

Recent Progress - Software

Software:

- **SVT:** Work begun on WP agent, thanks to the collaboration with Angelina and Jelena
first issues to familiarize with the code already in progress -> pushed and tested / not merged
- **ITS3:** The learning curve is slower, the task is broader,
ideally, I would like to have some concrete ideas / proposals / commits sometime next week

Recent Progress – Wafer Probing

Wafer Probing:

- **TWEPP plots** and tests information have been **added** in a draft form **to Overleaf**
- A **standalone Overleaf** has been created for **TWEPP proceeding** to be shared soon, the aim is to bring it to a good shape by the end of the weekend (deadline for JINST is 6th November)
is there any internal SVT / ITS3 review to go through before that? How?
- More tests on NKF7 wafer to be done to have larger statistics and improve the plots for the main paper, postponed to give priority to Software development
- Last Friday chat with Davide Ceresa (ESE IC designer) summary in next slide, TWEPP follow-up
- Brief chat with ESE lpgbt designer now working on Picopix for LHCb VELO (4x data out @25Gb/s) for which also WP might be interesting, to be followed up...
it might be worth proposing to Federico an ESE-ME “Topical” for the whole community?

Coffee chat with Davide Ceresa

Approximate cost that the group had to sustain to test **CMS outer tracker frontend ASICs**:
(internal info – tracking EDH documents for precise reference in Notion work in progress)

- | | |
|---|---|
| 1. Custom Probe cards | design ~20k + manufacturing ~20k |
| 2. Testing system (software test routines) | ~ 200k |
| 3. Testing time per wafer | ~ 150/wafer ~1kwafer -> <u>~150k underestimated</u>
<i>+ shipping + visual inspection + storage...</i> |

Point 1) is inevitable, **points 2) , 3) could be significantly lowered testing internally**

Coffee chat with Davide Ceresa

On top of the economical advantage there could be some others:

- ASIC designers had to devote a lot of time to the Procurement aspects
- ESE engineers characterized initially the wafers themselves at CERN (cantilever probing)
their data acquisition / testing system was completely redesigned for Production testing
-> duplicated effort could be greatly optimized by working in synergy for characterization and Prod QC
- In depth studies of low-yield QC results are not easy to arrange with the industry
-> in case further studies / characterization are needed during Prod QC, testing in house might be helpful

TAKEAWAY:

the group recognizes this WP development could have great benefits and would be interested to collaborate,
BUT large production for CMS LS3 upgrades are finishing/ed,
probably a chat with Federico could help to understand future prospects