Automatic error diagnosis and recovery

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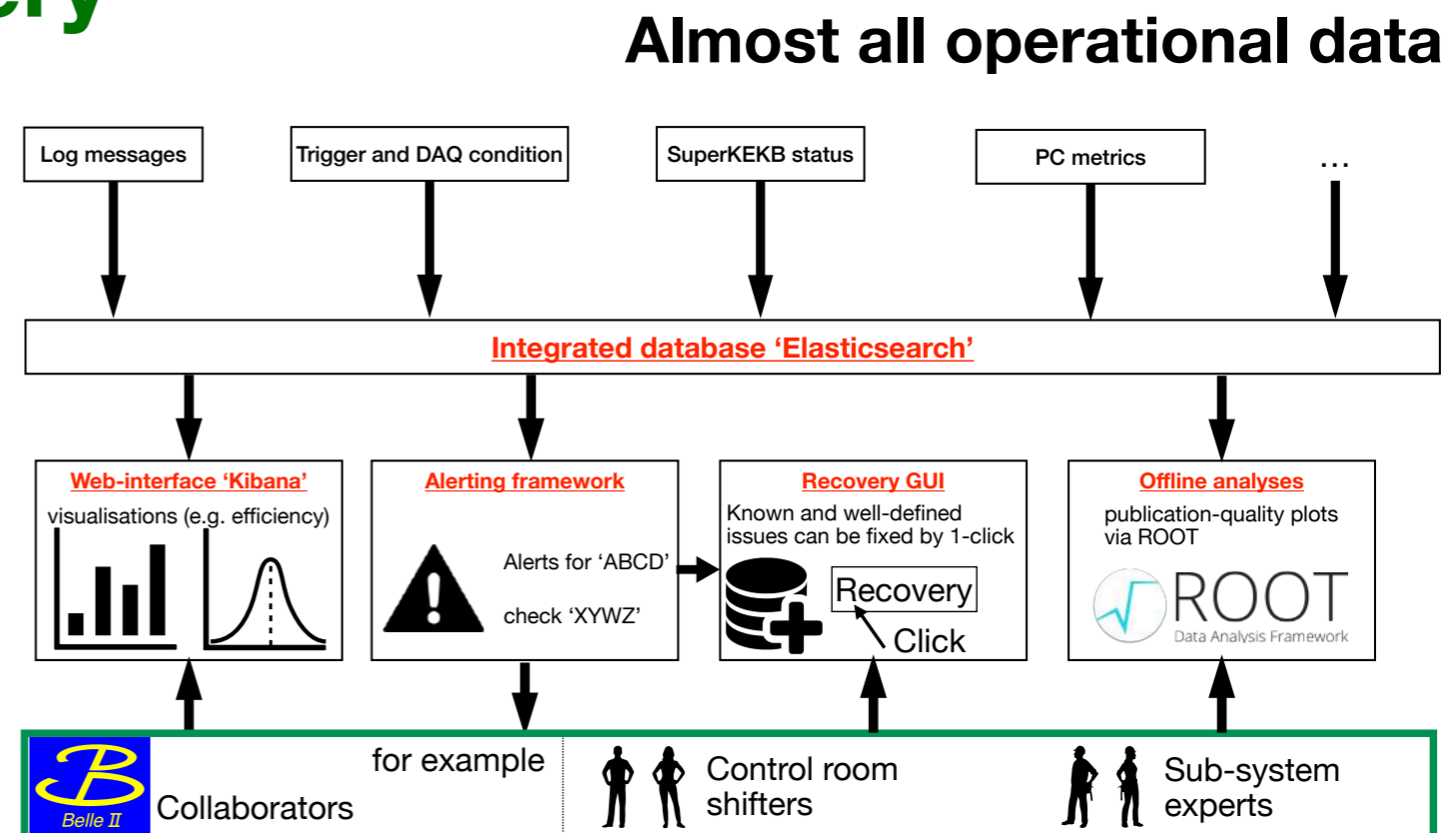Contribution ID: **#145**

