# ESA's Integrated Applications Programme

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# Introduction to the European Space Agency

# 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**

# Member States

18 Member States:

- Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Norway, the Netherlands, Portugal, Spain, Sweden, Switzerland and the United Kingdom.
- Canada takes part in some projects under a cooperation agreement.
- Hungary, Romania, Poland, Estonia and Slovenia are European Cooperating States.
- Estonia, Latvia and Cyprus have signed cooperation agreements with ESA.

# Activities

- ESA is one of the few space agencies in the world to combine responsibility in all areas of space activity.

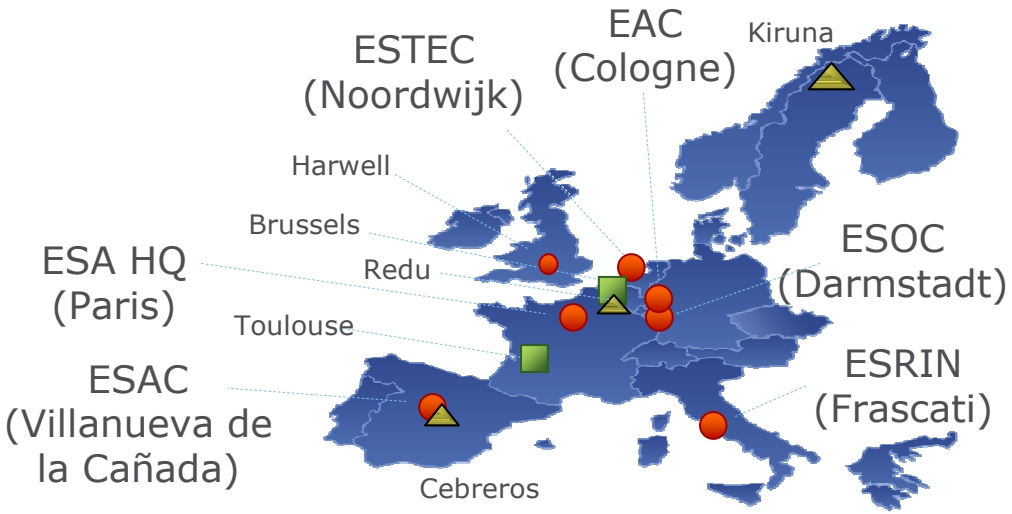
- Space science
- Human spaceflight
- Exploration
- Earth observation
- Launchers
- Navigation
- Telecommunications
- Technology
- Operations

