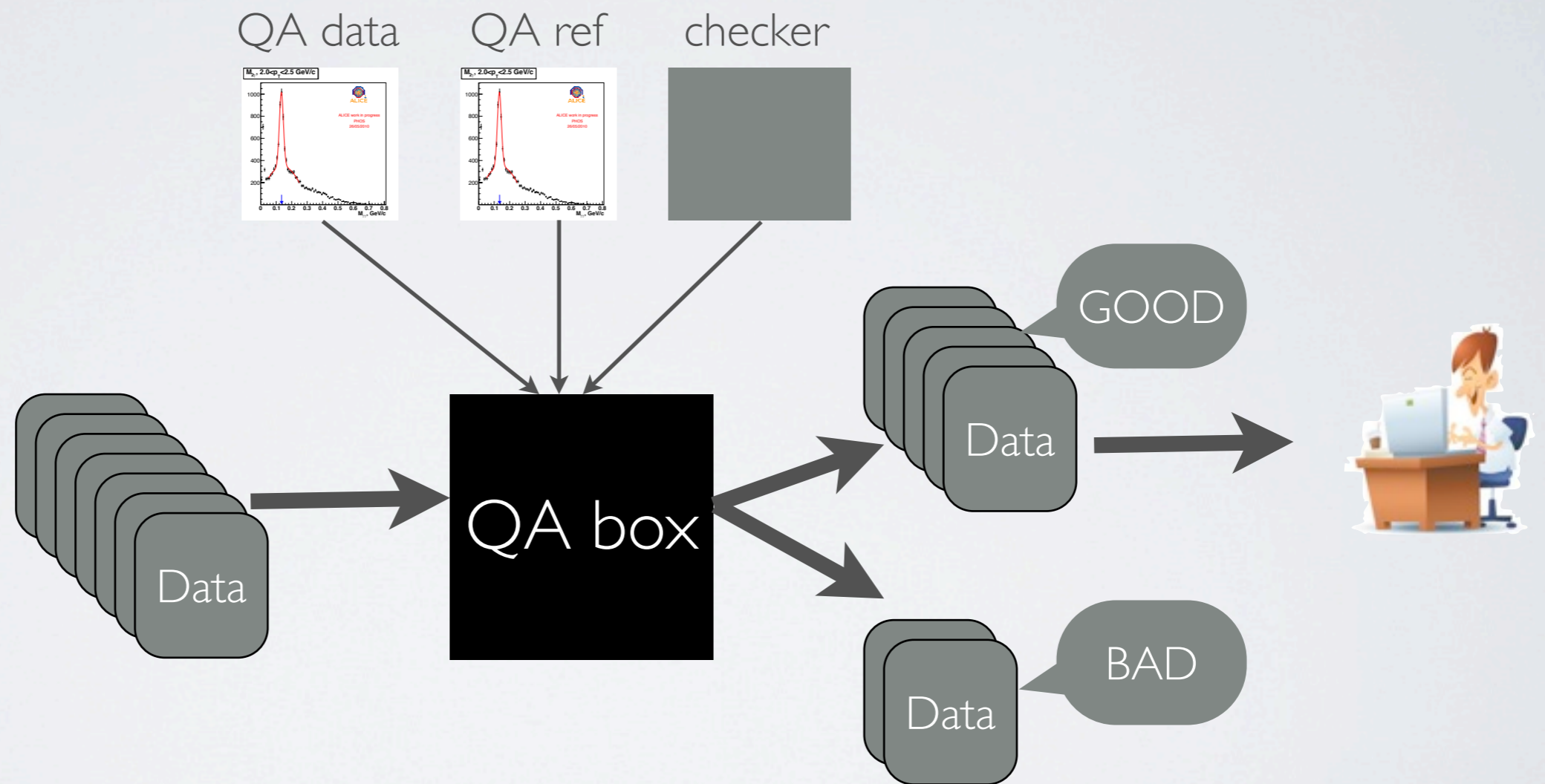


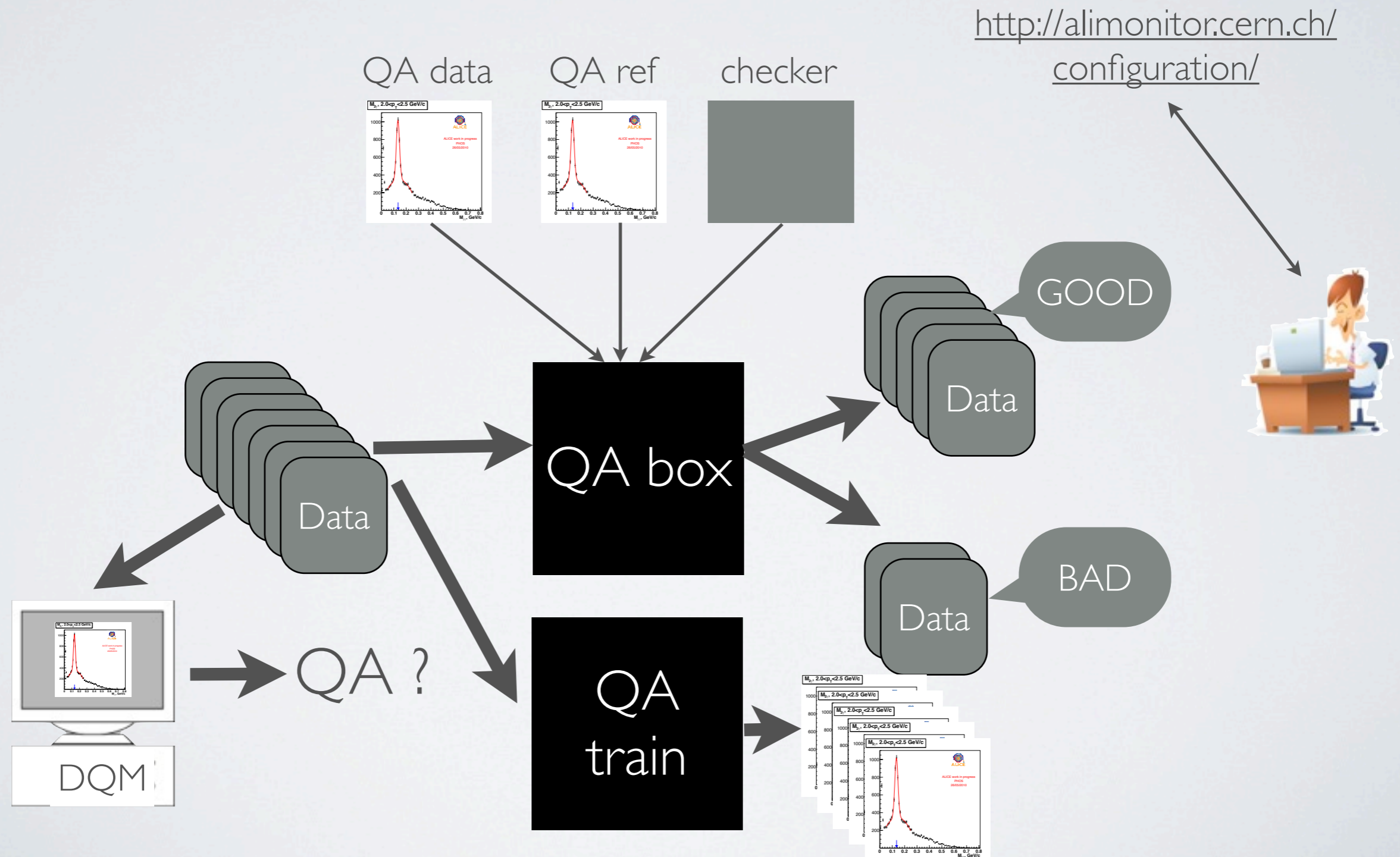
QA

Online/Offline Quality assurance

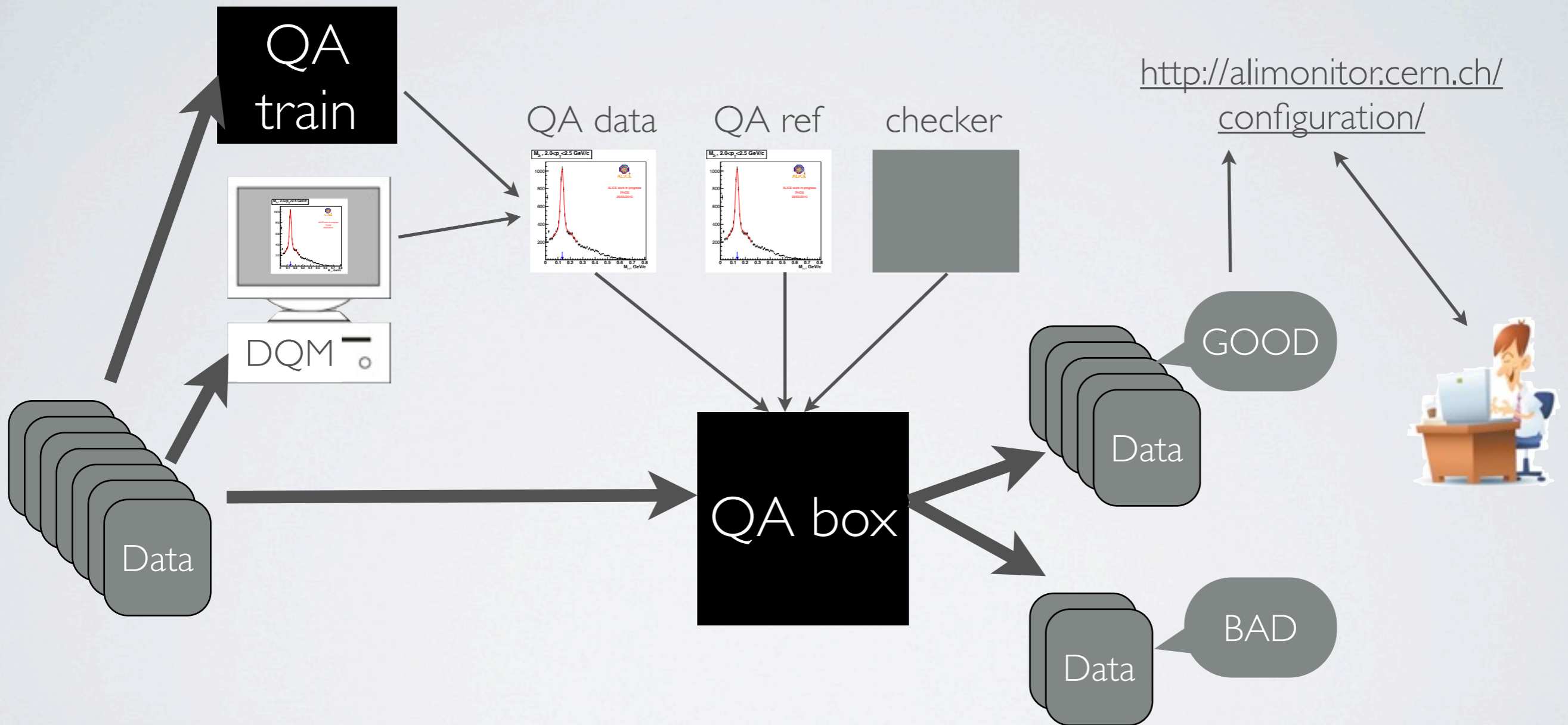
WHAT I THOUGHT IT SHOULD BE



WHAT IT IS NOW



WHAT IT COULD BE



Requirements

- Check the correctness of the data produced at various steps of the data processing:
 - ▶ Raw QA detector by detector
 - ▶ Global QA from reconstruction
 - ▶ Global QA from analysis
- Make use of the same algorithms online than offline
- Provide the users with information flags and give them access to the data being monitored
- Stay simple (data format, quality check, quality check result)

