

# Redesigning of The SED Calendars

Elias Catalano, Robert Sublett, Daniel DePonte, Jake Koralek, Alex Wallace

Cal Poly, San Luis Obispo.

Linac Coherent Light Source, SLAC National Accelerator Laboratory, 2575 Sand Hill Road, Menlo Park, CA 94025, USA.

Contact: sublett@slac.stanford.edu

## Introduction

Over the past few months at SLAC, I have had the amazing opportunity to work with the Sample Environment Department, SED. This department, made up of a very small group individuals, is responsible for injecting users' samples into the Free Electron Laser. Since running the accelerator is very expensive, and the users' samples are extremely valuable to them, the injection of each sample must be as effective and efficient as possible. This means that SED must run as smoothly as possible. Our solution, is to design and create multiple calendars that not only tell the group what experiments are up next but also show what resources are needed and where those resources are currently.

Key Words: Sample Environment Department, Sample Injection, Calendar, Development, User, Free Electron Laser

## Research

When redesigning our calendars we found that there were quite a few things that we wanted to change. We decided that the most important ability the calendars should have, is to be automated and able to collect information from different sources. It would then bring this information, it had collected, and create a few specialized calendars that would accomplish all our goals. We would need an Experiment Calendar, an Equipment Calendar, and a Project Calendar. Each of these calendars would have many different pieces of information that would help the SED group be more productive and better informed.

### Experiment Calendar

- Experiments dates and times
- Personnel needed for experiment
- Emails associated with experiment
- ICL test stations required
- Equipment needed for experiments
- Projects associated with an experiment and up to date progress

### Equipment Calendar

- Location and status (Deployed, Waiting to be Deployed, Being repaired)
  - Who the equipment is being used by, for what and where
- Orders with price and when expected

### Project Calendar

- Projects start and end dates
- Emails associated with project
- Parts/Labor needed
  - Cost
- Progress up to date

Fig.1 Requirements we would like our new calendars to contain.

## Experiment Calendar

The Experiment Calendar will be the main calendar showing times, dates, and resources needed for experiments. This calendar will be automated to pull information from different locations to create a calendar that has all the information associated with all the pertinent (High X-Ray, Soft X-Ray, or Protein Crystal Screening) experiments. It will also pull information from a questionnaire that each user group fills out months prior to their run. This information, from the questionnaire, will tell the SED what personnel will be needed for the experiment, as well as what equipment will be required and if the users will need training or use of the test stations in the Injector Characterization Lab, ICL, for pre experiment research. This Calendar would also pull emails that contain experiment number in a subject line and associate those emails with given experiments. Projects will be added later if an experiment needs additional resources to be built.

14	15	16	17	18	19	20	21	22
Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue
X239			LP73 Sc					
X228			LP06 lh					
PCS			X239					
			LQ70					
ON	Night	Night	Night	Night	Night	Night	ON	Night
Potential trip						ON	ON	
Night	Night	Night	Night	Night	Night	Night	Night	Night

Fig.2 Our present Experiment Calendar with needed resources, as well as a link to the user questionnaire.

## Equipment Calendar

Our Equipment Calendar will keep track of where, when, and how the SED's equipment is being used. This Calendar will tell us the status of each piece of equipment; whether it is deployed, waiting to be deployed, or being repaired. By allowing us to see where our equipment is at all times and what it is being used for, we will know the best way for it to be maintained. We also plan for this calendar to have an easily accessible form for ordering the equipment that we often have to purchase. This form will be directly connected to the order form from the LCLS Procurement site. This will fill out all the relevant information for us and all we would need to add is quantities of each item. This calendar would show purchase updates on cost, and delivery time.

	7/1/2017	1	2	3	4	5	6	7
	Sat	Sun	Mon	Tue	Wed	Thu	Fri	
Day	LQ64 Shpyrko						LP93 Marsi	
Day	LP41 Standfuss						LO91 Cascio	
Day	PCS	PCS	PCS				PCS	PCS
Night	LQ12 Orv		PCS				IH	LQ27 Silv
Night								
Equipment								
Reservoirs A								
Reservoirs B								
20AD - 10	CXI-3	CXI-3	CXI-3	CXI-3	CXI-3	CXI-3	CXI-3	CXI-3
20AD - 09	CXI-1	CXI-1	CXI-1	CXI-1	CXI-1	CXI-1	CXI-1	CXI-1
20AD - 08	ICL							
20AD - 07	ICL							
20AD - 06	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING
20AP - 05	ICL							
20AD - 04	ICL							
20AD - 03	ICL							
20AT - 02	ICL	ICL	ICL	ICL	ICL	CXI-1		

Fig.3 Equipment Calendar without order information or details about how the equipment was used.

## Project Calendar

Often times there is equipment that needs to be designed and developed for the ICL, or a specific experiment. To keep track of these projects we are designing a Project Calendar that will contain start and end dates as well as costs and part/labor orders. It will also show updates with the project's progress and any project notes of relevance.

## Creating the Calendars

We have been using Google Sheets to create these calendars since it allows for a lot of customization. Coding in JavaScript on Google Scripts, we can modify our sheets' abilities. This lets us change and redesign how our sheets look and act as well as what they can and cannot do.

## Conclusions

We have just recently finished the designs for these calendars, however they will still require a lot more work to become fully operational. I still do not know JavaScript as well as I would like, hopefully the next steps in this building process will help to increase my knowledge of this language as well as strengthen my abilities as a whole. Already, designing the calendars has given me a much better understanding of how the Sample Environment Department works and what makes the group more efficient.

## Acknowledgments

Use of the Linac Coherent Light Source (LCLS), SLAC National Accelerator Laboratory, is supported by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Contract No. DE-AC02-76SF00515.