

ADS-B NRA deployment by DSNA

CASCADE Workshop

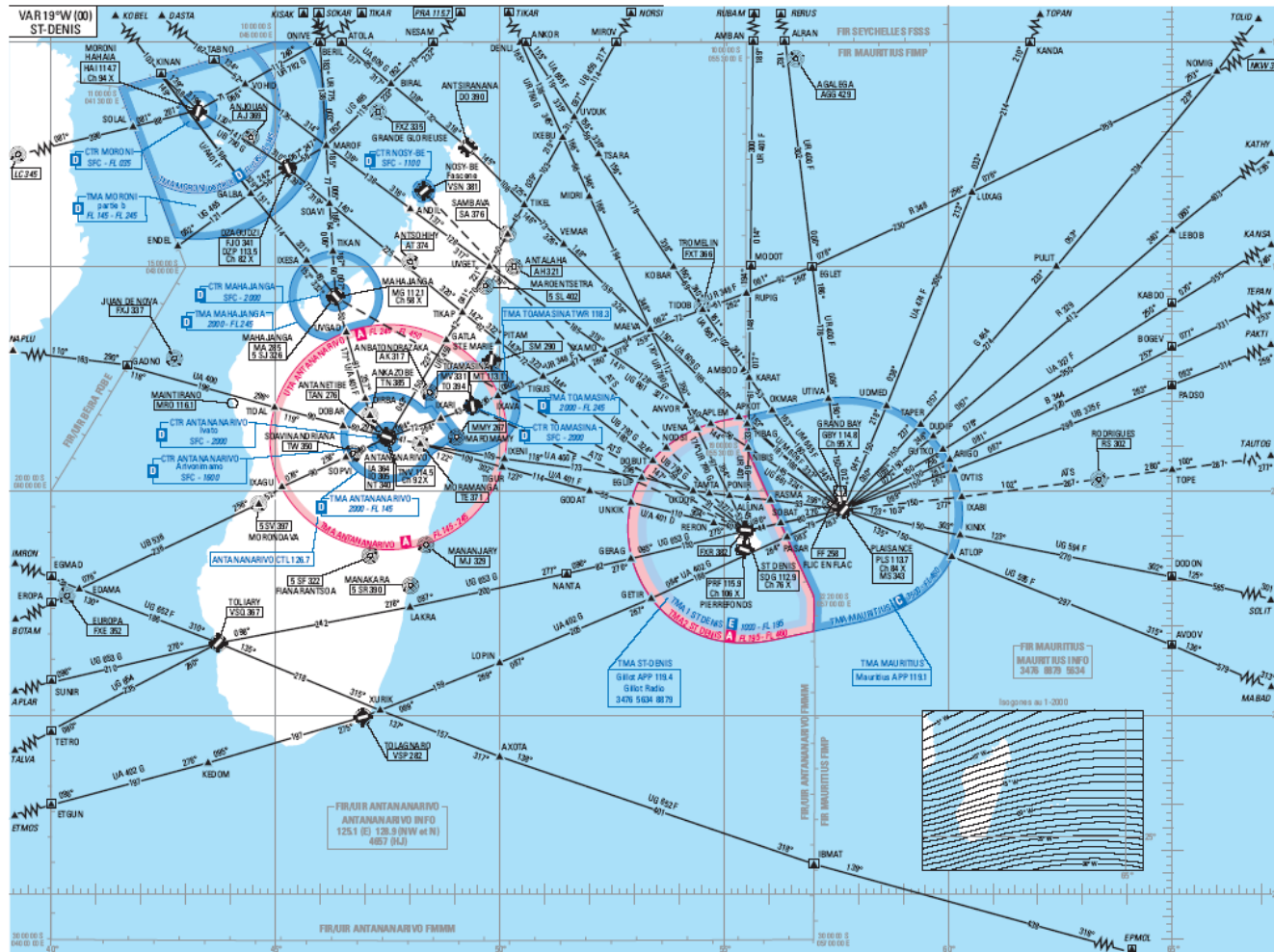
ADS-B implementation plans

- ✚ Operational implementation
 - ☀ ADS-B NRA in la Réunion
- ✚ Validation activities
 - ☀ ADS-B RAD in Corsica
 - ☀ ADS-B APT at Marseille aerodrome
- ✚ Future plans

