1ST ESA SNAP HACKATHON

Introduction

SNAP Development Team

ESA ESRIN, 15 + 16 October 2015

Agenda

Day 1, Part 1 (Introduction, SNAP team)

- SNAP team give short introduction of Hackathon and STEP & SNAP

Day 1, Part 2 (NASA WorldWind, NASA WorldWind Development Team)

- NASA WorldWind Development Team provide an inside look for how to get the most from this 4D visualization 'web app' platform WorldWind Q&A

Day 1, Part 3 (Presentation & Demos, SNAP team)

- SNAP team continue STEP & SNAP introduction, present project status and community platform, provide an outlook

- SNAP team introduce SNAP software architecture and show applications, the application programming interfaces (APIs), and the documentation

Agenda II

Day 1, Part 4 (Question round, SNAP team and participants)

- Occasion for participants to ask SNAP team general "How to...?" and "Can I...?" questions

Day 1, Part 5 (Hackathon, SNAP team and participants)

- Participants agree upon one considerable-sized programming tasks

- Together, SNAP team and participants work out high-level solutions in the first step

- In the second step, do "Aquarium Programming", where participants watch SNAP developers write code on the big screen, while following them in their own development environment

Agenda III

Day 2, Part 6 (Hackathon ctd., SNAP team and participants)

- Continue and finish work of day 1

- Reap the benefits! Run and play with the newly developed tools

Day 2, Part 7 (Close Hackathon)

- Gather ideas for future ESA hackathons and/or prize-giving coding challenges

- Gather feedback regarding the current state of the SNAP application, its APIs and libraries

- Discuss other possible applications and use-case scenarios of SNAP and SNAP APIs

- Discuss further evolution of SNAP, the Sentinel Toolboxes, and its potential adaptation to other missions

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Development Environment

- SNAP 2.0 beta 8 (from http://step.esa.int/) with Sentinel Toolboxes (released yesterday evening)

- Install Python (64-bit) with pip and numpy

- Install an IDE (IntelliJ IDEA highly recommended)

- Install Apache Maven

- Install git (https://git-scm.com/)

- `git clone https://github.com/senbox-org/snap-examples.git`

Goals

- Create a piece of running software on basis of SNAP

- Learn how to develop own ideas on basis of SNAP

- Learn to exploit satellite data with SNAP

- Exploit knowledge of SNAP developers

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1st ESA SNAP Hackathon:

SNAP OVERVIEW

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- SNAP: ESA **S**e**n**tinel **A**pplication **P**latform
  - A common software platform and host for the Sentinel Toolboxes and others
  - One application, one installation on end-user's computer
  - Synergistic use of various EO data with common and specific tools
  - Fully open-source, GPL 3
  - Joint, collaborative development of the primes running the Sentinel Toolbox projects
  - It's a ESA SEOM funded activity

Sentinel Toolboxes Consortia

driven by user requirements, guided by user expertise, implemented by a experienced technical team

