

# TTM Futures



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RIPE NCC

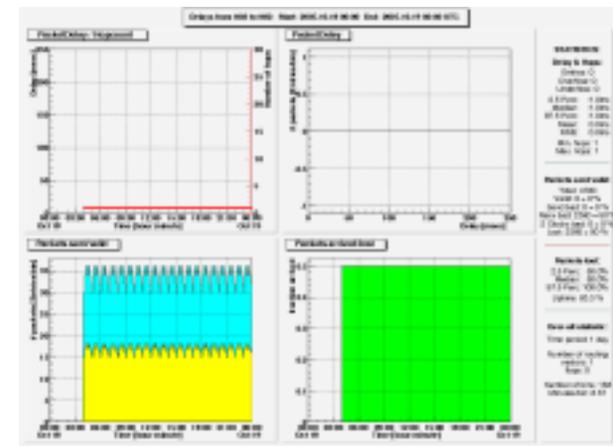
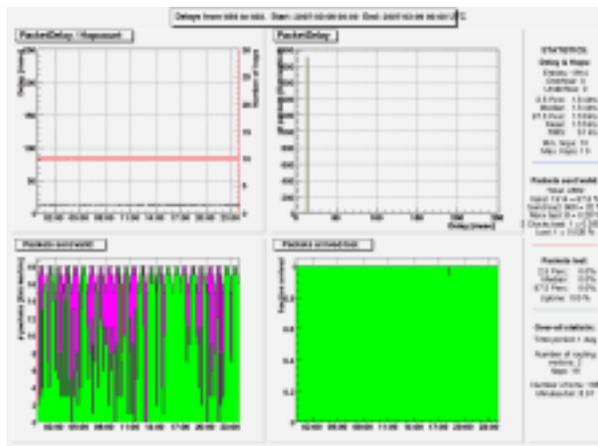


# But first...

- Who am I and what am I doing here?
  - Information Services department
  - Formed at the end of 2006
  - Maintain and develop:
    - TTM
    - RIS
    - DNSmon
    - Hostcount

# Introduction

- TTM
  - Initial design in 1997
  - Became a service in 2000
  - Measures Delay/Loss/Jitter/Traceroute



- 10 years on - time to rethink!



# Assumptions

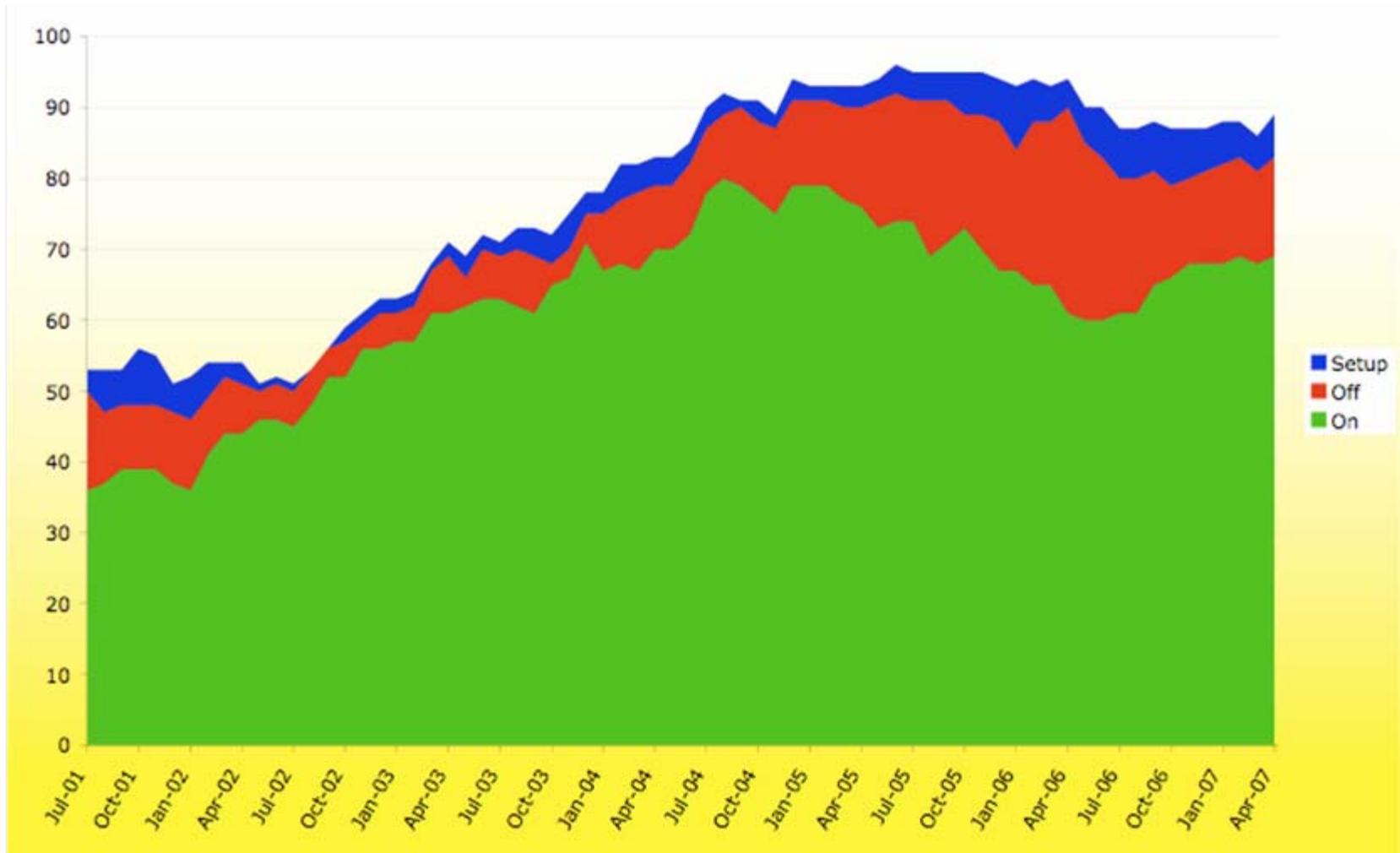
- Network capacity is expensive
- Bottleneck is link to user, so measuring applications is not interesting
- Subscriber lines are slow
- Internet poorly connected and routing not optimised
- Real-time traffic engineering based on performance measurements cannot be done
- IPv6 not on the horizon



