

# The New ITM Website

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**ISIP**

- Data Structure
- Release Versions - History
- ITM Types
- Primitive Types - Array Types - Structure Types
- CPO Instances
- Fortran
- Perl Tool
- Databases
- exp2ITM
- Universal Access Layer (UAL)
- Introduction
- UAL User Guide
- Introduction - General Concepts - High Level API - Low Level Layer API

**FC2K**

- How to turn a C++ code into a Kepler actor
- Adapt your C++ function - How to use code parameters - Compile your function as a library - Full example - How to fill the FC2K window

**Kepler**

- Setup - Issues
- Integrated Simulation Editor (ISE)
- Tools
- MD5plus
- Gateway
- How to get an account on the ITM Gateway - Using SSH - Using SFTP - Using NX - Disk Quota
- Portal
- GForge
- GForge Projects
- Training
- Cadarache May 2009
- Timeline
- Links
- Overviews - GForge Projects

Fully linked table of contents

**Linked CPO list**

member	type	description
datainfo	datainfo	Generic information on a data item
antenna_ec	antenna_ec	Electron Cyclotron antennas
antenna_lc	antenna_lc	Ion Cyclotron antennas
antenna_h	antenna_h	Lower Hybrid antennas
codeparam	codeparam	Code parameters
time	float	Time [s]; Time-dependent Scalar

**Inline steering elements**

member	type	description
datainfo	datainfo	Generic information on a data item
composition	composition	Plasma composition (description of ion species)
rho	vecrfl_type	Toroidal flux coordinate (not normalised, equivalent to rho [m], norm [m], Vector (rho), Time-dependent
rho_norm	vecrfl_type	Normalised toroidal flux coordinate values (= rho_norm / rho) at the value at the last grid point; Vector (rho)
delta_psi	vecrfl_type	Instant change of the poloidal flux [Wb]; Time-dependent, Vector (rho)
delta_te	vecrfl_type	Instant change of the electron temperature [eV]; Time-dependent, Vector (rho)
delta_tz	array3dfl_type	Instant change of the ion temperature [eV]; Time-dependent, Matrix (rho, z)
delta_ne	vecrfl_type	Instant change of the electron density [m^-3]; Time-dependent, Vector (rho)
delta_ni	vecrfl_type	Instant change of the ion density [m^-3]; Time-dependent, Vector (rho)
delta_nz	array3dfl_type	Instant change of the impurity (multiple charge states) density [m^-3]; Time-dependent, Matrix (rho, z)
delta_vtor	array3dfl_type	Instant change of the toroidal toroidal velocity [m/s]; Time-dependent, Matrix (rho, z)
codeparam	codeparam	Code parameters
time	float	Time [s]; Time-dependent Scalar

**Graphic links**

**Http links**

With the above definition of the toroidal coordinate system, the following relationships ensue (where increasing and decreasing refer to going from the magnetic axis to the separatrix on the outboard midplane):

$I_{p,core}$	$I_p$	$\psi$	Sign Relations	$\phi$	safety factor q
positive	positive	decreasing	increasing	negative	negative
positive	negative	increasing	increasing	positive	positive
negative	positive	decreasing	decreasing	positive	positive
negative	negative	increasing	decreasing	negative	negative

Flexible tables

**Shot Journal**

News

- ITM Shots
- JET shots
- UAL Version 4.07a - UAL Version 4.07b - UAL Version 4.07c
- TORRE SUPRA shots
- UAL Version 4.07b - UAL Version 4.07c
- TEST shots
- UAL Version 4.07a - UAL Version 4.07b - UAL Version 4.07c
- IMP12 Shots
- JET shots
- UAL Version 4.08a
- ASDEX Upgrade shots
- UAL Version 4.08a
- TEST shots
- UAL Version 4.08a
- IMP3 Shots
- JET shots
- UAL Version 4.08a
- TEST shots
- UAL Version 4.08a

The ITM has generated a series of publicly available data base entries, so called shots, which can be accessed on the ITM Gateway via the UAL (Universal Access Layer). Shots in private data bases are listed here as well, however, they are not validated. They may be used for testing purposes and code development though.

**News**

Date	News
2010-08-27	shots available for ASDEX Upgrade
2010-07-22	Public shots added
2010-07-07	Shots added for IMP3

last update: 2010-09-08 by konz

**JET shots**

The shots can be accessed by setting

TOKAMAKNAME = jet

**UAL Version 4.08a**

The shots can be accessed by setting

UAL = 4.08a

The following table lists the shot by shot number and run number together with the list of stored CPOs, the user name of the data base, and a short description.

