



JT-60SA remote participation tools

6 May 2022

G. De Tommasi^{1,2}

¹Consorzio CREATE

²Department of Electrical Engineering and Information Technology, University of Naples Federico II, Italy



 **DIE** UNIVERSITA' DEGLI STUDI DI
NAPOLI FEDERICO II
DIPARTIMENTO DI INGEGNERIA ELETTRICA
E TECNOLOGIE DELL'INFORMAZIONE



This work has been carried out within the framework of the EUROfusion Consortium, funded by the European Union via the Euratom Research and Training Programme (Grant Agreement No 101052200 — EUROfusion). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Commission. Neither the European Union nor the European Commission can be held responsible for them.

Contents

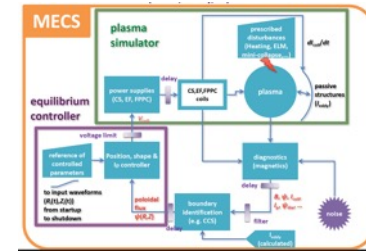
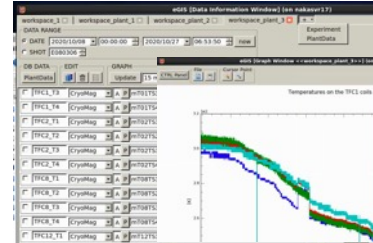


- Quick overview of th available tools
- Solutions under development
- Available resources/documentation

Remote Computer Access & HMIs



- **Remote Computer Access (RCA) to the Naka Server**
 - via NoMachine
 - Access to
 - the intranet, the so called *JT-60SA Research Management Site (RMS)*
 - data visualization tools (eDas)
 - modelling codes (e.g., MECS, *not yet released to public by QST*)
- **HMI client** → access to the «mimics» available in the control room
 - a new version based on a different IT technology is currently under development → *available after IC (?)*
- Direct access to local HMI of magnets and power supply (relevant for IC, especially after the incident) → *new solution will be deployed by QST*



Naka server – JT-60SA Research Management Site (RMS)



The wiki on the Naka intranet (accessible only via NoMachine)

<http://nakasvr17.naka.qst.go.jp/twiki/bin/view/Main/JT60SAResearchManagementSite>



JT-60SA Research Management Site

- JT-60SA Experiment Team wiki
 - [Structure](#)
 - [Experiment Timeline](#)
 - [Operation Shift Work](#)
 - [Experiment Proposals](#)
 - [Open Proposals](#)
 - [Tasks](#)
 - [System Daily Report](#)
- JT-60SA Integrated Analysis
 - [New Users](#)
 - [Experiment Log](#)
 - [Daily Report](#)
 - [Participation of Experiment](#) Access using IE.
 - [Status Monitoring System](#)
 - [Database](#)
 - [Data Analysis](#)
 - [Contact to EDIAS Team](#)



[Meetings](#)
[Documents](#)



[JT 60 SAResearch Management Site](#) »

Experiment Proposals

Attachments

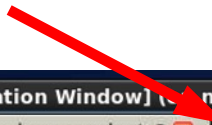
Attachment
1_Overall_Plan_Yoshida.pdf
2_ECWC_Nakano.pptx
3_Scenario_Yoshida.pdf
4.1_Breakdown_Urano2.pptx
4.2_Breakdown_Wakatsuki.pptx
5.1_Equilibrium_Inoue.pdf
5.2_Equilibrium_Wakatsuki.pptx
6_MHDDisruption_Tojo.pptx

