

65th International Astronautical Congress 2014

EARTH OBSERVATION SYMPOSIUM (B1)
Earth Observation Data Management Systems (4)

Author: Mr. Chris Böhme
pinkmatter solutions, South Africa, chris@pinkmatter.com

Ms. Sonja Goosen
pinkmatter solutions, South Africa, sonja@pinkmatter.com
Mr. Thinus Prinsloo
pinkmatter solutions, South Africa, thinus@pinkmatter.com
Mr. Wolfgang Lück
Forest Sense, South Africa, wolfluck@mweb.co.za

A LIGHT-WEIGHT, DISTRIBUTED PROCESSING AND DATA HANDLING SYSTEM FOR
EMERGING SPACE AGENCIES

Abstract

The recent years have seen a sharp rise in the establishment of new earth observation institutes and space agencies especially in the developing world. Many of these institutes are mandated with data collection, image archiving and processing to provide services around mapping and environmental and agricultural monitoring.

However, the challenges faced by emerging agencies dealing with satellite imagery, usually start with data handling. Rarely does an agency have mechanisms in place to manage the newly acquired volumes of data effectively.

Data processing is often performed with error prone manual steps that are further limited by a steep learning curve. Standardized methodologies are often hard to enforce, leading to inconsistent results.

The FarEarth initiative from Pinkmatter Solutions aims to provide a sustainable, distributed software infrastructure to agencies for data processing and management. The FarEarth system provides a light-weight and robust framework for archiving, cataloguing, processing and dissemination of data products. Processing workflows can be easily configured by agency staff to capture their standard production methodologies. Both automatic as well as manual, human driven production workflow steps are supported. The latter opens possibilities for easier integration of a lesser skilled remote sensing staff and provides mechanisms for quality control.

FarEarth has the capability to manage distributed infrastructure with several archives and processing nodes situated at remote locations. Robust communication and monitoring based on peer-to-peer technology ensures that nodes can operate in an environment with intermittent connections to the primary site. New production nodes can easily be discovered and seamlessly integrated into the production cloud. This ensures optimal use of resources and supports an organically growing agency.

This paper examines the data management challenges facing emerging agencies dealing with remote sensing data. It provides insights into new technologies like peer-to-peer networking and virtualization and how they can be harnessed to build a robust data handling and data processing infrastructure.