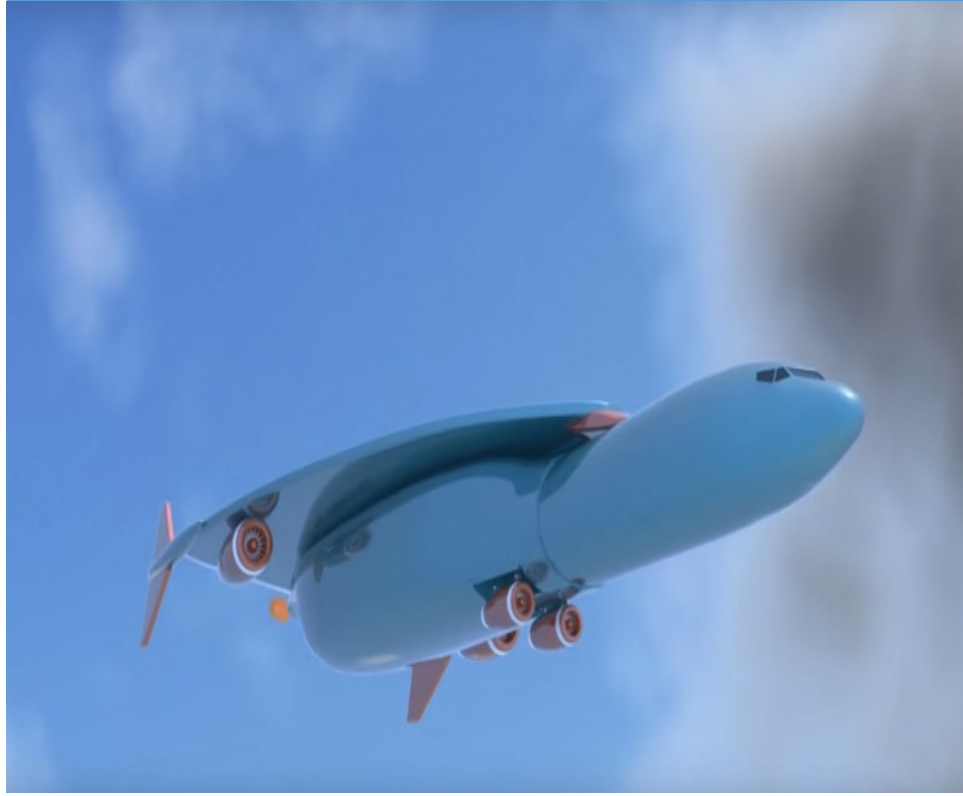


CERN Ideas

esa European Space Agency

easn

High Speed Initiative (EASN Conference, Glasgow 2018)

Some reminders

Philosophy of the initiative

- Student driven collaborative challenge
- Supervised by experts
- Open to anyone willing to contribute

