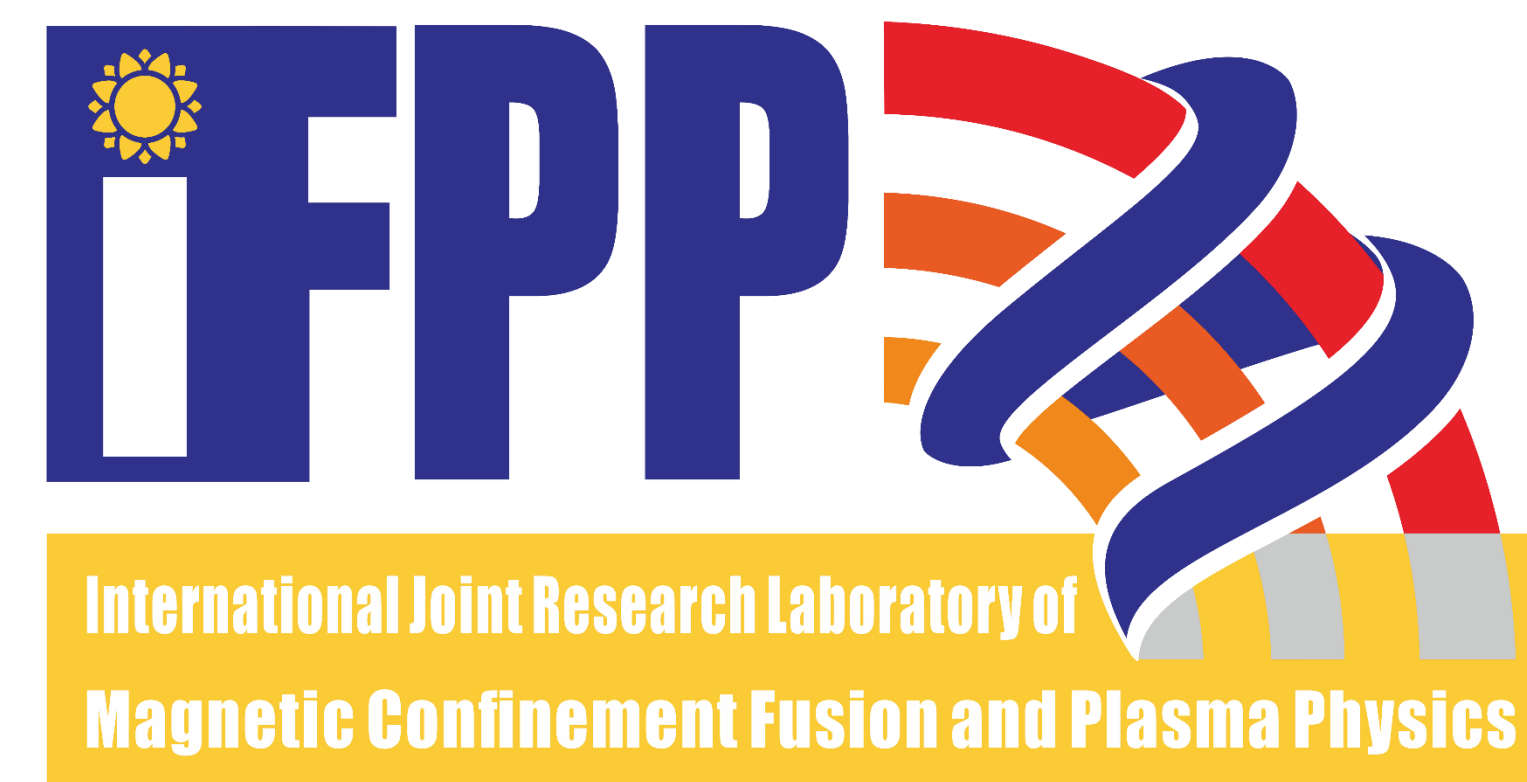# A full stack data acquisition, archive and access solution for J-TEXT based on Web technologies

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## Introduction

- The architecture of the existing data acquisition, archiving and access system on J-TEXT is not flexible enough to meet new requirements.
- A new software framework based on Web technologies was used for building the new solution.
- Data acquisition system supports different types of DAQ device and local data file.
- User can access the experiment data without noticing the types of the data file.
- All resources in the system including control and experiment data can be accessed by UDA in a uniform format.
- Web pages as the user interface.

