

# Status of eDAS Development

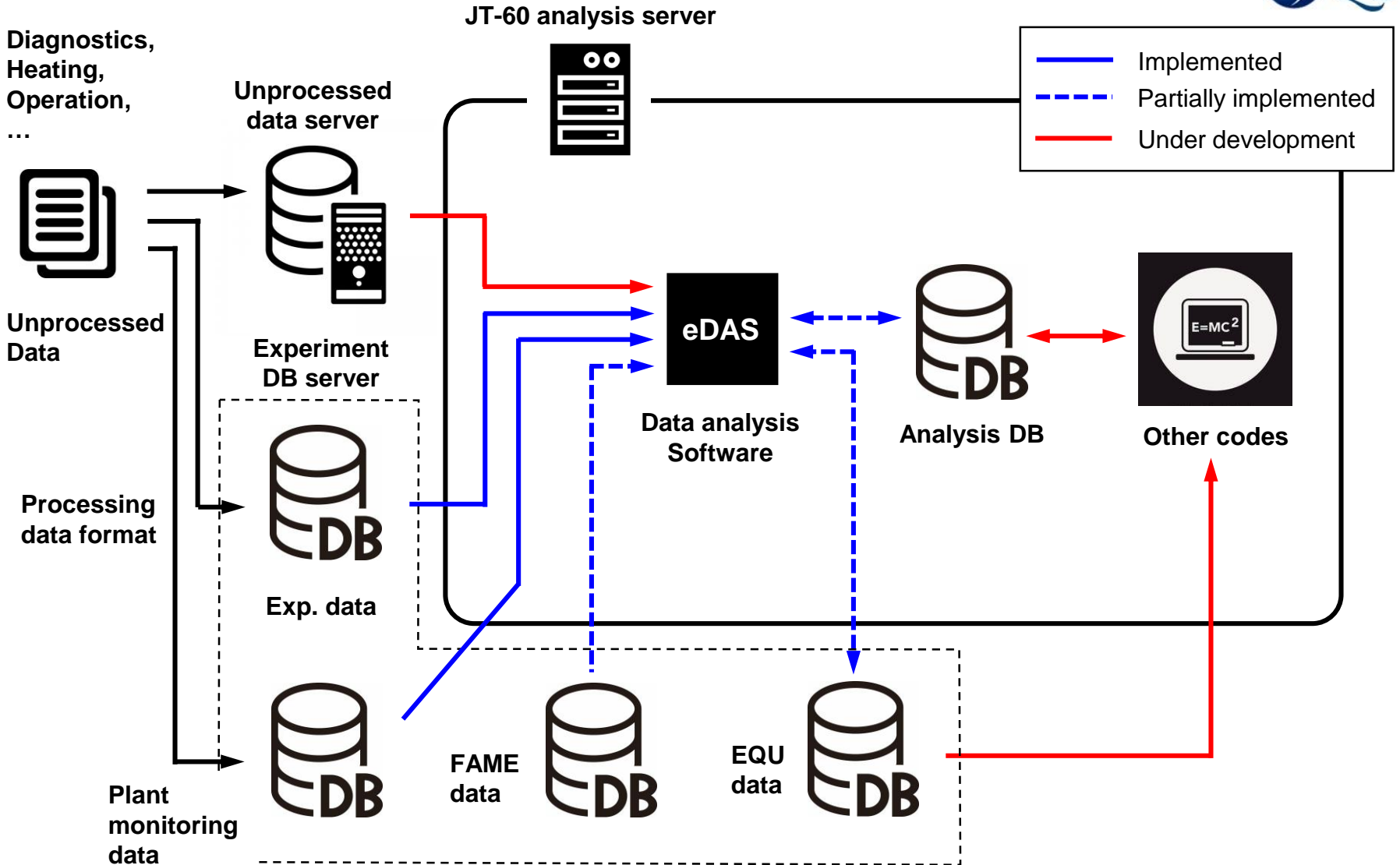
- Experimental Data Analysis Software -

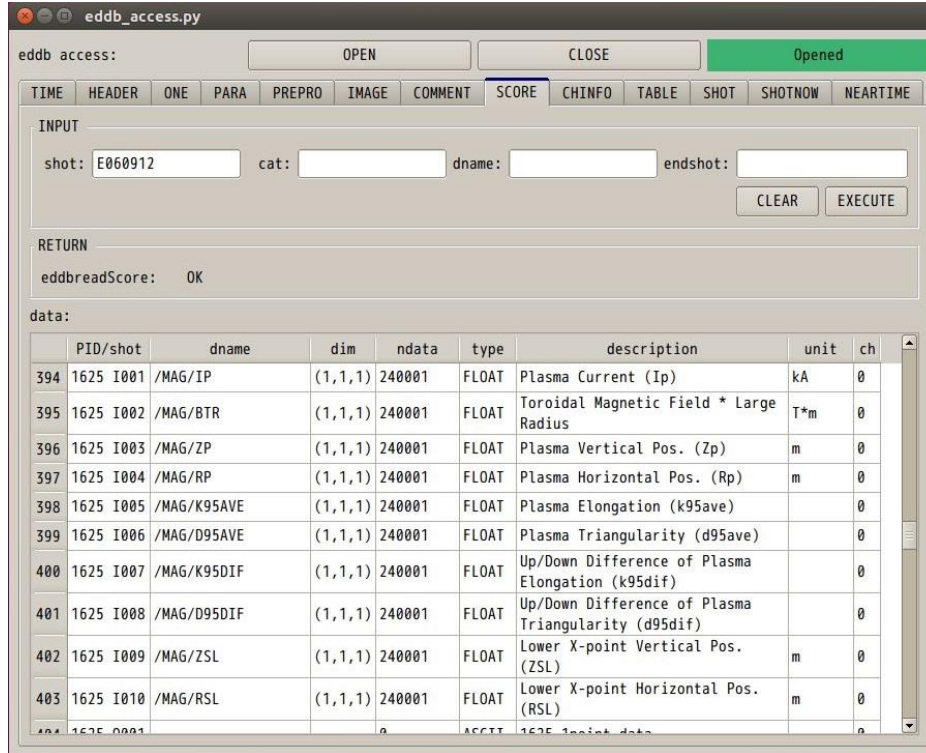
**H. Urano**

**Advanced Plasma Integrated Analyses Gr  
QST-Naka**

- **eDAS is a basic experimental data analysis software for the JT-60SA implemented in the JT-60 analysis server.**
- **eDAS provides the users with smooth and interactive data analysis environment, including the functions of data retrieval and storage with various DBs.**
- **eDAS consists of three basic tools of wave form visualizer (eGIS), equilibrium viewer (eSURF) and spatial profile analyzer (eSLICE).**

- **eDAS development team provides data access libraries for various DBs particularly for users who step further into advanced analysis so that they could develop their own tools.**
- **Some important functions have not yet been implemented; some DB development has not been completed.**





eddb access: [OPEN] [CLOSE] [Opened]

TIME HEADER ONE PARA PREPRO IMAGE COMMENT SCORE CHINFO TABLE SHOT SHOTNOW NEARTIME

INPUT  
shot: E060912 cat: [ ] dname: [ ] endshot: [ ]  
[CLEAR] [EXECUTE]

RETURN  
eddbreadScore: OK

data:

