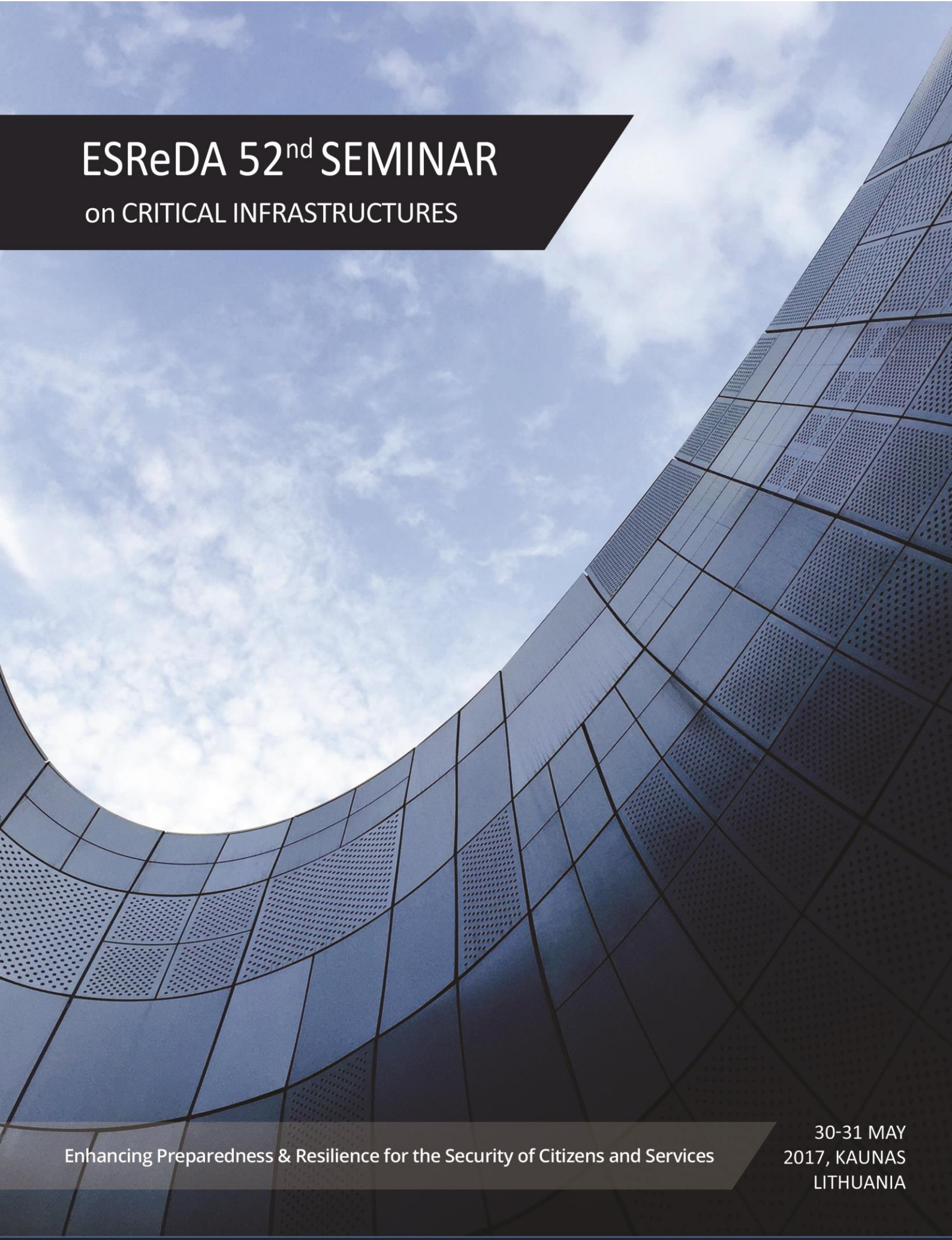
ESReDA 52nd SEMINAR

on CRITICAL INFRASTRUCTURES



Enhancing Preparedness & Resilience for the Security of Citizens and Services

30-31 MAY
2017, KAUNAS
LITHUANIA

ESReDA | European Safety, Reliability & Data Association

LITHUANIAN ENERGY INSTITUTE
http://www.lei.lt

VYTAUTAS MAGNUS UNIVERSITY
MCMXXII

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Preface

Critical Infrastructures Preparedness and Resilience is a major societal security issue in modern society. Critical Infrastructures (CIs) provide vital services to modern societies. Some CIs' disruptions may endanger the security of the citizen, the safety of the strategic assets and even the governance continuity.

