

EU – Horizon 2020

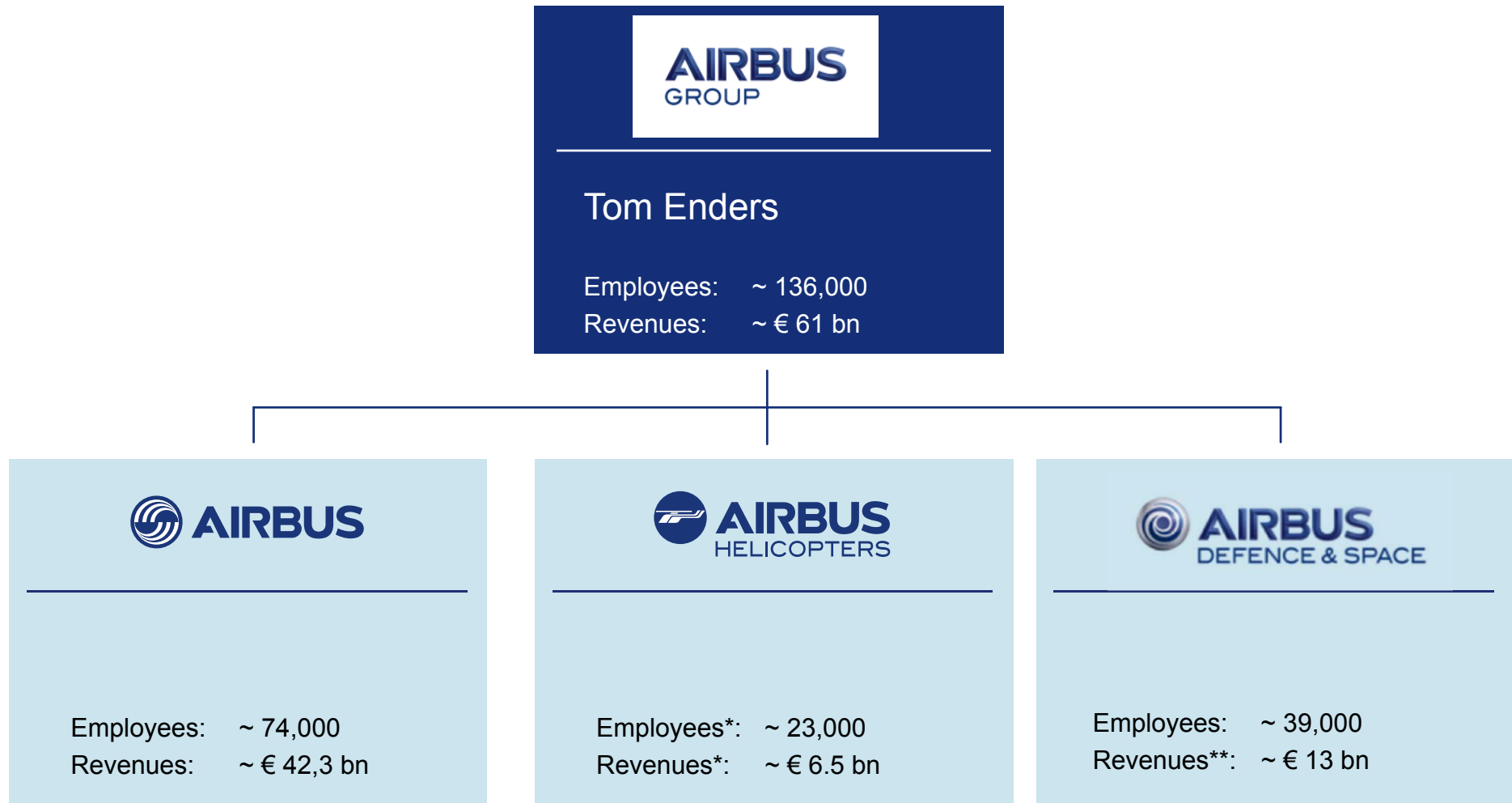
First results and first lessons learnt Recommendations for improvement

Gil DENIS

Airbus Defence and Space – R&T and Innovation Management

20 October 2015

Airbus Defence and Space in Airbus Group



Figures 2014

More than 130 locations around the world.

