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University and Economic Growth

Henrijs Kalkis, professor

University of Latvia

2024



Background

Henrijs Kalkis, Ph.D., professor

- Eur.Erg. *Certified European Ergonomist*
- PhD in *Management science*
- MSc. in *Management science*
- Higher professional education in *Work environment and expertise*
- Copenhagen Business School (Denmark, 2006), *Management studies (Exchange)*
- Penn State University (USA, 2014 – 2015), *Fulbright research scholar, Ergonomics research and studies*
- Penn State University (USA, 2018 – 2019), *BAFF visiting professor, Ergonomics, LEAN, human resource research and study courses*

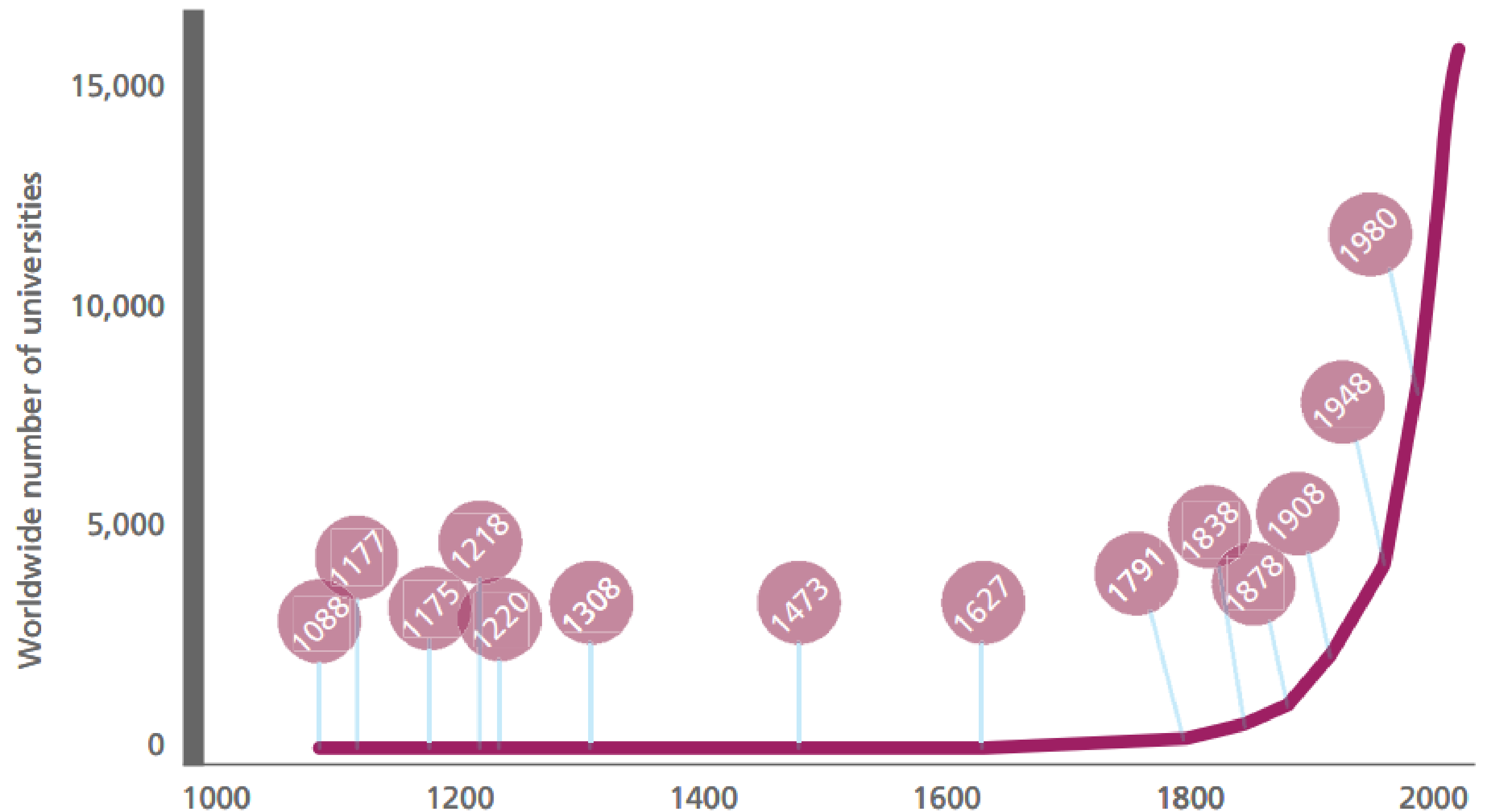
- Board member of ***Latvian Ergonomics Society***
- Board member of ***Latvian Business Efficiency Association***
- Council member of ***Federation of the European Ergonomics Societies***
- Council member of ***International Ergonomics Association***
- Council member of ***Centre for Registration of European Ergonomists***



Topic actuality (1)

The global growth of universities over the last 1,000 years

The expansion of higher education has helped to fuel economic growth around the world



Source: World Higher Education Database; dates marked when the number of universities in the world doubled.



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Topic actuality (2)



Universities have boomed in recent decades. Higher-education institutions across the world now employ in the order of 15m researchers, up from 4m in 1980. These workers produce five times the number of papers each year. The justification for this rapid expansion has, in part, followed sound economic principles. [Universities](#) are supposed to produce intellectual and scientific breakthroughs that can be employed by businesses, the government and regular folk. Such ideas are placed in the public domain, available to all. In theory, therefore, universities should be an excellent source of productivity growth.

Whereas in the 1950s and 1960s workers' output per hour across the rich world rose by 4% a year, in the decade before the covid-19 pandemic 1% a year was the norm. Even with the wave of innovation in artificial intelligence (ai), productivity growth remains less than 1% a year.



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Business and Labour Market Changes and Challenges

