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# INEO

A World leader in ATC Telecommunication Systems

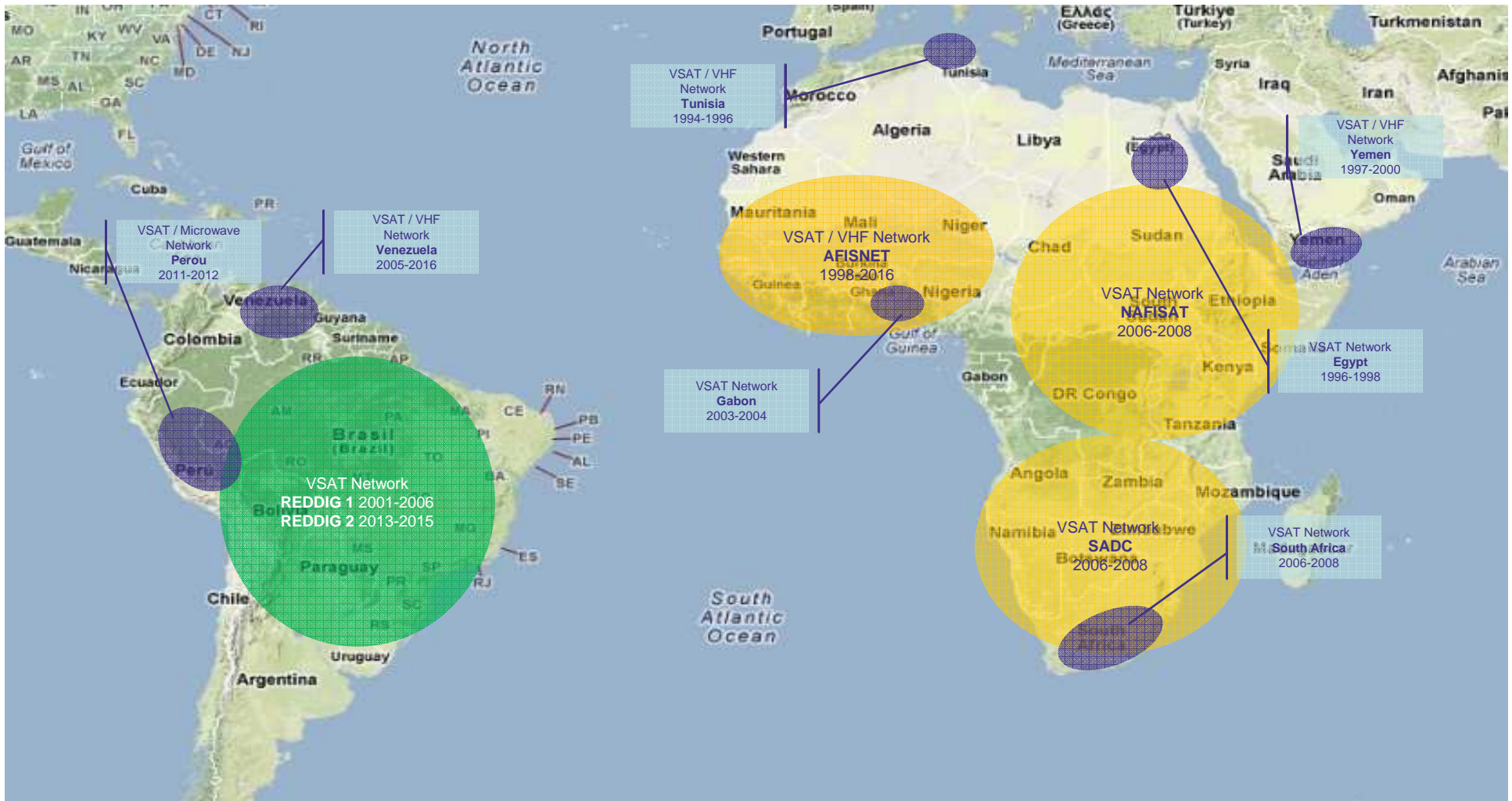
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The logo for ENGie Ineo, featuring the word "ENGie" in a bold, white, sans-serif font with a white swoosh above it, and the word "Ineo" in a smaller, white, sans-serif font below it.



