CTU

CZECH TECHNICAL UNIVERSITY IN PRAGUE

Czech Technical University in Prague

General introduction

History of the Oldest **Public** University in Central Europe:

- 1707 Rescript of Emperor Joseph I.
- 1717 Czech General Estate School
- 1803 Prague Polytechnic
- 1879 Technical University
- 1920 Czech Technical University


Estonsko
Moskva
Москва
Lotyšsko
Severní moře
Litva
Dublin
Dánsko
Londýn
Berlín
Polsko
Kyjev
Київ
Německo
Varšava
Paříž
Ukrajina
Česko
Moldavsko
Rakousko
Francie
Rumunsko
Gruzie
Černé moře
Chorvatsko
Teherán
تهران
Marseille
Srbsko
Madrid
Barcelona
Bulharsko
Ankara
Lisabon
Řím
Turecko
Istanbul
Španělsko
Tyrhénské moře
Řecko
Sýrie
Alžír
مدينة الجزائر
Irák
Tunis
تونس
Atény
Αθήνα
Libanon
Kuvajt
Středozemní moře
Izrael
Maroko
Tunisko


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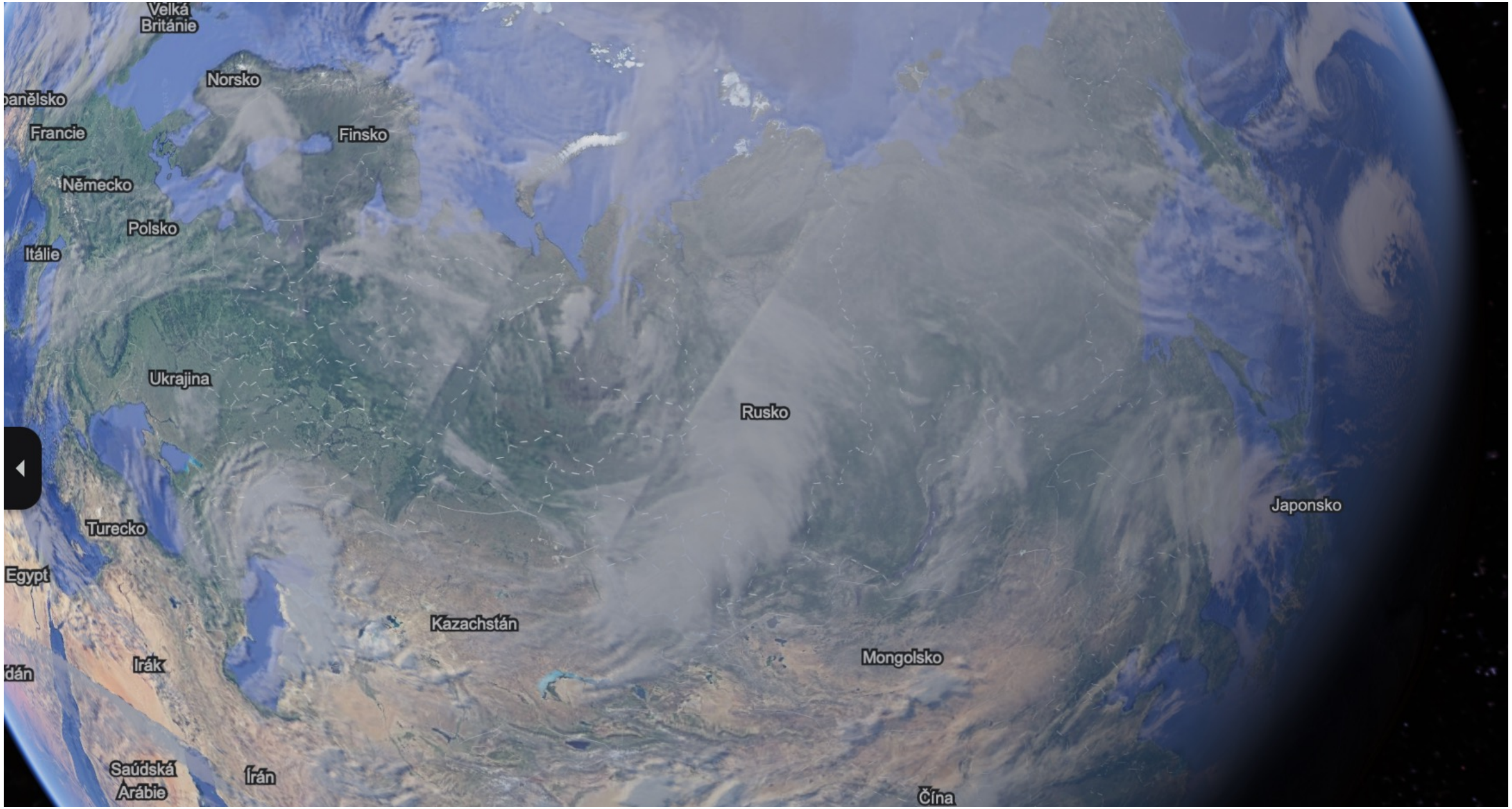
Winnipeg
NB
PE
NOVÉ SKOTSKO
WASHINGTON
Ottawa
Montréal
MONTANA
SEVERNÍ DAKOTA
VERMONT
MINNESOTA
Toronto
OREGON
WISCONSIN
NEW YORK
RHODE ISLAND
IDAHO
JIŽNÍ DAKOTA
MICHIGAN
WYOMING
Chicago
New York
IOWA
OHIO
San Francisco
NEVADA
ILLINOIS
Washington
Spojené státy americké
INDIANA
ZÁPADNÍ VIRGINIE
UTAH
KALIFORNIE
MISSOURI
KENTUCKY
Las Vegas
SEVERNÍ KAROLÍNA
Los Angeles
TENNESSEE
OKLAHOMA
San Diego
ARIZONA
JIŽNÍ KAROLÍNA
ARKANSAS
NOVÉ MEXIKO
Dallas
ALABAMA
GEORGIE
TEXAS
LOUISIANA
Kalifornský záliv
San Antonio
Houston
FLORIDA
Miami
Monterrey


