Why use the WWW as an interface ?

Alan Hewat
ILL Grenoble

1) Programs remain on local computers - easy to update
2) Programs run on any computer - Mac, PC, Unix...
3) User-friendly GUI & on-line help
4) Modernise old fortran applications
5) Control user access – only authorized users allowed

What programs work with WWW ?

Alan Hewat
ILL Grenoble

1) Programs that read just a few parameters
2) Programs that use data files.
3) Programs that use a CLI - Command Line Interface.
4) Programs that use Command Line Parameters
5) Any combination of the above

..... This covers just about everything !!!

What programs DON'T work with WWW?

Alan Hewat

ILL Grenoble

1) Programs that use an INTEGRATED GUI (& no CLI)

(Note for programmers – keep GUI separate from remaining code)

2) Spaghetti coded CLI - random questions to the user

(Note – program modular – even if you don't have a GUI now)

..... Because they will not accept packaged input

Simple or Sophisticated ?

Alan Hewat
ILL Grenoble

Available techniques range from simple to sophisticated.

1) Old **fortran** programs plus **simple HTML**
2) More sophisticated but still easy **PERL CGI scripts**
3) Dynamic **creation of GIF, VRML** and other plot files
4) **Javascript** additions to make HTML forms **interactive**
5) **Java** applets as local GUI's to remote applications

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How does “Simple” work ?

Alan Hewat
ILL Grenoble

1) Create an WWW form to take input from the user.

The **INPUT** from the **FORM** is **posted to CGI script “/cgi-bin/answer”**

How does “Simple” work ?

Alan Hewat
ILL Grenoble

2) Create a CGI script “/cgi-bin/answer” (Unix example)

This **CGI script** just reads the variable **$input** from the WWW form, and runs a simple Fortran program “fortrantime” that calls function “fdate()”

3) Your useful old Fortran program to be modernized

3 Components of a “Simple” WWW-GUI

Alan Hewat
ILL Grenoble

1) Create an WWW form to take input from the user.

2) Create a CGI script “/cgi-bin/answer” (Unix example)

