

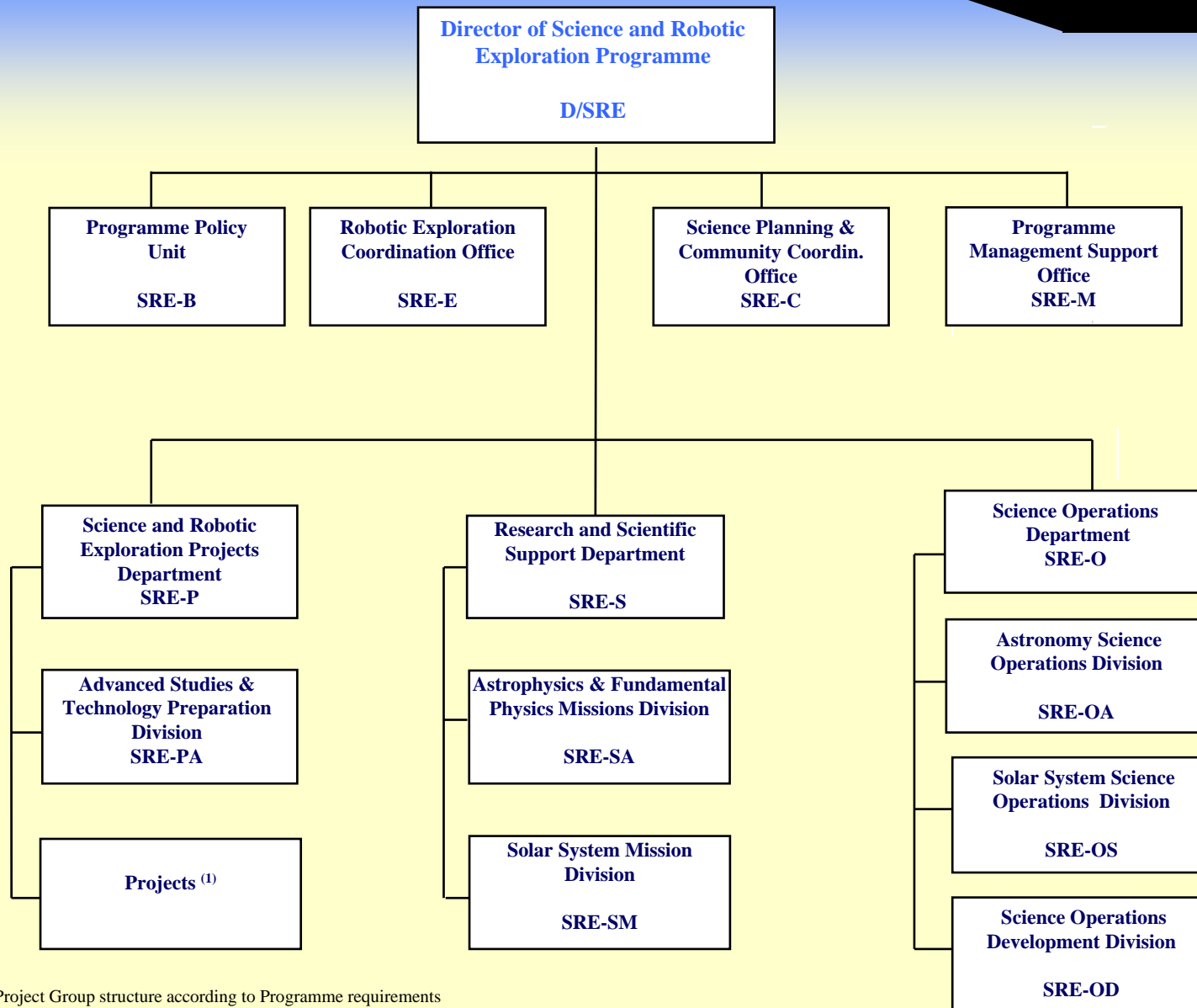
PRODEX Programme

&

ESA

H. Schroeven-Deceuninck - Head of the PRODEX Office

Hellenic Astronomical Conference – Athens – 24 September 2009



⁽¹⁾ Project Group structure according to Programme requirements

D/SRE Programme Management Support Office
B. Weymiens

**Budget & Programme Financial
Management Service**

R. Tosellini

**Information Systems,
Communication &
Education Support Service**

S. Ansari

**Project Control & Risk Mgmt
Service**

Z. El Hamel

PRODEX Office

H. Schroeven-Deceuninck

PROgramme de Développement d' EXpériences scientifiques

PRODEX

Scientific Experiment Development Programme

Optional Programme under the responsibility of the
Directorate of Science and Robotic Exploration (D/SRE)

In short ...

