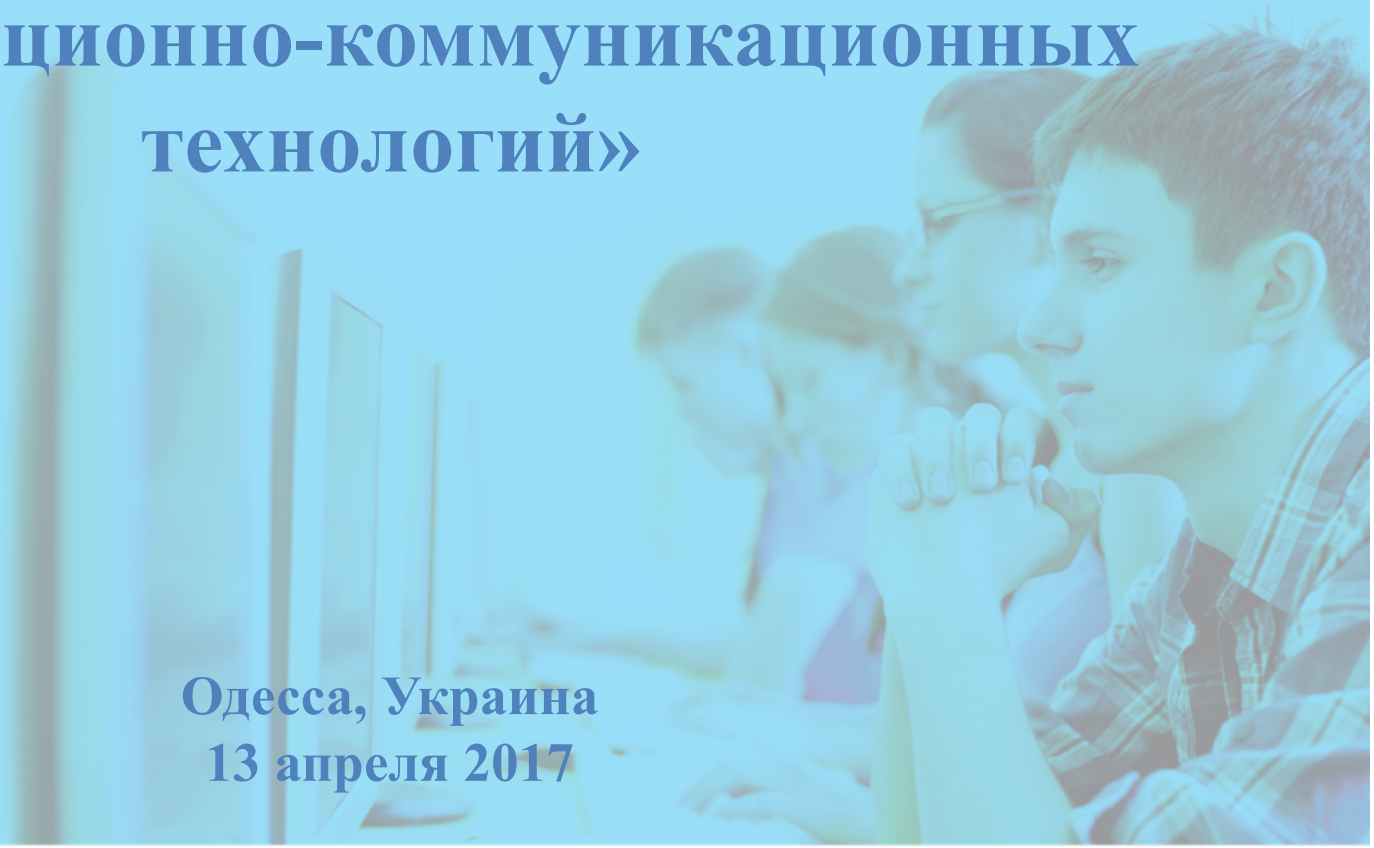
# Региональный семинар МСЭ «Укрепление кадрового потенциала в области электросвязи/ИКТ»

## Сессия 3: «Популяризация информационно-коммуникационных технологий»



**Одесса, Украина**
**13 апреля 2017**

# DIGCOMP – рамка для развития и понимания цифровой компетенции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**зав. кафедры компьютерных наук, КНУКиИ,**
**член Технического комитета «Образование» IFIP**

# Digital Agenda

1001100101011101110000100 2010–2020

# for Europe

Проект

# Цифрова адженда України – 2020

(«Цифровий порядок денний» – 2020)

Концептуальні засади

(версія 1.0)

Першочергові сфери, ініціативи, проекти «цифровізації» України до 2020 року

«Якщо нічого не міняти, нічого не буде мінятися»


Цифровая компетенция

http://files.eun.org/etwinning/EN_Developing%20pupil%20competences%20through%20eTwinning.pdf (див ст. 44)

# Digital Agenda: Grand Coalition for Digital Jobs

# A Digital Europe needs Digital Skills

European Commission

Digital Skills and Jobs Coalition · CodeWeek.eu · all you need is CODE · eSKILLS FOR JOBS 2016

@digitalskillsEU @eskills4jobs #DigitalSkills #eskills

## Young People

Nearly all young people are online but they need to be prepared for their digital future


95% of the 16-24 year olds in the EU are regular internet users

### Education has to adapt to the digital era

Less than half of children are in schools that are highly digitally-equipped

Only 20-25% of school children are taught by digitally confident & supportive teachers

Curricula need to be redesigned to integrate digital skills & learning


### We need to raise the number of students in ICT – especially women

The number of ICT graduates has decreased by 13% between 2006 & 2013

There are twice as many male as female graduates in STEM (science, technology & mathematics)

Students in all domains need to be educated in digital skills, not just those who choose an ICT career

## Working Age People

### Digital technologies create new jobs


There is rising demand for ICT professionals These jobs are in all sectors of the economy


Every job in ICT creates 3 more jobs elsewhere in the economy

With high unemployment in Europe, these jobs are sorely needed

### The whole labor force needs to be digitally trained

37% of the EU labor force have low or no digital skills


9% of the labor force in the EU has never used the Internet

The lack of graduates in ICT is leading to a gap estimated at 756 000 unfilled jobs by 2020


### Provide training & support for careers in digital domains

online learning


Coding clubs


apprenticeships

## Older People

### Everybody needs to go digital

By 2060 one in three Europeans will be over 65 years old

37% of people aged 55-74 have never used the Internet

Services are increasingly designed as digital by default. The need for public services is particularly strong amongst the older population but only 23% access them online

### We need to raise awareness of the benefits of going digital

The most common reasons for not going online are
- lack of interest
- lack of skills
- cost factors


Provide support to get online & develop digital skills

Use innovative solutions e.g. twinning with younger people online

Digital services should be accessible to everyone

Disabilities act as barriers to technology use

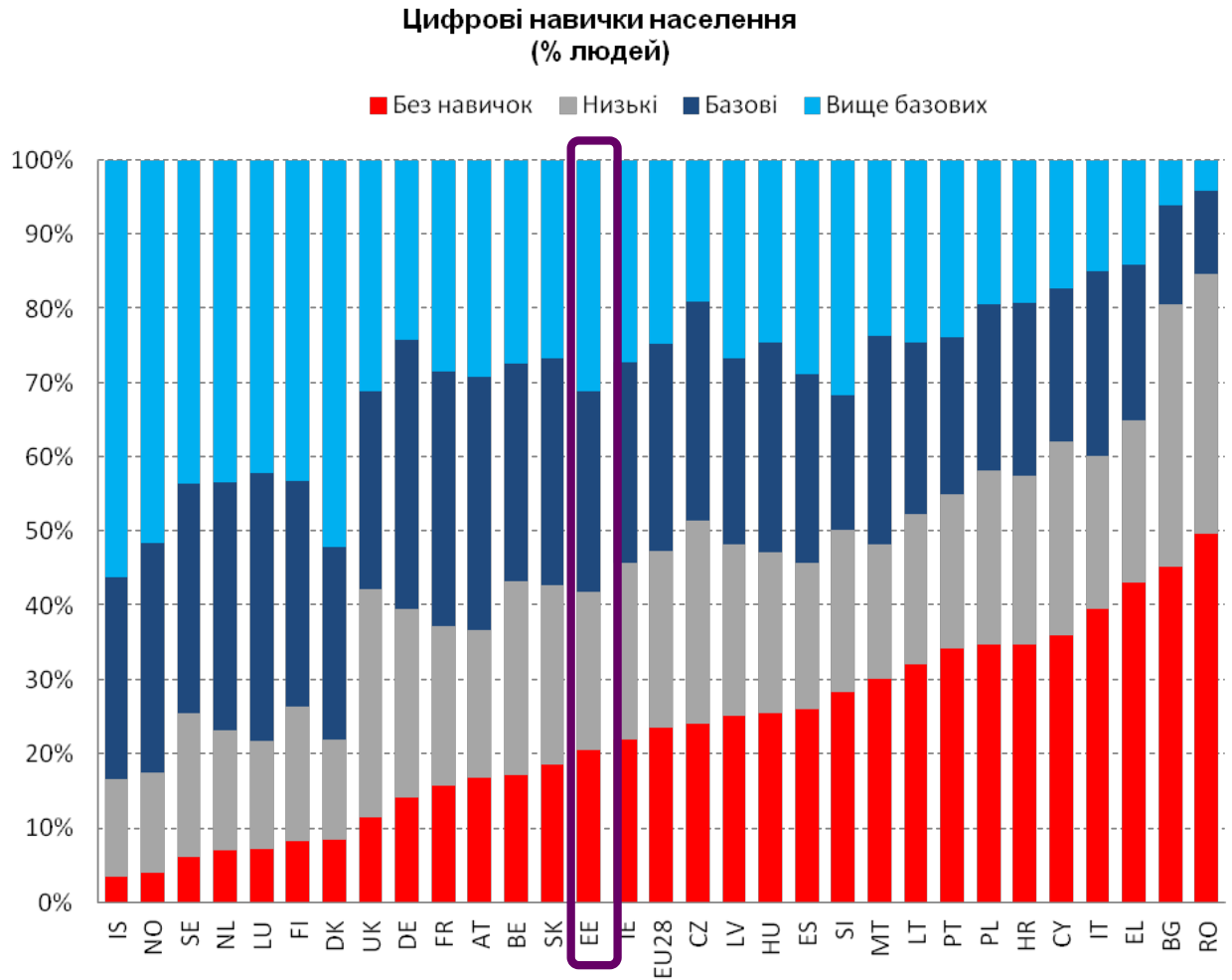
# Цели усто ития


IQ
EQ
DQ (Digital Quotient)

# 47% населення ЄС має недостатні цифрові навички, 23% не має жодних.

Згідно з нещодавно побудованим **Індикатором цифрових навичок***, на основі Структури цифрової компетентності**, 23% населення ЄС не має ніяких цифрових навичок; починаючи з 6% в Швеції до 50% в Румунії.

