

# ESA SSA SWE Element Status Report

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1. SSA SWE objectives
2. Status now
3. Next steps in 2011 - 2012
4. SSA SWE Services
5. Summary



1. Spacecraft designers
  - Environment specification and post event analysis
2. Spacecraft operators
  - In orbit environment and effects monitoring/forecasting, post event analysis, mission analysis
3. Human space flight
  - In flight and cumulative crew radiation exposure, increased crew radiation exposure risk
4. Launch operators
  - In flight monitoring, estimates and forecasts of radiation effects in electronics, atmospheric density forecasts
5. Transionospheric radio link users
  - Real-time and forecast TEC maps, scintillation maps, ionospheric disturbances monitoring
6. Survey and tracking
  - Atmospheric estimates, geomagnetic and solar indices archives and forecast for drag calculation
7. Data services
  - Space weather data archive, event based alarms
8. Non Space Systems Operators
  - Power systems and pipeline operators, airlines, resource exploitation system operators, auroral tourism sector

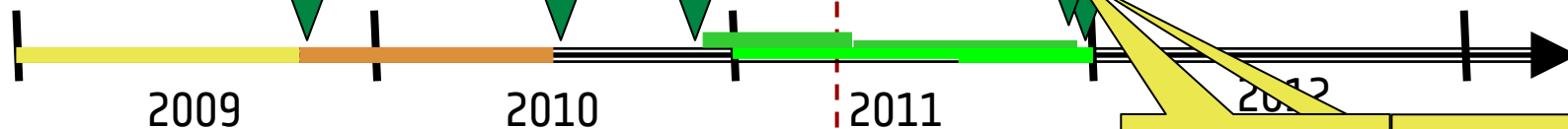
## SN-II: Implementation design study of Space Weather instruments:

- Identification of spaceborne instruments for SSA SWE services
- Characteristics of the instruments and the planned satellite missions for suitable orbits
- Identification of needs for dedicated SWE missions
- Implementation design studies for selected piggyback missions

## SN-I: SWE Segment Precursor Services:

- Review of SWE assets and services from the SWE CRD
- Re-deployment of the initial precursor services
- Service assessment with the user in the loop

