A sky full of eyes – Exploring the commercial opportunity in Earth observation

Media series

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A sky full of eyes – Exploring the commercial opportunity in Earth observation

600+ Earth observation satellites are constantly keeping an eye on us from space – is there a commercial opportunity in Earth watching, and how can companies play in this space?

Key insight

600+ Earth observation satellites are orbiting our planet, collecting data and images, as well as monitoring and tracking changes.

In eight executive briefing series, Arthur D. Little shares key insight into the commercial opportunity in Earth observation and how companies can play and win in this space. We look into:

- What is Earth observation, and what are its key applications?
- What is driving the interest in Earth observation, and is there a commercial opportunity?
- Where is the sector headed?
- How to ride the Earth observation wave and win?

Next edition: Earth observation applications

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Analytical solutions based on Earth imagery are used across a wide range of industries, promising high impact and disruptive changes.

**Key insight**

- Companies are building analytical services based on Earth observation imagery, with different applications across industries.
- Defense and government applications are still a key source of demand; however, use cases in other industries (insurance, commercial, etc.) are gaining traction.
- Early adopters tend to be from technology-exposed industries.
- Customers are increasingly demanding solution-based services (e.g., intelligence, supporting decision-making) rather than pure image-based products.

**Next edition:** Market value & key drivers

**Selected examples**

- **Insurance**
  - Monitoring assets, assessing risk and detecting changes to streamline insurance processes
  - **CAPE**, **CORTEX**, **planet**

- **Commercial**
  - Assessing market dynamics, increasing visibility over supply chains, analyzing economic activity, etc.
  - **Orbital Insight**, **SPACE_KNOW**

- **Infrastructure**
  - Monitoring deployed assets, planning new installations, predicting infrastructure failure
  - **EAGLEVIEW**, **AIRBUS**, **planet**

- **Disaster risk reduction**
  - Predicting and monitoring of disasters to support rescue & relief operations
  - **Orbital Insight**, **planet**, **RS Metrics**

- **Defence**
  - National security and defense monitoring (e.g., tracking maritime and airfield activity)
  - **EAGLEVIEW**, **AIRBUS**, **planet**, **URSA**

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Cheaper access to space and advances in data analytics will continue driving the double-digit growth of the Earth observation sector.

Global Earth observation data and services revenue
2013–2025, USD billion

Key insight
- The Earth observation sector is expected to continue its double-digit growth, driven by:
  - Availability of cheaper SmallSat technologies and decreasing costs of launching and operating satellites, which are making commercial solutions more viable
  - Advances in data analytics and artificial intelligence that make Earth observation solutions more accessible and enable the emergence of new applications across industries

Next edition: Investment dynamics

Source: Arthur D. Little based on Euroconsult

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Investor interest in Earth observation start-ups has significantly increased, driven by the expansion of potential use cases and range of clients

Key insight

- Investor interest in Earth observation has significantly increased over the past 5 years:
  - Over USD 220 million was invested and over 50 new start-ups were set up
  - 2017 was a boom year, with a ~9x increase in invested capital compared to the average of the previous 4 years

- Investor interest is driven by expansion of use cases/applications and potential customers (e.g., going beyond government-backed demand)

- New start-up companies are focusing on data analytics

Start-up investment dynamics in Earth observation

2013–2017

Source: Arthur D. Little based on Norther Sky Research

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Existing players are furthering their stake in the sector and extending capabilities from pure satellite operation and image sales to analytics services based on Earth imagery.

### M&A dynamics in the Earth observation sector

<table>
<thead>
<tr>
<th>Manufacturing</th>
<th>Operations</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackbridge</td>
<td>Terra Bella</td>
<td>DigitGlobe 2017</td>
</tr>
<tr>
<td>Elsag Datamat</td>
<td>VEGA 2011</td>
<td>EagleView Tech. 2017 OmniEarth</td>
</tr>
<tr>
<td>Thales Alenia Space</td>
<td>2017</td>
<td>Spaceflight Industries 2016 OpenWhere</td>
</tr>
</tbody>
</table>

**Key insight**

- **The Earth observation sector is evolving**, with key players extending their capabilities:
  - Recent *vertical integration* deals allow for building a full set of upstream and downstream capabilities (Spaceflight Industries, OpenWhere, etc.).
  - Horizontal mergers (e.g., Planet, Terra Bella & Blackbridge) allow for scale and tapping into adjacent segments.

