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www.attract-eu.org

What is ATTRACT?

- ATTRACT is a new, open, pan-EU initiative to accelerate the development of high-performance **sensor** and **imaging** technologies.

- It involves European Research Infrastructures (ERIs), European research institutes, small and medium enterprises (SMEs), companies, universities and business and innovation specialists.

http://www.attract-eu.org/

Why ATTRACT?   Because ..

- of our observation that frontier technologies are evolving too slowly in EU;

- industry and research infrastructure are less and less connected. Industry needs today a too fast approach to the market;

- Europe is loosing the race on new technologies. Most of the new technologies have been exploited in the US or Asia (WWW, ICT,….);

- new European ways need to be found to facilitate this co-innovation mode between the scientific R&D communities and industry to restore the European leading position

# European Research Infrastructures
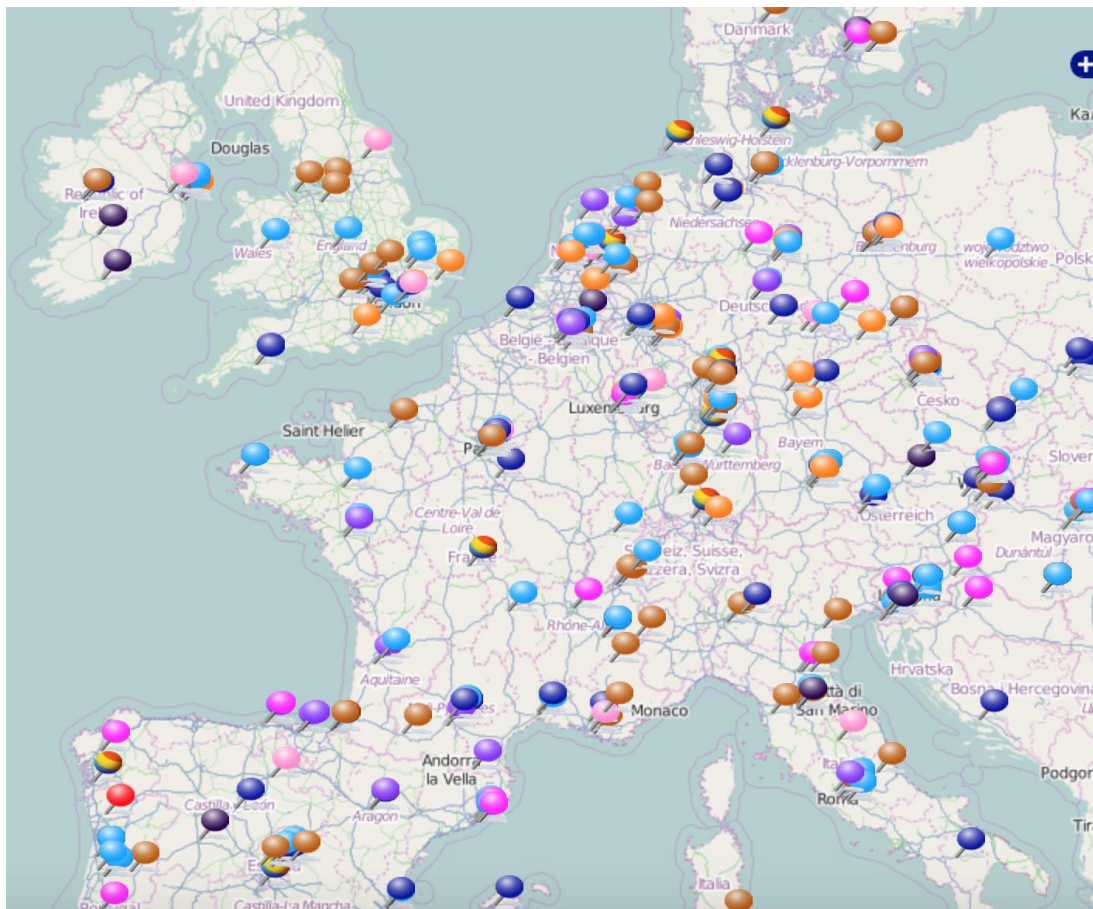
Large network with a substantial scientific and societal impact

From Open Science to Open Innovation

- Frontier science needs to be open because it needs to engage the best minds in a transparent manner, wherever and whoever they are

- Open Science is not interested in "Incremental" advancement

- Open Science is not challenged by the seemingly "Impossible", either

- Instead, Open Science is driven by the "Unthinkable"