# ESA's locations

Establishments & Centres

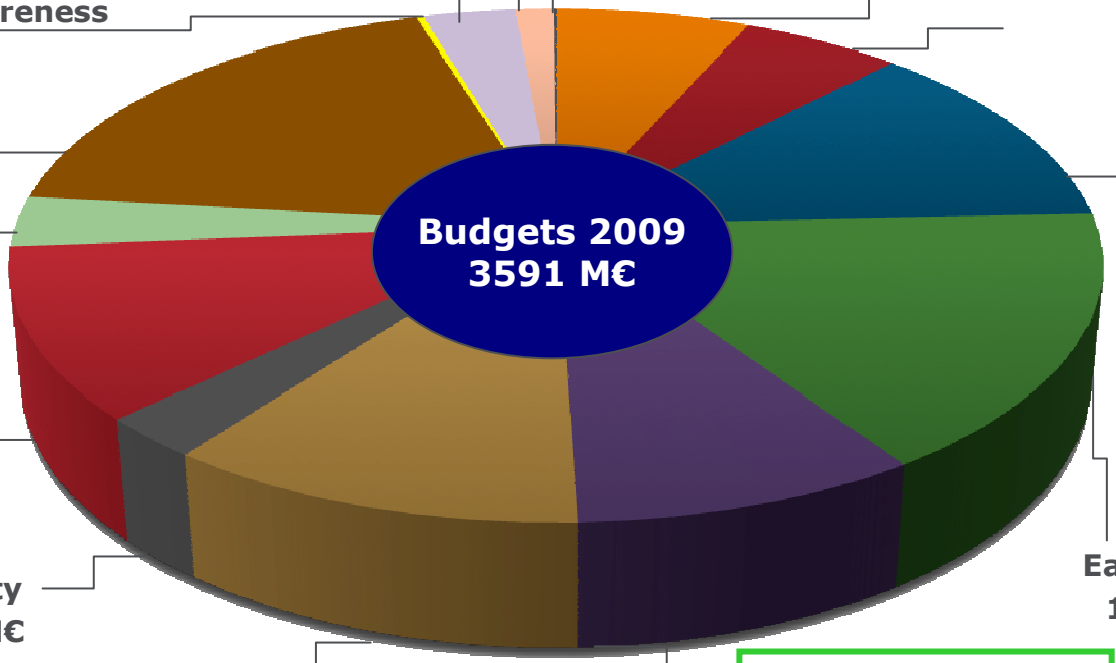
Offices

ESA Ground stations




# ESA's budget 2009

| | |
|---|---|
| Approved programmes | 3541 M€ |
| Programmes financed by third parties | 47 M€ |
| European cooperating states agreement | 3 M€ |
| Total | 3591 M€ |