З огляду на те, що для ефективного функціонування в цифровому суспільстві потрібно більше, ніж навички на початковому рівні, майже половину населення ЄС (47%) можна розглядати як недостатньо кваліфікованими у цифровому відношенні (які мають низькі, або не мають ніяких цифрових навичок).




*Джерело:* на основі даних Євростату

* **Measuring Digital Skills across the EU: EU wide indicators of Digital Competence**

** Ferrari, A. (2013), DIGCOMP: A Framework for Developing and Understanding Digital Competence in Europe, JRC Scientific and Policy Reports.

http://ec.europa.eu/digital-agenda/news-redirect/16547

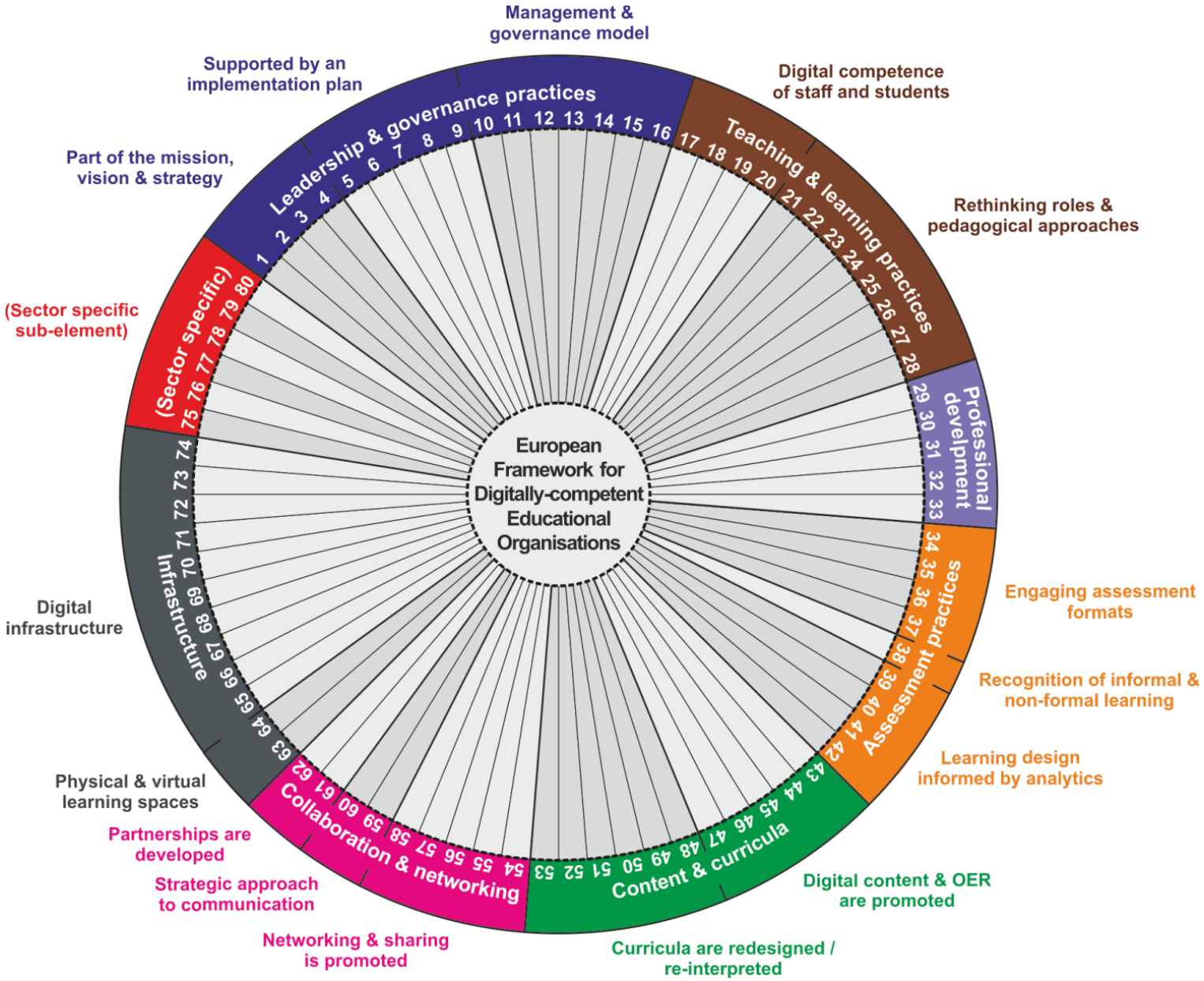
European Commission

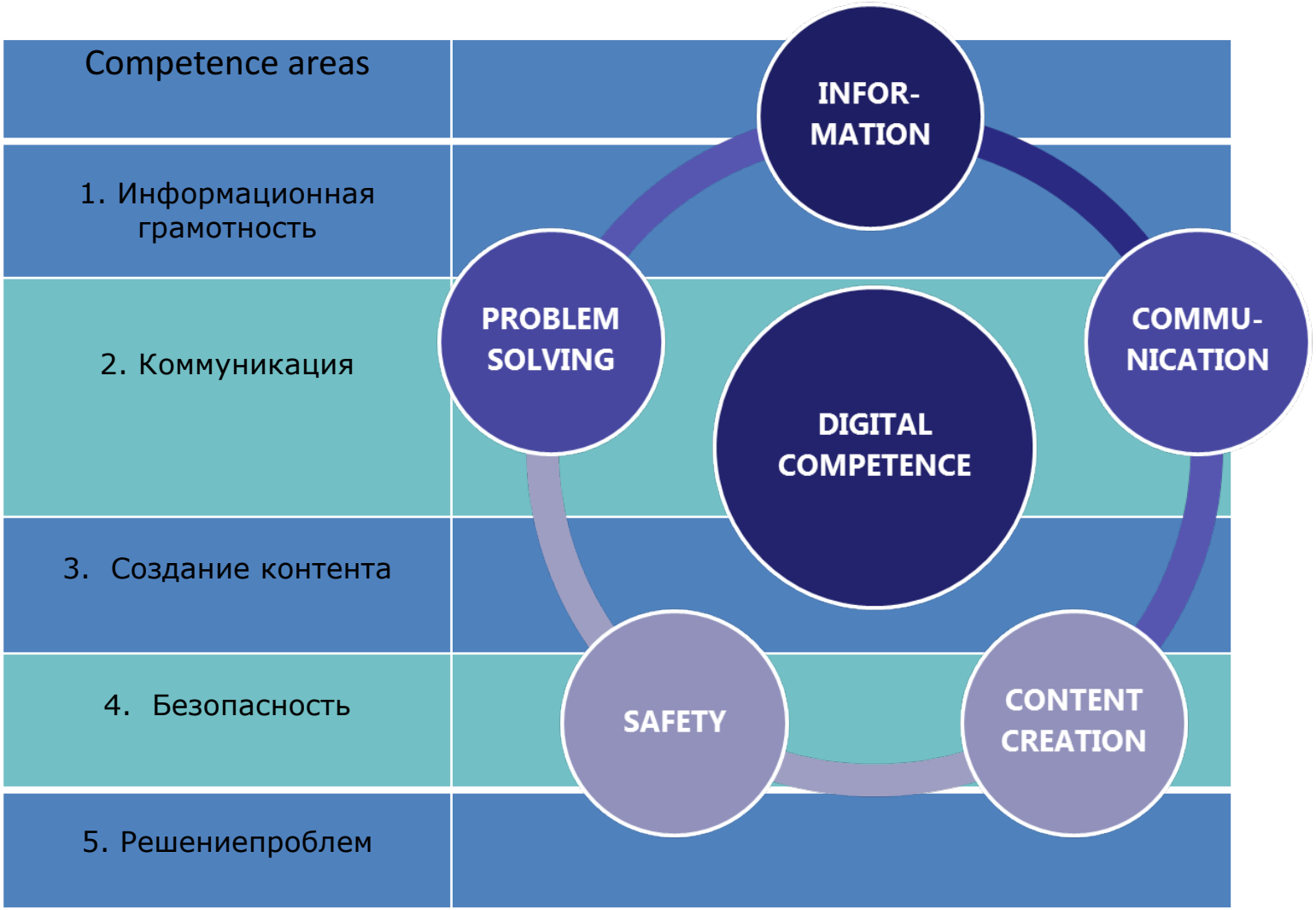
JRC SCIENTIFIC AND POLICY REPORTS

# DIGCOMP: A Framework for Developing and Understanding Digital Competence in Europe.

Author: Anusca Ferrari
Editors: Yves Punie and Barbara N. Brečko

2013


European Framework for Digitally-competent Educational Organisations
Leadership & governance practices
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Teaching & learning practices
17 18 19 20 21 22 23 24 25 26 27 28
Professional development
29 30 31 32 33
Assessment practices
34 35 36 37 38 39 40 41 42
Content & curricula
43 44 45 46 47 48 49 50 51 52 53
Collaboration & networking
54 55 56 57 58 59 60 61 62
Infrastructure
63 64 65 66 67 68 69 70 71 72 73 74
(Sector specific)
75 76 77 78 79 80
Management & governance model
Supported by an implementation plan
Part of the mission, vision & strategy
(Sector specific sub-element)
Digital competence of staff and students
Rethinking roles & pedagogical approaches
Engaging assessment formats
Recognition of informal & non-formal learning
Learning design informed by analytics
Digital content & OER are promoted
Curricula are redesigned / re-interpreted
Networking & sharing is promoted
Strategic approach to communication
Partnerships are developed
Physical & virtual learning spaces
Digital infrastructure


