



Guaranties for computing in PLGrid

Marcin Radecki
PLGrid Operations Centre

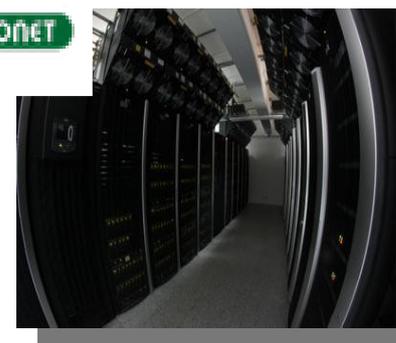
EGI Conference, Lisbon 20.05.2015

- **PLGrid intro**
- **Computing service: metrics**
- **Guarantees and concept of a guarantee loss**

PLGrid is a federation

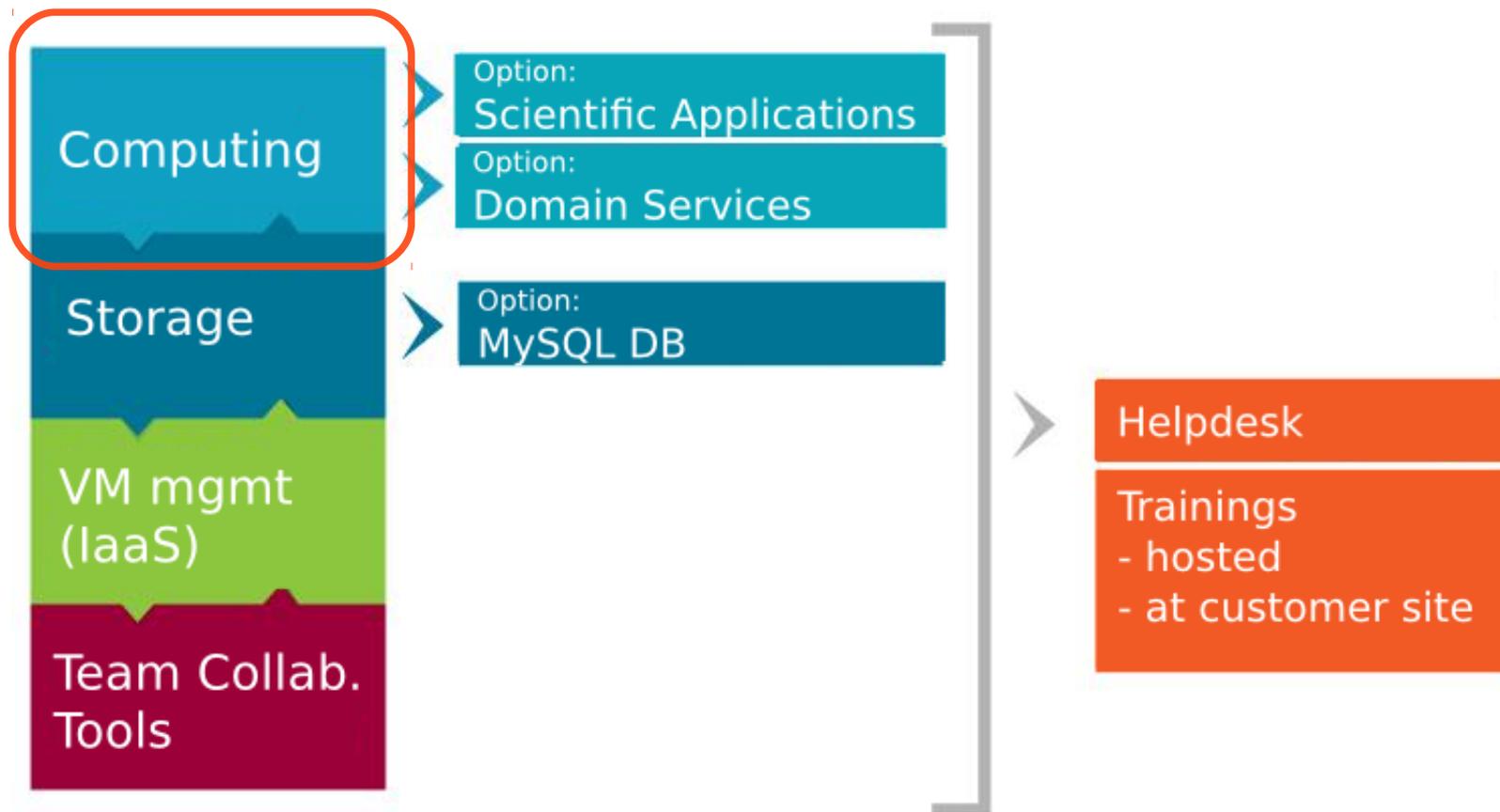


Five academic computer centres – PLGrid consortium members



576 TFLOPS 41248 cores
113,26 TB RAM 5,58 PB storage





SLA in PLGrid is known as “computational grant”

- **Negotiate & Sign** → agreed SLA
- **Monitor & Control** → resource usage aligned to SLA
- **Account** → evaluate collaboration, deliver promised results

Metrics describe how capacity of a service can be consumed

- **Main: Computing time [h]**