The critical role that CIs play in the security of modern societies is a direct effect of the ever-increasing spread out of the information technology (IT) in every smallest task in man's daily-life. The continuous progress in the IT fields pushes modern systems and infrastructures to be more and more: intelligent, distributed and proactive. That increases the productivity, the prosperity and the living standards of the modern societies. But, it increases the complexity of the systems and the infrastructures, as well. The more complex a system is, the more vulnerable it will be and the more numerous the threats that can impact on its operability. The loss of operability of critical infrastructures may result in major crises in modern societies.

To counterbalance the increasing vulnerability of the systems, engineers, designers and operators should enhance the system preparedness and resilience facing different threats. Much interest is currently paid to the Modelling, Simulation & Analysis (SM&A) of the CI in order to enhance the CIs' preparedness & resilience.
ESReDA as one of the most active EU networks in the field has initiated a project group (CI-PR/MS&A-Data) on the "Critical Infrastructure/Modelling, Simulation and Analysis – Data". The main focus of the project group is to report on the state of progress in MS&A of the CIs preparedness & resilience with a specific focus on the corresponding data availability and relevance.

In order to report on the most recent developments in the field of the CIs preparedness & resilience MS&A and the availability of the relevant data, ESReDA will hold its 52nd Seminar on the following thematic: "Critical Infrastructures: Enhancing Preparedness & Resilience for the security of citizens and services supply continuity".

The programme proposes 18 technical papers which cover five topics grouped into thematic sessions: Emergency & Risk Management, CIP & Safety Issues, CIP & System Safety Engineering, MS&A - Natural threats & CI's Resilience, Preparedness, Vulnerability & Resilience. Besides, a specific round table on Cyber Security is organised.

The technical programme includes plenary presentations by leading academics, scientists and risk managers. Speakers will be sharing their scientific knowledge and experience, stimulating our thoughts and getting across methodologies and applications in different areas of Critical Infrastructures Preparedness and Resilience.

Acknowledgements

We would like to thank many people for their support and contributions to the 52nd ESReDA Seminar. We gratefully acknowledge the members of the 52nd ESReDA Seminar Technical Programme Committee.

We also thank the 52nd ESReDA Seminar Plenary Speakers offering to share their expertise in the field.

We also thank all the contributed paper authors for their submissions and participation.

Finally we would like to thank the respective organisations for supporting the Seminar. It has been made possible by the Lithuanian Energy Institute working together with the support of Vytautas Magnus University.

Local Organization Committee

Dr. Sigitas Rimkevičius	Lithuanian Energy Institute, Lithuania
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Prof. Juozas Augutis	Vytautas Magnus University, Lithuania
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Prof. Ričardas Krikštolaitis	Vytautas Magnus University, Lithuania
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Žutautaitė Inga	Lithuanian Energy Institute, Lithuania

Organizers

European Safety, Reliability & Data Association

European Safety, Reliability & Data Association is an international non-profit association with approximately 35 member organizations comprising companies from different industries, research organizations and universities working within the safety and reliability field.
ESReDA aims to promote the development and the exchange of data, information and knowledge through the promotion of Project Groups (PG) on subjects related to Reliability, Safety and Data Analysis. In this PG's some of the best world specialists in these subjects are able to meet and, in a first time, to aggregate their knowledge and then to disseminate it for the sake of the scientific and technological communities in Europe and around the World. This dissemination can be made by organizing seminars twice per year and publishing the most important results of the Project Groups. Safety and Reliability Engineering is viewed as being an important component in the design of a system. However the discipline and its tools and methods are still evolving and expertise and knowledge dispersed throughout Europe. There is a need to pool the resources and knowledge within Europe and ESReDA provides the means to achieve this.
www.esreda.org

Lithuanian Energy Institute

The Lithuanian Energy Institute was established in 1956. LEI is a technical research centre dealing with energy related research in renewable energy (wind, biomass), smart grids, analysis of security of energy supply, energy efficiency (modelling and consulting), simulation of complex energy systems, energy planning (municipal, regional, country, international level), nuclear safety and radioactive waste management, structural integrity assessment of components and structures, thermal physics and fluid mechanics, combustion engineering, hydrogen storage, plasma research, material research (accredited laboratory), metrology (accredited and notified laboratory), hydrology studies (modelling of hydrodynamic and sediment processes).
www.lei.lt

Vytautas Magnus University

Vytautas Magnus University was established in 1922 and re-established in 1989 in Kaunas, Lithuania. It is one of the most liberal and modern universities in Lithuania and recognized worldwide – ranked among top 800 universities by QS World University Rankings and U-Multirank Ranking. At present, there are 10 faculties at VMU: Arts, Catholic Theology, Economics and Management, Humanities, Informatics, Law, Natural Sciences, Political Sciences and Diplomacy, Social Sciences, Music Academy, over 7,500 students of 50 nationalities and over 480 members of academic staff.
Vytautas Magnus University is the city's hub of academic, scientific and cultural activities, distinguished by its liberal education system (Artes Liberales), humanist spirit, cultivation of creativity and opportunities for wider, more universal enlightenment.
www.vdu.lt/en/