## CFET and Unified Data Access

- A CFET Thing is a class which has it's own control logic.
- A CFET Host is a program which contains some CFET Things.



Accessing Resources

- A Thing's Status/Config/Method/Event can be accessed through the Web by URIs, and Things contact each others by their S/C/M/E.
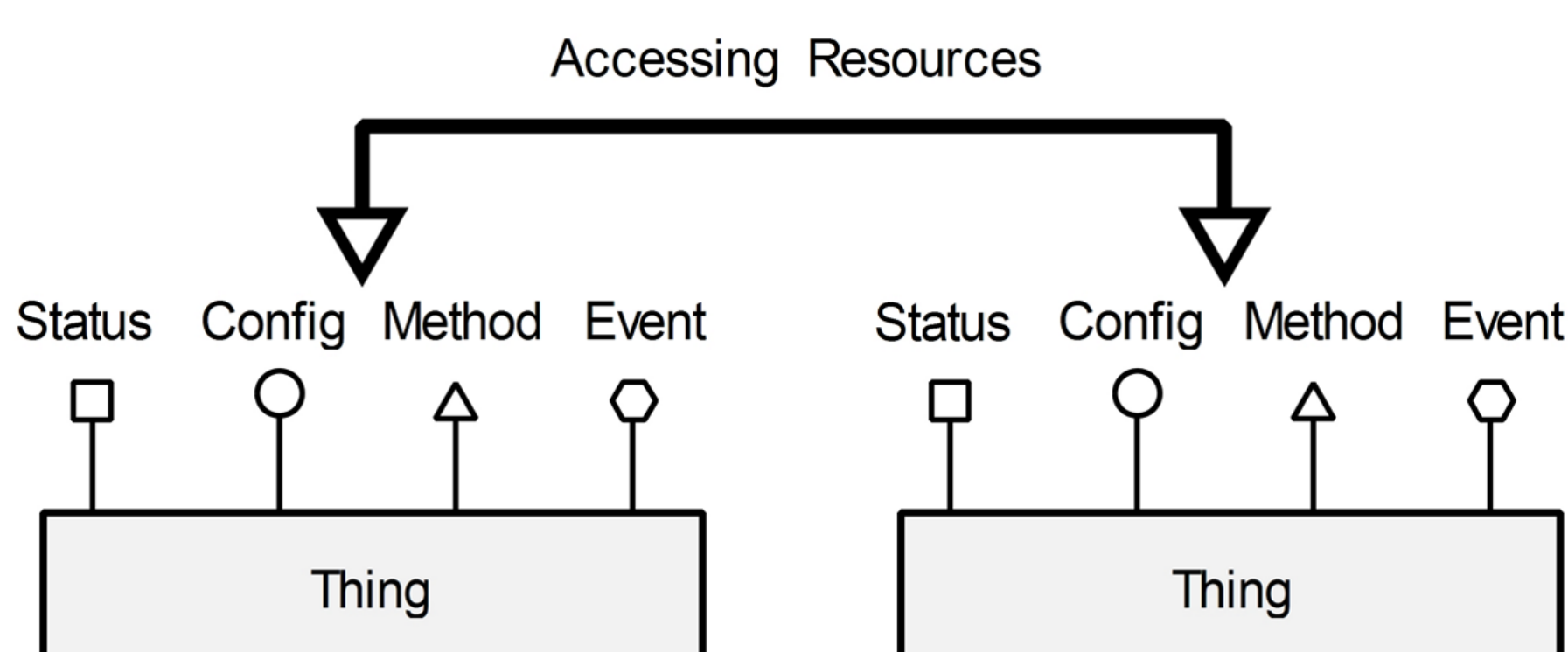
**Unified Data Access**

