ARTES Applications Programme overview

Tony Sephton

APNorway workshop, Oslo
16/04/2015

Purpose of ESA

"To provide for and promote, for exclusively peaceful purposes, cooperation among European states in **space research** and **technology** and their **space applications**."

Article 2 of ESA Convention

ESA - 21 Member States and Growing

ESA has 21 Member States: 19 states of the EU (AT, BE, CZ, DE, DK, EE, ES, FI, FR, IT, GR, IE, LU, NL, PT, PL, RO, SE, UK) plus Norway and Switzerland.

7 other EU states have Cooperation Agreements with ESA: Slovenia, Hungary, Cyprus, Latvia, Lithuania, Malta and the Slovak Republic. Bulgaria is negotiating a Cooperation Agreement.

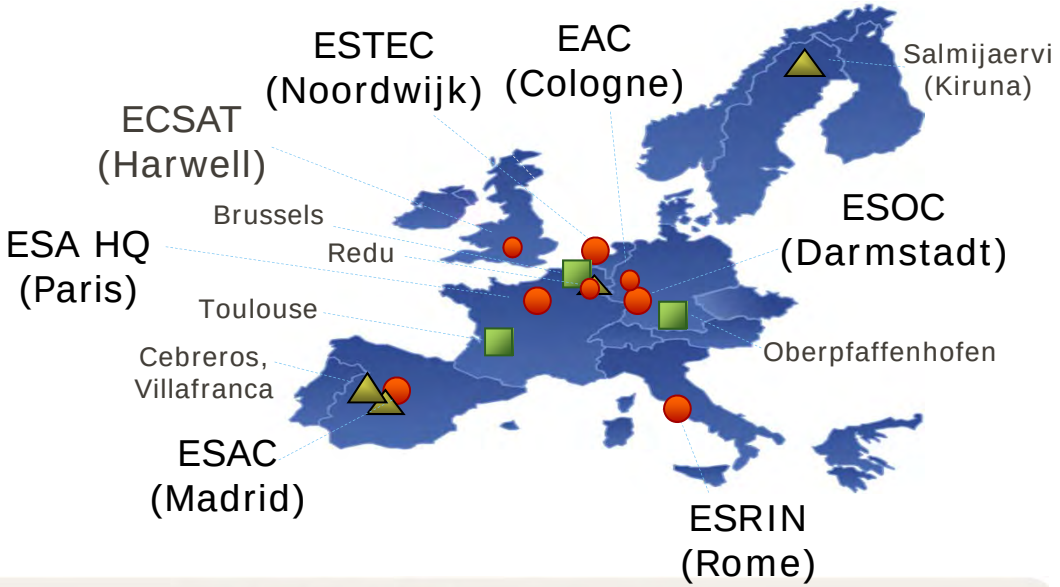
Canada takes part in some programmes under a Cooperation Agreement.

ESA'S locations

ESA sites/facilities

Offices

ESA ground stations



ECSAT

- **European Centre for Space Applications and Telecommunications (ECSAT)**
  - Harwell Science, Innovation and Business Campus, Oxfordshire.
  - c. 100 ESA employees will be based in Harwell by end of 2015.
- ECSAT support`s activities related to telecommunications, integrated applications, climate change, technology and science.
- ECSAT is built around and will be drawing maximum benefit from cooperation with organisations located on or linked to the Harwell campus.
  - Satellite Applications Catapult (hosts UK-AP), RAL, UKSA, Innovate UK.
  - Complemented by ESA Business Incubation Centre (BIC) Harwell.
- ECSAT will be working with communities in all Member States of ESA.

ESA Programmes

All Member States participate (on a GNP basis) in activities related to space science and a common set of programmes (**Mandatory** programmes).

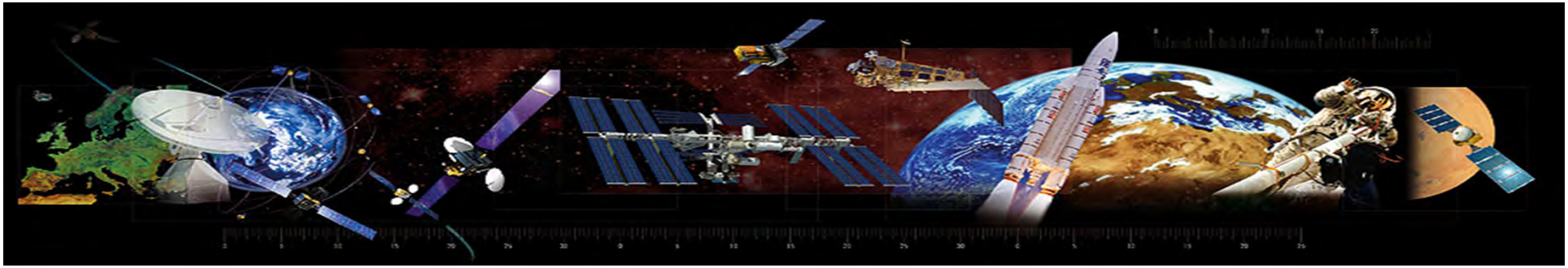
Mandatory

- General Budget: Future studies, technological research, education, common investments (facilities, laboratories, basic infrastructure)
- Science: Solar System science, astronomy and fundamental physics

In addition, Member States choose their level of participation in **Optional** programmes.

Optional

- Human Spaceflight
- Telecommunications & Integrated Applications
- Earth Observation
- Launchers
- Navigation
- Robotic Exploration
- Space Situational Awareness



ARTES Applications
Elements providing a steady stream of opportunities

ARTES 20
Integrated Applications Promotion (IAP)
(Multiple Space Integrated Applications
SatCom,SatNav, SatEO, HSF)

ARTES 3-4
Satcom Applications
(Capacity Building, Distance Learning,
B2B/B2C, Telemedicine etc)