- **Value generation is moving** from pure image sales towards ability to sell analytical solutions on top of Earth imagery.

**Next edition:**

Key business models
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Successful Earth observation businesses typically adopt one of 2 main business models – captive, government-backed demand or industry-focused model

Government-backed model
- Providers serving demand mainly from defense and intelligence government entities or other government authorities, etc.
- High-resolution images to support defense & intelligence applications
- Focus on data sales due to national security considerations and reluctance to outsource analytics
- Long purchasing cycles

Industry-focused model
- Providers focusing on the commercial sector, offering niche industry vertical solutions and targeting specific sectors
- Lower-resolution, high-revisit images to support quick commercial insight
- Focus on actionable analytics to solve business problems and support decision-making
- Industry-specific applications

Key insight
- Business models in Earth observation focus on government- or commercially backed demand, with distinct differences in buying and usage patterns for each
  - Governments typically release long-term contracts and are interested in image acquisition, while taking data analytics in-house for confidentiality reasons
  - Commercial actors are focused on analytical solutions and willing to purchase them, given intrinsic value for their businesses is unlocked

Next edition: Market positioning

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To capture the commercial opportunity in Earth observation, prospective players have three main options – choosing the right positioning depends on market specificities and internal aspects.

**Satellite operator**
- Operating an Earth observation satellite constellation, offering data to resellers or final customers
- Opportunity to differentiate through a unique data set/images
- Capital intensive
- Increasing number of Earth observation constellations
- Availability of open-access data and increasing data commoditization

**VAS player**
- Sourcing data from Earth observation satellite operators and offering VAS analytics solutions
- Increased customer interest in analytics solutions
- Capex-light model
- Availability of open-access data sets (Sentinel, Landsat)
- No control over image supply and quality
- Issues with data quality, synchronization and platform interoperability

**Integrated player**
- Integrating Earth observation satellite operations with VAS service offerings
- Control over data supply, quality and cost of image acquisition
- Opportunity to differentiate through a unique data set/images
- Most capex intensive, with uncertain returns
- Availability of open-access data and increasing data commoditization

**Key insight**
- The decision on type of market positioning needs to take into account internal and external factors:
  - From an external perspective – market demand, range of use cases and technology developments are key
  - From an internal perspective – capabilities, financial commitment and risk tolerance need to be taken into account
- Uncertainty exists regarding the sustainability of pure data play/satellite operations due to a shift towards open data and data commoditization

**Next edition: Key success factors**

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To be successful in Earth observation, players need to combine a solution-based mind-set, advanced technical capabilities and strong market push.

## Earth observations play – key success factors

### Raise market awareness

Raising awareness of Earth observation applications, as well as finding new use cases targeted at solving industry-specific problems, will be key in developing the market.

### Adopt a solution-based, rather than a product-based mind-set

Focus on developing solutions together with clients, ensuring strong understanding of end-user needs and requirements rather than pushing a standard product set.

### Leverage what you know

Leverage knowledge of a specific vertical and understanding of local economic specificities to identify potential pockets of opportunities and design tailored client solutions.

### Build up technical capabilities

Build capabilities for imagery analytics, data processing & management, utilizing machine learning/artificial intelligence, and establish an easy-to-navigate, user-friendly interface.

### Distill insight leveraging a range of data sources

Distill insight combining satellite Earth observation data with other data sources, which will create a unique data pool and analytical depth.

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### Key insight

- Combining technical capabilities and commercial acumen is key to winning in the Earth observation market.
  - Key technical skills include imagery analytics, data processing & data management based on advanced technologies (e.g., machine learning/artificial intelligence).
  - Commercial capabilities revolve around deep vertical knowledge, ability to proactively develop demand and explore new use cases, and adopting a solution-based mind-set.

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**Feel free to contact us for further insight**

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Arthur D. Little has been at the forefront of innovation since 1886. We are an acknowledged thought leader in linking strategy, innovation and transformation in technology-intensive and converging industries. We navigate our clients through changing business ecosystems to uncover new growth opportunities. We enable our clients to build innovation capabilities and transform their organizations.

Our consultants have strong practical industry experience combined with excellent knowledge of key trends and dynamics. ADL is present in the most important business centers around the world. We are proud to serve most of the Fortune 1000 companies, in addition to other leading firms and public sector organizations.

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