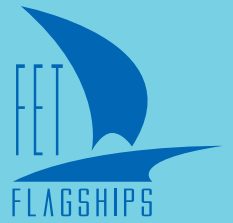


#DSM

Digital Single Market

FUTURE AND EMERGING TECHNOLOGIES FLAGSHIPS AND LARGE RESEARCH INITIATIVES

Boosting the delivery of cutting-edge technologies
and aiming for game-changing effects



These visionary, **long-term, large-scale** research initiatives address **major science and technology challenges in Europe**. They involve **hundreds of research teams** with the aim of boosting the EU's scientific and industrial landscape.



Activities based on
**jointly defined Research
& Innovation roadmaps**



**Alignment of Research
& Innovation agendas**
at EU, national and regional
levels



Joint governance
by EU and national
funding authorities

FUTURE AND EMERGING TECHNOLOGIES FLAGSHIPS

Supported under Horizon 2020. They will continue to be supported under Horizon Europe.



GRAPHENE FLAGSHIP

Since 2013

Unlock the potential of graphene, a carbon-based material one atom thick, and other 2D materials



**9 spin-offs, 160 prototype systems,
46 products launched,
400 academia/industry collaborations**



Cost-effective scalable graphene
production



Ultrafast components for 5G
communications



Lightweight materials for aeroplanes and
cars



Higher efficiency & long-lasting
photovoltaic cells



Flexible sensors for medical sector

graphene-flagship.eu



Human Brain Project

Since 2013

Understand and model the brain



**Brain atlases and models for brain
interventions** (e.g. stroke, epilepsy)



Exploring **consciousness mechanisms**



Building a **neuroscience data
& computing infrastructure**



Using **brain models** to equip robots with
more efficient artificial intelligence



More than **1000 publications**
200 doctoral students

humanbrainproject.eu



Since 2018

Use quantum effects - the laws of physics that apply to molecules, atoms and even smaller particles - to make advances in science, industry and society



Make **communications** ultra-secure



Build first ever **quantum computer**



Understand complex systems with quantum simulation



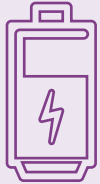
Develop breakthrough **sensing** devices

<https://qt.eu>

NEW LARGE RESEARCH INITIATIVE

BATTERY
2030+

Starting in 2020



Develop ultra-performing, safe and sustainable batteries

Use **artificial intelligence** to accelerate discovery of new **battery chemistries**, develop monitoring through **smart sensing** at the heart of the battery, increase longevity through **self-healing**, and more.

Battery 2030+ is part of the EU's [Strategic Action Plan on Batteries](#), supported under Horizon 2020 and with continued support proposed under Horizon Europe.

<https://battery2030.eu>

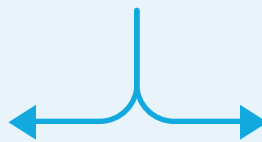
IDEAS/PLANS FOR NEW RESEARCH INITIATIVES

Under the Horizon 2020 Future and Emerging Technologies programme, and to be taken up in Horizon Europe missions, partnerships, and strategic programming.

Energy, Environment & Climate Change



Artificial photosynthesis for a clean energy future



Transformative chemistry for a sustainable future

ICT & Connected Society



Human-centred artificial intelligence



Time Machine

Using AI to make sense of complex historical datasets

Health & the Life Sciences



Understanding and treating human cells during diseases



Bring advanced therapies to clinical practice



@DigitalSingleMarket

@FETFlagships

@EU_H2020

@EUScienceInnov

#DigitalSingleMarket