Ubiquitous QA

- QA is now requested everywhere:
 - ▶ On line (on the flight, limited statistics)
 - Each detector has its own low level raw QA, they call it monitoring for the detectors shifter
 - Each detector provides high level raw QA for the QA shifter
 - Offline provides display and high level global QA from reconstruction for the QA shifter
 - Offline provides low level global QA from analysis of reconstructed data for the QA shifter

Ubiquitous QA

- QA is now requested everywhere:
 - ▶ Offline (full statistics)
 - Low and high level raw and high level global QA produced for all data during the first pass reconstruction to be monitored by QA/offline (??) shifter
 - Low level global QA produced for selected sets of reconstructed data on the CAF for physics experts
 - Low level global QA produced for all data by the analysis train for physics experts

QA Framework

- The QA object (result of the QA check):
 - ▶ one bit map per detector
 - 5 processing levels (Raw, Sim, Rec, ESD, Analysis)
 - 4 severity levels (Info, Warning, Error, Fatal)
 - Stored in a single root file
 - ▶ provides naming

QA Framework

- Creation and accumulation of data
 - ▶ QA data are TH1, one clone per Event Specie, created only when needed, with user flags (expert, image)
 - ▶ All QA data are stored in a single root file making use of a directory structure
 - ▶ Data are accumulated during cycles (# of events)
 - ▶ Detectors implement only booking and filling
 - ▶ Filling is done when data are in memory

QA Framework

- Checking
 - ▶ Checking is done by comparison with reference data
 - ▶ By inspection of the content of the root data file
 - ▶ Detectors implement the checking algorithms and set the severity flag
 - ▶ An image of selected QA data is generated

At run time

- Offline
 - ▶ raw QA can be produced stand alone from raw data chunks (`$ALICE_ROOT/prod/cosmic/rawqa.sh`) or RecPoints (`$ALICE_ROOT/prod/cosmic/recpointsga.sh`)
 - ▶ raw+detectors+global QA are produced during reconstruction
 - ▶ Low level global QA are produced in dedicated analysis tasks (Andreas Morsh is the QA train conductor)

At run time

- Online implements the QA framework in AMORE agents (see presentation by Barthelemy)
 - ▶ raw QA detector by detector for QA shifter and for detector experts
 - ▶ raw × raw correlations for ...
 - ▶ high level global QA from a reconstruction agent
 - ▶ Event display from reconstruction

Request

- Retrieve the Event Specie during online processing or the run type to allow to distinguish physics and calibration runs
- Get a snapshot of the QA reference data in OCDB on a disk local to the WFN running the QA AMORE agents → done

QA usage

- Online
 - ▶ Detector shifters low level monitoring
 - ▶ DQM shifter high level monitoring of the quality of detectors data and reconstruction (shifter histograms + EVE event display)
 - ▶ Who scrutinizes the results of the QA analysis train run on CAF ?
 - ▶ Who looks at the QA results and QA data of the reconstruction of real and MC data ?
 - ▶ Are automatic procedures requested ?

Detectors status

- ▶ ACORDE
 - Checking will be done by comparison with reference data, reference data being produced with new event generator
- ▶ EMCAL
 - Reference data being introduced
- ▶ HMPID
 - Implementation of run types and reference data in progress

Detectors status

▶ SPD

- SPD: checker for data and simulation on going development
- SDD: simple checks for raw done; check for recpoints and sim being implemented
- SSD: Checkers being tested

▶ TRD

- No checking done

Detectors status

- ▶ PMD
 - Too many histograms, no checking implemented
- ▶ VZERO
 - Reference data to be extracted; checker to be improved
- ▶ PHOS
 - no checking implemented, no reference data
- ▶ T0
 - all done

Detectors status

- ▶ MUON
 - More histogram might be added, checking to be improved
- ▶ FMD
 - Done with room for improvement
- ▶ TPC
 - Changes in the QA data and in the checking available in the trunk, ... to be ported to the release

Detectors status

- ▶ TOF

- QA update in progress, checker to be implemented, reference data to be deployed