PRODEX was created in 1986

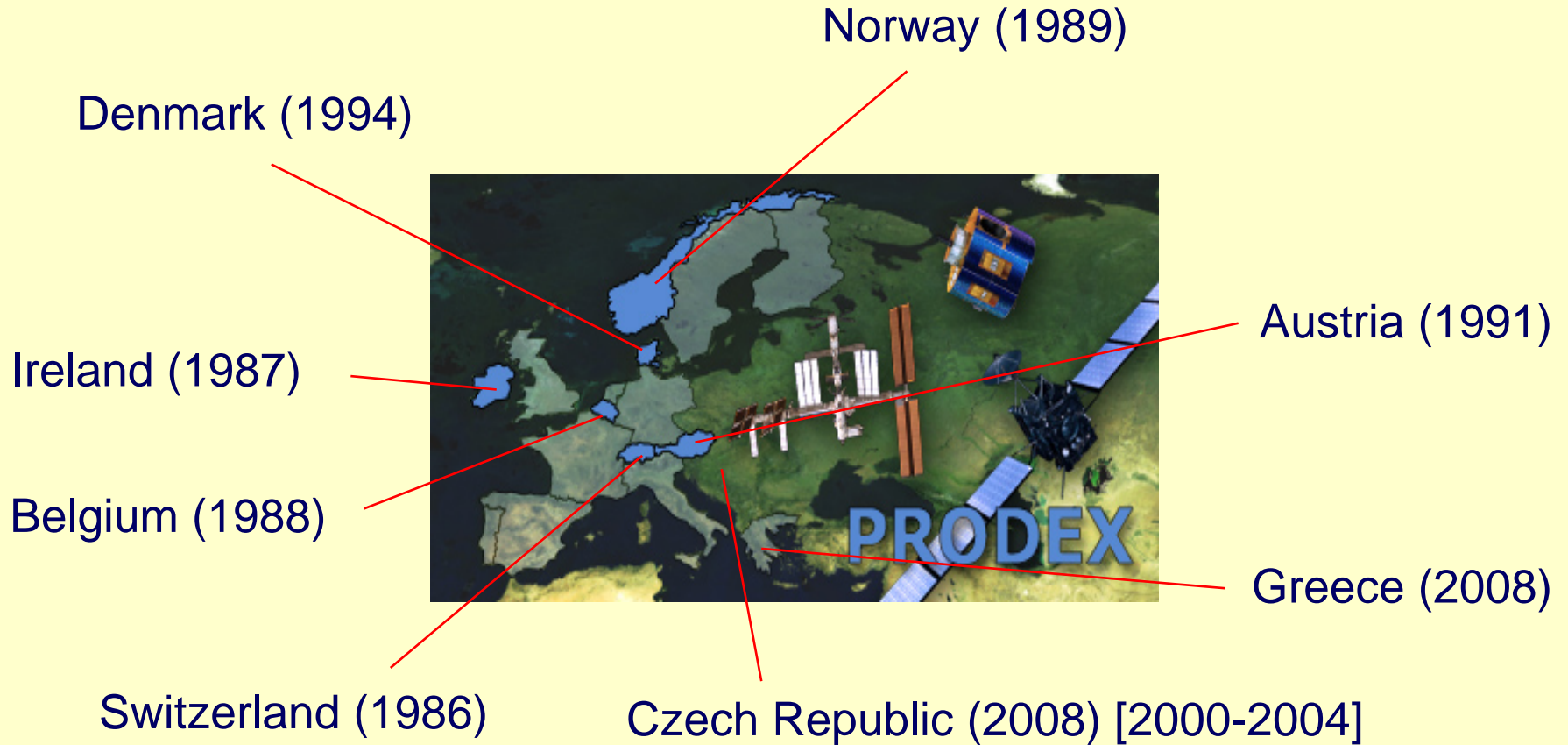
..... due to a need in small ESA member states

Main objective: funding for industrial development of experiments selected for ESA programme

Secondary objective(s): data analysis, HW for non-ESA programmes

Fields of space research: space science, earth observation, microgravity

Participating States



PRODEX

its framework

PRODEX is legally governed by:

- **ESA Council Resolution (ESA/C/LXXIV/Res.5)**
Approve the execution of PRODEX, in the framework of the Agency
- **PRODEX Declaration (ESA/C/LXXV/Dec.1, rev. 24 (Final))**
Describe the general objectives and the financial conditions of PRODEX

Legal Framework (2/3)

➤ **Implementing Rules** (ESA/C/PRODEX(2002)2)

Define the conditions governing the execution of PRODEX by the Agency

➤ **Other ESA Rules**

- ESA Convention and its Annexes
- Procurement and Contract Rules
- Intellectual Property Rules
- Use of ESA Facilities

Legal Framework (3/3)

The ESA Council acts as a Programme Board for all matters related to PRODEX.

- The Council shall :
 - (a) monitor and control the execution of PRODEX and take all decisions related to it;
 - (b) approve the annual budget of the Programme;
 - (c) take all necessary decisions concerning any reorientation of the objectives of the Programme.

- PRODEX Participating States Meeting

Objectives (1/3)

- to provide *funding for the development of scientific instruments or experiments* proposed by institutes or universities in the Participating States for use in the context of the scientific space programmes and missions of the Agency or of its Member States;
- to allow for the *participation of institutes or universities* located in the Participating States in the *execution of national scientific space programmes or missions of **Member States*** which have been considered by the Agency as meeting the overall objectives of its own Programmes;

Objectives (2/3)

- to allow for the *participation of the same* in the *execution of national scientific space programmes or missions of **non-Member States*** which have concluded co-operation agreements or arrangements with the Agency, as approved by the Council, and which have been considered by the Agency as meeting the overall objectives of its own Programmes;
- to foster relationships between scientific and industrial circles.

Objectives (3/3)

- PRODEX activities shall be carried out through contracts placed with industry, institutes or universities of the Participating State.

- The activities are defined as:
 - **experiment hardware** such as breadboard models, engineering models, flight and flight spare models, specific ground support equipment, and related software development;
 - **experiment software** development for the operation of a scientific mission or flight experiment;
 - **data exploitation** in the framework of scientific programmes or missions;
 - **temporary staff** hired by institutes or universities of the participating States for the purpose of the execution of the project(s), including travel cost associated with the performance of the institutes' or universities' project tasks.

Management Framework (1/2)

- The Agency is responsible for the overall technical and financial management of the Programme.
- The Agency shall make **accessible the available facilities and services of the Agency** as required to perform the approved activities (ref. ESA/C(99)11, add.1).
- The **industrial contracts** for the development of selected PRODEX instruments or experiments shall be **awarded to the industry or other entities of the participating States** which fund the corresponding work.
- As a rule, **fifty per cent** of the overall external expenditure of PRODEX for each participating State will be **allocated to its own industry** over the period of the financial commitment (five years).
- The PRODEX Programme shall be treated in the industrial return statistics of the Agency as a Programme with a **guaranteed return of 1**.

Management Framework (2/2)

- As a rule, the Agency, acting on behalf of the participating States, shall be the owner of the equipment produced under PRODEX for a period of 5 years after delivery.
- During that time however, the equipment funded by a participating State may be put at the disposal, free of charge, of the institute or university selected for their development upon request of that participating State.
- After the time period of five years, this institute or university shall become the owner of the said instrument or experiment.

PRODEX

Which topics?