ADS-B NRA in La Réunion



La Réunion environnement



Feasibility study

- ✚ Due to La Réunion topography, two radar would have been necessary in order to provide surveillance services there. However, taking into account the current traffic density, such installations are far too expensive.
- ✚ An ADS-B feasibility study was therefore requested end of 2004 by DSNA
- ✚ The main objectives were to:
 - ✚ Define the operational needs,
 - ✚ Define the number of ground stations and propose some installation sites,
 - ✚ Propose a ground architecture including data processing and display installation
 - ✚ Address the aircraft equipage policy
 - ✚ Encourage if possible a regional implementation
- ✚ Report was delivered in May 05 and DSNA official decision was taken in June.

Operational needs – Phase 1

- ✚ The first operational requirement is to display all IFR traffic in the airspace controlled by La Réunion. Display of VFR traffic would also be an advantage in the vicinity of both airports. To satisfy those needs, the ADS-B coverage shall be:
 - ✚ from surface in a radius of 6.5 Nm from the St Denis Airport (main airport),
 - ✚ above 6500 ft in the TMA and,
 - ✚ above FL195 at 200 Nm from St Denis.
- ✚ It is expected that traffic from Mauritius could be detected at 3000 ft after take off, in order to ease coordination between both ATC centres.
- ✚ Search And Rescue will also improve from a better localisation of aircraft in emergency or an information of the latest known aircraft position.

