# SwissFEL Beam Synchronous Data Acquisition - A Sneak Peek Under the Hood

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## Overview

The SwissFEL Machine, Beamlines and Endstations will be based on the same data acquisition system. Data will be recorded continuously and will be accessible consistently from all parts of the facility.

## Data Streaming

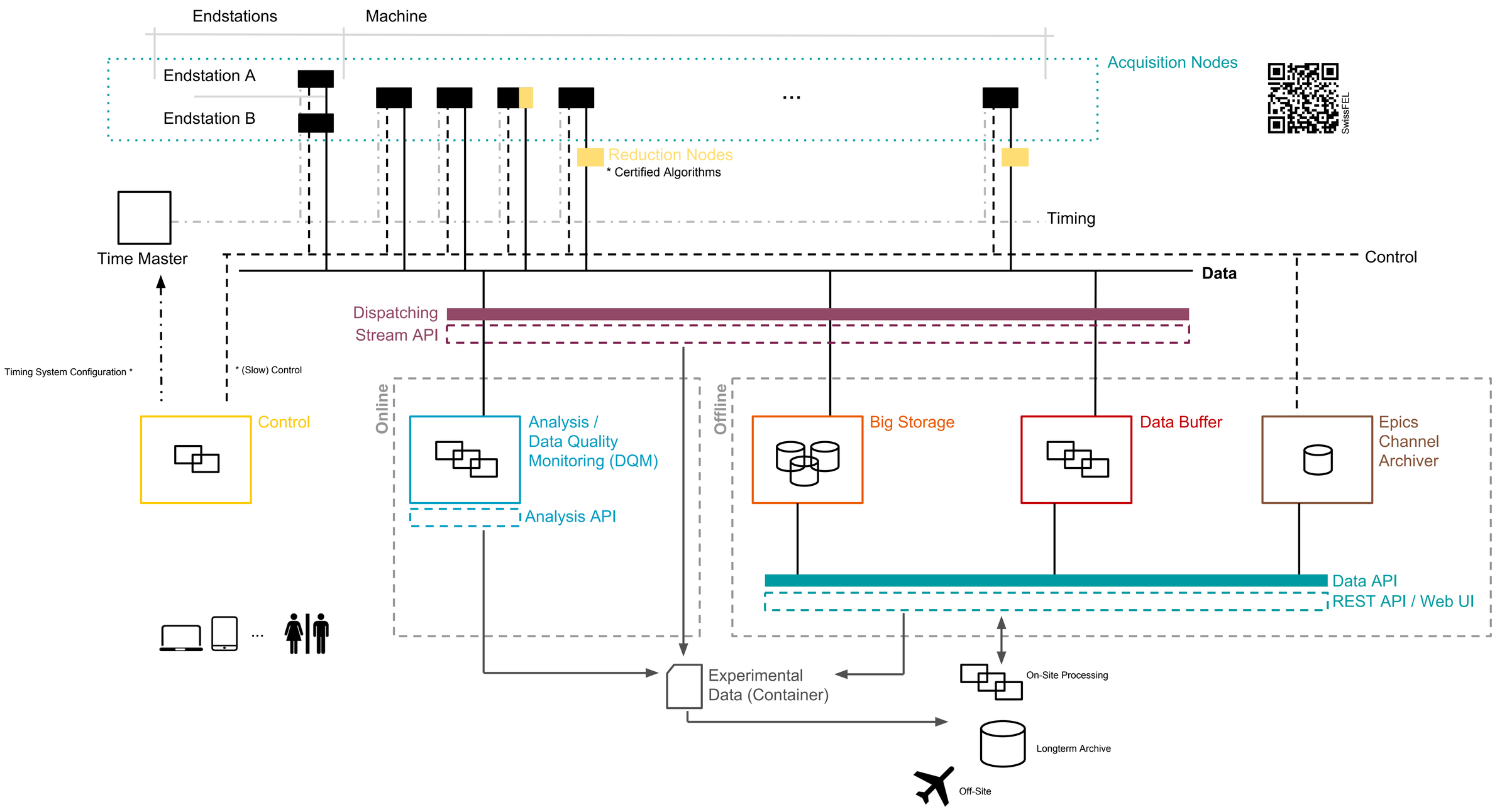
Data will be streamed out continuously from the acquisition nodes as soon as available. Whenever possible most of the data will be reduced before streaming or before entering the other parts of the DAQ system.

## Online/Offline Systems

The online system (Dispatching, Analysis / DQM) is used for online data processing and monitoring. The offline system (BigStorage, DataBuffer, *Epics Channel Archiver*), for longterm analysis and persisting data.

## Dispatching / Stream API

Dispatching takes care of "realtime" synchronization of data without introducing a single point of failure. Through the Stream API users can request synchronized and customized data streams.




## Analysis / DQM

The system is aimed to immediately analyse and monitor data to improve the performance and efficiency of operators and experimental groups during a beamtime. Custom user code can be seamlessly integrated into this system.

## DataBuffer / BigStorage

The DataBuffer is a distributed, scalable NoSQL cluster for persisting scalar and array data. The BigStorage is based on a GPFS cluster for persisting image data.

## Data API

The Data API allows to transparently query and access data from all parts of the facility and subsystems. On top of this API there is a web based UI to directly visualize and correlate data.

## Details

More details on:
https://github.com/paulscherrerinstitute/icalepcs2015_swissfel_poster

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