- The challenge thus is to capture and exploit the innovation opportunities generated by the push for the Unthinkable
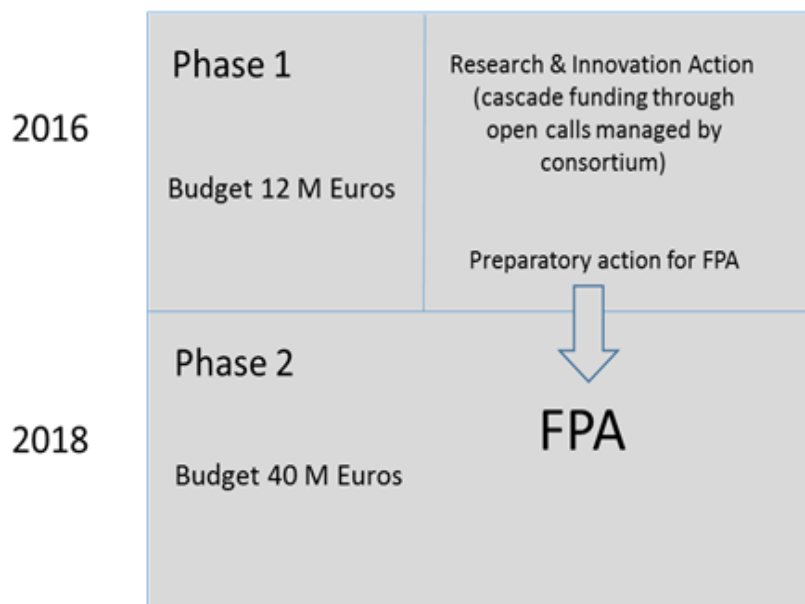
Why Sensors and Imaging ?
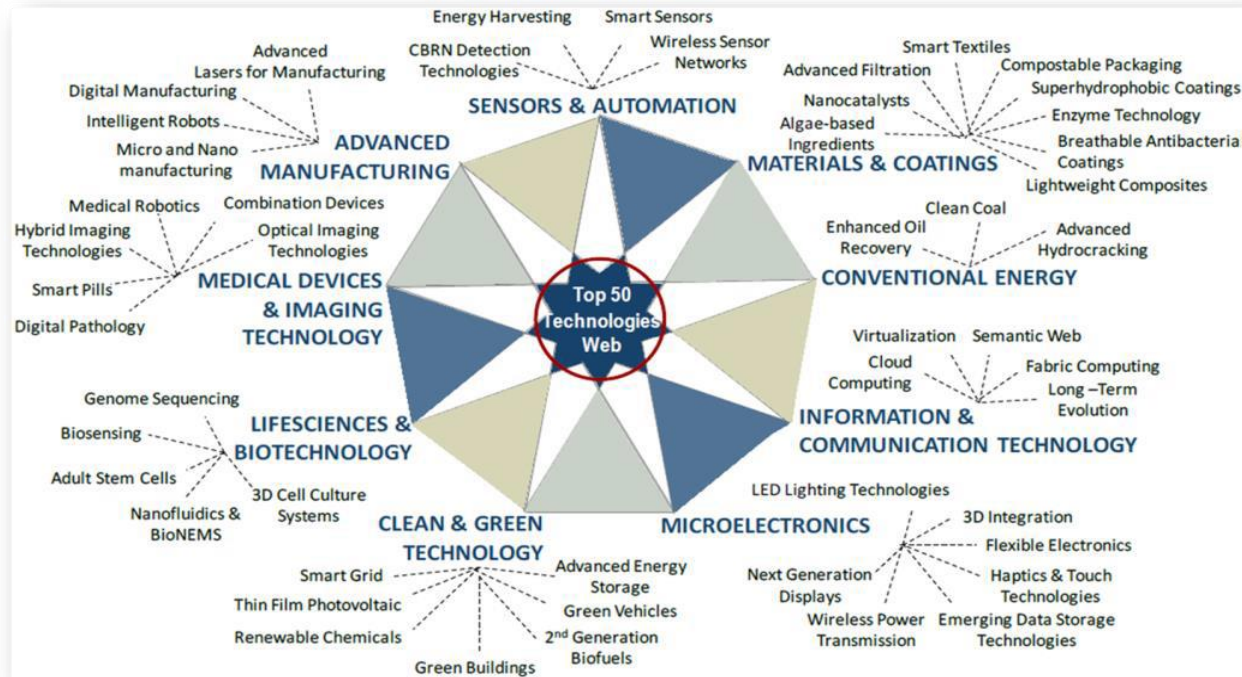
Detection and Imaging Technologies are crucial enablers for all the converging technological families illustrated above. More importantly, they create bridges between them. In other words it will be difficult to think or foresee a future application, product or business targeting any upcoming Societal Challenge that is not enabled by cutting edge Detection and Imaging Technologies.
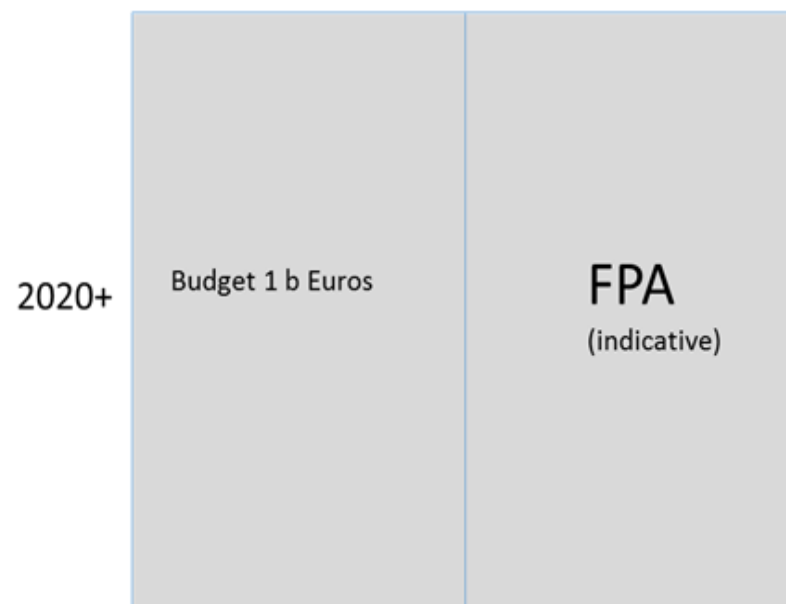
ATTRACT main idea

