How innovative space-based applications contribute to economic growth

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Government attitudes

e.g. UK Chancellor of the Exchequer:

"Space is transitioning from science endeavours into a capability that impacts our everyday lives."

Mantra = "Stimulation"

- **Scientific curiosity** → **capital investment**
- **Scientific research** → **high value investment**
- **Innovation funding** → **satellite-based services**

Space = Significant Market Impact

- **The share of commercial sales and exports in the European total space turnover has grown from 28% in 1991 to 45% in 2010.**
- **Europe's share in the worldwide commercial telecom market has grown in the past decade from 19% to 33%.**

- **€450bn = global space market by 2030.**

Growth Requirements

- **ESA procurement - less ‘equitable’ and more ‘free competitive bidding’**
- **Competitive bidding open to wider range of companies, including SMEs**
- **Public/Private Partnerships and more access to debt/equity markets**
- **Industry involvement in platform design and data requirements.**

Space activity growth generators

- **Skills and Qualifications key to 'smart' industry success**
- **Public engagement/Inspirational projects provide support**
- **Scientific excellence & Superfast computing for big data**

- **E-infrastructure and Critical National Infrastructure**
- **Integration of space and terrestrial systems and data**
- **Instrumentation niches; Enabling technologies**

- **Disruptive technology turns non-users into users**
- **Innovative solutions attract new users**

Data ⇒ creative solutions

- **Global Navigation Satellite Systems e.g. Galileo provide pinpoint locations of people or things. Geo-loco data correlation and analysis is the basis of a huge growth market in applications.**
- **Big data services and technology market will grow in value from $3.2 billion in 2010 to $47 billion by 2017. *(Wikibon)***
- **Companies that effectively create and implement big data strategies stand to gain in productivity and a competitive advantage.**
- **This is the ultimate 'Internet of Things' - gathering data from space to help make sense of climate, weather, agriculture, transport, urban planning, healthcare, pollution and natural disasters.**

Integrated Applications (IAP)

Annual IAP budget from Member States has doubled, with the UK and Italy as the largest contributors.

IAP =

- **combination of different space elements (like Satellite-Telecommunications, Earth Observation and Navigation, as well as Human Spaceflight technologies)**
- **with terrestrial systems where relevant**
- **creates capabilities that are greater than the sum of their parts.**

Objectives of the IAP:

- **expansion of the scope of space activity**
- **new user communities and platforms - identify new apps**
- **operational services more innovative, effective, resilient and commercially viable than terrestrial alternatives alone.**

Integrated Applications (2)

- **Emerging markets: Offshore Renewable Energy; Electricity Networks/Smart Grids; Insurance, Reinsurance & Loss Adjustment; Measurement & Management of Carbon Emissions.**
- **IAP's impact not from the relatively modest budget but its outreach. IAP's 'Ambassadors' target non-space users.**
- **IAP 50% co-funding approach not only requires matched funding from industry, but can leverage 3rd party funding from new players outside the space industry.**
- **ESA is enlarging its domain of action, from development tasks to maximising the exploitation of the tools and technology/service platforms it has created and will launch.**

Integrated Applications (3)

- **Studies on the economic multiplier of investments in the space industry indicate a range from 1.4 to 19. (Euroconsult)**
- **More evidence required on growth impact of space services or applications**
- **An integrated and international approach vital**
- **Develop end-to-end solutions that meet the needs of real users, who can be turned into paying customers.**

- **IAP and ARTES-APPS can have a big impact.**

Leveraging Impact

- **Emphasis on collaboration between upstream/downstream companies to ensure future missions deliver data with significant economic growth potential**

- **Encouragement of accuracy, effective flow and intelligent use of data through common standards for operational data transmission**

- **Improved cost/efficiency of access to space and innovation**

  e.g. deployment of TechDemoSat-1 as a satellite platform for 'in-orbit test facilities' for innovative payloads and software.

Integrating Space Data Creates Value