

THE DEVELOPMENT OF IRMIS AND ITS APPLICATION AT LANSCE



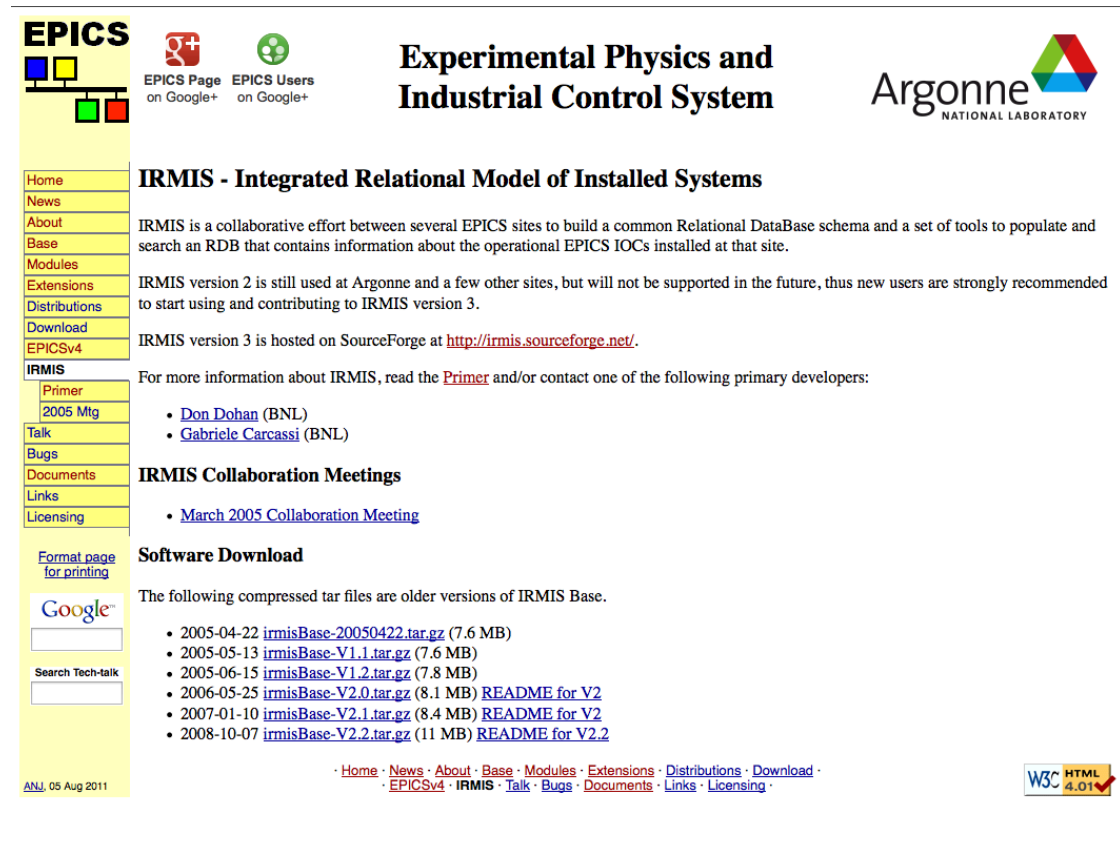
Kanglin Xu
John Faucett
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IRMIS 2 was developed by Argonne National Lab. Today it covers many aspects of EPICS control systems including IOCs, PVs, cables, models and etc.

- IRMIS 2 basically has
 - RDB modules and schema
 - PV crawler for loading PVs from database
 - GUI Application by Java
- Stable and used at APS
- But NOT supported by IRMIS community anymore



The screenshot shows the EPICS IRMIS website. The header includes the EPICS logo, Google+ links for the EPICS Page and EPICS Users, the title "Experimental Physics and Industrial Control System", and the Argonne National Laboratory logo. The main content area is titled "IRMIS - Integrated Relational Model of Installed Systems". It describes IRMIS as a collaborative effort to build a common RDB schema and tools. It notes that IRMIS version 2 is still used but will not be supported in the future, and version 3 is hosted on SourceForge at <http://irmis.sourceforge.net/>. It provides links to a primer and contact information for developers Don Dohan and Gabriele Carcassi. There is a section for IRMIS Collaboration Meetings, including a link to the March 2005 meeting. A Software Download section lists older versions of IRMIS Base as compressed tar files with their sizes and release dates. The footer includes a navigation menu with links to Home, News, About, Base, Modules, Extensions, Distributions, Download, EPICSv4, IRMIS, Talk, Bugs, Documents, Links, and Licensing, along with a W3C HTML 4.01 validation logo.