Belle II

- Search for new physics beyond SM using the data provided by SuperKEKB
- We should NOT lose any collision data
  - ➡ **Error diagnosis and Recovery** is a key
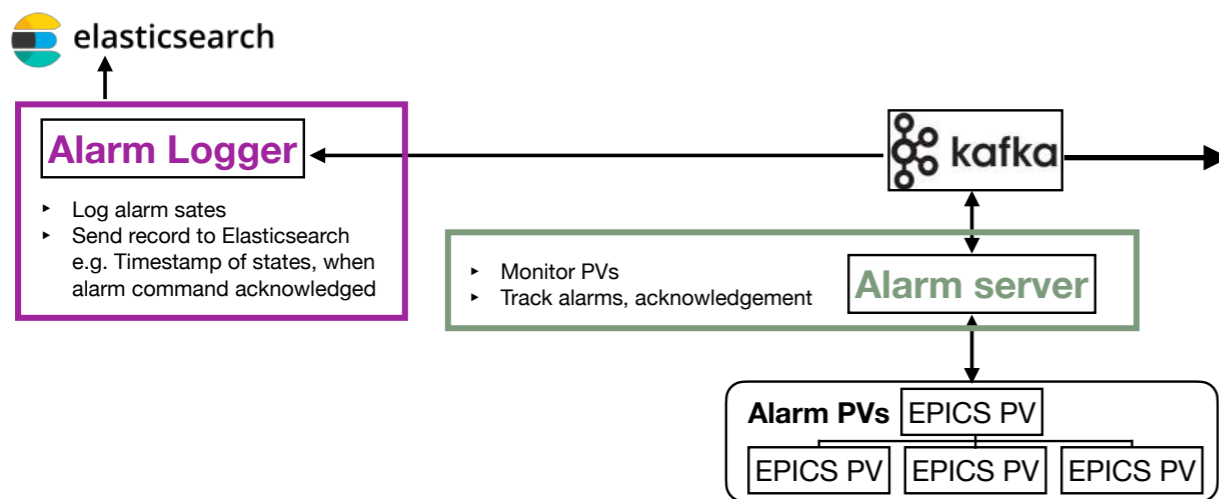
Error diagnosis and recovery

- Analyses on web-interface
- 1-click (manual) recovery on GUI
- Auto-pilot process
  - ‣ Automatic run-control
  - ‣ Automatic recovery

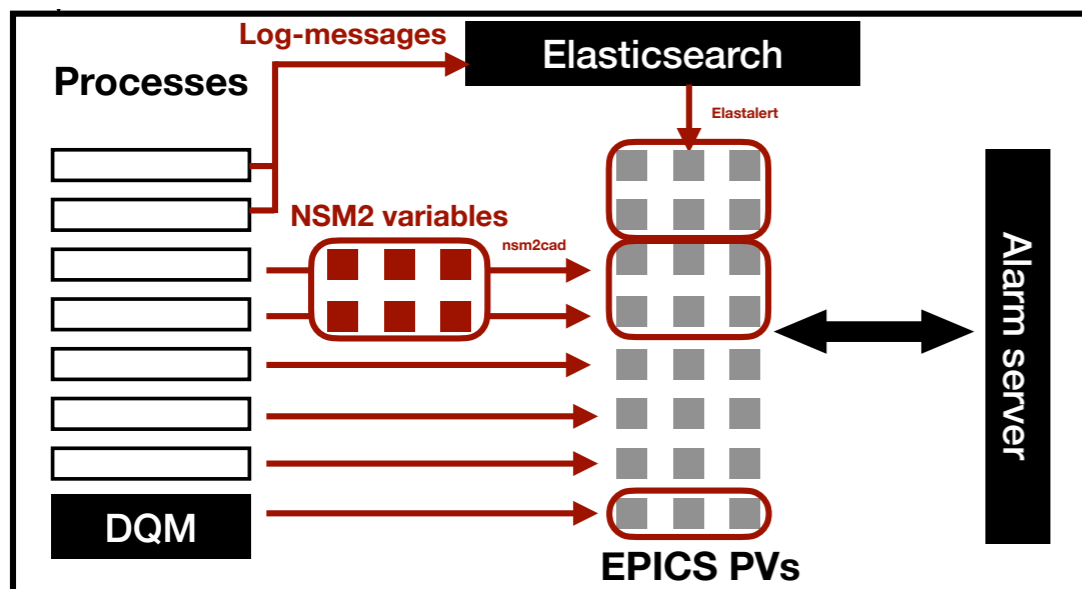➡ Improved our data-taking efficiency minimising time without data-taking

Almost all operational data

| Log messages | Trigger and DAQ condition | SuperKEKB status | PC metrics | ... |

Integrated database 'Elasticsearch'

Web-interface 'Kibana'
visualisations (e.g. efficiency)

Alerting framework
Alerts for 'ABCD'
check 'XYWZ'

Recovery GUI
Known and well-defined issues can be fixed by 1-click
Recovery ← Click

Offline analyses
publication-quality plots via ROOT

Belle II Collaborators   for example   Control room shifters   Sub-system experts

Alarm system

- Not to miss any important events, especially on detector safety
- To help our operators to take correct actions

Alarm Logger
- Log alarm sates
- Send record to Elasticsearch e.g. Timestamp of states, when alarm command acknowledged

- Monitor PVs
- Track alarms, acknowledgement

Alarm server

Alarm PVs | EPICS PV
EPICS PV | EPICS PV | EPICS PV

Belle II Alarms

PXD	SVD	CDC
TOP	ARICH	ECL
KLM	MDI	TRG

Overview, linking to the sub-pages

Alarm tree

Active alarms
- DCS: Detector control system and detector safety-related alarms
- DAQ: Data-acquisition (e.g. front-end electronics) alarms
- DQM: Interfaced to the data quality monitoring system

Acknowledged alarms

- Approximately 14k EPICS PVs
- Various types of PVs

CDC DCS GUI

POSTER MAP

Here