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CURRENT TRENDS IN DEFENCE PLANNING

The adoption of the new NATO defence planning process (NDPP) and its Implementation and Transition Plan, in 2009, has been followed at the MoND level by an internal thinking process on the proceedings and substance of harmonisation of the national defence planning process – in order to better incorporate and respond to the NATO, EU and national requirements - with the new NDPP, which is the driving factor for the national defence planning process development.

In this context, the draft Law on Defence Planning expecting approval this year will provide the harmonisation of national defence planning with NDPP, by establishing the premises for a national capability-based planning, and the development of non-military capabilities, a better integration of planning domains, and shifting to a 10 years planning period (compared to six years previously). The new Law on Defence Planning is also taking into account the relevant aspects from recent national resource planning legislation.

All the subsequent related bills and defence planning documents, to include norms and regulations as well, will be further build upon the provisions of this Law. At national level, a new National Defence Strategy, currently in draft, is expecting Parliamentary approval. At departmental level, the most relevant defence policy documents are the White Paper on Defence and the Military Strategy of Romania. The basic MoND planning document, at departmental level, is the Defence Planning Guidance (DPG), which recently has been aligned with the NATO planning cycle and planning domains. The 2011 DPG was approved by the Minister of National Defence.

The DPG sets out MoND's Programmes and structure, the dynamics of the forces, training and readiness objectives, as well as the specific policies and resources to be provided to each Programme in order to accomplish their objectives, within an integrated framework offered by the Planning, Programming, Budgeting and Evaluating System (PPBES), in place within the MoND since 2002.

Currently, there are 8 major Programmes, three for the armed services and five for support and auxiliary ("Logistic Support", "Central Administration/ Military Pensions", "General Staff/Strategic Command", „Defence Intelligence" and "International Representation").

Based on DPG provisions, Programme Managers develop their programmes that (pending upon a comprehensive revision) are approved in the Defence Planning Council (the decision-making body, to adopt all strategic decisions related to defence planning, chaired by the minister of national defence), and then budgeted and implemented.

In addition to the above mentioned documents, it is also worth mentioning some defence planning or planning related bills which are currently under review and expecting approval this year, such as The Defence Law and The Law on Organizing and Functioning of MoND. The review of these bills is taking account, inter alia, of the provisions and recommendations of the new NATO Defence Planning Process.

THE IMPACT OF GLOBAL DEVELOPMENTS ON ROMANIAN DEFENCE PLANNING

Starting with the second half of 2008 the economic and financial crisis has proved to be more severe than initially estimated, having negative consequences on the public sectors budgets, including the MoND's. In 2009, the trend of the macroeconomic figures had a dramatic inversion, one of the first signs being the increase of the 2008 General Consolidated Budget deficit from a planned target of 2.7% of GDP, to about 5.0%, against the Stability and Growth Pact target of 3%.

In 2010, the global economical environment remained unstable and hardly predictable, with slight and sometimes contradictory trends of recovery, and with a different behaviour from one country to another. As far as our country is concerned, besides the domestic difficulties in economical

environment, the still existing global financial crisis negatively affected the Romanian economy, reducing the export markets for the Romanian products.

The national budgetary fiscal policy for 2011-2013 is built upon a macroeconomic framework based on a very cautious economic evolution.

Against the 2010 European Commission (EC) spring forecast, the new program of measures agreed with the international financial bodies (EC, IMF and World Bank), program that followed the 2010 EC spring forecast, does not provide for an economical growth for the years 2010 and 2011. For 2011-2013, the macroeconomic forecast takes account of the funding agreement with EC, IMF and World Bank (a total of 19.95 billions Euro: IMF – 12.95 billions Euro, EC – 5 billions Euro, EBRD – 1 billion Euro and World Bank – 1 billion Euro) and, in terms of compliance with the established terms and targets. The associated measures aimed at improving the business environment, reducing the macroeconomic imbalances and stabilizing the banking financial sector are expected to favour a sustainable economical growth and to increase employment rate after 2011.

In order to fulfil Romania's commitments assumed by signing the funding agreements with the international financial bodies, agreements that are vital for the Romania's economic stability and for meeting the General Consolidated Budget deficit targets, an appropriate legislative framework has been approved (The Law of Budgetary Fiscal Responsibility no. 69/2010, The Law for the Approval of the Budgetary Fiscal Framework for 2011-2013, The Law on Public Unitary Pensions System, The Law on Approving some Measures in Pensions Domain, The Law on Approving some Measures in order to Re-establish the Budgetary Balance, 2011-2013 Fiscal-Budgetary Strategy).

There are no special plans on defence sector, but the aforementioned legislation provides for a tighter framework for public expenditures through:

- a better control of personnel expenditures level;
- eliminating the possibility of cutting investment expenditures during budgetary year;
- linking the state budget expenditures increase to the General Consolidated Budget deficit decrease.

On the short term, in order to reduce the public deficit, the Government adopted a set of expeditious measures consisting of: the reduction with 25% of

salaries and allowances of civil servants and all other government employees (into effect between July 2010 and the end of 2010; starting with January 2011, the above mentioned incomes were increased with 15%), the increase of VAT from 19% to 24% and, limitation and reduction of the public sector expenditures on goods and services.

All these factors conducted to an affordability analysis that took place in 2010, taking into consideration the commitments to NATO and the envisaged financial resources, afterwards all national plans being revised accordingly.

To conclude in an optimistic yet cautious manner, taking into account the forecast of international organisations (The World Bank and The International Monetary Fund) for 2011 and the most recent data received from the National Committee for Prognosis, I would like to emphasize that the GDP for 2011 will see a 1.5% raise, followed by increases of 3.9%, 4.5% and 4.7% respectively for 2012-2014 period. The above mentioned data translated in the defence planning field provides the background of an increase of the financial resources allocated for defence with positive implications in implementing defence policy goals.

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ECONOMIC FORCE STRUCTURE AND VETERANS

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World tolerance of risk and waiting while potentially ominous situations develop is manifestly lower now than it has been in the past. As a nation contemplates the use of force in the role of first responder to a crisis, it must have in place the ability to surge on short notice. All things being equal, it is easier, cheaper, and more militarily effective to surge deployed forces than it is to deploy forces from home. However, there is an inherent tension between the desire to push more troops forward and being able to maintain a reservoir of capability to draw on in a crisis. Understanding and addressing this tension, particularly in smaller nations, is discussed here.

Key words: economic, force structure, veterans

1. INTRODUCTION

World tolerance of risk and waiting while potentially ominous situations develop is manifestly lower now than it has been in the past. As a nation contemplates the use of force in the role of first responder to a crisis, it must have in place the ability to surge on short notice. All things being equal, it is easier, cheaper, and more militarily effective to surge deployed forces than it is to deploy forces from home. However, there is an inherent tension between the desire to push more troops forward and being able to maintain a reservoir of capability to draw on in a crisis. Understanding and addressing this tension, particularly in smaller nations, is discussed here.

2. PERSONNEL AND OPERATIONAL TEMPO

It is useful for defense strategists to think in terms of a continuum with surge capability on one end (the greatest possible amount of war fighting capability that can be delivered for a specific period of time) and the level of readiness necessary to be sustained in peacetime on the other end. Between these two extremes are alternatives that specify various conditions of readiness and capability costs of a given alert posture. A surge quickly exhausts troops, and sustaining the same forward operating force both physically exhausts them and causes poor retention while economically exhausting the nation they represent.

Surge capacity is a function of readiness, by which units at various stages of readiness are deployed on short notice to accomplish missions that are currently beyond their operational readiness level. Although any given episode in which forces are surged will be perceived as exceptional, the requirement to maintain surge capacity is really a routine part of peacetime operations.

Forces available for surge can be divided into three categories that are relative to their ability to deploy (or redeploy) on short notice:

- Category one units are expected to surge within ninety-six hours of notification and have a readiness cycle within thirty days of completion or deployed forces that are completing their operational tours within thirty days.
- Category two units in the training and readiness cycle that do not meet the criteria of those in category one, but are still mechanically mobile. Surge readiness in this category varies from ninety-six hours to ninety days, depending on precisely where the unit is in the cycle.
- Category three units are those whose mobility is restricted. Their availability to surge also extends out to ninety days, plus additional time needed to complete whatever maintenance is required for people and material to be deemed safe to operate.

These maintenance and training cycles must be scrutinized by administrative and operational commanders to determine if their training can shortened or re-sequenced to reduce the period when important assets are not immediately available.

Although the advantages of such scrutiny are obvious, there are institutional risks to be taken into account. One is simply that a surge will cease to become an exception for a specific goal and become a more routine part of military operations that is associated with periods of high anxiety. In other words, a heightened state of activity may be adopted as a generalized, symbolic response.

Another risk is that every surge of operational forces must eventually be offset by a countervailing period of recovery and reduced readiness; if such periods cease to be available, the capacity to surge will deteriorate. Further, the "war on terror" has not relieved the operational force of the requirement to live within a budget. Surge is enormously expensive and in contradiction to the "best business practices" that the public and political leadership have come to expect of the armed forces. Last, normalization of surge is likely to be most severe in the area of personnel - the direct relationship between operational tempo and force retention is clear.

Military accession planners should consider the requirements of the entire Defense Ministry when assembling a yearly plan. Consideration for the total force (active, reserve, civilian, and contractor), from minimum service to retirement, must be examined. Among the 18-21 year olds the military seeks to recruit, the opportunity to travel in an all-volunteer force is an important motivational tool. However, when a need to surge causes the sudden cancellation of long-anticipated deployment locations, or the unexpected extension of overseas tours, the job satisfaction of military personnel is threatened. As service requirements become more demanding and capricious and the service member's quality of life declines, a corresponding decline in retention becomes more predictable. This is exacerbated when such factors are not associated with a clearly defined mission where accomplishment may be its own reward.

3. ALTERNATIVES

A force can surge or sustain but cannot sustain a surge without expanding its force structure or reducing its mission. However, there may be alternatives to sustaining a surge. The alternatives may be realized in short-term operational gains with long-term economic costs. Some may have shorter-term savings while minimizing long-term cost. During an examination of such alternatives, planners must always be mindful of personnel readiness, mission capability and affordability.

If the active and reserve forces are required to meet a sustained surge, who will fill the „workload gap" at home base or the deployed location? Can the same number of civilian personnel accomplish the same required workload and push out readiness to the military force it replaces? The answer may lie in each nation's obligatory service policy. No longer do many countries rely solely on conscription to fill the ranks of their force structure. Flat rate wages (pay) and linear compensation are no longer the "norm" or measure of personnel costs. These costs can be long-term force structure, poor retention or short term civilian labor costs. Can a civilian workforce, whether civil service or contractor, fill the workload gap at the same or less cost?

An examination of how to surge or sustain the different types of services becomes more challenging as the military is used over extended periods of time to support each nation's foreign and domestic policy. The use of non-military personnel typically falls under the category of indirect combat support - either Civilian Service or Contract Services. An examination of how the civilian workforce could support the military as an option in extended conflict deserves close examination.

As more countries down size their militaries due to national and global economics, their military force structure will quickly exhaust itself if not reinforced by some means.

Who and what would these reinforcements look like?

What skill sets would they need to possess?

Perhaps an answer lies in the Veterans of the nation. To manage short-term labor shortages, the use of Veterans may be a viable alternative. Their understanding of the military infrastructure and culture lends itself well to short term gap management. Veterans may not be the only choice of a civilian workforce but perhaps the quickest to educate and train in a short period of time. Civilian and Contract personnel can supply food, laundry services, guard convoys, base security, construction, and logistics in support of surged active and reserve forces; this has been clearly demonstrated. If more outsourcing of home base jobs can be accomplished, this would allow the military to focus on battle-related tasks.

4. VETERAN WORKFORCE

Upon completion of minimum mandatory national service or an initial volunteer commitment is complete, some Knowledge Management (KM) architecture

must be put in place to capture the Knowledge, Skills and Abilities (KSA) of a nation's Veterans. These veterans' KSAs could be compared to vacant surged active and reserve force workload. Veterans could be called upon in a temporary or permanent basis to fill in for civilian workforce while essential military personnel are executing more mission essential direct combat force requirements.

Civilian personnel could broadly be characterized into two categories: either civil service personnel or contractor. These civilians could work directly for the Ministry of Defense, a contracting agency, or allowed to bid on workload to fill projected vacant personnel workload requirements. The use of Veteran civil servants may lend itself more toward long-term use while the use of contract civil servants may lend itself more toward short-term workload gap requirements.

5. SUMMARY

The nature and use of the military in deterrence and security has changed over the last 20 years. During this period, personnel-related costs have become the single largest long-term cost to support and sustain military force structure. The larger the active duty force, the more expensive the military. The use of the reserve force as an efficient means to support the active military past an initial surge may have outlived its initial usefulness in today's economic environment. Once the active and reserve forces are exhausted, possible alternatives need to be examined.

Finding alternatives to address increasing military costs has been the focus of many nations over the last 20 years. Specifically, the cost of military personnel has changed the way Defense Ministries view the force structure of their uniformed and civilian workforce.

An alternative solution may come in the form of using military veterans. Veterans can quickly come up to speed to back fill positions vacated by active duty and reserve personnel needed to execute military task-oriented jobs in the time of crisis. Veterans of the last 20 years leaving the armed forces possess a great deal of intellectual wealth. They can quickly fill the requirements vacated by active and reserve force personnel to better support the operating force in time of sustained operations (sustained surge). These veterans can be used in the form of Defense Ministry civilians or part of a defense contractor workforce.

Today, Defense Ministries should consider these alternatives as part of their initial accession plans. Force structure accession goals should represent future needs of the active, reserve, and civilian work force. Defense Ministries must take into account the future economic environment to better operate within a budget and available force structure.

REORGANIZING ROMANIA'S MILITARY TREAD WATER FIRST, THEN SWIM

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My first question to the reader is what is Romania's Grand Strategy? By Grand Strategy I mean the employment of all instruments of power (e.g. diplomatic, informational, military, and economic) available for the furtherance of its security and national interests. Security and national interests include both foreign and domestic. I contend that the designers of a nation's grand strategy ought to include representatives of the major political parties, civilian leaders in the areas of the Foreign Service, public affairs, and economic matters, as well as the Ministry of Defense. Without a unified grand strategy how does a nation develop a comprehensive National Security Strategy and then how does the Ministry of Defense construct a National Military Strategy?

Key words: reorganization, Grand Strategy, security, national interest, power

When I was asked to write a piece for this Journal I thought that it would be a good idea to conduct a little research to determine how I could best be of assistance to both civil and military authorities in Romania, who are my primary audience. My secondary audience includes those who will be the civil and military leaders of Romania during the next decade or so. This secondary audience is very important because it is this group that will have to live with the decisions concerning the reorganization of Romania's military that are being made today.

I do not intend to present myself as the all knowing authority in such matters for to do so would be quite presumptuous on my part. Rather I hope to be viewed as an independent consultant who asks those questions few others would care or dare to make. I ask my students at the Air Command and Staff College (ACSC) these same types of questions; for they, one day, will be the leaders of my country's military establishment, primarily the Air Force. After graduation from their year-long studies, many will become staff officers and they will have to wrestle with the same type of decisions as does my secondary audience here. I trust this essay will be beneficial to everyone who reads it regardless of their status.

I tried to not write this essay as an academic paper although I do provide "academic type" citations. These serve two purposes. First they demonstrate to the audience that the sources of my ideas are a result of over eleven years' teaching at ACSC, conducting research, reading, and personal experience. Second the citations provide the reader with some source material to consult and study for their own enrichment.

In 2004 Romania joined NATO and since that time has made great

strides in meeting NATO criteria such as standards of interoperability, commonality, interchangeability, etc. NATO's Partnership for Peace (PfP) is designed to "increase stability, diminish threats to peace and build strengthened security relationships between individual Partner countries and NATO, as well as among Partner countries."[1] At the same time member countries are given the leeway to determine its particular needs and the pace at which it implements the six basic elements of the program.[2]

My first question to the reader is what is Romania's Grand Strategy? By Grand Strategy I mean the employment of all instruments of power (e.g. diplomatic, informational, military, and economic) available for the furtherance of its security and national interests.[3] Security and national interests include both foreign and domestic. I contend that the designers of a nation's grand strategy ought to include representatives of the major political parties, civilian leaders in the areas of the Foreign Service, public affairs, and economic matters, as well as the Ministry of Defense. Without a unified grand strategy how does a nation develop a comprehensive National Security Strategy and then how does the Ministry of Defense construct a National Military Strategy?

Before Romania's civilian and military leaders progress too far into the next phase of NATOization, I suggest they address a series of questions that are difficult to answer, but profound nonetheless. Interestingly over the past several years I have frequently asked the students in my Leadership and Warfare seminars Americanized versions of these same questions.

This year my students read British General Rupert Smith's book, *The Utility of Force*. The author contends that today's warfare paradigm has changed from one of state-on-state industrial warfare to one of 'war amongst the people'. Smith suggests that war no longer exists as it has historically, but has been replaced by a type of conflict in which the battlefield is anywhere and everywhere, and that the primary targets are civilians. In this new paradigm civilians, he notes, are as much of a military objective as the enemy combatant.[4] We need to ask ourselves if Smith is right in his analysis of warfare based on his almost 40 years of military service.

If Smith is correct in his assessment, the implications are indeed significant in organizing, training, and equipping one's military forces. Should Romania's civilian and military leadership believe that Smith is more right than wrong then the approach to organizing, training, and equipping its military forces would be quite different than that for 'traditional war'. Countries such as Romania whose military budget and available military age man power are significantly less than larger countries such as the United States, China, Russia, and others cannot afford the luxury of organizing, training and equipping for all eventualities. Thus it is an even more important issue that needs to be addressed.

Another question worth asking is who are Romania's most likely

enemies and why? This is not an easy question to answer either, but it does have significant implications with regard to the organizing, training, and equipping of its military forces. Although this question cannot be answered with 100% certainty, senior leadership can perform a risk analysis considering a wide range of possibilities and opponents.

Sometimes such an analysis can be very accurate. Let me give two examples.

Shortly after WWI the American General Billy Mitchell visited with Britain's Air Marshall Hugh Trenchard and soon afterwards the Italian air power theorist General Giulio Douhet. The three came to the conclusion that another war in Europe against Germany was inevitable, primarily because of the humiliating Versailles Treaty.[5] In less than two decades their fears became reality.

Between December 1923 and July 1924 General Mitchell visited Hawaii, the Philippines, India, China, Manchuria, Korea, and Japan while on his honeymoon. Upon returning to the US he submitted a 325 page report to the War Department stating that war with Japan was inevitable and gave his reasons why.[6] Again, less than two decades later his assessment was validated in the attack on Pearl Harbor.

These examples are intended only to illustrate that it is possible to predict with some degree of confidence future enemies and conflicts. However, one must continually assess the international climate and make the necessary adjustments to those assumptions. Here we encounter a human frailty that can be a curse to both civilian and military leaders. Unfortunately all too often we see the things we expect to see them and not as things really are in spite of overwhelming evidence to the contrary. One way to mitigate this is to encourage openness about basic assumptions and practice from subordinate civilian and military personnel. Maverick officers are not bad people to have around provided they are "professional" when they disagree or put forth different or innovative ideas.

A week before this year's Fall semester ended at ACSC I asked my two Leadership and Warfare seminars what type of war the United States would fight next - conventional or unconventional (meaning "war amongst the people"). Each of the students thought about what I had asked before responding. Then we entered into a deep discussion of the possibilities and likelihood of each. In the end my students were 80% confident that the next fight would be a "war amongst the people" because that seems to be our greatest vulnerability, and perhaps NATO's as well. Their thoughts centered on peacekeeping, nation building, unconventional warfare, and similar types of conflicts and confrontations. But they also mentioned that although they thought there was only a 20% chance that the next fight would be a more traditional type of war they simply could not neglect that possibility. As a result they needed to prepare for the most likely while being able to quickly transition to the latter. In other words, to use an

American cliché, they wanted to hedge their bets.

This leads me to my next two questions. What type of "war" do Romania's civilian and military leaders expect to fight next? How does Romania organize, train, and equip its military force while at the same time "hedging its bets"?

Perhaps NATO's PfP program is useful here – how can Romania best contribute to the NATO Alliance? In light of the recent past and pondering potential future conflict it would be reasonable for Romania to consider finding a niche area within the NATO construct. Romania could then focus its military capabilities, for example "war amongst the people". Such an approach would address a NATO need and the Romanian military could become quite proficient in this area. This type of expertise, I suggest, is sorely needed. Reliance by Romania on NATO for safety in a conventional confrontation would not really be a negative construct because of the nature of the alliance itself.

An approach like this would be of great value to Romania because its defense dollars would not have to be based on a strategy the covers both conventional and irregular contingencies. The cost of procuring and maintaining weapons systems would probably be less costly in terms of money, material, and maintenance. Many of the skills necessary for irregular contingencies are also applicable to conventional military operations although the reverse might not be the case.

This suggestion of a NATO niche really is not that radical. Take Canada, for example. What does the reader think when it comes to Canada's military expertise? When I think about Canada's military, I think about peace making, peacekeeping, and expertise in the key areas of "war amongst the people". Admittedly, Canada has a conventional capability; however, its true value lays elsewhere - unconventional warfare.

In light of what I have written, how should Romania's civilian and military leadership organize, train, and equip its military forces? Smith informs us that it is not so much that militaries organize, train, and equip to fight the last war rather they tend to prepare for the wrong one.[7] In light of this remark I will discuss some considerations for each of Romania's armed services.

With regard to Romania's Naval Forces, there seems to already be in place a naval modernization plan designed to satisfy its security needs and defend its national interests at sea. Romania's mine warfare ships and river patrol fleet may well be excellent vessels for use in unconventional conflict and confrontation situations, especially when protected by the much larger naval vessels and aircraft of blue water navies.

Romania's Land Forces, as currently constituted, appears to be well balanced for any future type of conflict. As Kitson notes, 'war amongst the people' relies primarily on infantry units with strong junior leaders. Leaders at all levels need to be flexible, innovative, and possess

good situational awareness. Yet, these are the very same leadership traits required in inter-state warfare as well.

Also during the seminar discussions I mentioned previously we addressed the issue of training an army for both type of contingencies. My students pointed out that one approach was to conduct an analysis of the skill sets that land force personnel need to possess to fight a conventional war. Then they said an army should do likewise for the skill sets that must be mastered for the unconventional fight. They contended that it was important for leaders to know what these various skill sets are so one could determine which ones overlapped both types of conflicts. The resulting delta between the two could then be prioritized to round out the training programs at each level.

Then there are training needs that all too often get overlooked, but are required in both categories of warfare. The development of information and intelligence is one of these. Brigadier Frank Kitson notes that the integration of intelligence and operations is the most important factor in warfare and the least appreciated one by the conventional soldier.[8] There are several issues at play here. First, operational leaders tend to rely on intelligence organizations and higher headquarters to develop information and intelligence for them. What they forget is where those organizations focus their attention. It is not the same as that of the lower echelon units. Second, when those organizations do provide intelligence to lower units its value has usually diminished because of the long turn-around time. Thus, units at all levels need to gather their own information and transform it into actionable intelligence.

I think it is important for me to admit one of my prejudices. I am convinced that if a leader can master the skills and intricacies of 'war amongst the people' the transition to conventional warfare is not that difficult provided you have an open mind and are continually learning, Colonel John Boyd's OODA Loop comes to mind.[9] Success in warfare has a lot to do with learning and adapting, and adapting and learning. It is for these reasons that mission type orders and understanding of 'commander's intent' are vital – meaning decentralized control as well as execution.[10]

Carl Builder in his work *The Masks of War* states that the US Air Force is mesmerized by technology and the latest 'toy'.[11] It is for these reasons that it seeks the latest and greatest fighters, specifically the F-22 Raptor and the F-35 Joint Strike Fighter. Does Builder's observation apply to Romania's Air Force as well? Although, at least at the time of this writing, neither is being considered by Romania's leadership is this perhaps the reason that refurbished F-16 Fighting Falcons are being considered to replace the MiG-21 LanceR?

Is the F-16 really the aircraft best suited for the needs of Romania's Air Force? In conflicts such as Bosnia, Kosovo, Iraq, Afghanistan, etc. the F-16 might not be the best aircraft simply because of its speed. The British learned this lesson

during the Aden conflict (1955-1967).[12] Pilots had but seconds to distinguish the right ridge line, identify the correct target, and make shoot-no shoot decision.[13] The minimum speed of jet aircraft in the mountainous areas of South Arabia was a major disadvantage as it has been in Afghanistan as well.

Would a variant of the Harrier II possibly be more versatile? The US Marine Corps has been quite innovative with the employment of their Harriers especially with regard to air-ground support missions. In addition, the Harrier can be utilized as a reconnaissance platform as well as in a fighter role. The total cost, however, may make this aircraft much less attractive that the refurbished F-16.

Perhaps there are other aircraft available that are better suited to satisfy Romania's airpower needs than either of those? Since the Air Force is already familiar with Russian aircraft should Romania consider an aircraft from Russia? Retraining of pilots and maintenance crews might make for an easier transition. But one also needs to consider the possibility of a spare and repair parts embargo should the Russians want to show their dissatisfaction with the government is some manner.

Maybe the Air Force would find an aircraft similar to the Super Tucano a better fit to its needs than a jet aircraft. Many of the South American nations have found this aircraft to be well suited to unconventional operations. I do not know which of the many aircraft available is best suited to the needs of the Romanian Air Force. The ultimate decision ought to be based on Romania's overall national security strategy and the role it decides to play in the NATO Alliance.

There are a large number of variables to consider that are definitely beyond the scope of this article and expertise of this author. The implications for the nation as well as the Romanian Air Force are indeed significant. Treading water before swimming might be a good idea, at least until some of the questions raised in this article are addressed.

I want to end this article with some comments about Professional Military Education and joint forces training. Scharnhorst, the great German military educator, developed a superb professional military education curriculum as head of the Prussian War Academy in Berlin. In addition to extensive reading on military subjects, he incorporated staff rides to old battlefields and required his students to analyze the events and the decision-making of the various leaders.[14] He then made his students explain what they would have done differently and why. The student's peers then critiqued his presentation.

I suggest that this sort of education be part of the professional military education of not only commissioned officers, but warrant and non-commissioned officers as well. I also recommend that all services be represented during these staff rides. Air Force personnel could explain how best to use airpower. Special Forces and Naval officers could do the same. The outcome, I believe,

would be a core of personnel not only well versed in their own service's capabilities, but an awareness of how best to incorporate each of the other services into battle plans. This would be especially helpful in urban operations and operations with large numbers of non-combatant personnel are present.

Further, I urge Romania to pursue Professional Military Education exchanges with other nations. Do not limit these educational exchanges to NATO countries or American institutions. The purpose of these types of educational exchanges is more that intellectual. The friendships developed in such exchanges may well pay dividends later especially when trying to defuse tensions.

My second suggestion is to conduct extensive exercises in which Romanian Land and Air Forces work closely together. During his second interview with WWII US Army Air Forces General Pete Quesada Hughes reported that General Quesada said the Allies took the wrong lessons from Operation Corkscrew (Pantelleria). The real lessons had to do with inadequate communications between air and land forces.[15] The Allies not only paid a price later on in the war, but this same issue persists in the US military today although it is getting better. Interestingly, during WWII both the Germans and Soviet Air Forces developed good air and land force cooperation.

Lastly, I urge the Romanian military services to not only participate in NATO exercises, but joint exercises with neighboring and other countries as well. Such participation will improve the military expertise of Romania's military forces. It will also expose the men and women of the military to other ways of doing things and broaden their experiences.

In conclusion, I hope that everyone who has read this essay has benefited from it. It has been my intention to provide some thought provoking questions that if answered will help Romania's civilian and military leaders make better informed decisions about reorganizing, training and equipping its military forces be they Air, Land, or Sea. Admitedly, NATOization is important. The question is what path will Romania pursue in fulfilling its PfP obligations? The future will always be uncertain, but we can reduce the level of uncertainty by a thorough analysis of our environment. One will never be 100% correct, but it is possible to be 100% wrong. I have always told my students as well as my children to be aware of what is going on around them. You might not be able to control the situation, but you can mitigate the situation's controlling of you. Remember a conscious decision based on a thorough analysis is far better than one that is not. Perhaps Romania should tread water to determine the direction to head and then swim for it.

ENDNOTES

[1]North Atlantic Treaty Organization, The Partnership for Peace Programme, located at http://www.nato.int/cps/en/natolive/topics_50349.htm and downloaded on 23 December 2010.

[2]For further information on the six basic elements of the program the reader is referred to the URL noted above.

[3] I wish to direct the reader to two different web sites that discuss this issue. The first asks the question "Can the United States Do Grand Strategy?" http://www.fpri.org/telegram/201004.mcdougall.usgrandstrategy.html. The second is an essay discussing among other things the start of the Grand Strategy seminar at Yale University. http://www.duke.edu/web/agsp/grandstrategypaper. pdf

[4] Smith, Rupert (2005).The Utility of Force. New York: Random House. pp. 3-6.

[5] Hurley, Alfred F. (2006). Billy Mitchell: Crusader for Airpower. Bloomington, Indiana: Indiana University Press. p. 77.

[6] Ibid., pp. 86-88.

[7] Smith, p. x

[8] Kitson, Frank (1962). Low Intensity Conflict. Dehra Dun, India: Natraj Publishers., p. xi.

[9] In a future volume I will discuss this concept in detail, but for now suffice it to say this is a model for continually learning and adapting faster than your opponent. I have a PowerPoint presentation that provides a good overview of Boyd's OODA Loop. If the reader would like a copy of this briefing please feel free to email me at donald.maccuish@maxwell. af.mil if you would like a copy.

[10]According to the Air Force Doctrine Document 1 the USAF believes in Centralized Control and Decentralized Execution (p. 23). I believe that although this idea may have been necessary for the Combined Bomber Offensive in WWII, it is a recipe for disaster in today's environment.

[11]Builder,Carl H. (1989). Masks of War: American Military Styles in Strategy and Analysis. Baltimore, Maryland: The Johns Hopkins University Press. p. 23.

[12]seehttp://www.britains-smallwars. com/Aden/index.html

[13] Hoffman, Bruce (2007). British Airpower in Peripheral Conflict, 1919-1976. Santa Monica, California: Rand Corporation. See also Corum, James S. and W.R. Johnson (2003). Airpower in Small Wars: Fighting Insurgents and Terrorists. Lawrence, Kansas: University of Kansas Press. pp. 197.

[14] For an in-depth discussion of Scharnhorst's educational system the reader is referred to Charles Edward White's book The Enlightened Soldier. In my opinion this book should be required reading in every Professional Military Education Program.

[15] Hughes, Thomas A. (2002). Overlord: General Pete Quesada and the Triumph of Tactical Air Power in World War II. New York: Free Press Publishing. p. 328.

DEVELOPING EFFECTIVE ARMED FORCES IN THE TWENTY FIRST CENTURY CASE STUDIES OF NEW DEMOCRACIES

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The purpose of this article is to contribute to a better understanding of the contemporary value for democracy of the relationship between elected leaders and the armed forces. Hence, it focuses on the military effectiveness dimension of the CMR. It discusses why it is important and what newer democracies can do to successfully develop effective armed forces. The article provides "lessons learned/ best practices" of achieving effectiveness from three developing democracies - Chile, Hungary, and, Mongolia.

Key words: civil-military relations, defense institution building, military effectiveness, lessons learned, developing democracy

1. INTRODUCTION

The purpose of this article is to contribute to a better understanding of the contemporary value for democracy of the relationship between elected leaders and the armed forces. It draws from an article written in collaboration with Thomas Bruneau, and published by *Democratization* in 2008, entitled "Towards a New Conceptualization of Democratization and Civil-Military Relations", which expanded the prevalent civil-military relations (CMR) concept (concerned primarily with the armed forces and narrowed to issues of military intrusion in domestic politics through *coups d'état* and asserting civilian control) to a conceptualization and framework that better suit the twenty-first century security landscape - a trinity of democratic civilian control, effectiveness (fulfilling the assigned roles and missions - from war, to peacekeeping, to intelligence, to counterterrorism), and efficiency (fulfilling the assigned roles and missions at a minimum cost) of the security forces (armed forces, police forces, and intelligence agencies).

