aerodays2015

Aviation in Europe – Innovating for Growth

The 7th European Aeronautics Days

LONDON

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Canada – EU Collaboration in Aeronautics Research and Innovation

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Snapshot of Canada's Aerospace Industry

A significant contributor to the economy, directly adding CAD$13.1B to GDP, and employing 76000 (42k in manufacturing) in 2014.

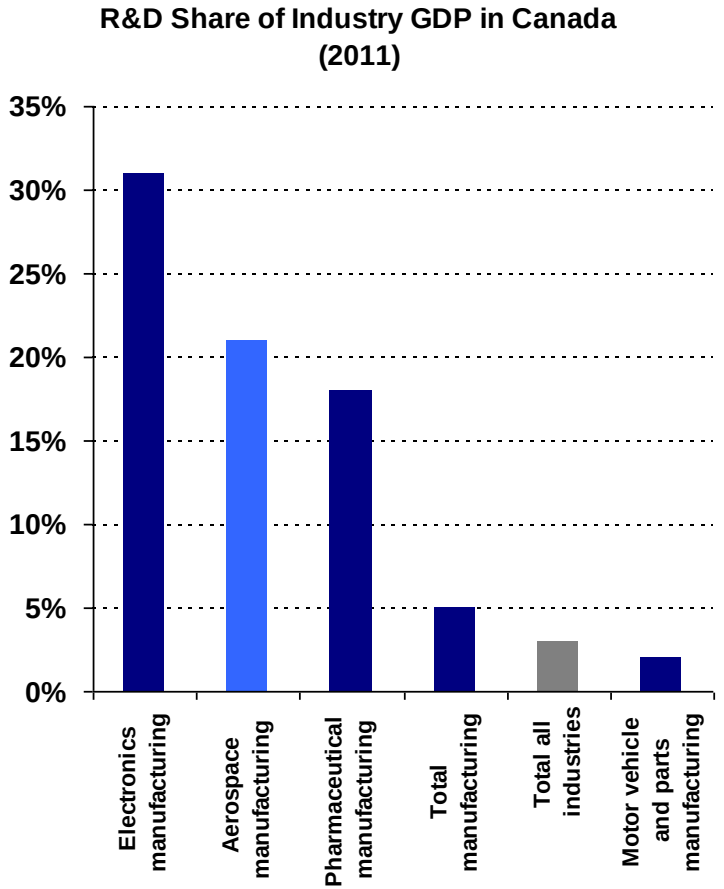
- **Including indirect and induced economic activity, totals are $29B and 180,000 employment**

Canada's most export intensive and trade diverse manufacturing sector

- **Nearly 80% of Canadian aerospace manufacturing output is exported**
- **Close to 50% of aerospace products are exported outside of the United States, in contrast to 26% for total manufacturing**

Innovation in Canada's Aerospace Industry: Domestic context

Nearly 20% of aerospace manufacturing activity is dedicated to Research and development, representing a $1.8B investment in 2014.



Aerospace Innovation Support Programs

- **Strategic Aerospace and Defence Initiative (SADI)**
- **Aerospace Technology Demonstration Program (TDP)**
- **Consortium for Aerospace Research and Innovation in Canada (CARIC)**
- **Green Aviation Research and Development Network (GARDN)**
- **Other Provincial Initiatives (CRIAQ, Mach, etc.)**

Why Collaborate?

- **The aerospace industry is an important element of our respective economies:**
  - ✓ **a driver of economic growth**
  - ✓ **a source of safe and efficient air travel**
  - ✓ **a provider of enhanced national security**
  - ✓ **a developer of R&D "spin-offs" that find application in other sectors**

- **Building on complementary expertise and capabilities, and leverage resources**

- **R&D collaboration, internationally, would serve to further our common objectives**

Canadian Networking Aeronautics Project for Europe (CANNAPE)

Objectives:

- To create a platform for enhancing aeronautics and air transport R&D cooperation between the EU and Canada.