Programme

Vytauto Didžiojo universitetas (Vytautas Magnus University)
S. Daukanto g. 28 (Small Hall, 2nd floor), Kaunas

1st day, Tuesday May 30th, 2017

08.00 – 08.30	**Registration**
08.30 – 09.00	**Welcome to participants** *Juozas Augutis, Rector of Vytautas Magnus University* *Sigitas Rimkevičius, Director of Lithuanian Energy Institute* *Luís Andrade Ferreira, ESReDA President*
09.00 – 10.20	**PLENARY SESSION** *Chair: Eugenijus Uščpuras* **Crisis management and Critical infrastructure protection in Lithuania** *Dalius Labanauskas, Head of National Security and Crisis Management Unit, Office of the Government, Lithuania* **Critical Energy Infrastructure Protection and building resilience in NATO ENSEC COE Agenda** *Artūras Petkus, Head of Strategic Analysis Division, NATO Energy Security Centre of Excellence, Lithuania*
10.20 – 11.20	**SESSION 1: Emergency & Risk Management** *Chair: Luis Andrade Ferreira, Kaisa Simola* ***Safety and Security of Critical Infrastructures with regard to nuclear facilities*** *Heinz-Peter Berg** ***Risk assessment for interconnected Critical Infrastructures: the case of ship-port interface*** *George Leventakis, Nikitas Nikitakos*, Athanasios Sfetsos* ***Some Specifics on Using Probabilistic versus Deterministic Approaches in Emergency Zoning Evaluations*** *Dan Serbanescu**
11.20 – 11.40	**Coffee Break**
11.40 – 13.00	**SESSION 2: CIP & Safety Issues** *Chair: Heinz-Peter Berg, Athanasios Sfetsos* ***Risk informed inspection and decisions making*** Robertas Alzbutas* ***The Importance of Safety Assessment, Reliability and Maintenance for Critical Infrastructures*** Luís Andrade Ferreira* ***Exploring public expectations for aid from critical infrastructure operators*** *Laura Petersen*, Laure Fallou, Paul Reilly, Elisa Serafinelli* **Risk Assessment for Critical Infrastructure** *Inga Žutautaitė, Linas Martišauskas, Ričardas Krikštolaitis, Juozas Augutis*, Vika Juričkaitė, Roberto Setola*
13.00 – 14.00	**Lunch**
14.00 – 15.20	**SESSION 3: CIP & System Safety Engineering** *Chair: Tomasz Nowakowski, Rolandas Urbonas* ***Degradation assessment of bridge components using Structural Health Monitoring*** *Christelle Geara, Alaa Chateauneuf*, Rafic Faddoul* ***Pipe Rupture and Inspection Sensitivity Analysis*** *Gintautas Dundulis, Robertas Alzbutas* ***Energy Management Controller of a Resilient Micro-Grid for Critical Buildings*** *Lenos Hadjidemetriou, Nikolas Flourentzou*, Elias Kyriakides* ***Security of supply analysis of critical energy infrastructures by flow network approaches*** *Vytis Kopustinskas*, Pavel Praks*

15.20 – 15.40	**Coffee Break**
15.40 – 17.10	**ROUND TABLE DISCUSSION: Cyber Security for CI** *Chair: Juozas Augutis, Sigitas Rimkevičius* **The cybersecurity dimension of critical infrastructure** *Vytautas Butrimas , Subject Matter Expert, Research and Lessons Learned Department, NATO Energy Security Center of Excellence, Lithuania* **Cybersecurity of electrical grid** *Marius Celskis, Information Security Manager, the Lithuania Electricity Transmission System Operator: LITGRID AB, Lithuania* **Discussions & Synthesis**
17.30 – 19.00	**ESReDA General Assembly**
20.00	**Gala Dinner at restaurant "Senieji rūsiai" (Vilniaus g. 34, Kaunas)**