- Build up a (initial) consortium of ERIs & industrial partners interested and specialized in sensor and imaging technology

- The consortium proposes to be mandated by EU in the framework of H2020 (initially) to:

    - *Define funding programs*
    - *Organize open calls*
    - *Monitor and peer review their execution*
    - *Manage and administrate their execution*

Implementing ATTRACT in Phases to Scale Up

"Mini" ATTRACT

2016	**Phase 1** Budget 12 M Euros	Research & Innovation Action (cascade funding through open calls managed by consortium) Preparatory action for FPA
2018	**Phase 2** Budget 40 M Euros	FPA

"Maxi" ATTRACT

2020+	Budget 1 b Euros	FPA (indicative)

FPA: Framework Partnership Agreement

Note: Proposed to EC 19/02/2015

"Mini-ATTRACT" Phases 1 and 2

Phase 1
- A wide scope of technologies with breakthrough potential (TRL 2 to 4). Plant the "Flowers".
- Selection process based on scientific merit, industrial scalability and social added value.

Phase 2
- Scalability of Phase 1-selected technologies towards industrial deployment (TRL 5 to 9). Select and fund 10% of Phase 1 projects.
- Construction and establishment of a self-sustained initiative ("Maxi" ATTRACT).
- Preparing to repeat the "Flowers" in parallel.
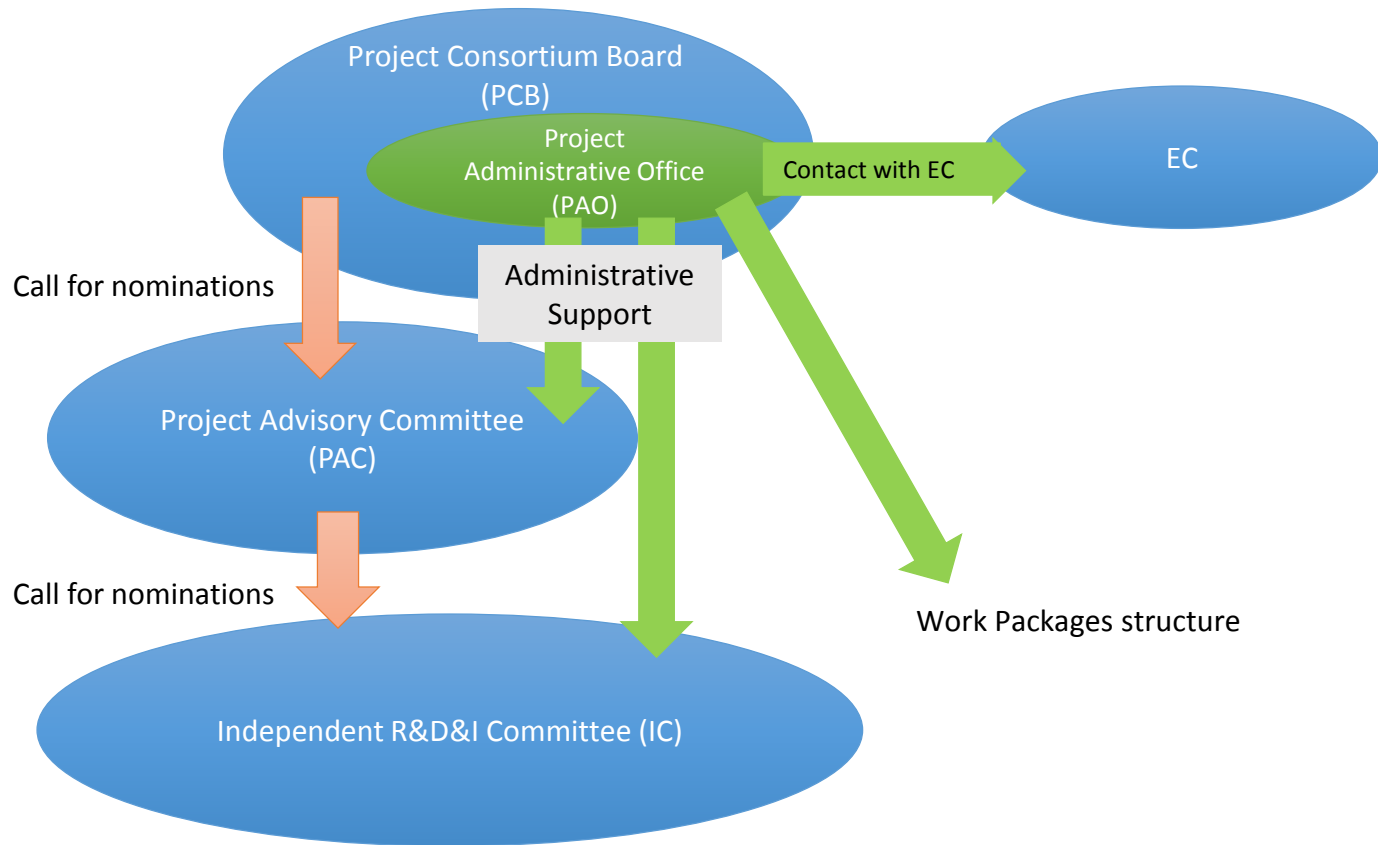
Funding "Mini-ATTRACT" Phases 1 and 2

Phase 1 (2016-2017): Research and Innovation Action (12 M Euros EC funding) with autonomy to launch open calls with the following objectives:

- Identification of a wide spectrum of technology opportunities with breakthrough potential across the 28 EU Member States and Associated Countries.
- Assessment of the feasibility and scalability of the identified opportunities.
- Selection and clustering of those opportunities with potential for industrial implementation (transition towards Phase 2).

