

Regular e-transfer experiences with geodetic INTENSIVE experiments at Wettzell

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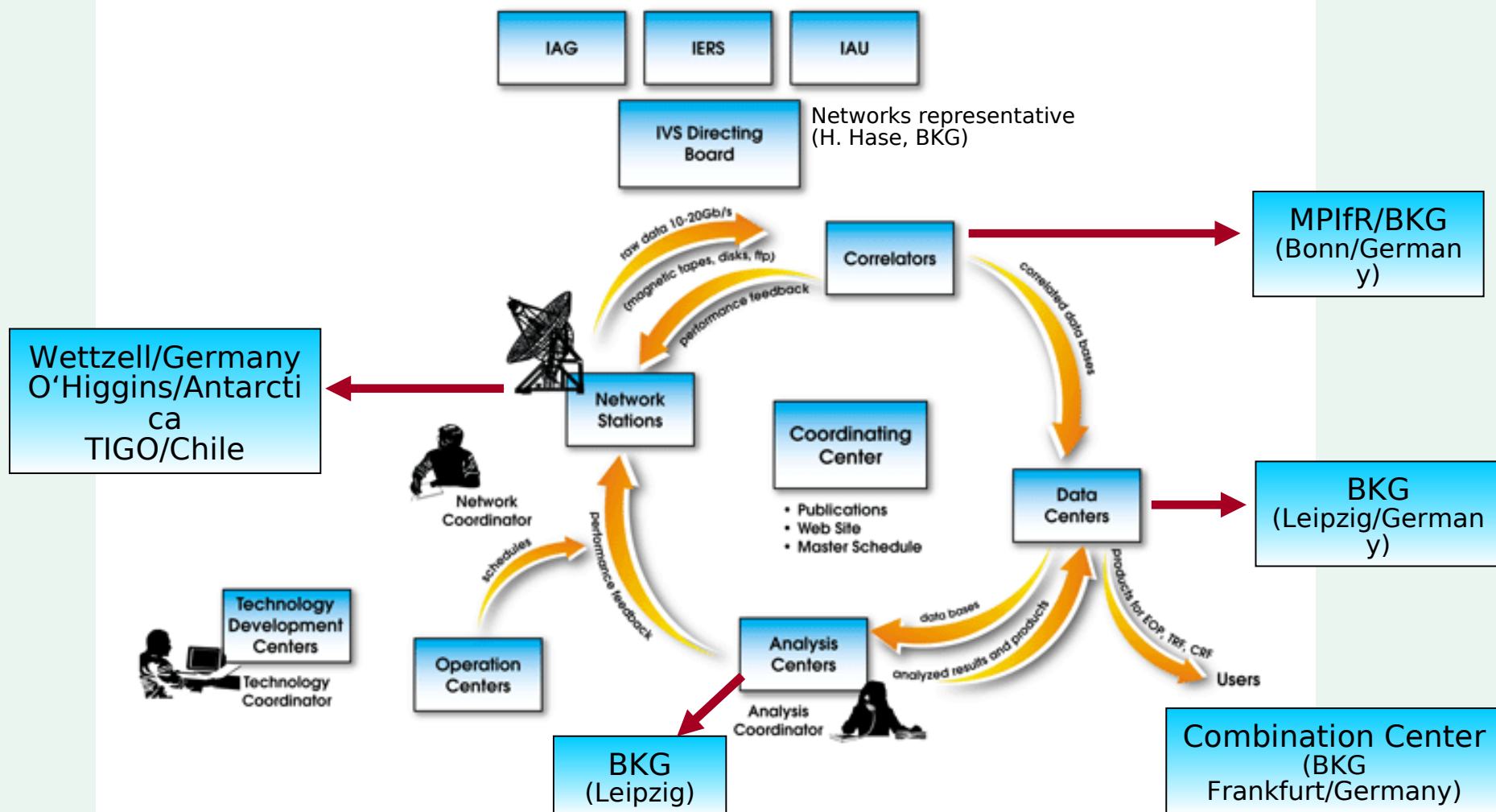
The INTENSIVES round trip

- Coordination by the International VLBI Service for Geodesy & Astrometry (IVS)
(Observing program, schedules)
- Observation at the radio telescope sites
(Pre-Ops, start, observation, data acquisition, data transport)
- Correlation
- Analysing and archiving at the data centres
(Session databases, collecting of all results, data mirroring)
- Supplying the products
(EOP-time series, daily SINEX files, specific analysis)
- Combination of the results
(Model evaluation, comparison of the solutions, combinations)

e-transfer / (e-
VLBI)

