

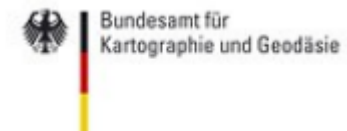


Concepts for continuous quality monitoring and station remote control

NEXPR*e*S

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Continuous quality monitoring

What does it mean?

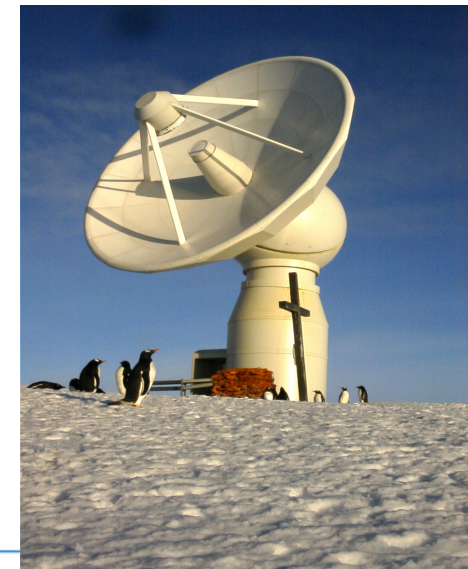
(external) observer



- ◆ Status of telescopes ?
- ◆ Is the telescope on source?
- ◆ How is the receiving quality?
- ◆ Environmental Information
e.g.: temperatur

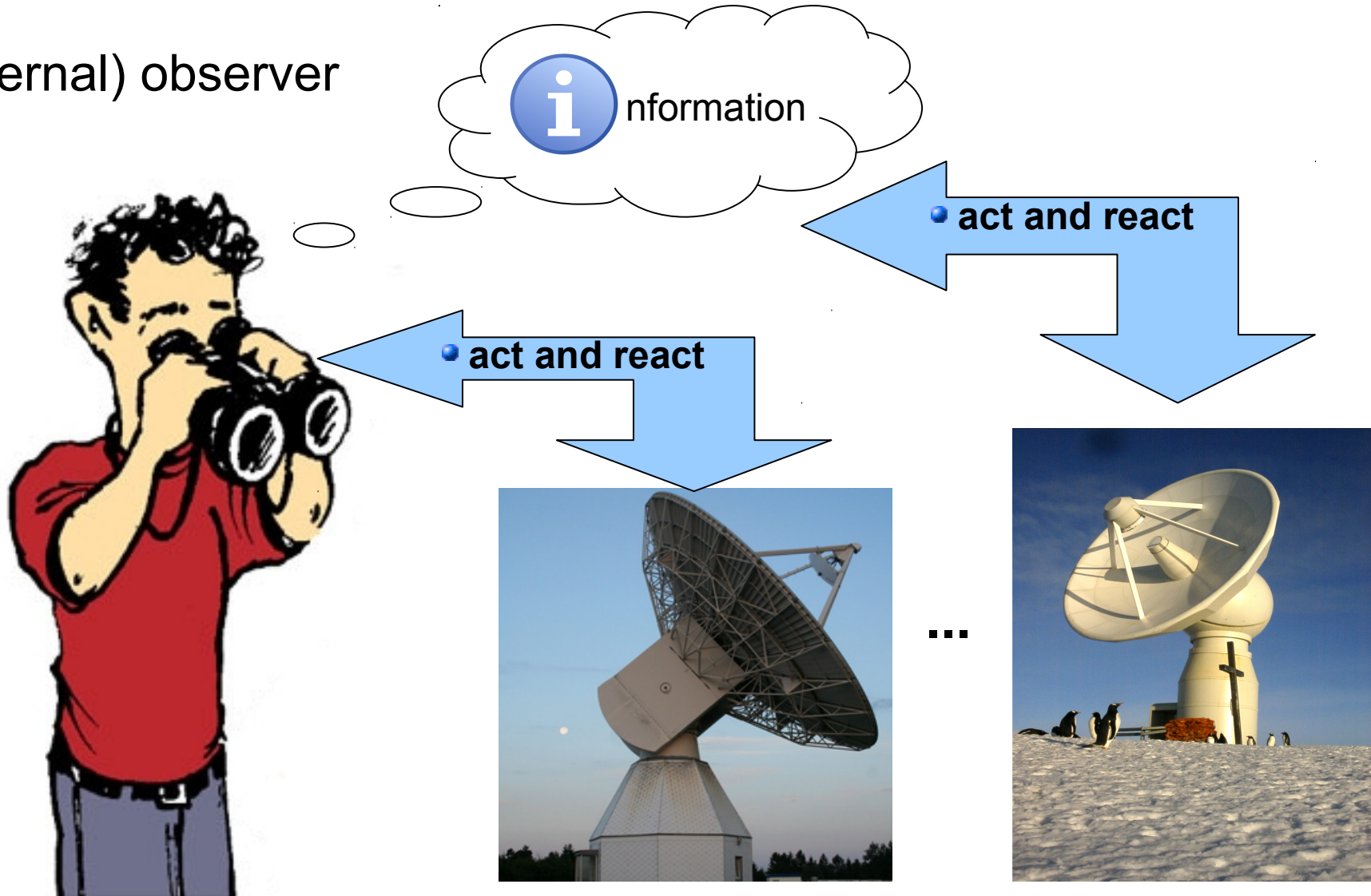


...



Continuous quality monitoring and remote control

(external) observer



Continuous quality monitoring and remote control

Status before:

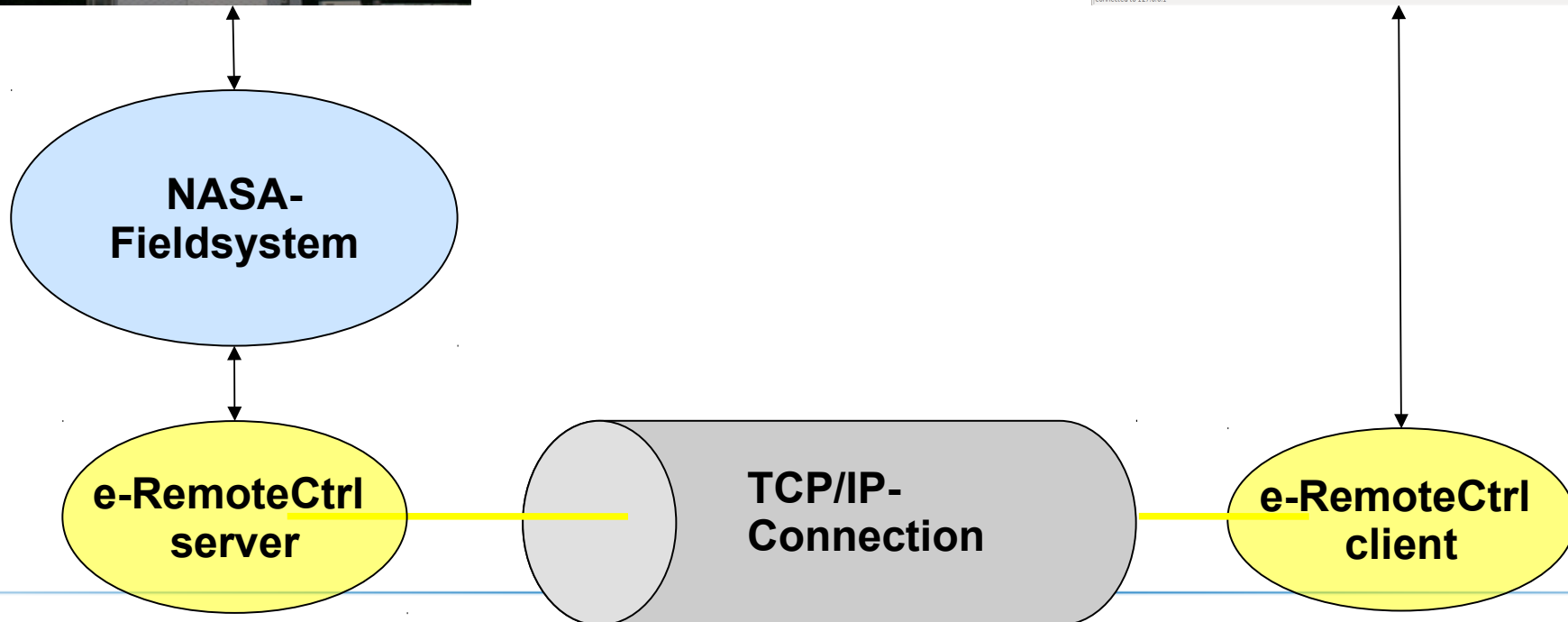
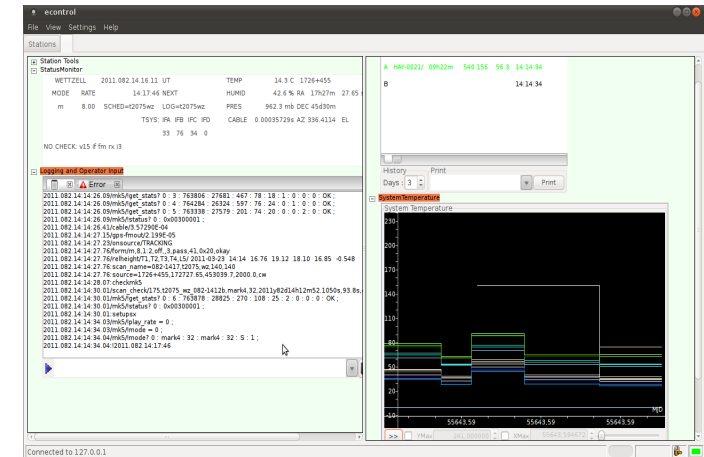
- No realtime access from correlators to read observation status (quality control through fringe checks/logfile monitoring etc.).
- No remote realtime error detection and reaction.
- No direct (read) access to fieldsystem parameters from remote.



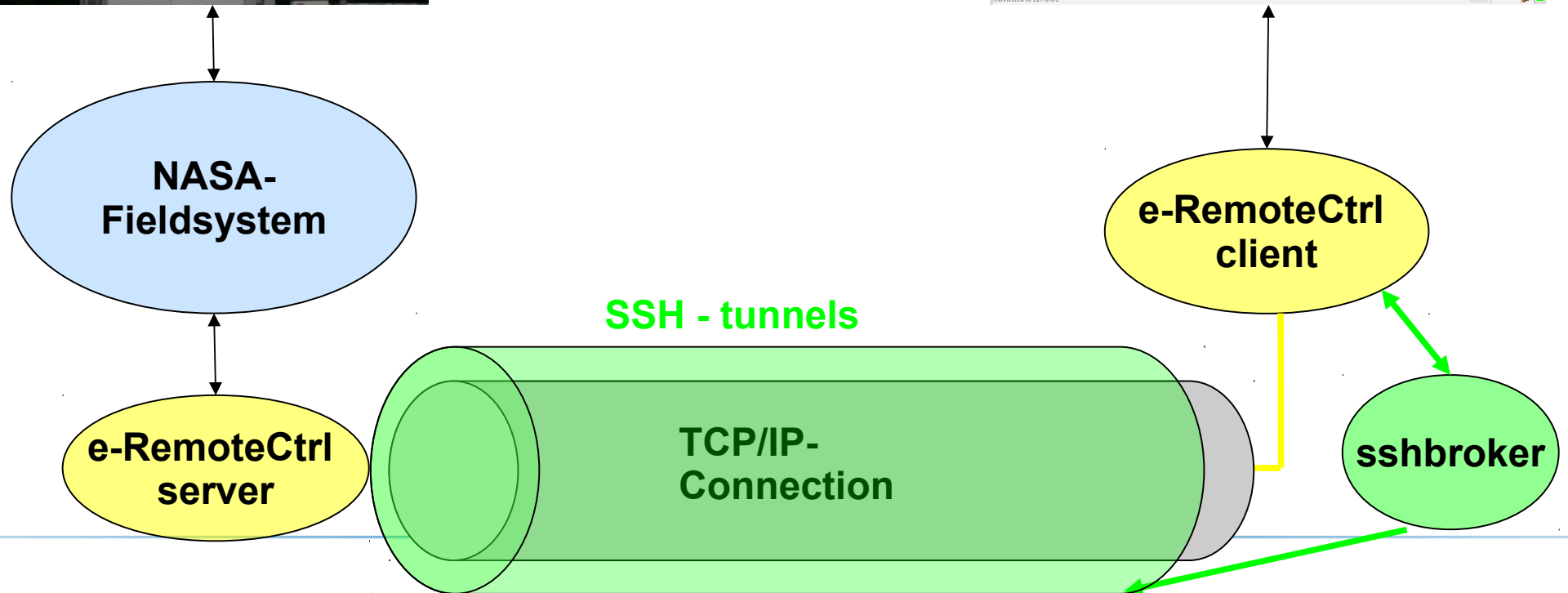
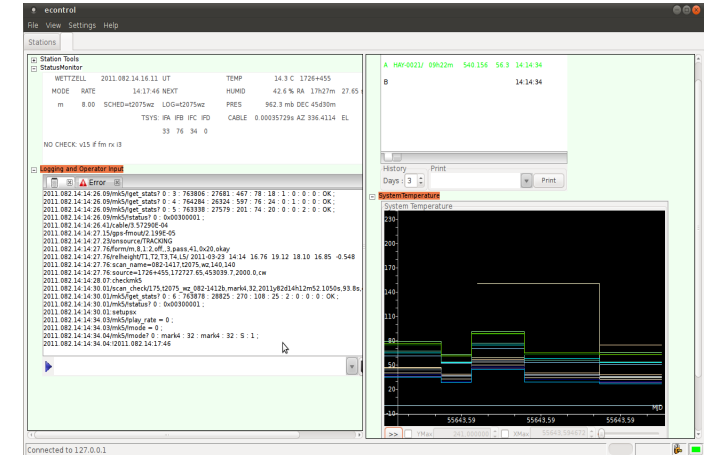
- Extend the field system remote control software with
 - Authentication
 - Authorization
 - User and role management
- Provide a concept for station monitoring to support remote control.