The New Workforce: Changing Career Values

Old Values

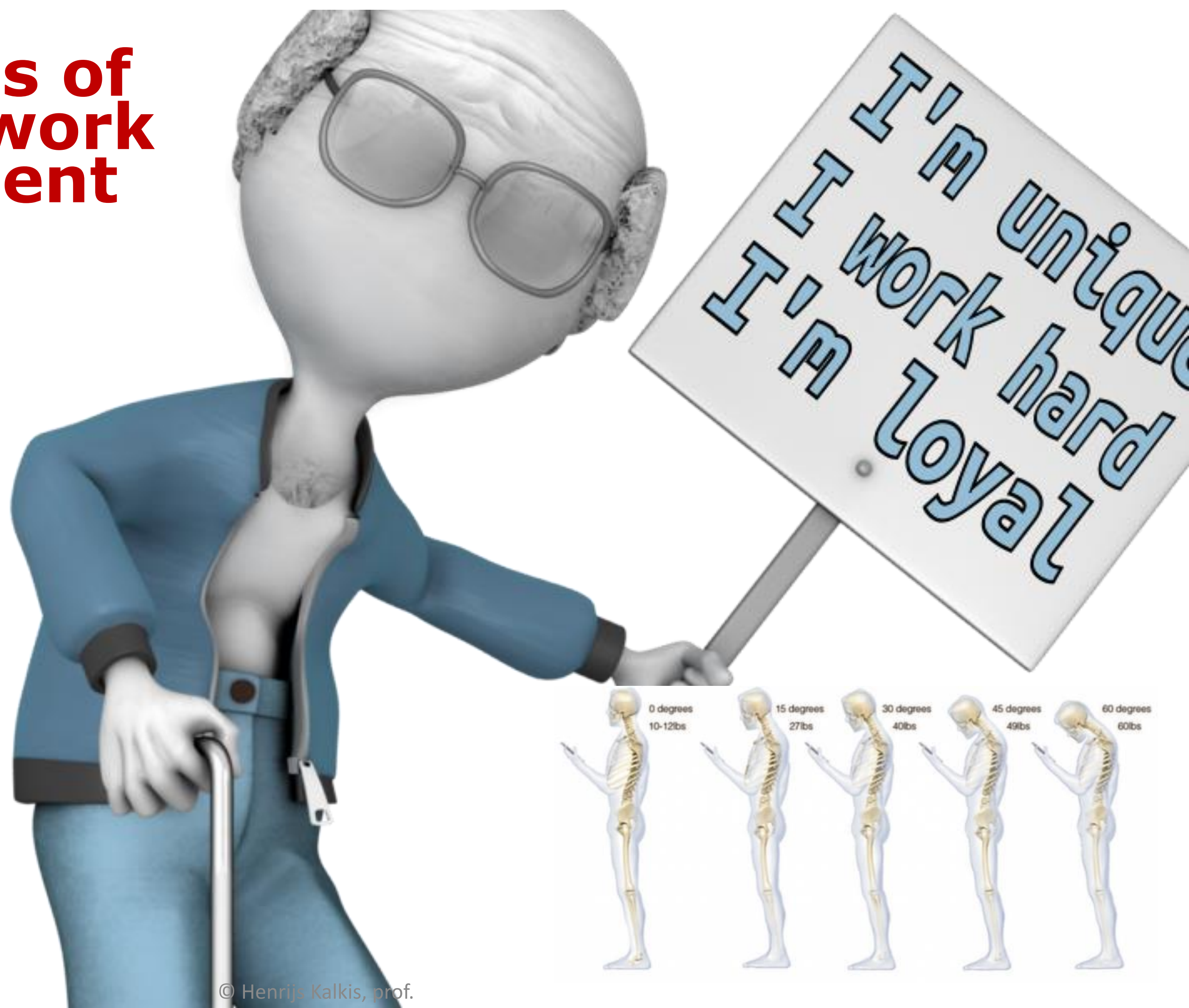
- job security
- longitudinal career paths
- job/person fit
- organizational loyalty
- career success
- academic degree
- position/title
- full-time employment
- retirement
- single jobs/careers
- change in jobs based on fear
- promotion tenure-based

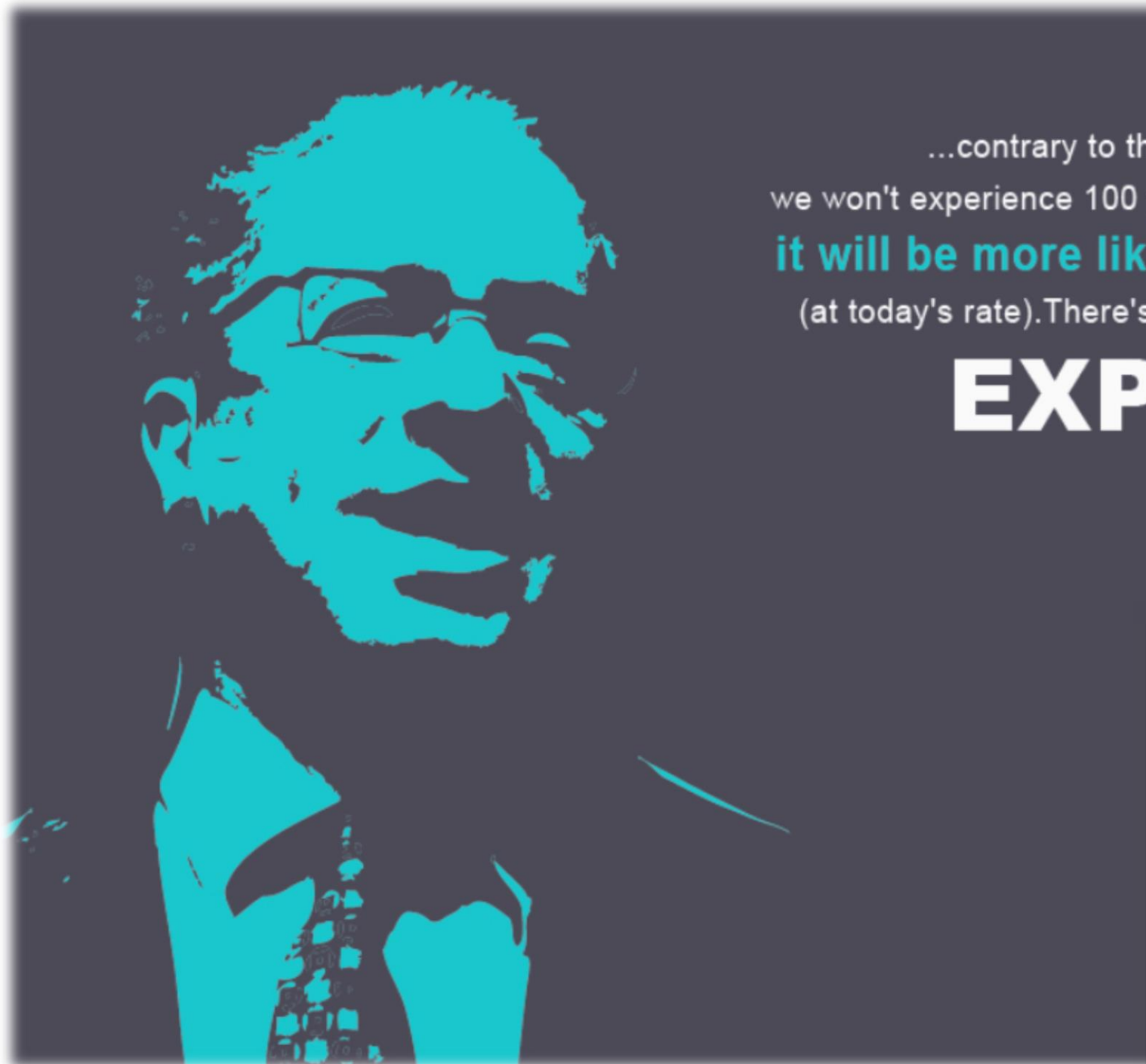
New Values

- employability security
- alternate career paths
- person/organization fit
- job/task loyalty
- work/family balance
- continuous re-learning
- competencies/development
- contract employment
- career sabbaticals
- multiple jobs/careers
- change in jobs based on growth
- promotion performance-based