Development


Water


Energy


Transport


Agriculture & Forestry

ARTES applications
≈300 projects


Tourism


Health


Maritime

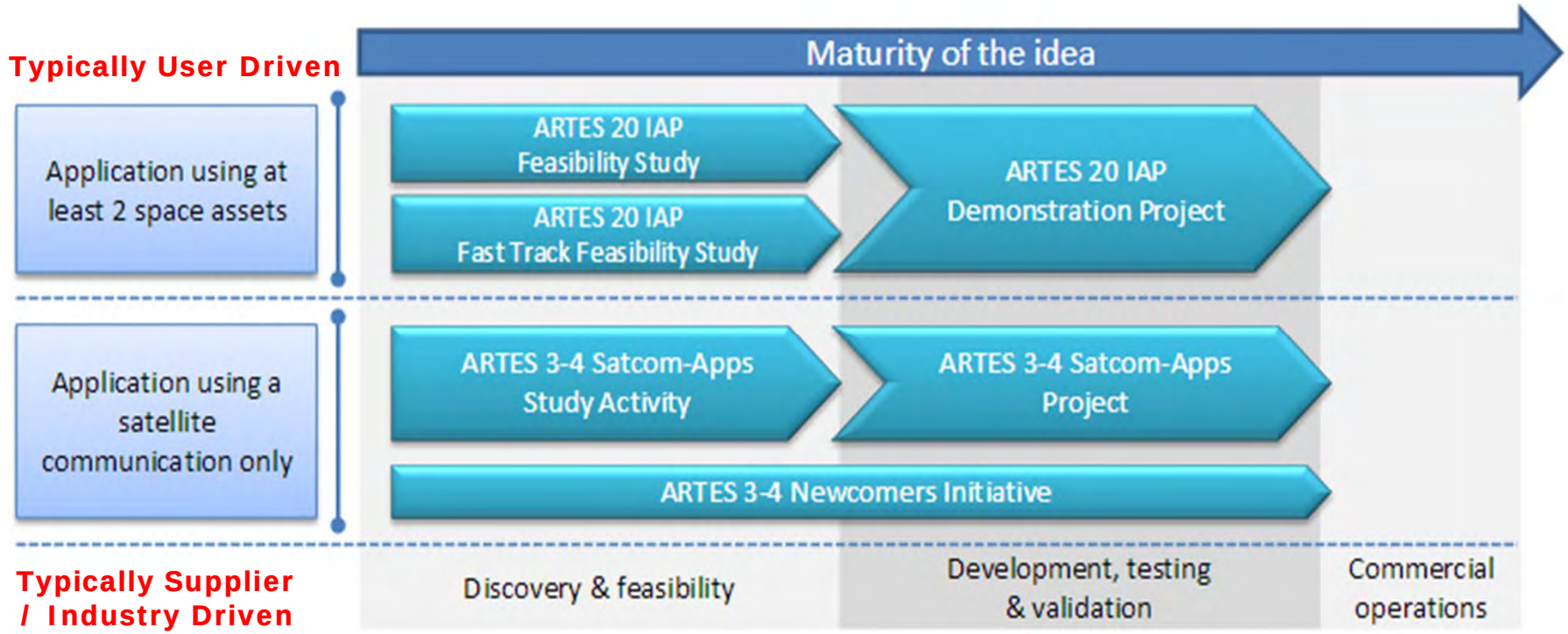

Security

Media & Broadcasting

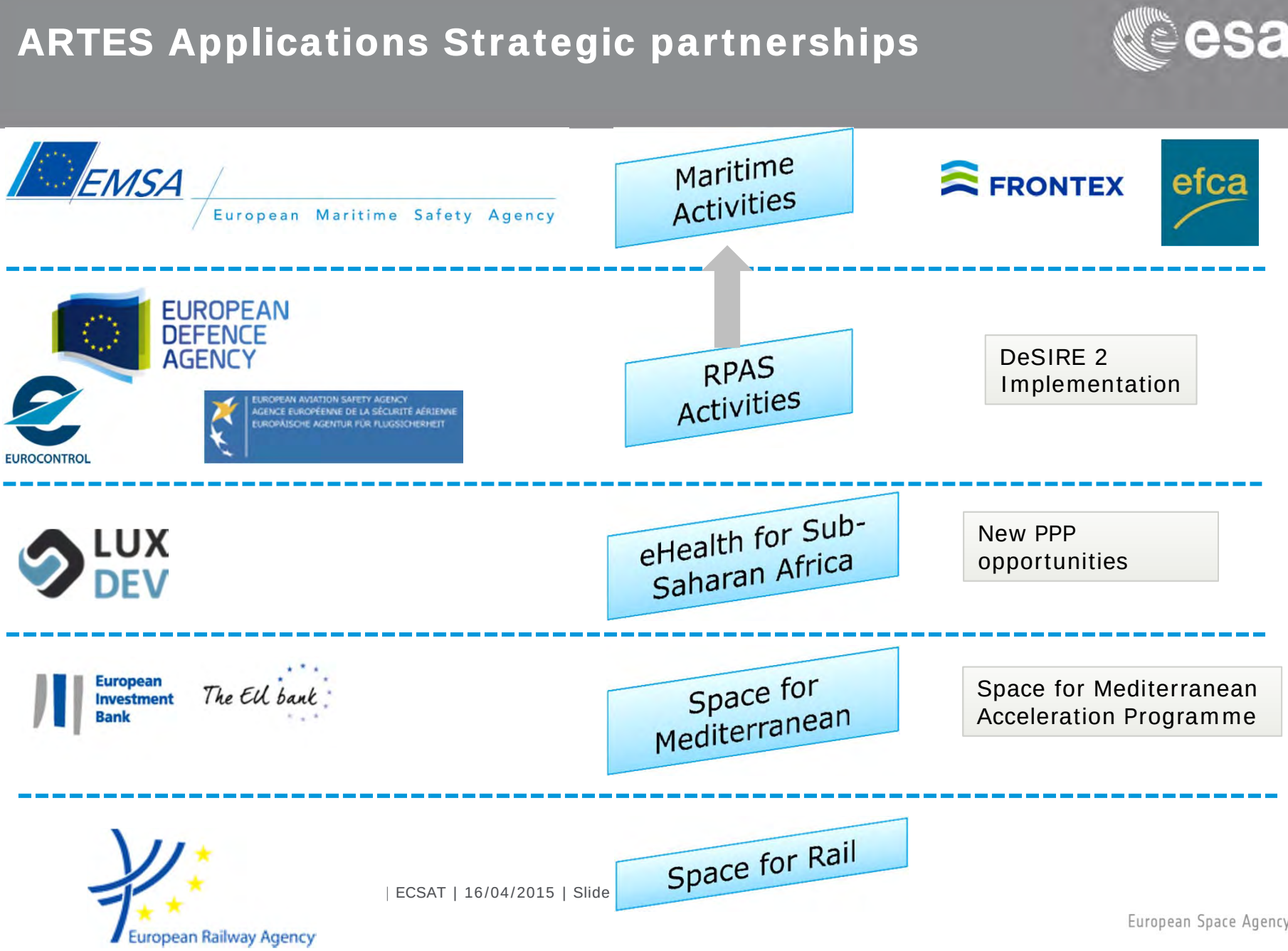
ARTES Missions:
(e.g. SAT-AIS, Alphasat, Hylas)
Apps. & Services

3rd Party Funding
(e.g EIB/EC/EDA/
EMSA/Partners)

ARTES Applications Funding Modes
https://artes-apps.esa.int/opportunities



ARTES Applications Strategic partnerships



ARTES 20 – Integrated Applications Promotion (IAP)