Coordination of the INTENSIVES by IVS

ORGANIZATION OF INTERNATIONAL VLBI SERVICE





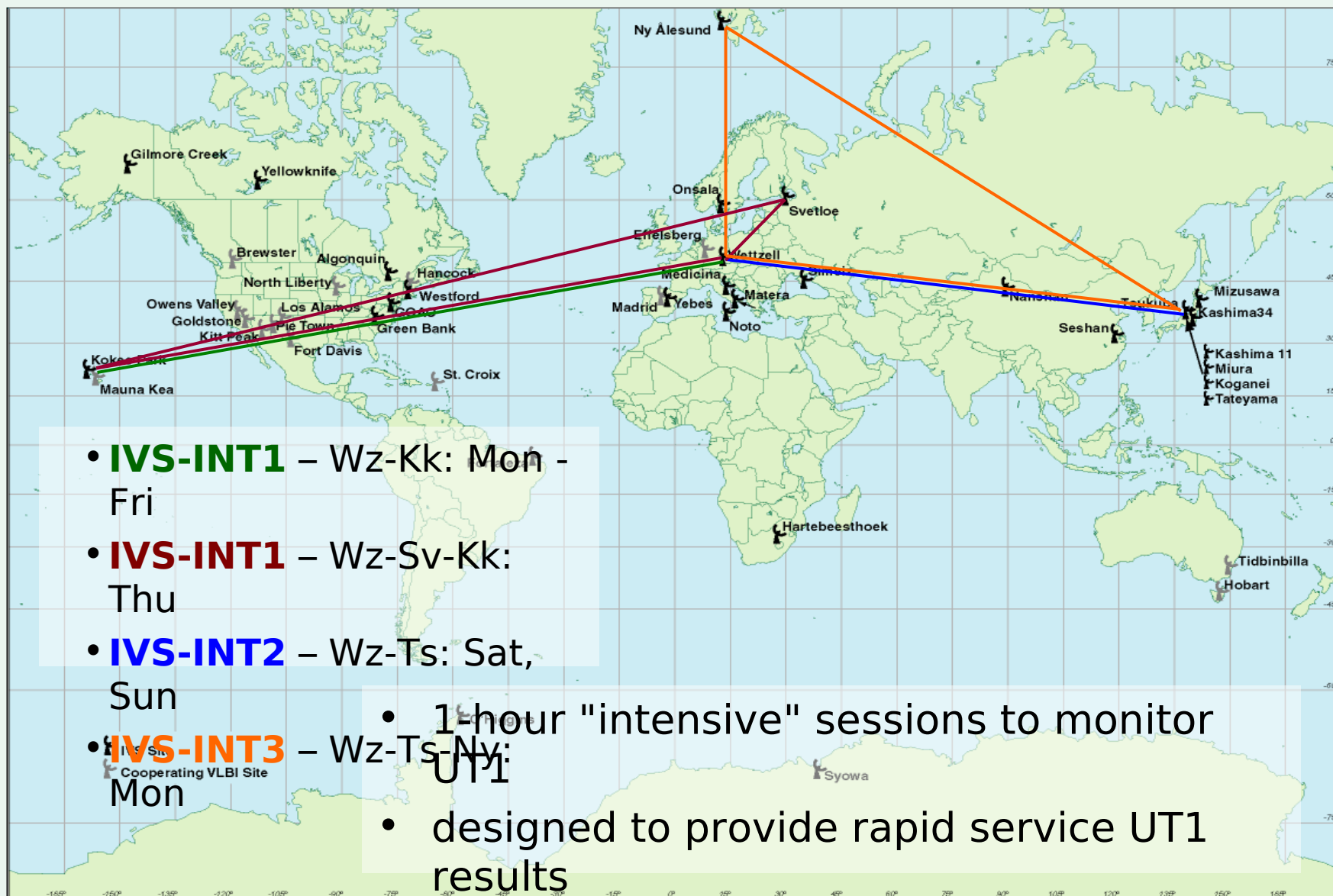
IVS WG 3 – VLBI2010: Current and Future Requirements for Geodetic VLBI Systems



Goals for a new generation VLBI
system:

- 1 mm position and 1 mm / year velocity for position
- Continuous measurements for EOP
- Rapid generation and distribution of the IVS products
- Data transfer near realtime

Quelle: IVS WG3 Final Report - <ftp://ivscs.gsfc.nasa.gov/pub/annual-reports/2005/pdf/spcl-vlbi2010.pdf>