	PID/shot	dname	dim	ndata	type	description	unit	ch
394	1625 I001	/MAG/IP	(1,1,1)	240001	FLOAT	Plasma Current (Ip)	kA	0
395	1625 I002	/MAG/BTR	(1,1,1)	240001	FLOAT	Toroidal Magnetic Field * Large Radius	T*m	0
396	1625 I003	/MAG/ZP	(1,1,1)	240001	FLOAT	Plasma Vertical Pos. (Zp)	m	0
397	1625 I004	/MAG/RP	(1,1,1)	240001	FLOAT	Plasma Horizontal Pos. (Rp)	m	0
398	1625 I005	/MAG/K95AVE	(1,1,1)	240001	FLOAT	Plasma Elongation (k95ave)		0
399	1625 I006	/MAG/D95AVE	(1,1,1)	240001	FLOAT	Plasma Triangularity (d95ave)		0
400	1625 I007	/MAG/K95DIF	(1,1,1)	240001	FLOAT	Up/Down Difference of Plasma Elongation (k95dif)		0
401	1625 I008	/MAG/D95DIF	(1,1,1)	240001	FLOAT	Up/Down Difference of Plasma Triangularity (d95dif)		0
402	1625 I009	/MAG/ZSL	(1,1,1)	240001	FLOAT	Lower X-point Vertical Pos. (ZSL)	m	0
403	1625 I010	/MAG/RSL	(1,1,1)	240001	FLOAT	Lower X-point Horizontal Pos. (RSL)	m	0

**Virtual tree structure of the data category and the data name in the user interface**

**Seamless data access among different DBs based on the same interface**

**Easy comparison between experiment and simulation on eDAS**

**Reference table will be implemented in data handbook on JT-60SA Research Management Site**

/MAG/wdia(ch)	/MSE/angMSE(ch)	/SPC/HaPOL(ch)	/SPC/OUV
/MAG/tmode1	/CXR/tiCXt(ch)	/PRB/neLP(ch)	/SPC/NeVUV
/MAG/tmode2	/CXR/vtCXt(ch)	/PRB/teLP(ch)	/SPC/ArVUV
/MAG/tmode3	/CXR/ncCXt(ch)	/PRB/isLP(ch)	/SPC/FeVUV
/MAG/tmode0	/CXR/zefCXt(ch)	/CAM/visTVmP15L	/SPC/WVUV
/MAG/vloop(ch)	/CXR/tiCXt(ch)	/CAM/visTVmP15R	/SPC/LyVUVd
/MAG/ip(ch)	/CXR/vpCXt(ch)	/CAM/visTVmP18L	/SPC/C1VUVd
/MAG/istpl(ch)	/CXR/ncCXt(ch)	/CAM/visTVmP18R	/SPC/C2VUVd
/MAG/ivv(ch)	/CXR/zefCXt(ch)	/CAM/visTVd	/SPC/C3VUVd
/MAG/ihallo(ch)	/ECE/teECE(ch)	/SXR/sxu(ch)	/SPC/HeVUVd
/CO2/neICO2	/BOL/prBOLm(ch)	/SXR/sxuo(ch)	/CAM/irTVd
/TMS/neTMSc(ch)	/BOL/prBOLd(ch)	/SXR/sxl(ch)	/FID/DaFIDA(ch)
/TMS/teTMSc(ch)	/SPC/zefVIS	/SXR/sxlo(ch)	/NEU/sntFC(ch)
/TMS/neTMSe(ch)	/SPC/HaVIS(ch)	/SXR/sxl(ch)	/NEU/sntCAM(ch)
/TMS/teTMSe(ch)	/SPC/CVIS(ch)	/GAU/preAUG(ch)	/SPC/tiCRY(ch)
/TMS/neTMSH(ch)	/SPC/HeVIS(ch)	/CAM/irTVmP6	/SPC/vtCRY(ch)
/TMS/teTMSH(ch)	/SPC/OVIS(ch)	/SPC/CVUV	/SPC/narCRY(ch)

