

Operations 2013

- StratWarm early by 10 days
 - UHF elevation drive replacement
 - ESR staffing
 - Covered 2nd warming (the largest)
- Asteriod 2012DA14
 - Large impact from media (russian meteor)
- Summer PMSE
 - First real 3static VHF
 - Very dynamic!
- Heating campaigns (RU,UA,SW,NO..)
 - October-November
- ICI-4 Cancelled
 - No France...

Operations 2013 Jan-Jul

2013	Total
CP1	91.5
CP2	125
CP3	0
CP4	0
CP6	167.5
CP7	4.5
UP	0
Total	388.5

2013	Total	Incl AA	Target
CN	27.5	28	64
FI	60.5	61	88
NI	48.5	49	103
NO	232	232	198
SW	67	67	149
UK	64.5	65	91
AA	0		
Total	500	500	694

2013	Total	Target
PP	84	108
EI	2	30
RU	134	170
TB	0	0
Total	220	308

2013	Total	Target
CP	388.5	450
SP	500	694
OP	199	308
Total	1087.5	1452

2013	Total	Target
UHF	510.5	587
VHF	320	513
Heating	166.5	202
Passive UHF	438.5	600
Bolt array	0	
ESR	411	926
Passive ESR	0	

2013	Total
CP1	81
CP2	85
CP3	0
CP4	0
CP6	62
CP7	0
UP	0
Total	228

2013	Total	Incl AA	Target
CN	0	0	32
FI	6	6	43
NI	43.5	44	51
NO	53.5	54	97
SW	23.5	24	73
UK	42.5	43	45
AA	0		
Total	169	169	341

2013	Total	Target
PP	11	92
EI	0	20
RU	0	20
TB	3	3
Total	14	135

2013	Total	Target
CP	228	450
SP	169	341
OP	14	135
Total	411	926

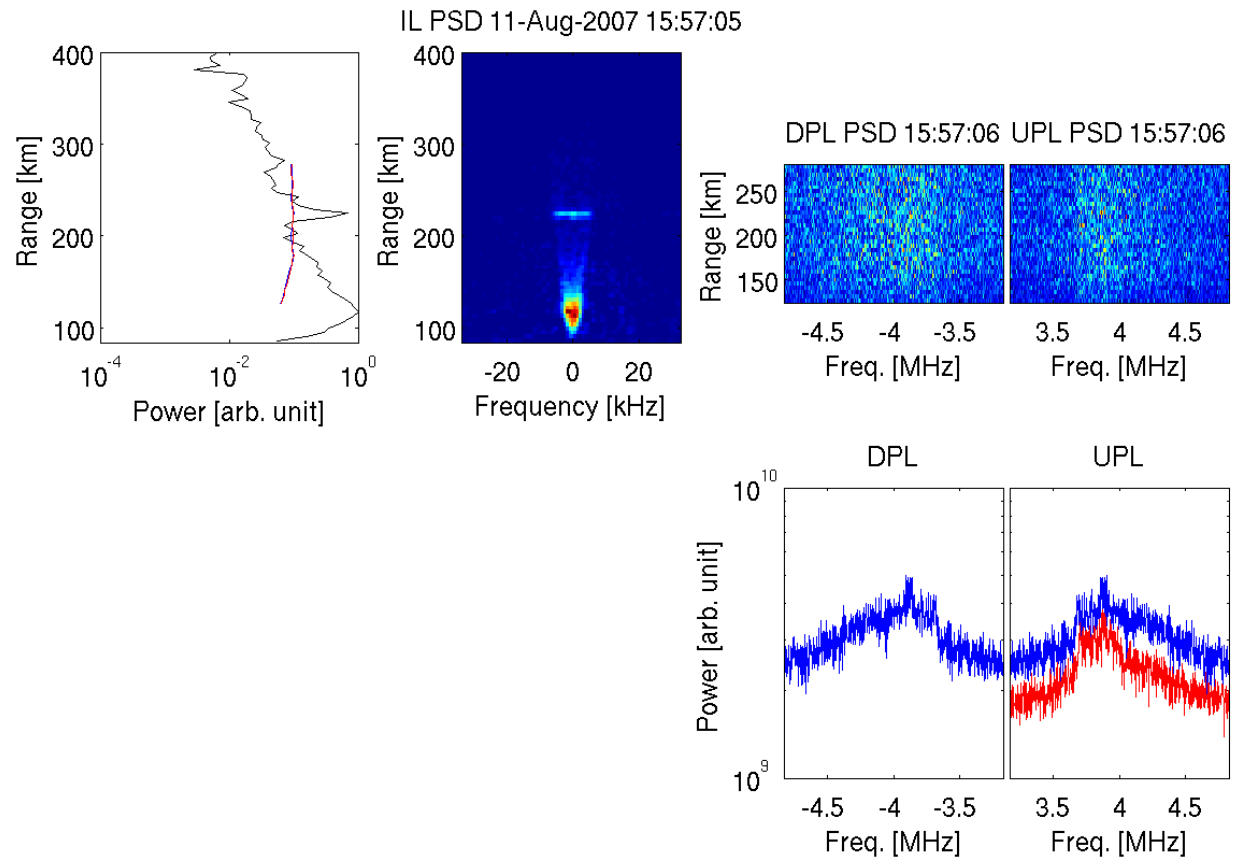
- KST
 - SP over target
 - NO overuse
- TB unbudgeted
 - No France
 - SpaceM
- ESR
 - On target