EPICS
EPICS Page on Google+ EPICS Users on Google+

Experimental Physics and Industrial Control System

Argonne
NATIONAL LABORATORY

IRMIS - Integrated Relational Model of Installed Systems

IRMIS is a collaborative effort between several EPICS sites to build a common Relational DataBase schema and a set of tools to populate and search an RDB that contains information about the operational EPICS IOCs installed at that site.

IRMIS version 2 is still used at Argonne and a few other sites, but will not be supported in the future, thus new users are strongly recommended to start using and contributing to IRMIS version 3.

IRMIS version 3 is hosted on SourceForge at <http://irmis.sourceforge.net/>.

For more information about IRMIS, read the [Primer](#) and/or contact one of the following primary developers:

- [Don Dohan](#) (BNL)
- [Gabriele Carcassi](#) (BNL)

IRMIS Collaboration Meetings

- [March 2005 Collaboration Meeting](#)

Software Download

The following compressed tar files are older versions of IRMIS Base.

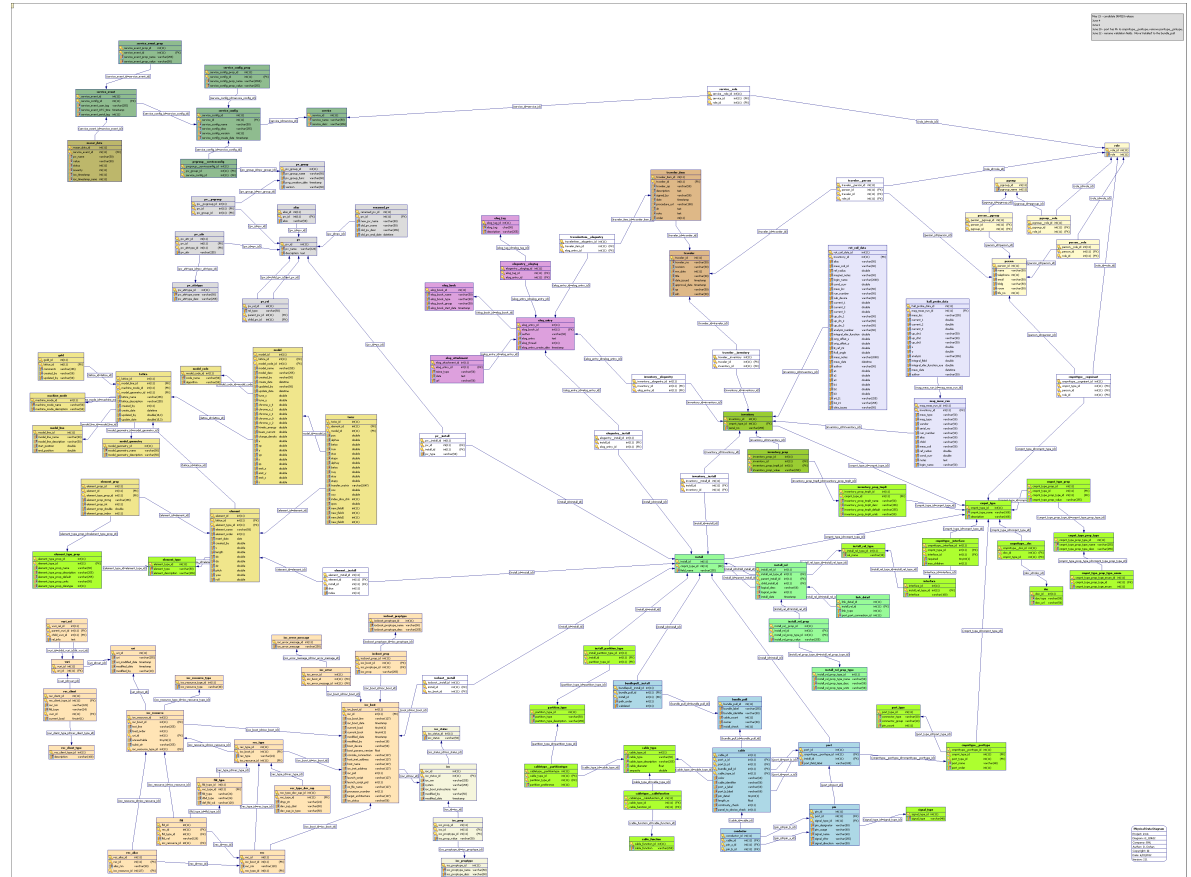
- 2005-04-22 [irmisBase-20050422.tar.gz](#) (7.6 MB)
- 2005-05-13 [irmisBase-V1.1.tar.gz](#) (7.6 MB)
- 2005-06-15 [irmisBase-V1.2.tar.gz](#) (7.8 MB)
- 2006-05-25 [irmisBase-V2.0.tar.gz](#) (8.1 MB) [README for V2](#)
- 2007-01-10 [irmisBase-V2.1.tar.gz](#) (8.4 MB) [README for V2](#)
- 2008-10-07 [irmisBase-V2.2.tar.gz](#) (11 MB) [README for V2.2](#)