Shot	Run	CPOs	user	generated with	description
79052	1	magfield physicists toroidal limiter riemmed moeclad	konz	exp2itm	time trace of experimental signals for equilibrium reconstruction
2	2	equilibrium	konz	equalslice	free boundary equilibrium at t=50s
3	3	equilibrium	konz	equal_helena	fixed boundary equilibrium up to separatrix at t=50s
4	4	mhd	konz	equal_helena_isa	linear MHD stability for n=3, 5 at t=50s (stable)

Quick link bar <http://www.efda-itm.eu/~wwwimp3/TEST/ITM/html/index.html> [sitemap](#)

Home > HowTo's > How to write documents for Practical XML

EFDA Task Force  
**Integrated Tokamak Modelling**  
EUROPEAN FUSION DEVELOPMENT AGREEMENT

AMNS • EDGR • ISIP • IMP12 • IMP3 • IMP4 • IMP5 • ISM Infrastructure • Conventions •  
HowTo's • Shot Journal • Numerical Tools • Visualization • Code Status • Code Catalog •  
Documentation Project • Verification and Validation • ITM Contact List in 2010 •  
Newsfeed • Glossary • EUFORIA • Search

**How to write documents for Practical XML**

Introduction  
Use  
Parser

**CPO type lists**

member	type	description
datainfo	vesseHdatainfo (datainfo)	Generic information on a data item
dataprovider	vesseHdatainfo (datainfo)	Generic information on a data item
update	vesseHdatainfo (datainfo)	Generic information on a data item
source	vesseHdatainfo (datainfo)	Generic information on a data item
comment	vesseHdatainfo (datainfo)	Generic information on a data item
href	vesseHdatainfo (datainfo)	Generic information on a data item
whatref	vesseHdatainfo (datainfo)	Generic information on a data item
user	vesseHdatainfo (datainfo)	Generic information on a data item
machine	vesseHdatainfo (datainfo)	Generic information on a data item
she	vesseHdatainfo (datainfo)	Generic information on a data item
run	vesseHdatainfo (datainfo)	Generic information on a data item
occurrence	vesseHdatainfo (datainfo)	Generic information on a data info
update	vesseHdatainfo (datainfo)	Generic information on a data info
pubmethod	vesseHdatainfo (datainfo)	Generic information on a data info
pubaccess	vesseHdatainfo (datainfo)	Generic information on a data info
publication	vesseHdatainfo (datainfo)	Generic information on a data info
rights	vesseHdatainfo (datainfo)	Generic information on a data info
position	vesseHposition (r2D)	Generic information on a data info
vecrfl	vesseHposition (vecrfl_type)	Generic information on a data info
s	vesseHposition (vecrfl_type)	Generic information on a data info

**Regularly updated ITM News**

Newsfeed [archive](#)

Date	News
2010-09-07	Gateway User Agreement now available
2010-09-07	simplified links to graphics and imports (now simply relative links)
2010-09-01	new material under AMNS
2010-08-31	more IMP12 workflows added
2010-08-28	new IMP12 workflows added
2010-08-28	active main links now in pdfs
2010-08-28	Contact List 2010 added
2010-08-27	shots available for ASDEX Upgrade
2010-08-24	Glossary added
2010-08-23	Verification and Validation material added
2010-08-23	Source movies for the documentation project now available
2010-08-18	project IMP4 now online
2010-08-17	projects ISM and EUFORIA now online
2010-08-17	material on Visualization of ETS results added
2010-08-17	all pdf files now with correct links (internal and external)
2010-08-12	ISIP timeline added
2010-08-12	Data Structure Releases added
2010-08-11	Matlab UAL expert guide added
2010-08-08	Added a link to the old ITM Code Catalog of the main page
2010-08-07	Universal Access Layer User Guide now online
2010-08-05	search engine (html, pdf) now active
2010-08-05	added material on How to turn a C++ code into a Kepler actor
2010-08-02	Testbed for PracticalXML added
2010-08-01	task table 2010 added for IMP3

last update: 2010-09-07 by konz

**Code Status**

The following page gives you a summary of the development and release status of the physics and infrastructure modules maintained within the ITM Code Status. Developers, please update the map of your modules regularly following the above link

**Code Catalog**

As the ITM Code Status evolves, the ITM created a catalog of available codes. This catalog is now somewhat out of date, it is still useful.

