Seismological Network Operations & Data Management at IAG-USP

Short Presentation @
IRIS MANAGING WAVEFORM DATA AND RELATED METADATA FOR SEISMIC NETWORKS
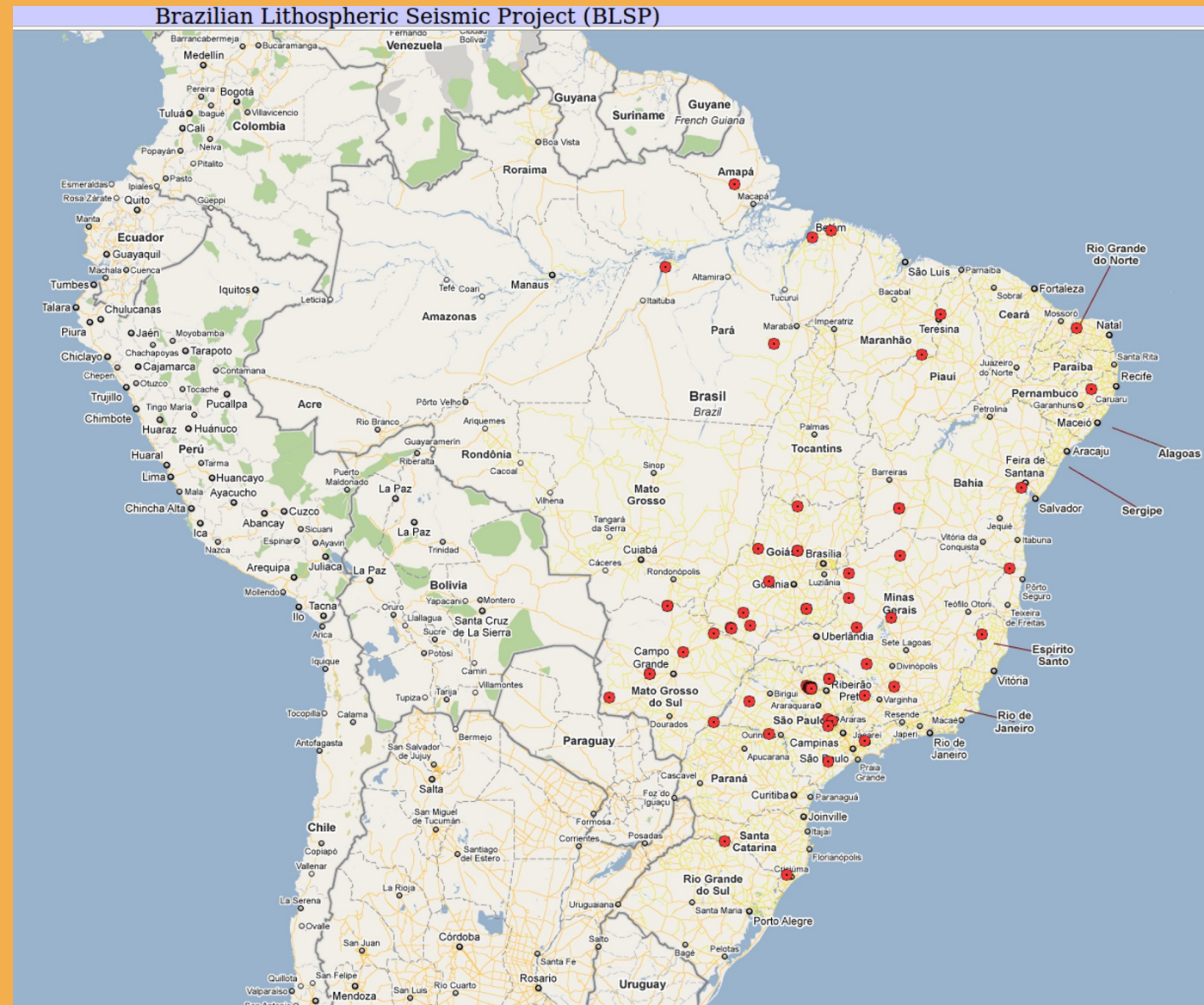
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August, 2010

IAG-USP 1992-2008:

- about 60 temporary stations (BB & SP seismometers) at whole country.

- most of them operating about > 2 years

Brazilian Lithospheric Seismic Project (BLSP)

IAG-USP 1992-2008:

- large amount of data stored in different disks without a properly structured database.

