Technical Services Overview

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Outline

- Background and motivation

- Specific services

  - RIPE Database

  - DNS Services

  - Information Services

- Future Plans

- How to participate

- Conclusions

Traditional view on RIPE NCC services

- Membership services
  - Only available to paying customers
    - Resources (IPv4, IPv6, AS)
    - TTM (Test Traffic Measurements)
    - Training Courses
    - DNSMON

- Community services
  - Available to everybody
    - K root server
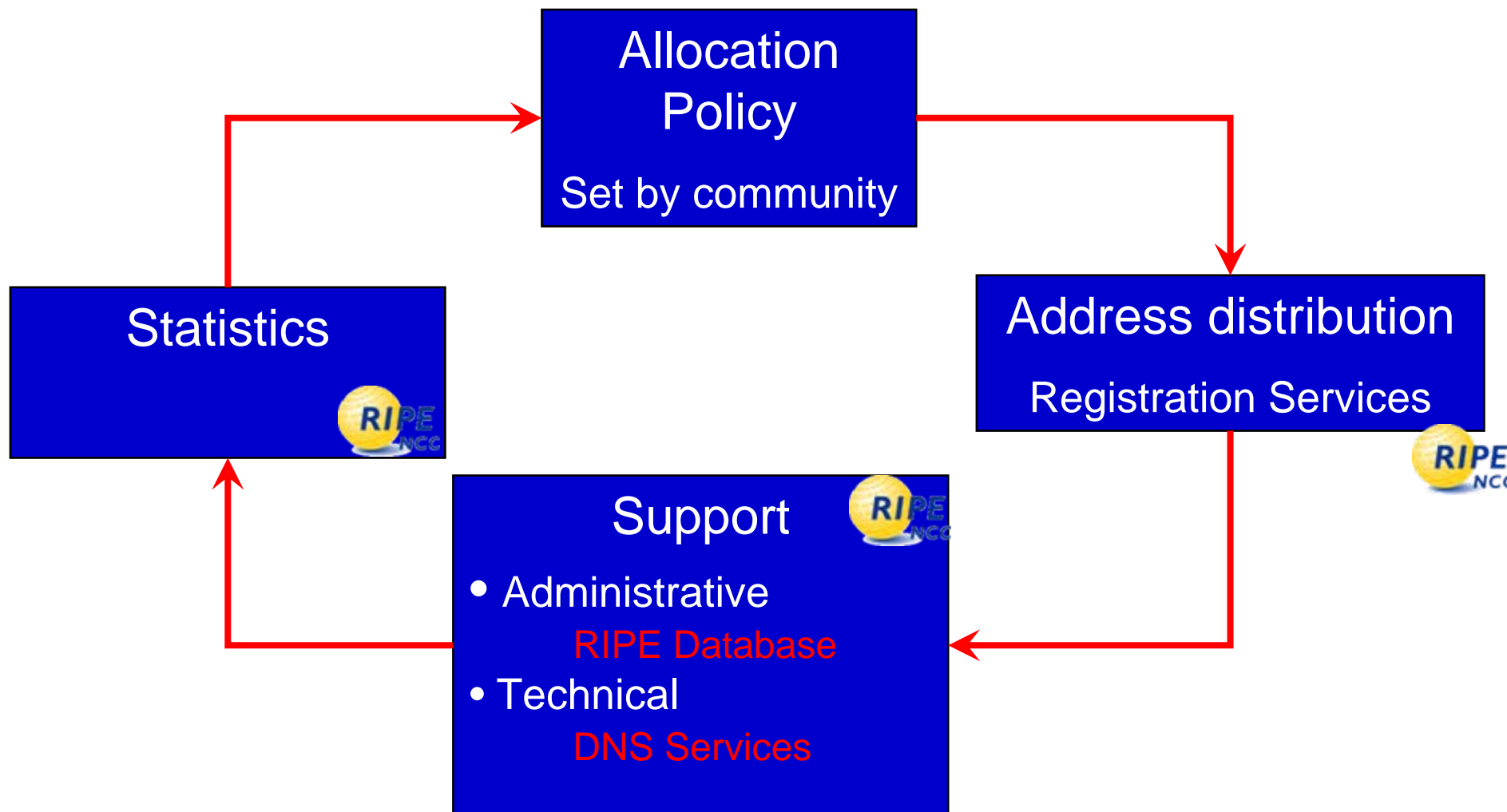   - RIPE database
    - RIS
    - TTM

A different view

- In traditional view services are usually seen as separate

  - Do not form a consistent full picture

  - Services are highly related

- The NCC aims to offer a portfolio of related services that benefits its membership