3 years

The remote control prinziple (local area network)



The remote control prinziple (internet)

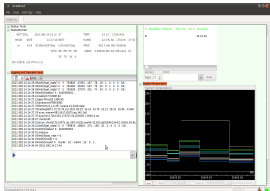


Software components

**econtrol
server**

**econtrol
client**

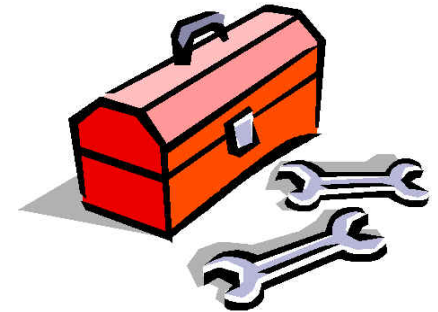
sshbroker



- based on idl2rpc.pl communication software generator
- remote procedure calls via TCP/IP networks

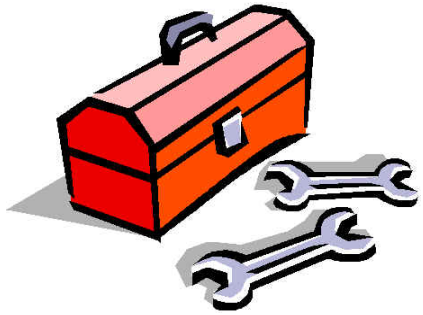
- establish ssh-connection (s)

- graphical user interface



**Wetzell
Software
Toolbox**

Software components



timecalc

C/C++ - ansi compliant

orbitcalc

sshbroker

socket
communication

serial
communication

crc32

config file parser

AES 256

...



e-RemoteCtrl features

e-RemoteCtrl-software

Status monitor

Logging

User input

Connection information

The screenshot displays the e-RemoteCtrl software interface with several panels:

- Status Monitor:** A table showing station parameters for WETTZELL, including date, time, temperature (34.3 C), humidity (42.6%), and pressure (962.3 mb).
- Logging and Operator Input:** A text area displaying system logs with timestamps and technical data.
- System Temperature:** A line graph showing temperature fluctuations over time.
- Connection State:** A status bar at the bottom indicating the connection to 127.0.0.1.

Mark 5 capacity

System temperature

Connection state

e-RemoteCtrl-software (logging and operator input)

Permanent logfile filter

The screenshot displays two windows from the e-RemoteCtrl software. The left window, titled 'Logging and Operator Input', shows a list of log entries with timestamps and technical data. The right window, also titled 'Logging and Operator Input', shows a list of error messages in red text, such as 'Tsys value for device i3 overflowed or was less than zero.' and 'total power integrator overflow'. Below the windows is a toolbar with several icons. Arrows point from text labels to these icons and windows:

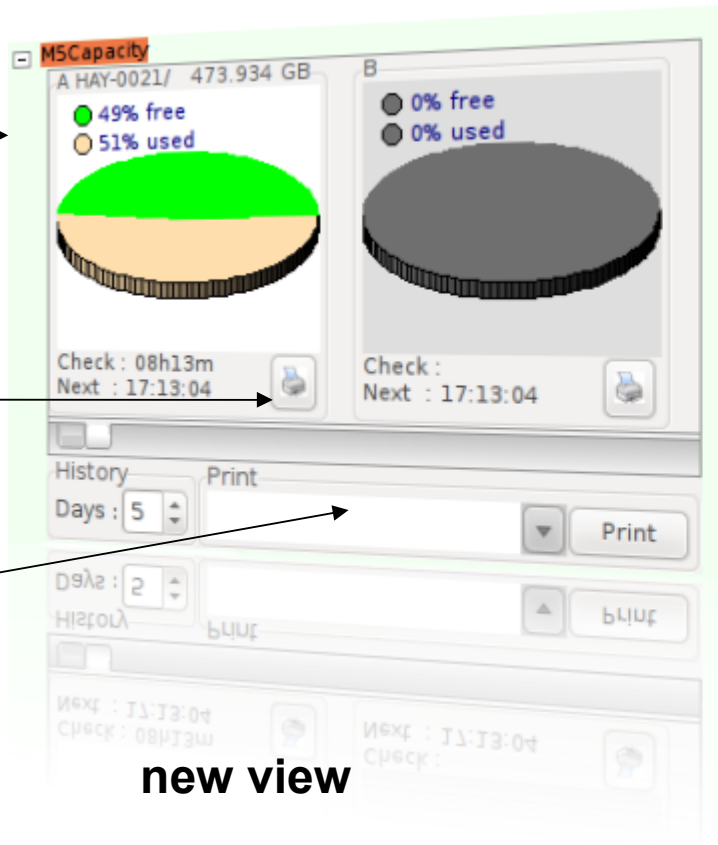
- Operator Input**: Points to the top-left corner of the left window.
- Commandline history**: Points to the bottom-left corner of the left window.
- Safe logfiles**: Points to the save icon in the toolbar.
- Filter logfiles by userdefined tokens**: Points to the search icon in the toolbar.
- Alarm sound (on/off)**: Points to the speaker icon in the toolbar.
- Permanent logfile filter**: Points to the top-right corner of the left window.

e-RemoteCtrl-software (mark5 capacity)

