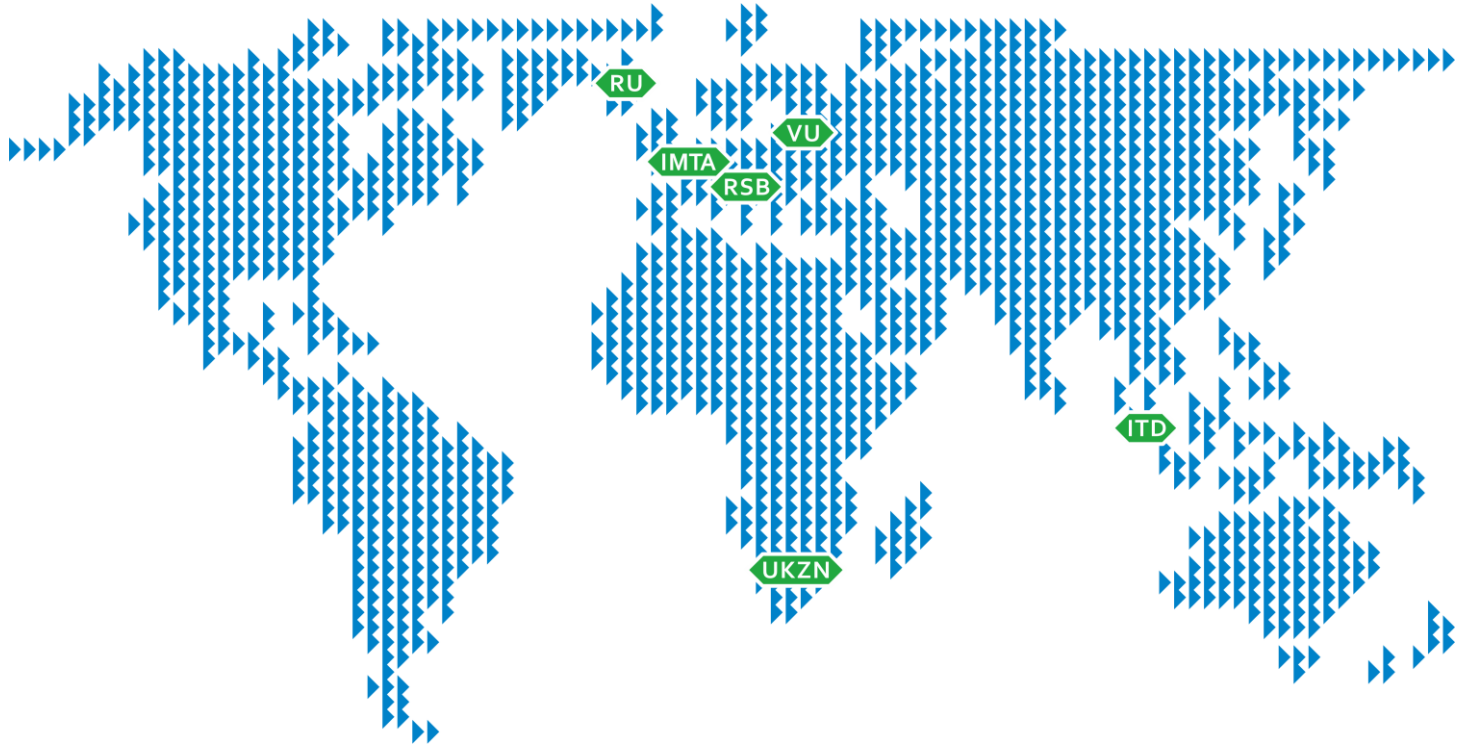


Designing higher Education  
Curricula for **A**gility, **R**esilience  
& **T**ransformation

[www.decartproject.eu](http://www.decartproject.eu)



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## About DECART

The DECART research and innovation project is an international cooperation partnership initiative funded under the European Commission's ERASMUS+ programme (2022-1-FR01-KA220-HED-000087657). The project unites higher education institutions in France, Iceland, Indonesia, Lithuania, and South Africa. The primary project goal is to provide guidelines to design innovative curricula that leverage the transformative capacities of 21st century education systems in engineering and business. The project will also identify leadership models to help educational stakeholders to thrive in an increasingly turbulent socioeconomic context.

