Book of Abstracts

Henri Coanda
Air Force Academy
Brasov, Romania

The 21st Students' International Conference

Communicating across Cultures

March 28 – 30, 2019
Brasov, Romania

Conference Agenda

THURSDAY, March 28, 2019

16.00 hrs – 22.00 hrs	Arrival of delegations/ "Henri Coanda" Air Force Academy
19.00 hrs – 22.00 hrs	Ice breaker / Students' Dining Facility (all participants are invited/dress code: smart casual)

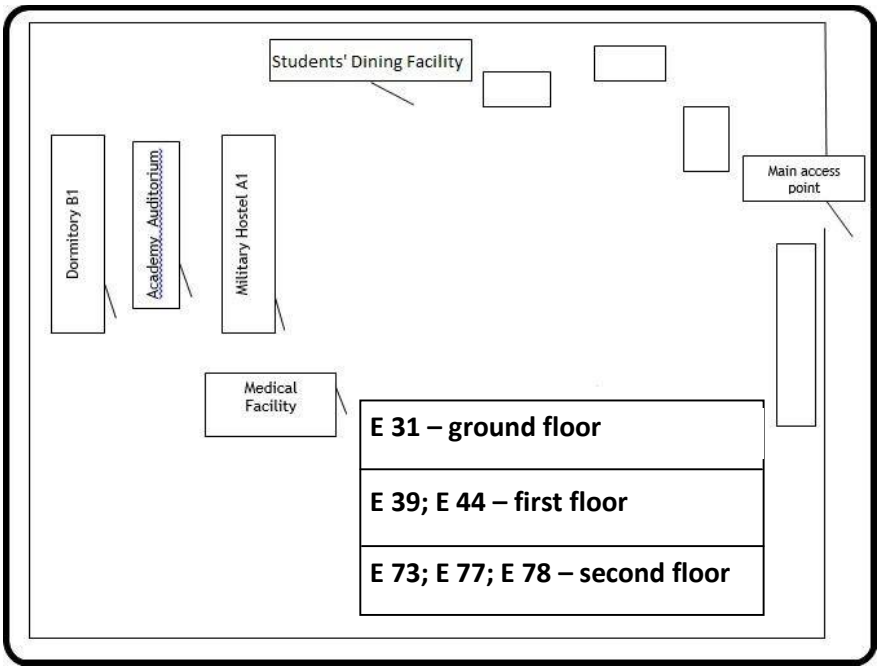
FRIDAY, March 29, 2019

07.00 hrs – 08.00 hrs	Breakfast *(*Students' Dining Facility*)*				
08.00 hrs – 08.30 hrs	**Welcoming and registration** *(antechamber of Academy Auditorium)*				
08.30 hrs – 08.50 hrs	**Official Opening of the International Conference "Communicating across Cultures" AFASTUD'19** *(Academy Auditorium)*				
8.50 hrs – 9.00 hrs	**Photo Session** *(In front of Bdg A1)*				
9.00 hrs – 13.00 hrs	**Panels (I)**	**Weapons & Defense technology** ***E - 31***	**Fundamental sciences & Engineering** ***E – 39,E - 44***	**Humanities & Social sciences** ***E – 77, E - 78***	**Military sciences & Management** ***E - 73***
13.00 hrs – 14.00 hrs	Lunch/ Students' Dining Facility *(*Students' Dining Facility*)*				
14.00 hrs – 16.00 hrs	**Panels (II)**	**Weapons & Defense technology** ***E - 31***	**Fundamental Sciences & Engineering** ***E – 39,E - 44***	**Humanities & Social Sciences** ***E – 77, E - 78***	**Military Sciences & Management** ***E - 73***
16.30 hrs – 17.00 hrs	**Closing of the International Conference "Communicating across Cultures" AFASTUD'19/ "Henri Coanda" Air Force Academy's** *(Academy Auditorium***)**				
19.00 hrs – 02.00 hrs	Students' Official Dinner *(*Students' Dining Facility*)*				

SATURDAY, March 30, 2019

09.00 hrs – 10.00 hrs	Breakfast *(*Students' Dining Facility*)*
10.00 hrs – 14.00 hrs	Brasov sightseeing tour
14.00 hrs – 15.00 hrs	Lunch/ Students' Dining Facility
15.00 hrs	**Departure of delegations**

Conference Location Map



Organizing Committee

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Student Mădălina-Lorena **DONISAN**

Student Răzvan **VOICU**

Student Ana-Maria **MIHALEA**

Student Maria **TUDOR**

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OR Adrian **BUTOI**

WO Marian **MIHALACHE**

WO Marius **CODREANU**

WO Marius **TĂNASE**

WO Denes **SZABO**

WO Ionuț **IORDĂCHESCU**

Moderators

1. MILITARY SCIENCES & MANAGEMENT

Lt. Col. Lect Bogdan **CHIOSEAUA**, PhD
Student Andreea **GIURESCU**

2. WEAPONS & DEFENSE TECHNOLOGY

Lt. Col. Daniel **ŞTEFĂNESCU, PhD**
Student Vasile **ŞOLDĂNESCU**

3. HUMANITIES & SOCIAL SCIENCES

Lect Daniela **NAGY,** PhD
Lect Ramona **HĂRŞAN**, PhD
Student Bogdan **CHICUŞ**
Student Răzvan **VOICU**

4. FUNDAMENTAL SCIENCES & ENGINEERING

Assist. Prof. Eng. George-Cristian **CONSTANTINESCU**, PhD
Assist. Prof. Eng.Vasile **PRISACARIU**, PhD
Student Maria **TUDOR**
Student Rebeca **IONESCU**

Scientific Committee

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Aviation Faculty, "Vasil Levski" National Military University, Bulgaria

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Conference Panels

1. Military Sciences & Management

Conference ROOM E73

Moderators:

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Student Andreea **GIURESCU**
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The Necessity of Implementing Change Management in Aeronautical Safety

Bianca Florinela Barstan

"Henri Coanda" Air Force Academy, Brasov, Romania

The Romanian Air Force is currently in a process of transformation aimed at changing unit organizational structures, upgrading the configuration of certain categories of equipment and providing advanced combat capabilities, competitive in the context of The North Atlantic Alliance. All this leads to the courageous approach of a change management process to support aeronautical safety, meant to increase the operational capacity of the Romanian Air Force.

Management and Leadership: Two Ways of Dealing with the Modern World

Nicolas Bertoncini, Federico Ivaldi

Italian Air Force Academy, Pozzuoli, Italy

The purpose of this paper is to provide a better understanding in what concerns the meaning of management and leadership, when it is more appropriate to apply one or the other and which of the two is more important for a future officer. To answer these questions we have analyzed the concepts of management and leadership starting from their meaning in Italian culture, and taking into consideration the differences between them.

Airspace Classification

Laurențiu-Dumitru Bîrsan

"Henri Coanda" Air Force Academy, Brașov, România

This paper contains details about a very important part of the Air Law: airspaces. Among other aviation rules and regulations, airspace classification was established by International Civil Aviation Organization (ICAO). ICAO is still the heart of the international air navigation principles and techniques and is concerned with the planning and development of international air transport to ensure safe and orderly growth. The purpose of this project is to understand the organization of the airspace in order to air traffic services, according to the possibilities of secure and permanent radio link between the ground air traffic authorities, that provide these services, and the aircraft in flight, as well as the territorial dislocation of the aerodromes.

The History and Evolution of Aeromedical Services in Romania

Alin Vasile Costea

"Henri Coanda" Air Force Academy, Brașov, România

The development and evolution of airplanes in the 20th century came with major advantages in various areas. The new perspective given by the transport of wounded troops by airplanes during the First and the Second World War proved that both airplanes and helicopters, once outfitted for medical emergencies were the most efficient ways to save human life. With this new experience, in our country the first air ambulance system was established in the mid 40' and was very strongly developed in the coming years, gathering a fleet of more than 100 aircrafts in various locations all around the country. The system provided a vast range of services from medical evacuation, medicine air delivery, the airdrop of flu shots and even an auto park of ambulances that were able to successfully perform the tasks of the air squadron for the time when the weather was not suitable for flight. After '89, due to bad financing, the original aeromedical system was slowly replaced by a subdivision of the Ministry of Internal Affairs which activates in our country. The current system relies on a fleet of more than 12 helicopters and 2 airplanes with aeromedical bases in the biggest cities of the country. The aeromedical system in Romania is in continuous growth.

Scuba Diving. Life Underwater

Denisa-Maria Dulea, Catalin Ionescu, Ionuț Rostogol

"Mircea cel Batran" Naval Academy, Constanța, Romania

Scuba diving is a type of underwater diving where the diver uses a self-contained underwater breathing apparatus (scuba), which is completely independent of surface supply, to breathe underwater. Scuba divers carry their own source of breathing gas, usually compressed air, allowing them greater independence and freedom of movement than surface-supplied divers, and longer underwater endurance than breath-hold divers. Open circuit scuba systems discharge the breathing gas into the environment as it is exhaled, and consist of one or more diving cylinders containing breathing gas at high pressure which is supplied to the diver through a regulator. They may include additional cylinders for range extension, decompression gas or emergency breathing gas.

NATO Missions, General and Particular Concepts

Eduard Glazov

"Henri Coandă" Air Force Academy, Braşov, România

NATO stands in the provisions of Attic 5. It has been argued that an armed attack against one or more states in Europe or North America would be considered an attack against all Member States. Therefore, if such an attack occurs, each of them will assist NATO allies in confronting the attacking party or parties by taking the individual action-deemed necessary, using the armed forces to restore and assure security in the North Atlantic region.
In an intercultural context, NATO helps all states, and our community adopted the idea of such collective defense as well.

Scipio Africanus Savior of the Roman Republic

Vitalie Grițco

"Henri Coandă" Air Force Academy, Braşov, Romania

The Roman civilization is at the basis of European culture. And as with any enchanting story (in our case the story of a city, Rome, that managed to become an empire) there are remarkable characters, soldiers, commanders, statesmen who dictated the future.
In this work, I seek to rediscover Scipio Africanus during the campaign in Spain that took place in the Second Punic War, the man who conquered an empire, the hearts of the Roman soldiers, the respect of the opponents and as a result was betrayed and exiled from The Roman Republic, to whom he dedicated his life. His last words, carved on his funeral stone were: "Ungrateful fatherland, you will not even have my bones"

Safety in Aviation

Grigore Hanțig

"Henri Coanda" Air Force Academy, Brasov, Romania

Even though air travel is one of the safest ways to travel, accidents happen and over time people have tried to find the causes that lead to such tragedies. In the present paper we will analyze the error causation model proposed by James Reason, which is a globally accepted concept and about an air disaster caused by a series of events, used as a case study**.**

Introduction to Crew Resource Management in Aviation

Viorel Iluc

"Henri Coandă" Air Force Academy, Braşov, România

The main focus of this article is on introducing the core concepts of Crew Resource Management (CRM), as well as presenting the beginnings and the evolution of this extraordinary management system, which remodeled the world's leading airlines, military, police, corporate and government flight operations to a much safer, teamwork oriented and more coordinated work environment. In this article, I will exemplify the key concepts of CRM, along with the objectives of a CRM course, how they can be met, and discuss the requirements to consider to successfully implement it in any domain where the teamwork environment is a must. For the purpose of this article I will concentrate on CRM in aviation, but nonetheless, I will also bring to your attention some of the other popular uses of this management system. Furthermore, in the pages of the article, the reader will find exemplifications and explanations of the structure of a CRM course, as well as, succinct information about the systematic techniques used in teaching this type of course to trainee pilots.