All resources in CFET system can be accessed by an URL through the internet. It is just the same as the URL we meet in the browser and someplace else. The head of the under UDA is the address of the CFET Host and in the end is the query string. One URL can locate an resource of a CFET Thing in a CFET Host of a CFET CODAC system.

http://192.168.1.1/tagServer/dataComplex/0/ecei_group1_ch1?start=0&stride=100&count=1000&block=1

## DAQ system
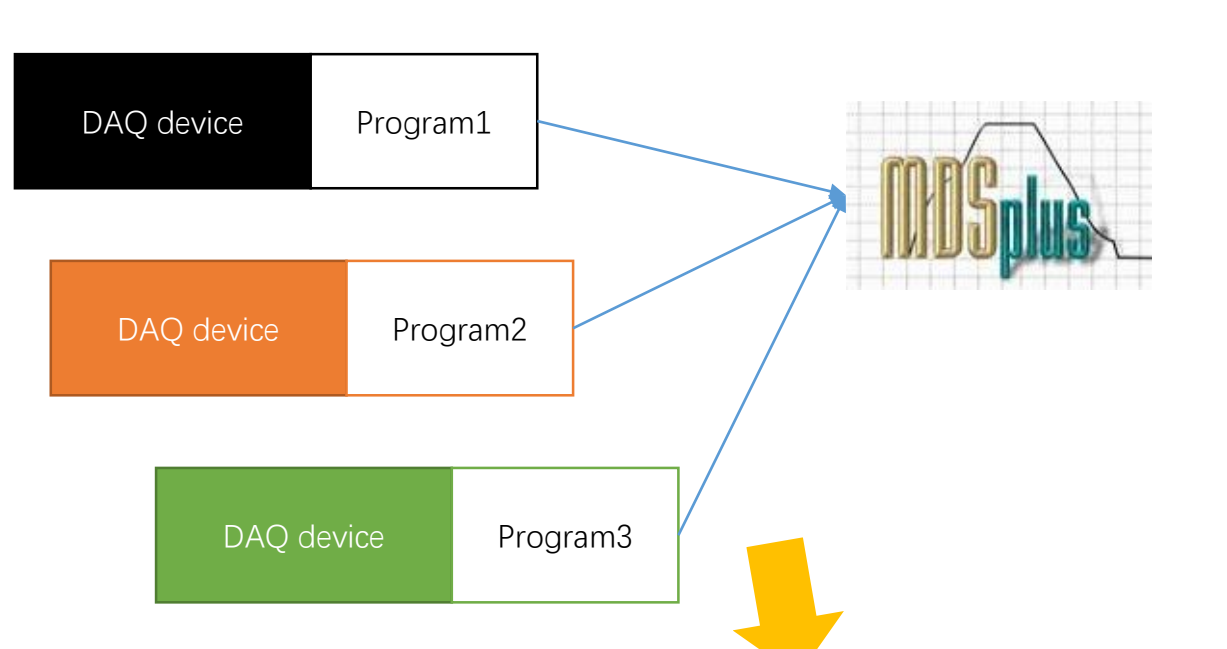


- A flexible architecture to facilitate the addition of new features and later modifications