- To develop networks and partnerships between EU and Canada in identified technical themes ideally suited for mutually beneficial aeronautics and air transport R&D cooperation.

- To promote Canadian participation in the aeronautics and air transport activities of FP7 through focused workshops, information and advisory services.

CANNAPE Workshops

Workshop #1 in Paris (June 2011)

- 127 attendees, 63 from Canada
- 6 round-table sessions (Alternative Fuels, Composites, UAS, Icing, Aircraft Safety, Other)

Workshop #2 in Ottawa (November 2011)

- 130 attendees, 35 from Europe
- Five thematic workshops (MRO, Smart Cabin Technologies, Advanced Engine Technologies, Avionics, GA)

Workshop #3 in Montreal (May 2012)

- Focus on the L1 (higher TRL) projects
- In conjunction with GARDN and CRIAQ Research Fora

Workshop #4 in London (April 2013)

- Wrap up and Future Plans

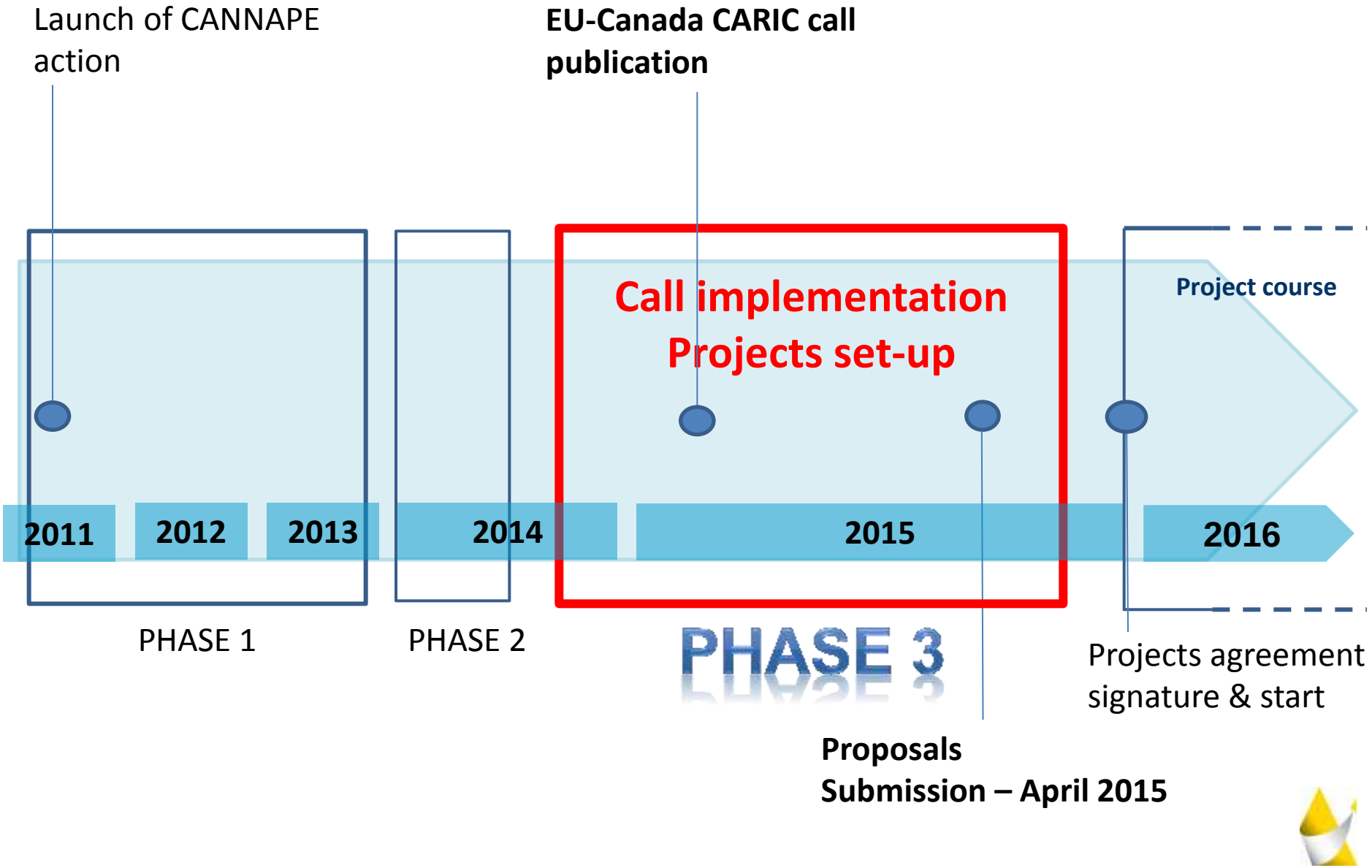
Priority Topics and Coordinated Call

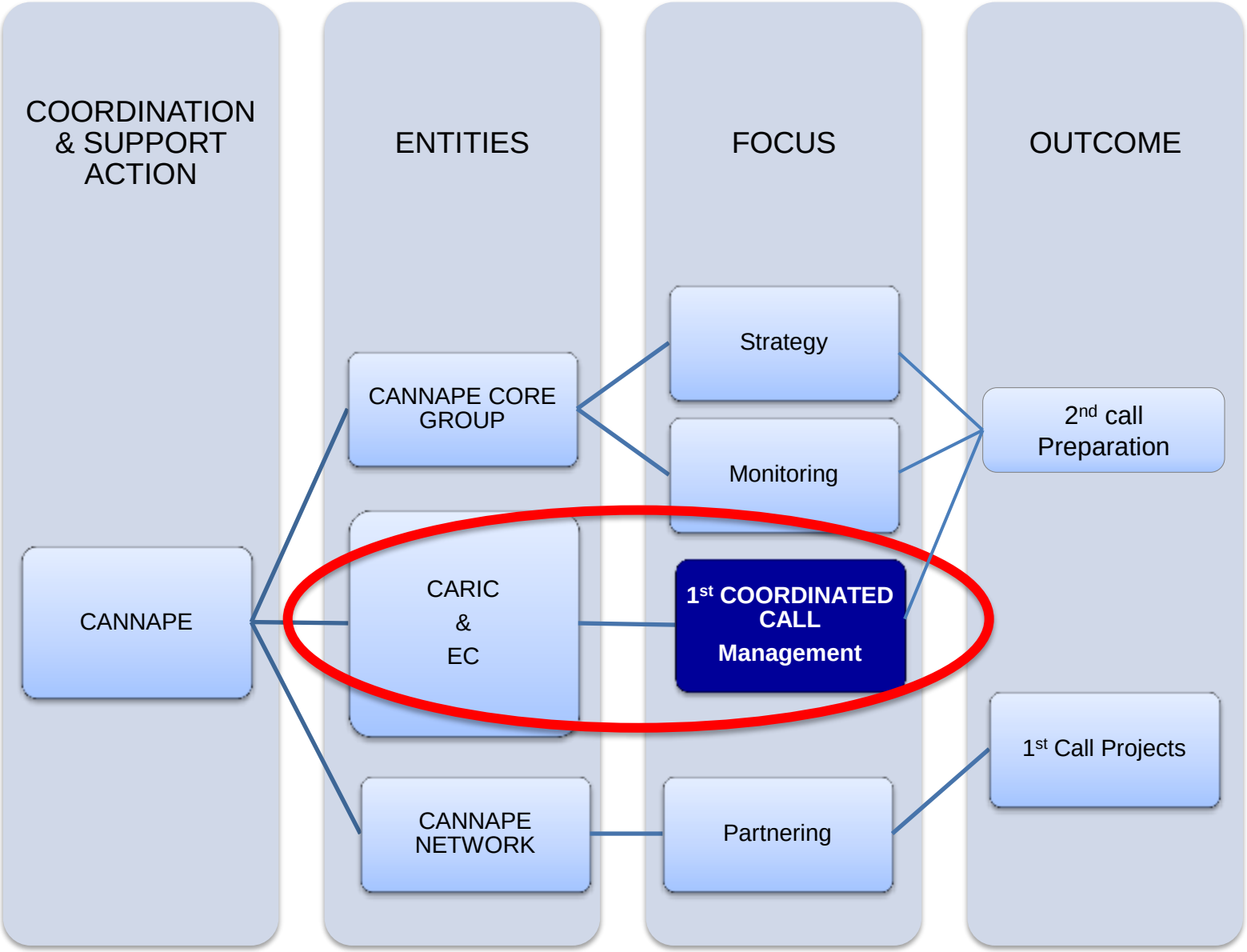
Priority Topics:

1. Reducing environmental impact through advanced design of novel aircraft configurations.
2. Reducing noise through novel materials application.
3. Resource-efficient high-performance development and manufacturing.
4. Reducing energy consumption through more electrical aircraft and systems integration

Coordinated Call

- In 2014 Canada and The European Commission agreed to provide joint funding to the order of €4 million over 3 years.
- The Consortium for Aerospace Research and Innovation in Canada (CARIC) will be responsible for the delivery and administration of the Coordinated call on the Canadian side


Launch of CANNAPE action
EU-Canada CARIC call publication
Call implementation
Projects set-up
Project course
2011
2012
2013
2014
2015
2016
PHASE 1
PHASE 2
PHASE 3
Projects agreement signature & start
Proposals
Submission – April 2015


COORDINATION & SUPPORT ACTION
ENTITIES
FOCUS
OUTCOME
CANNAPE
CANNAPE CORE GROUP
CARIC & EC
CANNAPE NETWORK
Strategy
Monitoring
1st COORDINATED CALL Management
Partnering
2nd call Preparation
1st Call Projects

Coordinated projects features

Eligibility Criteria

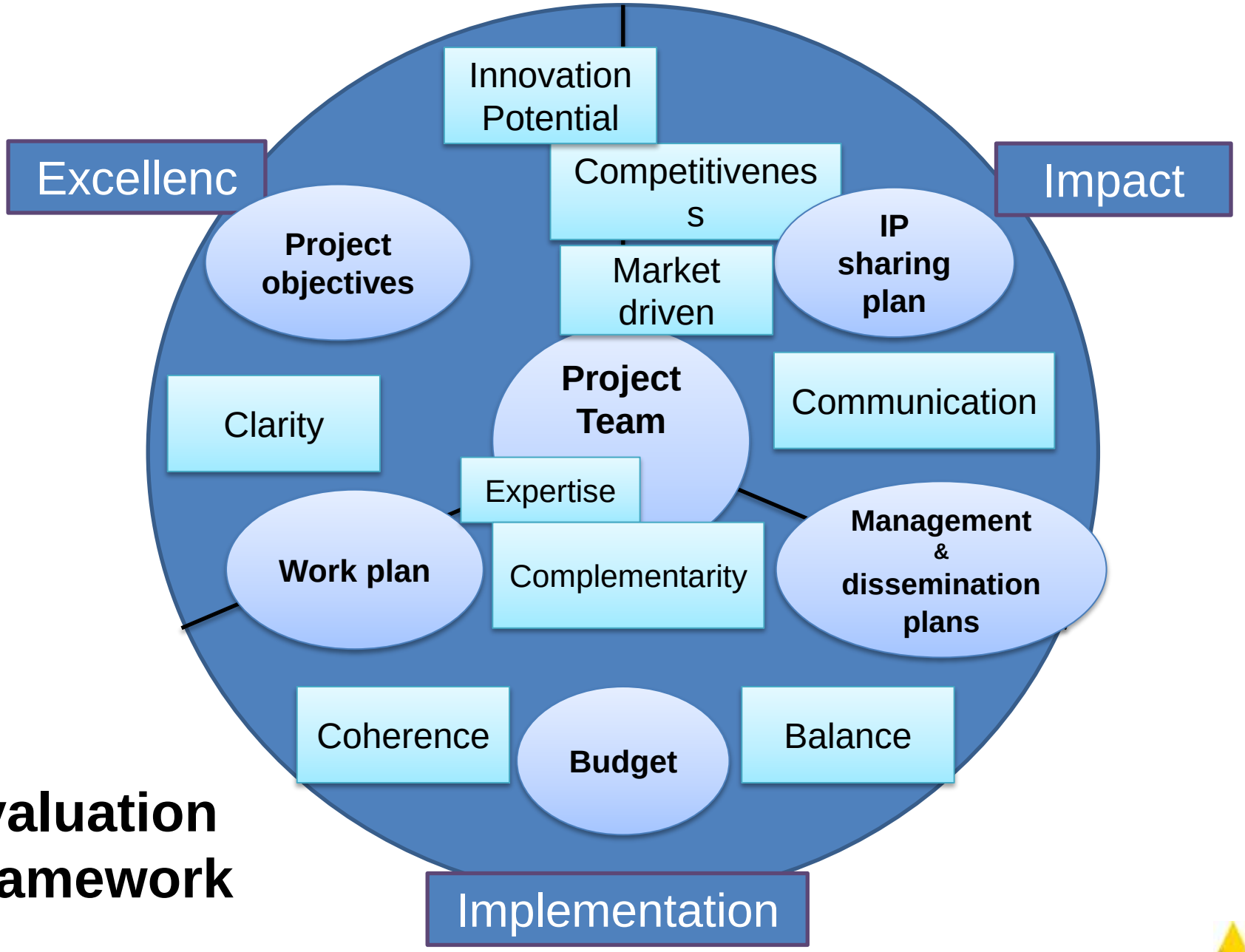
Canada-European Union Coordinated Call

Topic oriented	Projects aligned with one or more of the research topics
Activities	Applied research, proof of concept, development and integration, testing and validation on a small-scale prototype in a laboratory or simulated environment.
Partnership	**Canada:** minimum 2 industrial + 2 academic partners **EU:** minimum 3 independent organizations from 3 different EU member states **Min. 7 partners**