SSA SWE CRD



28.06.11

SN-II  
Final Report

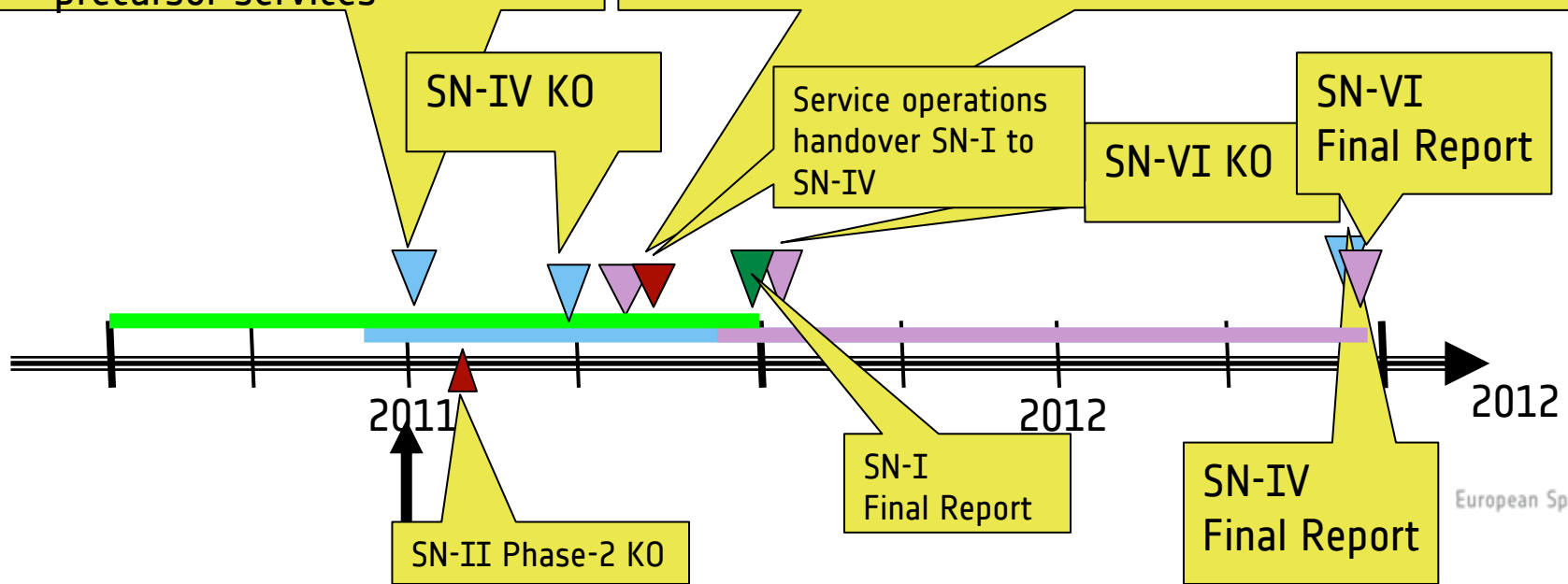
SN-I  
Final Report

## SN-IV ITT:

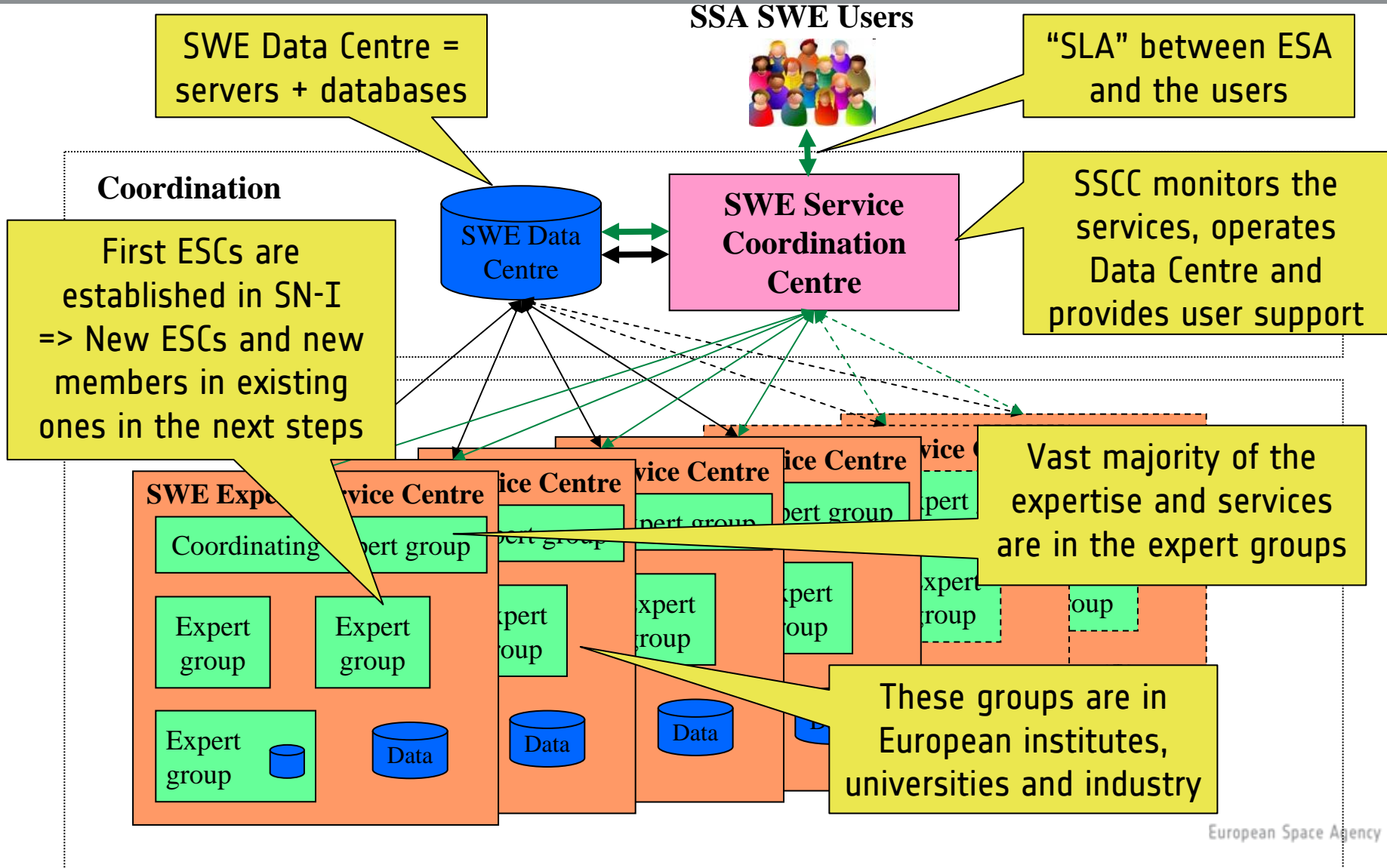
- Testing, validation and operation of established SWE precursor services
- Enhancement of the SWE user services beyond the initial precursor services
- Integration of more precursor services

## SN-VI ITT:

- Integration of new federated SWE precursor services
- Development of SWE metrics for assessment of the service accuracy
- Development of new services to semi-operational level
- Takes advantage of the results of the service assessment in SN-I



# SSA SWE utilisation of existing services and assets



- Core element evaluating system requirements, governance and data policy issues in parallel to segment specific activities
- Currently performing internal part of the System Requirements Review (CO-1 Part 2 study)
  - Expect this to be opened to external expert review post-summer
  - Will include an analysis of the CRD, System Requirements Document and product specification
- CO-II Architecture Design study ITT expected shortly
  - PDR to take place in 2012
- Work on proposal for next phase of SSA will start THIS year
  - Will build on work done during the preparatory programme
  - ESWW good opportunity to raise awareness of work currently ongoing & community needs



- ESWW8: 28th Nov-2nd Dec, Namur, Belgium
- Major event in the European space weather calendar
- Builds on initial series of ESA application workshops started in 1998
- Collaboration between the STCE, ESA, the SWWT, and the COST ES0803 communities.
- Provides opportunity for exchange links researchers with the latest information on user requirements and application development, particularly important in case of e.g. EC projects where complementarity is a requirement



<http://sidc.oma.be/esww8>

- SSA activities cover service development in response to user requirements
- ESA R&D programmes: TRP, GSTP, GSP etc
- TRP
  - E.g. Vispanet, due to conclude later in 2011
- GSTP-5 activities (elements, 1/2/3/4)
  - Includes SSA technologies (instrumentation & software developments)
  - E.g. Virtual Space Weather Modelling Centre, Phase 1
- Lower TRL development & prototype technologies that may be adopted later by SSA

# Summary

- First SSA SWE activities have been started in August and November 2010
- SSA SWE services are expected to be open to the public by autumn 2011
- More services will be federated into the SSA system in the new activities in 2011 – 2012
- System and R&D studies running in parallel
- Work will start on the proposal for the next phase of SSA this year
  - Include service requirements, measurement requirements and system requirements
- Collaboration through ESWW & SWWT a focal point





# THANK YOU

For more information:  
[www.esa.int/ssa](http://www.esa.int/ssa)

European Space Agency