Scientific disciplines (1/2)

Excellence of the national scientific community
Strategic points of national interest

- **Space science:** solar science, IR astronomy, X-ray astronomy, planetary science
- **Earth Observation:** atmospheric chemistry, monitoring and modeling of various parameters such as ice, sea, wind, forest - based on national interest.
- **Microgravity:** material science (e.g. X-ray diagnostics modules for MSL), physical science (various fluid science experiments), biology (e.g. PADIAC)

Scientific disciplines (2/2)

	Microgravity		Earth Observation		Space Science		Exploration	
	#	%	#	%	#	%	#	%
Austria	-	-	1	12%	2	88%	-	-
Belgium	27	18%	9	12%	37	69%	1	1%
Denmark	1	20%	-	-	3	51%	1	29%
Ireland	3	14%	-	-	6	86%	-	-
Norway	5	16%	8	51%	1	8%	2	25%
Switzerland	3	3%	1	9%	14	86%	3	2%

Hardware Developments (1/2)

Excellence of the national scientific community
Technology capabilities of industrial community
Strategic points of national interest

- Subsystem
- Complete Payload
- Test/Calibration Facility

→ Technical support from D/TEC

HW developments (1/2)

	Space Science Robotic Exploration	Earth Observation	Microgravity
Austria	Electron Drift Instrument [MMS] Active Spacecraft Potential Control instrument [MMS]	-	-
Denmark	MIRI Struts [JWST] Mars Surface Magnetic Observatory [ExoMars]	-	-
Ireland	MIRI Filters [JWST] PICAM – Low Voltage converter [BepiColombo]	-	-
Norway	AMASE Test Bed Langmuir Probe	-	-

HW developments (1/2)

	Space Science	Earth Observation	Microgravity
Belgium	MIRI – ICE [JWST] MIRI – IOC [JWST] LYRA [PROBA-2] SWAP [PROBA-2] SOIR [VEX] LARA [ExoMars] EUI [Solo] Scan Mechanism [Juno]	APEX [Airborne] Medusa [Airborne]	Freqbone [ISS]

HW developments (1/2)

	Space Science	Earth Observation	Microgravity
Switzerland	MIRI Contamination Control Cover [JWST] MIRI Harness [JWST] LYRA [PROBA-2] HARPS-N ISFEE [LisaPF] Premos-2 [Picard] Sovim [Solar-ISS] Filterwheel [Astro-H]	APEX [Airborne]	PADIAC Sacestre

HW developments (2/2)

	Hardware / Test Facility Development	Data Analysis Calibration Data Centres
Austria	2	1
Belgium	10	53
Denmark	2	3
Ireland	2	7
Norway	4	12
Switzerland	17	4

Project types

- Stand-alone project data analysis
- Stand-alone project HW development
- Consortium data analysis
- Consortium HW development

PRODEX

How does it work?

National selection - HW development

Science community

National Authority (GSRT)

Identify topics / collaborations

Inform science community

Respond to ESA AO

Identify national selection procedure

Await ESA selection

Submit selected proposals for PRODEX funding

Execute PRODEX selection procedure based on ESA evaluation

Delegation Approval

National selection – Data analysis

Science community

National Authority (GSRT)

Identify topics / collaborations

Inform science community

[Respond to ESA AO]

Identify national selection procedure

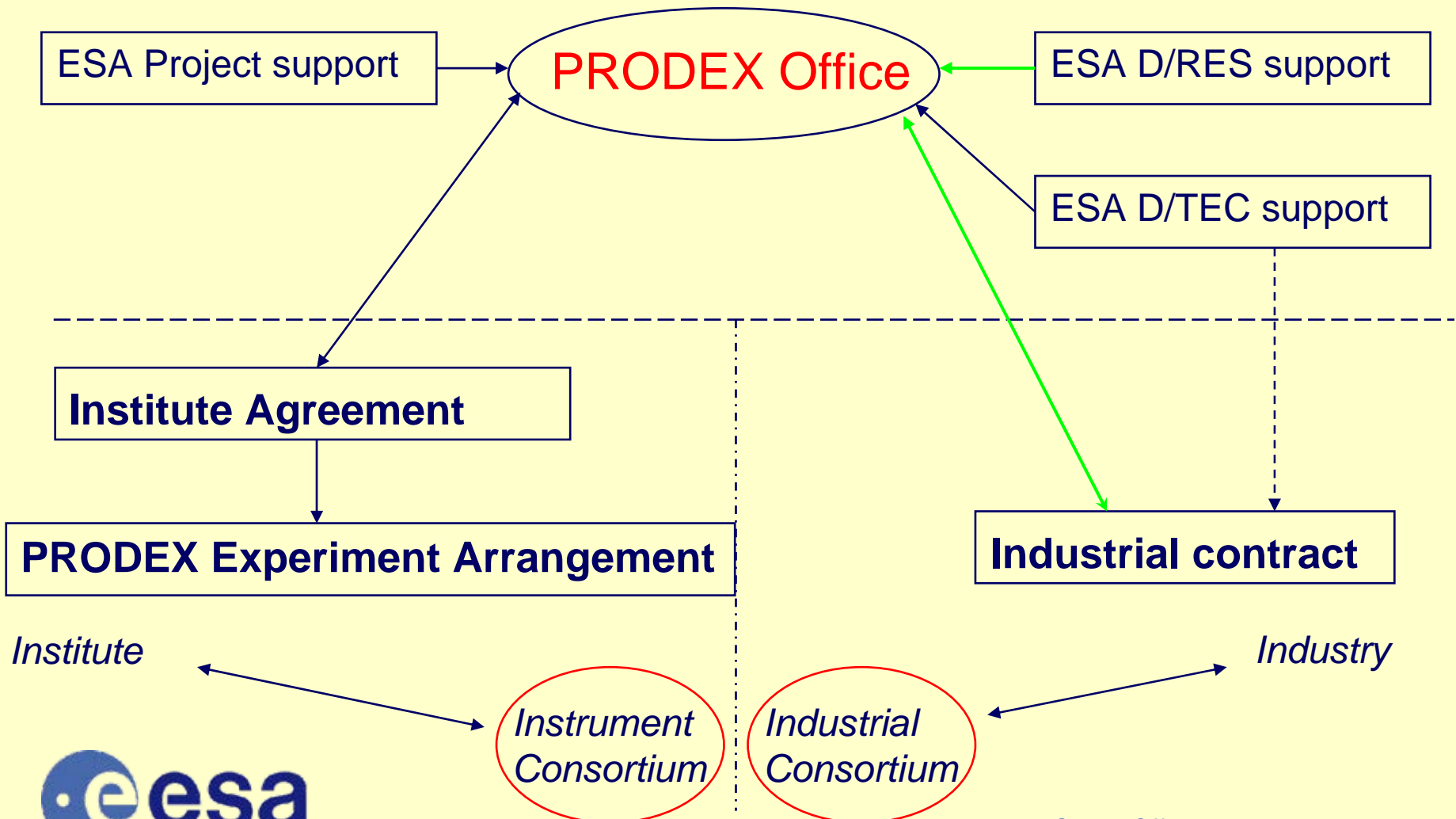
[Await ESA selection]

