



Konrad Lewczuk,
Wydział Transportu Politechniki Warszawskiej

Nauczanie inżynierii zarządzania kryzysem i ryzykiem w transporcie

Teaching the engineering of crisis and risk management in transport

na przykładzie projektu CBHE ERASMUS+

Crisis and Risks Engineering for Transport Services (CRENG)

12 November 2021, Systemy Logistyczne – Teoria i Praktyka



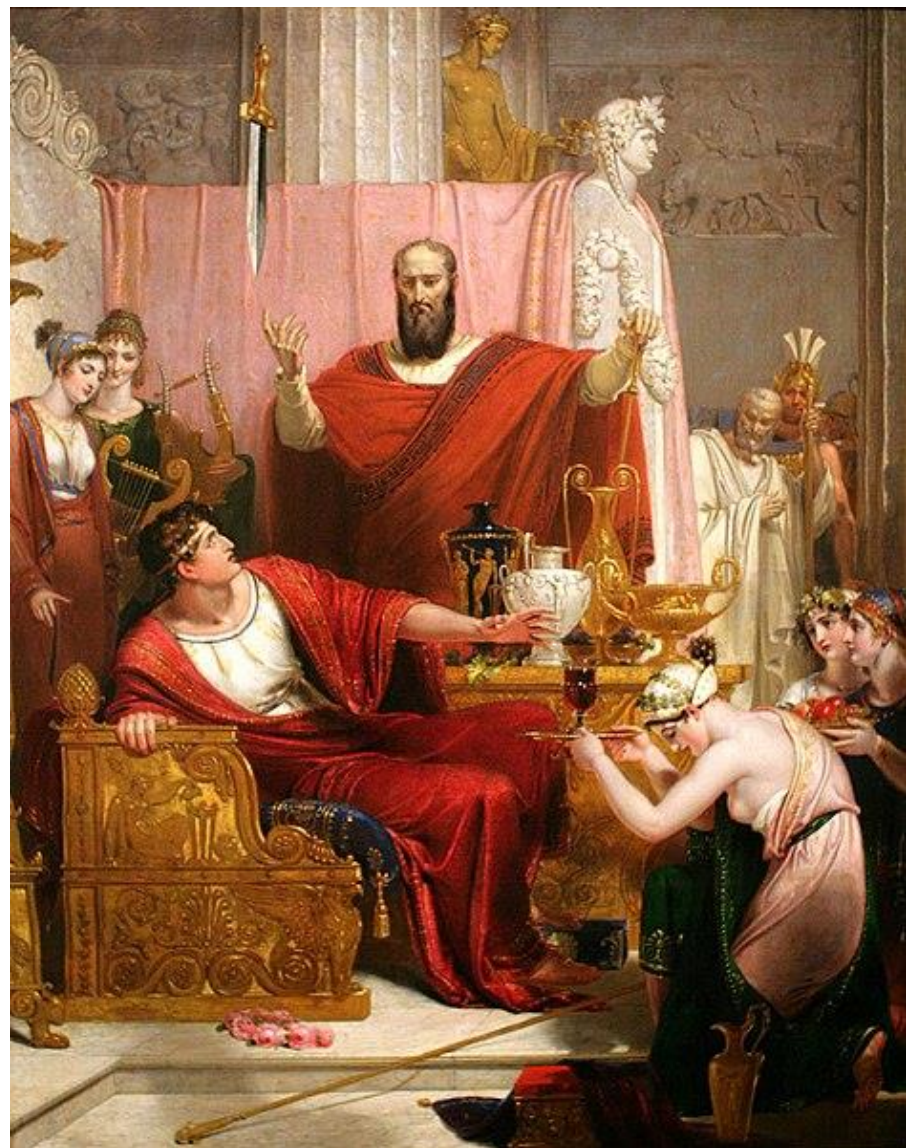
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The new crisis in transport?



Richard Westall's Sword of Damocles, 1812

- Ecological issues and elimination of fossil fuels
- War acts (Syria, Donbas, annexation of Crimea)
- Terrorism
- Economic crash (world crisis)
- Migration
- China vs USA
- Global shortage of raw materials
- Technological shifts: sharing economy, IoT, 3D printing, big data, artificial intelligence
- Pandemics
- ...?