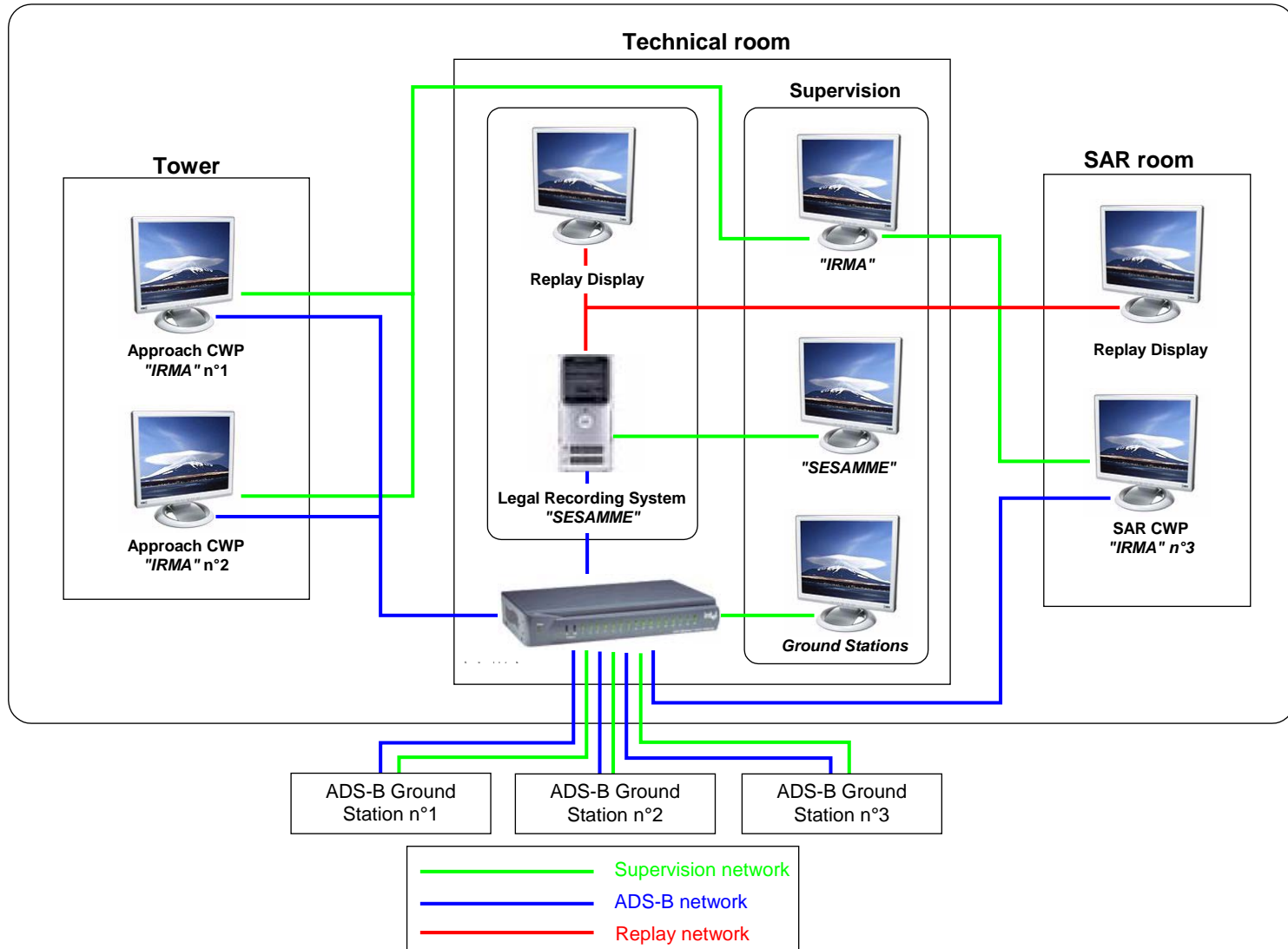
Planning phase 1

- ✚ Three ground stations will be installed to cover the operational needs.
 - ☀ Call for tender has been launched,
 - ☀ Technical and financial proposals under analysis
 - ☀ Installations expected to be finalised mid of 2007 (1st one expected end of 2006)
- ✚ Two CWPs (internal DTI products) will be installed in the tower end of 2006.
- ✚ Technical and operational validations, safety analysis... will take place in 2007.
- ✚ Entry into service expected January 2008:
 - ☀ at that date, current procedures remain applicable.
 - ☀ ADS-B is used to consolidate the ATC controllers mental picture of the surrounding traffic.

