

# A new governmental DWDM network provided by a NREN

## Lessons learned by RENATER

# Agenda

- General contextual aspects
- Technical overview
  - Offered services
  - Infrastructures
  - Roll out project overview
- Transformations on RENATER driven by this new IT network
  - Technical
  - Organizational
- Future
  - Opportunities
  - Threats

# General aspects

## Official statement

- On May 25th, 2011, the French Council of Ministers has decided to implement a :

*“secure interdepartmental telecommunication network, unifying departmental networks and ensuring that any public service could go on even in case of severe Internet failure”.*

- This network will replace all existing departmental networks (17 000 sites).

# General Context

## Choice for a NREN

POP & Fiber footprint  
geographically well spread

Time savings

IT experts

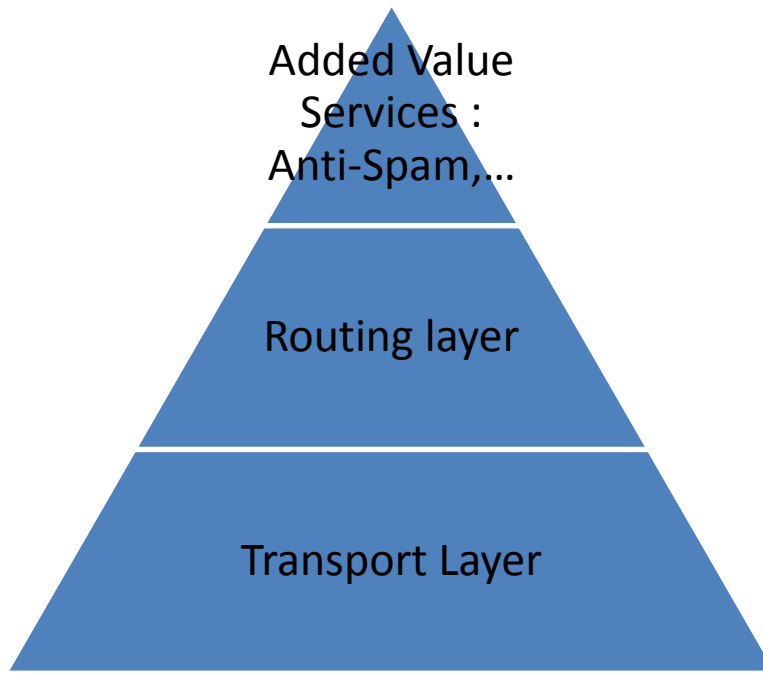
Financial savings



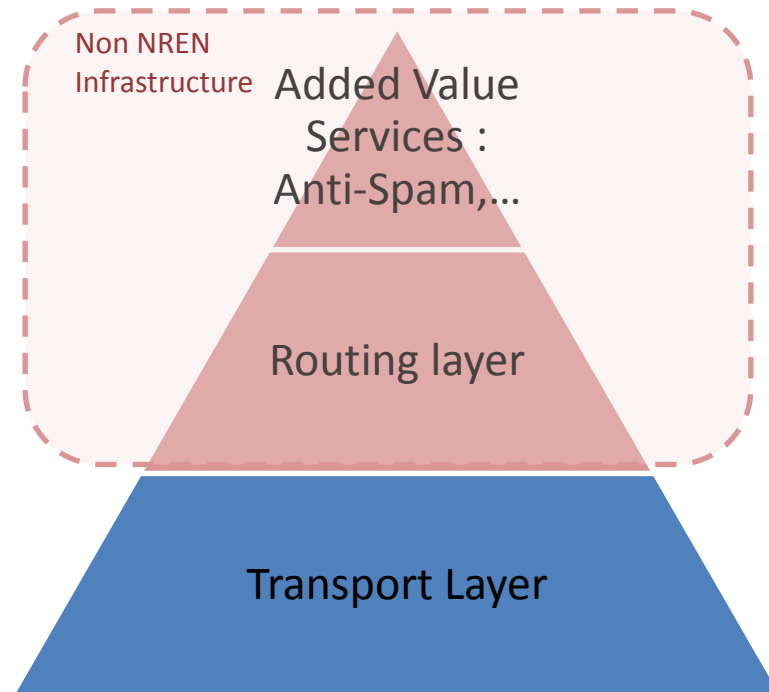
# RENATER

# Technical Overview

## Offered Services



RENATER IT Functional model



Governmental IT Functional model



**Offered Services :**

- NREN Fiber footprint and optical photonic infrastructure
- Layer 2 interfaces only & no routing