Financed by third parties
1.33%, 47 M€

ECSA
0.1%, 3 M€

General Budget
6.7%, 240 M€

Technology
3.1%, 112 M€

Space Situational Awareness
0.3%, 9 M€

Launchers
18.4%, 659 M€

Exploration
3.2%, 115 M€

Human Spaceflight
10.8%, 387 M€

Microgravity
2.6%, 94 M€

Navigation
10.8%, 387 M€

Telecommunications
8.9%, 319 M€

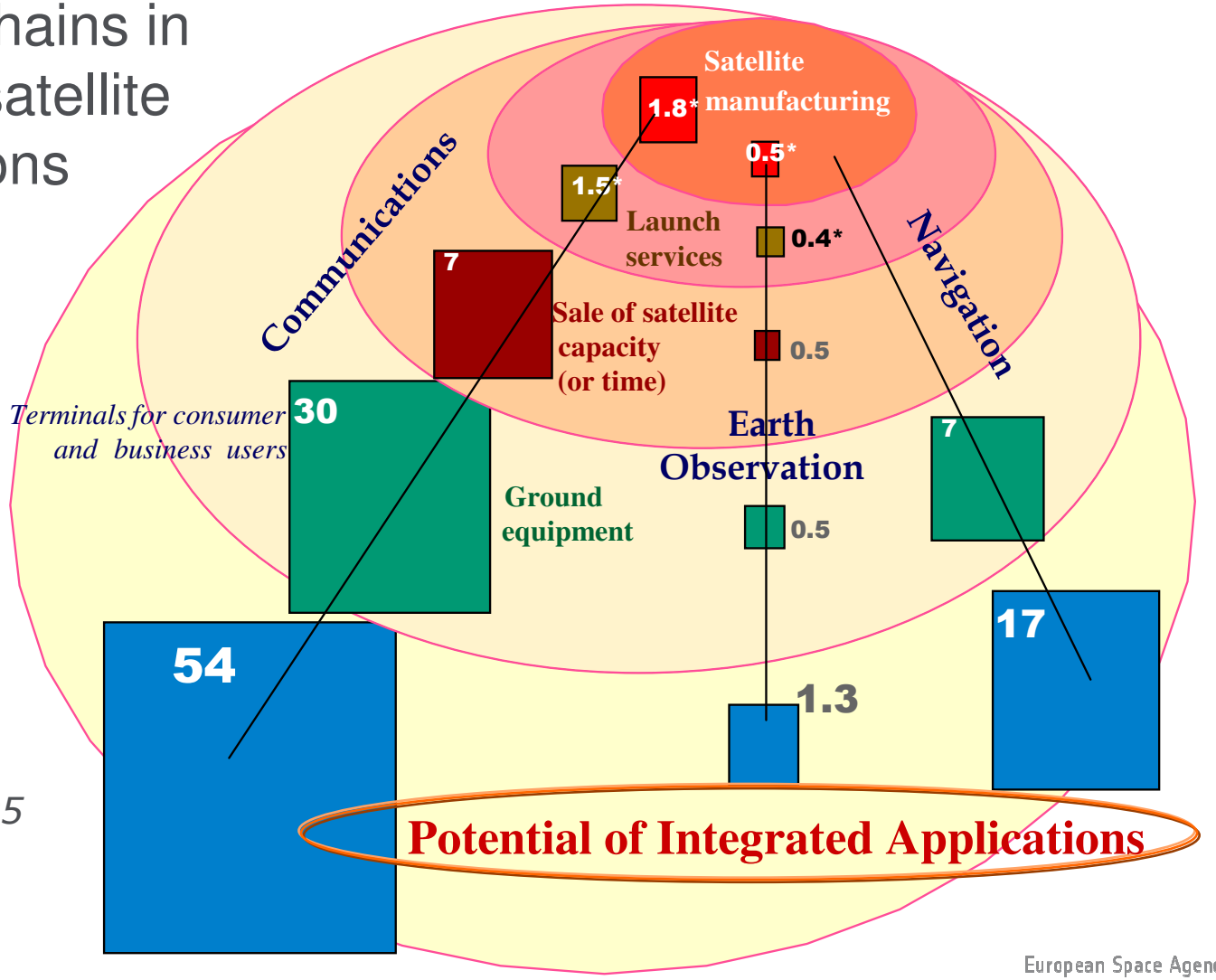
Earth Observation
16.3%, 586 M€

M€: Million Euro

# Introduction to the Integrated Applications Promotion (IAP) Programme - Strategy for promoting space activities

# Value chains

The 3 value chains in commercial satellite applications




**Value- Adding Services**

*Values for the year 2005 in billions of €*

# ESA Integrated Applications Promotion

- Programme initiation in November 2008 during Ministerial ESA Conference
- Objective:
  - Develop **sustainable operational services** for a wide range of (new) **users** through the **combination of different systems** (space and terrestrial); this includes space assets like Earth Observation, Satcom, Satnav, Manned Space Technologies, etc.
- Rationale:
  - Meet the **increasing demand for sustainable complete solutions** using integrated space & non-space technologies/systems
  - Overcome the cultural gap and lack of dialogue between potential users and the space sector **(awareness)**
  - Overcome the separation of the offer of the different space technology areas **(synergy)**
  - Using the principle of upstream and initial involvement of user/ partner/ service provider/ operator **(partnership)**

# ESA Integrated Applications Promotion

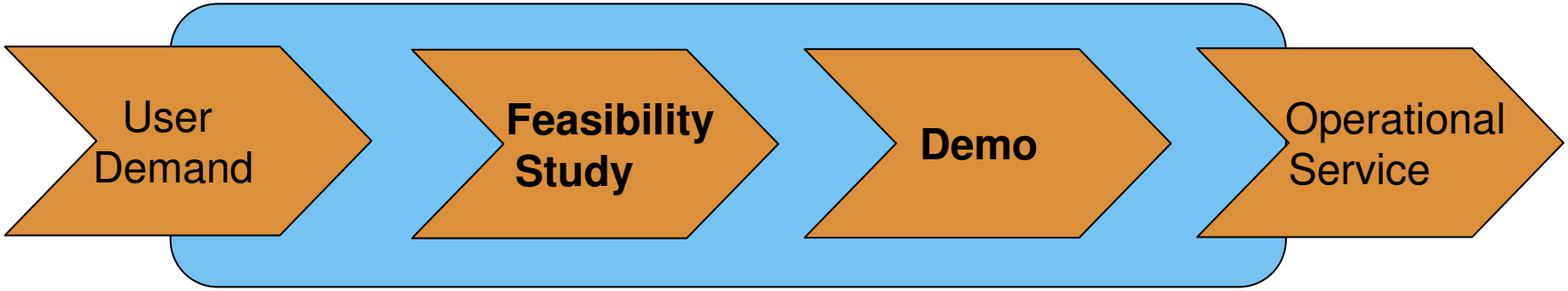
We do this by:

- Working with a wide range of stakeholders
- Responding to actual user needs
- Exploring the capacity of space assets beyond the current state-of-the-art
- Combining multiple existing space assets with terrestrial systems
- Emphasising the viability aspects of the applications and services

***Transport Health Safety Energy Development***

# IAP offers two types of activities

ESA IAP Involvement




User with demand but no contact to industry

Contact with ESA:

- iap.esa.int
- conferences
- ambassadors
- …

Funding by ESA:

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

Funding by ESA:

- 50% - initiated by either ESA or industry

Support etc.

# ESA IAP offers …

- **Financial support** in the co-funded programmes ARTES 20 (Integrated Applications Promotion) and ARTES 34 (Satcom Applications)
- **Consultancy** from idea generation until introduction of a sustainable application / service
- **Access to ESA's technological expertise** in a number of disciplines covering not only space
- **Networking within and access to** the community of the ESA Telecom and Integrated Applications programs (regular workshops on various subjects), i.e. a plethora of organisations and industries
- Organisation of **awareness activities** on specific subjects (thematic workshops, PR campaigns, etc.)
- **Credibility** through the involvement of ESA as international acknowledged organisation