3) Your useful old Fortran program to be modernized

4) Add links to help files to make life easy for novices

3 Components of a “Simple” WWW-GUI

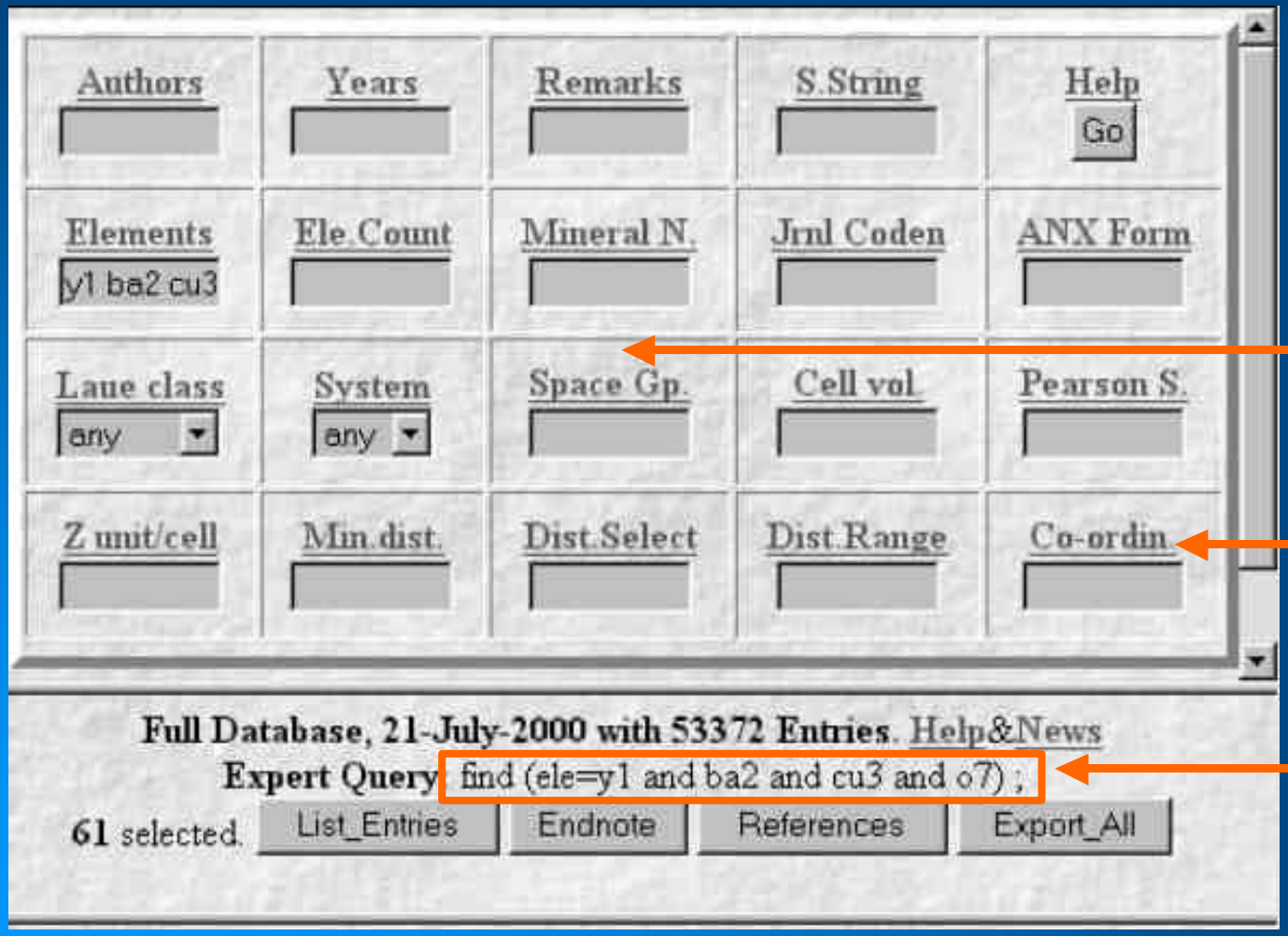
Old Fortran CLI

Alan Hewat
ILL Grenoble

The CLI dialogue in the old CRYSTIN search engine for ICSD

A “Simple” WWW-GUI

Alan Hewat
ILL Grenoble



WWW-GUI form

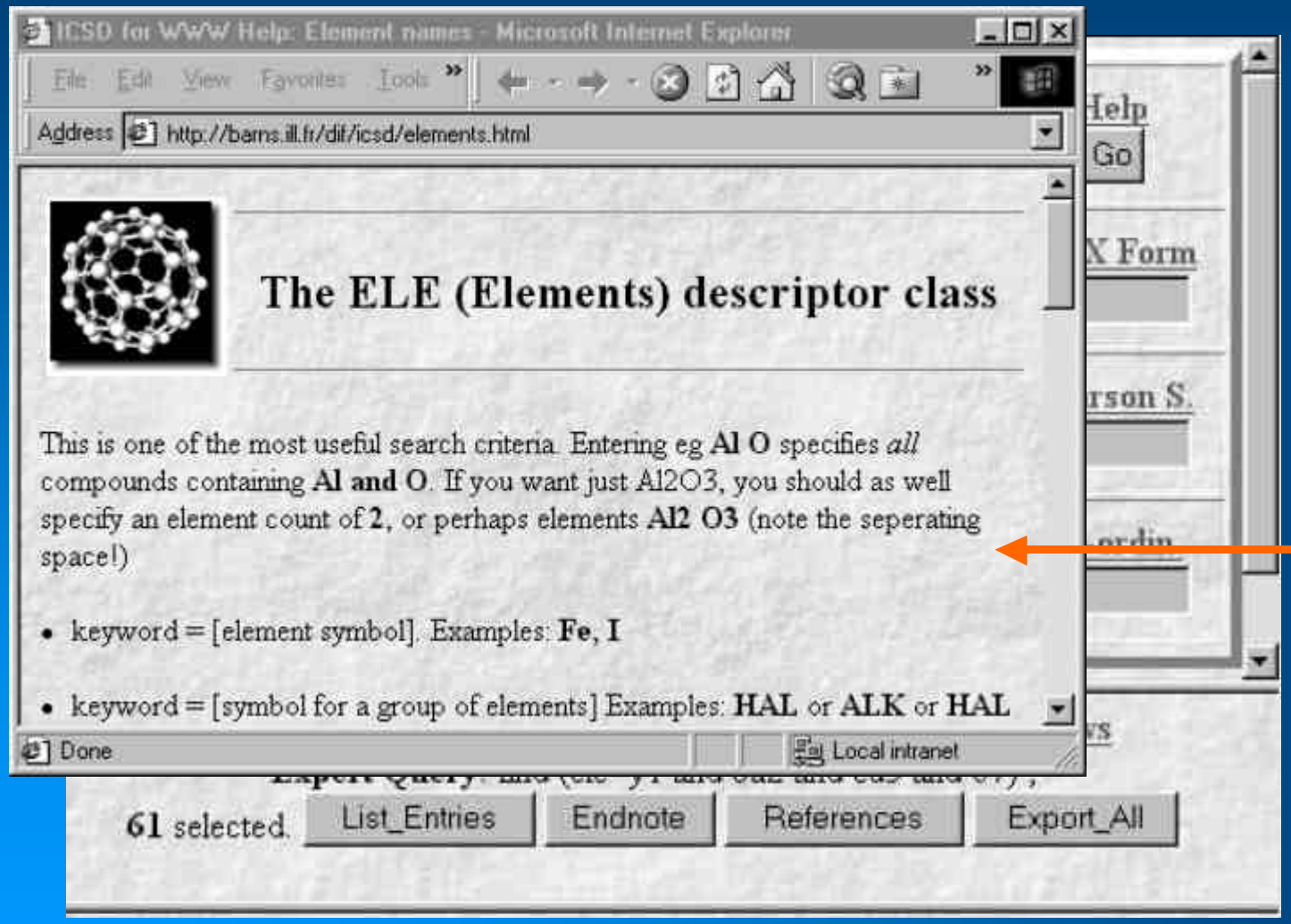
Help Links

Actual CLI Query

Simple WWW-GUI interface to ICSD barns.ill.fr/dif/icsd/

Alan Hewat
ILL Grenoble

A "Simple" WWW-GUI



Help Links

Simple WWW-GUI interface to ICSD barns.ill.fr/dif/icsd/

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The value of PERL www.perl.com

PERL = Practical Extraction and Report Language

Alan Hewat

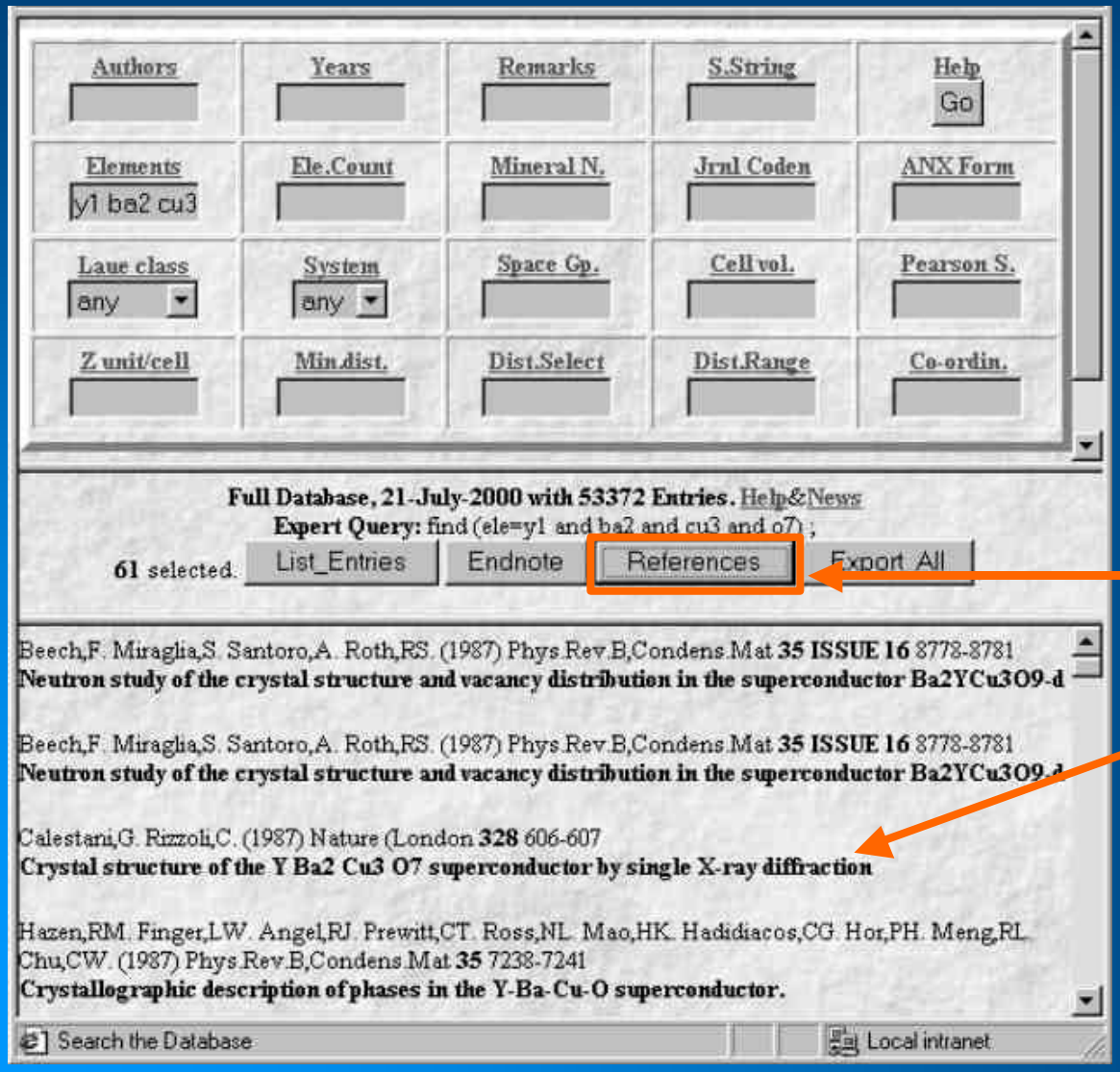
ILL Grenoble

1) A simple scripting language that works on **all computers**

2) Powerful for text/string manipulation (HTML output)

The value of PERL www.perl.com

Alan Hewat
ILL Grenoble



ICSD-for-WWW
barns.ill.fr/dif/icsd/

PERL used to print formatted references

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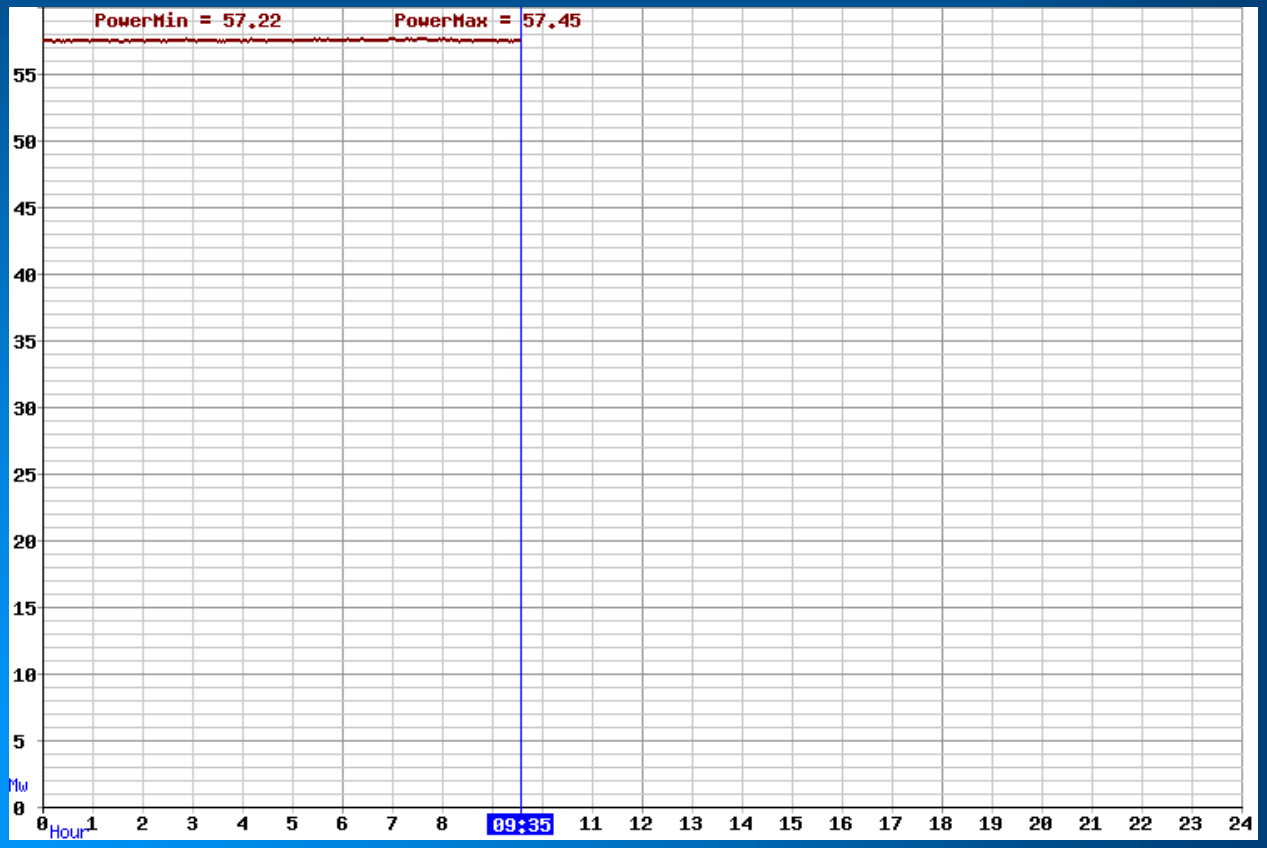
Dynamically generated WWW data plots