# Problems

- Low perceived benefit for sponsors of TTM boxes
- Complex presentation of results
- Requirement for GPS antenna
- Clustering of probes
- Ageing and shrinking of the network

# TTM network growth



# Clustering





# What have we done?

- RIPE52 - Istanbul
  - Presentation and discussion
- RIPE53 - Amsterdam
  - More discussion, and TT Task Force formed
- Discussion on Task Force mailing list
- Input and feedback incorporated draft proposal

# Vision

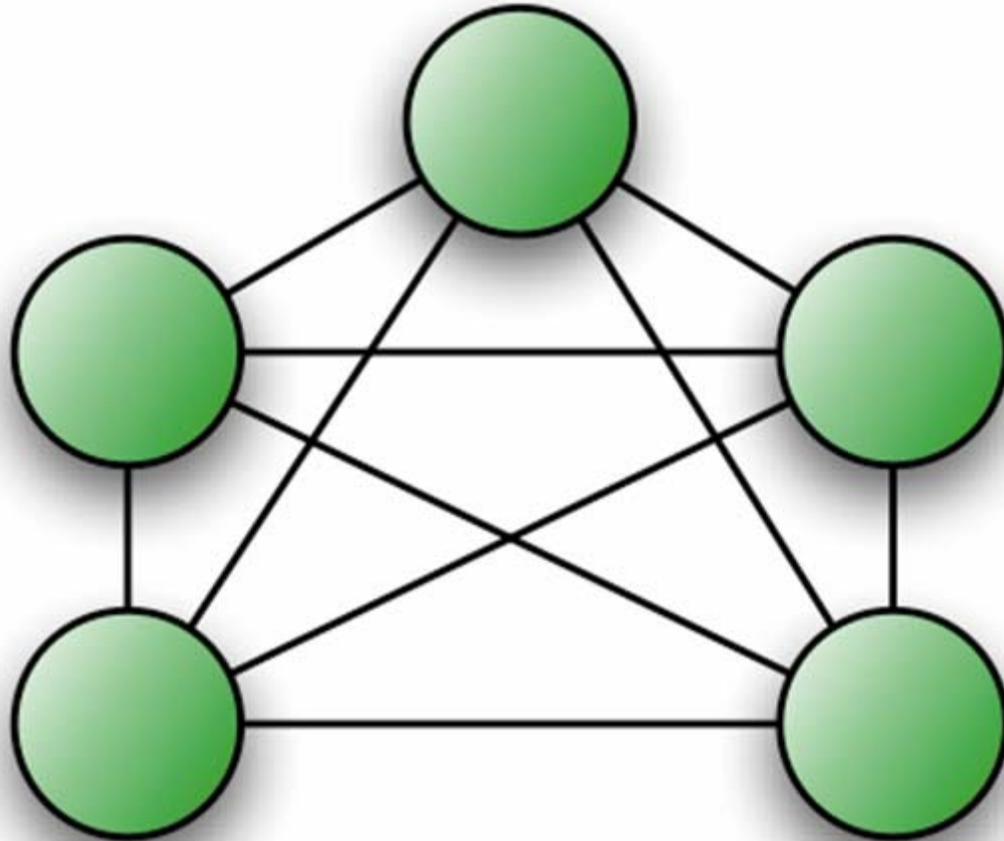
- *Expand and maintain the TTM network, increasing the value of the service to the community at large, and to the owners of the probes*
- Enhance the TTM network architecture