Phase 2 (2017-2020): Candidate FPA (40 M Euros) with autonomy to launch open calls with the following objectives:

- Continuation with the selected opportunities from Phase 1 towards industrial applications having societal value.
- Advancement towards a strategic model for a sustainable ATTRACT initiative.

"Mini" ATTRACT Phase 1: Draft Governance

Project Consortium Board (PCB)

Project Administrative Office (PAO)

Contact with EC

EC

Administrative Support

Call for nominations

Project Advisory Committee (PAC)

Call for nominations

Independent R&D&I Committee (IC)

Work Packages structure

"Mini" ATTRACT Phase 1: Main Features
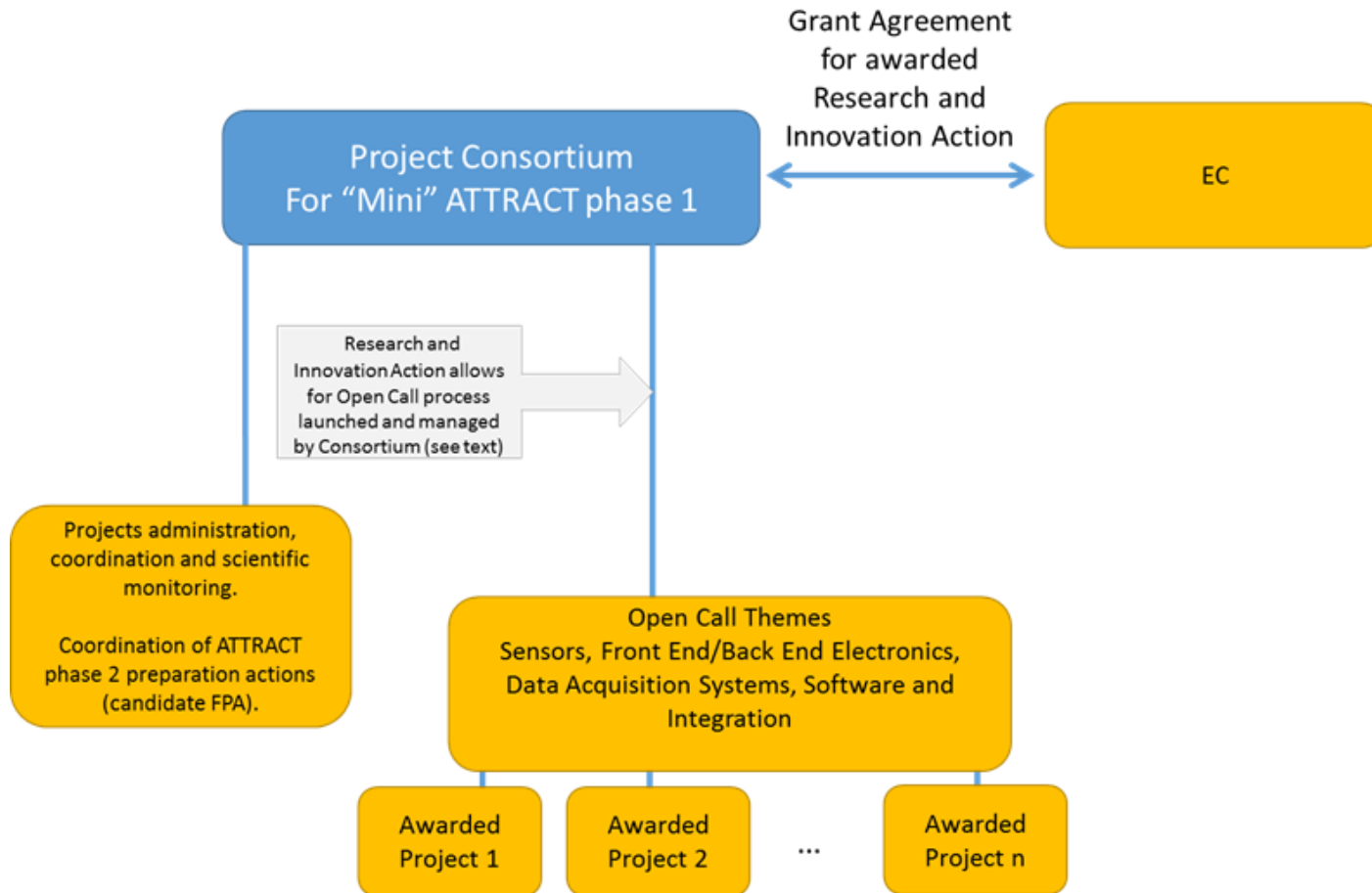
Governance

- Small consortium (up to 10 partners) and consisting of entities with proven skills and capacity to reach out and activate actors and organizations at pan-European level.