Airbus Defence and Space in Brief



Europe's No. 1 in defence and space
and top 10 worldwide



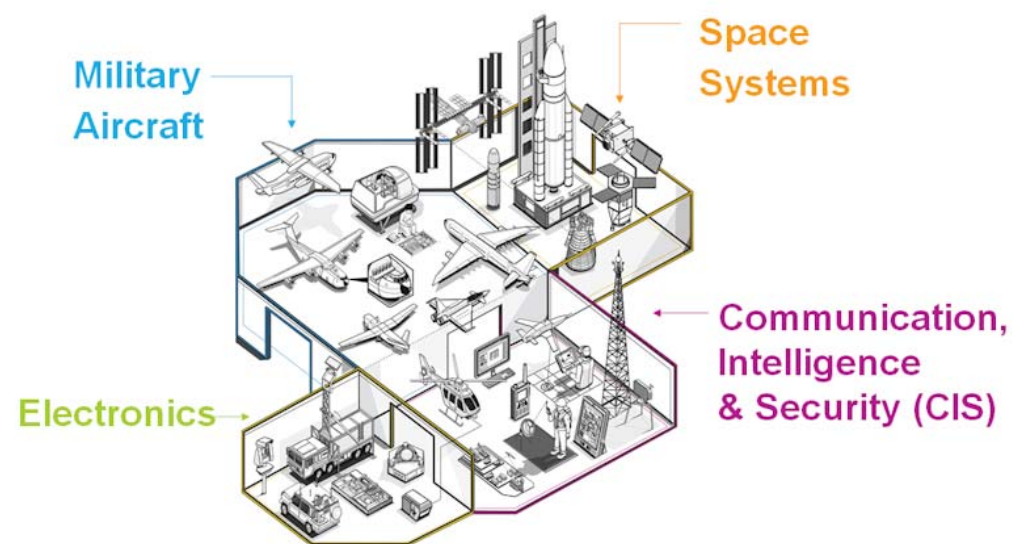
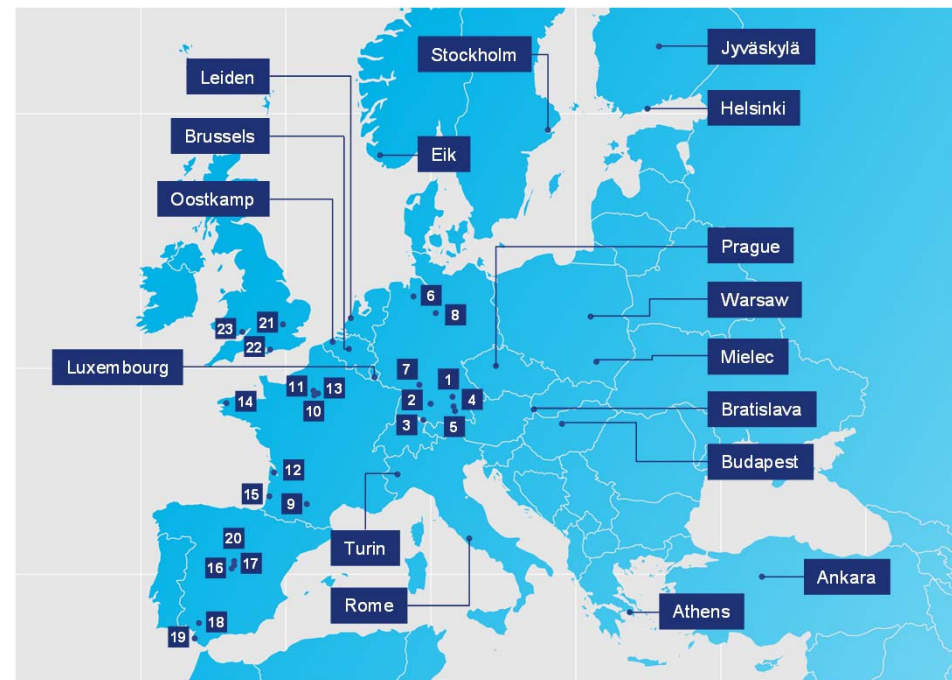
World's No. 2 in space



