



# ESESA

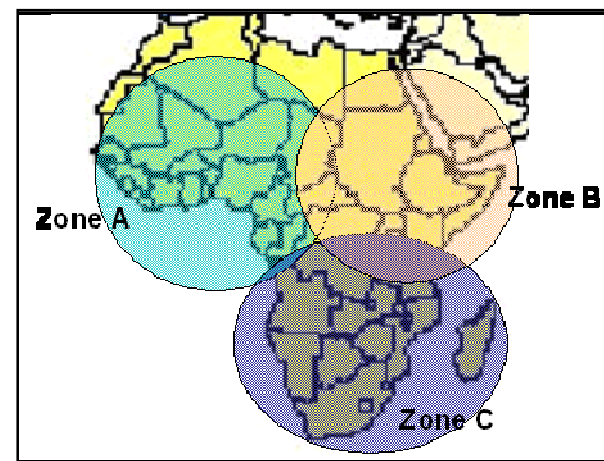
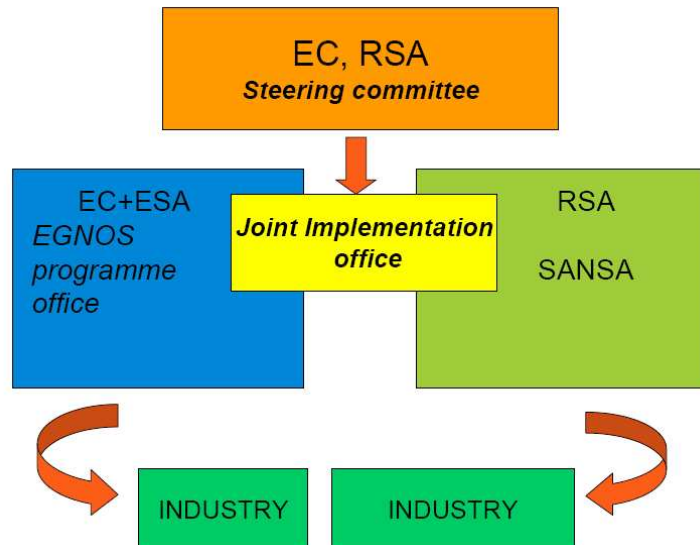
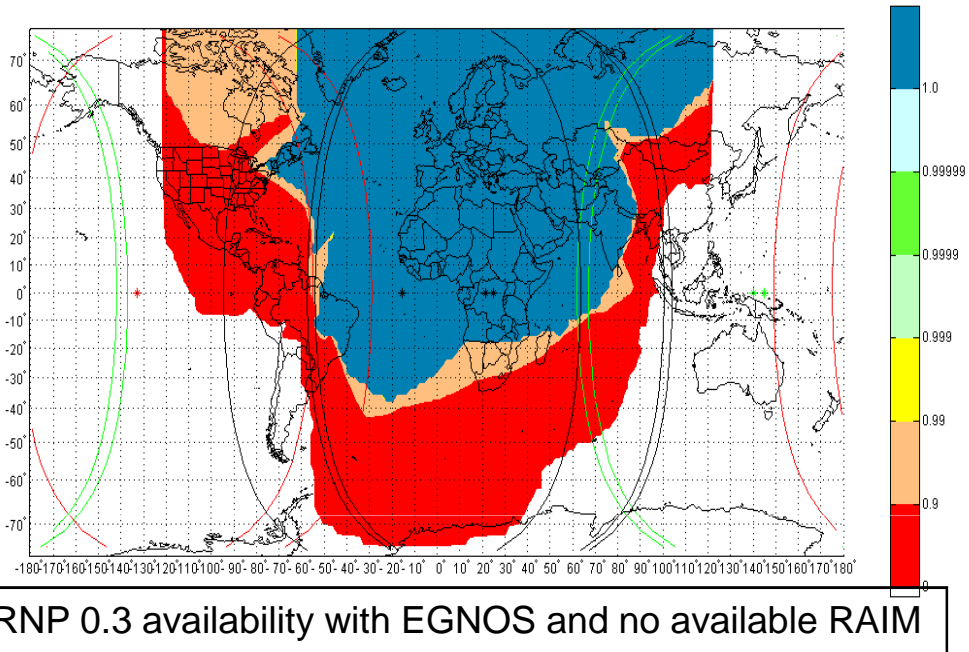


