NSTX-U Software Support & Trajectory Discussion

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Where we are now?

NSTX-U Last run 2016

- Cluster Upgraded RHEL5->RHEL6 2016
- Cluster Upgraded RHEL6->CENTOS7 2020

Experienced SW support personnel have retired during this time

- Bill Davis
- Tom Carroll
- Kevin Ying
- Paul Henderson

Good hires in HPC over the past few years..no experience supporting Ops

How Did we get here?

NSTX-U SW has been on “life support”

- Conscious decision to not fund new hires (replacements) or do routine SW work
- Labor coverage was reduced, Research budget was reallocated
- But..Data has remained available over 99% of the time (M&RP)

What is Technical Debt?

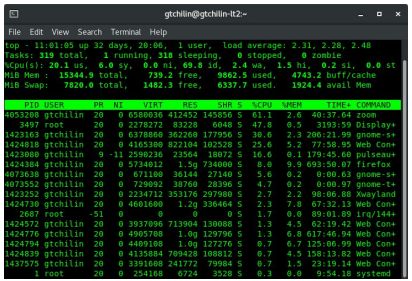
Technical debt (also known as **design debt**[1] or **code debt**, but can be also related to other technical endeavors) is a concept in software development that reflects the implied cost of additional rework caused by choosing an easy (limited) solution now instead of using a better approach that would take longer.[2]

--Wikipedia

How Did we get here cont'd?

HPC going in a new (appropriate) direction

- Not prioritizing "terminal server" usage model
- Compatibility with PU hosted systems
- More advanced capabilities, (ex. GPU)
- Reduced module support
- Reduced legacy, specialized, package support
- Rapid upgrade schedule, provide close to bleeding edge



What about PCS?

In Good shape:

- Monthly meetings held during the outage (with a brief pause).
- Four I&C Staff members involved in this support
  - Frank Hoffmann
  - Roman Rozenblatt
  - Chris Barber
  - Marc Sibilia
- Working with Devon and Dan to develop needs list, set direction

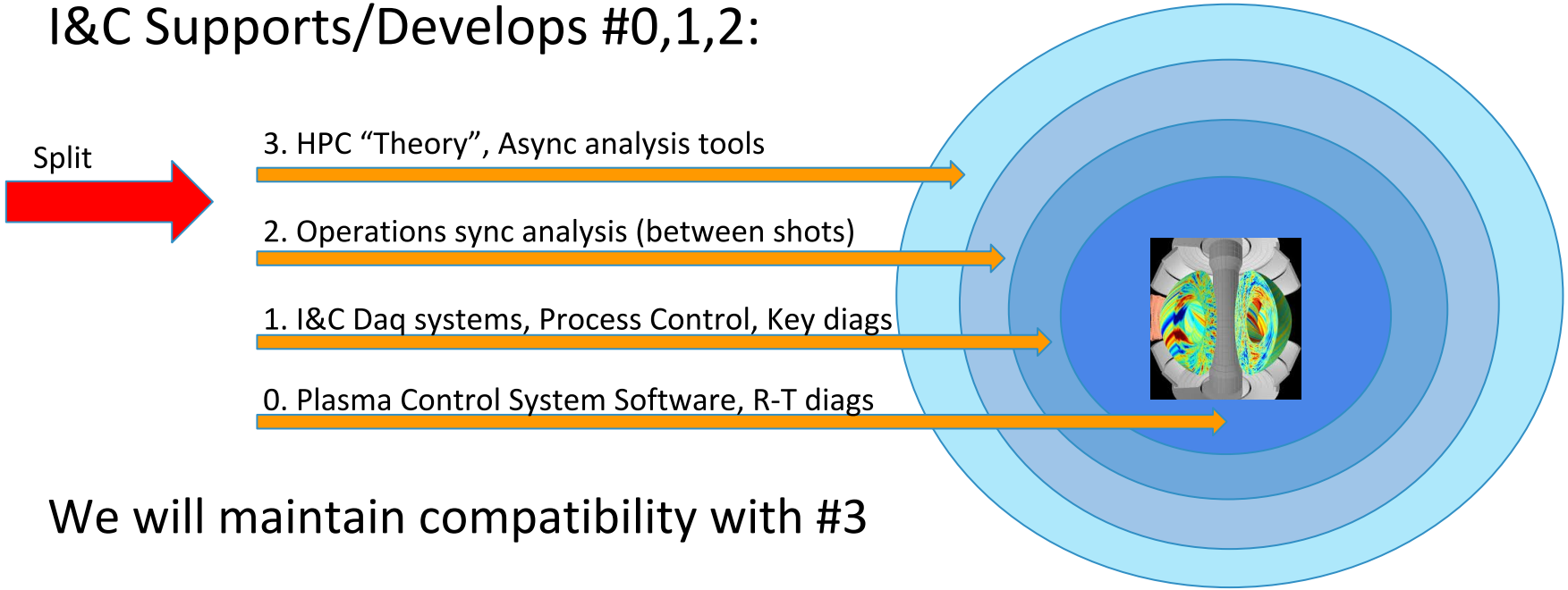
Where do we go from here?

- New hire: NSTX-U SW support personnel
  - Job Description will be written over the next couple of weeks for a mid-level SW Engineer
- Discussions with Bill Dorland & main campus to borrow a “strike team” to aid in debt pay-down

- Stan, Devon and I have worked out a list of tasks to work on this year

Restructured Support Model

I&C Supports/Develops #0,1,2:



We will maintain compatibility with #3

Proposed Architecture change:

Splinter a NSTX-U driven “mini-cluster”,

- Effectively a new nstxpool
- Prioritizes stability for operations support
  - Slower to change SW configuration
  - Upgrade policy is much less aggressive
- Configuration maintained by Ansible (I&C has been using this for its servers for 2+ years now)
- Move systems to FCC to be “closer” to most recently acquired data, camera data

Discussion Time.

Thanks for listening!