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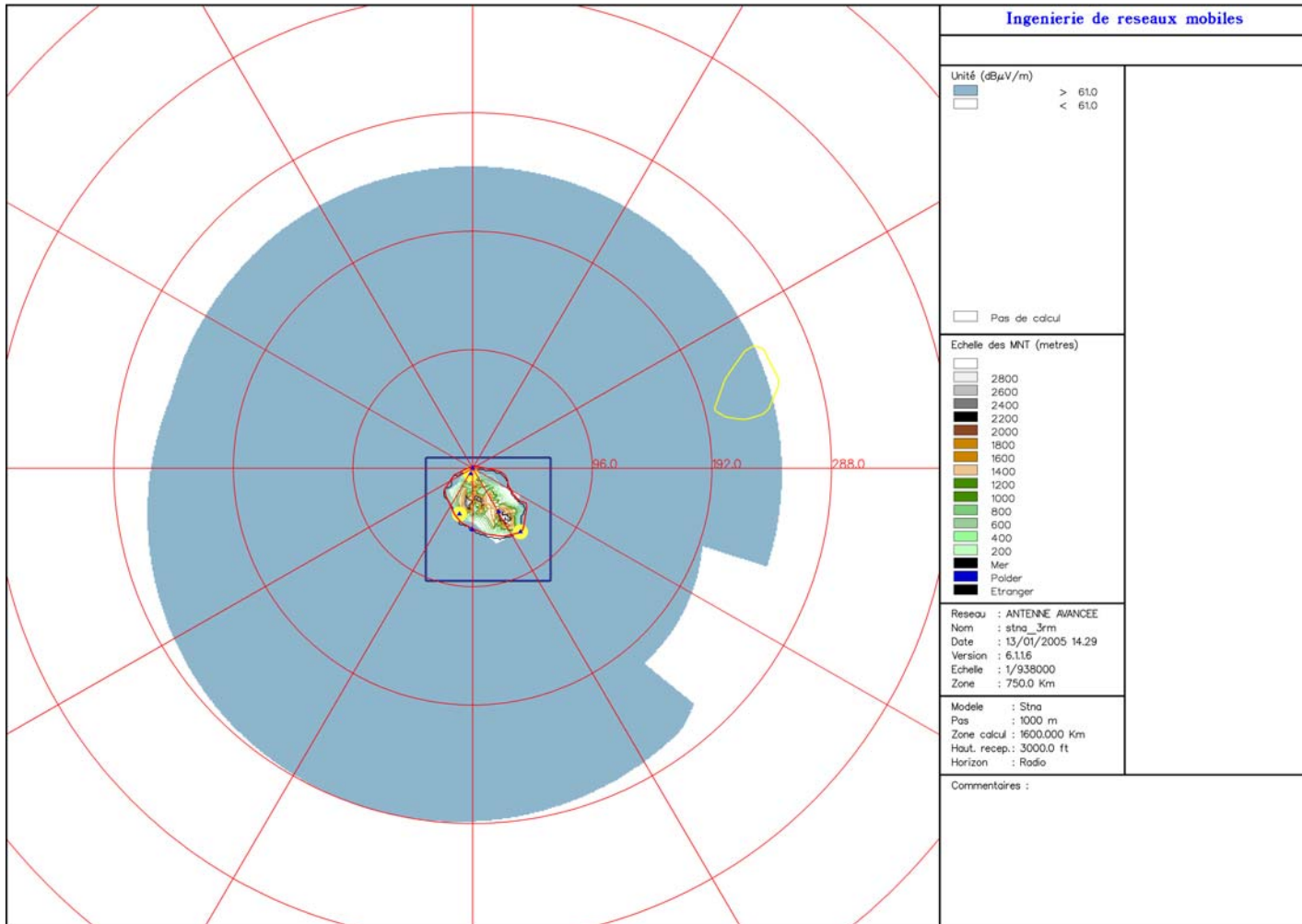
Ground architecture for Phase 1

