Space Imaging Analytics

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1.0 INTRODUCTION

Space Data Analytics is research that can help construction intelligence firms:
• By providing fresh observation imagery to help monitor the progress of a project
• Understand the trends within the construction industry through comparative studies on different project developments
• Reduce operation costs and ultimately increase revenues.

2.0 SPACE DATA ANALYTICS

We are living in a world where real-time maps, fresh and accurate images and trusted location information are central to our professional and personal lives. Whether it is gathering intelligence on geo-located assets (e.g. monitoring the progress of a construction project), managing physical assets (e.g. energy infrastructure, operations and maintenance) or promoting assets (e.g. real estate development), demand for accurate and fresh observation imagery is only growing. Nowadays however, the overwhelming majority of businesses use Google Maps as their preferred mapping applications to make important decisions and one can take it for granted that the information used is out-of-date and often of poor quality.

Learning Outcomes

In this tutorial, you will learn about identifying and tracking the progress of construction projects using space imaging analytics, where artificial intelligence is applied to process satellite images.

2.1 GOOGLE MAPS VS SPACE DATA

Construction intelligence firms monitor the progress of thousands of construction sites in the Middle East and North Africa by checking the latest image on Google Maps, calling contractors on site, or sending runners to verify the actual status.

Therefore, the construction projects comprising their portfolio are:
• Limited in number
• Updated only on an average of between 6-9 months
• Have high operation costs
These lead to an inefficient decision making process, based on obsolete or inaccurate information.

3.0 OBSERVATION IMAGERY VALUE

There is massive value in fresh and accurate observation imagery used for applications such as design and planning for infrastructure projects, asset management, surveying and charting, analytic services for energy industries, humanitarian and relief support to natural disasters.

3.1 Benefits of Observation Imagery

Most businesses and individuals are not aware that there are hundreds of satellites imaging our world every day.
   They cannot therefore benefit from this observation imagery value. This is due to a very fragmented and monolithic sector, where the traditional data provision model serves only large orders of high-cost images to a limited number of high-value customers:

### 3.11 Extra Large Order Size:

Even if the ground asset that needs to be observed is as small as a property, the minimum order size would be between 25 and 100sqkm.

3.12 Expensive Imagery

The average price of an image depends on parameters such as its 'freshness' or its resolution. Price is usually driven up over areas of interest with high demand. It could vary from $15/sqkm for an archived image to more than $50/sqkm for fresh acquisitions depending upon time and location.