 - Guaranteed
 - Non-guaranteed
 - Reserved
 - Preemptive (to be implemented)
- **Optional**
 - Max job walltime
 - Max job parallelism
 - Max RAM per slot
 - Max scratch space

Example: 2 jobs, each running on 10 cores for a day will consume:
 $2 * 10 * 24 [h] = 480 [h]$

- **Guarantee:** if a user provides jobs **regularly** she/he will get **resources** in the amount negotiated in the computational grant (e.g. 1000h of computing time in 10 days)

Regularly: in a way which allows the scheduler implement the policy of **evenly consumption** e.g. for 1000h grant for 10 days, the user should provide jobs consuming (at least) 100h daily

Concept of „guarantee loss”

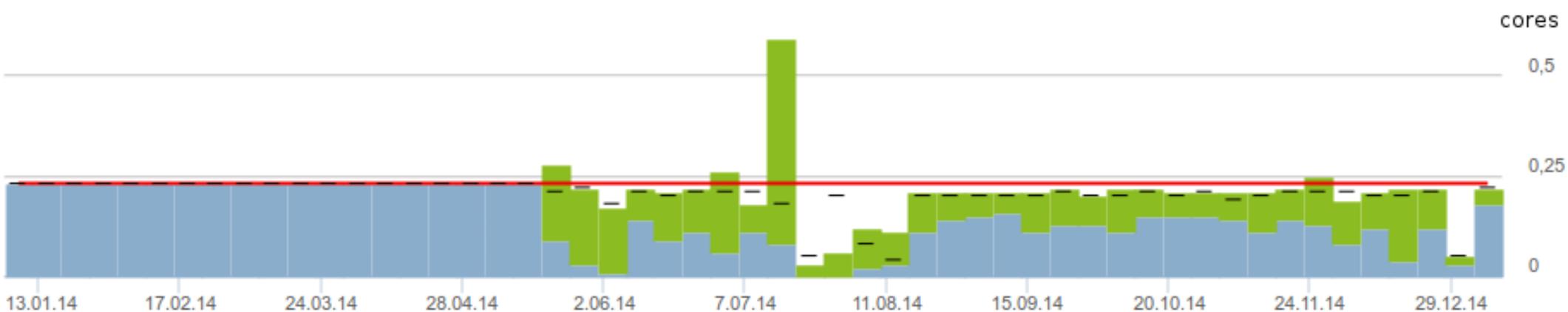
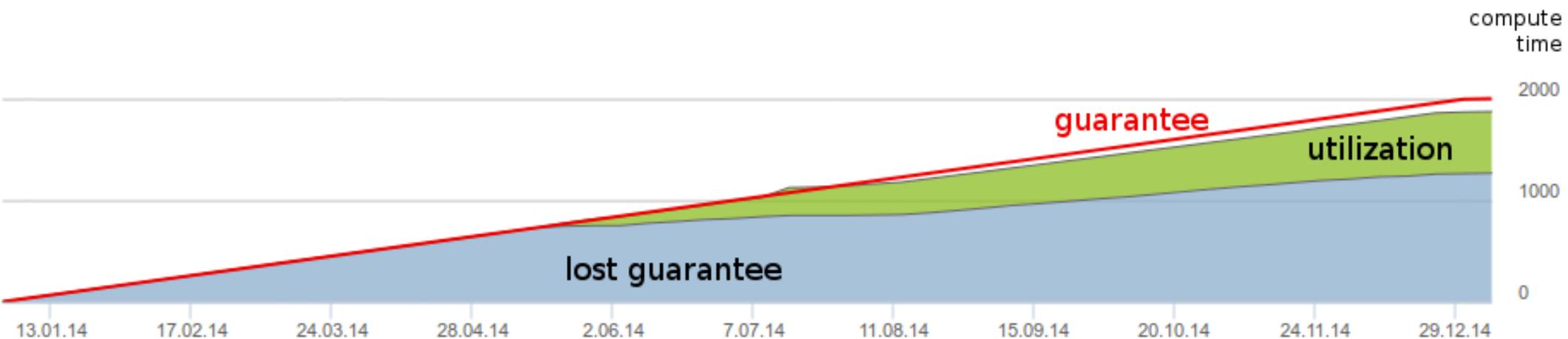