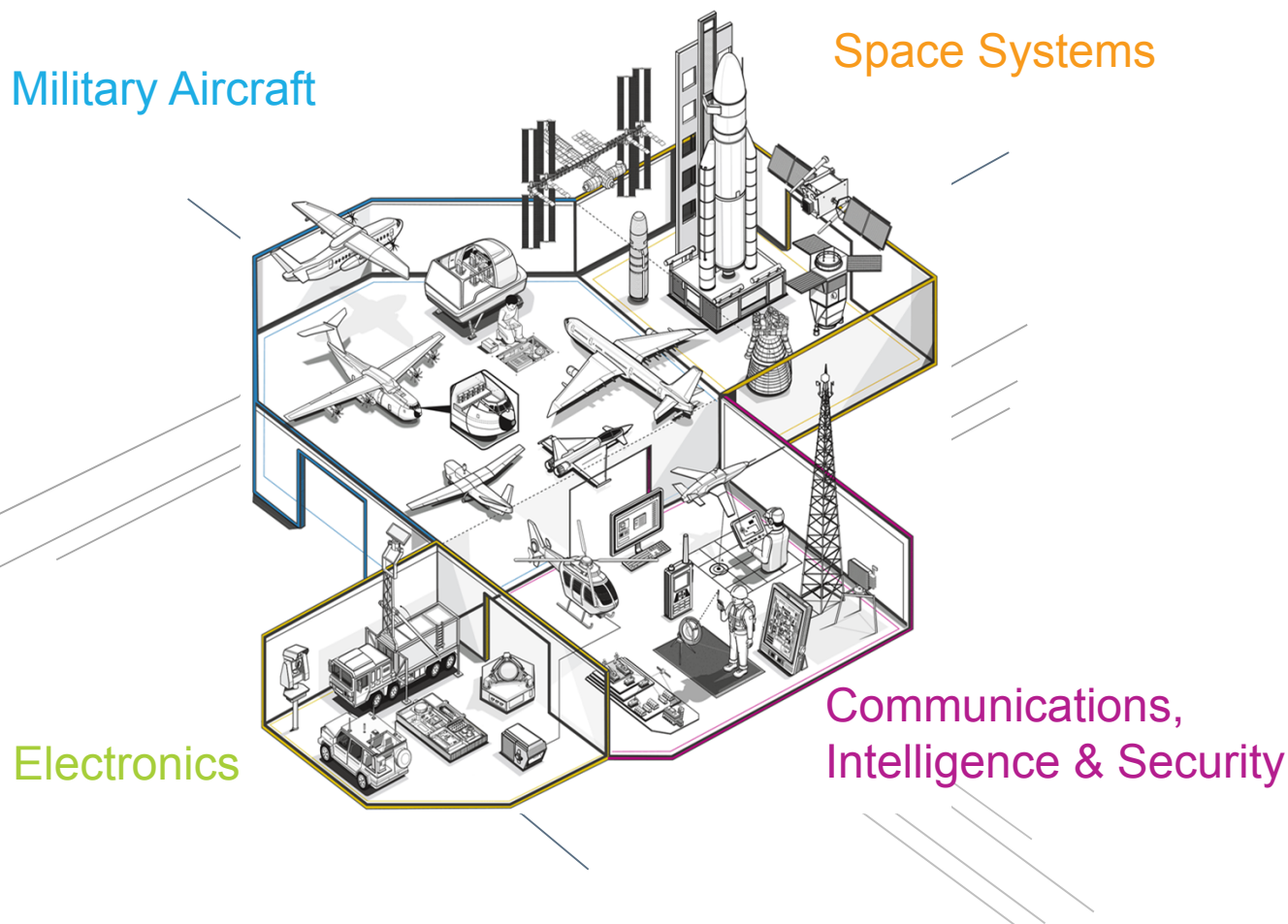
More than 39,000 employees



Approximately €13 billion in revenue



Airbus Defence and Space: a new organisation and a new management of R&T and innovation



- « One roof » concept.
- Four business lines, delivering their products to the customers.
- Technology and Common Engineering ensures homogeneity and consistency across division and with Airbus.
- Objectives: strengthen synergies, maximise reuse, share tools and processes, foster transverse R&T and innovation.
- And... think bigger!