Challenge

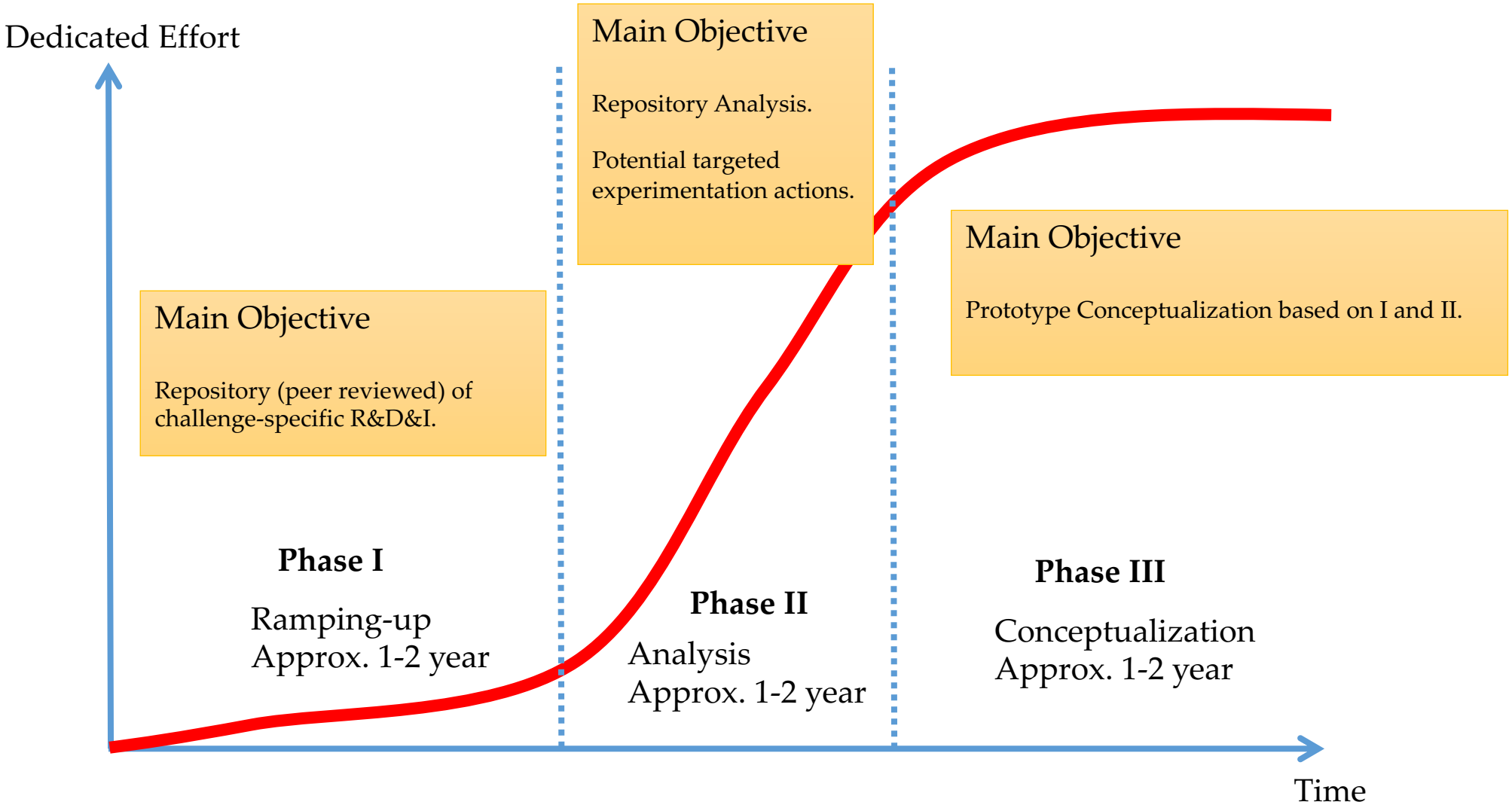
- Produce a holistic concept for a supersonic, economically viable, 300 passenger aircraft
- Many interlinked aspects need to be considered

Goal

- The final concept could become a paper/report to be published
- All contributors will be authors

Initiative overview

More information at
https://indico.cern.ch/event/570268/timetable/#20161021



Phase I: Ramping-up

Resources

- Existing curricular activities and resources in organizations.
- CERN IdeaSquare first version of collaborative platform available (allows creating repository).

Effort

- Each organization requires limited effort.

Objectives

Increased engagement of Universities

- After 1 year elaborate a peer reviewed database out of existing R&D&I activities specifically challenge oriented.
- R&D&I database (or repository) based mainly on students' projects (i.e. master thesis, PhDs, etc).

Modus Operandi

- Distribute participating organizations around the challenges (Work Groups).
- Each WG has an overall leader.
- Materials uploaded in repository should be peer reviewed by professors each WG leaders.

Phase II: Repository Analysis

Resources

- **Within existing or beyond** curricular activities in organizations.
- Enhanced version of collaborative platform (CERN IdeaSquare).

Effort

- Effort from each WG coordinator beyond "daily activities".

Objectives

After 2 years elaborate a synthesis of the gathered **challenge oriented** R&D&I.

Propose complementary and missing key experimentation/ simulation suitable to be realised by students.

Integrate results in the synthesis.

Modus Operandi

- Each WG coordinator spends time elaborating synthesis of results of Phase I and indicates key missing experiments/ simulations.
- Each organization determines the feasibility to carry on key missing experimentation/ simulation
- Each WG coordinator elaborates a final report per challenge.