Challenges of changing work environment

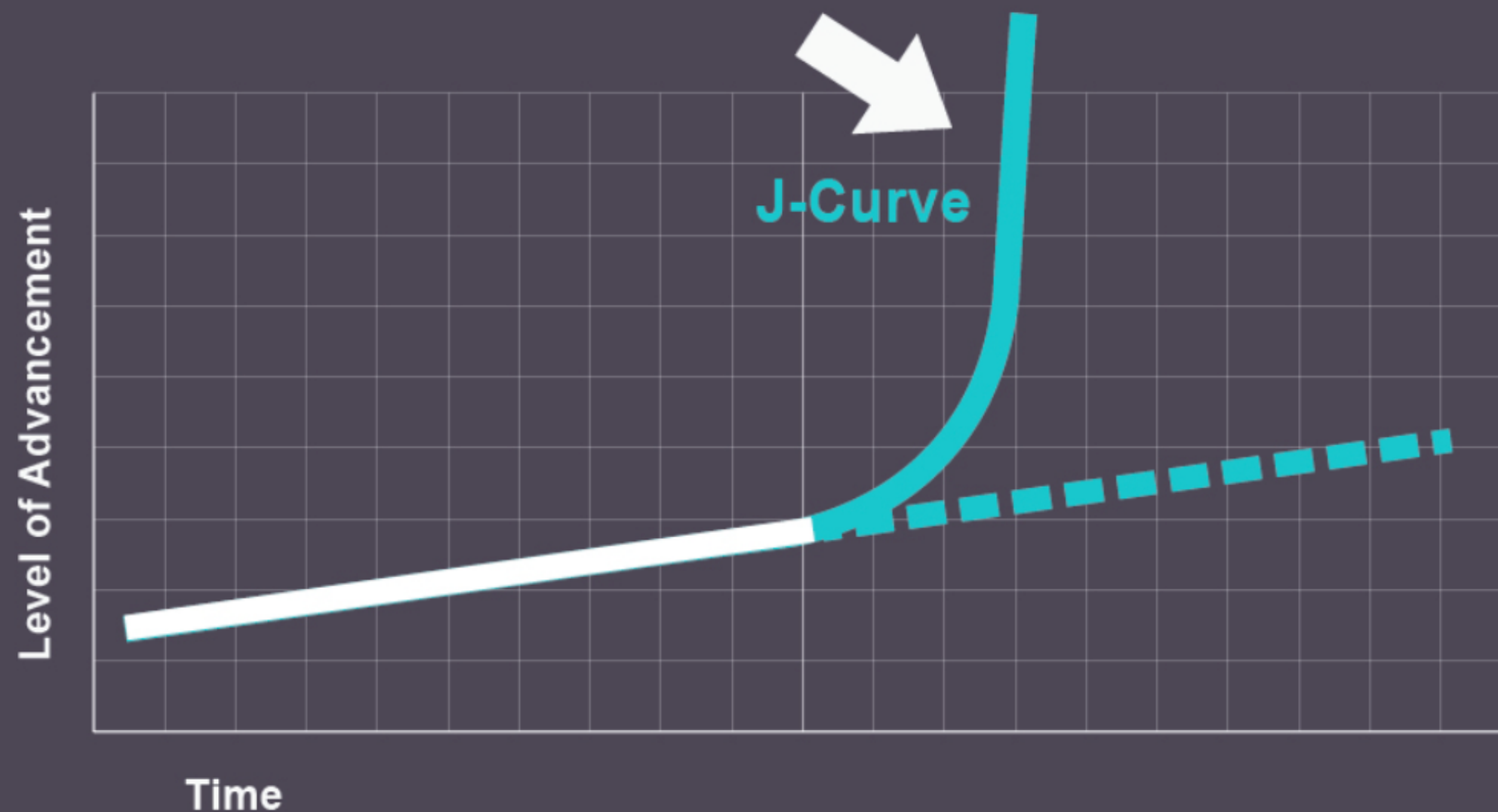
- **Aging workforce** – readiness to adjust work environment and forms
- **Changes in communication,** communication forms, demand for information (role of human factors and ergonomics/ LEAN)





...contrary to the common-sense 'intuitive linear' view, we won't experience 100 years of progress in the 21st century—**it will be more like 20,000 years of progress** (at today's rate). There's even exponential growth in the rate of

EXPONENTIAL GROWTH



EXPONENTIAL GROWTH

Role of HEI



The role of higher education in driving *economic growth* is crucial. Quality education leads to skilled workforce, innovation, and entrepreneurship, which are essential for sustainable economic development.



Skilled Workforce

Education equips individuals with the necessary skills and knowledge to contribute to the workforce. A well-educated workforce is vital for driving economic productivity and competitiveness.

Multidisciplinary approach (example)



Management

- Project management
- Business efficiency
- Emotional intelligence
- Communication and collaboration

Technical

- Analytical thinking and innovation
- Software development
- Systems Thinking
- Data understanding and analysis

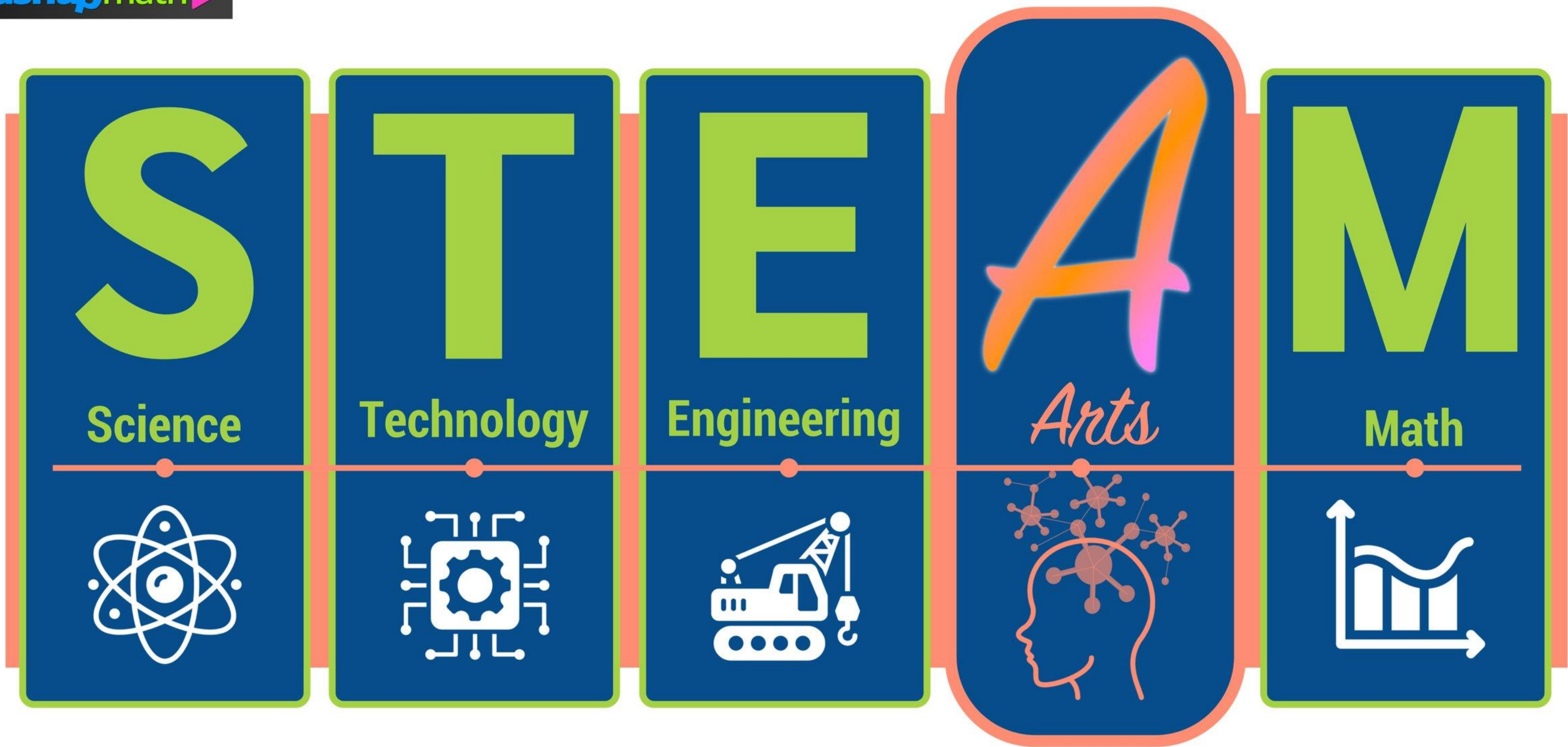


Innovation and Research



Universities are hubs for *innovation* and *research*, fostering the development of new technologies and solutions. These advancements have the potential to drive economic growth and create new industries.