  - Start from Internet resources (IP, AS)
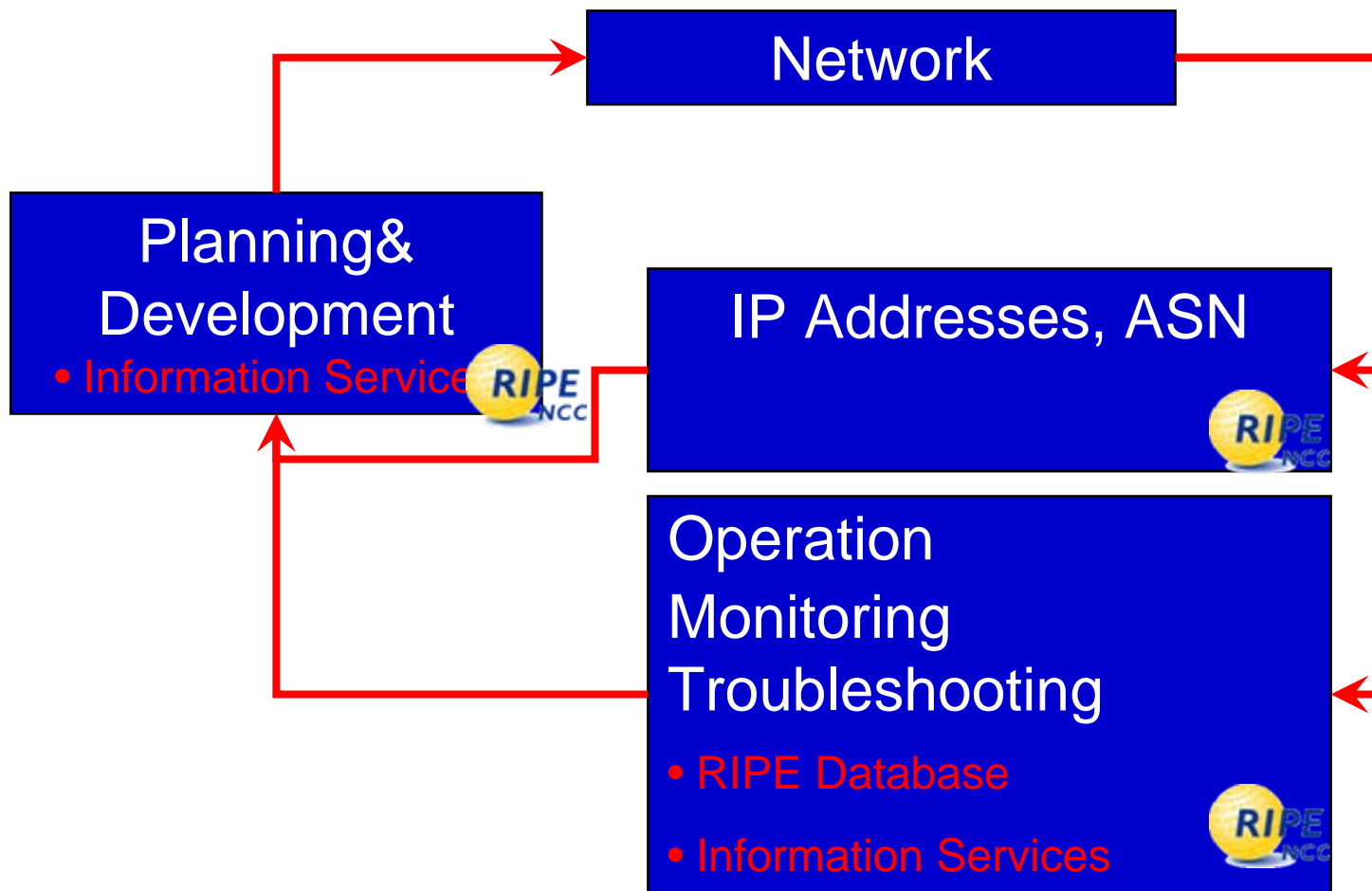
  - Logical connection

Example 1: IP address distribution

Allocation Policy

Set by community

Statistics

Address distribution

Registration Services

Support

- Administrative
  - RIPE Database
- Technical
  - DNS Services

Example 2: Network operations

Network

Planning&
Development
• Information Services

IP Addresses, ASN

Operation
Monitoring
Troubleshooting

• RIPE Database

• Information Services

Overview of Technical Services

- RIPE Database

  - Address and ASN allocation registry

  - DNS provisioning system

  - Internet Routing Registry (IRR)

- DNS Services

  - Reverse delegation

  - Root Server k.root-servers.net

  - ENUM Tier0 (e164.arpa)