<https://www.nature.com/articles/d41586-020-00253-8>



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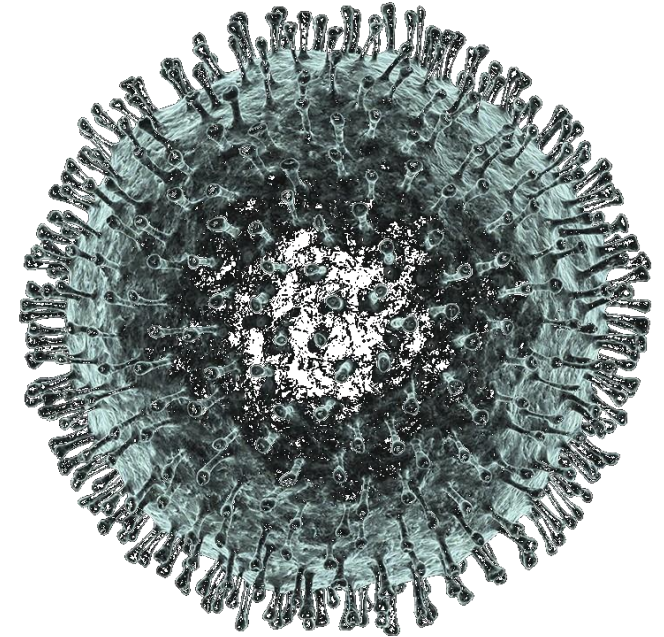


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The new crisis in transport – pandemics

- Government restrictions - impediments to economic activity
- Movement restrictions (closed borders)
- Lack of employees in the field of logistics and drivers
- Change in individual purchasing behavior (panic, growing home consumption, isolation)
- Regular freight transport vs. medical transport.
- Breakdown of supply chains (lack of products, raw materials)
- Displacement of producers



<https://www.nature.com/articles/d41586-020-00253-8>



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Crisis and Risk

CRENG
specialist
required

Systematic
RISK

Specific
RISK

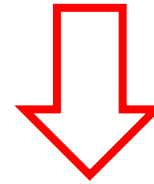
...and
other
RISKS

Transport
(in a broad sense)



- Planning
- Data collection and processing
- Prediction
- Analysis
- Countermeasures

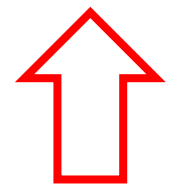
New crisis and risk



- No data
- No prediction tools
- Analysis errors
- Unpredictable events
- Communication problems



New knowledge
New skills
New perspective



CRISIS!



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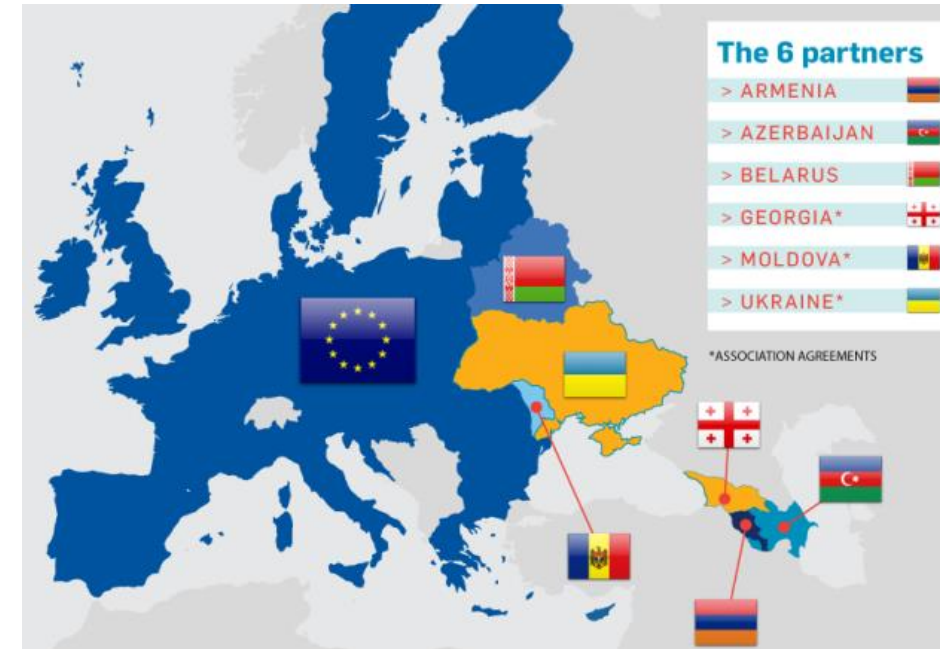