The Future of the Visegrad Military Cooperation

Cosmin Jinga

"Henri Coandă" Air Force Academy, Braşov, Romania

The Visegrad military cooperation reflects the efforts of the countries in the Central European region to work together in a number of fields of common interest within the all-European integration. The Czech Republic, Hungary, Poland and Slovakia have always been part of a common civilizational area sharing cultural and intellectual values and common roots in various religious traditions, which they wish to preserve and trengthen even further. It is important to observe the way in which they help each other and see if we can constitute a similar group whit other countries.

“Coup d’état” in NATO

Maria Magdalena Jinga

“Henri Coandă” Air Force Academy, Braşov, România

We are now witnesses to a century mainly dominated by quietude, lawfulness and cordiality, free from disturbance. The truth is, perhaps, far from this semblance, as a chronic and endemic insecurity still endangers this peaceful time, gliding through the shadows in the backstage of 21st century Europe. The reason for this political and military instability is found in the depths of the everlasting desire of power combined with the anxiousness of being overtaken/ surpassed by another power. To what extent does this instability represent a threat to our apparently peaceful Europe? The answer is meant to be found in the present essay by giving a brief insight on a particular case: the disturbances in Turkey after an unfortunate series of events that also involved another frightful titan, Russia, and frustrations generated in all Europe as a result , touching the integrity of both the EU and NATO.

Close Air Support

Andrei Klett

“Henri Coandă” Air Force Academy, Braşov, Romania

This contribution sets aut to present the action of providing Close Air Support (CAS) in all its complexity, as well as the exemplification of this action by analyzing the air support aircraft that holds supremacy in this domain, namely the A-10 Thunderbolt. The importance of these types of actions and of the aircraft taken as an example, its use in all types of conflicts, their aftermath, the reason for their existence and also the economic value and the cost of the aircraft as compared to other aircraft in use that might be used as an alternative in order to accomplish the same tasks are also presented. While focusing on the “Warthog”, this study will present the characteristics that are essential for an aircraft to be used in CAS and for it to be the best in its field, but it will also provide a short history of the military conflicts in which its actions made a staggering kill count and changed the war forever.

The Battle of Predeal (October 1916)

Constantin Mateescu

Military Technical Academy “Ferdinand I”, Bucureşti, România

The battle of Predeal was a confrontation between the Romanian armed forces and those of the Central Powers during WWI. Even if, at the end of a string of fierce battles, the Romanian forces were unable to stop the Central Powers’ offensive, this historical battle

showcased the heroic and well-coordinated action of the Romanian troops, who were able to pose a serious threat to their enemy, and to resist for as long as it took for the rest of the Romanian forces to withdraw safely. They kept on fighting to their last breath. This was also the battle during which national hero Mihail Săulescu, a Romanian intellectual and poet who willingly fought alongside the Romanian troops (in spite his lack of obligation to do so) was captured and brutally killed.

School Management and Leadership -The Issue of Conflicts in School Practice

Alin-Dragos Matei

"Henri Coanda" Air Force Academy, Brasov, Romania

This essay will describe and differentiate management and leadership by pointing out certain skills and qualities that both managers and leaders should strive to develop and achieve. Factors that may affect the managers and leaders, such as standards of school management, their roles in decision-making and conflicts are included in this. The issue of conflicts is especially emphasized and this essay will show ways to both prevent and manage them. Whilst both management and leadership are examined and discussed in the essay, the main focus will lay on leaders and leadership.

Multi-Criteria Analysis of Modern Attack Helicopters

Cosmin-Alexandru Mazilu

"Henri Coanda" Air Force Academy, Brasov, Romania

A helicopter is a machine that can fly due to lift and thrust provided by rotors and it is able to take off and land vertically, to hover and to fly in any direction, these abilities making it the perfect flying machine to be used in isolated and difficult areas. The current article consists of a presentation of historical and design process related data about the most important types of helicopters, for the first part, and a multi-criteria analysis of the most important military helicopters used in modern armed conflicts, for the second part.

A Competency Model Applied to the Portuguese Air Force Academy. Practical Study for the Pilots Course

Vasco Monteiro, Carlos Páscoa

Portuguese Air Force Academy, Sintra, Portugal

To fly is, in essence, the action of reaching free mobility in the atmosphere. Flying involves prior preparation and training to solve occurring emergencies, internal or external to the aircraft. That said, the desire to be a pilot, especially a military one, is not enough. A whole set of physical and psychological characteristics is required. Since modern Organizations are faced with very rough and dynamic environments, their human resources need to be prepared for this as well. Therefore, Competency management, which increasingly proves its importance in Human Resource Management, needs to be implemented in these Organizations. The Portuguese Air Force is no exception. Competency models can be applied in recruitment, selection, career progression and military courses. The present article presents the research carried out within the sphere of a master's dissertation, whose objective is to apply a competency model in a military course, namely a master's degree in Military Aeronautics for military pilots.

National Security Policy

Iustina-Lavinia Muraru

"Henri Coanda" Air Force Academy, Brasov, Romania

In human interactions, politics occurs every time there is a dispute over the results pursued by two or more interdependent actors - individuals or their agents - in terms of their various interests, goals and values. If there are no differences or conflicts, then there is no politics. Generally speaking, a public policy is a set of political decisions for the implementation of social projects and programs. The ultimate goal of a public policy is to produce "public goods", and national defense and security are considered to be representative public goods.

Considerations on Birdstrikes in Aviation

Bogdan Muscalu

"Henri Coandă" Air Force Academy, Braşov, Romania

The birdstrike phenomenon is an unfortunate moment in the life of any pilot. For them, colliding with a bird while flying an airplane can lead to disaster for their crew and passengers. The damage caused can result in losing control of the aircraft and may cause

huge flight difficulties. Besides, this phenomenon is a nuisance for mechanics, technicians and engineers who need to find optimal solutions to increase the resistance of aircraft in order to prevent disaster. Also, airlines and air forces suffer enormous damage as a result of such events, which leads us to the conclusion that, since a collision can't always be avoided, it must be prevented, which means that both the aircraft and the pilots must be specifically prepared for such incidents.

Hybrid War

Raluca Petrescu

"Nicolae Balcescu" Land Forces Academy

This paper approaches the topic of hybrid war, bringing into discussion the informational dimension of this phenomenon. The analysis begins with a brief history of the wars that build up to the central subject, today's hybrid warfare. Also, it describes the informational part of the war and the ways in which it affects us through the main weapon at hand: manipulation. In conclusion, although the informational tool may have given the feeling of change, no significant transformations actually occurred.

The Importance of Motivation in Military Leadership

Olga Pripeșneac

Armed Forces Military Academy "Alexandru cel Bun", Chisinau, Moldova

The role of leadership stands out when we talk about current relationships between the members of an organization and staff motivation. Considering that sometimes, for some soldiers, material incentives are underestimated, the management tries to support and stimulate them by non-material means to achieve organizational goals. The motivation of a subordinate to achieve performance at work and his morale are closely linked. If their morale is high, there is a premise for the person to feel motivated. A low morale can not be long-lasting as a background for motivation.

The Russian Bear

Sorin Sanda

"Henri Coanda" Air Force Academy, Braşov, Romania

The desire of a state is to maximize its power, and now, in the 21st century, Russia wants to continue to be a strong voice in the world. This is largely due to the participation of this great power in the two great wars, where it was a very important element on both the political and the military side of events. In general, the Russian Federation has used non-

violent means to achieve its goals. Geopolitical objectives such as Crimea became the target of the federation as it was trying to manage the separatist movements in this area. Despite the voices saying that the military has lost its importance in modern warfare and has been taken up by economic issues, recent situations have shown that this statement is not true. Russia has shown that using obsolete technical capabilities correctly can cause significant damage. The Russian Federation has the necessary skills at this time to take advantage of the use of heavy power.

Suppression of Enemy Air Defenses

Lucian Simionescu

"Henri Coanda" Air Force Academy, Braşov, Romania

Every existing military doctrine regarding modern warfare in the 21st century recognizes the most important roles of air supremacy and the informational supremacy that derives from it. The huge technological advance allowed air assets to be one of the most important parts in waging modern warfare, beginning with ground and air attacks and ending with information gathering and C4ISR missions. This paper will analyze how these air assets can be protected from the ever-growing threat of Air Defense Systems. I will look into the history of the SEAD missions and their beginnings and I will anticipate on what the SEAD mission of 2019 will look like, both in terms of doctrine and technology.

Basic Characteristics and Principles in Training Military Leaders

Andrei Șambra

Armed Forces Military Academy "Alexandru cel Bun", Chisinau, Moldova

The changing face of war in the late twentieth century poses special challenges. It is the job of the military personnel to ensure the sovereignty of a nation. The ability to carry out this responsibility and to ensure the safety of the country's citizens, depends on the competitiveness of military leaders. Certain and specific features are common to leaders all over the world. However, due to the special types of duties and responsibilities that military leaders share and have to execute, they are expected to have greater competences in what concerns certain leadership characteristics. The main role in leadership skills is played by aperson's character. When you delegate something to a subordinate, for example, the result of the action is your own absolute responsibility, and the subordinate must understand this. You, as a leader, are to take complete responsibility for what the subordinate does. The military students and future officers should face and practice such situations during their studies because, after the graduation, they will influence, train and shape personalities in their own turn.

Satellite States and Proxy War

Teodor-Vicentiu Tatulea

"Henri Coanda" Air Force Academy, Brasov, Romania

This paper aims to highlight some geopolitical practices typical of the great powers today. These practices reach as far back as the ancient world and its conflicts, but they have recently re-emerged. What is a satellite state? What is a proxy war? From my perspective, these two concepts are closely linked. This short article presents a current situation that started almost a century ago. Why are some states dependent on other states? What do they win and what do they lose? What are the economic interests involved? What are the tactical-military interests of the great powers? I am going to answer these questions and talk about Syria's situation, the war in Yemen, the current political tensions in the Middle East and some of the strategies of the great powers. In addition, I will give examples of states that are or have been controlled by others and a list of proxy wars around the globe. Thus, the main goal is to approach some multicultural dysfunctional ties specific to certain countries.

Military Leadership

Michał Uliczka, Damian Bartniak

Polish Air Force Academy, Dęblin, Poland

Papers must be prefaced by an abstract in English up to 250 words. The text will be written in 10pt high, Italic, justified, left-right alignment. A number of maximum 8 keywords will be written 10pt below the abstract. The words will be 10pt high, Italic, left alignment, and separated by a semicolon.

The Gulf War - Lies and Manipulations Used by the United States and the United Kingdom

Alexandru Vasile

"Herni Coanda" Air Force Academy, Brașov, România

Despite the partial truths provided in standard explanations meant to clarify the reasons behind Saddam Hussein's aggressive actions against Kuwait (1990) and Iran (1980), the propaganda in the answers typically provided by the US and the UK is very clear. There is a need for the American public to understand much more before allowing its government to carry out a war against Iraq. The history of Iraq, Kuwait, Great Britain and the United States shows that the reasons for the Iraqi invasions in Kuwait and Iran are much more complex and worthy of attention than the standard response that Hussein is an aggressive tyrant, a contemporary Hitler. Over a period of decades, and especially in recent years, the United

Kingdom and the United States have voluntarily manipulated the tensions in the region and have set in motion certain events that have led to the Iraqi invasions. The purpose of these manipulations was to increase the power and control over the Middle East governments and their oil resources, which serves the interests of the American and British elites.

The Role of Empathy in the Development of Emotional Intelligence with Military Leaders

Ștefan Zamfir

"Henri Coandă" Air Force Academy, Brașov, România

The fundamental prerequisite for this article is that the leader counts, that the people who are at the top of the military hierarchy definitely influence the productivity of the structures they manage and that it is necessary to be aware of the existence of empathetic capacity in each leader. The discovery of some capabilities constitutive of the empathic phenomenon and their particular involvement in decision-making are therefore investigated. The quality of being empathetic is an imperative in optimizing the leadership's relationships with subordinates and an essential precondition for effective communication.