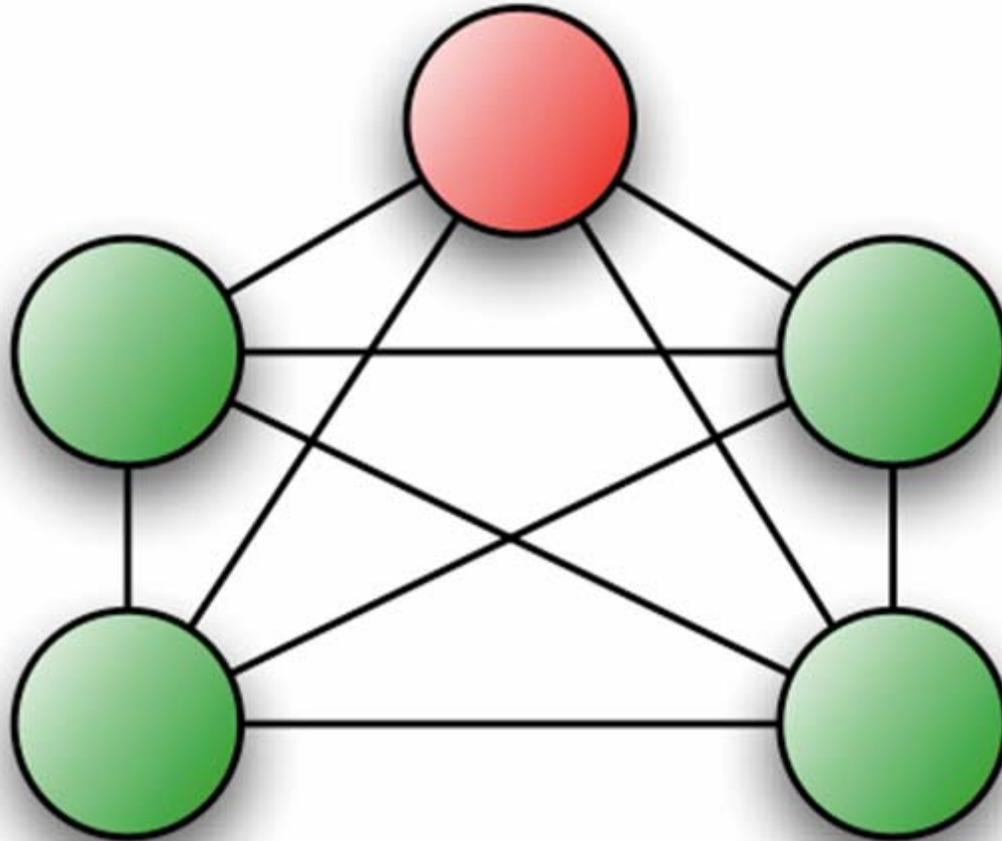
# Network architecture

- NCC sponsored probes
  - At interesting locations - major AS or IX
  - Commitment from site to operate for at least 3 years
  - Selection will be a 'beauty contest' at NCC discretion
- ISP sponsored probes
  - Sponsor-defined measurement mesh
  - Customised mesh for private application testing

