Understanding current and future Earth Observation from Deimos Imaging

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VH-RODA Workshop, ESRIN, 18 November 2019
A Vertically-Integrated EO System

Space-based “big data” geospatial collection, processing, and information management system

Upstream
Satellites / Constellation

Midstream
UrthePipeline
Ground Segment

Downstream
Cloud-based Platforms

Traditional
EO Apps

Big Data
Data Analytics Apps

Consumers & Social Media
Apps/Mobile/Long-tail

Markets
Unique EO portfolio

VHR data provided with scientific grade precision

- DEIMOS-1
- DEIMOS-2
- TRIPLESAT (3)
- SUPERVIEW (4)
- KOMPSAT 3/3A
- KAZEOSAT 1 / 2

✓ highly responsive planning strategy
✓ Delivery in NRT (30 min)
Unique EO portfolio
Medium-High resolution data for large coverages

- Optimized planning strategy
- Highly revisit coverages
Knowledge is Power
Providing High-Quality EO data is the main key goal at DEIMOS Imaging

Satellite-agnostic improved processing with UrthePipeline

Radiometry
Cross-calibration
Absolute calibration
Relative calibration

Geometry
Band registration
Geometric correction
Accuracy validation

Value-added
Image analysis
Classification
Change detection
From Earth Observation to GeoAnalytics
Harnessing the power of imagery for dependable decision-making.

Agriculture
Tipping & Cueing
Disaster
Urban Planning
Monitoring
Change Detection

...and tailored solutions to meet your challenges
UrthePipeline – Machine Learning for Earth Observation

Designed for quality, automation and scale

Radiometry
High-quality Processing, Calibration/Validation and Quality System

Processing
Fully cloud-native, automated and able to handle massive amounts of raw data

Transforms raw downlinked satellite data into scientific machine-learning/Analytics Ready Data products
UrthePipeline – Fully Cloud Native

- Can scale to thousands of datasets
- Can generate products in minutes for high-priority orders

# of image orders in parallel: 2705

# of virtual machines in parallel: 204
UrthePipeline – Fully Cloud Native

Designed for system scalability and elasticity

- **Scalability**
  Efficient customer product distribution via the cloud
  
  Dynamically scale compute, quickly, based on the needs of the customers and projects, allowing for control over performance

- **Security**
  Secure data compute, storage and delivery through VPCs, encryption and user authentication
UrthePipeline – Quality and Automation

Designed for high-quality products obtained in a cost-effective way

✓ On-going and continuous calibration ensures excellent image quality even over radiometrically uniform areas

✓ Handles non-visible image registration challenges with differing modality (e.g. visible to NIR)

✓ Handles complex scenes using Specialized Ground Control Point marking

- Clear: 0.44 Pixel Error
- Partial cloud: 0.46 Pixel Error
- Cloud and snow: 0.5 Pixel Error

Green
Near Infrared
UrtheDaily with UrthePipeline
Analytics-ready data directly into your application, fresh, daily

Can you picture the same place on Earth daily, with reliable high quality imagery?

- Daily
- Scientific-grade quality data
- Cloud based
- Designed for apps
- Global
- Cost-effective
- Near real time delivery
- Analytics-ready
The UrtheDaily constellation
The future is here: UrtheDaily
Designed & Optimized for Geoanalytics at Scale

The world’s first EO system designed, from the ground-up, to power machine-learning and AI-ready geoanalytics applications, on a global scale:

✓ Spectral bands optimized for geoanalytics and cross-calibration with other sensors (e.g., Sentinel-2)
✓ High SNR for geoanalytics
✓ Ultra-stable spacecraft pointing system and precise orbit control enabling high geo-location accuracy
✓ Wide swath enabling improved calibration
✓ Automated cloud-based processing system designed for scale
✓ Highly accurate cloud masks to allow direct use in machine learning & AI algorithms
UrtheDaily: Unprecedented Data Quality
Enabling Transformational Insights

A state-of-the art constellation designed to meet market needs while remaining cost-effective.

The spectral bands selected to match Landsat-8/Sentinel-2/Deimos-1 bands to ease the constant and automatic in-flight cross-calibration.

The presence of a narrow coastal/aerosol Blue band, specifically designed for atmospheric analysis, greatly helps in correcting for atmospheric effects.

The system is designed to provide a high SNR and bit depth that goes a long way to reducing measurement uncertainty.
UrtheDaily: Constant data collection
Cost-effective solution useful for global change detection and geoanalytics

The whole Earth’s landmass and large maritime areas, every day at 5m / pixel with multi-band spectral diversity aligned with Sentinel-2

Fully automated tasking, collection, downlink, backhaul and data processing, cataloguing and delivery

Data available same-day via cloud-based platform

Service to start in 2022
THANK YOU!