- a lot of time and money were spent updating computer systems, disk storages and routine back-ups whithout prevent dataloss.

- very hard access and share of IAG-USP data between institutions and researchers.

IAG-USP 2008-2010:

- full priority to assembling data to be stored at the IRIS DMC.

- many different recording configurations and <u>instrument types</u> had been used in the <u>same station</u>.

- sometimes up to 4 different <u>streams</u> with different <u>sampling rates</u> and <u>gains</u> were used.

Visitas de Campo

Técnicos	Jose Roberto Barbosa/Celia	Data da Visita:	21/07/1999
Sismômetro [+]	STS2 g1 - Streickeisen STS2 1a ger	Registrado [+]	671 Reftek (072A-02-16bits)
Estacao [+]	AREB - Areado - MG		

Aquisição — Início (JD: 174): 23/06/1999 19:44:00   Fim (JD: 202): 21/07/1999 16:23:00

Imagem — Servidor|Midia: none   Caminho: none   Arquivo: none

Dados — Servidor|Midia: tombador.iag.usp.br   Caminho: /tomb9/blsp95/raw/areb_99202   Formato: segY   Dados: ☑ Usar

Comentarios: Estacao normal.

Streams:
[1Z] [1] [2] [3] [4]
[Limpar] [Ajusta]

Samples:
[10] [20] [40] [50] [100] [200] [500]

Ganho:
[1] [32] [128]

Stream:
[1] [2] [3] [7]

RefChannel:
[E1] [E4]

#	Stream	RefChannel	Nome Seed	Loc. Seed	sps Hz	Ganho	Az.	Merg.	
1[x]	1	1	BHZ	10	10	32	0	-90	[v]
2[x]	1	2	BHN	10	10	32	0	0	[v]
3[x]	1	3	BHE	10	10	32	90	0	[v]
4[x]	2	1	BHZ	50	50	32	0	-90	[v]
5[x]	2	2	BHN	50	50	32	0	0	[v]
6[x]	2	3	BHE	50	50	32	90	0	[v]
7[x]	3	4	BLZ	50	50	1	0	-90	[v]
8[x]	3	5	BLN	50	50	1	0	0	[v]
9[x]	3	6	BLE	50	50	1	90	0	[v]
10[x]	7	1	HHZ	02	200	32	0	-90	[v]
11[x]	7	2	HHN	02	200	32	0	0	[v]
12[x]	7	3	HHE	02	200	32	90	0	[v]

Def.Sample. 10 Def.Gain. 1 Def.Stream. 1

(Voltar) (Nova) (Excluir) (Salvar)

"LogSheet" webapp: see how many streams and channels were used for just one operation period

SISMOLOGIA
## Instituto de Astronomia, Geofísica e Ciências Atmosféricas

IAG-USP 2008-2010:

- LogSheet WebApplication was developed to try solve these troubles.

- today (with a lot of help and patience from IRIS-DMC) all data acquired by IAG-USP are stored at IRIS-DMC

- almost all of the IRIS request tools were tested successfully with IAG-USP dataset.