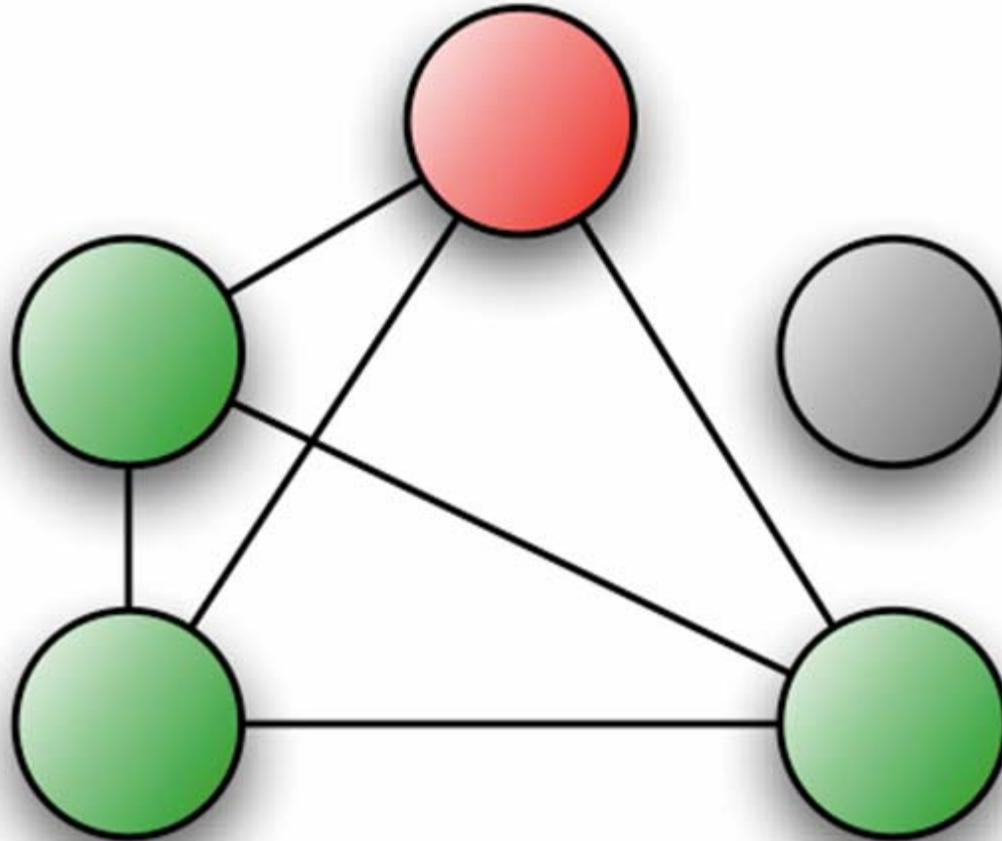
# Customised mesh



# Customised mesh



# Customised mesh





# Network architecture

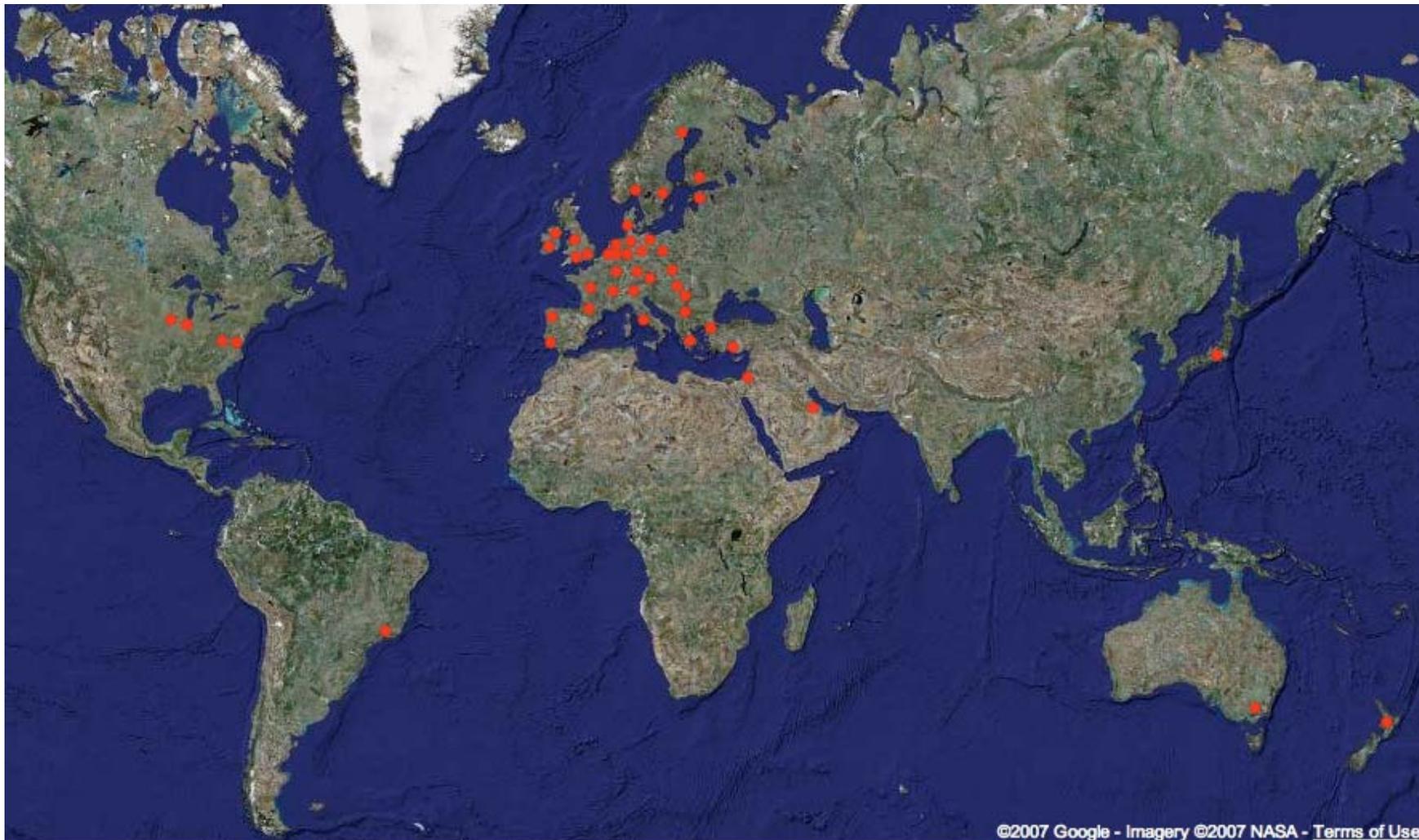
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- Lightweight probes
  - CBM proposal