Unrealistic assumption: *I have 1M hours grant. Today is my last day. Give me 1M hours.*

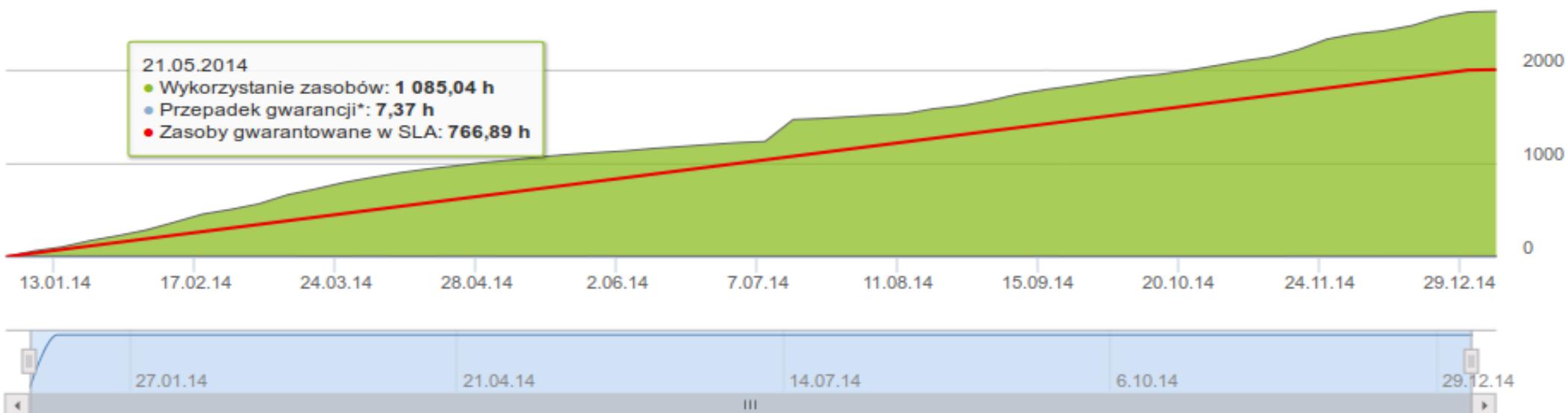
- Guarantee: if a user provides jobs regularly she/he will be allowed to use all resources assigned in a compute grant
- If a user does not provide enough jobs then **guarantee is lost** (computing time becomes non-guaranteed)
- Guarantee loss can be expressed in computing time hours
- If user provided jobs but they are waiting in the queue then guarantee loss **does not take place**