Peer review Programme 2013

- Total budget 200h, 11 exps, half done
 - 8h TVH EDMIN 6h US
 - 10h TVR MFICOL 8h US
 - 12h TV NACE 11h US
 - 24h T 2012DA14 15h FI
 - 12h E FLH-NEIAL 11h CL
 - 12h TE Einstein KR
 - 15h VT WADIS 11h GE
 - 6h TH AEE RU
 - 18h T HTVIT NI
 - 12h T SCINT UK
 - 24h E PCarcs FI
- Next deadline 1Nov13

Events – Example I

- Two distinct layers in IL and PL enhancements
- PLE at four frequencies in the upper layer



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Operations 2014

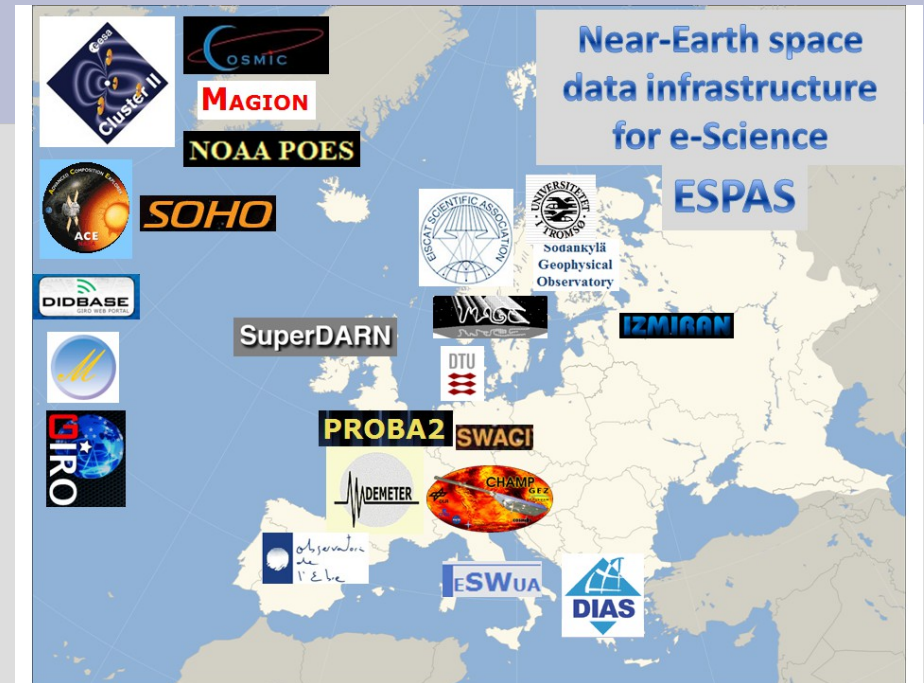
- ESR 150 % of 2013
- KST
 - UHF 0h?
 - VHF as 2013 + 50% of UHF-2013
 - HEA, KIR, SOD as 2013

WD 2014

- StratWarm (UHF???)
 - 14 January - 14 February
 - 10 day run
 - 5 day alert
- Hemispheric and latitudinal stormtime behavior
 - Chinese meridian chain
 - 3-day run
 - two-week alert period of 24 March - 06 April
- SAPS & SED evolution
 - 7 day run
 - 14-21 December
- Decided at
 - Cedar meeting 25 June 2013

