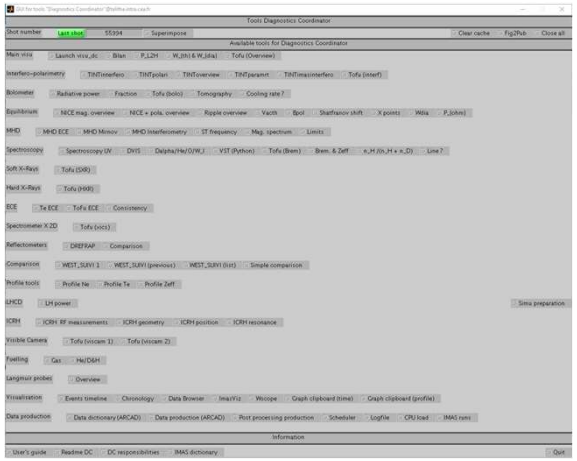
DE LA RECHERCHE À L'INDUSTRIE

www.cea.fr

GUI FOR DIAGNOSTIC COORDINATOR TOOLS



MONDAY, FEBRARY 3, 2020

HOW TO LAUNCH

- On Unix session
  - “module load tools_dc”
  - “matlab –nodesktop” or “matlab”
  - run_gui_dc

- Information available on WEST portal:

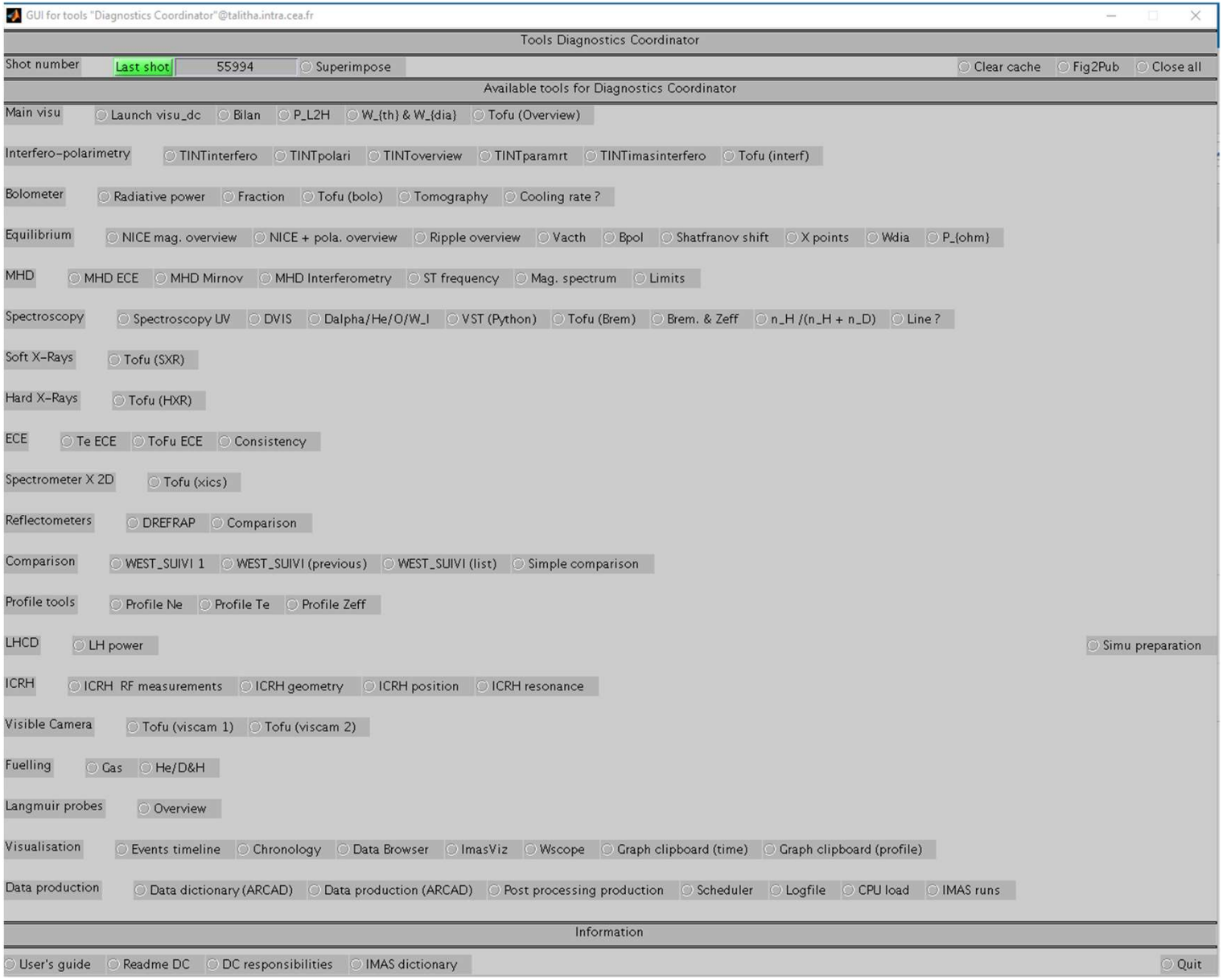
  https://westusers.partenaires.cea.fr/group/west/west-data-visualization-gui

