

Computing in Poland

from the Grid/EGEE/WLCG point of view

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Gratefully acknowledging slides from:

- P.Lasoń (Cracow)
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- W.Wiślicki (Warsaw)

Polish HEP(LHC) centres

➤ *Cracow (Kraków)*

Institute of Nuclear Physics, University of Science and Technology

- *ATLAS (12 physicists, 3 PhD students), LHCb (7+1), ALICE*
- *Neutrino, Belle*
- *ZEUS, H1*

➤ *Warsaw (Warszawa)*

Institute for Nuclear Studies, University, Technical University

- *CMS (5 physicists, 6 PhD students, ~3 engineers), LHCb, Alice*
- *COMPASS*
- *Neutrino*

Polish LCG/EGEE centres

- Cracow:

- CYFRONET – Academic Computer Centre
- <http://www.cyfronet.pl/>

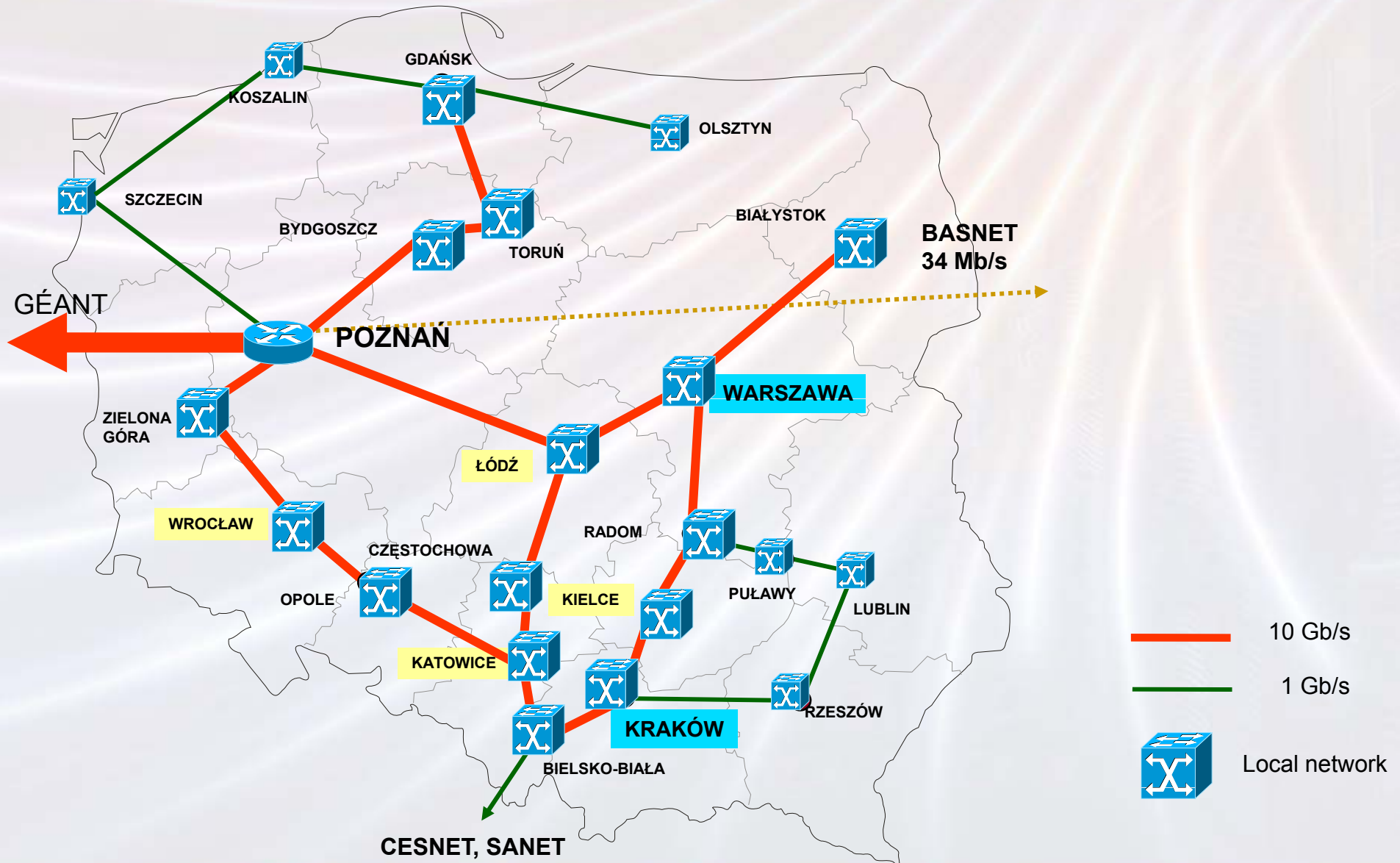
- *Warsaw:*

- *ICM – Interdisciplinary Centre for Mathematical and Computational Modelling*
- <http://www.icm.edu.pl/>

- *Poznań*

- *PCSS – Poznań Supercomputing and Networking Centre*
- <http://www.man.poznan.pl/>

Polish network





Cracow

CYFRONET-LCG2 (32-bit)



- 274 CPUs in WNs (Xeon 2.4-2.8 GHz, 2 GB RAM)
- 22 TB of storage (20 TB – DPM, 2 TB – classic SE)
- 1 Gb/s interconnect (except 5 WNs) and uplink
- OS: Scientific Linux 3.0.8
- Middleware version: gLite 3.0
- Torque + Maui
- VOs: alice atlas balticgrid belle bgtut biomed cms dteam
euchina gaussian hone lhcb ops zeus voce



Cracow

CYFRONET-IA64 (64-bit)



- 34 CPUs in WNs (2x Itanium2 1.3 GHz, 2 GB RAM)
- 2 TB (classic SE – SCSI disk array)
- 1 Gb/s interconnect and uplink
- OS: Scientific Linux CERN 3.0.8
- Middleware version: LCG 2.7.0
- Torque + Maui
- VOs: atlas alice balticgrid belle biomed compchem
dteam euchina gaussian lhcb ops voce