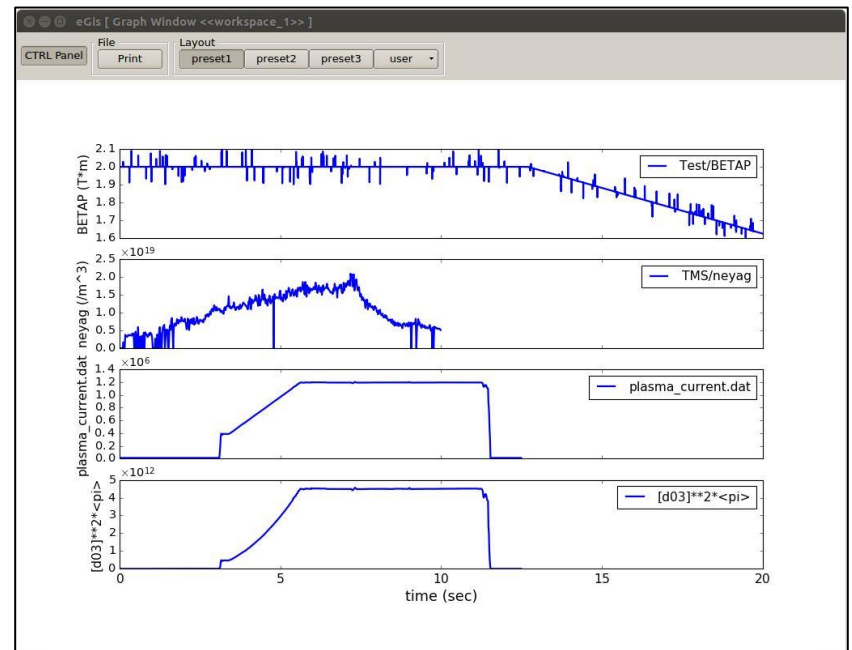
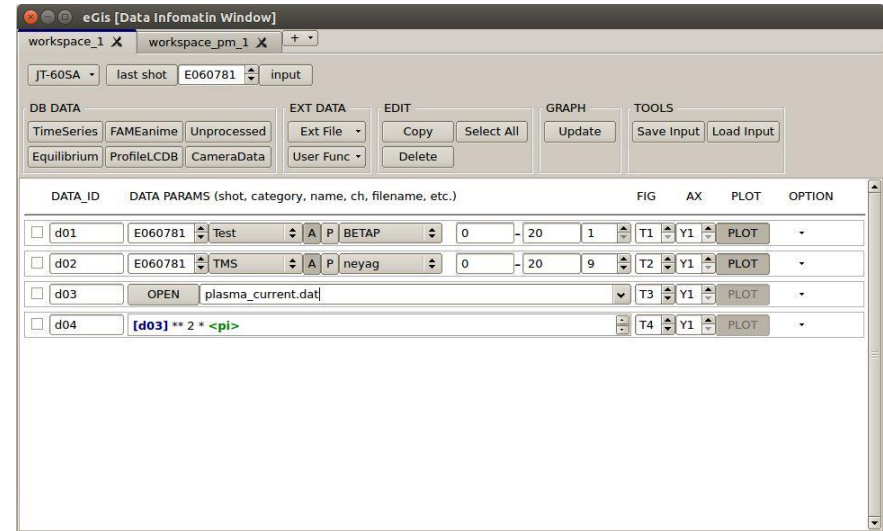
Ex. Diagnostics for the first plasma phase

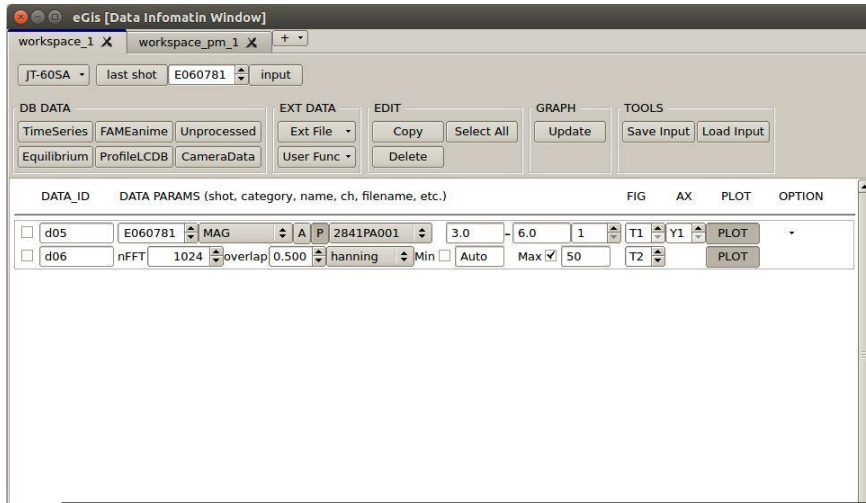
Visualize time dependent experimental data (waveform) in discharges and also the results of transport simulations.