R&T and innovation management: how do we work?

- **An integrated process involving Airbus Defence and its business lines**
- **Three principles:**
 - Subsidiarity.
 - Search for synergies and reuse.
 - Prepare the future (long term vs short term).
- **Three threads support R&T, R&D and innovation management:**
 - Product portfolio evolution and R&D road maps.
 - Technology domains and R&T road maps.
 - Innovation process.
- **Each thread has its own toolbox**
- **And a new tool: Trend Watch...**
 - Monitoring of mid- and long term trends (emerging technologies, societal challenges)

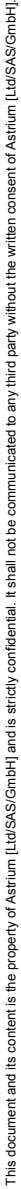
Technology domains:

- Structural engineering and materials
- Flight and space physics
- Propulsion
- On-board power and energy management
- Communication and data links
- Sensor, actuators and payloads
- Computing Technologies
- Flight Management, guidance, navigation and control
- Manufacturing and AIT
- Product support and services solutions
- System engineering, simulation, integration and Test
- Ground systems
- Security and information management

Tools for innovation:

- Innovation pipeline: internal, bottom-up: every people can propose ideas.
- Blue box: transverse innovation.
- Innovation factory: de-risk and mature ideas
- Innovation days and open-innovation.

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No as complex as many things we do

- No statement of work = flexible work content
- If the topic is in your R&D roadmap, it's not a cost. It saves internal resources.
- Cooperation = lever effect if well-managed
- Can enable and shape future operational programme or EU-owned systems (e.g. Copernicus)
- EU becomes a major buyer of space systems and services.

What you need:

- A good idea, in the scope.
- A good consortium.
- A good proposal manager.
- A good writer.

Horizon or Nadir?

Look into the future while keeping our feet on the ground

Scattered budgets but strong potential leverage

A picture is worth a thousand words:



Horizon 2020 – Topics of interest for Airbus Defence and Space

- **Industrial leadership (17 B€):**
 - Space.
 - ICT.
 - NMP - Nanotechnologies, new materials and processes.
 - FOF - Factories of the Future.
- **Societal challenges (30 B€):**
 - Health, demographic change and well-being.
 - Food security, sustainable agriculture and forestry, marine, maritime and inland water research, and the bioeconomy.
 - Secure, clean and efficient energy.
 - Smart, green and integrated transport.
 - Climate action, environment, resource efficiency and raw materials.
 - Europe in a changing world – Inclusive, innovative and reflective societies.
 - Secure societies – Protecting freedom and security of Europe and its citizens

Horizon 2020: Our bid strategy – Three possible postures

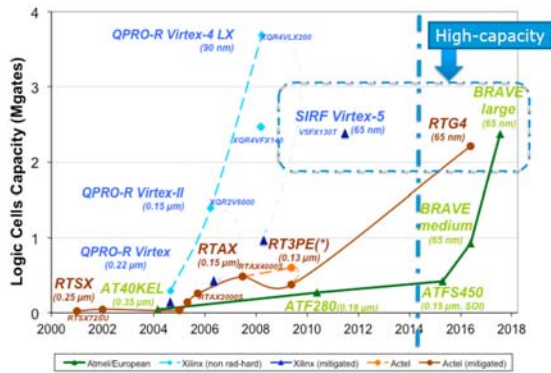
- **Main and strategic topics:**
 - We want to coordinate
 - or we play an important role in the consortium.
- **Main technical activities:**
 - We play a key role, with significant co-funding.
 - With active involvement in proposal preparation.
 - With our preferred partners.
- **Opportunistic participations:**
 - One criteria: alignment with our RTD road maps.
 - “all you can eat”...
 - Best effort.

