ARC-CE Patch Policy by/for/in the WLCG
WLCG Ops Coord Mai 2017

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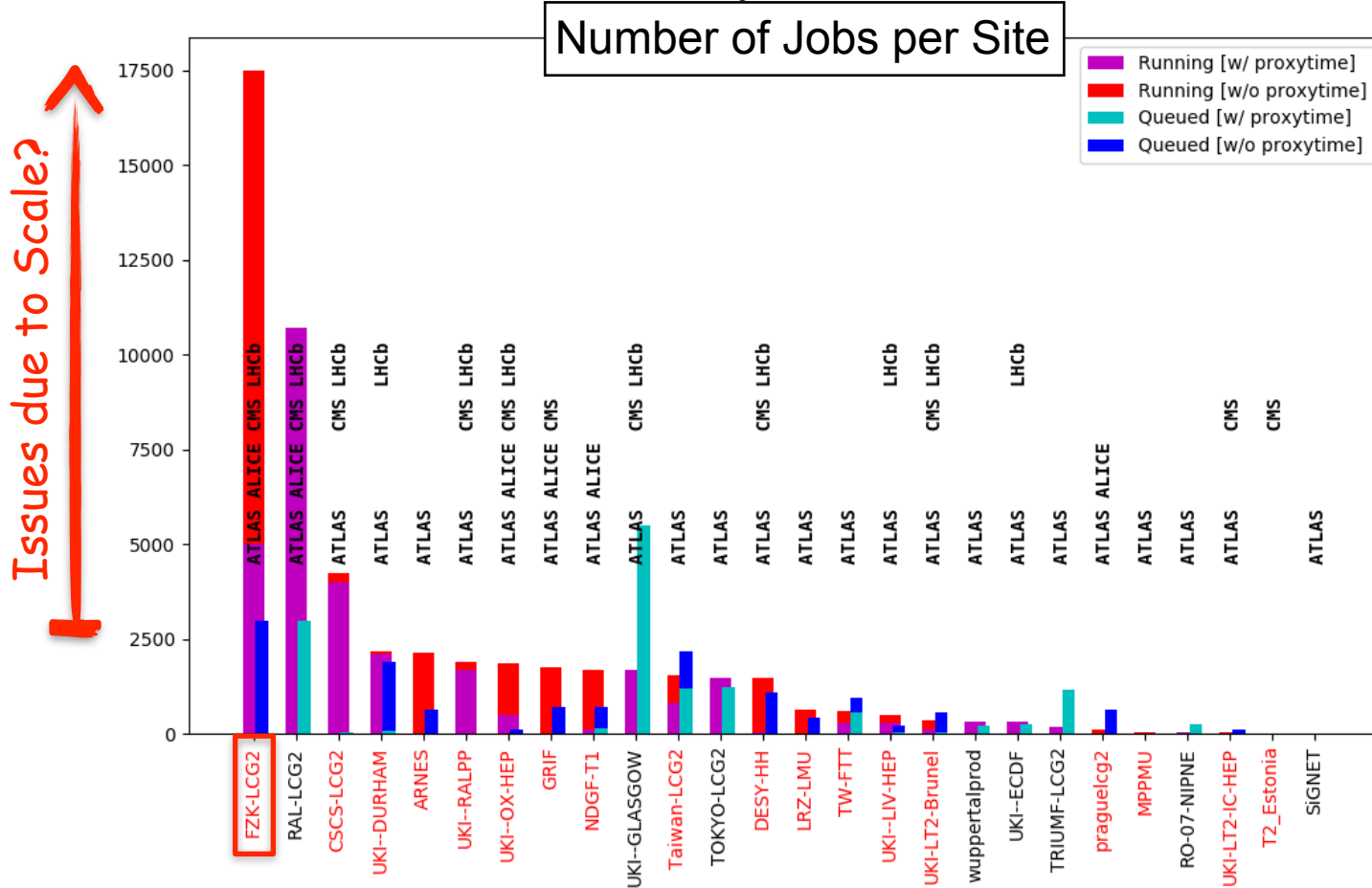
Steinbuch Centre for Computing

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Occasion for this talk

■ Sites with red name are technically broken…

Number of Jobs per Site

Issues due to Scale?

Legend:
- Running [w/ proxytime]
- Running [w/o proxytime]
- Queued [w/ proxytime]
- Queued [w/o proxytime]

■ …running an unmodified, official release of ARC-CE

ARC-CE at FZK (as relevant here)

- FZK semi-recently switched to ARC-CE + HTCondor
    - Based on good feedback from community
    - Switched off CREAM-CE end of March
    - *We consider ourselves late to the party...*

- Encountered lots of technical issues
    - Infosystem unsuitable for some VOs
    - Services and clients regularly die/hang/deadlock
    - *...and by default assume we messed up*

- Applied custom patches [1] requested by VOs
    - Site contacts mentioned/found out only after things broke down
    - Overhead for upgrades/debugging, works as temporary fix
    - *...fine for us after assurance that patches will go upstream*