# ENGIE Ineo : a world leader in VSAT/VHF networks for ANSP



# SUMMARY

## Chapter 1

**Presentation and key figures**

## Chapter 2

**ENGIE Ineo : ATC products manufacturer**

## Chapter 3

**ENGIE Ineo : ATC & Airport solution turn-key integrator**

## Chapter 4

**References**

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# 01

## Presentation & key figures

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## ENGIE Ineo

- is a major player in electrical engineering, information and communications systems, and related services
- provides its public and private customers with overall solutions from design right through to maintenance
- works on projects for industrial and tertiary-sector electrical installations, energy networks, public lighting, transportation and telecommunications infrastructures, overall security, energy production, information systems, and outsourcing
- is part of ENGIE BtoB France Business Unit, one of the 24 business units of ENGIE

### KEY FIGURES

Employees

15 600

Locations

300

Turnover 2015

2,4 Bn€



# Aeronautical Department

- **40 years** of experience in the aeronautical fields
- Our systems are operating in airports & control centers of more than **70 countries**



## KEY FIGURES

### Main activities :

- ATC product manufacturer
- Turn-key solution integrator for runway infrastructures, telecommunications and networks, ATC/ATM systems

Employees

270

Engineers

150

Turnover 2014

89 M€



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# ENGIE Ineo: The power of expertise

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● **We provide you with polyvalent technical expertise, with vocation to benefit from latest technology :**

- Aeronautical experts
- Telecommunication experts
- Software development engineers
- Design department
- Integration facilities
- Partnerships with strategic suppliers

● **Quality and management methods :**

- Management Process
- Sales process
- Business process
- Technical process
- Purchasing process
- Human resources process
- Services process