Home · News · About · Base · Modules · Extensions · Distributions · Download · EPICSv4 · IRMIS · Talk · Bugs · Documents · Links · Licensing

W3C HTML 4.01

IRMIS 3 was started by Donald Dohan of Brookhaven National Laboratory. It will cover pretty much every aspect related to EPICS information and data.

- A variety of tools and frameworks with different programming languages like Java, Python, Matlab, Groovy and etc.
- Collaborated work in BNL, MSU, SNS and Canadian Light Source
- But how is its status, still ongoing ?



LANSCCE-RM Device Database System is a site IRMIS implementation to install, manipulate, track, and search the data and information for LANSCCE control systems.

- IRMIS 2 Schema and tables
- IRMIS 2 PV Crawler
- Application based upon REST – Representational State Transfer
- More schema other than those covered by IRMIS
- More applications and features

The screenshot shows the LANSCCE-RM Device Database System web interface. The header includes the title "LANSCCE-RM Device Database System" and a navigation menu with links: Home, Mobile, Login, Channel, Component, LCS, CCR Day Log, Wire Scanner, About, and Help. The main content area welcomes users and provides information about the system's purpose and usage. It mentions that the system is under development and lists various features and links. A sidebar on the right contains "Update and News" and "Associated Links" sections. The footer includes a status message "Yeah under construction like lots of good sites" and a search bar.

LANSCCE-RM Device Database System

Home Mobile Login Channel Component LCS CCR Day Log Wire Scanner About Help

Welcome to LANSCCE-DM Device Database System! The LANSCCE-RM Device Database is an AOT-IC project to build a relational database schema and corresponding GUI and web interface to install, manipulate, populate, track, and search the data and information about LANSCCE-RM devices.

Folks with **iPad**, **iPhone** or **android** devices, although you are still able to use the regular pages, might also be interested in [here](#) for mobile device friendly pages.

Since this system is developed on Firefox browsers, the other browsers, like Microsoft Internet Explorer, may or may not work correctly. So we strongly recommend you to use Firefox for this system. Note that this system also uses Javascript for front development and some pages need cookies for verifying users. So please enable Javascript and cookie for your browser. Basically, they are default enabled. So you are probably not needed to do anything.