2nd day, Wednesday May 31st, 2017

09.00 – 09.40	**PLENARY SESSION** *Chair: Alaa Chateauneuf* **Investigation of seismicity in the Lithuanian territory** *Jurga Lazauskienė, Head of Division of Bedrock Geology, Lithuanian Geological Survey, under the Ministry of Environmental, Lithuania*
09.40 – 10.40	**SESSION 4: MS&A - Natural threats & CI's Resilience** *Chair: Nikitas Nikitakos, Pestana Maria-Luisa* ***Vulnerability Analysis methodology: The expected number of heavy storms and flood vulnerability prediction model of Rio de Janeiro city*** *Eduardo Calixto** ***Integrating the security in the process risk assessment*** *Micaela Demichela** ***A methodological approach for assessing the resilience of the interconnected EU critical infrastructures to climate change*** *Theodoros Katopodis, Athanasios Sfetsos*, Stelios Karozis, Georgios Karavokyros, Georgios Eftychidis, Georgios Leventakis, Ralf Hedel, Ifigenia Koutiva, Costantinos Makropoulos*
10.40 – 11.00	**Coffee Break**
11.00 – 12.20	**SESSION 5: MS&A - Preparedness, Vulnerability & Resilience** *Chair: John Andrews, Ričardas Krikštolaitis* ***Lifetime degradation and interventions for systems under random shocks*** *Dimos C. Charmpis** ***Network's Connectivity Dynamic Modelling using a Topological Binary Model: Critical Transitions Concept*** *Mohamed Eid*, Inga Žutautaitė, Dovilė Rafanavičiūtė* ***Enhancing System Preparedness by the Method of Sequence Rationale to Perform Heterogeneous Repair Works in Time*** *Andrey Kostogryzov*, Pavel Stepanov, Andrey Nistratov, George Nistratov, Sergey Klimov, Leonid Grigoriev* ***Towards a real-time Structural Health Monitoring of railway bridges*** *Matteo Vagnoli*, Rasa Remenyte-Prescott, John Andrews*
12.20 – 12.50	**Closure Session & Next Event** ESReDA General Secretary
12.50 – 14.00	**Farewell Buffet**
14.30	**Guided tour in Kaunas**

Plenary presentations

Tuesday 30th May: 09.40 – 10.20

Crisis management and Critical infrastructure protection in Lithuania
Dalius Labanauskas
Head of National Security and Crisis Management Unit, Office of the Government, Republic of Lithuania

National security is the basis for the prosperity of the State. Only a secure environment can ensure the functioning of a mature democratic constitutional order, sustainable economic growth, the protection of human rights and freedoms, and the viability of civil society. Instability in the world, natural and manmade disasters, large scale migration, humanitarian crises, terrorism, and the disruption of the vital societal functions and of the supply of strategically important resources may have negative consequences for the country. Situations which have occurred because of natural, technical, ecological or social events, the outbreaks of contagious diseases threatening to cause a major danger and threat to the health and life of the majority of the population, the environment, and to disturb public administration or the functioning of critical infrastructure. Such situations may increase in number due to negative consequences caused by the climate change. The prevention of potential threats, dangers and risks, and where it proves impossible to avoid them – the readiness to appropriately counter them using all measures and methods available to the State – steps necessary to strengthen the security of the country and its population. The priority of the Lithuanian government is to make sure that Lithuanian citizens feel safe in their homeland from all possible threats. An overview of the Lithuanian crisis management structures, responsibilities, coordination and information exchange mechanism, and the cooperation between the state and private institutions will be presented.

Dalius Labanauskas joined the Office of the Government of the Republic of Lithuania in 2009. Prior to the current position he was the Head of the Analytical Division in the Crisis Management Centre under the Ministry of National Defence. Since 2010, he has been a member of the Lithuanian Government Emergency Commission.
On an everyday basis, he is involved in risk and threat assessment, information exchange activities among national institutions and international partners, preparation and participation of national as well as international exercises such as NATO CMX. He is also involved in the European Programme for Critical Infrastructure Protection as a Lithuanian representative. In 2013, he was a chair of and is still actively involved in the Council of the European Union Friends of Presidency group, which is in charge of dealing with the EU Integrated Political Crisis Response arrangements and Solidarity Clause implementation.

Tuesday 30th May: 10.20 – 11.00

Critical Energy Infrastructure Protection and building resilience in NATO ENSEC COE Agenda

Dr. Artūras Petkus
Head of Strategic Analysis Division, NATO Energy Security Centre of Excellence, Republic of Lithuania

Critical Energy Infrastructure has become a convenient target (especially in terms of Hybrid Threats) due to its complexity (fragility of security) and vital significance for the existence of states, effective governance and welfare of the society. Hybrid Threats meanwhile blend elements of diplomacy, clandestine action, disinformation, sabotage and irregular troops to achieve strategic objectives. In other words these are a wide spectrum of hostile acts, where the role of the military component is limited. However these methods are being succesfuly employed to impact proper function of Critical Energy Infrastructure. While hybrid war can take place over several dimensions, it appears clear that Critical Energy Infrastructure and energy industry could be and will be targeted as part of a wider campaign in order to reduce the county's ability and willingness to resist.
Since protection of Critical Energy Infrastructure is primary responsibility of nations, NATO seeks to "continue to develop NATO's capacity to support national authorities in protecting critical infrastructure, as well as enhancing their resilience against energy supply disruptions that could affect national and collective defence, including hybrid and cyber threats" (NATO Warsaw Summit Communique). Working in line with NATO's commitments, NATO ENSEC COE provides expertise in Critical Energy Infrastructure Protection. Main outcomes of Center's activities in this regard will be presented.