Alan Hewat
ILL Grenoble

The WWW server plots data and outputs GIF image files eg using PGPLOT



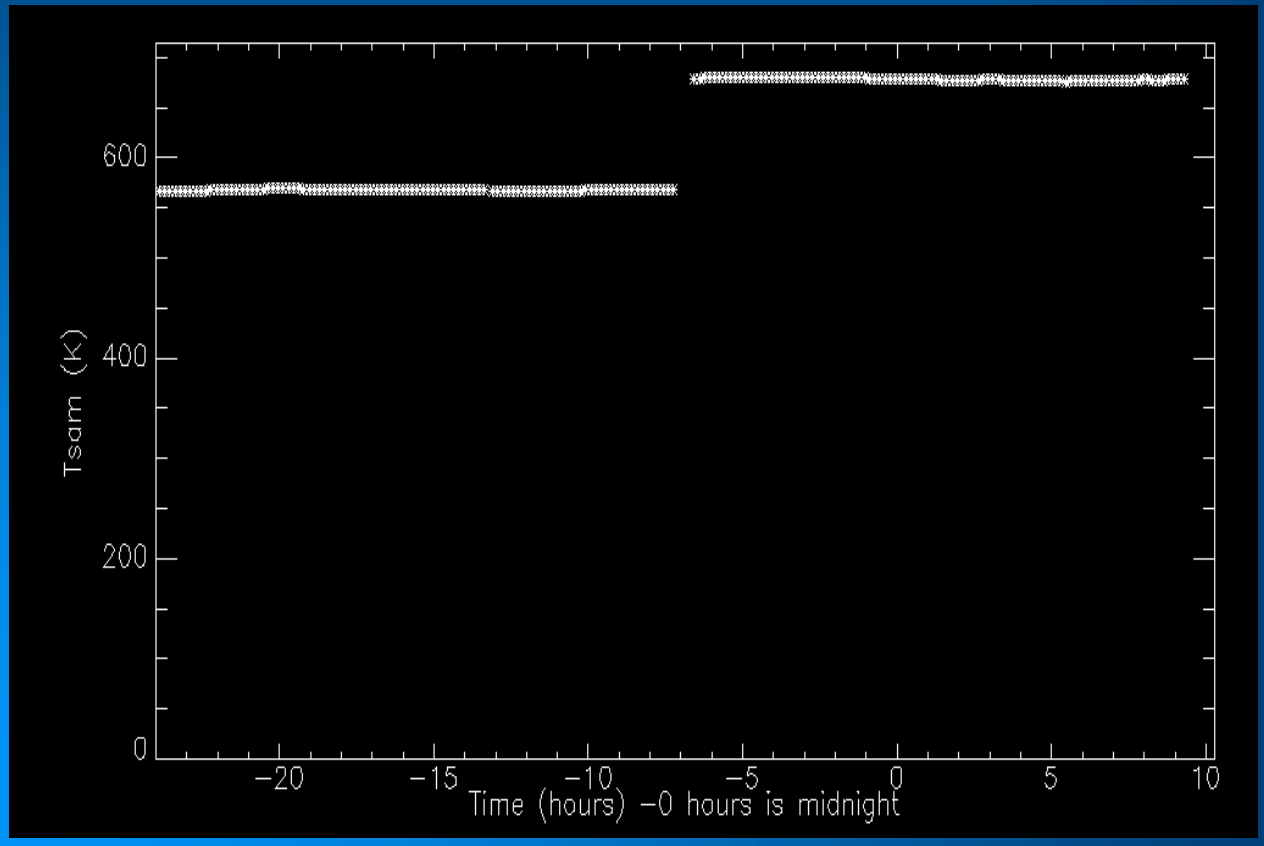
ILL reactor power. GIF plot automatically updated every 15 minutes

Fabien Pinet, ILL

Dynamically generated WWW data plots

Alan Hewat
ILL Grenoble

The WWW server plots data and outputs GIF image files using eg PGPLOT



D7 diffractometer sample Temperature. GIF plot updated on demand.

Ross Stewart, ILL

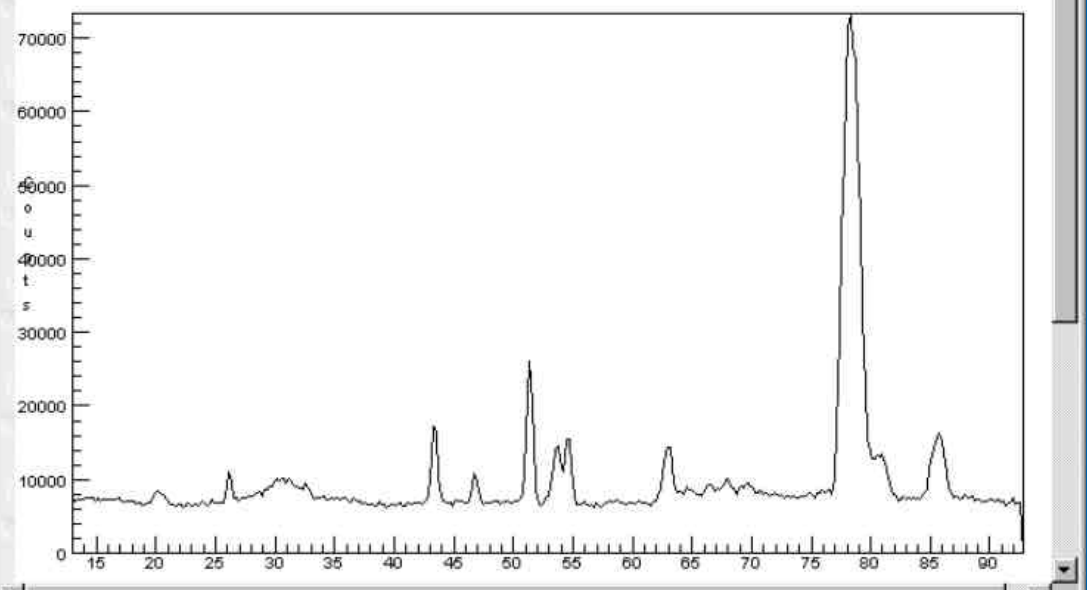
Dynamically generated WWW data plots

Alan Hewat

ILL Grenoble

Powder Diffractometer Status For DMC

RunNumber	3197
Title	1st test pcell A1, p1
User	sadykov
Sample	CuCr2S4 + NaCl, 1
wavelength	2.559238
SampleTemperature	Undetermined
Status	Counting