Velká Británie
Norsko
Francie
Finsko
Německo
Polsko
Itálie
Ukrajina
Rusko
Japonsko
Turecko
Egypt
Kazachstán
Irák
Mongolsko
Saúdská Arábie
Írán
Čína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Москва
Lotyšsko
Severní moře
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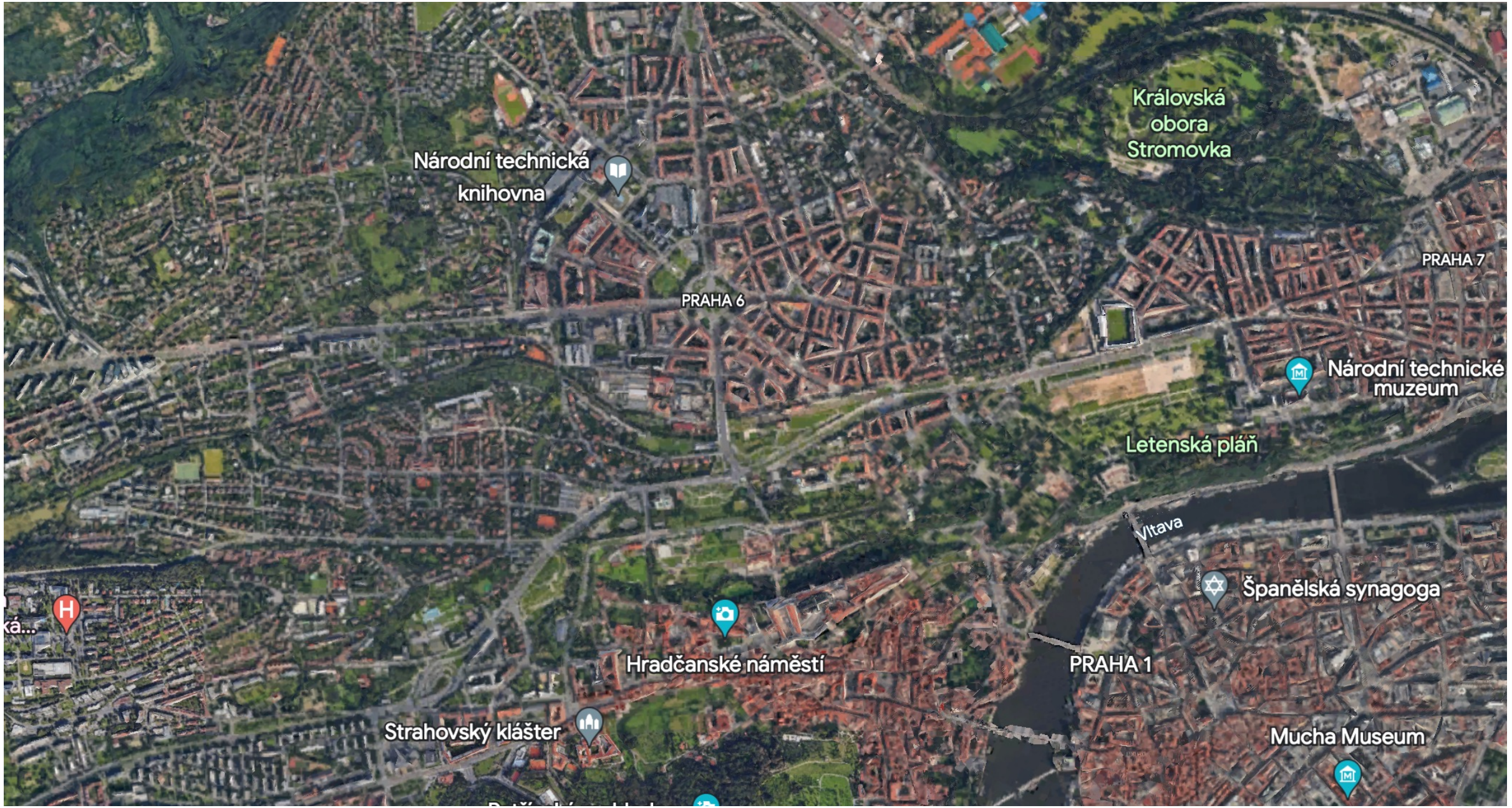
Drážďany
Zhořelec
Vratislav
Jena
Jelení Hora
Čenstochová
Chemnitz
Liberec
Valbřich
Cvikov
Ústí nad Labem
Opolí
Teplice
Hlivice
Karlovy Vary
Hradec Králové
Praha
Katovice
Pardubice
Bayreuth
Ostrava
Bílsko-Bělá
Plzeň
Česko
Olomouc
Jihlava
Brno
Žilina
Řezno
České Budějovice
Trenčín
Ingolstadt
Slovensko
Landshut
Pasov
Linec
Nitra
Mnichov
Wels
Sankt Pölten
Vídeň