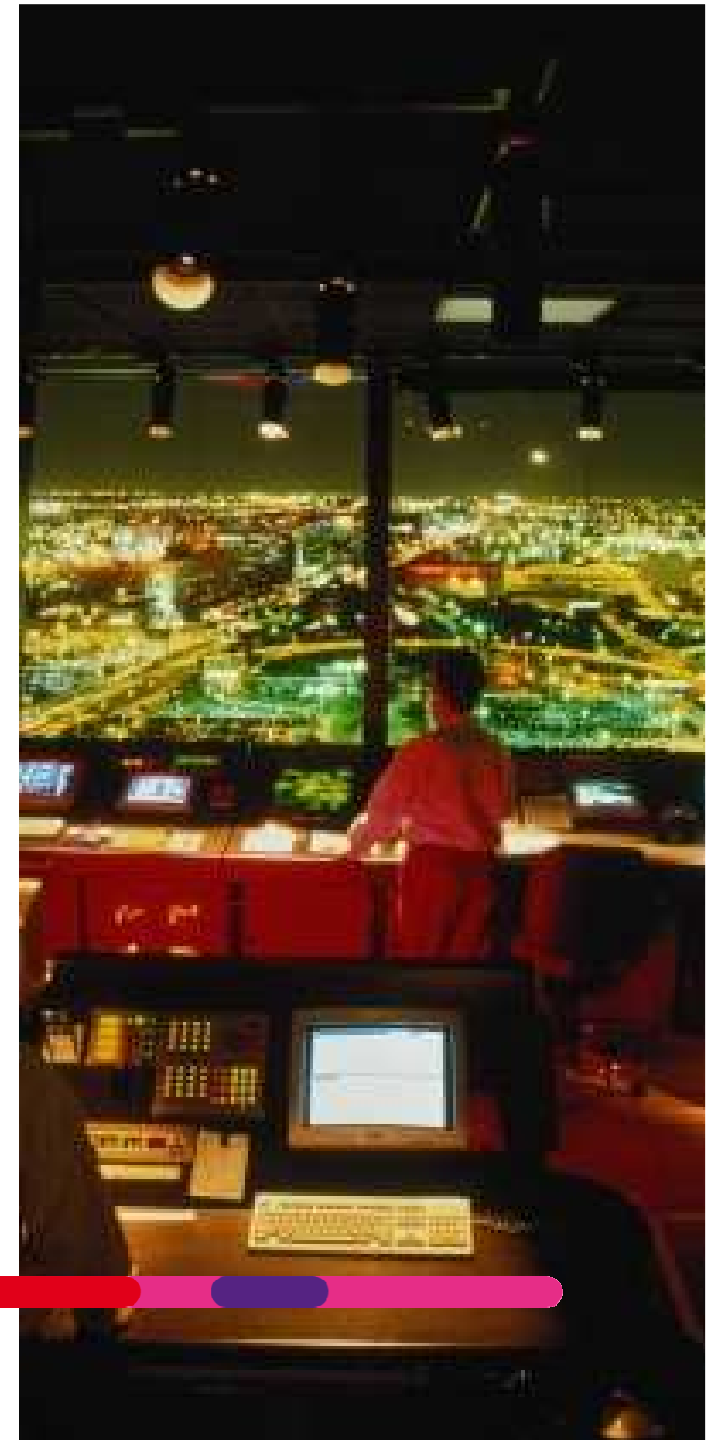


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02

ENGIE Ineo : ATC products  
manufacturer

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# ENGIE Ineo is an ATC product manufacturer

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■ ENGIE Ineo designs, develops and commercialize a **business product range for the ATC world**

■ These products are known under a **new brand name : [be-safe.com](http://be-safe.com)**

■ Dedicated web site : [be-safe.com](http://be-safe.com)

■ AIRvoice : VCS over IP

■ AIRtouch : Smart Tower Suite

■ AIRview : Integrated Tower Position

■ AIRrecord : ATC Recorder

■ Simulation tools



# AIRvoice : VCS over IP



- Voice Communication Switch over IP
- A native full-IP software solution
- A solution optimized for VSAT networks
- A flexible HMI developed and customized for ATC Controllers
- Designed for ATC Towers and ACCs
- Compliant to ICAO and EUROCAE standards



## Key figures

**+100**  
Operator stations installed  
in 2013

**11**  
# of equipped countries

**1<sup>st</sup>**  
World manufacturer of  
VCS over IP

# AIRtouch : Airport Integrated System

- An evolutive software suite designed to simplify working positions of controller, supervisors and maintenance operators
- Reduces the number of interfaces in front of the controllers
- Monitors & controls equipment and systems : airfield lighting, power plant, NAVaids equipment, weather sensors and stations, newtorks, radios, radars, ADS B, ...
- Provides tools for simple and efficient air traffic management : e.stripping, ATIS, support to decision making, support to billing, documentation
- Control of the blinds, lights, access, video-monitoring...for Tower and Cab



## Key figures

**5000**

standard # of elementary pieces of real-time information that can be incorporated

**11**

Years of experience in the field of airports

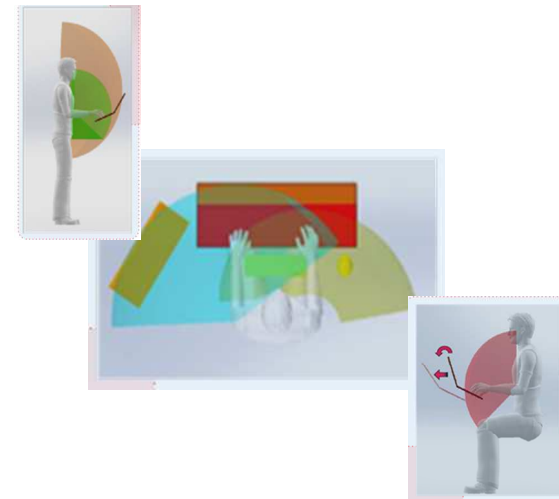
**100**

% of airside pieces of equipment

# AIRview : an ergonomic console



- ATC-dedicated ergonomic workstation
- Optimized footprint within the control tower
- “no paper” principle
- Built-in peripheral devices with no apparent cabling (monitor, keyboard, mouse, mic-earphones, loudspeakers)
- Numerous ergonomic adjustment : screen distance, height and tilt, sitting low and sitting high positions...
- 2 stretch LCD touchscreen monitors, hinged and redundant