**Documentation Project**

The repository activity of the documentation project is summarized very nicely in the following movies:

- X264 MP4
- WMV2 WMV

These were produced by doing:

```
svn log --verbose --xml http://forge.efda-itm.eu/svn/doc/test > DOC.log  
python /bin/svn-gource.py --file-refs DOC.log > DOC-gource.log  
gource -i247650 -highlights=users --max-files 1000000 -a 3 -s 0.5 \\\n-i 80460 --stop-at-end --disable-progress \\\n--output ppm-stream --SCRATCH=DOC.ppm --output-framerate 30 \\\n--log-format custom DOC-gource.log  
split -a 6 -b 2359334 DOC.ppm DOC  
bash -c 'x=1; for i in DOC ??????; do counter=$((printf %06d $x)); ln -s "${DOC}counter".ppm; x=$((x+1)); done'  
ffmpeg -y -b 3000k -r 30 -i DOC?????.ppm -c:v libx264 -vpre libx264-default -codec:v h264 -ac 2 DOC.mv  
ffmpeg -y -b 3000k -r 30 -i DOC?????.ppm -c:v libx264 -vpre libx264-default -codec:v h264 -ac 2 DOC.wmv
```

where details about source can be found at <http://code.google.com/p/gource/>

**Search**

Select: All ITM | Match: All | Format: Long | Sort by: Score

Search

last update: 2010-08-26 by coster

**Former code catalog**

Categories	Equilibrium	Grad-Shafranov Solvers	Fixed Boundary	2-D Flux coordinate codes
MHD Stability	Experimental reconstruction (eg from magnetics)	Free boundary	2D Flux coordinates	CAXE
Core Transport and Discharge Evolution	High resolution Grad-Shafranov Solvers	Fixed boundary	2D Cylindrical coordinates	CHEASE
Micro-stability and Turbulence	Equilibrium evolution codes		3D geometry	ECHN
Exhaust/heat loading	Full list			FINESE
Heating, Current drive and Fueling				HELENA
Equilibrium				
Data analysis codes				
Full list of codes				

**Automatically generated pdf**

- pdf's can be generated at any arbitrary level
- include all subpages in form of a book with fully hyper-linked TOC
- engine automatically resolves all internal links
- external links automatically linked to website
- formulae in html and pdf in Latex quality

**Introduction**

The UAL (Universal Access Layer) is a multi-language library that allows exchanging Consistent Physical Objects (CPOs) between various modules, and write to an ITM database. The documentation here is provided for rather experienced users who want to practice the UAL in their test programs. Regular KEPLER users do not need to know anything about the UAL. KEPLER manages transparently the UAL calls, which are embedded in the physics code wrappers. No UAL calls should be made inside physics modules.

Use the UAL in <http://www.efda-itm.eu/isip/project/swit/ual/>.  
The current default version is 4.08a, located at: <http://www.efda-itm.eu/project/swit/ual/v4.08a/>.  
The database environment variables (mandatory prior UAL usage), use:

```
source /afs/efda-itm.eu/project/swit/scripts/set_itm_data_env USERNAME  
MACHINENAME DATAVERSION  
e.g.:  
source /afs/efda-itm.eu/project/swit/scripts/set_itm_data_env myname jet 4.08a  
Then to set the path to the right UAL libraries, use:  
source /afs/efda-itm.eu/project/swit/scripts/set_itm_env DATAVERSION  
e.g.:  
source /afs/efda-itm.eu/project/swit/scripts/set_itm_env 4.08a  
If you wish to work on your own private database, you can use the complete script ITMV1 (which uses both scripts above + sets the Kepler environment variables simultaneously):  
source /afs/efda-itm.eu/project/swit/scripts/ITMV1 KEPLERFOLDER  
MACHINENAME DATAVERSION  
e.g.:  
source /afs/efda-itm.eu/project/swit/scripts/ITMV1 kepler tore supra 4.08a  
See the UAL User Guide for more information.  
The source code is stored in a subversion repository in http://www.efda-itm.eu/isip/project/portal/gforge/storage/svnroot/ual/. To check out a subversion working copy of the repository, storing it in a subdirectory ual, do  
svn co http://gforge.efda-itm.eu/svn/ual
```

**Universal Access Layer (UAL)**

The UAL (Universal Access Layer) is a multi-language library that allows exchanging Consistent Physical Objects (CPOs) between various modules, and to write to an ITM database.

**actor**

Actors take execution instructions from a director. In other words, actors specify what processing occurs while the director specifies when it occurs. In the ITM-TF, actors are usually modules which contain physics codes like EQUAL or HELENA.

**calibration**

The process of adjusting numerical or physical modelling parameters in the computational model for the purpose of improving agreement with experimental data.

**data mapping**

An XML file containing all the mapping essentials for mapping from a local experimental database for a specific tokamak device to the ITM database. The mapping essentials include for instance the download method, local signal names, gains and offsets, time base, and eventual interpolation option to ensure that only one time base is set for each CPO that is built from multiple local signals. A java code (exp2ITM developed under ISIP), with the MD and DN files as inputs, is then run to connect to the local device database, retrieve the required experimental data and populate the ITM database instance for that shot/device and dataversion.