## Project objectives

The DECART project proposes a framework and toolkit to guide STEM (Science, Technology, Engineering, Mathematics) and Management educational leaders in the transformation of their institution's curricula and programs. This should help them to activate agility and resilience in the face of today's increasingly VUCA contexts. In particular, the project's international partners and associate partners will collaborate to:

- identify and share innovative curricula,
- assess and improve the agility, interoperability and resilience of curricula,
- propose models and processes for curriculum change and leadership transformation.

By sharing contrasting ideas and practices in curriculum design, the project partners will generate insights destined to catalyse the transformation needed to foster more resilient and agile higher education systems.

## What is the meaning of **VUCA**?

VUCA is an acronym that describes specific characteristics of situations that challenge organizations' coping capacities i.e. their resilience. In the DECART project, the VUCA terms are interpreted as follows:

<b>Volatility</b>	a situation liable to change rapidly.
<b>Uncertainty</b>	a state of limited knowledge where it is difficult to predict a future outcome.
<b>Complexity</b>	a state of having many parts/multiple variables, being difficult to understand or find the answer to.
<b>Ambiguity</b>	a situation open to more than one interpretation and inexactness, more than one possible meaning.

### VUCA readiness – preparing students

Introducing the unexpected to students in the engineering program at Reykjavik University is achieved further to a long-standing two-day course entitled "Disaster Days". The theme of this event has centred on an unexpected but realistic situation that may to some extent be characterized as volatile, uncertain, complex and ambiguous, commonly abbreviated and referred to as VUCA. Such situations are expected to increase in the near future, and may therefore be an inherent part of education in, for example, business, engineering and software development. Trying to predict what kind of VUCA-like event could be around the corner is like looking in a crystal ball; we only have a vague idea of what may happen.



Photo: H Audunsson, CC BY-NC-SA licence

## DECART project program

The DECART project will implement the following primary actions:

- the organization of three collaborative intensive workshops / programmes to unite higher education programme leaders from the partnership,
- the execution of quantitative and qualitative analysis to generate insights on original curriculum structures, properties and leadership models,
- external communications and dissemination to multiple stakeholders and the public,
- the organization of onsite and online multiplier events (towards the end of the project) to facilitate the transfer and sharing of the project's intellectual results and practical tools.

## Overview of the project work packages

**WP0** Project Management (by IMT Atlantique)

**WP1** Curriculum Design (by Reykjavik University)

**WP2** Curriculum Resilience (by Rennes School of Business)

**WP3** Curriculum Transformation (by University of KwaZulu-Natal)

**WP4** Communication and Dissemination (by IT Del and Vilnius University)

### Curriculum Design – Work package 1

Work package 1 (WP1) is led by Reykjavik University. The WP1 focuses on systematically benchmarking facets of curriculum design (properties and types) and the identification of potential VUCA scenarios that may affect these curriculum designs. Based on an initial survey among the six DECART partners, we have harmonized understanding of what “curriculum” means within the project and have adopted a coherent and practically salient interpretation of the term. In addition, the survey results led us to identify a list of six external constraints impacting partner curriculums.

Although the curriculum descriptions submitted by the partners appeared quite varied at first, our analysis revealed eight common themes that were inherent in the majority of the descriptions. Furthermore, some of them had unique and noteworthy additional properties. Those themes that were identified will become our framework in the next ongoing iteration of the partner curriculum survey where we will collect and analyze more and varied curriculum descriptions, with increased focus on significant aspects that may be valuable contributions for more resilient curriculum design, and which may also inspire others.