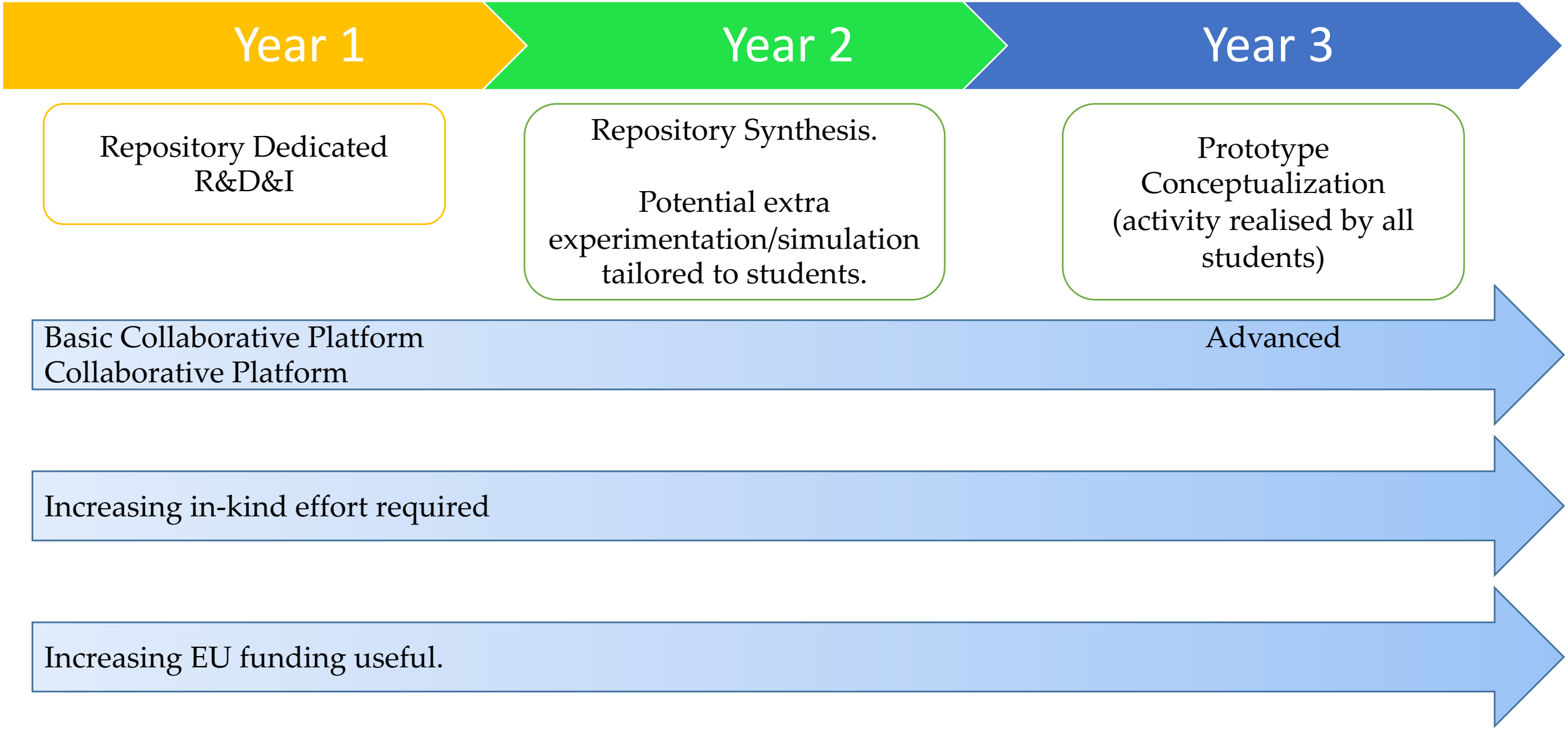
Phase III: Conceptualization

Resources	Effort	Objectives	Modus Operandi
• **Existing and beyond** curricular activities in organizations. • Enhanced collaborative platform.	• Each organization requires effort beyond “daily activities”.	• After 3 years conceptualise a prototype of the future 300 passenger civil supersonic aircraft.	• Organise participating organizations around the challenges (Work Groups). • Each WG has an overall coordinator. • General student activity: conceptualize prototype with information of all WGs.