# Technical Overview

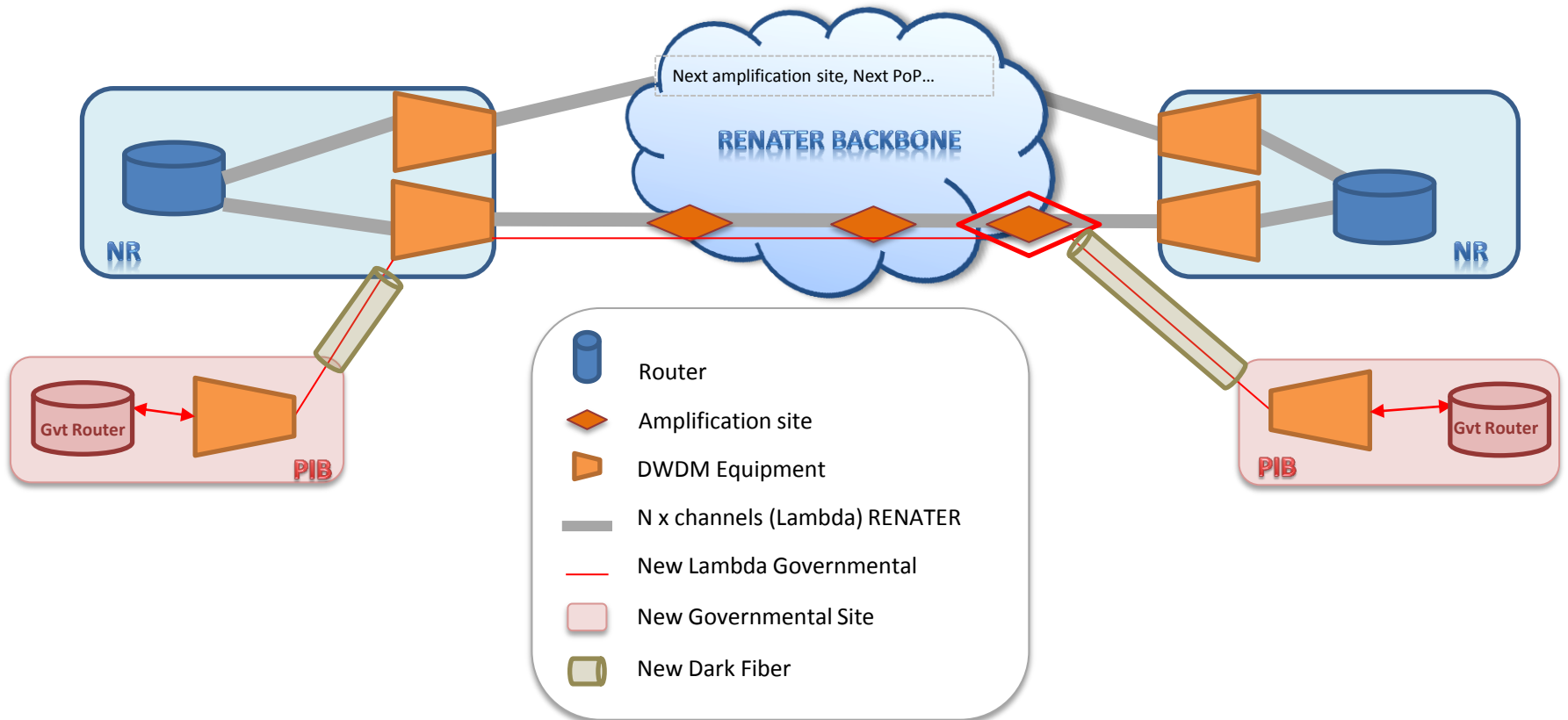
## Offered Services

- Dedicated services :
  - 19 point to point 10G Ethernet links
  - Capacity up to 8x10G
  - DWDM spectral split and channels reserved for Governmental purpose
  - Supervision at the Transport layer
- Common services :
  - IT expertise on optical and others domains to transfer knowledge on the newest technology and skills on IT networks