Královská
obora
Stromovka
Národní technická
knihovna
PRAHA 7
PRAHA 6
Národní technické
muzeum
Letenská pláň
Vltava
Španělská synagoga
Hradčanské náměstí
PRAHA 1
Strahovský klášter
Mucha Museum

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CZ Prime Technical University

- Within 500 Global Rank Civil & Structural Engineering: 101-150
  - Engineering & Technology: 220
  - Physics & Astronomy: 151-200
- Research University – ERC projects, Horizon 2020 projects, industrial cooperation projects
- 14 units (**see next slides**)
- 5 Research and Educational Institutes (Masaryk Institute, Klokner Institute, Institute of Energy Effective Buildings, Czech Institute of Informatics, Robotics and Cybernetics, Institute of Physical Education and Sport)
- Study Programmes: 170+ (in Czech) and 70+ (in English)
- 20 000+ Students Bc.+MSc.+PhD. (3 500+ international students – about a fifth)
- 1 900 Academic Staff
- 1 500 Non-Academic Staff

Faculty of Civil Engineering

- Intelligent Building
- Energy Efficient Building
- Environmental Engineering
- Water Management
- Integral and Fire Safety
- Engineering Structures
- Construction Materials Engineering
- Architecture and Building Engineering
- Experimental Centre
- Josef Underground Laboratory / Centre of Experimental Geotechnics

Faculty of Mechanical Engineering

- **Mechanics, biomechanics, robotics and mechatronics**
- Josef Božek Research Centre of Engine and Automotive Engineering

Faculty of Electrical Engineering

- Informatics, esp. the interface between hardware and software
- **Power** production and distribution
- New and environment-friendly power sources, integrating them into a smart grid
- 6th ranked research institution in CZ
- 29% of CTU research outputs

Faculty of Nuclear Science and Physical Engineering

- The only nuclear science faculty in CZ
- Applied mathematics, physics, computing
- Optics and nanostructures
- Own faculty reactors:
  - Golem Tokamak (fusion)
  - VR – 1 (fission)

Faculty of Architecture

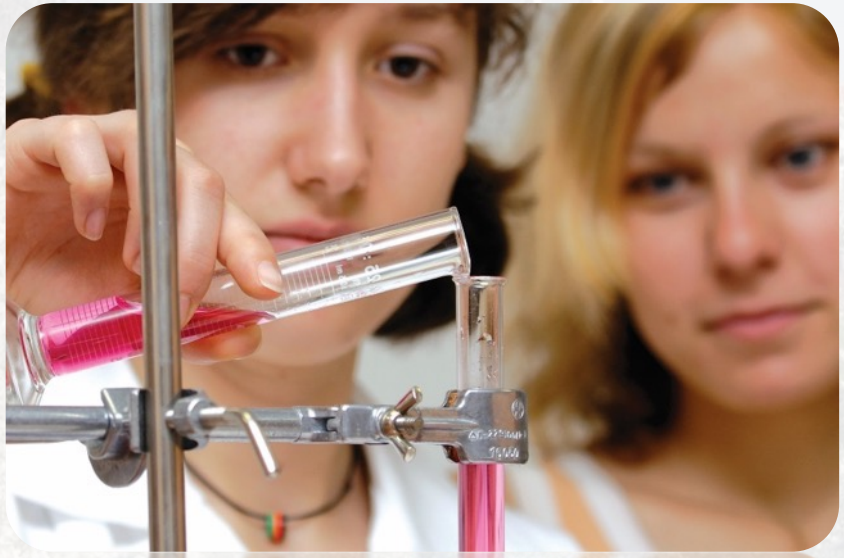
- Architecture, urban planning, design, studio work
- Monument and heritage preservation
- The Research Centre of Industrial Heritage

Faculty of Transportation Sciences

- International Double Degree Programmes
  - Intelligent Transportation systems
  - Transportation and Logistics Systems
- Project-Oriented Education

Faculty of Biomedical Engineering

- Biomedical informatics
- Nanotechnology
- Artificial Lung Ventilation research
- Based in Kladno, close links with hospitals and with local and regional authorities