EISCAT e projects

- ESPAS
 - 53 MM
- ENVRI
 - 9 MM
- Coopeus
 - 12 MM





- near-Earth space environment
 - from the Earth's atmosphere up to the outer radiation belts
 - Build e-Infrastructure
 - Support the access to observations, the modeling and prediction
 - provide access to more than 40 data repositories
 - ground and space
 - in situ and remote sensed

• <http://www.espas-fp7.eu/>

• portal

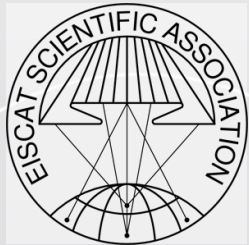
– http://194.177.192.228:8080/uoa-espas-gui/Uoa_espas_g



- Implementation of common solutions for a cluster of ESFRI infrastructures in the field of "Environmental Sciences" (ENVRI)
- <http://envri.eu>
- Portal
 - <http://portal.genesi-dec.eu/envri/>
- Reference Model

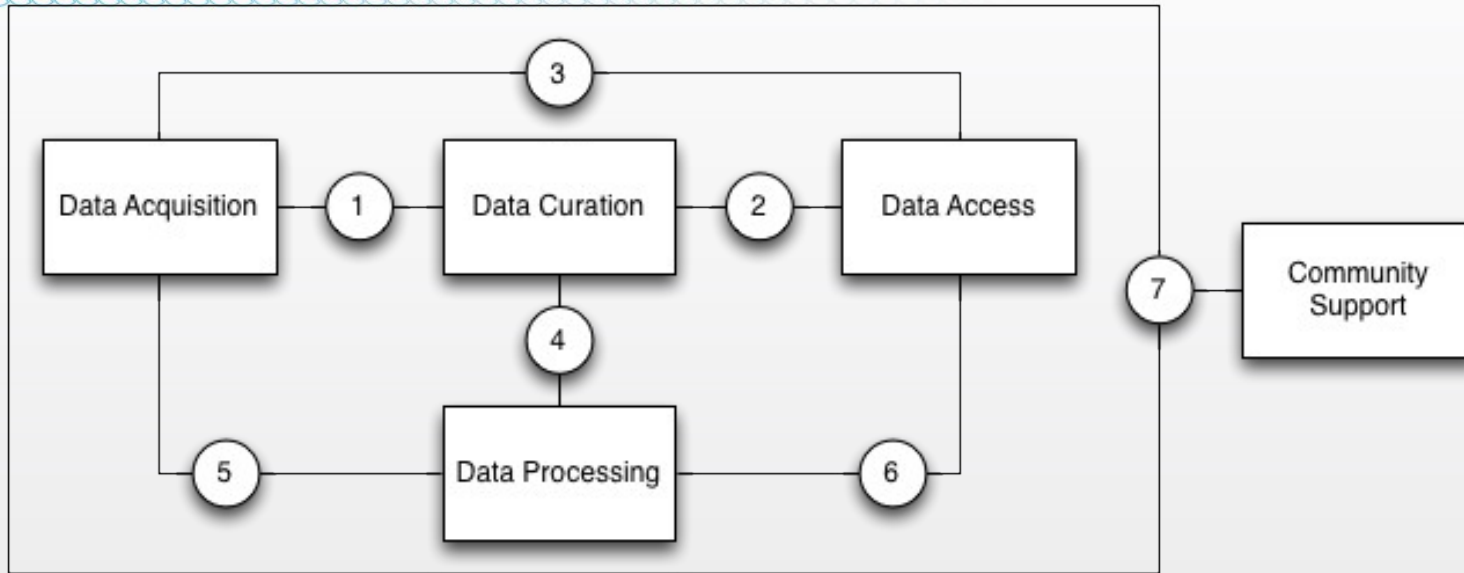
Towards the Big Data ENVRI Strategies for EISCAT-3D

- EISCAT 3D will be a world-leading incoherent scatter radar to study space physics
- Its data infrastructure introduces significant big data challenges
- Since Feb 2013, a pilot project is set up with goals of:
 - Encourage the early adoption of the ENVRI Reference Model
 - Experiment with e-Science approaches
 - Evaluate the usability of EGI/EUDAT in supports of EISCAT_3D



- **The ENVRI Reference Model serves the following purposes:**
 - to provide a way for structuring thinking which helps the community to reach a common vision;
 - to provide a common language which can be used to communicate concepts concisely;
 - to help discover existing solutions to common problems;
 - to provide a framework into which different functional components of research infrastructures can be placed, in order to draw comparisons and identify missing functionality.