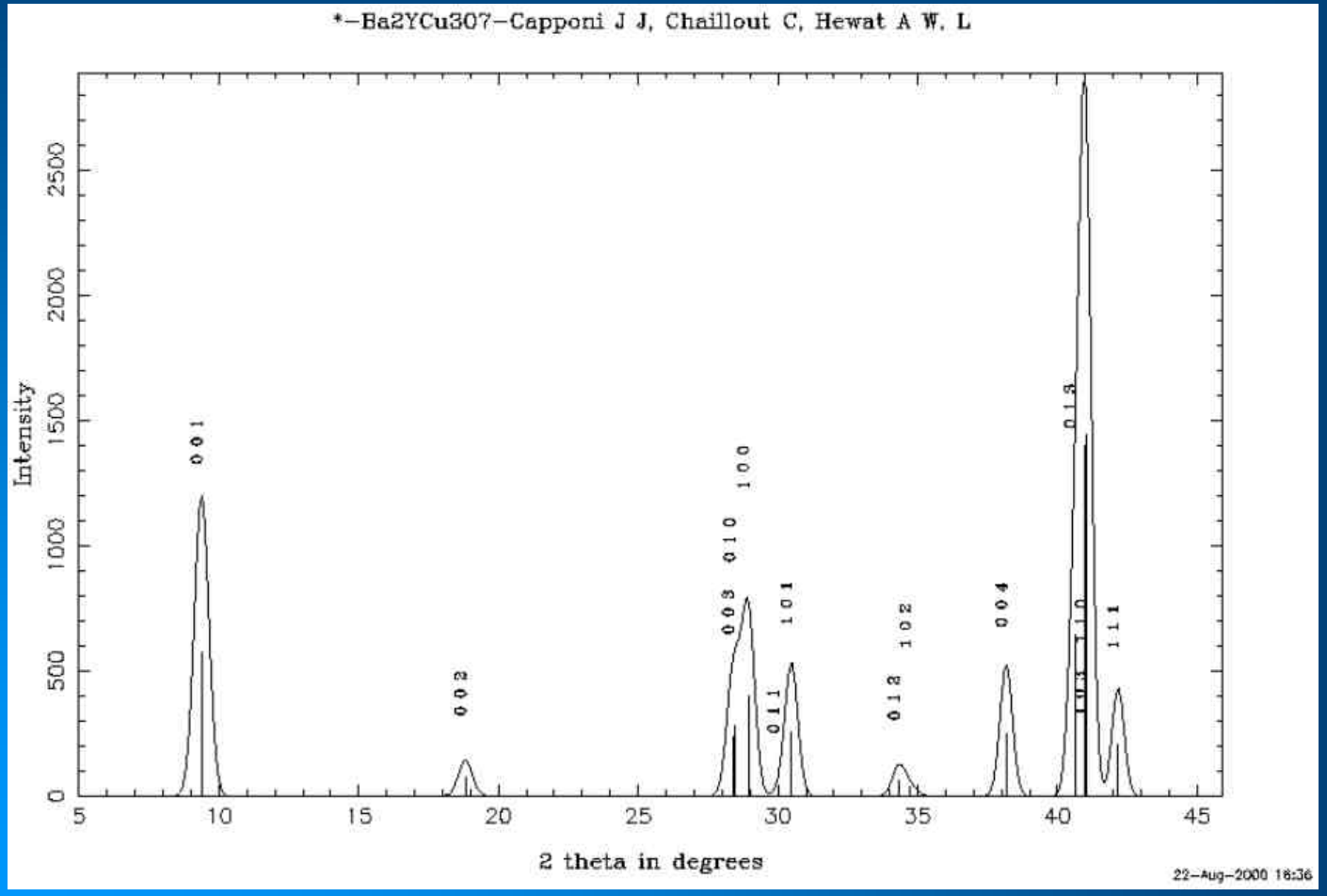


Real-time display in Grenoble of Swiss diffractometer DMC

Dynamically generated WWW postscript

Alan Hewat
ILL Grenoble

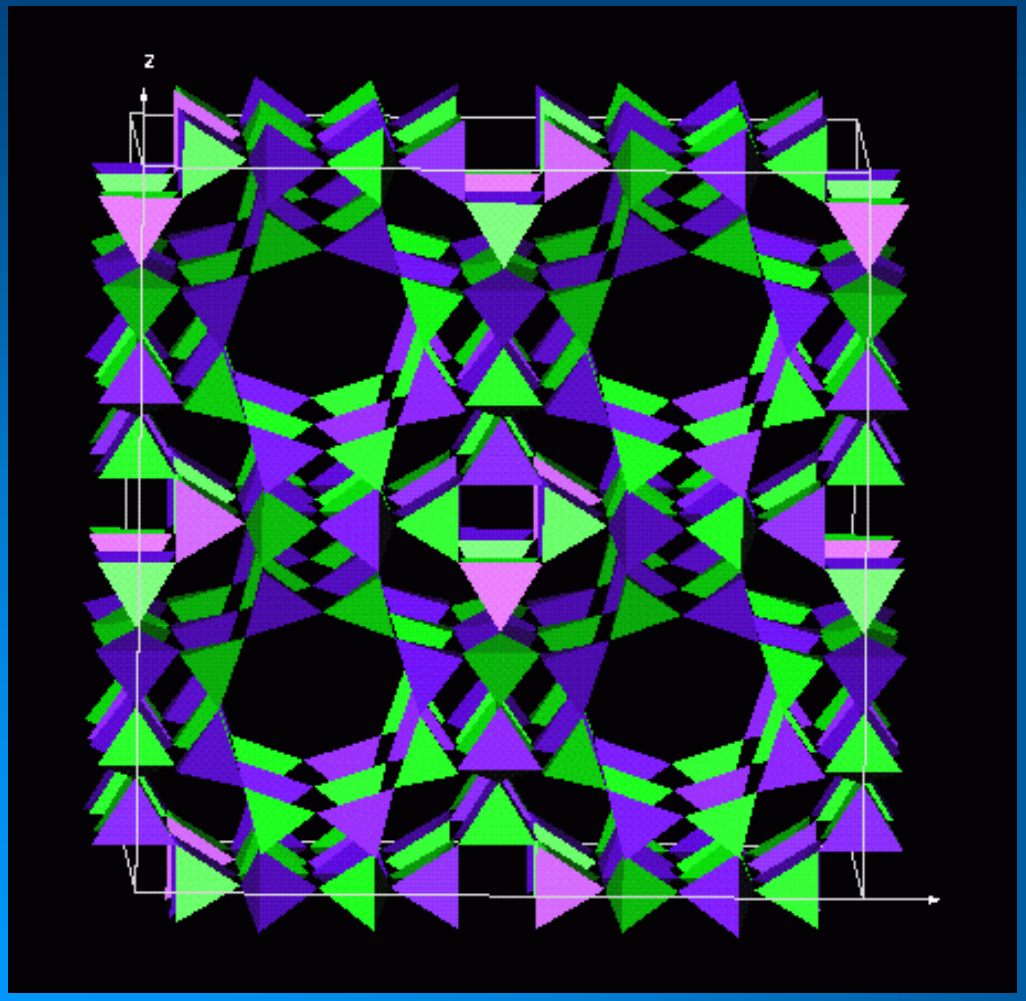
High resolution printout or display



Lazy Pulverix generates postscript plots barns.ill.fr/dif/icsd/

Alan Hewat
ILL Grenoble

Dynamically generated 3D VRML



VRML is a general 3D format for WWW use

Show me

Xtal-3d generates VRML crystal structures barns.ill.fr/dif/icsd/

Simple or Sophisticated ?

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Javascript for interactive WWW-GUI

Alan Hewat
ILL Grenoble

Lazy Pulverix uses Javascript on barns.ill.fr/dif/icsd/

ECM-19, Nancy, August 2000

Javascript for interactive WWW-GUI

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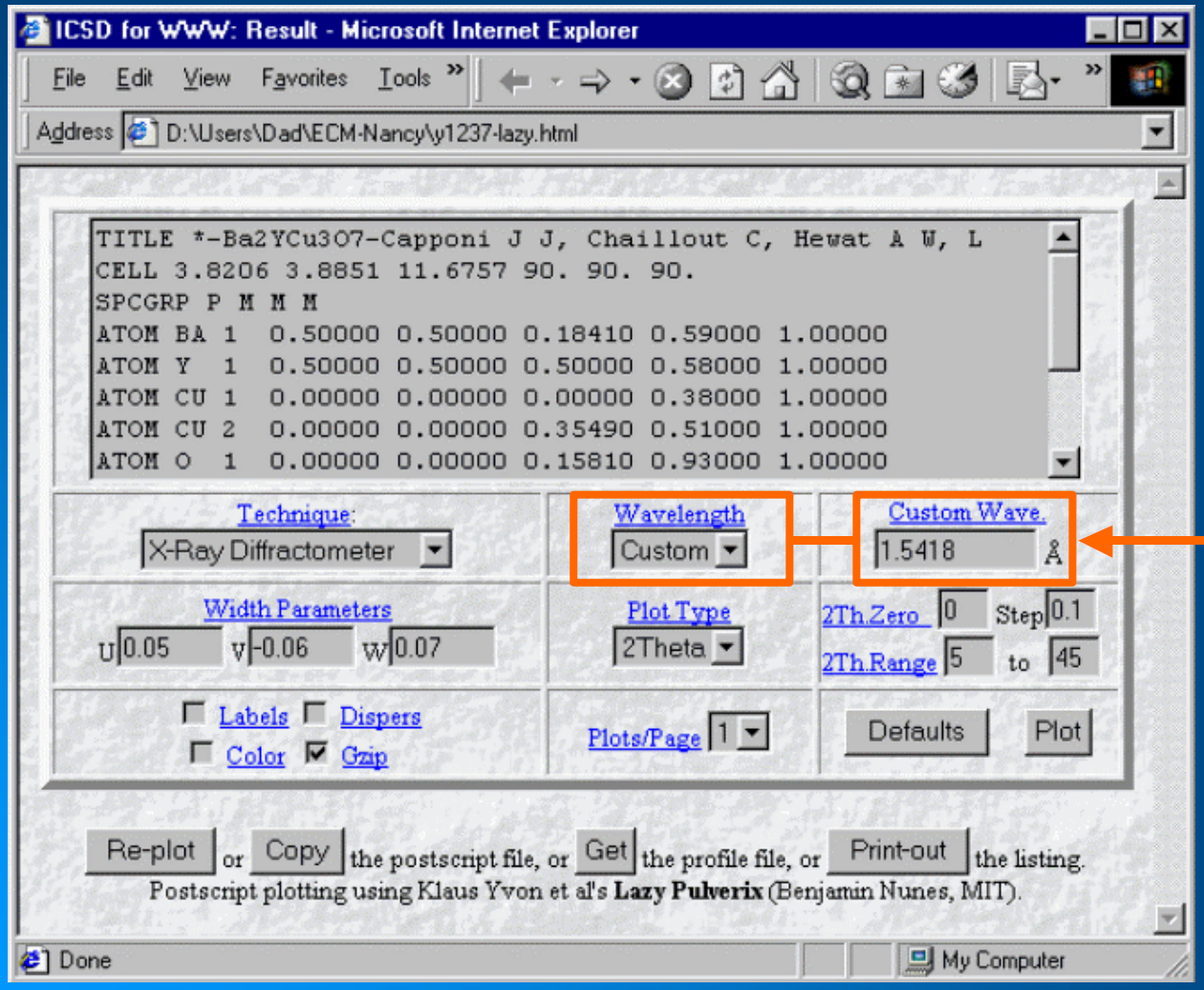