- Information Services

  - TTM: DNSMON

  - RIS: MyASn, BGPlay

Overview of Technical Services

- ## RIPE Database
  - Address and ASN allocation registry
  - DNS provisioning system
  - Internet Routing Registry (IRR)

- ## DNS Services
  - Reverse delegation
  - Root Server k.root-servers.net
  - ENUM Tier0 (e164.arpa)

- ## Information Services
  - TTM: DNSMON
  - RIS: MyASn, BGPlay

RIPE Database: IRR

- Internet Routing Registry

  - Allows to document routing policy

  - Facilitates router configuration (e.g. IRRToolSet)

- Routing Registry Security

  - Implemented as per RFC 2725

  - Object creation is authorised by address and ASN holders

  - Only secure for address space AND ASN allocated by RIPE NCC

- Usage

  - 65K routes coming from 10K AS

DNS Services: k.root-servers.net

- Operated by the RIPE NCC since May 1997
  - First instance installed in London (LINX)

- Using NSD software from February 2003
  - Increased performance and software diversity

- Anycast since 2003
  - Two global instances in London and Amsterdam

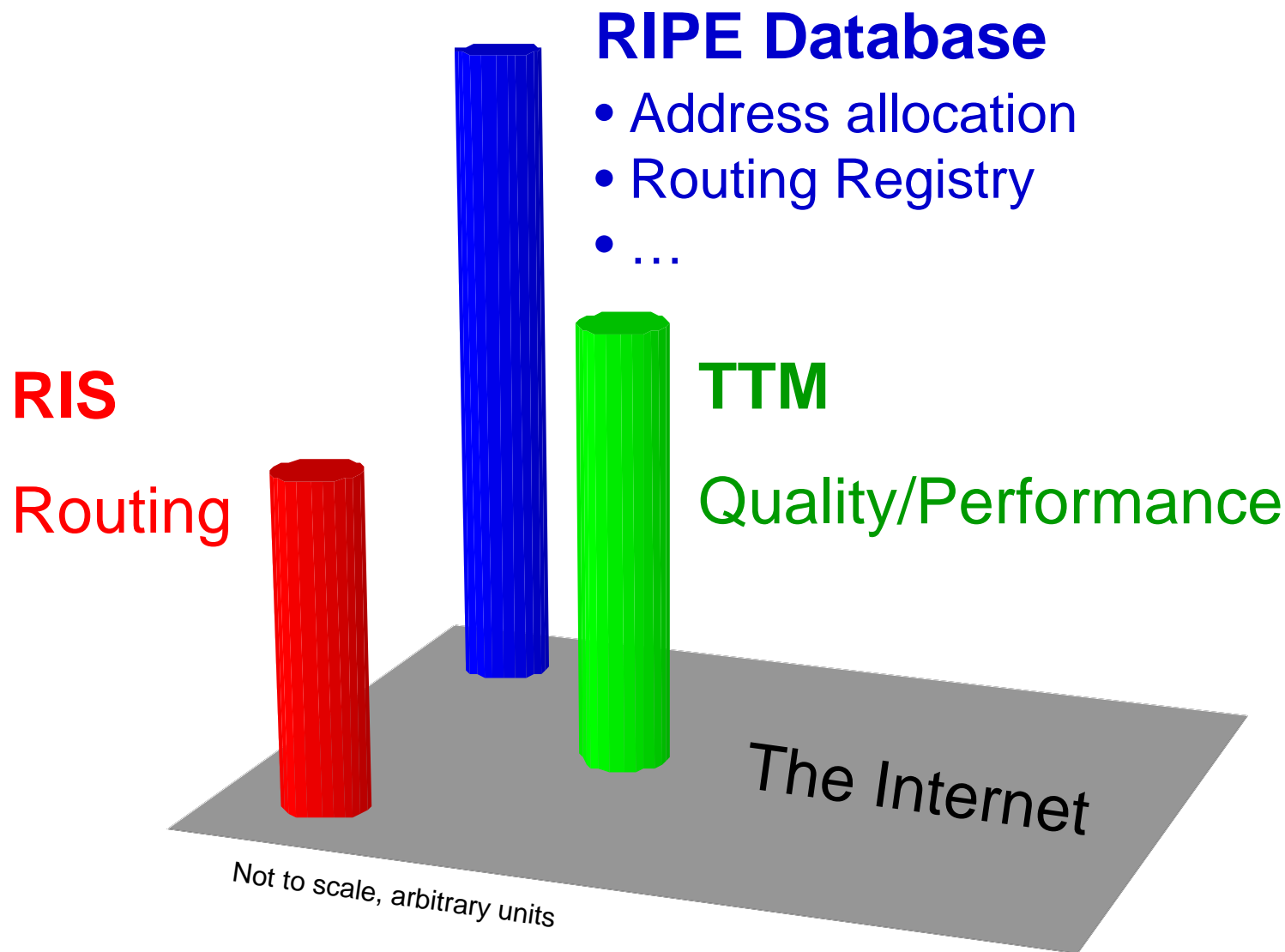- Wider deployment of anycast (from 2004)
  - 5 global and 12 local nodes