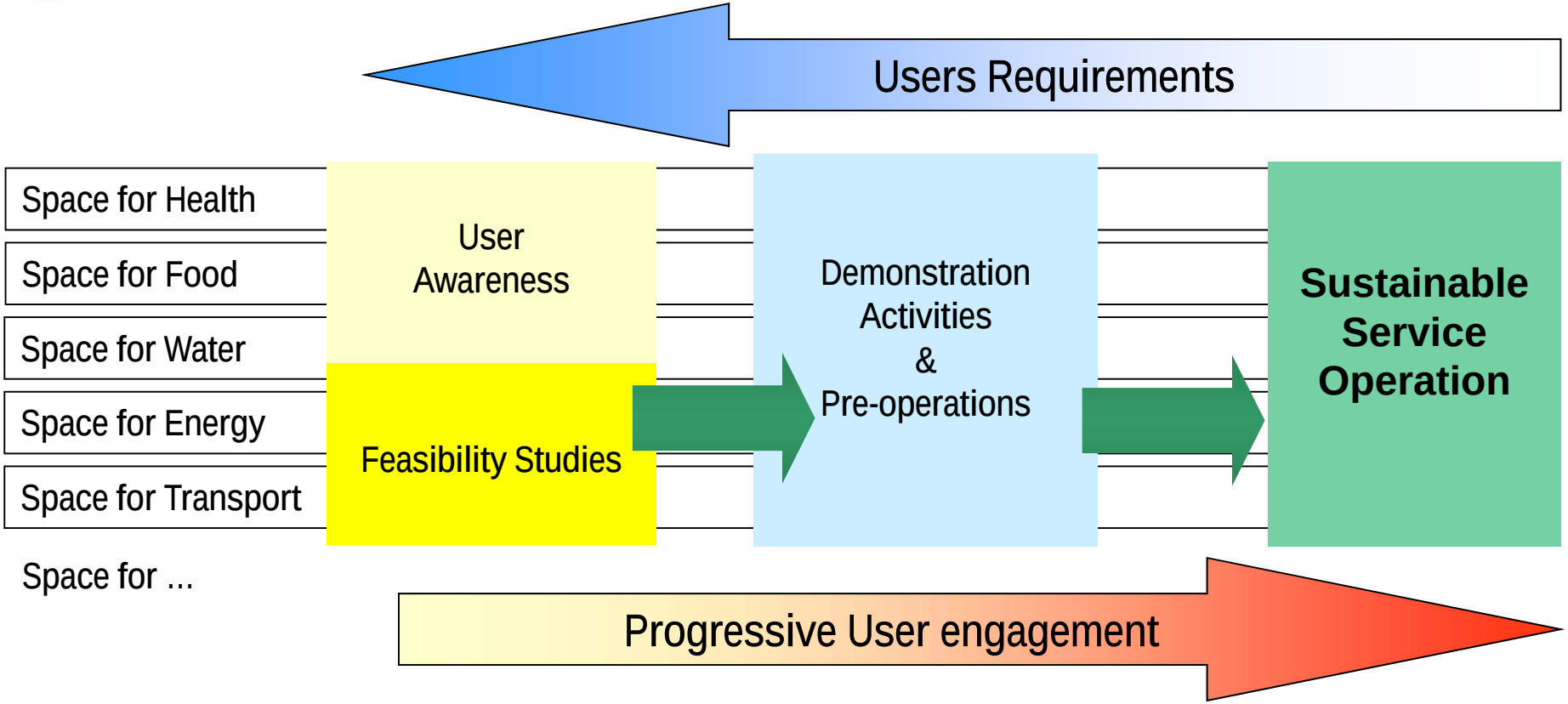
IAP is ESA's user driven programme to leverage on space investments and develop sustainable services

Objective

- Foster utilization of existing space capabilities involving at least 2 space assets
- Avoid research / new technologies
- Work in close partnership with users/customers
- Develop integrated and sustainable services

The open call for proposals can be found in ESA's Electronic Tendering System (EMITS); **http://emits.esa.int,** AO/1-6124

IAP Programme Structure



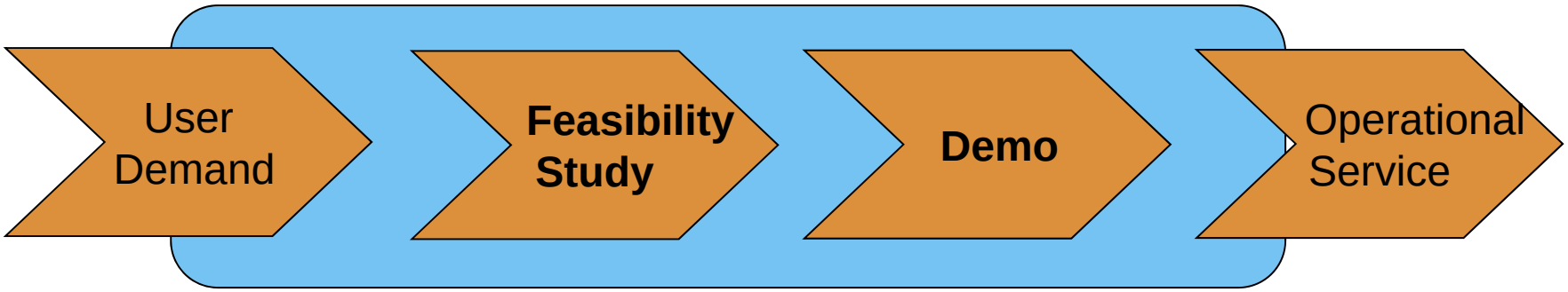
Awareness Activities: Understand, foster and organise stakeholder demands.

Feasibility Studies: Assess technical and economic viability of services.

Demonstration Projects: Implement pre-operational services in partnership with users.

ESA's Integrated Applications Promotion Programme (ARTES 20)

ESA IAP Involvement



User with demand but no contact to industry

Contact with ESA:

- artes-apps.esa.int
- Conferences
- Ambassadors
- Call for User Ideas

Funding by ESA:

- 100% - ESA initiated activities in close collaboration with users / stakeholders
- 50% * - Partner / industry initiated activities in close collaboration with users / stakeholders

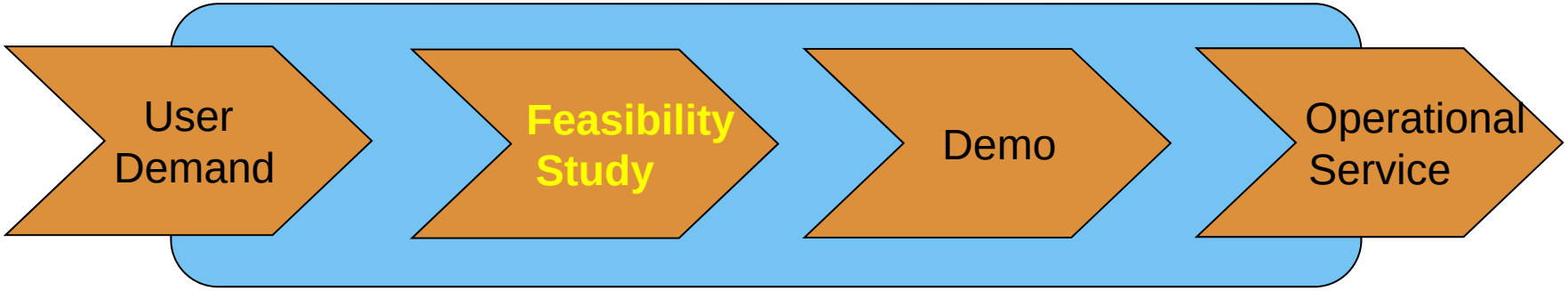
Funding by ESA:

- 50% - initiated by ESA or industry

Support, etc

* For Feasibility Studies only: Work carried out by Universities and research institutes and justifying no further commercial interest in the final solution may be funded 100% by the Agency.