- Nomination of a Project Advisory Committee (PAC).

- PAC launches a call to nominate an Independent R&D&I Committee (IC).

- IC decides on topics for open calls and evaluation (= the project is **NOT** consortium biased).

- Consortium **only** offers Management support through the Project Administrative Office (PAO, legal entity).

ATTRACT pilot: H2020 call

- The dialog with the EC resulted in a call in the next H2020 Draft Work Programme (Research Infrastructures) for a **Pilot Demonstration** of ATTRACT.

- Call: *INFRAINNOV-1-2017 – Fostering co-innovation for future detection and imaging technologies.*

- Budget up to 20 M Euros; single project proposal;

- The result and delivery of this pilot will be supporting the dialog with EC towards a bigger commitment by end of 2017.

- In informal talks a Framework Partnership Agreement was lightly discussed as a potential follow-up funding instrument for ATTRACT.

"Mini" ATTRACT Phase 1: Draft Operational Proposal

"Mini" ATTRACT phase 1 Operational Concept (proposal)

Project Consortium For "Mini" ATTRACT phase 1

Grant Agreement for awarded Research and Innovation Action

EC

Research and Innovation Action allows for Open Call process launched and managed by Consortium (see text)

Projects administration, coordination and scientific monitoring.

Coordination of ATTRACT phase 2 preparation actions (candidate FPA).

Open Call Themes Sensors, Front End/Back End Electronics, Data Acquisition Systems, Software and Integration

Awarded Project 1

Awarded Project 2

...

Awarded Project n

Immediate work

- Organize the Project Advisory Committee (ongoing process managed by Prof. John Wood for creating an ATTRACT Advisory Board constitutes the PAC).

- Identify a list of candidates that can be part of the Independent R&D&I Committee (IC).

- Identify and agree on a list of challenges on detection and imaging technologies that can be part of the open calls.

- Nominate contact person(s) from each organization able to follow and work in the submission process.
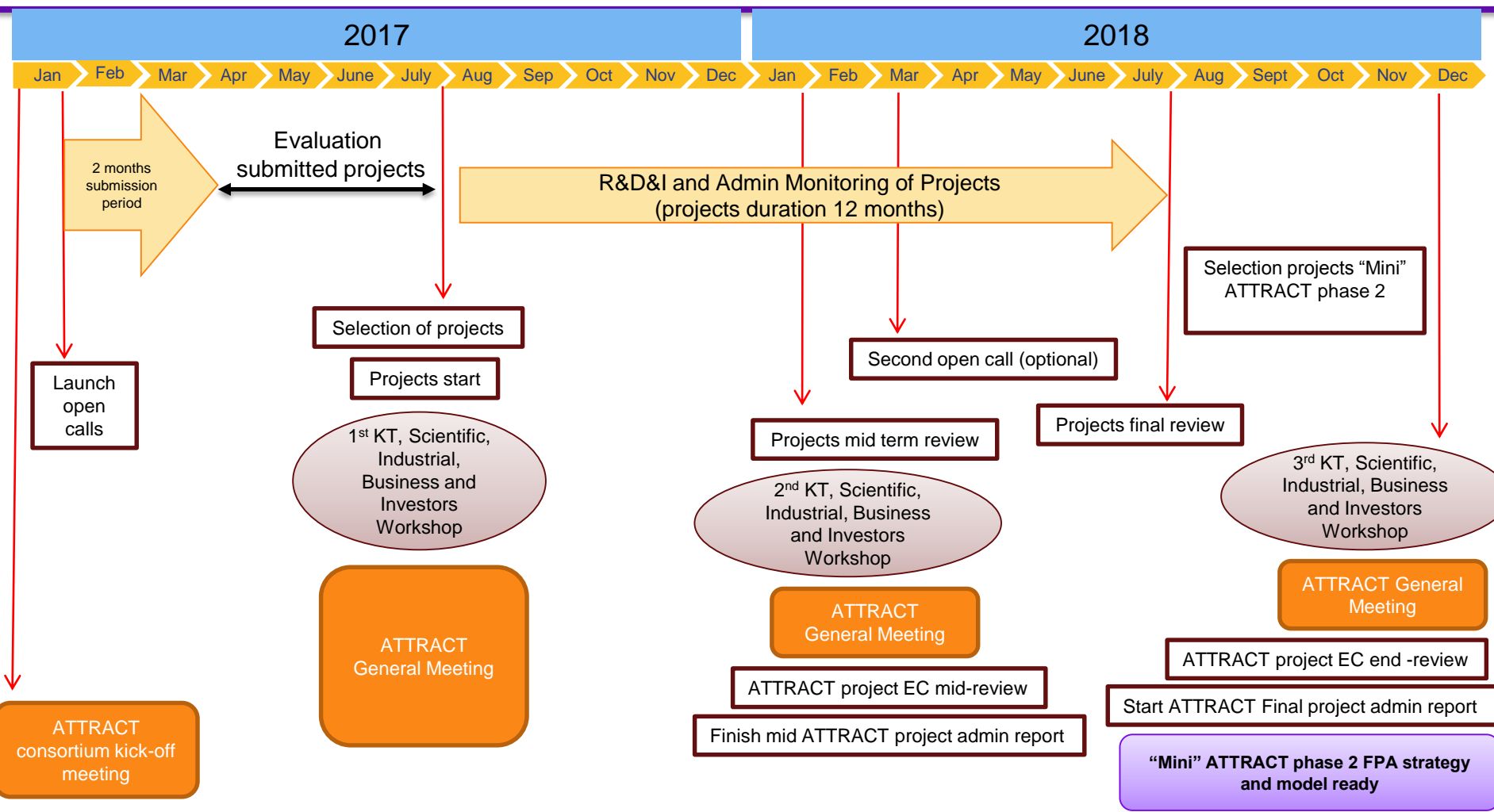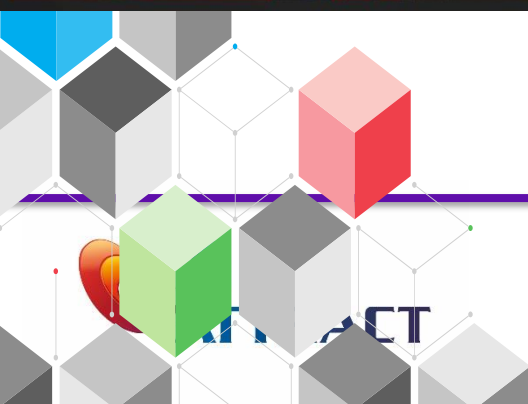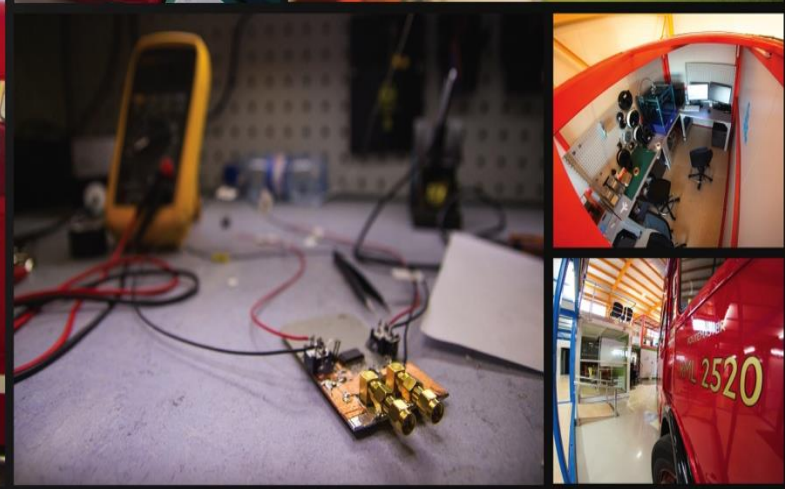
CERN IdeaSquare
in bldg 3179
(@point 1 near to
the Globe)

