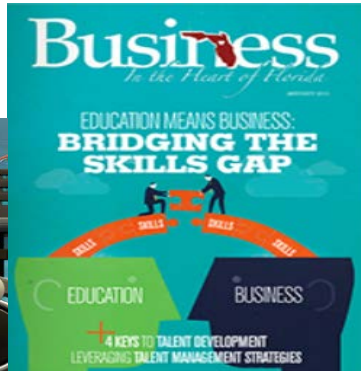


Promoting ST(A)EM and digital competences in the EU



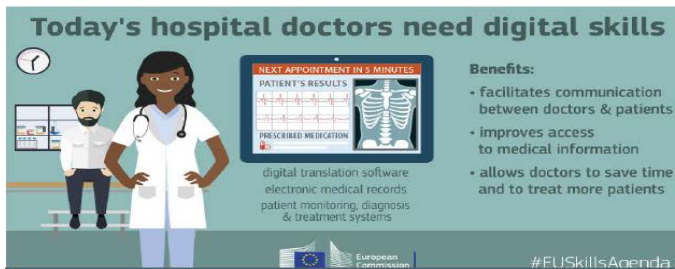
Ana-Maria Grigore
DG RTD
Industrial Technologies
D.1 – Strategy

How does the future look like?



Digitisation is transforming the economy

Today's hospital doctors need digital skills

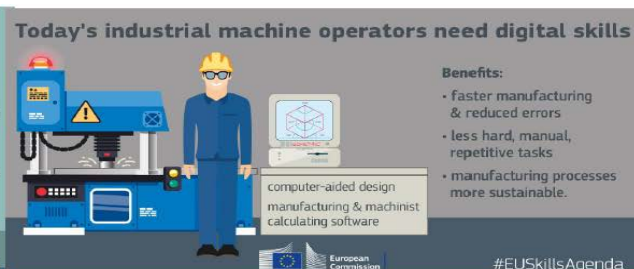


Benefits:

- facilitates communication between doctors & patients
- improves access to medical information
- allows doctors to save time and to treat more patients

European Commission #EUSkillsAgenda

Today's industrial machine operators need digital skills



Benefits:

- faster manufacturing & reduced errors
- less hard, manual, repetitive tasks
- manufacturing processes more sustainable.

European Commission #EUSkillsAgenda

Today's VET teachers need digital skills



Benefits:

- improved communication between teachers & students
- improved quality of learning
- increased safety

European Commission #EUSkillsAgenda

Today's farmers need digital skills



Benefits:

- improved decision making
- less repetitive & physically demanding tasks
- increased flexibility, productivity & animal health

European Commission #EUSkillsAgenda

Challenges and future trends



The 2020 Workplace

- Networked
- Flexible
- Integrated
- Open
- Innovative



Critical skills for the workforce

- Social Intelligence
- Novel and adaptive thinking
- Cross-cultural competency
- Computational thinking
- Transdisciplinary
- Virtual collaboration



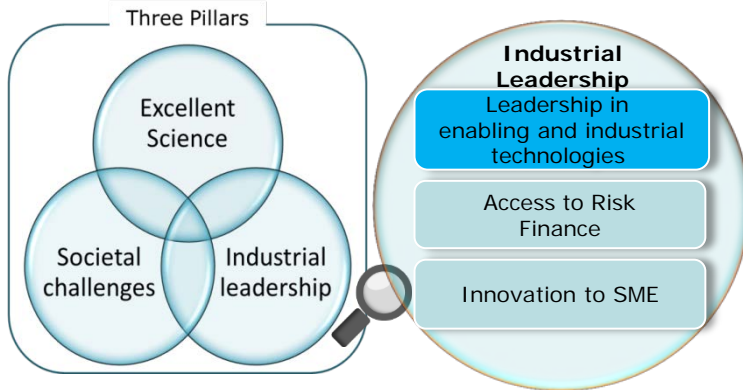
Skills demand in 2020

- Complex problem solving
- Critical thinking
- Creativity
- People management
- Co-ordinating with others
- Emotional intelligence
- Judgment and decision-making
- Service orientation
- Negotiation

Horizon 2020 Leadership in Enabling and Industrial Technologies (LEIT)

NMBP: Nanotechnologies, Advanced Materials, Biotechnology, Advanced Manufacturing and Processing