[1] https://www.gridpp.ac.uk/wiki/Example_Build_of_an_ARC/Condor_Cluster

Case Study: ProxyExpirationTime

- FZK site contact for a VO reports broken Infosystem
    - *ProxyExpirationTime* of jobs not published by CE
    - Urgent: client constantly „updates" proxy and frequently deadlocks
    - Site contact assures problem occurs only with FZK CE

- Roughly 2 weeks trying to locate the issue
    - Easy to reproduce - affects most jobs from all VOs
    - Not *reliably* reproducible - 10% of jobs just work
    - Check implemented/known custom hacks, docs, scripts, code, …

- Preliminary results: Frustration
    - VO still has to babysit/restart/hack its client, issues only at FZK
    - Site staff doubts determinism of the universe…

# Case Study: ProxyExpirationTime

- Question to the world: How does this even work? [answers paraphrased]
    - Site: „It actually does not. No one complained, so we never looked."
    - Devs: „[Holiday pause] We made a patch just now in a few hours."
    - FZK: „Wait, what?"

- Post-Mortem Debugging
    - **Problem exists for all ARC-CE versions in the last 6 months** *likely much longer*
    - Functionality was „used" by at least one VO client tool
    - Functionality was patched on several WLCG sites

- Sites did not know others had the same problem or fixes
- Site contacts did not know others had the same problem or fixes
- Developers did not know there was a problem
- *We wasted precious time needed for debugging other problems…*

Personal [Site + Experiment] Perspective

- ARC-CE in WLCG has a problem due to technical debt
  - Manually maintained patches delay trouble shooting + updates
  - Site/VO specific hacks means duplicate work (of dubious quality)
  - *We probably spend most time chasing known problems*

- Custom patches not acceptable for either site or experiments
  - Sites need official fixes to avoid technical debt
  - VOs need official fixes to rely on features and services
  - *Temporary hacks must be semi-official, push for official fixes*

- Current problems likely hurt badly due to scale
  - FZK-LGC2 runs 2-10x jobs versus other sites (due to VO mix)
  - Issues will (probably do) affect other sites now or in the future
  - ***Need to debug/fix/address such issues at WLCG scale***