- It is just à simple tools aggregator
  - share shot number
  - launch tool just by pushing a button

- Tools are provided by many contributors (names given by tooltip)

- You can try to push any button to discover what does each tool
  (it is risk-free !)

MAIN INTERFACE



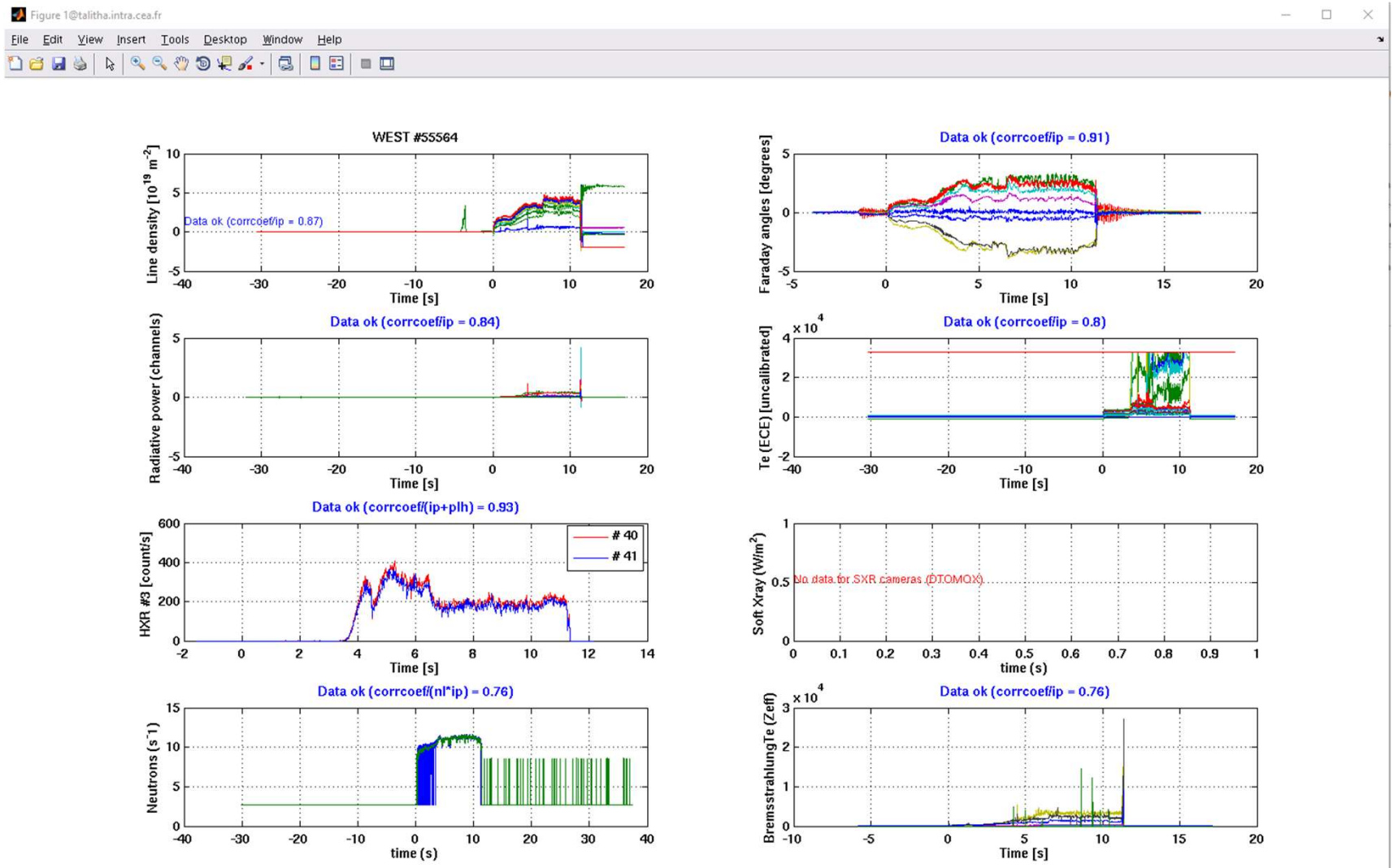
ONE LINE = ONE TOPIC

- First button line for shot selection and display control
  - "last shot" select last shot with available data (colored in green = current shot number is the last shot)
  - "superimpose" allows to superimpose data for many shot in Matlab display
  - "clear cache" clears IMAS memory cache to force data update
  - "fig2pub" tries to create nice elementary figure for reporting (works only with Matlab tools)
  - "close all" closes all Matlab figures at once
- Each next line address one topic (detailed in next slides)
- "Data production" tools available only in network zone intra
  - data access needed for these tools are not available in zone partenaires
- Last line gives access to information and closes the GUI
  - User's guide → this presentation
  - Information for Diagnostic coordinator
  - IMAS dictionary (version use by tools_dc)
- Tools are also available from Matlab (or Python) command line if needed.