ESA's IAP Programme (ARTES 20)
Programme workflow – Feasibility Studies



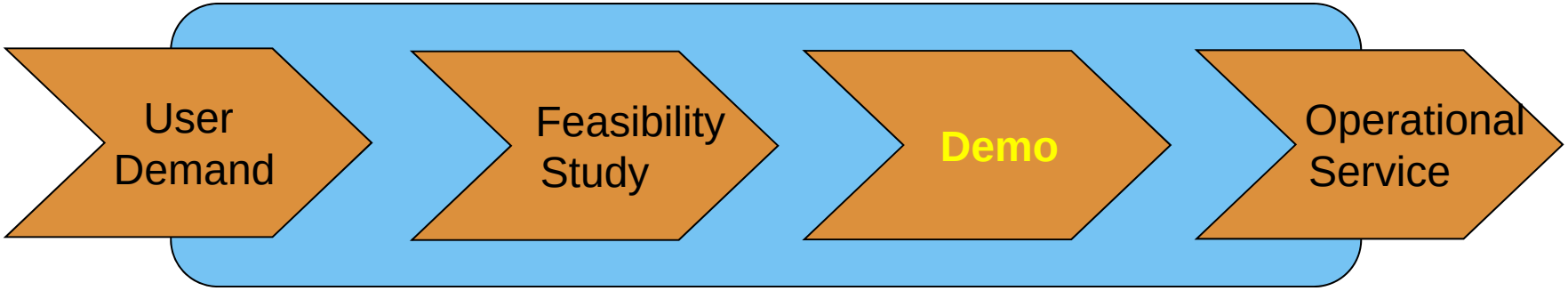
Feasibility Studies:

- Understanding what the user/customer needs.
- Assessing the viability and potential sustainability of service & system.
- ESA funding:
  - 100% when ESA initiates the study (dedicated competitive tenders (ITT))
  - 50% (*) when industry initiates the study (non competitive tender)(AO 6124)
    (* 100% for academia and R&D organisations up to max of 75% ESA funding)
- Are a "trust building" exercise between: Industry – Users/Customers – ESA.

Process for co-funded activities:

- Outline Proposal online tool: http://artes-apps.esa.int/artes-20-proposal-guide
- If mature, submission of full proposal according to AO 6124 (incl. letter of support).

ESA's IAP Programme (ARTES 20)
Programme workflow – Demo Projects



Demonstration Projects:

- Developing the concept into a service (technically and business plan).
- Pre-operational demonstration of the Service with representative users in their operational environment (can range from few months to 2 years).
- ESA funding is always 50% of the project cost.
- Important success factor is user / customer 'Willingness to Pay' at project end.

Process:

- Can be initiated from a feasibility study or can be inserted directly.
- Outline proposal online tool: http://telecom.esa.int/opdt/artesapps/artes20demo
- If mature, submission of full proposal according to AO 6124 (incl. letter of support).

ARTES 3-4 – Satcom Applications

The ARTES 3-4 Satcom Application programme supports the adoption and utilization of satellite communications for sustainable applications and services

Objective

- Improve and promote Satcom solutions for everyday use.
- Provide pilot services leading to sustainable services.

The open call for proposals can be found in ESA's Electronic Tendering System (EMITS); **http://emits.esa.int,** AO/1-5891

ARTES Application Activities
Outline Proposal Development Tool

artes applications

HOME | OPPORTUNITIES | PROJECTS | COMMUNITY PORTAL

ARTES Applications Portal
- About ARTES Applications
- Event Calendar
- News Archive
- Documents

ARTES 20 Integrated Applications Promotion
- Overview
- Working with ARTES 20 IAP
- Funding Schemes
- Proposal Guide

ARTES 3-4 Satcom Applications
- Overview
- Working with ARTES 3-4 SATCOM-APPS
- Funding Schemes
- Proposal Guide

Media
- Videos

Contact & Support
- Contact
- National Delegations
- Newsletter
- Register
- FAQ

OUTLINE PROPOSAL DEVELOPMENT TOOL FOR ARTES APPLICATIONS

19 February 2014 - Last updated at 04 March 2014 - 10:30

To apply to the ARTES Applications programmes, it is mandatory that bidders submit an Outline Proposal before submitting a Full Proposal as a means for the bidder to initiate a dialogue with the ESA ARTES Applications Programme Office on the content of the planned activity. This approach allows for clarification of the eligibility of the proposed idea, as well as allowing for early feedback on the content of the technical and business parts before the bidder starts preparation of the Full Proposal.

The Outline Proposal needs to provide the following information:

1. System/Service Overview
2. Major Project Stakeholders
3. Service Value Chain
4. Competitive Positioning
5. Market Analysis
6. Financial Indicators
7. User Requirements
8. System/Service Architecture
9. Implementation Approach
10. Pilot Service
11. Finance, Management & Administrative (FMA)

Modules of the Outline Proposal Development Tool for ARTES Applications

The Outline Proposal Development Tool has been designed to help preparing these topics. There are specific tools and templates for each topic, along with step-by-step guidance on how to write each section of the Outline Proposal. Eleven modules assist the proposal author by addressing a specific section of the Outline Proposal document. Inside each module can be found tutorials, tools, worksheets, tips and techniques for preparing the Outline Proposal.

Bidders are encouraged to work through each module to gain maximum value, but may also select only those modules of specific interest.

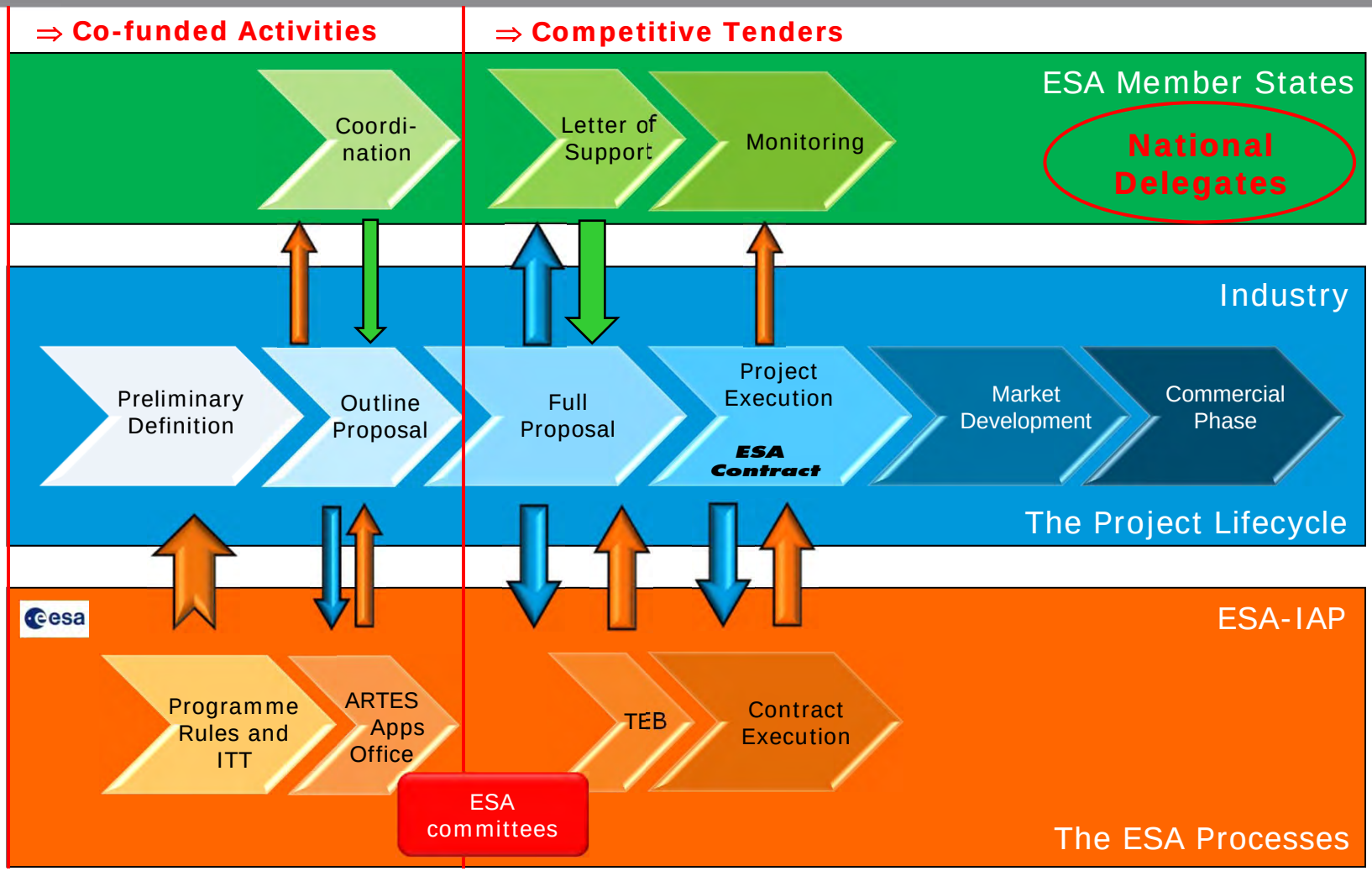
The Outline Proposal Development Tool is online on the ESA Telecom website, and is accessible via the URLs:

http://telecom.esa.int/opdt/artesapps/artes20demo/ for **ARTES 20 Demonstration Projects**

http://telecom.esa.int/opdt/artesapps/artes34satcom/ for **ARTES 3-4 Satcom Applications Projects**

Access is granted to users who registered at the ESA Telecom website. New users can register here.

ESA's IAP Programme (ARTES 20)
Project Lifecycle & ESA Processes



ESA expects all applicants to ARTES Applications programmes to…

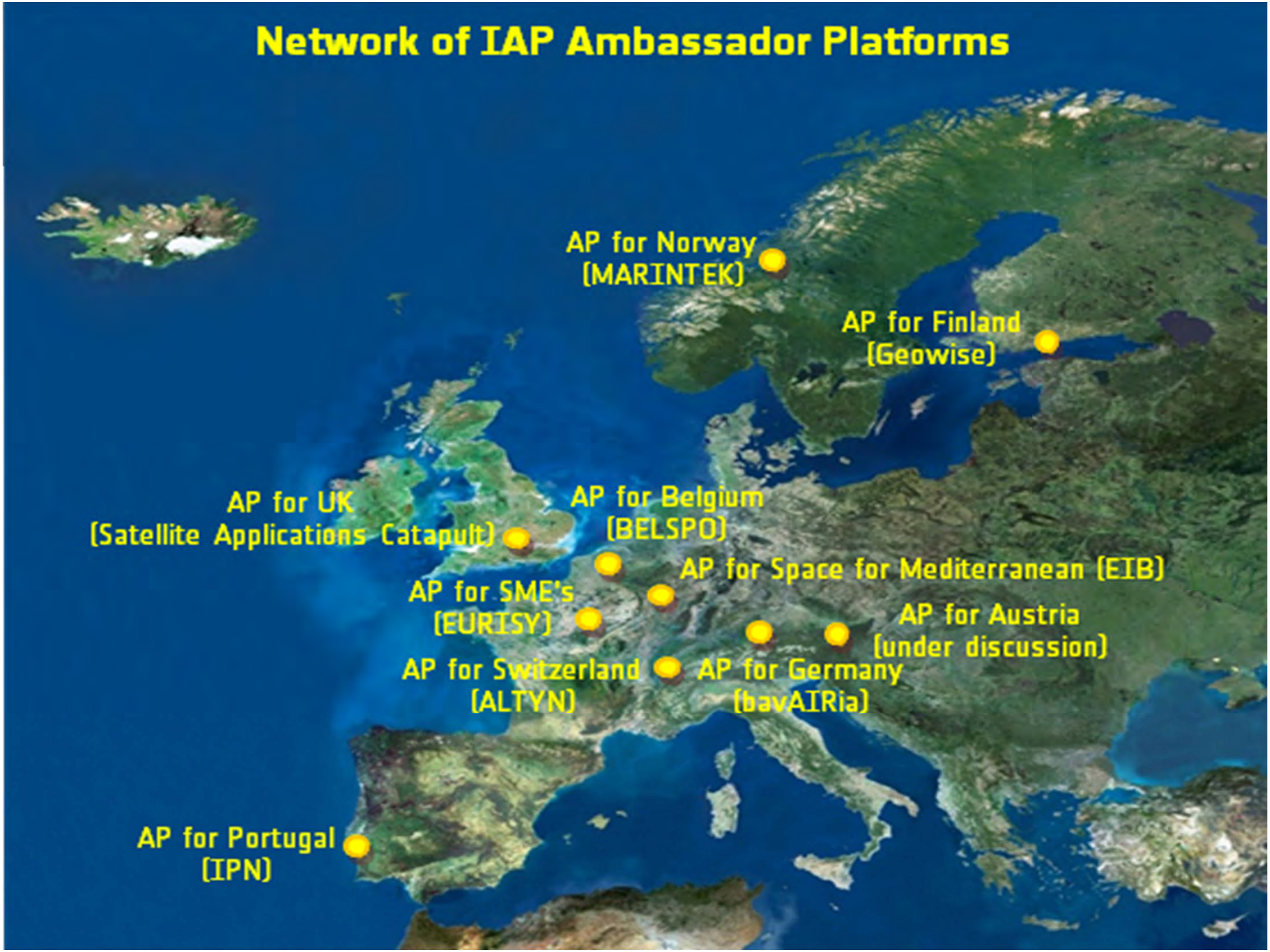
- **Identify the user community and the needs/demands** that could trigger a new sustainable service.
- **Identify the gaps** that prevent the users to do their job optimally or to expand … maybe there is a chance for space systems to fill the gaps.
- **Come to us** with their idea and **we discuss together** if and where space can help, **identifying the best route** through the system of ESA programmes (SatCom, Integrated Applications, others).
- Get in **contact with their national ESA delegation**, as they are the ones needed to support the activity as well.
- Be aware that there is a **requirement for co-funding** for both industries and user groups.

Points to pay special attention to …

- The involvement of the **stakeholders / users** in most of the tasks is indispensable: it needs to be explained how this involvement is done. (ARTES 20)
- Experience and **completeness of the team**: it needs to be explained which know-how is already in the team, but also which know-how is missing and how this will be acquired (training, new partner, external service, advisor, etc).
- The identification / involvement of a potential **service provider** is highly recommended for FS and indispensable for DP (ideal case: the service provider is the prime).
- The **viability analysis** is often done by technical persons which may be inappropriate if they do not have the know-how. (ARTES 20)
- The coordination with the **national delegations** related to the consortium partners has to be established from the very beginning, as their approval procedures to issue the required authorisation letters need time as well.