St Denis La Reunion ATC Center



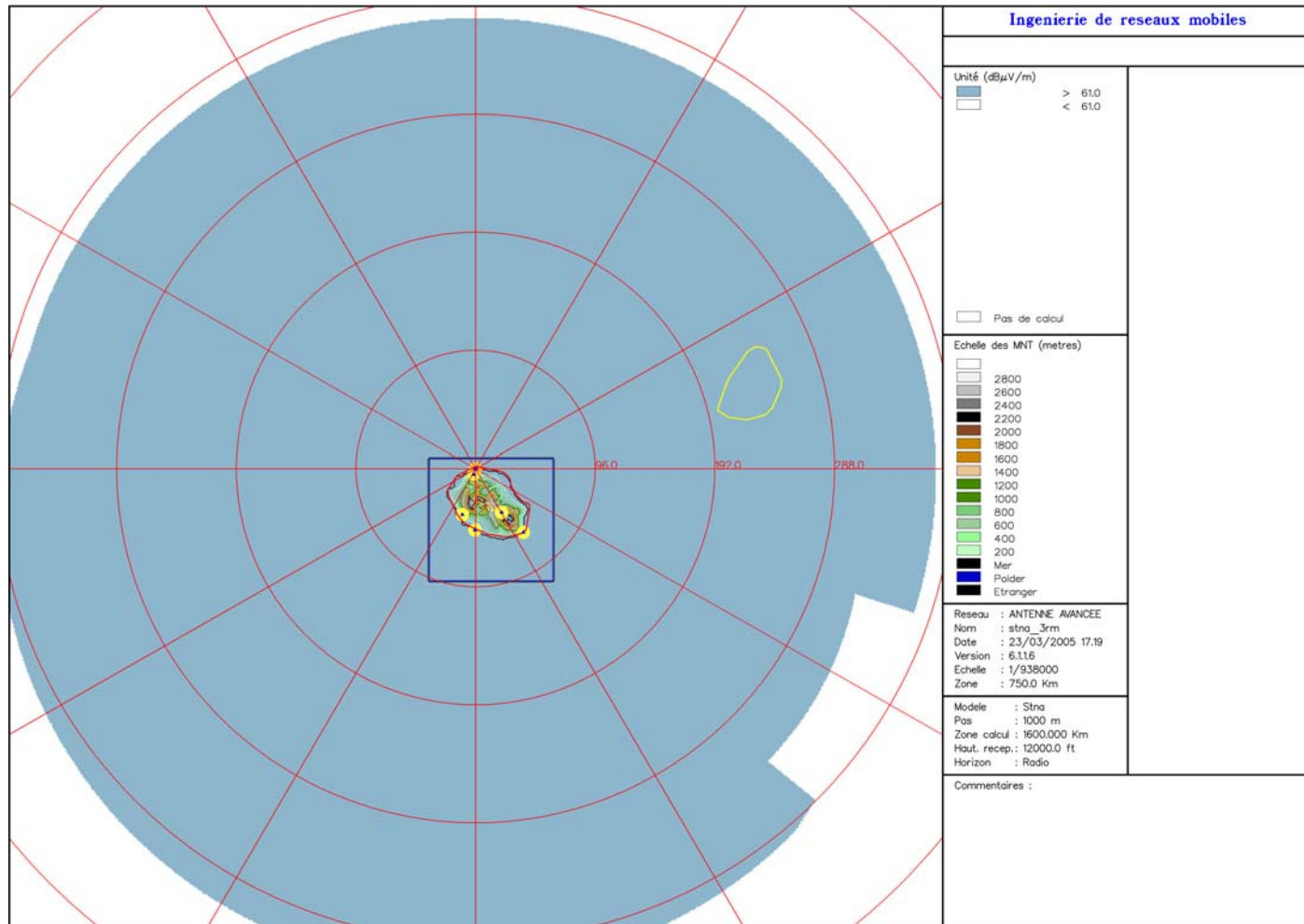
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Expected coverage at FL 30 (La Réunion)



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Expected coverage at FL 120 (La Réunion)