European GNSS Supervisory Authority

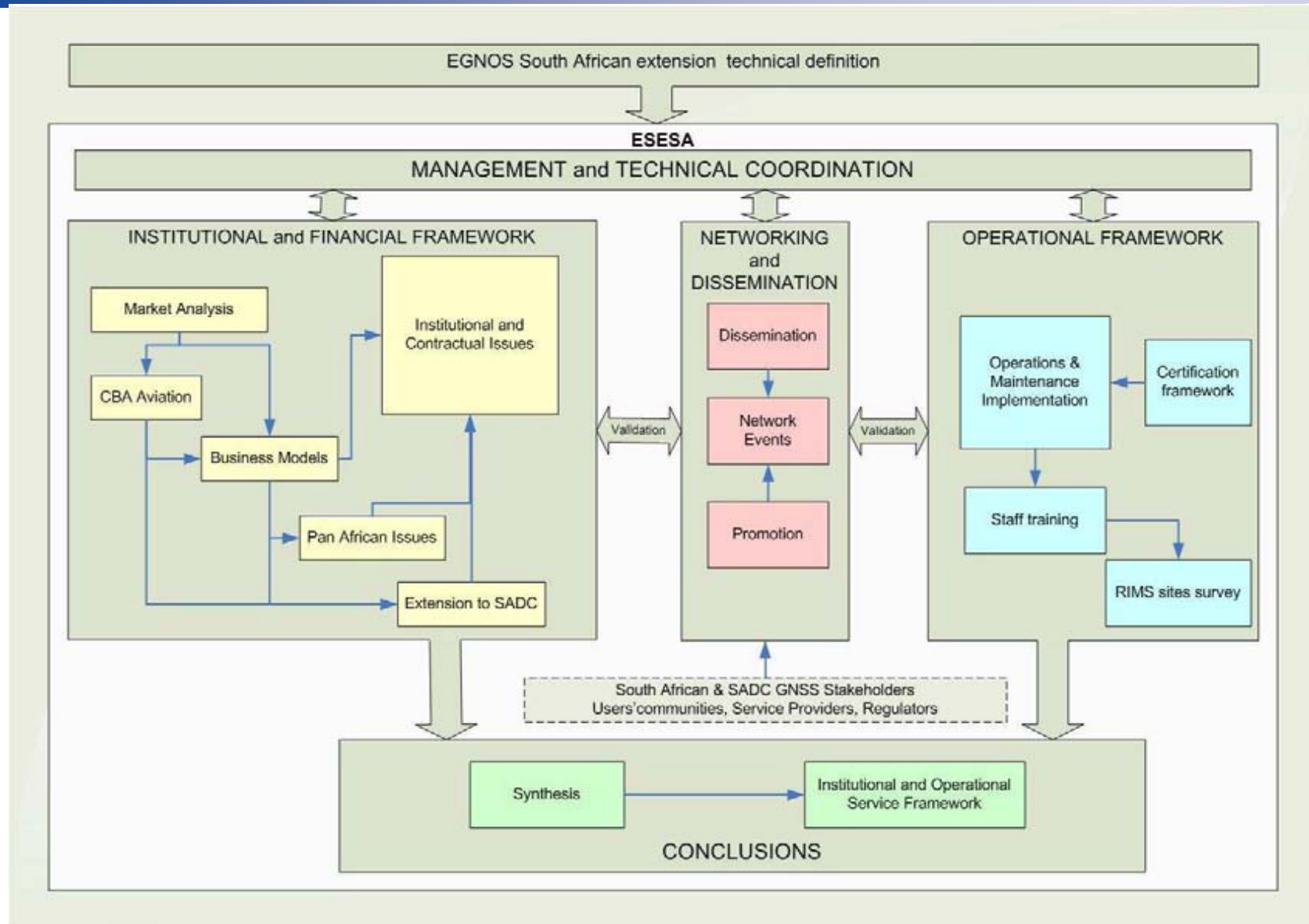
# EGNOS Service Extension to South Africa