Faculty of Information Technologies

- Established in 2009
- Computer security
- Software development
- Image processing
- Business informatics
- Supercomputing
- Robotic agent groups
- 60+ business partners

Czech Institute for Informatics, Robotics and Cybernetics

- Intelligent systems
- Industrial informatics
- Robotics and machine perception
- Industrial production and automation
- Cognitive systems and neurosciences
- Biomedical engineering and assistive technology
- Scientific management of platforms

- National Centre for Industry 4.0
- National Centre for Construction 4.0
- Centre of City of the Future
- Testbed for Industry 4.0
- RICAIP = Research and Innovation Centre on Advanced Industrial Production
- ROBOPROX = Robotics and advanced industrial production

University Center for Energetically Effective Buildings

- Digitization in the Construction Industry
- Energy and Buildings
- Urban Innovations
- Eco-friendly buildings and circular construction
- Healthy and comfortable environment in buildings
- S.A.W.E.R. https://www.sawer.cz
- Solar Decathlon

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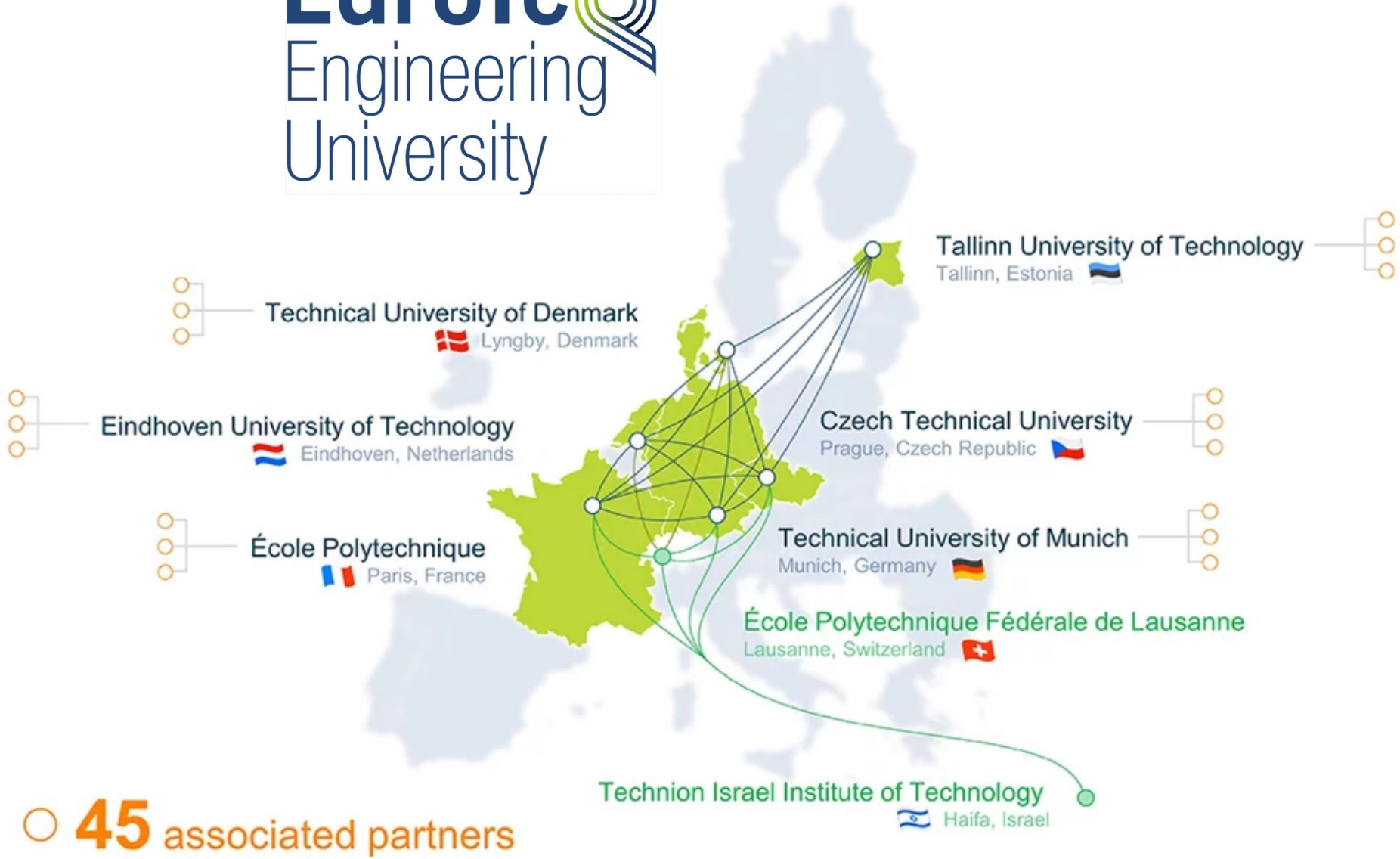
EuroTeQ Engineering University



45 associated partners

EuroteQ membership

CTU is a member of EuroteQ alliance actively working on

- European Campus
  - Creme de la creme = best online courses available to all enrolled
- Entrepreneurship and Innovation
  - Integrated approach to fostering Innovation and Leadership among students

Euroteq COLLIDER

In the 2nd Collider the CTU team has won in the „energy“ vertical of the „Leave no waste behind“ finále of the Eutoteqathon in Munich in November 2022

- The jury singled out the Waste Heaters team, composed of Prokop Pučejdl, Edoardo Tasini, and Danilo Lisitskii.

