

A Workflow for Automated Satellite Image Processing: from Raw Data to Object-based Spectral Information

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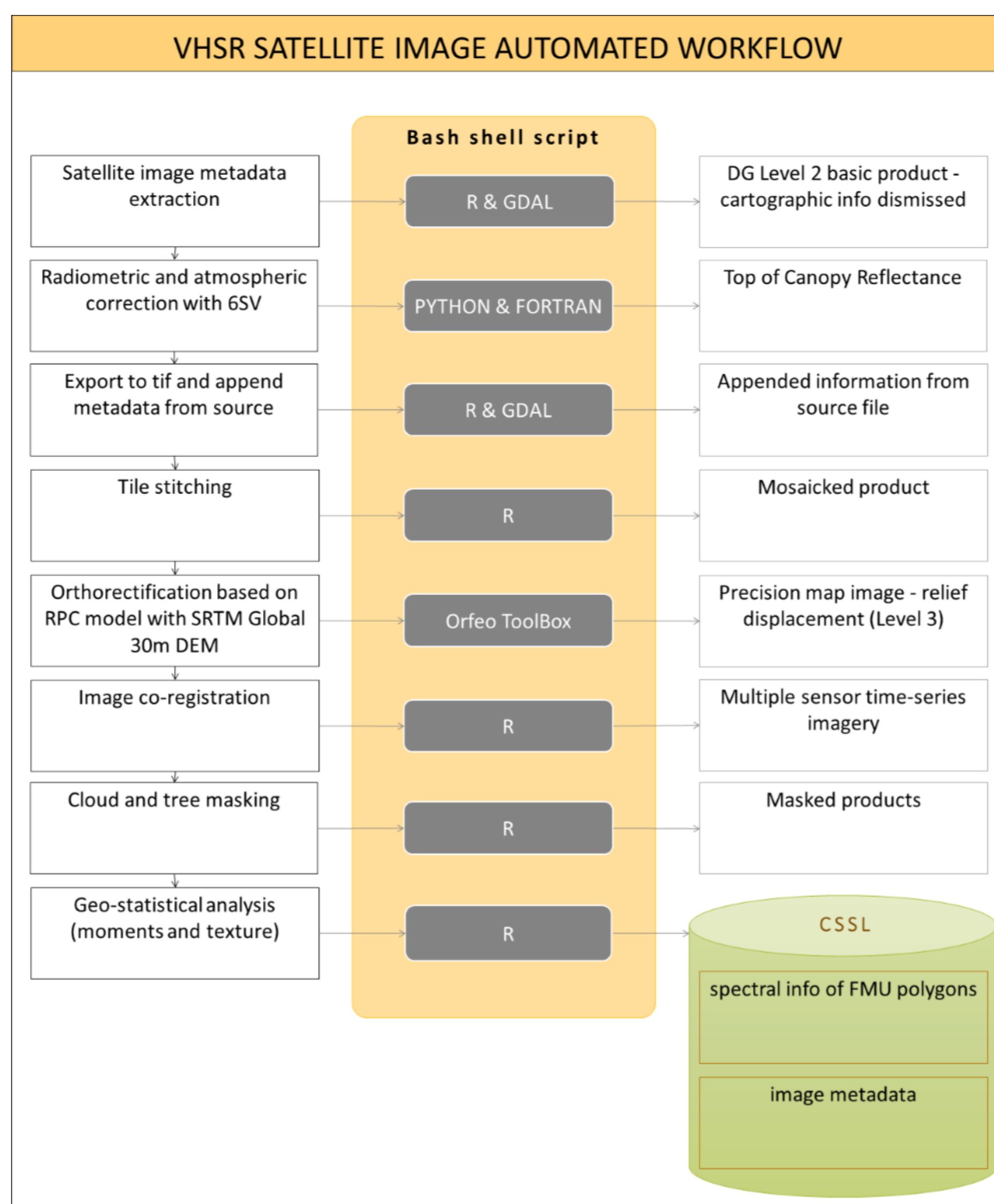
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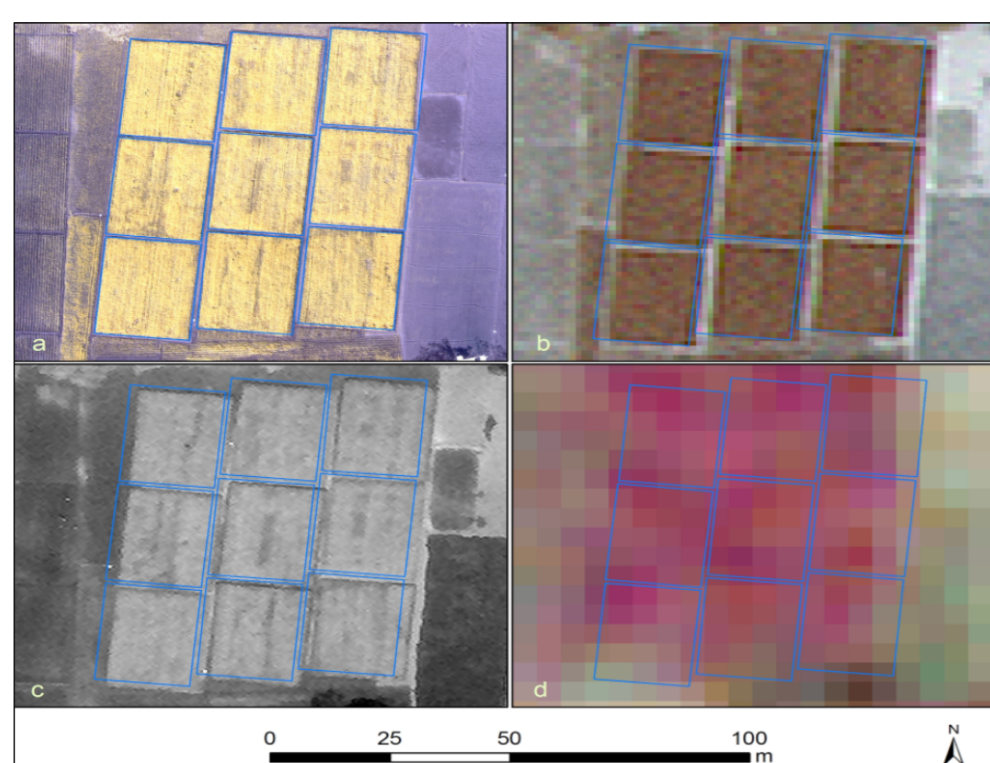
Summary:

Remote sensing is steadily evolving to a discipline integrating large volumes of diverse information sources; as such the new landscape requires efficient methods not only of archiving and processing large datasets, but also of near-real time information provision that supports rapid responses and decision making. This study presents a fully automated satellite image workflow developed to process a large satellite data volume in the framework of smallholder agriculture. Practically, this is a processing flow from raw satellite image to crop-related spectral and textural information for individual smallholder farm plot.



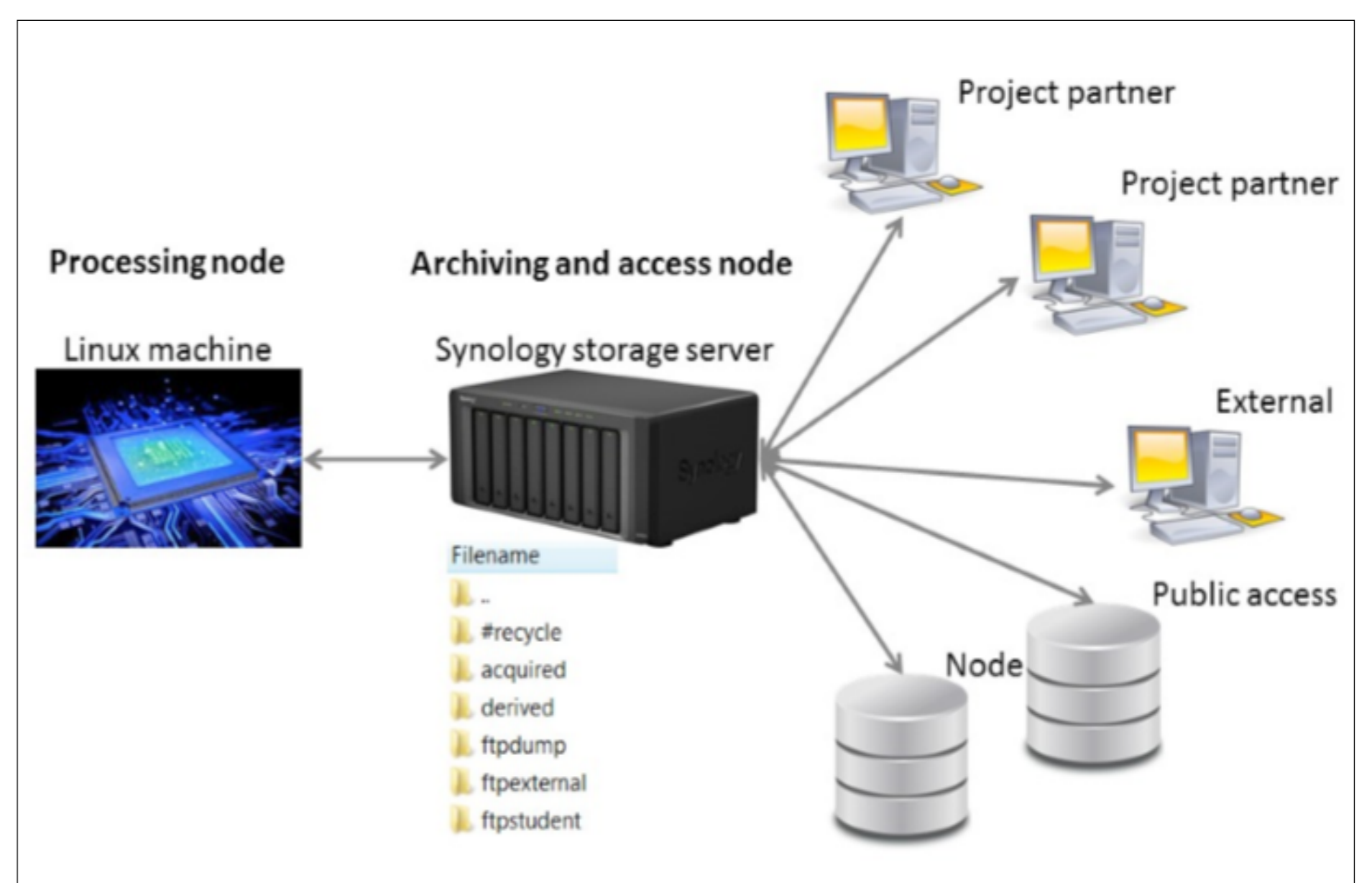
Workflow scheme:

The presented workflow is a sequential processing chain for basic satellite products as typically delivered by image providers. It is fully based on free and open software packages. Most of the processing is done with R. Bash scripting, Python, FORTRAN, and Orfeo Toolbox are used as well.



Robustness:

This workflow has been applied on a multi-sensor image archive of over 270 VHSR images from WorldView-2, WorldView-3, QuickBird, GeoEye, Ikonos and is currently tested on RapidEye data in five different test areas in South-East Asia and sub-Saharan Africa.



Information architecture:

The processing is run on a Linux machine connected to a storage space; the latter is acting both as the physical space of processing and providing real-time access of satellite data and extracted information to partners and interested parties through an ftp connection.