Selection Criteria

- **Strong user needs, interest & involvement.** (ARTES 20)
- Include the **utilisation of two or more space assets.** (ARTES 20)
- Provide evidence of **clear added value** (w.r.t. state of the art of the service, and of including the space component).
- Demonstrate **potential for sustainability**.
- Proven **strength in background and experience** (credibility) of the bidding team with respect to the proposed activity.
- And only for Demonstration Projects:
  Demonstrate the need for and the representativeness of the pre-operational service (incl. scalability).


Network of IAP Ambassador Platforms
AP for Norway
(MARINTEK)
AP for Finland
(Geowise)
AP for UK
(Satellite Applications Catapult)
AP for Belgium
(BELSPO)
AP for Space for Mediterranean (EIB)
AP for SME's
(EURISY)
AP for Austria
(under discussion)
AP for Switzerland
(ALTYN)
AP for Germany
(bavAIRia)
AP for Portugal
(IPN)

ARTES Applications portal – artes-apps.esa.int

HOME
News, Funding Schemes, Proposal Guide, Event Calendar

OPPORTUNITIES
Open Competitions, Call for Proposals, Call for Ideas

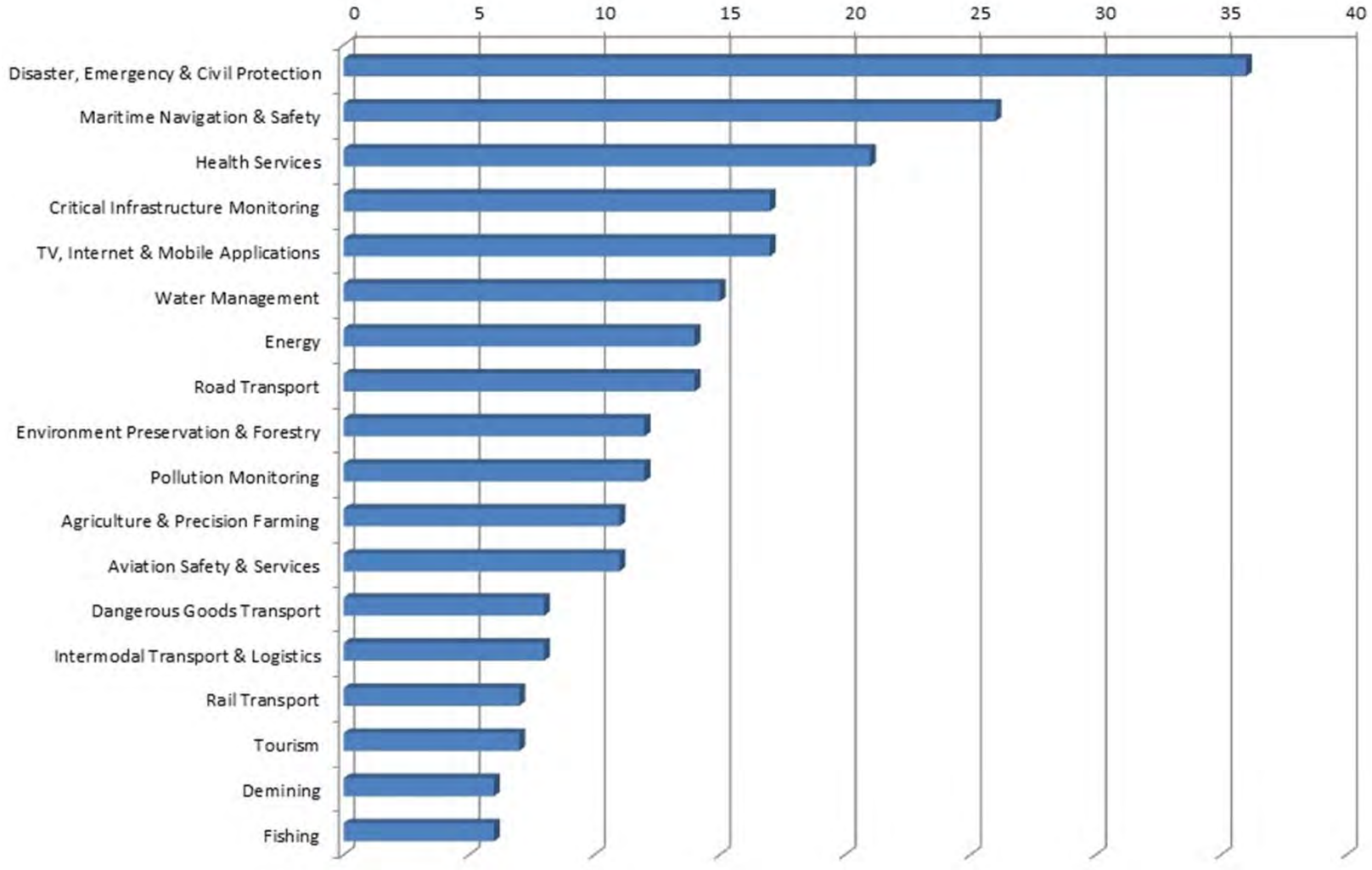
PROJECTS
Success Stories, Latest Projects, Project Filters

COMMUNITY PORTAL
Ambassador Platforms, Discussion Forums

ONE SINGLE GATEWAY
for all ARTES Applications programmes

IAP addresses almost every market sector

(Number of completed / ongoing / planned activities excluding CCNs as of Nov 2014)



Example Demo Projects

NAME	DESCRIPTION
SATForM	Online platform combining space and ground assets for forest monitoring
SATMODO	Real-time monitoring of timber harvesting
eLeaf	Water management and crop monitoring
DeSIRE	Remotely piloted aircrafts for maritime surveillance (UAV)
Blue-Belt	Ship tracking for European waters
SatFinAfrica	Financial services for remote African villages
ISIDE	Satellite-distributed digital cinema
FlySafe *	Tracking and forecast of bird movements to reduce bird strikes in aviation
VECMAP	Mapping disease-carrying mosquitos in Europe
AMAZON	Portable telemedicine units for diagnostic support in the field
iHST	Internet services for high speed trains
TalkingFields	Satellite technology supporting precision farming
SASS@Sea	Flexible satellite broadband for ships
S2BAS	Satnav support for small airports
INTOGENER	Water flow monitoring and prediction
Planet2	Meteo. services for general aviation

* Inkef Capital (ABP) and MIF (KLM, Schiphol Airport a.o.) became shareholders by providing significant funds to support international roll-out and ambitious Innovation Agenda

TalkingFields

Investment in one project creates value for a range of companies in the value chain nationally and, in many cases, internationally.