- **IVS-INT1** – Wz-Kk: Mon - Fri

- **IVS-INT1** – Wz-Sv-Kk: Thu

- **IVS-INT2** – Wz-Ts: Sat, Sun

- **IVS-INT3** – Wz-Ts-Ny: Mon

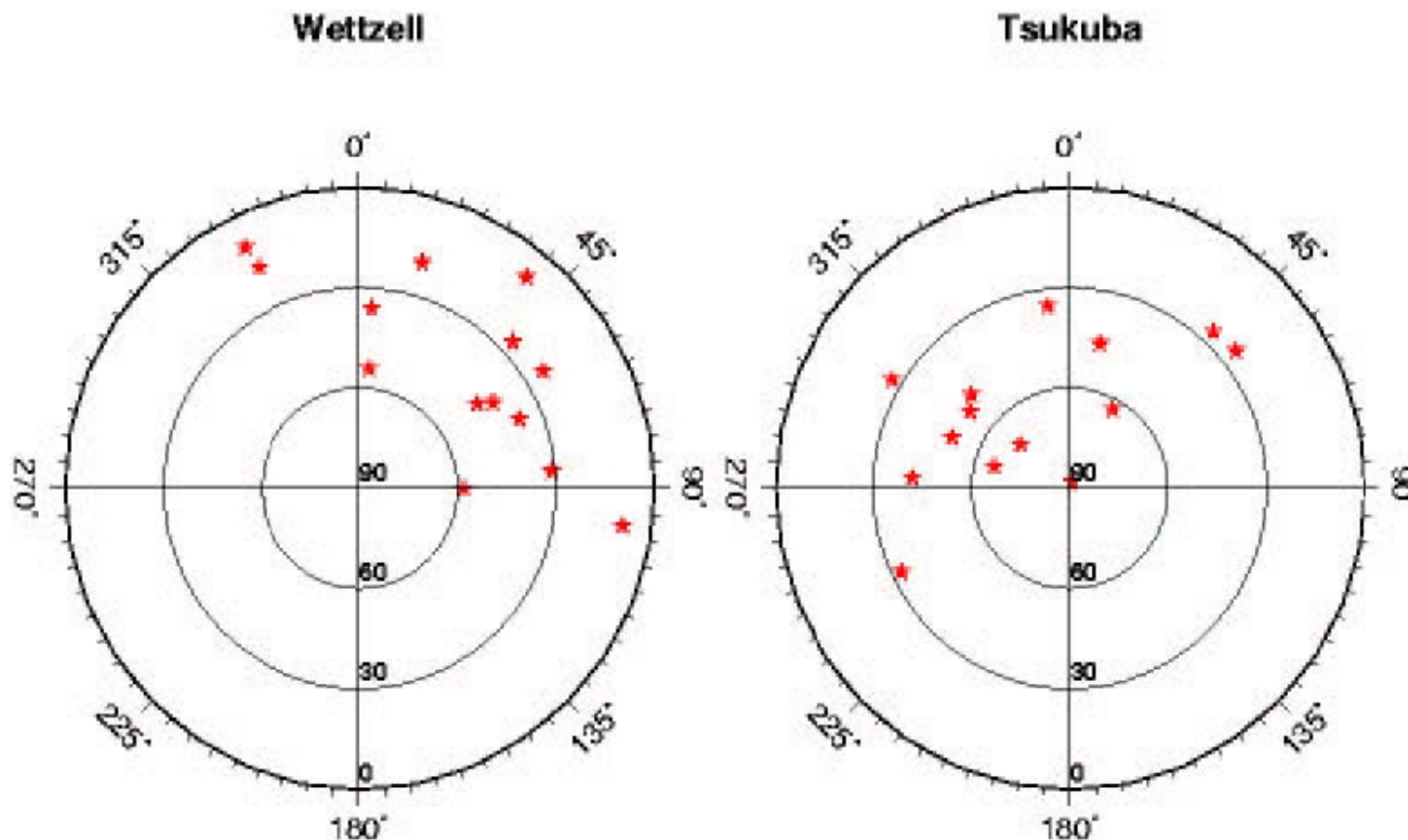
- 1-hour "intensive" sessions to monitor UT1
- designed to provide rapid service UT1 results

- Optimization for the boundary conditions
- Unidirectional observations with homogeneous sky coverage
- East-west-distance defines accuracy of final UT1
- Low elevations allow troposphere estimation
- Short (one hour) sessions to allow quick data transport with „standard“ internet equipment

But:

- Only a few sources are visible for participating sites
- Limitations in sky coverage with sources
- Limitations of sources with low elevations
- Limitations in observing time per source

Simultaneously visible sources on July 1st, 2002 (IN202182, 7:30 UT)



D. Fischer et al.: The K4 Intensive project 2002 for UT1 determination. Proceedings of the 16th Working Meeting on European VLBI for Geodesy and Astrometry, p. 165-170.

<ftp://ivs.bkg.bund.de/pub/analysis/papers/165-Fischer.pdf>

Regular e-transfer experiences with geodetic INTENSIVE experiments

Observation at the radio telescope sites

RT Wettzell/Germany



The Wettzell VLBI crew (from left to right):
 Ch. Plötz, E. Bauernfeind, G. Kronschnabl, R.
 Schatz, W. Schwarz, R. Zeitlhöfler, A. Neidhardt
 (missing in picture: E. Bielmeier).

Table 2. RTW observations in 2008

program	number of 24h-sessions
IVS R1	49
IVS R4	51
IVS T2	6
IVS R&D	9
RDV/VLBA	6
EUROPE	5
CONT08	15
total	141
total (in hours)	3384

program	number of 1h-sessions
INT1(Kokee-RTW)	234
INT2/K('Tsukuba-RTW)	100
INT3/K('Tsukuba-RTW-NyAI)	41
total (in hours)	375