# ESA IAP does not offer …

- **Expertise in the specific field of applications:**
  therefore the involvement of relevant stakeholders and users is required to guarantee the identification of solutions solving the real problems and to avoid technology push
  - ⇨ **Involvement and integration of representative stakeholders / users in the project team** => consortium
  - ⇨ **Engagement with a wider stakeholder / user community in workshops** => today's workshop + workshop at study end
  - ⇨ **For ESA initiated activities: ESA collaboration with representative stakeholder(s) / users as advisor(s) to ESA** => Bird Strike Advisory Board

**Inputs / feedback / verification:**
**user requirements, state-of-the-art, service concept, viability analysis, roadmap for further implementation of sustainable operational services**

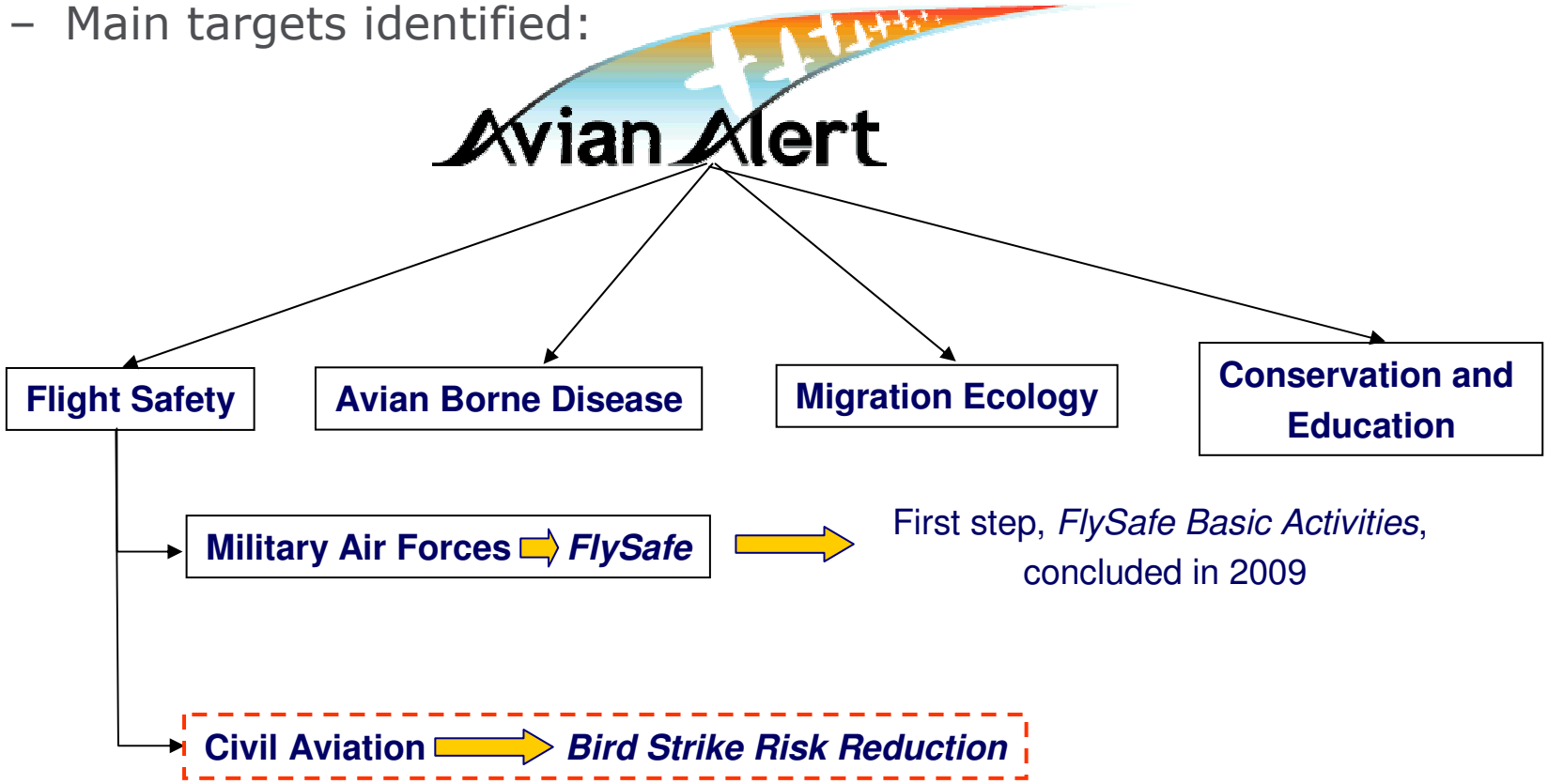
# ESA IAP does not offer …

- **Development of new technologies in IAP activities:**
  but implementation and integration of existing technologies