Description	RO
-------------	----

eDas – Data visualization tool



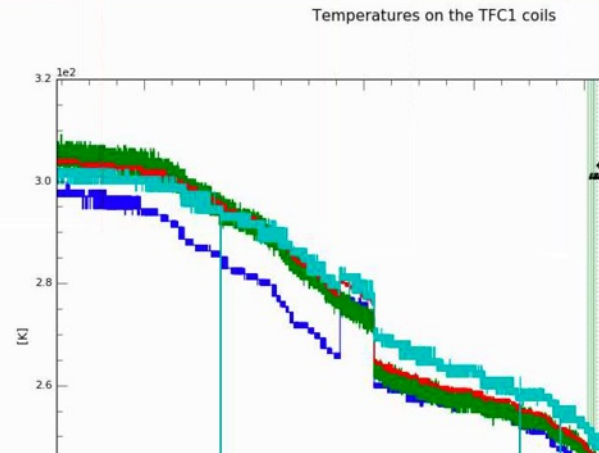
Pulse data



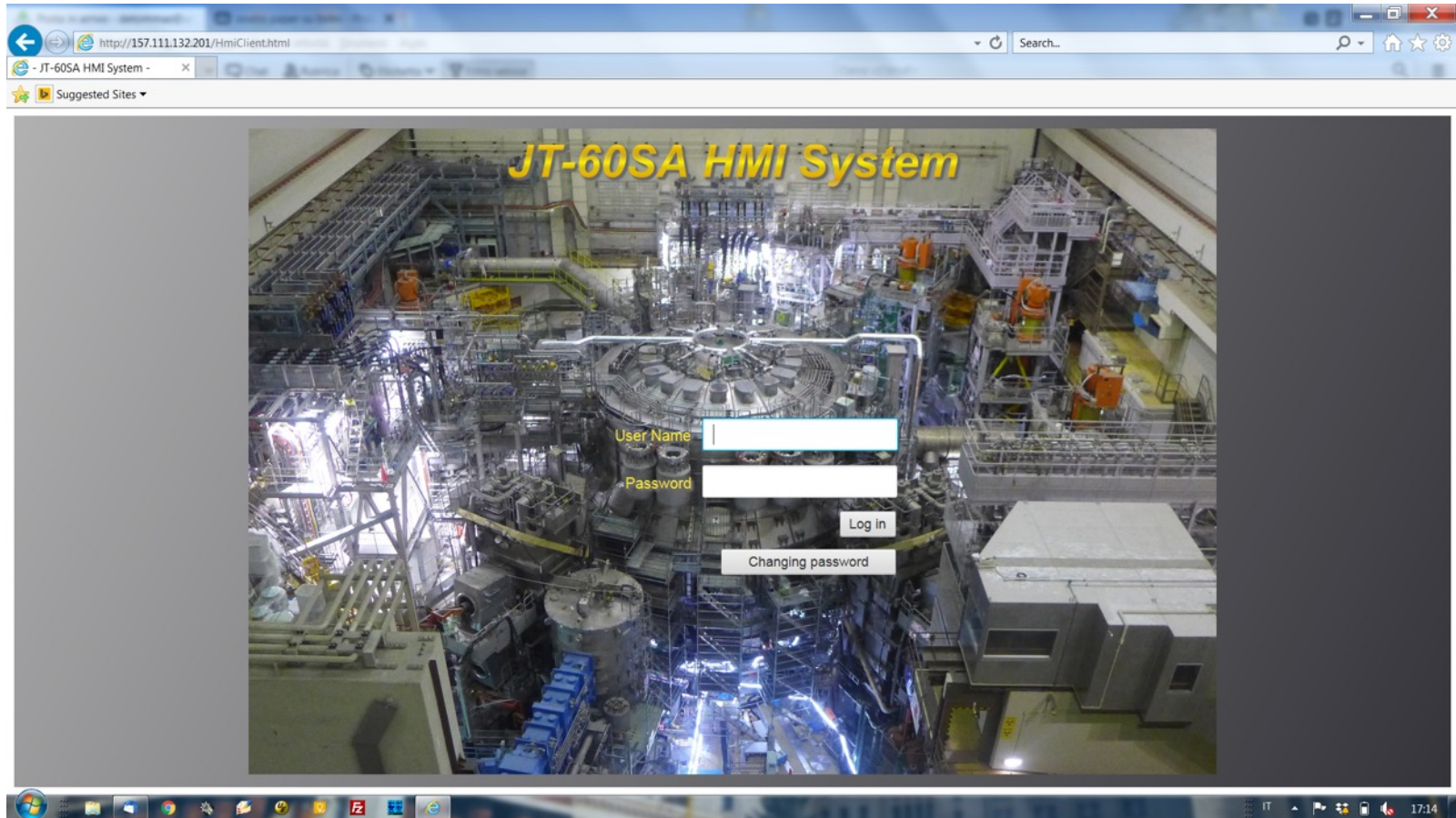
Plant data (continuously acquired)



