

# User-Level Performance Monitoring Programme

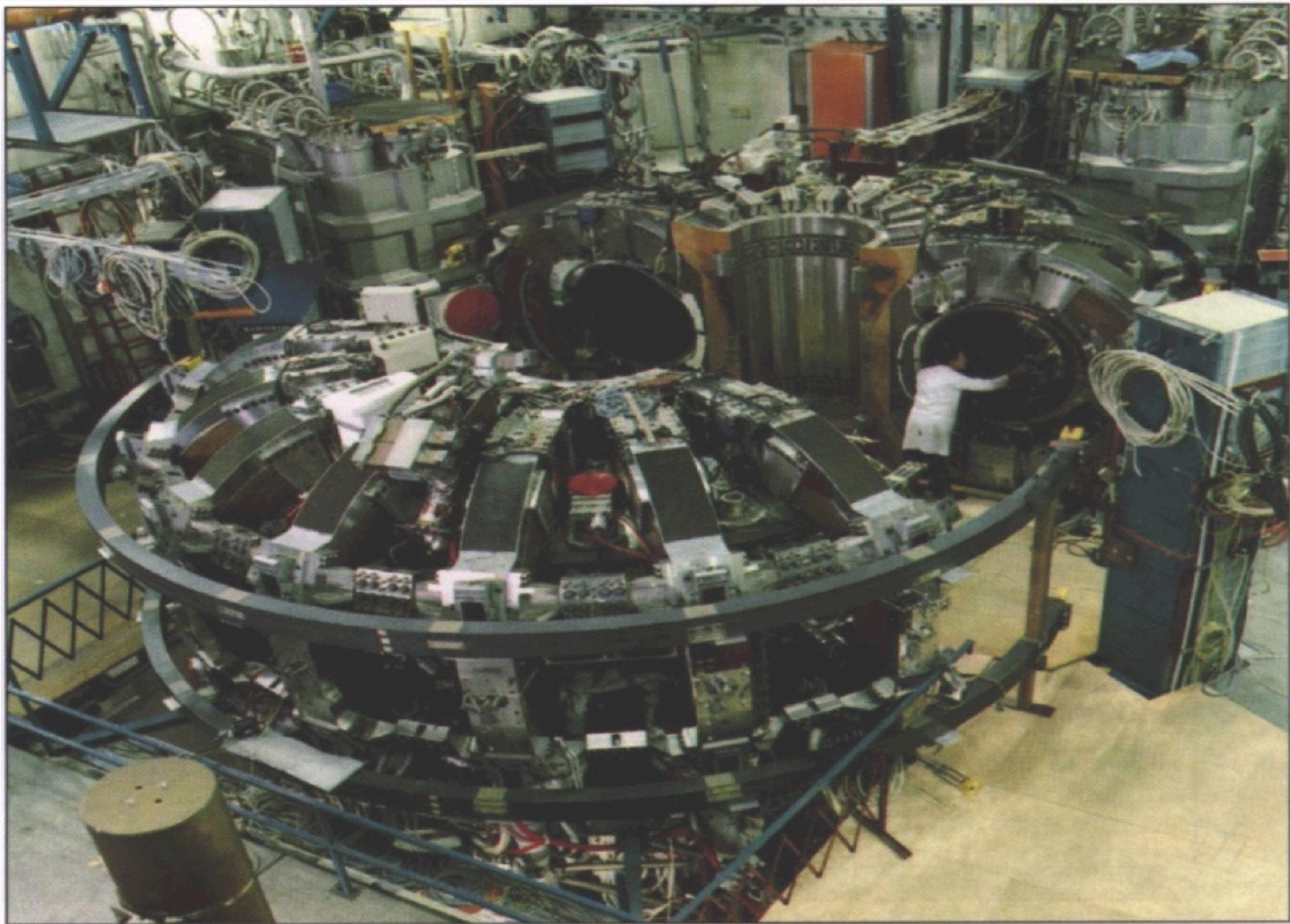
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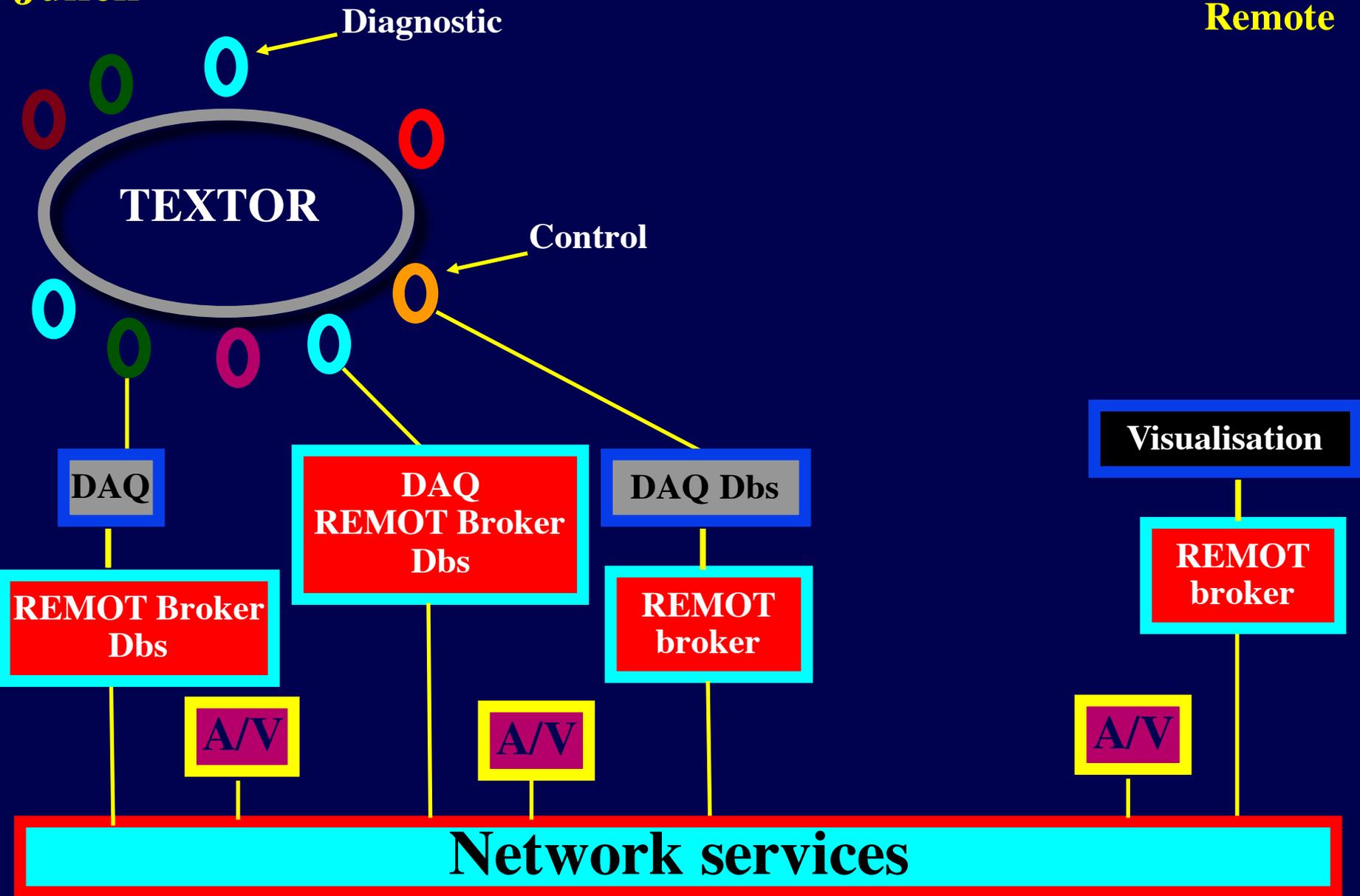
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- **DAS project**
  - 4 computer clusters on 4 different universities
  - Connected via "internet" and ATM
  - Prove QoS advantage
  - Management level WWW screen to see if links are up
- **Dynacore**
  - Remote Control
  - Video conferencing
  - Distributed databases
  - CORBA/Objectivity
  - Pseudo real time operation
  - Requirement minimal 10 Mbit/s
- **Juelich - Utrecht**
  - Weekdays often around 30 - 60 kbit
  - Was not a local problem, occurred in other German-Dutch projects



