

# Automating Data Collection and Location Tagging for the SRF Lab in the Pansophy Inventory Management System





Nicolas Crespo, Tabb High School Mentors: Valerie Bookwalter (Computer Scientist) & Mike Dickey (Sr. Production Support Technician)

### Introduction

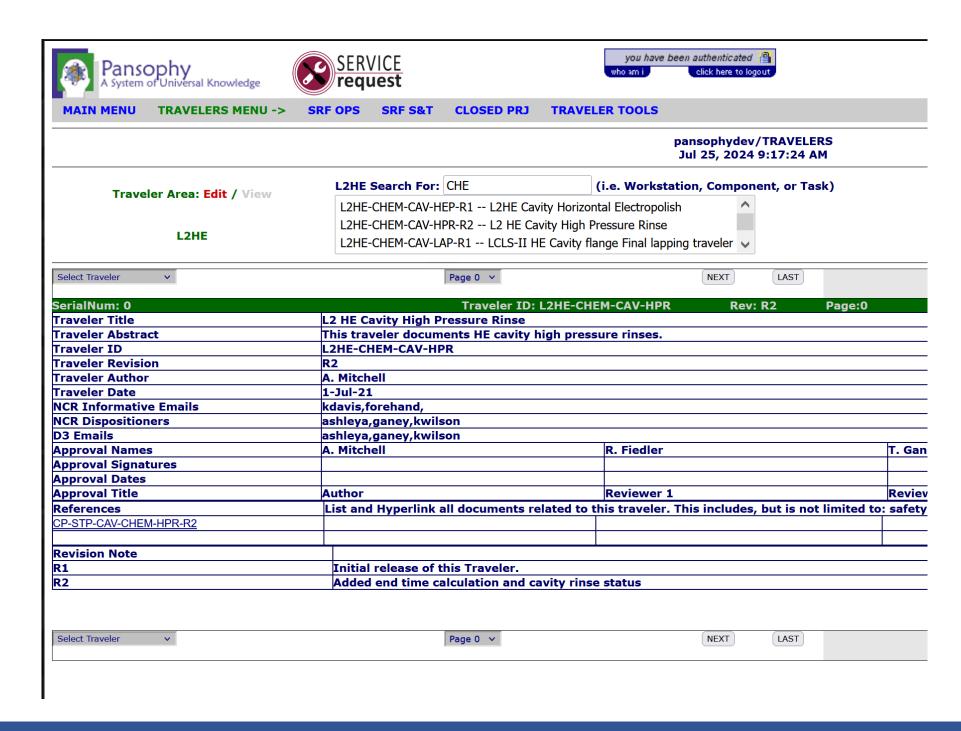
The superconducting radio frequency (SRF) cavities that line the linear particle accelerator at Jefferson Lab allow for near zero energy loss and enable particles to travel at close to the speed of light. However, the highly specialized nature of SRF technology means Jefferson Lab must design, construct and test SRF cavities in house. Though this allows the Lab to produce cavities for accelerator facilities around the world, it also presents an exceedingly difficult challenge in inventory and data management. Pansophy, an internal data management system is an all-encompassing solution to this problem.

Pansophy is an internal website that is only accessible inside of Jefferson Lab's firewall. Its front end is written in ColdFusion, JavaScript and CSS, with ColdFusion being used mainly due to its ability to seamlessly embed SQL (Structured Query Language) onto a webpage. ColdFusion is an HTML-like language with its own plethora of custom tags and a built-in scripting language, CFScript.