Information Services (IS)

- Information Services

  - Major Components

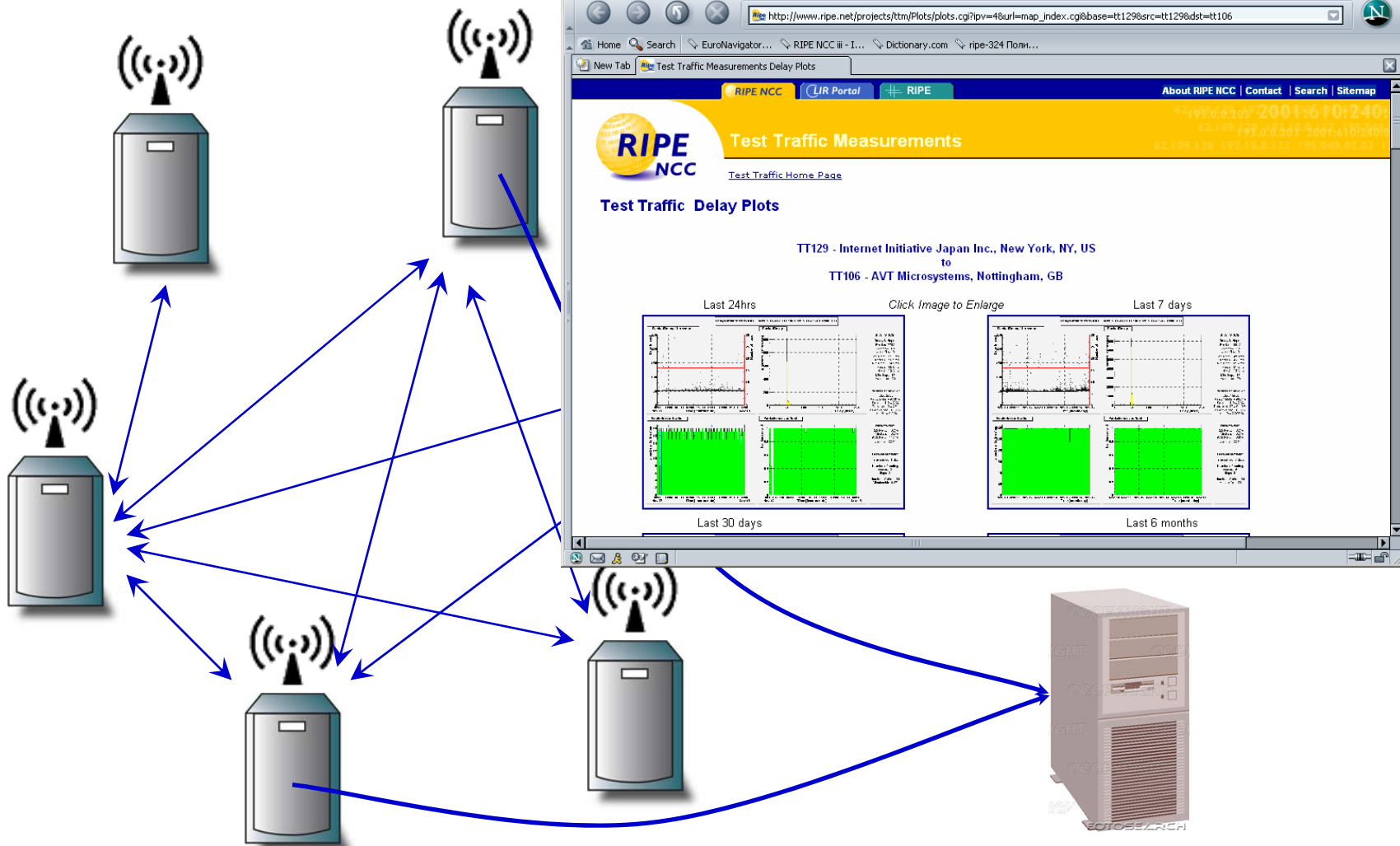 - Concept

  - TTM: DNSMON

  - RIS: MyASn, BGPlay

Data Collection Components

RIPE Database

- Address allocation
- Routing Registry
- …

RIS

Routing

TTM

Quality/Performance