JAVASCRIPT used to select precise wavelength

Show me

Lazy Pulverix uses Javascript on barns.ill.fr/dif/icsd/

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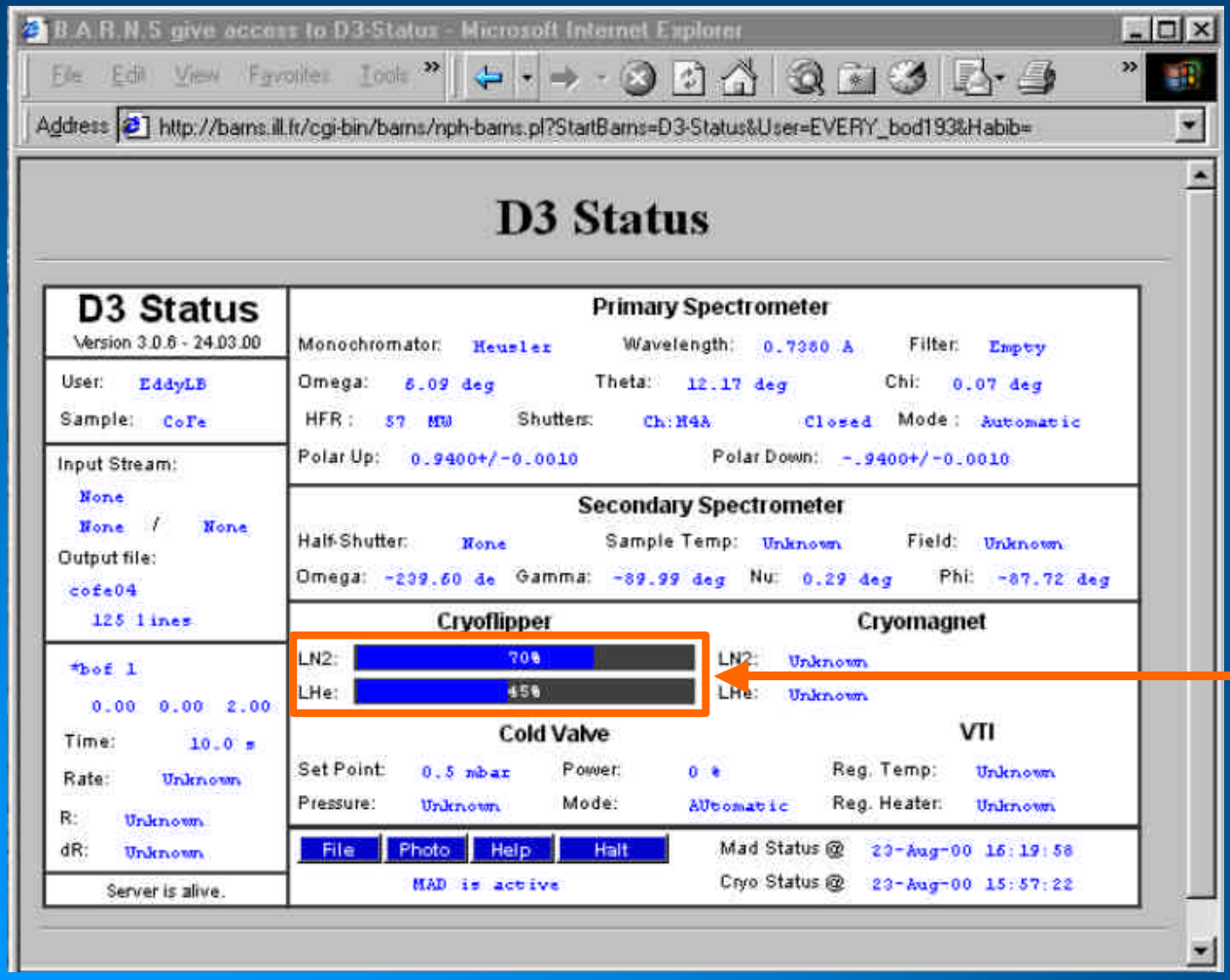
http://barns.ill.fr

JAVA applets monitor/control machines

D3 diffractometer operation monitor.

Alan Hewat
ILL Grenoble



Java graphic monitor for cryogenic levels, temperature etc

The server downloads JAVA code to run on the local WWW browser

Marcel Portes de Albuquerque & Eddy Lelievre, ILL

http://barns.ill.fr

JAVA applets monitor/control machines

D3 diffractometer operation monitor.

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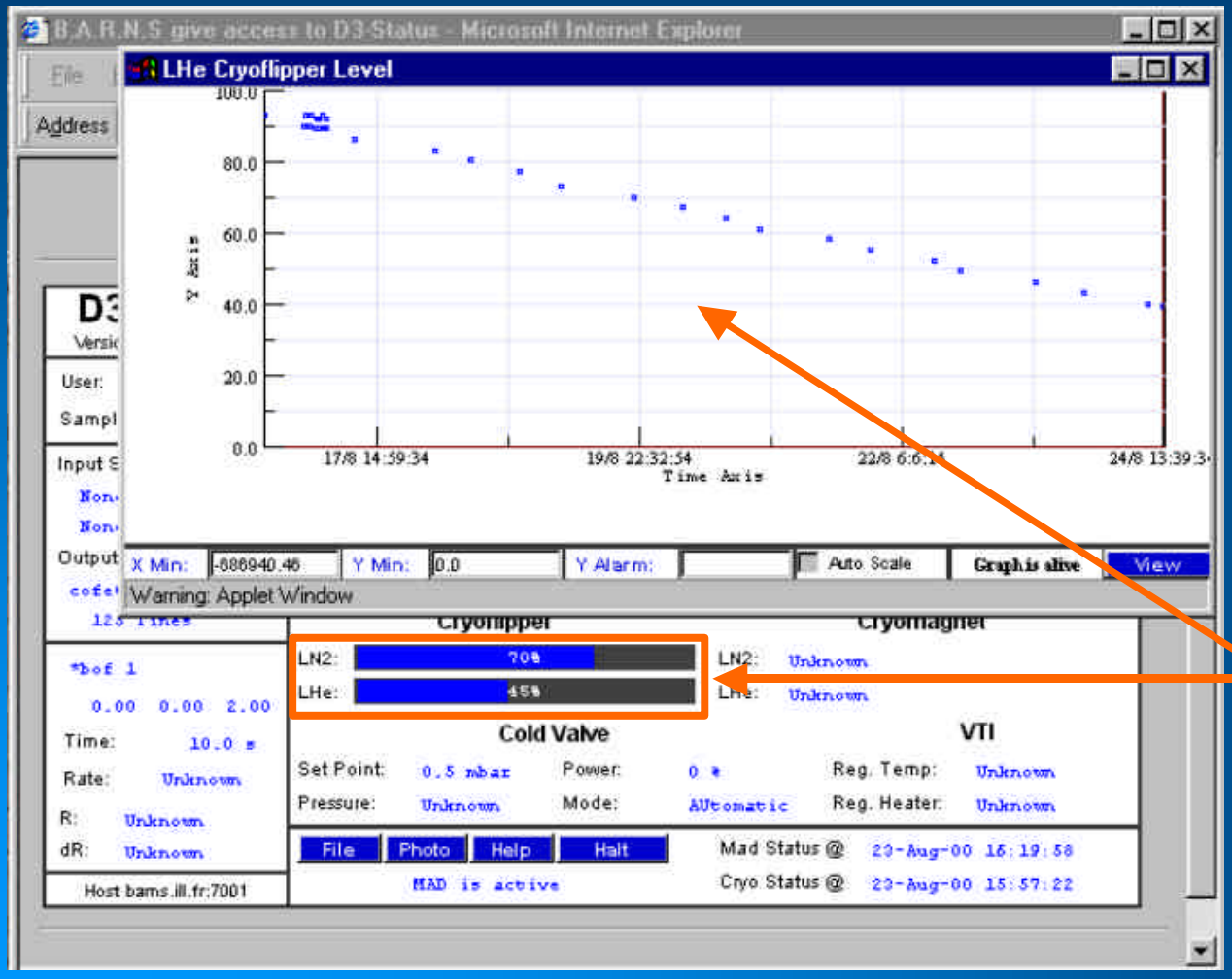