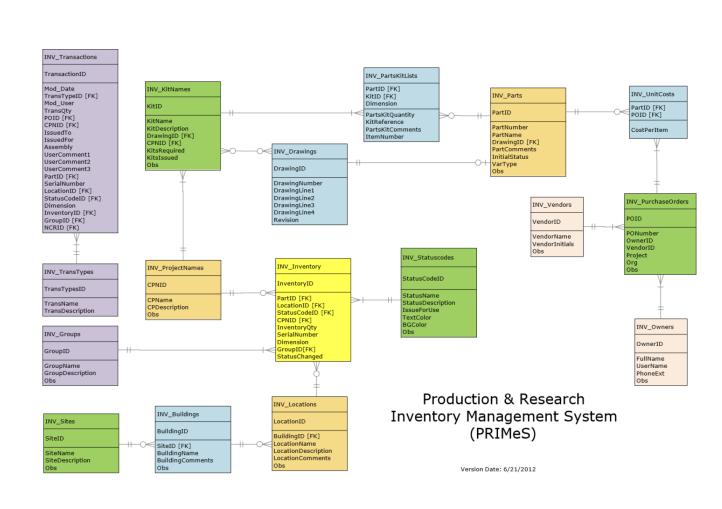
SQL is used to query the two main relation Oracle databases: the PRIMeS (Production and Research Inventory Management System) and Travelers. Each database houses a collection of tables each with a primary key and various foreign keys. By cross referencing the correct tables, relevant information about a part or traveler can be discerned even when provided limited information.

## Objectives

As parts make their way around the SRF Test Lab, they go through various stages, or actions, at different locations, or work centers. At each step, an engineer is tasked with creating a Traveler for the part they are dealing with. To streamline the creation of travelers into the Pansophy system and minimize errors due to typos, it is in Jefferson Lab's best interest to automate the entrance of part information as much as possible. As such, unique bar codes have been placed on most parts with stickers. These barcodes, which produce Transaction IDs, can prove various important characteristics of a part. Combined with location information stored in cookies that is pre-set on every engineer's machine, a proper implementation will instantly redirect an engineer to a Traveler page with just on scan of a barcode (Figure 1).



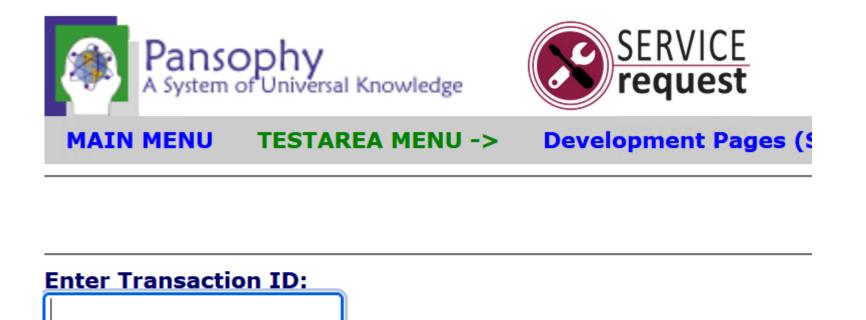
# Methodology



- Placeholder text

# Results

- Paragraph explaining why pansophy is useful/important
- ERD diagram showing relation database
- Explaining why coldfusion is used
- Explain how SQL works (maybe)Some code/queries







## Challenges

- Dealing with non-standard standards
- Dev/production database discrepancies
- Difficult to reverse engineer and test query results for accuracy vs edge cases
- No barcode scanners available for easier testing

#### **Future Work**

- Standardization of formatting for traveler IDs?
- Allow for fuzzy searching of workcenters, actions, etc

## Acknowledgments

I would like to acknowledge Mike Dickey and Valerie Bookwalter for their excellent mentorship and invaluable guidance for this project, Carol McKisson and Jalyn Dio for making the program possible, and my fellow interns for making my experience even more enjoyable.

#### References

- Learn coldfusion in a week
- Adobe documentation
- ORACLE sql documentation
- Mike/Valerie paper?
- NOTE: formatting not correct yet
- https://www.osti.gov/biblio/1471215
- https://www.jlab.org/accelerator/srf/pansophy
- https://learncfinaweek.com/
- https://helpx.adobe.com/coldfusion/user-guide.html