This article focuses the military effectiveness dimension of the CMR. It discusses why it is important and what newer democracies can do to successfully develop effective armed forces. The article provides "lessons learned/best practices" of achieving effectiveness from three developing democracies - Chile, Hungary, and, Mongolia. While a comparison between the three countries may seem a stretch at first glance due to different geographic locations and historical backgrounds, the three countries are actually worth comparing, for at least the following reasons: they include three democratization areas (Latin America, Eastern Europe, Asia);

they were repressive dictatorships; despite the dictatorial pasts, they are considered consolidated democracies after twenty years or so; they progressively yet successfully engaged in CMR and Defense Institution Building (DIB) reforms since the end of the non-democratic regimes; and, they are currently important security actors both regionally and globally (e.g. in various global security and peace operations and missions), which is a proof of achieving effectiveness.

2. RELEVANCE OF THE TOPIC

In this article, I aspire to achieve three goals. First, I hope to complement the current research and literature on civil-military relations and DIB. Virtually all of the literature on the armed forces in established democracies is concerned with democratic civilian control over them. In the newer democracies, the literature usually focuses on how to achieve the control supposedly already existing in the more established democracies. That is because policy makers in new democracies, especially in those where the military was the government during the previous non-democratic regime (e.g. Latin America) and still enjoys prerogatives it negotiated during the transition to democracy, tend to focus CMR reform only on control. Control also remains relevant as more traditional issues of coups have, however, not totally disappeared (e.g. Honduras, 2009 or Ecuador, 2010). There is, however, less attention in the literature on democratic consolidation and civil – military relations, especially in relation to what the armed forces do; that is, their effectiveness and the implications of their roles and missions for democracy. This is very surprising because today, when the traditional inter-state conflict has virtually disappeared (with few exceptions), very few militaries are primarily trained, resourced, and prepared to wage combat with other armed forces; armed combat is probably the least likely role that militaries are currently carrying out. More specifically, armed forces today are involved in peace support operations (PSO), in "nation building" (e.g. in Afghanistan), in fighting street gangs (e.g. Haiti in 2007), which is more typically a police function, in supporting or supplanting police forces in operations to combat drug trafficking and street crime, or fight terrorism (e.g. Mexico). This combination of activities are the issues that democratically elected policy makers must deal with to meet domestic and, increasingly, global expectations and standards. The exclusive focus on civilian control in this literature is a significant impediment to understanding the larger and more complex relationships concerning democracy and security forces, particularly when we consider this very wide spectrum of roles and missions. I hope this article will begin to fill these lacunae. Second, I hope to interest policy makers in newer or

currently emerging democracies on why it is incumbent on them to invest time and effort in developing effective armed forces in a security context that lacks traditional conflict, and how they can contribute to reform. Third, I expect the article to be relevant to policy makers and armed forces in developed democracies, which are increasingly encouraging cooperation with newer democracies to avert national and global security threats. It is important for governments in developed democracies to know they can cooperate with compatible and capable armed forces from newer democracies, which are also accountable.

3. EFFECTIVENESS IN FULFILLING ROLES AND MISSIONS

As previously mentioned, I have learned from my experience with the Center for Civil-Military Relations (CCMR) and National Security Affairs (NSA) Department of the NPS, in working with civilians and military officers in consolidating democracies that CMR (and democratic reform of the armed forces) should not focus entirely on civilian control. Thus, while civilian control is considered a fundamental aspect of democratic consolidation, and is not assumed to exist in any particular case, it is only a part of the analysis [1]. Analysis of how effective security forces are is also necessary to understand the contemporary importance for democracy of the relationship between elected leaders and the military.

As previously mentioned, armed forces are not solely fulfilling traditional combat missions. Currently, there are at least six [2] major categories of roles and missions that armed forces carry out: 1) fight, and be prepared to fight, external wars; 2) fight, and be prepared to fight, internal wars or insurgencies; 3) fight global terrorism; 4) fight crime; 5) provide support for humanitarian assistance; and, 6) prepare for and execute peace support operations. It is a very broad spectrum of roles and missions, which democratically elected civilians must deal with effectively in order to fight national and international security challenges. Thus, focusing CMR reform only on civilian control hinders the larger and more complex relationships concerning democracy, elected policy makers, and security forces. In a democracy, policy makers craft and implement security decisions and policies that are in service of safeguarding democratic values, national interests, and citizens; successful policies, however, go hand in hand with effective security forces. Even when civilian control is unquestioned, as in the United States, civilian control by itself is no guarantee that the policy - makers will make good decisions, or implement policy in such a way as to result in military success.[3]

But what does military effectiveness involve? Effectiveness in fulfilling any of the six roles and missions requires the following: First, there must be a plan in place, which may take the form of a strategy or even

a doctrine. Examples include national security strategies, national military strategies, strategies for disaster relief, doctrine on intelligence, counter terrorism doctrine and the like. Second, there must be structures and processes both to formulate the plans and implement them. These would include Ministries of Defense, National Security Council-like organizations, or other means of interagency coordination. Third, a country must commit resources, in the form of political capital, money, and personnel, to ensure it has sufficient equipment, trained forces and other assets needed to implement the assigned roles and missions. Lacking any one of these three components, it is difficult to imagine how any state would effectively implement any of these roles and missions.

Although it is rather difficult to assess success of effectiveness [4], what comes out clearly from the preceding discussion is the importance of the institutions as a MOD and a NSC. That is, they are critical to making the armed forces work, or not. There is evidence from new, and not so new, NATO countries that they created robust institutions, which are staffed by certain numbers of civilians, with some level of expertise, and with stability (such as members of the National Security Councils, Ministers of Defense, Deputy Ministers, heads of departments and offices within the militaries, as well as subject matters experts). Nevertheless, these countries were more or less required from outside (e.g. NATO membership requirements) to recruit civilians and make them stable in their positions. Conversely, countries in Latin America lack such institutions. At a minimum, they have recruited civilians (and provided them with stable careers), but for administrative jobs (Argentina, Chile). In those cases where there are subject matter experts, their positions are not stable (Argentina). Democratic control can also contribute to military effectiveness. If there is a certain amount of willingness and interest (whether due to internal or external incentives), but also knowledge and expertise in defense and security (e.g. policy makers know what questions to ask and how to provide recommendations to improve the activity of the military) on the part of the elected civilians, armed forces can fulfill their responsibilities better. As CMR scholar Deborah Avant contends, “Having more civilians control the army made it easier, not harder, for the army to maintain its focus” [5]. Institutionalizing control and oversight in a way that provides top-level direction and general oversight guidance, as opposed to malfeasance or cronyism, leads to improved effectiveness. In the US, the 1986 Goldwater-Nichols Department of Defense Reorganization Act is a good example to this end. It both reinforced democratic civilian control and mandated jointness for the military services in the United States. Colombia is also an interesting case. President Alvaro Uribe (2002-2010) undertook strong personal

control over the armed forces, police, and intelligence organizations, and compelled them to confront the internal conflict with the FARC. The resultant was improved security.

4. CASE STUDIES

During my work with CCMR, I have had the privilege to research democratic civil-military relations in several newer democracies, including Chile and Hungary (which I also visited in summer and respectively fall of 2010) and Mongolia (through discussion with colleagues and NPS students). While there is no claim here that these three are a "representative sample" of military effectiveness, they are "lessons-learned/best-practices" which contrasts them from most countries in the world, where very little in fact is happening in terms of civil-military relations and defense institution building, especially regarding developing effective armed forces. They can provide data and insights that may be of use to other countries, should the political will exist to implement change. For each country I based my research on the following four questions:

1. Has the country developed a plan in place, which may take the form of a strategy or even a doctrine?

2. Has the country developed institutions (e.g. structures and processes) that have or are in the process of formulating these plans and implementing them? If yes, do these institutions and plans involved interagency coordination?

3. Have the civilian policy makers committed resources, in the form of political capital, money, and personnel, to ensure the respective country has sufficient equipment, trained forces and other assets needed to implement the assigned roles and missions?

4. If either or all of these developments have taken/is taking place, what has motivated/is motivating the civilians to invest in effectiveness of the military?

It must be emphasized from the very beginning that most of these cases were intentionally selected as examples of achieving effectiveness in military reform; in most countries with which I am familiar, policy makers are unable to contribute or are not at all interested in defense reform in general, let alone effectiveness.

4.1. CHILE [6]

Chile has started its journey to democratization with a big gap between two worlds: an emerging civilian government and a strong, independent, and influential military, which emerged from the dictatorship with the highest prerogatives among all Latin American neighbors (including high resources for the military through the "Copper Law" enacted in 1973, which stipulates the military gets 10 percent of all export revenues from the state-owned copper company CODELCO, for weapons and equipment acquisitions). Reducing the gap between the two worlds (e.g. by strengthening civilian interest, expertise, and authority

over the military while decreasing the influence of the Armed Forces in the politics and government and focusing on professional issues) has therefore been rather protracted and cumbersome, but not without reaching the desired effect. Fortunately, Chile has incrementally developed democratic Defense Institution Building and strengthened democratic CMR, including effectiveness (which has involved plans, structures/ institutions, interagency processes, as well as resources). After two decades of democratization, the civilian government has come to understand the need for an effective military as a mean and tool to further and consolidate foreign policy, and, secure economic gain, while the military has understood that democracy is the "only game in town" in Chile and therefore civilian guidance and oversight is part of the game.

Due to the legacy of the past, it is not surprising that for many years since the transition, civilians' main objective was asserting democratic civilian control. Preoccupation for effectiveness, however, emerged during the administration of Eduardo Frei Ruiz Tagle (1995-2000), and further developed by presidents Ricardo Lagos (2000-2006), and Michelle Bachelet (2006-2010). President Frei had a "carrots-and-sticks" approach related to CMR: attempts to balance strengthening democratic civilian control (thus decreasing military prerogatives) while supporting military effectiveness and professionalism. During the Frei administration, Minister of Defense Edmundo Pérez Yoma took a keen role in developing Defense Policy. He initiated several civilian and military debates among officers from the Ministries and Armed Forces, civilians from the Congress, think thanks, academic institutions and other non-military organizations. By the late 1990s, the military came to accept the civilian "right" to develop defense policy, a natural prerogative in a consolidated democracy. President Ricardo Lagos (2000-2005) sought to continue the dialogue on effectiveness and modernization of the Armed Forces. He looked into conferring the military a raison d'être in a time of peace, which brought about positive changes in the Armed Forces' attitudes toward constitutional reforms, civilian decisions, democracy, and human rights. The new Constitution adopted in 2005 provided a clearly external orientation for the armed forces (while still having limited domestic roles, such as in emergency situations). Changes in recruitment (including the draft and the acceptance of women in the Army and the Navy), overhauling the force structure, strengthening joint structures and operations, and reforming acquisitions, doctrines and military education and training also took place. Frei and Bachelet administrations were marked by some important legislative changes, which triggered a series of institutional, organizational, and structural transformations. After procrastination for five years, the Law on the Organization and Functioning of the Ministry of Defense (MOD Law) was approved in February 2010,

at the end of the Bachelet tenure, which left the task of implementation to the new Government of President José Piñera (2010 – present). The MOD Law is expected to bring "big" changes to both democratic control and effectiveness (and, to some extent efficiency) of the "revolutionized" Armed Forces and MOD, with an emphasis on better defense policies, increased civilian roles in designing and developing defense planning and strategic thinking, and increased effectiveness of Chile military while deployed in international missions. The Law led to the creation of a series of new structures within the MOD, including a Joint Chiefs of Staff (which has an operational function), as well as an Undersecretary for Defense Policy Office (which develops defense and military policy and conducts the main defense planning). MOD civil society representatives are confident this Law, and the Office will effectively support civilian policy makers to decide what Armed Forces are needed in the future and for what purposes, establish a relationship between the decision to develop forces with the decision to deploy them (e.g. for external defense, peace and stability operations, or even internally to take care during disasters, etc.), how much to spend on defense and how can efficiency be ensured and measured, how joint systems will be, what keep what get rid off from military etc. Sources within the MOD expect that interagency coordination and cooperation within the defense/ security sector will also be improved. Chilean authorities expect all the desired outcomes of the MOD Law to be implemented/fulfilled within the next four to five years.

Through the public policy agenda developed in 1995, DSP began to shape. DSP documents (strategic assessments, national strategic plans, strategic defense plans, as well as the White Book of Joint Doctrine), as well as the 2005 Constitution emphasize the internationalization of the Chilean military through participation in peace, stability, and reconstruction operations, as well as strengthening neighborly and regional cooperation. The White Book (2010) is based on the NATO and Spain's doctrines (following discussions with the joint chief of staff from Spain who showed MOD officials their doctrine) yet adapted to Chile's peculiar security and defense related realities and needs. That is because Chileans want to participate in international forces, which brings to the agenda interoperability and the effectiveness.

What also contributed to strengthening military effectiveness in Chile was participation in international Peace Operations. The military participation in such international and regional operations has been mutually beneficial to both the civilian and military elites: for the former, involvement in PSO is part and parcel of civilian governments' extended foreign/diplomatic and economic policy agendas (as the Chileans acknowledge that globalization does not only bring free trade and diplomatic ties but also security

challenges and threats which imply shared security responsibilities); for the latter, it ensures the preservation of institutional *raison d'être* (with all financial and moral benefits) in a security environment that moves away from the traditional inter-state conflict and in an overall global context of economic hardship, as well as a great opportunity for boosting professional experience and effectiveness; to both parties, such participation helps maintaining the already established normality, stability, dialogue, and transparency in civil-military relations. The expertise and experience acquired by Chile's military during international operations was tested during the events during and ensuing the devastating February 2010 earthquake [7]. The earthquake experience demonstrated Chilean military effectiveness (e.g. PSOs taught the armed forces how to deal with civilians when reinstating order due to previous engagement and interaction with NGOs representatives and others in PSO, stability and reconstruction operations via internationally-established Rules of Engagement [ROEs], a perhaps different outcome twenty years ago when the Chilean military was not involved in PSO). The Armed Forces have now very high population trust and support from society. Professional Military Education (PME) and Civilian Defense Education (CDE) have also helped increase effectiveness.

Chile is a great example of mutual willingness by the civilians and the military institutions to accept and undergo democratic reforms, not only in terms of control but also effectiveness (due to perceived threats, and in relation with international security cooperation that the country supports, which have implications not only for security ties, but also for economic and foreign relations). Chile could also be relevant to other new democracies (especially those that are not from South Eastern Europe (SEE), do not have NATO and/or EU to provide them with a checklist of accession requirements to foster reform) in that Chile has followed NATO doctrine (focusing on Spain's in particular) to base their defense policy – again, among other reasons, in order to ensure the military is effective and interoperable in international coalitions. Chile, thus, provides an example of how a non-aspirant NATO country can use NATO model to undertake military reform (thus, showing that NATO can have an indirect effect on the military reform in countries that do not necessarily seek to or cannot become members).

4.2. HUNGARY [8]

Hungary is an example of successful development of effective armed forces. Hungary has effective armed forces, especially when contributing to Stability, Reconstruction, and Peace Operations. NATO membership has greatly impacted the reform, in that it forced the hand of the Hungarian government to create or reorganize institutions involved in bringing about armed forces' effectiveness. The road to effectiveness, however, has been long and hampered by several obstacles. First, interest in

effectiveness, did not emerge until Hungary joined NATO (1997-1999), and even then it was minimal. That is because governments "started out from the mistaken assumption that NATO accession would not occur any time soon" [9]; as a result, policy makers "supported as much the military reform as it was necessary for achieving the invitation of NATO". [10] Defense reform basically involved budgetary cuts for defense, personnel downsizing (including civilian), as well as slow development of a host of military reform plans (but with virtually zero chance and time for implementation). With regard to resources for defense, the civilian elites in Hungary focused only on ensuring the military officers got paid, but increasingly cutting [11] military budgets for any reform programs. The lack of financial resources held back military restructuring and modernization programs (including procurement, as well as research and development) [12], stalled domestic and international education and training (including PfP-conducted exercises, very important for interoperability with international Allies and Partners), made recruitment difficult (as well as retaining volunteers), and reduced the morale within the armed forces (due to relatively low pay and poor housing conditions)[13]. The pace of the reform, however, changed after [14] Hungary received an accession invitation from NATO in 1997 (although due to upcoming elections, the administration procrastinated the development of any major reforms). During the late 1990s, especially after NATO integration, accelerated and more comprehensive defense reforms toward an expeditionary NATO contributing force have taken place: reforming personnel and training; decreasing the number of officers; interoperability of units to be assigned to NATO, and disposing of redundant armament and equipment (2002-2006); further modernization and procurement (e.g. new vehicles, armaments, such as Gripen JAS 39 fighter plans, Harris and Kongsberg tactical radios, new transport vehicles), and cutting down more military facilities (2006-2010); improving living and working conditions for Hungarian armed forces personnel (comparable with their NATO counterparts), developing attractive career paths in the military, and increasing the number of NCOs (2010-2013). Likewise, it was not until NATO integration that Hungary's had seen an increase in the defense budget. Yet, since then the Defense Budget has been decreasing continuously. Moreover, 9/11 was an eye opener for reconstructing the Hungarian Armed Forces, especially from the perspective of increasing interoperability with NATO. Hungary has been participating in Afghanistan and although Al Qaeda is not a direct threat to Hungary's national security, it has been a threat to its military in Afghanistan (i.e. "withdraw or suffer more casualties"), but decision makers seem to pay little attention to this. Second, and related to the previous, DSP has developed at a very slow pace, due to lack of experience and expertise (e.g. on

what to do with the military, how to prepare the military for future roles and missions, what relations to build with different factions, such as political and civil society arenas), as well as other priorities (e.g. economic reform). It was not until 1993, when the Parliament issued the "Basic Principles of Security Policy", the first document that dealt with security and defense; it was followed by the "Basic Principles of National Defense" later that year. These two documents set out roles and missions of the armed forces (e.g. to defend the country), as well as the basis of the Hungary's DSP. Based on these documents, the Government has to issue and review the National Security Strategy and the National Military Strategy [15]. Nevertheless, before 1997 (the year when Hungary got an invitation to accede to NATO) and 1999 (the year of actual accession into NATO), and even after NATO membership, Hungary had no NSS, or NMS. It has been a long waited process. In the spring of 2001, MOD and MFA designed and developed the first NSS (MFA is in charge of coordination of the development of the NSS), which was approved by the Parliament in 2002. The process was integrative in that the MOD and MFA invited outsiders (including civil society, parliament members) to discuss and debate it. The National Security Strategy sets the stage for the development of Ministerial strategies, such as Military, Foreign Relations, Law Enforcement, Finance, Information Systems, and the like (Hungary's NSS). Up to date, however, only the Foreign Relations and Military Strategies have been developed. NMS was developed in 2008 by the Minister of Defense. MOD also invited representatives of the General Staff, Ministry of Justice to assist developing it. In addition, civilian experts (e.g. former deputy secretary of defense policy, think tanks, researchers, and others) were invited to debate it. Very interesting, the Ministry of Defense also invited the representatives of the Ministry of Finance to ensure the latter learn and understand what is required for ensuring effectiveness of the armed forces' Roles and Mission (especially budget related issues), with the ultimate goal to increase funding for the military. The NMS was adopted in 2009. Today, DSP in Hungary consists of a hierarchy of different documents, including the Constitution (which is rewritten as we speak, and will be approved next year), the Law on Hungary Defense Forces, the Resolution No. 94/1998 of 1998 Hungarian National Assembly on "The Basic Principles of the Security and Defense Policy of the Republic of Hungary", NATO Strategic Concept and all other related documents, as well as the EU Common Security and Defense Policy.

Under these circumstances, Hungary provides a good example of how a military struggles, due to insufficient resources and even precarious plans and policies, to overcome effectiveness. Nevertheless, it also provides an example of how effectiveness can be achieved through subregional/regional cooperation, NATO membership, as well as participation in international missions led by UN, NATO, OSCE, etc.

Even if the traditional external threat has virtually disappeared (which, however, Hungary's military does not totally exclude), which has minimized the armed forces' focus on fighting external wars, participation in regional/international peace operations, humanitarian relief, and countering terrorism efforts, are a few of Hungary's military current roles and missions. Hungary's contribution to regional cooperation has encompassed participation in the Visegrad group, the Central European Initiative (CEI), the Southeast European Cooperative Initiative (SECI), the Stability Pact for South Eastern Europe. NATO/EU membership requirements and accession programs such as PfP, IPP, PARP, have helped strengthen Hungary's armed forces interoperability and compatibility with its western counterparts. Effective contribution to UN, NATO, EU forces and/or OSCE operations has included the following: Strategic Airlift Capabilities, a Deployable Command, Control, Communications and Computer System (CIS) Module, a Deployable Communication Module (DCM) for operation theaters, military medicine capabilities, such as Operational Military Liaison Teams (OMLT) and Provincial reconstruction Team (PRT) in theater. Regional cooperation has encompassed participation in the Hungarian-Romanian Peacekeeping Battalion, the Multilateral Land Force (MLF) with Italy (Julia Alpine Brigade), Slovenia, and Croatia (since 2010), and the Tisa multinational engineer battalion with Romania, Ukraine, Slovakia. Hungary is currently contributing troops to international operations and missions, including Iraq, KFOR, EU/UN/OSCE led operations, Afghanistan. Hungary's capabilities and professionalism has been praised on numerous occasions by foreign counterparts. [16] As recognition of Hungary's effective contribution to international missions (especially in the field of military medicine), NATO established in Hungary a Center Of Excellence in Military Medicine in 2009, as the primary source of military medicine expertise for NATO. PME, whose objective is achieving the three levels of interoperability with NATO in terms of education and training, has also contributed to improved military effectiveness.

All these led to a better understanding on the civilian side of the need for an effective military (especially due to Hungary's NATO/EU membership duties and obligations) in a security environment that lacks the threat of a traditional adversary. Hungary has become an important and effective contributor to military operations in the Balkans, Middle East, Africa, under NATO/EU/OSCE/UN umbrella. Hungary can serve as an example of achieving military effectiveness for other newer or emerging democracies.

4.3. MONGOLIA [17]

Mongolia, bearing in mind its history and location, has successfully focused its CMR and DIB process reform on achieving effectiveness of the armed forces, in particular in peace support operations. There have

been at least four [18] incentives for Mongolia to become involved in peace support operations. First, is Mongolia's "third neighbor policy", whereby the country establishes alliances with like-minded nations, through multilateral action, in order to lessen the influence of immediate neighbors. Second, due to limited budgets for the military, the compensation for equipment and training by involvement in PSO is solid incentive. Third, is the increased emphasis on and preoccupation for utility of external standards for readiness, as well as the commitment to training and equipment. And, fourth, is Mongolia's post Cold War policy of "rebranding" the armed forces for international versus national purposes. All these incentives were motivating not only decision makers within the Ministry of Defense but also the civilians; "an all-party consensus that survived successive changes of government"[19]. Since approximately 2002, Mongolia has participated in PSO missions in Kosovo, Iraq, Afghanistan, as well as ten UN - sponsored missions.

To achieve effectiveness in PSO, a series of reforms have taken place since the end of the Cold War. The 1992 Constitution provided for roles and missions of the armed forces. A new defense concept followed, coupled with various laws and regulations (e.g. Law on the National Security Council in 1992, the Law on Defense of 1993, a National Security Concept in 1994, and the Law on the Armed Forces of 2002) for the military, seeking to transform the Soviet-style armed forces into a professional and interoperable military. Yet, until 2002, a majority of politicians and even senior military officers were reluctant to support Mongolia's participation to PSO (as they thought Mongolia military was not sufficiently trained to fulfill PSO missions). In addition, according to Bruneau and Mendee, the Mongolian armed forces were unknown to the UN DPKO and even its own Permanent Mission in New York. However, the US requests for troop contribution in Afghanistan and Iraq brought changes in the support for Mongolian PSO deployments in general, and armed forces effectiveness, in particular. The US request initiated a broad debate at the NSC and the parliament, prompted closer interagency coordination and cooperation among security-involved ministries and institutions, elicited additional resource allocations for the PSO (administrative, logistics, and training), and strengthened military cooperation with Western countries and neighbors. The Armed Forces Development Plan to 2015, followed, in 2006, a key financial commitment from political leaders to improve Mongolia's military effectiveness in PSO. The plan led to the creation of a PSO brigade, a Regional Peacekeeping Training Center, a medical field hospital, and other PSO capabilities. It should be noted that, in strengthening PSO capabilities of its armed forces, Mongolia has capitalized on U.S. Government support and assistance programs (including International Military Education and Training (IMET) and Global Peace Operations Initiative (GPOI). A Law on Participation in the PSO, was enacted in 2010, which allows annual budget and resource

allocations for PSO, on the one hand, and fosters interagency coordination and cooperation in PSO, on the other. [20] Mongolia is another case where a non-aspiring NATO member uses NATO, alongside other Western defense reform standards, to shape DIB. This is explained by Mongolia's desire to move away from its Soviet past and become interoperable and compatible in international operations. The adoption of NATO standard HQ system in 2008, employment of Western PME standards at the Defense University in 2007, development of non-commissioned officer corps, self-sustaining English-training capability, have proved the departure from the Soviet-era.

More changes are coming regarding strengthening Mongolia's military PSO effectiveness, including, revision of National Security and Defense Concepts, and a stated goal of a potential increase in defense budget from 1.4 to 4.0%. All these have triggered strengthened interagency cooperation. Involvement in PSO has not only increased the armed forces' effectiveness and interoperability, but also led to more trust and support for the military by Mongolian society. PSO is being recognized as the foreign policy instrument for bilateral and multilateral cooperation among all Mongolian arenas (state, political, economic, civil).

5. ANALYSIS OF THE CASE STUDIES

Based on my review of the Defense Institution Building and Civil-Military Relations developments in these three countries, I can summarize the following key points vis-à-vis achieving effectiveness of the armed forces (a summary of the findings is displayed in **Table no. 1**).

At a minimum, military effectiveness requires political will and ongoing interest. Political will and interest can have an internal drive/incentive. On the one hand, it could be direct interest in developing democratic institutions (including effective armed forces), for rational grounds – such as punishing non-democratic regime abuses and preventing the continuation of these practices in the new democracy. Of the three case studies, Chile is a good example in this context. The outcome in Chile is transformed armed forces, more flexible and with more rapid reaction capabilities, with better guidance, direction, and coordination by the civilian decision makers, with new personnel (that had not been involved in human rights violations and abuses), which benefits from better/more attractive career paths, professional military and civilian education (both in country and abroad), and better budgeting policies. On the other hand, it could be awareness of the post-Cold War global security challenges and threats (e.g. intrastate conflict, failed states, terrorism, organized crime etc.), which have prompted security institutions adjust and redefine their roles and missions (with a heavy focus on external Peace Support and Stability Operations, or, in the case of India focused on internal security), in order to become more effective and professional. All three countries studied (Chile, Hungary, Mongolia) are excellent examples whereby awareness of threats by policy makers and military participation in PSO and other international missions have

led to improved effectiveness of the armed forces. Political will can also be motivated by external incentives. This could be "carrots and sticks" from NATO, EU. The two organizations membership (more than membership requirements), which included institutionalizing armed forces that are effective and interoperable, while under democratic control, have influenced Hungary develop and implement Western military effectiveness and professionalism standards. External incentives can also be a security/defense/intelligence crisis or failure (e.g. a terrorist attack, or a domestic security issue) that triggers developing or consolidating military effectiveness (e.g. Hungary, after 9/11).

I also observed that countries that had an external drive and incentive for CMR and effectiveness have been more advanced than the others in terms of reform (e.g. Hungary versus Mongolia). On the other hand, both Chile and Mongolia have proved that where political will exists to create democratic institutions by emulating NATO models (while, adjusting and using it for their own domestic needs), NATO can be useful to non-European countries when undertaking CMR.

Of the three countries, only Chile reflects an almost equal fulfillment of the three requirements (e.g. adequate plans, capable structures [interagency coordination/cooperation], and sufficient resources) for effectiveness. Hungary and Mongolia, on the other hand, have suffered from limited resources. They, therefore, had to capitalize on plans and structures (including coordination and cooperation) to successfully achieve effectiveness. Lack of expertise in defense and security was a drawback for all three countries, but through PME/CDE this obstacle is being minimized. In addition, time was crucial for the countries that recorded military effectiveness; nothing has happened overnight: it took twenty years or so for all three countries to develop effective armed forces.

Although none of the surveyed countries falls in this category, CMR/DIB is not a linear process, and past experience is no guarantee of continued success. Therefore, civilians in democracies (old and new) need to remain focused on balancing military accountability with effectiveness, in order to ensure preserve security in and of their democracies.

Requirements for effectiveness of the Armed Forces / Country	Plan	Structure (interagecy coordination/cooperation)	Resources
Chile	Medium-high	Medium-high	High
Hungary	Medium	Medium-high	Low-medium
Mongolia	Medium	Medium	Low-medium

Table no.1. Summary of Findings – Fulfillment of Effectiveness Requirements per Country

6. CONCLUSION

My purpose in this article is to synthesize conceptually what I have learned in my experience with CCMR programs globally on the requirements for developing effective armed forces in newer democracies. I have

found that although achieving and strengthening military effectiveness is not always an urgent goal for the civilian elites, it is not ultimately an impossible job for civilians in new democracies. I, therefore, argue that the three countries have successfully developed effective armed forces, which are today reliable allies and partners in common international missions and operations. My research, with CCMR programs, of democratic security institution building suggests that civilian policy makers are key players in civil-military relations and defense reform, including creating effective armed forces. I hope the article to be relevant to policy makers and intelligence professionals in other emerging democracies.

7. ACKNOWLEDGMENT

The views expressed in this paper are the author's alone and do not necessarily reflect those of the United States Department of the Navy or the Department of Defense. This article is part of a bigger project on a new conceptualization of Civil-Military Relations (CMR), which the author wrote with Professor Thomas C. Bruneau. The article also relies heavily on the research conducted by Professor Bruneau and Jargalsaikhan Mendee on Mongolia, in 2010, for a CCMR research project on Defense Institution Building (DIB) (which resulted in papers). Finally, the author would like to thank the US Embassies, MOD representatives, members of the Legislatures, and civil society in Hungary and Chile for making the research on the effectiveness in these two countries possible.

ENDNOTES

[1] British scholar of strategy, Hew Strachan also emphasizes effectiveness. See "Making Strategy: Civil–Military Relations after Iraq", Survival Vol. 48, Number 3, Autumn 2006: 59-82. In addition, British scholar of SSR, Timothy Edmunds, also looks to these issues. See Timothy Edmunds, "What *are* Armed Forces For? The Changing Nature of Military Roles in Europe" International Affairs Vol 82, No. 6, 2006, 1059-1075. Also, all of SSR proponents address effectiveness.

[2] For a discussion on roles and missions, and the mixes in different countries, see Paul Shemella, "The Spectrum of Roles and Missions of the Armed Forces," in Thomas Bruneau and Scott Tollefson, eds. Who Guards the Guardians and How: Democratic Civil – Military Relations (Austin: University of Texas Press, 2006).

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[4] a discussion on why it is difficult to measure effectiveness, see Thomas C. Bruneau and Florina Cristiana (Cris) Matei, "Towards a New Conceptualization of Democratization and Civil-Military Relations", *Democratization* 15, no. 5, 2008, pp. 909 - 929.

[5] Deborah Avant, "Political Institutions and Military Effectiveness: Contemporary United States and United Kingdom", in Risa A. Brooks and Elizabeth S. Stanley, eds., *Creating Military Power: The Sources of Military Effectiveness* (Stanford: Stanford University Press, 2007), 87.