Cracow

Resources for WLCG

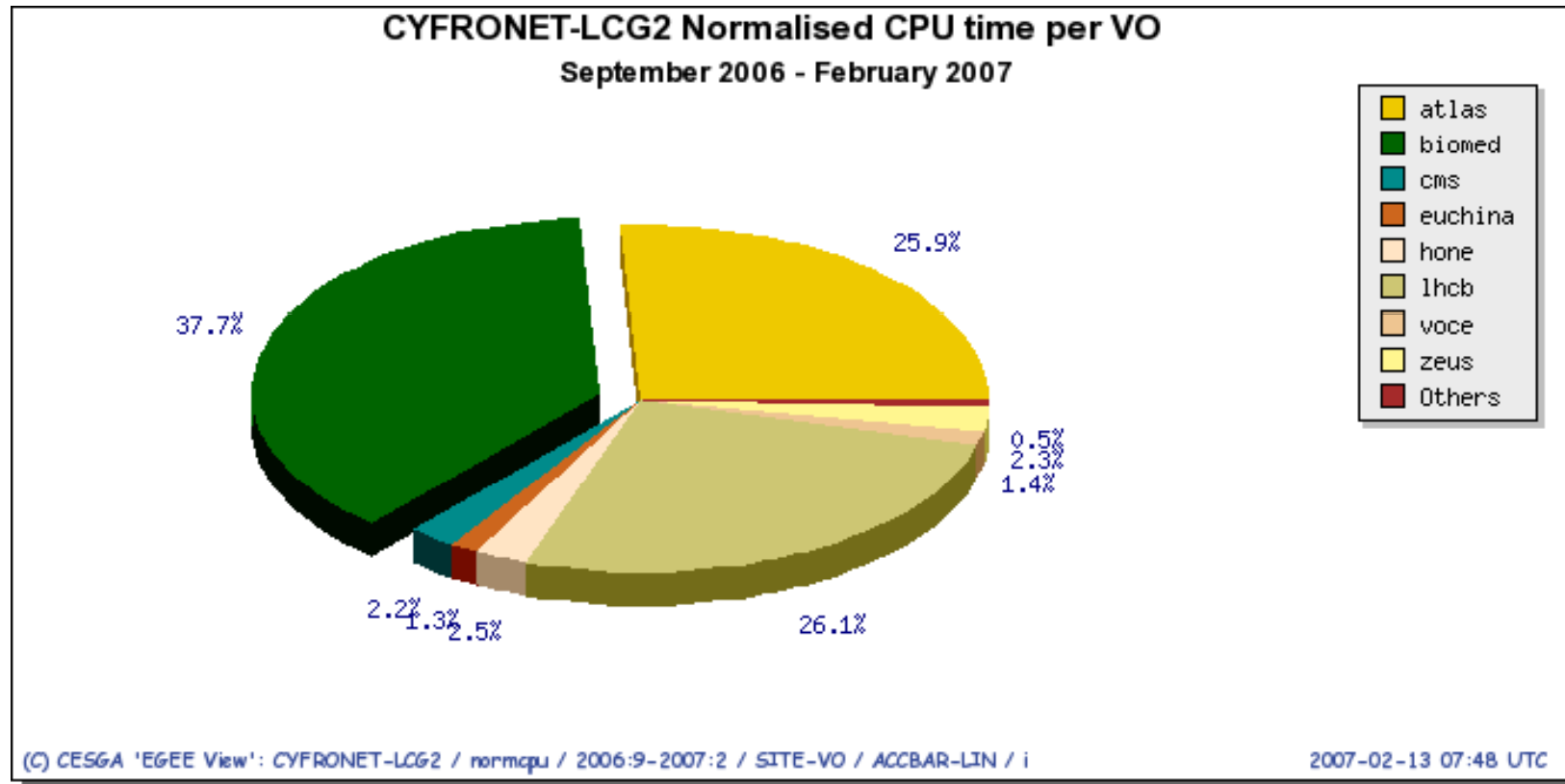


- 55% of CPU power for WLCG
 - Atlas: 38.5%
 - LHCb: 11%
 - Alice: 5.5%
 - CMS: best effort