# Technical Overview

## Infrastructures

- Typical infrastructure

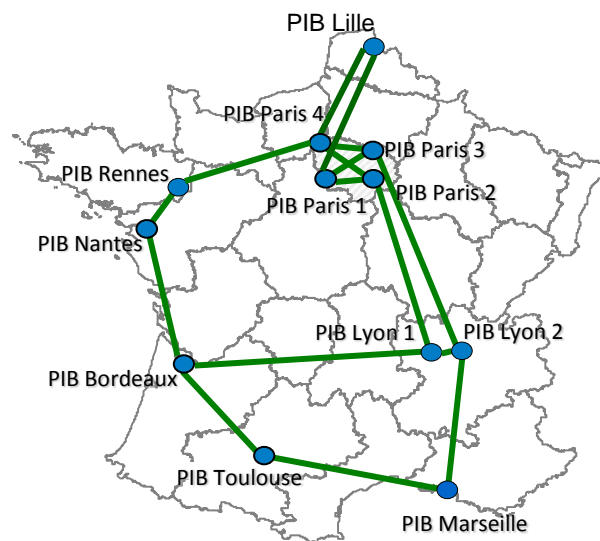


# Technical Overview

## Infrastructures

- Key Figures :
  - Additional 960 Km dark fiber,
  - 12 new governmental sites called PIB :
    - 12 new DSL lines for Out of band supervision
  - 17 RENATER sites needed to be upgraded all over France

### Network functional view





# Technical Overview

## Roll Out project

- **Planning :**
  - **Dark Fiber scope :**
    - 3 to 6 months to light the dark fiber depending on mainly :
      - Length of the new span,
      - Road works to deploy new fiber ducts in cities according to the legislation (traffic car outages,...),
      - Availability on the splice boxes.
  - **DWDM scope**
    - **Out of band supervision lines :**
      - Difficulty to deliver on time by our NOC subcontractor
      - Difficulty to comply with new administrative processes for site access

- **Supervision :**
  - Improvement of our tools to monitor specifically the optical infrastructure : DWDM equipment and the dark fiber,
  - Customer optical weather map
  - New security standards : authentication, protocols.
  - TT management :
    - New queue for governmental users (NOC)
- **Infrastructures :**
  - Security surveys :
    - RENATER Sites access reinforced

# Transformations

## Organization

- **HR :**
  - 2 new persons have been hired,
- **Management :**
  - New steering committees : Strategic, Follow Up, Operational
  - New processes :
    - Site access more restricted for some sites
    - New “frozen” periods : political elections,...
- **Financial**
  - Different model than for R&E community
    - case by case quotations for new requirements (not a turnkey)

- **Architecture & Transport layer :**
  - New sites (PIB) located in main French cities for :
    - Twin POPs inside big cities ?
    - Future Metropolitan Area Network ?
  - New transport layer requirements :
    - Optical encryption ?
    - ROADM ?
    - Low latency ?
- **NREN expertise on services (identity federation, mail, videoconferencing ...) promoted within Governmental community**
- **Wider community concerned by the optical domain :**
  - More means to maintain and develop the optical network (tools, redundant equipment,...),
  - Intensified meshed optical network,

- **Additional attenuation due to bandsplitters :**
  - More amplifications and Regeneration (3R) and, thus, less evolution margin to cope with the ageing of the fiber
- **DWDM Technology deployed with DCM :**
  - More difficult to change for an homogeneous coherent DWDM technology
    - Need to plan and to organize more closely the introduction of such technology



**Need to balance between Governmental and R&E requirements.**