## Anticipated results

The DECART project will deliver several reports including:

- VUCA scenarios that may be used by any higher education institution to assess their agility and resilience,
- learning materials for educational institutions and stakeholders interested in improving the agility and resilience of educational systems (e.g. co-design and leadership workshops, crisis serious game model),
- a common body of knowledge regarding curriculum change and transformation processes to inspire educational programme leaders in any higher education institution,
- academic publications, project informational brochures, and videos.

The DECART project will deliver several reports which include producing a shared understanding of curriculum structures in partner countries, identifying VUCA scenarios to assess agility and resilience, as well as creating guidelines for curriculum design and transformations. A common body of knowledge will be delivered, including change and transformation processes to inspire program leaders. Learning materials with guidelines will be produced (co-design and leadership workshops, crisis serious games), alongside publications, brochures, and videos.

In this newsletter we would like to start with the brief introduction of two partner institutions: IMT Atlantique (France) and Reykjavik University (Iceland).

### Spotlight on the coordinating partner IMT Atlantique, France



<https://www.imt-atlantique.fr>

Photo: Panoramic Bretagne & Flyoverschool, CC BY-NC-SA licence

**IMT Atlantique** (IMTA) is one of the top 10 engineering schools (among 300) in France, a generalist engineering 'Grande Ecole' financed by the Ministry of Industry and Digital Communication.

## IMTA is:

- a Higher Education Institution with first-rate, internationally recognized research capabilities (present in 5 disciplines in the Shanghai, one of the top 400 in THE World University Ranking (<50 in Young University Ranking);
- a resolutely multi-site institution reflecting the world in which we live. An institution with a strong local presence, and a commitment to contributing to local development. The same programme is offered between the 3 sites in Nantes, Rennes and Brest, with curriculum flexibility in line with the Bologna process and Learning Outcomes principles, as constructive alignments of assessments;
- an institution which is aware of its environmental and societal responsibility. In 2019 it was awarded the sustainable development & social responsibility accreditation,
- an institution that trains executives capable of understanding and mastering the complexity of the highly interconnected systems of the future, by combining their knowledge of the systems with that of the networks that link them;
- and finally, IMTA will reform its programmes in 2023 to reinforce transferable skills and their integration within agile and flexible curriculum architectures.
- involved in Erasmus+ KA2 projects, e.g. Inspire, DAhoy, INNOSID, EASTEM, SMARTSoc and now DECART.

**Mission** at IMTA is to prepare the new generation to face future challenges, to deal with complex problems, to understand increasingly networked systems, but also and above all to be responsible agents for change in the world.

## IMTA – Key Figures:

- CTI accredited, member of the *Conférence des Grandes Ecoles*
- Member of the EU List of European Universities linking Society and Technology
- 3 campuses in Bretagne – Loire, France: Brest – Nantes – Rennes
- 3 main areas of expertise: digital, energy and the environment
- 1 800 students, including 1 380 engineers and 270 doctoral students
- 700 graduates/year from the engineering degree to doctorate level
- 750 staff, including 500 permanent employees
- 260 permanent teacher-researchers, including 115 who are accredited to supervise research
- 850 publications/year, of which 390 are "rank A"

## IMT Atlantique project team

- **Nathalie Chelin** is in charge of diversity management at IMTA. She leads a training course on female leadership and participates in reflection on socio-technical controversies related to ecological and societal transition;
- **Gilles Jacovetti**, PhD, is pedagogical engineer at IMTA. His professional interests and activities are in pedagogical innovation, Edutech (incl. LMS, blockchain, metaverse and virtual reality), and research (pedagogy, sustainable management of projects, transformations of Higher Education curricula);
- **Coraline Lozac'h** and **Chantal Puren** act as administrative and financial managers;
- **Siegfried Rouvrais**, PhD, is an Associate Professor at the computer science department of IMTA & CNRS Lab-STICC. He is the DECART project coordinator. His educational interests are in models, methods and processes for higher education transformations;
- **Roger Waldeck**, PhD, is a teacher-researcher at IMTA and a member of the Western Economics and Management Laboratory (LEGO). His research focuses on methodologies for modelling complex social systems. He is expert in serious game design.