Competence areas
1. Информационная грамотность
2. Коммуникация
3. Создание контента
4. Безопасность
5. Решениепроблем
INFOR-MATION
COMMU-NICATION
CONTENT CREATION
SAFETY
PROBLEM SOLVING
DIGITAL COMPETENCE

| Competence areas | 21 Competences |
|---|---|
| 1. Information | **1.1 Browsing, searching, & filtering information**<br>**1.2 Evaluating Information**<br>**1.3 Storing and retrieving information** |
| 2. Communication | **2.1 Interacting through technologies**<br>**2.2 Sharing information and content**<br>**2.3 Engaging in online citizenship**<br>**2.4 Collaborating through digital channels**<br>**2.5 Netiquette**<br>**2.6 Managing digital identity** |
| 3. Content creation | **3.1 Developing content**<br>**3.2 Integrating and re-elaborating**<br>**3.3 Copyright and Licences**<br>**3.4 Programming** |
| 4.Safety | **4.1 Protecting devices**<br>**4.2 Protecting data and digital identity**<br>**4.3 Protecting health**<br>**4.4 Protecting the environment** |
| 5. Problem solving | **5.1 Solving technical problems**<br>**5.2 Expressing needs & identifying technological responses**<br>**5.3 Innovating, creating and solving using digital tools**<br>**5.4 Identifying digital competence gaps** |

# 1. Інформаційна грамотність та грамотність щодо роботи з даними

- 1.1 Вміння шукати, фільтрувати дані, інформацію та цифровий контент.
- 1.2 Вміння оцінювати дані, інформацію та цифровий контент.
- 1.3 Вміння використовувати та управляти даними, інформацією та цифровим контентом.

# Комунікація та взаємодія

- 2.1 Вміння спілкуватися через використання цифрових технологій.
- 2.2 Вміння ділитися інформацією завдяки використанню цифрових технологій.
- 2.3 Вміння контактувати із суспільством, користуватися державними та приватними послугами завдяки використанню цифрових технологій
- 2.4 Вміння взаємодіяти завдяки використанню цифрових технологій.
- 2.5 Знання «нетикету» (від англ. network та etiquette), тобто володіння правилами поведінки та етикету в цифровому середовищу.
- 2.6 Управління цифровою ідентичністю, тобто вміння створювати та управляти аккаунтами.

# 3. Цифровий контент

- 3.1 Створення цифрового контенту.
- 3.2 Вміння змінювати, покращувати, використовувати цифровий контент задля створення нового контенту.
- 3.3 Обізнаність щодо авторських прав та політики ліцензування відносно даних, інформації та цифрового контенту.
- 3.4 Програмування, тобто вміння писати програмний код.

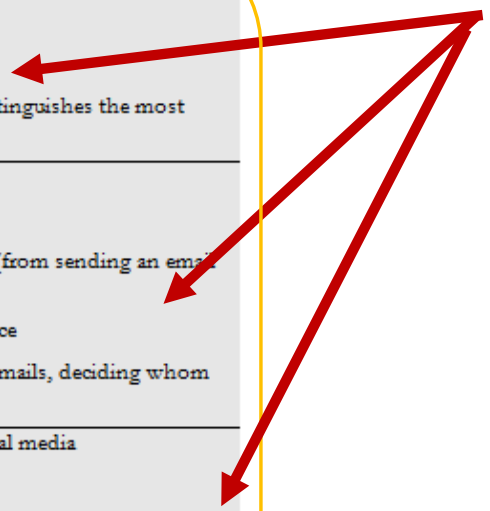
# 4. Безпека

- 4.1 Вміння захистити пристрої та контент, знання заходів безпеки, розуміння ризиків та загроз.
- 4.2 Захист персональних даних та приватності.
- 4.3 Охорона здоров’я, тобто знання та навички для збереження свого здоров’я та інших з точки зору як екології використання цифрових технологій, так і ризиків, загроз безпеці громадян.
- 4.4 Захист навколишнього середовища, тобто розуміння впливу цифрових технологій на екологію, навколишнє середовище, з точки зору їх утилізації, а також їх використання, що може нанести шкоду, наприклад, об’єктам критичної інфраструктури і т.д.

# 5. Вирішення проблем

- 5.1 Вміння вирішувати технічні проблеми, що виникають із комп'ютерною технікою, програмним забезпеченням, мережами і т.д.
- 5.2 Вміння визначати потреби та знаходити відповідні технічні рішення, або кастимізувати цифрові технології до власних потреб.
- 5.3 Креативне користування, або вміння завдяки цифровим технологіям створювати знання, процеси та продукти, індивідуально або колективно, з метою вирішення повсякденних життєвих та професійних проблем і т.д.
- 5.4 Вміння самостійно визначати потребу в отриманні додаткових нових цифрових навичок.

| Dimension 1<br>Name of area | Communication | | |
|---|---|---|---|
| **Dimension 2** | **2.1 Interacting through technologies** | | |
| Competence title and description | To interact through a variety of digital devices and applications, to understand how digital communication is distributed, displayed and managed, to understand appropriate ways of communicating through digital means, to refer to different communication formats, to adapt communication modes and strategies to the specific audience | | |
| **Dimension 3** | A - Foundation | B- Intermediate | C- Advanced |
| Proficiency levels | I can interact with others using basic features of communication tools, (e.g. mobile phone, VoIP, chat or email). | I can use several digital tools to interact with others using more advanced features of communication tools (e.g. mobile phone, VoIP, chat, email). | I am engaged in the use of a wide range of tools for online communication (emails, chats, SMS, instant messaging, blogs, micro-blogs, SNS). I can adopt digital modes and ways of communication that best fit the purpose. I can tailor the format and ways of communication to my audience. I can manage the different types of communication I receive. |
| **Dimension 4** | | | |
| Knowledge examples | Is aware of different digital communication means (e.g. email, chat, VoIP, video-conference, SMS)<br>Knows how messages and emails are stored and displayed<br>Knows the functionality of several communication software packages<br>Knows the benefits and limits of different means of communications and distinguishes the most appropriate ones to the context | | |
| Skills examples | Is able to send an email, write a blog post, an SMS<br>Is able to find and contact peers<br>Is able to edit information in order to communicate it through several means (from sending an email to making a presentation in slides)<br>Evaluates his/her audience and can tailor communication according to audience<br>Is able to filter the communication he/she receives (for instance, sorting out emails, deciding whom to follow on micro-blogging social sites, etc) | | |
| Attitude examples | Is confident and comfortable in communicating and expressing through digital media<br>Is aware of the code of conduct appropriate to the context<br>Is aware of the risks linked with online communication with unknown people<br>Is actively engaged in online communication<br>Is willing to select the most appropriate communication means according to the purpose | | |



| **Dimension 5**<br><br>Application to purpose | | | |
|---|---|---|---|
| **Learning** | I use a chat or a discussion forum to communicate with other students on my course. | I use a chat to communicate with other students, when necessary I can also use a group chat and moderate it. When needed, I also use VoIP to talk to other students. | I use several communication tools to communicate with other students (mobile phone, VoIP, chat or email). I use several features of VoIP – when I work on a project with other students: I can use screen share feature, I can also record a conversation and broadcast it. I know which communication tool to select, depending on the purpose and the size of the audience. |
| **Employment** | I handle travel arrangements and use a mobile telephone and email to communicate with others. | When I handle travel arrangements I use a mobile telephone a lot, but also use email and VoIP to communicate with some people. I can organize a discussion with more participants using VoIP. | When I travel I use several communication tools (e.g. (mobile phone, VoIP, chat or email), I can organise a meeting using VoIP, using different features (file, screen sharing, recording the conversation), I can also run a video-conference among remote sites and moderate it. I know when to use VoIP and when videoconference tools. |

