

New observation strategies with e-control

FESG



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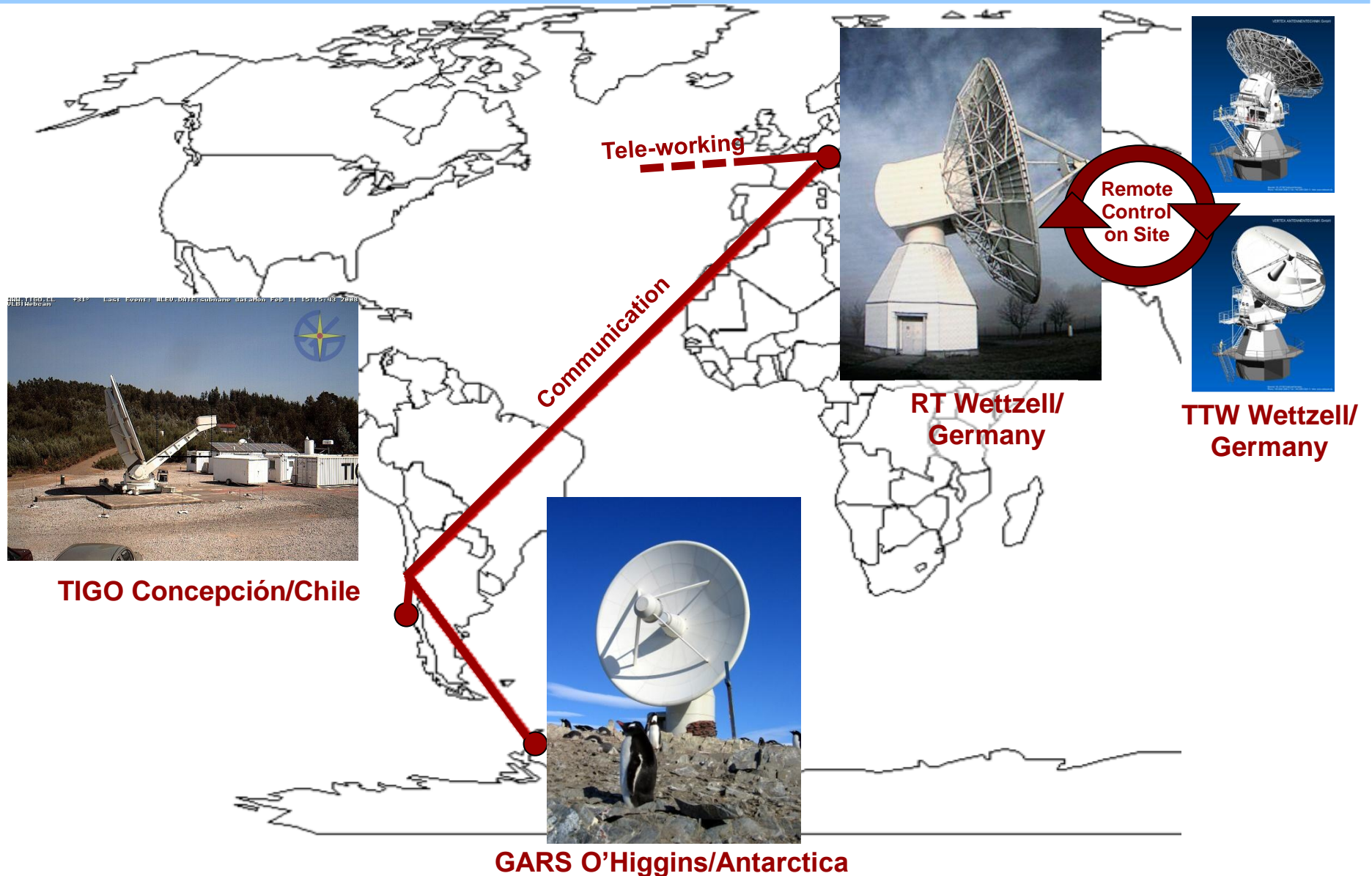
Max-Planck-Institut
für
Radioastronomie



NEXPR*es*

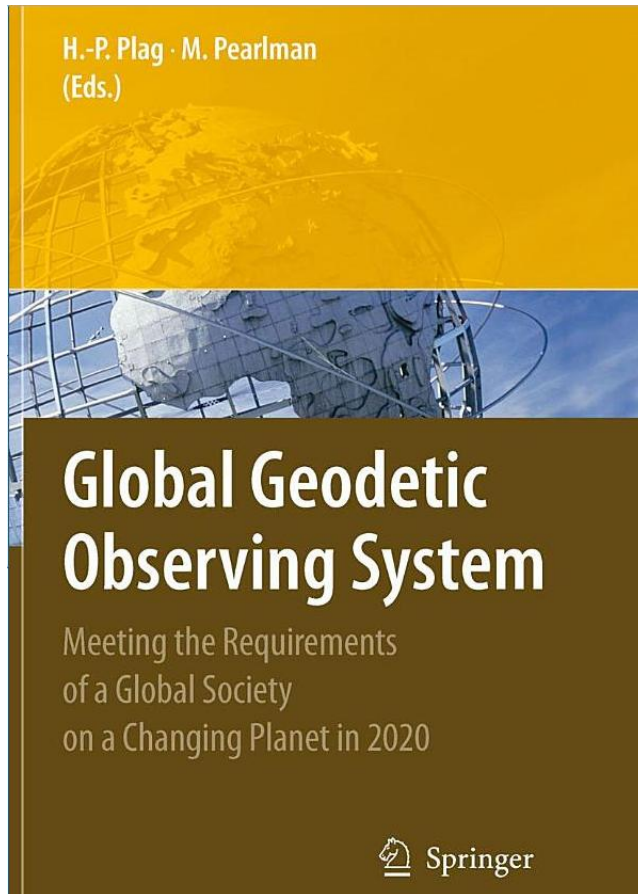
Martin Ettl (FESG), Helge Rottmann (MPIfR), Christian Plötz (BKG),
Matthias Mühlbauer (BKG), Hayo Hase (BKG), Walter Alef (MPIfR),
Sergio Sobarzo (Udec), Cristian Herrera (Udec),
Ed Himwich (NASA/GSFC/NVI)