## Spotlight on the first onsite meeting host Reykjavik University, Iceland



HÁSKÓLINN Í REYKJAVÍK  
REYKJAVIK UNIVERSITY

In Iceland there is a touch of optimism, a sort of willingness to act despite a gloomy situation which is reflected in the common saying that “it will all work out fine in the end” (“þetta reddast” in Icelandic). Through the ages Icelanders have developed an attitude towards resolving effects of natural disasters and hence resiliency, something that is a valuable contribution to the project and to echo in curriculum design e.g. to meet Sustainable Development Goals. In addition, the resilience of an educational system has to be gender equal, and Iceland has a good reputation and experience in striving in that direction.



<https://en.ru.is>

Photo: SB Saevarsson, CC BY-NC-SA license

**Reykjavik University (RU)** is a private non-profit university, situated in the heart of Iceland’s capital. It is a dynamic international university with 3 600 registered students and 250 permanent faculty and staff. RU focuses on research, excellence in teaching, entrepreneurship, technology development and cooperation with industry. RU offers a wide range of undergraduate and graduate programmes, taught in seven departments.

RU's School of Technology emphasises quality of teaching and the balance between a strong theoretical foundation and applied knowledge of the latest technologies and methods. The School offers study programmes in engineering and computer science in three different departments. Courses are at BSc and MSc level, as well as PhD. Most MSc programmes are taught in English.

The Department of Business Administration at RU offers varied BSc and MSc level courses in business. Interdisciplinary courses such as BSc in business administration with a minor in law or computer science are on offer. On the graduate level, courses are taught in English and take 14 months to complete. Close collaboration with businesses, practical projects and internships give students a competitive advantage. Main research areas are leadership studies, marketing and consumer psychology, management, innovation, and entrepreneurship. The MBA programme has an Association of MBAs accreditation. The BSc programme in Business Administration and Economics has the European Foundation for Management Development accreditation. The Department of Business Administration has been a member of the United Nations Principles of Responsible Management Education network since 2012.

### Reykjavik University – Key Figures:

- one campus under one roof, a dynamic and bright building in Reykjavik
- offers programs in Engineering, Business Administration, Computer Science, Law, Psychology and Sports Science
- 3.600 students and 250 permanent faculty and staff
- 8% of students at RU are international
- gender ratio among students is 47 to 53
- publications by RU affiliated academics in peer-reviewed outlets in 2022 are 480.
- RU is part of the European University Association.

## Reykjavik University project team:

- **Haraldur Audunsson**, PhD, Associate Professor in the Department of Engineering at RU. His interests include applied physics, physics education and experiential learning. He has been involved in developing engineering curriculum for several years, and in particular establishing new programs in engineering.
- **Anna Sigríður Islind**, PhD, Associate Professor in the Department of Computer Science at RU. Her interests include applied information technology, learning analytics, lifelong learning and experiential learning. She worked on work-integrated learning, and lifelong learning in her previous research group, and is running a research group called CLARU (Champions of Learning Analytics at RU). She has been teaching in higher education since 2011, and has passion for co-design.

## Meeting in Reykjavik in June

We are all really looking forward to our first on site meeting in June at Reykjavik University – a splendid opportunity to actually meet and work together face-to-face for at least two days. At the meeting we will continue our work on exploring curriculum design and properties, VUCA scenarios and preparing for the upcoming tasks later in the year. In preparation for the meeting, we will continue to gather broad ideas on potential VUCA scenarios that may affect educational programs, and for that purpose, we will conduct an online survey. These contributions will be used as seeds for our work in Reykjavik.

## Summary view of the DECART project partners



**IT Del** has 4 faculties and 8 study programs (4 diplomas and 4 bachelors) which are focussing in Information Technology, Industrial Technology, and Bio Technology.