Lancaster University

IFIP Conference 2015

# Computer Science (CS) or Information and Communication Technologies (ICT): The National policies and directions

Lancaster University

Lancaster

Lancaster University

## School practices and needs

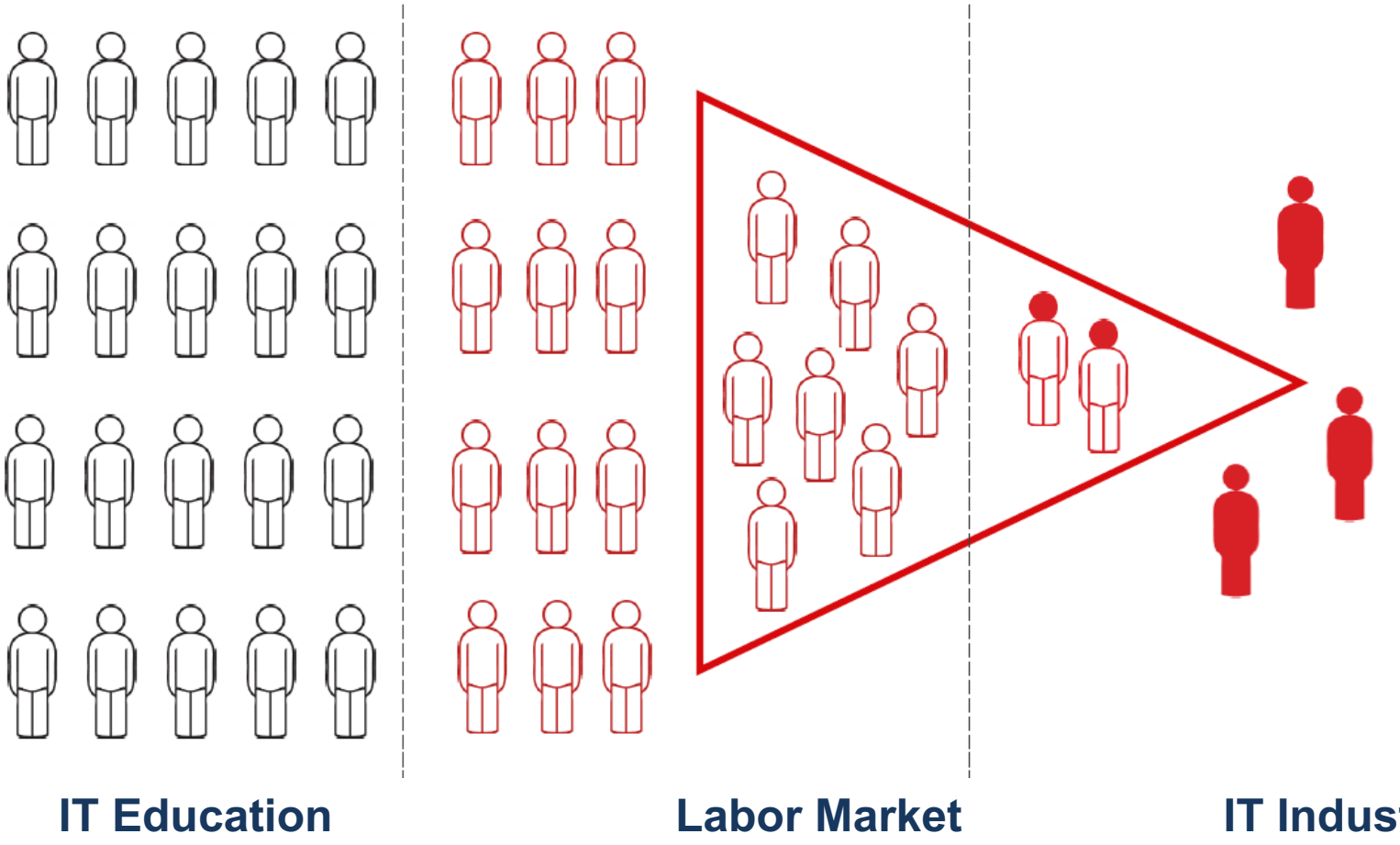
| Country | CS |
|---|---|
| Austria (Futschek, 2015) | Infor years |
| Finland (Koivisto, 2015) | In se speci has b |
| France (Grandbastien, 2015) | Com stude scho elem in m cour |

- Computing can be applied in different situations
- Formal – in classrooms, focusing perhaps on the learning of the individual
- Informal – in home and community, focusing more on application, identifying practices and needs
- Non-formal –in groups or clubs, supported, but focusing on, working together, on tasks or projects


2017
WORLD CONFERENCE
ON COMPUTERS IN
EDUCATION
3-6 JULY 2017 / DUBLIN / IRELAND
Tomorrow's Learning: Involving Everyone

# Misbalance between IT Education and IT Industry

There is an estimated shortfall of over two million skilled ICT professionals worldwide



# Dual higher education training at Audi Hungaria
## 1. Basic information

- **Partners**: Széchenyi István University; Audi Hungaria Motor Kft.
- **Start**: From September 2015
- Vehicle Engineering BSc; full-time course
- 5 students per academic year

**Dual higher education training:** special skills-based higher education training
- **Accreditation of companies**: institute (SZE), DTC (self-assessment; Committee of Visitors)
- **Open dual training system**: students as well as the company may quit without any liabilities
- **Students ar**
period

**Dual Hands-**
- Audi Hungar
of the traini
- Teacher bas
- Department

**Responsibilit**
- Employmen
- Ensuring (pr
- Supporting
- Organizatio



# Dual higher education training at Audi Hungaria
## 1. Basic information

### Advantages of the dual training for students:

- Quality **skills-based training** to complement academic studies
- Mastering **state-of-the-art professional skills** in an international environment
- **A complex knowledge** of the professional areas of the vehicle industry (production, production technology, research and development)
- **Regular performance evaluation**
- Students are automatically involved in the **supply program** of Audi Hungaria
- **Employment opportunities** at Audi Hungaria after graduation
- Development of a **project-centered attitude**
- **Strengthening professional commitment and motivation**

### Advantages of the dual training for Audi Hungaria:

- **Social responsibility**
- **Students get better education** than that offered by normal full-time or correspondence courses, both regarding content and quality
- This cooperation is suitable for **integrating students** into the corporate structure, culture and processes
- **More motivated students, with a more positive attitude**
- Contributes to **ensuring professional supply**
- **Selection of the best students**
- **The risk is smaller** than in the case of employing a new external colleague
- **Benefits are exempt from contributions and taxes**
- **Less further training/retraining needed**

# Dual higher education training at Audi Hungaria
## 2. Dual higher education training schedule

1st

Study period

14 v

University

11 v
(Week
5 t

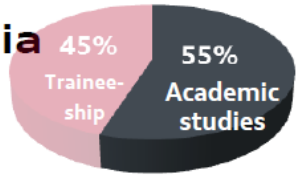
Traineeship AHM

3 w
(Week

:



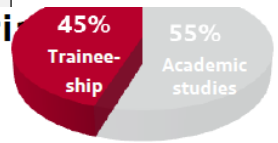
# Dual higher education training at Audi Hungaria
## 3. Curriculum – University subjects




Academic studies – University

| 1st semester<br>Weeks 1 and 5 to 14<br>in the semester | 2nd semester<br>Weeks 1 and 5 to 14<br>in the semester |
|---|---|
| ▶ General mechanics<br>▶ Machine structures<br>▶ Material Science<br>▶ Electrotechnique<br>▶ Engineering physics<br>▶ Technical chemistry<br>▶ Mathematics I<br>▶ Computer Science | ▶ Mechanics I<br>▶ Thermal- and Fluid Dynamics<br>▶ Computer engineering<br>▶ Processing Technologies I<br>▶ Vehicle Structure Materials<br>▶ Mathematics II<br>▶ Computer science |

# Dual higher education training at Audi Hungari
## 5. Curriculum – Dual Hands-on Training




### Traineeship at Audi Hungaria

| 1st semester<br>Weeks 2 to 4 in the semester | 2nd semester<br>Weeks 2 to 4 in the semester | 3rd semester<br>Weeks 2 to 4 in the semester | 4th semester<br>Weeks 2 to 4 in the semester | 5th semester<br>Weeks 2 to 4 in the semester | 6th semester<br>Weeks 2 to 4 in the semester | 7th semester<br>Week 14 at Audi Hungaria |
|---|---|---|---|---|---|---|
| **Basic skills** | | | **Specialization I** | | **Specialization II** | | | **Thesis** |
| **Basic skills I (PTC)**<br>▶ Manual processing technologies (Processing of metal and plastic) | **Basic skills II (PTC)**<br>▶ Machine processing (Processing of metal and plastic) | 8 weeks – AHM<br>Summer traineeship | **Specialization I/1**<br>▶ Individual task related to the given department<br>▶ Project task | **Specialization I/2**<br>▶ Individual task related to the given department<br>▶ Project task | 8 weeks – AHM<br>Summer traineeship | **Specialization II/1** (in an area other than Spec.I.)<br>▶ Individual task related to the given department<br>▶ Project task | **Specialization II/2** (in an area other than Spec.I.)<br>▶ Individual task related to the given department<br>▶ Project task | 8 weeks – AHM<br>Summer traineeship | **Thesis** (topic related to Spec. I. or Spec. II.) |

- Getting to know the Company (Week 2)
- PET engine (1 week)
- PET vehicle (1 week)
- Introduction to work at the department (4 weeks)

- Individual task related to the given department
- Project task
- Trainings in the Profiraum

- Individual task related to the given department
- Project task
- Trainings in the Profiraum