ID	Coil Name	Mag	A	P	Temp	Plot	Status
TFC1_T3	CryoMag	A	P	mT01TS3	T1	PLOT	✓
TFC1_T4	CryoMag	A	P	mT01TS4	T1	PLOT	✓
TFC2_T1	CryoMag	A	P	mT02TS1	T2	PLOT	✓
TFC2_T2	CryoMag	A	P	mT02TS2	T2	PLOT	✓
TFC2_T3	CryoMag	A	P	mT02TS3	T2	PLOT	✓
TFC2_T4	CryoMag	A	P	mT02TS4	T2	PLOT	✓
TFC8_T1	CryoMag	A	P	mT08TS1	T3	PLOT	✓
TFC8_T2	CryoMag	A	P	mT08TS2	T3	PLOT	✓
TFC8_T3	CryoMag	A	P	mT08TS3	T3	PLOT	✓
TFC8_T4	CryoMag	A	P	mT08TS4	T3	PLOT	✓
TFC12_T1	CryoMag	A	P	mT12TS1	T4	PLOT	✓



JT-60SA HMI system

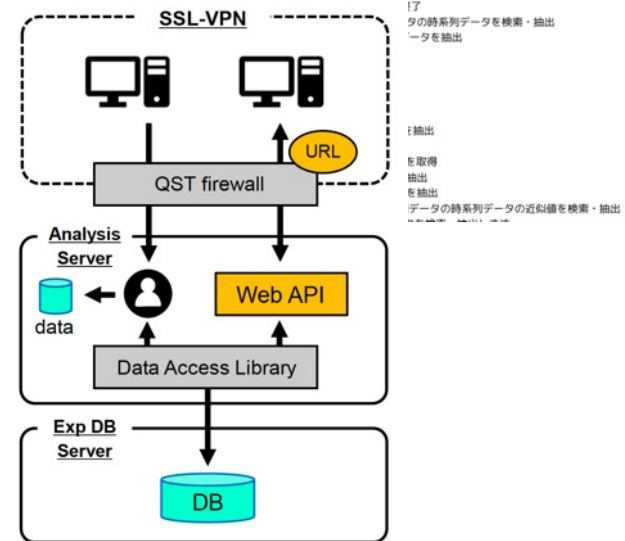


Status – Remote Data Access



Remote Data Access

- **Data access library available on the Naka server (via NoMachine)**
 - *Both for plant data (continuously recorded) → plantreaddata script made available by QST*
 - *and experiment data (pulse based recording) EDDB library*
- **webAPI (real RDA)**
 - Made available only to a small group (5) of EU beta testers (F4E and EUROfusion)
 - Agreed to be released also to other IC participants with access to QST remote tools
- **webAPI – as ALL OTHER TOOLS – works only within the QST VPN (!)**





Once the connection to the QST is established, all the local services that run on your PC and that rely on a network connection cannot be used

Examples:

- Access local printer/scanner
- Access internet resources (although browsers are available on the Naka server, these can be used only to surf the intranet)
- Emails (not even using the webmail, see the previous point)
- Access cloud-based file sharing services like Dropbox and GoogleDrive
- Access to instant messages services like and Telegram (**Whatsapp (this now seems to work)**)
- Access videoconferencing software like **Zoom**
- **Some MS products seem to work now (QST is using Teams...)**