Check out the full stream here

CTU and eDIH

European Digital Innovation Hub at the Czech Technical University in Prague

Inspire and make the Czech AI-driven Industry

CTU provides services to businesses in all fields of the eDIH structure along the EU guidance

- **Test before invest**
- **Educate**
- **Innovate**
- **Support in finding and using financing**

RESEARCH HIGHLIGHTS:

The most prestigious European grants to individual researchers

European Research Council Grants:

- Artificial Intelligence for Large-Scale Computer-Assisted Reasoning in Physical and Engineering Sciences, Dr. Josef Urban, contact: jiri.vyskocil@ciirc.cvut.cz

- Evolving Language Ecosystems, **https://prl-prg.github.io** prof. Jan Vitek, prof. Christopher M. Kirsch

RESEARCH HIGHLIGHTS:

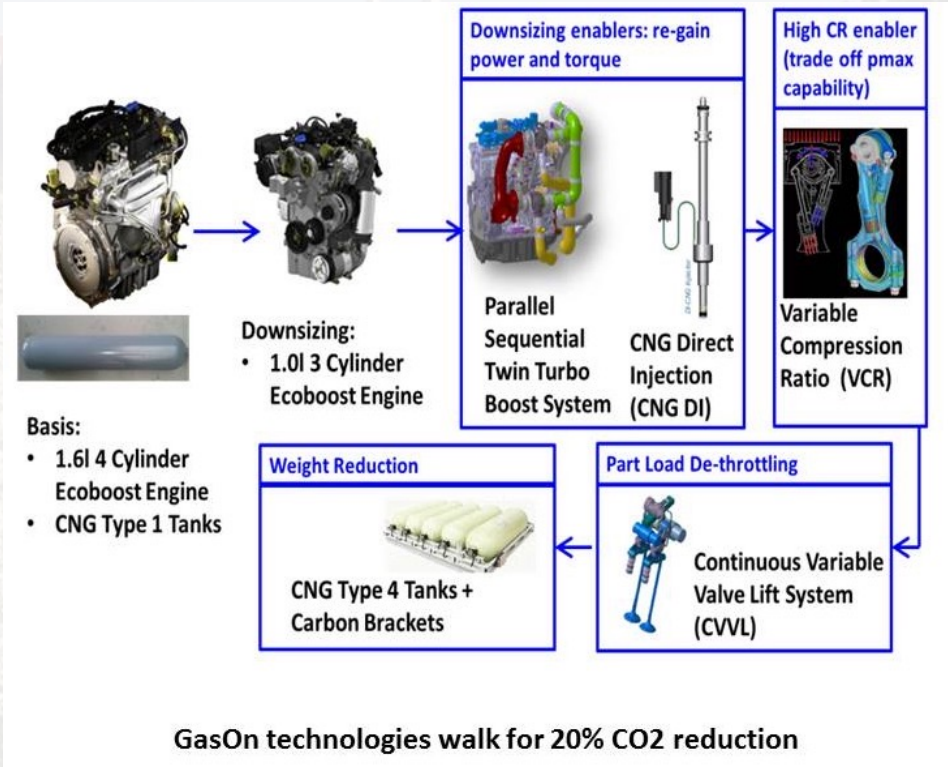
Currently 38 Horizon 2020 research & innovation grants`

Example: GasOn: Gas-Only internal combustion engines

http://cordis.europa.eu/project/rcn/194816_en.html

Participants:

- FIAT
- FORD-WERKE GMBH
- RENAULT SAS
- VOLKSWAGEN AG
- COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES
- UNIVERSITAT POLITECNICA DE VALENCIA
- CESKE VYSOKE UCENI TECHNICKE V PRAZE
- EIDGENOESSISCHE TECHNISCHE HOCHSCHULE ZÜRICH...