- Dedicated VOBOX for Alice
- Local LFC for Alice, Atlas



Cracow

Statistics (CYFRONET-LCG2)



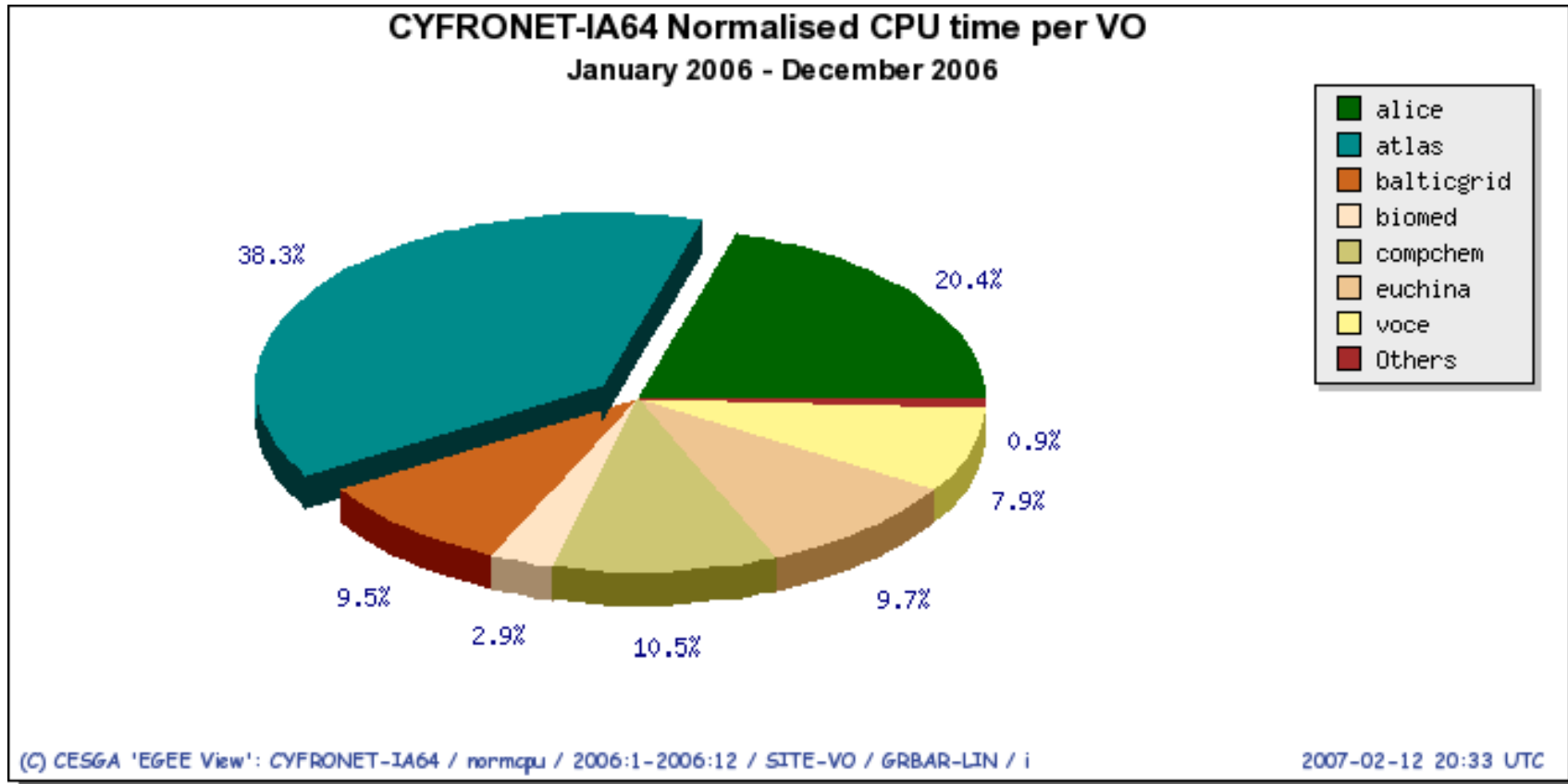
Total number of jobs: 93660 (81125)