Toolbox Evolution

ENVISAT , Radarsat, Spot, Modis, …

ESA   **NASA**

NEST   BEAM   SeaDAS 7

SNAP   S1TBX   S2TBX   S3TBX   SeaDAS 8+

ESA   **NASA**

Sentinel 1,2,3, ENVISAT, Radarsat, Spot, Modis …

Main Subsystems
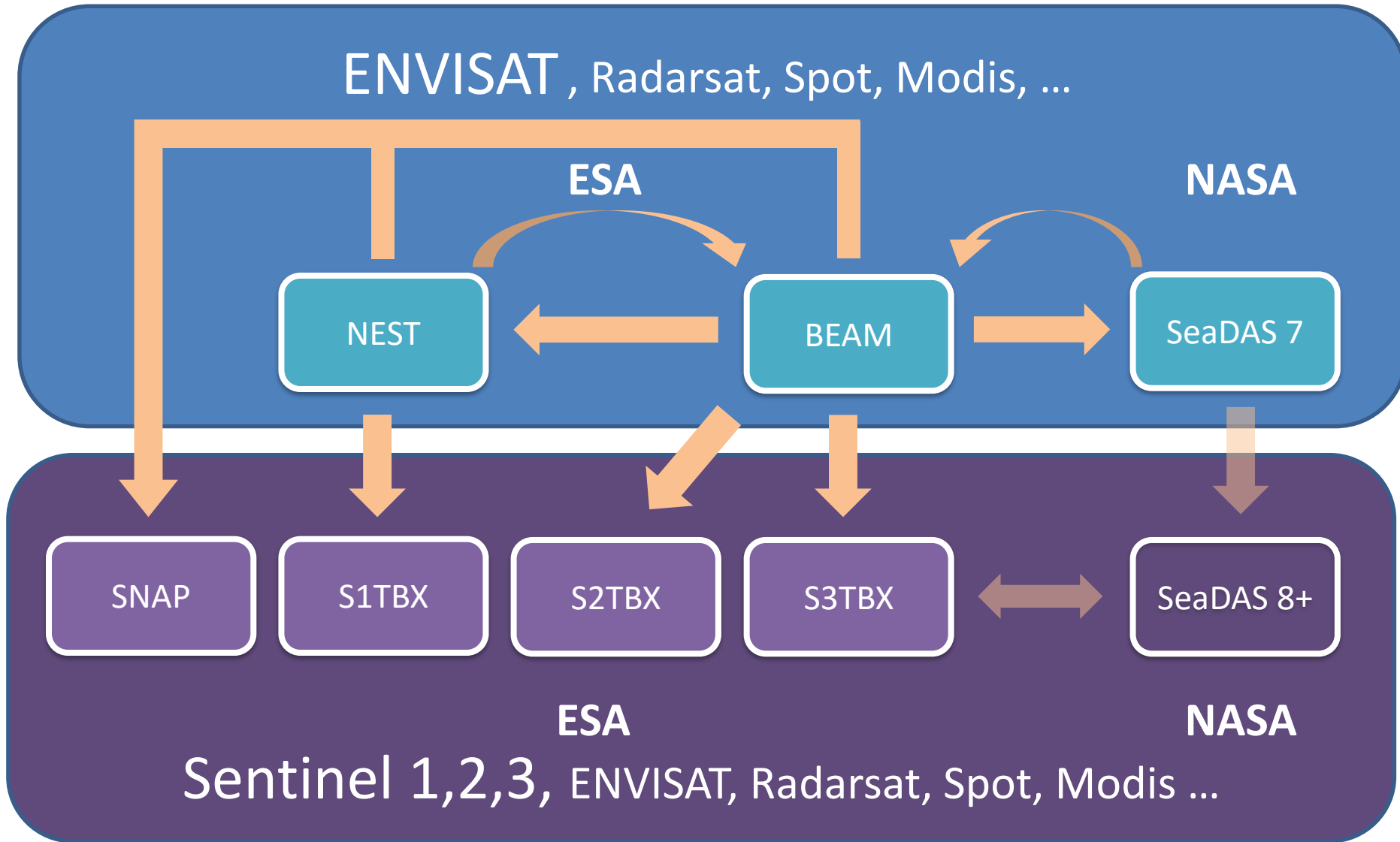
- ## SNAP Desktop
  - Modern, intuitive and rich user interface
  - Fast display of giga-pixel images
  - Large portfolio of analysis and visualisation functions
  - Operator interfaces and graph builder for processing

- ## SNAP Engine
  - SNAP core code base
  - EO data model, I/O & operator APIs
  - Python API
  - Common, generic I/O formats
  - Common, generic functions
  - Command-line interface, no GUI
  - Various uses: library, service implementation, Cloud services exploitation

STEP

- step.esa.int
- Science Toolbox Exploitation Platform
- EO Science collaborative platform
- Technical forum and community animation
- Gathering user feedback and usage
- SNAP tutorials and documentation
- SNAP software download

SNAP Download

**1600 beta user
Thanks you so much for valuable feedback!**
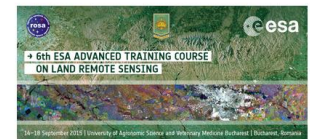
SNAP Roadmap

- SNAP 2.0 beta 8 yesterday night (before Hackathon)
  - Feature freeze for S1TBX, S2TBX, S3TBX
- SNAP 2.0 final end of October
  - Multi-size issue stable, blocking all tools that request single-size
  - S1TBX, S2TBX, S3TBX
  - New SMOS Toolbox
- SNAP 3.0 January 2016
  - True multi-size, resampling operator
  - Lots of new features for S1TBX, S2TBX, S3TBX
- SNAP 4.0 March 2016
- SNAP 5.0 June 2016

→ Project ends in July 2016