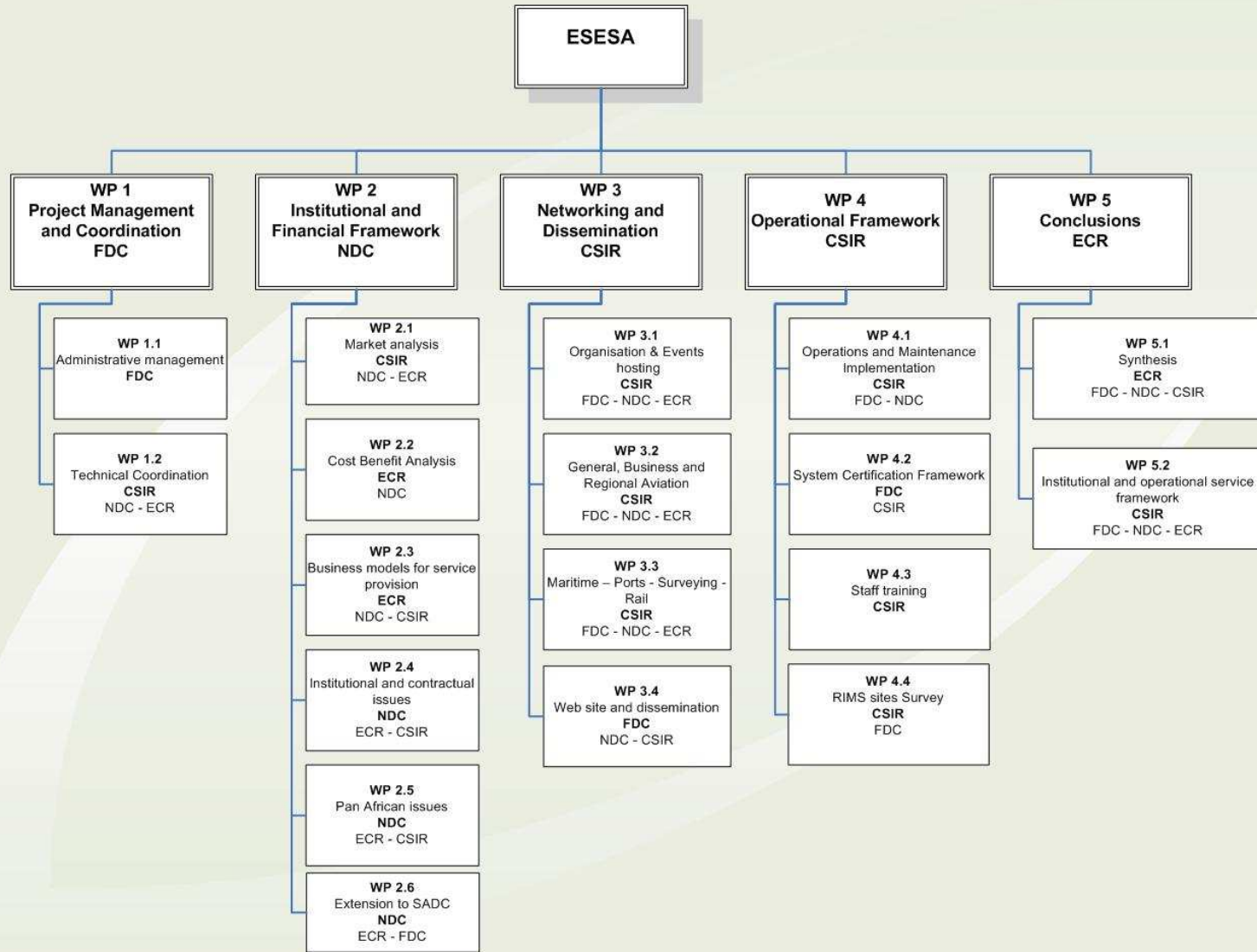


- EGNOS service coverage in South Africa
  - ✓ Technical study achieved by ESA
  - ✓ Additional RIMS necessary to cover region >Lat 20° South
  - ✓ Successful EU-South Africa discussions in 2009
  - ✓ Stepwise approach for full EGNOS service (REM concept)
  - ✓ Joint Implementation Team set up
  - ✓ S.A will bear Capex and Opex costs
  - ✓ S.A ready to support extension to SADC