special program	number of experiments
SELENE	19
total (in hours)	92

Wettzell is the most used radio telescope for geodetic VL

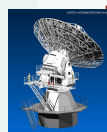
TIGO Concepción/Chile

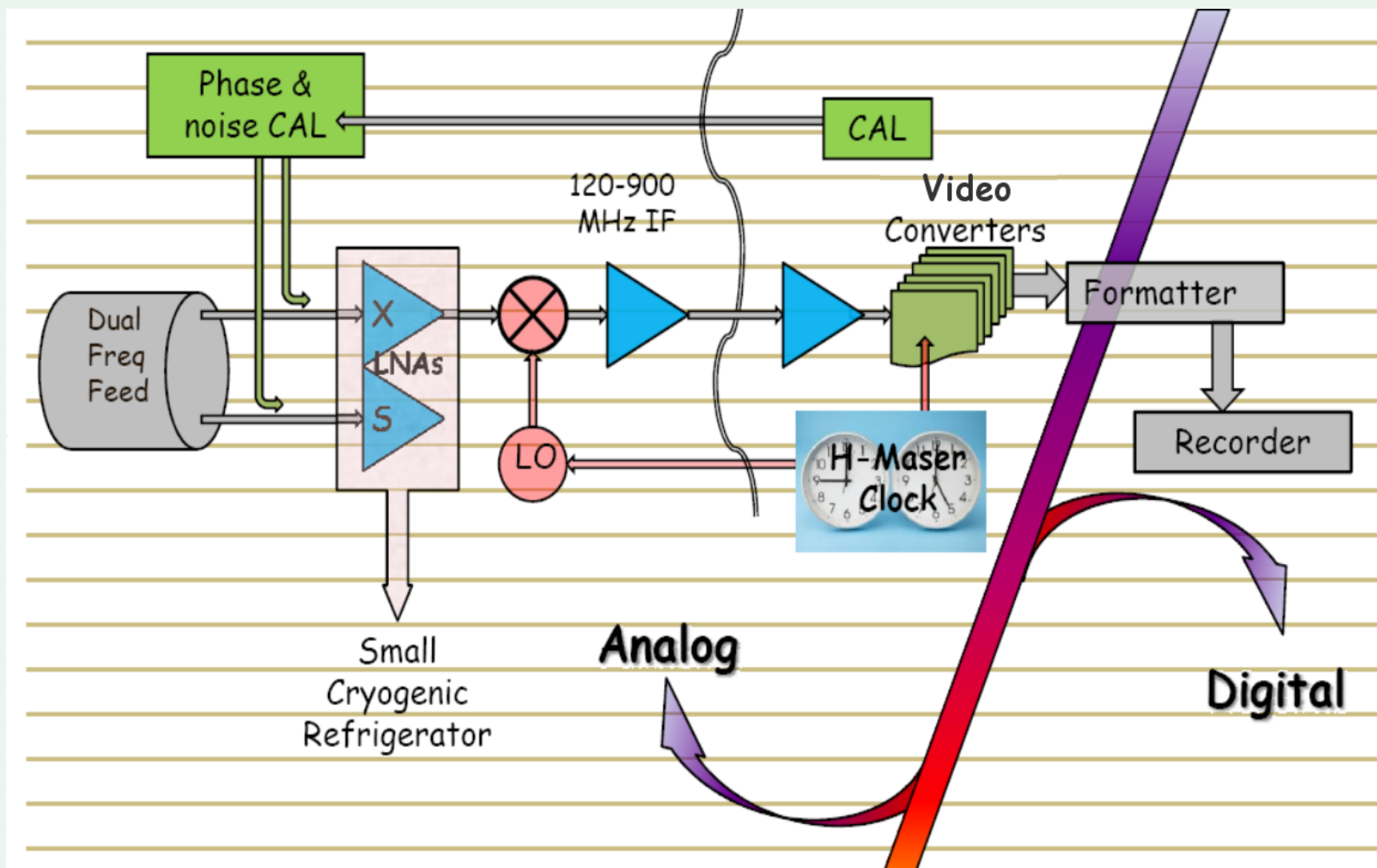


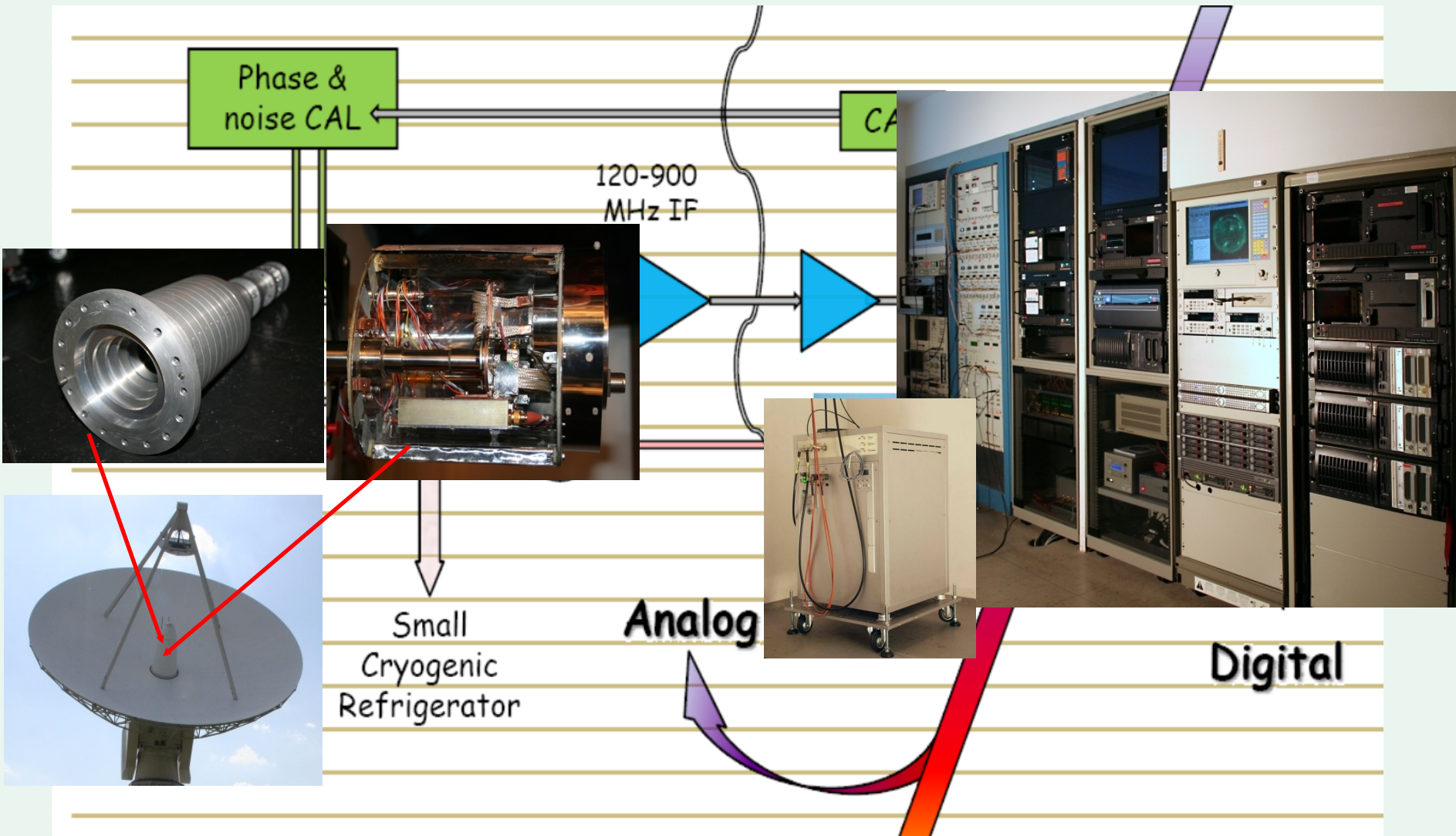
GARS O'Higgins/Antarctica