Dr. Artūras Petkus joined the Strategic Analysis Division of the NATO Energy Security Centre of Excellence in 2015 as a Head of division. His main areas of responsibility are: performance of energy security related analysis on strategic level; development of methodology and theoretical approach for assessment of energy security risks and threats, contribution to development of NATO ACT Strategic Foresight Analysis Report as well as Framework for Future Alliance Operations Report; contribution to research in field of Energy Security (Overview of energy security in Baltic States, study "Hybrid Conflict and Critical Energy Infrastructure: the Case of Ukraine" etc.).

Wednesday 31st May: 09.00 – 09.40

Investigation of seismicity in the Lithuanian territory
Dr. Jurga Lazauskienė
Head of Division of Bedrock Geology, Lithuanian Geological Survey, under the Ministry of Environmental, Republic of Lithuania

The territory of Lithuania and whole region of Eastern Baltic feature a low seismic activity. Earth's crust of early Precambrian consolidation and significant distances to active tectonic zones causes situation of this kind. Nevertheless, according to historical and instrumental data a few dozens of local earthquakes with intensities reaching VII points (MSK scale) took place in the Baltic countries and adjacent Belarus since 1616 to our days. Two Kaliningrad earthquakes with magnitudes 4.5 and 5.0 stroke Baltic region in 2004 which indicated seismogenic potential of this region. These seismic events indicate that earthquakes may occur in Lithuania as well. Besides manifestation of some local seismic activity in Eastern Baltic, large regional earthquakes generate earth trembling up to intensities IV or V (MSK scale) in this area. For instance, inhabitants of Lithuania have felt trembling from Oslo 1905 earthquake and from earthquakes of Vrancea area in Romania in years 1940, 1977, 1986 and 1990.
The first instrumental seismological observations in Lithuania started in 1970 as Vilnius seismic station was founded. Three analog long period (T=25 s) and three short period (T=1.5 s) seismometers were installed in the territory of Institute of Physics at outskirts of Vilnius. Seismological records were processed in Obninks (Russia) until 1992. Later on, maintenance of station and routine data processing was undertaken by stuff of Institute of Physics. 450 distant and regional seismic events were reported in the seismic bulletin of Vilnius seismic station since 1991 to 1995. No local events were registered in Vilnius seismic station. Operation of Vilnius seismic station was suspended in the beginning of 1999.
The first comprehensive study of seismic activity of Lithuania was carried out in 1988 as a part of re-examination of safety of Ignalina Nuclear Power Plant (INPP). The top twenty-two experts of the Soviet Union concluded that seismic hazard was not assessed properly when INPP has been designed despite local and international regulations. In order to improve the situation the experts proposed to install seismic network and monitor local seismicity. Seismic Alarm System (SAS) and complementary Seismic Monitoring System (SMS) were installed in the INPP in 1999. At the same time Geological Survey of Lithuania took responsibility to process, analyse and store seismological data of the SMS and project of seismological monitoring was initiated there. In 2012, Lithuanian Geological Survey established Seismological Data Center (LGS-SDC) with two broad band seismic stations PBUR (Paburgė, western Lithuania) and PABE (Paberžė, central Lithuania). In addition, data from the SMS are also received regularly. The Lithuanian Geological Survey continued seismic monitoring of Lithuania and adjacent territories. Seismic data were continuously collected from seismic stations in Lithuania and adjacent countries. Four seismic stations are located around the INPP at distances of 30 km. These INPP and Lithuanian Geological Survey two broadband stations together form the current Seismic Monitoring Network of Lithuania.
Lithuania has several important industrial facilities including the decommissioned INPP, Nemunas dam, nitrogen fertilizer factory "Achema" in Jonava, mineral fertilizer factory "Lifosa" in Kėdainiai, oil refinery "Orlen" in Mažeikiai, and liquefied natural gas floating storage and regasification unit terminal in Klaipėda. Therefore, even moderate earthquakes can cause significant damage in such objects. This shows that seismic assessment is important even in such low seismicity regions like Lithuania. Until present, assessments of seismic hazards were performed using various approaches. These assessments were, however, sporadic or they involved partly deterministic seismic hazard assessment – an approach that is no longer considered up-to-date. Until now, seismic hazard maps for entire European continent and Mediterranean region published by Jiménez et al., 2003 and later Woessneret. al., 2015, were considered the most reliable in terms of seismic hazard assessment. Yet continent- scale maps are not always appropriate for small areas like Lithuania. Naturally, it was necessary to perform a new seismic hazard assessment of the Lithuanian territory using, modern probabilistic seismic hazard assessment (PSHA). This assessment had to include all available information from historical and instrumental seismic observation sources. A new map was compiled based on revision of an existing map of seismic hazard over Lithuania. It presented Peak Ground Acceleration (PGA) that can be exceeded within 50 years with probability of 10 %.