EDUCATION

An aerial photograph of a university campus. The central focus is a large, multi-story brick building with a prominent portico and columns. To its right is a building with a large, domed roof. In the center of the campus, there is a circular fountain with water spraying upwards. The campus is surrounded by green lawns, trees, and paved walkways. In the background, there are more buildings and a parking lot. The overall scene is a well-maintained academic environment.

Research Institutes & Centers

A research centres and institutes conducts a large part of the University's interdisciplinary research and are set up with the purpose of stimulating collaborations in the border between various traditional disciplines.



Entrepreneurship

Higher education nurtures an environment conducive to **entrepreneurship**. It empowers individuals to create and grow businesses, leading to job creation and economic development.

Student Business Incubator



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The incubator helps students and their teams of all study levels and faculties to start and develop a business, offering comprehensive support, which, for example, includes the opportunity to participate in incubator workshops, receive support from mentors and coaches, gain access to office and production facilities, and financial support in the form of grants and stipends.



Strong collaboration with industry regarding practical workshops, training, hands-on approach, scholarships



Life Is On

Schneider
Electric

Great
PEOPLE
make Schneider Electric
a Great Company.



Global Competitiveness



Investing in higher education enhances a nation's *global competitiveness*. A well-educated population attracts foreign investment and enables countries to compete in the global market.

Wide collaboration opportunities
with global leading universities !!!

FULBRIGHT



Baltic-American Freedom Foundation

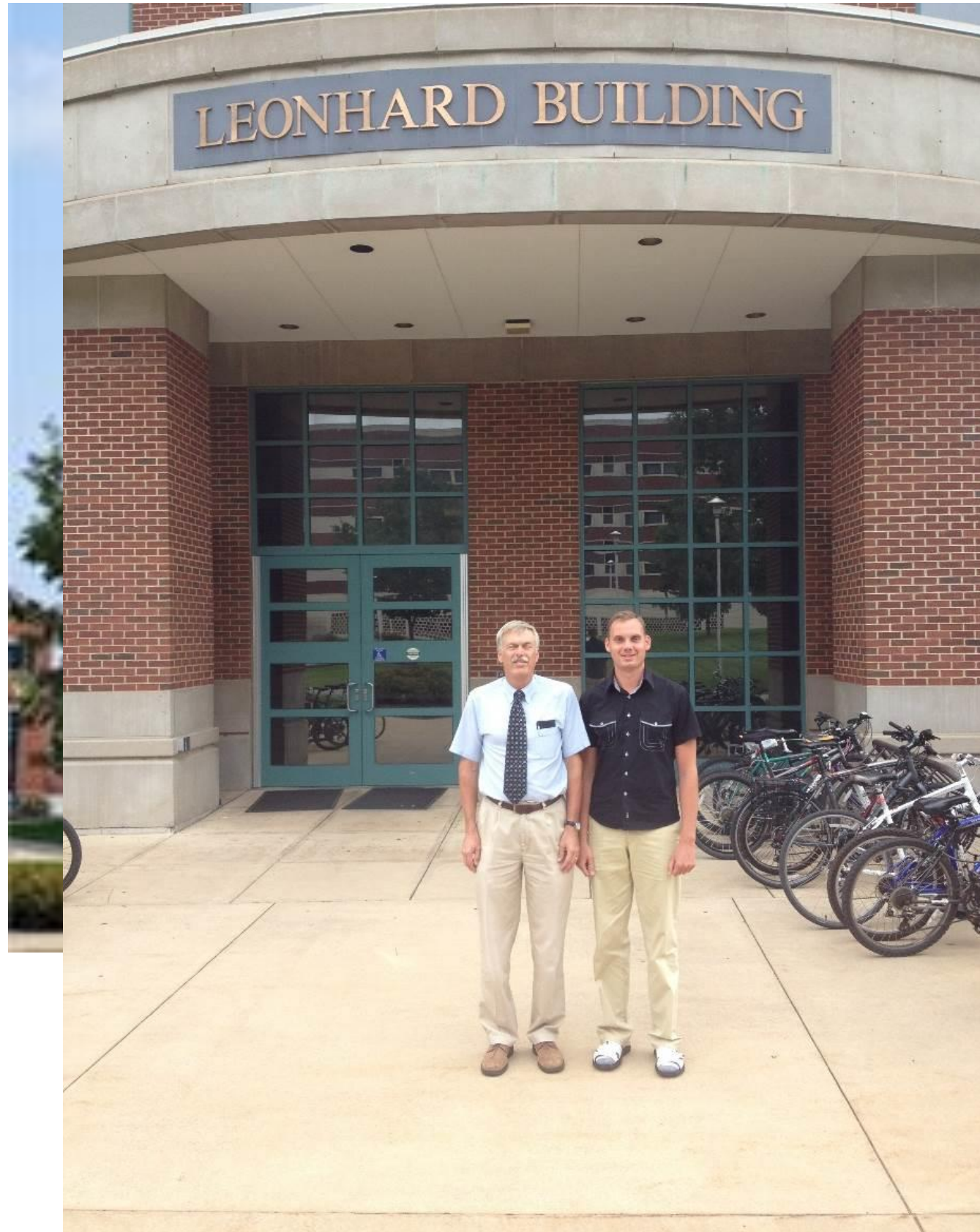


prof. Henrijs Kaļķis un ASV vēstniece
Latvijā Nensija Bikofa Petita BAFF
stipendijas apbalvošanas ceremonijā
Rīgā, ASV vēstnieces Latvijā rezidencē
2018. gada 5. jūnijā

2014 – 2015

2018 – 2019

2022, 2023, 2024



**Industrial and Manufacturing Engineering
Leonhard building and laboratories**

The Harold and Inge Marcus Department of Industrial and Manufacturing Engineering