Submit selected proposals for PRODEX funding

Execute PRODEX selection procedure based on ESA evaluation

Delegation Approval

Nominal case



Nominal project example – MIRI (1/3)

MIRI= Mid-InfraRed Instrument (JWST)

European Consortium:

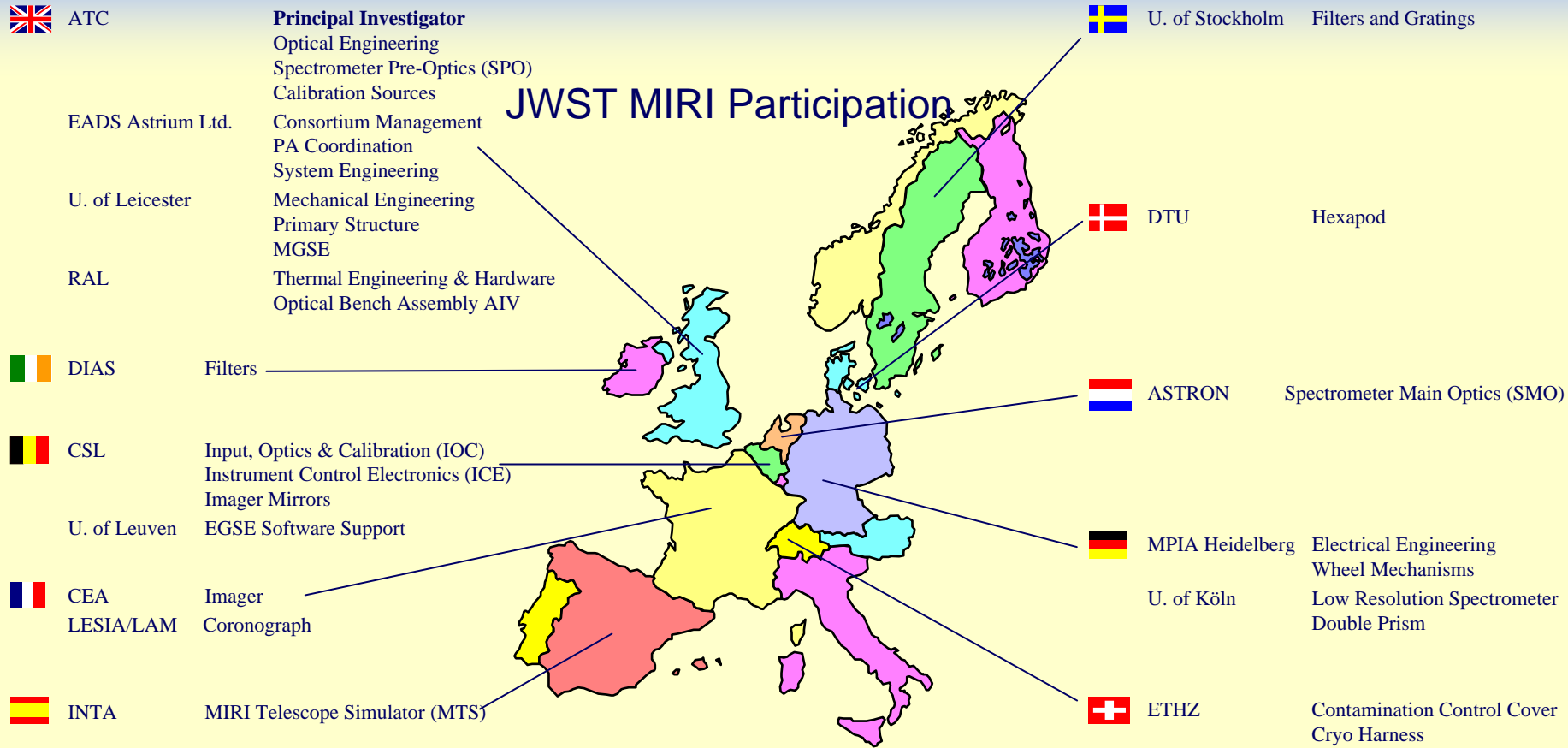
UK – D – F – **B** – E – **CH** – NL – SE – **IRL** – **DK**

4 PRODEX countries

Every country has lead scientific institute, with co-PI
Every country has minimum one industry

Nominal project example – MIRI (2/3)

JWST MIRI Participation



NASA/GSFC JWST Project Office
 Spacecraft
 Integrated Science Instrument Module (ISIM)