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CRENG – the answer

- CRENG MA programs in universities of France, Germany, England, Norway, etc.
- Risk and crisis engineering for transport service is critical for societies and global economy.
- Ukraine, Azerbaijan, Turkmenistan located on strategic transport routes.
- EU supports integration of UA, AZ (*Eastern Partnership*) and TM (*Central Asia*) transport systems.
- 11 UA, 5 AZ and 3 TK HEIs annually train 250, 80 and 50 specialists in Transport Technologies (none on CRENG).
- The project meets strategies of PCs in transport services and higher education. This fact is proved by legislative acts.



Source: EU/EEAS



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The new opportunities

One belt, one road – China's new Silk Road



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CRENG objectives

- ❑ **Develop, implement and accredit** new practice-oriented, student-focused **MA program on CRENG** including innovative teaching approaches and ECTS in **UA, AZ and TM** till Jul 2022
- ❑ **10 new + 3 transferable curricula: 90 ECTS**
- ❑ **Creating environment for teaching and learning CRENG disciplines:**
 - **Skills Wallet**
 - **International Project Based Learning**
 - **Network of CRENG Service Offices**
 - **Didactic content development**
 - **MOODLE-based e-courses and web platform**
 - **Equipped laboratories**

Ensure sustainability of UA, AZ, TM transport systems and integration with global transportation network

Create environment for education of high skilled specialists in line with labour market, EU best practices and Bologna process



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CRENG facts

Crisis and **R**isks **E**ngineering for Transport Services

www.creng.eu

www.facebook.com/CrengErasmus

EU unit: Education, Audiovisual and Culture Executive Agency

Priority: Transport Services

Project duration: 15 October 2018 – 14 October 2021

Grant holder: Warsaw University of Technology, Poland

Project coordinator: Prof. Marianna Jacyna

Project manager: Dr. Konrad Lewczuk

Project No.: 598218-EPP-1-2018-1-PL-EPPKA2-CBHE-JP

No of partners: 17 (including 4 EU partners)

Value: 999 949 EUR

Staff costs: 376 044

Travel costs: 120 965

Costs of stay: 228 840

Equipment: 244 800

Subcontracting: 29 300



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CRENG partners

	PL	P1: Warsaw University of Technology	Ukraine: 4
	DE	P2: Berlin Technical University	Azerbaijan: 5
	FR	P3: University of Valenciennes	Turkmenistan: 4
	DE	P4: EXOLAUNCH GmbH	Germany: 2
	UA	P5: Pryazovskyi State Technical University	France: 1
	UA	P6: Dnipropetrovsk National University of Railway Transport	Poland: 1
	UA	P7: State University of Infrastructure and Technologies	
	AZ	P8: Baku Engineering University	
	AZ	P9: Azerbaijan Technical University	
	AZ	P10: Azerbaijan Technological University	HEIs: 12
	TM	P11: Turkmen State Institute of Transport and Communications	Ministries: 2
	TM	P12: International University for the Humanities and Development	Business: 2
	TM	P13: Turkmen State Architecture and Construction Institute	Agencies: 1
	AZ	P14: The Ministry of Education of the Republic of Azerbaijan	
	TM	P15: Ministry of Education of Turkmenistan	
	AZ	P16: Baku Transport Agency	
	UA	P17: The Ukrainian Railway (Ukrzaliznytsia)	



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Project Management Board (PBM)