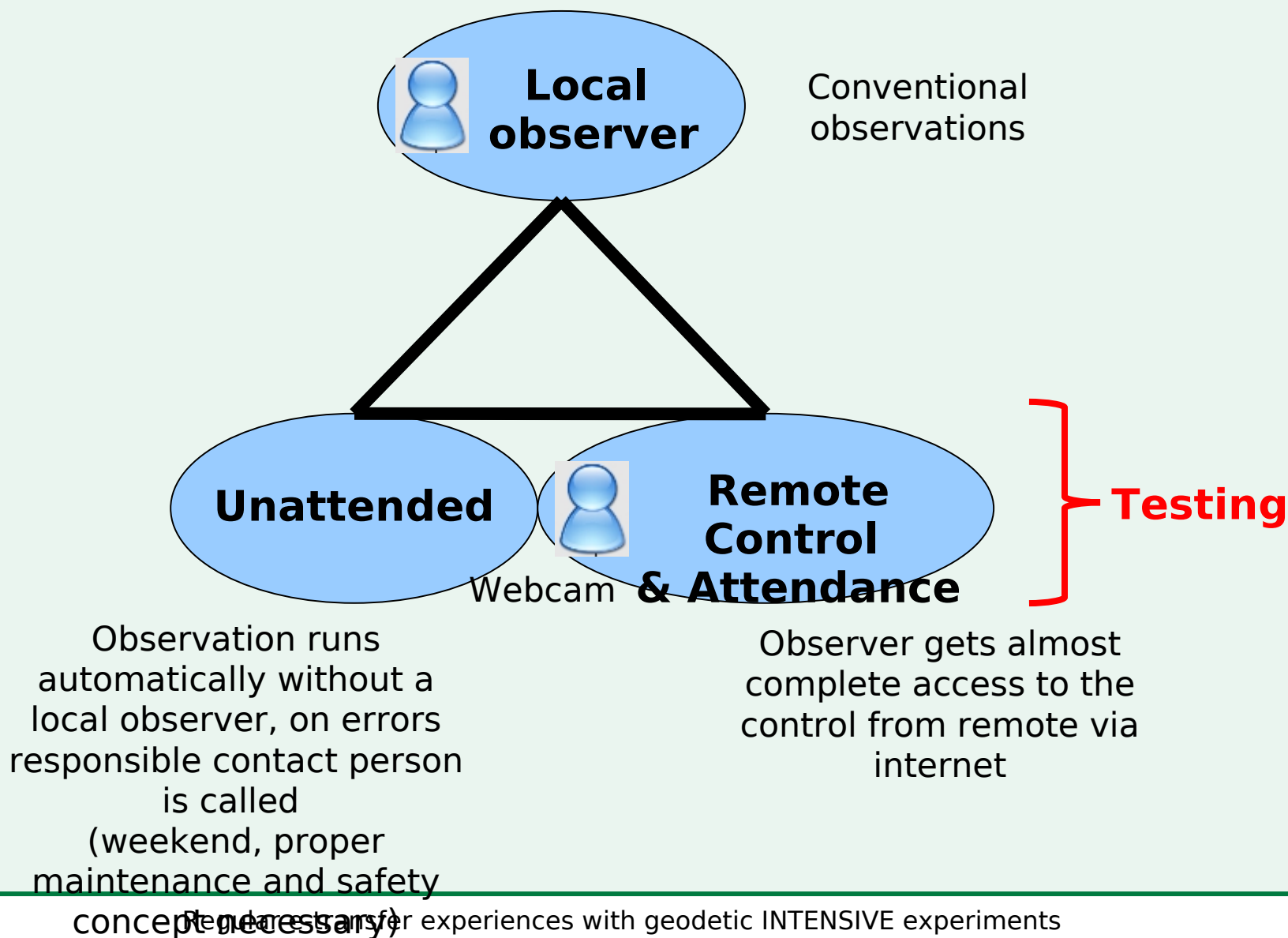


And in the future:
TTW Wettzell









Antenna

Intermediate
Frequency
Distributor

Videoconvertors

Formatt
er

EVN-PC with RAID-
system

EVN-PC with internal hard
drives

Mark5

Copying

eVLBI-
Mark5

Conventional
station network

Firewall

Internet
(e-transfer)