Dr. Jurga Lazauskienė is Head of the Department of Bedrock Geology at LGT and an Associate Professor at Vilnius University where she teaches Geodynamics, Geotectonics and Petroleum Geology. She is actively involved in fields of Seismology, Petroleum and Bedrock geology, Geodynamics and sustainable development of natural resources. She is an author of more than 90 oral and poster presentations (75% internationally) and more than 15 publications in the international journals. Since year 2009 dr. Jurga Lazauskienė acts a member of Delegations of Republic of Lithuania for geological and seismo-tectonic issues related to Astravets NPP (Belarus Republic) and Kaliningrad NPP (Russian Federation) sites.

Round table discussion

Tuesday 30th May: 15.40 – 16.10

The cybersecurity dimension of critical infrastructure
Vytautas Butrimas
Subject Matter Expert, Research and Lessons Learned Department, NATO Energy Security Center of Excellence, Republic of Lithuania
Member, National Communications Regulatory Authority Council, Republic of Lithuania

As someone occupied with government information technology (IT) and national security policy for the past 27 years, I have worked in a changing cybersecurity environment that started from dealing with the first hackers invading our IT systems with viruses such as the "Michelangelo" virus of 1991 to worrying about cyber criminals, socially motivated hacktivists and possible activities of cyber "terrorists" to state sponsored cyber-attacks not limited to just IT systems. The appearance of STUXNET, the "denial of computers" attack perpetrated against energy company Saudi Aramco and cyber intrusions that took place in one of Ukraine's regional power grids in the winter of 2015 strongly indicated that critical infrastructures that support national economies and well-being of modern society were now increasingly attractive targets for cyber-attacks. Additionally, the extensive expansion of the capabilities of modern industrial control systems (ICS) made possible by the advances in information and communication technologies (ICT) and their application to the management of complex systems running critical infrastructure has introduced, together with increased efficiencies and cost savings, serious dependencies and vulnerabilities. Vulnerabilities that, due to a lack of understanding of the interrelatedness of increasingly complex systems, have given rise to unintentional incidents. Vulnerabilities, that if known by "the bad guys", may be exploited to execute intentional cyber-related attacks, attacks which are now possible due to the entry of IT in the formerly isolated and proprietary world of industrial control systems (SCADA). The new threats emanating from cyberspace have provided new and broad challenges that range beyond the national level to the international level. Critical infrastructure today has a cross-border or international dimension. Failure at a national level can affect a connected neighboring country. While some worthy and effective efforts are being made by national governments and industry in terms of laws, regulations and standards, they fall short in meeting the international dimension of today's cyber threats. SCADA and ICS environments can no longer be considered safe from today's dynamic threats emanating from cyberspace. This presentation will address implications of any changes to cyberspace environments that have taken place within the last few years that now require responses in the form of shared understanding, restraint, acceptance of responsibility, transparency and cooperation. Proposals for addressing these new threats will also be discussed.

Vytautas Butrimas has been working in information technology and security policy for over 27 years starting from his work as a computer specialist for Prince William County Government in Virginia, to his work on information society development as Vice Minister at the Ministry of Communications and Informatics, Republic of Lithuania. In 1998 he moved on to the Ministry of Defense as Policy and Planning Director where he chaired a task force which prepared Lithuania's first National Military Defense Strategy (approved in 2000). From 2001 to 2011 Mr. Butrimas worked as Deputy Director responsible for IT security at the Communications and Information System Service (CISS) under the MoND. In 2009 he chaired taskforces which prepared the first MoND Cyber Defense Strategy and Implementation Plan. In 2007 (and again in 2012) the President of the Republic of Lithuania appointed him to the National Communications Regulatory Authority Council (RRT-Council) for a 5 year term. He served as Chief Adviser for the Ministry of National Defense with a focus on cyber security policy from 2011-2016 and served on a national task force which wrote The Law on Cybersecurity passed in 2014. In November of 2016 he was posted by the Minister of National Defence to work as Cybersecurity Subject Matter Expert for the NATO Energy Security Center of Excellence in Vilnius. Mr. Butrimas has participated in NATO and National exercises that have included cyber-attacks on critical infrastructure in the scenarios. He has also contributed to various reports, written published articles and been an invited speaker at various conferences on Cyber Security and Defense policy issues.