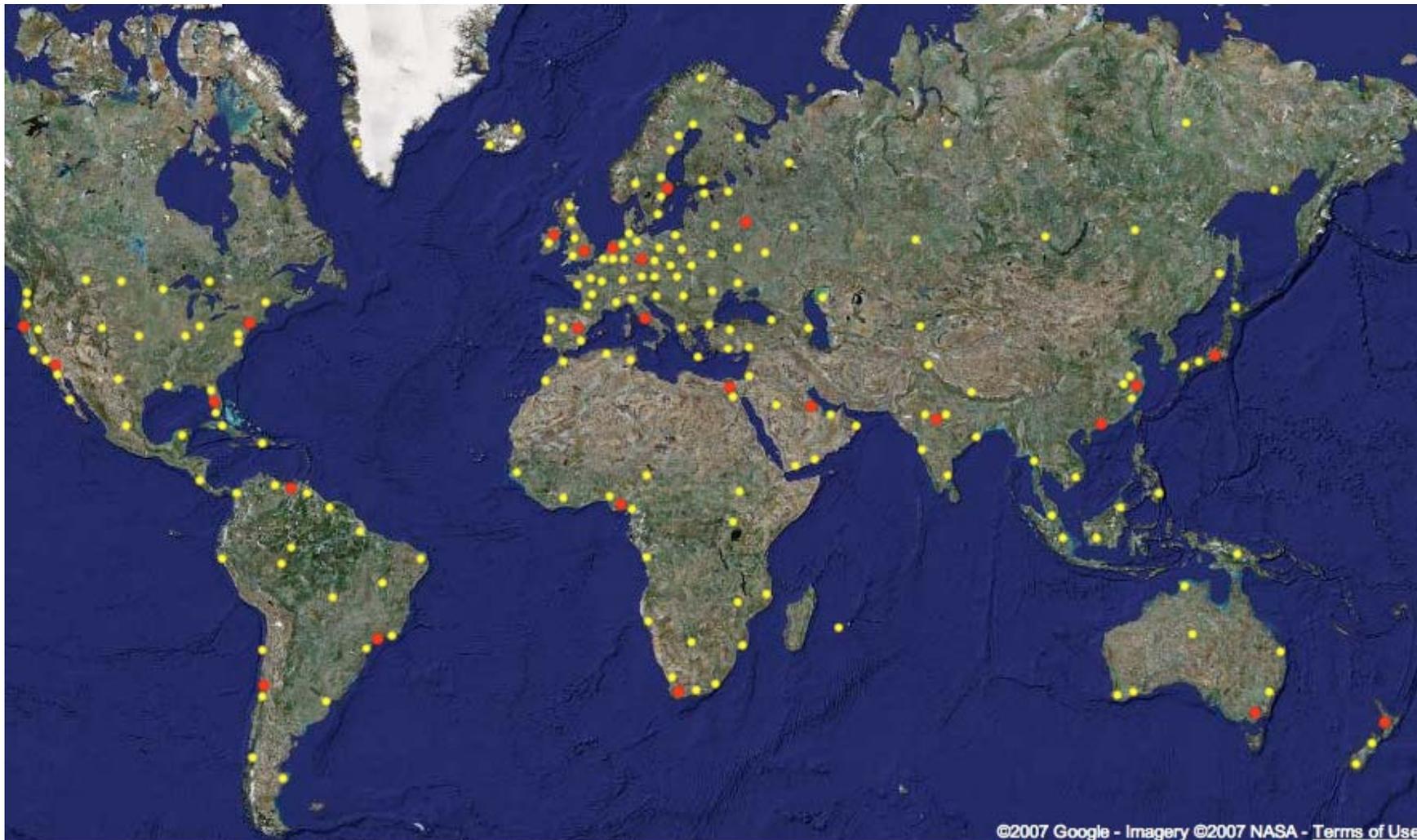
# Network Infrastructure



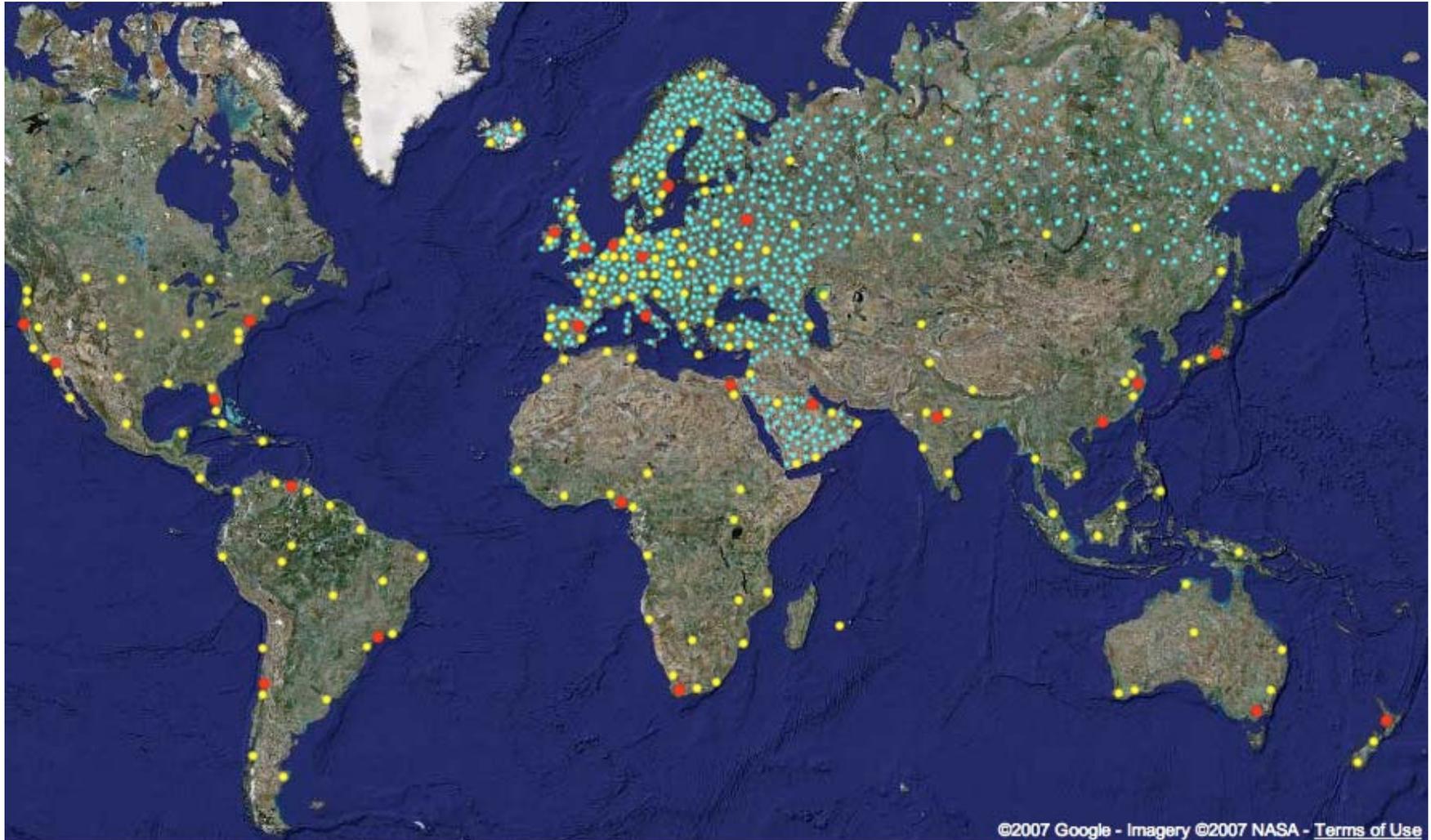
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- Enhance the TTM measurement architecture



