Agenzia Spaziale Italiana

SDC-IT

M. Frailis

on behalf of SDC-IT team

SDC-IT teams and infrastructures

SDC-IT-DEV at INAF

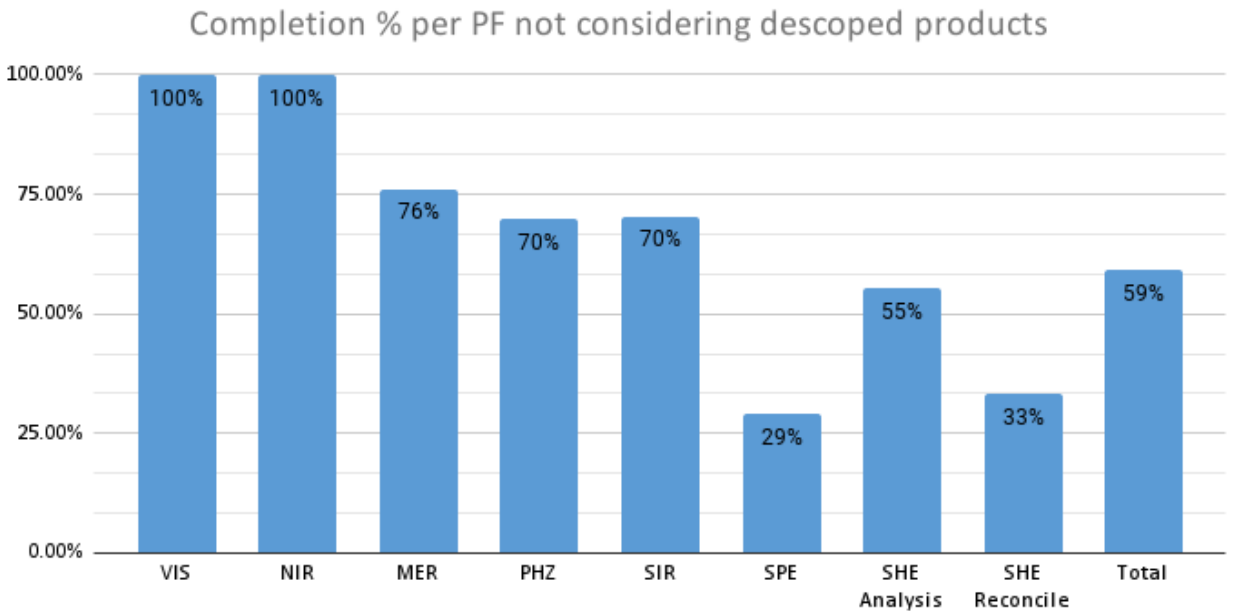
- PF integration, testing and release (LE1, NIR,SIR,MER,LE3,SPE)
- PF testing in scientific challenges and ops rehearsals
- Planning and management of operational infrastructure
- Support to the IOT
- Infra resources:
  - cluster HOTCAT in OATs
  - 2 dedicated BeeGFS storage servers **(650 TB)**

SDC-IT-OPS at ALTEC SpA

- Production infrastructure:
  - **SDC-IT-INT**: for technical integration of PFs before their deployment (available)
  - **SDC-IT-PROD**: production infrastructure (next procurement)
  - Technical and Scientific challenges production and follow-up
- SW development and validation:
  - LE1 NISP Processor
  - PF validation infra development and support
  - PSFEx and SCAMP reengineering

Scientific Challenge 8 (514 deg2)

- Preceded by a **Pilot phase**, on a small set of observations
  - For each PF (NIR, MER,SIR) several early processed datasets releases, to be used by downstream PFs
- Provided releases: NIR PF 1.3.0, MER PF 8.4.0, SIR PF 2.7.0



SC8 results and SC8 ops rehearsal

- Some of the issues raised during **SC8**:
  - In some tiles, MER deblending step was using much more then 22 GB of RAM (> 100 GB in some tiles), due to a new validation procedure
  - SIR version 2.7.0 was still implemented as a single workflow: single input observation, multiple extracted spectra products per tile
    - Splitting SIR in two workflows (spectra extraction pipeline and spectra combination pipeline) was already planned after SC8
- New releases for the **SC8 Ops rehearsal** in October (NIR PF 1.3.1, MER PF 8.6.1, SIR PF 2.8.4)
  - **MER**: issue above solved. **92%** of SC8 PPOs completed, 6% descoped because at the edge of the covered area, only **2%** due to a failure
  - **SIR** has provided a **separate combination pipeline** (step) and the last release has also drastically **reduced the memory footprint**. **All PPO**s correctly processed
- **LE3 PPO testing**: performed on L2_CATRED, GC ed ED PFs