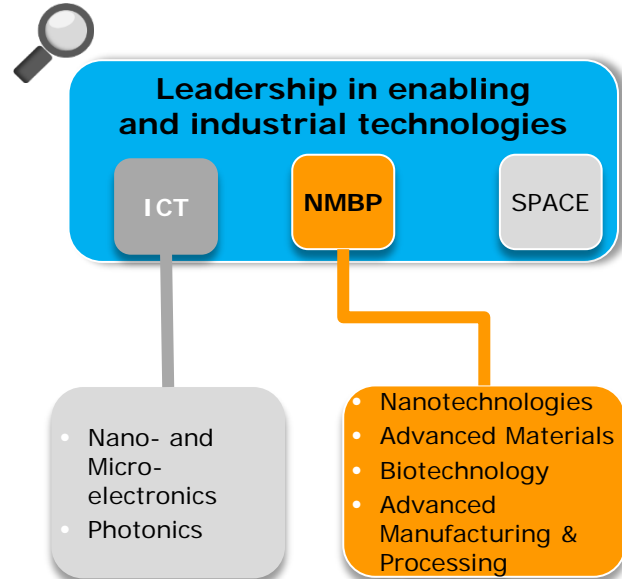
ICT: Nano- and micro-electronics, Photonics



Indicative budget:
75 billion € *

Indicative Budget:
16.5 billion € *

Out of it for NMBP:
3.8 billion € *



* July 2015 – includes EIT, JRC, "Science with and for Society", "Spreading Excellence / Widening Participation", in addition to three priorities above

The Human in the centre

The future of work and jobs

- *changes to expect in industry and society, new job profiles (e.g. Factories of the Future PPP)*

Skills development – for digitisation, new jobs, entrepreneurship, interdisciplinary cooperation

- *European Skills Agenda, Digital Skills Coalition, Erasmus+ Sectoral Blueprints, Horizon 2020*
- *Digital technologies to support learning, also in factories*

Acceptance: by workers, by public

Human centred workplace design and work organisation, human-robot collaboration (eg Factories of the Future PPP)

Artificial Intelligence: calls for ethical framework, regulatory review

Policy responsibility with regard to cohesion and inclusiveness

Results study: Vision and Sectoral Pilot on Skills for Key Enabling Technologies (2017, DG GROW and PwC)

Skill requirements for KETs

High diversity of educational backgrounds (heavily relying on STEM, but broader than STEM)



(Technical)
Universities
Institutes of
technology
(Polytechnics),
technical colleges
Vocational schools

EU Answer: New Skills Agenda for Europe ^{x)}



**Inscribed in "Renewed EU
Industrial Policy Strategy"
(Commission Communication)**

- *Digital transformation*
- *Skills mismatches (affect productivity and growth)*
- *EU workforce ageing and shrinking*
- *Quality of education and training varies in EU*
- *Perceptions not rooted in reality (e.g. VET)*
- *Importance of learning outside the formal system*

^{x)} Commission Communication July 2016

STRUCTURE OF THE NEW SKILLS AGENDA

Skills formation

1. Skills guarantee

2. Key Competences Framework

3. VET a first choice

4. Digital Skills and Jobs coalition

Visibility and comparability

5. Revision of EQF

6. Skills profile tool for 3rd country nationals

Skills intelligence

7. Revision of EUROPASS

8. Blueprint for Sectorial Cooperation on Skills

9. Best practice on brain drain

10. Initiative on graduate tracking

Digital Education Action Plan

Making better use of digital technology for teaching and learning (Action 1 to 3)

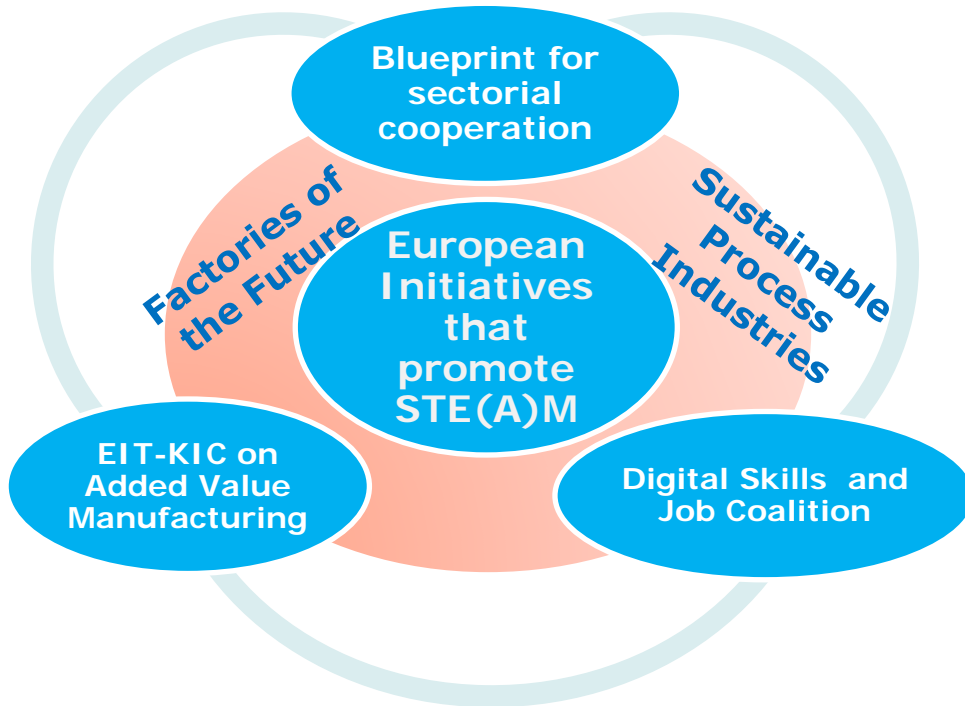
- [Action 1 - Connectivity in Schools](#)
- [Action 2 - SELFIE self-reflection tool & mentoring scheme for schools](#)
- [Action 3 - Digitally-Signed Qualifications](#)