LogSheet WebApp: a 'jerry-rigged' solution with PDCC 3.0 database engine.
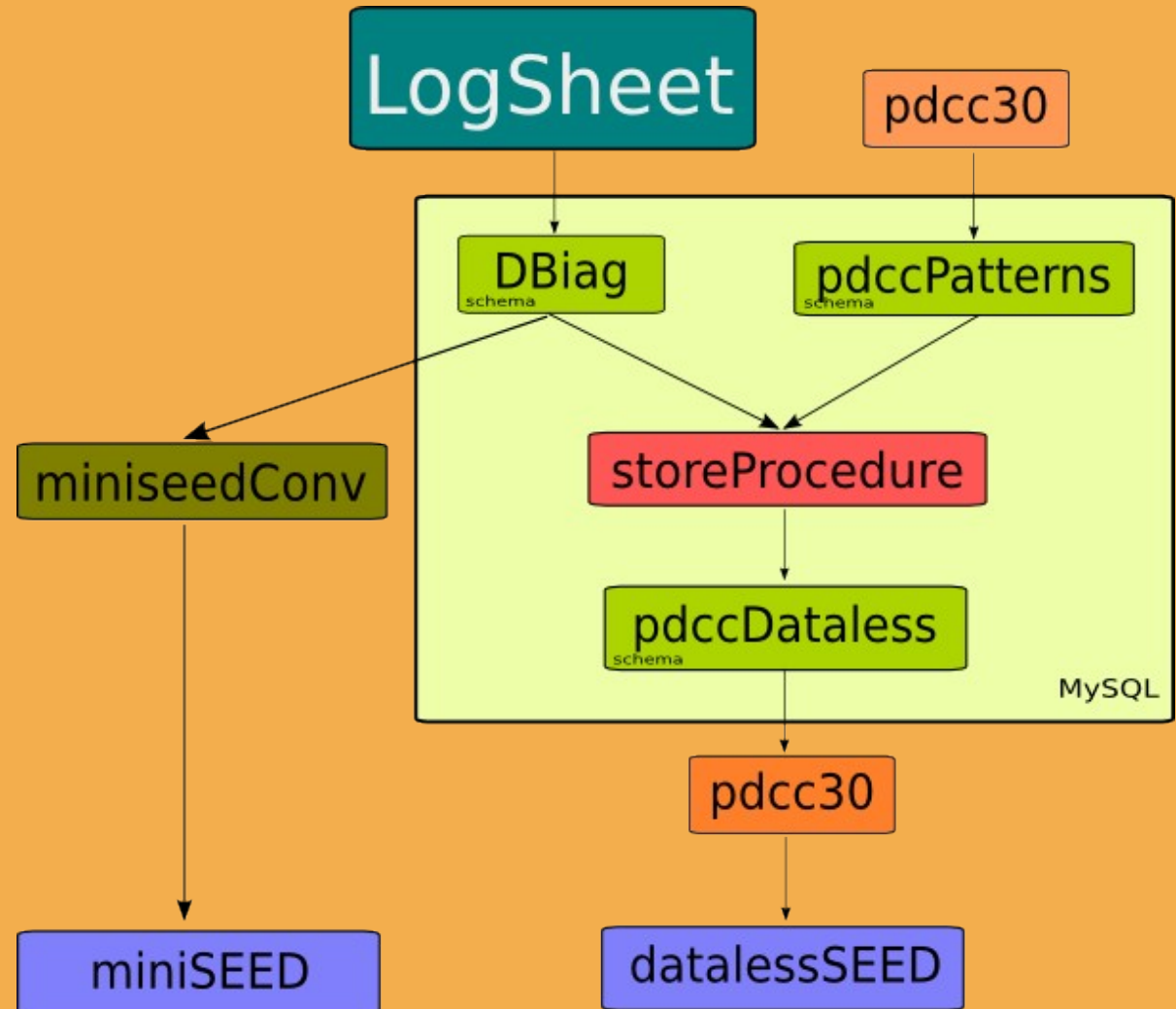
IAG-USP 2008-2010:

- also a simple WEB-PORTAL was designed to promote/advertise the IAG-USP Seismological Lab.

IAG-USP 2010 & Future

BRASIS Project:

- 55 BB permanent real-time stations to be installed by _four institutions_

ResearchGroups

-Study Brazilian seismicity, locating all magnitudes 3+

-Studies of crust and upper mantle structure.

Stations

IAG-USP 2010 & Future
BRASIS Project:

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-Studies of crust and upper mantle structure.

Stations

Standard Answer:
YES! We'll share our data!