Audi Hungaria

IT UKRAINE ASSOCIATION

СИНЕРГІЯ
ІТ БІЗНЕС ІТ ОСВІТА

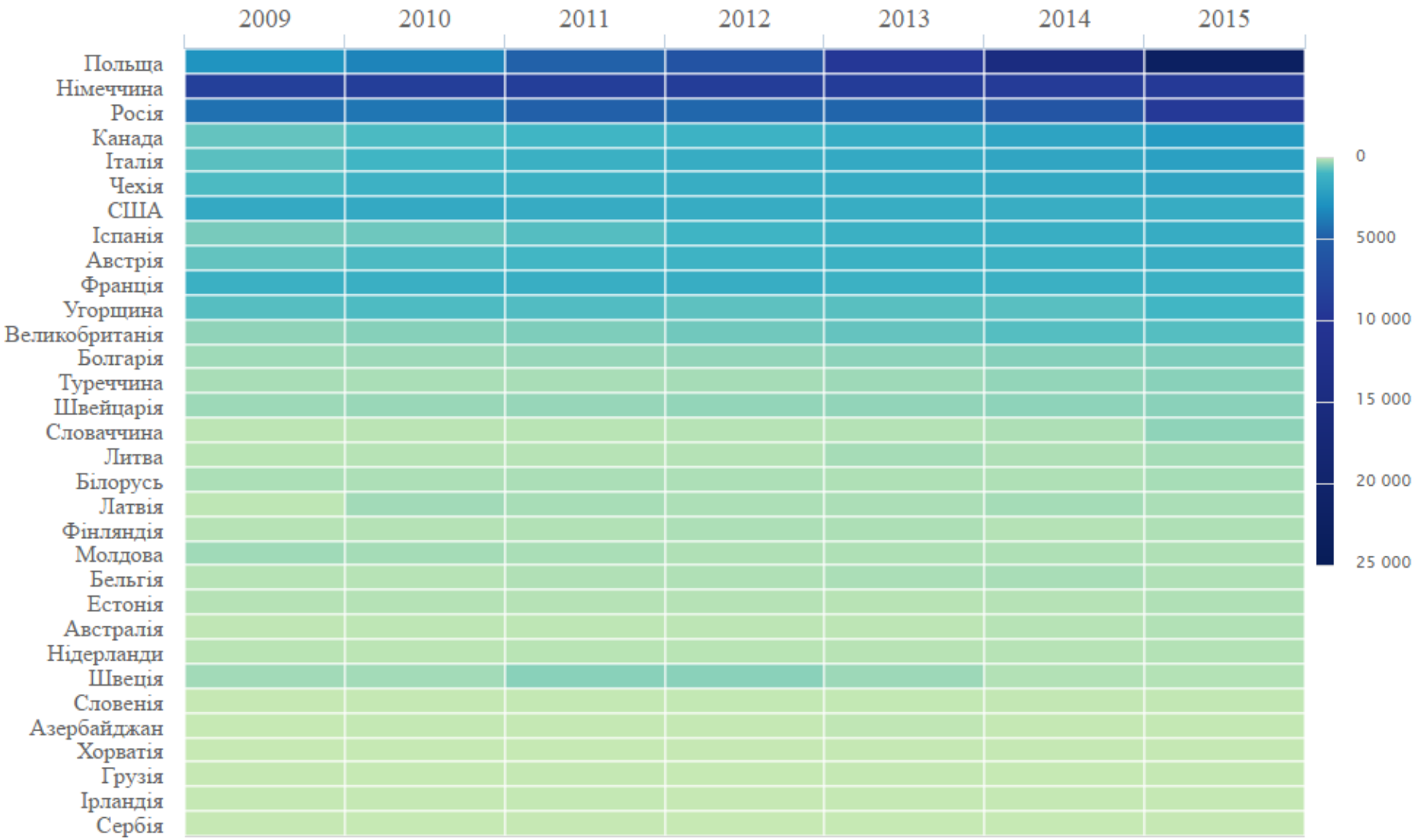
ЦЕНТР
РОЗВИТОК КОРПОРАТИВНОЇ
СОЦІАЛЬНОЇ ВІДПОВІДАЛЬНОСТІ
*Можливість бути першими.*

MAIN ACADEMY

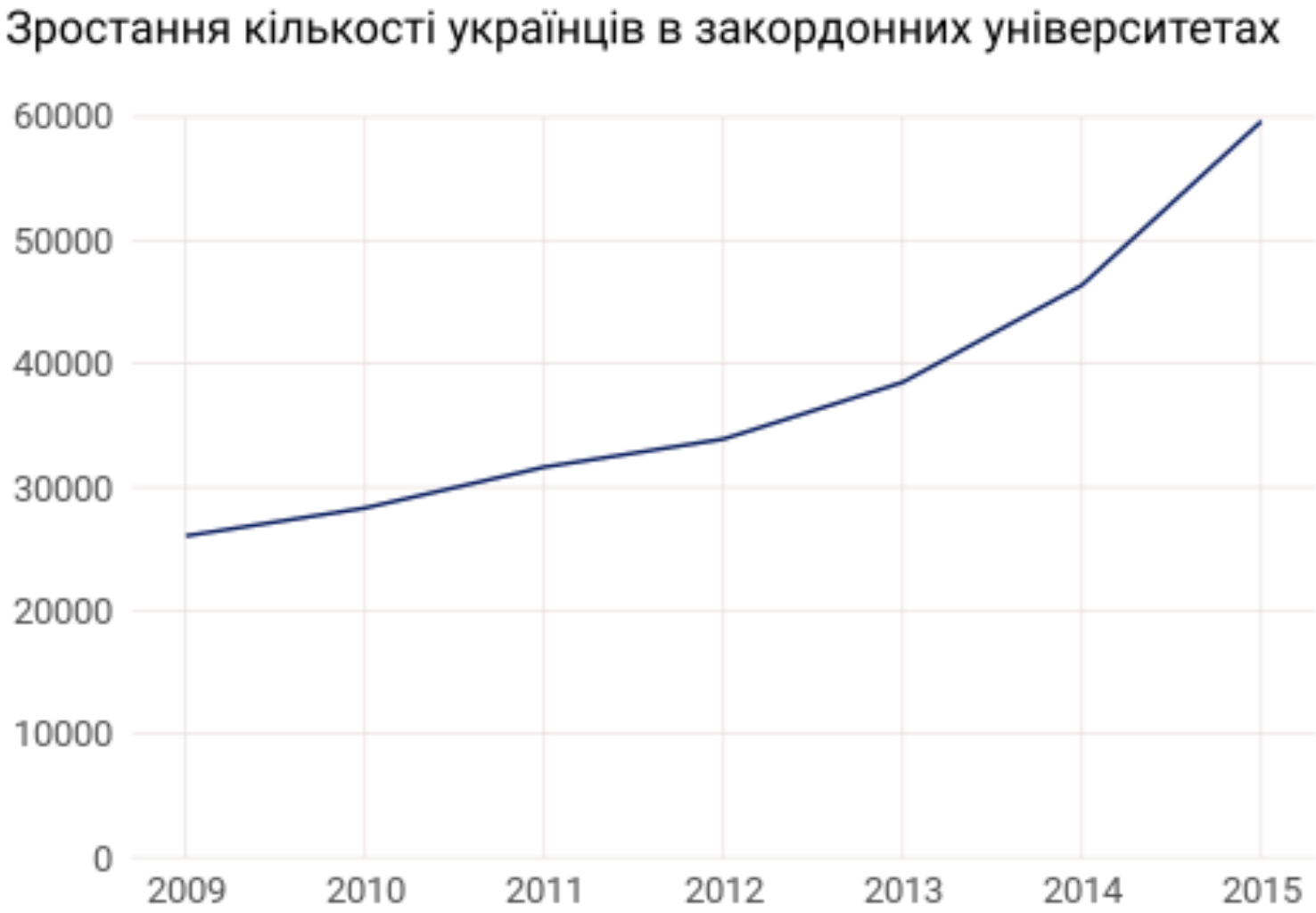
# IT DISCOVERY

## соціально-освітня ініціатива

## Динаміка кількості українських студентів в закордонних університетах




www.cedos.org.ua


Зростання кількості українців в закордонних університетах
60000
50000
40000
30000
20000
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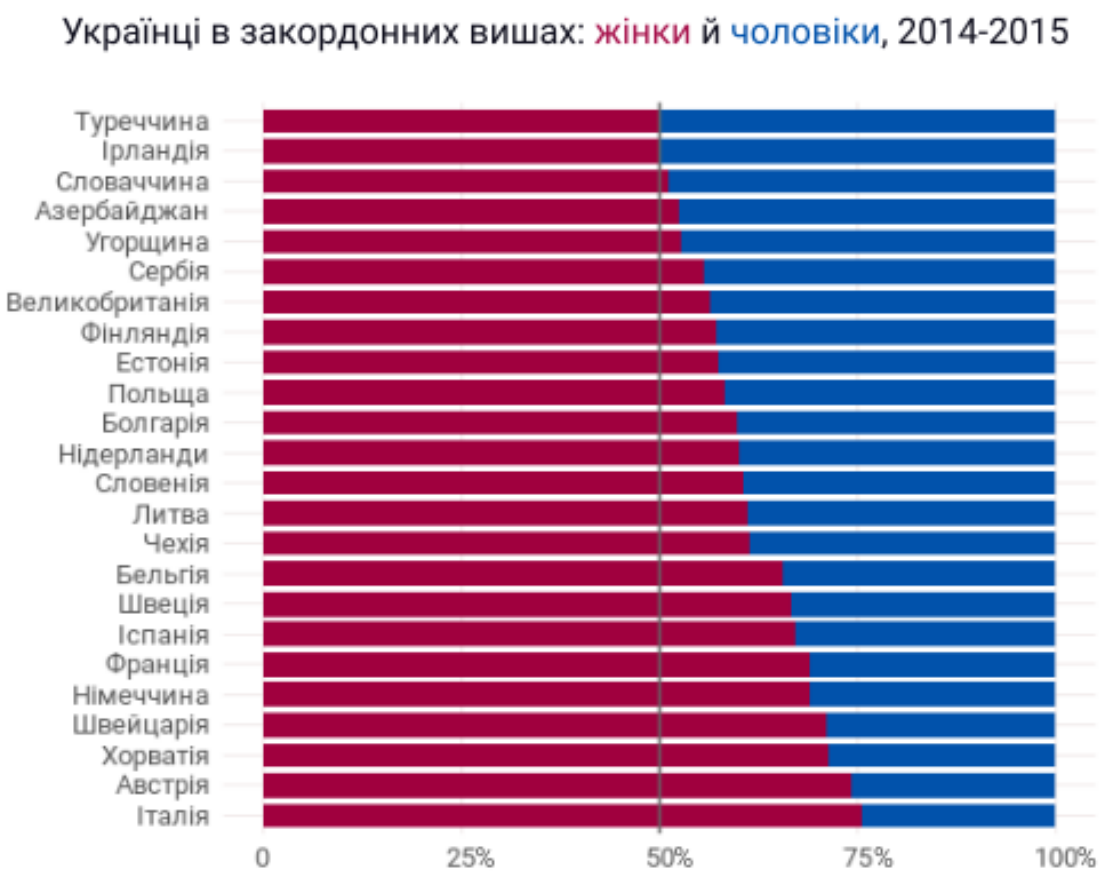
0
2009
2010
2011
2012
2013
2014
2015