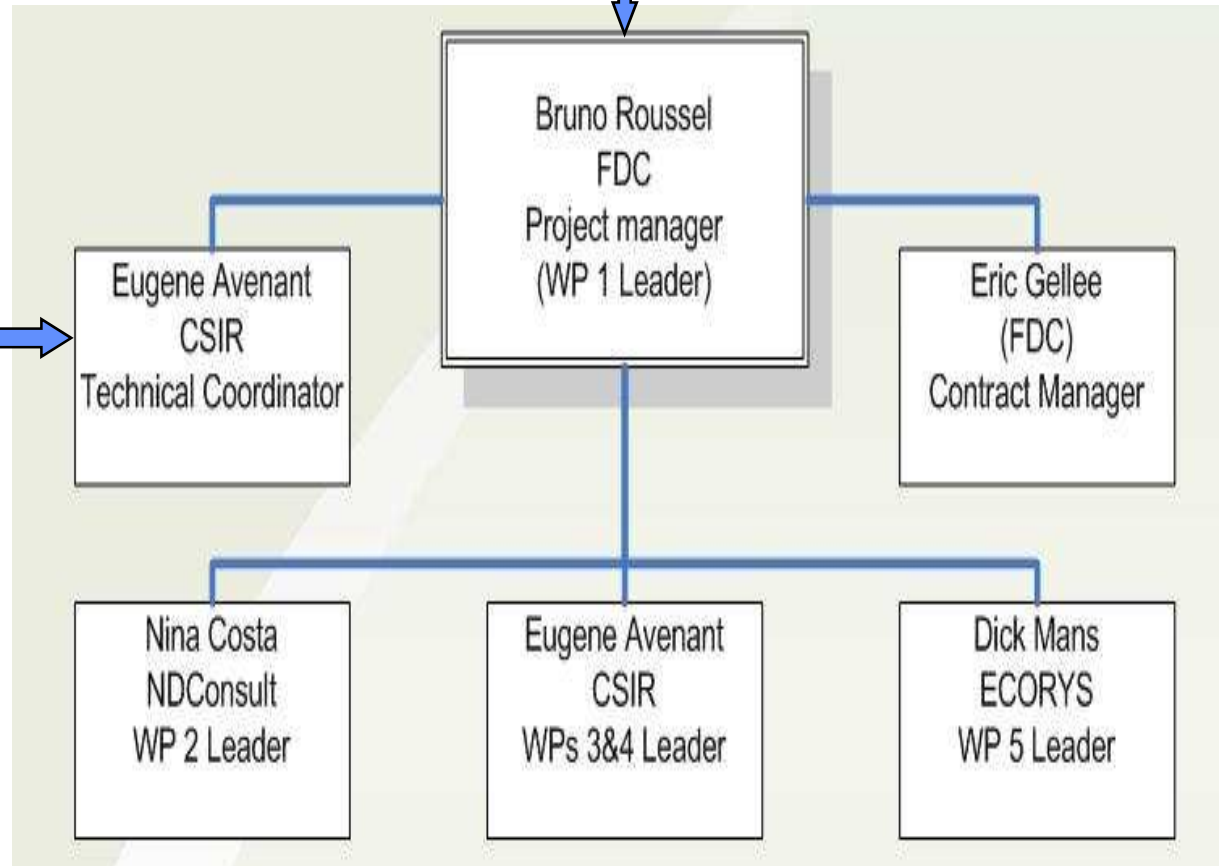


- To produce an overall service implementation plan for the initial extension of EGNOS service to Southern Africa (SADC)
  - ✓ Including a roadmap, an action plan and recommendations
  - ✓ Addressing Institutional, Financial and Operational aspects
  
- To perform preparatory actions for EGNOS service deployment
  - ✓ Initial training for South Africa staff who will be in charge of EGNOS operations
  - ✓ RIMS sites survey
  
- To implement a strong networking with GNSS local stakeholders
  - ✓ To develop GNSS applications awareness
  - ✓ To validate the outcomes of the service framework
  - ✓ To relay strong EU signal for EGNOS extension to the African continent and to show the S.A as incentive for other regions.





- As consortium coordinator, FDC is the Contractual and Administrative interface of GSA
  - ✓ Project Manager (PM): Bruno Roussel ([bruno.rousseau@fdc.fr](mailto:bruno.rousseau@fdc.fr))
  - ✓ Contract Manager (CM): Eric Gellee ([eric.gellee@fdc.fr](mailto:eric.gellee@fdc.fr))
  
- The PM is supported in its tasks by:
  - ✓ The Technical Coordinator (TC): Eugene Avenant ([EAveant@csir.co.za](mailto:EAveant@csir.co.za))
  - ✓ WP Leaders (WPLs) responsible for:
    - Technical coordination of the WP activities including review and verification of the deliverables
    - Monitoring the progress of these activities and providing progress reporting
    - Keeping the PM informed on the state of the WP
    - Maintenance of its WP travel plan
  
- GSA interface
  - ✓ Project Officer : Hans de With ([Hans.DEWITH@gsa.europa.eu](mailto:Hans.DEWITH@gsa.europa.eu))
  - ✓ Contract Officer : Aydin Ciliv ([aydin.ciliv@gsa.europa.eu](mailto:aydin.ciliv@gsa.europa.eu))



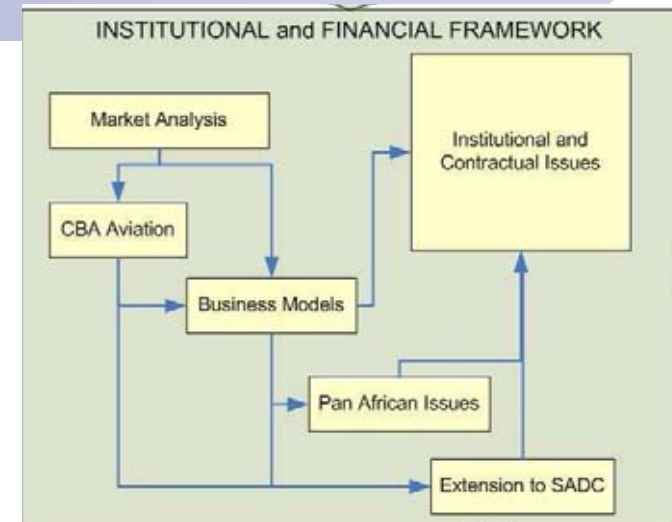




- Information and Communication with GSA
  - ✓ Day-to-day communication will be ensured by the PM
  - ✓ Activity Reports produced every 3 months
  - ✓ Progress Report produced every 6 months
  - ✓ Meetings (Involving PM and WPLs, GSA PO and other GSA -EC representatives (as required))
    - Progress Meetings
      - Organised every 6 months
      - Review of the status of WPs, of GSA endorsement of deliverables, of payments and projected dates and of any impediments to progress
      - Scheduled just after a Progress Report delivery
    - Intermediate Review (T0+12 Aligned with PM2)
      - Reviews the activities progress and main achievements over the first year of activities as well as the financial and contractual status. Presentation and agreement of the plans for the next 6 Months
    - Final Review (T0+18)
      - Overall presentation of the main outputs of the project, detailed presentations of all results WPs by WPs, recommendations for future work.