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[7] As the police could not alone handle the unrest that burst in some of the regions affected by the earthquake, after 48 hours of hesitation to involve the military, President Bachelet ultimately announced a state of calamity in those regions, and the Minister of Defense immediately involved the military to reinstate order in the regions in cooperation with the Ministry of the Interior. The military succeeded in 12 hours, to take control of situation (9000 soldiers took control of 2 million people), without hurting one single person. According to sources from the MOD, for the Armed Forces, this resembled a humanitarian/ stabilization operation only this time in a different, domestic, environment.

[8] The author would like to thank the Center for Civil-Military Relations, U.S. Embassy as well as the Hungarian MOD and General Staff, National Defense University, Hungarian Defense Forces Central Training Base (CTB), and the Vocational School, for facilitating invaluable interviews and discussions in support to this research. Other sources: Todor Stoyanov Hitrov, "Civil-Military Relations in Post-Communist Countries", Thesis, Naval Postgraduate School, 2004; Dunay, Pál, "The Half-Hearted Transformation of the Hungarian Military", *European Security*, 14:1, 2005, 17 — 32; "Central European Civil-Military relations and NATO expansion", RESDAL; Imre Takacs, "Reform of Civil-Military Relations in Hungary in Context of Joining NATO", Thesis, Naval Postgraduate School, 2001; Ferenc Molnar, "Military Reforms in Hungary", Paper presented at the International Workshop on "The Challenges of Security Sector Reform in Macedonia", Skopje, 6 – 7 December 2002; Ferenc Molnar, "Civil Society and Democratic Civil-Military Relations - The Case of Hungary", Geneva Centre for the Democratic Control OF Armed Forces (DCAF) Working Paper No. 101; Mark Yaniszewski, "Post-Communist Civil-Military Reform in Poland and Hungary: Progress and Problems", *Armed Forces & Society*, Vol. 28, Issue 3, March 2002; "Breakthrough of Civil-Military Relations in Hungary", No Author; Zoltan Szenes, "The Implications of NATO Expansion for Civil-Military Relations in Hungary", *Journal of Communist Studies and Transition Politics*,

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[9] Dunay, Pál, "The Half-Hearted Transformation of the Hungarian Military", *European Security*, 14:1, 2005, 17 - 32

[10] Ferenc Molnar, "Military Reforms in Hungary", Paper presented at the International Workshop on "The Challenges of Security Sector Reform in Macedonia", Skopje, 6 - 7 December 2002.

[1] Except a minor increase in 1993

[12] Instead of buying new equipment improve old Russian one (minor modernization in air defense) cut back of various infantry units number, C4I, recon, ISTAR capabilities very limited

[13] "Central European Civil-Military relations and NATO expansion", RESDAL; Mark Yaniszewski, "Post-Communist Civil-Military Reform in Poland and Hungary: Progress and Problems", *Armed Forces & Society*, Vol. 28, Issue 3, March 2002; "Breakthrough of Civil-Military Relations in Hungary", No Author; Imre Takacs, "Reform of Civil-Military Relations in Hungary in Context of Joining NATO", Thesis, Naval Postgraduate School, 2001

[14] A different situation from other countries which sped up reform prior NATO integration but underwent a "relaxation" period after accession (e.g. Romania)

[15] Tibor Bozo, "Hungary a Member of NATO. The road membership of NATO 1990-1999", U.S. Army War College, Strategy Research Project, April 2003

[16] Tibor Bozo, "Hungary a Member of NATO. The road membership of NATO 1990-1999", Strategy Research Project, April 2003

[17] The author would like to thank professor Thomas Bruneau, and Colonel Jargalsaikhan Mendee for making the research on the effectiveness in Mongolia possible, by providing the author with relevant information..

[18] Mendee, Jargalsaikhan and Last, David, 2008 "Whole of Government Responses in Mongolia: From Domestic Response to International Implications", *The Pearson Papers* 11(2) pp, 1 – 22

[19] Mendee, Jargalsaikhan and Last, David, 2008 "Whole of Government Responses in Mongolia: From Domestic Response to International Implications", *The Pearson Papers* 11(2) p. 6

[20] However, an interagency process, which in some countries is sponsored and promoted by an NSC-type institution, is very low in Mongolia. (Thomas C. Bruneau, Florina Cristiana Matei, Sak Sakoda, "National Security Councils: Their Potential Functions in Democratic Civil-Military Relations", *Defense & Security Analysis*,25:3,255 - 269, 2009).

STRATEGIC COMBINED JOINT SPECIAL OPERATIONS AND THE BALANCE BETWEEN NATIONAL AND COMMON INTEREST

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Motto: *"Men are moved by two levers only: fear and self interest. A man will fight harder for his interests than for his rights".*

Napoleon Bonaparte

This paper's purpose is to explore how the relation between national interest and common interest of different countries determine them to build a transnational military alliance in order to achieve common strategic aims by launching strategic combined joint special operations. Those common strategic aims are composed, in variable percentages, of the partners' national goals. The use of special operations for achieving national objectives is made after all political possibilities are ruled out and when using conventional forces is neither necessary nor recommended. The balance between the coalition's common interest and member states' national interest influences the strength of the partnership. There are three types of relations between the common interest of the coalition and the national interest of a state: direct, complementary, and opportunistic relationships.

Key words: joint special operations, common interest, national interest

1. COMMON INTEREST IN TRANSNATIONAL ALLIANCES

Where commonality of interest exists, nations will enter political, economic, and military partnerships. These partnerships can occur in both regional and worldwide patterns as nations seek opportunities to promote their mutual national interests or seek mutual security against real or perceived threats (ABCA, 2008, p. ix).

James Chace (2002) observed that, "Political leaders have only two basic tools at their disposal when enforcing the national interest-diplomacy and force. But diplomatic negotiation implies compromise" (p. 3). Moreover, Clausewitz's well-known description of war as a "continuation of policy by other means", broaden Chace's observation (Howard & Paret, 2007, p. 28). Therefore, the only way to achieve the national interest when no compromise is possible is the application of power as depicted in **Figure 1**.

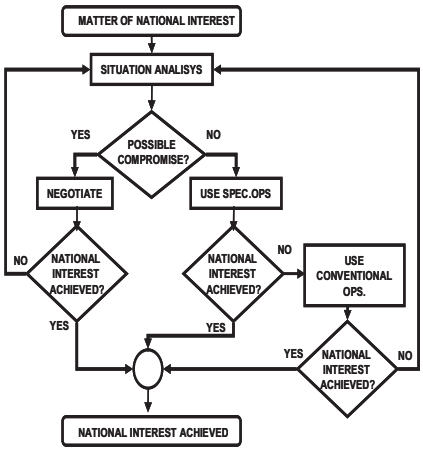

Fig. 1. A Decision Cycle for Achieving National Interest

As Heaney and Rojas (2007) noted, "*While the length of a coalition's life may vary by design, it may also fluctuate with the vicissitudes of politics, including ideological disputes, altered political opportunity structures, dwindling resources, and personality conflicts*" (p. 1). While these factors influence the life of a coalition, they also have a major influence over the formation of a coalition. The political factor, as an expression of national interest, has a major role in shaping and maintaining a coalition.

Joe Bandy and Jakie Smith (2004) realized the importance of common interest in the birth of a coalition. They observed that, "*many coalitions begin as a way to support only temporary and clearly delimited forms of transnational cooperation*" (p. 3). Moreover, exploring the matter of coalition formation and existence, Sidney Tarrow (2005), identified two main causes of the formation and maintenance of a transnational coalition, shown in **Figure 2**, as: the common interest and the partners' commitment to pursue together the achievement of a common objective (pp. 165-166).

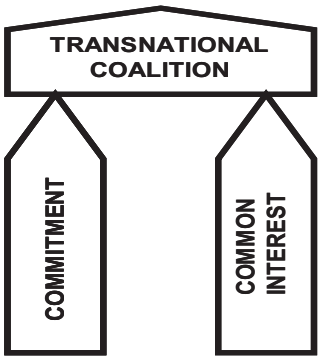

Figure 2. The Two Main Pillars of Transnational Coalitions

Beyond ethical considerations in international politics, the legitimacy of the national interest of a state is relative. What one state considers justified and legitimate, other players in the international arena may consider illegitimate and unjust. Situations differ from case to case, but any country will always try to benefit from any opportunity to achieve its national objectives.

When the national interests of two or more states are convergent, building a political-military alliance may be an efficient way to pursue that interest. Using this formula, the involved states share not only the benefits of their actions but the potential risks as well.

2. COMMON INTEREST IN STRATEGIC COMBINED JOINT SPECIAL OPERATIONS

Based on the preceding paragraph, the common interest is the main element that generates and maintains transnational coalitions. When the fulfilling of the common interest of a coalition requires the execution of strategic special operations, by extension we can say that the common interest generates strategic special operations as well. Therefore, strategic special operations may become valuable tools for two or more states that decide to form a coalition in order to pursue the achievement of common strategic interests in a fragile international situation.

As Heaney and Rojas (2007) observed, coalitions vary in temporal stability. They may be „*ad-hoc and short-lived*" (sometimes formed exclusively for the purpose of staging a single event), or they may be „*highly institutionalized and enduring*" formed with the intention of addressing a wide range of issues over a long period of time. (p. 1)

The speed, surgical accuracy, secrecy, and reduced costs are the characteristics that embody Commando type — strategic special operations for the quick resolution of potential crises from their earliest stages.

In addition, special operations are viable options for dealing with protracted conflicts when, due to various reasons, conventional operations cannot be carried out, or when they did not achieve the expected results. Strategic Combined Joint Special Operations may be utilized as force multipliers in support of conventional operations as well.

JP 3-05 (2003, I -1) defines special operations as „… *operations conducted in hostile, denied, or politically sensitive environments to achieve military, diplomatic, informational, and/or economic objectives employing military capabilities for which there is no broad conventional force requirement. These operations often require covert, clandestine, or low-visibility capabilities*".

Because of these characteristics, Strategic Combined Special Operations can be used to solve a wide range of delicate international situations. This makes them very attractive for achieving the state's national interests, and a transnational coalition's common interests.

The multinational task force designated to execute Combined Joint Special Operations in order to fulfill transnational common interests is nominated as a Combined Joint Special Operations Task Force (CJSOTF).

Therefore, a Combined Joint Special Operations Task Force is primarily the result of a military and political transnational cooperation between states that have decided to achieve common strategic interests by carrying out special operations.

3. NATIONAL INTEREST VERSUS COALITION COMMON INTEREST

As previously stated, the participation in the construction of a Combined Joint Special Operations Task Force has a clear goal: to achieve a common interest by carrying out special operations. However, from case to case, this aspect has several different particularities.

A transnational coalition is usually initiated by the state that has the highest national interest in solving the problem concerned. For this reason, the proportion of the national interest's amount of a state, within the common interest of the coalition, may be unequal and nuanced.

Narlikar (2003) considered three different coalition building type's theories: (1) theory highlighting an interest-based method of coalition-building; (2) theory emphasizing processes and institutions; (3) constructivist theory: ideational (based on common beliefs and ideas) and identity-based method of coalition formation (pp. 17-33).

For the purpose of this paper, considering Narlikar's (2003) analysis on the interest-based method of coalition-building, three main different situations whereby a state may participate in forming a political-military coalition may be distinguished. They are direct complementary and opportunistic relationship between the common interest of the coalition and the national interest of a state as explained below (pp. 17-24).

a. Direct Relationship between the Common Interest of the Coalition and the National Interest of a State.

The first situation occurs when the state's national interests are similar to coalition's common interest. This is an ideal and merely theoretical situation, but when the similarity of the national interests of coalition partners is high and reflected in the common interest of the coalition, the coalition is much stronger (Weitsman, 2008, pp. 7-8).

b. Complementary Relationship between the Common Interest of the Coalition and the National Interest of a State.

The second situation occurs when the state's national interests is not entirely reflected in the coalition's common interest. In this case, the national interest of a particular state is not necessarily similar to the common interest of the coalition. However, the end state of a coalition's actions may prove advantageous to a particular member state by creating favorable conditions for further actions in pursuing its national interests (Weitsman, 2008, p. 5).

c. Opportunistic Relationship between the Common Interest of the Coalition and the National Interest of a State.

The third situation arises when some countries join a transnational coalition due mainly to reasons related to the advantages that membership in such a coalition may offer. The interest for participating in

coalition operations may be motivated by a degree of international or regional prestige and influence that can be gained (Weitsman, 2008, p. 5). The above relationships between national interest and coalition common interest are depicted below in **Figure 3**.

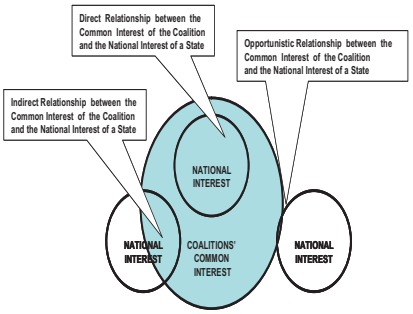

Fig. 3. The Relationships between National Interest and Coalition Common Interest

Comparing presented coalition types, a much stronger cohesion exist when there is a direct relation between the common interest of the coalition and the national interest of a state, and less strong when a opportunistic relation exists, as in **Figure 4**.

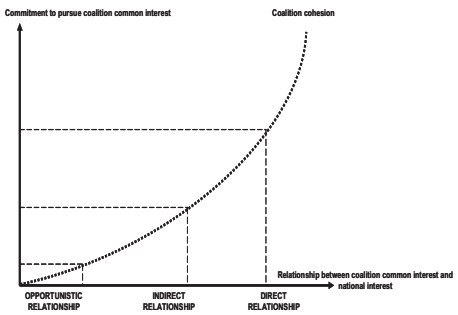

Fig. 4. The Strength of Transnational Coalitions

4. CONCLUSIONS

The decision to participate in a transnational coalition in general and to conduct Strategic Combined Joint Special Operations in particular, is mainly a political-military decision. Considering the benefits and risks that such a decision involves, political and military leaders should perform a detailed analysis of the situation. Answering the following questions can aid in making such decisions easier:

- Is there a common interest, which requires the creation of a political-military coalition, in order to carry out special operations for solving a case?
- Do the implied states have technical capabilities to participate with military forces in a combined joint special operation?
- How do coalition partners perceive the state's national interest?
- How does the international arena perceive the state's national interest?
- What are the risks and benefits of such an enterprise in terms of the state's national interest? Are the risks acceptable?
- Do coalition partners agree to share both the benefits and risks related to coalition's actions?

The main advantage in conducting Strategic Combined Joint Special Operations is that the states involved in such operations may share the benefits, costs, and risks of such

an enterprise. However, for each state, the national interest, rather the common interest, is the main reason to be a member of the coalition. Accordingly, the balance between the national interest of a state and the common interest of a state coalition is the main element that dictates the best method in pursuing national interest.

Therefore, the choice between unilateral Strategic Special Operation and Strategic Combined Joint Special Operation – in solving a matter of a state's national interest – should be based on a comprehensive comparative analysis between the national interest of that state and the common interest of a potential coalition.

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WHAT IF (Sensitivity Analysis)

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Sensitivity analysis represents such a well known and deeply analyzed subject that anyone to enter the field feels like not being able to add anything new. Still, there are so many facets to be taken into consideration.The paper introduces the reader to the various ways sensitivity analysis is implemented and the reasons for which it has to be implemented in most analyses in the decision making processes. Risk analysis is of outmost importance in dealing with resource allocation and is presented at the beginning of the paper as the initial cause to implement sensitivity analysis. Different views and approaches are added during the discussion about sensitivity analysis so that the reader develops an as thoroughly as possible opinion on the use and UTILITY of the sensitivity analysis. Finally, a round-up conclusion brings us to the question of the possibility of generating the future and analyzing it before it unfolds so that, when it happens it brings less uncertainty.

Key words: sensitivity analysis, risk analysis, decision making process, scenario planning

"*Truth is o big mirror which fell from Heaven and broke in millions of pieces. Each of us has one piece and we think we know/have the absolute truth.*" - The Man that Contemplated His Soul (movie about dervish people and culture).

Risk Management consists of Risk Analysis, Risk Communication, Risk Monitoring and Evaluation. Risk Analysis is also the first stage in the Decision Making process, compulsory or not, according to the degree of importance one assumes to the decisions that are about to be made. Features: compulsory/not, formal/informal, thorough (detailed)/ general (quick, overview).

One can see decision making processes in most fields of activity and this is why one has to be aware of the many input elements to be taken into consideration.

Also, one can see decision making processes having almost the same steps and, most important, the decision making process is not one source of thought dependant only. It takes into consideration (or has to take) variables influenced by the psychological profile, expertise of the decision-maker.

Because of this great amount of factors one gets when trying to fit an optimum decision, there has to be a kind of framework to take all of them, or, coming to the subject, most of them (meaning the most important for that respective decision) into analysis.

There is a general acceptance of most scholars and scientists in the field that not all factors contributing to the decision making process have actually decisive influence on the final decision and, later on its results. This means that one can structure on fields, areas, directions of work most factors and see what that group influence would be on the final result of a decision being implemented.

There can be quantitative or qualitative assessment in this respect, but there can also be differential evaluation among factors inside the same group of analysis.

Usually, one would like the decision to be made so that it is viable for a wider range of factors, and the factors to have a wider variation that the values taken for the initial stage of the decision making process. In order to try to fit the decision to as many factors as one can find, and for as big of variation of the factors as one accepts as feasible while the decision making process is still in development, there is a compulsory stage in the process called sensitivity analysis.

The purpose of the sensitivity analysis is to directly assess the stability and strength of the decision to be made and its capability to stand in front of the future trials of various factors, taken into consideration at the moment of making the decision. When one says trials, one refers to the factors envisaged during the decision making process but with different values than those taken initially. This means that the decision is to prove stability for the process it has been made for when it can be maintained although the values of the factors are different than those used for initial calculations.

Sometimes, the deviation of the factors taken in consideration can go up to 10-20% difference than initially conceived for the respective element and the decision proves valuable and the process under scrutiny can go on without any change in its initial approach.

Besides the material aspects of this possible difficult to understand stage of the decision making process which is sensitivity analysis, one can see as being of high value the psychological aspects involved in the same process. These elements get a great variety and complexity as the number of people involved in the decision making process gets bigger. This means that, although most of the human factors participating into the decision making process can be in agreement about the list of factors influencing the output of the process under the respective decision, they might not be in agreement regarding the level of influence each of those factors in the list brings. Additionally, one can take in consideration the post-implementation stage of the decision when, also psychologically speaking, one can discover that, people attending the decision making process have actually changed their attitude towards the respective decision and try, by any means to

show it does not work in practice. In this respect, one can find a host of situations in the current practice of the organizations, in most fields of activity. Starting with lack of interest to implementing the decision as it was made, going through lack of activity necessary to implement it, and getting to work against it, as one can see up to the highest level in a social hierarchy, even in a country's leadership.

When one can take 10-20% variability for each factor influencing greatly a future decision and can still live with it without changing anything in its core, that is a good decision, close to optimum, one could say. But, there is a hidden aspect that one has to be aware of. The wider de variability of the factors, the more complex the decision is going to be, the more difficult the entire algorithm of actions to be taken to implement it, the more expensive and time consuming its analysis and finalization, the less additional value is to be added to the final product. What does this mean? There has to be a breakeven point where the analysis in depth has to stop and make the decision.

Most decisions are made under uncertainty. In addition, the decision making model itself will always be an approximation of the real problem and because of that brings uncertainty with respect to the quality of the optimal considered resulting solution.

It is important to remember that although all decisions can be viewed as being made under uncertainty, there are cases where uncertainty is unimportant for making decisions.

The usefulness of sensitivity analysis for understanding uncertainty is in robustness, uncertain data, and base case and scenario analysis.

There have been many types of approaches to sensitivity analysis along the development of science, and each science took advantage of it starting at a certain moment in time. Methodologies and principles have been set for this approach and models and modeling approaches have been tabled for system analysts, decision-makers, leaders in organizations, generally speaking, people who want to develop their organization activity based on an as close to the scientific truth and maximum efficiency as possible.

There is a very large and diverse literature on SA, including a number of reviews (e.g. Clemson et al., 1995; Eschenbach and Gimpel, 1990; Hamby, 1994; Lomas and Eppel, 1992; Rios Insua, 1990; Sobieszczanski-Sobieski, 1990; Tzafestas et al., 1988). However, the existing literature is limited in a number of respects. Most of what has been written about sensitivity analysis has taken a very narrow view of what it is and what it can be useful for. A large proportion of the literature is highly mathematical and rather theoretical in nature. Even those papers with a focus on applied methodology have tended to concentrate on systems and procedures which are relatively

time consuming and complex to implement. There has been almost no discussion of procedures and methodological issues for simple approaches to sensitivity analysis.

There is a big offer of applications to which sensitivity analysis is put. They are grouped into four main categories: decision making (developing recommendations for decision makers), communication, understanding or quantification of the system under analysis, and development of models to be used later in similar applications. All uses are important, but the primary focus is potentially on making decisions or recommendations.

Models are used to make easier the implementation of sensitivity analysis in several close types of approach areas of decision making (which need to be made based on similar circumstances).

In all models, parameters are uncertain, generally speaking. The analyst is unsure of the current values of the parameters and, possible is to be even more uncertain about their future values. This applies to things such as prices, costs, productivity, and technology. Uncertainty is one of the primary reasons why sensitivity analysis is helpful in making decisions, advice, recommendations, or councillorship. If parameters are uncertain, sensitivity analysis can give information about how stable the optimal solution is in the application of different values for parameters, under what conditions and circumstances the optimal decision is going to change, how that optimal decision changes in different conditions and circumstances (if it is better or worse), if the changed circumstances were ignored, they would affect the decision makers by how much compared with the initial variant if they stayed with the original optimized decision or some other strategy,

This amount of information one can get has great value in making decisions or recommending such movements. If the optimal decision is robust (meaning insensitive to changes in parameters up to a certain degree), this will let confidence play the main role in implementing or modeling it further. If it is not robust, sensitivity analysis can be used to indicate how important it is to make the changes to management suggested by the changing of the optimal alternative. Perhaps the base-case solution (the one where there is a minimum accepted for each of the parameters taken into consideration) is only slightly less than optimal in the range of parameters, so that it is reasonable to adopt in any situation. Even if the levels of variables in the optimal solution are changed dramatically by a higher or lower parameter value, one should examine the difference in profit (or another relevant objective) between these solutions and the base-case solution. If the objective is hardly affected by these changes in management and decisional strategy, the decision

maker may assume the smaller risk and decide on the small cost of not changing the strategy, for the purpose of simplicity only.

If the base-case solution is not accepted for more than a few details non-accepted in the profitability or effectiveness of the model, there might be another strategy which is not optimal in the original model (that is to be changed) but which performs well across the relevant range of circumstances. If there is no single strategy which results in acceptable values in all circumstances, sensitivity analysis will identify different other strategies for different parameter values and the circumstances (the sets of parameter values) in which the decisional strategy should be changed.

If there is certainty about the parameter values, it may be subject of knowledge that they will change in particular ways at different times or in different places. Similarly to the approach stated above, sensitivity analysis can be used to test whether a simple decision strategy is adequate or whether a complex conditional strategy is worth the effort.

Sensitivity analysis can be used to assess the "riskiness" of a strategy or scenario. By observing the range of objective function values for the two strategies in different circumstances, the extent of the difference in riskiness can be estimated and subjectively factored into the decision. It is also possible to explicitly represent the trade-off between risk and benefit within the model.

In the field of scenario implementation sensitivity analysis plays a very important role. The main part of the scenario generation is to make all possible assumptions, inferences and deductions that might be taken into calculation when deciding on different courses of action for the respective scenario.

Scenario planning, also called scenario thinking or scenario analysis is a strategic planning method that some organizations use to make flexible long-term plans.

The original method was that a group of analysts generated simulation games for policy makers. The games used to combine known facts about the elements that were going to be parts of the future, such as demographics, geography, military, political, industrial information, and mineral reserves, with plausible alternative social, technical, economic, environmental, educational, political and aesthetic trends of development which are key driving forces.

In organizational applications, the emphasis on gaming the behavior of opponents is increased (while in the business organizations the emphasis was shifting more toward a game against nature).

Scenario planning involves several aspects of Systems Thinking, specifically the acceptance that many factors may combine in complex ways to create sometime surprising futures (due to non-linear feedback loops).

The method allows the consideration of factors difficult to formalize, like new insights about the future, shifts and rifts in values, unexpected regulations or new technical evolvements that reduce to null the need for some other bigger, more expensive and less productive or effective equipments.

Systems thinking used in conjunction with scenario planning leads to acceptable scenario lines where the causal relationship between factors can be demonstrated. In the cases where scenario planning is congregated with a systems thinking approach for the purpose of scenario development, one refers to this sometimes as structural dynamics.

This paper is nothing but a small and hopefully interesting contribution to the colossal works developed by other scientists. It is to open the eyes of the people interested in getting as much as possible in the field of decision making and want to further their research in cases and situations much more complex or with many variables to keep in mind.

Sensitivity analysis is a process of creating new information about alternative strategies. It allows the analysts to improve the quality of their subjective beliefs about the merits of different strategies.

Under all circumstances presented above, there is a need to cover as much as possible of the unknown future developments of any decisional situation. This makes it so attractive to be put under analysis and so exciting to get findings that let us wonder how come one can get so many futures starting from a single point.

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THE NEW STRATEGIC CONCEPT NATO 2010

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NATO (The North Atlantic Treaty Organization) – OTAN (Organisation du Traité de l'Atlantique Nord) has been, since its estabslishment, oustandingly receptive to the international security environment developments and has always altered its strategy and strategic concepts in order to meet the afferent challenges, with an emphasis on its purely defensive character. The most favorable moment of this kind have been its summits: Rome (1991), Washington (1999) and Lisbon (2010), on which our paper will focus. The greats mutations in the last decade have called for the creation of the new strategic concept NATO 2010, developed in the Lisbon summit declaration of 19-20 November 2010.

Key words: concept, strategic, declaration, defensive, summit, evolution, international security environment.

Eversince its establishment, in the aftermath of signing the North Atlantic Treaty on 4 April 1949, NATO has been permanently preocupied with aligning its strategy and strategic concepts with the international security environment development without neglecting the Treaty's fundamental provision of remaining a puerly defensive organization.

The need for adapting the concepts and strategies to the new realities has bee sustained by reputable Romanian and foreign experts, among which the French professor Hervé Coutau-Bégarie [1] examined these aspects in his Traite de strategie published in Paris, in 1999.

One of the first aspects we have examined was that of concepts globalization in NATO and worldwide. In this respect, one should consider what professor Begarie (Sorbonne) said:

"*We can notice a general trend towards concepts globalization, which results from the problems interdependence: security is no longer military, but global (the UN*

human security) and must take into account all types of threats, including the environmental ones, or the ones resulting from discrimination...".[2]

On the other hand, theorists cannot help noticing a tendency to adapting military culture to the new developments. The aforementioned professor argues: "The art of warfare cannot be reduced to an immutable catalogue; instead, it permanently adapts to means or culture exchanges".[3]

In our opinion, the main arguments underpinning the need for a new strategic concept are the following: a transatlantic consensus of NATO roles and missions regarding its strategy to face these challenges is critical for the well being of this organization. The strategic Concept is NATO's fundamental document that regulates and reflects this transatlantic consensus; the security environment has altered, therefore the Alliance must update the current Concept of 1999, when the Alliance had 19 members compared to its 28 members of today; NATO must focus on European challenges; the new strategic concept must be developed and approved by all the 28 member states; it must take into consideration both the way in which the security challenges have emerged (e.g., energy supply, terrorism, climate changes etc.) and the way in which NATO has adapted and transformed in order to better address these issues; the new Strategic Concept will be more than an analysis document. Instead, it will have to provide specific guidance to the member states in terms of further alliance transformation as well as the transformation of their own national defense structures and capabilities in order to meet NATO's main tasks.

The elaboration of the New Concept is an example of seriousness and professionalism considering that this document is of paramount importance for the life of the organization and the entire world. Thus, during the summit of Strasbourg / Kehl (3-4 April 2009) the state and government heads of the NATO members delegated the Secretary General, mr. Anders Fogh Rasmussen, to develop a new NATO strategic concept. The Secretary General summoned and led a large group of experts, who set out the main provisions of the New Strategic Concept with the active involvement of NATO's highest decision body – the North Atlantic Council (NAC). The concept was completed and approved at the Lisbon NATO summit of 19-20 November and was detailed in the declaration adopted at the end of this important event.

Prior to any considerations regarding the aforementioned document, it is necessary to briefly review some of the main provisions of the summits that preceded the 2010 event. Thus, the Rome Strategic Concept of 1991 established the following: the strictly defensive role of the Alliance; the indivisible character of security that makes any attack on a NATO member state an attack against all member states; the NATO security policy built upon the concepts of collective security and on an integrated military structure, as well as on cooperation and coordination agreements; the necessity of an equilibrium between nuclear and conventional power on the European territory in order to ensure a predictable future.

The 1999 Strategic Concept set out in the Washington Summit Declaration not only preserves NATO's defensive character, but also introduces major changes to NATO's outlook. Thus, besides the

Alliance's major focus on collective defense, the document underlines: the organization's concern for ensuring peace and stability in the extended Euro-Atlantic region and **its increased contribution to interstate relationship consolidation and conflict prevention**; the necessity to maintain adequate structures and procedures for conflict prevention and crises management; the need for dialogue and cooperation with non-NATO members; the Alliance's enlargement through an open-door policy for prospective members; the need to undertake on a continuous basis disarmament and non-proliferation efforts in order to ensure Euro-Atlantic stability, to consolidate democratic institutions and to peacefully settle disputes; the Alliance's role as a consultative forum with regard to problems affecting its member states' vital interests and as a defender of these states against any threats or aggressions; the promotion of an extended partnership, cooperation and dialogue with states from the Euro-Atlantic region in order to ensure transparency, mutual trust and joint action capability within the Alliance; a strong commitment to the transatlantic relationship; the Alliance's military capability maintenance with a view to undertaking more efficient military operations; a broader outlook on security that includes political, economic, social and environmental factors.

Moreover, this summit is a landmark for the Alliance due its stance on two core military operations commonly known as "out of area actions" and "non Article 5 actions" – in this respect, the relationship between Article 5 of the Alliance Treaty and "non Article 5 actions".

The adoption of a new strategic concept is approached in the first part of the Lisbon summit declaration, which is natural considering that this summit's main mission was to develop the concept required by the world's new physiognomy, that is, the late 90's and the early 21st century.

As far as the 2010 Strategic Concept is concerned, Article 2 of the Lisbon Summit Declaration sets out the following:

"We have adopted a new Strategic Concept that lays out our vision for the Alliance for the next decade: able to defend its members against the full range of threats; capable of managing even the most challenging crises; and better able to work with other organizations and nations to promote international stability. NATO will be more agile, more capable and more cost-effective, and it will continue to serve as an essential instrument for peace".[4]

Thus, NATO's vision for the next 10 years was actually the focus of the Lisbon reunion. In this respect, the opinion expressed by Romania's president during his meeting with mr. Anders Fogh Rasmussen, NATO Secretary General is that the new strategic concept is an excellent one.

Given the complexity of this concept and the constraints with which any research paper must comply, this article will focus only on those aspects that are novel to NATO's strategy and that add up to the latter's provisions, namely: the reaffirmation of NATO's commitment to collective defense; NATO's role in unconventional threats defense; examining the likelihood of new operational actions outside the Alliance's borders; creating conditions for achieving success in Afghanistan; consultations concerning crises situations prevention or management; a new partnership age; involvement in complex problems; NATO-Russia

relationship; the open doors policy; new capabilities for a new age; nuclear weapons policy; solidarity with a view to bringing peace; missile defense as a new mission; countering cyber attacks; implementing reforms in order to maintain a more agile Alliance.