High Level Gantt Chart

Minimum effort is 3 years;

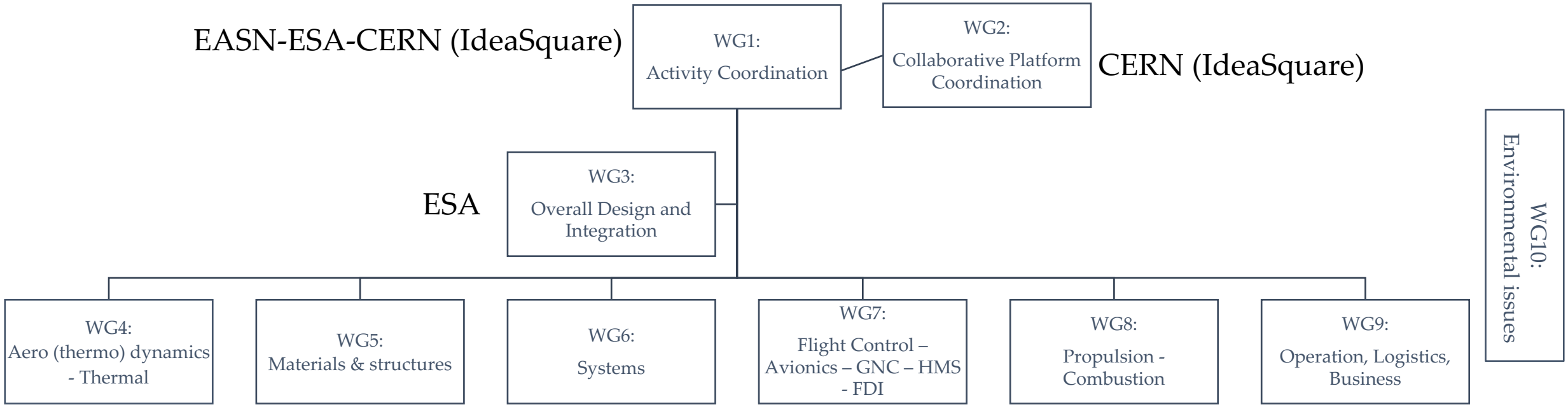
If EU funding available it could be extended.



Approach to EU funding

- As agreed in the launching of the initiative EU funding is a “nice to have” but NOT a “must have.
- Everyone is encouraged to pursue it on an individual basis.
- Dedicated efforts from WP1 will be intensified specially when approaching phase II (e.g. the initiative is mature enough, there is a story for submitting a proposal, more efforts beyond the strictly voluntary basis is required.
- EU Funding sources could be available in programmes like Science with and for Society, EU education programmes and calls.