This system is under development. However, parts of system are available for testing. Currently, we have deployed:

- Please click [here](#) for PV fast search.
- Do you want to find the information for **removed** or **expired** PVs. [Here](#) you are.
- PV/Channel Report will dynamically generate a channel table and channel XLS spreadsheet with any field-column at your choice in it. [Here](#) is details.
- Switch or network devices table has been deployed. Go [here](#) if interested.
- [Here](#) is IOC information list.
- If you forget the launching point for an application in the treepml menu, please try [this](#).
- Please try New Wire Scanner Information System by click [it](#).
- Magnet power supply(MPS) list for the MPS team.
- Resolved MR fulltext search for software systems is at least helpful for me.
- **CCR Day Log** would keep the electronic copies of screenshots and logs if operators obtain or print daily logs via any of two applications located at Treepm/Print/CCR Daily Log. Furthermore, users of Daily Logs can add a brief comment for each electronic copy to make those daily logs to be full-text-searchable on comments, comment writers and dates.

Have suggestions or comments? Please hit [here](#), or **Feedback** button on the menu bar.

Update and News

- DB Design For LANSCCE-RM
- Presentation For RDB
- Comments to Kanglin
- Please stop by for update

Associated Links

- LANSCCE
 - Software Team
 - Work Controls
 - Mesa Library
 - Resolved SW MR Search
- Others
 - Controls Doc
 - Resources
 - Network Status

Yeah under construction like lots of good sites

Search: Submit

The LANSCE-RM Device Database System is developed by using many popular open source software, tools and frameworks.

- **LAMP open source software packages**
 - Refer to the first letters of Linux, Apache, MySQL and PHP, PERL or Python
- **Python Django framework for the server side**
 - Pure python
 - MVC pattern
 - Free admin interface and user authentication ready
- **SQLAlchemy SQL toolkit for database interface**
- **jQuery javascript library for the front-end client side and AJAX implementation**
 - jQuery GUI framework for some special UI requirements
 - jQuery Mobile framework used for developing mobile-friendly pages
- **Elasticsearch to provide powerful full-text search server**

The system has many more extensions and sub-systems for the LANSCE control system other than a local and site IRMIS implementation.

- **The PV system including the schema and crawler based upon RIMIS 2 posted on the EPICS web site as mentioned.**
 - PV search and report generator
 - PV history including those changed and deleted
- **LANSCE wire scanner information system**
 - Wire scanner and actuator general info like locations, chassis, IP and etc.
 - Configuration and initial parameters
- **LANSCE daily log and archive management system**
 - Auto archiving to save operators' work and time
 - Full-text search for historic data
- **LANSCE switch and network device system**
- **Legacy RICE channels system for timed/flavor data**
- **cRIO wiring and connecting information system**

The LANSCE daily log and data archive management system provides a mechanism to manage dynamic information and data.

- **At LANSCE, the status of control systems and accelerator tuning parameters required and need to be archived every day**
- **A variety of data collection and archives from around 50 applications developed using Java, scripts, Tcl/Tk or EDM toolkits**
 - The text data printed by operators
 - The waveforms captured by screenshots
 - Comments and notes taken for future reference
- **All the work manually, so**
 - Low efficiency and inconsistency
 - Time-consuming
 - extra knowledge and effort
 - Unsearchable for future
 - Different formats from different operators

The LANSCE daily log subsystem consists of data and screen capturer, database, full-text search engine and web applications.

- **The data and screen capturer**
 - A “crawler” to collect data and store it into data
 - An application to print or generate hard copies of texts and screens
 - Loads and runs around 50 applications automatically so operators do not need to go through each program and run it by hand
 - Can be started at anytime or within any time period through Linux cron jobs
- **MySQL database to store the text files or screens permanently**
 - More schema and tables designed and implemented for this purpose
- **Elasticsearch full-text engine also used to search for the comments and notes input**
 - Recall that we mention that the operators need to take notes on the sheet.
- **The REST web application for the front site too**

Screenshots of implementation of IRMIS at LANSCE: PV Search Page - Similar to the APS IRMIS 2 Java Application