In this respect, one of the aspects worth mentioning is NATO's commitment to accepting new members in line with its policy in this domain set out during the Bucharest Summit. Such keenness on following and reinforcing policy objectives established during previous summits is a telltale of NATO's credibility and coherence. Thus, the Lisbon Summit Declaration mentions:

"In accordance with Article 10 of the Washington Treaty, NATO's door will remain open to all European democracies which share the values of our Alliance, which are willing and able to assume the responsibilities and obligations of membership, which are in a position to further the principles of the Treaty, and whose inclusion can contribute to the security of the North Atlantic area. […]We reiterate the agreement at our 2008 Bucharest Summit to extend an invitation to the former Yugoslav Republic of Macedonia, Montenegro, Bosnia and Herzegovina, Serbia, Georgia and Ukraine."[5]

Another aspect of concern for the organization the Romanian military is part of is the nuclear threat and its capacity to tackle it:

"Our Strategic Concept underscores our commitment to ensuring that NATO has the full range of capabilities necessary to deter and defend against any threat to the safety of our populations and the security of our territory. To that end, NATO will maintain an appropriate mix of conventional, nuclear, and missile defense forces. Missile defense will become an integral part of our overall defense posture. Our goal is to bolster deterrence as a core element of our collective defense and contribute to the indivisible security of the Alliance. We have tasked the Council to continue to review NATO's overall posture in deterring and defending against the full range of threats to the Alliance, taking into account changes in the evolving international security environment. This comprehensive review should be undertaken by all Allies on the basis of deterrence and defense posture principles agreed in the Strategic Concept, taking into account WMD and ballistic missile proliferation. Essential elements of the review would include the range of NATO's strategic capabilities required, including NATO's nuclear posture, and missile defense and other means of strategic deterrence and defense. This only applies to nuclear weapons assigned to NATO. "[6]

A ballistic missile threat on behalf of Iran has led to an essential military mission for NATO. From this point of view the USA's decision to set a Missile Defense Shield in Europe is an efficient, rapid and trustworthy commitment to supporting NATO's anti-missile policy. Moreover, such an action requires an equal and open participation on behalf of all the Alliance's members. It is only through joint efforts, through cooperation among Alliance' members and between NATO and Russia that such an allegiance is possible. In this context, the Missile Defense Shield is no longer a USA objective, but a mutual one shared at the level of NATO. As a result, the NATO-Russia relationship becomes of great importance. Thus, besides actions concerning the establishment

of such a shield, this relationship involves a set of joint actions.

"NATO-Russia cooperation is of strategic importance, as reflected by today's meeting of the NATO-Russia Council (NRC) at the level of Heads of State and Government in Lisbon. In light of common security interests, we are determined to build a lasting and inclusive peace, together with Russia, in the Euro-Atlantic Area. We need to share responsibility in facing up to common challenges, jointly identified. We want to see a true strategic partnership between NATO and Russia, and we will act accordingly, with the expectation of reciprocity from Russia. We recommit ourselves to the goals, principles and commitments which underpin the NRC. On this firm basis, we urge Russia to meet its commitments with respect to Georgia, as mediated by the European Union on 12 August and 8 September 2008. Over the past year, NATO-Russia cooperation has progressed and produced notable results. We welcome, in particular, the completion of the Joint Review of 21st Century Common Security Challenges, which has identified practical cooperation projects on Afghanistan, including counter-narcotics; non-proliferation of weapons of mass destruction and their means of delivery; counter-piracy; counter-terrorism; and disaster response. We also welcome the new extended arrangements offered by Russia to facilitate ISAF transit to and from Afghanistan. We are actively pursuing cooperation with Russia on missile defense, including through the resumption of theatre missile defense exercises. We will also want to discuss in the NRC a range of other topics, including Afghanistan; implementing OSCE principles; military deployments, including any that could be perceived as threatening; information sharing and transparency on military doctrine and posture, as well as the overall disparity in short-range nuclear weapons; arms control; and other security issues. We look forward to discussing all these matters in the NRC, which is a forum for political dialogue at all times and on all issues, including where we disagree. Our dialogue and cooperation with Russia also help us to resolve differences by building trust, mutual confidence, transparency, predictability and mutual understanding."[7]

Another contemporary threat facing NATO is cyber attacks against international organizations, banks, military and diplomatic structures, etc. Therefore, NATO's task in this respect is to accelerate its efforts to counter this threat by protecting its command and communications systems, by training its members to deter or mitigate the effects of such attacks, and by developing capabilities in this field. In this respect, the Lisbon Summit Declaration sets out:

"Cyber threats are rapidly increasing and evolving in sophistication. In order to ensure NATO's permanent and unfettered access to cyberspace and integrity of its critical systems, we will take into account the cyber dimension of modern conflicts in NATO's doctrine and improve its capabilities to detect, assess, prevent, defend and recover in case of a cyber attack against systems of critical importance to the Alliance. We will strive in particular to accelerate NATO Computer Incident Response Capability (NCIRC) to Full Operational Capability (FOC) by 2012 and the bringing of all NATO bodies under centralized cyber protection. We will use NATO's defense planning processes in order

to promote the development of Allies' cyber defense capabilities, to assist individual Allies upon request, and to optimize information sharing, collaboration and interoperability. To address the security risks emanating from cyberspace, we will work closely with other actors, such as the UN and the EU, as agreed. We have tasked the Council to develop, drawing notably on existing international structures and on the basis of a review of our current policy, a NATO in-depth cyber defense policy by June 2011 and to prepare an action plan for its implementation"[8].

In conclusion, the new Strategic Concept elaborated during the Lisbon Summit of 2010 and included in the Lisbon Summit Declaration will bring essential changes to NATO's Strategy not only from a textual point of view, but also in terms of the Alliance's future actions. An axiomatic truth underlying this topic of research is that, regardless of the complexity characterizing this new Concept, the former does not impede upon the basic tenets of the Washington Treaty, nor on NATO's fundamental role. Therefore, the North Atlantic Treaty Organization will always preserve its defensive character and will observe universal values such as democracy, freedom and human rights.

ENDNOTES

[1] Hervé Coutau-Bégarie, né le 22 novembre 1956 à Angers (Maine-et-Loire), est un écrivain et stratège naval francais; directeur de recherches en strategie au Collège interarmées de défense (CID), président de la Commission française d'histoire militaire, professeur au Cours Supérieur d'Etat-major (CSEM)

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[3] Hervé Coutau-Bégarie, op. cit., p. 32

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[5] Lisbon Summit Declaration, Art. 13

[6] Lisbon Summit Declaration, Art. 30

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[8] Lisbon Summit Declaration, Art. 40

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[3] Rome Summit Declaration

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[7] NATO Summit – Rome, 7-8 November, 1991

[8] NATO Summit – Washington, 3-4 April 1999

[9] NATO Summit- Prague 21-22, November 2002

[10] NATO Summit- Istanbul, 28-29, June 2004

[11]NATO Summit- Riga. 28-29 November 2006

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THE SECOND REVOLUTION IN MILITARY AFFAIRS

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The four components of the OODA loop can be split into three which are associated with processing information, and one which is associated with movement and application of firepower. Observation-Orientation-Decision is information centric while Action is kinetic or centered in movement, and firepower. Armed with a general understanding of the concepts of Information Superiority and Network Centric Warfare, enterprising individuals and organizations are developing new ways of accomplishing their missions by leveraging the power of information and applying network-centric concepts. Creating a military structure based on NCW concept represent the first revolution in military affairs. Most of the weapons used are based on an old technology which achieved a maximum level of evolution. In order to increase the envelope of that weapons in term of mobility, firepower and precision other technology should been created. On the other hand all weapons are based on oil fuel for mobility and chemical energy on fire power. For that reasons a second revolution in military affaires should happen.

Key words: revolution in military affaires, network centric warfare, information warfare, railgun.

1. INTRODUCTION

The subject of military transformation has expanded to the point that it transcends focused discussion. From a cult phenomenon among military historians, government officials, and policy analysts in the 1980s and 1990s, the concept has morphed into a 21st-century all-purpose explanation for military decision making. It provides a rationale for expanded foreign policy objectives. Further, it has been adopted as a touchstone by the Department of Defense (DOD), especially the civilian leadership, to justify weapons programs and operational approaches. Finally, it has been the object of scholastic attention. Transformation is thus in danger of being the most oversold military-strategic concept since deterrence. A vast academic and military literature and extensive policy-related discussion have raised important questions about U.S. military policy, strategy, and war. Transformation, as understood by Pentagon planners and the political leaders, has the potential to improve military performance in important ways. But it is far from a guarantor of strategic success or sensible policy choices at the margin. This discussion asks pertinent questions about what

transformation means and explores its implications for policy and strategy issues that have both immediate and longer-term importance.

2. THE FIRST REVOLUTION IN MILITARY AFFAIRS

From a broad perspective the introduction of networking techniques into war fighting systems is the military equivalent of the digitization and networking drive we observed in Western economies between 1985 and 1995. Military networking, especially between platforms, is far more challenging than industry networking due to the heavy reliance on wireless communications, high demand for security, and the need for resistance to hostile jamming. The demanding environmental requirements for military networking hardware are an issue in their own right. It should come thus as no surprise that the introduction of networking into military environments has proven more painful and more protracted than the industry experience of over a decade ago. At the most fundamental level networking aims to accelerate engagement cycles and operational tempo at all levels of a war fighting system. This is achieved by providing a mechanism to rapidly gather and distribute targeting information, and rapidly issue directives. A high speed network permits error free transmission in a fraction of the time required for voice transmission, and permits transfer of a wide range of data formats. In a more technical sense, networking improves operational tempo (optempo) by accelerating the Observation-Orientation-Decision phases of Boyd's Observation-Orientation-Decision-Action (OODA) loop.

The four components of the OODA loop can be split into three which are associated with processing information, and one which is associated with movement and application of firepower. Observation-Orientation-Decision is information centric while Action is kinetic or centered in movement, and firepower. If we aim to accelerate our OODA loops to achieve higher operational tempo than an enemy, we have to accelerate all four components of the loop. Much of twentieth century war fighting technique and technology dealt with accelerating the kinetic portion of the OODA loop. Mobility, precision and firepower increases were the result of this evolution. There are practical limits as to how far we can push the kinetic aspect of the OODA loop - more destructive weapons produce collateral damage, faster platforms and weapons incur ever increasing costs. Accordingly we have seen evolution slowdown in this domain since the 1960s. Many weapons and platforms widely used today were designed in the 1950s may remain in use for decades to come, the B-52 being a good case study.

For this reason the attention had focused on accelerating the Observation-Orientation-Decision phases centered in information.

Information is a resource created from two things: phenomena (data) that are observed, plus the instructions (systems) required to analyze and interpret the data to give it meaning. The value of information is enhanced by technology, such as networks and computer databases, which enable the military to

(1) Create a higher level of shared awareness,

(2) Better synchronize command, control, and intelligence, and

(3) Translate information superiority into combat power.

The current DOD term for military information warfare is "Information Operations" (IO). DOD information operations are actions taken during time of crisis or conflict to affect adversary information, while defending one's own information systems, to achieve or promote specific objectives. The focus of IO is on disrupting or influencing an adversary's decision-making processes.[2]

DOD identifies five core capabilities for conduct of information operations:

(1) Psychological Operations,
(2) Military Deception,
(3) Operations Security,
(4) Computer Network Operations, and
(5) Electronic Warfare.

These capabilities are interdependent, and increasingly are integrated to achieve desired effects.

DOD defines PSYOP as planned operations to convey selected information to targeted foreign audiences to influence their emotions, motives, objective reasoning, and ultimately the behavior of foreign governments, organizations, groups, and individuals.

Deception guides an enemy into making mistakes by presenting false information, images, or statements. MILDEC is defined as actions executed to deliberately mislead adversary military decision makers with regard to friendly military capabilities, thereby causing the adversary to take (or fail to take) specific actions that will contribute to the success of the friendly military operation.

OPSEC is defined as a process of identifying information that is critical to friendly operations and which could enable adversaries to attack operational vulnerabilities.

CNO includes the capability to:

(1) Attack and disrupt enemy computer networks;

(2) Defend our own military information systems;

(3) Exploit enemy computer networks through intelligence collection, usually done through use of computer code and computer applications.

EW is defined by DOD as any military action involving the direction or control of electromagnetic spectrum energy to deceive or attack the enemy. High power electromagnetic energy can be used as a tool to

overload or disrupt the electrical circuitry of almost any equipment that uses transistors, micro-circuits, or metal wiring. Directed energy weapons amplify, or disrupt, the power of an electromagnetic field by projecting enough energy to overheat and permanently damage circuitry, or jam, overpower, and misdirect the processing in computerized systems. DOD now emphasizes maximum control of the entire electromagnetic spectrum, including the capability to disrupt all current and future communication systems, sensors, and weapons systems.

DOD transformation seeks to reorient us and focus our attention on emerging and future missions, change the way we fight (operate) to leverage Information Age concepts and technologies, and change our business processes to make us an Information Age organization.

Transformation is about continuous adaptation to the Information Age. A report to Congress on Network Centric Warfare began its executive summary by saying that "Network Centric Warfare is no less than the embodiment of an Information Age transformation of the DOD." This transformation must focus on C2, where information is translated into actionable knowledge. Without a transformation of C2, it is far less likely that we will be able to meet the challenges that lie ahead. A transformation of C2 provides us with the best opportunity to achieve the one organizational characteristic that is sure to stand us in good stead for the foreseeable future–agility. Armed with a general understanding of the concepts of Information Superiority and Network Centric Warfare, enterprising individuals and organizations are developing new ways of accomplishing their missions by leveraging the power of information and applying network-centric concepts.

Two key realities dominate thinking about *command and control* (C2) in the 21st century. The first is the nature of the 21st century military mission space. This space is characterized by its extreme uncertainty. In addition to the high intensity combat operations that are traditionally associated with military operations, the 21st century mission space has expanded to include a wide spectrum of mission challenges, ranging from providing support to multi-agency disaster relief operations to complex coalition efforts within a political-military environment involving a large variety of military and non-military actors; which we describe as *Complex Endeavors* [1].

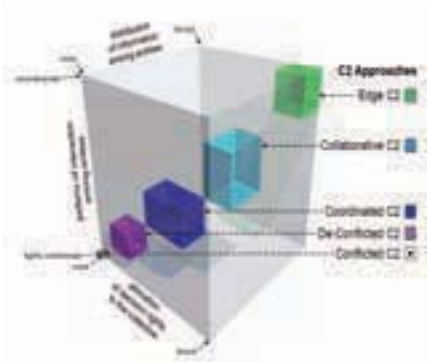

Fig. 1 C2 Approaches as regions in the C2 Approach Space

The second reality is the ongoing transformation of 21st century militaries, and for that matter, other 21st century institutions and actors from the Industrial Age to the Information Age. With this transformation comes the ability to leverage new information technologies. This has had, and will continue to have, a profound effect on how institutions manage themselves and how they can work with coalition partners.

These fundamental realities put the emphasis on command and control (C2), interpreted in its broadest sense to include acquiring, managing, sharing and exploiting information, and supporting individual and collective decision-making. In particular, more mature C2 includes the ability to recognize situational change, and to adopt the C2 approach required to meet that change – which we term *C2 Agility* [1].

The C2 approach space contains the different possible approaches to accomplishing the functions that are associated with command and control. This approach space can be viewed from two perspectives. First, it can be used to think about C2 within existing organizations. Second, it can be used to think about how a disparate set of independent (yet inter-dependent) entities, that is, a collective, can achieve focus and convergence.

We define NCW as an information superiority-enabled concept of operations that generates increased combat power by networking sensors, decision makers, and shooters to achieve shared awareness, increased speed of command, higher tempo of operations, greater lethality, increased survivability, and a degree of self-synchronization.

In essence, NCW translates information superiority into combat power by effectively linking knowledgeable entities in the battle space. Creating a military structure based on NCW concept represent the first revolution in military affairs. Most of the weapons used are based on an old technology which achieved a maximum level of evolution. In order to increase the envelope of that weapons in term of mobility, firepower and precision other technology should been created. On the other hand all weapons are based on oil fuel for mobility and chemical energy on fire power. For that reasons a second revolution in military affaires should happen.

3. THE SECOND REVOLUTION IN MILITARY AFFAIRS

Warship designers until now have used hydraulics, pressurized air, and steam to move large masses, such as aircraft catapults, aircraft elevators, and ship propulsion systems, yet new

advances in high-power electronic devices may lead to all-electric power aboard surface vessels. The latter half of the past century saw nuclear power, computers, and precision-guided rocketry greatly increase the capabilities and killing power of naval warships. While those technologies improved through the decades, the next evolution in ship design is expected to alter naval maritime architectures so dramatically that it has been compared to the transition from sail – to steam – to nuclear power.

This next evolution, called advanced electrical power systems (AEPS), involves the conversion of virtually all shipboard systems to electric power – even the most demanding systems, such as propulsion and catapults aboard aircraft carriers.

AEPS, in short, will provide the foundation upon which to build fleets of all-electric ships – otherwise known as AESs. Ship designers are already working on all-electric ship concepts in programs such as:

- the U.S. Navy's next-generation destroyer, known as DDG 1000 Zumwalt;
- the British Royal Navy's Daring-class Type 45 destroyer;
- the French navy's Forbin-class Horizon future anti-air warfare frigate;
- the Italian navy's Bergamini-class Horizon frigate.

Also planned as an all-electric ship is the CVN-21 (CVN-X) next-generation U.S. Navy carrier, currently in Phase II design and scheduled for launch around 2011 to 2013 to replace the then half-century-old USS Enterprise (CVN 65). The CVN-21's new nuclear reactor not only will provide three times the electrical output of current carrier power plants, but also will use its integrated power system to run an electromagnetic aircraft launch system (EMALS) to replace the current steam-driven catapults. Combined with an electromagnetic aircraft recovery system (EARS), EMALS will enable the new carrier to conduct high-intensity aircraft launch and recovery operations consistently with minimal recovery or maintenance downtime.

The amount of power that an electric motor generates, stores and distributes throughout a vessel, in tandem with an integrated "fight-through" power (IFTP) system designed to function despite combat damage, is essential to the operation of the next generation of warships, due to the enormous amount of electrically powered components they will carry. These include computing systems for functions such as network-centric warfare and onboard automation; powerful surface and underwater sensors and dual-band radar units; "plug-and-play" modules that upgrade operational capabilities

during the life of a ship; launch and guidance of conventional armaments such as the 155mm. Advanced Gun System and Tomahawk cruise missile; and new armaments such as directed-energy weapons and rail guns, which are still on the drawing board. An electric motor and the IFTP system also will manage energy more efficiently than the gas-turbine power plants, gearboxes and related mechanical components they replace. This is because software developed for use with the IFTP system regulates energy distribution to the propellers and elsewhere in the ship. Rather than having conventional turbine engines dedicated to propulsion and configured to deliver maximum power in anticipation of a rare command for flanking speed, energy will be channeled as needed to the propellers, computing systems, radar, sensors and weapons, as well as to the ship's "hotel loads" (i.e., electric lights, water-purification system, and cooking and cleaning appliances).

The efficient distribution of energy is one way that an electric propulsion system reduces fuel costs. Though the unit is still powered by gas turbines, the ability to adjust energy needs according to demand reduces fuel consumption.

There are other benefits, such as longer periods between refueling, which increase cruising range, and a reduced infrared signature due to lower emissions of exhaust gases. Moreover, since an electric propulsion system has fewer mechanical components than conventional turbine motors, it doesn't require as many personnel for operation and maintenance, which fits in with another goal of the DDG 1000 ships-reduced crew size (though this will largely be achieved by extensive automation). The Zumwalt is designed for a crew of 142; the Arleigh Burke-class destroyer, by contrast, has a crew of 341.

Fig. 2 DDG 1000 design features and systems

In future conflicts, naval forces envision conducting ship-to-objective maneuvers as an integral part of the joint campaign. Joint ground elements will consist of increasingly light, highly maneuverable forces that will employ indigenous light, lethal fires from advanced ground combat vehicles while directing heavy joint fires that will be delivered increasingly from the air and sea. The integration of special operations forces and joint fires during

Operation Enduring Freedom was just a glimpse of how the relationship between ground forces, fires, and maneuver elements will transform future military operations. Naval forces must continue to extend their operational reach from the beach to 200 miles inland and beyond. Future operations will require the capability to engage thousands of targets a day, up from the current capability of sea-based missiles and carrier aviation to engage a few hundred targets in that time frame. To support the ground campaign, sea-based naval fires also must achieve performance equal to or greater than that currently available from shore-based artillery systems.

Constrained by physics and cost, conventional guns have reached their inherent limitations. The limits of gas expansion prohibit launching an unassisted projectile to velocities of greater than about 1.5 kilometers per second (km/sec) and ranges of more than 50 miles from a practical conventional gun system. Alternatively, the extended range guided munitions (ERGM) and advanced gun system (AGS) would launch rocket-assisted shells to extend the range of conventional guns, but tradeoffs between size, rocket fuel, and lethal payload requirements make these options prohibitively expensive beyond their expected ranges.

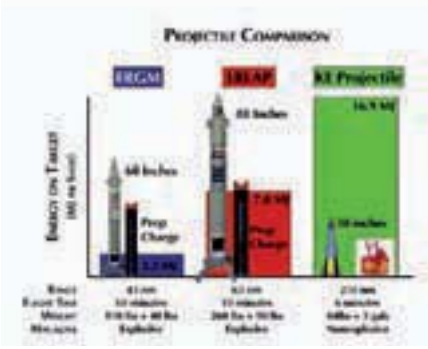

Fig. 3 Projectile comparison

Electromagnetic rail gun technologies offer the most mature, unconventional, extended-range fire support solution. Increased muzzle velocity is the key to cost-effective increases in range, lethality, and responsiveness because it provides these benefits without onboard propellants or explosives. Rail guns are the only systems that have demonstrated a capability to launch projectiles to 4.4 km/sec, and recent technical developments have significantly reduced the technical barriers to fielding naval systems.

Developing rail gun technology would shift the possibilities for naval fire support to a new performance curve, allowing tremendous future growth potential in gun technology. To put things in perspective, current 5-inch gun has muzzle energy of 10 megajoules (MJ). ERGM will

increase this to 18 MJ, and AGS will press the limits of conventional gun physics by attempting to achieve muzzle energy in excess of 33 MJ. In contrast, naval railguns will achieve muzzle energies from 60 to 300 MJ. Research indicates that a notional first-generation naval railgun with a 2.5-km/sec muzzle velocity could deliver a guided projectile with an impact velocity of Mach 5 to targets at ranges of 250 miles at a rate of greater than six rounds per minute. Mature rail gun technology is predicted to produce a much greater capability.[5]

Fig.4 Naval Railgun

An important advantage of rail guns is the ability to exploit the high kinetic energy (KE) stored in the projectile for extremely lethal effects. One test demonstrated that the release of the rail gun projectile's kinetic energy alone would create a 10-foot diameter crater, 10 feet deep in solid ground, and achieve projectile penetration to 40 feet. Hypervelocity projectiles provide deep penetration to destroy hardened targets that are extremely hard to kill by other methods. Nothing prohibits the use of explosives, but lethality studies suggest that rail gun KE projectile concepts will be sufficiently lethal-three to five times more deadly than current gun systems.

Compared with propellant guns, railguns can fire at higher velocities and do not require gun propellant but use ships' fuel. These features lead to important advantages, including shorter time of flight (important for ship defense), higher lethality on target (important for direct fire), and very extensive range capability (important for support of troops on shore). Such extended range capability also supports the sea-basing concept in which a forward deployed battle group is able to operate far enough off shore to be safe while providing a long reach for distant targets.

4. CONCLUSIONS

During the time the weapons was based by mechanical energy (bows, catapults) and chemical energy (guns, missiles). Now more and

more weapons are designed using electromagnetic energy. Instead to accommodate new systems on old weapons the weapons designers are looking to integrate all systems in an electrical powered weapon. Despite the fact the speed of development are different, now we can see the two steps of revolution in military affair started at the end of industrialization age. First step was networking all the elements of the battle field sensors, platforms and decisions makers. Second step are in development and consist in building weapons based on electromagnetic energy. Both steps will create a stronger military body able to respond to future challenges.

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THE POST SADDAM HUSSEIN IRAQ A SECURITY OUTLOOK

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The stabilization and reconstruction efforts of Iraq are part of a broad strategy of the international community. The latter's focus is on countering the asymmetrical threats stemming from the new challenges, vulnerabilities and risks at play within the international security environment. At regional level, namely in Iraq, such aspects are even more pressing due to the disappearance of a repressive government that left room for airing out ethnic and religious divergences. However, despite the overall insecurity climate characterizing the post Saddam Hussein Iraq, some progress has been made towards the post-conflict stabilization and reconstruction of this country. Hence, the focus of this paper is on outlining these efforts and their results, as well as on describing the Romanian contribution to such endeavours.

Key words: stabilization, reconstruction, Iraqi Governing Council, lessons learned, interoperability

1. THE STABILIZATION AND RECONSTRUCTION PROCESS: AN OVERVIEW

In the spring of 2003 the post Saddam Hussein Iraq became the subject theater of ceaseless armed confrontations, whereas the international community was doing its best to ensure the country's stability and reconstruction. As a result, the United Nations Organization was called upon to play a vital role in providing humanitarian assistance and supporting economic reconstruction and institutional development. Through the unanimously voted Resolution number 1511 dated 16 October 2003 the UN Security Council legitimized the stabilization and reconstruction activities of the USA led Coalition.

The initially optimistic forecasts made after the removal of the Saddam Hussein regime did not match the realities in the field. The military intervention in Iraq was considered a necessity due to the danger posed by this country's mass destruction weapons. Even though the US militaries could not find foolproof evidence of these weapons, their support in removing the dictatorial regime was greeted by almost 80% of the Iraqi population, especially by the Kurds and Shiite Arabs. However, what the American authorities could not forecast was that, once a repressive regime is removed, the ethnic and religious tensions boom with unprecedented violence. Although these tensions dated back to the beginnings of modern Iraq, the chaos created after the invasion, the frustrations accumulated during the Saddam Hussein regime, as well as the influx of Jihadis from neighbouring countries led to their exacerbation.

The Sunni Arabs who, by tradition, had been part of the state ruling elite since the British mandate, felt alienated from the new political framework. In this respect, a govern led by a Shiite majority meant a loss of privileges obtained during and before the Saddam Hussein regime. Moreover, the alliance forged between the formerly oppressed groups of Shiites and Kurds did nothing but to fuel such fears. Thus, all this added to a clear geographical separation of the etnic and religious groups contributed to the flood of violence that seized Iraq. Its intensity made many of the observers notice that the country was on the verge of a civil war.

Despite the insecurity climate some progress towards the post conflict reconstruction and stabilization was made. On April 21 2003,a few days later after the USA-led coalition entered Baghdad, the Coalition's Provisional Authority was funded and Paul Brener, a former official in the State Department, was appointed as its head. The establishment was invested with legislative, executive and judicial powers and its role was to act as a transition government by ensuring the set up of institutional elements and supervising the reconstruction efforts until an Iraqi government was to be invested. It consisted of three semiautonomous branches divided by regional criteria: the North branch located in Mosul, the Center branch located in Baghdad and the South branch in Basra. On July 13 2003, in an attempt towards joining various groupings within the Iraqi society the Provisional Authority establishes as a subordinate body the Iraqi Governing Council – IGC. The latter's role was to advise the Authority. However, in reality, the ICG acted as a real govern by training the Iraqi representatives to assume country governance. The Council brought together 25 tribal, religious and political leaders selected by representativeness criteria. Thus, the ratio of these leaders complied with the ethnic and religious divisions characteristic of Iraq. Hence, the Council was made of 13 Shiite representatives, 5 Sunnis, 5 Kurds and two representatives for the Turkish, respectively Asyrian minorities.

On June 28 2004, during the NATO Summit held in Istanbul, the Coalition transferred the political authority to the first Iraqi government ever established after the fall of the Saddam Hussein regime. The role of that interim government led by Iyad Allawi was to prepare the elections, as well as to address some of the most current problems such as the security climate and the economic recovery. Between September 20-23 the Iraqi problem was again discussed as part of the NATO work agenda.

In the absence of a permanent Constitution, the actions of the interim government were regulated by an interim Constitution known by the name of Law of Administration for the State of Iraq adopted on March 8 2004 by the Iraqi Governing Council and effective as of June 28 2004 upon the transfer of sovereignity. On the same date the Iraq elected its first president, Ghazi Mashal Ajil al-Yawer, after the fall of Saddam Hussein. The date of the first elections was established for January 30 2005.

In accordance with the Iraqi interim Constitution, the country became a Parliament Republic with a legislative body - the National Gathering - of 275 seats. The electoral system was based on lists made up by parties, except for the independent candidates. These lists could include between 12 and 275 candidates. The minimum age for a person to be listed as a candidate was 30. Moreover, concerning the candidates on the lists, 25% of them had to be females and all of them were supposed to present moral guarantees that they had never been members of the Baas party or, otherwise, to sign a document by which they disavowed any connection to this organization. The unicameral Parliament was tasked to elect a president and two deputies who formed the Presidential Council. The latter's role was to unanimously appoint a prime minister, who, in his turn, nominated the council of ministers. The first legislative body also served as a group adunare constituantă whose task was to elaborate a permanent Constitution by the end of August 15 2005.

May and June 2004 were dominated by the efforts to transfer the authority towards a local govern that, supported by UN, NATO and EU and by the Islamic community, was to prepare the general elections of 2005 and to continue the Iraq stabilization, democratization and post-conflict reconstruction process. Through the authority transfer plan adopted on April 27 2004 the UN Security Council approved of the transfer for June 30.

The deadline for the American forces presence on Iraqi territory was an issue long debated among high ranking Iraqi officials and representatives of the Washington administration. In the end, the USA political media and decision makers agreed with the arguments proposed by the former commandant of the American forces in Iraq, General David Petraeus. According to him, suggesting 2011 as a deadline for American troops withdrawal was to be evaluated and decided upon after the USA presidential elections of 2008.

The international efforts towards the stabilization and reconstruction of Iraq were part of a general strategy aimed at dealing with the evolving challenges, vulnerabilities and risks underlying such a process and characteristic of the international security environment. As a result, strategies of countering the asymmetrical threats posed by all of the above were adopted in order to tackle them on differentiated levels.

2. THE ROMANIAN CONTRIBUTION

As of July 2003 Romania contributed to the Iraq's stabilization and post-conflict reconstruction efforts as part of the "Iraqi Freedom" Operation. Thus, in the fourth stage of the reconstruction and stabilization process in Iraq, Romania deployed infantry, mountain, engineer and police troops, military instructors, General Staff personnel, medical personnel who undertook various tasks in different locations. For example, in Ad Diwaniyah, in the Multinational Division Center-South (MND-CS) under Polish command, Romania deployed General Staff

COs and NCOSs, as well as a detachment of engineers who were tasked to undertake operations in Al Hillah – Camp Charlie, Ad Diwaniyah – Camp Echo and in Al Kut. Some of the missions of the 96 Battallion consisted of repairing and building new roads and access ways, building and maintaining heliports, maintaining the bridges connecting different locations from Iraq, executing engineer related missions to ensure an increased level of protection for the Coalition forces, as well as for the benefit of the civil population and of the newly established Iraqi military.

In Basra the Romanian contribution consisted of General Staff officers deployed within the Multinational Division South-East headquarters under British command. In An Nassiriyah – Camp Mittica, within the same division under the operative command and directly subordinated to an Italian brigade General Staff officers and an infantry battalion were deployed. The tasks of the battalion were to support humanitarian missions, to escort convoys, to ensure unit security, to patrol the main roads day and night, to undertake recce and CIMIC missions, as well as to train the Iraqi newly established military forces.