JPL
 Detector System
 Flight Software
 Cryocooler

ESA/ESTEC JWST Project Office
 PRODEX Office

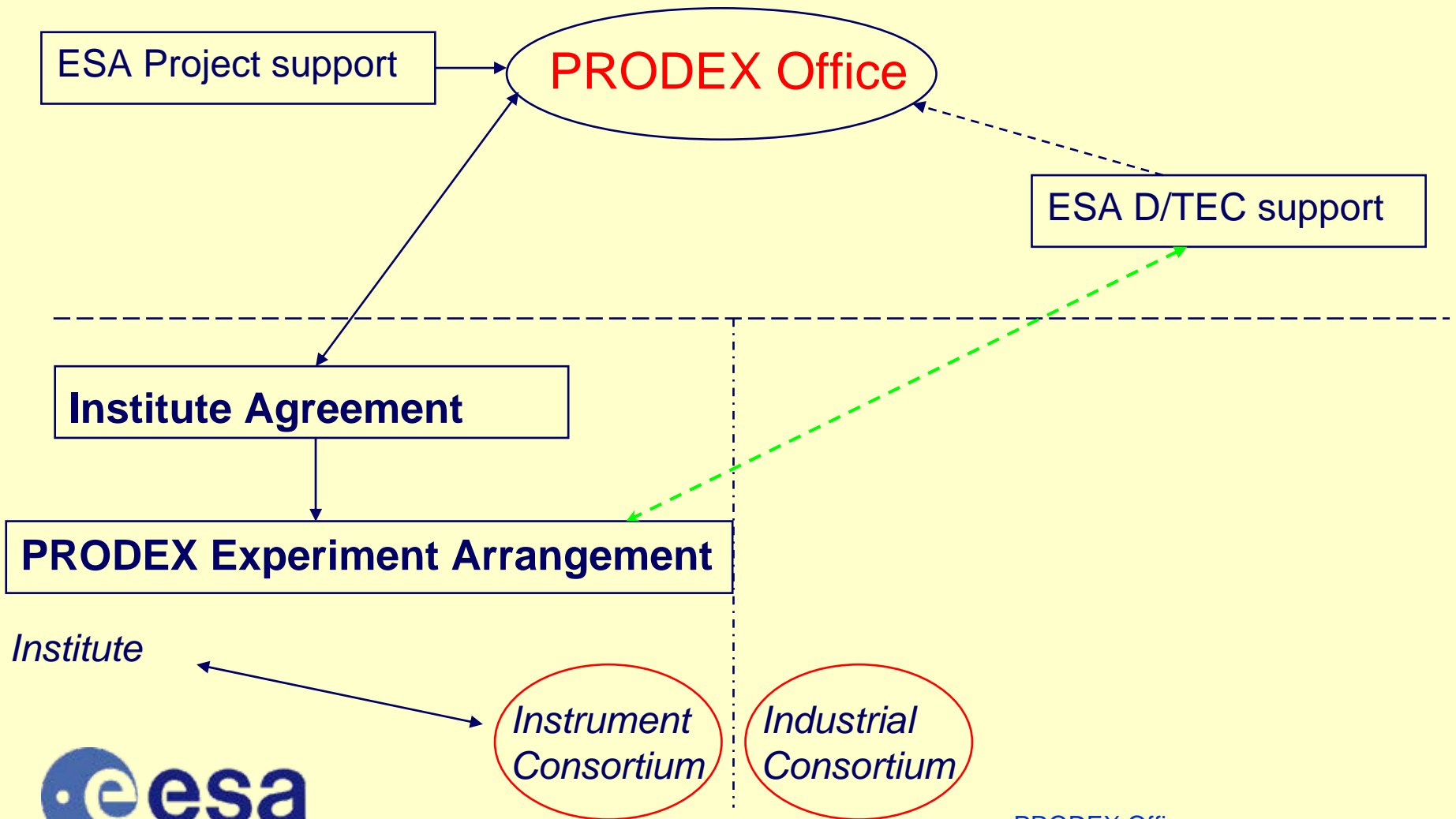
Nominal project example – MIRI (1/3)

PRODEX participation to MIRI development

All contracts placed via ESA/PRODEX

	Scientific institute	Industry
Belgium	Centre Spatial de Liege (CSL)	OIP ETCA
	University of Leuven (KUL)	-
Denmark	Danish Technical University (DTU)	ACE
Ireland	Dublin Institute for Advanced Studies (DIAS)	Univ Reading
Switzerland	Technical University Zurich (ETHZ)	Syderal RUAG Wallisellen

Case B: no industry



Case B - conditions

Projects with no industrial contracts

- Two types:
 - a. Hardware developed and built at institute
 - b. Data analysis and calibration activities

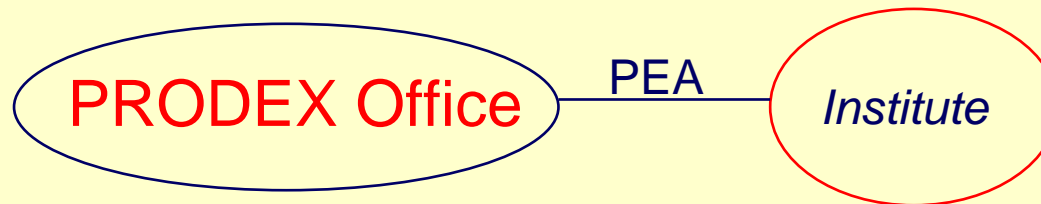
For cases a:

- Agreed management approach with responsible ESA project team
- SOW, proposal to be submitted to PRODEX Office
- Dedicated management follow-up by PRODEX Office
- Technical responsible of PRODEX Office interacts with counterpart in project team
- Support by D/TEC experts according to need