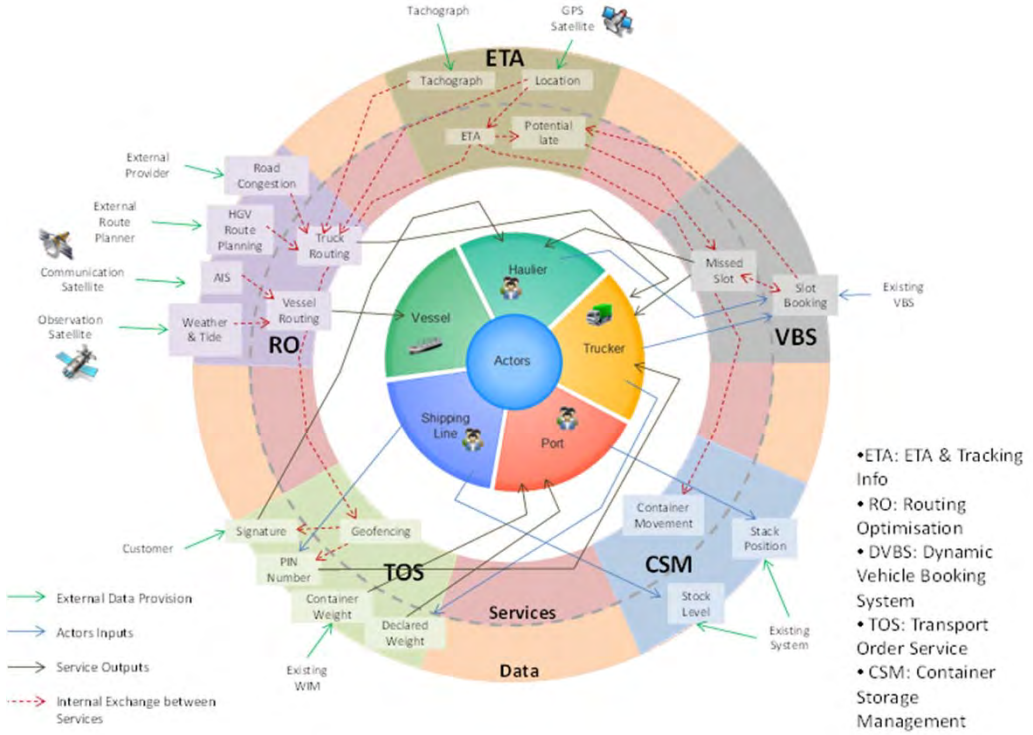
The project consortium is a comprehensive and operational value chain, from the data collection to the farmers. It involves:

- 2 national suppliers (i.e. suppliers to the business model from within Germany, the prime's country).
- 2 national and 1 international distributors.
- 5 national and 15 European research and academic centres.
- 60 customers across 8 countries.

i-Port

Optimisation of freight transport through European ports

- Identify the integration of technologies and space assets best suited to increasing the optimisation of freight transport.
- Examine the economic and non-economic viability of such a service.
- Target users which could benefit:
  - Ports.
  - Hauliers.
  - Shipping lines.
  - Railway operators.
  - Inland waterways.
  - Storage facilities.
- **Demonstrate the benefits of utilisation of new satellite technologies within freight transport.**
- **Better visibility of freight position to all stakeholders during delivery journey.**
- **Accurate status and greater security.**



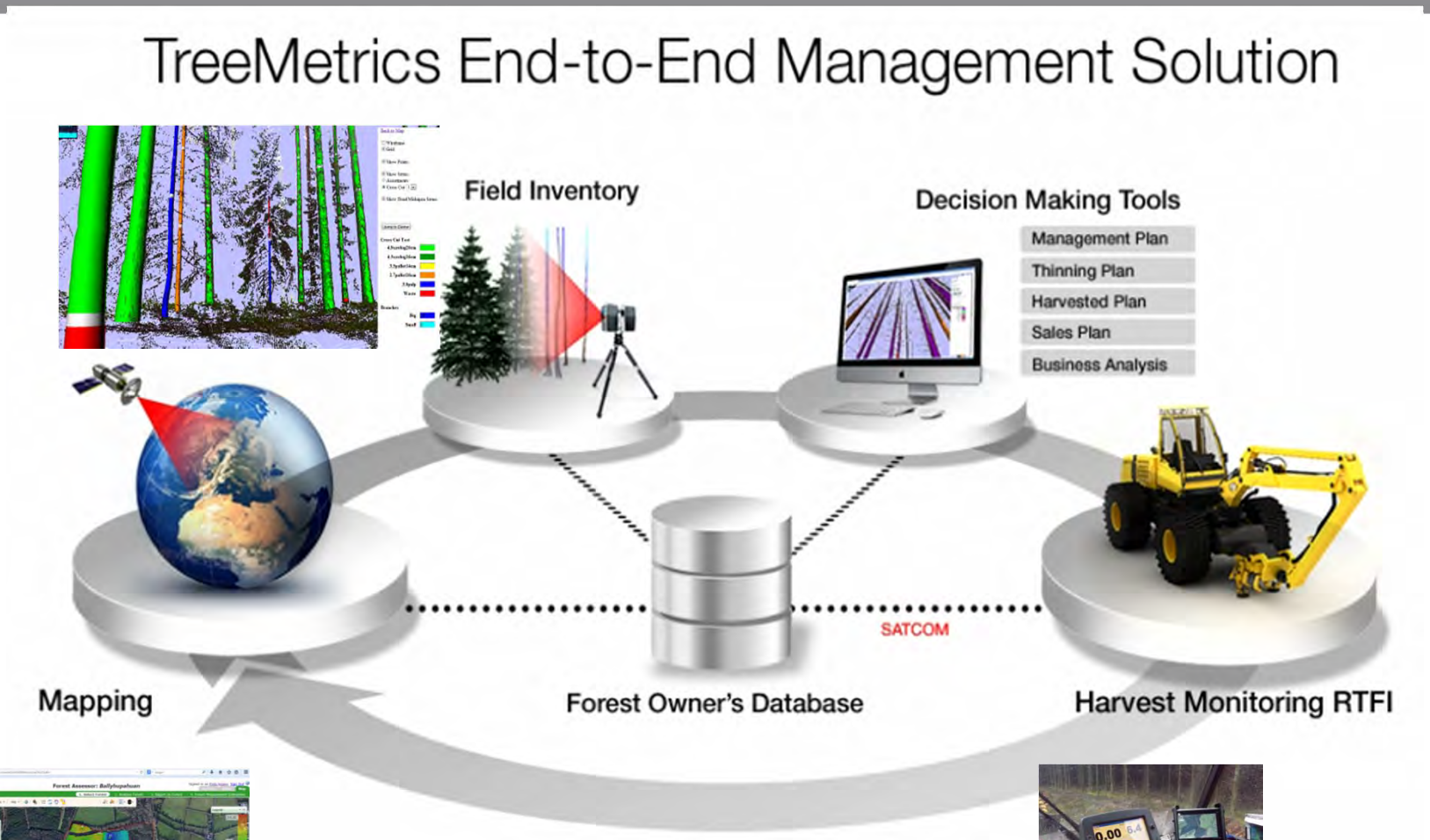
AMAZON: Management of Medical Emergencies Service

- Every year between 700-1000 people die during long duration flights (>6 h) due to medical reasons.
- Each day one or more planes are landing in emergency conditions for medical reasons. 45% of these cases could be avoided if electrocardiogram data could be transmitted from the plane for hospital diagnosis.
- The cost of such re-routings is about 80K€.
- New planes (e.g. A380) have increasing flight duration (15 hours non stop) and passenger capacity.
- AMAZON system now deployed and operated by several airlines (e.g. Virgin Atlantic, Etihad, Emirates, Virgin Australia), commercial shipping companies, luxury yachts & military health services.