An almost given situation for the VLBI telescopes Wettzell, O'Higgins/Antarctica and TIGO/Concepción

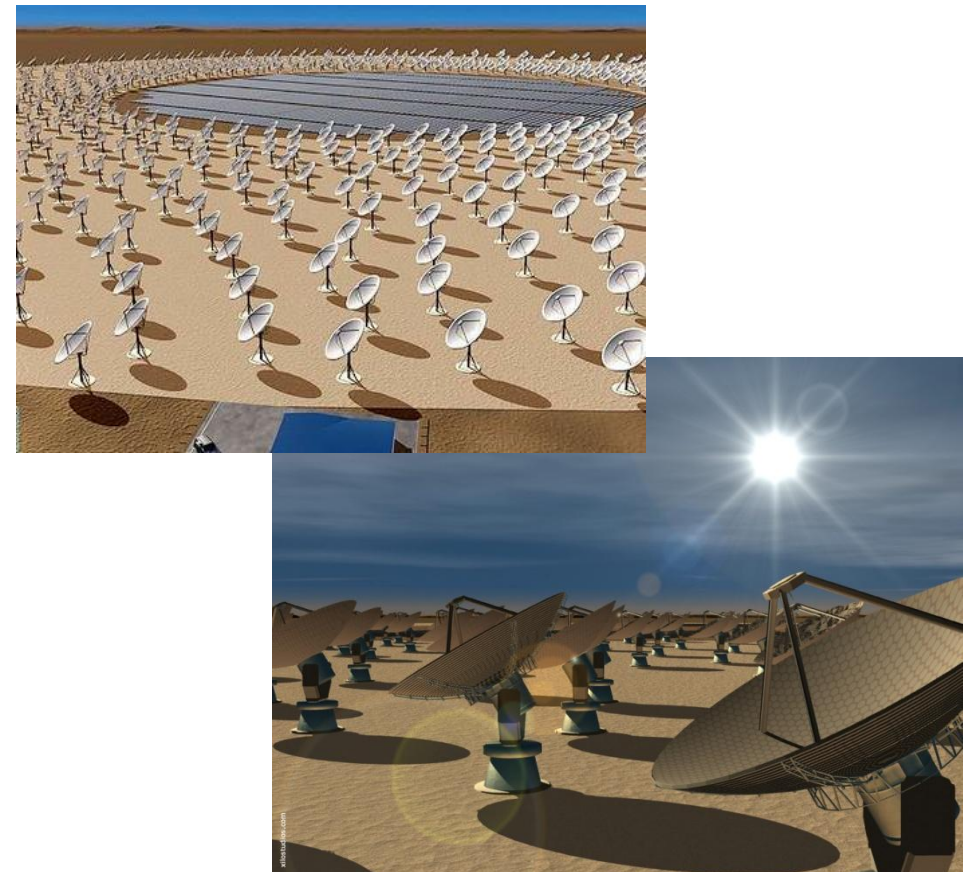


Future visions with (globally) distributed systems

GGOS



SKA



See: <http://www.smh.com.au/news/national/astronomers-bid-for-a-quiet-space-in-the-country/2006/09/28/1159337280513.html>, Download 2011-03-23

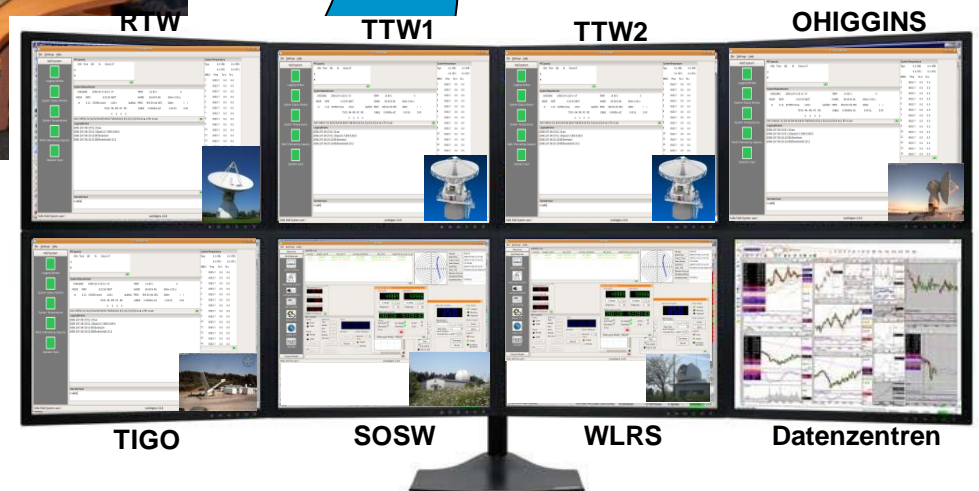
See: http://hea-www.harvard.edu/~psr_snr/research.html, Download 2011-03-23

See: http://www.amazon.de/Global-Geodetic-Observing-System-Requirements/dp/3642026869/ref=sr_1_1?ie=UTF8&qid=1300913444&sr=8-1, Download 2011-03-23

And new ideas are on the way ...