# Measurements

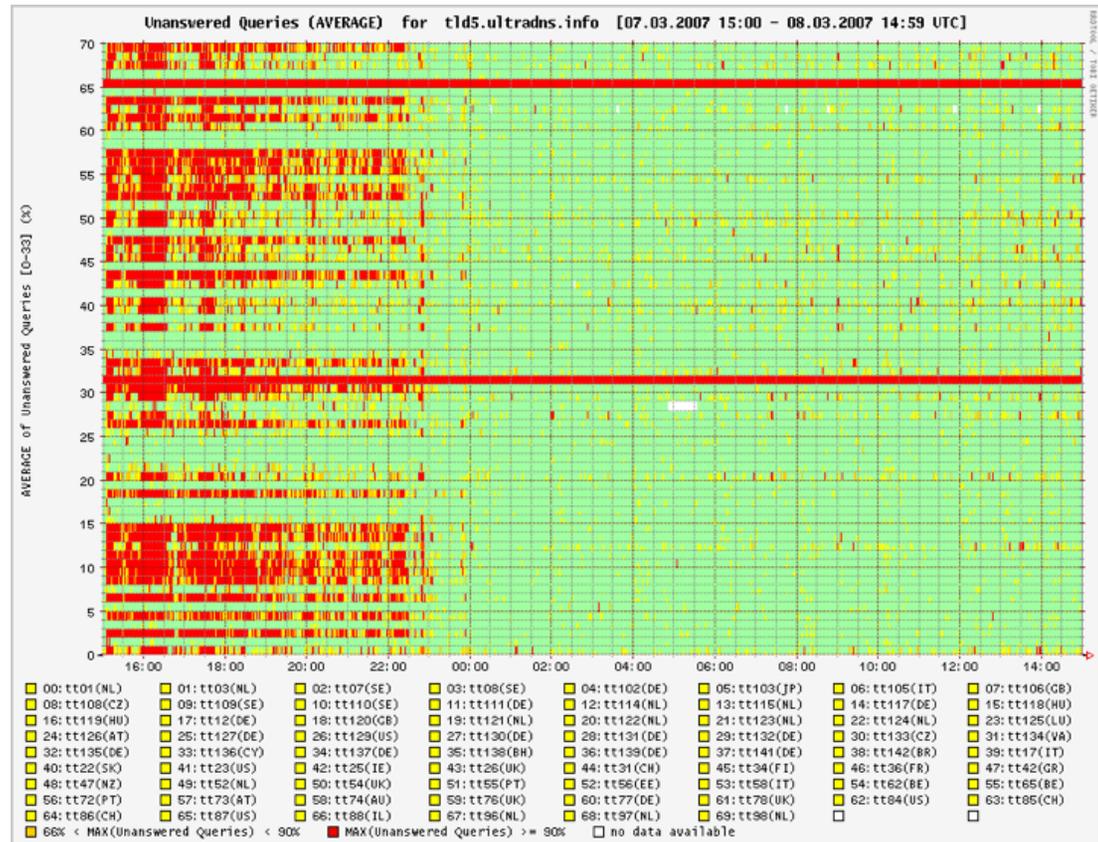
## 1. Global one-way measurement platform

- Continue to measure delay/loss/jitter/traceroute across full network
- Add support for custom measurement meshes
- Add support for OWAMP
  - Allows for measurements on demand
  - Allows for measurements outside our network
- Data quality checks

# Measurements

## 2. Near real-time application testing

- E.g. DNSmon - <http://dnsmon.ripe.net>
- Support for others as required



# Measurements

## 3. General purpose platform for ad-hoc experiments

- Time limited local, global, or mid-range
- Clearly defined
- Results should be made available to the community
- Available to interested parties (e.g. CAIDA)

# Vision

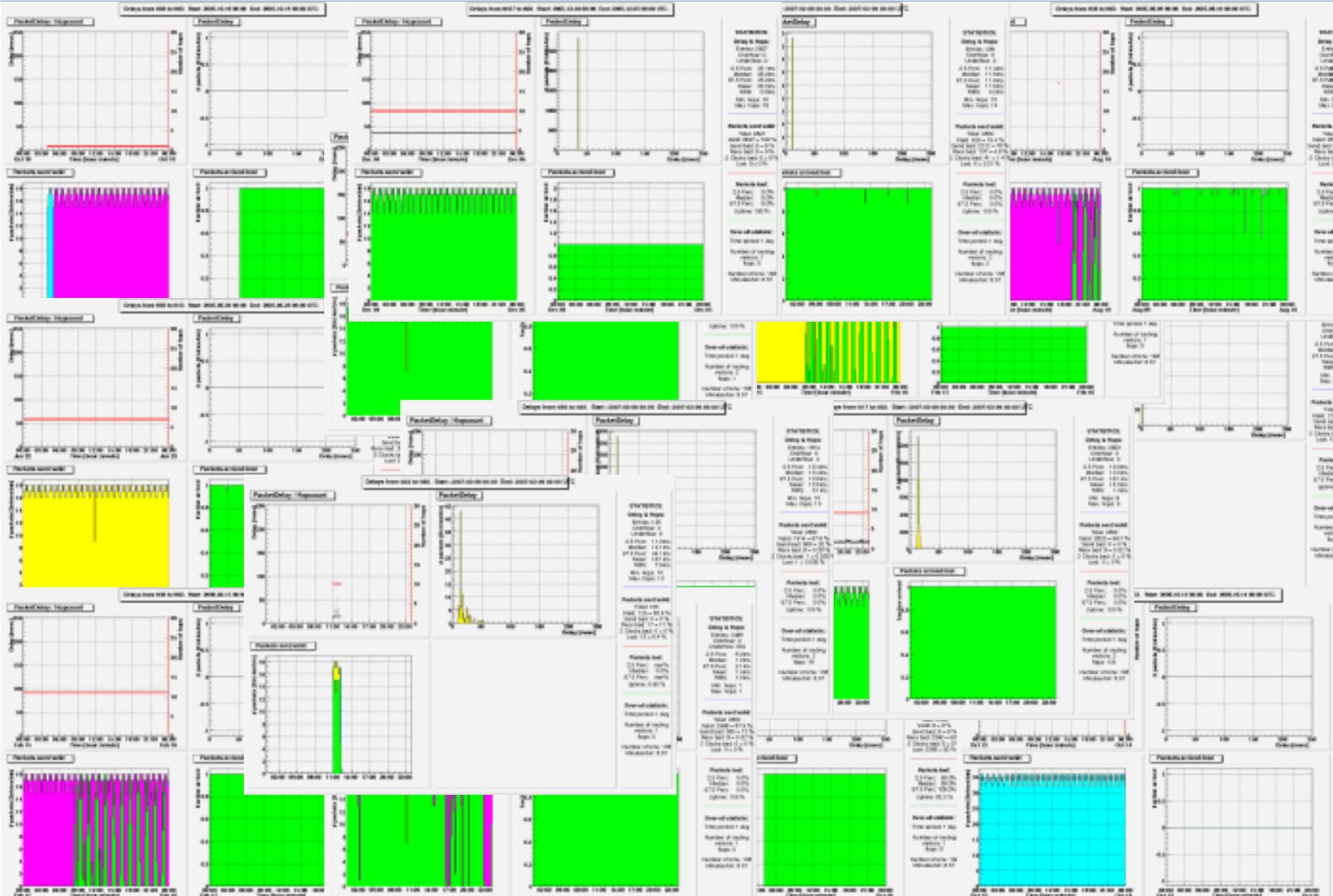
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- Enhance the TTM network architecture
- Enhance the TTM measurement architecture