## Гендерний розподіл



# Цели устойчивого развития

ITU NEWS
MAGAZINE


Issue No. 04/2016


<30%
WOMEN IN SCIENCE
START
Just 28% of researchers are women. Explore the data to see where they work and their fields of research in countries around the world.
UNESCO INSTITUTE FOR STATISTICS
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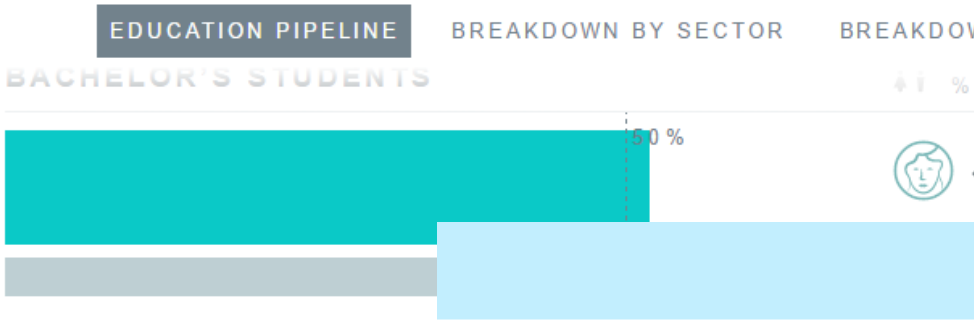
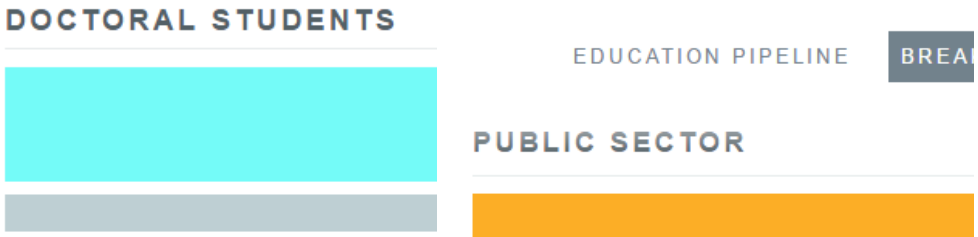
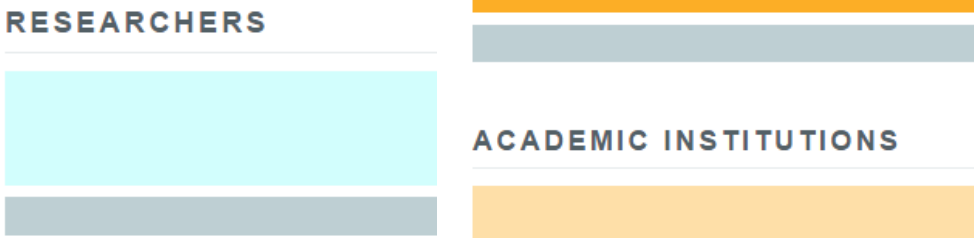
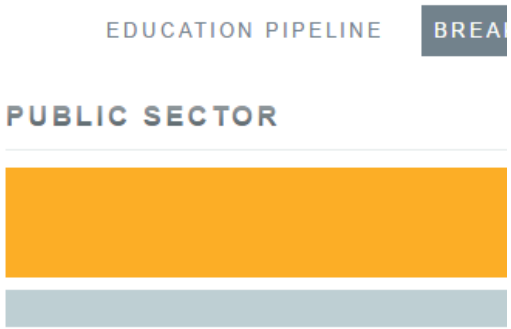
# UKRAINE

EDUCATION PIPELINE | BREAKDOWN BY SECTOR | BREAKDOWN BY FIELD



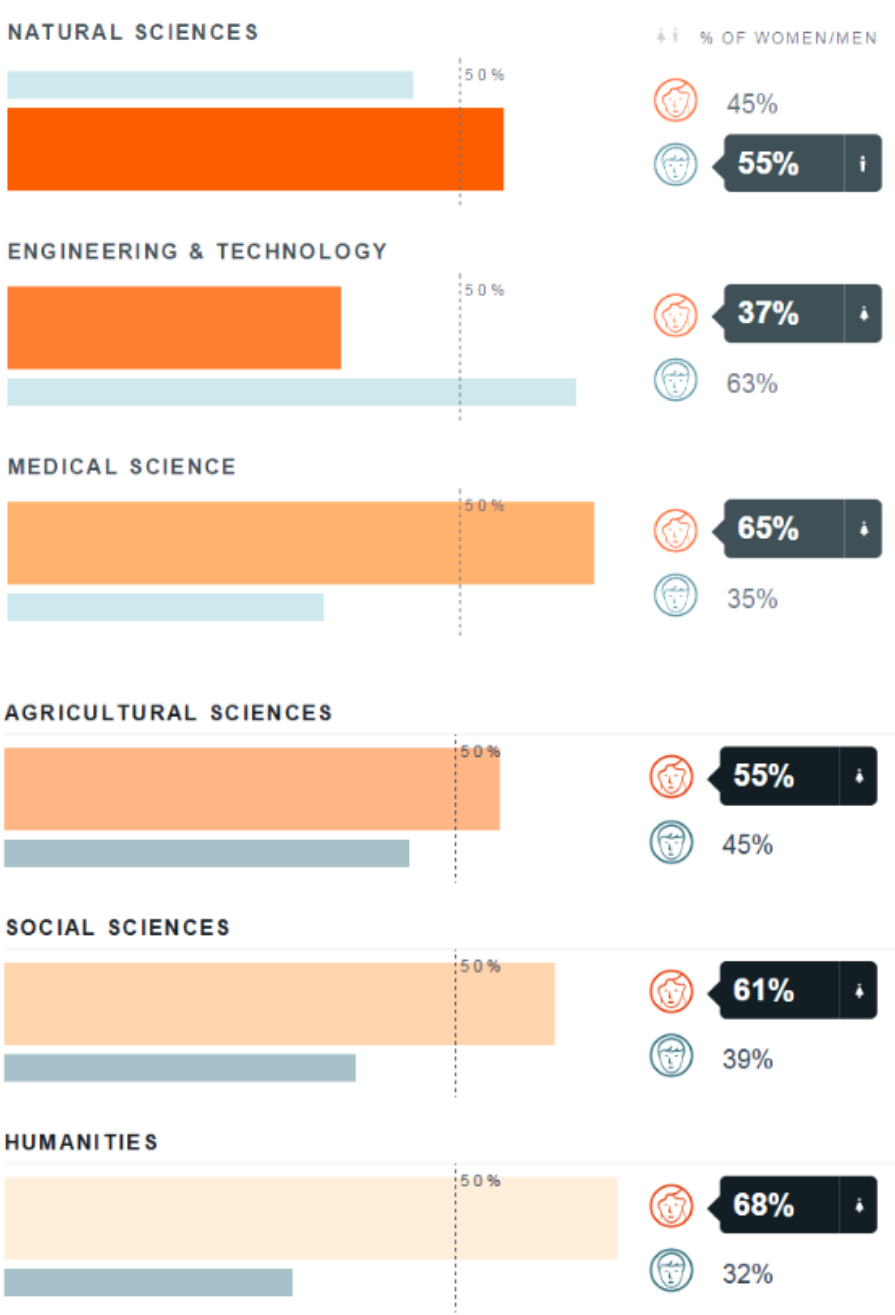









EQUALS

## How can you take part in the Equals movement?

Have someone take a photo of you doing the EQUALS sign – you can be on your own or with friends.

This sign visually represents your support for equality.

Last but not least, ITU and UN Women are pleased to be leading EQUALS: Global Partnership to Ensure Gender

EQUALS

GENDER EQUALITY IN THE DIGITAL AGE

# JOIN THE MOVEMENT

The p
UN General
first phyaical
Bangkok, Th
2016, in Nov

### Time to be

We face many chu
der divide, but I ar
we can achieve this

Indeed, in some countrie
there are already more women onli
divide can be bridged there, then a
Progress on that key metric is an imp
achieve gender equality in the digit

SKILL

Empower wome
to become ICT c

LEADERS

Promote women as ICT leaders and entrepreneurs

UN WOMEN ITU

Equals is a global movement dedicated to acting on gender equality; an initiative of ITU and UN Women.