And new ideas are on the way ...



Similar to: Hase, Hayo; et. al.: Twin Telescope Wettzell (TTW) – a VLBI2010 Radio Telescope Project. IVS General Meeting 2008

New control strategies

New observation strategies for VLBI telescopes Wettzell, O'Higgins/Antarctica and TIGO/Concepción



Local

- Standard operations
- Local operator

New observation strategies for VLBI telescopes Wettzell, O'Higgins/Antarctica and TIGO/Concepción



Local

- Standard operations
- Local operator



Remote

- Check system states from everywhere at the observatory
- Tele-working
- Remote assistance and diagnostics
- Control very remote, inaccessible telescopes

New observation strategies for VLBI telescopes Wettzell, O'Higgins/Antarctica and TIGO/Concepción



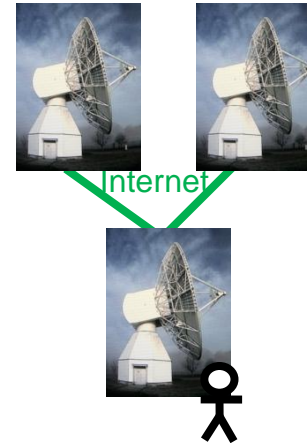
Local

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Remote

- Check system states from everywhere at the observatory
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Shared

- Save, passive data live monitoring
- Dedicated control access by responsible person
- Shared access from different observatories
- Shared night shifts

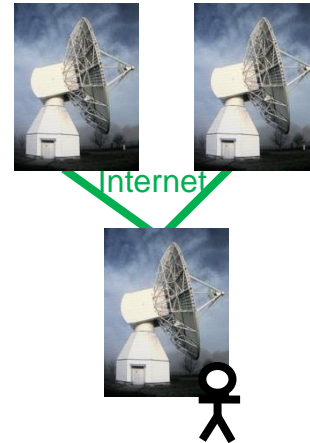
New observation strategies for VLBI telescopes Wettzell, O'Higgins/Antarctica and TIGO/Concepción



Local



Remote



Shared



Unattended

- Standard operations
- Local operator

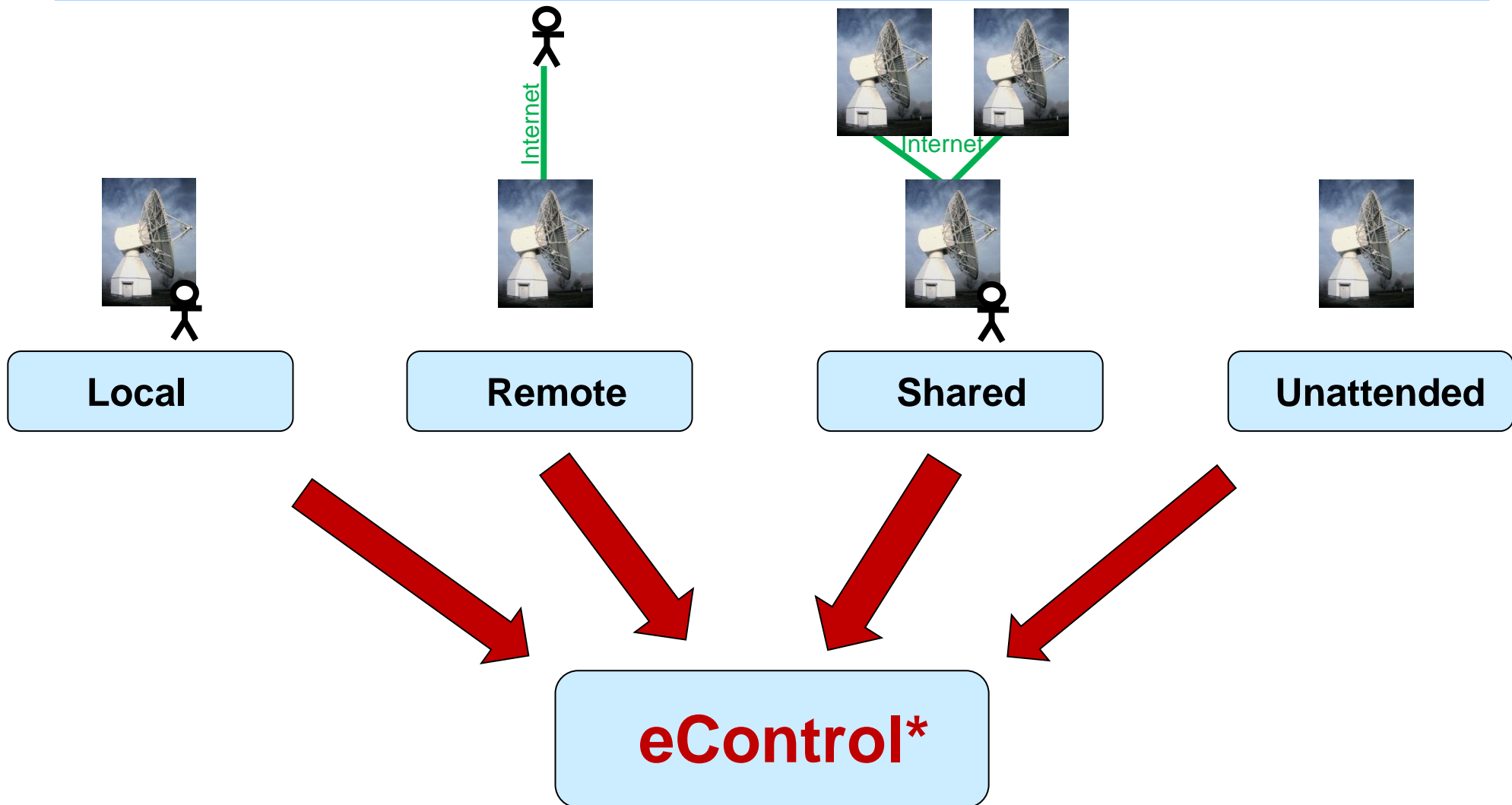
- Check system states from everywhere at the observatory
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- Save, passive data live monitoring
- Dedicated control access by responsible person
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- Observations run autonomous, (semi-) automated and unattended