2. Weapons & Defense Technology

Conference ROOM E31

Moderators:

Lt.Col. Daniel-Cornel **ŞTEFĂNESCU**, PhD
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Student Vasile **ŞOLDĂNESCU**
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Space as a Crucial Defense Technology to EU's Common Security Defense Policy

Christos Angelopoulos

Hellenic Air Force Academy, Dekeleia, Greece

Space is a crucial asset for the security of modern nations, i.e. comprising military, economic, and citizen security. Space efforts have focused on defense operations missions that are crucial for land, maritime and air forces such as surveillance, communication, and navigation. This paper deals with how space has been gradually incorporated into the European Union's Common Security and Defense Policy.

Ground-Based Air Defense Systems - New Challenges and Perspectives

Flaviu Berția

"Henri Coandă" Air Force Academy, Brașov, Romania

While the aeroplane itself was taking its first 'baby ' steps into mankind's history, some visionary officers, like Giulio Douhet or William 'Billy' Mitchell, were outlining the future baselines of air power and how it could be used to change the outcome of future conflicts. Today, the proper use of air power became crucial for the successful conduct of military operations. One has only to examine the psychological impact of the air raids that took place during the conflicts after 1914. In all military operations after 1914, one key aspect remains unchanged throughout the years: GBAD systems are trying to target the aircraft exclusively. Nothing or little has been done to target the weapons themselves. During WWI and II, GBAD forces spent thousands of rounds to virtually no effect. Even if during

contemporary conflicts GBAD forces proved to be more competent, there are various examples (such as Operation Mole Cricket 19) were they failed to fulfill their assigned mission. In this paper, we shall examine the need and potential of a radical change in doctrines and principles. We shall research whether transferring the focus of GBAD forces to the weapons instead of their carriers, could solve many of the problems and challenges now faced. Furthermore, we shall examine the potential uses and dangers regarding space and cyberspace together with potential defense methods against drones. One should always remember that the primary objective of GBAD forces is "the elimination of the effects of the air power as there are projected against ground assets". With that in mind we can provide a guideline to the GBAD forces of the future.

Cyber Security: the Status Quo in 2019

Loredana-Cristina Ceampelea

"Nicolae Bălcescu" Land Forces Academy, Sibiu, Romania

'Cyber Crimes' - those two words come to our mind when we hear about cyber security. Nowadays, Cyber security is not optional due to the fact that is has an important role in everyone's lives as more products and services are found and used online. Thus, we should acknowledge and identify the risks that lurk on the other side of the screen - in the online world. From a simple personal phone to a nation's confidential information, cyber incidents point out that hacking became so common in our lives that we do not focus on the challenges and the trends of its evolution and think that it cannot happen to us directly. This paper mainly focuses on presenting and raising the awareness on the basic safety rules of internet use because, up to a point, the internet is unsecure. The research methodology is based on studying open source information.

Propulsion in Missile Design and the System Engineering Process

Radu-Viorel Coman

"Henri Coanda" Air Force Academy, Brasov, Romania

This contribution provides a general description of propulsion systems suitable for missiles. These systems are solid- and liquid-fuelled rockets, liquid-fuelled ramjets, solid fuel ducted rockets (ramrockets), and scramjets. Concise summaries about testing are also given, and mention is made of a scramjet test facility developed by the Defence Research and Development Laboratory (DRDL) in Hyderabad, India. This facility is part of the DRDL hypersonic programme entitled 'Hypersonic Technology Demonstrator Vehicle' (HSTDV).

Unmanned Aerial Vehicles

Bianca Constantinescu, Alin Neagu

"Henri Coandă" Air Force Academy, Braşov, România

Unmanned Aerial Vehicles are a new technology branch in both civilian and military aviation, as they are made up of more efficient and easy to use and control systems in any national airspace. This paper is about the Unnamed Aerial Vehicles in military aviation and means to provide a detailed view on them.

Drone Uses in Intelligence. Benefits and Usage

Gabriela Elena Cuşmir

"Henri Coandă" Air Force Academy, Braşov, România

Drones, or, as they are called, Unmanned Aerial Vehicles (UAV) are unmanned aerial systems guided by a remote or through a preset flight program. Their various shapes and sizes allow them to be used in a wide variety of fields, such as: science, industry, civilian environments, but especially in the military domain, where they are used in intelligence, surveillance and reconnaissance. The reasons for their widespread purpose across the world is to get more accurate ground information, but they are also fuelled by the unceasing development of remote technology. The purpose of this paper is not to demonstrate that drones are able to carry out intelligence, reconnaissance and surveillance missions or to completely replace the human factor, but that they come to complement it, to support human efforts in collecting information more efficiently and faster. Drones can thus become an important tool, able to meet the challenges of the 21st century.

Weapons of destruction on the tactical field

Valentin Deaconescu

"Henri Coanda" Air Force Academy, Brasov, Romania

In this article, I will describe the difference between the AK47 and the AK74 assault rifles, some of the most popular weapons used by the military. This is especially a relevant topic for those of us who serve in the Romanian Armed Forces. This contribution will discuss the design of the two weapons, their components, the functioning mechanism of the two weapons and their variants. The approach also includes a comparison between these personal weapons and their advantages. Finally, you will learn which of the two rifles is best to use.

Stealth Technology and its Role in Military Operations

Ionuț Ciprian Duca

"Henri Coanda" Air Force Academy, Brasov, Romania

This paper discusses the evolution of airpower and the ever-increasing component of stealth technology in dictating warfare, based on the need felt in scholarly literature to integrate and place them in the right perspective. This technology works by reducing or eliminating possible attempts to identify the aircraft. On airplanes, panels are placed so that the radar signal is spread and is not reflected back to the base.

Romanian Anti-Aircraft Self Propelled Artillery System Gepard

Lidia Miruna Dunca

"Henri Coanda" Air Force Academy, Brasov, Romania

In contemporary armed conflicts, air defence artilerry is able to generate enormous strategic effects through its capabilities and operations, having decisive influence on the end result of armed conflicts. At peacetime, air defence systems are the main factor in eliminating and diverting potential asymetric threats from the air space. The best anti aircraft artillery systems held by the Romanian armed forces in the 1960s is a version of the Gepard system. It is designed to nulify or to reduce the effectiveness of hostile aircraft actions in the AOR (area of responsability). In order to maximize the efficency or firing against air and land targets, the system needs to be upgraded.

The Effect of Bullet Weight Variance on Muzzle Velocity

Dominik Garai, Peter Perun

Armed Forces Academy of General Milan Rastislav Štefánik, Liptovský Mikuláš, Slovak Republic

The goal of this work is to discuss the effect of bullet weight variance on muzzle velocity. I want to investigate the ways in which the weight of the bullet and its variance influences muzzle velocity. There are so many factors that influence muzzle velocity and on the other hand there are many factors that are influenced by muzzle velocity. There is also a thorough demonstration of how inner and external ballistics co-operate together during fire.
In theoretical part I try to explain some facts about 5,56x45 NATO and 7,62 x 39 M43 bullets and give some basic information about them. Then, I describe some basic inner and

external ballistic features and show how they influence muzzle velocity. Finally, I calculate muzzle velocity and try to determine how muzzle velocity is influenced by variance in bullet weight.
For the practical part, I use weight determination processes to identify the exact weigts of the bullets to be able to count equations of muzzle velocities.

FIM-92 Stinger Missile Air Defense

Gabriel Daniel Gobeajă

"Henri Coandă" Air Force Academy, Brașov, România

In this article I mean to introduce the most important information about a shoulder-fired Man-Portable Air Defense System (MANPAD) developed by the United States in the late 1970s, the FIM-92 Stinger, such as technical specifications, certain parameters, the history of the system and more. The system was designed by General Dynamics and manufactured by Raytheon Missile Systems. It has been in service since 1981 (second generation) and it is still in use now (fourth generation). The Stinger is designed to engage fast, low level, ground attack aircraft. This system is also highly lethal against helicopters and transport aircraft. The Stinger is an improvement over the first generation Redeye missiles previously used against aerial targets. As compared to its predecessor, the Stinger has increased speed and range, improved resistance to countermeasures. It can also identify friendly aerial vehicles. The FIM-92 Stinger missile uses infrared homing. It has an operational range of 8 km. This air defense missile system designed to protect vital small-size and big military areas, industrial targets and land forces units has reinforced the air defense units responsible for the protection of troops and military installations against precision-guided air attack from low and extreme low altitudes.

SIKORSKY UH-60 Helicopter Main Rotor Blades and Their Effect in Operating Mode

Andrei Goga

"Henri Coandă" Air Force Academy, Braşov, Romania

A helicopter is a type of aircraft in which lifting and thrust forces are produced by the rotor (or rotors).
This allows the helicopter to take off and land on the vertical axis and to fly in all directions, thing that fixed wing aircrafts (planes, gliders) can't do.
A helicopter's main rotor or rotor system is the ensemble of several rotor blades and a control system which uses the rotor blades in yaw, pitch and roll movements.
This paper deals with the modeling and simulation of Sikorsky UH-60 helicopter main rotors in different configurations. The main focus is on a new configuration of the helicopter's main rotor, bigger in dimensions than the original one. Several simulations were performed using AeroFoil software for 2D analysis and QBlade software for the 3D analysis of the Sikorsky SC1094 and SC1095R8 airfoils. Conclusions for each of the simulations were drawn and compared to the original configuration in terms of their efficiency and the power needed, using a scale model of the real helicopter rotor.

Guidance and Control Modeling for Missile Flight Simulation

Monica-Andreea Hoinaru

"Henri Coanda" Air Force Academy, Brasov, Romania

Since simulation methodology depends on the type of missile guidance system being simulated and on the objectives of the simulation itself, specific computational methods are given to meet different modeling requirements. The guidance and control functions considered are seekers, guidance processors, autopilots, and control systems. Methods of modeling optical and radio frequency (RF) seekers are given for a wide range of fidelity levels. Lower levels of seeker fidelity are represented by perfect tracking and by accurate tracking but with a time lag. An intermediate fidelity seeker modeled - useful for analyzing the effects of multiple track points within the seeker's field of view - is described.

Aspects Concerning the Concept of Cyber Security

Rebeca-Elena Ionescu

"Henri Coanda" Air Force Academy, Brasov, Romania

The connected electronic information network has become an integral part of our daily lives. Technology has developed very much and it is important in providing us and organizations with the computer security tools to protect the main entities: networks, endpoint devices and the cloud. Cyber security is the ongoing effort to protect networked systems and all of the data from unauthorized use or harm. The aim of a cyber attack is to access, change or destroy sensitive information, to interrupt normal digital activities, money theft and many others. This domain extends very much and everything that is exposed or unsecured properly can be used against us. The danger of a cyber attack could be anywhere and hackers can benefit from them. Cyber security is essential to secure the information related to our private life and organization in order to keep our society functioning.

Normative Basis for Unmanned Aerial Vehicles

Yosif Ivanov[*], Daniela Lazarova[**], Ivelina Koleva[**], Stoyan Vitanov[**]

[*]Air Defense, CIS and Artillery Faculty, Shumen, Bulgaria, [**]Aviation Faculty, Dolna Mitropolia, Bulgaria

The fast development of unmanned aircraft systems and their mass use – mostly unregulated – can create problems for national security and flight safety. This requires for the introduction of rules regarding the aircraft, theor operators and their performed missions. Pursuant to the requirements of the European Aviation Safety Agency, those rules should be based primarily on a risk analysis concerning the operations they are to perform.