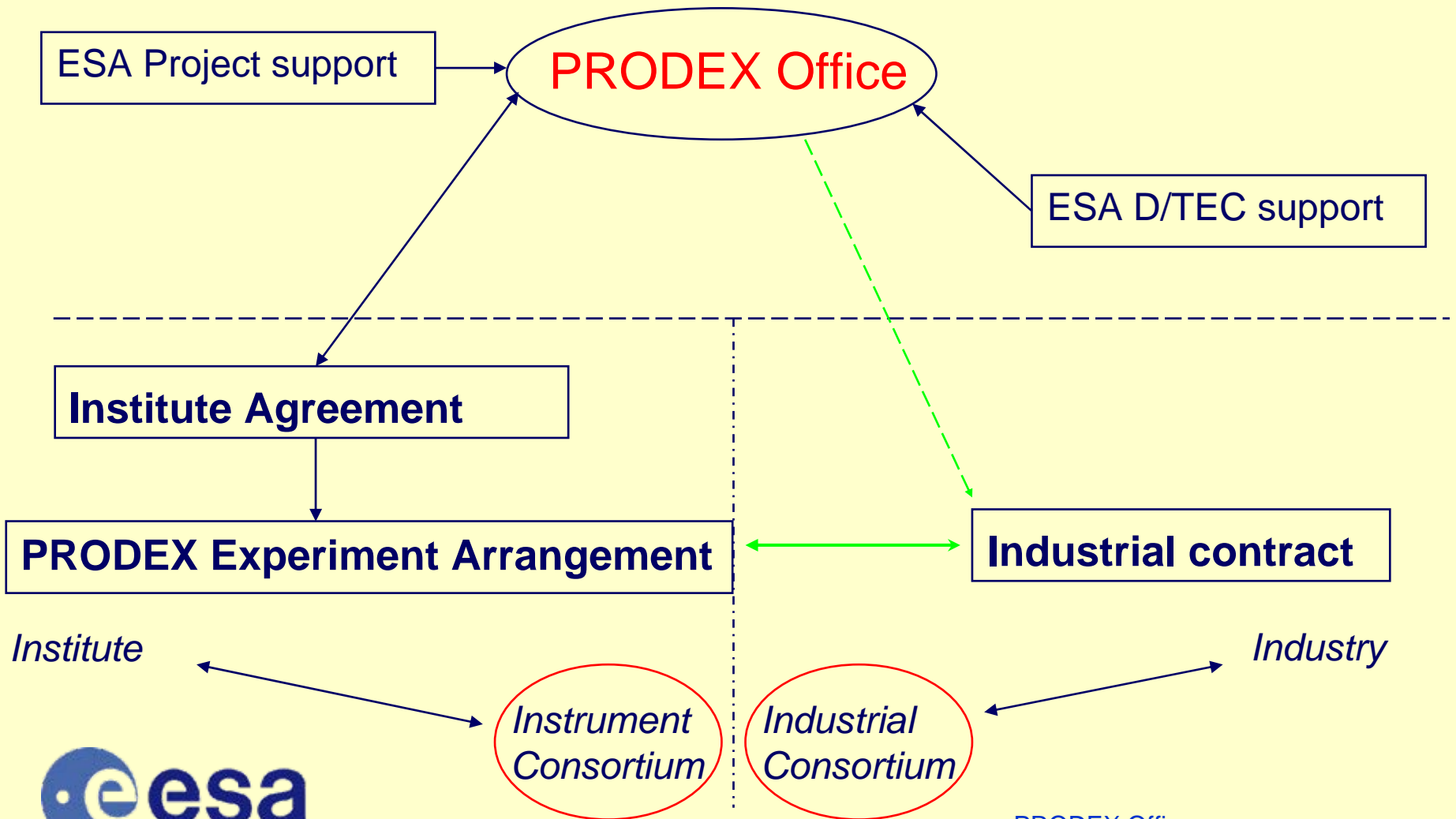
Case B – project examples

Any data analysis project

Hardware development in Institute e.g. breadboard



Case C: industry via institute

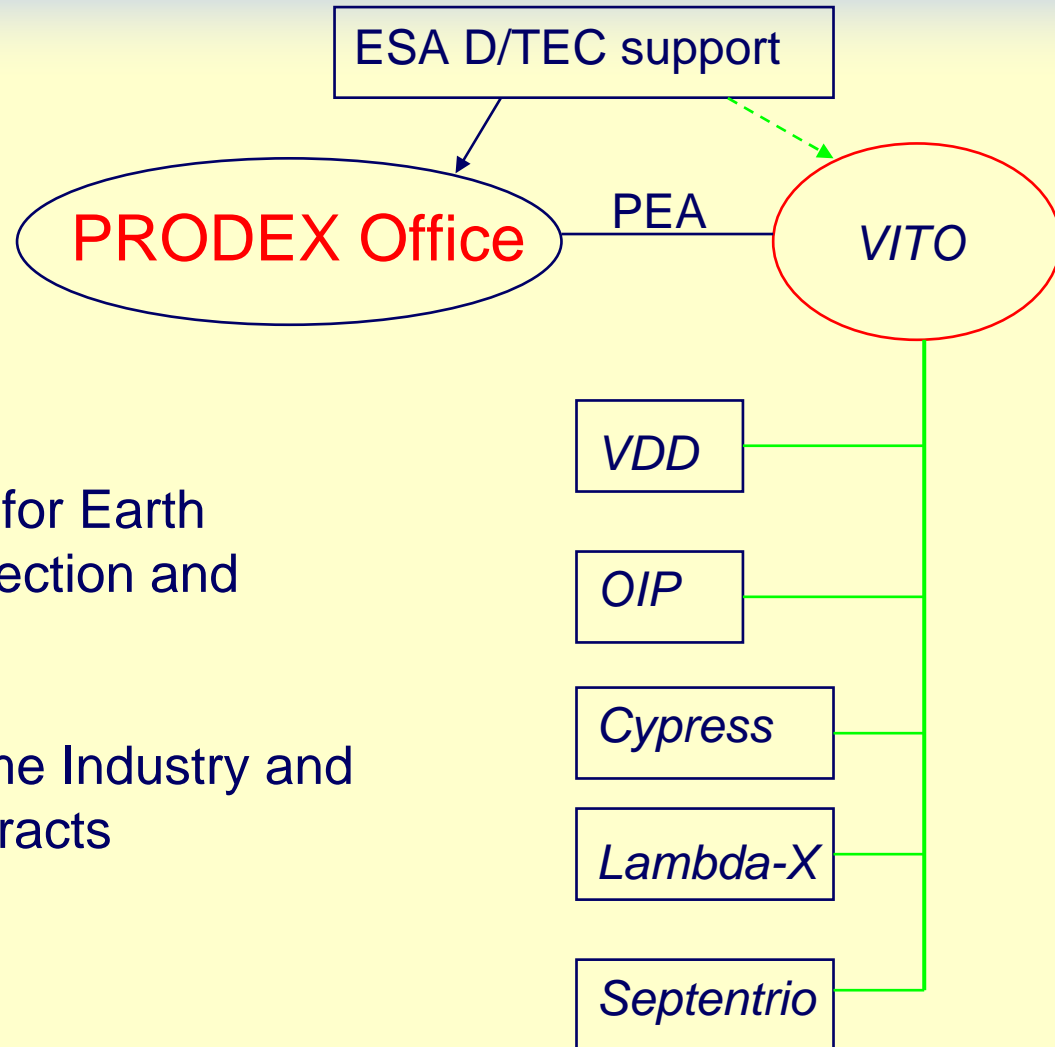


Case C - conditions

Projects with industrial contracts through Institute

- Needs approval from PRODEX with justified reasons
- Needs solid technical team in Institute
- SOW and specification need ESA approval/endorsement
- Evaluation – selection – negotiation with ESA participation
- Reduced project management follow-up
- Support by D/TEC experts according to need