Subsystem relationships



- 1. collection of raw data**
- 2. retrieval of curated data products**
- 3. status of the data acquisition network**
- 4. analysis of curated data**
- 5. acquisition events are listened for and responded to**
- 6. data processes are scheduled and reported**
- 7. the outside world interacts with the infrastructure in many different roles.**

Usage of the Reference

- To guide research activities
- To serve as a reference-base to improve the preciseness in communication
- To provide a research tool to conduct system analysis tasks:

1. Analysis of
EISCAT 3D
Data

Infrastructure

2. Analysis of
EGI Services

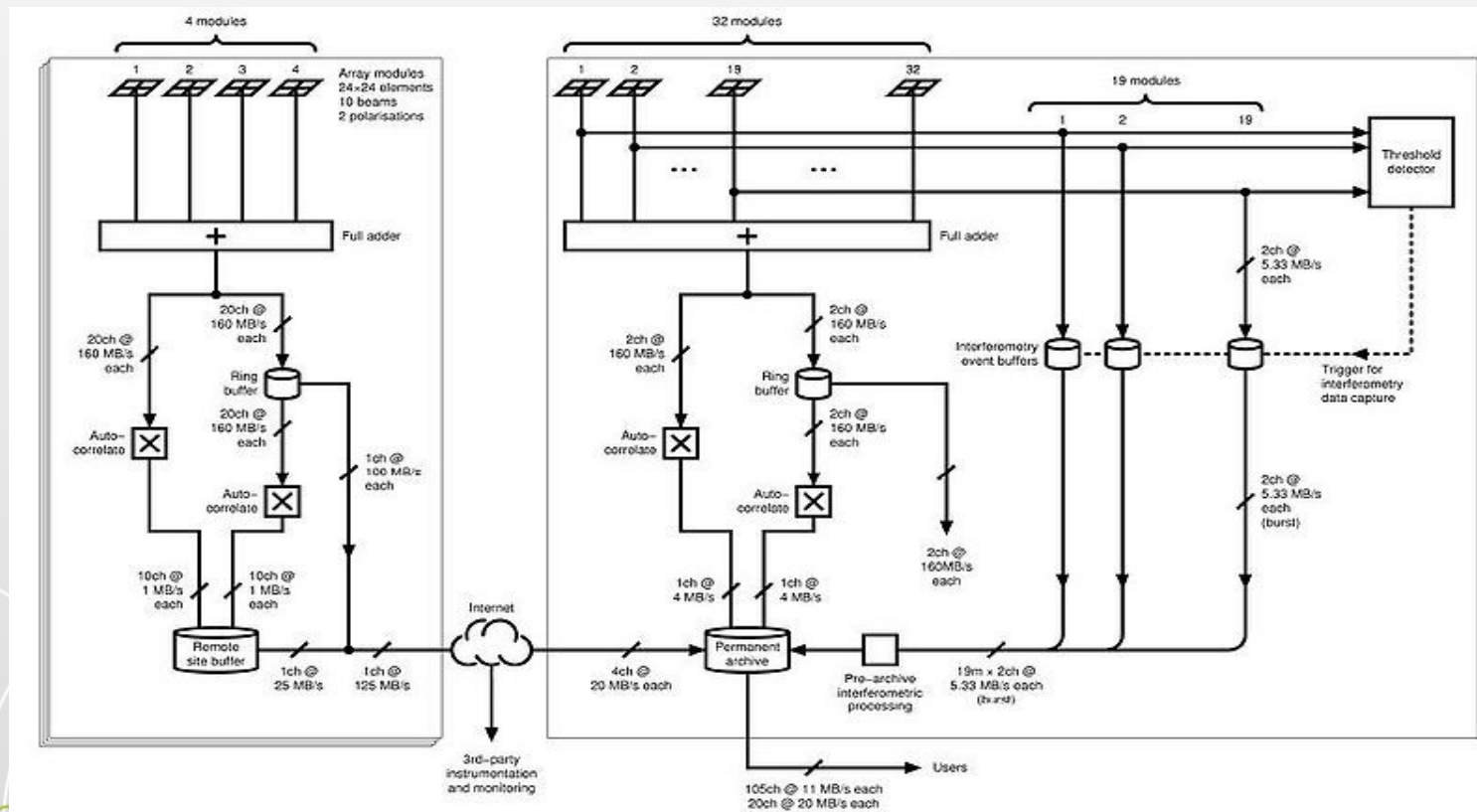
5. Analysis of
EUDAT
services

3. Construction
of the integrated
Infrastructure

4. Evaluation
of the
feasibility

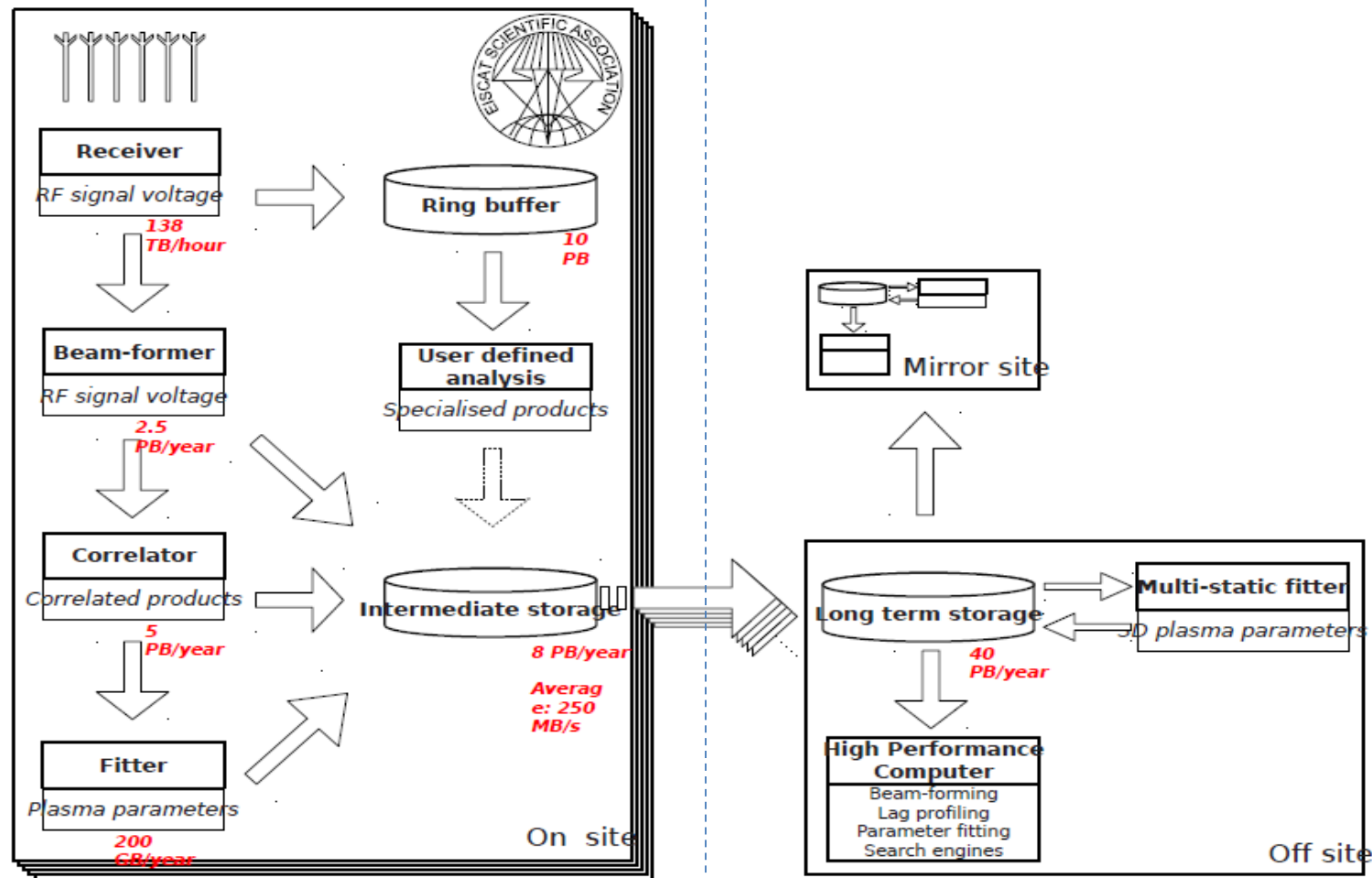
Task1: Analysis of EISCAT 3D Data Infrastructure