# AIRrecord : ATC recorder

- Voice recording system (VRS) of air traffic control
- Additional VCS solution of AIRvoice full VoIP
- Continuous recordings and secure voice communications “ground / ground” and “air / ground”
- Integrates all analog radio and telephone interfaces, digital and IP
- Respond to the interoperability of ATM requirements
- COTS hardware without obsolescence, high availability architecture



## Key figures

Up to  
**256**  
recording channels

**30**  
Simultaneous playbacks

**35**  
days' short term recording



# Simulation tools

- Simulation software solutions for the training of air traffic controllers
- 2D and 3D ATC (radar and non-radar) intuitive and modular simulators from aerodrome to En-route, from airport 3D to ADS/CPDLC
- Control tower 3D simulator (Simulavia JV, installed in Saudi Arabia, Qatar, Egypt, Ethiopia, Laos)
- Voice communication system simulator (Voice@net)



03

ENGIE Ineo : ATC & Airport  
solution turn-key integrator



## ENGIE Ineo is also a turnkey solution integrator

- **Airport Infrastructure** : production and backup power plants, solar power systems, secured electrical distribution, runway lighting, navigational aids (VOR, ILS, DME, NDB, DF), weather stations, equipment monitoring & maintenance...
- **Telecommunications & networks** : HF/VHF, UHF, MW, VSAT, LAN/WAN networks, remote VHF stations, secured optical fiber networks (data collection around the runway)
- **Air Traffic Control** : digital and analog voice communication systems (VCS), voice recording systems (VRS), ITWP, integrated towers, mobile towers, AFTN/AMHS switch, AIS, time synchronization, ATIS, D-ATIS, 3D simulators...





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## ENGIE Ineo offers a comprehensive range of services

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- Project management
- Studies and engineering
- Prime contracting
- Procurement / Transport
- Integration
- Installation and Commissioning
- Training
- Operational Maintenance
- Technical Assistance



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## Telecommunication Networks

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- Satellite VSAT Network are already deployed in most Airspace
- The biggest challenges for new projects are
  - Safe migration without disruption of CNS services
    - Temporary back-up for smooth transition
    - Simultaneous Migration
  - Specific architecture are designed based on each needs and legacy equipment
  - Detailed Studies (Link Budget, (MW or VSAT), VHF / HF coverage study, NMS, SOC, NOC)
  - R&D on new equipment and services
  - Advanced Training (Factory & OJT) by specialists that have implemented many ATC networks
  - Operational Readiness & Transfer of systems (support to ATC Controllers)
  - Provision of Bandwidth
  - Provision of a Backup Landline Network
  - Maintenance of Networks with local partners



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## Telecommunication Networks

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■ New services are underway:

■ IP VHF

■ IP VCCS

■ AIDC

■ ADS-B

■ MLAT

■ SIP Phone

■ INEO is currently realizing a platform of test to validate the new generation of equipment