  - ⇨ **However, the IAP activities shall identify the gaps that prevent an optimal solution**
  - ⇨ **For gaps identified in the fields of space technologies there are other ESA programmes to further evolve these technologies**

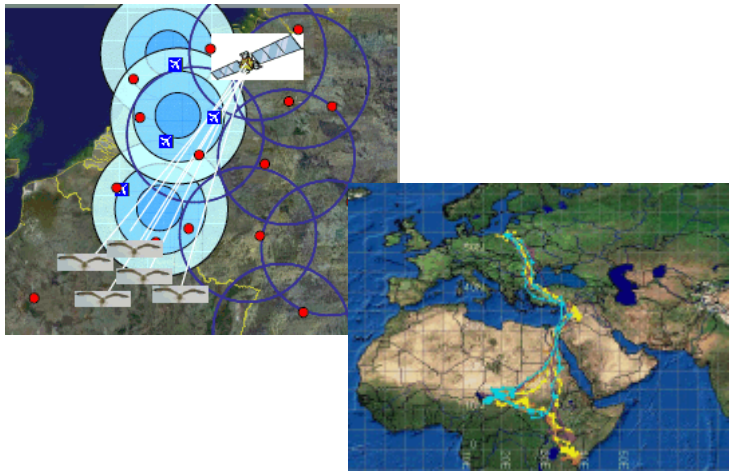
# Background of the study (I)

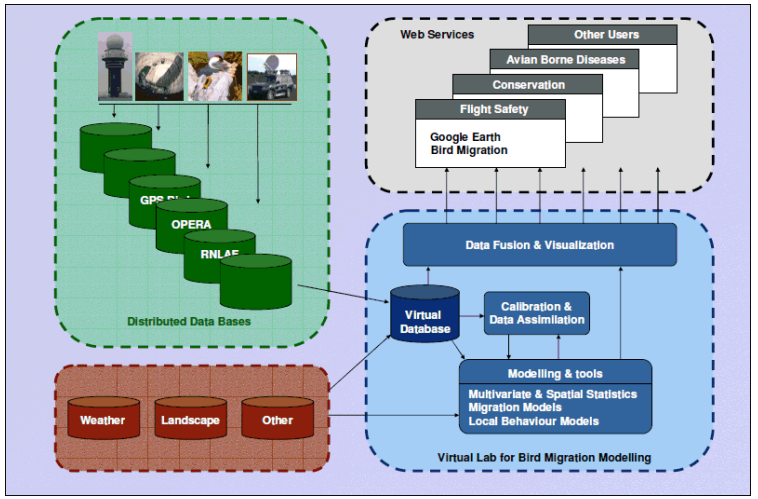
- **Avian Alert (2006):**
  - Identification of possible suitable candidate activities for the new IAP Programme.
  - Main targets identified:



# Background of the study (II)

- **FlySafe Basic Activities:**
  - IAP precursor activity.
  - User driven (Military Air Forces from NL, B, F, D).
  - Integration of space and non-space technologies.
  - Achievements:
    - Setting up a pre-operational service for the estimation of the BirdTAM (http://public.flysafe.sara.nl/bambas/index.php)
    - Creation of a model concept that can be extended to other countries' Air Forces.
    - Federation of users from different countries
- **Continuation:**
  - Setting-up the pre-operational service.
  - Dissemination of results





# IAP activities in the aviation domain

- **FlySafe** (completed demo project): user partner = Air Forces
- **Bird Strike Risk Reduction for Civil Aviation:** (running feasibility study): user partner = commercial aviation
- **Unmanned Aerial System (UAS) Mission supported by Integrated Space Systems** (running feasibility study with 2 objectives: insertion of UAS in non-segregated airspace, identification of promising UAV utilisation scenarios):
  user partner = European Defence Agency
- **Tele-support to regional and minor airports missing the proper facilities / infrastructure** (in preparation)
- **Collaborative Meteo Service for General Aviation via Satcom** (in preparation)
- **Monitoring atmospheric pollutants like volcanic ashes via space based services / UAVs** (brainstorming)

# IAP references

- IAP Website: http://iap.esa.int
- "Integrated Applications Handbook"
  available as hardcopy and via the IAP website:
  http://iap.esa.int/handbook
- IAP Open Call for co-funded activities online on
  - EMITS: http://emits.esa.int (ITT AO6124)
  - IAP website
- IAP general email address: iap@esa.int

# Thank you

Contact information:

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