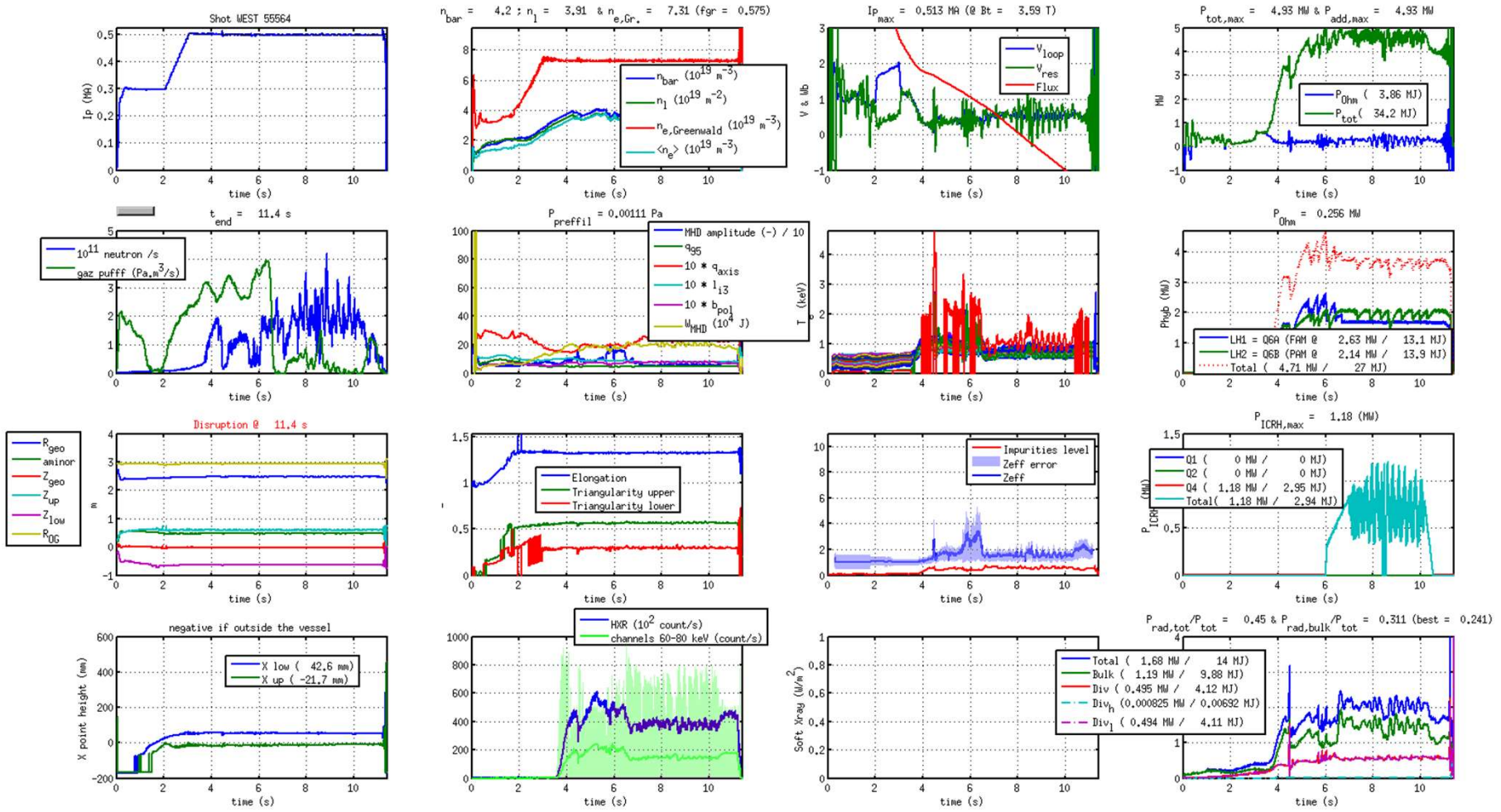
MAIN TOOLS FOR DIAGNOSTIC COORDINATOR

- "Main visu" tools are basics tools for Diagnostic Coordinator activities
  - "Launch visu DC"
    → tool to check data production by main diagnostics
  - "bilan"
    → tool to plot main data useful to fill fields of physics summary
  - "P_L2H"
    → tool to check if L to H mode transition conditions are fulfilled
  - "Energy"
    → tool computing not directly available data as Ti, plasma composition and thermal energy content