Loss of guarantee – lazy user

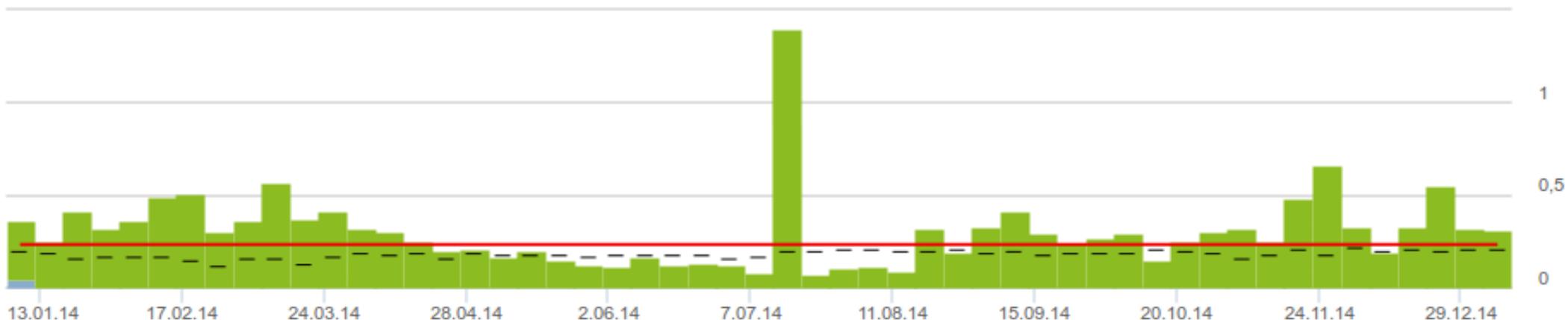


Loss of guarantee - thrifty user

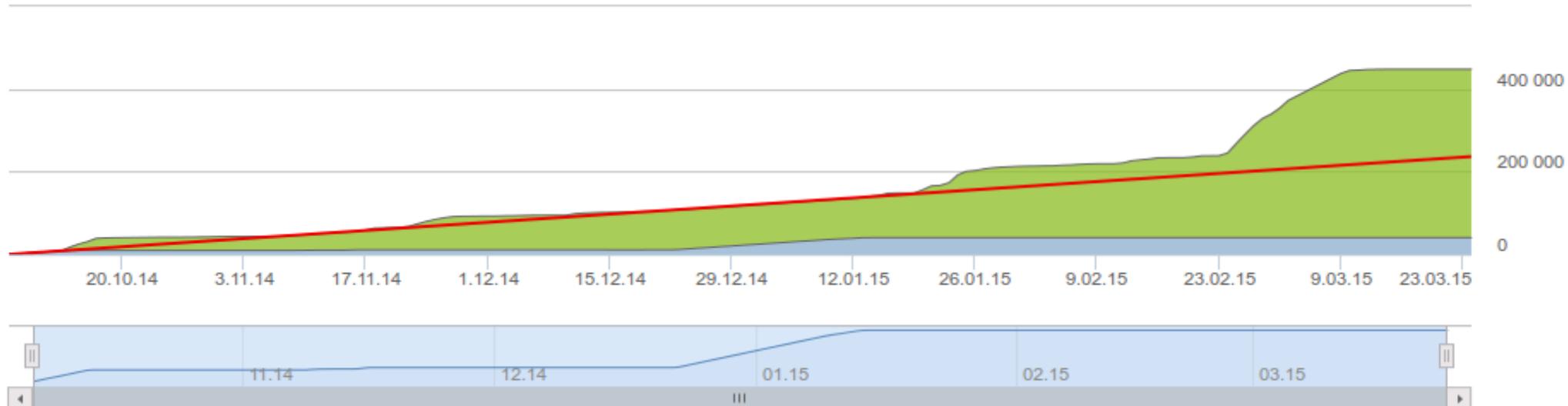


Ukryj wartości w jednostce czasu

Wartości w jednostce czasu

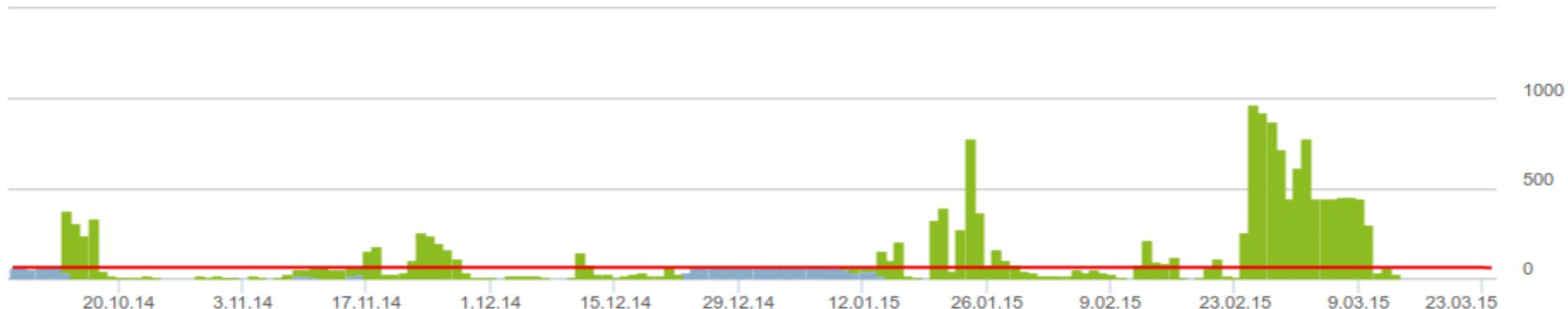


Loss of guarantee – „gusty” user



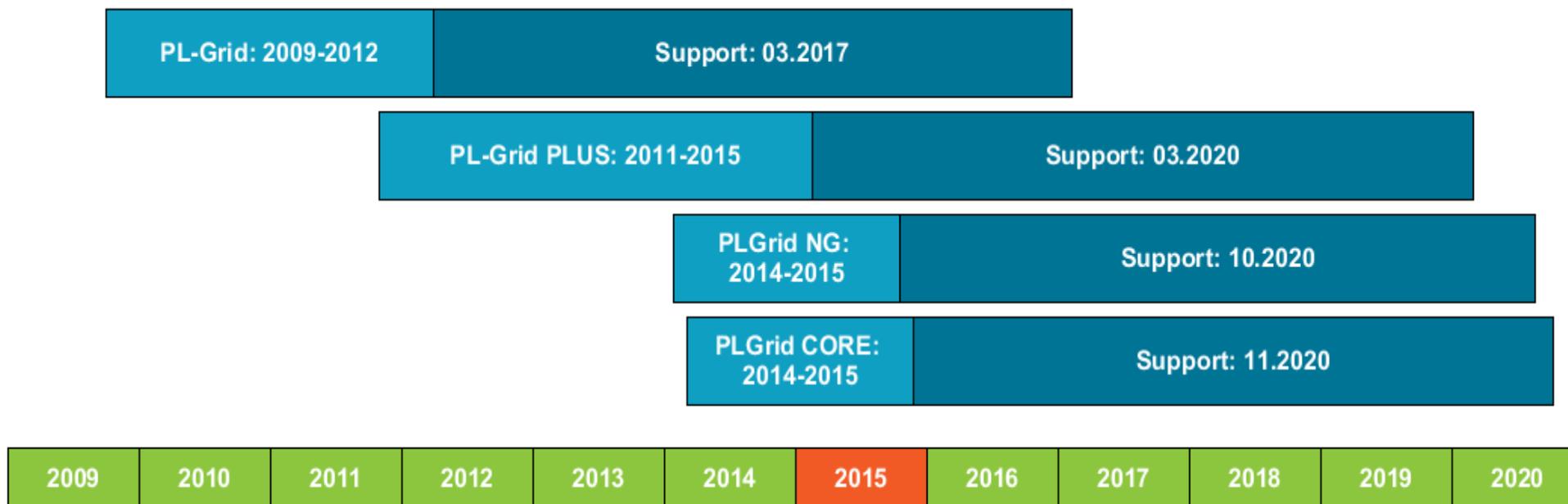
▼ Ukryj wartości w jednostce czasu

Wartości w jednostce czasu



- **SLA negotiation & signing – Bazaar**
 - Precursor of e-grant
- **SLA monitoring**
 - Resource Usage Monitoring
 - Accounting in the context of a given computational grant
- **SLA control**
 - Bazaar Site Admin Toolkit – takes data from Bazaar and configures scheduling policy
- **SLA accounting**
 - User Portal

Sustainability of guarantees in PLGrid



- Compute resources can be utilized using **different types of compute time** defined by metrics
- Concept of **a guarantee loss** help to better understand offered guarantees

What next?



Get in contact:

Marcin Radecki

m.radecki@cyfronet.pl