A Comparison of Missile Characteristics

Mihai-Andrei Maftei

"Henri Coanda" Air Force Academy, Brasov, Romania

Aerodynamic configuration sizing is conducted to develop the configuration geometry and the dimensions of the missile. The output of aerodynamic configuration sizing includes the missile diameter, length, nose geometry, stabilizer size and geometry and the control surface size and geometry. Areas that also receive primary emphasis because of their strong impact on aerodynamic configurations sizing are aerodynamic stability and control, aerodynamic flight performance, propulsion, structure and weight.

All You Want to Know About Unmanned Aerial Vehicles

Alin Neagu, Bianca Constantinescu

"Henri Coanda" Air Force Academy, Brasov, Romania

Drones are used by thousands of passionate hobbyists as well as by organizations around the world as a pleasant way of spending leisure and even saving lives. The drones can be defined as unmanned aerial vehicles, having the ability to perform absolutely autonomous flights from take-off to landing.

5th Generation Fighter Aircraft Performance

Claudia Popescu

"Henri Coanda" Air Force Academy, Brasov, Romania

"Fifth Generation Fighter" is actually the current standard naming convention for 'next-generation' and most advanced fighter aircraft.
The age of this Generation Aircraft began in 2005 with the USAF Lockheed F-22 Raptor. Yet there are no truly defined or widely-accepted features of this breed and the aircraft under this title often utilize proven features of Fourth Generation Fighter designs and introduce new levels of performance with stealth profiles and advanced avionics with integrated all-digital flight systems.
Nowadays, the only fully-operational Fifth Generation fighters are the United States Air Force's Lockheed F-22 Raptor, introduced in 2005, the Lockheed Martin F-35 Lightning II, which entered service in 2015 and the Chinese Air Force's Chengdu J-20, introduced in September 2017.

Airport Safety & Security Future Plans

Andrei Popovici

"Henri Coandă" Air Force Academy, Braşov, Romania

The purpose of this paper is to explain some future plans in the development of airport safety and security systems. These two concepts have a great impact nowadays due to the evolution of terrorism and safety incidents caused by human errors. The lives and welfare of passengers are crucial concerns in aviation industry so these services must be safe and secure. The events of September 11, 2001 and the multiple accidents caused by human and system errors have raised troubling questions regarding the reliability, safety and security of the civil aviation.

Analyzing Well-Known Countermeasures Against Distributed Denial of Service Attacks

Ștefan Andreas Raoul Rădăcină

"Henri Coanda" Air Force Academy, Brasov, Romania

This paper reviews and analyzes well-known countermeasures against distributed denial of service (DDoS) attacks. This paper provides an in-depth analysis of each countermeasure and enumerates strengths and challenges of each technique. Whenever possible, a countermeasure against each defense mechanism from the attacker's point of view is designed. It is expected for this survey to assist the potential victims in choosing suitable countermeasures against DDoS attacks based on the analysis presented here and the capabilities they need in order to implement the designed techniques. The analysis performed in this paper provides a great opportunity for both academic and industrial researchers to improve the state of the art countermeasures against DDoS.

Ballistic Protection of an Individual Based on Non-Newtonian Fluids

Radovan Stephany

Armed Forces Academy of General M. R. Štefánik , Liptovský Mikuláš, Slovakia

Work on the topic of the Ballistic protection of an individual based on non-Newtonian fluids deals with the theoretical basics and the possibility of their real use in protection against the wounding effects of ballistic shells. The focus of the work was an attempt to prove the effectiveness of non-Newtonian fluids and their possible use in praxis, which would remove the negatives associated with the current ballistic protection of an individual such as high weight, price or reduced mobility of the wearer. The problem was conceived with the idea of using the lowest entry costs with the most effective deceleration or the overall stopping of different types of ballistic shells. Through several experiments, we have proven the efficiency of various types of non-Newtonian fluids to reduce the rate of different projectiles. Based on the experiments and the knowledge we have gained, we have indicated their possible use or other similar materials in the field of ballistic protection of an individual.

Environmental Factors, Human Errors and Safety

Darius-Florin Rus

"Henri Coandă" Air Force Academy, Braşov, Romania

The purpose of this paper is to explain the plans for the development of environmental factors and safety. This concept has a great impact nowadays due to the evolution of safety incidents caused by human errors and environmental factors. The life of the passengers is crucial in the aviation industry so these services must be safe and secure. If we talk about the human factor, we need to cover a broad field that analyzes the interaction between people, cars and the environment in order to improve performance and reduce errors. As aircraft become safer and less prone to mechanical damage, the proportion of human factor-related accidents has increased.

A Comparative Study of Automatic Pilot Functioning on Anti Air Missiles According to Their Guidance System

Alexandru Dumitru Sacagiu

"Henri Coandă" Air Force Academy, Braşov, Romania

Influenced by a variety of factors, the trajectory of a single missile can change the entire outcome of a battle if it reaches its established target or misses it. In order to maximize the possibility of the missile reaching its target, several types of guidance methods have been developed and improved over time, each with its own set of characteristics. In the present paper, battle scenarios in which targets are destroyed or missed are presented, and based on this data set two methods of routing are compared.

Propulsion Considerations in Missile Design and the System Engineering Process

George-Cristian Stefan

"Henri Coanda" Air Force Academy, Brasov, Romania

The missile propulsion considerations are addressed in this project emphasize conceptual design methods, design trades, and the technologies for rocket, ramjet, and turbojet propulsion. Consideration is given to propulsion system alternatives, limits on turbojet compressor and turbine temperature, fuel alternatives, rocket propellant weight fraction required to achieve an incremental velocity, solid propellant rocket specific impulse and thrust prediction, solid propellant grain alternatives, solid propellant composition tradeoffs, storage and propellant aging.

Introducing the Multirole F-16 Aircraft in the Quick Reaction Alert

Gheorghiță-Răzvan Tărîță

"Henri Coandă" Air Force Academy, Braşov, Romania

An F-16 is easy to fly, but it is very difficult to use in combat, and by "difficult" we understand that such a machine is both very precious, but unfamiliar to an air force that has to fly it for the first time. On the other hand, the F-16 is a device that has to fight in combat mode very often so the pilots need to train and maintain their real fighting ability. I will try to present some elements related to the importance of introducing this aircraft into the Quick Reaction Alert of Romania. I will also present Romania's stage in the initiation of this modernization process, which prevents it from introducing the F-16 aircraft into this service and detail the most advanced F-16 production configuration.

The History of UAVs

Valentin Tașcă

"Henri Coanda" Air Force Academy, Brașov, România

UAVs - Unmanned Aerial Vehicles- are aircraft destined to function without a pilot on board, or in other words, to be remotely controlled. Although UAVs have been developed for military purposes, they have become valuable applications in various fields such as science and commerce within the past decade. Originating in World War I, unmanned aerial vehicles completed the mission of intelligent surveillance and recognition, a task hardly suited to normal airships. Technological advancements have shaped the characteristics of UAVs throughout World War II, the Cold War and the Vietnam War which led to enhanced mission performance.

Aerodynamic Considerations in Missile Design and the System Engineering Process

Marian Turi

"Henri Coanda" Air Force Academy, Brasov, Romania

This project is about Missile Design and System Engineering, and it presents a comprehensive review of missile design, system engineering and the technologies involved. This presentation addresses aerodynamic considerations for missile design and system engineering. The conceptual design methods, design tradeoffs, design criteria and technologies emphasize low aspect ratio wing and wingless configurations.

S-300 PMU-2 FAVORIT- One of the Most Capable Air Defense Systems

Răzvan-George Voicu

"Henri Coandă" Air Force Academy, Braşov, Romania

The aim of this article is to present an air defense missile system produced in Russia, which has the mission to protect a state against possible air threats. The S-300 PMU-2 FAVORIT belongs to a very extensive family tree (S-300), which was constantly enhanced and updated, which makes it a very competitive air defense system. I will provide general information, in the beginning, and will then proceed to offer specific data about the most important components of the system. Also, the readers will be provided with valuable insight on how the S-300 PMU-2 works.

3. HUMANITIES & SOCIAL SCIENCES

Conference ROOM E77 & E78

Moderators:

Lecturer Daniela **NAGY** , PhD
„Henri Coanda" Air Force Academy, Brasov

Lecturer Ramona **HĂRŞAN**, PhD
„Henri Coanda" Air Force Academy, Brasov

Student Bogdan **CHICUŞ**
„Henri Coanda" Air Force Academy, Brasov

Student Răzvan **VOICU**
„Henri Coanda" Air Force Academy, Brasov

Psychological Vulnerabilities-Risk Factors for Developing Disadaptive Behaviors in the Military

Andreea Antonie

"Henri Coandă" Air Force Academy, Braşov, Romania

Vulnerability represents a multidimensional construct which includes psychic structures predisposed and destabilizing influences from social environment that acts with intensities and frequencies on human psychic .The knowledge of psychic vulnerabilities helps at optimization of human resources from military system and prevents the appearance of disadaptative behaviors.

Stress: Contemporaneity's Major Issue. Highest Stress Level Jobs

Andrei Ardelean, Erik Szabo

"Alexandru Ioan Cuza" Police Academy, București, România

Stress has been related since ancient times, among many others, with the workplace. We kept our eyes out to the first four most stressful jobs, according to a research made by Career Cast's annual Jobs Rated records. We focused on what that job means, the sources of stress, the effects that it has on the subject`s life and the performance at the workplace,

how to avoid or face it, how to deal with stressful situations without being affected by it and the possible consequences in case that stress was unrecognized and unacknowledged, or they did not look for a treatment due to some personal reasons. For sure we did not miss to make specific remarks for each job.

The History of "Mircea cel Batran" Tall Ship and the Story of Hundreds of Young Cadets

Adrian Cîrlea, Andrei Rusu, Alexandru Tanasă

"Mircea cel Batran" Naval Academy, Department of Naval Engineering and Weaponry, Constanta, Romania

"NS Mircea" is the second ship of its kind that has sailed under the "Mircea cel Batran" Academy banner. This proud Romanian ship trains future sailors every year so that they could learn seafaring skills.
Built between 1938 and 1939, in Hamburg by the "Blohm and Voss" shipyard as a training vessel, the ship bears the name of the Moldavian prince "Mircea cel Batran". She has four other sister ships: the "Eagle" (USA), "Gorch Foch I" (now a museum ship in Germany), "Gorc FochI" (Germany), and "Sagres" (Portugal). On the 4-7th of July 1976 the five ships met for the first and last time to celebrate two hundred years of USA independence.

Handling Burnout: A Study Regarding the Influence of Job Stressors Over Military and Civilian Personnel

Andrei-Mihai Coșa

"Henri Coandă" Air Force Academy, Braşov, Romania

Burnout is a popular phenomenon primarily involving employees who spend most of their time at work interacting with people and trying to solve their problems (Greenglass, E., & Burke, R. 1990). It is likely to set in when people are also affected by other symptoms of stress, like depression and anxiety, or when environmental pressures arise. This multidimensional concept has been defined as a psychological syndrome that occurs as a response to chronic emotional and interpersonal stressors on the job that appear when coping with a difficult work situation. The three core dimensions of burnout are emotional exhaustion, depersonalization and low personal accomplishments (C. Maslach, M.P. Leiter, 2016). It has been proved that organizational factors such as the lack of personal rewards, extra-work, lack of support, excessive demands can have a big impact on burnout occurrence (Cherniss, 1980). The purpose of the present study is to examine the problem of burnout in the military.

A New Cold War in the High North?