Pie-charts →

Direct-labelprint →

Label selection →



new view

MSCapacity

VSN	Time	GB	%	Check UT
A HAY-0021/	08h13m	473.934	49.4	17:13:04
B				17:13:04

History Print

Days : 5 Print

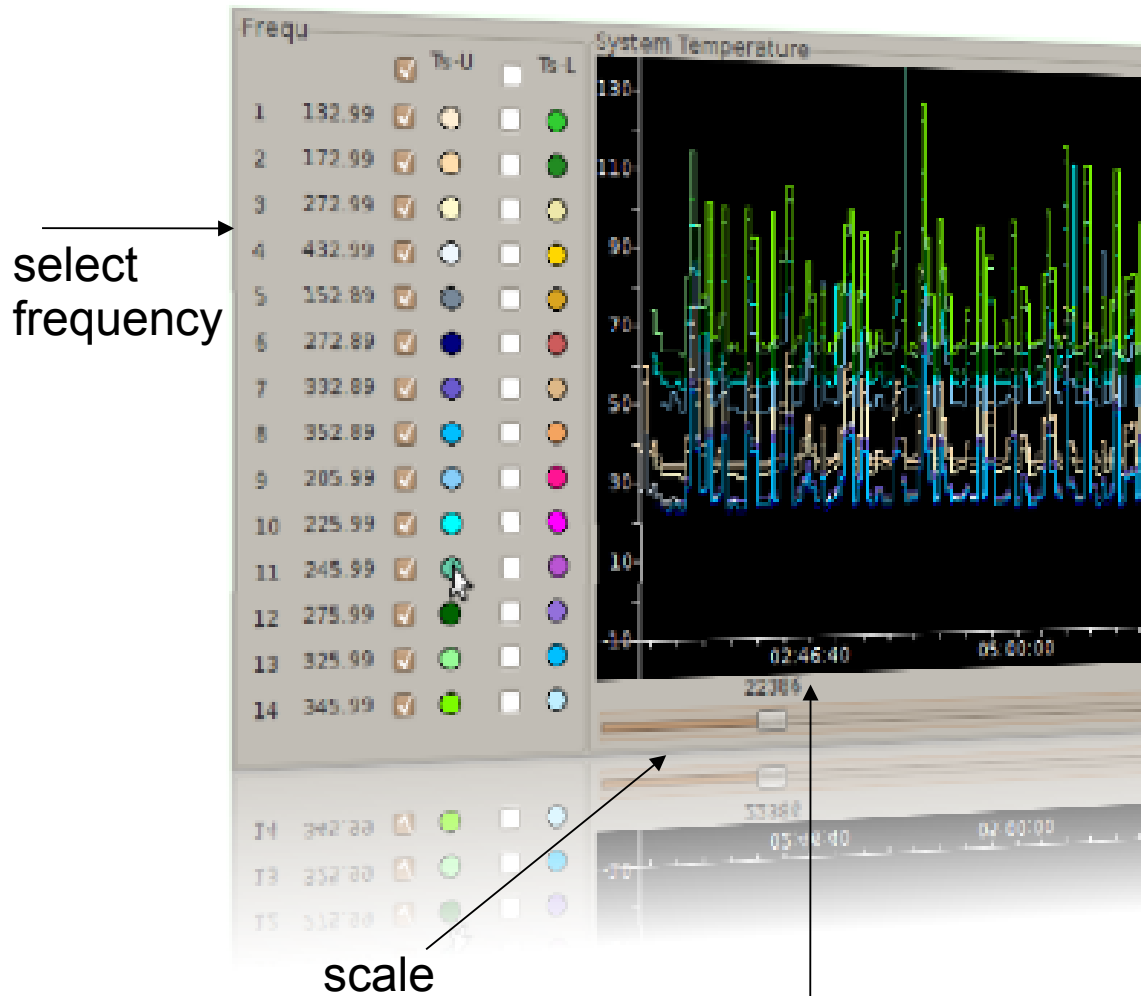
Days : 2 Print

History Print

Days : 2 Print

classic view

e-RemoteCtrl-software (system temperature)



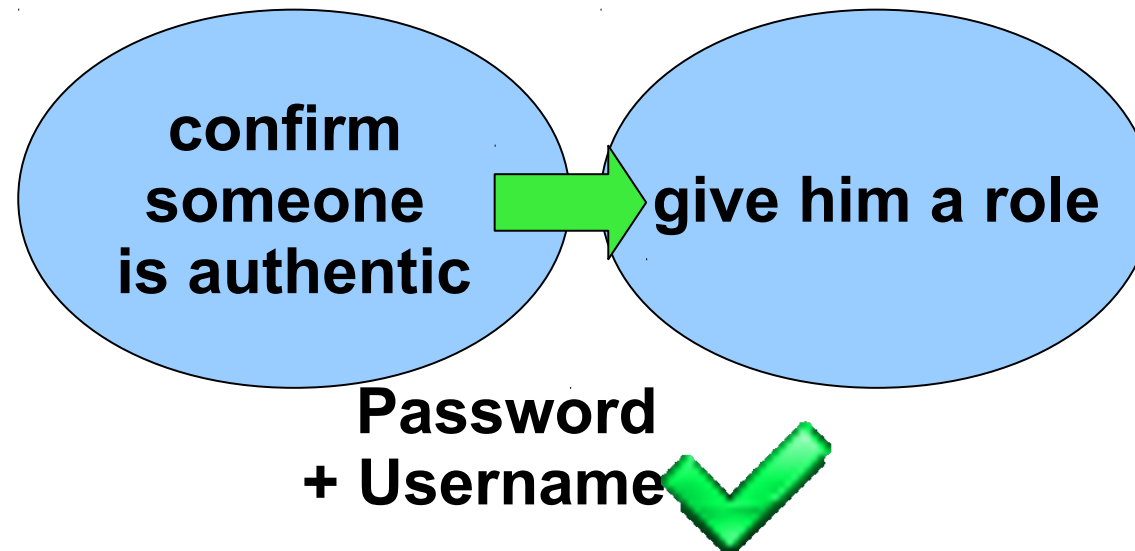
Systemtemperaturen

Tsys	IF1	IF2
95.6721	77.5856	
28.245		0 (VC)
Freu	Ts-U	Ts-L
1	132.99	40.4033
2	172.99	40.5536
3	272.99	36.7627
4	432.99	30.6402
5	152.89	29.6597
6	272.89	27.2098
7	332.89	30.5121
8	352.89	28.7326
9	205.99	59.6541
10	225.99	66.4643
11	245.99	71.4272
12	275.99	71.2099
13	325.99	70.2127
13	332.89	18.5751
13	342.89	17.5088
17	342.89	17.4515

classic view

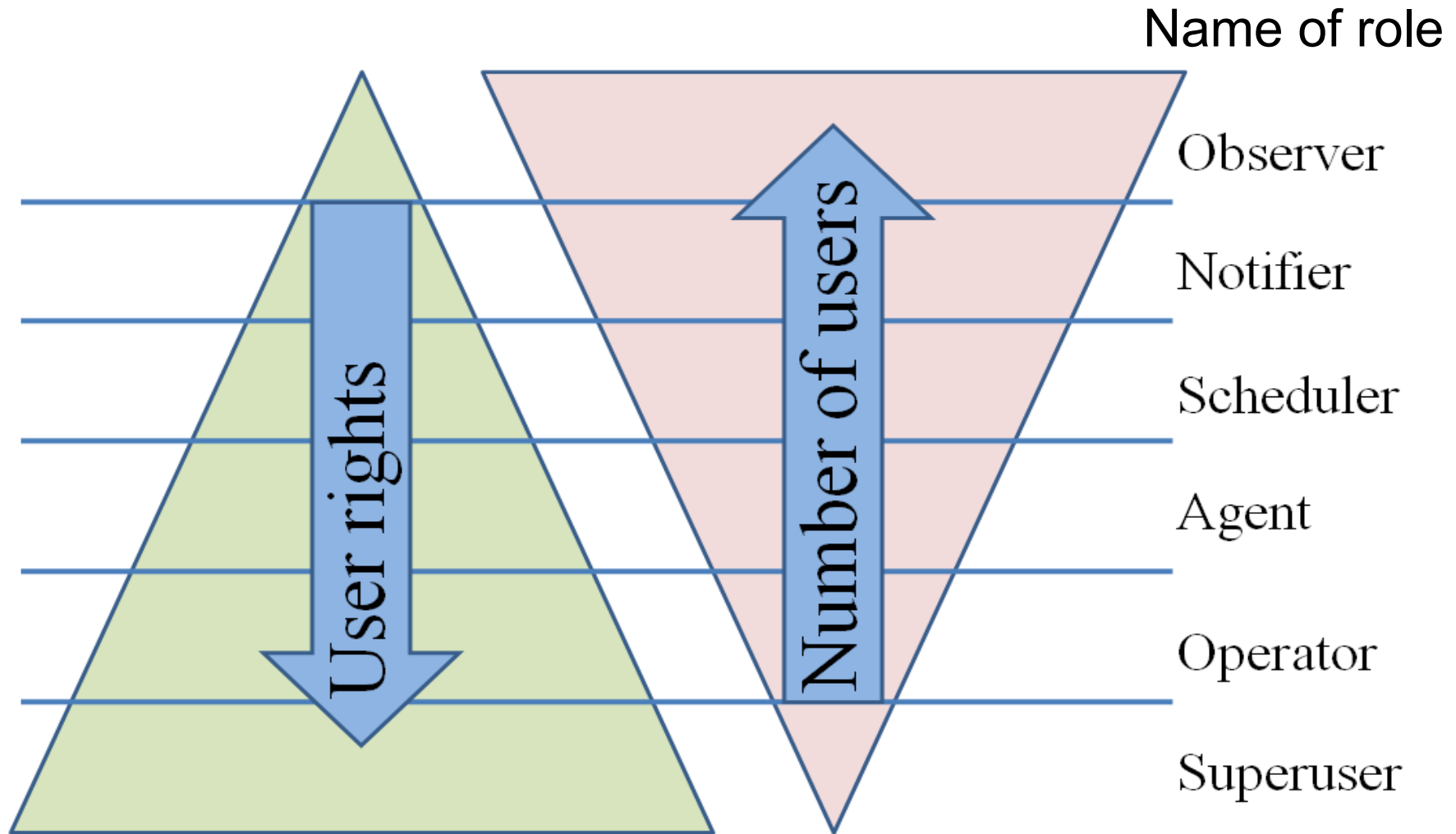
Authentication and authorization

- This requires an authentication and authorization mechanism.