Jülich

Remote



## Physics-UU to IPP-FZJ => 7 kingdoms

### – Netherlands

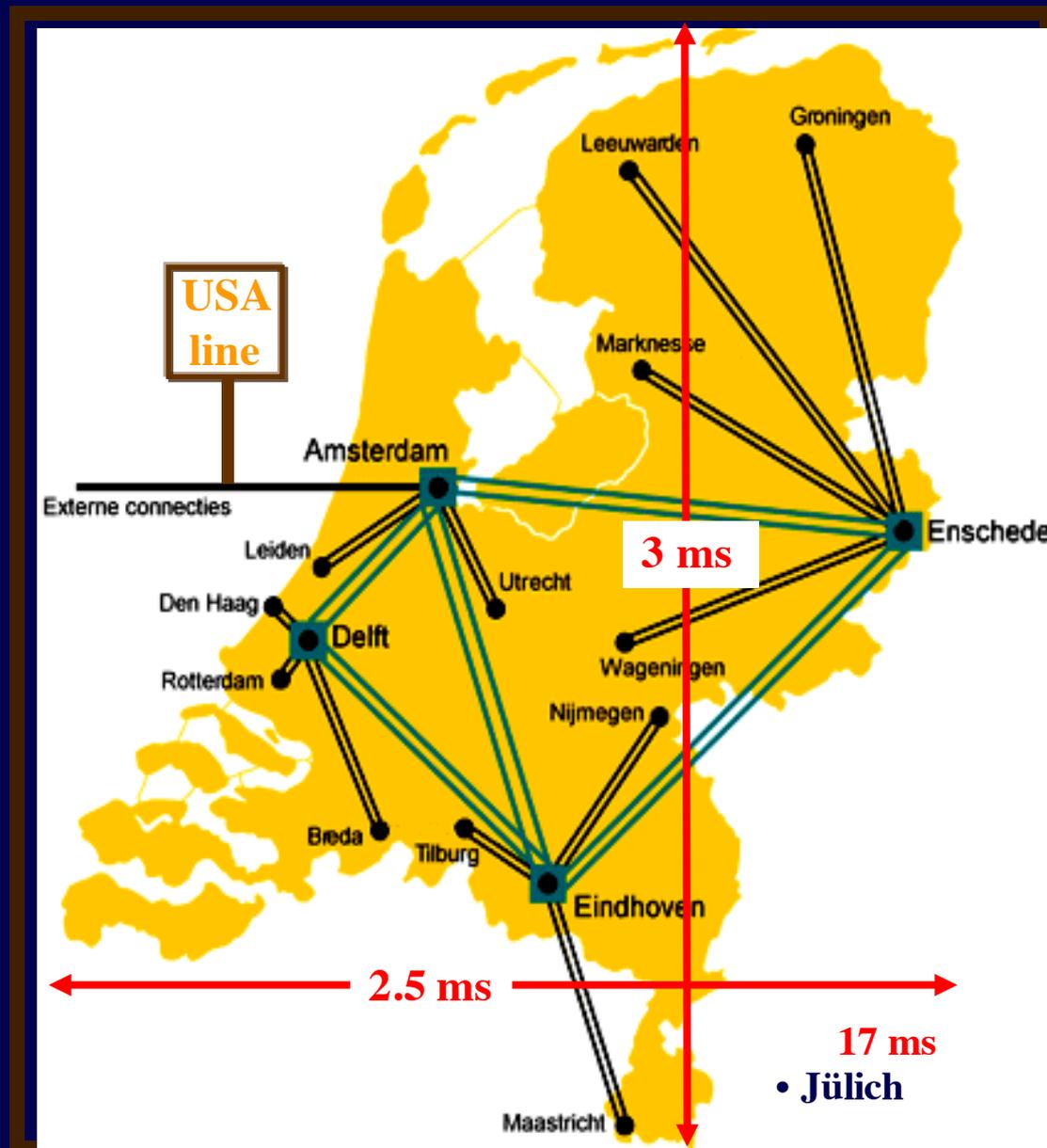
- » Physics dept
- » Campus net
- » SURFnet