**Rennes School of Business** is an innovative, triple accredited, international management school located in France which for the past 30 years has been offering students the opportunity to experience diverse management practices and to acquire valuable professional skills. As a cosmopolitan business school - 90% of its professors and 55% of its students are international - Rennes School of Business offers a wide range of programmes that empower its students to act effectively outside the box to invent the world of tomorrow. #UnframedThinking  
EQUIS, AACSB, AMBA accredited | 5,000 students | 350 leading partner universities on 5 continents. More information on: [www.rennes-sb.com](http://www.rennes-sb.com)

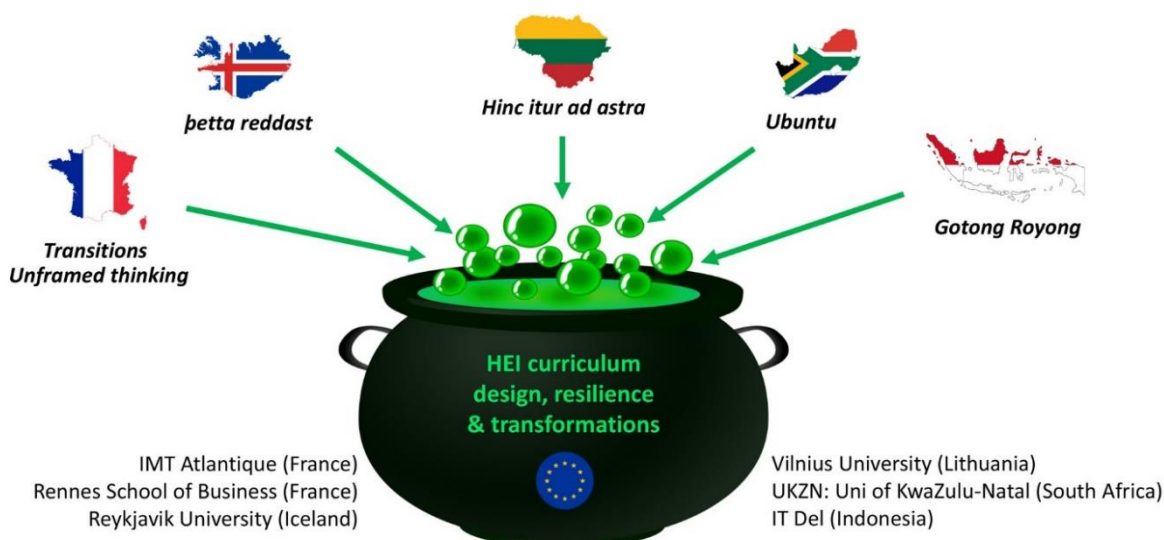


**University of KwaZulu-Natal (UKZN)** is a leading institution of higher learning on the African continent. The Vision of the University is: To be the Premier University of African Scholarship. It is located in the province of KwaZulu-Natal and has multiple campuses.



**Vilnius University** was founded in 1579, and is one of the oldest universities in Eastern Europe. It offers a wide range of study programs, including humanities, social sciences, natural sciences, health sciences, and more.

*Detailed information about partners' institutions will be included in subsequent newsletters.*



## Status update and ongoing project activities

Activities in the first 6-month of the DECART project include:

- November 2022:
  - First online meeting
  - Roundtable of partner's presentation
  - Main points of STEM and Management educational programs
  - VUCA overview from a Higher Education perspective
  - Initial discussion on what is a curriculum
  - Broad overview on resilience in Higher Education
- December 2022:
  - A qualitative and quantitative questionnaire to enhance the quality of future project meetings
  - Brainstorming of curriculum examples and metaphors
  - Website requirements discussion and project logo selection
- January 2023:
  - Template of curriculum artefacts
- February 2023:
  - Development of 2 page curriculum descriptions by all partners
- March 2023:
  - Publication policy and guidelines developed
  - Comparison of curriculum descriptions, including main themes
  - Approval of details of the first face-to-face meeting (to take place in Reykjavik University, Iceland in June 2023)
- April – May 2023:
  - Extending analysis of curriculums to include other partner programs
  - Sharing views on potential Higher Education crises and VUCA context.



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