The Internet

Not to scale, arbitrary units

TTM Architecture

Distributed Platform

Routing Information Service

- Understanding routing can be very difficult
  - 20000 active ASN
  - Looking glass on router has limited functionality
- A system that collects BGP information at multiple points on the Internet
  - Include history information
  - Available to the entire community
  - Set of tools to access the information suited to various audiences
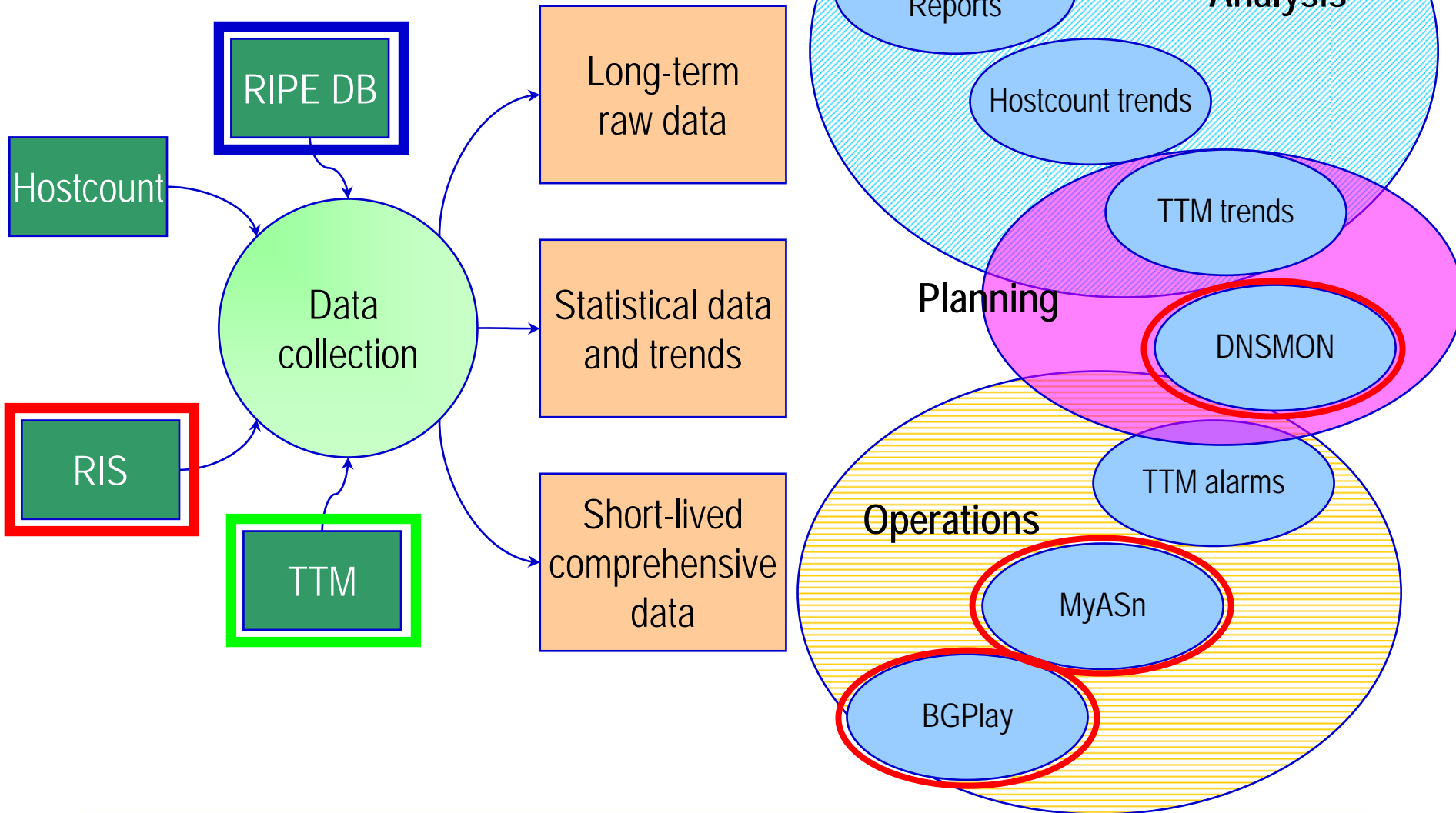- Routing Information Service or RIS
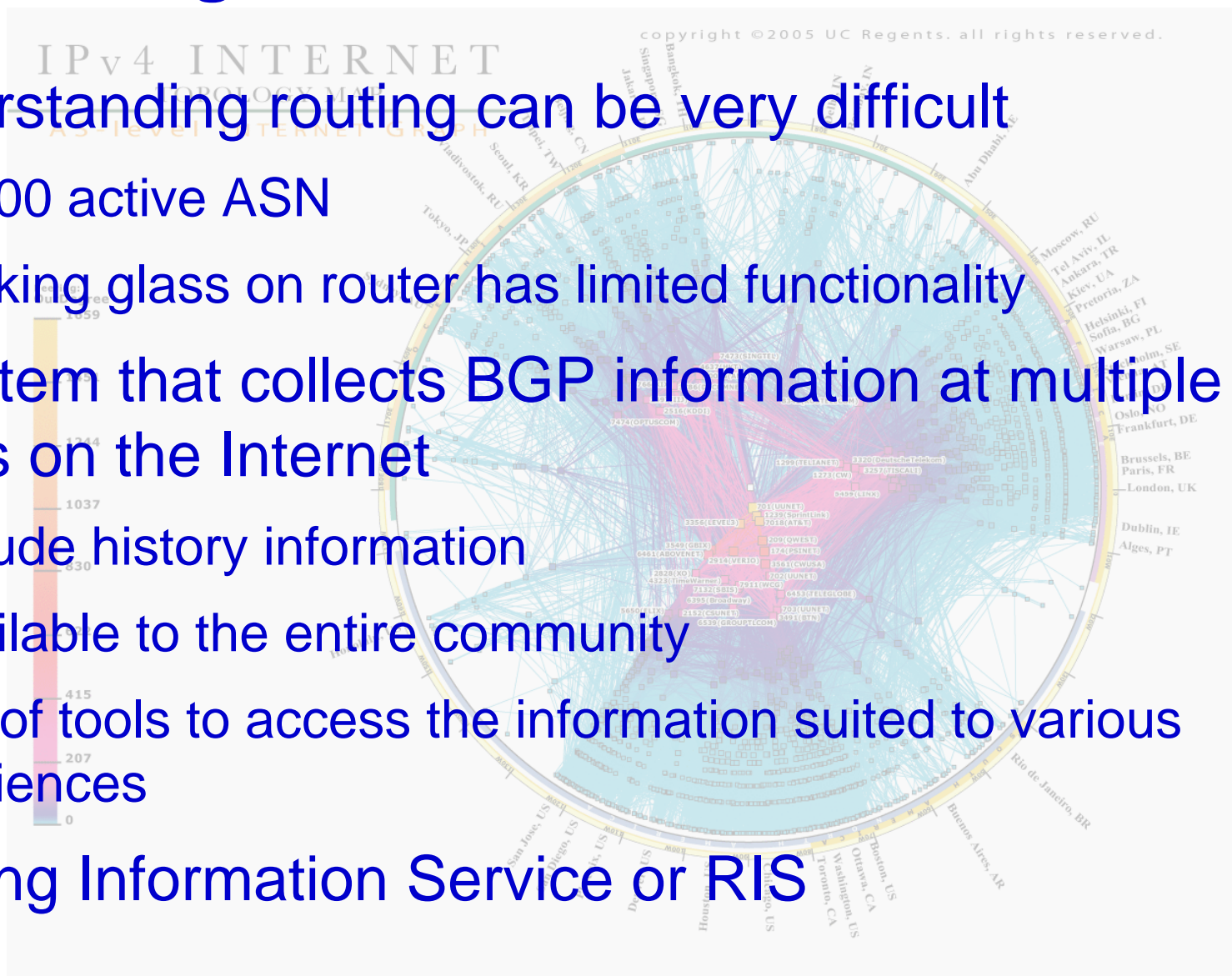
RIS Collectors