Silje Dalhaug

The Royal Norwegian Air Force Academy, Trondheim, Norway

Today, global security dynamics are rapidly changing, influencing regional security environments, as the High North and the Arctic. These are both of high importance and interest for countries in this region, including Norway and NATO. This paper sheds light on some of the most important challenges that Norway, as a NATO ally, faces in the High North, focusing on Russia, climate change and resource wealth dominating the area. The relationship between Norway and Russia is complicated and it is therefore essential for Norway to take care of through both deterrence and reassurance. However, the extent at which Russia poses a challenge to Norway ultimately depends on how Russia and NATO's relationship develop. This paper will therefore discuss the challenges Norway has to manage as a NATO member in the High North, as posed by Russia and the possibility that we might be facing a new Cold War.

Colors

Ioan Răzvan Diaconu

"Henri Coandă" Air Force Academy, Braşov, Romania

As you look around, the eyes send a lot of valuable informations to the brain. You spot a fruit and you can say if it is good for eating or not. You watch the sky and you can predict if it is about to rain or not. You read these words right now and you understand their meaning. The list is longer but to sum up, colors have an important meaning in your life. The color of the fruit helps you create an idea about it, if it is good for eating or not. The color of the cloud will send information to your brain so that is how you can predict the probable weather, and the contrast between the black words and the white background helps you read this article peacefully. Probably, without you even realizing it, colors help you process all the information you need about everything around you. More than that, they can influence your mood.

God Bless the Peace: the Christmas Truce

Ciprian-Vasilică Floare

"Henri Coandă" Air Force Academy, Braşov, Romania

During World War I, on and around Christmas Day 1914, the sounds of rifles firing and shells exploding faded in a number of places along the Western Front in favor of holiday celebrations in the trenches and gestures of goodwill between enemies. This is an example of true humanity in time of one of the cruelest wars in all the history of mankind.

Climate Migration - Disaster Displacement

Lorena Gherghicianu

”Henri Coandă” Air Force Academy, Braşov, Romania

The climate creates one of the most important conditions for our existence. It has been repeatedly noticed that the climate is not just the foundation of human civilization, it also causes its behavioral forms, successes and failures. Therefore, people are either disadvantaged or favored, depending on the situation in their climatic region. However, the term "climate" translates different meanings in areas of human activity. There is a scientific understanding of climate and a cultural conception. Climate change is likely to cause higher temperatures, increased rainfall, a higher probability of drought risk, increase the intensity of a cyclone in a tropical sector that leads to a growing number of floods in some areas. Climate change causes significant transformations in migration patterns around the world. The increased frequency and severity of natural disasters and hazards suggests an alteration of the migration pattern of communities or countries. Disasters vary considerably due to their potential to cause migration. In addition, individual, collective and national vulnerabilities create responses which are just as drastic as the effects of disasters. Focusing on how people are vulnerable according to the political, economic and social situation leads to understanding post-disaster human security.

Emotional Intelligence

Raluca Gabriela Giosan

"Henri Coandă" Air Force Academy, Braşov, Romania

Over time it has been noticed that some people, although having a high intelligence quotient and good academic background, do not achieve the expected results in daily work, paradoxically, even less well-off people from the point of view of their intellect, succeed in achieving success in the actions taken. Researchers in the field have tried to discover what is behind the performance of these individuals. An intelligent, correct and efficient organization of our emotions and feelings may mark our life in a different way, making it more rational. This is why specialists came to the conclusion that the chances of success in life increase if academic training is doubled by what specialists have come to call "emotional intelligence" and "social intelligence."

Psychology

Cristina Andreea Giurescu

"Henri Coandă" Air Force Academy, Braşov, Romania

The article contains information about how psychological effects act on athlete's life, how these influence the performances, the trainings and the feelings of athletes during competitions. Also, there is a focus on how important a psychologist and psychological training are for an athlete – because unfortunately, this dimension of their activity is sometimes forgotten in the context of the ~~a~~ complete training of athletes and the emphasis is just placed on physical training. Also, one of the key points is motivation, which can consist of various reasons from the pleasure of practicing a sport to desperation, the last one being less beneficial. Other key points are volition and determination, which are qualities hard to acquire.

The Influence of the Unit Commander's Personality on the Morale of the Subordinates

Iulia-Simona Ilie

"Henri Coandă" Air Force Academy, Braşov, Romania

The paper aims to emphasize once again the importance of the commander's personality in creating and maintaining the morale of the subordinates. According to the theories discussed by many modern scholars and specialists in the study of relations between commanders and subordinates, we can easily answer the following questions: "What are the essential objective and subjective factors in creating a positive psychosocial climate? Why do homogenous military groups have different results, since they benefit from similar material and situational conditions, as well as an analogous human component? What elements of the officer's personality influence his or her authority and help them achieve the objectives of the rally team?". The research proposes to improve the recommendations on the moral and psychological climate of military structures.

Terrorism and Counter Intelligence

Lucian Ionel

"Henri Coandă" Air Force Academy, Braşov, Romania

This paper contains a history of terrorism, refers to the current situation as far as terrorism is concerned and outlines its basic characteristics correlated with counter intelligence facts, which is a possible way to combat terrorism. The concept of counterintelligence is shown as a hypothetical method and an easy way to face terrorism, involving no violence, but relying on information. Counterintelligence and counterterrorism may well be a source

of positive intelligence on the opposition's priorities and thinking, not just a defensive measure. Still, foreign intelligence capabilities are an important part of early warning. Not all nations maintain their offensive counterespionage and counterterrorism capabilities, and, of course, not all countries can have a worldwide presence. Countering terrorism makes us a less manageable target, increasing uncertainty with the enemy and making a significant contribution to the success of friendly operations. Counterintelligence also identifies friendly vulnerabilities, evaluates security measures and helps implement the appropriate security plans. The integration of intelligence, counterintelligence and counter-terrorism operations creates a cohesive unit force protection program against any type of terrorist act.

Officer Training in Romania

Ciprian Isac

"Henri Coandă" Air Force Academy, Braşov, Romania

The Romanian military has a long history of proving its efficiency on the battlefield by developing exceptional tactical knowledge and discipline. From medieval times, when the rulers and nobility used to have their private armies trained by experienced warlords, to modern times, when military schools and academies have been established all over the country, the collective entities forming the Romanian army stood tall against all conquering enemies. Since 1859, when the current Romanian Armed Forces were founded, the Romanian military schools have been subjected to recurrent reforms in order for them to meet the international standards for military training. The last notable improvement of the military education system was achieved after Romania joined the North Atlantic Treaty Organization (NATO) in 2004. At this moment, higher professional military education can be acquired in Romania by applying for one of the five military academies that provide training for all the military services and branches. The number of high school students who express their will to join a military academy in Romania is increasing every year as the military academies are slowly beginning to rank high, among the most pursued college level educational institutions.

The Impact of Thunderstorm Phenomena on Aeronautical Activities

Aniela – Sorana Ișoiu

"Henri Coandă" Air Force Academy, Braşov, Romania

This article will examine the influence of the thunderstorms on aeronautical activities. Thunderstorm phenomena represent a very high danger for aeronautical activities. In meteorology, there is a clear distinction between storms and thunderstorms. The

meteorological meaning of the word “storm” is given by the wind intensities without being accompanied by electrical discharges. Instead, the term of “thunderstorm” includes both the high instability of the air, and the presence of Cumulonimbus clouds accompanied by electrical discharges and rain showers.

Stress Factors that Affect the Aeronautical Personnel

Georgiana Jitariu

"Henri Coandă" Air Force Academy, Braşov, Romania

Stress represents an important problem in many countries. No matter if you are a civilian or a service member, stress displays the same manifestations. Selye H. claims that one’s stress-free state is called death: which means that stress is actually a normal and permanent part of our life. What matters is the type of stress we live with everyday: eustress or distress.
But what does this term actually mean? And how can it influence our daily activities especially in military world? - The answer is meant to be found in the present paper that attempt to make a comparison between different branches of the air force, according to the stress factors.

Et in Regatta Ego. The Tall Ship Races - My First Sailing Experience at Sea

Mihnea Alexandru Moise

“Mircea cel Batran” Naval Academy, Constanta, Romania

This paper is about The Tall Ship Races and Regattas, events organized by the Sail Training International, an international sail training organisation, with members in 29 countries, Romania included. Romania hosted it as early as 3 years ago when I had the opportunity to participate. Therefore, the following contribution is my personal account of this unique sailing experience. Firstly, I will present in full details what this sailing race and the organization is all about. Secondly, I will introduce you to what the actual life at sea means, with its ups and downs, troubles and joys.
Finally, my involvement in this regatta provided me with several lessons learned, such as the value of teamwork, commitment and friendship.

The Possible Methods of Stress Management in Air Traffic Controlling and its Importance in Aviation Safety

Bernadett Molnár

Department of Aerospace Controller and Pilot Training, Institute of Military Aviation, Szolnok, Hungary

When investigating aviation safety, it is essential to examine the risk factors – such as natural conditions, technical equipment, infrastructure, etc. - where the human factor occupies a prominent position. Over the last decades the impacto of technology and its uses in aviation has grown at an exceptionally high rate, resulting in that more and more functions have being taken over by machines, but the presence of humans is still the most common cause of aircraft incidents nowadays. One of the most significant human roles is that of the air traffic controller, who is aware of the present air traffic situation and makes air transportation safe by providing instructions to the pilots while respecting the regulations. In the process of air traffic controlling, executing parallel tasks is required, which causes more stress with the increase of air traffic. Improper handling of stress leads to mistakes.

IDENTITIES

Anca Moraru

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Psychologically, the basis of identity is the acceptance of a self that retains certain properties like beliefs, personality and values. The self retains a self-image which is a mental model of the self. This self-identity must by necessity be unique – that is, different from other selves – and be persistent – what is past and will be future is also true in the present. Some argue that self-identity is only possible in a being that is self-reflective or self-aware, capable of reflecting on its own existence and behavior. Finally, self-identity serves to support self-esteem and vice versa. A key element of being able to exist successfully is a sense of our own worth or value. We pursue that which increases our self-esteem and avoid threats to it. That is, we accept who we are.
From a sociological point of view, self-identity is related to the roles we perform and the behavior we adopt in the performing of those roles. Identity is a feature of social interaction. People learn their roles through social interaction, in other words through experience-action and feedback. We develop social identities. This process of interaction is known as identity negotiation. Through interaction we develop meanings for identity. For example, if you are born with black skin you will experience the meaning of that identity through living with others. Social identities are the collection of group memberships that define the individual. That is, who we are in interaction with others.

Islam. Terrorist Attacks and the Influence of the Mass-Media on the World

Gabriela Muşoiu

"Henri Coanda" Air Force Academy, Brasov, Romania

This paper aims to analyze Islam and the history of this religion in order to discover the underlying causes of the attacks and wars caused by them. One comment on the impact that these attacks have on the world as a result of the media coverage of the actions of terrorist organizations, it affects the public sphere. At the same time, the presentation of terrorist group attacks creates a different vision for society, a different, uncertain world. By acting violently, by provoking disasters and destroying the lives of many innocent people, the Islamists militate for their own ideology that they are trying to impose on the world.

Suicide Terrorism: Evolution and Motivations

Anda Nan

"Henri Coandă" Air Force Academy, Brasov , Romania

Suicide terrorist attacks are the most lethal form of terrorism, causing 48% of the victims of terrorism during 1980-2003, although they represented only 3% of all incidents of this nature. Extreme nationalism and religious radicalism often have an essential role, individual engagement in suicide terrorism being more often than not a rational act. Researchers have in fact revealed a paradox: suicide terrorists are not psychologically unbalanced peopled. In contrast to the existing explanations, this study shows that suicide terrorism follows a strategic logic, one specifically designed to meet all the goals desired by the terrorist organizations.