- Each station manages dedicated access rights for every individual client.
- Configure fine grained access levels, e.g:
 - allow monitoring only
 - allow/deny changing source coordinates during session
 - ...

Role management





e-SysMon

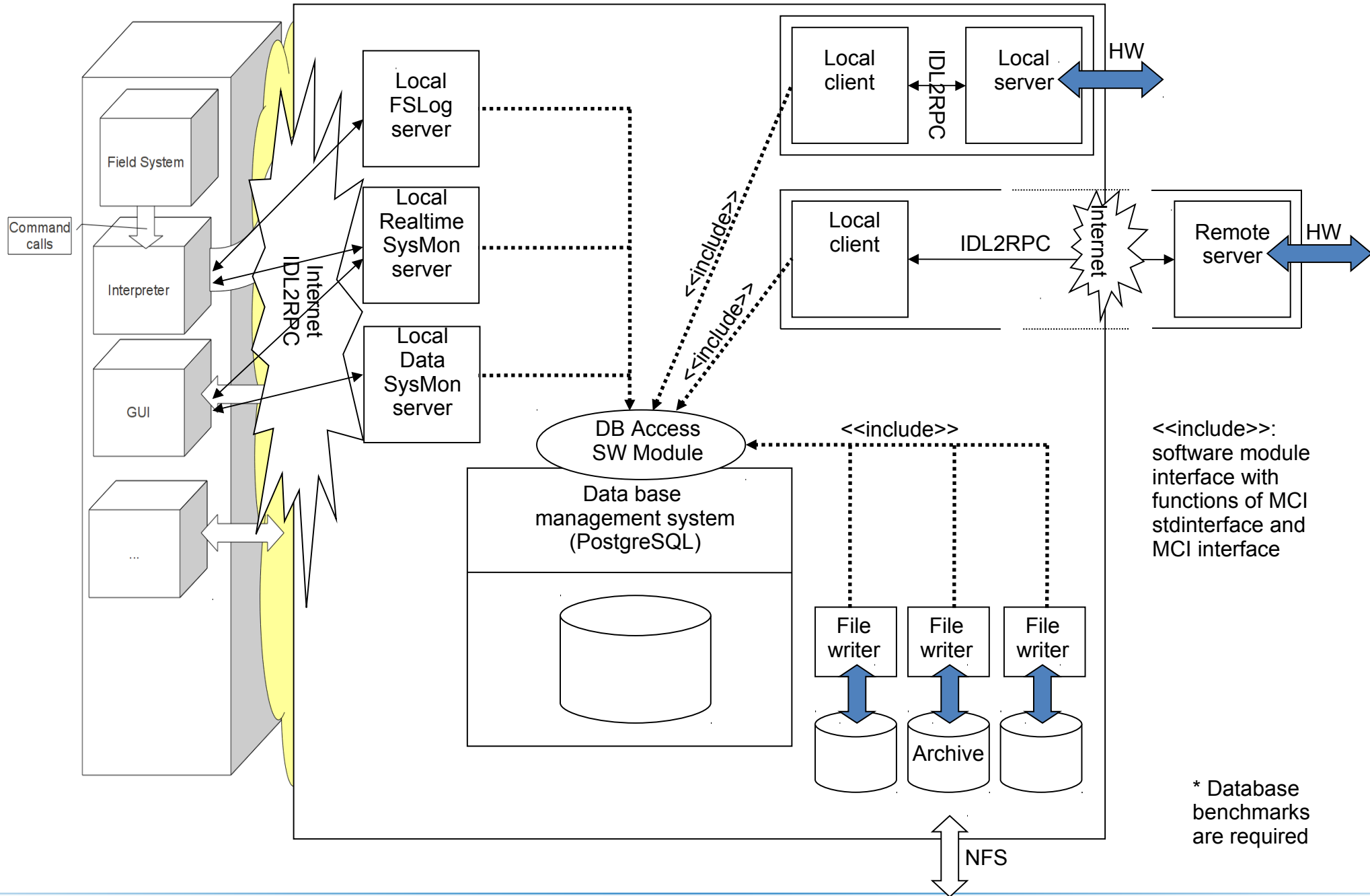
System monitoring

- Collect data
from several sensors at the telescope and site
- Visualize
the data with graphs and diagrams
- Archive
the collected data
- (React
according to predefined rules)