**Data base showing integration status of ITM codes**

**ITM Code Status**

List codes

Update already existing code

Specific code name:

Update code status

Code name:  Date (format=YYYYMMDD)  IMP12  IMP3  IMP4  IMP5  User ID

Description Status Date of next action Comments

Phase I: initial porting

(A) Porting to the ITM Gateway (runs on ITM Gateway, compilers, libraries, etc.)

(B) Completion of "grant of software license and rights to the ITM-TF" procedure

(C) Creation of a project under GForge and code under subversion (on the ITM Gateway or mirrored there)

Phase II (preparation of stand-alone module)

**Search results for 'code and specific and parameters'**

Match: All | Format: Long | Sort by: Score

Refine search: code specific parameters

Documents 1 - 10 of 35 matches. More stars indicate a better match.

**How to handle code specific parameters**

How to handle code specific parameters September 7, 2010 Contents 1 Why XML? 2.2 W3C XML Schemas 3.3 How to convert Code Parameters into XML 3.3.1 Step 1: Extraction - XML Schema . . . . . 4.3.2 Step 2: Conversion - XML File . . . . .  
[https://www.efda-itm.eu/~wwwimp3/TEST/ITM/html/itm\\_code\\_parameters.pdf](https://www.efda-itm.eu/~wwwimp3/TEST/ITM/html/itm_code_parameters.pdf) 09/07/10, 989220 bytes

**How to handle code specific parameters**

Home > HowTo's > How to handle code specific parameters Previous & Next & Index AMNS & EDGR & ISIP & IMP12 & IMP3 & IMP4 & IMP5 & ISM & Infrastructure & Conventions & Shot Journal & Numerical Tools & Visualization & Code Status & Code Catalog & Documentation Project & Verification and Validation & ITM Contact List in 2010 & Newsfeed & Glossary & EUFORIA & Search  
[https://www.efda-itm.eu/~wwwimp3/TEST/ITM/html/itm\\_code\\_parameters.html](https://www.efda-itm.eu/~wwwimp3/TEST/ITM/html/itm_code_parameters.html) 09/07/10, 33947 bytes

**ITM**

ITM September 7, 2010 Contents 1 AMNS 19 1.1 Scientific Rationale and Main Objectives . . . . . 19 1.2 ITM contact person . . . . .  
. . . . . 19 1.3 Tasks . . . . .  
<https://www.efda-itm.eu/~wwwimp3/TEST/ITM/pdf/itm.pdf> 09/07/10, 12899165 bytes

**Using XML for Code Specific Parameters**

Using XML for Code Specific Parameters C. Konz ITM TF Kepler Training, Cadarache May 4, 2009 Outline: Code Specific Parameters Proposed Approach W3C XML Schemas and F95 XML Parser Tools for Autogeneration of Schemas XML Use for ITM Data Structures Motivation structures form the basis of . . . . .  
[https://www.efda-itm.eu/~wwwimp3/TEST/ITM/imports/isp/public/isp\\_FortranXMLParser.pdf](https://www.efda-itm.eu/~wwwimp3/TEST/ITM/imports/isp/public/isp_FortranXMLParser.pdf) 08/27/10, 762677 bytes

**Glossary**

AMNS & EDGR & ISIP & IMP12 & IMP3 & IMP4 & IMP5 & ISM & Infrastructure & Conventions & Shot Journal & Numerical Tools & Visualization & Code Status & Code Catalog & Documentation Project & Verification and Validation & ITM Contact List in 2010 & Newsfeed & Glossary & EUFORIA & Search  
[https://www.efda-itm.eu/~wwwimp3/TEST/ITM/html/itm\\_glossary.html](https://www.efda-itm.eu/~wwwimp3/TEST/ITM/html/itm_glossary.html) 09/07/10, 11597 bytes

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Using XML for Code Specific Parameters C. Konz ITM TF Kepler Training, Cadarache May 4, 2009 Outline: Code Specific Parameters Proposed Approach W3C XML Schemas and F95 XML Parser Tools for Autogeneration of Schemas XML Use for ITM Data Structures Motivation structures form the basis of . . . . .  
[https://www.efda-itm.eu/~wwwimp3/TEST/ITM/imports/edrg/public/AVS2010/ERC3D\\_WS\\_5July/presentation\\_konz.pdf](https://www.efda-itm.eu/~wwwimp3/TEST/ITM/imports/edrg/public/AVS2010/ERC3D_WS_5July/presentation_konz.pdf) 08/27/10, 762677 bytes

**Animated history of the documentation project**

Monday, 06 September, 2010 16:39:26