The military police company deployed in Iraq as part of the Romanian contingent escorted military and civil convoy, ensured VIP protection, controlled and supervised traffic, did recce and surveillance missions and also trained the Iraqi police members. In addition, a group of General Staff officers was deployed in Baghdad within the multinational force headquarters. Moreover, a medical team was deployed in the same location.

An infantry company was deployed in the spring of 2005 in Basra, South of Iraq as part of the UNAMI and its role was to ensure the protection and security of dignitaries and of the UN General Headquarters.

The first Romanian unit deployed in the operations theater from Iraq was the 811 Infantry Battalion. The latter was stationed in Camp White Horse, near An Nassiriyah between July 2003- January 2004. Between January-July 2004, this battalion was replaced by the 26 Infantry Battalion and between July 2004- February 2005 by the 812 Infantry Battalion. As of September 2004, the Romanian troops were deployed in Camp Mittica, Tallil, near An Nassiriyah. Later, the Romanian armed forces stationed at Tail air force base were moved to Camp Dracula.

On February 24, 2005 an engineering detachment was deployed in Al Hillah. The detachment consisted of a command structure, three engineering platoons commissioned to build bridges and roads and three support subunits tasked to do recce missions, ensure communications and logistic support. The overall mission was a complex and dangerous one. Thus, once deployed to Iraq, the Romanian detachment's main missions consisted of building and repairing bridges, roads, building heliport patforms, building infrastructure and military bases, as well as of undertaking demining missions. The Romanians acted in the area of responsibility of the Multinational Division Center-South,

under Polish command and the nature of their missions not only allowed them to have direct contact with the Iraqi population, but also to support it within available means.

Since they were first deployed to Iraq, the Romanian armed forces participated in the stabilization and reconstruction process of this country alongside with Coalition forces. Thus, the Red Scorpios Task Force stationed in Camp White Horse made an important contribution to the overall mission of the Coalition given the unit's experience gained in Angola, Albania, Kosovo and Afghanistan. In this respect, in the conditions of an increasing volatility of the domestic security environment, one of their most important missions in Iraq consisted in ensuring the security and stability of the area of responsibility. As a result of a continuous training process, the Romanian militaries were able to fulfill their objectives by adopting and putting into practice new methods aimed at countering the threats characteristic of their deployment area. Moreover, they applied the lessons learned during the Enduring Freedom Operation undertaken alongside the American forces and proved their capacity to react promptly to unforeseen circumstances by also showing respect to the local population. A good example of their professionalism and of the payoffs of their considered attitude towards the locals was the friendly reaction of the latter whenever the vehicles displaying the Romanian flag crossed the Iraqi villages and towns.

All this considered, the CIMIC missions played an important role within the stabilization and post-conflict reconstruction process in Iraq. By implementing programs aimed at renovating schools from Suqash-Shuyukh, Al Fuhud and Al Fudliyah, the Iraqi children were provided with a better future. In this respect, the Romanian CIMIC teams made an important contribution to these efforts by supervising the renovation activities and by undertaking other projects such as supplying medical equipment and medicine to hospitals or water purification and bottling systems so that the Iraqis could efficiently manage their country's transition to democracy. The cooperation between the Iraqi authorities and the Romanian militaries was an essential step in developing relations that ensured a stable security environment. Thus, in Camp Mittica, near Camp White Horse a Romanian military police detachment was deployed to undertake patrolling missions and to maintain order alongside with Italian and Portuguese police.

Dr. Derrin Ray Smith, a professor and expert in international security problems at Graduate School of International Studies, from Denver Univeristy visited Camp Mittica and concluded: *"(...) to ensure the efficiency of their activities they spend most of their time patrolling in the vehicles, but most often they walk making contact with the locals. The result is a relationship based on good will. As a result, there has been an improvement of the situation in the areas patrolled by the Romanian militaries who are greeted every time they appear in the street. However, there are also important difficulties,*

sensitive issues and dangers lurking everywhere. However, wherever they go, the militaries are welcomed with good will by the locals. The personnel undertook intensive training in international humanitarian law, UN standards for peace support operations and environmental protection of their area of operations. The Romanian militaries have adopted the Belgian model to investigate road accidents, but they also integrate the Italian, Portuguese and American experience. Many of the Romanian military police members are veterans of missions like those from Somalia, Bosnia, Kosovo. At about 300 km North of Camp Mittica in Al Hillah there is an engineering detachment stationed in Camp Charlie. The Romanian military engineers made a good impression due to their mission dedication and their constant adaptation to the needs of the locals in terms of activities like building and repairing houses, schools, bridges, etc. In this respect, the efforts of the Romanians to build a school of arts for the children from Al Hillah are significant. Moreover, the Romanian militaries have done a great amount of engineering work to ensure the protection of the Coalition forces, as well as established numerous check points for the local police. Most of their time is spent inspecting the bridges and the length of their missions can sometimes reach even five days in a row on itineraries exceeding 200 km. Checking the resistance and stability of bridges, ensuring road traffic flow, undertaking EOD missions aimed at neutralizing UXO have been top priority for them in Iraq. Also, it is important to mention that twice a day teams are sent in the area of responsibility to distribute water, food and materials as part of the humanitarian missions.Given the harsh environment and the poverty of most of the Shiite population there is a long way to go to improve the living conditions.However, all Romanian military personnel who have actively been involved in their missions are fully aware of the importance of their mission to protect and ensure better conditions for all Iraqis".

On December 11, 2005 the Romanian militaries from the 20th Infantry Battalion in cooperation with the Italian militaries finished a training course for 100 Iraqi instructors. The activity lasted from September until December 2005, unfolded on a military base near An Nassiriyah and consisted of four training series. In each of the series 25 Iraqi militaries were trained. The course was taught in English, benefited from the support of Iraqi translators and consisted of theoretical and practical modules, each of them of a 5 day length. The Romanian infantrymen trained the Iraqi militaries to correctly use and maintain individual armament, and they also provided knowledge related to security rules to be respected during fire drills in accordance with NATO standards. By the end of their mission, the Romanian military trained over 50 Iraqi instructors from a battalion that represented the only operational Iraqi force from the Dhi Qar province that was in the area of responsibility of the Romanian forces.

On December 12, 2005, the engineering Romanian detachment from the Iraq V mission handed over two shooting ranges near

Ad Diwaniyah. These were then employed by the Iraqi troops in training their forces in fire drills with light infantry armament. The platoon responsible for this project consisted of 35 militaries who for six weeks worked in a 6200 square meters area preparing it for the training activities. The Polish Major General Piotr Czerwinski, commandant of the Multinational Division Center South, participated in the inauguration ceremony and congratulated the Romanian militaries for accomplishing their mission one month earlier than planned. The Iraqi General Othman Ali Ferhood, Commandant of the 8th Infantry Division that was the direct beneficiary of these efforts also acknowledged the efforts of the Romanian militaries.

In the post-Saddam Iraq the parliamentary elections were an essential stage in the unfolding of the stabilization and democratization process. In this respect, the Romanian troops alongside with the Coalition forces supported the Iraqi efforts to ensure domestic security during elections. The latter were a test for the new Iraqi army, as well as for the security and police forces. While the main task of the Iraqi troops was to secure voting centers, the Romanian forces deployed in Irak had to ensure the stability all along the elections period. Upon request, small rapid reaction subunits equipped with armored vehicles were trained to intervene to support the Iraqi security forces. The Romanian militaries in cooperation with the local authorities and with the Iraqi armed forces supervised the installation of security forces in the voting centers from the villages and towns East of An Nassiriyah. A platoon of the Romanian military police company supported a unit of the Italian police. During 2006, the efforts of Romania were directed both towards making an increased contribution to the training of the Iraqi security forces on Iraqi territory, and towards initiating the development of specific training programs in Romania.

Between July 15,2003- December 2006 a parte of the Romanian forces deployed in Iraq participated in the Antica Babilonia operation under Italian command. The aims of this operation revolved around the establishment and maintenance of a stable domestic environment, ensuring the necessary conditions for security and stability in order to allow for a smooth distribution of humanitarian aid, providing medical support to the local population, reestablishing the infrastructure and the support of the stabilization and reconstruction process in the post-conflict Iraq.

Through its involvement, NATO made an important contribution to the multinational effort of ensuring stability and of reconstructing Iraq. In this respect, the NATO Training Mission – Iraq/NTM-I was established and approved by the North Atlantic Council on November 17, 2004. Thus, on December 16, 2004, SACEUR issued the Operational Order that set up the aforementioned mission. The initial NATO Training Implementation Mission was started in Iraq on August 14 as a result of the request made by the interim Iraqi govern on June 22. The request was

based on the NATO decision made at the Istanbul Summit to support Iraq by implementing a training program in this country. The mission objectives set out the identification of training alternatives for the Iraqi security forces, the training of certain General Staff personnel and the identification of liaison means between the interim government and Coalition forces.

The NTM-I focused on the following cooperation fields: training offers and counseling for certain categories of personnel in the General Staff, providing assistance for the establishment of a military academy and of a training, education and doctrine center, coordinating national contributions in military equipment and training offers, providing assistance for establishing an Iraqi Training Command – ITC.

All these initiative were implemented and developed in tight cooperation with the Iraqi authorities and the Coalition forces. The principle underlying them separated very clearly the roles: the Iraqis were the decision makers, whereas NATO provided counciling and support. The training mission benefitted from the involvement of both ACT and ACO. Moreover, the mission underlined NATO's new capabilities employed as a security instrument at the beginning of the XXIst century and as a means of providing support in establishing, developing and training the security structures from Iraq. As a result of these missions, in August 2005 the Romanian officers were employed as instructors in the NTM-I under the command of NATO in Camp Victory near Baghdad with the mission of training the the Iraqi army.

In March 2007 in a speech delivered at the Ministry of National Defense headquarters by the Romanan president, Traian Băsescu, it was highlighted the achievement of the objectives undertaken by the Romanian military in Iraq and, hence, the necessity to reduce the Romanian presence in this country by 100 militaries during that year. However, the president highlighted that increasing or diminishing Romanian contribution to multinational missions is based on allies' requirements in this respect and upon their prior consultation. On March 29, 2007 the agenda of the Romanian Council of National Defense included the future strategy of Romanian militaries' employment in missions outside Romanian borders, as well as a follow-up on the withdrawal procedures of the Romanian contingent from Basra ensuring the UNAMI personnel security. Upon mission completion, at the beginning of May 2007, the Romanian contingent was finally withdrawn.

On June 7, 2007 the Romanian militaries were visited by the commandant of the Multinational Division South East, the British Major General Jonathan Shaw. On this occasion, in acknowledgement of the Romanian contribution to the theater of operations, the British general wrote in the Book of Honour of the battalion the following:"Romania should be proud of its militaries". In July 2008, the deputy for operations of the Multinational Division South East, the British Brigade General Julian Free visited the 151 Infantry Battalion deployed in Tallil, Camp Dracula. During the ceremony that

unfolded with this occasion five of the Romanian militaries were awarded medals for valor and courage in undertaking their missions.

On January 20, 2009 the Romanian Council of National Defense approved the signing of the Memorandum of Understanding between Romania and the Republic of Iraq. The latter regulated the types of operations and non-combatant activities to be further carried out by the Romanians as agreed with the Iraqi authorities. Some of these activities included humanitarian and medical support in Tallil and Baghdad, as well as training and counseling activities for the members of the Iraqi security forces. Even though the mandate of the Multinational Coalition set up in accordance with UN resolutions expired on December 31, 2008, as a result of the bilateral agreements and upon the request of the Iraqi authorities the Romanian Parliament approved the continuation of the Romanian militaries' mission until July 31, 2009.

As of July 2003, Romania contributed for 6 years (2190 days) to the international efforts aimed at stabilizing and reconstructing Iraq both as part of MNF-I, and within the NATO training mission- NTM-I. On the whole, more than 8,400 Romanian militaries participated in Iraq missions under American, British, Italian or Polish operational command and undertook more than 1,200 missions. Thus, the structures deployed for the Iraqi Freedom operation (July 2003-December 2008) consisted of an infantry battalion (12 rotations), General Staff and liaison personnel, military intelligence structures, an engineering detachment, a medical detachment and a military police detachment. The amount of money spent from the Romanian defense budget until December 31, 2008 totalled 334 million LEI.

Between 2003-2009, in the Iraq theater of operations 12 militaries were injured and two died: sublieutenant Bogdan Valerian Hâncu – April 27, 2006 and sublieutenant Ioan Grosaru – September 21, 2007.

High ranking civil and military officials such as Generals David Petraeus, William Casey, Ray Odierno, commandants of the multinational force from Iraq, Robert Gates, USA Defense Secretary, Emma Nicholson, special representative of the EU in Iraq, Major General Mark Kellz, commandant of the Australian land forces praised the activity of the Romanian militaries in Iraq. As recognition of its contribution and efforts, starting November, 2006, Romania filled out the the deputy position for Coalition operations of the General Staff head in charge of the the Iraqi multinational force. As a result, from this position, Romania coordinated the actions and activities of the countries contributing to the Coalition, other than the USA.

On July 29, 2009 upon the completion of the mission of the Romanian armed forces in Iraq, a military ceremony gathering all militaries who had participated in Irak was organized in Bucharest.

In conclusion, the enlarged spectrum of military actions undertaken by the Romanian troops in Iraq (e.g. providing humanitarian support, stabilization and construction activities) has directly contributed

to ensuring the implementation of NATO interoperability standards in accordance with the lessons learned during the activities undertaking during the multinational mission. The involvement of these forces in stabilization and reconstruction activities is a direct consequence of Romania's new strategic outlook that highlights its active role in ensuring international security.

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QUALITATIVE RISK ANALYSIS METHODS IN AVIATION PROJECTS

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This paper provides information to project managers and project teams that will help with their risk management efforts in the following ways: provide a consistent methodology for performing project risk management activities, provide techniques and tools for project risk management, identify data requirements for risk analysis input and for output, and provide guidance on how to proactively respond to risks.

The research will outline a few of the qualitative methods commonly used in project risk management and also accomplishes the comparative evaluation of different methods using multi-criteria analysis. Understanding of project risks will better enable project teams to contribute to the fulfillment of public service through assessing project risk and uncertainty to aide in making decisions regarding aviation project development and delivery. These decisions contribute to public safety and the projects we deliver add value on many levels.

Qualitative risk analysis assesses the impact and likelihood of the identified risks and develops prioritized lists of these risks for further analysis or direct mitigation. The team assesses each identified risk for its probability of occurrence and its impact on project objectives. Project teams may elicit assistance from subject matter experts or functional units to assess the risks in their respective fields.

Key words: risk management, aviation project, qualitative analysis

1. INTRODUCTION TO PROJECT RISK MANAGEMENT

Project risk management attempts to anticipate and provide a solution regarding the uncertainties that pose a threat to project objectives and terms, to identify all the foreseeable risks, assessing the chance and severity of those risks, and then deciding what might be done to reduce their possible impact on the project or avoid them altogether.

In some industries risk management and its closely associated discipline of reliability engineering have to be taken particularly seriously because of the potential of project failure on public safety or the environment. High in this list of risk/sensitive projects are all those connected with aerospace and air transport, where a risk event might be anything from missing a flight connection to a catastrophic collision between two fully laden passenger aircraft over a densely populated city.

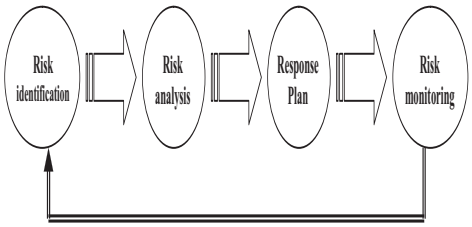

Fig. 1 Cycle of risk management process

Any project, small or complex, needs special attention to risk management [1]. A risk management strategy must be developed, first to identify as many potential risks as possible and then to decide how to deal with them **(Fig.1).**

Project risk management is a complex subject. Even the classification of risks is not straightforward and can be approached in different ways. There are several techniques for assessing and dealing with project risks grouped into two categories: qualitative and quantitative risk analysis. Qualitative risk analysis involves considering each risk in a purely descriptive way, to imagine various characteristics of the risk and the effects that these could have on the project or subsequent operations.

Quantitative risk analysis goes at least one stage further than qualitative analysis by attempting to quantify the outcome of a risk event or to attach a numerical score to the risk that ranks it according to its perceived claim for preventive or mitigating action.

2. CAUSE AND EFFECT IN QUALITATIVE ANALYSIS

The process of qualitative analysis means to evaluate the importance of identified risks and to extend the priority lists of these risks for further evaluation. Risks analysis is about clearly defining them, including weighing the importance of project risk, anticipating an agravating presumed situation, establishing projects sensibility and also the probability of risk materialization.

The concept of qualitative risk analysis is of fundamental importance when it comes to the need for the project management team and or the project management team leader to take the action at the onset or prior to the onset of the project to adequately and appropriately ascertain the approximate level of risk that so may exist in regards to the conduction of the given project and or series of projects. Specifically speaking, the concept of the qualitative risk analysis refers specifically to the project related process of performing a thorough and complete analysis of the overall effect of the complete and total set risks in the entirety of the predetermined list of project objectives that have been set forth by the project management team and or project management team leader.

The qualitative risk analysis can be conducted at any point in a project life cycle, however at least once at the onset it should be conducted. The primary goal is to determine proportion of effect and theoretical response [1,2].

Qualitative Risk Analysis assesses the impact and likelihood of the identified risks and develops prioritized lists of these risks for further analysis or direct mitigation.

To perform the analysis it has to identify the risk, including a thorough description of the risk and risk triggers, it can be characterized in terms of probability of occurrence and the consequence if it does occur.

2.1. FISHBONE DIAGRAMS

This method is commonly used by reliability and safety engineers to analyze or predict faults in design and construction. In project risk management fishbone diagram is usefull to examine risk cause and effect relationships. Fishbone diagrams can also be used to analyze failures or poor performance in project organizations or communications.

In my case, I show how an Ishikawa fishbone diagram might be compiled to analyze the numerous reasons why an Unmanned Air Vehicle (UAV) might lose the communications with control station (**Fig.2**). Many items in this example could be expanded into a complex diagram [3].

This method has numerous advantages: it permits a thoughtful analysis that avoids overlooking any possible root causes for a need; it is easy to implement and creates an easy-to-understand visual representation of the causes, categories of causes, and the need; it focuses the group on the big picture as to possible causes or factors influencing the problem/ need; it shows areas of weakness that can be rectified before causing more sustained difficulties. As disadvantages, we can enumerate: the simplicity of the fishbone diagram may make it difficult to represent the truly interrelated nature of problems and causes in some very complex situations; smetimes, it is necessary an extremely large space on which to draw and develop the fishbone diagram, you may find that you are not able to explore the cause and effect relationships in as much detail as you would like to.

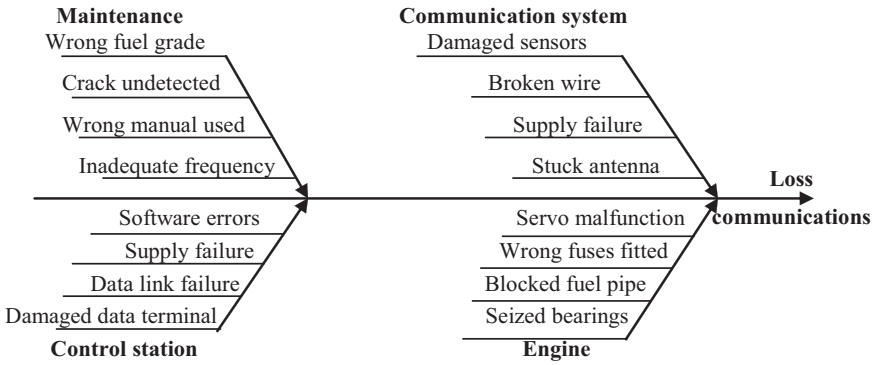

Fig. 2 A simplified fishbone diagram

2.2. FAULT-TREE ANALYSIS (FTA) IN ENGINEERING DESIGN

The fault-tree analysis diagram is an important tool when it comes to quality management that has applications in reliability engineering. This process examines the posibility of component failures in all kinds of engineering systems, with a view to improving safety and reliability.

This enables all those who are involved in the production of a product to be able to understand why these failings and faults have occurred and they can then ensure that the causes of the faults are eliminated. It can also be used within the design process, using design to eradicate faults that have occurred in a product and ensuring that future products are fault free.

One particularly good aspect of the fault tree analysis is that it seeks to get to the root of any fault problem, so it is not about papering over the cracks, but rather seeks to address why the cracks have occurred and making certain that they do not happen again.

The fault tree analysis is very good at looking at a problem from different angles. It requires a very honest approach in order to get to the root cause of problems that result in fault. So human error has to be looked at and also what caused the human error to happen. Was it the result of staff not caring, staff being pressurised in terms of time, or are there issues of staff training that need to be addressed?

The process of getting to the ‘‘root cause” for a fault is often quite lengthy, so the fault tree analysis diagram, if it is to be done properly, has to focus on a number of aspects of the production process. Failure to properly identify the root causes and the countermeasures will result in a fault tree analysis that simply fails to elicit improvements. However, when done properly and the root causes and countermeasures are all listed, this analysis can be a powerful catalyst for improvements to production [4].

2.3. FAILURE MODE AND EFFECT ANALYSIS (FMEA)

This method is an established reliability engineering activity that also supports fault tolerant design, testability, safety, logistic support, and related functions. It is particularly helpful to aviation project managers because it starts by considering possible risk events and then attemps to predict all their possible effects.

The FMEA can be performed as either a hardware or functional analysis. The hardware approach requires parts identification from engineering drawings (schematics, bill of materials) and reliability performance data, for example mean time between failure (MTBF), and is generally performed in a part-level fashion (**Table 1**). However, it can be initiated at any level (component/ assembly/subsystem) and progress in either direction (up or down) [4]. The recommended method for performing an FMEA is dictated by the equipment life cycle. The early stages of the equipment life cycle represent the region where the greatest impact on equipment reliability can be made.

Item	Failure mode	Cause of failure	Effect	Recommended action
Pilot's automobile	Engine refuses to start	Poor maintenance	Pilot marooned at private hunting lodge with no other means of transport	Ensure good vehicle maintenance. Either keep back up car at hunting lodge or don't go there
New maintenance hangar	Floor over basement collapses during first aircraft engine exchange	Errors in the floor loading calculations when hangar was built	Personal injuries. Damage to engines. Damage to aircraft. Schedules disrupted.	Triple check vital structural calculations
	Floor over basement collapses during first aircraft engine exchange	Floor slabs incorrectly poured	Personal injuries. Damage to engines. Damage to aircraft. Schedules disrupted.	Ensures operatives get good training and instruction

Table no. 1 Part of a FMEA matrix for a new airport
Source: Flouris T., 2009

FMEA provides an organized, critical analysis of potential failure modes of the system being defined and identifies associated causes. It uses occurrence and detection probabilities in conjunction with a severity criteria to develop a risk priority number (RPN) for ranking corrective action considerations.

For each potential failure, a formal estimate is derived to determine potential impact and in some cases the anticipated cost of both making up financially for said failure and also possibly the estimated costs in modifying the project to minimize the risks of this failure [5].

2.4. RISK CLASSIFICATION MATRICES (RCM)

A risk classification matrix or table is a simple way of ranking different potential projects in terms of their potential benefit and the likely risks or costs in implementing them. Some projects may be very attractive in terms of the potential benefits that they offer but have serious implementation difficulties.

Risk matrices are different enough from other topics (such as multivariate classification, clustering, and learning with correct classes provided as training data) to require separate investigation of their properties, in part because "risk" is not a measured attribute, but is derived from frequency and severity inputs through a priori specified formulas such as following:

$$Risk = probability \times impact \quad (1)$$
$$(frequency \text{ x } severity)$$

The use of such risk matrices to set priorities and guide resource allocations has also been recommended in national and international standards: airport safety (**Fig. 3**).

In general, there is no unique way to interpret the comparisons in a risk matrix that does not require

explanations about the risk attitude and subjective judgments used by those who constructed it. In particular, if some consequence severities are random variables with sufficiently large variances, then there may be no guarantee that risks that receive higher risk ratings in a risk matrix are actually greater than risks that receive lower ratings [6].

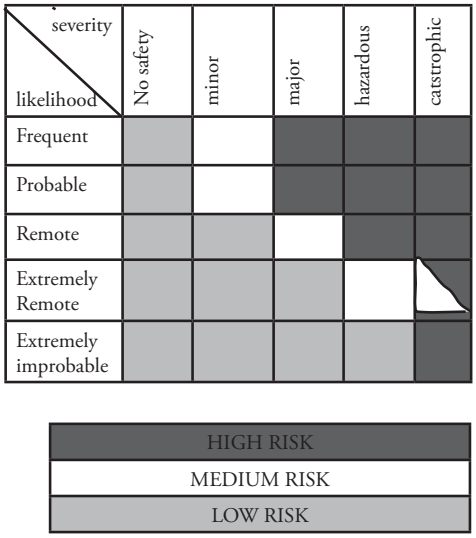

Fig. 3 Predictive Risk Matrix for Federal Aviation Administration
Source: Federal Aviation Administration, 2007

Categorizations of severity cannot be made objectively for uncertain consequences. Inputs to risk matrices and resulting outputs require subjective interpretation, and different users may obtain opposite ratings of the same quantitative risks. These limitations suggest that risk matrices should be used with caution, and only with careful explanations of embedded judgments [7].

3. THE COMPARATIVE METHODS ANALYSIS

For comparative evaluation of qualitative methods of risk analysis in project management of aircraft, we used multi-criteria analysis [8].

Establishing criteria

The criteria considered for this analysis are :

- Consistency (C)
- Aplicability (A)
- Design (D)
- Ability to use in dynamic scenario (S)
- Utility (U)

The share of each criterion

Share of criteria is established on a grid with three values. It compares each and every criterion is assigned a value of 0,5 and 1 in order of importance. Determination is completed with the calculation (table 2) of share coefficient (γ_i) using Frisco method:

$$\gamma_i = (p+m+\Delta p+0,5)/(-\Delta p'+N_{crt}/2) \quad (2)$$

where:

p – the sum of points obtained (on line) by the considered item;

m – surpassed the number of criteria considered by the criterion;

Δp – difference between item score and the score taken from the last level element;

$-\Delta p'$ – difference between item score and the score taken from the top level element;

N_{crt} – number of the considered criteria.

	C	A	D	S	U	Points	Score	Share
C	0,5	1	1	1	0	3.5	2	2.85
A	0	0,5	1	1	0	2.5	3	1.55
D	0	0	0,5	1	0	1.5	4	0.72
S	0	0	0	0,5	0	0.5	5	0.15
U	1	1	1	1	0,5	4.5	1	5.20

Table no.2. The share of each criterion

Identifying alternatives

Among countermeasures for increasing survival of large transport aircraft when the missile self-directed terrorist attacks, we selected the following:

a) Fishbone Diagram (FD)

b) Fault-tree Analysis (FTA)

c) Failure Mode and Effect Analysis (FMEA)

d) Risk Classification Matrices (RCM)

Grant notes

According to the criteria, we gave the following notes to each variant N_i, as we show in **Table 3**.

	FD	FTA	FMEA	RCM
Criterion	N_i	N_i	N_i	N_i
C	7	8	9	7
A	9	7	9	8
D	7	7	8	9
S	6	7	8	6
U	8	8	9	8

Table no. 3. Grant notes

Determination of matrix effects

In order to calculate the matrix of consequences it is graded the product between the grades and the weighting coefficients. Finally, it is calculated the amounts of these products and the final standings are determined (table 4).

	FD	FTA	FMEA	RCM
Criterion	$N_i x \gamma_i$	$N_i x \gamma_i$	$N_i x \gamma_i$	$N_i x \gamma_i$
C	19,95	22,8	25,65	19,95
A	13,95	10,85	13,95	12,4
D	5,04	5,04	5,76	6,48
S	0,9	1,05	4	0,9
U	16,64	41,6	46,8	41,6
Total	**56,48**	**81,34**	**96,16**	**81,33**

Table no. 4. The final standings

4. RESULTS ANALYSIS

The final results demonstrate that FMEA method, as a complete set for identifying and managing failure modes to all assembly levels, provides a balanced approach into aviation risk management projecys.

Top-down methods (such as FTA) are efficient in that they focus on particular areas of safety and certification concern, but do not provide general validation support.

To analyze as possible in a comprehensive manner the various situations of danger and undesirable events, and the causes and their consequences, is required a complete risk appraisal and analysis: qualitative and quantitative.

This approach can create a clear and common reality to promote effective solutions in aviation projects every time.

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COMPUTERIZED MODEL OF RISK MANAGEMENT IN BUSINESS

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The occurrence of risk situation and the manager's awareness of it are serious threats for the organization and its objectives. Consequently, the manager has to have available, analyze, select and interpret many pieces of information, under stress, before making a decision for avoiding a disaster. Under these circumstances, a computerized model of risk management is the most adequate solution to make the intervention possibilities effective through a quicker and more accurate intervention. The model offers enough confidence and a favorable psychological state for managing risk. In accordance with this model, the risk manager processes the information by means of some operational (mathematical) methods and that favors reaching optimum solutions in the shortest delay, based on some estimated anticipations through a rational model.

Key words: risk, decision-making, computerized model, business

1. INTRODUCTION

Risk is virtually anything that threatens or limits the ability of an organization to achieve its mission. The following is a definition of risk which will be most useful for the purpose of this article: *"Risk is the threat that an event or action will adversely affect an organization's ability to maximize stakeholder value and achieve its business objectives and business strategies. Risk arises as much from missed opportunities as it does from possible threats"*.

A project oriented definition of a risk is as follows: "*A problem that could cause some loss or threaten the success of your project, but which hasn't happened yet; these potential problems might have an adverse impact on the cost, schedule, or technical success of the project, the quality of your products, or team morale"*.

Whilst a single definition of risk is useful from a theoretical point of view, in practice it is necessary to elaborate on it to generate useful risk management ideas. On a practical level, risk could be categorized in a number of different types of risk groupings. This depends on the relative importance of the considered factors to specific businesses, together with subjective views and cultural issues affecting the corporate view of risk.

For this paper we have chosen to consider risk in four categories:

- *Operational risk* - loss of key staff, IT system failure, image problems, health and safety issues.
- *Financial risk* - market risk, credit risk, liquidity risk.
- *Hazard risk* - environmental pollution, product liability issues, natural disasters, stress claims, property risk.

- *Strategic risk* - reduced insurance company profitability due to the implementation of stakeholder pensions, mergers and acquisitions, changes in demand, political changes.

However, some risks are difficult to allocate to just one of these four categories because they involve two or more elements.

Risk management is a process of thinking systematically about all possible risks, problems or disasters before they happen and setting up procedures that will avoid the risk, or minimize its impact, or cope with its impact.

It consists of policies, procedures, and practices involved in identification, analysis, assessment, control, and avoidance, minimization, or elimination of unacceptable risks. It is basically setting up a process where you can identify the risk and set up a strategy to control or deal with it, and is also about making a realistic evaluation of the true level of risk.

Risk management begins with three basic questions:

1. What can go wrong?
2. What will we do to prevent it?
3. What will we do if it happens?

Any organization should be concerned on this subject and apply into daily practice the following approach, where the elements are performed, more or less, in the following order:

- Identify, characterize, and assess threats;
- Assess the vulnerability of critical assets to specific threats;
- Determine the risk (i.e. the expected consequences of specific types of attacks on specific assets);
- Identify ways to reduce those risks;
- Prioritize risk reduction measures based on a strategy.

A buzzword that tends to be heard more and more often in our days is *Enterprise Risk Management (ERM)*. In business, it includes the methods and processes used by organizations to manage risks and seize opportunities related to the achievement of their objectives.

ERM provides a framework for risk management, which typically involves identifying particular events relevant to the organization's objectives, assessing them in terms of likelihood and impact, determining a response strategy, and monitoring progress.