# Vision

- *To expand and maintain the TTM network, increasing the value of the service to the community at large, and to the owners of the probes*
- Enhance the TTM network architecture
- Enhance the TTM measurement architecture
- Improve
  - Reporting



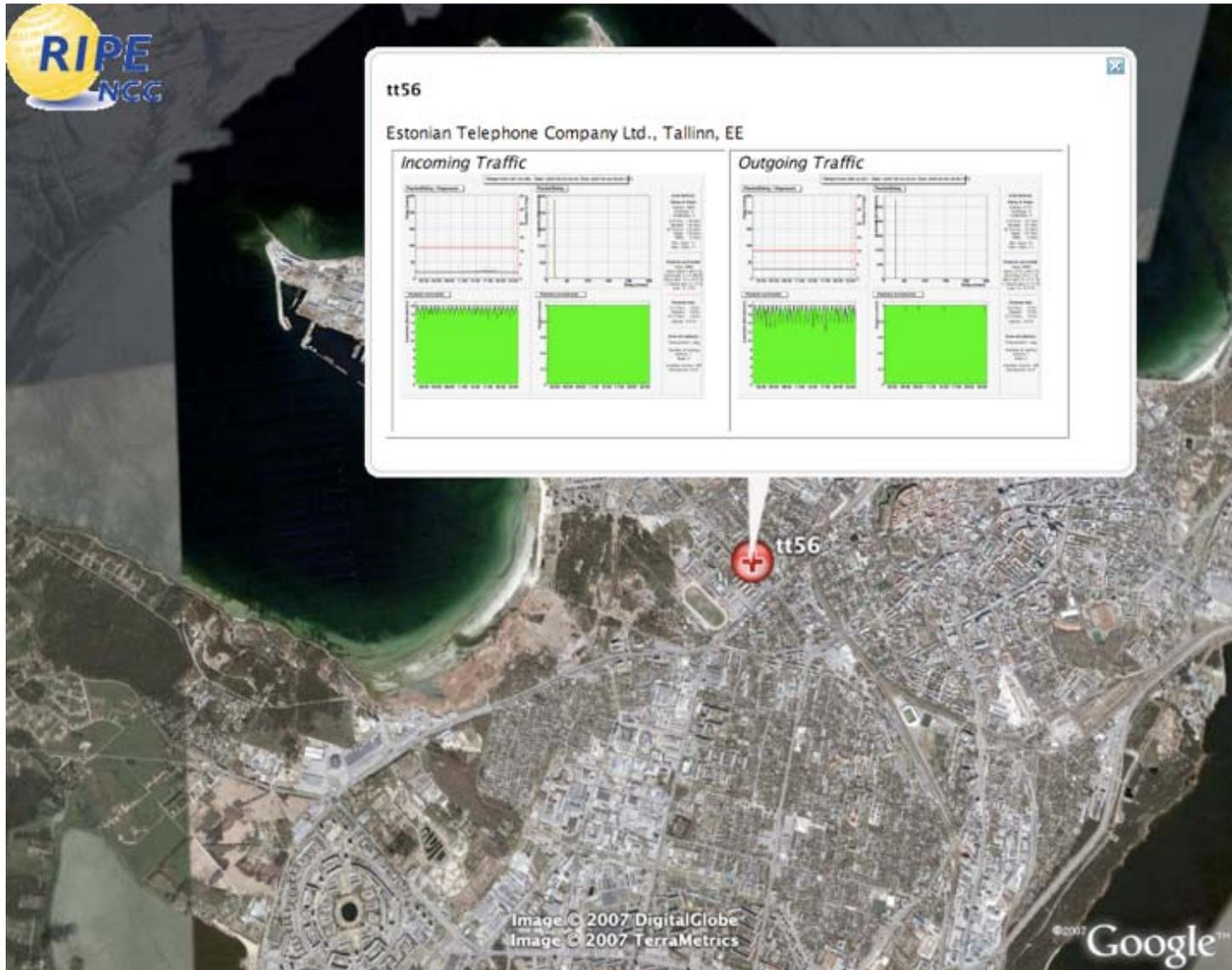
# Reporting



# Reporting

- Simpler and clearer
- Fewer pre-generated plots
  - plots on demand
  - raw data
- Monitoring trends
  - clearer presentation of long term performance changes
- Data Quality Management
  - ensure plots make sense
- Combine TTM data with other services
  - e.g. RIS