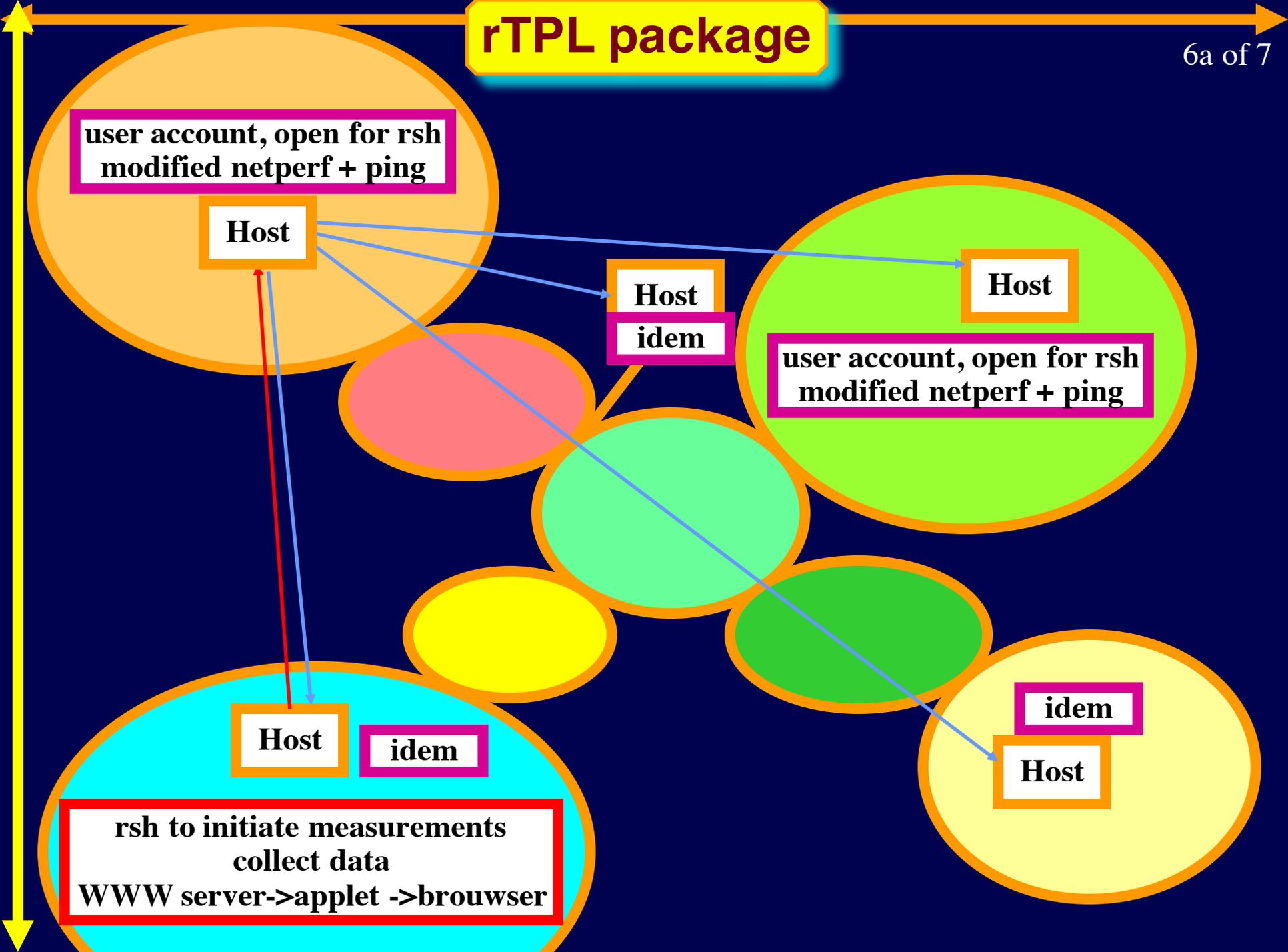
### – Europe

- » TEN 155

### – Germany

- » WINS/DFN
- » Juelich, Campus
- » Plasma Physics dept





user account, open for rsh  
modified netperf + ping

Host

Host

idem

Host

user account, open for rsh  
modified netperf + ping

Host

idem

idem

Host

rsh to initiate measurements  
collect data  
WWW server->applet ->brouwser

## • Every hour:

- Controlling host contact host from list
- Netperf to other hosts for about 10 sec
- 40 ping's to other hosts
- Collect data
- Contact next host in list
- Builds matrix from/to
- Not all elements need to be filled
- data compressed in zip file
- Load on network ~ 1%

## • User display

- User contacts WWW server at controlling host
- User gets applet
- Applet loads last zipped data file containing a week of data
- Older data also loadable
- Applet can average per week, per time of day, etc...

**This is the tricky part ....**

- **Toolset rTPL**
  - Flexible package
  - Unix knowledge essential (scripting)
  - User friendly
  - Can pinpoint performance problems if hosts well chosen
- **Performance**
  - Network performance improved a lot (TEN 1.55 -> TEN 155)
  - Still not sufficient for full scale virtual lab
- **Modeling**
  - How does end to end relate to per hop performance



$$T_p = f( tp1 , tp2 , tp3 , ... )$$



- **This work is supported by**
  - **TERENA Technical Programme**
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    - » **Telematics Applications Programme**  
**Telematics for Research**
    - » **RE 1008 REMOT**
    - » **RE 4005 DYNACORE**



- **More info:**

- <http://www.phys.uu.nl/~wwwfi/nettest>
- <http://www.phys.uu.nl/~wwwfi/das>
- <http://www.phys.uu.nl/~wwwfi>
- <http://www.phys.uu.nl/~dynacore>



# QUESTIONS?