ERM can also be described as a risk-based approach to manage an enterprise and integrates concepts like internal control and strategic planning. ERM best addresses the needs of those stakeholders who want to understand the broad spectrum of risks facing complex organizations, to ensure they are appropriately managed.

The occurrence of risk situation and the manager's awareness of it are serious threats for the organization and its objectives. Consequently, the manager has to have available, analyze, select and interpret many pieces of information, under stress, before making a decision for avoiding a disaster. Under these circumstances, a computerized model of risk management is the most adequate solution to make the intervention possibilities effective through a quicker and more accurate intervention. The model offers enough confidence and a favorable psychological state for managing risk. In accordance with this model, the risk manager processes the information by means of some operational (mathematical) methods

and that favors reaching optimum solutions in the shortest delay, based on some estimated anticipations through a rational model.

2. HOW THE COMPUTERIZED MODEL FOR RISK MANAGEMENT FUNCTIONS

1. The manager of the risk situation perceives the danger situation and initiates the computerized system:

- the danger situation resulted from the action of the risk factors is defined, based on the information provided by the passive system (data and images);
- M.R.S. (the manager of the risk situation) alarms the whole system;
- the discriminator of scenarios is transmitted using the code of starting a risk management process.

2. The simulation (support) unit provides the basic data of the risk situation:

- identifies the typology of risks and defines the essential characteristic features
- foresees the most probable way of dissemination in the system
- defines, assesses the consequences of the risk situation.

3. The active IT department draws up the action strategy of the system as a response to the action of the risk factors:

- based on the initial data provided by the simulation department, the scenario discriminator chooses the most probable scenario which summarizes the integrating action of the risk factors;
- based on a mathematic model, the unit for measuring and evaluating the system risk, measures and evaluates the consequences;
- the strategy generator draws up the strategy for responding to the action of the risk factors, with the support of the logistic department and other internal and external co-workers.

4. The decision maker analyses the strategy provided and implements it through the decisional process:

- the decision content is formulated;
- it is communicated to the implementation department;
- special measures are implemented for counteracting the action of the risk factors in each department and in the system as a whole;
- results are continuously evaluated, finding the whether the danger state is removed or eliminated.

3. CONCLUSIONS

The optimization of the computerized model depends directly on: information collected from the external stimuli in the database; expertise of professionals who draw up the logical frames of various types of adequate scenarios and mathematic models; the viability of the strategies drawn up for preventing, diminishing or annihilating the action of the risk factors.

Using the computerized models of risk management in business is, nowadays and in the future, the most adequate solution for defeating stress and risk taking by the managers.

Risk management with the help of some specialized tools will represent an important support for sustaining the managerial decision in relation with the evolution of internal and external events in the economic and information conflict area.

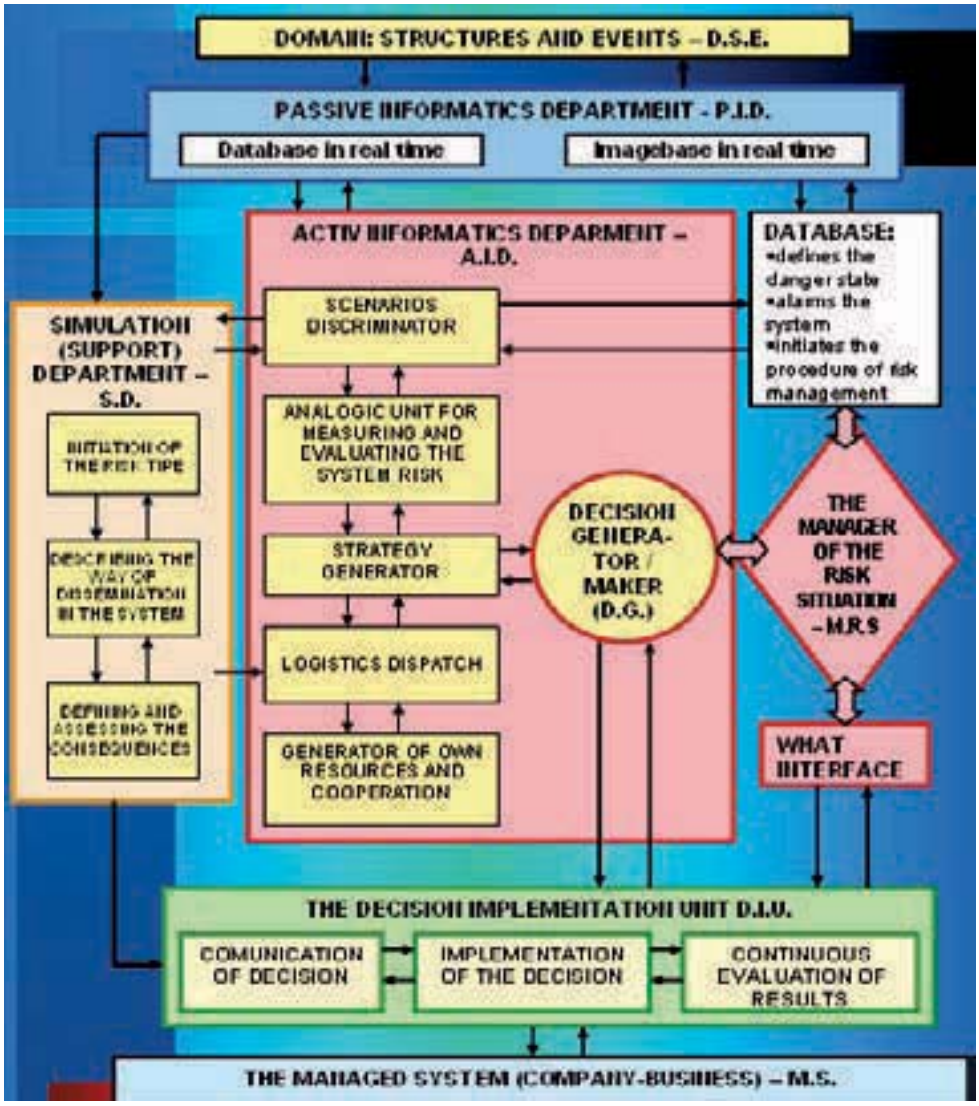

Fig. 1. The functional scheme of the computerized model of risk management in business

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ADVANCED TECHNOLOGIES APPLIED TO THE MODERN LOGISTICS OF MILITARY SYSTEMS/EQUIPMENT

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The nations that achieve cyberpower will command influence in global affairs economically, culturally, militarily, and politically in the decades ahead. Military cyberpower is the application of the domain of cyberspace to operational concepts to accomplish military objectives and missions, and influence operations, as well as warfighting. Infotronics Technologies intertwine advanced information and electronics systems intelligence and enable autonomous business functions and objectives through the use of internet and other tether-free technologies (i.e. wireless, web,...). The modern logistics of military systems/equipment imply core technologies such as Watchdog Agent for Predictive Prognostics, Web-enabled Smart D2B (device to business), Platform and Tools for Data Transformation, Optimization, and Synchronization, Applied Wireless Technologies and Logistics Infotronics Agent (LIA).

The hereby article argues that traceability, predictability and diagnosticability through advanced technologies will lead the armed forces to the life cycle logistics approach for interoperability and optimal cost of military systems/equipment.

Key words: life cycle logistics, cyberspace, robotics, logistics infotronics agent.

The cyber revolution is just the latest in a series of massive waves of "creative destruction" that arise when the convergence of new technologies, organizational models, and process innovations spawns new industries, remakes old economic sectors and in the process, creates new sources of economic, social, political, and military power.

The goal today is **cyberpower**, the ability to master and exploit the revolutionary capabilities of information and communications [3], while simultaneously keeping cyberspace secure. The nations that achieve cyberpower will command influence in global affairs economically, culturally, militarily, and politically in the decades ahead.

Each successive wave of technology constellations (e.g., the convergence of microprocessors, software, and digital networks during the current era) become the engine of economic growth and social change, creating new industries and transforming the underlying political-military systems. Older industries were displaced or transformed in a

process that created new sources of competitive advantage and, often, new centers of geopolitical power.

Over the last 250 years, waves of "creative destruction" emerge around the convergence of new technologies and organizational innovations. These waves create new industries, transform the underlying social and political-military systems, and create new sources and centers of power, **Figure 1.**

These new waves included the ages of steam, iron, and railroads; steel, chemicals, and electricity; oil, autos, and electronics; and today, information and computer technologies, with the contours of the next wave around nano-biotechnology and robotics just emerging.

These industry waves follow a predictable sequence [3] that mirrors technology (S-curve) life cycles: incubation, irruption, frenzy, synergy, maturity, and decline, **Figure 2**. Likewise, the role of government follows a predictable pattern as these industries evolve. Incubation occurs when innovations are still in the research and development stage and where use is limited to early adopters.

Cyber is well within the synergy phase and stands ready to enter the maturity phase over the next few years. The recent reinvestment in fiber optic networks and cloud computing infrastructures reflects this transition.

The key questions are where will cyber be by 2020, and what is the appropriate role for government in capitalizing on cyber opportunities while keeping cyberspace secure?

The advent of the Information and Communications Technologies Age has created a new infrastructure - the Internet and a new domain called cyberspace - that has transformed how individuals, businesses and governments interact.

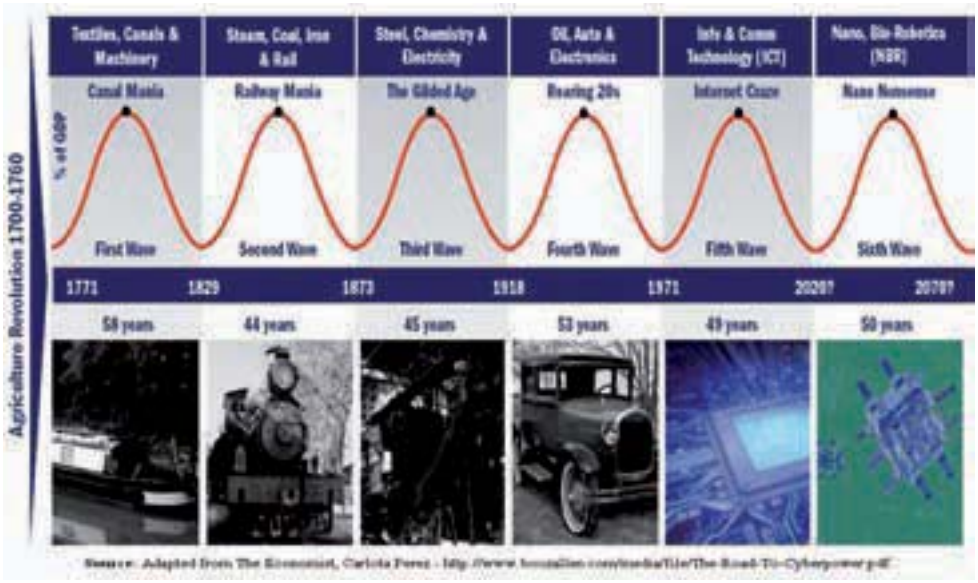


Fig.1. The waves of "Creative Destruction" - Next wave Nano / Bio-Robotics (NBR)

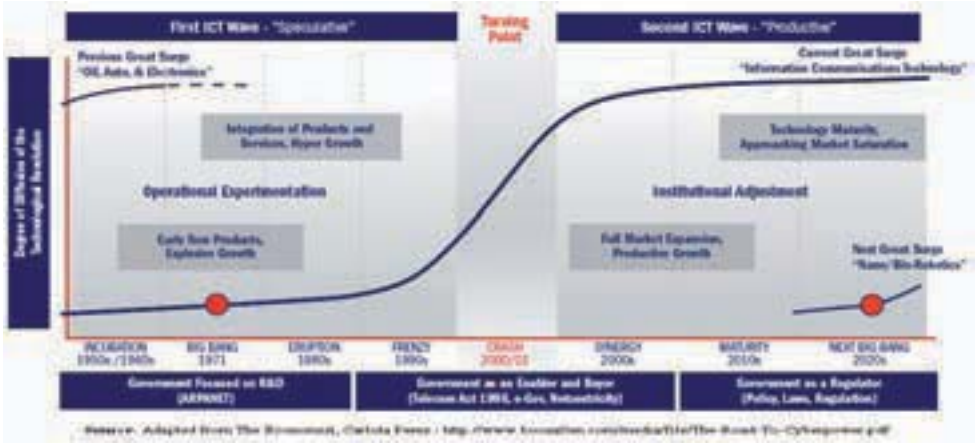


Fig. 2. Information Communication Technology (ICT) Evolution and Role of Government

Cyberspace is comprised of the networks, computers, software, hardware, and other devices (including cell phones and radios) that organizations and people use to store and exchange information across the globe; it includes the information and business processes that power the economy and allow individuals to connect and collaborate across organizational, social, and geographic borders. More importantly, while the Internet is focused on technology and operations, cyberspace is more comprehensive and includes policy and governance, technical standards, operations, human capital, and management.

The number of users and methods used to access cyberspace have grown exponentially in size, scope and complexity. By 2020, there will be almost 3 billion internet users (with most of the growth occurring in India and China), driving massive new investments in infrastructure, technology, and new security architectures, **Figure 3.**

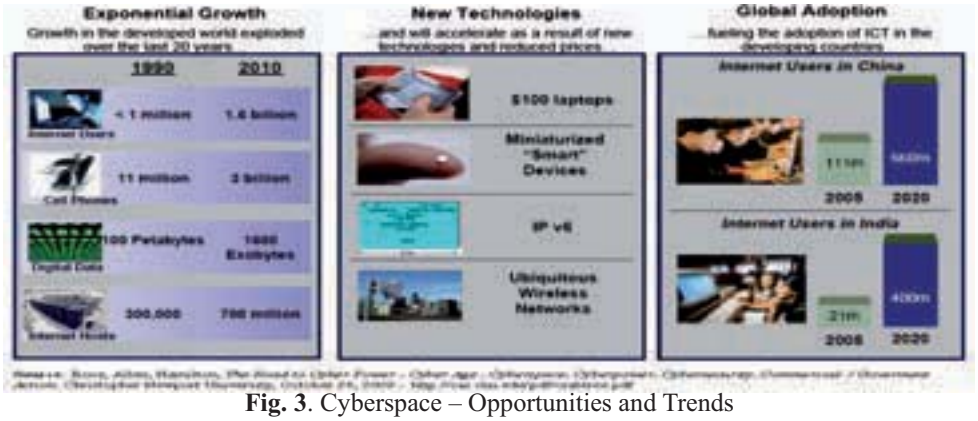


Fig. 3. Cyberspace – Opportunities and Trends

Basic advancement in science and technology [7] come about twice a century and lead to massive wealth creation. **Nanotechnology** is an enabling technology that will impact all the economic sectors, including defence industries, **Figure 4**.

As we are only halfway through the ICT wave, we can expect dramatic changes over the next 10 years as new developments accelerate the growth of cyberspace in size, capabilities, and complexity. Among the expected trends:

- semiconductors will continue to miniaturize through nanoscale manufacturing, resulting in the proliferation of billions of "smart devices" and inexpensive laptops costing $100 or less;

- these new smart devices will collect and process information, accelerating the growth of data from 100 petabytes in 1990 to more than 3,000 exabytes by 2020, growing at a compound annual growth rate of over 50 percent a year and creating a data tsunami in the process;

- ubiquitous high-bandwidth networks - both wired and Wireless - will link mobile users, smart devices, and computing clouds to create an "Internet of things";

- global adoption of Internet Protocol version 6 (IPv6) will expand exponentially the number of IP addresses available for smart devices.

These and other developments are leading to what's commonly called the Web 3.0 stage of Internet development. Web 1.0 was about digitizing data and connecting people to information via the Internet. Web 2.0 saw the deployment of social – networking applications such as MySpace, Facebook, wikis, and Twitter, which connected people

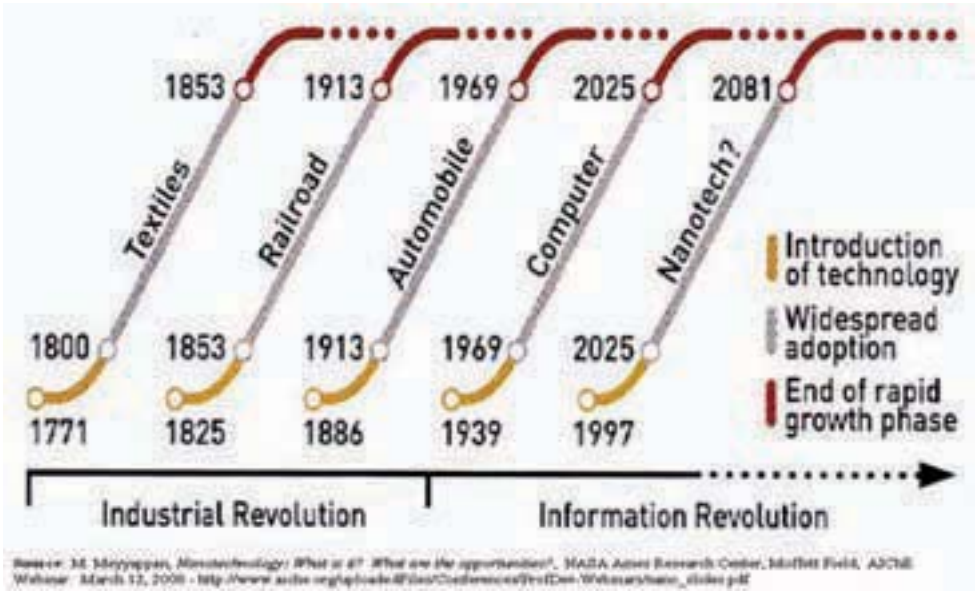


Fig. 4. Advancement in science and technology

to people, improving collaboration and creating new social ecosystems. Enabled by distributed clouds, the semantic Web technologies and other emerging applications, Web 3.0 will connect information to information in ways that significantly increase the amount and usefulness of the data collected.

Military cyberpower [6] is the application of the domain of cyberspace to operational concepts to accomplish military objectives and missions, and influence operations, as well as warfighting. Military administration, personnel management, medical care, and logistics are also enhanced by cyber tools. The growth in information technology and use of cyberspace has given the military new capabilities, but has also new challenges.

Military robots are used increasingly in wartime situations to reduce human casualties, being used for a mix of both combat against the enemy and non-combat roles [1].

The range of available military robots is huge, but a successfully one is **Multifunction Utility / Logistics and Equipment Vehicle (MULE)**. MULE [8] is an unmanned platform that provides transport of equipment and/or supplies in support of dismounted maneuver forces. The vehicle is designed to carry the load of two infantry squads, totaling about 2,000 pounds (907 kg), and support troops with water and power sources for extended operations, **Figure 5**.

Fig. 5. Multifunction Utility/Logistics and Equipment (MULE) - Unmanned Ground Vehicles (UGVs)

The MULE will be a "follower" to the human team. Each of the team members will be able to order the MULE to come forward, to support the operation. Otherwise, the vehicle will maintain a safe distance behind the team, waiting for orders. The MULE can communicate with and sometime, deploy unmanned aerial and ground vehicles (UAV/UGV) to give the squad members a true 360 degree image of the battlefield.

In 2008 LOCKHEED MARTIN displayed the latest configuration of the MULE which recently received new wheels, utilizing springs made of composite materials, instead of inflatable tires. Currently at an engineering evaluation phase, MULE is expected to mature into a full scale development system and be ready for deployment with the first Future Combat Systems (FCS) units of action, around 2013-1014. The company expects a requirement for 1,530 vehicles, based on current Army plans.

In the last 30 years, evolution in product, manufacturing and quality (**Figure 6**) implied some important „steps" from intelligent mechatronics (data & control intelligence) to product that thinks and links (information & computer intelligence) and products that learn, grow, reconfigure, and sustain (knowledge & distributed intelligence), or from factory automation (flexibility) to enterprise integration (agility) and e-logistics & e-manufacturing (velocity) with near-zero-downtime & sustainability and asset optimization [5].

The characteristics in the evolution [4] of product and service value imply for infotronics systems IT - embedded autonomous service, smart and predictive systems and zero-breakdown productivity (**Figure 7**).

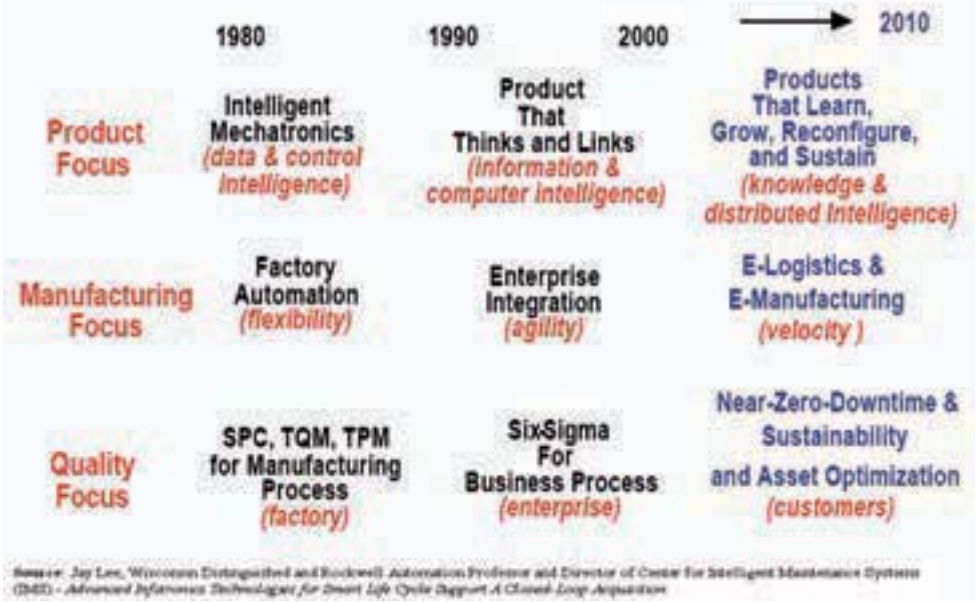


Fig. 6. Evolution in Product, Manufacturing and Quality

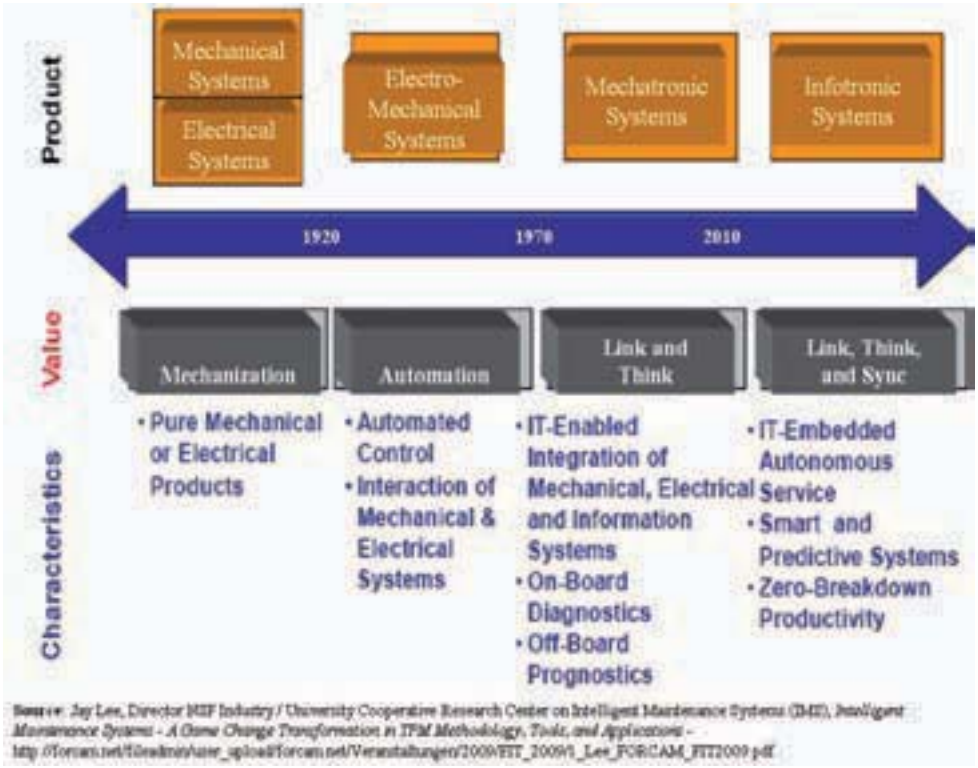


Fig. 7. Evolution of Product and Service Value

Autonomous logistics processes are an approach to face the current challenges in logistics by use of modern information and communication technologies (ICT) and novel decision-preparing and decision-making tools. Risk management is needed to make the autonomous logistic processes reliable and robust against suddenly appearing events which were not considered during the planning phase of the logistic processes. The ongoing development of modern ICT, e.g., telematics, mobile data transfer, and transponder technology open new opportunities for the development and emergence of intelligent logistic systems which can satisfy the requirements of autonomous logistic processes. The main technical challenge of autonomous logistic processes is the realisation of autonomous decision taking in logistic entities that have no reliable connection to a central control system.

However, in order to maintain a controllable dynamic logistic system, the technological development needs not only to provide autonomous replacements in the short-run for standard logistic operations, but it must also take into account that introducing autonomy will impact the operational and strategic management of logistic services. In this respect, the vision [5] on smart life cycle support for military systems/equipment is presented in **Figure 8**.

Fig. 8. Vision on smart life cycle support for military systems / equipment

The Watchdog Agent is a toolbox of algorithms that can autonomously asses and predict the performance degradation and remaining life of machines and components. This information can be fed to a closed-loop product life-cycle management system, **Figure 9**. The Watchdog Agent provides machine level intelligence and is synchronized with the operation and synchronization level intelligence. It includes signal processing and feature extraction, diagnoses, performance prediction, and performance assessment modules.

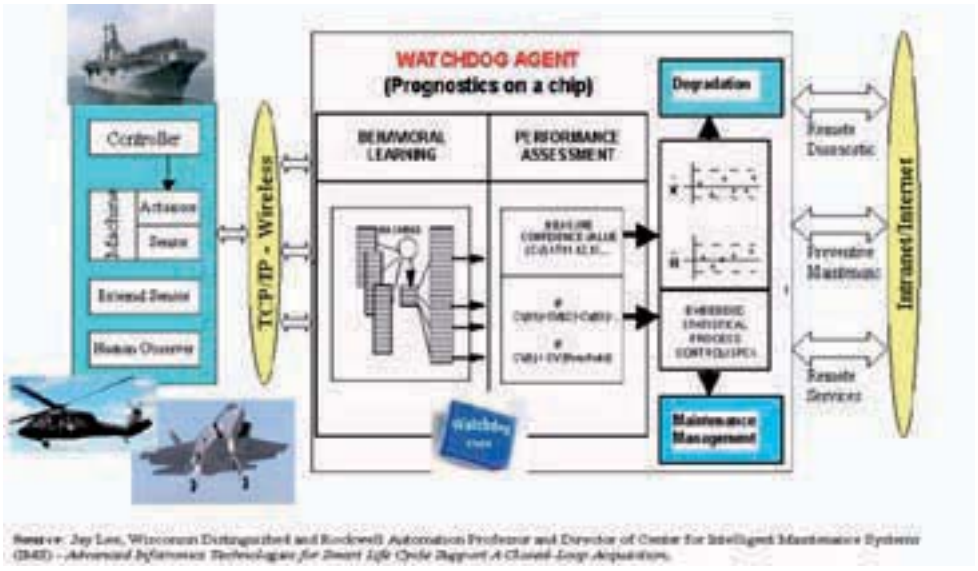
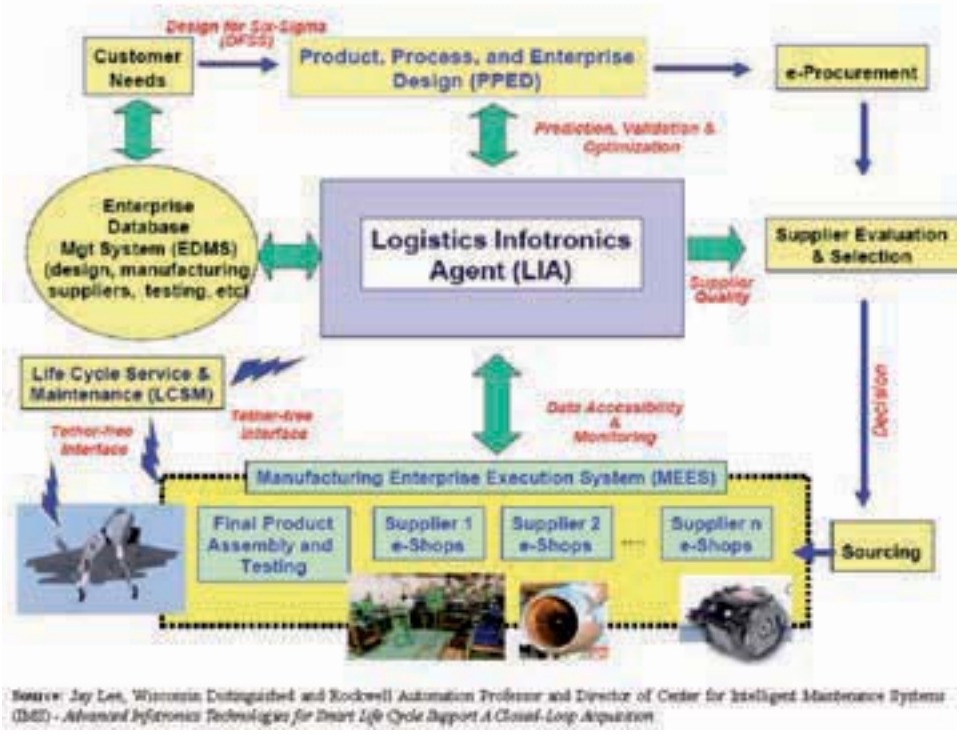


Fig. 9. Watchdog Agent – Prognostics on a chip

The toolbox consists of tools such as Neural Networks, Fourier Transform, Support Vector Machine, Self-organizing Maps, Fuzzy Logic, Logistic Regression, Hidden Markov Models, Bayesian Belief Networks, Match Matrix, Autoregressive Moving Average, Time-Frequency Analysis, in addition to others.

The Next Step: Self-Maintenance. The ability of a machine to adjust its own functionality according to its health status is an integral part of a self-maintenance paradigm. Self-maintenance requires both functional intelligence and health intelligence. This information can be fed into a functional intelligence module – e.g. controller – and the machine's operation can be adjusted accordingly. The purpose of self-maintenance is to provide enough time for maintenance personnel to become available and proper downtime to be scheduled.

Infotronics Technologies intertwine advanced information and electronics systems intelligence and enable autonomous business functions and objectives through the use of internet and other tether-free technologies (i.e. wireless, web,…). The modern logistics of military systems/equipment implies core technologies such as Watchdog Agent for Predictive Prognostics, Web-enabled Smart D2B (device to business), Platform and Tools for Data Transformation, Optimization, and Synchronization, Applied Wireless Technologies and Logistics Infotronics Agent (LIA), **Figure 10**.



Source: Jay Lee, Wisconsin Distinguished and Rockwell Automation Professor and Director of Center for Intelligent Maintenance Systems (IMS) - *Advanced Infotronics Technologies for Smart Life Cycle Support A Closed-Loop Acquisition*

Fig. 10. Logistics Infotronics Agent

Advanced infotronics technologies for smart life cycle support (**Figure 11**) means firstly the utilization of tether-free interface.

Advanced technologies applied through the life cycle logistics of the major military equipment (**Figure 12**) involves the approach in terms of programme management, systems engineering, supportability analysis, integrated logistic support elements, logistics engineering and reliability, availability, maintainability, testability, predictability and diagnosticability for the interoperability and optimal cost of major military equipment.