Case C – project example Medusa

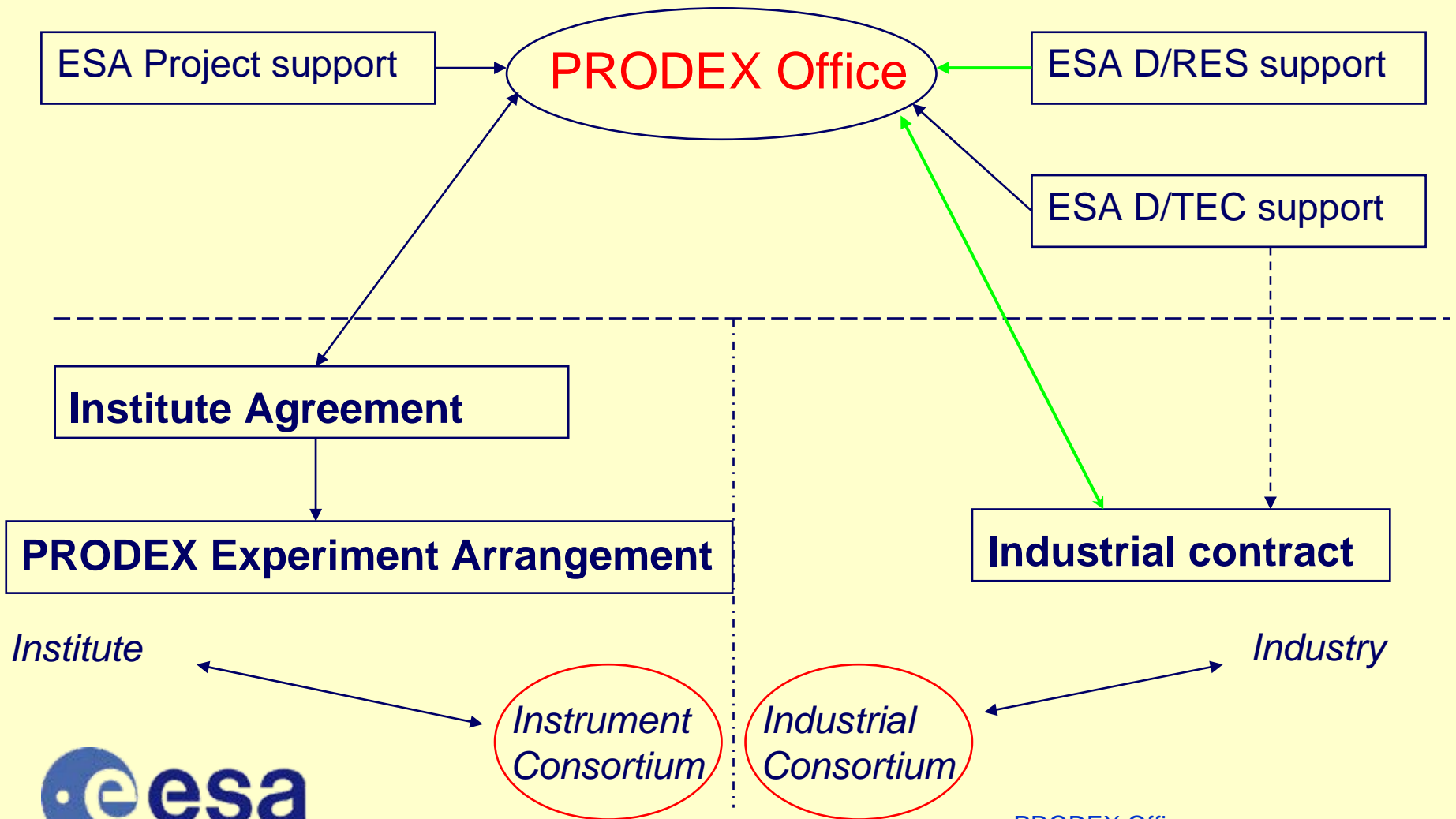


Medusa

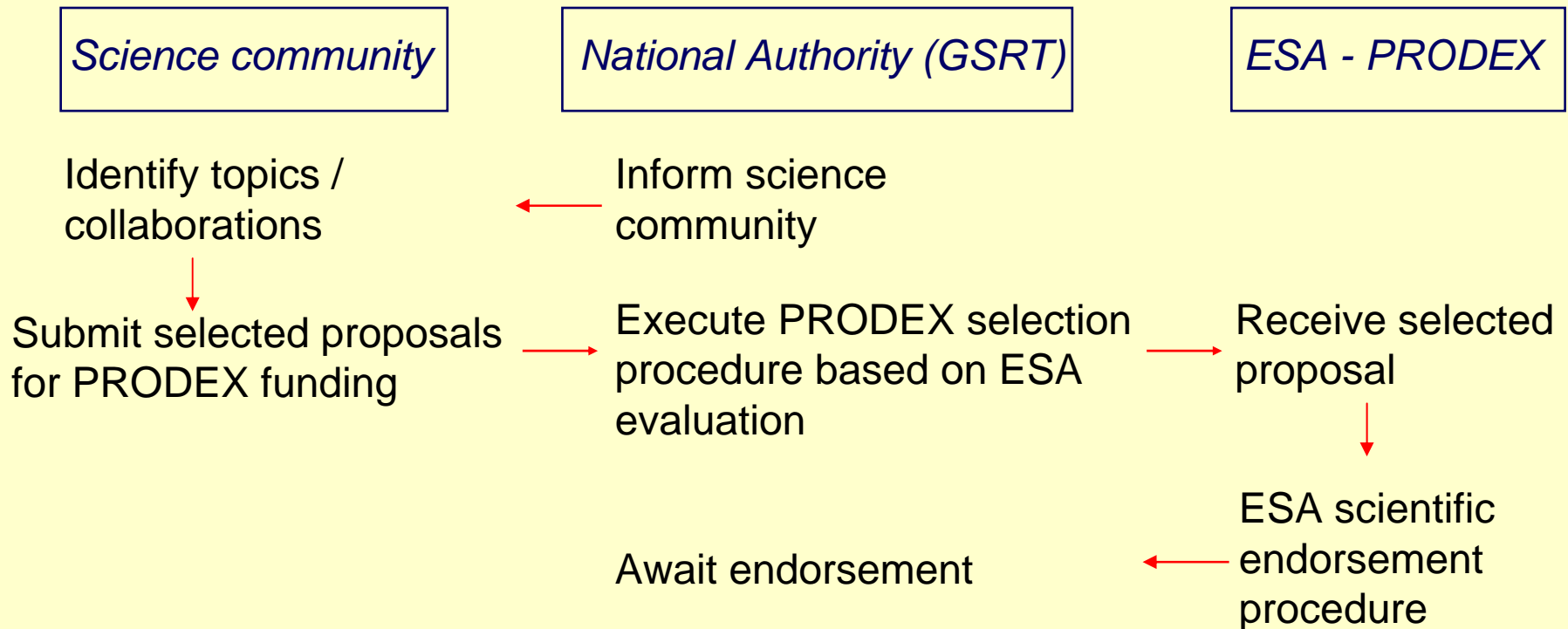
Airborne instrument for Earth observation (fire detection and prevention)

Institute acts as Prime Industry and has 5 industrial contracts

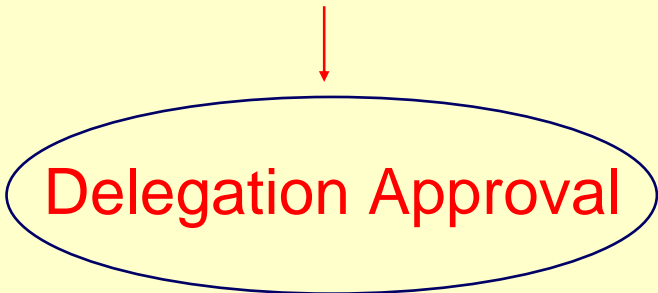
Case D: non-ESA programmes



National selection – Participation Non ESA mission



Extra time needed!