Your life With care Anywhere

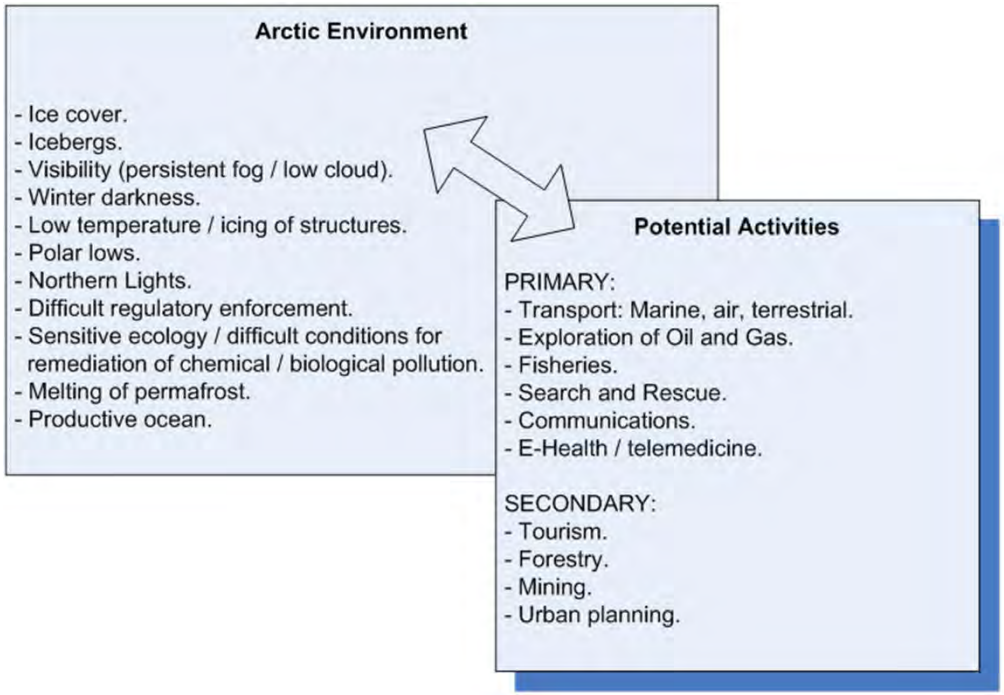
International SOS

TreeMetrics – Forest Management



Example thematic areas of relevance to Norway for ARTES Applications …

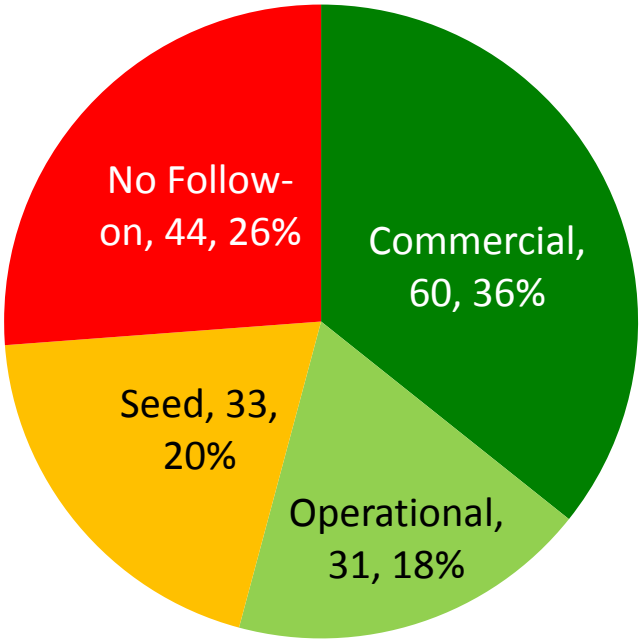
- Arctic operations.
- Oil and gas exploration.
- Search and Rescue.
- Fisheries and aquaculture.
- Ship routing.
- Maritime weather forecasting.
- Intelligent freight transport.
- Ice condition forecasting.
- Oil spill response.
- Telemedicine.
- Environmental impact analysis, e.g. offshore renewable developments.
- Avalanche forecasting.
- Forest Management.
- Energy efficiency of buildings.
- Space Weather.



Success rate for ARTES application projects

Success Rate

Snapshot of 168 projects assessed up to 15th Sept 2014



Qualifier	Definition
Commercial	A commercial offer generating revenues has been put in place
Operational	Operations continue after the end of the ESA contract
Seed	Has generated other pilot projects with or outside ESA
No Follow-up	No Follow-up after the conclusion of the contract

User-centric approach of IAP is expected to increase rate and extent of revenue generation.

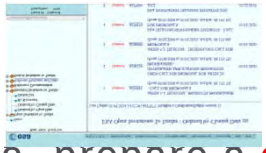
** Typically assessed 1 to 3 years after project completion*

How to apply – Checklist

1. Register to ESA EMITS at http://emits.esa.int (to get access to ITT documents)
2. Read the documents (invitation letter, special tender conditions, draft contract) for

   AO5891 ARTES 3-4: TELECOM - PRODUCTS or

   AO6124 OPEN CALL FOR PROPOSAL FOR ARTES 20 IAP



3. If you wish to get first feedback about the eligibility of your idea, prepare a concise concept paper (one-two pages) that you could share with ESA. Send the concept paper to iap@esa.int
4. Contact the relevant National Delegation(s) [countries of prime and subs] to get feedback on their potential support. Contact points are available at: http://artes-apps.esa.int/national-delegations
5. If feedback is OK, prepare the Outline Proposal in line with applicable ITT documents (from EMITS). Templates and on-line tools to support the preparation of the Outline Proposal are available under: http://artes-apps.esa.int/news/opdt-artes-applications
6. In case you want to apply for the special access to Satcom capacity and services at preferential conditions, clearly indicate this in the Outline Proposal. Further info at: http://artes-apps.esa.int/opportunities/satcom-apps/operator-opportunity
7. Submit the Outline Proposal in accordance with what is indicated in the ITT
8. After ESA feedback and green light, proceed with Full Proposal preparation and submission

Conclusions

1. Space based applications and services can provide support to the management and solution of daily life problems.
2. Application and service developments can be done without expensive qualification and investment efforts.
3. Related expenditures result in fast 'Return on Investment' for the involved companies, user communities, and society.
   Private and 3rd party investment to ARTES applications projects provides the clearest evidence of the programme's success.
4. Their results are understandable and easy to communicate to non-experts (politics, general public).
5. Smaller Member States and their industry are competing successfully alongside larger ones.
6. ESA IAP actively supports and trains companies to achieve the technical, operational and commercial goals.
7. IAP Ambassador Platforms support the detection of valuable ideas and increase both the number and quality of proposals.

Contact and Further Information

Thanks for your attention !

- Tony Sephton: Tony.Sephton@esa.int
- ARTES Applications Website: **http://artes-apps.esa.int/**
- ARTES Applications Open Calls for co-funded activities on EMITS at: **http://emits.esa.int** (ITT AO6124, AO5891, AO5658)
- Information on ARTES Applications Opportunities at: **http://artes-apps.esa.int/opportunities**
- ARTES Applications general email address: **artes-apps@esa.int**