The Importance of Nonverbal Communication in the Military Environment

George – Ciprian Nistor

"Henri Coandă" Air Force Academy, Braşov, Romania

Communication in the military environment is an important ability of a true leader. In order to have good contact with their subordinates, a true leader needs to know when and how to regulate nonverbal behavior: gestures, posture, clothing, voice. If an officer controls his or her nonverbal behavior very well, its relationship with subordinates will be based on respect and seriousness, but at the same time, it will be a friendly relationship.

Military Operations. What's in a Name?

Eduard-Andrei Onofrei, Vlad-Cosmin Sofrone

"*Mircea cel Batran" Naval Academy, Constanta, Romania*

Naturally, several series of military operations involve matters of military secrecy, more precisely, coded names. Firstly, we will take a look at the definition of the key term: military operations. So, what is a military operation? It is a (military) state coordinated action as a response to an ongoing situation. Secondly, we will examine the process of naming them, which goes according to the purpose they served (for security reasons). Moreover, we will analyze the relationship between the names given to several operations carried out in different theaters of operations by the US Armed Forces, and their nature. Finally, we will draw several conclusions regarding the way military operations are "baptized".

The Relationship between Job Satisfaction and the Five Main Dimensions of Personality

Mirela-Daniela Petre

Ovidius University, Constanta, Romania

This research investigates the link between job satisfaction, which is the employee's level of positive effect, cognitive and behavioral components in relation to his job, and the -Five Main personality traits. The objectives are the correlation between the five personality traits and work satisfaction and to answer the question whether there is a difference between the five traits and choosing a career in the police.
The tests were applied to 60 policemen from Braila, the lot being divided equally into borderline policemen and criminal police officers. The hypotheses have been confirmed, with the "openness" personality trait being the most significant in both cases.

The Danger that Lies in the Heights

Bianca Pop

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Hypoxia is a disease caused by the low level of oxygen in the air. This disease is encountered in the world of aviation due to flights at high altitudes where the atmosphere has other features than on the ground. To understand this phenomenon called hypoxia, we need to understand how the body gets the oxygen it needs. In the body, there is oxygen with a lower partial pressure than in the atmosphere. At the moment of inspiration, the air that contains a higher partial oxygen pressure will tend to go in the zone with lower partial

pressure. As the two partial pressures equalize, the body will receive the oxygen it needs. Hypoxia is a disease that often causes disasters and this could be avoided by simply being aware of the characteristics of this disease and the way in which it acts on the human body. This paper presents the ways in which it installs and develops in order to raise awareness on the topic and help prevent this disease.

Unconscious Religious Patterns Embedded in the Identity of Military Professionals

Ema-Teodora Rădulescu

University of Pitești, Romania

The army and the church have always shared a tight connection. In the secular era, the relationship between the military personnel and religiosity has not vanished, but has rather taken other forms, mostly hidden, unrecognized, unconscious ones. In the following paper I aim to develop this insufficiently explored topic.

Preventing Human Errors in Flight Performance by the Optimization of Radio Communications

Constantin Roșioru

"Henri Coandă" Air Force Academy, Brașov, Romania

This paper presents the effects of perturbing factors which act on the pilot's flight performance. The human being is the most flexible, adaptable and valuable part of an organization, but it is also the most vulnerable to influences affecting performance. An important role in preventing human error is the involvement of visual and auditory senses in making a decision. Behavior and human performance are regarded as being the cause of most accidents. Using a good example, we have demonstrated that human error can occur at the level of radio communications between the pilot and the air traffic control structures, especially because of the misunderstanding of the transmitted message. The focus of the current study is represented by the importance of engaging the visual sense in messages transmissions between the pilot and the air controllers. At the end of this paper, we have formulated an alternative approach to reduce the risk of transmitting and misunderstanding messages between these two cooperating structures. In this sense, optimizing radio communication by stimulating both visual and acoustic analyzers is a solution.

Environmental Pollution – Overview and Possible Interventions

Ștefan-Vasile Sfarghiu

"Henri Coanda" Air Force Academy, Brasov, Romania

We chose this topic because from our perspective pollution is a global problem, one each of us has to face every day. Our goal is to raise awareness and make people realize the consequences of their actions, in the hope that they will be more careful with the environment in the future and will eventually help fight pollution. In this project, we focus on air pollution, water pollution and soil pollution. Also, we refer to the effects of pollution, and we investigate ways to avoid it and methods of prevention. We also detail the issue of pollution in Romania.

The Human Mind - The Ultimate Enemy of Financial Investors

Ovidiu-Andrei Stănică

"Henri Coandă" Air Force Academy, Braşov, Romania

The financial markets have become increasingly popular during the last decades, not only for the fact that economics is such a discussed subject nowadays, but because it is now easier than ever to start diving into the sea of financial opportunities. From trading CFDs, binary options and stocks to trading currencies on the foreign exchange market, there is a place for each and every trader/investor to get to know how the money flows in the 21st century and to get to experience the largest market ever in motion. Whether the retail trader happens to find himself struggling with consistent profits on the stock, foreign exchange, commodity or indices market, we can start an entire discussion around the reason(s) why that is still a problem for such a large percentage of individuals. From having a "get-rich-quick" mentality to over-leveraging and risking more than the trader could lose, this vast area of issues is to be discussed in the following pages.

The European Union - Origins, Evolution and Perspectives

Alexandru-Nicolae Stefan

"Henri Coandă" Air Force Academy, Braşov, Romania

Top leaders inspired the creation of the European Union we live in today. Without their energy and motivation, we could not enjoy this space of peace and stability that we have become accustomed to. From resistance fighters to lawyers, the founding fathers were a heterogeneous group of people sharing the same ideal: a united, peaceful and prosperous

Europe. Besides its founding parents, many other people have inspired and helped build the European project. This initial selection of the founding parents is therefore constantly evolving and could be still open for discussion.

Stress and Compulsoriness with Police Officers

Diana-Maria Stoica, Petre Mirela

Ovidius University, Constanta, Romania

In the present study, I examined the differences between criminal police officers and border police officers. The study investigates possible significant differences in stress levels and mentality with the two types of policemen. Two tests were applied on 60 participants, 30 of each category. One test was for measuring stress and the other one for observing the mentality of the employees. The study has 2 hypotheses: the presumption that there are significant differences in stress levels between the two types of officers and the presumption that there are significant differences between the levels of compulsoriness. The hypotheses were confirmed.

Human Factors for Pilots

Alexandru-Flavius Toarga

"Henri Coandă" Air Force Academy, Braşov, Romania

This article refers to the influence of the human factor on pilots. In the life of pilots (whether they are helicopter pilots or fly fighters) there are factors that can negatively influence the activity they perform. The main objective of this contribution is to see how chronic stress and alcohol influence the lives of pilots and how their capabilities begin to decrease. Stress is a complex psychosocial phenomenon that comes from confronting the person with demands, tasks, situations that are perceived as difficult, painful or of great importance to the person. Alcohol is also a negative human factor in aviation, because it reduces the concentration and response capabilities of pilots. With regard to alcohol, in this article, we will present some of its essential aspects, especially focusing on the way in which it influences the body of the pilots. Thus, some of the negative consequences will occur in case of aeronautical activity under the influence of alcohol.

Timur Lenk – Iron Man

Sebastian Vasile

"Henri Coandă" Air Force Academy, Braşov, Romania

The story of Timur Lenk, the last great nomadic conqueror, fascinated and terrified generations alike. Seen as a national hero in today's Uzbekistan, buried by his subjects with honors due to a saint, Timur would associate his name in the neighborhood with the terrifying image of the skull pyramids left behind and with the massacres of unimaginable cruelty committed, deeds compared to which those of Attila the Hun or Genghis Han themselves would look like child's play.

The Influence of Human Factors in Air Traffic Control

Ștefan Alexandru Vasile

"Henri Coandă" Air Force Academy, Braşov, Romania

The aim of this paper is to present the importance of human factors when referring to air traffic control. Air traffic control represents an important element in aviation safety and it relies deeply on human factors and their behavior. The vital role of the operational procedures in the world of aviation industry will be underlined through detailing certain elements in aviation incidents that could have led to social or economic disasters. The conclusion will be exemplified using methods and objectives followed by the evaluation of the continuous process of actualization concerning the operational procedures and the development of aviation safety.

4. Fundamental Sciences & Engineering

Conference ROOM E39 & E44

Moderators:

Assist. Prof. Eng. Cristian-George **CONSTANTINESCU,** PhD

„Henri Coanda" Air Force Academy, Brasov

Assist. Prof. Eng.Vasile **PRISACARIU**, PhD

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Student Rebeca **IONESCU**

„Henri Coanda" Air Force Academy, Brasov

Student Maria **TUDOR**

„Henri Coanda" Air Force Academy, Brasov

Creating a Radar Module for Didactic Use

Marius Cosmin Anghel

"Henri Coandă" Air Force Academy, Braşov, Romania

The article examines the methods that can be applied in support of practical education. Nowadays, there is great emphasis on progressive and continuous learning but this cannot be achieved so easily because of material reasons. I tried to develop and demonstrate how easy it is to keep up with the help of modules purchased from the internet and put into practice based on the information available on YouTube. I have tried to correlate one part of the radar – which is the most expensive part of today's technology – and, at the same time, the most advanced one. Consequently, I have only created a small part of what a project like this can achieve and thus, I have demonstrated the usefulness of this project, showing that it can be used in practical lessons in the academic field.

Using of Arduino Uno Developing Kit Into the Process of Determining the Accuracy and Reliability of Temperature Sensors

Alexandru-Ionuț Badea

"Politehnica" University of Bucharest, Romania

This essay presents some aspects referred to differences between analogic and digital temperature sensors. Based on the "Arduino UNO Starter Kit" DHT11 analogic temperature and humidity sensor and the DS18B20 digital temperature sensor, using a certain coding for each sensor, we will observe the advantages and disadvantages of them.

The Sound and Effects Caused by Ultrasound and Infrasound

Antonio – Cristian Baias

"Henri Coandă" Air Force Academy, Brașov, Romania

The present paper includes the definition of sound, the parameters that define this unit, the types of sounds and their applications, the effect on people who are exposed to ultrasonic and infrasonic waves and the echo.
Physically, a sound is any mechanical energy that propagates through a material in the form of a wave. People perceive sounds with frequencies between 20 Hz and 20 kHz. Ultrasounds are sound waves with a frequency greater than 20 kHz, which people do not hear, but they can have physical-psychic effects on them.
Infrasound is also a sound wave with a frequency of less than 20 Hz that cannot be heard by people but can have negative effects on them.
By ultrasound systems, metallic and non-metallic objects or movement can be detected (via motion sensors). The distance to the objects that are discovered by the ultrasound emitters, is realized by the propagation time up to the object and back, knowing the speed of the sound.
The echo it's a phenomenon based on the reflection of sound by an obstacle.

The Colors of the Aurora

Denisa - Nicoleta Baias

"Henri Coandă" Air Force Academy, Brașov, Romania

The present paper includes a definition of a natural phenomenon called aurora, the process of the aurora's creation, the balance of colors that appears in the sky and the main factors that affect the color of the astronomic phenomenon.
The aurora is an enchanting phenomenon that can be observed at high altitude in different colors. The light of aurora is generated by atoms and molecules of the air when they are stuck with energetic particles come from space. The main factor in determining the colors is the altitude which the solar particle collide with our atmosphere. Also, each altitude has a different concentration of energy and gasses, that the collision which excites the gas determines the color of the aurora.
There are many tones of color that our eyes can see in the sky, such as yellow, pink, blue, green and red. The red color is not seen frequently in the aurora, it tends to be associated with intense solar activity.
The naturally phenomenon is difficult to predict because it depends most of all on solar activity.