IDEASQUARE IN BRIEF

"Ideasquare is a pilot project that brings together physicists, engineers, industrial partners, early-stage researchers and cross-disciplinary teams of students to work together on detector upgrade R&D technologies. The purpose is to co-develop new technologies for research purposes, and at the same time, create a fruitful environment for socially and globally relevant new product ideas and innovation."

IDEASQUARE IS

» Project with a dedicated building, hosting:

 – EU-funded detector upgrade R&D projects

 – Innovation events, workshops, hackathons

 – Multidisciplinary master level student programs

» ...to prototype, test and iterate new forms of collaboration and co-creation in the areas or Research, Education and Technology - RET

Research

Education   Technology
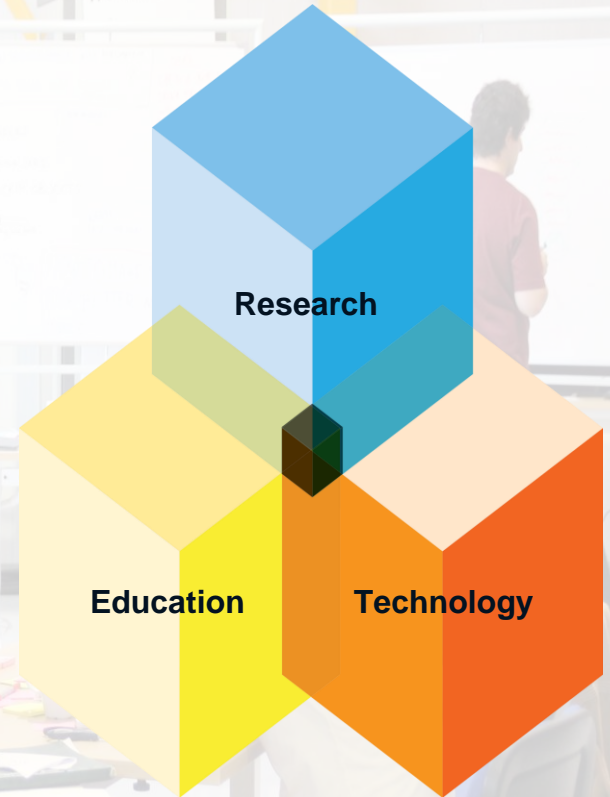
EXAMPLE: EU-FUNDED DETECTOR UPGRADE R&D PROJECT