	Partner #	Organisation Name	Acronym	City / Country	PMB Member	Email
	P1	Warsaw University of Technology	WTU	Warsaw/ Poland	Marianna Jacyna/ Konrad Lewczuk	maja@wt.pw.edu.pl/ kle@wt.pw.edu.pl
	P2	Technische Universität Berlin	TUB	Berlin / Germany	Elena Eyngorn	elena.eyngorn@tu-berlin.de
	P3	Université polytechnique des Hauts-de-France	UPHF	Hauts-de-France/ France	Jimmy Lauber	jimmy.lauber@univvalenciennes.fr
	P4	ECM space technologies GmbH	ECM	Berlin / Germany	Dr. A.Sterenharz	arnold.sterenharz@ecm-space.de
	P5	Pryazovskyi State Technical University	PSTU	Mariupol / Ukraine	Kateryna Polupanova	Polupanova.pstu@gmail.com
	P7	State University of Infrastructure and Technologies	SUIT	Kyiv / Ukraine	Julia Bulgakova	jibulgakova@gmail.com



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CRENG steps

1. Create information environment for dissemination of project results
2. Prepare curricula oriented for CRENG in European universities
3. Professional development of teachers from UA, AZ and TM
4. Academic teachers from PCs develop teaching environment on CRENG
5. Pilot training of students in the new CRENG MA program
6. Accreditation
7. Operational and financial management of the project



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CRENG study program

Crisis and Risk Engineering in Transport Systems: New Core Curricula

1. **TUB:** *New technologies and big data for innovations in crisis and risk management + IT Security* (6 ECTS)
Dr. Natalia Ivanova (6 h – Berlin), Prof. Wladimir Bodrow (4 h – Berlin, 6,5 h – Warsaw)
2. **UPHF:** *Risk and crisis forecast, Analysis and Reduction Methods and Tools* (10 ECTS)
Dr. Abdessamad Ait el Cadi (1,5 h – Berlin, 6 h – Valenciennes)
3. **SUIT:** *Simulation of complex transport processes and systems that operate in conditions of risks* (10 ECTS)
Prof. Viacheslav Matsiuk (3,5 h – Berlin, 6 h – Warsaw)
4. **WUT:** *Human Factors in Design & Operations* (5 ECTS)
Prof. Iwona Grabarek (1,5 h – Berlin, 6 h – Warsaw)
5. **UPHF:** *Humanitarian logistics and transport services in disasters conditions* (6 ECTS)
Dr. Abdelghani Bekrar (1,5 h – Berlin, 6 h – Valenciennes)





CRENG study program

Crisis and Risk Engineering in Transport Systems: New Core Curricula

6. **TUB:** *Informational-Analytic and Diagnostics for Sociotechnical System* (6 ECTS)

Dr. Natalia Ivanova (6 h – Berlin)

7. **WUT:** *Risk and crisis engineering of Transport systems* (5 ECTS)

Dr. Mariusz Izdebski (1,5 h – Berlin, 6 h – Warsaw)

8. **UPHF:** *New challenges for crisis and risk management in logistics systems* (5 ECTS)

Dr. Abdessamad Ait el Cadi & Dr. Abdelghani Bekrar (1,5 h – Berlin, 6 h – Valenciennes)

9. **WUT:** *Supply chain management and networks* (5 ECTS)

Dr. Emilian Szczepański (1,5 h – Berlin, 6 h – Warsaw)

10. **UPHF:** *Health, Safety & Environmental Management Systems* (6 ECTS)

Dr. Abdelghani Bekrar (1,5 h – Berlin), Dr. Sondes Chaabane and Dr. G. Clarhaut (6 h – Valenciennes)



CRENG study program

Crisis and Risk Engineering in Transport Systems: New Transferrable Curricula

1. **TUB:** *Project management and leadership in logistics and research, through open communication and team-working* (5 ECTS)
Dr. Elena Eyngorn (2 h – Berlin, 1h – Valenciennes)
2. **TUB:** *Research methods and professional development* (5 ECTS)
Dr. Elena Eyngorn (2 h – Berlin , 1h – Valenciennes)
3. **TUB:** *Carrier Managing, Soft skills for engineers, basics of technical creativity* (3 ECTS)
Dr. Elena Eyngorn (2 h – Berlin, 3,5 h – Warsaw , 1h – Valenciennes)



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CRENG Work Packages milestones

1. PREPARATION - Agreement and guidelines on instructional strategies for MA program development:

- kick-off meeting;
- **working groups** in each PCs and EU HEIs created;
- **Agreement and Guideline** model for MA curricula development and implementation designed and signed by 9 PCs HEIs and 3 EU HEIs.