GasOn technologies walk for 20% CO2 reduction

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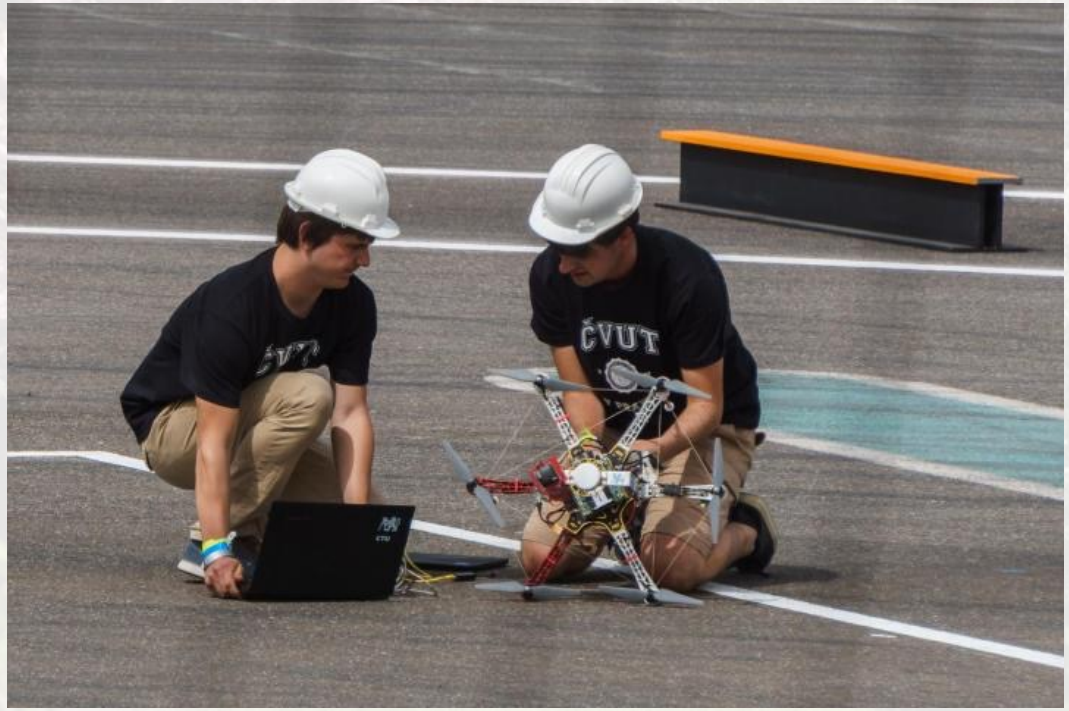
RESEARCH HIGHLIGHTS:

Successful results - winning team at an international competition

Autonomous drones from the Faculty of Electrical Engineering CTU won the prestigious Mohammed Bin Zayed International Robotics Challenge in Abu Dhabi in March 2017



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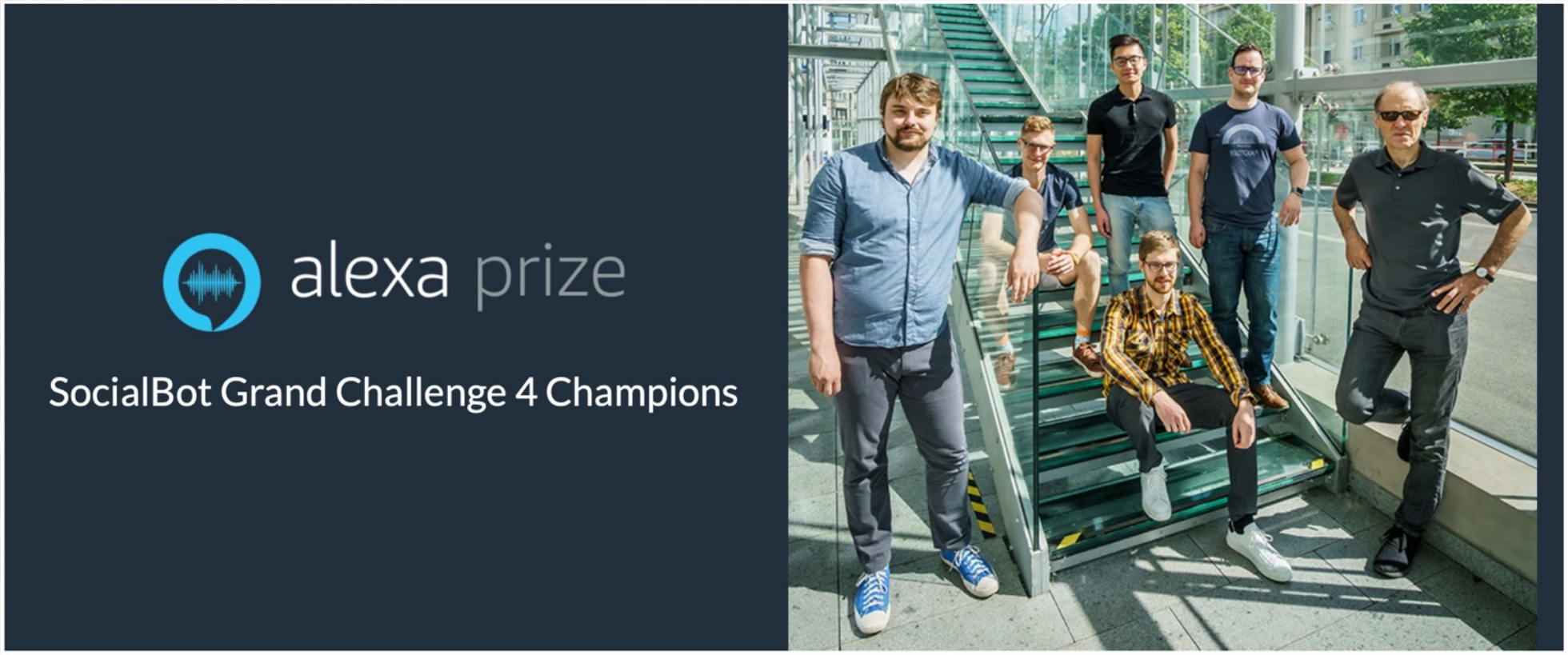
RESEARCH HIGHLIGHTS:

Successful results - winning team at an international competition

CIIRC CTU WINNER OF THE ALEXA PRIZE SOCIALBOT GRAND CHALLENGE 4 for Amazon in 2021



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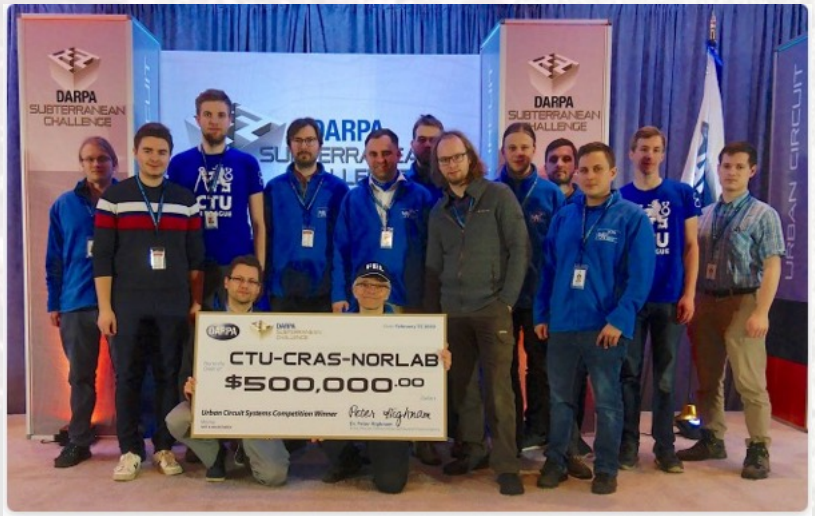
RESEARCH HIGHLIGHTS:

Successful results - winning team at an international competition

In the Tunnel-Circuit, we finished 3rd among 11 teams, and 1st among teams without DARPA funding winning thus the prize award, see the DARPA official anouncement DARPA Sub-T challenge



tomas.svoboda@fel.cvut.cz

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RESEARCH HIGHLIGHTS

Successful results - winning team at the prestigious Microsoft Imagine Cup in Redmond on July 27th, 2017

Students developed a baby glucometer in the form of a credit card within the XGLU start-up