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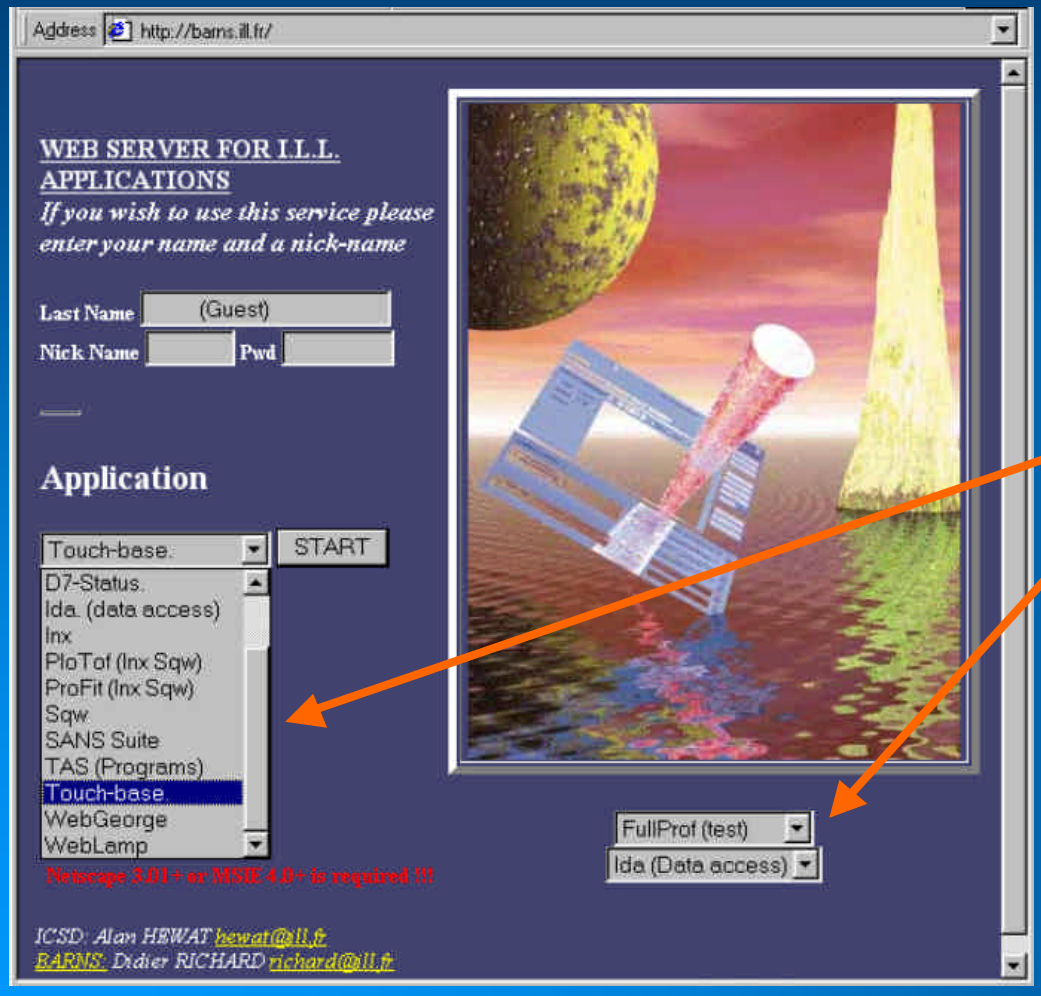
http://barns.ill.fr