- Data collection:
  - 14 collection points
  - >600 peering sessions in total, v4 and v6
- Data that is being collected:
  - RIB: 3 times a day
  - All BGP updates
- Storage:
  - mySQL DB for 3 months
  - Raw data

- LINX, London, UK
- SFINX, Paris, FR
- AMS-IX, Amsterdam, NL
- CIXP, Geneva, CH
- VIX, Vienna, AT
- NSPIXP2, Othemachi, JP
- NETNOD, Stockholm, SE
- MIX, Milan, IT
- NYIIX, New York, USA
- DECIX, Frankfurt, DE
- MSK-IX, Moscow, RU
- PAIX, Palo Alto, USA
- PTTMetro-SP, São Paulo, BR
- RIPE NCC, Amsterdam, NL

Information Services: Concept

RIPE DB

Hostcount

RIS

TTM

Data collection

Long-term raw data

Statistical data and trends

Short-lived comprehensive data

Research and Analysis

White Papers Reports

Hostcount trends

TTM trends

Planning

DNSMON

TTM alarms

Operations

MyASn

BGPlay

DNSMON: DNS Monitoring

- DNS service is important

  - QoS for root and ccTLD zones

- Measure composite performance

  - From multiple points in the Internet, based on TTM

  - Real DNS traffic

  - Servers + Network

- Interactive with graphical user interface

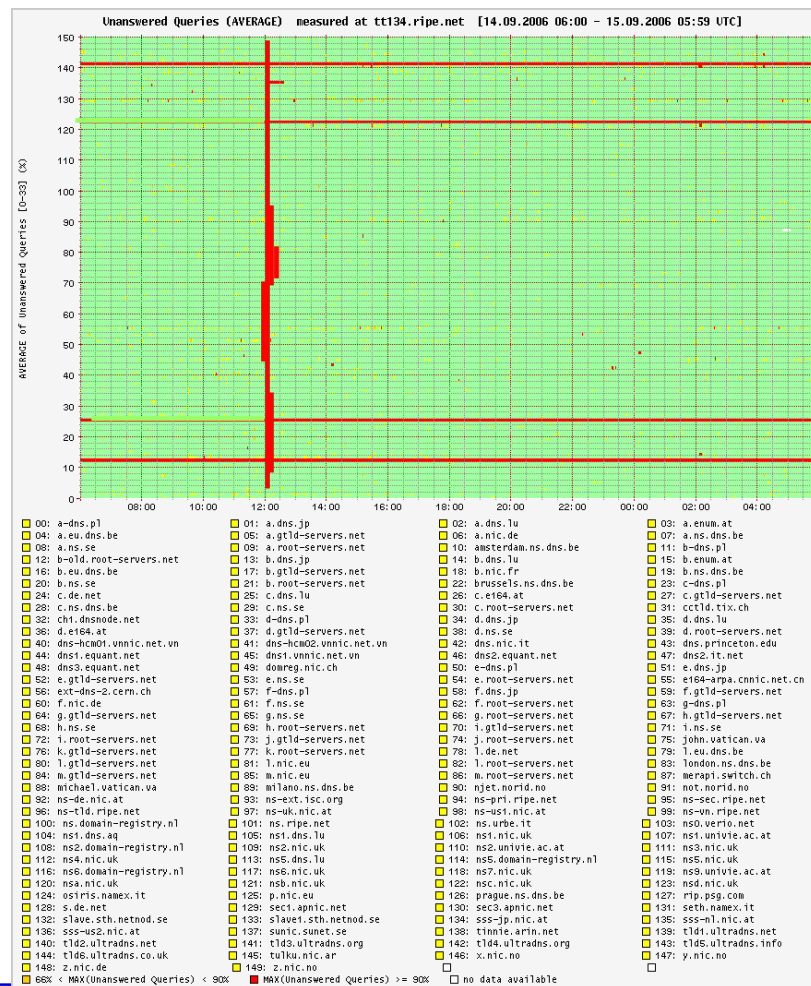 - Stacked plots allow people to easily see trends