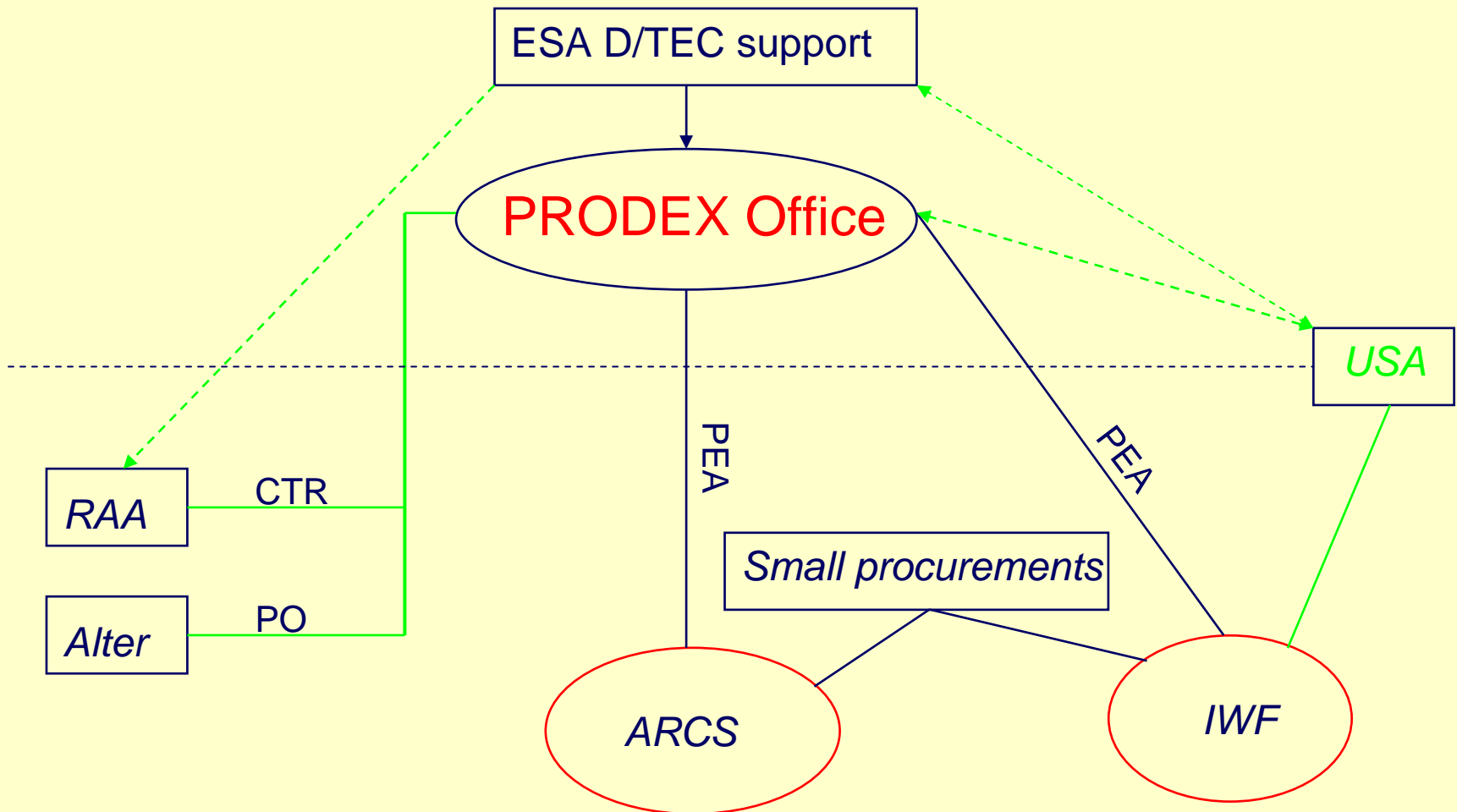
Case D - conditions

Projects for non-ESA missions

In principle, all identical as before with the following exceptions:

- Institutes have full responsibility for specifications and interfaces towards platform
- Management follow-up by PRODEX Office to be defined case by case
- Very limited support by D/TEC experts since mission mainly unknown

Case D – project example MMS



PRODEX

the running projects

Overview running projects

Around 200 contracts with institutes

Around 20 contracts with industry

[Projects Belgium](#)

[Projects Switzerland](#)

[Projects Norway](#)

[Projects Denmark](#)

[Projects Ireland](#)

[Projects Austria](#)

PRODEX

The people

Head of Office – H. Schroeven-Deceuninck

Administrative staff

Veronique Dowson
Asst. Programme Controller

Hilal Caglayan
Administrative Support

Technical/scientific staff

Cristina Bramanti
Experiment System Engineer

Sara Gidlund
Experiment Coordinator

Specificities for Greece

- Scientist will send his/her proposal **directly** to ESA – PRODEX Office
- Evaluation will be done by ESA with recommendation to National Authorities
- Further detailed information sessions will be organized.

Contact

Hilde Schroeven-Deceuninck

Head of PRODEX Office

Phone: +31 71 565 6478

Mobile: +31 627 319693

Fax: +31 71 565 4693

Email: hilde.schroeven-deceuninck@esa.int

ESTEC PRODEX Office

Keplerlaan 1

P.O. Box 299

NL-2200 AG Noordwijk ZH

The Netherlands

Website: sci.esa.int/prodex

Contact

Olga Sterghiou

Head International Organizations Division

Phone: +30 210 745 8116

Fax: +30 210 7714153

Email: oste@gsrt.gr

Ministry of Development

General Secretariat for Research & Technology (**GSRT**)

14-18 Mesogeion Avenue

GR-11510 Athens

Greece

Website: www.gsrt.gr