First results – 2014 and 2015

	2014	2015
Space	<input type="checkbox"/>	<input type="checkbox"/>
ICT	<input type="checkbox"/>	<input type="checkbox"/>
Secure societies	<input type="checkbox"/>	?
Factory of the future	<input type="checkbox"/>	<input type="checkbox"/>

Higher success ratio when coordinator.

Cooperative RTD: some examples (space)



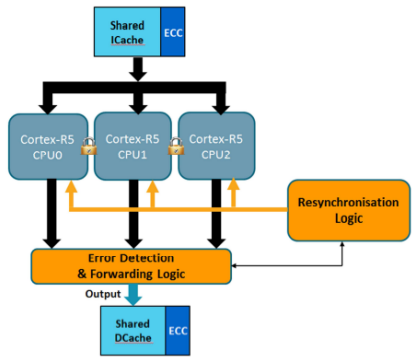
VEGAS

European High capacity
Rad-hard FPGA



TESER

Technology
for Self-Removal



TCLS ARM FOR SPACE

Triple Core Lockstep
concept for ARM
Cortex R5 processor



NEOShield-2

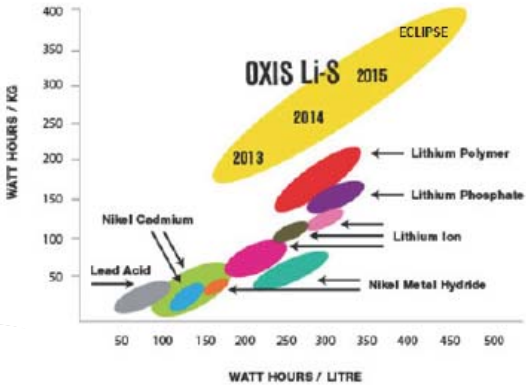
Science and Technology
for Near Earth Object
Impact Prevention

IRENA

Technologies for
Atmosphere
entry and Re-entry

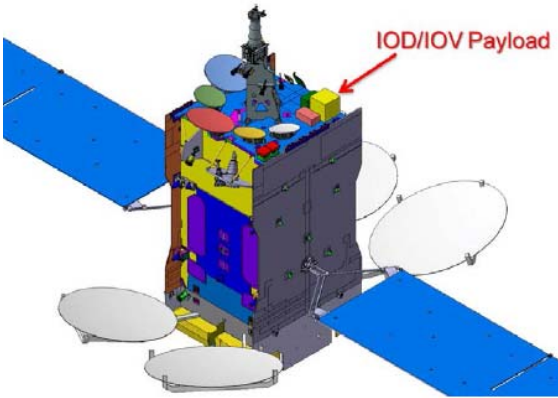
HYPROGEO

Hybrid Propulsion
for upper stages and
transfer modules



ECLIPSE

Lithium-Sulfur batteries
for Space Environments



PLUG-IN

Universal interface
for hosted payloads



Horizon 2020 – first feedback and lessons learnt

- **Airbus Defence and Space is very active on Horizon 2020.**
- **Despite good proposals in line with industry competitiveness, the success rate is rather low compared to research entities:**
 - Unbalanced participation of industry and public bodies, even for topics related to industrial competitiveness. Evaluator profile.
 - Current top winners are public organisations.
- **Lack of focus on industry competitiveness in the work programme:**
 - Improve accessible budget, apply same funding rules as public entities (e.g. coordination of Innovation Actions).
 - Avoid shopping list effect in work programme (scattering of funds on small projects).
 - Involve more industry in strategic RTD road maps.
- **Large oversubscription and low success rate:**
 - A two-stage evaluation would improve the situation (TBC)
- **On some specific topics (security, national eyes only), governance issues to be solved before publication of work programmes:**
 - e.g. security topics, export control,

Facts and figures:

- 2015: 18 successful proposals on COMPET-2015 (Space) but only 5 coordinated by industry.
- 2014: ASD share in security is particularly low (only 1 participation in only 1 project out of 17. financial share of ASD is 0,6%).