Industrial Engineering Department



Close work with world leading scientists

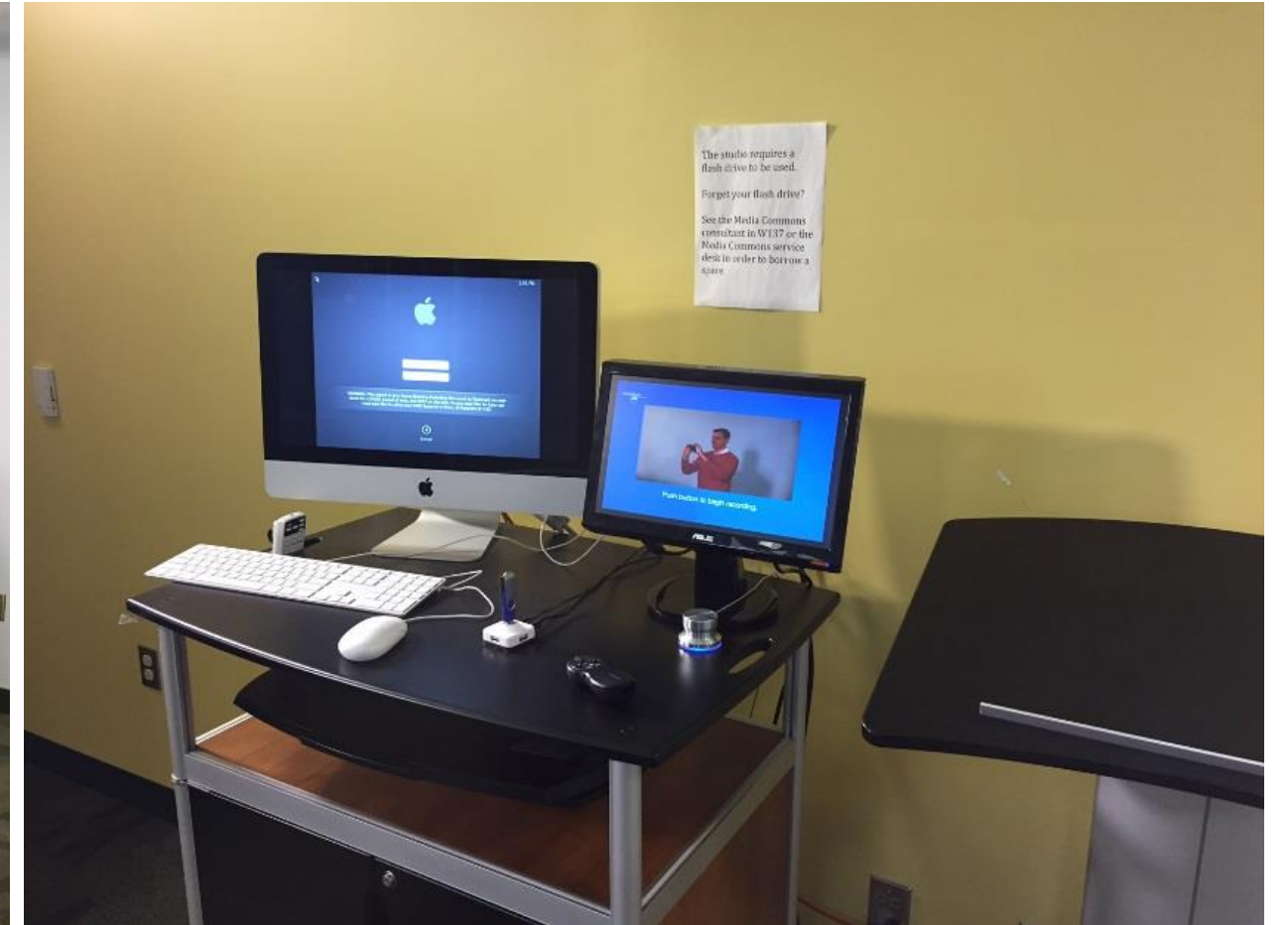




Practical research



Library

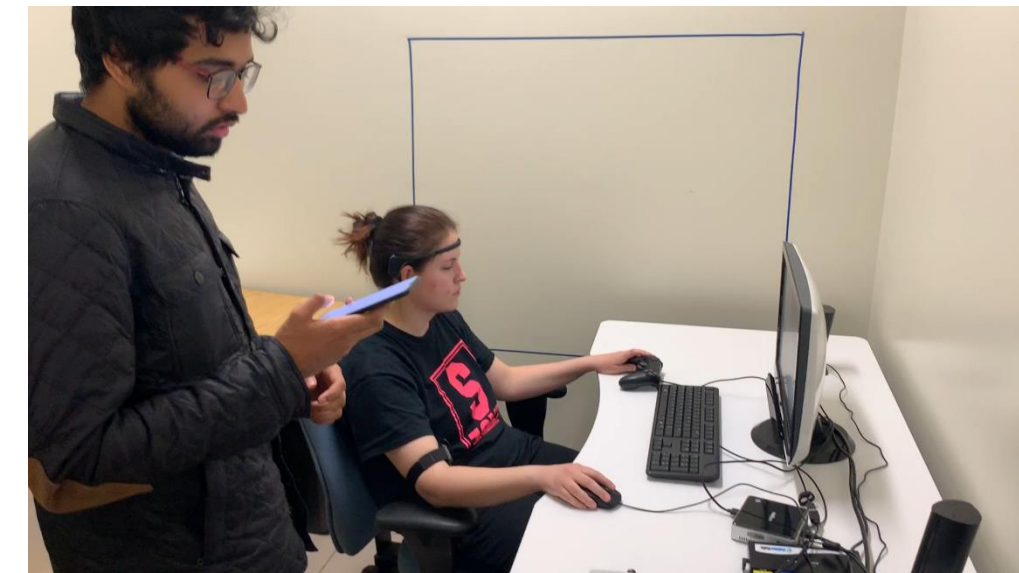
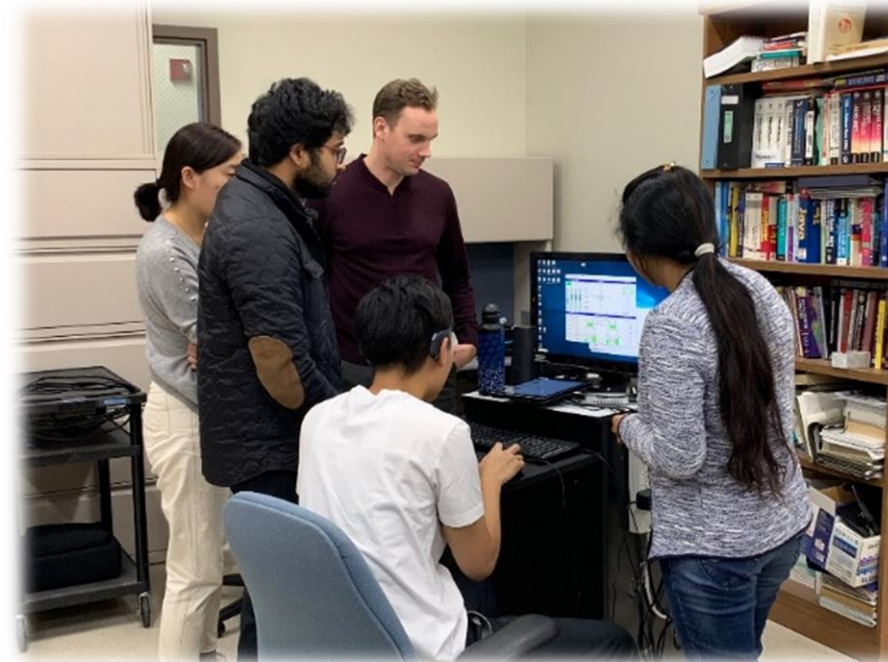
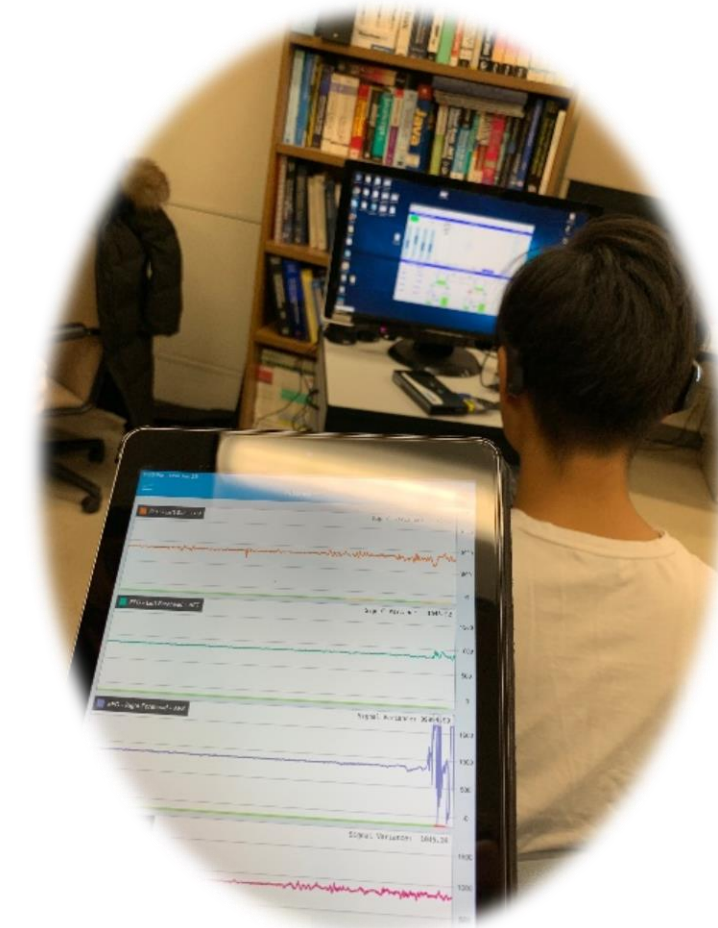
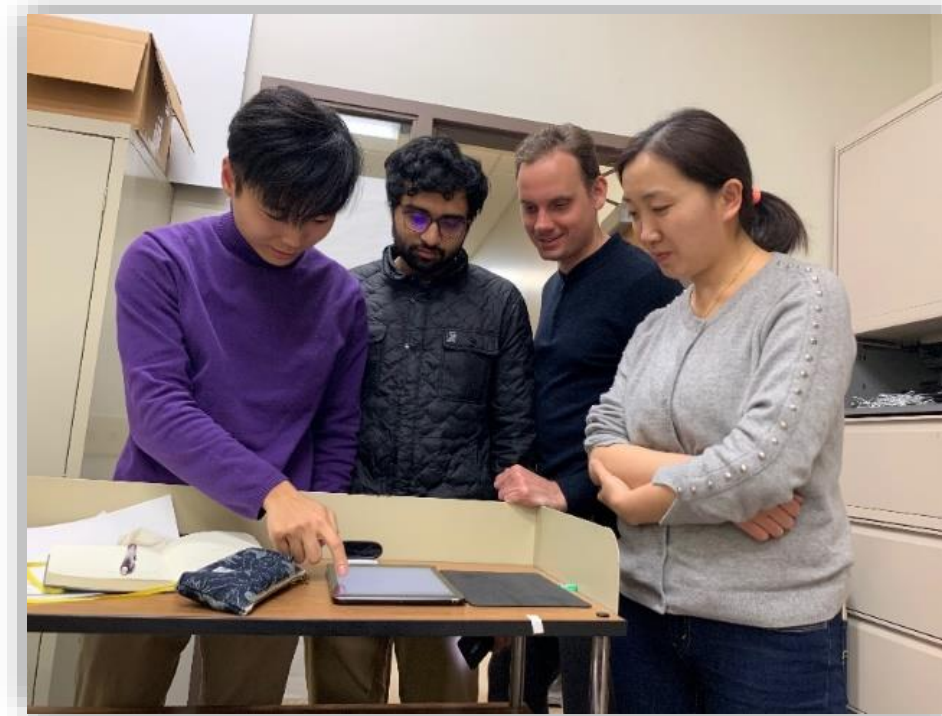