Correlator
S:
WASH
GSI
BONN

622
MBit/sec

Router

1 Gbit/sec

LAN-Switch

400
Mbit/sec

512
Mbit/sec

1
Gbit/
sec

e-transfer:
Local copy is
transferred after the
observations via
internet



RAID-
Server

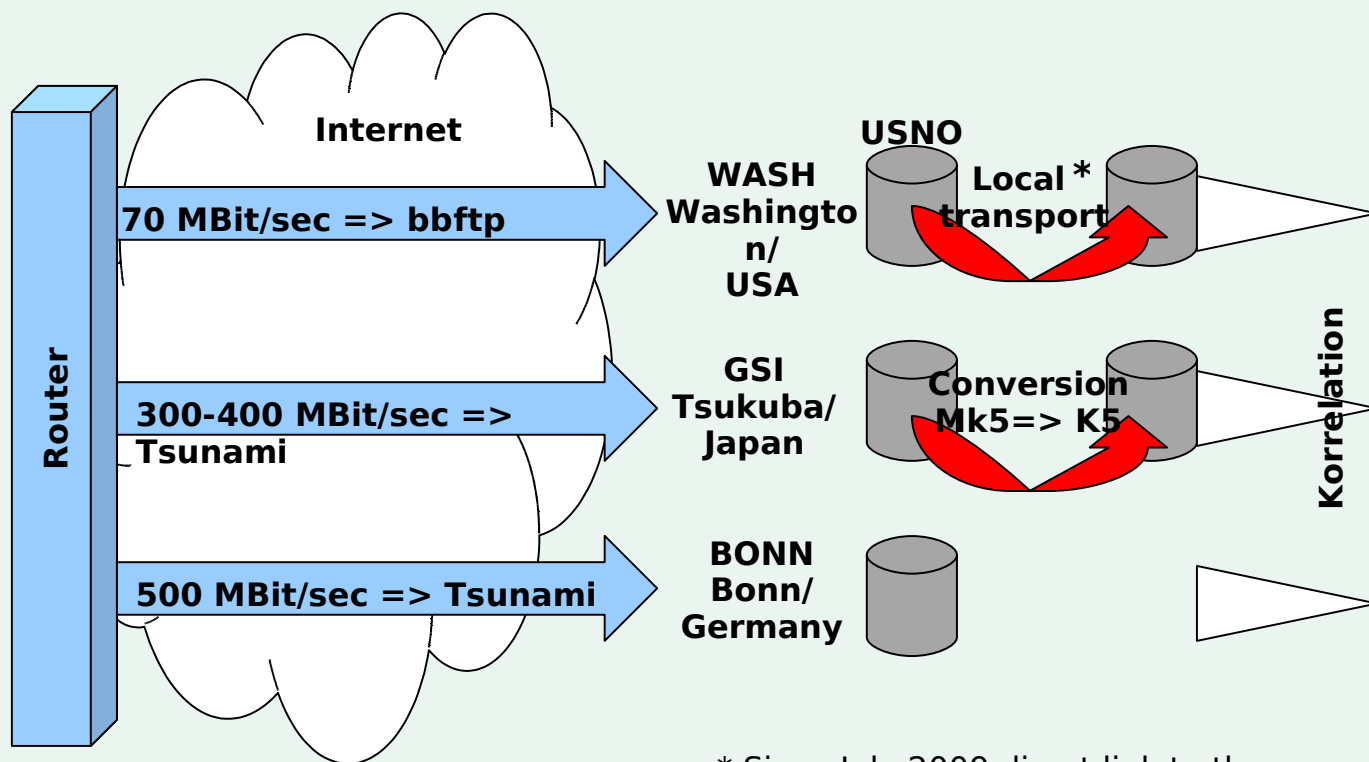


EVN-PC



eVLBI-
Mark5

Optimized buffer
and operating
system settings

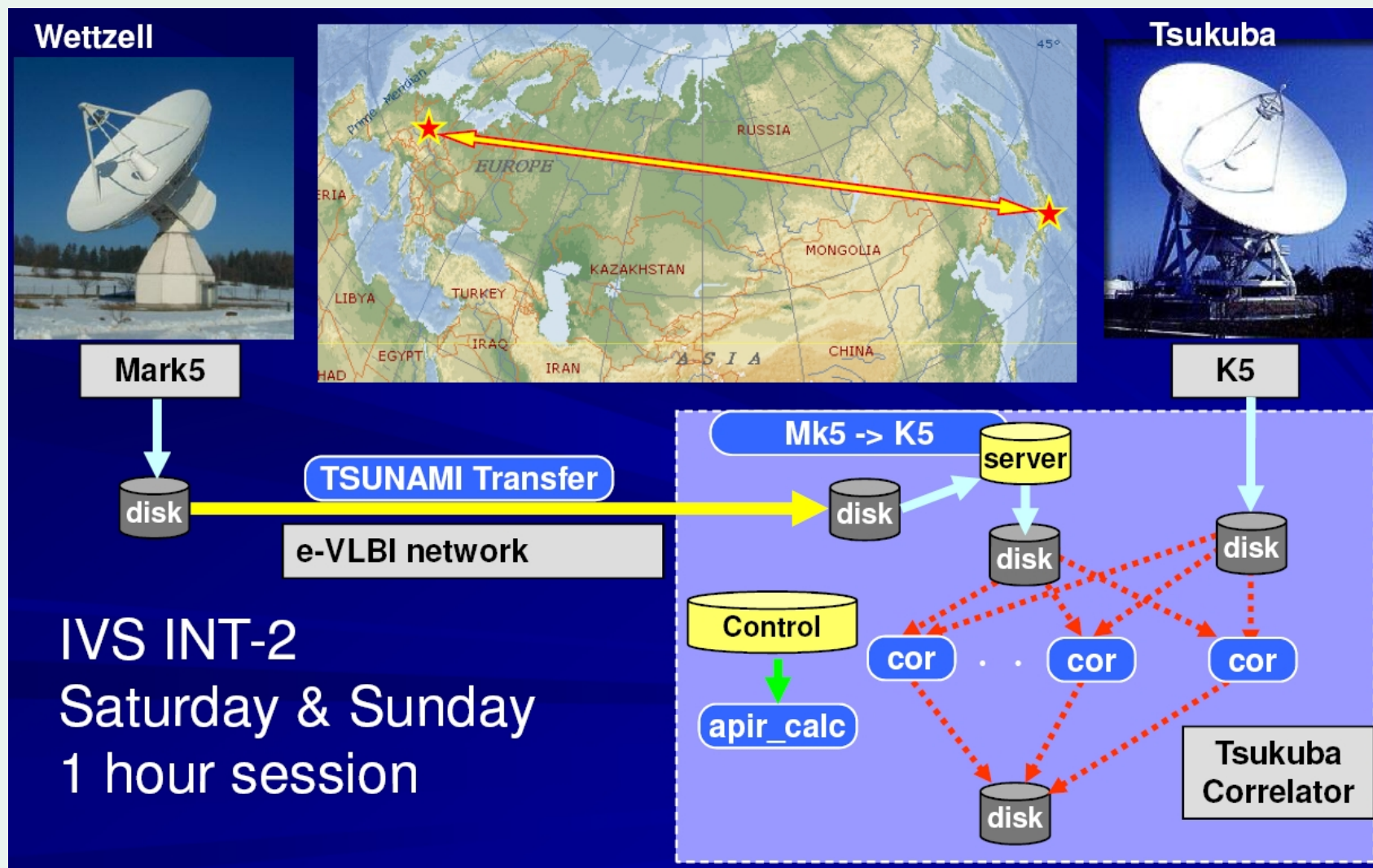


* Since July 2009 direct link to the correlator

**Planned for fall 2009: e-vlbi
Realtime-communication to WASH**

Correlation

Example: Software correlator at Tsukuba

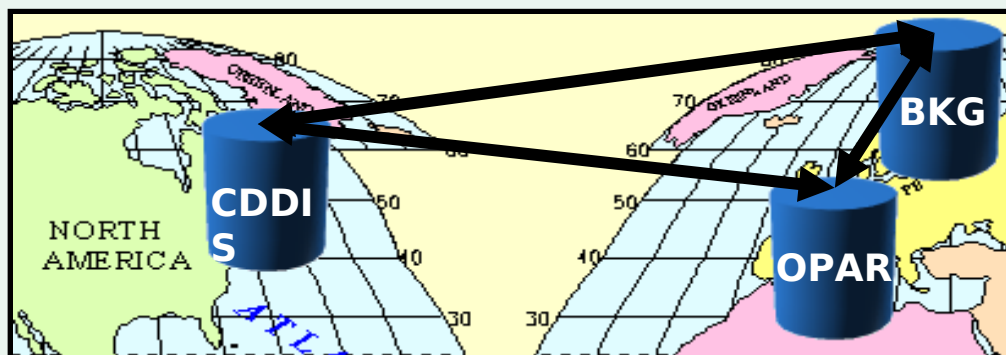


Takashima, Kazuhiro; Nozawa, Kentaro: Japanese Software Correlator for UT1 Intensive.

http://www.fs.wettzell.de/veranstaltungen/vlbi/frff2009/SW_CORRELATOR/Japanese_correlator_V2C.pdf, Download

16.06.2009

Data analysis centres



IVS – data centres
(Mirroring between
GSFC, OPAR, BKG)

IVS-Analysezentrum

Preparation of S- and X-band data bases (IVS)

Continuation of the EOP time series using 24 hours and 1 hours INTENSIVES (IVS, Bulletin B)

Quarterly solutions for TRF and CRF (IVS)

Continuous supplying of tropospheric parameter (IVS, e.g. wet zenith delay)

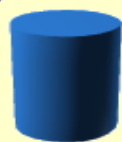
Supplying of daily SINEX files for INTENSIVES and 24h-experiments (IVS)

Scheduling of the INTENSIVES for baseline Tsukuba-Wettzell

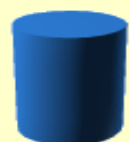
Analysing ITRF and ICRF

Participation in working groups, projects and improvements of the analysing tools