Facts and figures:

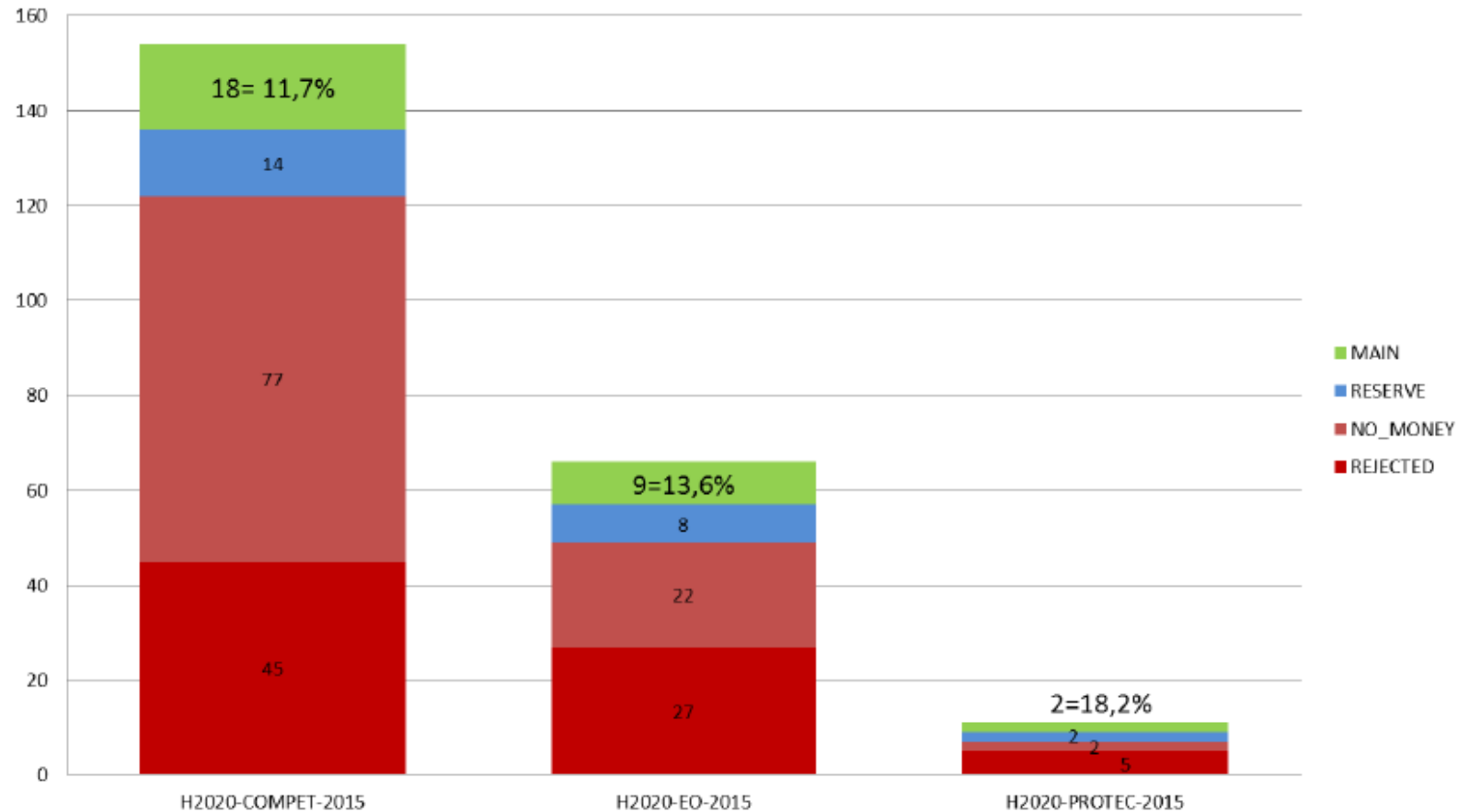
- EU SST Program financed by H2020 involving only agencies.
- Some strategic topics defined without direct industrial involvement (e.g. Strategic Research Clusters on Electric Propulsion and Robotics).