Library – visual media studio

Cognitive research on business efficiency and ergonomics

The study is devoted to the investigation of business efficiency and cognitive load indicators in the work environment, using the latest cognitive and physical load assessment methods and efficiency solutions.

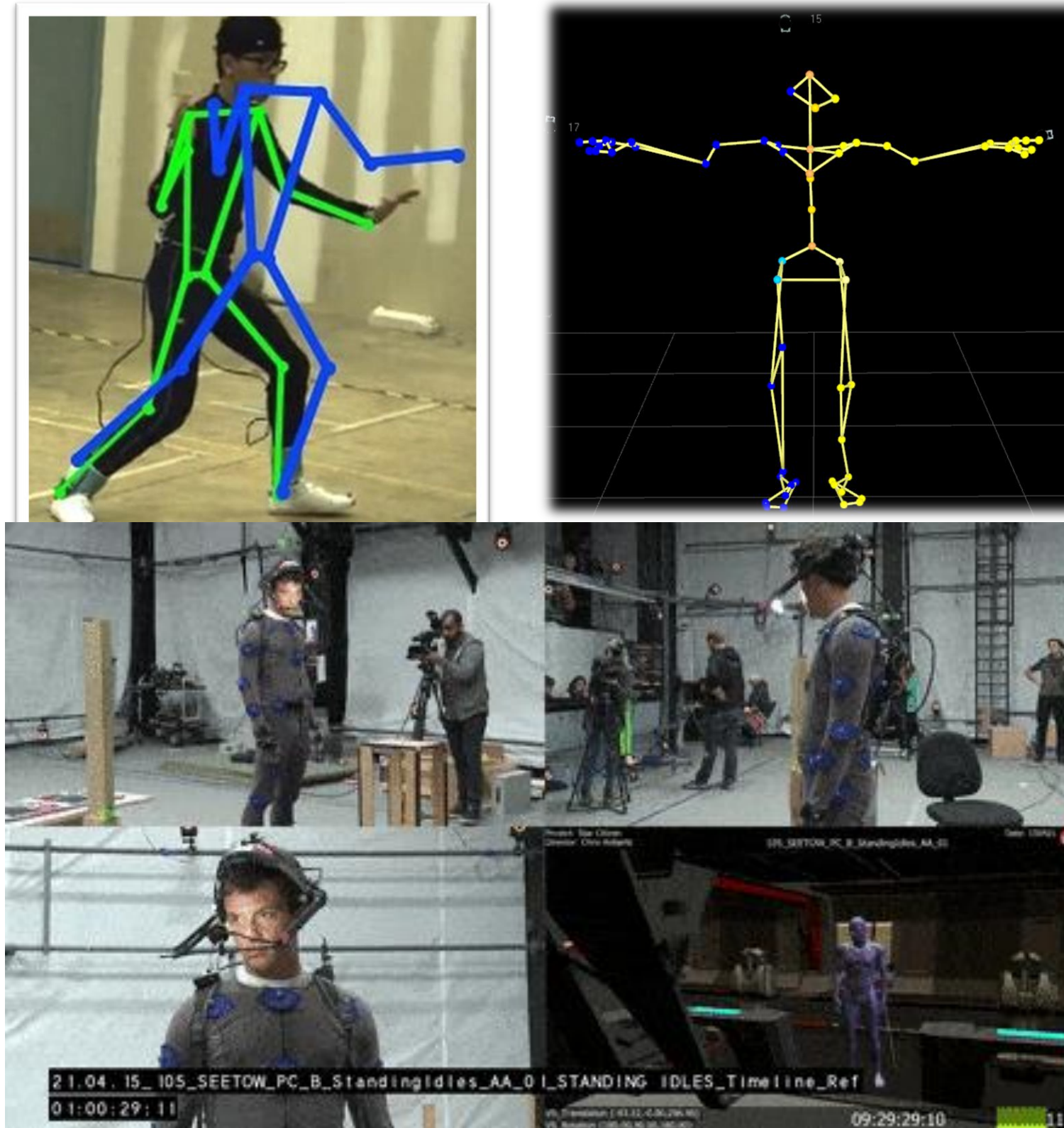
It is closely linked to the global educational development guidelines aimed at the well-being of workers, business efficiency and the economic growth of the country as a whole.