JAVA applets monitor/control machines

General ILL WWW diffractometer monitor

Alan Hewat
ILL Grenoble



Large choice of Java and other applications

The server downloads JAVA code to run on the local WWW browser

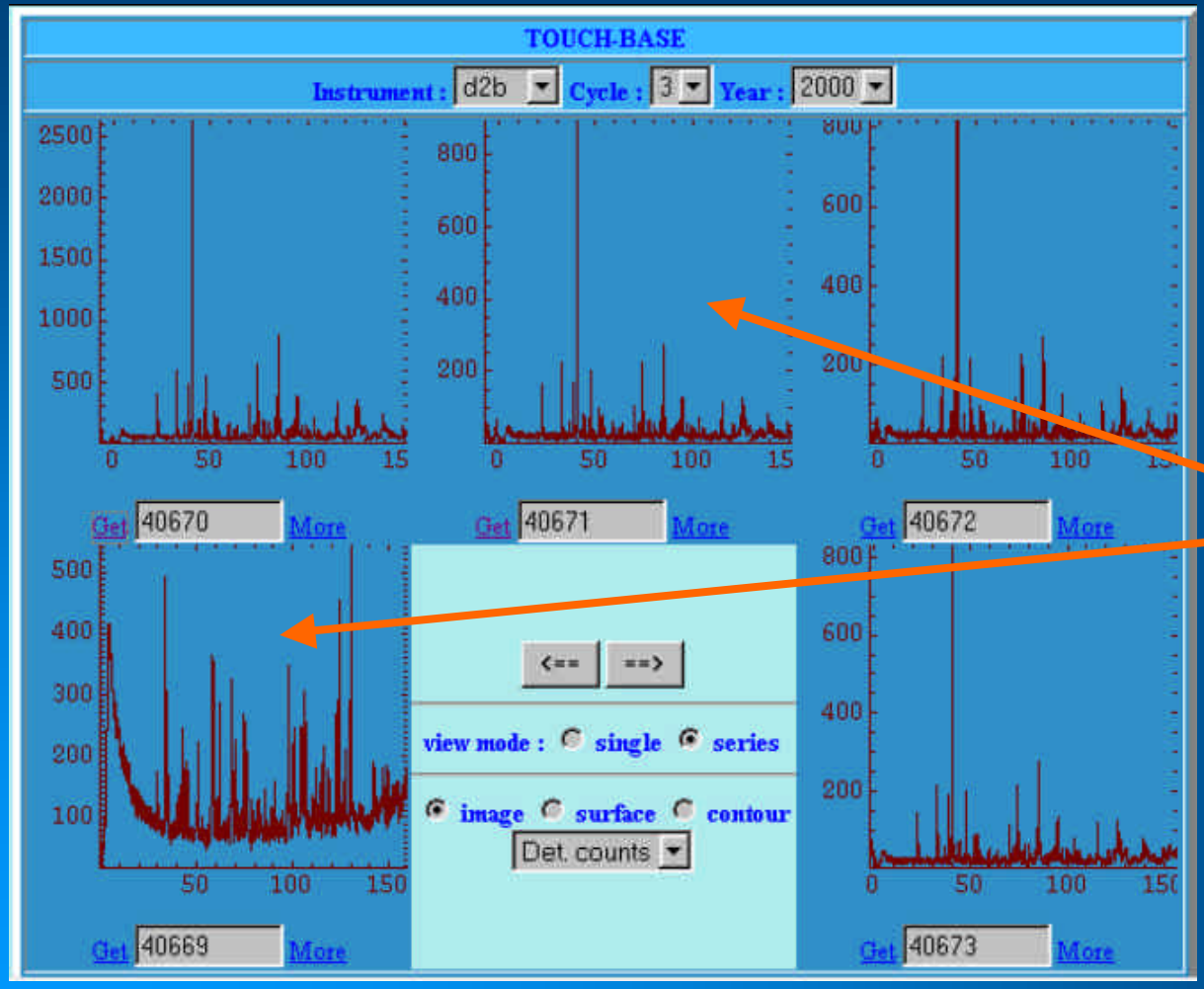
Didier Richard, ILL

http://barns.ill.fr

JAVA applets monitor/control machines

ILL TouchBase diffractometer monitor for D2B

Alan Hewat
ILL Grenoble



Series of D2B powder diffraction patterns

The server downloads JAVA code to run on the local WWW browser

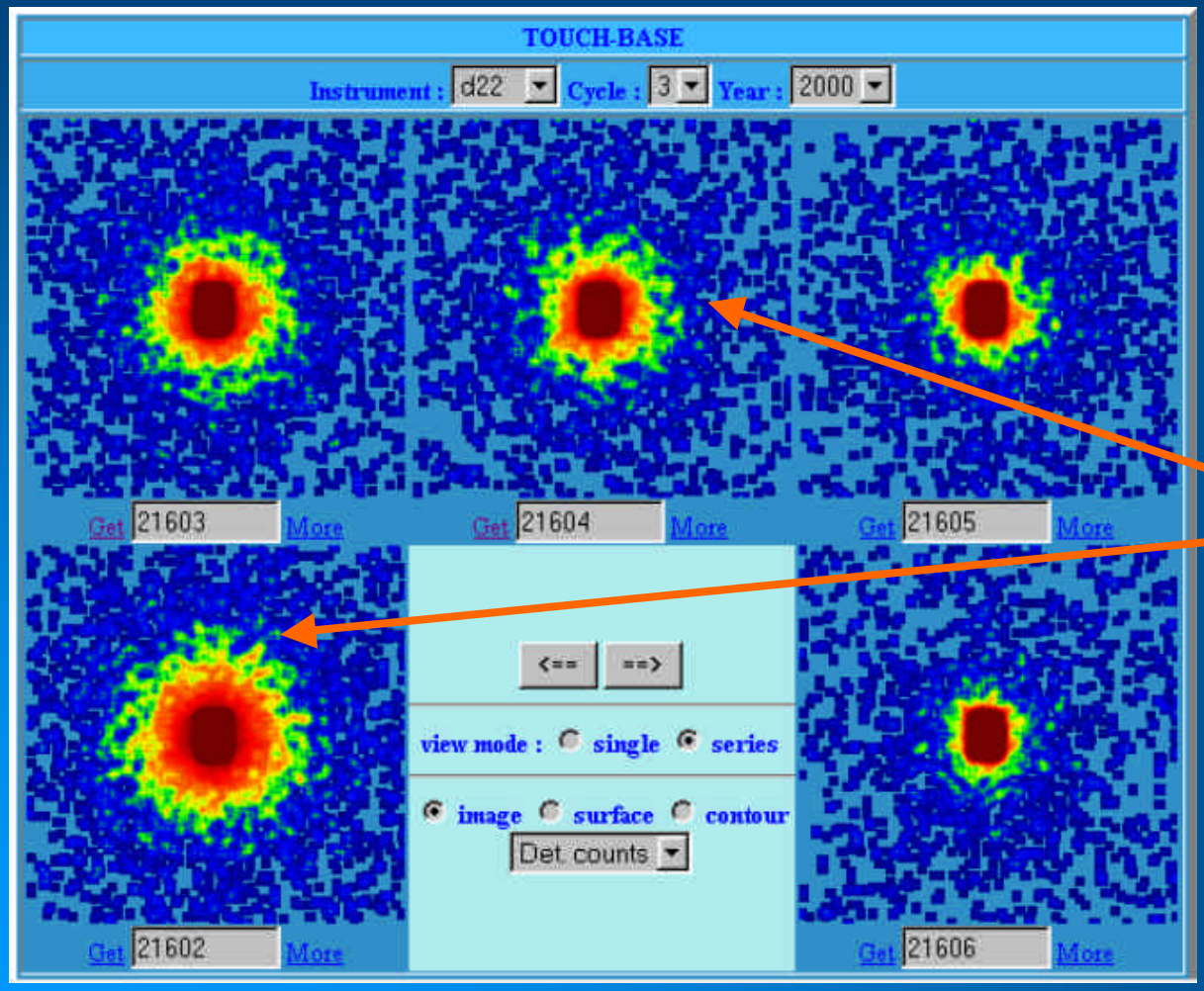
Didier Richard, ILL

http://barns.ill.fr

JAVA applets monitor/control machines

ILL TouchBase diffractometer monitor for D22

Alan Hewat
ILL Grenoble



Series of D22 SANS diffraction patterns

The server downloads JAVA code to run on the local WWW browser

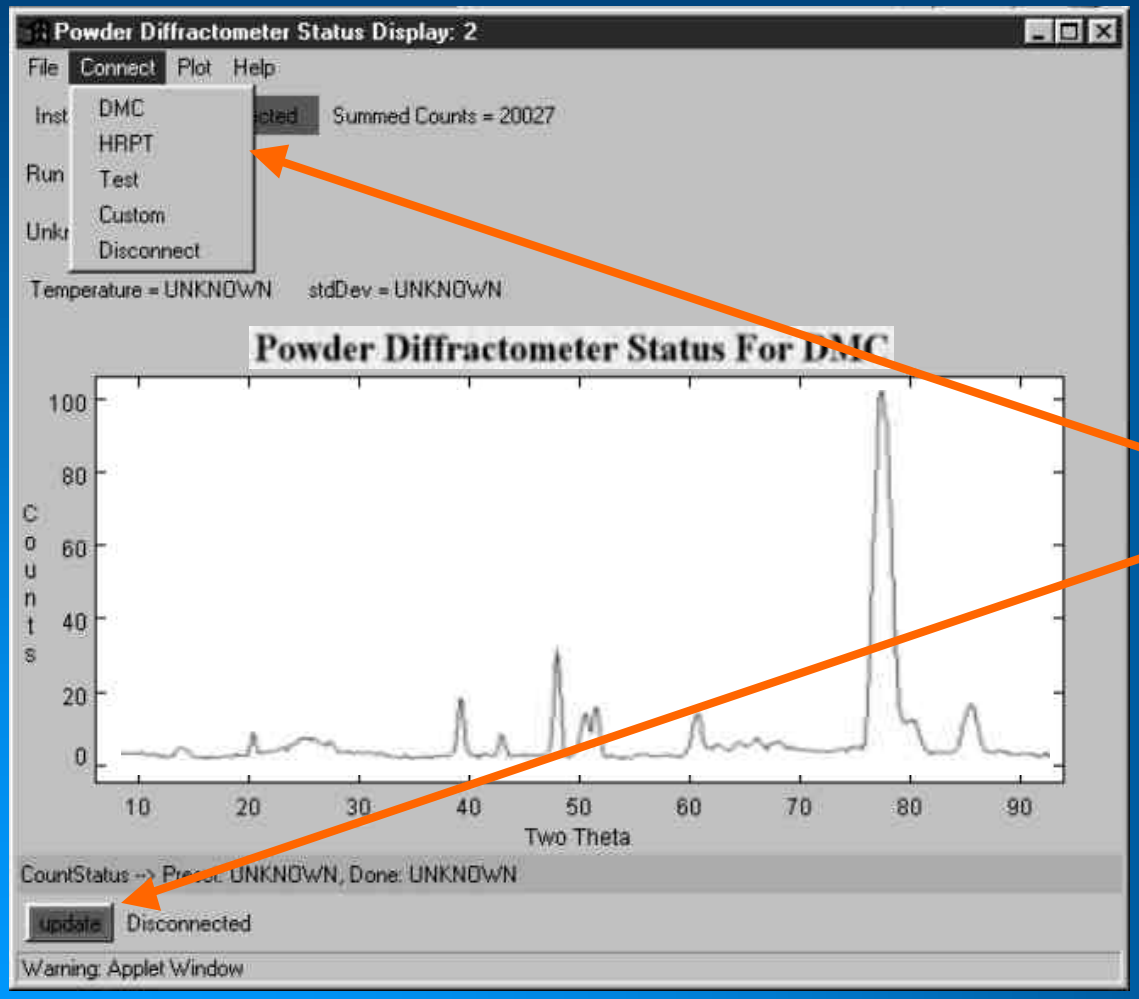
Didier Richard, ILL

http://lns00.psi.ch/

JAVA applets monitor/control machines

Swiss PSI diffractometer operation

Alan Hewat
ILL Grenoble



Automatic or manual update every ~ seconds

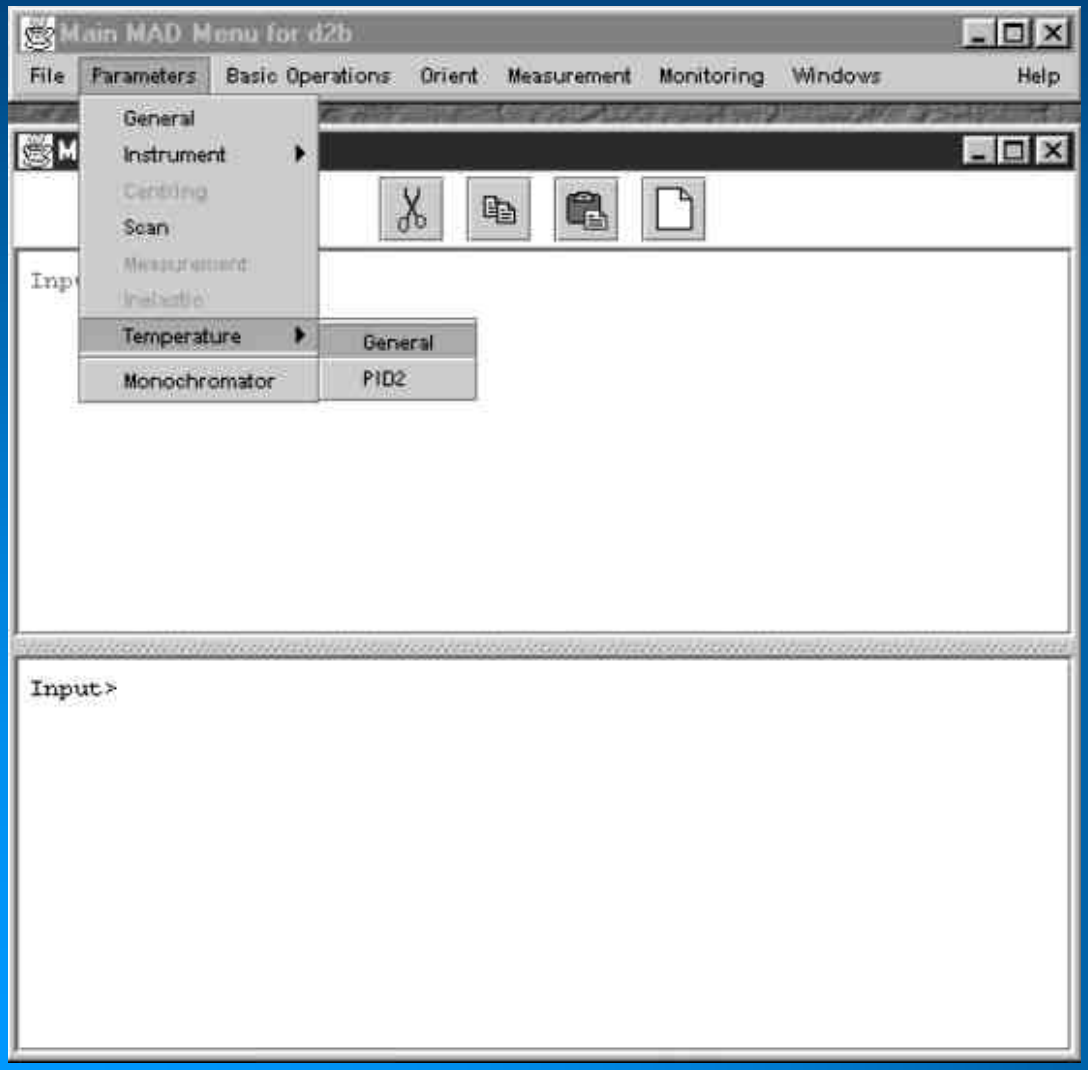
Dynamic display of powder patterns.