ЦЕНТР
РОЗВИТОК КОРПОРАТИВНОЇ
СОЦІАЛЬНОЇ ВІДПОВІДАЛЬНОСТІ
*Можливість бути першими.*

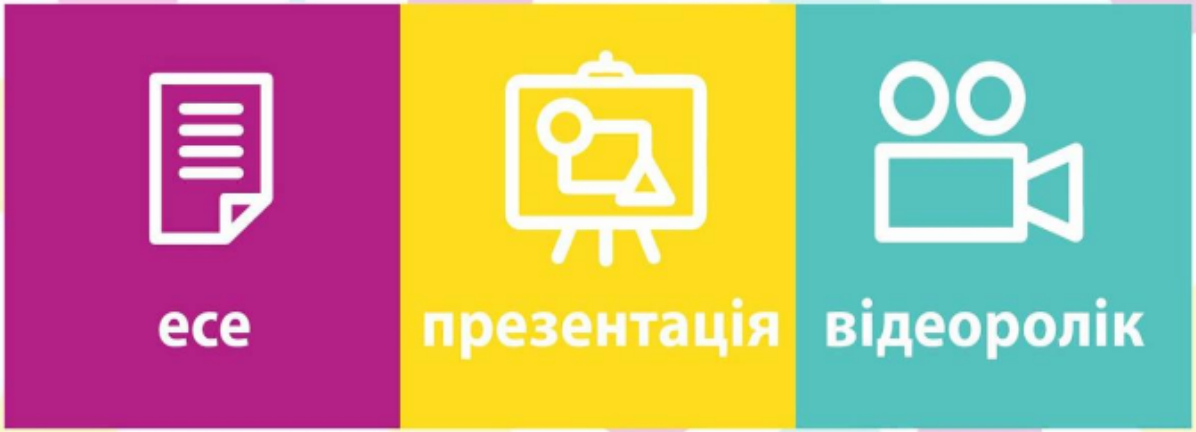
# КОНКУРС

## творчих робіт для дівчат "Чому я обираю STEM кар'єру?"

**STEM =** SCIENCE (НАУКА), TECHNOLOGY (ТЕХНОЛОГІЯ), ENGINEERING (ІНЖЕНЕРІЯ), MATHEMATICS (МАТЕМАТИКА)

Якщо тобі 13 – 19 років і ти мрієш про кар'єру в STEM, напиши про це до 15 грудня 2016 року на адресу ik@csr-ukraine.org

### Якою може бути творча робота?

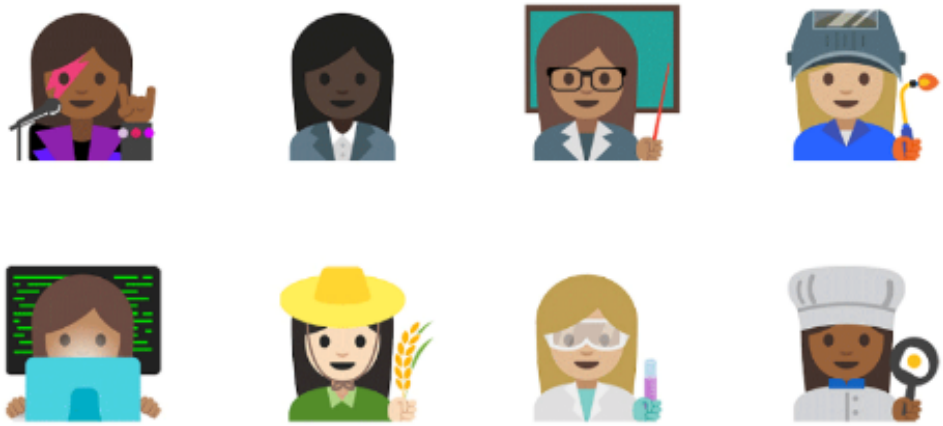


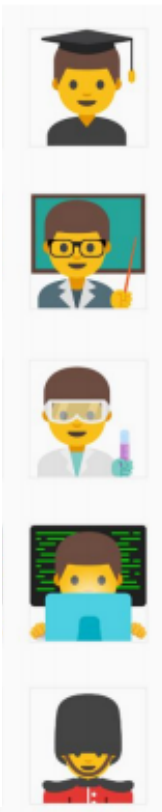

**Переможниці отримають:**

**10 годин менторської підтримки від однієї з ТОП-20 Надихаючих жінок у STEM**

ЦЕНТР РОЗВИТОК КОРПОРАТИВНОЇ СОЦІАЛЬНОЇ ВІДПОВІДАЛЬНОСТІ

SAP



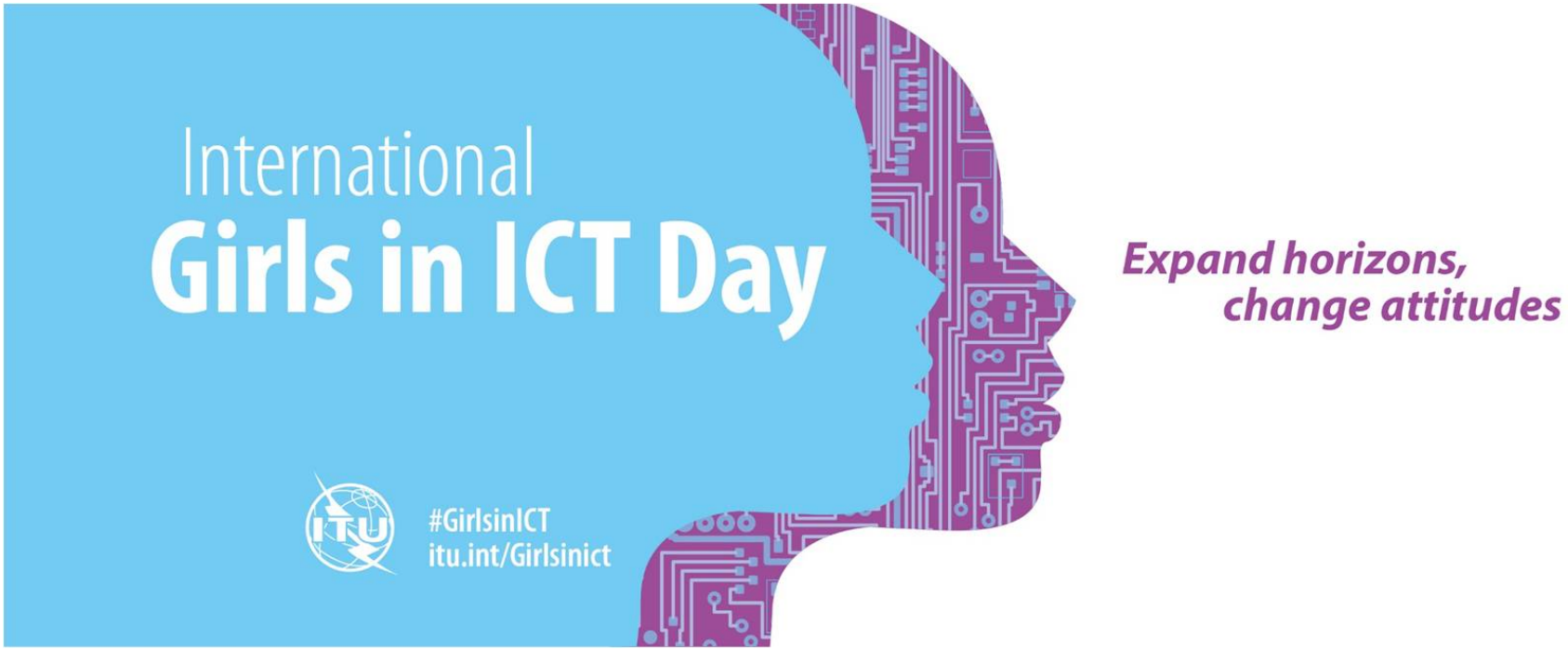


УКРАЇНСЬКА ФЕДЕРАЦІЯ ІНФОРМАТИКИ

UKRAINIAN FEDERATION OF INFORMATICS


LIGA·IT




International
Girls in ICT Day
#GirlsinICT
itu.int/Girlsinict
Expand horizons,
change attitudes