- Acquisition systems does not rely on specific hardware
- Data storage and uploading do not depend on a specific database or file format but have supports for them like HDF5
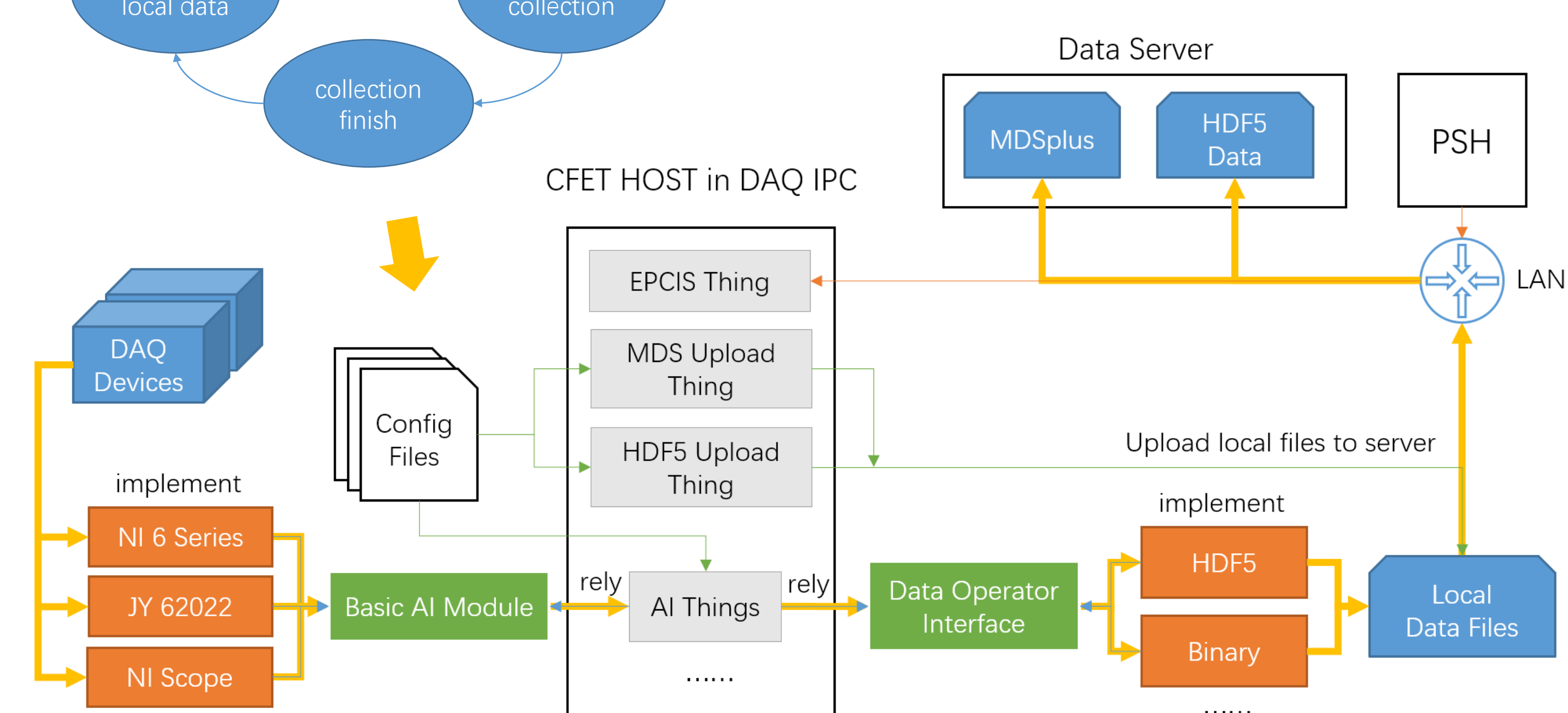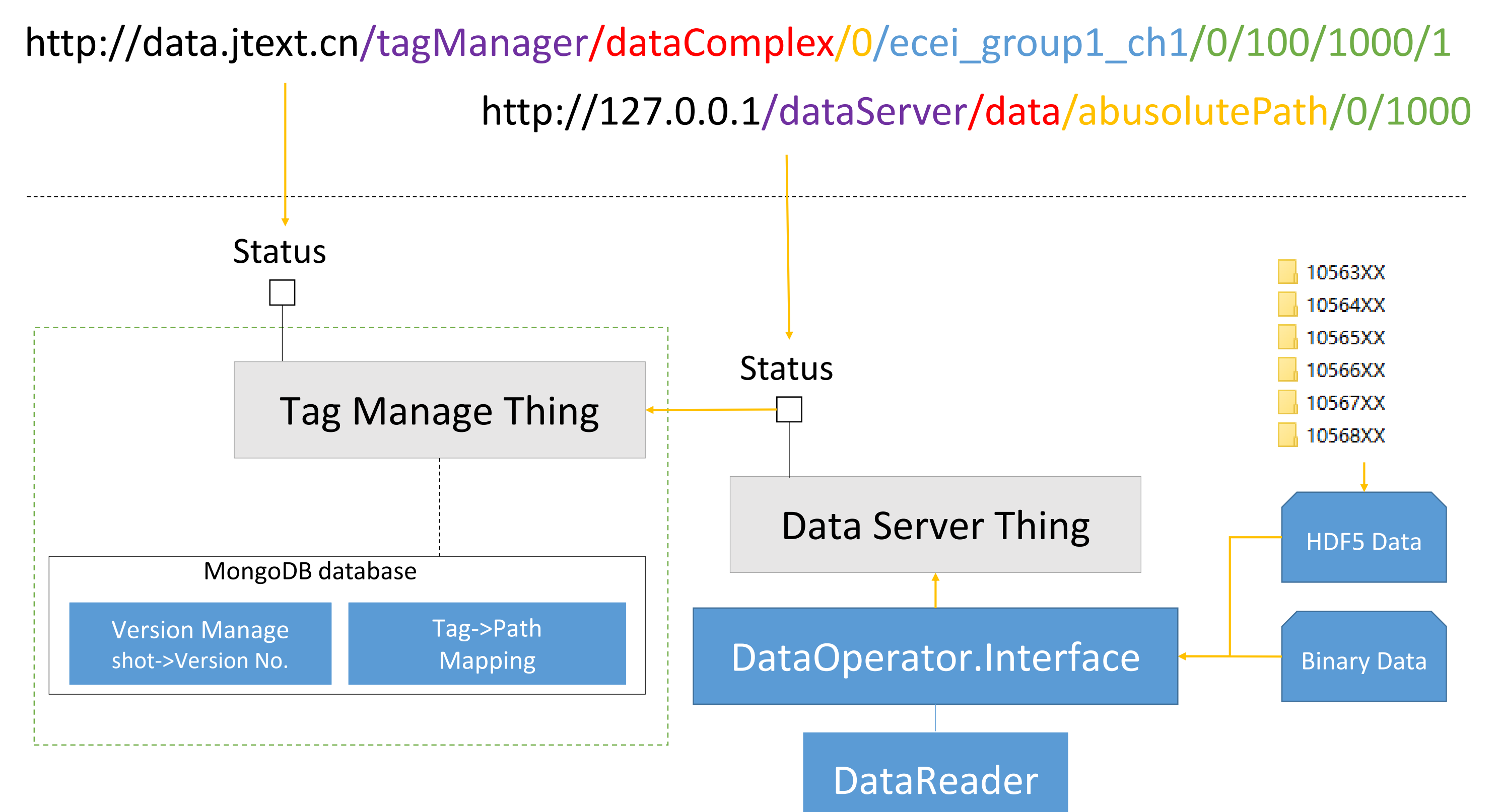
## Data archive and access system