→ Get a better knowledge about the system behavior during

1. Session
2. Post processing



System monitoring



Safety-system display

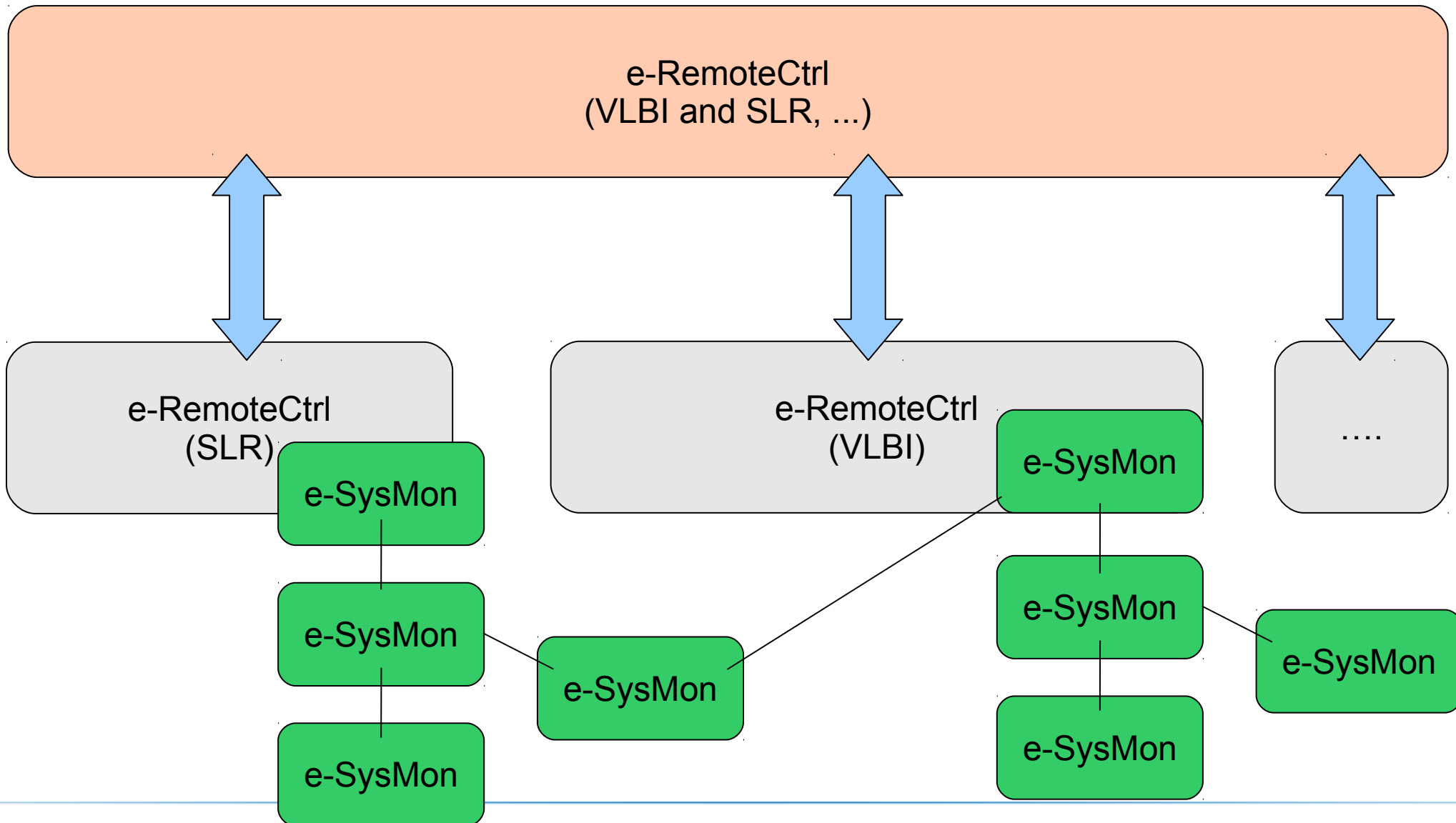


Windsensor display

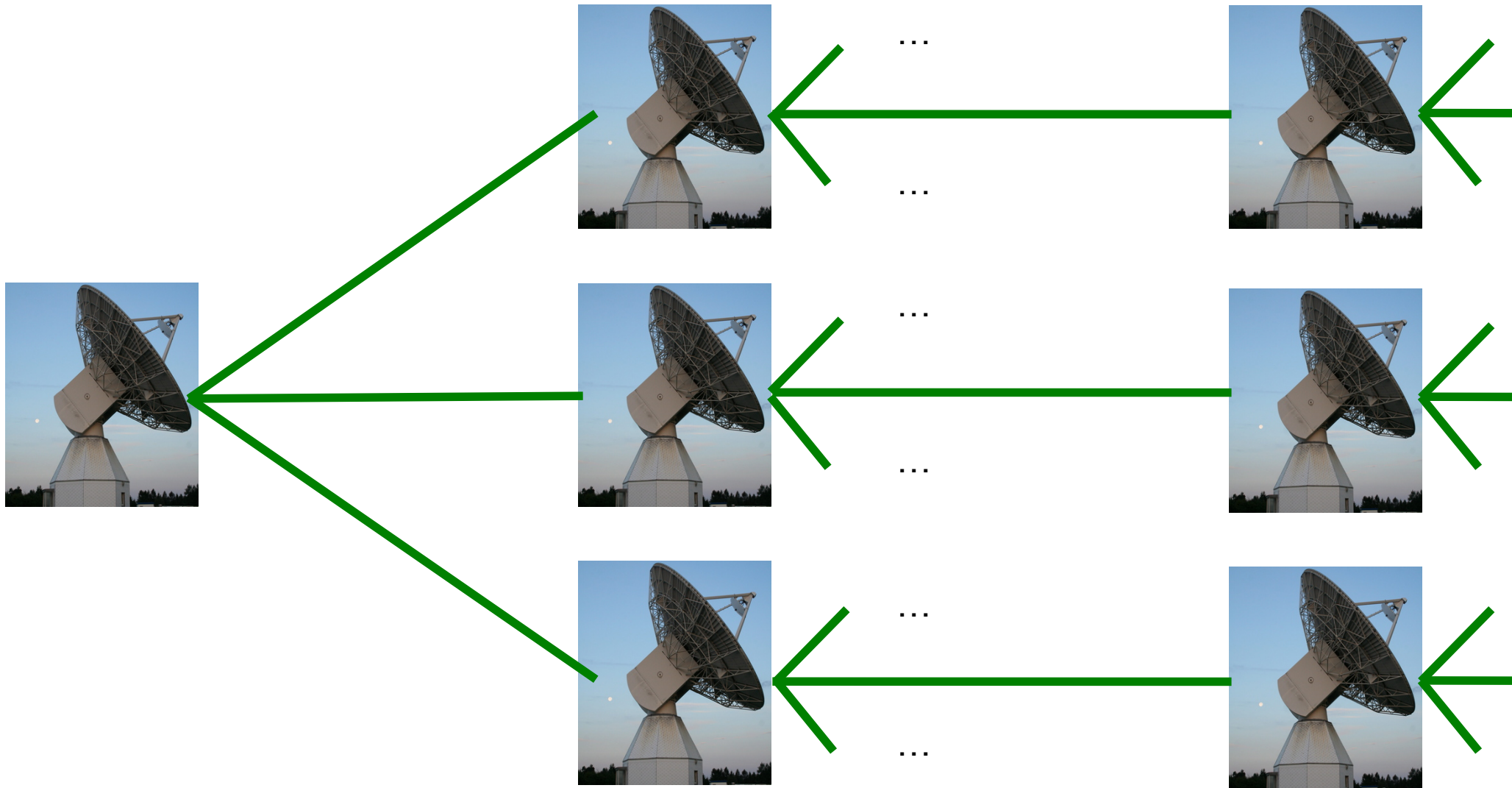


MCI Collaboration Group (Wettzell/Haystack)