- This WP comprises 6 sub-tasks

- ✓ 2.1 Market analysis
- ✓ 2.2 Cost benefit analysis
- ✓ 2.3 Business models
- ✓ 2.4 Pan-african issues
- ✓ 2.5 Extension to SADC



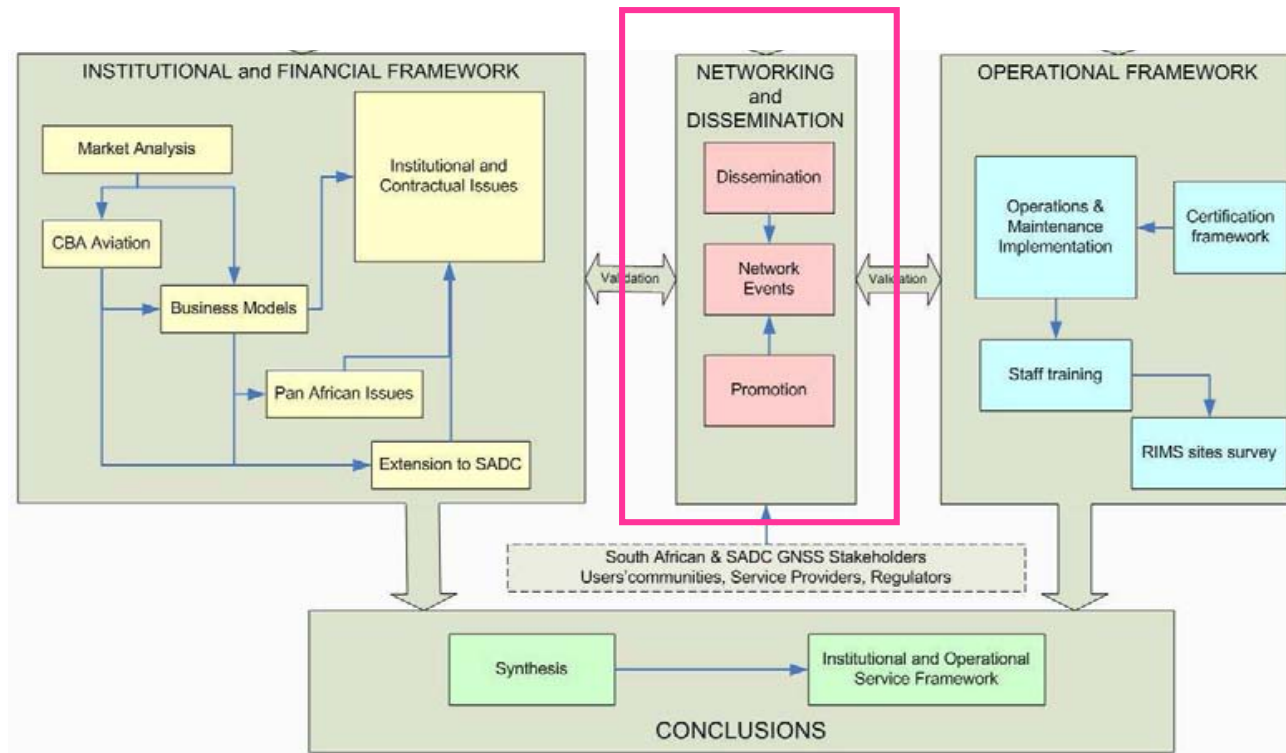
- 2.1 - Market research on the demand (user communities, user numbers) and supply (product and service suppliers) sectors in South Africa
- 2.2 - CBA for ISA (SBAS for civil aviation in AFI) will be reduced in scope to the SADC region
- 2.3 – Assess indicative costs, possible cost recovery mechanisms, and then develop appropriate business models
- 2.4 - Identify the key institutional and contractual for successful implementation of EGNOS in South Africa
- 2.5 - To ensure that any decisions taken in Southern Africa regarding EGNOS are coherent with those taken at pan-African level on ISA
- 2.6 – Investigate what need to be put in place to extend EGNOS to SADC

- Our requirement for the latest updated **ISA CBA (for the aviation sector) model** and assumptions is critical to the completion of the CBA for South Africa
  - ✓ During negotiations the budget for this WP was cut significantly and as a result the effort was reduced dramatically
  - ✓ As a result, the CBA will now focus on the aviation sector within SADC
  - ✓ It will not be possible to develop a new CBA model within this time frame
  
- This study also requires the **latest architecture, technical and performance studies and planning from ESA** on the extension of RNP and EGNOS to southern Africa
  - ✓ ESESA requires officially these inputs to EC DG TREN

- WP 2.1 Market analysis
  - ✓ Identification of all supply side players, i.e. private or public organisations that supply GNSS products and services
  - ✓ Identification of all potential user communities in South Africa for EGNOS services.
  - ✓ Start gathering information about the most relevant market sectors e.g aviation, maritime, rail, and agriculture
  
- WP2.2 CBA for aviation in SADC
  - ✓ Gain access to the ISA updated CBA model and gain an understanding of how it works
  - ✓ Gain access to latest ESA architecture studies for RNP coverage and ISA
  - ✓ Identify what key inputs are needed from market analysis, and feed this back to WP1
  - ✓ Decide how the model should be adapted to the SADC region
  
- WP 2.3 Institutional and contractual issues
  - ✓ Identify contact points and make initial contact with representatives from the South African Civil Aviation Authority, South African Space Agency, SA Dept of Science and Technology and SA Dept of Transport, and ESSP.

