PHAN-Pan TA 4

present in discussion:
A. Redelbach(FIAS), W. Rhode (Dortmund) <- coordinators
T.Ferber, F.Gaede (DESY)

propose a new title:
Real Time Data Analysis and Selection
(irreversible decision on dropping data)

Potential work packages:

- **algorithm optimisation for specialised hardware** (FPGA, GPU, TPU,..)
    - input precision reduction
    - method development for hardware and software co-design
        - high level synthesis (porting to FPGAS)
    - ML techniques
- **real-time feature extraction and pattern recognition**
    - clustering techniques
    - fast tracking algorithms
    - anomaly detection
- **hierarchical data selection systems**
    - irreversible data reduction (trigger decision)
    - background and noise filtering
- **prototyping and demonstrator setups**
    - specialised hardware 'as a service'
    - test and benchmark setups
- **ML methods for data quality assurance**
    - online monitoring
    - outlier detection

- -> proposal to move "Anomalie Detection for Predictive Maintenance" to TA4 (G.Kasieczka) and merge w/ QA
    - interested partners (**Hamburg, Heidelberg, Dortmund)**
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Synergies with

- TA3 through ML activities
- TA1 through test bed and benchmark setups ?

-> need to fill with life and understand who is interested in addressing the individual tasks

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further interest in participating in TA 4:

- **Dresden** (A.Straessner)
- **Mainz** (V.Buescher)
- **KIT** (S.Bahr ?)

-> need clarification from contact people

Interplay with AstroNFDI (H.Hessling, Berlin)

- similar activities:
    - fast data selection algorithms (ML et al)
    - software development for dedicated hardware
- **should mention synergies in proposal !**