3.13 Fragmented Supply Chain

Finally, even if an organisation had pockets deep enough to buy some imagery, a very fragmented supply chain makes it hard to navigate through the data resellers who have commercial agreements, sometimes exclusive, with suppliers or over a limited geographical coverage.
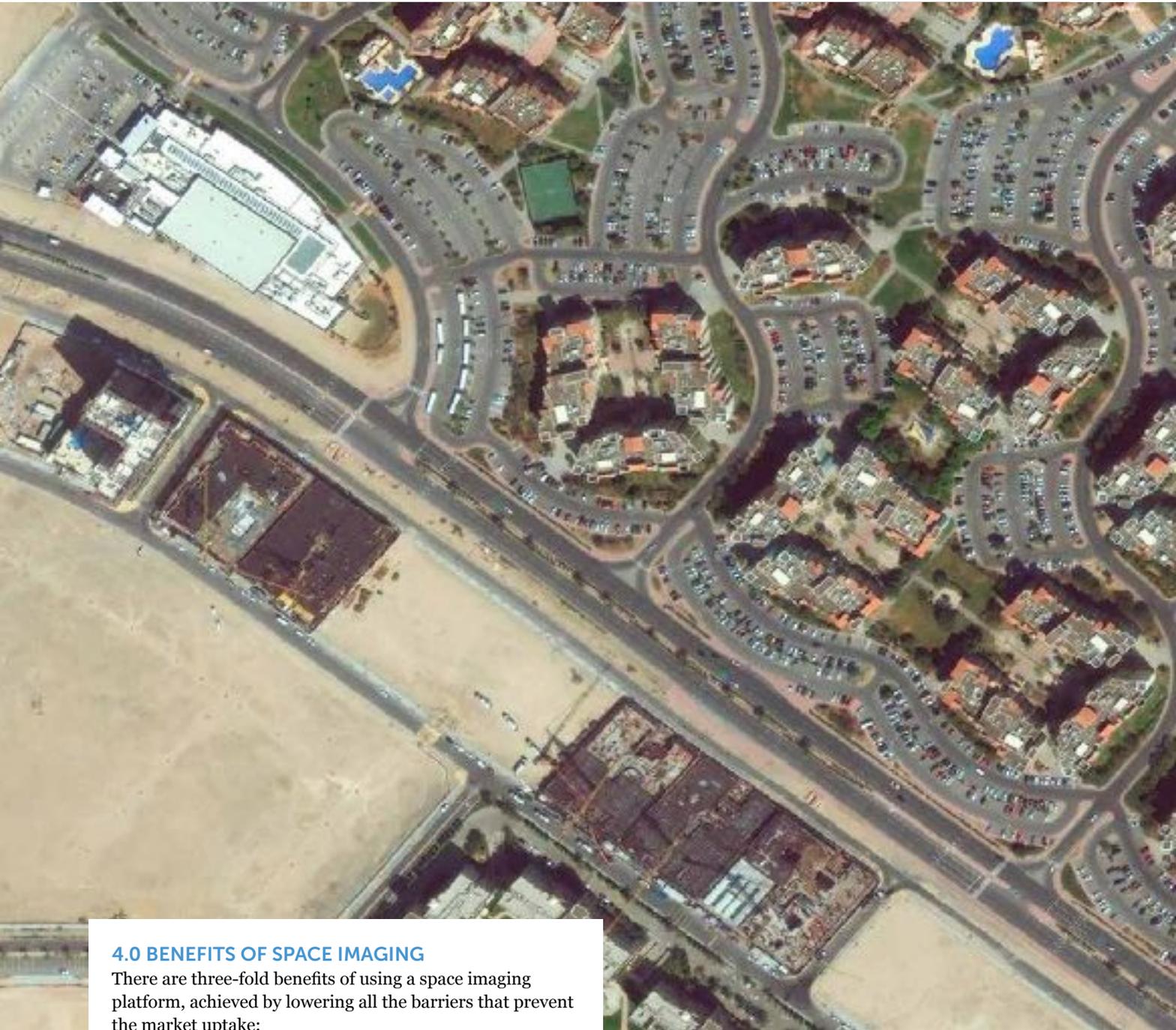
4.0 BENEFITS OF SPACE IMAGING

There are three-fold benefits of using a space imaging platform, achieved by lowering all the barriers that prevent the market uptake:

4.1 Technical Barriers:

Users no longer need to understand the complexity of Earth observation data and its characteristics. The platform provides the best images and insights through a super simple application programming interface (API) which can be integrated into any type of mapping applications or location based service as an Image View.

4.2 Commercial Barriers:

Users no longer need to invest in large one-off orders to access the required information.

4.3 Contractual Barriers:

There is no longer any need to navigate through a complex supply chain and licensing agreements. The platform has integrated the usual contractual burden into a single and easy-to-understand Terms of Service agreement.

5.0 BIG DATA ANALYTICS PLATFORM

To enable access to fresh, accurate imagery and the insights they contain, the author has built a big data analytics platform called, Bird.i, which curates an average of 10 million sq km of new observation images every day. The platform disseminates precise and up-to-date small image sections and the derived information they contain, through a simple API subscription service capable of addressing, specifically, each user's unique needs. ∎

The author is the Founder and CEO of Bird.i, a big data company focused on the geospatial industry. Established in 2016, it has built a platform that curates the best of the world's satellite, airborne and drone imagery in real time to create an up-to-date view of the world that everyone can explore at any time. Bird.i sources its data from a mix of providers, offering super fresh data greater than 1.5 metres in resolution.