UKRAINIAN COALITION STEM

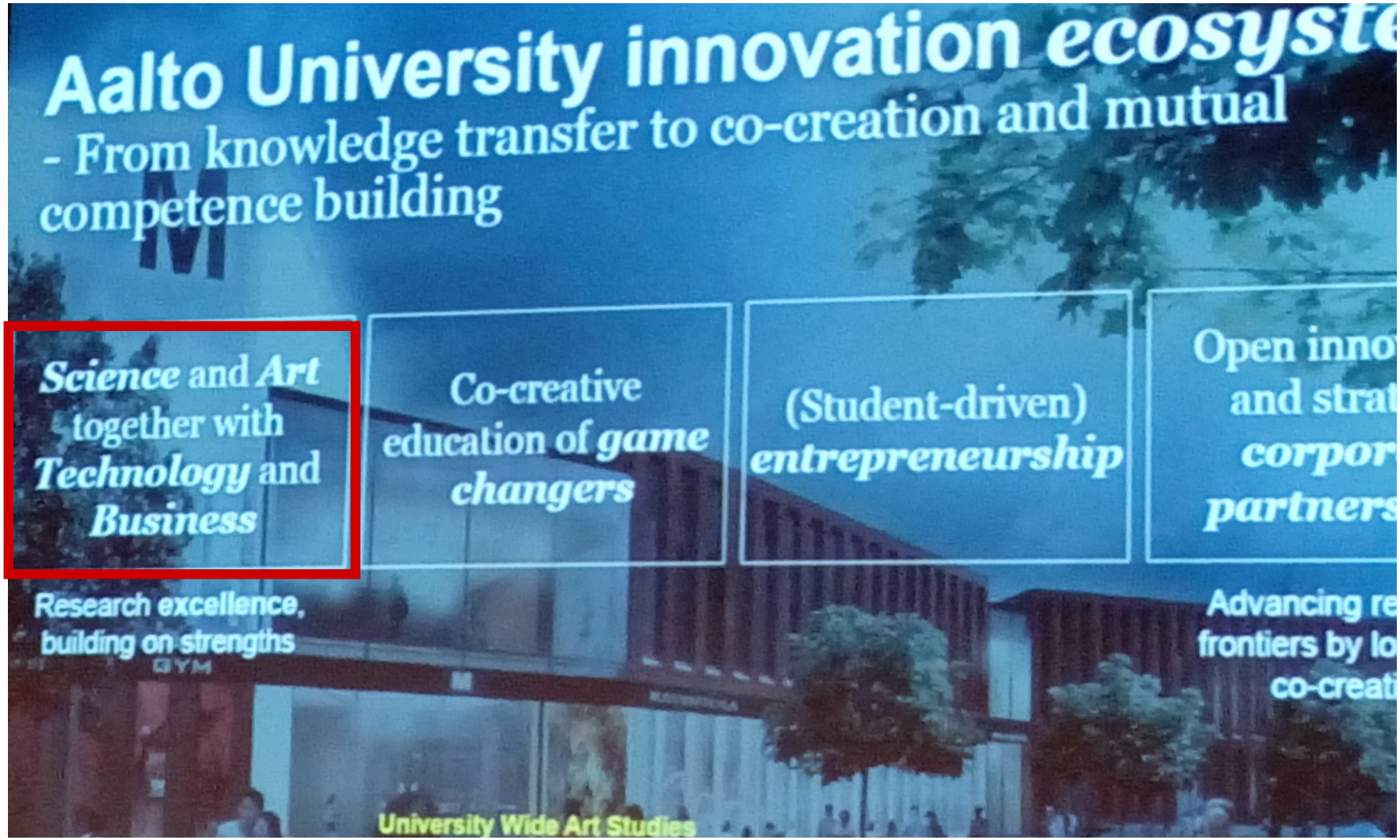
# ЄВРОПЕЙСЬКИЙ STEM ТИЖДЕНЬ В УКРАЇНІ

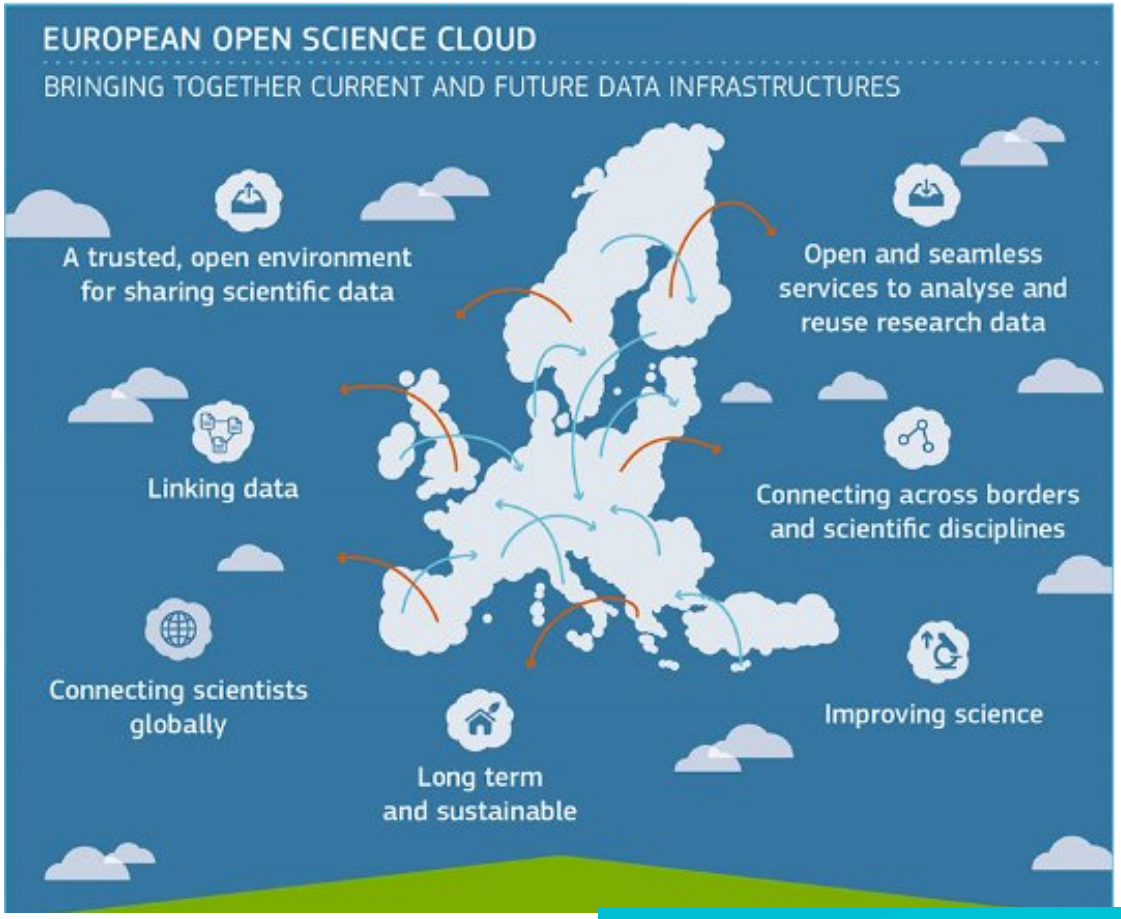
# STEM WEEK

## 24-29 квітня 2017р.

Science Technology Engineering Mathematics

# UNIVERSITY-BUSINESS COOPERATION - FOR INNOVATION AND MODERNISATION


Aalto University innovation ecosyste
- From knowledge transfer to co-creation and mutual competence building
Science and Art together with Technology and Business
Co-creative education of game changers
(Student-driven) entrepreneurship
Open inno and strat corpor partners
Research excellence, building on strengths
Advancing re frontiers by lo co-creati
University Wide Art Studies


EUROPEAN OPEN SCIENCE CLOUD
BRINGING TOGETHER CURRENT AND FUTURE DATA INFRASTRUCTURES
A trusted, open environment for sharing scientific data
Open and seamless services to analyse and reuse research data
Linking data
Connecting across borders and scientific disciplines
Connecting scientists globally
Improving science
Long term and sustainable

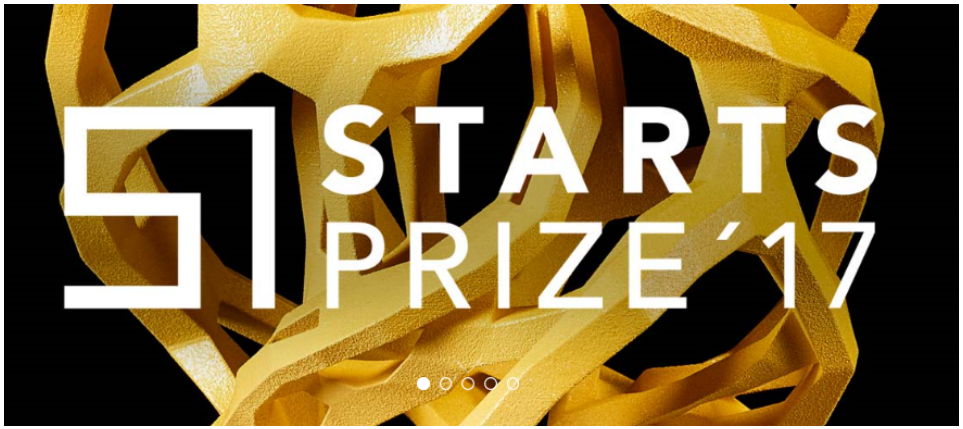

EUROPEAN
CLOUD INITIATIVE
UNLOCKING THE POWER OF
BIG DATA FOR OPEN SCIENCE


Creative
Europe

# ICT & Art - the STARTS platform

https://ec.europa.eu/digital-single-market/en/ict-art-connect

starts



# Shaping the future: science and art together with technology and business

## Take home

**Incentives** – *'UBC is a people business'*

- Academics driven by curiosity, interesting problems born out of (industrial) cocreation
- Industrial leadership facilitated by colearning at the very front of science

**Students** – *'Shaping the Future'*

- Our partners in learning and the most important **'product'**

**Invest in**

- The BEST people and BEST ideas, **not institutions**
- **Diversity of talents** – academics, artists, executives, experts, entrepreneurs, students, policymakers, philantrophists, angels

erc

Aalto University


Київський
національний університет
культури і мистецтв
ІНФОРМАЦІЙНІ
ТЕХНОЛОГІЇ
В КУЛЬТУРІ, МИСТЕЦТВІ,
ОСВІТІ, НАУЦІ, ЕКОНОМІЦІ
ТА БІЗНЕСІ
Міжнародна
науково-практична
конференція

**18-19 квітня**

# Спасибо за внимание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**+380504444454**


КЦ
У
унікально
К
креативно
інноваційно
І
М