- This WP will undertake liaison with a large number of external interfaces, including
  - ✓ Key South African institutional stakeholders
    - ATNS, South African Civil Aviation Authority, South African Space Agency, SA Dept of Science and Technology, SA Dept of Transport
  - ✓ The European Satellite Service Provider (ESSP)
  - ✓ Pan-african stakeholders
    - African Union, ASECNA, AFCAC, Air Safety Agency for Africa, etc.
  - ✓ SADC stakeholders
    - SADC Infrastructure and Services Directorate, national civil aviation authorities, Ministries of Transport, SADC Civil Aviation Committee
  
- WP2.5 activities include keeping a close watch on the meetings and decisions taken at
  - ✓ ICAO's APIRG (APIRG/17 in Dakar during August 2010)
  - ✓ sub-committees such as the Joint PBN and GNSS TF (in Nairobi on 2-4 March and 13-15 Sept 2010) and CNS Sub-group (in Nairobi during Q1 2010)
  - ✓ EGNOS SoL commissioning in Europe

- Events organisation and hosting
- Schedule
- Events
- Deliverables
- ESESA Web site
  - ✓ [www.esesa.org](http://www.esesa.org)
  - ✓ [info@esesa.org](mailto:info@esesa.org)
- E-News
- Points of contacts



- Two events
- Maintain contact list
- Identify user community representatives
- Develop workshop objectives, programme, speakers and/or moderators
- Workshop organisation
- Announcements, programmes, leaflets and supporting documentation
- Workshop logistics
- Dissemination material



- Establish and invite stakeholders
- Present improved navigation capability offered by EGNOS
- PBN in Europe: APV, Baro VNAV and LPV
- Present initial benefit
- Get feedback
- Foster dialogue
- Arrange SADC meetings



Unlocking winning partnerships

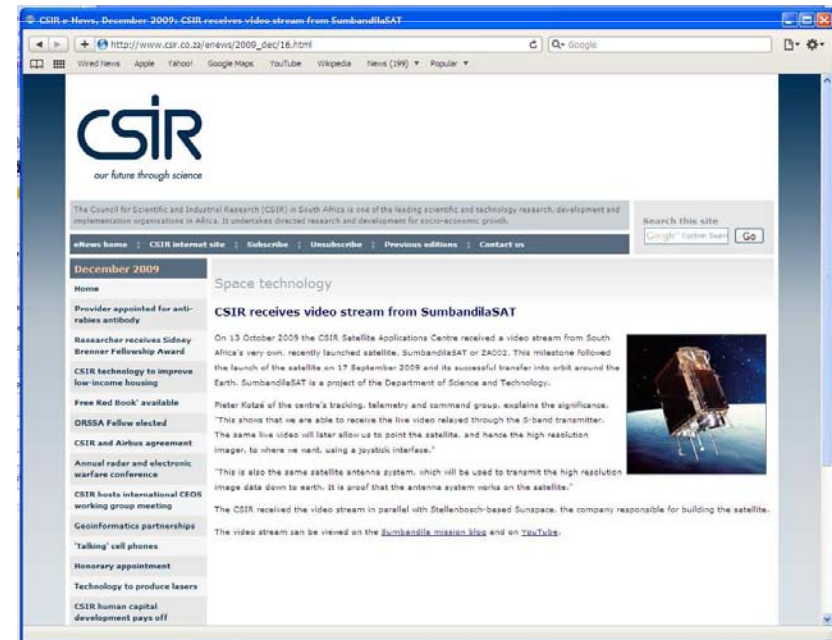




- Establish and invite stakeholders
- Present improved navigation capability offered by EGNOS
- Coastal Port navigation E-navigation AIM
- Precision Agriculture
- Present initial benefit
- Get feedback
- Foster dialogue



- Electronic and paper media used for promoting project
- Project progress
- GNSS events or achievement in South Africa and SADC
- EGNOS and Galileo project status



- Operation and Maintenance
- Certification framework
- Training and RIMS site survey
- Schedule
- Inputs from GSA and EC
- Interfaces in Europe and South Africa
- Short Term Action Plan