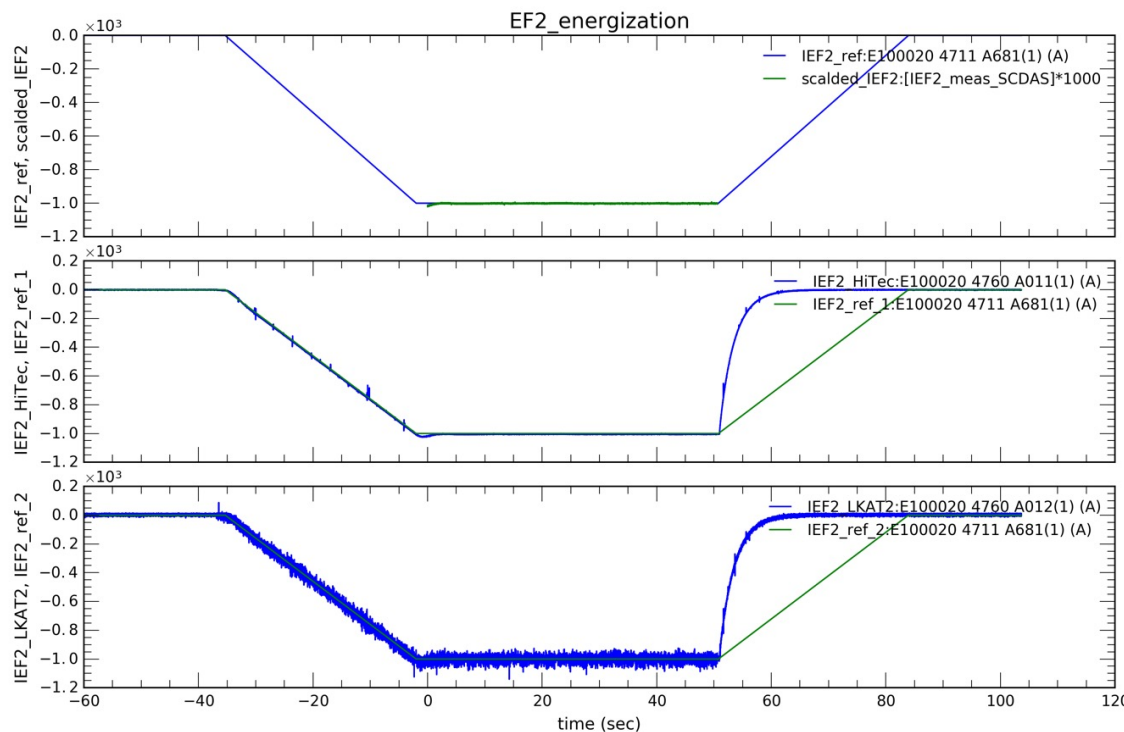
An example (before webAPI)



To add this plot in this presentation (before webAPI):

- work with eDas/eGis on Naka server (with SSL-VPN)
- cannot send it to myself by email from the Naka server
- cannot upload it to my Dropbox
- cannot send me a message with Teams (not available on the Naka server)
- Connect via `sftp`