| Provider's path | Data type | Shot | Tag name | params |
|---|---|---|---|---|
| Provider's path | Data type | Channel path | | params |

The parts of UDA to access the experiment data in 2 ways

- 2 ways to access the data.
- The basic way is in charged by A Data Server Thing, it get data by the Data Operator Interface from the format file and expose them to the Web by some CFET Status.
- A Tag Manage Thing is built so the user can access with the data with a Tag and a shot No.
- User doesn't need to care about which format the data is stored when access them.
- All data is accessed through UDA.

http://data.jtext.cn/tagManager/dataComplex/0/ecei_group1_ch1/0/100/1000/1

http://127.0.0.1/dataServer/data/abusolutePath/0/1000
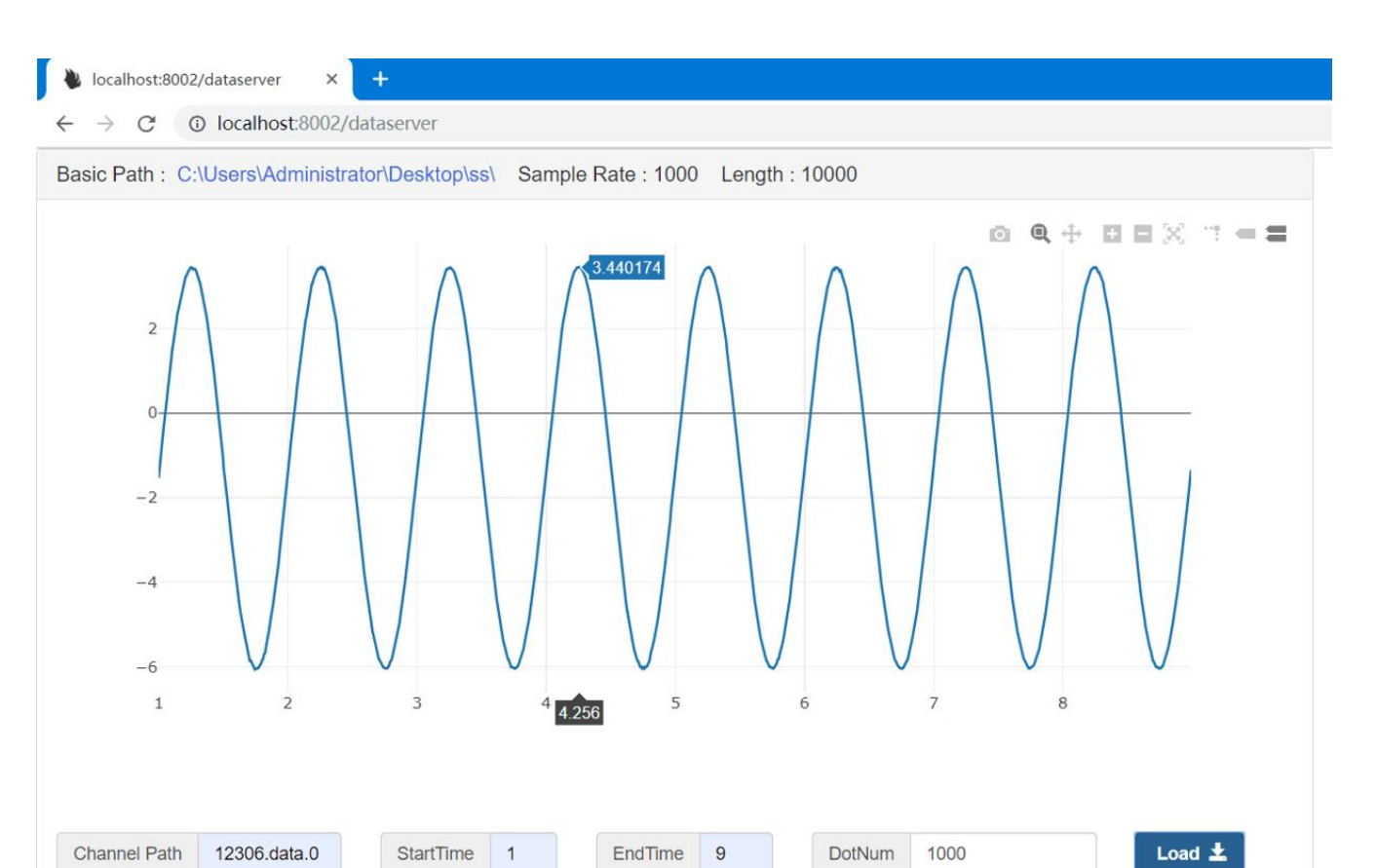