Hierarchical design



Hierarchical design for distributed systems



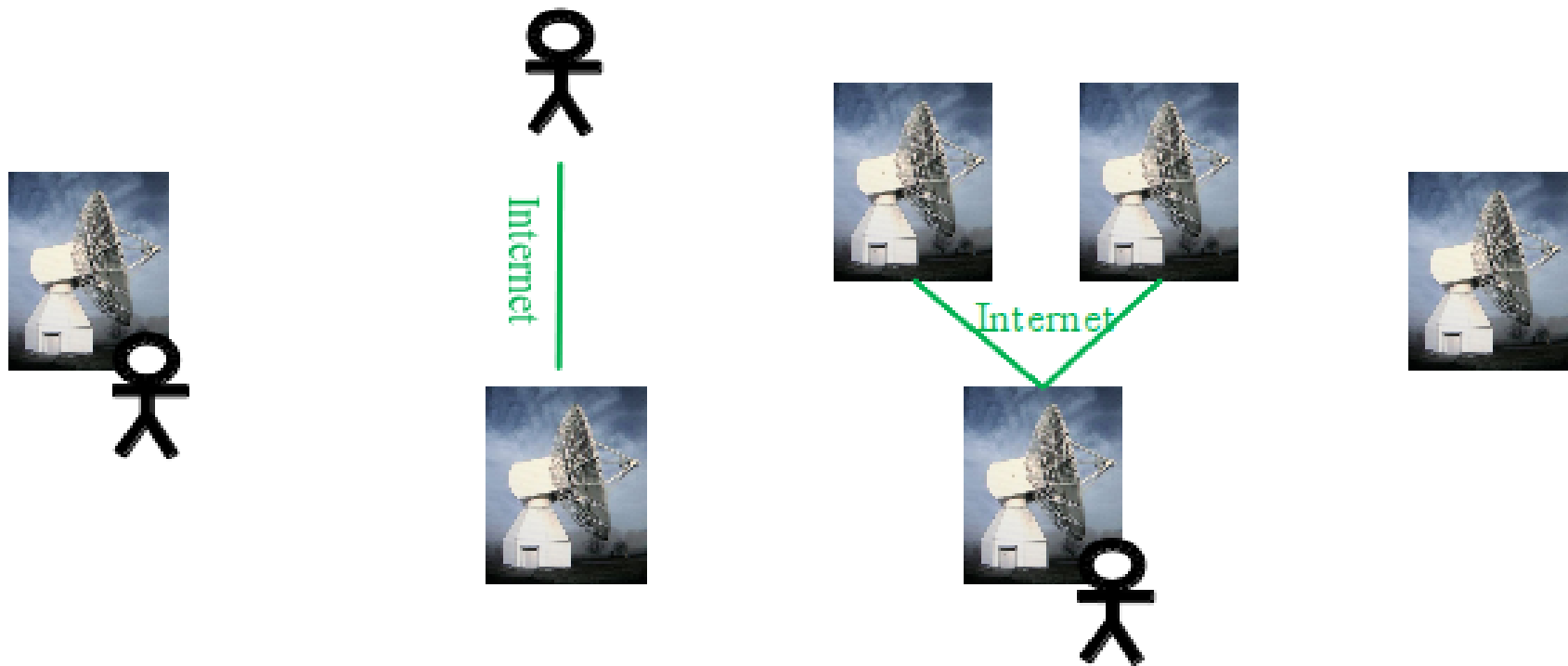
VLBI observation strategies

Local Observation

Remote Observation

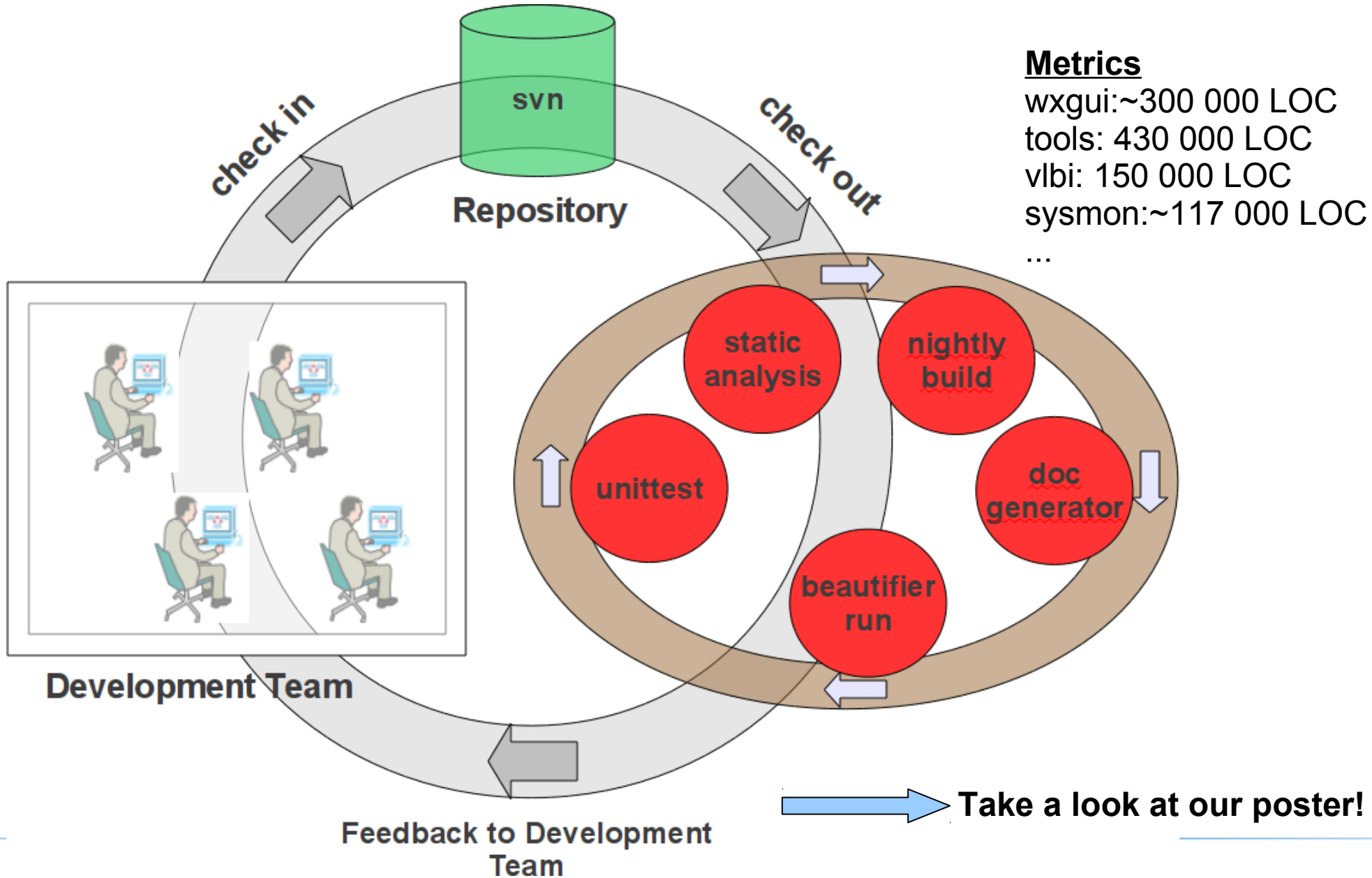
Shared Observation

Unattended Observation

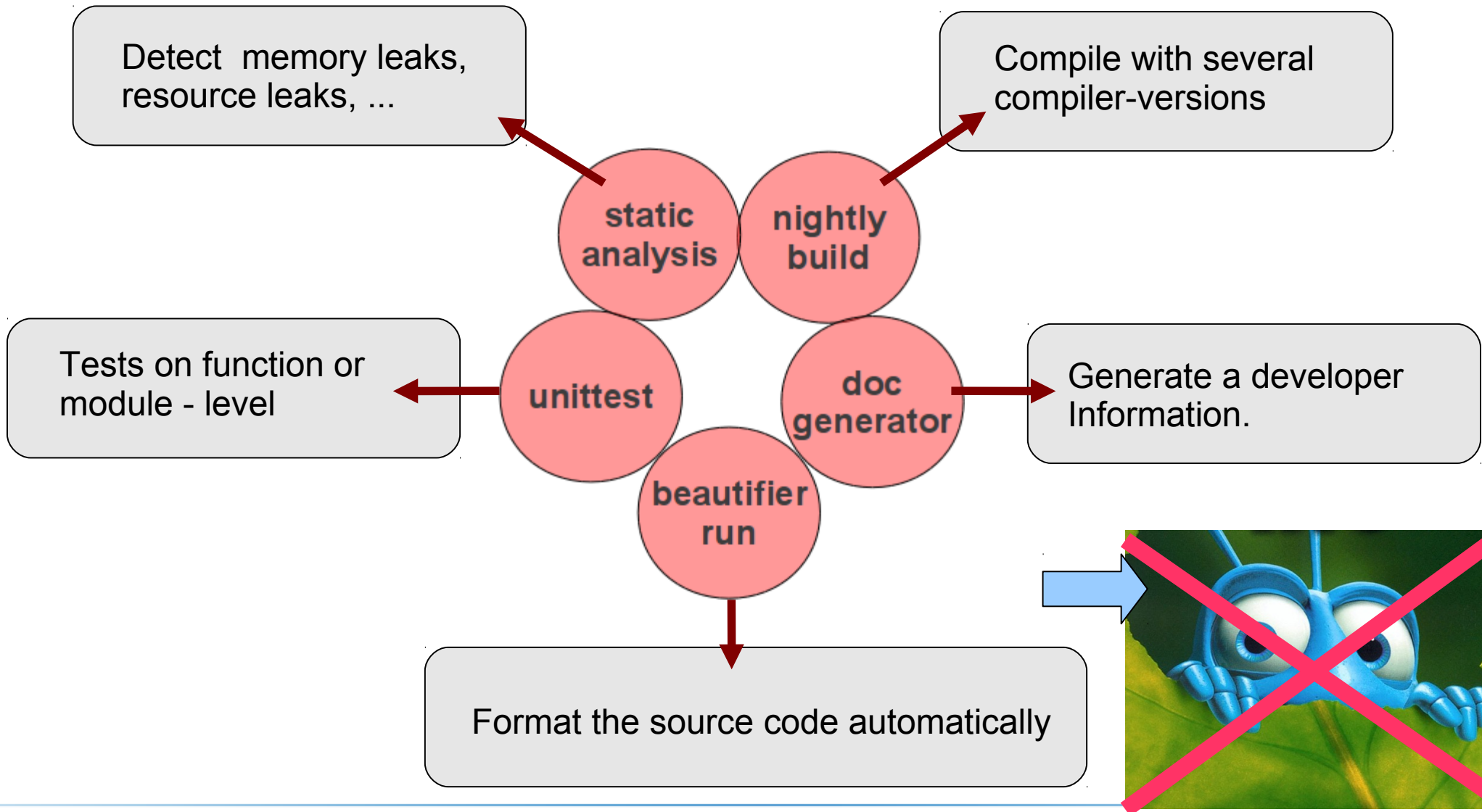


Take a look at our poster!

Development strategies: continuous integration

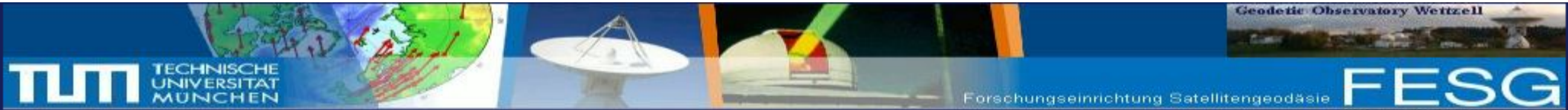


Development strategies: continuous integration





e-control-software homepage



e - Control

- Home
- VLBI
- SLR
- SysMon
- Tools

e-RemoteCtrl/VLBI

- [Introduction](#)
- [Downloads](#)
- [Manuals & Testreports](#)
- [Developers & Cooperations](#)
- [References & publications](#)
- [Licenses](#)
- [Email exploder](#)