The Evolution of Air Traffic Control

Denisa-Ana Balea

"Henri Coandă" Air Force Academy, Brașov, Romania

Air Traffic Control's main purpose is to supervise the movements of the aircraft and to prevent the collisions that may occur between them. The air traffic controllers permanently interact with the on-board crew via voice radio. Nowadays, the aircraft are equipped with great technology in order to improve the safety of both the passengers and the entire personnel. If there is a lack of communication between the ground staff and the pilots because of weather conditions or wrong data provided, the majority of aircraft are able to detect a possible intruder, which can lead to pilots' maneuvers to prevent an unfortunate event. So, in this paper I study what an ATC system involves and its main characteristics to get a better view ~~of~~ on how it really works.

Urban Influence on Air Temperature in Brașov

Alexandra-Elena Bombea

"Henri Coandă" Air Force Academy, Brașov, Romania

This paper is intended to illustrate the way in which a city influences the temperature in its region and changes it in such a way that it comes to differ from the specific temperature in

that area. Over time, studies have shown that cities have different temperatures than the surrounding areas (suburbs, peripheries), creating a so-called urban heat island. By studying the thermic data from 9 stations monitoring the climate of Brasov for a period of 9 years, the differences between the temperature of the city and the suburbs / surrounding areas are explained.

5G Technology

Călin Bucur

"Henri Coandă" Air Force Academy, Brașov, Romania

5G is the name of the fifteenth wireless technology, the next generation of wireless technology. The new standard in telecommunication technology is designed to be used by any smart, smaller or larger gadget, more or less useful. Autonomous cars, virtual reality, intelligent devices (and IoT – the Internet of things) are just a few of the technologies that will benefit greatly from the emergence of the 5G standard. We will also benefit from simpler surgical procedures, safer means of transportation and the possibility of instant communication. 5G is not just for mobile phones. Most people already have smart devices in the house: a speaker, a thermostat, or a bulb. Such gadgets will have the opportunity to reach the 5G network to operate on a high-capacity network. The current 4G technology, can not provide enough bandwidth for all devices to operate the way they should. This last factor determines the initial evolution of the technology: 5G will complement and will not replace the 4G standard, at least in the early years of development and maturity of the standard.

Introduction to Simulation and Modelling

Octavian Budreală

"Henri Coandă" Air Force Academy, Brașov, România

This introductory tutorial is an overview of simulation modeling and analysis. Many critical questions are answered in the paper. What is modeling? What is simulation? What is simulation modeling? What types of problems are suitable for simulation? The intended audience is made up of those who are unfamiliar with the area of discrete event simulation as well as beginners looking for an overview of the area. This includes anyone who is involved in system design and modification - system analysts, management personnel, engineers, military planners, economists, banking analysts, and computer scientists. Familiarity with probability and statistics is assumed.

Characteristics and Performance of Propulsion Systems of Trainer Aircraft

Ștefan Buțincu

"Henri Coandă" Air Force Academy, Brașov, România

Propulsion systems that fit distinct aircraft categories were developed in accordance with the type of aircraft on which they were meant to be used (trainer aircraft, transport aircraft, multilevel aircraft). By means of a comparative analysis, the article highlights the characteristics and performance of 4 aero-propulsion systems that equip 4 well-known aircrafts.

Characteristics and Performances of UAV Piston-prop Systems

Dan Comșa

"Henri Coandă" Air Force Academy, Brașov, România

Propulsion systems that equip different types of unmanned aerial vehicles were developed according to the type of mission they were built for, so there are UAVs of different sizes, ranges and capabilities. Both military and civilians use UAVs for different purposes like: reconnaissance, surveillance, spying or combative purpose (for military) aerial pictures, speed contests or even in construction sites (for civilians). Propulsion systems used to power those UAVs varies according to the mission, using small sizes piston engines in different configurations (for surveillance UAVs) and turbojet engines and turbo-prop engines (for combat UAVs). This article is meant to highlight the characteristics and performances of different types of propulsion systems based on pistons that equip light UAVs used by civilians by using a benchmark.

Ground-Based Augmentation System

Laurențiu Ioan Cucu

"Henri Coandă" Air Force Academy, Brașov, Romania

This paper describes the functioning, use and technical capabilities of Ground-Based Augmentation System or GBAS. The GBAS is a satellite based technology that corrects the data provided by satellites. GBAS comes as a great help to civil aviation. It drastically increases the safety of all passengers as the system improves the accuracy of the approach phase and makes landing easier, a part of the flight in which an airplane is most vulnerable to crashing. GBAS is still an improving technology and awaits greater popularization as only

four airports in Europe host the category 1 system. Category 2 and 3 are also awaiting greater development and higher accuracy.

Synoptic Analysis of the Late Blizzard of April 19-21, 2017. A Case Study

Mădălina Lorena Donisan

"Henri Coandă" Air Force Academy, Brașov, Romania

This paper aims to analyze both the conditions having favoures the genesis and evolution of the blizzard that affected Romania's territory on April 19-21, 2017, and its impact on socio-economic activities in some regions of the country. Blizzard is the most representative climate risk for the eastern and southern regions of Romania in the cold season of the year. Annually, blizzard causes significant damage in the regions in which it occurs, especially when it turns to be a severe episode of early or very late blizzard. The reason for this case study is the extremely late occurrence period of this winter phenomenon. The blizzard that affected our country on April 19-21, 2017 is the most recent late blizzard recorded on large areas in the recent history of Romanian climatology. The synoptic analysis in this paper is based on satellite images and synoptic maps that define the distribution of atmospheric pressure at ground level. Essential elements that encouraged the genesis of this late blizzard could be discovered through its synoptic analysis. These could be useful to the improvement of future weather forecast of similar events, so to the reduction of risks associated with these hazardous phenomena.

Broken Wire Detector

Valentin Dumitraș

"Henri Coandă" Air Force Academy, Brașov, Romania

A device may work correctly only if here is a connection between its components, including consumers and the power supply. The conductive wires are designed to provide the connection between the circuit components. When there are problems with the connection wires, for example, the wires are broken, the devices or the consumers are no longer working. For such a problem, those threads had to be replaced altogether, especially if they were isolated. In order to fix this problem with great ease, the broken wire detector was invented. In this project we will analyze the use, advantages, construction and operation of the broken wire detector.

The ION Propulsion

Răzvan-Nicolae Duțu

"Henri Coandă" Air Force Academy, Brașov, România

The purpose of this article is to explain how the main types of ion thrusters work and to present their advantages and disadvantages. The concept behind the electric propulsion was first imagined as a future possibility 100 years ago. With hundreds of ion thrusters operating in orbit now, we can say that we are already living in the future. An ion thruster is a form of electric propulsion, a technology which aims to achieve thrust with high exhaust velocities, thus reducing the amount of propellant needed for a given mission. With less propellant onboard, the launch mass of a satellite or a spacecraft is significantly decreased, which leads to lower mission costs. The traction levels developed by the ion thrusters are small, compared to those created by conventional rocket engines. Given the fact that ion thrusters cannot work in the presence of the ions outside the engine, they can be used only in a vacuum. Ion thrusters are designed for different types of missions, from satellite station-keeping to propelling spacecraft in the outer space.

A Continuous Flux of Information via a Wireless Black Box

Elena-Daiana Ghiniță

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A **Flight Recorder** (FR), commonly known as **Black Box**, is an electronic device installed in an aircraft, used to assist investigators in the event of an incident or accident. There are two distinct Flight Recorder devices: the Cockpit Voice Recorder (CVR), used to record the conversations of the pilots or the communications between pilots and air traffic controllers; and the other one is the Flight Data Recorder (FDR), used to record flight parameters such as altitude, location, engine temperature, speed, fuel level, and system performance. In case of an accident, the probability of losing the existing Black Box increases. So, the recorded flux of information will be certainly lost, which leads to a major problem. If this really happens, it is usually very difficult to identify the cause of the crash. Taking into consideration these difficulties, a good idea would be to transmit the data to the nearest ground station in real time. The data would be transferred via a XBEE-Radio Frequency Module (long range) or, briefly, via a wireless system. This paper aims to meet the need of today's aviation field to reduce and prevent air disasters.

Fundamentals of Directed Energy

Răzvan Herțeg

"Henri Coandă" Air Force Academy, Brașov, Romania

The aim of this project is to show the basics of directed energy, their potential in future warfare and the reasons why it's time to focus more on this technology. When we say directed energy, the most common device that would come to mind would be the laser, but there are many other applications and some of them have amazing features. If we are to take a closer look at directed energy, we also have to talk about the electromagnetic spectrum which is nowadays a critical enabler for modern militaries. If at first the electromagnetic spectrum was a source of battlefield advantage, in today's era those who exploit the electromagnetic spectrum better will win the war. All in all, the capabilities of directed energy technology can easily surpass every weapon system as it is in continuous evolution. We should consider it in the future, as it may very well win the next war.

Audi Sequential Turn Lightning

Florentin Iacoboaie

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The new Audi turn signals style has improved on the classic signal using sequential circuits and LED's LEDs for an increased lifetime and a more attractive look. Adopted by all new car manufacturers, this new concept changed the worldwide image of auto turning lights. This project will analyze the process of manufacturing and the ways in which this new type of turn signals for automobiles was made, in order to provide deeper insight on this successful new design.

Digital Radio-transmitter Lines

Nadezhda Serkis Laziyan, Didi Zhelyazkova Ivanova

Aviation Faculty, National Military University "Vasil Levski", Dolna Mitropoliya, Bulgaria

Modern radio-transmission lines used for direct connection give an opportunity for the transmission of TV programs, thousands of phone messages and streams of data over vast distances. For the usage of such data streams, wide band-length of several megahertz and a carrier signal of several gigahertz is required.

Testing the Frangible Signal Light Holder for Airports

Dănuț Ilie Matei

University of Petroşani, Romania

By “beaconing”, we understand the totality of optical, acoustical or radio apparatuses which permanently indicate the limits of an airfield, the landing place, the points where certain maneuverings must be performed, dangerous obstacles and places etc. The signal light is an optical sign for marking the margins of an airfield or of the landing runways. ~~In~~ Within the area of an airport, any body with lights that is situated above the level of the runway must have a breaking section that would give in the case of a collision with a plane or any other vehicle. This breaking section of the holder is ensured by a frangible coupling, which is a replaceable part of the holder. In this paper, we present the checking of an aluminum frangible coupling. The frangible coupling was made by ElectroMax Petroșani and was tested in the Laboratory for the Strength of materials at the University of Petroșani.

Electrical Propulsion Systems in Aviation

Bogdan-Mihai Micu

“Henri Coandă” Air Force Academy, Braşov, Romania

The current article presents the introduction and launching of a more suitable propulsion model for aircraft. Due to global warming, the entire industry related to car and aircraft construction had to adjust to new world regulations with regard to pollution reduction norms. Accordingly, electric motors have become increasingly common since they are more effective and less costly. Nevertheless, should car running on electrical engines be common sight, in case of aircraft reality differs since electrical engines mounted on aircraft are quite rare. Electrical engineers have been preoccupied to develop an optimal engine to equip an aircraft that is able to use little resources and be autonomous for longer intervals of time. The current paper provides data regarding the emergence of electrical propulsion, the first Romanian inventor of an electrical aircraft and some inventions capable to initiate a huge revolution in aviation.

