STATUS OF THE CIRCUS

Marco V., Jakub Z.

CIRCUS, AEGIS CONTROL SYSTEM

- CIRCUS is the Control System of the AEgIS Experiment, managing almost all the hardware

- It is a fully distributed democratic system that unifies all computers in a single entity

- All code is divided in MicroServices, running asynchronously and independently side-by-side

  - Ease debugging and code development

  - Guarantees scalability and expansion → futureproof

- Three watchdogs ensures system stability and safety

- It is powered by TALOS, the library managing the backend (and this explains a lot of naming confusions 😅)
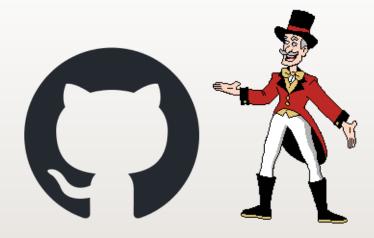
FIRST THINGS FIRST: STABILITY

Data campaign of November went extremely smooth

Most Hbar data taken during nights&weekends by CIRCUS running unsupervised

RELEASED OPEN SOURCE! (FINALLY!)

- Now both TALOS and CIRCUS are released open source on GitHub:

  - https://github.com/drvolpe/CIRCUS

  - https://github.com/drvolpe/TALOS

- No release of compiled code

  - It would have worked with LabVIEW 2020 sp1 anyway

  - We could release GNU LGPL 3.0

- Entire codebase manually checked

  - Some well-hidden bugs spotted and fixed

  - Found a couple of points that could be reworked (no worries, we'll never do it 😆)

OF COURSE, NEW uSERVICES

- Three new uServices added:

    - PCO Edge Camera (i.e. new 1T MCP imager)

    - Hikrobot Camera (i.e. Portable Trap camera) (thanks Sara and Tommaso)

    - Detector Cross Rotator (i.e. Mirror/5T MCP actuator controller) (thanks Tym)

- New *AEgIS Generic Camera* class to handle common camera functions

    - Mainly formatting and saving images (now losslessly-zipped TIFF)

ARTIQ LIBRARIES CLEAN UP AND RE-ALIGNMENT

- Since last November our ARTIQ Libraries have diverged in more than 3 branches:
  - devel (main)
  - ions
  - hbar
  - ...

- A careful "semi-manual" merge was done, incorporating fixes and development from all the branches back into *devel*

- We need to increase the use of feature-branches!

FUTURE ADDITIONS

- On Tamer, new "Stop Run (let it finish)" in addition to current "Stop (actually Kill) Run"

- Possibility of "injecting" a schedule (i.e. appending it to the currently running one)
  - → Last bit needed to run *ParticleServer* properly with parallel execution

- Hitting "Big Red Stop Button" shouldn't put the system in Abort

  - Guardian will send the "Ladies and Gentlemen, it has been a pleasure" message before dying

- Removal of internal Shared Variables for unlocking LabVIEW 64bit upgrade

  - This will remove the "*Shared Variable Update Notification*" – nobody ever used it…

IMPORTS NEEDED

- Enviro Overview page generator → new uService

- **Positron System!!!**

THANKS FOR LISTENING!

Questions & Comments?

TWO BUGS HAUNTED US 👻

- DAQ Sender (almost) infinite errors when (sometimes) stopping Runs

  - Minor, only happen by user action (→ gets noticed)

  - Solvable

- Avantes Manager: sometimes it hangs and brings down with it the entire EKSPLA Guardian

  - Major: can happen in the middle of the night, and put system into Abort

  - Mitigation was to turn it off during night (not a great mitigation…)

  - Swapping master ←→ slave improved it but didn't really solved it

  - Still not clear path on how to solve it