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CRENG Work Packages milestones

2. DEVELOPMENT - Development of new MA program “CRENG ” and innovative teaching environment:

- **new core and transferable curricula** on CRENG developed and implemented;
- **e-learning courses** developed and downloaded on MOODLE platform in PCs HEIs;
- **retraining program** on new curriculum on CRENG developed by EU HEIs;
- **teachers retrained** on new MA programs and teaching/learning environment at EU HEIs;
- set of **teaching materials** for each new curricula developed and published (Join Web Platform);
- **laboratory** at each PCs HEIs created and equipped;
- **master classes** on new MA program conducted by retrained PCs teachers an EU HEIs;
- one year **pilot teaching** conducted;
- staff from PCs HEIs **retrained** to operate CRENG Service Offices;
- MA program “**CRENG** ” **accredited** on institutional and national levels;
- **CRENG Service Offices** established and equipped;
- **CRENG + Agreement** signed;
- **Skills Wallet** and IPBL implemented at PCs HEIs.





CRENG Work Packages milestones

3. QUALITY PLAN - Internal and external quality control of processes and deliverables

- **Internal Evaluation Committee (IEC)** established;
- number of IEC **meetings** conducted (IEC reports);
- **questionnaire**, feedback, annual **reports**;
- online evaluation in function;
- peer-view **visits**;
- report of inter project coaching;
- report of PTAT;
- external **audit** report.



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CRENG Work Packages milestones

4. DISSEMINATION & EXPLOITATION - Strategy dissemination and event plan:

- Dissemination events plan and timetable worked out and approved by all participants;
- 100% execution of Dissemination event plan: conference and meetings conducted;
- CRENG + agreement worked out;
- number of stakeholders signed CRENG + Agreement;
- Joint WEB based platform updated;
- number of WEB site visitors;
- number of groups in social networks created and updated;
- number of people integrated via social networks;
- number of networked CRENG Service Offices;
- number of promotional materials disseminated;
- number of refresh training courses conducted for specialists of enterprises;
- **number of people retrained;**
- **number of enterprises signed Carrier Support Agreement;**
- **number of students participated in Skills Wallet;**
- **number of graduates employed after Skills Wallet participation.**





CRENG Work Packages milestones

5. MANAGEMENT - Management of the project

- project work-plan and timetable incl. milestones and contingency plan developed;
- joint management group formed;
- number of LPT formed, plan of coordinating meeting worked out;
- number of coordinating meeting conducted;
- number of management assessment reports;
- number of downloaded files on WEB platform.



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Actions in CRENG

- Two sessions of Master Classes for Azeri and Turkmen partners in first quarter of 2022 (depends on pandemic situation).
- Accreditation of new MA courses at the national level.
- Enrolment of students for first semester of CRENG.
- Equipment purchase.
- CRENG handbook.
- CRENG Service Offices, SW, IPBL.
- CRENG+ agreements.



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Challenges

- Communication
- Equipment purchases
- Travels
- Evaluation
- Student recruitment
- MA accreditation in partner countries
- Project's objectives after its completion (e.g. CRENG +)



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www.facebook.com/CrengErasmus/

Facebook event page:

<https://www.facebook.com/events/warsaw-university-of-technology/2nd-training-course-for-teachers-of-the-creng-project/1002868070099206/>

WUT event page:

<https://www.pw.edu.pl/engpw/News/Crisis-and-Risks-Engineering-for-Transport-Services-CRENG-meetings-at-the-WUT>



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