Retrieve various kind of data from experiment DB, plant monitoring DB, analysis DB, unprocessed DB and external ASCII file.

Save and load customized workspace  
Define function with several physics constants

- $c$  speed of light in vacuum,  $299792458.0 \text{ m s}^{-1}$
- $\mu_0$  the magnetic constant  $\mu_0$ ,  $1.25663706144\text{e-}06 \text{ N A}^{-2}$
- $\epsilon_0$  the electric constant (vacuum permittivity),  $\epsilon_0$ ,  $8.85418781762\text{e-}12 \text{ F m}^{-1}$
- $h$  the Planck constant  $h$ ,  $6.62607004\text{e-}34 \text{ J s}$
- $\hbar$   $h/(2\pi)$
- $G$  Newtonian constant of gravitation,  $6.67408\text{e-}11 \text{ m}^3 \text{ kg}^{-1} \text{ s}^{-2}$
- $g$  standard acceleration of gravity,  $9.80665 \text{ m s}^{-2}$
- ... etc

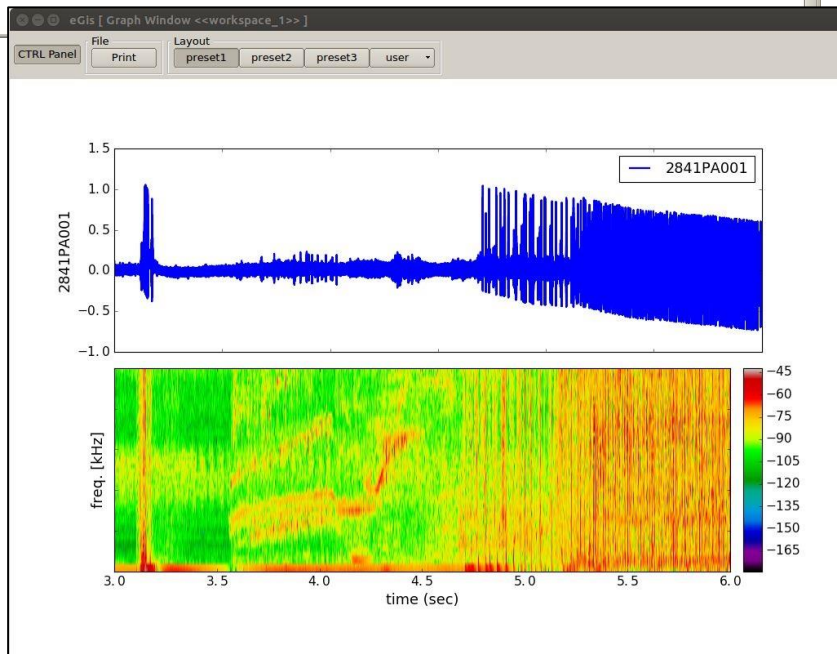




eGIS enables users to perform the spectrum analysis for MHD / fluctuation using fast sampling data.

Large volume data is temporarily stored as cache in the analysis server.