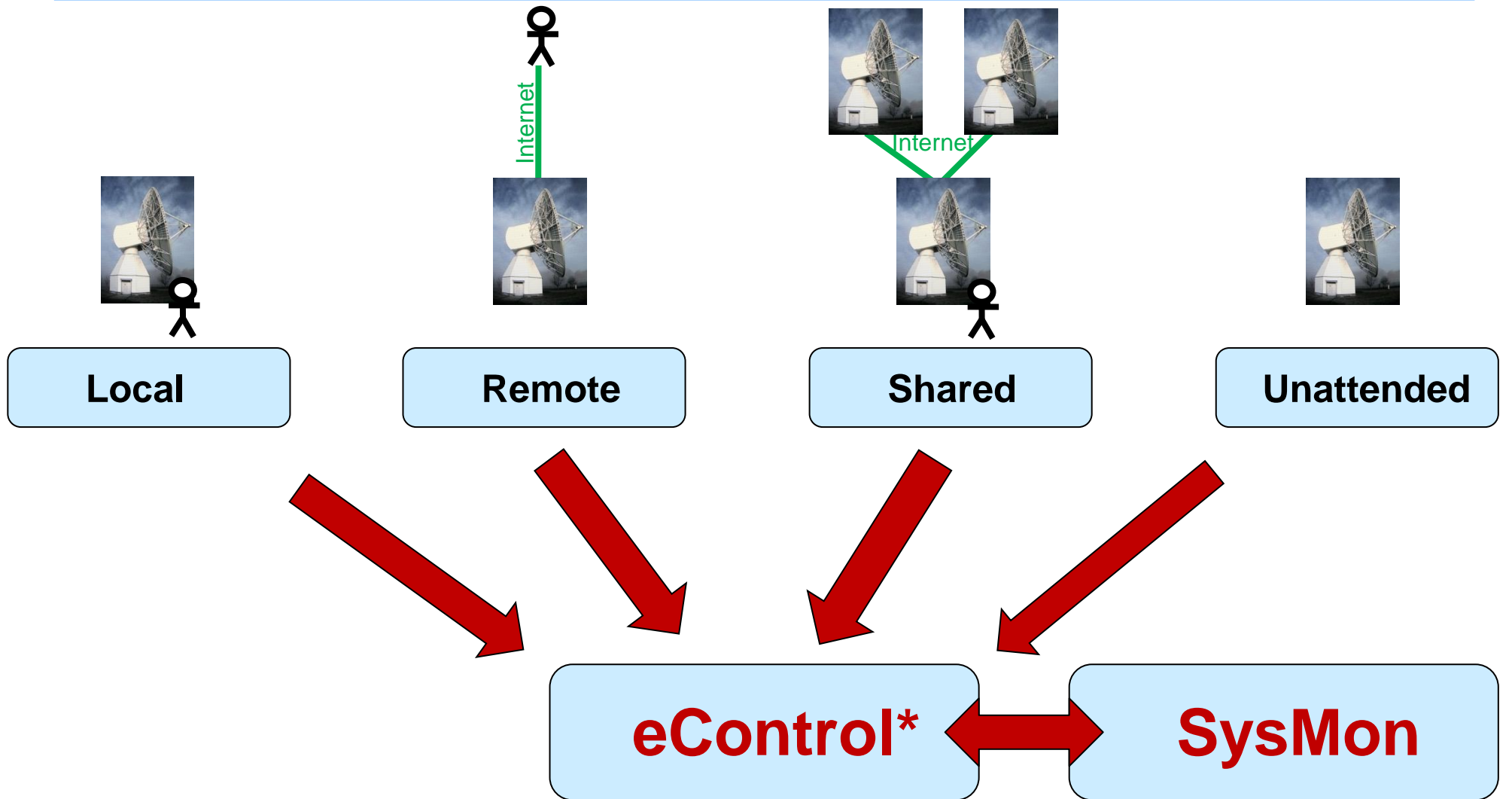
**A possible basis for such strategies:
e-control and SysMon**

New observation strategies for VLBI telescopes Wettzell, O'Higgins/Antarctica and TIGO/Concepción