Tuesday 30th May: 16.10 – 16.40

Cybersecurity of electrical grid
Marius Celskis
Information Security Manager, the Lithuania Electricity Transmission System Operator: LITGRID AB, Republic of Lithuania

Electricity management system. Main grid components - generation, transmission and distribution of electricity. Cybersecurity of informational and operational technology. Rise of attacks on critical infrastructure. Prevalent security threats and countermeasures. Protecting operations at Lithuania's electricity transmission system operator - Litgrid AB.

Marius Celskis is Information Security Manager at the Lithuania Electricity Transmission System Operator: LITGRID AB. Specializing in cybersecurity of industrial control systems (incl. SCADA). Mr. Celskis has a Bachelor's Degree in Electronics Engineering and Business Management from Kaunas University of Technology and holds a number of professional certificates in Industrial Control Systems Security, Information Systems Auditing and Security Incident Handling.

ESReDA events

ESReDA Project Groups Meetings

Monday, 29th May, 10.00-12.00
Lithuanian Energy Institute
Breslaujos g. 3 (Small Hall, 2nd floor, room 202)

PG CI-PR/MS&A-Data meeting will be held on May 29th, 10.00-12.00. The agenda will be circulated by the leader of PG CI-PR/MS&A-Data. The meeting is open to all the 52nd ESReDA Seminar participants. For those interested in participating, please contact PG leader Mohamed Eid (mohamed.eid@cea.fr) in advance.

ESReDA Board of Directors meeting

Monday, 29th May, 15.00-18.00
Lithuanian Energy Institute
Breslaujos g. 3 (Small Hall, 2nd floor, room 202)

The biannual meeting of the ESReDA Board of Directors will be held this afternoon. The agenda will be circulated by the ESReDA General Secretary to ESReDA Directors.

ESReDA General Assembly

Tuesday, 30th May, 17:30-19:00
The 52nd ESReDA seminar auditorium

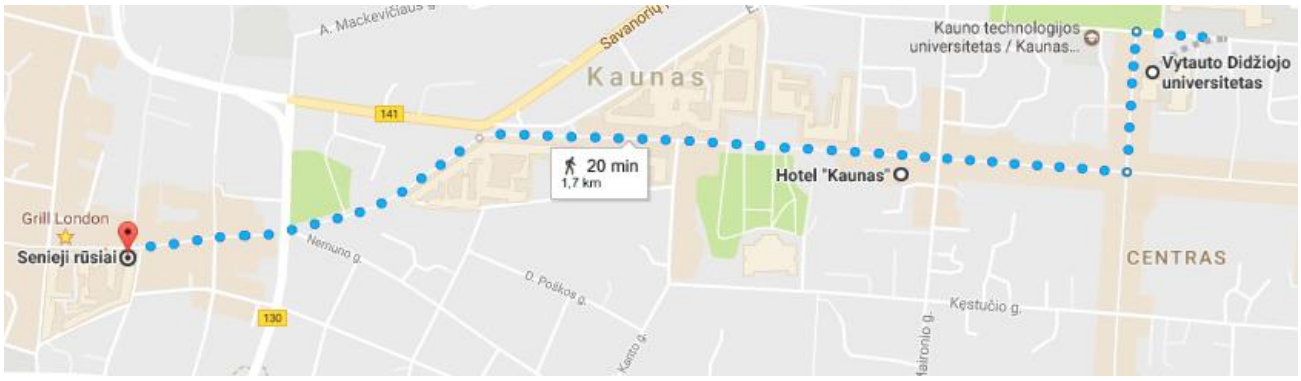
The annual meeting of the ESReDA General Assembly will be held this evening. The agenda will be circulated by the ESReDA General Secretary to Members. A Gala dinner for Members and participants of the seminar will be followed the main meeting.

Social events

Gala dinner

Tuesday, 30th May, 20:00
Restaurant "Senieji rūsiai" ("Old cellars") / Napoleon's Hall
Vilniaus g. 34, Kaunas

Gala dinner will be held in a European standard restaurant established in the17th century cellars in the heart of Kaunas old town. The restaurant with the interior in the style of middle ages attracts visitors with their Napoleon's Hall, Noblemen's Hall, and the Hall of Guns. In one of the halls, there is a fresco depicting the Middle French Army crossing the river Nemunas on 24 June 1812 according to the lithography of De C. Montte.