Atlas: 38545, LHCb: 9374, Alice: 92, CMS: 509



Cracow

Statistics (CYFRONET-IA64)



Total number of jobs: 29157 (21727)

Atlas: 4694, LHCb: 37, Alice: 2148, CMS: 0

Hardware for PolTier2

- 47 WNs, each having:
 - 2 CPUs (Itanium2)
 - 2GB or 4GB memory
 - 73GB HDD
- CE, ALICE VOBOX
- 2x SEs: 6TB of storage space
 - 1TB solely for Tier2 Project – included in PolTier2 network (VOs: ALICE & ATLAS)
 - 5TB recently added (100mb/s links – support for ALICE, ATLAS, CMS, LHCb, other)

Other machines

- 40x SunV20Z servers (2x dual-core AMD Opteron, 8gb of RAM, 64bit OS)
- Supported WLCG VOs: ALICE, ATLAS, CMS, LHCb

Warsaw

ICM Infrastructure @ polgrid.pl

- ce.polgrid.pl: 268 (240) CPU AMD Opteron 250 in servers v20z and v40z sunfire, ~0.5 MSi2k
- se.polgrid.pl: 19 (~10) TB, RAID5 at StorEdge
- 1 Gbps to VLAN
- www.polgrid.pl: information
- helpdesk.polgrid.pl: ROC CE helpdesk
- i2helpdesk.polgrid.pl: Int.eu.grid helpdesk

Warsaw

Resource usage and sharing, cont.

CPU distribution over VOs (%):

•ALICE	<1
•ATLAS	14
•CMS	50
•COMPASS	1
•DTEAM	<1
•LHCB	29
•VOCE	6
•Interactive	10

Warsaw

Resource usage and sharing, cont.

- Active users: 294
- Jobs: 191 000
- CPU efficiency: 73%
- Cluster usage was very inhomogenous in time