Facts and figures:

- 2015: 1301 proposals on ICT, 687 on NMP, 346 on FOF, 331 on space, 538 on Secure Societies.
- Low success rate (12% on ICT, 11.7% on Space Compet)

A major drawback: large over-subscription and low success rate

H2020 Space Calls: Evaluation outcome (231 evaluated proposals; success rate 12,6%)



Horizon 2020: Pros - Benefits for industry

HORIZON
2020



- **It's today:** first projects, new calls (3rd call in 2015), WP 2016-2017 adopted in September. Mid-term review and preparation of "Horizon 2027" will start.
- **An additional funding source**, for topics aligned with our RTD road maps.
- **Lever effect through cooperative RTD** (x3 to x4 if well managed).
- **Rules and funding are more attractive than FP7.** Low TRL activities are better funded.
- **Opportunities in other domains** (ICT, NMP, FOF, etc.) beyond the main usual activities (space, security, transport).
- **Can shape future operational programmes.**
E.g.: Copernicus and the Sentinel missions. SST : next flagship?
- **Improves the management skills of our teams**
(management by consensus, conflict resolution, European dimension).
- **Develops our network of partners**, prepares future European supply chains and contributes to technology watch.
- **Pushes to excellence.** Requires a sustained effort (lobbying, relations with partners, proposals, project coordination and cost reporting). Only excellent proposals can be successful.

Horizon 2020: Cons - Room for improvement...

**HORIZON
2020**



- **Role of industry / public organisations: important weight of research entities (grant level, responsibilities)**, even in the case of LEIT (Industrial leadership). Example : COMPET-2015: 18 successful proposals but only 5 coordinated by industry. In 2014, Space: 28 public / 38 industry, Secure societies: 32 public / 40 industry. Other example: EU SST Program financed by H2020 involving only agencies.
- **Budget for industrial competitiveness: partly used for other actions** (e.g. science, communication, international cooperation, prizes).
- **Work Programme preparation: a difficult exercise.** Consensus between 28 Member States, each one advocating for its own priorities. No arbitration. As a consequence, “Shopping list” effect. Some strategic topics defined without direct industrial involvement (e.g. Strategic Research Clusters on Electric Propulsion and Robotics). Possible conflicts of interest for large public bodies involved a work programme committee.
- **Very large over-subscription and low success rates.** Direct impact on willingness of the teams to submit proposals. Two-stages evaluation could improve the situation.
- **Coordination of Innovative Actions less funded (70% of direct eligible costs) than in FP7** (coordination tasks of IA should be fully funded in order to secure industry’s role. Public entities get 100% funding).
- **Evaluation results: can be biased by the profile of experts** (industry stakes not always well understood). No appeals procedure or evaluation revision in the case of disagreement with the evaluation results.
- **Other issues: Airbus Defence and Space financial viability, security scrutiny and export control** (different rules between EU and member states).

Key messages: what shall be improved...

Four main areas of improvement:

- **Lack of focus on industry competitiveness in the work programme:**
 - Improve weight of competitiveness and industry role: accessible budget and share, coordination, same funding rules (e.g. coordination of IA).
 - Improve work programme preparation process, with more transparency, more visibility to industry and more time to review and propose comments. Possible conflicts of interest (from public organisations).
 - Avoid shopping list effect in work programme (scattering of funds on small projects) and involve more industry in strategic RTD road maps.
- **Unbalanced participation of industry and public bodies, even for topics related to industrial competitiveness.** Current top winners are public organisations.
- **Large oversubscription and low success rate: a two-stages evaluation could improve the situation**
- **Poor industrial profile of evaluators:** large population of academic people (the value of industrial proposals is not always understood by the evaluators).

And one specific issue (secure societies):

- **Export control:** different rules between Member states and EU. Potential issues with security scrutiny and export control (internal lobbying first, National level).

Questions?

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