PF software maturity evaluation

- To be started by NIR, SIR and MER (target **ML 3A**). Some PA/QA automatic estimates based on **SC8 versions** of the software

NIR PF estimated ML: **ML2B + 32%**

Requirements: ML3A + 67%
Design: ML3A + 75%
Development: ML2B (line coverage 33.7%)
Validation: ML2B (M16 = 36.92 %)
Documentation: ML2B (SRN to be updated, SUM to be started)

MER PF estimated ML: **ML2B + 73%**

Requirements: ML3B
Design: ML3A + 75%
Development: ML2B (line coverage 30.2%)
Validation: ML3A + 18%
Documentation: ML2B (SRN and SUM to be updated)

SIR PF estimated ML: **ML2B + 36%**

Requirements: ML3A + 67%
Design: ML3A + 50%
Development: ML2B (line coverage 41.3%)
Validation: ML2B + 18% (M16 = 46.48 %)
Documentation: ML2B (SRN and SUM to be started)

PF validation

- Especially for NIR and SIR, we needed a more systematic approach to the test cases development and run
  - Different approaches in each test script
    - Elements executables, free python scripts
    - undocumented parameters
    - Input dataset not always clear (which input to which executable parameter)
- After some iteration, we have provided to ALTEC a software specification to
  - define a common json configuration file for all test cases, and using PF working directories
  - a common, lightweight, python API to be implemented by each test case
  - a common validation pipeline (in python), running all test cases
  - preserving the possibility to run each test case as a stand-alone executable
  - a common json output, categorizing and grouping test cases outputs (parameters, statistics, plots, pass/fail, etc.)
  - A final step rendering the json output of the validation pipeline to a wiki page

SDC-IT infrastructure

- SDC-IT-DEV infrastructure
  - INAF-OATs (HOTCAT) resources sufficient for the SDC-IT development and integration activities
  - Some requests received from **SWG for LE3**, but currently **no sufficient computing resources** available
- Resources for the SDC-IT production infrastructure based on the SGS Proc. Budget presented at the Implementation Review (IR)
  - Since then, new resource estimates presented by the System Team, with a huge increment of computing resources due to **SHE** (**x5 increment**)
  - We have decided to keep IR estimates, wait for a more mature SHE software and to discuss with PO and System Team lead about the involvement of the other SDCs (e.g. SDC-UK)
- SDC-IT-PROD (ALTEC)
  - Official SDC-IT production infrastructure
  - Reserved to SGS production pipelines

Next phases

- Performance Verification rehearsal preparation
  - PF migration to EDEN 3 and the new Data Model v9
  - Matching between **Calibration blocks** and current NIR/SIR software
- Deep fields processing optimization
  - **SIR** spectra decontamination: **62 GB of RAM** on a deep
  - **MER** mosaicing: up to **70.000 IOPS** (due to Swarp), heavy on a shared file system
- Readiness Review preparation
  - Increase the PF Software Maturity Level
  - Complete the PF documentation (in particular the user manuals)
- More frequent telecons with the NISP IOT, to prepare SOVT2 and support from ALTEC
- Preparation of the RDO for next activities with ALTEC
- Start prototyping the software for the Data Products Validation
  - Some software already available from MER and SIR

The SDC-IT team

- M. Frailis (SDC Lead and DEV Lead for NIR)
- D. Busonero (SDC Validation team)
- S. Galeotta (SDC-DEV Lead for MER and LE3)
- G. Maggio (SDC Infra Sys Admin)
- D. Maino (SDC Scientific Coordinator, SIR)
- M. Moresco (SDC-DEV Lead for SPE)
- E. Romelli (SDC-DEV team: MER ,LE3, ICR Tool)
- F. Rizzo (SDC-DEV team: NIR and LE3)
- G. Taffoni (SDC-PROD Infra Manager)
- D. Tavagnacco (SDC-DEV Lead for SIR, LE3, ICR Tool)
- T. Vassallo (SDC-DEV team: MER and LE3)
- C. Vuerli (SDC PA/QA Lead)

AND

the ALTEC team