- Review system performance and user requirements
- Define:
  - ✓ Overall organisation of service provision
  - ✓ Tasks related to implementation and operation
  - ✓ Maintenance tasks locally performed
  - ✓ Processes with ESSP, roles and responsibilities
  - ✓ Safety management system
  - ✓ Staff capabilities and complement
  - ✓ Training needs and organisation
  - ✓ Upgrade path for evolution of system
  - ✓ Agreements between stakeholders
  - ✓ Implementation planning



Unlocking winning partnerships

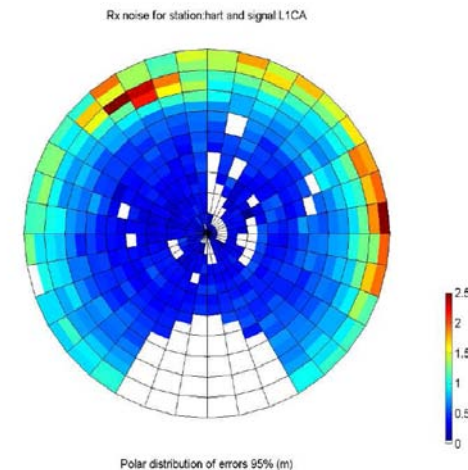
- Identify European and South Africa framework for EGNOS system and operation certification
- Needs analysis, option development with stakeholders
  - ✓ EC (DG TREN Galileo and SES), ESA, ATNS, ESSP
  - ✓ DGAC/DSA (Fr) and EASA
- Stakeholder responsibilities
- Different options for the certification legal framework, applicable requirements
- Agreement between European and South African stakeholders
  - ✓ Infrastructure and System level
  - ✓ Aviation domain level for service implementation support (Eurocontrol, EU MS etc)
- Proposed certification framework with:
  - ✓ Definition of roles and responsibilities
  - ✓ Required agreements
  - ✓ Certification process
  - ✓ Applicable technical requirements

- Identify training objectives and technical staff
- Organisation of training service with:
  - ✓ ESSP
  - ✓ ESA
  - ✓ European body/companies involved in EGNOS operation
- Training budget programme and candidate trainees
- Training programme execute





- Based on EGNOS and Galileo surveys done at HBK
- Analysing the RIMS locations chosen in the ESA technical study and checking for each site the overall possibilities with regard to facilities, global environment (potential masks etc.) communications and network connections, practicalities for maintenance.
- Discussing the results of this initial analysis with the EGNOS JPO and if necessary refining the site list,
- Analysing the technical requirements for RIMS sites and preparing survey operations and equipments,
- Performing the survey at each site and collect the necessary data for further processing,
- Evaluate site on:
  - ✓ Multipath analysis
  - ✓ Radio frequency interference
  - ✓ Site logistics
  - ✓ Site security
  - ✓ Technical support available at site



For each site develop a report with the following high level headings:

- ✓ General
- ✓ Applied Procedures
- ✓ Infrastructure procedures report
- ✓ Site Access
- ✓ Site Security
- ✓ Indoor Areas

- ✓ Maintenance
- ✓ Indoor Environment
- ✓ Canalisation/Cable trays
- ✓ Fire-proof system
- ✓ Grounding system
- ✓ Power supply
- ✓ Communication Facilities