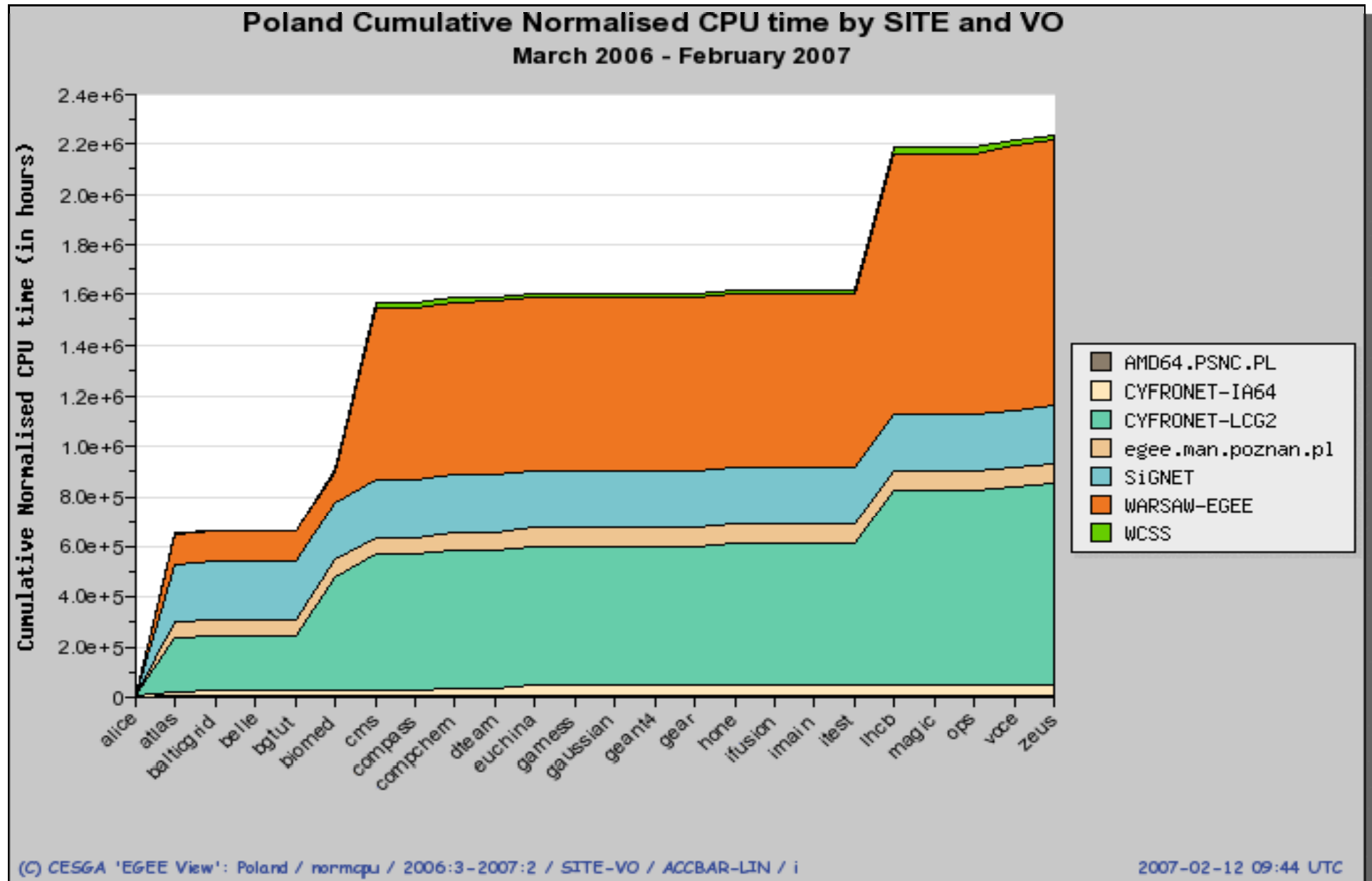
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User portals

- CE ROC user support helpdesk:
 - - about 300 tickets processed last year,
 - - most of them operational
 - - 20% solution time 1 day
 - - 50% solution time > 4 days (does not always mean poor performance, some tickets are time consuming. Response time is normally 1 day.)