Mark Koennecke, PSI

JAVA applets monitor/control machines

ILL General diffractometer control application

Alan Hewat
ILL Grenoble



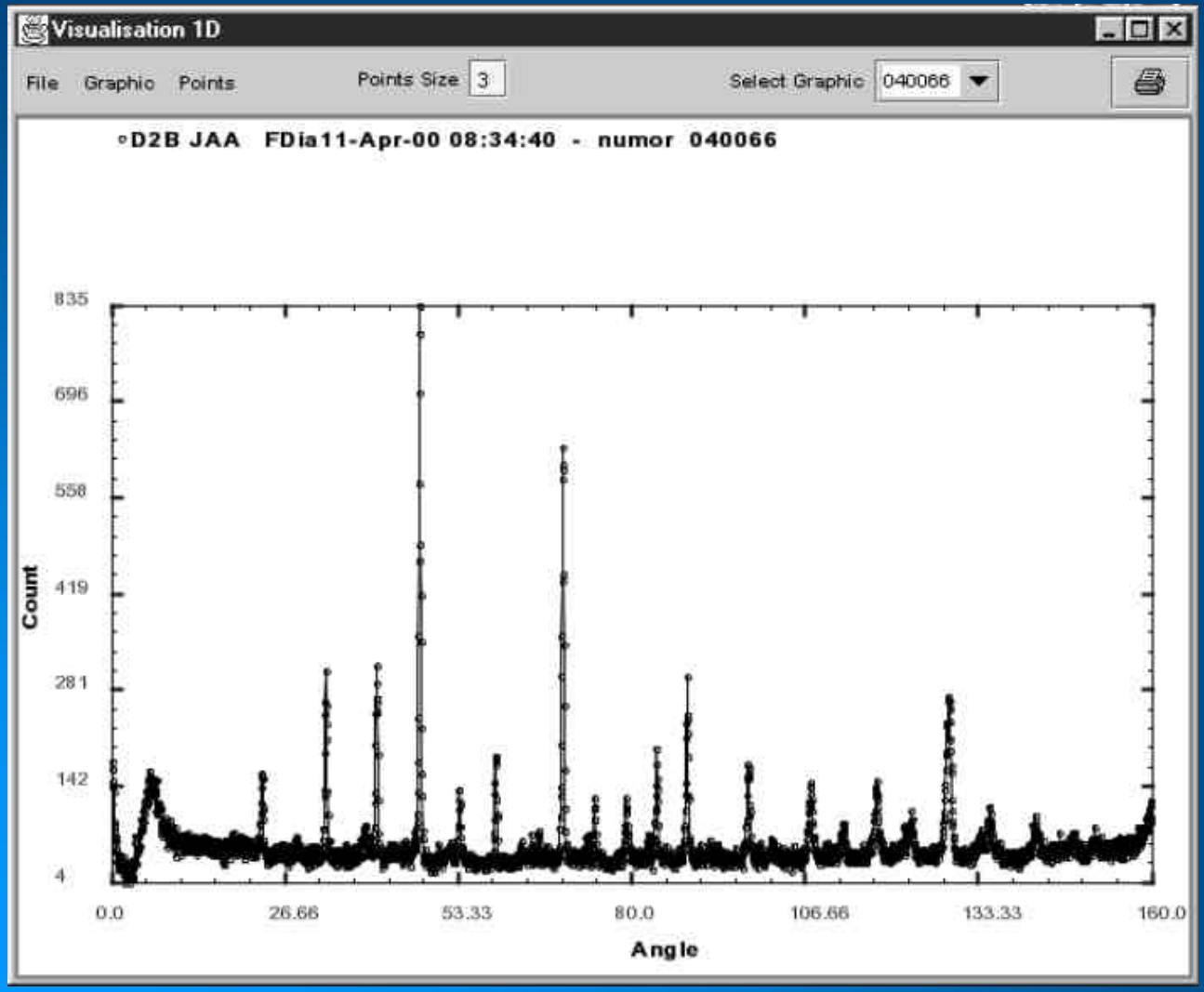
- Menus and parameters are read from simple text files
- Auto grayed out menu items not applicable in this case (eg no centering for powders)

JAVA applets monitor/control machines

ILL General 1D/2D/3D plot application

Alan Hewat

ILL Grenoble



- Multiple colored plots
- Change of scale etc...

Show me

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ILL Grenoble

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Simple or Sophisticated ?

Alan Hewat
ILL Grenoble

1) **Simple HTML will already provide a useful GUI**

2) Basic **PERL CGI scripts** will eventually be needed

3) Dynamic **creation of GIF** is relatively fast & easy

4) **Javascript** additions require a bit more work

5) **Java applets** are for **experts**, and are **rather slow**
(but Java interpreters & computers will get faster)

Why use the WWW as an interface ?

Alan Hewat
ILL Grenoble

It's easy and makes life easy for users