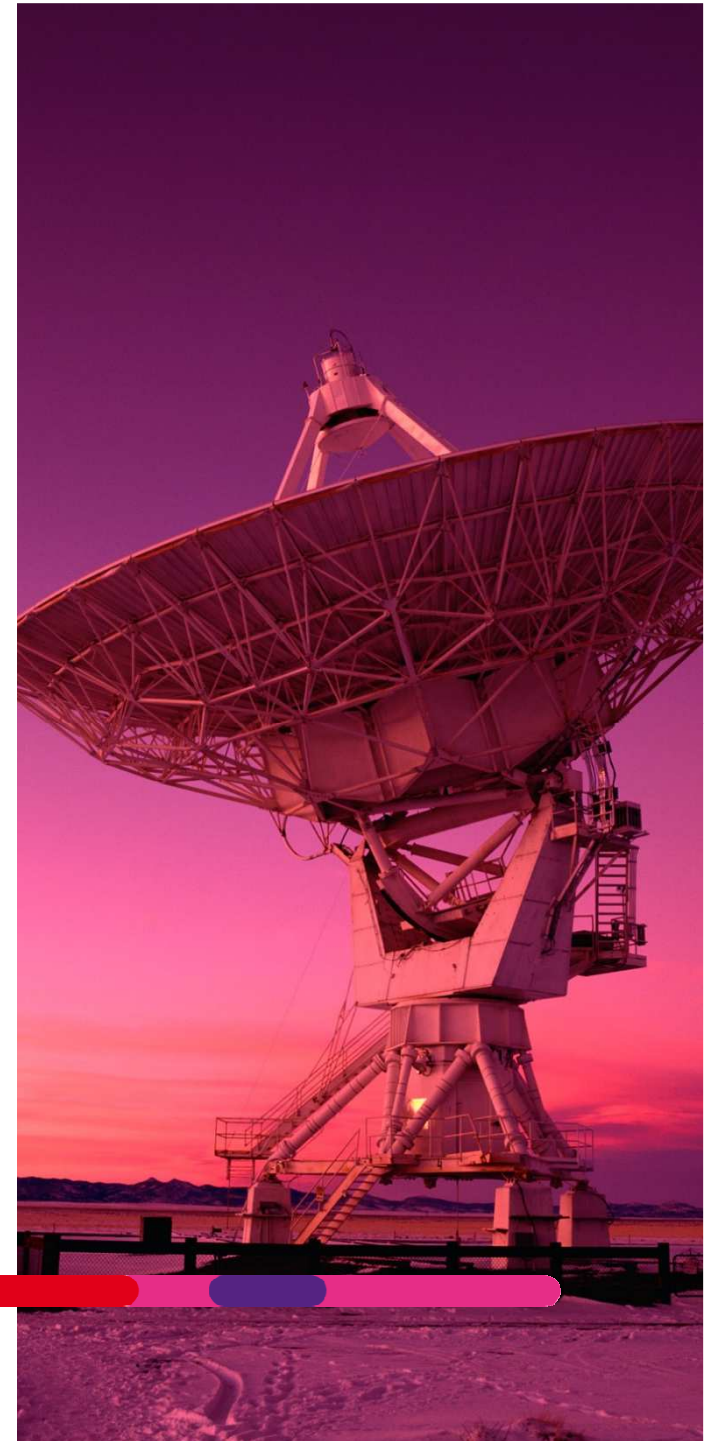
■ INEO is capable to deploy a network now that will allow a smooth transition to new ATC services (no modification on the core of the network)



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# 04

## References



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# Reference : Venezuela – ICAO/INAC – VSAT Network

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**Date :** 2005-20016

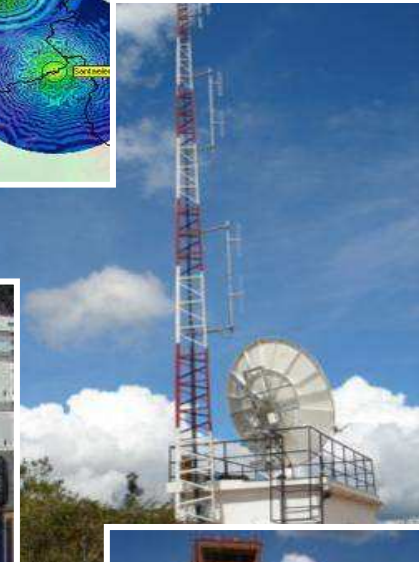
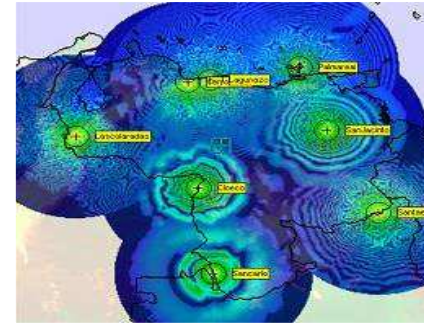
## Customer challenge

