

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

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

1st ESA SNAP Hackathon:

SNAP OVERVIEW

What is SNAP?



- SNAP: ESA **Sentinel Application Platform**
 - 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



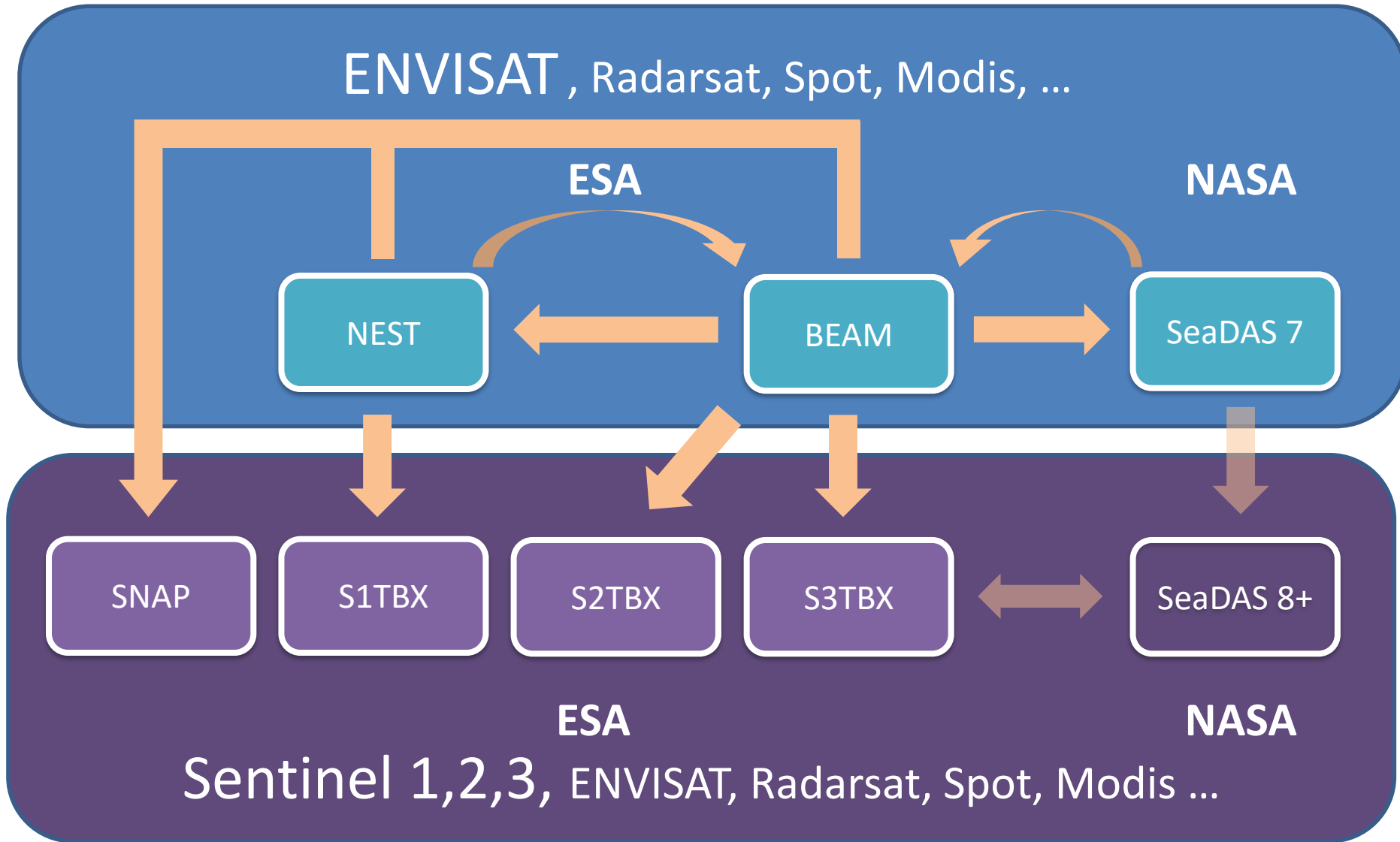
scientific exploitation
of operational missions

Sentinel Toolboxes Consortia



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

Toolbox Evolution



- 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.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
- Sentinel 1 Toolbox
- Sentinel 2 Toolbox
- Sentinel 3 Toolbox
- Download
- Community

[Home](#) > Scientific Toolbox Exploitation Platform



ESA is developing **free open source toolboxes** for the scientific exploitation of **Earth Observation missions** under the the Scientific Exploitation of Operational Missions (SEOM) programme element. **STEP** is the ESA **community platform** for accessing the software and its documentation, communicating with the developers, dialoguing within the science community, promoting results and achievements as well as providing tutorials and material for training scientists using the Toolboxes.

The ESA toolboxes support the **scientific exploitation** for the **ERS-ENVISAT** missions, the **Sentinels 1/2/3** missions and a range of **National** and **Third Party** missions. The three toolboxes are called respectively Sentinel 1, 2 and 3 Toolboxes and share a common architecture called **SNAP**. They contain some functionalities of historical toolboxes such as BEAM, NEST and Orfeo Toolbox that were developed over the last years.



SNAP Features



Download



Tutorials



Community



Documentation



Developers



Gallery



Blog

The following results have been obtained thanks to the Sentinel Toolboxes :

S1 TOPS co-seismic interferogram of the Pishan earthquake

A Sentinel-1 TOPS co-seismic interferogram of the Pishan earthquake in Western China on the 3rd of July 2015.

[View More](#)

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EO Science 2.0



6th ESA Advanced Training Course
on Land Remote Sensing



4th ESA Advanced Training Course
on Ocean Remote Sensing

SNAP Download



step
science toolbox exploitation platform



ESA STEP TOOLBOXES **DOWNLOAD** GALLERY DOCUMENTATION COMMUNITY

- SNAP
- Sentinel 1 Toolbox
- Sentinel 2 Toolbox
- Sentinel 3 Toolbox
- Download
- Community

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Download

Here you can download the latest installers for SNAP and the Sentinel Toolboxes.

Data provision is available to all users via the [Sentinel Data Hub](#).

Previous Versions

Former releases can be downloaded from the [Previous Versions](#) page. But we highly encourage you to test the beta version for the next release !

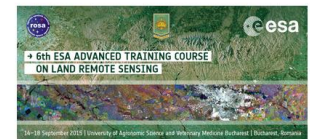
Current Version

1600 beta user
Thanks you so much for valuable feedback!

Search...



EO Science 2.0



6th ESA Advanced Training Course
on Land Remote Sensing



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