IAG-USP 2010 & Future: Technology & RealTime data processing

- datacenter infrastructure

- realtime data acquisition & processing

- seedLink, arcLink & SeisComP3

- modular arrangement of processing components
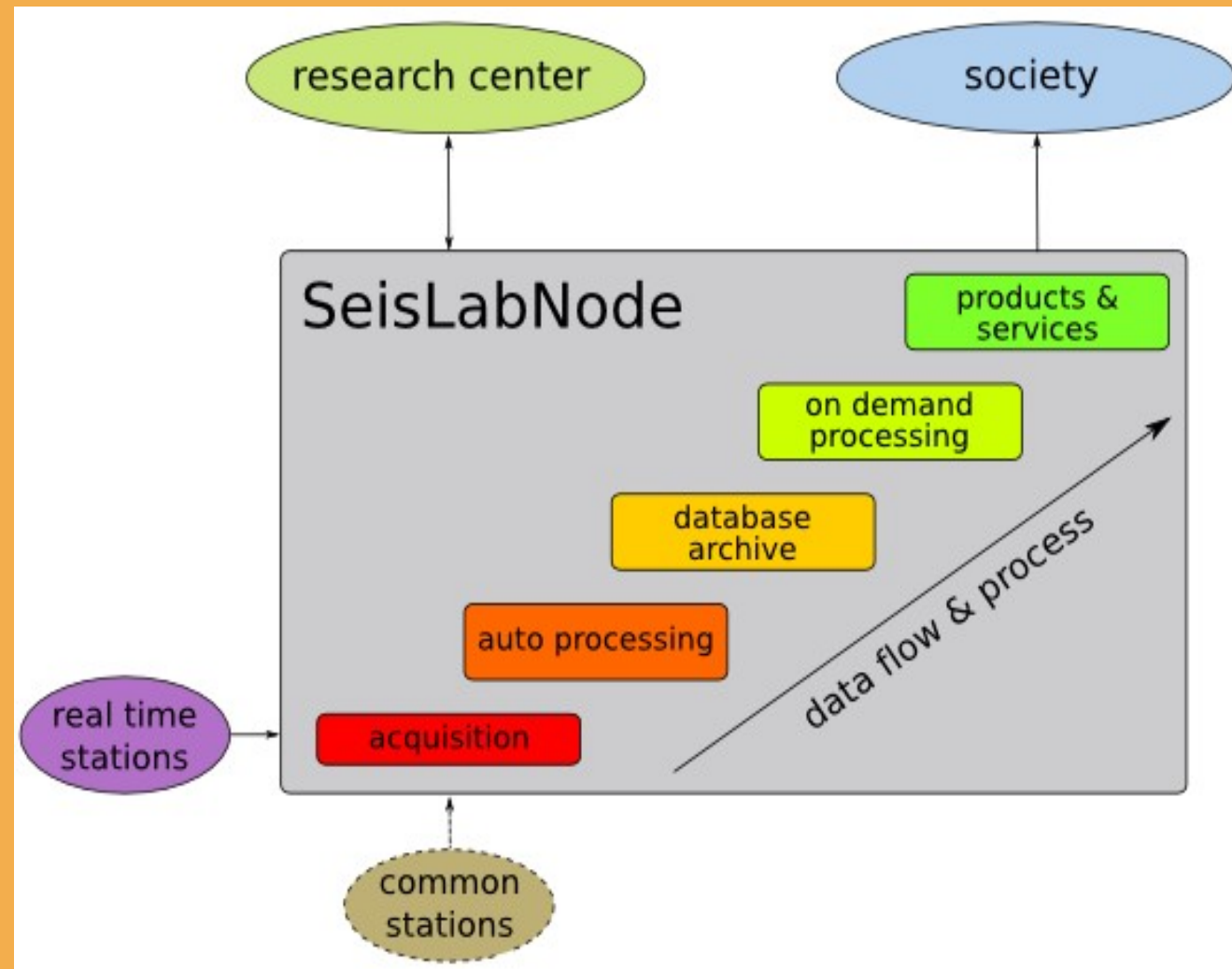
IAG-USP 2010 & Future: NonRealTime data processing ?

- **not all** of our seismological experiments will be at real time data acquisition.

- the **realtime data processing** creates databases, schemas, data objects and models.

- we wonder to be able to use **the same model, objects, database structure and tools** in both scenarios.

IAG-USP 2010 & Future: Geophysical WebSchool Lab

- was created a geophysical/seismological webLab, as part of expected goals of BRASIS Project, to encourage and promote EarthSciences at elementary school.

- it ables teachers and students to cooperate and disseminate content by theirselves.

- many other seismological products should be developed after BRASIS operates with a minimum density of stations.

IAG-USP 2010 & Future: Geophysical OpenSource SDI

- was prototyped an OpenSource Spatial Data Infrastructure to serve and maintain some related data layers consumed and produced by us using OGC standard formats (WMS/WFS/GeoSciML).

- SeisComP3 QuakeML implementation using PostGIS database extensions could be merged to provide other data products.