  - Plots on demand

Composite measurement: DNS Server Quality
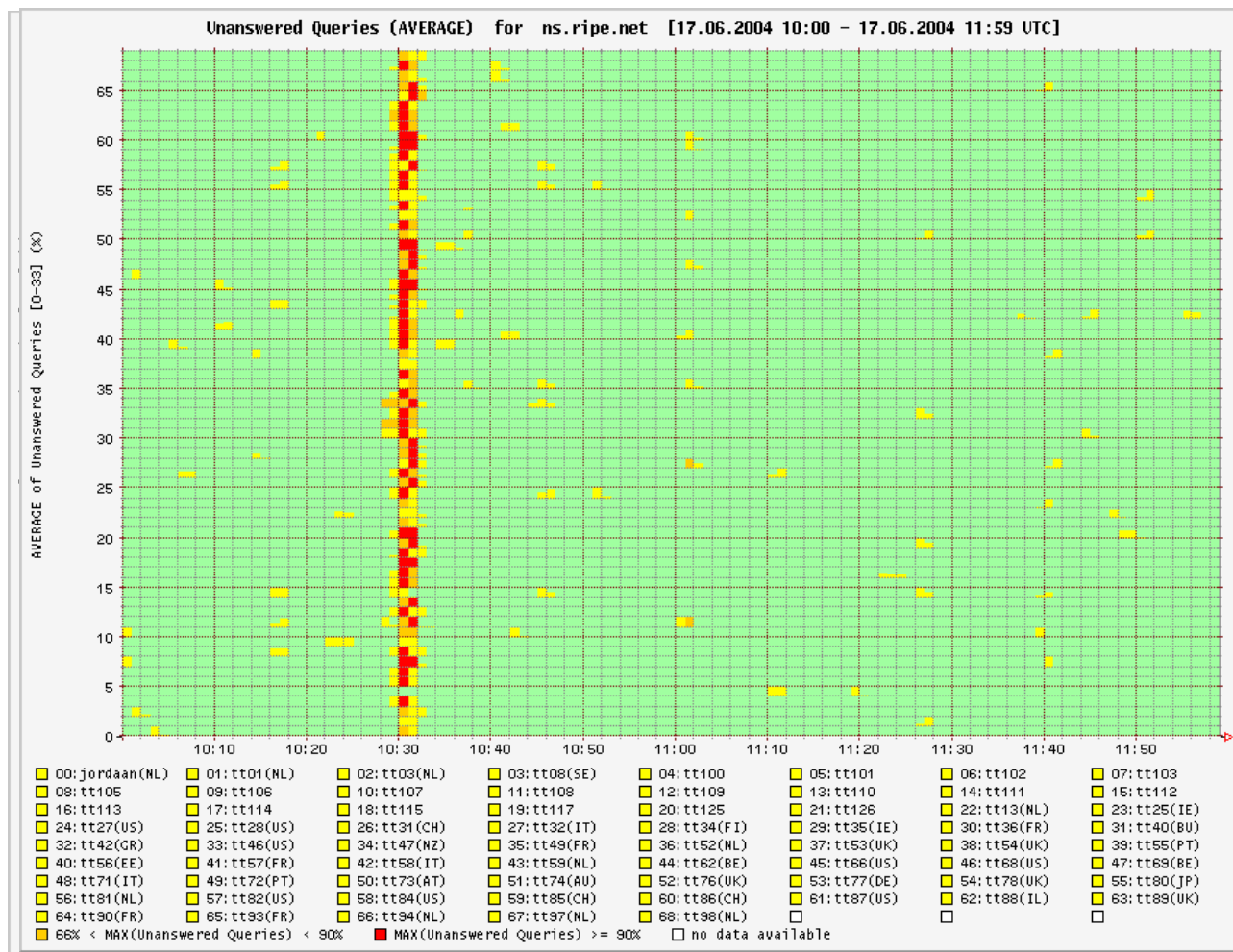
Composite Measurement: Connectivity Quality

DNS server (~150)

Time

RIS Applications

- ## MyASN

  - Allows to monitor BGP events related to an AS

  - Alarms: Origin, Customer, Transit, Advanced

  - Triggers and thresholds to generate notifications

- ## BGPlay

  - Animated graph of routing activity over time

  - Prefix to monitor and data sources

Why should the NCC do this?

- Activity that benefits the entire community
  - The NCC was set up to do that
  - Connected to our registration services

- Neutral & Impartial
  - No commercial bias
  - Results that reflect reality

- Access to networks operated by others

Future Plans

- Composite measurements of service quality
  - Measure network from service perspective
  - DNSMON-like service for other protocols

- Global platform for one-way measurements
  - Measurements on demand
  - In real time, based on the OWAMP

- More useful and simpler services
  - Ready to use tools with good user interface
  - Solve real problems
  - Examples: MyASn, BGPlay

How to Participate?

- Just use it
  - www.ripe.net/ttm
  - www.ripe.net/ris
  - dnsmon.ripe.net

- Active Measurements
  - TTM:
    - Buy and install a probe
    - RIPE 297 explains the details
  - DNSMON
    - TTM service is free
    - TLD operators: RIPE 342 explains all details

- RIS:
  - Set up a peering session at any of our locations
  - Contact rispeering@ripe.net

URL's, email

- RIPE Database
  - http://www.ripe.net/db/
  - ripe-dbm@ripe.net: support @ NCC
  - db-wg@ripe.net : RIPE Working Group
- DNS
  - http://www.ripe.net/rs/reverse/
  - ripe-dbm@ripe.net : support @ NCC
  - dns-wg@ripe.net : RIPE working group

URL's, email

- ## TTM

  - http://www.ripe.net/ttm

  - ttm@ripe.net: support @ NCC

  - tt-wg@ripe.net: RIPE Working Group

- ## DNSMON:

  - http://dnsmon.ripe.net

  - dnsmon@ripe.net: support @ NCC

- ## RIS

  - http://www.ripe.net/ris

  - ris@ripe.net: support @ NCC

  - routing-wg@ripe.net: RIPE Working Group

Questions?