Analysis Center

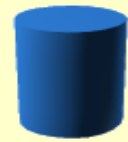


OPAR



mirror

CDDIS



Correlator

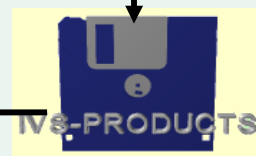
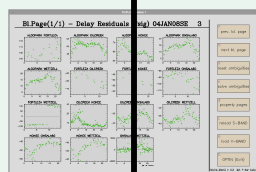
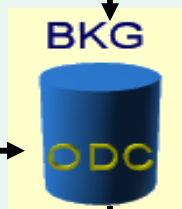
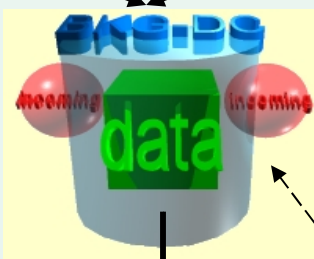


input

input

Access from
outside

Public
Internal



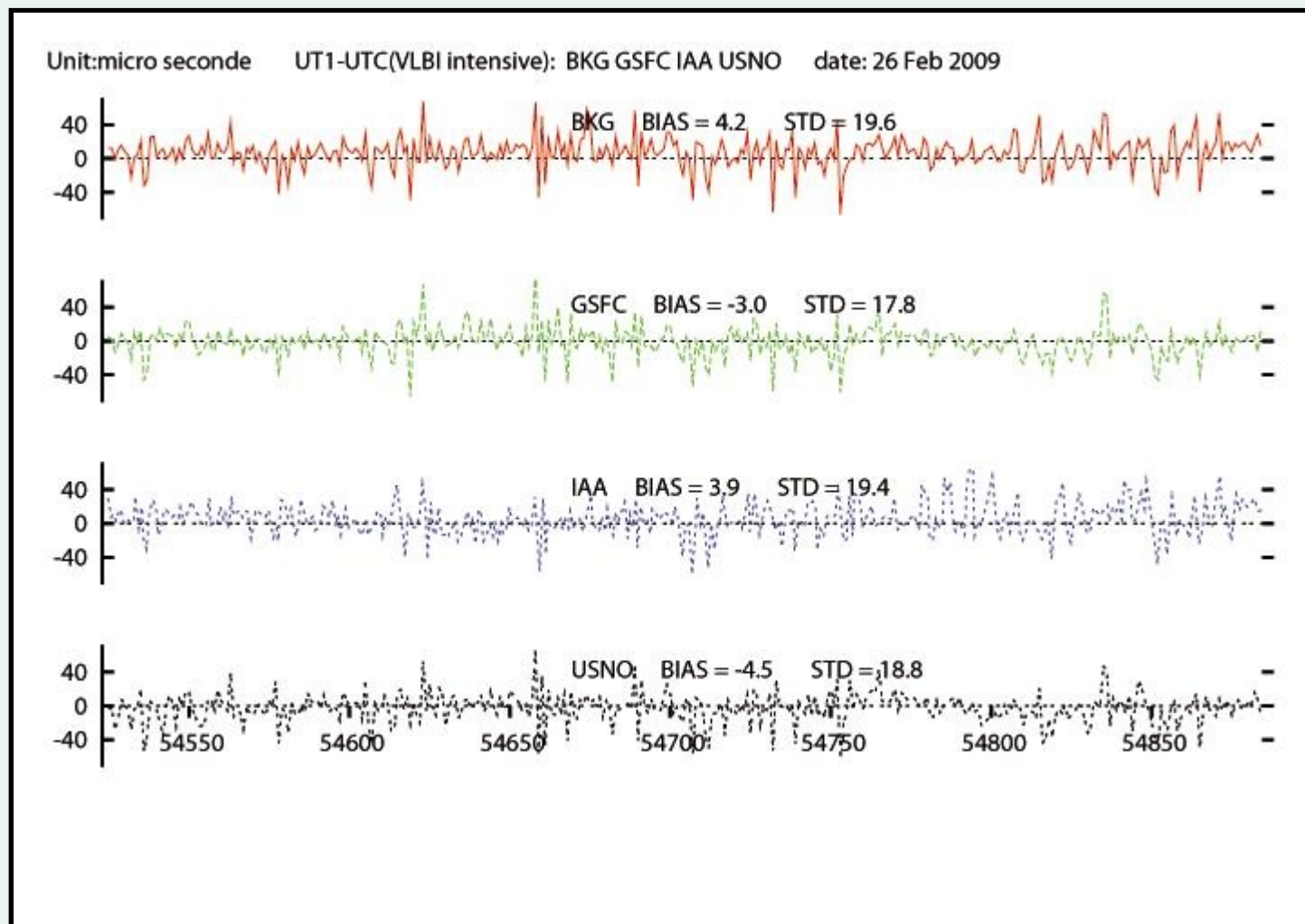
Semi-automated
procedures
for mirroring, filtering and
pre-analysing (prae_solve)



Interactive processing (Calc/Solve)
Outliers, ambiguities,
weighting, clock jumps,
parametrization

Semi-automated procedures
To create the IVS-products
(post_solve)

Offered products:
EOP
TRF
CRF
Trop. parameter
Daily Sinex files
Data bases
Calibr.-Data (met,cab)



(Differences to IERS EOP C04)