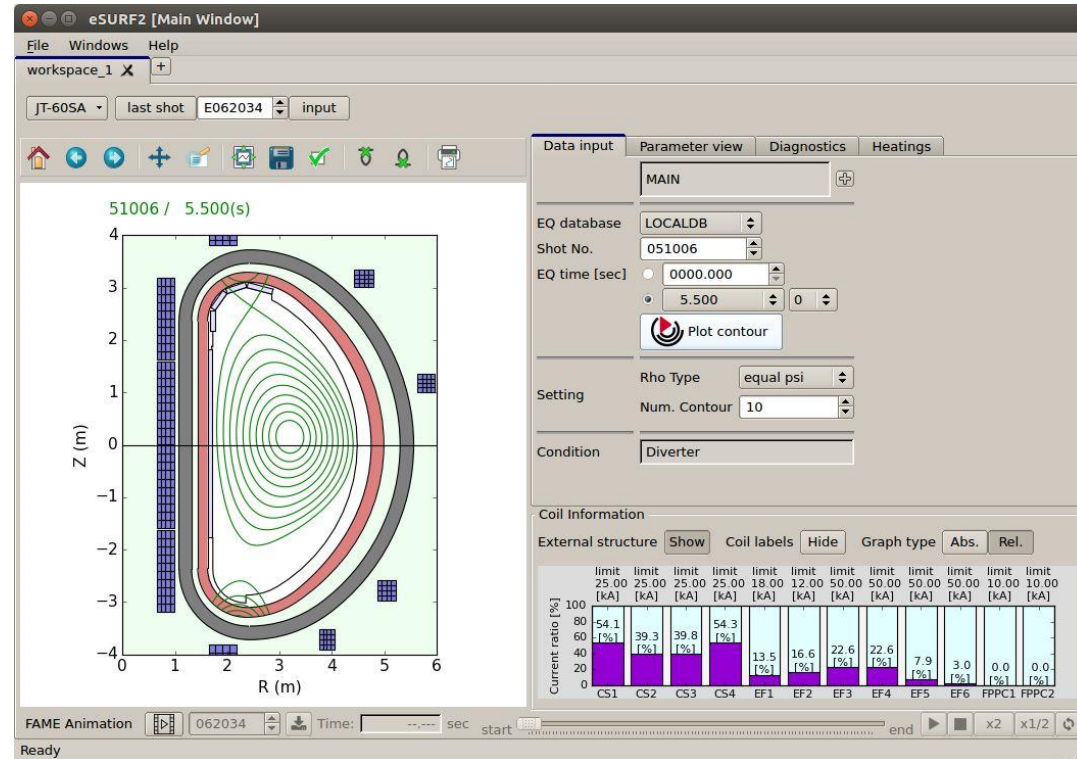
- Check the revision number



eSURF calculates the equilibrium, illustrates the contours of magnetic flux surfaces, show the values of equilibrium quantities and store the result in the EQU DB.

Illustrate diagnostic viewing chords and NB trajectories

Comparison between two equilibria  
 Show poloidal coil current usage rate  
 Real time FAME animation