Aerodynamic Analysis of Convertoplane Fuselages

Cristian Mihai

“Henri Coandă” Air Force Academy, Braşov, Romania

This project is focused on the aerodynamic design of a tilt-wing VTOL, Vertical Takeoff and Landing. A tilt- X (X being the wing or rotor) is an unconventional hybrid design using both fixed-wing and rotary-wing aircraft design principles. This project illustrates a short

overview of the tilt- X concept. The conceptual design was carried out by means of specific software tools such as XFLR.

Labview NXG Applicability in Real-Time Management of Distributed IoT Environments

Alexandru Naita, George-Alexandru Doroftei

Transilvania University of Brasov, Romania

Over the last two decades, the graphical language became an important asset for programming in engineering. The LabVIEW platform using this language is a proven instrument in the automation industry. Several key features like network communication and some protocols for communications, like UDP, TCP/IP were included in LabVIEW and made adjusted it to the distributed environment. For real-time distributed systems, an advanced LabVIEW NXG (NeXt Generation) was launched by National Instruments. This paper assesses its applicability to the newest IoT challenges – remote procedure calls, automated building and execution of the code for Edge-/Cloud- computing and seamless aggregation of local-/online- resources based on REST (Representational State Transfer) web services.

Technologies for Obtaining Geographic Information System Data: Lidar

Andrei Adrian Negura, Alexandru Antal

"Henri Coanda" Air Force Academy, Braşov, Romania

A geographic information system comprises a collection of geographic data, purchased, stored and managed with the help of a computer, which can perform various analyses. Geospatial data used in a GIS system can be collected via different methods such as satellite methods, telediction methods, topographical, photogrammetric methods but they can also be placed on analog formats through digitization.
The data represents the most important component of the geographic information systems. Geographic data and tabular data associated to it may come from internal sources or can be purchased from specialized distributors.
The front shows the technologies of geographic information by LIDAR and digitization. LIDAR Technology is an integral part of modern remote sensing, with an active sensor. It has experienced rapid growth and sustained need for continuous production of geospatial information as precise regarding the topography of the land, such as digital terrain model and model digital surface.

Cloud Electricity

Iulia Onișa

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This article provides an outline of the major cloud charging mechanisms, an overview of the physics of cloud-to-ground lightning which include the initiation, propagation and attachment to ground phase. Both conventional and runaway breakdown mechanisms of lightning in thunderclouds are reviewed. I shall primarily limit my approach to summaries of some observed electrical properties of clouds and to observing which are the particles contained inside them. Also, the mechanism and parameters of compact intracloud discharges which are thought to be the most intense natural producers of HF-VHF radiation on Earth (3-300 MHz) are reviewed in this article. Interaction between lightning and the ionosphere with the production of energetic radiation (gamma radiation and X-rays) and the consequence of lower positive charge region in facilitating distinct types of lightning are considered. The ways in which airplanes and flight activities are affected by lightnings and the required actions following a lightning strike to an airplane are showcased as well. The lightning-strike conditions for ~~a~~ commercial airplanes are equally considered and presented.

Occurrence of the Lift Force

Angelo-Mihai Papa

“Henri Coandă” Air Force Academy, Braşov, Romania

Many people question the way in which airplanes fly. The present paper sets off to explain how lift occurs and by what it is influenced. Over the years engineers from all over the world tried to find the best special shaped wings for aircraft to develop lift force and result in the lowest drag coefficient. In order to do that, many tests had to be conducted and observations were made about every parameter involved in the production of lift. In this paper you will find what is needed to understand the basics of aerodynamic theory.

The Influence of Weather Phenomena on Flight

Narcisa Pintilei

“Henri Coandă” Air Force Academy, Braşov, Romania

The article examines the most important weather phenomena for aviation and their crucial importance on aircraft performance. The paper consists of details regarding each meteorological phenomenon, their influence on aviation and some solutions which might help avoid extreme weather conditions or be applicable in case there is no other possibility to avoid hazards.

Protection Against Foreign Object Debris (FOD)

Radu-Gheorghe Poenar

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Nowadays, each airport presents rules and measures of prevention and detection of foreign objects debris. Thus, each airport has its own rules and its own policies regarding this issue, which make up the safety rules of the unit. Some foreign objects are stored in the operating area and it is important that all staff members understand the danger of exposure. FOD can be sucked into the aircraft engines, can cause a flat tire, can cause serious structural changes to the fuselage, and these incidents can cause aircraft failure or, in exceptional cases, can lead to accidents, some of which are very serious. The importance of this concept is to keep the runway clean and eliminate any possibility of an incident.

Using Holography in Military Education

Adelin Florin Poenaru

"Henri Coandă" Air Force Academy, Braşov, Romania

Theory lies at the basis of fundamental knowledge demanded by the military career; nevertheless, practice comprises the acquired knowledge in a vast cerebral process and helps military professionals improve. It is known that visual memory plays a decisive role in understanding and assimilating knowledge faster. This paper presents fundamental notions about holograming and its impact on military education, differentiated methods of creating holograms and conclusions related to holograms' effectiveness. Considering that a combatant acquires most of his or her skills through practical activities, a program for editing pictures and videos was searched for. This interactive way of learning allows cadets to acquire the necessary knowledge, equally implying commitment and dedication on their behalf.

Considerations on Turboshaft Compressors

Alexandru Robeci

"Henri Coandă" Air Force Academy, Braşov, Romania

Propulsion systems used on rotary wing aircraft require certain design features arising from the operational needs of these types of aircraft, such as geometric (compact) or high shaft power optimized depending on the helicopter type and its main mission. The use of turbo-engines for vertical take-off aircraft has opened new horizons on missions where large take-off masses and airborne flight conditions (unplanned missions) are used.

Development of Optical Communications from Fires to Contemporary Technology

Maria Ventsislavova Romanova, Nikolay Stoyanov Dimitrov

Aviation Faculty, National Military University "Vasil Levski", Dolna Mitropoliya, Bulgaria

The use of light for communication purposes dates back to antiquity if we interpret optical communications in a broad sense. Most civilizations have used mirrors, fire beacons, or smoke signals to convey a single piece of information. Essentially the same idea was used up to the end of the eighteenth century through signaling lamps, flags, and other semaphore devices. The idea was extended further, following a suggestion made by Claude Chappe in 1792, to transmit mechanically coded messages over long distances by the use of intermediate relay stations, acting as regenerators or repeaters in modern-day language.

Design and Development of Mini-Aerial Platforms for Development and Testing

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The field of UAVs (unmanned aerial vehicle) met a steady development in recent years, supported by both military research and civilian enthusiasm generated by the low cost of researches as well as by the endless applications of the pilotless aircraft. This paper describes the perspective and the realization of a 1:64 scale aircraft model, in order to highlight the effectiveness of using pilotless aircrafts on board in the near future, not only to supervise the conflict areas but also for other types of missions.
This case study deals with military aviation aspects. From an educational point of view, the access to pilotless aerial platforms is facilitated by the availability of constructive elements on the market and in this context, the current paper represents the realization of a few unmanned aerial platforms which are low cost, in-house fabricated by students, and whose purpose is to work as educational development and testing platforms.

MH370 Air Crash Investigation

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On the 8th of March 2014, a Boeing 777 aircraft belonging to the Malaysian Airlines, flight number "MH 370", which took off from Kuala Lumpur International Airport, disappeared from the ATC radars shortly after take-off. The Malaysian government along with civil and military flight safety organizations started the investigation of the disappearance immediately after. The current paper aims to analyze some of the elements that conducted to the disappearance of the aircraft and later on, to its crash.

The Meteorological Station and Platform

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In this article, I will focus on the meteorological station. I have chosen to deal with this subject in order to showcase the amount of knowledge humanity currently holds in matters concerning the environment and how much we have evolved as far as technology is concerned. It is important for us to understand the evolution of weather and climates, to anticipate future natural events that will take place in a certain location at a certain time to be able to prevent unpleasant incidents such as storms or heavy rains. Sometimes we can prevent natural disasters through some simple calculations and statistics.

The Raman Effect in Medicine and Optical Communication

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Raman spectroscopy is a spectroscopic technique based on inelastic scattering of monochromatic light, usually from a laser source. Inelastic scattering means that the frequency of photons in monochromatic light changes upon interaction with a sample. Photons of the laser light are absorbed by the sample and then reemitted. The frequency of the reemitted photons is shifted up or down in comparison with original monochromatic frequency, a phenomenon called "the Raman effect". Raman amplification has been one of the optical amplifier technologies that had a slow start, but then experienced a wide deployment with increasing performance needs of optical networks.

International Aspirations and Opportunities to Reduce Air Pollution Produced by Aircraft Engines

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The aircrafts has changed so much during the past decades, to meet the requirements of the modern World, but they also cause problems. It has been demonstrated by nowadays enviromental safety that CO_2 emissions have increased in the past decades. The human factor and aircraft engines contribute to this pollution. The possible alternative to meet the increasing energy demands may be alternative fuels such as bio and synthetic fuel research and development. There are a lot of investigations going on in a lookout for the suitable alternative jet fuels. Nowadays there is a project conducted by the Institute of Aviation for the alternative fuels which can be used for National Aircraft. Therefore, I chose to show the conventional fuels' physical and chemical parameters and to discuss different types of bio fuels belonging to different generations, for example biodiesel, and synthetic fuels, such as BTL and CTL. Thus, I was led to the conclusion that alternative fuels are the solution of the futureIn my view, the Hungarian Defence Force is ready for the innovation brought about by the new technologies.

Emergent Aspects of Flight Simulators

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Flight simulators have been designed and developed for the past seventy years, primarily for the training and evaluation of pilots. In this regard, the flight simulator represents a highly sophisticated and complex technology which has been largely successful in its goal of creating a ground-based, synthetic environment for pilot training. But no discussion of flight simulation would be complete without at least some reference to its role in aviation research. Flight simulators used for research also have a different user population. Accurate and complete recordings of simulated aircraft performance under a wide variety of scenarios require extensive instrumentation of flight simulators used for research. The designers of research simulators also need to address the issue of fidelity. Fidelity in research simulators is even more important than it is with training simulators since much of the research conducted on these simulators is based on the assumption that the simulator is a wholly valid surrogate for the aircraft. Facilities engaged in aviation research where flight simulators are the main research tool are located all around the globe. Many facilities are owned and operated by government agencies and universities. They have been selected to provide a sense of the wide diversity of research activities supported by flight simulator technology.

Parametric Analysis of a Mechanical System

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The current paper aims at identifying the relation between the speed of a wheel and the load that can determine the motor torque, the friction force between two objects which are made of identical or different materials and the necessary weight to stop an electric motor. The experiments performed indicated the interdependence between the speed of the wheel and the load applied to it. By means of this relation, the force necessary for controlling the brake action can be established with precision.

Atmospheric Precipitations. A Study on the Variability of Annual Quantities of Precipitations and the Linear Development Trend (1961-2013)

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Precipitations are hydrometers that consist of ~~a~~ the fall of a particle assembly. Types of precipitation are: rain, drizzle, snow, snowy grains, snow pellets, hail, ice pellets and diamond dust. Precipitation occurs when a portion of the atmosphere becomes saturated with water vapor, so that the water condenses and "precipitates". Increasing temperatures tend to increase evaporation which leads to more precipitation. Precipitation has generally increased over the land north of 30°N from 1900 to 2005, but has declined over the tropics since the 1970s. Globally, there has been no statistically significant overall trend in precipitation over the past century, although trends have varied widely by region and over time.

Open Source Navigation Systems Used on Unmanned Aircrafts

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Technology has performed a tremendous leap in the last decades, developing a wide range of systems that help monitor land, sea and air space. Some of these systems are unmanned aircraft. The absence of the human pilot inside the aircraft requires the presence of a system that ensures the proper functioning of the device. In this paper I will present the importance of navigation systems in the context of the current development of unmanned aircraft.