Motion analysis



Ford company research



Motion analysis in different work processes
(Motion Capture Analysis)

2024 – Harvard University



Future perspectives ?



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Preparing Leaders for tomorrow

Clients do not come first.
Employees come first.
If you take care of your
employees, they will take
care of the clients.

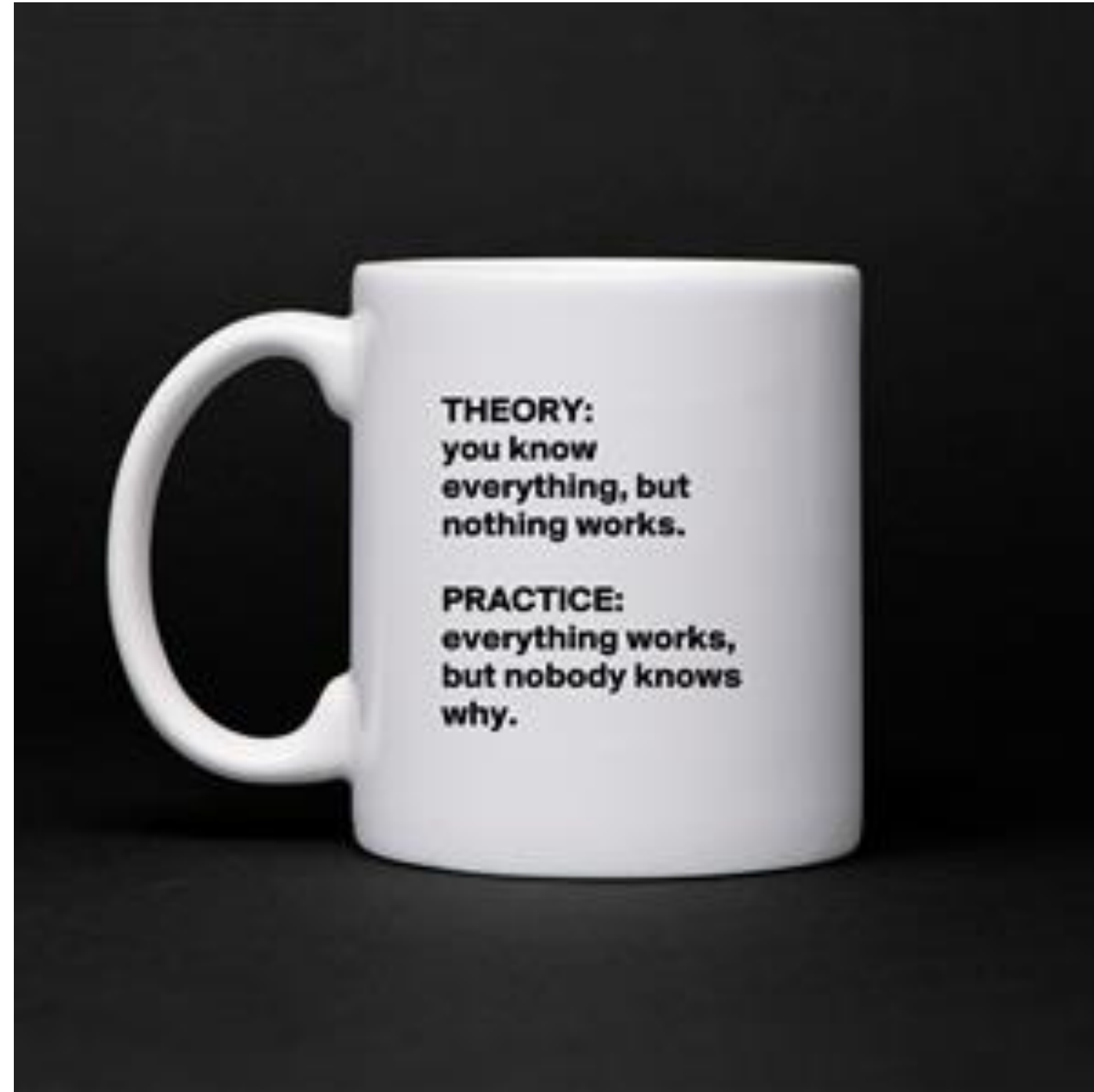
- Richard Branson



Industry-Academia Collaboration

Collaboration between *industry* and *academia* bridges the gap between theoretical knowledge and practical application, leading to the development of skilled graduates who are in sync with industry needs.





TAL TECH



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Learning from best examples in the world (Benchmarking)



HARVARD UNIVERSITY



RESEARCH SCHOLAR STUDIES ERGONOMICS AND INSPIRES

May 9

INDUSTRIAL ENGINEERING COLLOQUIUM

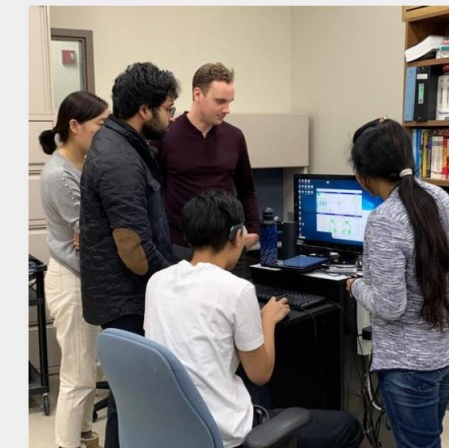
ENRIJS KALKIS,
ASSOC. PROFESSOR OF
MANAGEMENT, RĪGA
TRADIĻŠ UNIVERSITY,
LATVIA

September 13, 2018
5:00-5:50 p.m.
12 Leonhard Building
Refreshments will be available at 4:35.



PennState
College of Engineering

HAROLD AND INGE MARCUS
DEPARTMENT OF INDUSTRIAL AND
MANUFACTURING ENGINEERING



Latvian Research Scholar, Henrijs Kalkis, had an enriching experience at Pennsylvania State University in the Department of Industrial and Manufacturing Engineering department. The title of his study was *Ergonomics stress indicators in contemporary social-technical system, "Human-Machine-Environment"*. Henrijs was mentored by Dr. Andris Freivalds, an incredible professor who was a great influence on him while he was abroad in the US.

"...HIS EXPERIENCE, PASSION AND ATTITUDE TOWARDS THE WORK, HE HAS INSPIRED ME TO WORK VERY EFFECTIVELY, PERFORM RESEARCH ACTIVITIES WITH HIGH RESPONSIBILITY AND ENCOURAGED ME TO GIVE LECTURES EVEN IN ONLINE PLATFORM"

Carnegie
Mellon
University



ASU
Arizona State
University

Government Investment



Government investment in higher education is essential for building a strong knowledge-based economy. Adequate funding for education institutions is crucial for long-term economic growth.