General information

Changes to technical and social programme

The 52nd ESReDA seminar organizers reserve the right to adjust or change the Technical and/or Social Programmes as, if and when necessary.

Seminar venue

Vytauto Didžiojo universitetas (Vytautas Magnus University)
S. Daukanto g. 28 (Small Hall, 2nd floor), goo.gl/IUk03p
Kaunas, Lithuania

Kaunas is the second-largest city in Lithuania and has historically been a leading centre of Lithuanian economic, academic, and cultural life. Kaunas was the biggest city and the centre of a county in Trakai Municipality of the Grand Duchy of Lithuania since 1413.
Kaunas is unique place since it has the oldest funiculars in the world; it is surrounded by old fortification system (now the castle are used for cultural activities, as museums); has the best example of high Baroque in Northern and Eastern Europe – "Pažaislis" Church and Monastery Ensemble; has the longest pedestrian street in Eastern Europe – "Laisvės alėja".

An old legend claims that Kaunas was established by the Romans in ancient times. These Romans were supposedly led by a patrician named Palemon, who had three sons: Barcus, Kunas and Sperus. Palemon fled from Rome because he feared the mad Emperor Nero. Palemon, his sons and other relatives travelled all the way to Lithuania. After Palemon's death, his sons divided his land. Kaunas got the land where Kaunas now stands. He built a fortress near the confluence of the Nemunas and Neris rivers, and the city that grew up there was named after him. There is also a suburban region in the vicinity named "Palemonas".

Kaunas is first mentioned in written sources in 1361 when brick Kaunas Castle was constructed. In 1362, the castle was captured and destroyed by the Teutonic Order. The Kaunas castle was rebuilt at the beginning of the 15th century.

In 1408, the town was granted Magdeburg Rights by Vytautas the Great and became a centre of Kaunas Powiat in Trakai Voivodeship in 1413. Vytautas ceded Kaunas the right to own the scales used for weighing the goods brought to the city or packed on site, wax processing, and woollen cloth trimming facilities. The power of the self-governing Kaunas was shared by three interrelated major institutions: vaitas (the Mayor), the Magistrate (12 lay judges and 4 burgomasters) and the so-called Benchers' Court (12 persons). Kaunas then began to gain prominence, since it was at an intersection of trade routes and a river port. In 1441 Kaunas joined the Hanseatic League, and Hansa merchant office Kontor was opened — the only one in the Grand Duchy of Lithuania. By the 16th century, Kaunas also had a public school and a hospital and was one of the best-formed towns in the whole country.

After the final partition of the Polish–Lithuanian state in 1795, the city was taken over by the Russian Empire and became a part of Vilna Governorate. During the French invasion of Russia in 1812, the Grand Army of Napoleon passed through Kaunas twice, devastating the city both times.
It is also the seat of the Roman Catholic Archdiocese of Kaunas.

Modern Kaunas has close links with critical infrastructures. It is an important railway hub in Lithuania and city of the crossroads of international air transport (Kaunas airport) and road transport (Via Baltic, Rail Baltic). The Kaunas Hydroelectric Power Plant, located on the Nemunas River, is producing electricity for Kaunas city.

Kaunas is often referred to as a city of students and basketball, often called as the second religion of Lithuania.

http://visit.kaunas.lt/en/

Guidelines for presenters and session chairs

Each presentation has been allocated 15 minutes, with an additional 5 minutes for discussion. Please keep to the scheduled times so that the conference can run smoothly and participants can attend the talks they wish to see. Session chairs have been asked to keep exactly to the timetable.

Presenters should upload their presentation onto the presentation computers before their session using a USB memory device. The presentation computer has the 52nd ESReDA directory structure that corresponds to the session location, day and time.

This computer is running the Windows operating system, and is preloaded with Windows 10, Powerpoint 2016 and Adobe Acrobat Reader software to display PowerPoint and PDF files. No other file formats are supported.

Presenters are strongly discouraged from using their own computers and should do so only in exceptional cases. Changing computers takes time away from other presenters and valuable discussions. In these special cases, presenters should verify that their presentation works by connecting their device to the projector in the room where they will present and trying their presentation out before their session. Conference staff will be there during the breaks to help.

Presenters should meet the Session Chair during the break before the session. They are encouraged to provide very short written biographical statements to the Session Chair in advance.

Discussion and time keeping

Session Chairs have the responsibility to introduce the speakers, to lead the discussions, and to ensure that the session schedule is observed. Every effort should be made to keep to the 20-minute total time allocation for each presenter, in order that the next talk starts on time.

Internet access

Free WiFi network is available. Login details will be provided to participants at the reception desk.

Language

The official Language of ESReDA Seminar is English.

For your notes

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