# Vision

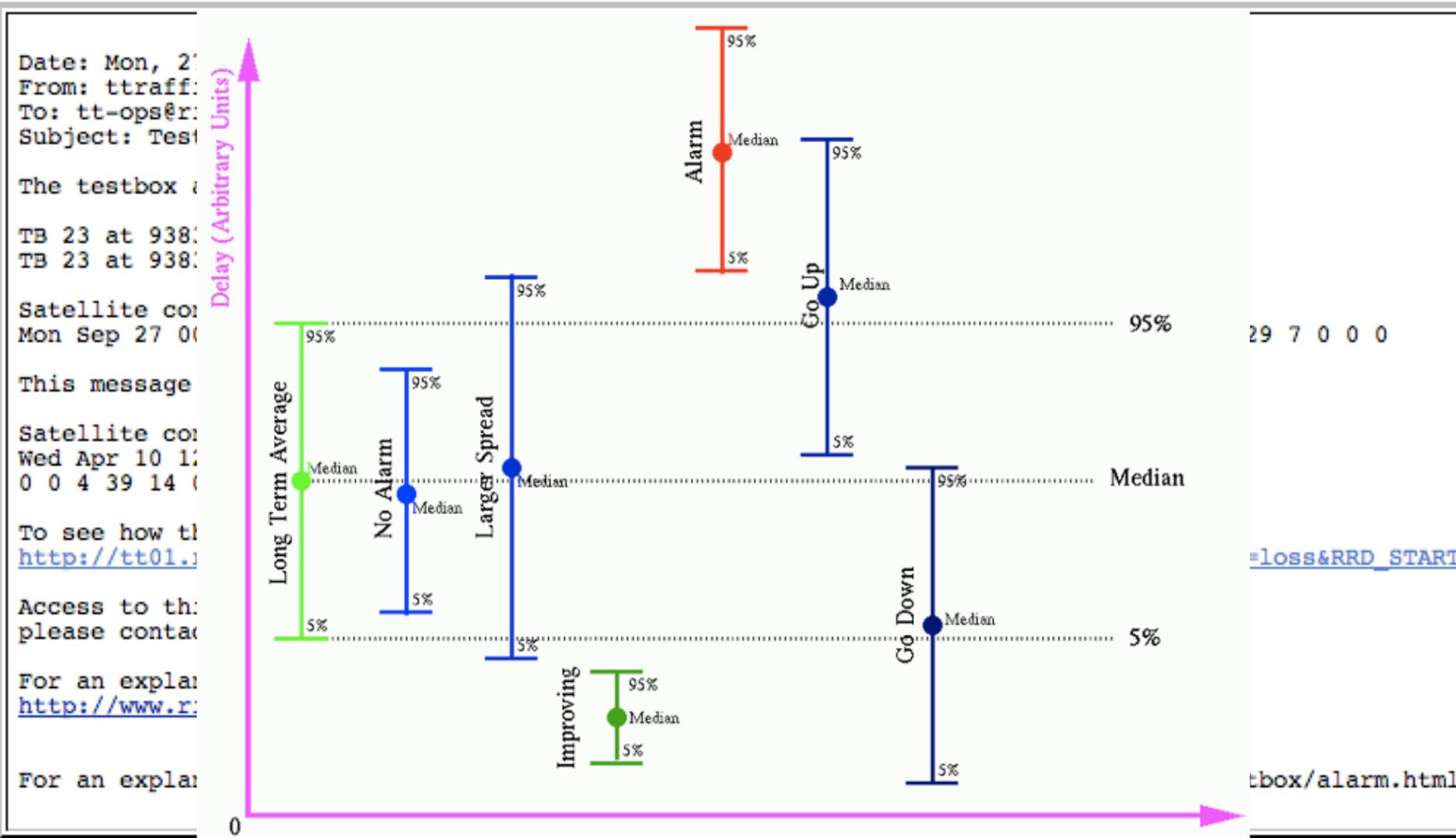
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- Enhance the TTM measurement architecture
- Improve
  - Reporting
  - Alarms
  - Admin and pricing



# Alarms





# Alarms

- User configurable
- Application and network
- Clearer presentation



# Admin and pricing

- Different payment options:
  - One large up front payment and no ongoing fees
  - Setup fee and recurring service fees
  - No setup, and larger ongoing monthly subscriptions
  - others?
- Hardware lifecycle
  - 1, 3, 5, 7, 9 years?
  - what happens after this time?
- Encourage more involvement
- Model must ensure life and viability of network

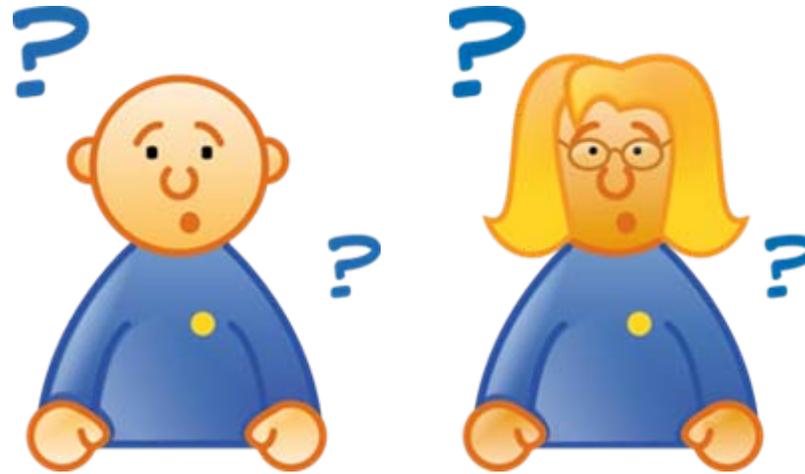
# Summary

- Probes
  - NCC sponsored
  - ISP sponsored
  - CBM
- Measurements
  - One way
  - Applications
  - Ad-hoc
- Reporting
  - Clearer
  - More real-time
- Alarms
  - Simpler
  - User configurable
- Admin and pricing
  - Consider different models
  - Ensure sustainability of network



# Where next?

- RIPE54
  - Present this draft proposal
- Work with YOU via the task force - [tt-tf@ripe.net](mailto:tt-tf@ripe.net)
  - Subscribe to the task force list
  - Please provide your feedback and input
- Build proof of concept
- RIPE55
  - Present final proposal



# Questions?