- Improve VHF coverage and VSAT network for INAC

## Services

Supply, installation, commissioning, training of the technical staff of the civil aviation in order to implement a VSAT network of 30 stations and 8 VHF stations

- VHF radio coverage studies, design of the VSAT network and of the microwave links
- Interconnection of the VSAT system with the Radar, VHF, AFTN, ATN and ATS/DS voice switch
- Monitoring and control of all active equipment from two geographically separated centers
- Turnkey solution including the provision of space segment and operation of the network
- Training and maintenance service



# Reference : Africa – ATNS – Aeronautical VSAT networks : SADC 2 / NAFISAT / IVSAT

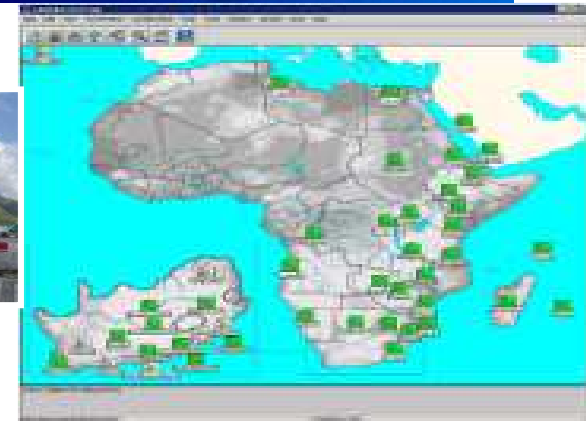
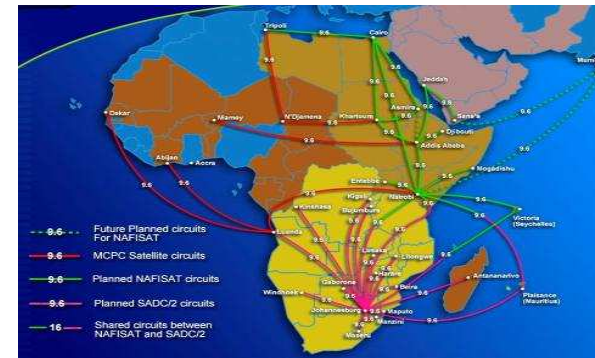
Date : Since 2006

## Customer challenge

- Renewal of the VSAT network for SADC and NAFISAT countries as well as South Africa domestic network (IVSAT)
- Optimization of satellite bandwidth

## Services

- Turnkey VSAT network including 43 stations in 28 countries for fixed services (SADC and NAFISAT) as well as mobile services (IVSAT)
- Interconnection with AFISNET (ASECNA)
- On demand bandwidth allocation
- Monitoring and control on each site with two centralized centers (Nairobi and Johannesburg)
- Seamless integration with the Radar system, VHF, AFTN, ATN and ATS/DS



# Reference : Africa – VHF coverage

Date : 2008-2017

## Customer challenge

- VHF coverage of the ASECNA airspace
- 17 hubs, 31 new stations, upgrade of 12 existing stations spread out in 17 countries

## Services

- VHF coverage studies
- Turnkey solution including civil work, solar panels, VSAT stations and VHF systems
- Innovating monitoring and control solution (information gathered locally to optimize space segment)

*ENGIE Ineo is ASECNA remote VHF provider since 1996*



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**Reference : Africa – VHF coverage**  
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**Feel free to contact us...**  
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PASSION FOR SUCCESS



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