Open Source Spatial Data Infrastructure @Seismological Lab, IAG-USP

Application

Midleware / Access

Apache, Proxy, Balance

GeoWebCache

GeoNetwork

GeoServer (OGC Services: WMS, WFS)

MapServer

Data

PostGIS (vector data)

RAID Storage (raster data)

QuakeML

Implemented
Planned
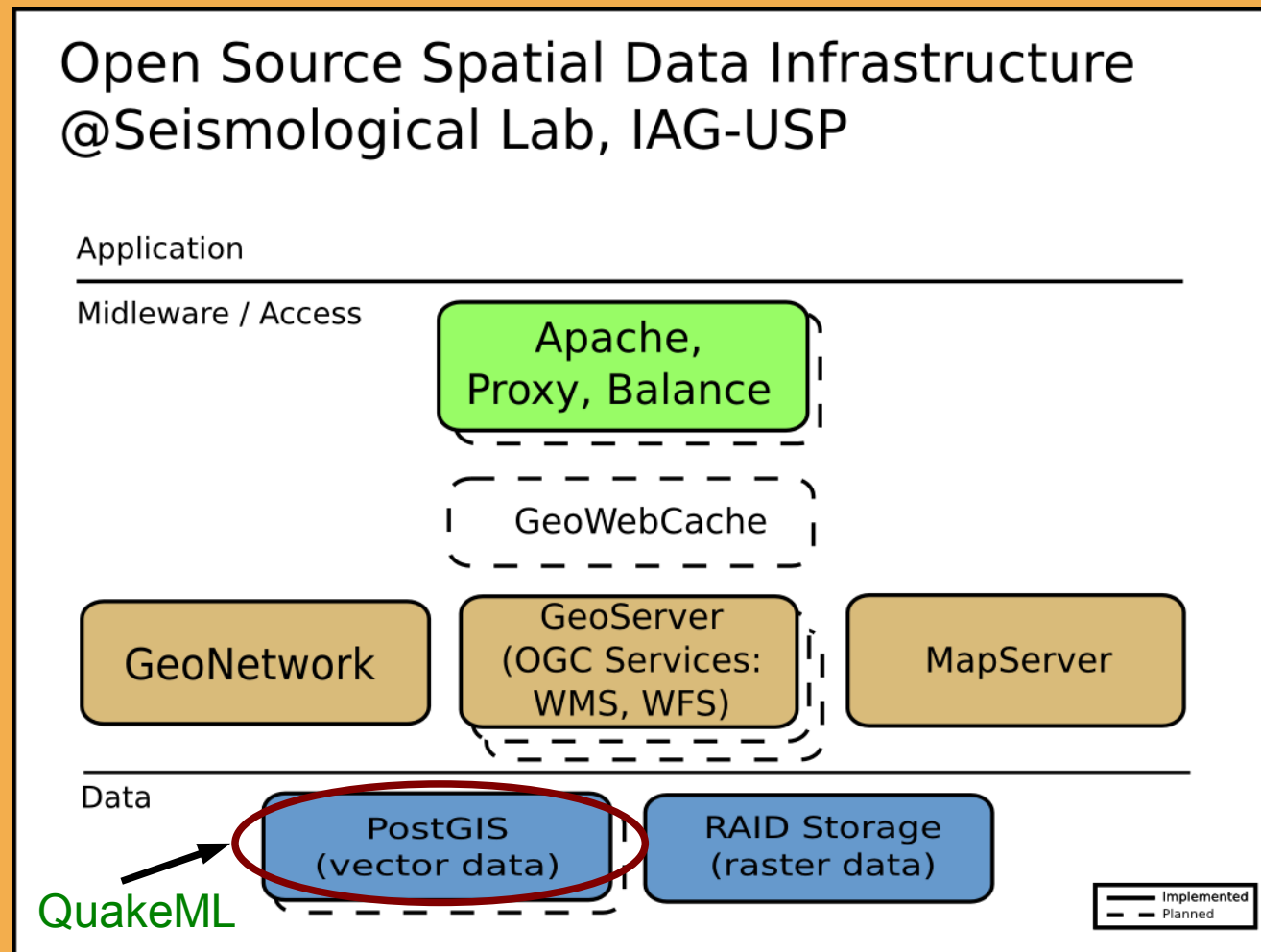
Thanks to:

- IAG-USP Seismological Lab staff and coordinators.

- Petrobras (BRASIS Funder)

- IRIS/DMC (Rick Benson/MaryAnn Wood: too much help and patience)

- All others seismological staff in Brazil.

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Thank you!