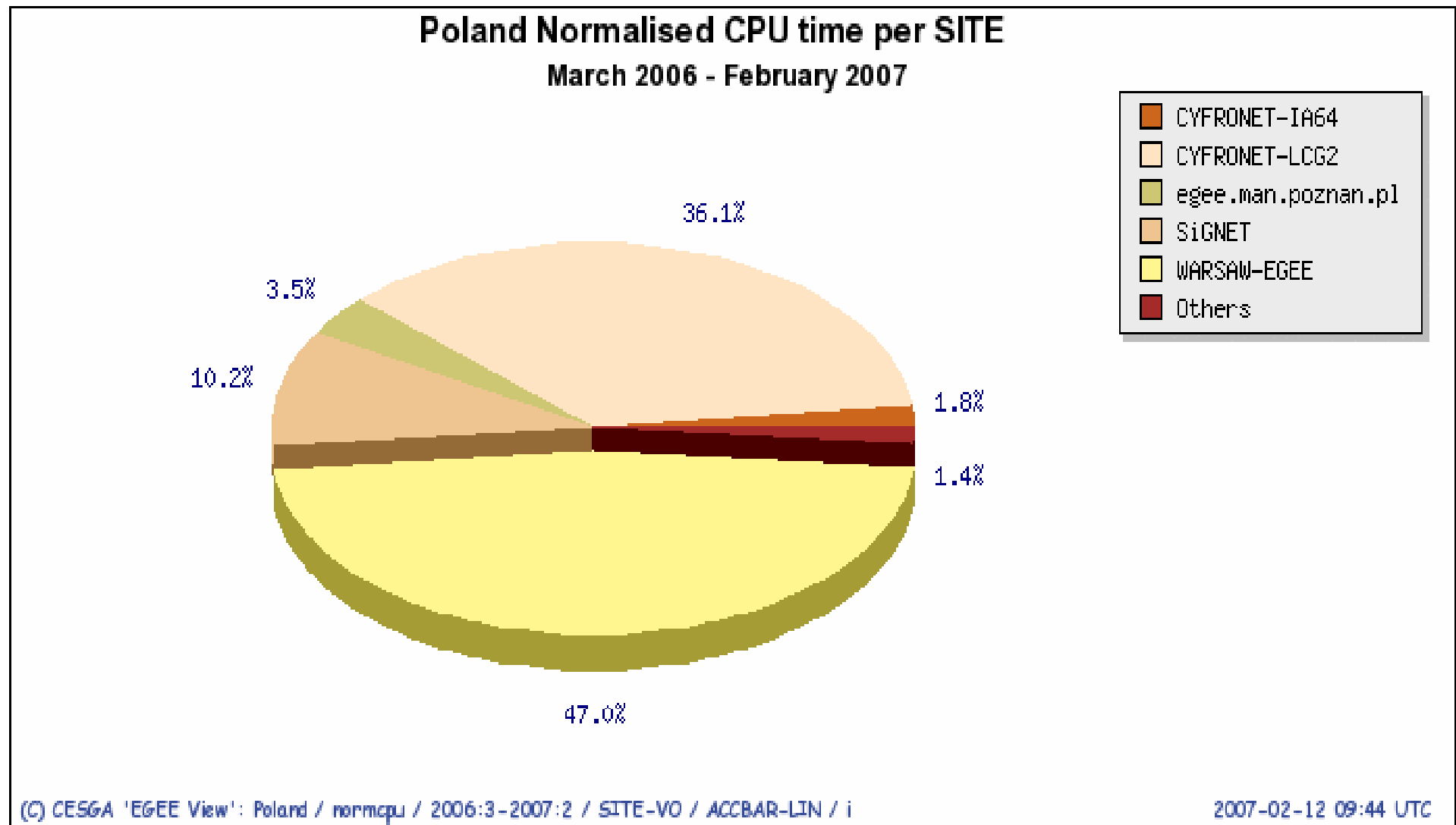
Poland

Tier-2 clusters performance, CPU



Poland

Tier-2 clusters performance, CPU



Polish Tier-2 federation

- Poland is a **federated Tier-2**
- **HEP community rather small (*~60 people*)**
- **Each of the computing centres naturally will support mainly 1 experiment**
 - **Cracow – ATLAS**
 - **Warsaw – CMS**
 - **Poznań – ALICE**
- *This probably means that each centre will be about 1/3 of the average/small Tier2 for a given experiment (???)*

Polish Tier-2 Federation

Resource pledges for WLCG

General

Poland Polish T2 Federation	2007	2008	2009	2010
CPU (kSI2k)	650	1150	1650	2250
Disk (Tbytes)	60	183	333	445
Nominal WAN (Mbits/sec)	1000	1000	2000	2000

Polish Tier-2 Federation

Resource pledges for WLCG

Details for 2008

Split 2008	ALICE	ATLAS	CMS	LHCb	sum
Offered CPU (kSI2k)	175	465	305	205	1150
% of total	2%	3%	2%	5%	2%
Offered Disk (Tbytes)	11	104	68	0	183
% of total	0%	1%	2%		0%
TB/kSI2k offered	.06	.22	.22	0	.16
TB/kSI2k requested	.13	.44	.22	0	