Shot 100020 – EF2- fast discharge - 14 Jan 2021

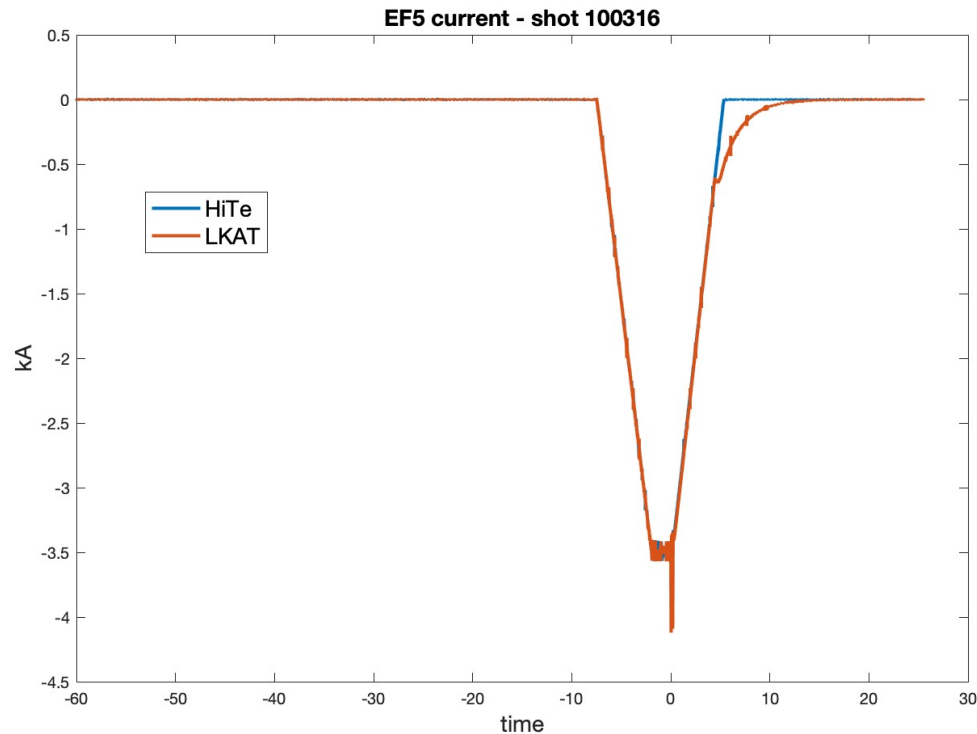


An example (with webAPI)

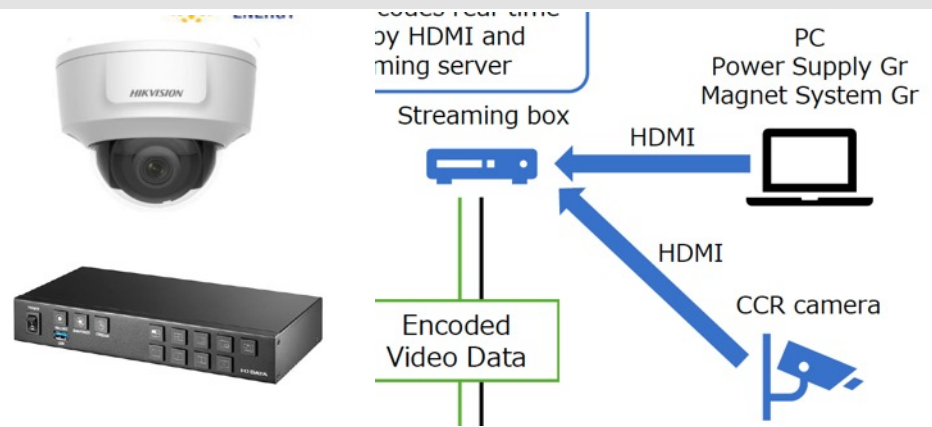


To add this plot in this presentation (with webAPI):

- still need to be connected with to QST SSL-VPN
- Signals downloaded with *local* Matlab (while I was preparing this presentation slide)



Status – Live streaming & HMI



- Live video streamed from the *Central Control Room (CCR)*...
- ...Power Supply & Magnets HMIs streamed as well
- Accessible both
 - **via MS Azure with multi-factor Office 365 authentication** (also the JT-60SA Research Management Site should be available)
 - **via QST-VPN**, as possible backup (local services are cut-off)
- Expected by the end of Summer 2022

Where to get information – 1/2



Dedicated page on FP9 wiki ([LINK](#))



Work [\[edit | edit source \]](#)

Remote Access [🔗](#)

Remote Computer and Data Access [\[edit \]](#)

QST VPN [\[edit \]](#)  **First connection and setup of the VPN client**

- Setup remote access to QST VPN
- **NOTE for OSX users: when installing the Pulse Secure client, you must allow the untrust installation app by enabling it in System Preferences -> Security & Privacy -> General**
- [link to Open Connect client](#) (Linux alternative to Pulse Secure)

Naka Analysis Server [\[edit \]](#)  **Setup the NoMachine connection to the nakafs17 server**