LANSCE-RM Device Database System

Home Mobile Login Channel Component LCS New WS Feedback About Help

Home > Channel Search

Channel Search

| IOCs | DB Files | Rec Type | Text Input - (* or ?) accepted |
|---|---|--|---|
| be87iioA be87iioB be94iio bece bpm ccr1 eb1 ebcams er2 exbpm gateway geicco0 ia ib ipf ipfcs iserver iz lcr lcs LXWS5 m01iioA m01iioB | LXWS5.db PMKnobsA.db PMKnobsB.db PMKnobsC.db PMKnobsD.db be87iioA.db be87iioB.db be94iio.db bece.db bpm.db ccr1.db eb1.db er2.db gateway.db geicco0.db ia.db ib.db ipf.db ipfcs.db iserver.db iz.db lcr.db lcs.db | aal aao advisor ai ao apply aSub asyn bi bo cad calc calcout car compress compressRavStd dfanout event fanout genSub knob longin longout | One or Multiple Channel Patterns: 1B7W00* LBB* Field: INP Value: @* Get Channels |

☐ History Mode

Update and News

- Firefox Browser Preferred!
- DB Design For LANSCE-RM
- Presentation For RDB
- Comments to Kanglin

Useful Links

- Component
- Channel Report

Yeah under construction like lots of good sites

Search: Submit

Tips: (1) wildcards "*" or "?" are allowed in the text fields to match anything. If the pattern itself has "*" or "?", use "*" or "\?" instead. (2) For the channel text field, you are allowed to input more than one patterns separated by lines, that is, one line has one pattern.

Screenshots of implementation of IRMIS at LANSCE: PV REPORT TEMPLATE – Dynamically Generate a PV Report with FIELDS at Users' Choice

Users can select up to 8 field types to be included in the following report.

Other than FIELD types, IOC list, Rec Type list and text patterns are similar to PV search.

Tips: (1) By clicking the **Get Report** button without selecting any item in the three dropdown lists and without inputting anything in text slots, you can get a default report which includes the columns of channel name, channel type, IOC name, DESC and INP. (2) Wildcards "*" or "?" are allowed in the text fields to match anything. If the pattern itself has "*" or "?", use "*" or "\?" instead. (3) For the channel text field, you are allowed to input more than one patterns separated by lines, that is, one line has one pattern.

Screenshots of implementation of IRMIS at LANSCE: PV report generated dynamically

Default Field Types

Users-selected field types at the previous slide

The screenshot displays the LANSCE-RM Device Database System interface. The main table lists channels with columns: ch, Channel (Total: 41424), Chn Type, IOC, DESC, ACKS, DISP, FLNK, and LLNT, INSEV, PHAS. Annotations include:

- Arrows pointing to the table headers for "Default Field Types" and "Users-selected field types at the previous slide".
- A text box stating: "Can sort the results based on the FIELD clicked at both ASC and DESC directions" with an arrow pointing to the "FLNK" header.
- Arrows pointing to the pagination controls at the bottom, labeled "DJANGO pagination used".
- An arrow pointing to the "Channel Info" and "Spreadsheet" buttons, labeled "AJAX calls to get the complete FIELD/VALUE pairs at the next slide and to send you an XLS spreadsheet file created dynamically."

On the right side, there is a sidebar with sections: "Update and News", "Related Links", and "Channel Info". The "Channel Info" section includes a table for "Cable # and Terminal Mapping" with columns "Field" and "Value".

At the bottom of the page, there is a footer with the text: "Yeah under construction like lots of good sites" and a search bar.