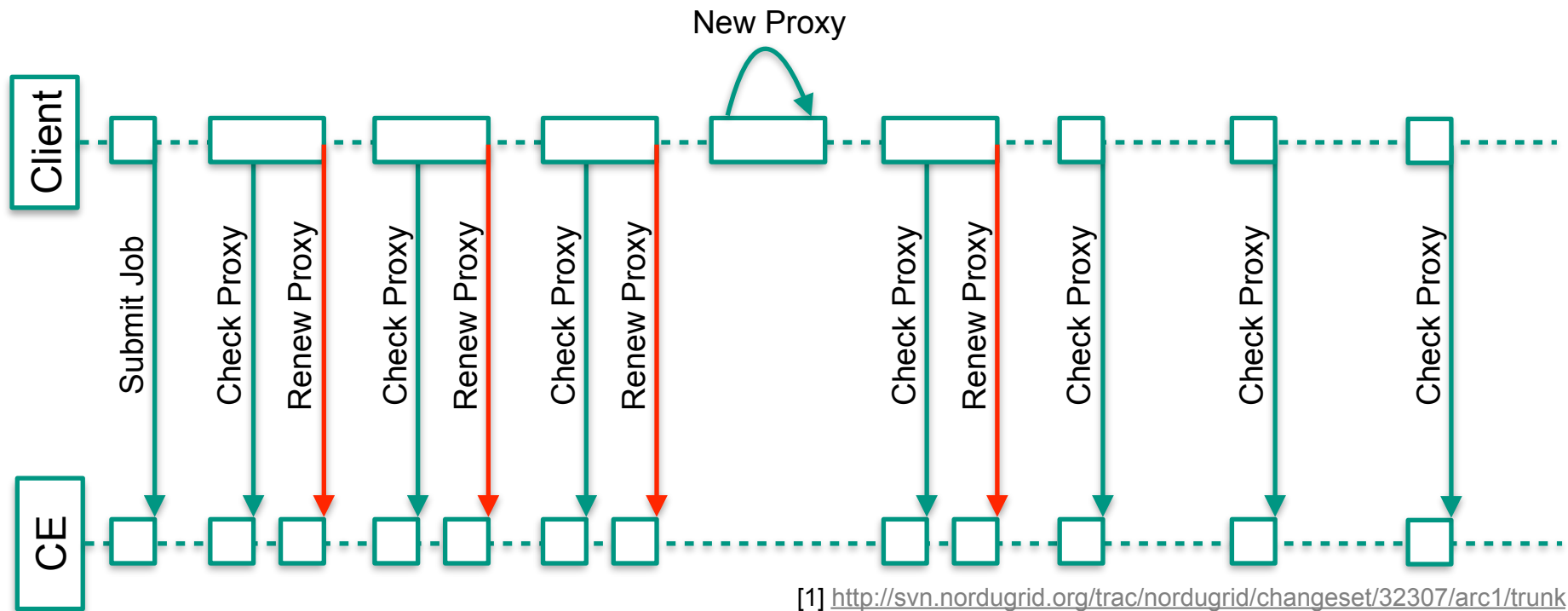# Conclusion for this talk

- Sites with red name are technically broken…

Number of Jobs per Site
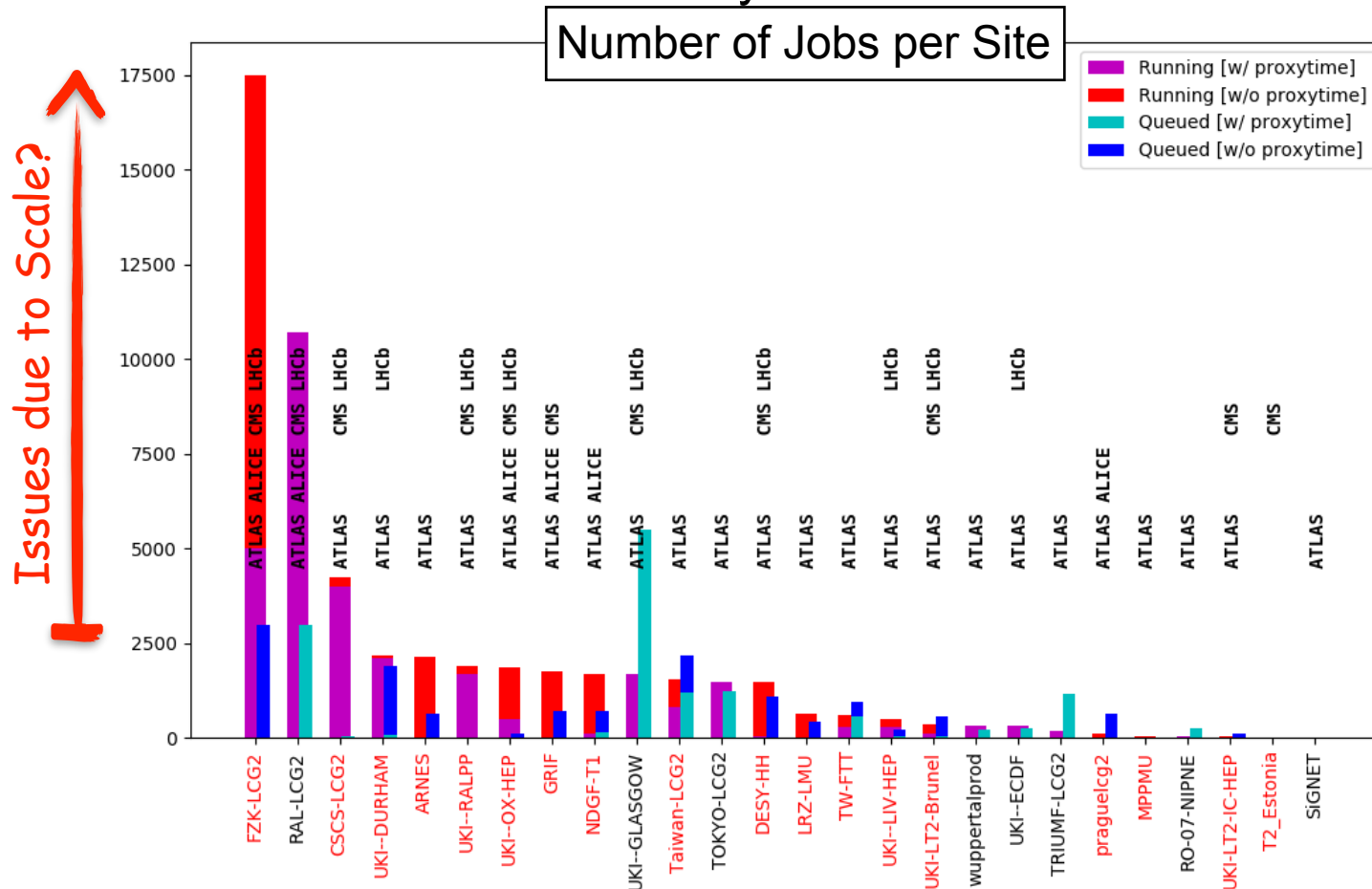
- …what can we do about it in the long run?

Backup

Backup: Proxy Lifetime/Update Issue

- Job proxy lifetime not visible after submission[1], only after proxy renewal
- ARC-CE only accepts proxy with longer lifetime for proxy renewal
- Client sees 0 proxy lifetime, constantly renews with same proxy
- Client can deadlock during proxy renewal[2]

New Proxy

Client

CE

Submit Job

Check Proxy

Renew Proxy

Check Proxy

Renew Proxy

Check Proxy

Renew Proxy

Check Proxy

Renew Proxy

Check Proxy

Check Proxy

Check Proxy

[1] http://svn.nordugrid.org/trac/nordugrid/changeset/32307/arc1/trunk
[2] http://bugzilla.nordugrid.org/show_bug.cgi?id=3534