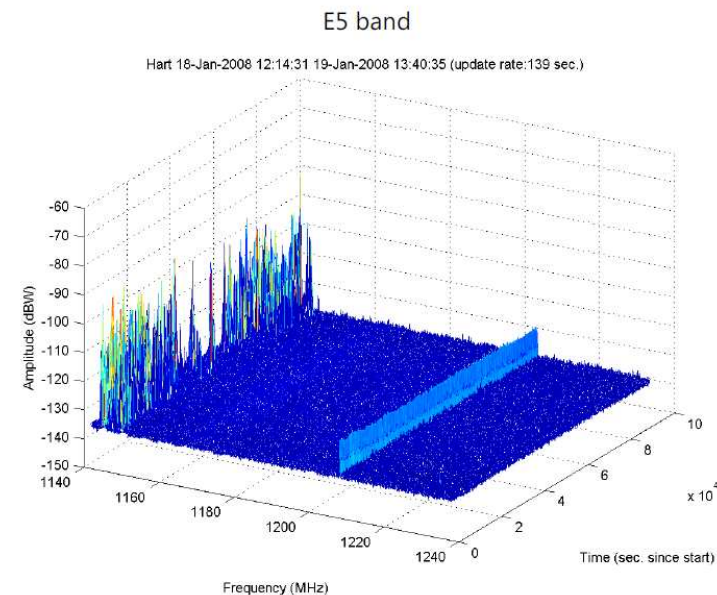
#### ■ GNSS Antenna Survey Report

- ✓ Clear Horizon
- ✓ EMI
- ✓ MULTIPATH

#### ■ S/S Accommodation procedure report

#### ■ S/S Accommodation

#### ■ To produce a single technical report gathering the data of each site survey.

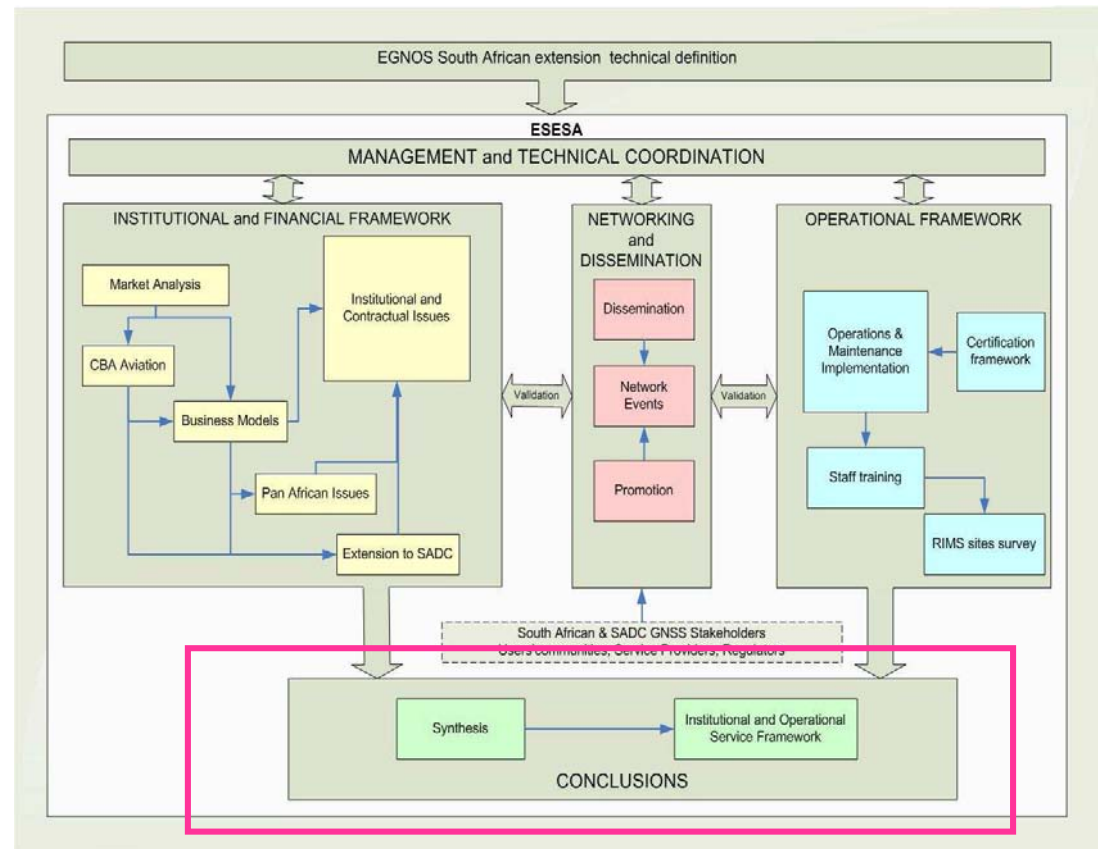




- Previous studies for RIMS implementation
- Updated REM concept (for further steps to full EGNOS service) in EGNOS Evolution Programme
- Updated criteria for RIMS site survey



- WP 5 consists of the following:
  - ✓ WP5.1 Synthesis and roadmap
  - ✓ WP5.2 Institutional and operational service framework
  
- Responsibilities for tasks of WP5:
  - ✓ WP5 leader: ECORYS
  - ✓ WP5.1 leader: ECORYS
  - ✓ WP5.2 leader: CSIR



- The aim of WP 5.1 “Synthesis and roadmap” is:
  - ✓ “to gather all analysis and outputs obtained during the project in order, to check their consistency and to elaborate an overall picture of the service schemes to be implemented”
  
- WP 5.1 “Synthesis and roadmap” consists of the following activities:
  - ✓ **Integration** of all available results of the project;
  - ✓ Check for **inconsistencies** between the available results;
  - ✓ Provide a **high level overview** of the overall implementation scheme;
  - ✓ Provide a **roadmap**, which indicates how the implementation scheme can be reached in the coming years.

- The aim of WP 5.2 “Institutional and operational service framework” is
  - ✓ to “provide the EC and the GSA with a comprehensive plan for the EGNOS service provision over South Africa and SADC taking account for the regional issues.”
- WP 5.2 “Institutional and operational service framework” will result in a high level document describing the following topics:
  - ✓ The **EGNOS service level to be implemented** with associated infrastructure;
  - ✓ Organisation of the **operations and maintenance framework**;
  - ✓ Organisation of the **certification process**, applicable rules and technical standards;
  - ✓ Organisation of the **funding scheme and institutional framework**;
  - ✓ **Overall** implementation process and schedule;
  - ✓ Need for arrangements between **stakeholders** ;
  - ✓ Provisions for **evolution** of the infrastructure and service level;
  - ✓ **Action plan** for all European and SADC stakeholders.