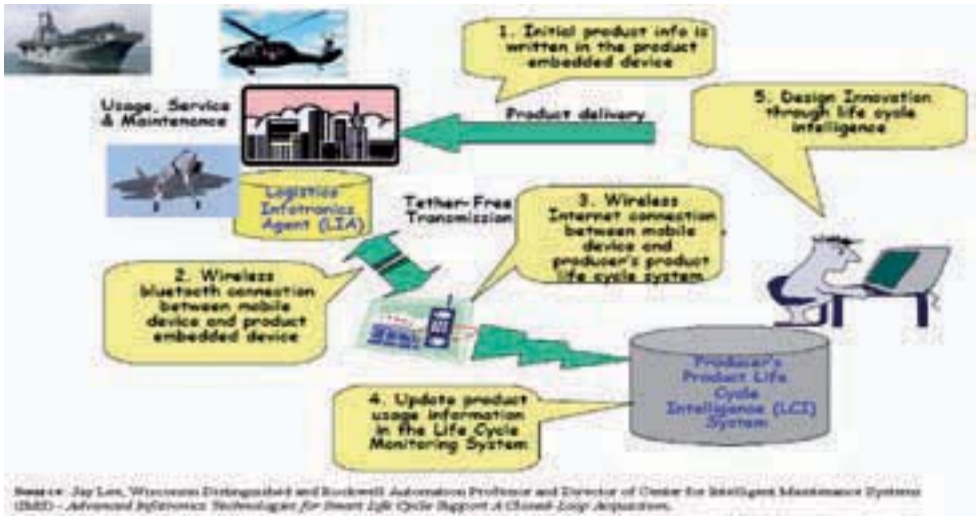


Fig. 11. Advanced Infotronics Technologies for Smart Life Cycle Support

Fig. 12. Life cycle logistics of major military systems

For the near future traceability, predictability and diagnosticability through the advanced technologies will lead the armed forces to establish a guidance on the life cycle logistics of the military systems/equipment, **Figure 13**.

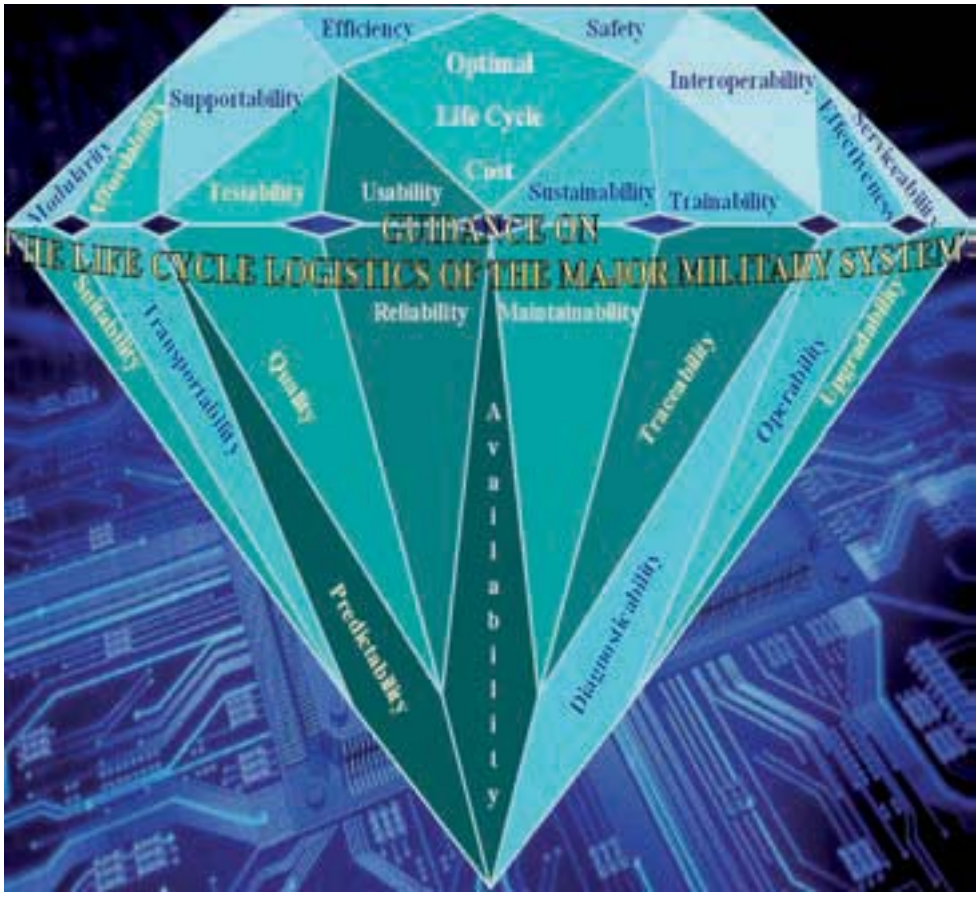


Fig. 13. Guidance on the life cycle logistics of the major military systems

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EFFECTIVE STRATEGIC DECISION MAKING

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***Abstract**: The importance of taking effective strategic decisions is very easy to understand, but in the same time it is difficult to be achieved, because it requires reforms that modify both senior leader decision-making styles and organizational structure. The decision-making process is familiar to everybody, being applied in almost all aspects of our public or private lives, at an individual or aggregate (organizational) level.*

This paper presents many interesting issues related with strategic decision-making process, like a discussion about the decision-making process in the military. Also presents ways to increase the efficiency of strategic management, by debating whether the rational analytical approach or the intuitive way of thinking is preferable and if finding a satisfactory solution is suitable than searching for the best possible alternative.

Keywords: decision-making process, strategic decisions, organizations.

1. INTRODUCTION

The importance of taking effective strategic decisions is very easy to understand, but in the same time it is difficult to be achieved, because it requires reforms that modify both senior leader decision-making styles and organizational structure.

A decision could be defined as *"the act of reaching a conclusion or making up one's mind"* [1]. Another definition said that it is *"a position or opinion or judgment reached after consideration"* [2]. In comparison with tactical decisions, that affects the day-to-day implementation of steps required to reach the goals, strategic decisions are *"chosen alternatives that affects key factors which determine the success of an organization's strategy"* [3].

The decision-making process is familiar to everybody, being applied in almost all aspects of our public or private lives, at an individual or aggregate (organizational) level. It is commonly assumed that all decisions lead to some results that at least diminish current issues. At a closer look it seems that sometimes it is preferable not to act, instead of doing things in a wrong way, with unexpected consequences.

Effective decisions need a solid understanding of realities and social environment. All of us are confronted with various decisions to make on a

daily basis. Some are small and have minor consequence, while others are huge and with a great influence on our existence.

Let's identify some prerequisites for making a good decision:

- clearly identify the objectives or outcome you want to achieve;
- gather as many information you can to assess your options;
- elaborate several possible choices in accordance with your values, interests and abilities;
- reflect on the possible outcomes of each course of actions and estimate if it's acceptable;
- make a brief list of pros and cons, along with what you consider to be very important / important / less important;
- learn from previous experience and ask for opinions from those who had a similar situation to contend with.

It is preferably that only after all those steps were completed, people make the decision and monitor the results, to make sure they obtain the desired outcome. For simple and obvious choices we can rely on intuition, but for those that are complex and difficult to make a closer look is needed.

2. STRATEGIC DECISION MAKING IN THE MILITARY

One myth of strategic decision making is the assumption that people can and should make decisions as rationally as possible. Ideally, people make decisions by identifying and comparing options to determine which one produces the optimal outcome for a given set of circumstances.

In practice, the erratic behavior of human beings clearly demonstrates that people rarely act in a purely rational manner. Instead, people use so called "mental shortcuts" to simplify and speed up their decision-making process, based on previous experience, intuition or empiric common sense.

Senior leader's decision-making process, in most cases, is a combination of rationality and intuition. On one hand, they use intuition to bind the range of possible solutions for a problem that will be later analyzed with a rational approach. Similarly, they frequently follow steps from the rational model to verify their initial intuitive judgments.

In today's military fluid environment, with lots of unfamiliar operational circumstances, experience becomes less relevant and intuition less reliable. At the same time, reasoning is also underused, because it is time consuming and needs ample information to be available.

The question here is how to reconcile those two approaches that seems to be opposed in terms of strategic decision-making. For real battle situations intuition inevitably remains essential, due to the increasing tempo of military

operations. Improving reasoning also remains important, using the information processed and shared by networks.

In conclusion, to enhance military operational problem-solving we have to merge those two ideas, to such an extent that make intuition more reliable and reasoning more time-efficient.

People generally rely on their intuition when [4]:

- *They are facing a time-urgent situation.* In extreme situations, such as firefights and battlefield triage, even short delays caused by reasoning through a formal decision-making process can result in disastrous outcomes.
- *Conditions are dynamic or goals are ambiguous.* If a situation is changing rapidly, then it makes sense to focus on a satisfying solution that can be quickly found. One can reevaluate the situation when it changes and identify a new solution if needed.
- *They have a great deal of relevant experience.* Because intuitive decision-making relies on a person's ability to match a given situation to previous situations one has seen, the more relevant experience one has, the more likely one is to use intuition and use it effectively.
- *The problem can be modeled in mental simulations.* Intuitive decision-making requires people to run mental simulations on what might happen if a given option were chosen. People can do this for a wide range of problems, some of which are fairly complex.

In contrast, people generally use a rational process when [4]:

- *They are not under heavy time pressure.* Stepping through a rational decision-making process takes more time than simply following a flash of insight. With more time, people are more likely to follow the rational approach, if only to verify an initial gut feeling.
- *Conditions are relatively stable and goals are clear.* If a situation is not changing rapidly relative to the time needed to make a decision, then a rational approach to find an optimal solution to the problem can be used.
- *They do not have a great deal of relevant experience.* If decision makers' experiences are not applicable to a given situation or insufficient to provide a basis for pattern matching, they should resort to a more rational model to guide them through problem formulation, option identification, analysis, and selection of a solution.
- *The problem is computationally complex.* Although human beings have a remarkable ability to use intuition in complex circumstances, at some point

complexity overwhelms the ability to grasp a given situation. At that point, the quality of decisions erodes along with the ability to recognize situations or run mental simulations.

For making effective strategic decisions it's not enough to have good rational planning and resource allocation processes. The decisions account for a broader range of factors than those found in the analyses conducted at tactical level. Even if the results of the rational analyses offer valuable insights, senior leaders must still compare possible options across operational, political, and economic value sets.

It is difficult to compare rationally the weights and prevalence of those conflicting value sets and to do so successfully require heavy reliance on intuition, judgment, and other non rational factors.

Even so, the rational decision has a vantage point. Senior leaders must rely in part on their intuitive understanding of the net effect of their decisions across multiple objectives, but they ought to do so while taking advantage of decision support that can better inform their intuition [4].

In practice there are two critical elements required for effective military strategic decision-making:

- clear, transparent, and well-coordinated rational analyses of alternatives from the decision support system; and
- sharp personal intuition and judgment.

The decisions must be consistent with the organization's broader interests. If there are situations when a rational decision is preferable (especially when the decision is not final and should be endorsed by some high level committee) the organization must encourage such behavior among its members, by:

- providing standard operating procedures;
- creating an organizational culture that promotes a rational set of values and norms;
- establishing a formal chain of command for promulgation of authority and communications;
- establishing programs for training and indoctrinating new members;
- controlling access to information;
- dividing work among members and/or subunits.

3. DECISION MAKING AS A FOUNDATION FOR STRATEGY

Managers in charge of strategic decision-making are capable of providing only satisfactory solutions to problems. Most human decision makers *"whether individual or organizational, are concerned with the discovery and selection of satisfactory alternatives; only in exceptional cases are concerned with the discovery and selection of*

optimal alternatives" [5]. As a result, it appears that strategy must deal with the notion of choosing the first option that appears to satisfy a basic set of criteria.

Decision-making under uncertainty is the central idea in strategy and it consists of lots of strategic decisions. The development of effective and successful strategies requires the development of three organizational skills:

- *anticipating the shape of the uncertain future.* This is no easy task since uncertainty involves not only uncertainty about the probabilities of the alternatives available, but also uncertainty about the probability distribution itself;
- *generating new alternatives for strategic decisions* (i.e. through the role of imagination and intuition in decision making);
- *implementing new decisions to make adaptation more effective.* Adaptation refers not only the level of the organization adapting to its environment, but also at the individual level ("*What a person wants and likes influences what he sees; what he sees influences what he wants and likes*" [5]).

It is widely recognized that effective strategic decision making is important for the evolution of organizations and for the creation and capture of value.

The decision problem is one of finding the best course of action which will fulfill the aspiration of the organization. This requires the ability to use imagination in creating new strategic possibilities.

4. DECISION-MAKING AND THE BEHAVIORAL THEORY

In practice, the fierce competition for economic, politic or social success induces a new dilemma regarding strategic decisions: how much quality is enough? In other words, is finding a satisfactory solution preferable than searching for the best possible alternative?

The behavioral theory of strategic management states that in decision making process "satisficing" (satisfactory solution) prevails optimization (best option). The reason is because *"the capacity of the human mind for formulating and solving complex problems is very small compared with the size of the problems whose solution is required for objectively rational behavior in the world – or even for a reasonable approximation to such objective rationality"*[6].

"Decision-making" in the behavioral theory is assumed to take place in response to a problem, through the use of standard operating procedures and other routines, as

also through search for an alternative that is acceptable from the point of view of current aspiration levels for evoked goals.

There are four factors that affect decision-making process: the definition of the problem, the existing rules, the order in which alternatives are considered, and by anything that affects aspirations and attention [7].

Within this framework, four concepts were developed:

- *Quasi-resolution of conflict* - organizations function with considerable latent conflict of interests but do not necessarily resolve that conflict explicitly;
- *Uncertainty avoidance* - even if organizations try to anticipate the future as good as they can, they also try to restructure their working environment in order to minimize their dependence on anticipation of the highly uncertain future;
- *Problemistic search* - search within a organization is stimulated primarily by problems and directed to solving those problems;
- *Organizational learning* - assumes that firms learn from their own experiences and the experiences of others.

In conclusion, after defining the notions of decision and strategic decision, followed by a discussion about the decision-making process for the military, we end-up by debating whether the analytical or the intuitive way of thinking is more powerful.

Even if the popular "head versus formula" controversy established the superiority of rational analytical approach over the intuitive one, the extension of this approach to strategic decision-making is problematic, because those are characterized by incomplete knowledge.

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LIFE-LONG LEARNING AND TEACHER DEVELOPMENT: CAN STUDENTS TEACH THEIR TEACHERS?

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The paper is centered upon the student as a source of learning for the language teacher and the biunivocal, teacher-student, student-teacher knowledge and experience transfer, in the context of life-long learning and the development of motivational strategies related to military foreign language education.

Key words: life-long learning, adult education, teacher development, motivational strategies

1. INTRODUCTION

The role of the teacher has changed in recent years. From a provider of knowledge in the target area and of language standards, he/she has turned into a facilitator-mediator-enabler of knowledge acquisition and a creator of opportunities for students to develop into good users of the target language.

My thesis is that while for any student life-long learning is a must, stipulated in the national education laws of most countries, be it done through attendance of successive and gradual training forms, self-study as follow-up of the organized course, or as autonomous learning – the student being trained by the teacher to know how and what to learn, the latter, in his/her turn, is being faced with another must, in the sense that he/she also adopts a particular type of life-long learning strategies using the students as a resource for day-in-day-out learning. Far be it from me to minimize the importance of teacher training and development done in the traditional manner. My point is that the students are reservoirs and enablers of knowledge acquisition (either methodologywise, military languagewise or else) for their teachers.

2. DESCRIPTION OF THE GROUP

Name of the course: *Information and Public Relations* postgraduate course, organized by the Department for Joint Operations, and for Strategic and Security Studies.

Student profile: Higher education graduates belonging to the national defense system, i.e., the Ministry of National Defense, the Ministry of Administration and the Interior.

Number of students: 8 (eight), out of which 3 female-officers and 5 male-officers, ranking from junior-lieutenant to colonel.

Level of linguistic competence: mixed abilities, ranging from B1 to C1.

The activity I used and which I intend to refer to in the present paper involves integrated skills: reading, speaking, listening and, to a little

extent, writing. It is of the case study type, highly appreciated by students in general, no matter the course they are taking, because it relates to negotiating in a foreign language, supporting opinion and joint decision making. The activity, presumably well known by teachers of English delivering upper intermediate and advanced courses is called "Who Gets the Heart?"

What was my role as a teacher in the opening phase? To announce the role the students will take during this activity, the setting and their task, as follows: "*You are the members of the heart transplant team at the University Hospital. At the moment, you have seven patients who desperately need a transplant if they are to have any chance of living. All seven patients are classified as 'critically ill' and could die at any time.*

You have just received the news that the heart of a 16-year old boy has become available. Consequent to a car accident, he is brain-dead. Speed is extremely important in your decision as to which of the following patients is to receive the heart. Not only might one of the patients die, but the donor's heart will also begin to deteriorate".

The handout the students then receive contains a list of 7 (seven) potential receivers of the heart plus an extra 8th option, (i.e., *None of the above, save the heart for someone else)*.

Under each brief description, there are four lines to be filled in after individual familiarization with each medical file, as follows:

1. Reasons for recommending the patient to receive the heart.
2. Reasons against recommending the patient to receive the heart.
3. Individual ranking, and, eventually.
4. Group ranking.

3. SUMMARY OF THE DESCRIPTION OF POTENTIAL RECEIVERS

A pattern is followed in order to describe briefly each case, consisting in the patent's name; sex; age; marital status; number of children (if applicable); education; current occupation; personal/ professional achievements; medical evaluation conducive to the assessment of survivability.

Last, but not least, no medical experience or knowledge is required from the participants. On the contrary, being as objective and unemotionally involved in the case is highly preferable.

4. THE ACTIVITY "WHO GETS THE HEART?"

The activity is complex, insofar as it integrates all four skills, involves reading the material (scenario), taking notes, listening to each other, expressing opinion, and discussing/ debating on an abstract topic. All the students had the opportunity to work closely together during the 90 minutes the activity took to unfold.

On the whole, the goals of the activity were of two kinds:

1. Language-related:

1.1. To develop the students' sub-skill of understanding spoken and/ or written materials on abstract or complex topics;

1.2. To develop the students' sub-skill of delivering a speech or presentation on a complex topic, integrating pertinent examples, secondary arguments, and specific points so that to reach an adequate conclusion;

1.3. To develop the students' capacity of leading and taking part in a discussion using various language functions in order to hypothesise, support opinion, agree and disagree, etc. so as to reach an agreement and build consensus.

2. Intercultural education-related (keeping in mind that the scenario is based on a US setting, fictitious characters of the North-American environment against which the Romanian-bound culture will be used in order to solve the task):

2.1. To develop the students' capacity of adequately interpreting cultural resemblances and differences and mediating cultural misunderstandings;

2.2. To increase their effectiveness in working as a group by developing interpersonal skills, sharing beliefs and experience, becoming thus more flexible.

Step 1 was based on individual reading, followed by the individual choice. The students had 20 minutes to read the information and to make an individual choice, according to his/her personal reasons, objective or not.

Step 2 involved the following sub-skills:

- sustaining opinion related to the individual choice,
- careful listening to each participant,
- asking for clarification,
- contradicting,
- justifying,
- negotiating,
- compromising if necessary
- reaching consensus.

The students felt it necessary to design together a set of criteria in order to help them make an objective choice, to judge with the mind and not with the heart, as the scenario might lend itself to emotional involvement with one potential receiver of the heart or the other.

The criteria created and set by students in order to make an objective choice were as follows:

- Age
- Family
- Health evaluation
- Value for society
- Is the investment worthwhile?

The group discussion which followed observed the set of rules which are always taught by teachers and internalized by students for this kind of activity. The final decision was that reached by the group and which in only one case out of the 8 participants coincided with the original individual choice.

Finally, the students went back to their original individual stand. They were asked to think back on their work as a team and discuss what they found useful, challenging, interesting in working together. After this stage, I carried out a debriefing of how the group had functioned. The questions asked depended upon the learning

I wanted the students to achieve from the exercise, by encouraging reflection on their experience. Some examples of questions I submitted to their attention are given below:

- How did you reach the joint decision?
- What role do you think each member adopted?
- Did you listen to each other during the supporting opinion phase?
- To what extent do you consider that the preliminary individual proposal resembles the final proposal?
- How did you manage to come to a common decision although in the beginning you had different ideas with respect to the person who will get the heart?
- What did you learn about the functions of a group?
- What would you do next time in order to improve joint decision-making?
- What made your group work and your group as such successful?

4.1. REMARKS

The answers the students produced were more or less the same for all participants who, by stating them for the whole class, became the more so aware of what makes a group successful. The key issues pointed out were:

- They felt close to each other and responsible for each other and for the accomplishment of their tasks;
- They built a supportive, positive atmosphere;
- As everyone was willing to listen to, and learn from, the others, communication was open;
- Group members could compromise and make decisions together despite their initial differences of choice;
- They also could learn about each other's assumptions and beliefs (most of which were culturally induced);
- As members understood, trusted, and accepted each other, there was cooperation;
- Possible differences of opinion were confronted openly and contradictions were settled constructively;
- There was a sense of fun.

When introducing the case study type of activity in the course syllabus, the expected outcome was to operate adjustments on the teaching material in order to make it meet the students' real needs, namely to serve their language objectives, to facilitate their communicative and social development as well as to increase their motivation. From my teaching experience, I can state beyond any doubt that in any group there is a range of interests for the different members, so that, for a teacher, it is almost impossible to predict what kind of activity will arouse the students' intrinsic motivation. Anyway, due to the fact that in the group under discussion the course members came from the same professional background, namely public relations, the case could – even slightly modified if need be – inspire maximum involvement.

In the student evaluation stage, each participant received an evaluation sheet followed by a discussion. Some important observations could be made afterwards, as follows detailed below.

The case under discussion was highly appreciated by all 8 participants because it mainly involved productive skills and creative use of the language, although 60 % considered there was a balance of utilizing receptive (reading and listening to the participants' opinion) and productive (speaking) skills;

The negotiation phase was by far the most attractive and popular task, because the course topic, as stated in the Description of the group chapter, was Information and Public Relations postgraduate course in which negotiating skills in Romanian were focused on; The case under discussion was considered by everybody difficult to solve, in the sense that the participants' emotional involvement could not be avoided;

The case study is not a transmitter of knowledge method per se, but rather a way of developing/ reinforcing certain skills and sub-skills (supporting opinion, contradicting and justifying, negotiating, compromising, building group consensus, team work and joint decision making).

4.2. LESSONS LEARNED

The lessons I learned from this particular group performing the activity under discussion are presented below.

From the development of this activity and the discussions which followed, new observations and suggestions emerged. This taught me, once again, that each group is particular and the teacher's expectations of a certain outcome for the same activity should never be determined a priori.

There are, nevertheless, some overall conclusions to be highlighted in point of methodology as a result of using this particular activity in a range of groups made up of students coming from different institutions.

The teacher's role in 'Who Gets the Heart?' – as in any other similar scenario based on joint decision making – is necessarily based on fostering ongoing interaction between individuals and/or teams or the whole group. The teacher should by no means interrupt or take over control, even if at some moments we might feel that some important aspects or points have not been touched upon.

It is the group who makes the final decision. With every group, the winner of the heart is different. Who gets the heart becomes less important: the decision making process is thus more important than the outcome.

What I always tell my students (the Information and Public Relations postgraduate course students included), from the very beginning of the activity, is that there is not one right solution: the process they follow is right or proves wrong, in case there is no consensus. How many times have we, teachers, not made conscious effort not to be judgmental about students' remarks or ideas?

Let me refer now to the use of language during the activity: my idea is now to adopt a relaxed attitude as to it, insofar as group dynamics is focused on and what we want to get, in the end, is a sense of achievement and ownership, as well as a sense of responsibility, on behalf of the students, of the success of the overall activity.

Of great importance is the choice of the topic, which should be tailored to the group's professional background as much as possible. On this occasion, it is worth mentioning that one student shared his professional experience by enumerating the usual criteria commonly used in Romania by the transplant boards, but these criteria were not imposed on the group and, moreover, the students considered they did not sound satisfying for their approach to the topic (insofar as the criteria were unanimously considered too schematized and based on bare scientific, social and sociological data). The idea is to identify and provide diverse and challenging input along with complex topics for groups with similar professional background, experience and interests.

Of equal importance is that such activities based on case studies require an appropriate level of linguistic competence. If this requirement is met, students confess they find it very stimulating to deal with this type of activity.

5. CONCLUSION

The behavioral and communication aspects of case studies should be given extra emphasis as the individual students' self-awareness of their communication strategies could be raised as a consequence of using them, which, in their turn, may lead to systematic self-improvement of these skills.

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THE IMPORTANCE OF MEASURING INDIVIDUAL PERFORMANCE TO INCREASE ORGANIZATIONAL PERFORMANCE

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Management theory and practice suggest a wide range of instruments used in organizations in order to measure performance, whether individual or organizational. The purpose of this paper is to mention some of these tools, with an emphasis on the balanced scorecard. Although numerous organizations have adopted the balanced scorecard as a means to increase organizational performance, few of them have succeeded in making it really work. Moreover, individual performance appraisal is often regarded as a coercive instrument rather than a procedure meant to foster the employee's performance which, in turn, should contribute to enhancing the organization's overall performance. The hereby article aims at highlighting some of the advantages, as well as shortcomings of the balanced scorecard, followed by drawing conclusions regarding the way in which the balanced scorecard can and must contribute to organization's well being.

Key words: organizational performance,individual performance, measurement, appraisal, balanced scorecard.

1. INTRODUCTION

In the '90s, Robert Kaplan and David Norton published a study entitled *"The balanced scorecard: measures that drive performance"*, which advanced the concept of balanced scorecard as an effective means to evaluate organizational performance. The novelty of their approach consisted of the idea of measuring organizational performance from more than one perspective, that is, the financial one. Thus, the new tool viewed organizational performance as a four-faceted instrument, which focused on assessing areas such as: customer relationships, customized products, product innovation, employee skills, motivation and information technology. Thus, instead of judging organizational success exclusively in terms of profit and share growth, the authors view organizational performance as a comprehensive process meant to offer an overall understanding of the organization as a balanced structure, in which four different aspects contribute synergistically to the general performance.

Although adopting the balanced scorecard is an organization-wide cultural change, it may also be implemented as a cascading

process, in which every business unit/ department/division/section etc. adopts, in its turn, its own balanced scorecard.

Mention should be made that one of the main roles of the balanced scorecard is to translate organizational strategy, often formulated in abstract terms, into more simple and doable tasks that are to be put in practice at lower hierarchical levels. It is thus clear that adopting and implementing a balanced scorecard based culture requires an accurate understanding of the organization's mission, vision, strategy, goals and objectives, which need to be transformed into measurable tasks.

2. THE LINK BETWEEN INDIVIDUAL AND ORGANIZATIONAL PERFORMANCE

Notwithstanding that the balanced scorecard pertains to using in various organizational contexts, many scholars consider that it can be a great tool to manage IT functions as a result of its reliance on data collection and processing. Also, Tillmann (2008) mentions some of the critical business questions which aim at translating organizational strategy into smaller, measurable tasks, as follows:

1. What is the purpose of the business?
2. Who are the customers?
3. What do the customers need and want from the business?
4. What products or services should the business provide?
5. How will success be measured?

In the light of the above, one may notice that one of the critical questions which a business should address refers explicitly to measuring organizational performance. In this context, the author mentions the use of the balanced scorecard and its limited success in implementations, despite it being regarded as a powerful tool to assessing organizational performance. Among the factors impeding the effective utilization of this tool, one may list the difficulty of gathering relevant and/or accurate information, some people's not wanting attention placed on their performance, or misunderstandings caused by various perceptions related to the same reality, e.g., IT shops sell technology, but users buy service.

The question naturally arising is: why do many people resent being assessed? One possible answer could be that many managers, regardless of their hierarchical positions, lack the necessary skills to do this job more meaningful and less stressful for both parties involved. On the one hand, the manager or the supervisor is responsible for getting results, but has no say in selecting the people that he/she will work with inside the team. As Myland points

out, "*the absence of power to make decisions in the human resource arena almost inevitably undermines the supervisor's responsibility and renders meaningless any attempt to praise, reward or get tough when things go wrong*" (p. 3).

On the other hand, it is in people's nature to dislike being placed under a magnifying lens in order to be evaluated. If they have been assigned tasks without having a say in doing that, the frustration is even bigger. In order to overcome such obstacles to effective performance appraisal, Kaplan (2007) suggest that while progressing in his/her career every employee should test himself/herself by asking himself/herself certain key questions regarding to areas such as: vision and priorities; managing time; feedback; succession planning; evaluation and alignment; leading under pressure; staying true to oneself. By asking such questions, the author considers that an individual may find it easier to assess oneself and, therefore, will be more prepared to undergo the assessment process performed by his/her superior.

Another aspect to highlight in this respect is the importance of setting high standards for teams and individuals as well, and – more importantly – making sure that everyone in the organization is aware of these standards. This is mainly ensured by the balanced scorecard, which fills the gap between strategy – the abstract purpose of the organization – and individual tasks – the measurable part of the overall purpose of the organization. In this respect, Green (1995) expresses the importance of integrating individual performance into organizational performance:

"*Not only do sales managers and supervisors need sufficient information to enable them to monitor performance, so also do the individual members of the team. Time and time again, it has been proved that when teams are able to assess for themselves, how they are performing against agreed targets and standards, they respond positively. Key ratios appropriate to the industry concerned can be used to establish company norms and drive up performance. "High flyers" should be encouraged to log their "personal bests" as targets against which others can compete"* (p. 6).

The importance of individual performance and its appraisal within the organization-wide performance cannot be overstated, in spite of the fact that the way in which organizations are evaluated depends on how clear their goals are. If in case of clearly defined goals their assessment is easy to do by comparing them with the achieved results, in case of ambiguous goals organizational performance is measured by

means of other dimensions such as profitability, attracting and sustaining resources, or satisfying/exceeding key stakeholders (Sowa et al, 2004).

When examining organizational performance, one should identify a set of objective indicators that help measure this performance as accurately as possible. Among these indicators, theorists (Herman and Rentz, 1998, Stone et al., 1999) mention the following: a formal mission statement, a strategic plan, the human resource system, an independent financial audit, and an information technology system. As one may easily notice, all the aspects previously listed are related or derived from the balanced scorecard. Whereas the mission statement is translated into simple, measurable items by means of the balanced scorecard, the rest of the elements are identified in the balanced scorecard quadrants connected to people, finances, processes, and customers. Among these dimensions, the human resource systems are of paramount importance as they foster individual performance across the organization.

Mention should be made that management literature points out the direct correspondence between employee satisfaction, employee productivity or performance, and organizational effectiveness or performance. As Sowa et al. (2004) emphasize, "the most common objective measure of employee satisfaction is employee turnover" (p. 719). Furthermore, the authors consider that employee motivation impacts their professional performance, i.e., organizational performance as a whole.

3. CONCLUSIONS

The final section of this paper aims at highlighting the main advantages of using the balanced scorecard in measuring organizational and individual performance and the tight connection between the two elements of performance.

As the "parents" (Kaplan and Norton, 1996, p. 19) of the balanced scorecard point out, organizations use this tool in order to:

1. clarify and gain consensus about strategy;
2. communicate strategy throughout the organization;
3. align departmental and personal goals to the strategy;
4. link strategic objectives to long-term targets and annual budgets;
5. identify and align strategic initiatives;
6. perform periodic and systematic strategy reviews;
7. obtain feedback to learn about and improve strategy.

As one may infer, this instrument bridges the gap between individual and organizational performance

by transforming the organization's overall goals and objectives into clear and measurable individual tasks.

In spite of the obvious advantages of implementing a balanced scorecard based culture in an organization, however, there are cases when this system does not work in practice. Unless there are periodical reviews and unbiased feedback, both provided and collected, the balanced scorecard as a performance measurement system can be time-consuming and subjective. Also, some cultures or organizational procedures simply do not match the balanced scorecard due to some constraints such as delayed feedback or setting limits on the incentive for an employee who works extra hard.