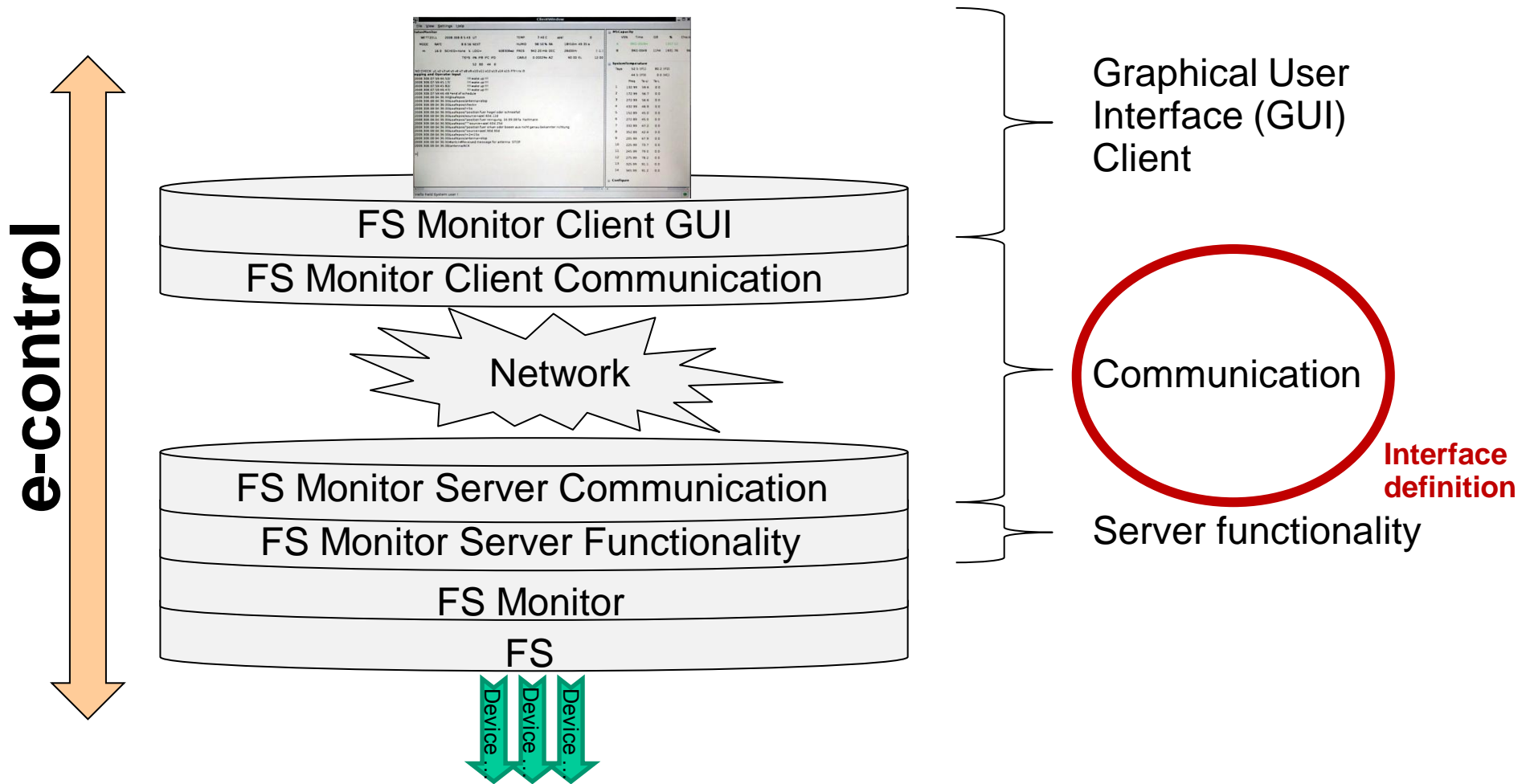
*** per system with individual restrictions and only with reliable, well educated personnel staff on site**

New observation strategies for VLBI telescopes Wettzell, O'Higgins/Antarctica and TIGO/Concepción



*** per system with individual restrictions and only with reliable, well educated personnel staff on site**

The idea: remote attendance and control of VLBI telescopes Wettzell, O'Higgins/Antarctica and TIGO/Concepción



The client – graphical, textual or browser based

Logging and Operator Input

```

2010.023.08:03:43.49/rx/1E(20K),on,a,on,on,on,off,locked,17.02
2010.023.08:04:59.49/rx/1E(20K),on,a,on,on,on,off,locked,17.09
2010.023.08:06:16.49/rx/1E(20K),on,a,on,on,on,off,locked,17.02
2010.023.08:07:33.49/rx/1E(20K),on,a,on,on,on,off,locked,16.95
2010.023.08:08:49.49/rx/1E(20K),on,a,on,on,on,off,locked,17.02
2010.023.08:10:13.49/rx/1E(20K),on,a,on,on,on,off,locked,17.02
2010.023.08:11:31.49/rx/1E(20K),on,a,on,on,on,off,locked,16.89
2010.023.08:12:52.49/rx/1E(20K),on,a,on,on,on,off,locked,17.02
2010.023.08:14:17.49/rx/1E(20K),on,a,on,on,on,off,locked,17.02
2010.023.08:15:42.49/rx/1E(20K),on,a,on,on,on,off,locked,16.95
2010.023.08:17:11.49/rx/1E(20K),on,a,on,on,on,off,locked,17.09
2010.023.08:18:44.48/rx/1E(20K),on,a,on,on,on,off,locked,17.09
2010.023.08:20:00.49/rx/1E(20K),on,a,on,on,on,off,locked,17.09
2010.023.08:21:16.48/rx/1E(20K),on,a,on,on,on,off,locked,17.09
2010.023.08:22:33.49/rx/1E(20K),on,a,on,on,on,off,locked,17.09
2010.023.08:23:50.48/rx/1E(20K),on,a,on,on,on,off,locked,17.09
2010.023.08:25:06.49/rx/1E(20K),on,a,on,on,on,off,locked,17.02
2010.023.08:26:30.49/rx/1E(20K),on,a,on,on,on,off,locked,17.09
2010.023.08:27:48.50/rx/1E(20K),on,a,on,on,on,off,locked,17.02
2010.023.08:29:04.49/rx/1E(20K),on,a,on,on,on,off,locked,17.02
    
```

70K 20K

20K

Graphic and Classic main interface

M5Capacity

A BKG-0069/ 3143.859 C B

98% free 2% used 0% free 0% used

Check : 27h17m Next : 08:28:19

SystemTemperature

System Temperature

rtwadm@ubuntu: ~/S...