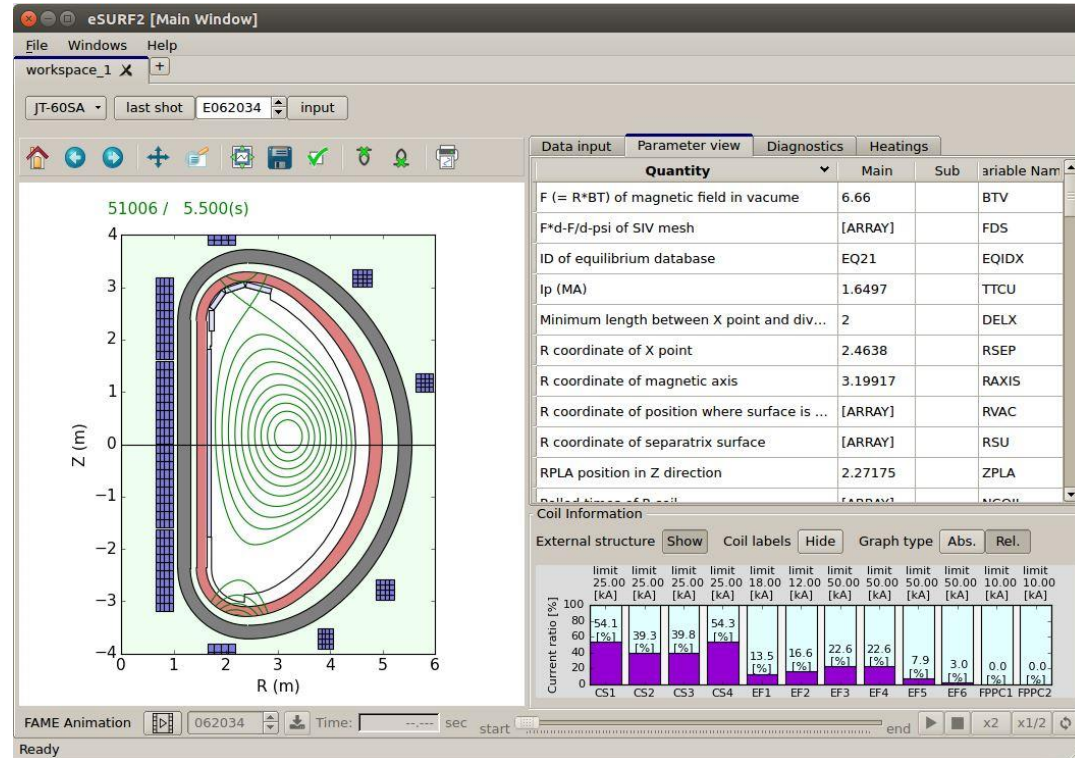




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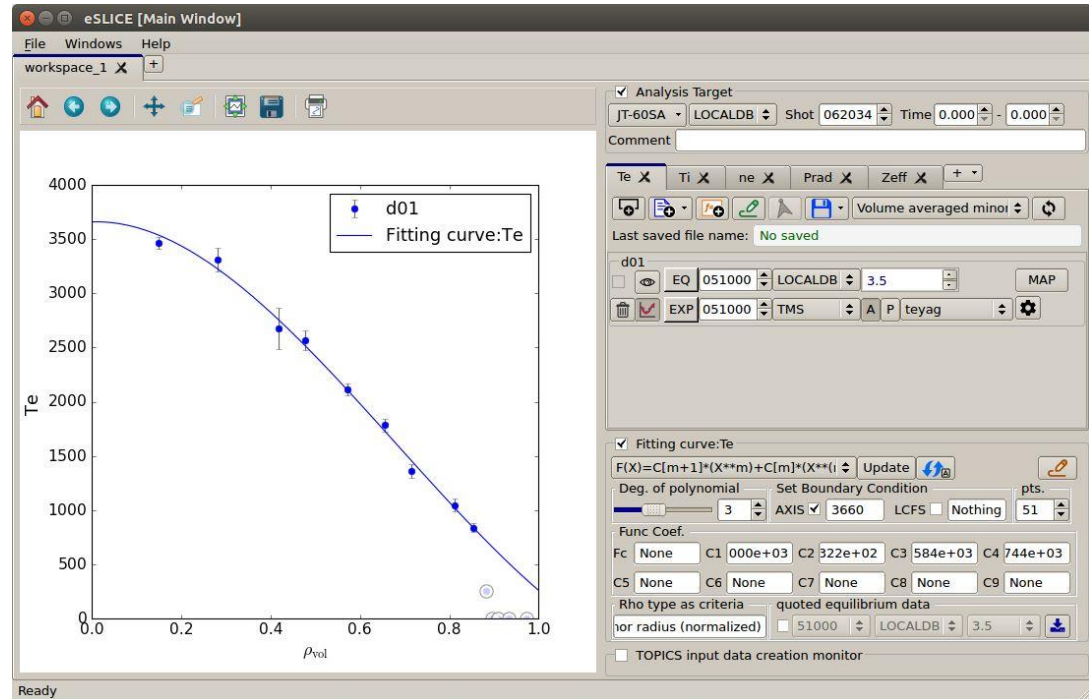
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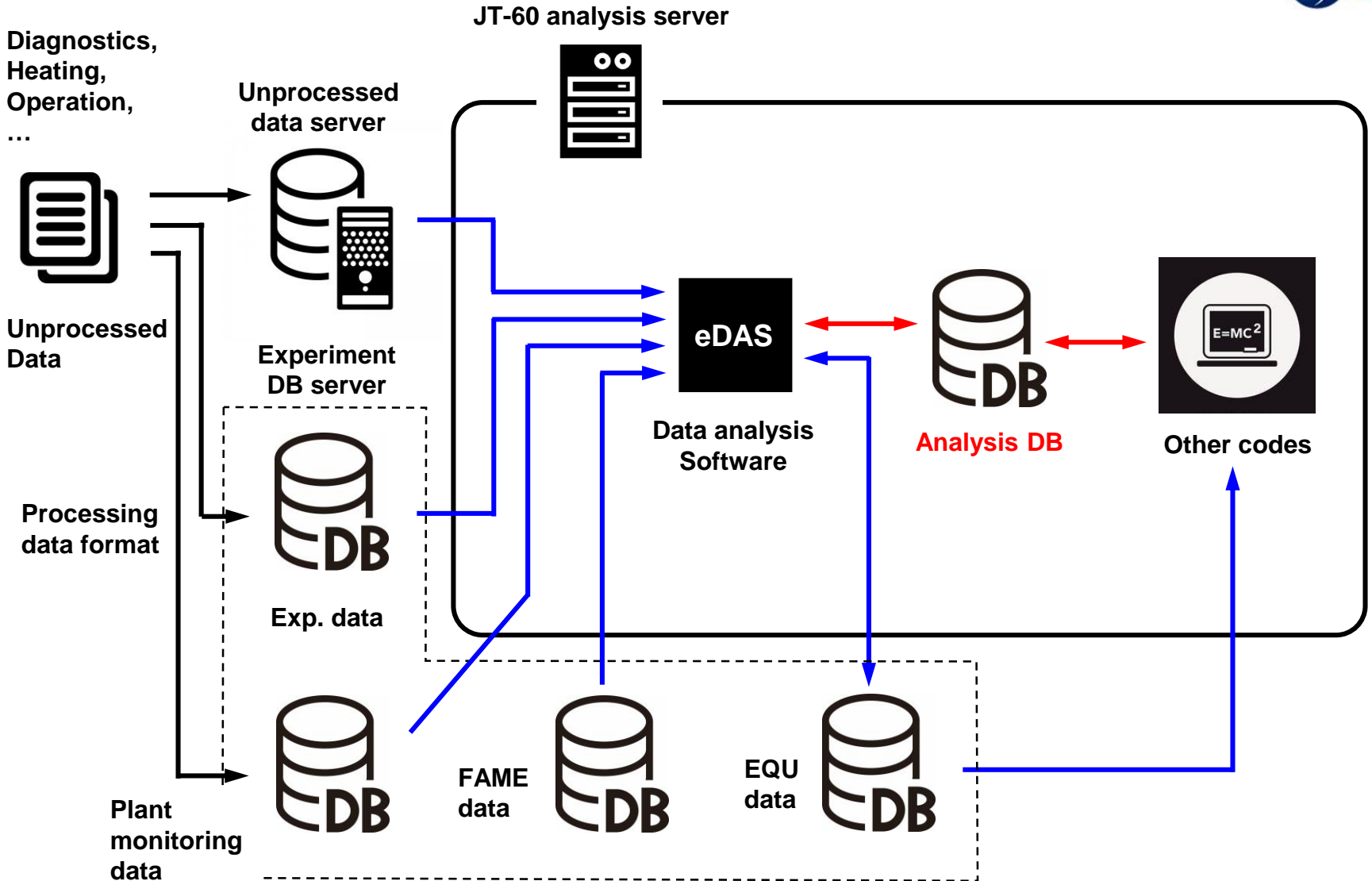
eSLICE enables users to analyze the spatial profiles of physics quantities by mapping diagnostic data onto the magnetic flux surfaces.

This software also provides functions of fitting the profiles, saving and loading the analyzed profile data in / from the analysis DB.

eSLICE generates the dataset required for the calculation of the next step analysis codes, e.g. OFMC, TOPICS.



# eSLICE analysis results are stored in Analysis DB and retrieved from other codes



- **In order to provide the basic tools of data analysis for JT-60SA, eDAS, data analysis infrastructure and appropriate data access sockets have been developed.**
- **Several essential functions on DB access are under development: unprocessed data, FAME, EQU data.**
- **Insufficient number of test data, backbreaking debugging work...**
- **English document should be prepared.**