EDUSAFE

» EDUSAFE is a 4-year Marie Curie ITN project
» Training for 10 Early Stage and 2 Experienced Researchers
» Focuses on research into the use of Virtual Reality (VR) and Augmented Reality (AR) during planned and emergency maintenance in extreme environments
» The result will be an integrated wearable VR/AR system (+control system) which can be implemented and tested as a prototype, using LHC at CERN as a test and demonstration platform
» Next proposal to be funded under discussion

EXAMPLE: EU-FUNDED DETECTOR UPGRADE R&D PROJECT

» TALENT is a 4-year Marie Curie ITN

» Provides training for 14 Early Stage and 1 Experienced Researcher

» Focuses on piloting new state-of-the-art technologies on the new precision pixel detector: ATLAS Insertable B-Layer (IBL) and for future high precision tracking detectors

» The outcome will be to create the means to produce affordable high performance detector modules in European industry and thus answer to the forthcoming needs of research infrastructures and industry application demand
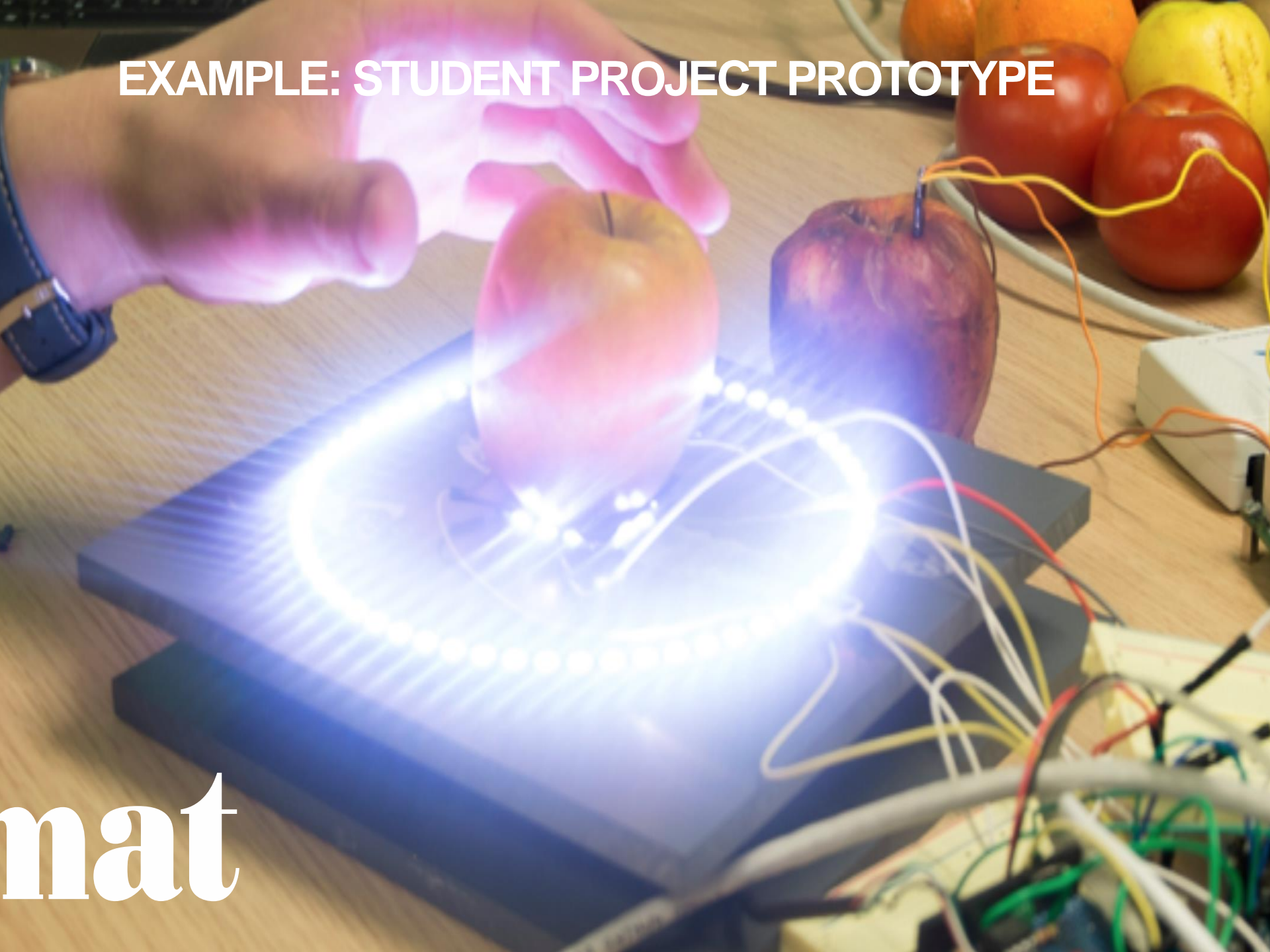
» Next funded proposal : STREAM