- Setup NoMachine to access to the Naka server

JT-60SA HMI [\[edit \]](#)  **Setup your Windows machine to access to the HMI client**

- Setup your Windows machine to access HMI
- `java.policy` file - **This file should be copied in C:\Users\{user_name} and renamed as java.policy (note the '.' at the beginning of the filename)**

eDAS [\[edit \]](#)  **eDAS manual**

- [eDAS User Manual](#) (v. 1.0.0, 11 Sep 2020, the latest version is maintained on the Naka server at <http://nakasvr17.naka.qst.go.jp/wiki/bin/view/Main/DataAnalysis>)

Data dictionary [\[edit \]](#)

- Cryo and Magnets Plant Monitoring Data
- Main plant monitoring data relevant for the Integrated Commissioning (link to DMS)
- Experiment DB data dictionary as at 14 Jan 2021
 - **NOTE on DataList: magnetic signals can be presently loaded from MDAC (aka Magnetic Data Acquisition Controller) category. Equivalent nodes from PSRC (aka Plasma Shape Reconstruction Computer) are empty**

Windows 7 Virtual Machine [\[edit \]](#)

- [Short guide to install a Window 7 virtual machine to access the JT-60SA HMI](#)

JT-60SA DB access [\[edit \]](#)  **Python scripts for remote data access**

- [A few scripts in Python for JT-60SA DB access](#)

Where to get information – 2/2



SEMINARS on FP8 SA wiki

https://users.euro-fusion.org/iterphysicswiki/index.php/JT-60SA_Seminars

Presentations

Date	Speaker	Presentation	Q&A
8/7/2020	C. Sozzi	Diagnostics for the JT-60SA Integrated Commissioning	<ul style="list-style-type: none">■ What diagnostics will be available in real-time? (E. Belonohy)■ Request information on gas analysis diagnostics (E. Belonohy)■ Request information on the stress gauges provided by F4E (C. Sozzi)■ Investigate whether the Cotton Mouton effect will be used for den
29/7/2020	M. Yoshida	Human Machine Interface (HMI) (recording)	<ul style="list-style-type: none">■ Check how to view multiple waveforms in the discharge editors■ Review how to get coil currents as input to the plant simulator for
9/9/2020	H. Urano	eDAS and the Commissioning website (recording)	
29/10/2020	G. De Tommasi	JT-60SA Remote Connection (recording - access with password JT-60SA_Seminar1)	<ul style="list-style-type: none">■ If you encounter any issue, please contact G. De Tommasi .■ NOTE for OSX users: when installing the Pulse Secure client, you System Preferences -> Security & Privacy -> General■ .java.policy file - This file should be copied in C:\Users\{use beginning of the filename}■ link to Open Connect client (Linux alternative to Pulse Secure)

Where to get information – LINKS



- FP8 Wiki

[https://iterphysicswiki.euro-fusion.org/index.php?title=Naka Remote Access Page](https://iterphysicswiki.euro-fusion.org/index.php?title=Naka_Remote_Access_Page)

- JT-60SA Wiki

<https://www.jt60sa.org/wiki/index.php?title=Remote-access-tools>

EVERYTHING IS ACCESSIBLE FROM FP9 WIKI

Areas of activity [edit | edit source]

Code Management and Simulation	Operations	Enhancements
Scientific Exploitation	Integrated Commissioning	International Fusion School

JT-60SA information [edit | edit source]

Public JT-60SA website	JT-60SA DMS	WPSA FP8 wiki
Research Plan (2018)	Plant Integration Document	WPSA News Archive

Work [edit | edit source]

Remote Access	Visa Application Process	Visitors' Handbook
-------------------------------	--	------------------------------------

Events and Publications [edit | edit source]

Meetings	Publication list
--------------------------	----------------------------------

Useful links [edit | edit source]

- [JT-60SA Remote Access Tools for Integrated Commissioning \(login required\)](#)
- [FP8 WPSA webpage & wiki](#)