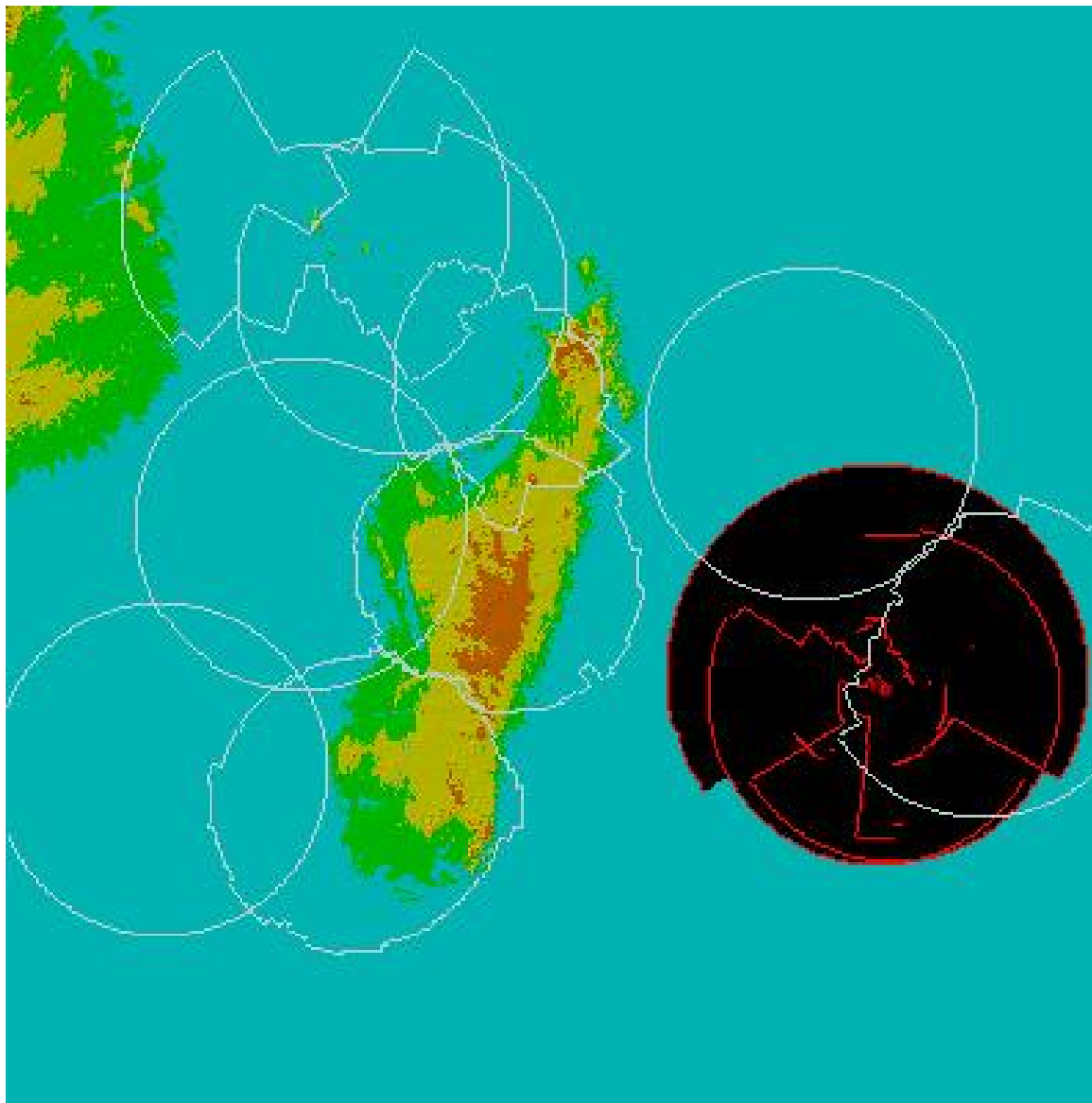


Planning phase 2

- ✚ In parallel to those activities, DSNA intends to work in close cooperation with all regional ANSPs in order to allow a regional ADS-B implementation.
 - ☀ This may lead to a regional mandate for IFR flights
 - ☀ A cost benefit analysis will have to be performed in order to balance benefits that airlines may expect compared to the equipage cost.
 - ☀ Reducing separation is a major one as it will help to significantly reduce flight duration in particular for flight between La Réunion and the Mauritius Island.
 - ☀ A more in-depth safety analysis is required before to approve changes in separation minima, according to the new version of the PANS-ATM . Such activity is about to be initiated (in particular through the Cristal Toulouse project).
- ✚ Entry into service not expected before mid 2009.

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Coverage example at FL300 (Indian Ocean)



Cristal Med Projects

- ✚ The Cristal Med project is conducted in co-operation with ENAV, HCAA, Cyprus and Maltese Civil Aviation.
- ✚ DSNA intends to perform experimentations focused on two package 1 ground surveillance applications:
 - ✚ ADS-B APT:
 - ✘ Two ground stations will be installed on Marseille airport
 - ✘ The main objective is to demonstrate that ADS-B can be used with a surface radar in the frame of a A-SMGCS system.
 - ✚ ADS-B RAD:
 - ✘ One ground station will be installed in Ajaccio to experiment whether it can improve the radar coverage.
 - ✘ The main objective is to investigate a common use of radar and ADS-B.
- ✚ The three ground stations will be installed in 2007.

Future plans

- ✚ DSNA will validate implementation of:
 - ☀ ADS-B NRA in La Réunion (2008-2009)
- ✚ And will experiment
 - ☀ ADS-B APT in Marseille (2008)
 - ☀ ADS-B RAD in Ajaccio (2008)
- ✚ Once validation is completed, DSNA will decide on the opportunity to launch an ADS-B implementation programme.
- ✚ For ADS-B APT, further analysis will be necessary to decide which technology (ADS-B vs. multi-lateration) is the most appropriate.