Another important motivating factor is to involve employees themselves in setting the goals and parameters that directly affect them and their area of responsibility. This involvement impact positively their productivity, and thus measuring their individual performance is no longer regarded as a potential coercive pretext.

A challenging aspect of a manager's activity is to embed the balanced scorecard in the process of organizational change, which itself is a difficult time. However, this evaluation method is meant to maintain and monitor critical feedback loops. As Ho and McKay (2001) point out, "*the difficulty in business is that managers tend to take a snapshot of an isolated part of the system and make decisions based on that snapshot and wonder why the deepest problems do not get solved [...]. During organizational change, quick fix solutions are developed without attention to longer term consequences that may undermine the organization in the long run*" (p. 13).

To conclude upon the prerequisites for the successful implementation of the balanced scorecard as a tool to measure individual performance, one should notice that the number and nature of parameters play a vital role in the process, in the sense that they must be clear and easy to monitor. Provided that these requirements are met, individual performance appraisal can be performed in an objective and constructive manner, which enhances the employee's feeling of contributing effectively and efficiently to the overall organizational well being. Consequently, he/she knows exactly how to be an important part of organizational performance instead of embodying the frustrating and counterproductive metaphor of "*being a small cog in a big wheel*".

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CONSIDERATIONS REGARDING DIFFERENT APPROACHES TO MEASURING LABOR PRODUCTIVITY

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Assessing the productivity of factors of production has been a key issue for economists for many decades, as the development and well-being of a govenrment sector, industry or company have been very early on linked to the way in which inputs are used in order to produce outputs. In this respect, the main aim is to use the available (and often scarce) resources (human, material, capital, information etc) in the most efficient and effective manner as to generate the most output; in othr words, to optimize te use of resources in order to produce the desired results.

Key words: input, output, factors of production, productivity

1. THE ISSUE OF PRODUCTIVITY

Assessing the productivity of factors of production has been a key issue for economists for many decades, as the development and well-being of a govenrment sector, industry or company have been very early on linked to the way in which inputs are used in order to produce outputs. In this respect, the main aim is to use the available (and often scarce) resources (human, material, capital, information etc) in the most efficient and effective manner as to generate the most output; in other words, to optimize te use of resources in order to produce the desired results.

There is no consensus regarding the definition of productivity, as the meaning varies depending on the purpose and area of specialization. A very broad definition of the productivity presents the concept as „the relation of output to input in the manufacturing transformation process". [1]

Other authors provide a more detailed definition of productivity, based on there main categories:

- The technological concept: the relationship between ratios of output to the inputs used in its production.
- The engineering concept: the relationship between the actual and the potential output of a process.
- The economist concept: the efficiency of resource allocation. [2]

The most commonly used approach of defining productivity is the the cost-based assesement, based on the production function, equivalating production with productivity. This approach links the inputs to outputs and is aimed to at identifying the maximum possible output that can be produced for a given amount of input or the minimum inputs to be used to achieve a given output. While this approach has the benefit of being of providing an easier way

of calculating productivity, it has the drawback of providing a too general picture.

Another method used for assessing productivity, known under the name of partial productivity, tries to offer a more detailed view of how a specific input factor contributes to the formation of the total output and may help in making decisions as to the best mix of production factors (such as using more performant equipment instead of human labor). One of the advantages of using partial productivity is that it allows the measurement over time of the evolution of the relationship between inputs and outputs. One of the drawbacks of this method is that by relating output to a single input, it sometimes oversimplifies the reality and does not consider the complex relationships and tradeoffs between inputs and how they contribute as a whole to the creation of the output.

Partial productivity is mostly used in the form of single-factor productivity, refering to the measurement of productivity presented as a ratio of output and one input ŧt frequent factors of procution (labour, material, capital), they can be used to evaluate partial productivity by measuting indicators such as:

- indicators measuring the contribution of labor to the output (labor productivity):
  - output per man-hour worked
  - output per person employed
  - revenue per person employed
  - no flying hours per pilot per year or month
  - no. hours in class per proffessor
- indicators measuring the contribution of material resources to the output (material productivity):
  - output per value of materials used
- indicators measuring the contribution of capital resources to the output (capital productivity):
  - output per fixed capital expenses
  - output per working capital expenses.

Another way of measurig productivity tries to overcome the narrowness of the single-factor approach by relating the total outputs to the total inputs (all the factors of production used – labor, material, capital, energy, information etc).

An extention of this approach tries to take into consideration not only the tangible inputs, but also the intangible factors that influence productivity, variable(s) which account for effects in total output not caused directly by inputs. This approach, named *total factor productivity* refers to the portion of output not explained by the amount of inputs used in production. As such, its level is determined by how efficiently and intensely the inputs are utilized in production. [3]

For example, a winter with heavy snows and blizzards may generate higher costs (and lower incomes) for an airport than a milder weather year. This is an influence variable over the output, but it is not directly related to the inputs.

The above approaches to determining productivity are by no means exhaustive and there is no “ideal” way of determining the efficiency and effectiveness in using inputs to generate outputs. The optimum method has to be chosen depending on the context and purpose, and usually a combination of approaches is desirable to get an

accurate picture of the productivity and the stranght and weakenesses of an organization.

2. DETERMINING LABOUR PRODUCTIVITY

As with the overall concept of productivity, labor productivity is a relativ ely simple concept which is so easily defined. The most common definitions of labor productivity refer to the amount of goods and services produced by one hour of labor. Thus it is described as the rate of output per worker (or a group of workers) per unit of time as compared with an established standard or expected rate of output.[4] Labor productivity does not refer only to a company, it may also be used as a measure of the economic growth of a country, by assessing the amount of real GDP produced by an hour of labor (GDP per person employed).

These indicators are useful for generating a picture of how much labor contributes to the overall output, but as with other measures of productivity, managers are faced with many challenges in the interpretation of results deriving fron calculations of productivity and in the attempt to include in these calculations both quantitative and qualitative factors. This is a challenge both at the level of an economy and at the level of an organization.

For instance, the indicator GDP per person employed expresses the overall labour productivity of a country and enables cross-country comparisons. As the GDP is calculated at market prices, as the monetary value of the final output of the activity of resident individuals and business, it incorporates all the advantages and the drawbacks of calculating the GDP. The Gross Domestic Product also incorporates market inefficiencies, speculative price increases (such as a real estate boom) and other variables, as a result it is sometimes difficult to estimate how much of the productivity increase is real and how much is just an illusion, generated by a speculative bubble.

Also, the widely used labor productivity indicator measured as the total output divided by the number of man hours worked often offers the picture of an increasing trend of the labor productivity.

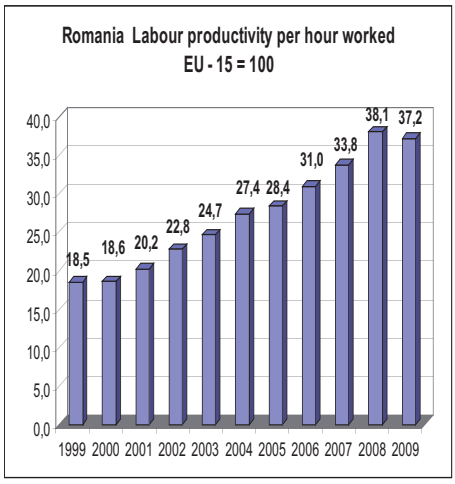

Fig. 1 Romania labor productivity per hour worked
Source: EUROSTAT

This type of indicator may be useful at the level of the economy in presenting the total output (GDP) correlated with the number of hours worked, or it may be illustrative in areas of activity where the output can be easily quantified, with the reserve that is remains a quantitative indicator and does not capture the qualitative aspects of the production.

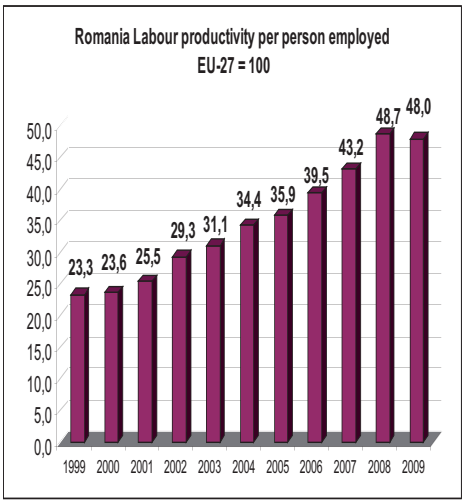

Fig. 2 Romania labor productivity per person employed
Source: EUROSTAT

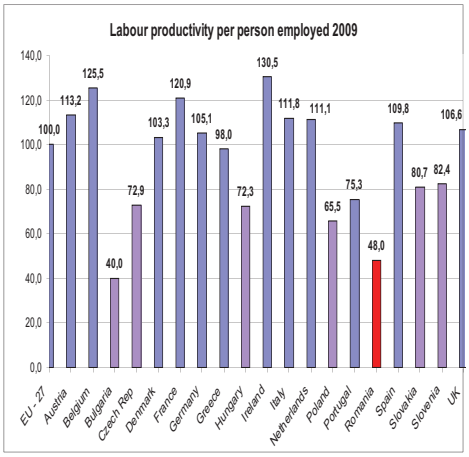

Fig. 3 Romania labor productivity per person employed 2009
Source: EUROSTAT

The increasing trend of the Romania's labor productivity per hour worked is generally regarded as a good sign, as good labor productivity is a desirable factor in any economy, but this indicator alone does not present the entire picture. An increase in employment, coupled with an increase in labor productivity is usually a sign of a growing economy, but in a recession it may happen that the labor productivity increases for a different reason – the companies can afford to hire fewer workers and demand more hours worked or to fire workers and demand the same output as before from the remaining workers.

As seen in **Figure 3**, in comparison with other countries from the EU area, Romania still experiences room for improvement in the labor productivity at national level, despite the encouraging increasing trend of the latter years. In 2009 the work productivity per person employed has been less than half the European average.

In the areas of education, health care, defense – generally speaking in the service sector, this indicator can be useful, but it generates the need for refinement and discussion in order to capture all the specifics of a particular area of activity.

The first difficulty in calculating the productivity per hour worked consists in quantifying the output of their activity. It is relatively easy to quantify the output of an worker (ex. number of bullets produced/ unit of time/worker), but the output for „white collar" activities is less obvious. Should we measure the productivity of the work of a pilot solely in the number of flying hours/ unit of time? Although tempting due to the ease of obtaining the necessary information (flight records), this indicator may prove to be misleading in many circumstances. The number of maximum flying hours/ unit of time is strictly regulated, but below this maximum level there are no clear correlations between a pilot's work quality and the number of flying hours. The question of increasing work productivity is a challenge for any manager, but in the particular

case of this example, what does an increase in labour productivity mean?

The various approaches for this problem have been classified in several categories [5]:

- the managed growth approach, meaning that the output increases faster than input
- the working smarter approach, refering to obtaining more output from the same input)
- more output with a reduction in input (considered as „the ideal" approach, but as with any ideals, this is the least likely to be achieved in the real world).
- greater efficiency approach, meaning that the aim is to obtain the same output with fewer inputs
- managed decline, meaning accepting an output decrease, correlated with a greater decrease in input.

In this particular example, one approach of increasing the work productivity may be to increasing the number of flying hours/pilot/unit of time up to the maximum limit admitted by regulations – increasing the output for the same input.

Apparently this measure would lead to a better productivity, but the approach ignores the potential problems deriving from pilots working longer hours – from lower motivation to small, correctible mistakes up to mistakes leading to major financial and human losses caused by lack of attention, fatigue etc.

Should we replace the no with flying hours with the number of passengers carried as the output for the pilot's activity? Since the number of passengers carried in one flight (together with the size of the plane) is not a result of the pilot's decision or performance, this is not a good indicator of pilot's productivity. It would be irrational to consider that the pilot of a Lear Jet is less productive than the pilot of a 747 for the reason that the number of passengers is different.

Another approach to increasing the productivity of the pilot's work may be emphasizing the use of revenues/pilot employed as productivity indicator. This means either maintaining the same revenues but reducing the inputs (reducing the number of pilots, which in turn may lead to an increased workload for the remaining staff) or maintaining the same level of inputs, but increasing the level of revenues.

In this second case, we need to take a closer look at how the revenues are determined, as the indicator may be in some cases misleading. A decrease in the public confidence regarding travel, increased terrorist threats, declining economy etc may be external factors of influence with negative effects on the level of revenues, with no connection to the way pilots are performing their job. Using this data in calculating the labor productivity may provide the erroneous impression that the level of pilot productivity has decreased and that, in other words, they are not doing their job properly. In this case, we need to be extremely precise and selective in defining what „revenues" mean in this context, in order to identify the real problem causing the decline in productivity. Shoud we consider the revenues in general (turnover) or calculate productivity using the profit? Ideally, we should use for our calculations the revenues directly connected to the pilot's activity, but this is very difficult, if nearly impossible to determine in reality. The passengers pay a fare for the air-transport service as a whole, meaning a vast array of services besides the flight itself and

deciding how to allocate both costs and revenues on various activities and tasks has long been a challenge for both accountants and managers.

As a result, maximizing labour productivity calculated as revenues/ pilot employed is often accompanied by the attempt to decrease the costs, including personnel costs, through methods such as decreased wages, diminished benefits, paying the pilots depending on the number of flying hours instead of a fixed salary etc.

These measures have to be taken after a careful analysis and evaluation of their impact on the productivity, as extreme costs cuts may prove to have an undesirable negative effect over the labor productivity – lack of motivation, leading to a decrease in work performance.

3. CONCLUSIONS

Finding the most appropriate ways of increasing productivity in an organization is a challenge for any manager. This is especially true in the field of labour productivity and in the service sector, where an accurate and clear identification of the output in quantitative terms is more difficult than in the production sector.

In this sense, each organization must start by clearly defining the requirements of each activity, the role of the employees in the functioning of the activity and the components of each employee/activity output.

In quantifying the labour productivity, a crucial step is trying to determine the output directly related and influenced by the employee's work, as opposite to the output influenced by external factors, non-quantifiable or irrelevant variables.

This output should also be quantifiable and relevant to the purpose it is used for, namely measuring productivity.

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THE NECESSITY OF USING PERFORMANCE INDICATORS

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Strategic planning is more than ensuring the organization will remain financially sound, it is projecting where your organization expects to be in five or more years and the way the organization will get there. Planning does not only focus on developing goals and objectives but also on accomplishing them. And what better way to see that a goal has been accomplished than to measure the performance. Obtaining results does not always equal obtaining performance, that is why there should be established some metrics against which to measure the results and success of an organization.

Key words: information, measurements, performance indicators, strategies, goals, objectives

1. STRATEGIC PLANNING

Strategic planning is more than ensuring that the organization will remain financially sound, it is projecting where your organization expects to be in five or more years and the way the organization will get there. This planning process benefits from the continual attention to current changes in the organization and its external environment, and how all these affect the future of the organization. It is the process through which we set a desired future end state which will be translated into goals and objectives and then, a series of steps which will be established in order to accomplish the goals. Sometimes strategic planning could be mistaken for long-term planning; it is true, there are some similarities between the two which stem from the long term thinking needed in both cases but, while strategic planning includes long term planning the reverse is not possible.

Strategic planning covers the entire organization, it sets its direction; when it starts building strategic planning begins with the desired end state and goes backward to the current status. On the other hand, long term planning is a means through which goals and objectives are accomplished; it begins with the current status and lays down a way to meet estimated future needs. In order

to find the way the strategic planner should answer the following question in a backwards method of thinking: "What should be done at the **previous** (lower) stage to reach the end state?" and the long term planner should start from the question: "What must be done to reach the **next** (higher) stage?"

This is a process made of several phases starting with the identification of the position and status of the organization, the mission, the vision for the future, operating values, needs, goals, prioritized actions and strategies, action plans, and monitoring plans. Still, when planning, we should not forget that the focus is not only to develop goals but also to accomplish them. And what better way to see that a goal has been accomplished than to measure the performance.

The definition of performance given by the business dictionary says that it represents an: „*accomplishment of a given task measured against preset standards of accuracy, completeness, cost, and speed*" [1]. In other words it is about doing the work as well as about the results achieved and the impact they have. Brumbach gave another definition: "*Performance means both behaviours and results. Behaviours emanate from the performer and transform performance from abstraction to action*." [2] This definition leads to the conclusion that when analyzing and managing performance both inputs (behaviours) and outputs (results) need to be taken into consideration. Still, there is something missing from the definition, results as outputs are not the same with results as outcomes. Obtaining results does not always equal obtaining performance, that is why there should be established some metrics against which to measure the results and the success of an organization.

2. PERFORMANCE INDICATORS

Performance indicators are (should be) a key component of any basic planning. Any strategic planning process develops around the organization's vision, mission, values. The vision draws the picture of the desired future and indicates the purpose of the organization; the vision talks about the status the organization wants to attain. The mission derives from the vision but it is more concrete. It presents the activity of the organization, in other words the vision says *why* the organization exists and the mission statement explains *what* the organization does in order to pursue its vision. The values are the principles which guide

the organization on its way to accomplish the mission, they help individuals make decisions and take action in accordance with he vision.

The goal(s) are the means through which the vision can be reached and strategies will be developed in order to make the activities more efficient and effective. When setting goals it is critical to make them S.M.A.R.T. (E.R.) (specific, measurable, attainable, realistic, timely – exciting and recorded).

At a first view it may look very simple, we start from the mission, we set the goals and than break them down into smaller pieces (objectives) and we establish some performance indicators to help us measure the progress made towards the goals. But, setting incorrect, incomplete performance indicators will mislead the organization from the right track towards success.

Performance indicators should help the organization align the activity to the strategic objectives. The key to selecting measures and indicators is asking thoughtful questions about the way we can measure the important accomplishments. For example: "Does this measure reflect an performance dimension for the entire organization?", "Is the data on this measure leading to performance?", "Will the measure be sustainable for a longer period of years?" The KPIs will help you make decisions, guide you to where you need to collect data and will give an indication of what improvement(s) have (not) been made and how the data should be used.

Fig. no. 1 Planning elements

The organizations need to know whether they are on the right track or not, whether the goals and objectives are being achieved, they need to know if the strategies are implemented effectively and if they are the right strategies. In order to answer all these questions we need information about performance which may come in the form of quantitative or qualitative data. Much of the information gathered by the organizations brings quantitative information e.g. the number of clients/students attending a seminar, the number of mails/phone calls made etc. But this is not performance information and it is not enough to look only at numbers when assessing performance.

Performance indicators should measure the performance of an activity and not just the level of workload. It is true, that hard work is the way to achieve performance but working long hours does not necessarily lead to success since quite often outcomes and activities are not so directly related. So, if we measure only the time spent at work or the amount of papers written we might get the wrong image about the performance of the organization.

"*Performance refers to output results and their outcomes obtained from processes, products, and services that permit evaluation and comparison relative to goals, standards, past results, and other organisations. Performance can be expressed in non-financial and financial terms*." [3]

Furthermore, when setting performance indicators we should ask ourselves the following questions: "How reliable are the indicators we chose?" and "How valid are the indicators?" Reliability means getting the same result if we measure the same thing twice which is almost impossible because there is always error in measurement; so we should find an indicator which does not allow for too much error. Validity reflects the connection between what is measured and the objectives which must be reached. When want to check the validity of the indicator we should ask ourselves: "Are we measuring the right thing?"

Performance indicators should be established only after an in depth analysis of what the organization wants to obtain through its activity. If the indicators are incorrectly formulated we will get the wrong answers, i.e. finding out how many items are produced does not tell anything about the quality of the product.

When starting to use performance indicators it should not be done only as the basis for rewards because people/employees will start to fudge the figures just to get the rewards or to avoid punishment. Instead they should be used to improve the mistakes, to correct or to speed up the way things are done.

3. TYPES OF PERFORMANCE MEASUREMENTS

David Parmenter in his book "*Key Performance Indicators: Developing, Implementing and Using Winning KPIs*" says that there are four types of performance measurements:

- Key Result Indicators which speak about what we have dome from a perspective or critical success factor

- Result Indicators which tell what we have done
- Performance Indicators which tell us what to do
- Key Performance Indicators which tell us what to do in order to increase performance very much [4]

Sometimes they can be used in inappropriate combinations.(**Figure no. 2** [5] describes the relations these measures form.)

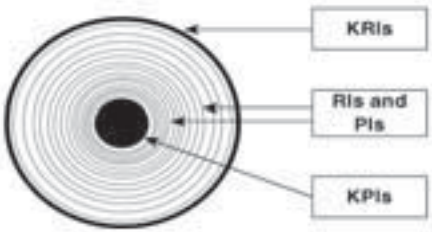

Fig. no. 2 Types of performance measurements

Key result indicators (KRI) are most of the time mistaken for key performance indicators. They can tell us whether or not the activity has an output (result) but they do not tell anything about the value, the usefulness of the output, in other words if the output is an outcome. The key result indicators tell us whether we are travelling in the right direction but they do not tell what is needed to be done in order to improve the results and they look over a longer period of time like months or quarters as opposed to result indicators (RI) which look at a shorter time span (a day, a week); KRIs bring complementary information to that of the KPIs. The result indicators (RI) summarize the activity and all financial facts and they look at the increase in value the results bring to the organization. Value in this context does not refer to money but to the status/position of the organization and to the satisfaction the stakeholders get from the activity of the organization. KPIs are measures that focus on the aspects of the organizational performance that are of high importance for the success of the organization.

To conclude, it can be said that KPIs are important not only for measuring performance but also for driving the business and, at the same time, for establishing where we are in comparison with the targets.

Every organization should create and use KPIs, as they show what has been successful and also which are the problems and the

ways in which organizations can fix them. This way companies can proactively plan and manage their future activity. Another benefit of using PIs is that employees can readily understand what needs to be done and which are the standards they should meet.

At the same time performance indicators can provide information on what strategies bring success for the long-run. To be most useful, performance indicators must be simple and timely and used to control other factors than the program's effectiveness.

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WORKING IN TEAMS -THE EFFICIENCY OF A UNITED TEAM

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A team is a collective of people with a minimal number of people with complementary attributes that have the same objective, a performance set of standards and a common approach to work. The team is a group of people under the management of a leader that fulfill at the same time a job and a common action. The team constitutes a component of social life made with people who interact, who know themselves and form together a common identity.

Key words: leader, management, team, team-work

1. CONSIDERATIONS REGARDING THE LEADER

The leader is the person who, because of his formal/informal status motivates, organizes and leads the members and activities of groups towards reaching their goals. From other authors' viewpoints, the leader is defined as a person who exercises the power or a great influence upon social groups of a variety of dimensions, his essential attribute being that of a leader and the role of taking decisions in a team.

The responsibility of each leader is to excel the subjectivity and individualism that could appear in a team. Leaders are those people that succeed in the team in that they are a part of and that they lead, to establish homogenous relations, unresponsive to the problems which he could face, and to change in a very short time in order to lead to success.

The leader, even though the concept is theoretically approached by many renowned scholars, cannot have a clear definition, which could underline all those necessary attributes of a perfect leader. The role of a leader in a team is very important. He is the person who motivates his team, who handles the objectives and who proposes to his subordinates to reach the goals in a very responsible manner. The leaders are those who contributes to maintaining the balance of teams, encouraging the participants to be more flexible in their work, analyzing objectively the processes that take place and learning with others how best to work in a team. A good leader will also represent the interests of the group: he will protect their reputation, he will sustain the confidence in other teams, departments and managers, he will help them solve creatively the conflicts which can take place

in their teams and groups. The leader has an important role, because he must show the courage of using other procedures than those practiced in the majority of organizations in order to offer better services to clients, and a healthy environment of optimism and safety to their members. The essence of leading efficiently involves warmth, because this is at the foundation of any successful community and group.

2. TYPES OF TEAMS

Before presenting a small classification of teams, I will provide a definition: "*The team is a group of persons which under the management of a chief realize at the same time a job and a common action*".

The teams may have various goals and can take multiple forms, like:

- intervention or initiative teams have the task to elaborate and finish different strategies and methods;
- teams established in a functional and specialized sector, such as the administration sector in an organization;
- leading team formed with the chiefs from the next superior level of the organization;
- team for the accomplishment of a project, with a limited time for actions;
- auto-conducted teams, recommended in situations in which the activity must be coordinated by persons that have correlated tasks;
- teams led and coordinated from the outside;
- planning teams.

In order to make a team one must be establish and recognize the objectives that must be reached. An evident condition for making a team is the possibility of interaction. When people are capable of interacting they can have common goals and can reach them through mutual trust.

The potential of reaching goals is another factor which contributes to forming and maintaining the balance. Making a team is the art of harmonizing the differences between individuals from different places, different interests, different perspectives, in the interest of realizing a team with minimal conflicts, never forgetting the common interest of the team.

3. THE TEAM AND WORKING IN A TEAM

The performance of any organization depends on the efficiency of the activities of their members and is not always the sum of individual performances.

The group is an ensemble of people who interact under the management of a leader for the purpose of reaching a common objective and who have a common identity.

People have often different ideas about an objective; conflicts may appear even because of the task, the management and working methods of their organization. Because of these arguments it is necessary that teams should establish common goals, common methods of action and a leader should be chosen to satisfy the organizational needs of a team.

A team is a group of people with a minimal number of people with complementary attributes that

have the same objective, a set of performance standards and a common approach to work. Is a special kind of group characterized by:

- a common goal or task;
- in order to fulfill the task members must collaborate and coordinate their efforts;
- the members get close to one another;
- the typical attributes of a team are: cooperation, equality between members, coordination and engagement.

Working in teams and belonging to a group can change the behavior of people, who tend to lead to conform regarding the goals and collective expectation, which can lead to a change in individuals' behavior. The team or the group tries to put pressure upon the individuals, and they must assimilate the common values; otherwise, they risk being expelled from the collective. In each working team and each group of people, members have tasks. They have positions, which have a set of expected behaviors. Their roles represent in fact some sets of norms which apply to all members. Each member of the team has a precise role, which is a part of the puzzle of team roles. The most important role is the leader's one – without his implication the objectives could not be accomplished.

During the last decades, the ability of working in team appears in the majority of working places, and has become an essential requirement. Why is it so important to know how to work in groups, to know and to maintain good relations with colleagues, and why are the results at group level more important than the individual results?

Even so, going with the same principle of reaching goals and objectives, the organizations form small groups or bigger ones which, by means of coordination, participate in most organizational activities. Regardless of how the organization is structured, at a certain moment the people in its structure learn how to work in groups in order to fulfill their tasks.

Working in teams has become a reality of organizations. Even if teams are established as a permanent element of the organization's structure or they are made for the purpose of fulfilling a task, working in teams can affect- in a good or a bad way the efficiency of the organization. So, as individual employers, teams must be led in order to insure efficiency. The team leader sustains his members, encouraging them no matter what situation they encounter, in a friendly manner, puts his heart in his work, spontaneously, sometimes superficially, inconsistently, renounces to some projects in order to finish more important objectives for the organization he is a part of. Sometimes the team leader is very lucid, objective, speaks little, considers aspects in detail, uses arguments in a rational way, sustaining them, without passion, convincing, masterly, correctly, develops new ideas, very creative, conducts a successful action, is very careful with details, by leaving nothing to faith. All these qualities of a leader are reflected in the team activity and in the task the team has.

4. THE "TEAM SPIRIT"

Team spirit represents the unit soul. It is the common attitude of the unity members, the main factor of the group solidarity .Team spirit involves devotion and loyalty to the unit and to the others, and also the unity force desire against the pressure and for the achievements that will follow.

True team spirit is based on high military values: altruism, self-discipline, honor, patriotism and courage.

Laziness is the virus of the military life and it kills the team spirit.

a) Indicators:

- enthusiasm and pride that every military has for their unit;
- good reputation of the unit;
- high competition spirit;
- voluntarily participation and the unit members' commitment to their activities;
- pride in the history and the traditions of the unit.

b) Improvement ways:

- the leader must be the warrior spirit symbol that he wishes to cultivate into the subordinates;
- in the description about the unit, history and traditions are included, and also the missions and present activity;
- train your subordinates as a team;
- leaders must train their troops as well as they can, so that the subordinates develop their military skills and physical training;
- use competitions in order to develop the team concept; try to be victorious in every contest; always find a method used to convince others that your team is the best;
- always make your subordinates feel invincible, and that the unit success depends on their success.

5. CONCLUSIONS

When you make a team inside an organization, you will be able to reach a high level of success which you could not believe was possible. Working in a team for a vision makes some people be capable of obtaining some special results. When the members aren't normal people, but leaders, their achievements multiply. All that a team needs is a perfect trainer.

The notion of "efficient leadership" or "good leadership" is frequently used. The latter means to orientate the subordinates in the direction that corresponds to their interests over a long period of time As a result, the group should not lose their resources and forces, and not exploit the negative part of the human nature. Because of this, not any kind of leader is efficient. For example, Adolf Hitler, even if he displayed powerful leadership, was not efficient.

Being a process of orienting and influencing activities of members of a group, leadership implies: other people (subordinates) who accepts an orientation from the leader; an unequal distribution of power between the leader and his subordinates, in favor of the leader; the ability to use

different types of power to influence subordinates in their behaviors and in their activities.

People often believe that the leader determines the destiny of a group. But then when a team loses, it wants the trainer to be changed, and blames particularly the president. The idea that a good leader will heal all the diseases which the group suffers from is a myth, because the performance of a group depends on the interaction between the leader and the rest of group.

The leader puts emphasis on defining and giving tasks, on establishing a level of communication inside the group, and on defining the directions of the group activity, and then comes the human factor, who does all the work. Sometimes, leaders tend to be autocratic, and will conduct to the fulfillment of the tasks, but with emotional and energetic contribution from the subordinates.

The leader concentrates on behaviors which create a work climate, where trust, mutual respect, and friendship have an important role. He focuses on group interactions and the needs of each member must be taken separately, he understands the individuals needs of those in his subordination, recognizes the differences between the members of the group and their capabilities, avoiding to judge them and being ready to guide them in reaching their tasks. He is responsible with the security and comfort of his employees. He accepts the establishment of interpersonal relations, he is interested in his employees' needs and their work satisfaction and takes time to listen to them. He tries to motivate his subordinates as well as he can. It is considered that the best leaders are those who balance the concern for people with tasks and professional duties.

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- **Page setup:** top – 28mm, bottom – 20mm, inside – 25mm, outside – 20mm, header – 18mm, footer – 15mm, mirror margines activated;
  - paper format A4 210X297;
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  - style: normal.
- **Paper title:** upper case, font size 14pt, bold, centred;
- **Author (s) name:** first name, surname, font size 12pt, bold, centred;
  - two free spaces below the title of the paper.
- **Author's workplace name:** one free space (12pt) below author's name, font 12pt, centered.
- **Abstract:** one free space (12pt) below author's workplace name;
  - up to 150 words;
  - font size 11pt, Italic, justified, left-right alignment.
- **Key words:** maximum 8;
  - one free space (12pt) below the abstract;
  - 11pt, italic, lef alignment, separated by comma.
- **Paper body:**
  - even number of pages (maximum 6);
  - no free space between lines;
  - two free spaces below the key words (24 pt);
  - two columns, width: 8cm, spacing: 0.5cm;
  - font size 12pt, justify.
  - paper main parts: introduced by titles numbered with Arabic figures, upper case, font size 12pt, bold, centered. One free space above the text and one free space (12pt) below it.
  - paragraph indentation: 6mm.
- **Drawings, diagrams and charts:** one free space below the the text;
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  - mathematical formulae: 6mm left alignment; ordinal numbers: in round brackets, right alignment; Times New Roman; Full - 12pt.; Subscript / Superscript - 9pt.; Sub-Subscript / Superscript - 7pt.; Symbol - 16pt.; Sub-Symbol - 12pt.
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