VISU DC: DIAGNOSTIC DATA MONITORING

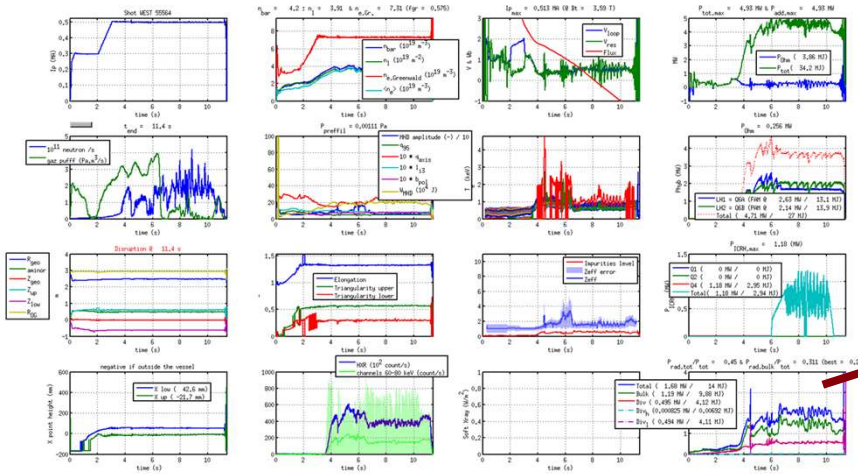


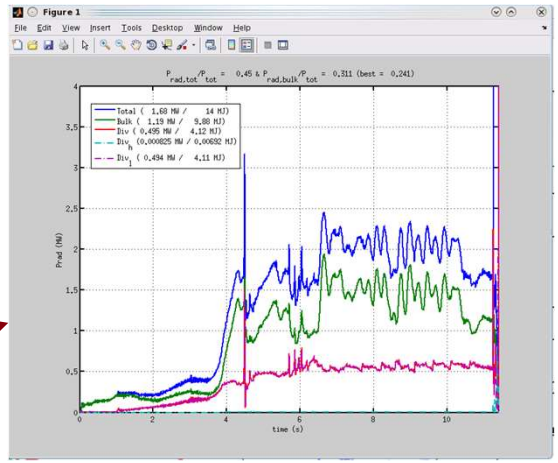
BILAN: MAIN PARAMETERS DISPLAY



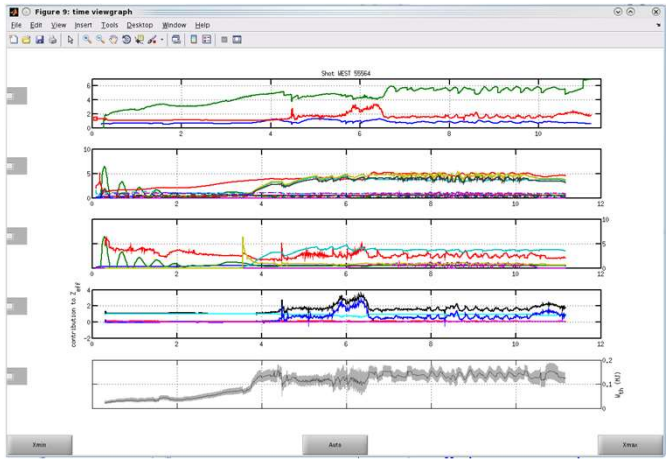
SOME FEATURES OF MATLAB GRAPH

- All Matlab editing tools are available
- Click on axis expand the graph :





- Curve clipboard are available to accumulate and synchronise curves and profiles:
  - Push button graph clipboard in main interface



LIST OF TOPICS (1/4)

3. Interfero-polarimetry
   → tools to visualise and assess data produced by interferometry and polarimetry

4. Bolometer
   → tools to visualise bolometer data, radiative power (total, bulk and divertor) and fast (simplified) tomography

5. Equilibrium
   → tools to visualise NICE 2D equilibrium, magnetic ripple maps, Vacth data, ect…

6. MHD
   → tools for MHD studies with ECE, Mirnov coils, interferometry and to display stabilities limits.

7. Spectroscopy
   → tools to visualise VUV and visible spectrometry, bremsstrahlung and assess plasma composition

LIST OF TOPICS (2/4)

8. Soft X-Rays
   → visualisation of soft X-rays data with Tofu

9. Hard X-Rays
   → visualisation of hard X-rays data with Tofu

10. ECE
    → visualisation of T_e from ECE, raw data and consistency check between T_e and q in ohmic phase.

11. Spectrometer X 2D
    → visualisation of raw data of X2D diagnostic with ToFu

12. Reflectometers
    → visualisation of reflectometers electron density profiles and comparison with other density profile identifications

13. Comparison
    → Tools to compare main data between set of shots.

LIST OF TOPICS (3/4)

14. Profile tools
    → visualisation of indentifed/fitted profiles (n_e, T_e & Z_{eff})

15. LHCD
    → visualisation of lower hybrid powers (forward/backward) for each launcher

16. ICRH
    → various tools for ICRH (powers & geometry visualisation, ripple)

17. Visible Camera
    → visualisation of movies from visible camera with ToFu