info@xglu.cz

http://www.xglu.cz/

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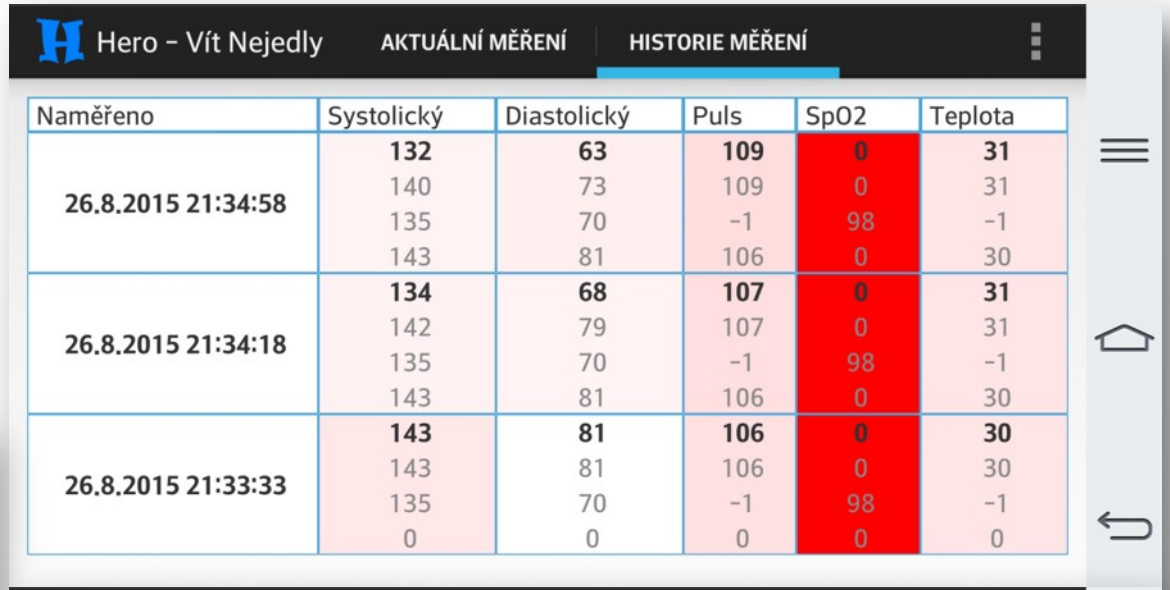
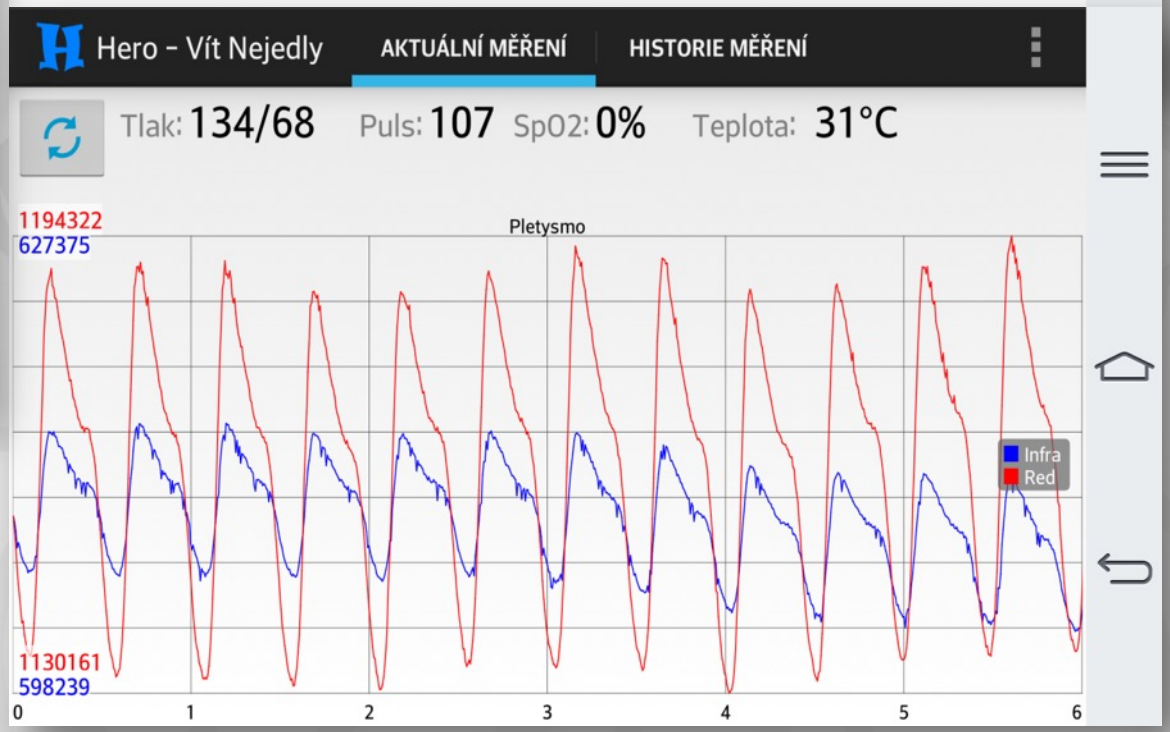
HeRo
Health Robot

- Constant measurement of blood pressure
- Used as a ring, earrings, bracelet, etc.
- Wirelessly connected to a mobile phone
- Connected with ambulance service and emergency centres
- In the process of commercialization



Naměřeno	Systolický	Diastolický	Puls	SpO2	Teplota
26.8.2015 21:34:58	**132**	**63**	**109**	**0**	**31**
	140	73	109	0	31
	135	70	-1	98	-1
	143	81	106	0	30
26.8.2015 21:34:18	**134**	**68**	**107**	**0**	**31**
	142	79	107	0	31
	135	70	-1	98	-1
	143	81	106	0	30
26.8.2015 21:33:33	**143**	**81**	**106**	**0**	**30**
	143	81	106	0	30
	135	70	-1	98	-1
	0	0	0	0	0



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RESEARCH HIGHLIGHTS:

Successful results - European Invention Award 2016

A **bladeless turbine** developed by Ing. Miroslav Sedlacek promises to change how water current is transformed into electrical power, expanding the application of hydropower technology to previously untapped sources, including ocean tides and small brooks.

Patenting: patent number: EP2171260

sedlacek@fsv.cvut.cz

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RESEARCH HIGHLIGHTS:

Successful results – an example of spin-off

A unique digital cloud chamber developed and produced by undergraduate students for CERN in 2016

Currently the Nuledo Cloud Chamber is considered to be the most advanced device of its kind in the world, which is used for teaching particle physics, and for demonstration and detection of ionising radiation.

zbytekond@fel.cvut.cz

https://www.nuledo.com/en/

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- Faculty of Mechanical Engineering
- Weight only 320 kg
- Speed: 340 km/h
- Motor: 1000 cm^3 200 HP
- 2 persons
- Below radar detection

Ultralight airplane UL-39 Albi

Startup highlights

FITIFY - https://fitifyapps.com

DRONETAG - https://dronetag.cz/en/

OPTIFLOW - https://www.optiflowsolutions.eu