	Joint research proposal among Canadian and European partners Research activities coordination
Intellectual Property	Partners sign an International Project Coordination Agreement

Call Management

- Close coordination:
  - CARIC-European Commission
  - CARIC-National Science and Engineering Research Council of Canada
- ERA-CAN+ support, NCP Network
- 6 projects submitted
- 62 partners:
  - 29 in Canada (11 SMEs)
  - 33 in Europe
  - 8 countries involved

Evaluation Framework



Coordinated Call – Results

- ✓ **EPICEA - Electromagnetic Platform for lightweight Integration/Installation of electrical systems in Composite Electrical Aircraft**
  - Bombardier Aerospace, Solutions Isoneo, ETS, Polytechnique Montreal
  - ONERA, ARTTIC, AxesSim, Fokker Elmo, IDS Corpo

- ✓ **AMOS - Additive manufacturing optimization and simulation platform for repairing and re-manufacturing of aerospace components**
  - P&WC, Héroux-Devtek, Liburdi, McGill, UOttawa,
  - University of Sheffield, Ecole Centrale de Nantes, GKN Aerospace, DPS

- ✓ **PHOBIC2 ICE - Super-icephobic surfaces to prevent ice formation on aircraft**
  - P&WC, Plasmionique, Dema Aeronautics, UConcordia, Polytechnique Montreal
  - Technology Partner Fondation, Instituto nacioanl de Technica Aerospoacial, Consejo Superior de Incvestigaciones cientificas, Airbus Group

Timeline for projects set-up

Q3 Coordinated Evaluation and Decisions
Q4 2015
Projects signature
February 2016 projects start

Conclusion

- CANNAPE Coordinated Action – *The Catalyst*
- Successful Coordinated Call
- Increased Canadian & European Partnerships
- Promising base for future collaborations between Europe and Canada