18. Fuelling
    → visualisation of gas injection, pumping and composition

19. Langmuir probes
    → visualisation of raw data from fixe Langmuir probes.

LIST OF TOPICS: (4/4)

20. Visualisation

→ generic tools for data visualization and graph clipboards (Matlab):

events timeline = graphical display of events/triggers time line after shot
chronology = text display of events/triggers time line after shot
data browser = simple tool with menu trees to visualize ARCAD and IMAS data
ImasViz = simple tool to visualize IMAS data
Wscope = Jscope tool adapted to WEST databases

21. Data production

→ tools to monitor data production (available only in zone intra network):

data dictionary (ARCAD) = list of diagnostics and list of data for each diagnostic
data production (ARCAD) = size of data for each diagnostic (do not include files)
post processing production = volume of IMAS data produced for each run
scheduler = live view of logfile messages from post processing scheduler
logfile = state of treatments and execution logfile of each treatment
CPU load = Ganglia view of hercule server with various load indicators
IMAS runs = list of available IMAS runs for the current shot

LAST COMMENTS

- This GUI is in continuous evolution to handle new diagnostic or new tool
- Based on CRONOS/METIS graphical interface generator:
  easy and unexpansive to extend
- You are welcome to provide new tools that we can add in the GUI
- Please report any issues you experience: jean-francois.artaud@cea.fr
- Tools are also available from Matlab (or Python) command line if needed:
  - request information when you need use a specific tool in a standalone way

Commissariat à l'énergie atomique et aux énergies alternatives
Centre de Cadarache | 13108 Saint Paul Lez Durance Cedex
T. +33 (0)4 42 25 46 59 | F. +33 (0)4 42 25 64 21

DRF
IRFM
SPPF

Etablissement public à caractère industriel et commercial | RCS Paris B 775 685 019