Configure

RPC-Clients RPC-Server SSH Hot-Key Table

Command	Hot Key	[]	Reload
/usr2/fs/bin/monpcal	CONTROL + SHIFT + V	<input type="checkbox"/>	Save
/usr/bin/xterm -e /usr2/fs/bin/pfmed	CONTROL + SHIFT + p	<input type="checkbox"/>	Append
/usr/bin/xterm	control + shift + x	<input type="checkbox"/>	Delete
/usr2/prog/econtrol/bin/econtrold	control+shift+e	<input type="checkbox"/>	
/usr/bin/nedit	control+shift+n	<input type="checkbox"/>	

/home/rtwadm/econtrol/config-econtrol-extern/RPCClient.conf

Remote program startu

SSH

Logbook

Logging and Operator Input

```

2010.023.08:34:28.00#antcn#Received message for antenna: STOP
2010.023.08:34:28.09/antenna/ACK
2010.023.08:36:48.20#antcn#Received message for antenna: STOP
2010.023.08:36:48.29/antenna/ACK
2010.023.08:37:05.67:u
2010.023.08:37:05.67/F: 375@2010.024.06:45:50.00 sy=/usr2/oper/startevnrec.sh k10024 wz &
2010.023.08:37:05.67/F: 369@2010.024.06:49:50.00 schedule=k10024wz #1
2010.023.08:37:05.67/Q: 6@2010.024.06:50:50.00 startmka
2010.023.08:37:05.67/Q: 14@2010.024.08:34:27.00 safepos
2010.023.08:37:05.67/F: 375@2010.025.06:15:50.00 sy=/usr2/oper/startevnrec.sh k10025 wz &
2010.023.08:37:05.67/F: 369@2010.025.06:19:50.00 schedule=k10025wz #1
2010.023.08:37:05.67/Q: 6@2010.025.06:20:50.00 startmka
2010.023.08:37:05.67/Q: 14@2010.025.08:03:46.00 safepos
2010.023.08:38:05.03:t
2010.023.08:38:05.03/F: 375@2010.024.06:45:50.00 sy=/usr2/oper/startevnrec.sh k10024 wz &
2010.023.08:38:05.03/F: 369@2010.024.06:49:50.00 schedule=k10024wz #1
2010.023.08:38:05.03/Q: 6@2010.024.06:50:50.00 startmka
2010.023.08:38:05.03/Q: 14@2010.024.08:34:27.00 safepos
2010.023.08:38:05.03/F: 375@2010.025.06:15:50.00 sy=/usr2/oper/startevnrec.sh k10025 wz &
2010.023.08:38:05.03/F: 369@2010.025.06:19:50.00 schedule=k10025wz #1
2010.023.08:38:05.03/Q: 6@2010.025.06:20:50.00 startmka
2010.023.08:38:05.03/Q: 14@2010.025.08:03:46.00 safepos
    
```

Chat

Chat

```

[alexander*] hallo
[oper] hello
[alexander*] how are you
[oper] fine, how can i help you?
[alexander*] the schedule has changed
[alexander*] please drudg it again
[oper] ok, thanks!
[alexander*] thank you
    
```

Append to log

Complete remote access

Configure

RPC-Clients RPC-Server SSH Hot-Key Table

Station Network Access Settings

Enable

Site: Wettzell

Port: 22000

User Name: vlbi

Port Binding: 22222:193.174.166.80:22

Additional Cmd:

Station IP: gate1-w.wetzell.ifag.de

DSA file: /home/rtwadm/econtrol/RT...

Pass Phrase:

Password:

Timeout-Settings: 20 [s]

System Access Settings

Enable

Name: rtw

Port: 22222

User Name: oper

Port Binding: 50225:127.0.0.1:50225
50226:127.0.0.1:50226

Additional Cmd: -2

IP Address: localhost

DSA File:

Pass Phrase:

Password:

/home/rtwadm/econtrol/config-econtrol-extern/RPCClient.conf

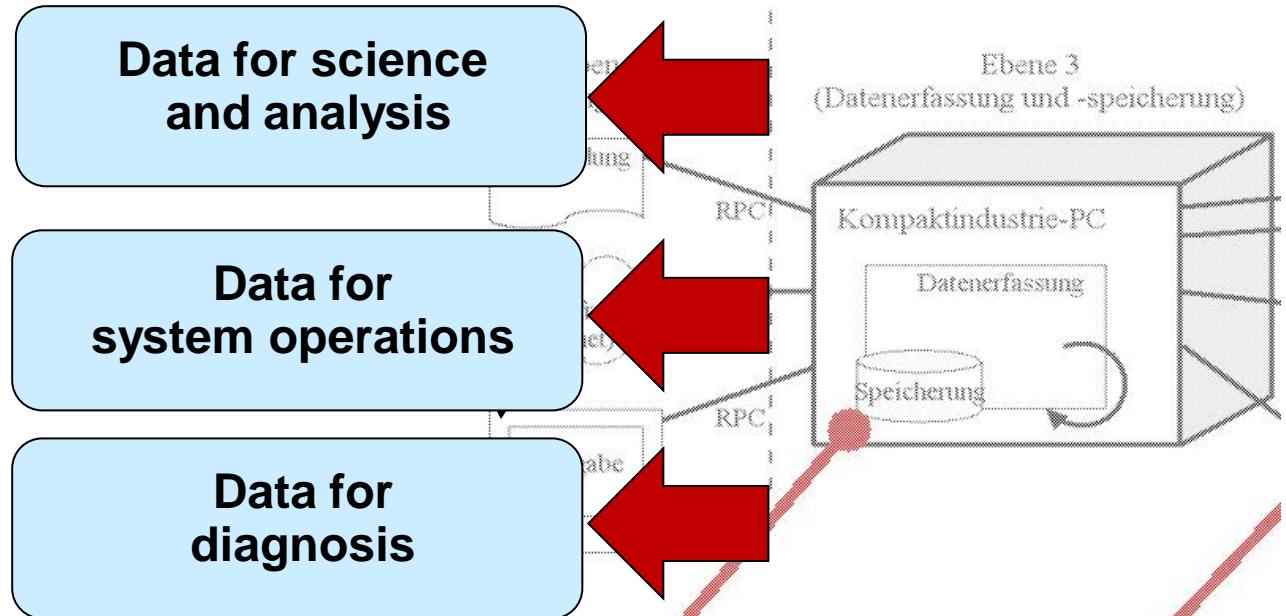
System Monitoring: SysMon

Local safety for people and systems in combination with reliability in operations

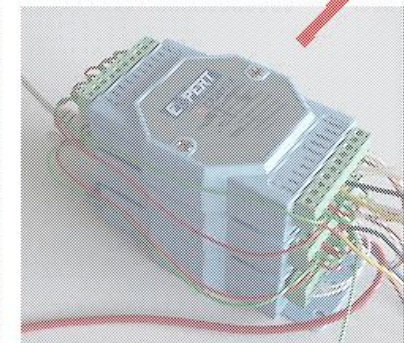
Meteo, WVR, Clock offsets, ...
=> low sampling rates
=> as scheduled

Power supply, wind uploads, emergency stops, rack temp., ...
=> medium sampling rates
=> permanently

Servo currents, contouring errors, ...
=> high sampling rates
=> on demand



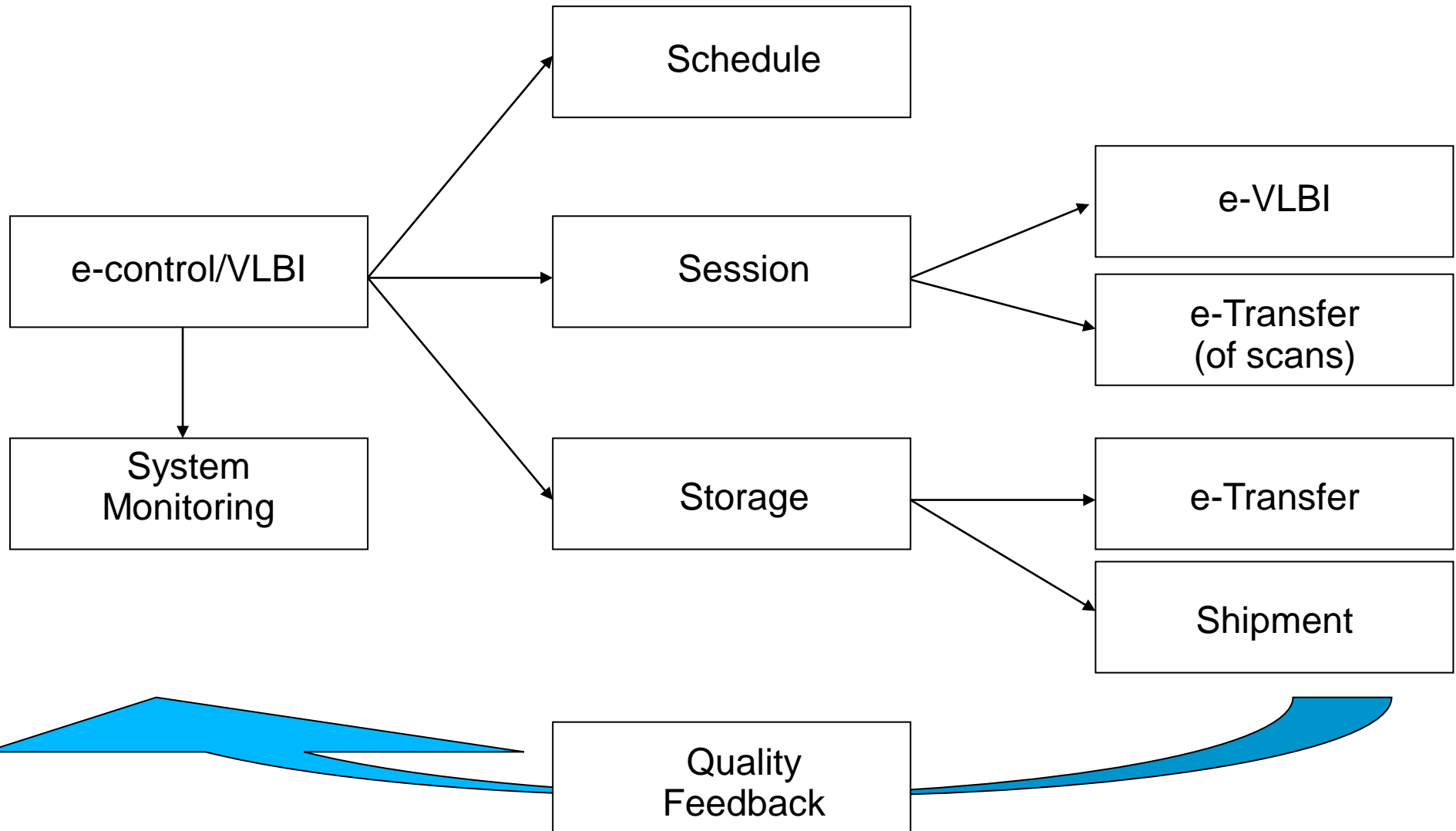
See also:
Monitoring and Control Interface
Collaboration Group