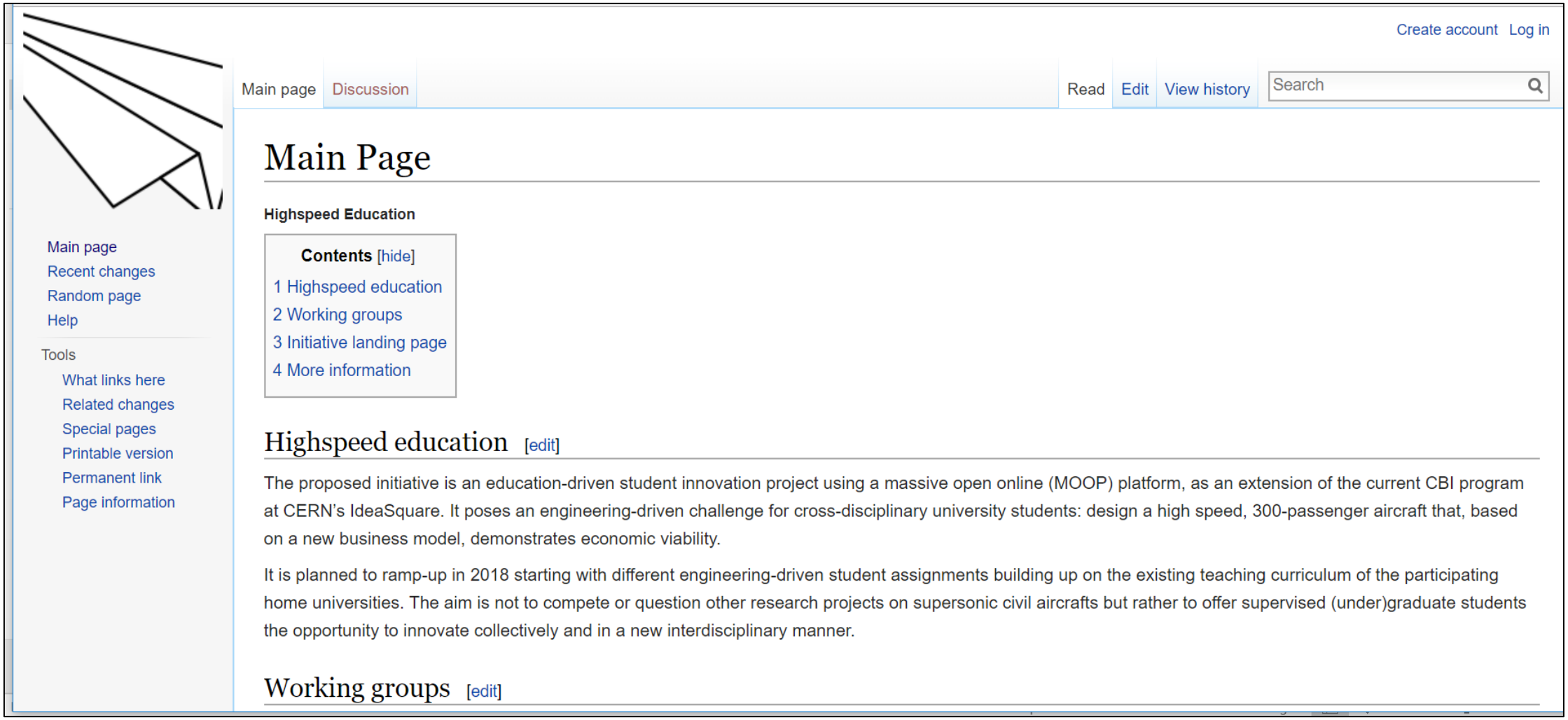
Constituted Working Groups



Constituted Working Groups leaders

- **WG1: Management**: “troika” of EASN-ESA-CERN IdeaSquare, main contact Romain Muller (CERN IdeaSquare), Andreas Strohmayer (EASN Network, Universität Stuttgart)
- **WG2: Platform:** main contacts, Romain Mueller and Jani Kalasniemi (CERN IdeaSquare)
- **WG3: Design & Integration:** main contact Johan Steelant, (ESA)
- **WG4: Aero (thermo) dynamics & protection:** Christian Mundt, (Universität München)
- **WG5: Materials & structures:** (George Labeas, University of Patras)
- **WG6: Systems:** Marco Fioriti, (Politecnico di Torino)
- **WG7: Flight Controls & Avionics:** Marco Fioriti, (Politecnico di Torino)
- **WG8: Propulsion –Combustion**: Bayındır Saracoğlu, (von Karman Institute)
- **WG9: Environmental issues**: Viktor Kopiev, Igor Bashkirov, (TsAGI)
- **WG10: Operation, Logistics, Business**: Nicole Viola, (Politecnico di Torino)

Collaboration Platform ready to be used in Phase I



General Characteristics of the Platform

- Familiar layout (Wikipedia format) especially for students
- Access http://wiki.highspeed.education/index.php?title=Main_Page
- Versatile (many functionalities possible, upload different document formats, video, etc)
- CERN-IdeaSquare owns the domain
- Wiki site makes an automatic log of all the changes.
- Extensive information and tutorials exist on Wikipedia.
- Accessible through any case of interfaces (PC, tablet, smartphone, etc).

Introductory video

Next steps (1)

Three main actions

1. We encourage the WG Leaders to start requesting materials for populating the platform and act as “curators” before it is uploaded.

2. We encourage all users to contact Romain (r.muller@cern.ch) and Jani (jani.kalasniemi@cern.ch) for suggestiosn to be incorporated to the platform (i.e. functionalities, tutorials, etc)

3. We encourage all of you (and us) to act as ambassodors of the initiative so the collaborative aspects grows fast.

Next steps (2)

From the WG 1 we will monitor entries and inform WG Leaders periodically.

The goal is to identify in the course of 1 year time approx. when there is sufficient relevant material to start the Initiative phase II.

Thanks to you all!!

Any questions?