- EISCAT 3D focuses on radar design
- Its data infrastructure is embedded in overall infrastructure
- Difficult for computer technologists to understand



Results of Using the ENVRI RM

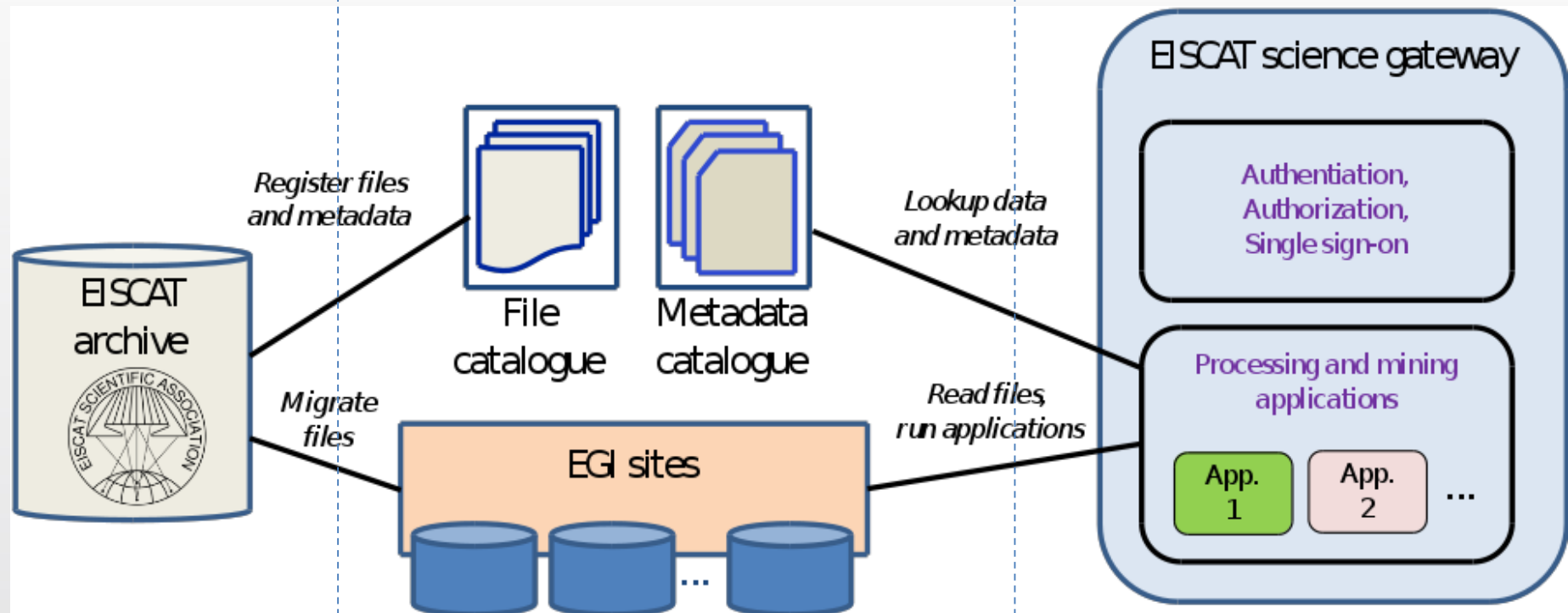
- Clarified the boundary for the data infrastructure
- Clarified the functionalities specified in the design



- **Identified problems**

- Only 2 subsystems are covered
- 3 of 5 are missing
- The reason is likely because of the resource limitation
- Without services for data discovery, access, processing and user community, the value of EISCAT 3D big data cannot be unlocked
- Thus, expensively generated, archived scientific data will be useless.