Regular meetings with government representatives to initiate and align possibilities in the latest trends in business and industries



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Prof. Henrijs Kalkis meeting with President of Latvia, 2024, february

Meeting with government representatives to discuss latest productivity trends





Policy Recommendations

Policy measures should focus on increasing access to higher education, promoting research and innovation, strengthening industry-academia partnerships, and ensuring the quality and relevance of education to drive economic growth.



Challenges and Opportunities

While higher education presents opportunities for economic growth, challenges such as access, affordability, and quality need to be addressed to ensure that the benefits are accessible to all segments of society.



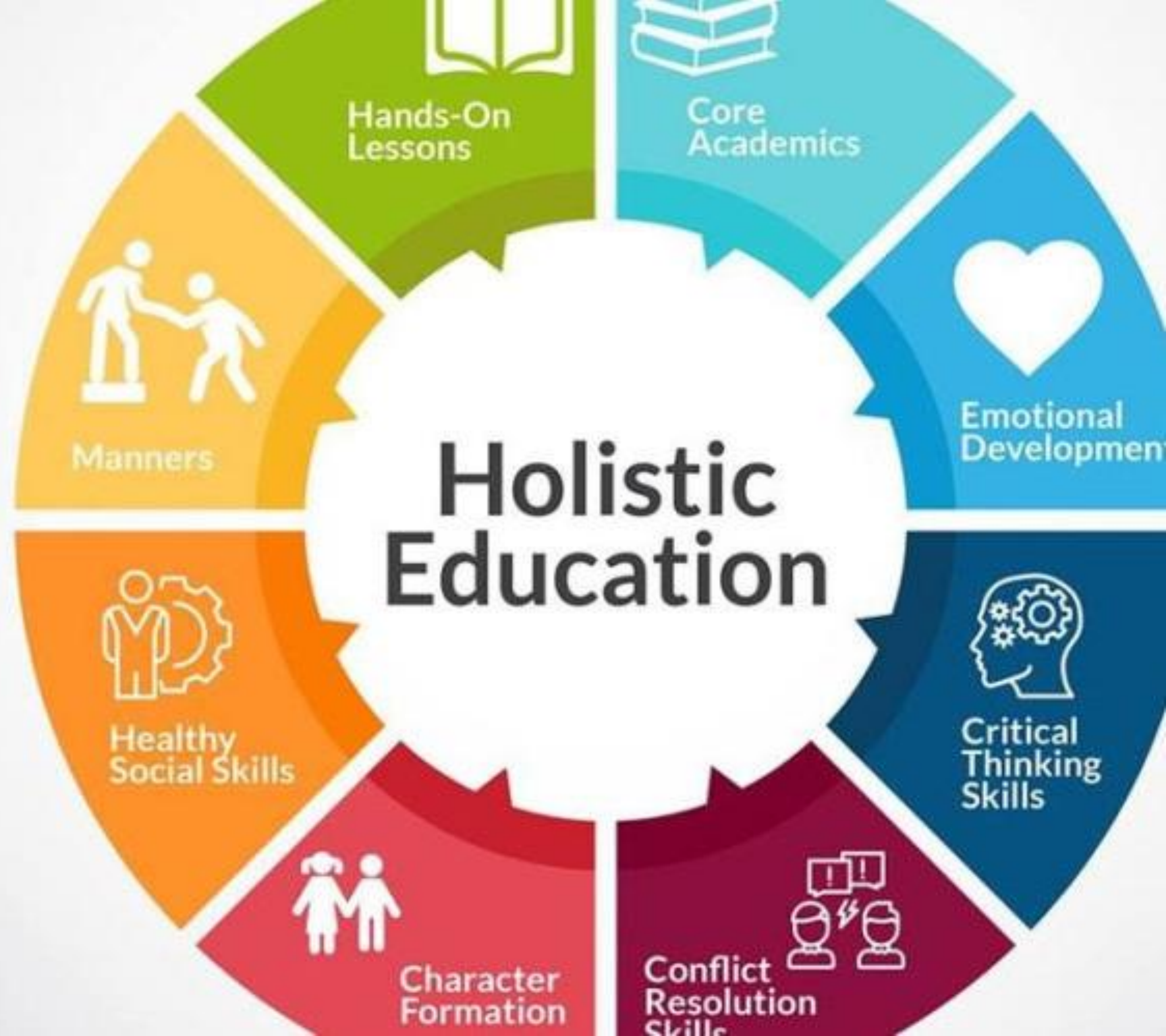
Investing in Human Capital

Investing in **human capital** through higher education leads to a more skilled, adaptable, and innovative workforce, which is essential for driving economic growth in the knowledge economy.

Multidisciplinary study fields



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Our PhD students
participate in
international
conferences



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Sustainable Development

Higher education contributes to *sustainable development* by fostering critical thinking, problem-solving skills, and environmental awareness, which are essential for addressing global challenges and achieving long-term economic prosperity.





Technology is
future

“It’s not that we use
technology, we live in
technology”- Godfrey
Reggio





New multidisciplinary study programme

Professional Bachelor's degree programme INDUSTRIAL ENGINEERING and MANAGEMENT

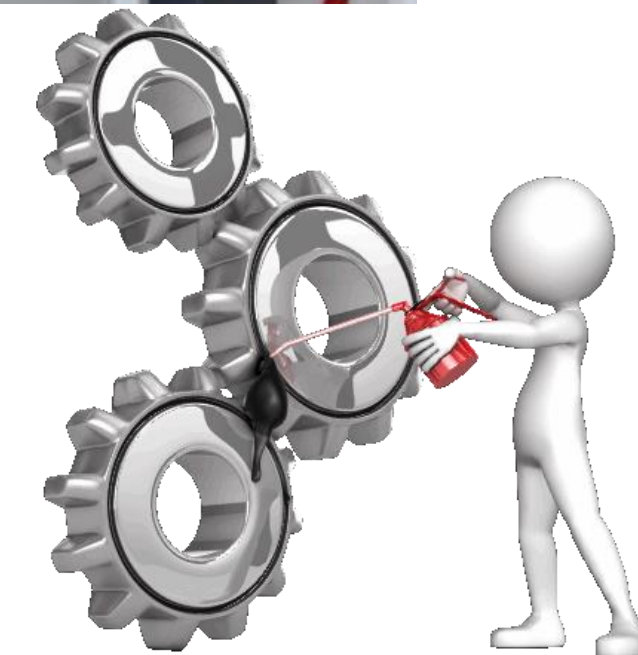
<https://www.lu.lv/en/studies/faculties/faculty-of-business-management-and-economics/bachelors-study-programmes/industrial-engineering/>

Degree: Professional Bachelor's degree in Industrial engineering management & professional qualification: engineer in industrial management

Duration of studies: 4 years

Amount of credits: 240 ECTS

Language of instruction: Latvian / English



Ph.D. study program
*Human Factors,
Occupational Health and
Safety*

<https://www.lu.lv/studijas/fakultates/kimijas-fakultate/doktoranturas-studijas/cilvekfaktors-drosiba-darba-un-arodveseliba/>

Duration of studies: 3 years
Amount of credits: 180 ECTS
Language of instruction:
Latvian / English



Conclusion

Higher education plays a pivotal role in driving economic growth through the development of skilled workforce, innovation, entrepreneurship, and global competitiveness. It is imperative for governments and institutions to prioritize and invest in quality higher education for sustainable economic development.