Developing digital competences and skills (Action 4 to 8)

- [Action 4 - Higher Education Hub](#)
- [Action 5 - Open Science Skills](#)
- [Action 6 - EU Code Week in schools](#)
- [Action 7 - Cybersecurity in Education](#)
- [Action 8 - Training in digital and entrepreneurial skills for girls](#)

Improving education through better data analysis and foresight (Action 9 to 11)

- [Action 9 - Studies on ICT in education](#)
- [Action 10 - Artificial Intelligence and analytics](#)
- [Action 11 - Strategic foresight](#)





Blueprint for Sectoral Cooperation on Skills

Framework for strategic cooperation between key stakeholders. To increase the **talent pool** and deliver **sector-specific skills** solutions

Funded under ERASMUS+



2017 sectors	2018 sectors	2019 sectors
Start date: Jan 2018	Start date: Jan2019	Start dates: Nov 2019, Dec 2019, Jan 2020
Automotive	Additive manufacturing	Bio-economy, new technologies and innovation in agriculture
Maritime technology	Construction	Batteries for electro-mobility
Textile-clothing-leather-footwear	Maritime shipping	Defence technologies
Space (earth observation)	Steel	Energy value chain – digitalisation
Tourism		Energy-intensive industries/industrial symbiosis
		Microelectronic manufacturing & design



Skills Strategy in Additive Manufacturing Project (SAM)

Objective: Tackle the current European need of developing an effective system to identify and anticipate the right skills for Additive Manufacturing.

The SAM project intends to:

Build a sector skills strategy in AM;

Assess and anticipate skills (gaps and shortages) in AM;

Support with data the AM European Qualification System and foster wideness of its scope;

(Re) design professional profiles according to the industry requirements;

Develop specific relevant qualifications to be delivered for the AM Sector;

Increase the attractiveness of the sector to young people, whilst promoting gender balance;

Strengthen education-research-industry partnerships and encourage creativity “in companies and relevant educational and scientific institutions”;

Track students, trainees and job seekers and promote match making between job offer and search.

Duration: 4 years (1.01.2019 – 31.12.2023)

<https://ec.europa.eu/social/main.jsp?langId=en&catId=89&newsId=9294&furtherNews=yes>



European Institute of Innovation & Technology - Existing KICs

EIT Climate-KIC



EIT Raw Materials



EIT Digital



EIT Health



EIT InnoEnergy



EIT Food



New KICs



2018 Call for Proposals



EIT Urban Mobility*

Smart, green and integrated transport



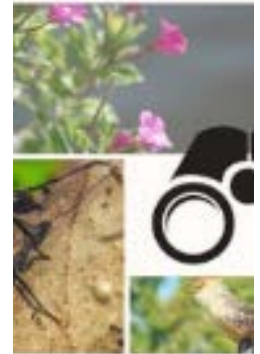
EIT Manufacturing*

Added-value manufacturing

STEM Horizon 2020 projects



- **ER4STEAM:**
<http://www.er4stem.com/>
- **SciChallenge:**
<https://www.scichallenge.eu/>
- **Perform:** <http://www.perform-research.eu/about/project-description/>
- **BEACONING:** <https://beaconing.eu/>
- **STIMEY:**
<https://www.stimey.eu/home>
- **EDU-ARCTIC:** <https://edu-arctic.eu/>
- **STEM4youth:**
<http://www.stem4youth.eu/>
- **UMI-Sci-Ed:** <http://umi-sci-ed.eu/>





Further information

Horizon 2020: http://ec.europa.eu/research/horizon2020/index_en.cfm

Key Enabling Technologies, R&I website :

http://ec.europa.eu/research/industrial_technologies/index_en.cfm

Participant Portal - Funding Opportunities and support services :

<http://ec.europa.eu/research/participants/portal/desktop/en/home.html>

National Contact Points in your country (NMP)

http://ec.europa.eu/research/participants/portal/desktop/en/support/national_contact_points.html#c.contact=country/sbg//1/1/0&+person.last_name/desc

Research Enquiry Service: <http://ec.europa.eu/research/index.cfm?pg=enquiries>

CORDIS database with EU funded research projects :

http://cordis.europa.eu/projects/home_en.html

European Institute of Innovation & technology:

www.eit.europa.eu

Blueprint for sectorial cooperation:

http://ec.europa.eu/growth/content/new-skills-agenda-blueprint-sectorial-cooperation-skills-1_en