ENSVRI Construction of the Integrated Infrastructure



Acquisition

Curation

Community Support



Benefits of Using the ENVRI RM

- **Functional elements of both EISCAT 3D and EGI can be placed into a uniform framework**
- **Provides a way of thinking and construction of the integrated infrastructure**
- **Enables analysis, comparison of the EGI generic service infrastructure and the requirements of EISCAT 3D**
- **Enable identifying gaps in-betweens**



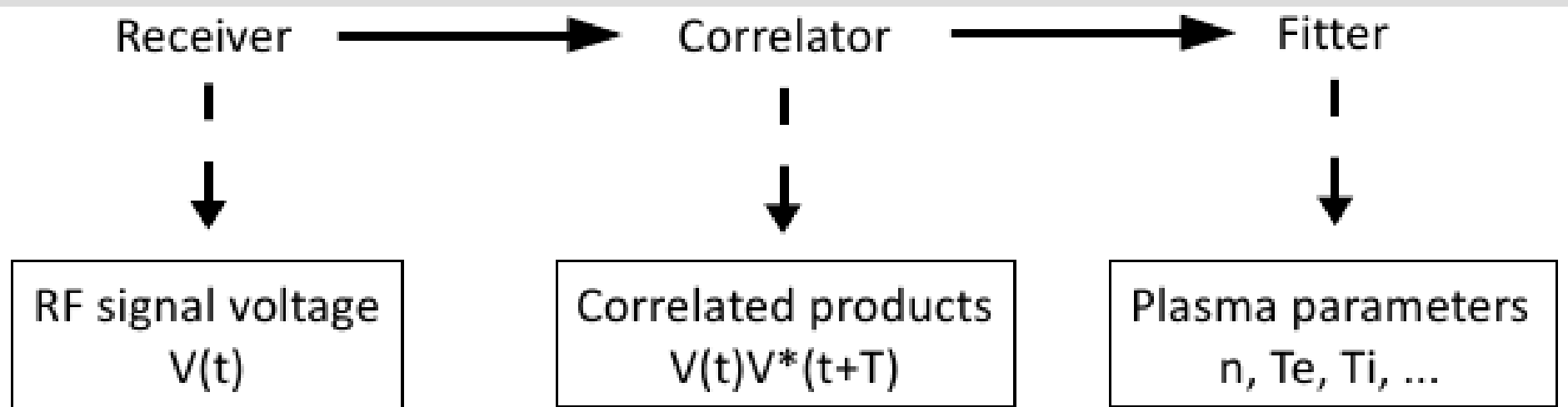
Results of Using the ENVRI

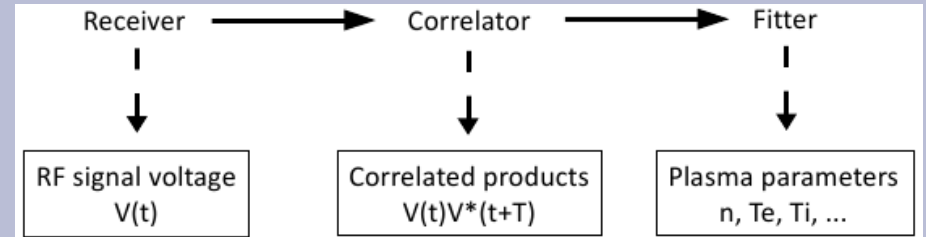
EUDAT Services	Computational Viewpoint	ENVRI Common Subsystem
Safe replication	Data transfer service	Curation
staging	Data importer	Curation
Metadata catalogue	catalogue services	Curation
Simple store	data store controllers	Curation

- **EUDAT Services are filling the gaps for EGI**
- **Seen as a layer on top the EGI federated computing facilities**
- **Challenges:**
 - How to integrate EUDAT services within EGI infrastructure
 - EGI infrastructure needs evolve to adapt the emerging big data phenomena
 - Many services for data access, processing, community support are still missing



- Connecting Research Infrastructures
- <http://www.coopeus.eu/>
 - Flashy!
- EISCAT-SRI/MIT
 - Integrate the ISR systems
 - Look at standards+procedures
 - For data storage&sharing





- RF signal
 - Openradar.org
 - HDF-5 format
 - Lower level
 - VITA 49 Digital IF...
- Correlated
 - HDF-5
 - Guisdap additions
- Fitted
 - Madrigal new vs
 - Hdf-5 format
 - Better UI
 - Extensions to other engines
 - ESPAS

MISW: Mitigation of space weather threats to GNSS services

Space weather action call FP7

Coordinator Biagio Forte, University of Bath

10 EISCAT work-months

Starting 1 Feb 2014

EISCAT will provide analysis and interpretation of both archived and new measurements of ionospheric gradients from existing data sets and on-going measurement campaigns.