e-RemoteCtrl/VLBI Manuals & Testreports

Installation and users manual

Installation and users manual (PDF-Download)

<http://econtrolsw.wettzell.de>

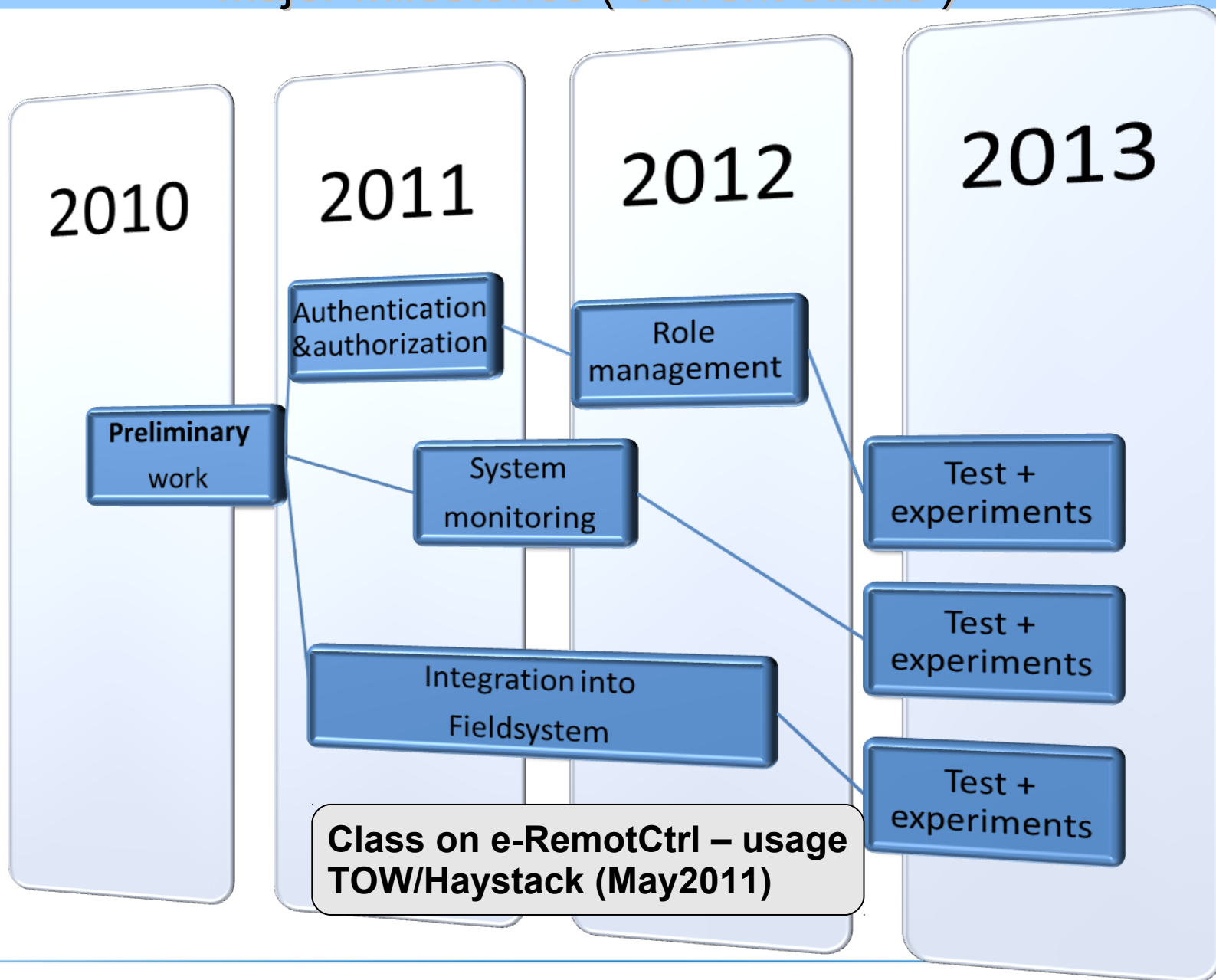
Developers manual

	Stable version	Latest version
Developers manual (generated with Doxygen)		
Server	Manual for stable version (n.a.)	Manual for latest version (2011-05-01 00:00)
Client	Manual for stable version (n.a.)	Manual for latest version (2011-05-01 00:04)

Continous integration test reports

Test type	Stable version	Latest version
Automated build	Report for stable version (n.a.)	Report for latest version (n.a.)
Static code checks	Report for stable version	Report for latest version

Major Milestones (current status)





Thank you!