Optimization of workflows over system borders

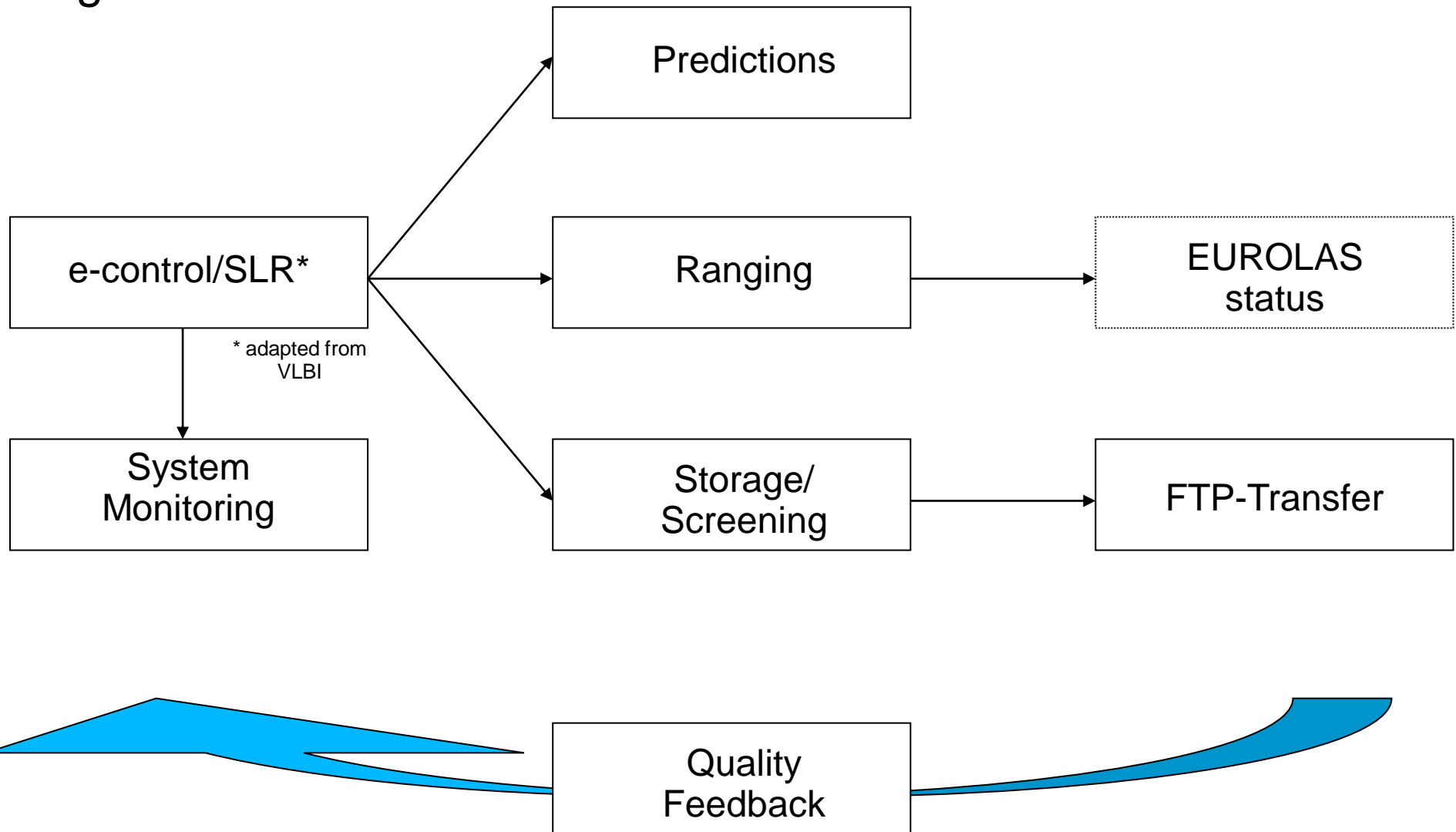
The workflows on a technical point of view

VLBI



The workflows on a technical point of view

e.g. SLR

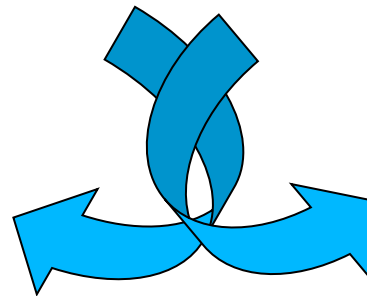


Technical synergies in ...

- Models
- Software
- Data
- Observing Times
- Manpower
- ...

... are the fundament for technical realizations of ...

GGOS science



Astronomic SKA science



But it wont avoid this ...

The Radio Telescope Wettzell (RTW): impressions of a maintenance



The Radio Telescope Wettzell (RTW): impressions of a maintenance



Thank you!



View from „my“ new „command room“ ...



View from „my“ new „sky-deck“ ...