## Web page as user interface

- The architecture of the user interface is simple but effective.
- The CFET CODAC system as Web server exposes all the recourses like Status, Config and Method as Web APIs.
- Web pages as UI use Restful HTTP request to access data from Web APIs and display them in some form.
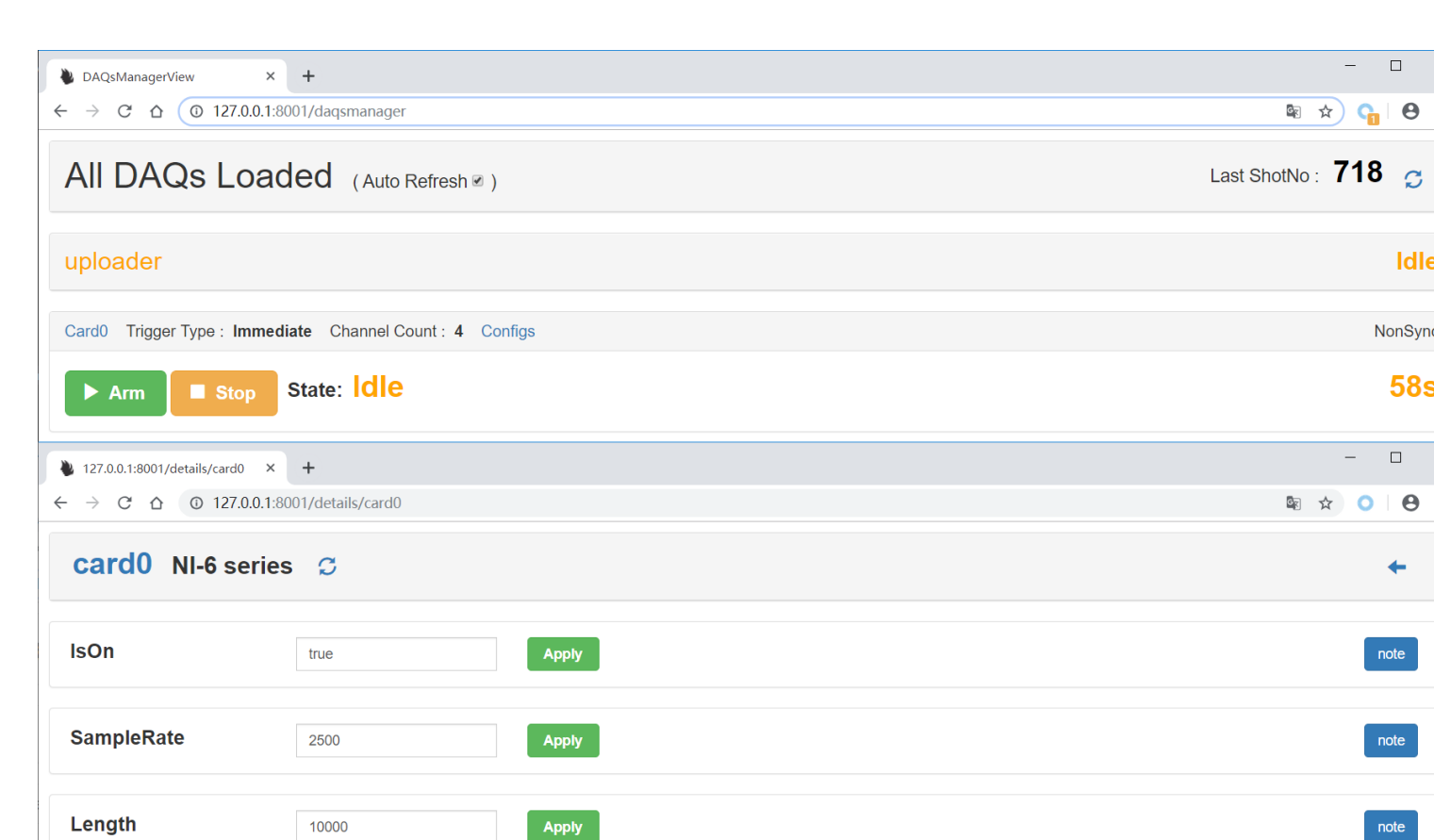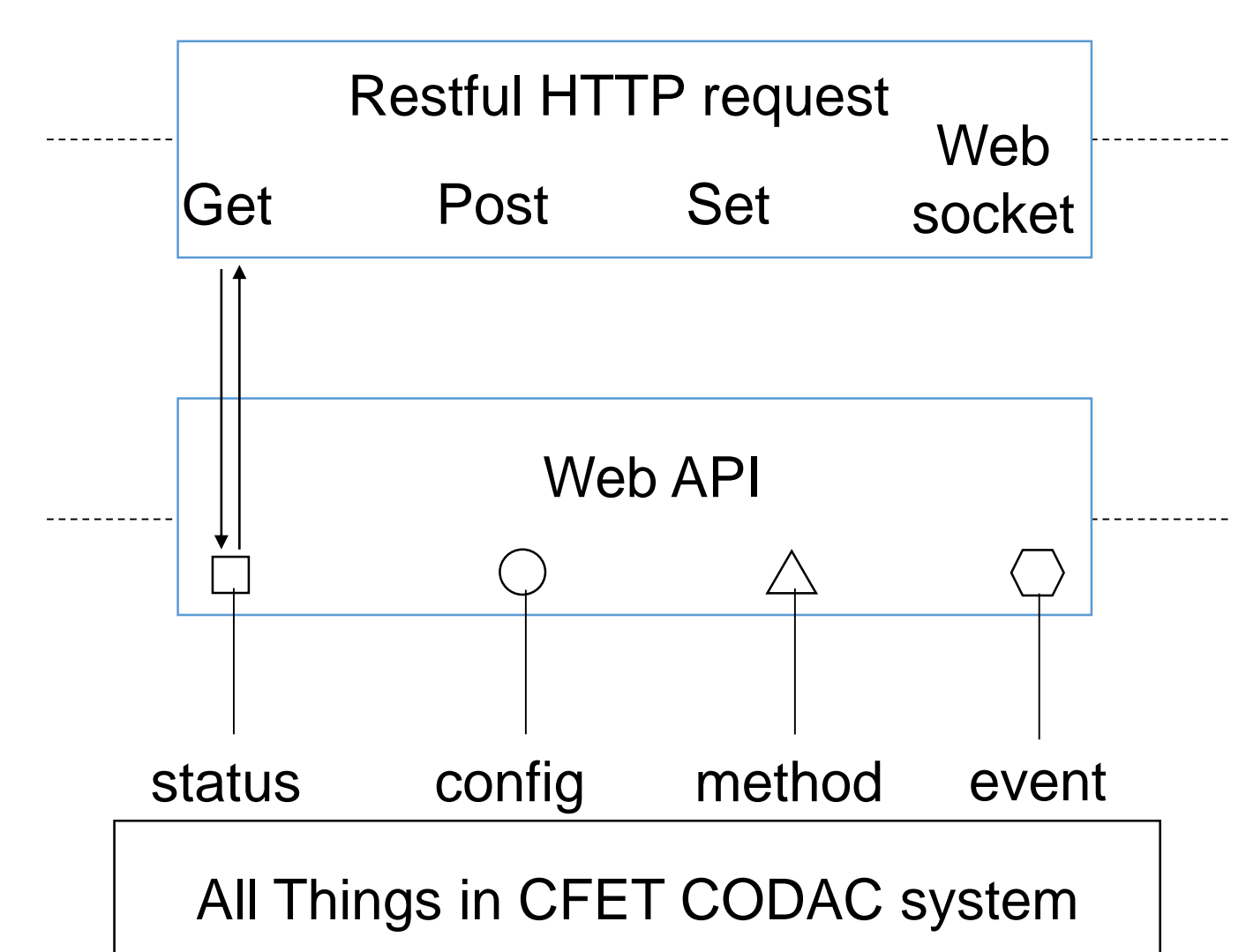




UI of DAQ system in Web

Web Scope for Data Visualization

## Future work

- Build support for continuous acquisition
- Further testing and application are needed to verify reliability and performance
- Web Scope need more further development
- Data and metadata in Restful HTTP protocol need to be improved