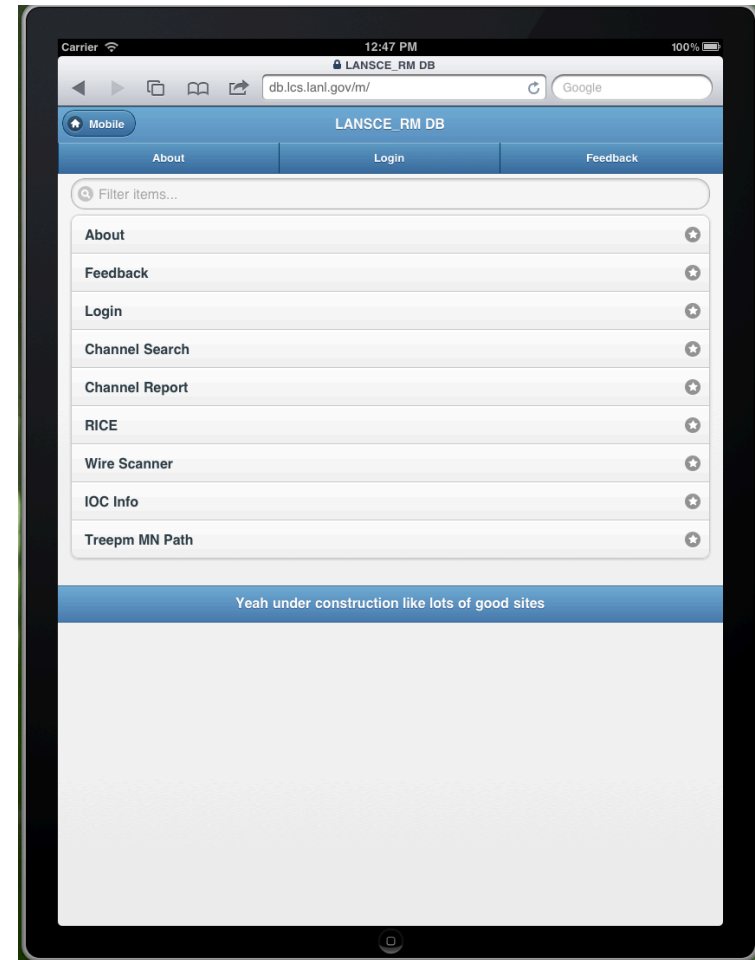
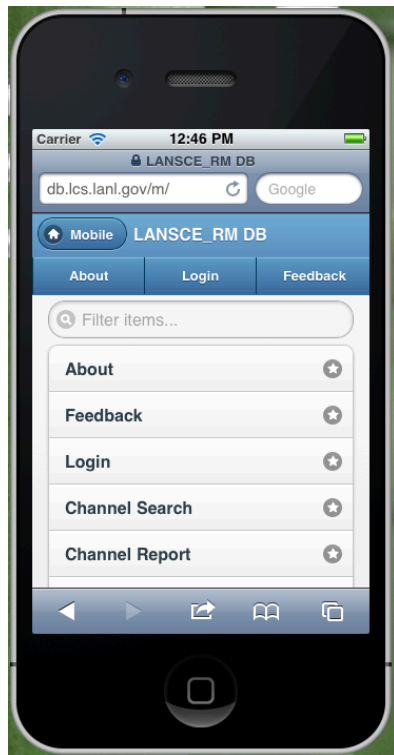
Screenshots of implementation of IRMIS at LANSCE: PV report generated dynamically - Continued

AJAX call

The screenshot displays the LANSCE-RM Device Database System interface. The main table lists channels with columns for Channel ID, Status, and various parameters. A 'Channel Detail Information' pop-up is shown for channel 01JC001L05, displaying fields like COSV, DESC, DISS, DISV, DTYP, EVNT, FLNK, INP, ONAM, OSV, PHAS, PINI, Prio, SCAN, SDIS, SIML, SIMS, SIOL, ZNAM, and ZSV. The 'Channel Info' sidebar on the right shows the same fields and values for the selected channel. Arrows indicate the flow of data from the channel list to the pop-up and then to the sidebar.

Click the radio button of 01JC001L05 to get the its field pairs in the grey box;
And then click "Channel Info" button, we can get the white pop-up dialog with detailed info.
Both are AJAX calls without leaving and refreshing the page.

Screenshots of implementation of IRMIS at LANSCE: Mobile device friendly pages



Screenshots of implementation of IRMIS at LANSCE: Mobile device friendly pages - continued



Dynamically change FIELD to be displayed - field Chn type, IOC, DESC or INP

Future Works

- **IRMIS 3 implementations at LANSCE**
 - New database schema
 - New crawler for IRMIS 3
 - Applications based upon IRMIS 3 schema
- **LANSCE daily log and archive management systems**
 - Collect the dynamic data and status information via channels
 - Associated the system with IRMIS
- **Uncertain frankly, particularly for IRMIS 3**