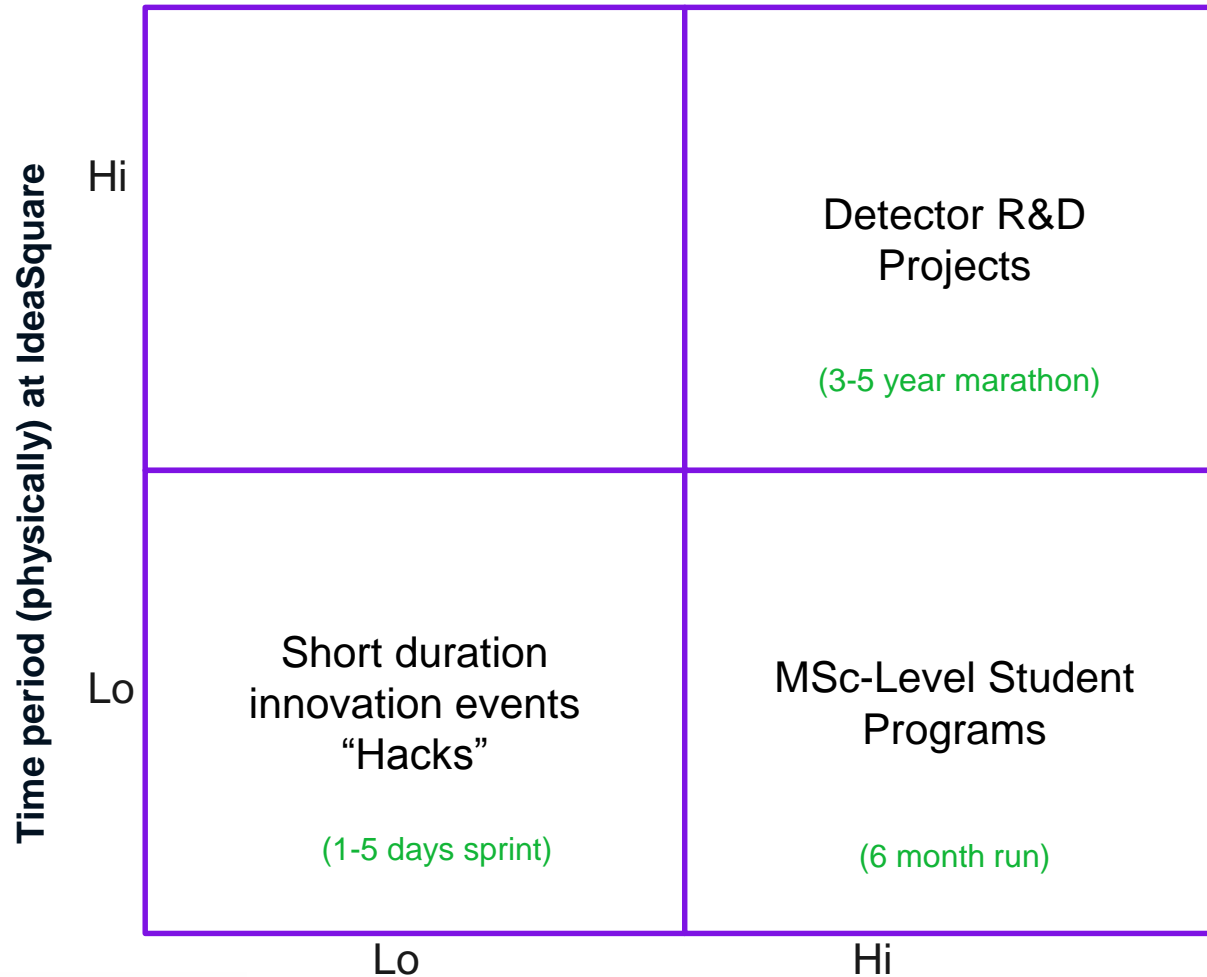# EXAMPLE: MASTER-LEVEL STUDENT COURSE

Challenge Based Innovation

» Challenge Based Innovation (CBI) is 6 month MSc-level specialization course for product and service development, run by participating universities from (currently) 8 countries around the world

» Two pilot runs completed, 8 final proof-of-concept prototypes produced

» In the course, multidisciplinary student teams learn how to apply Design Thinking – process for new product/service development; CERN researchers act as technological coaches in the process

» "Work extremely hard, learn and have fun!"

» "Fail fast and often to succeed sooner"

mat

HOW DO THESE PROJECTS DIFFER?

Time period (physically) at IdeaSquare

Hi

Lo

	Lo	Hi
Hi		Detector R&D Projects (3-5 year marathon)
Lo	Short duration innovation events "Hacks" (1-5 days sprint)	MSc-Level Student Programs (6 month run)

Level of complexity/required integration

ATTRACT

HOW DOES IT WORK?

» Where is the magic? Bringing different people together. Empowering them. Putting people first.

   1. Information doesn't radiate (communication deprived at 4m distance, goes to nearly zero at 20m) (TJ Allen, 1976)

   2. Single disciplinary teams do not radiate (single mindset leads thus far, but not beyond the rainbow)

» People from different backgrounds are amazed by each others skills... but only when they see them!

» Innovation is 1% about ideas, 99% execution & iteration: finding ways in which people can collaborate and co-create efficiently

IDEASQUARE IPR APPROACH

» Collaboration is conducted in an Open Innovation-spirit, meaning:

» All research papers and publications will be made publicly available (but can be delayed if deemed necessary)

» Students, both master and PhD-level can use/refer to the results of their assigned projects (e.g. as an example in their CV portfolio)

» CERN will not patent foreground coming out of EC-funded projects (within IdeaSquare framework)

» CERN will not sign any NDA's within EC-funded projects

» The related HEP institutes that have signed a MoU with CERN adhere to the above policies

The best way to predict the future is to invent it.

Alan Kay