National Synchrotron Light Source II

Results of PASS Review & Next Steps

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Background

Proposal Allocation Safety Scheduling (PASS) System

Pros

- NSLS-II proposal system targeted to have specialized functionality for user facility operations
- Ability to integrate with other BNL systems including training and Guest Information System (GIS)

Cons

- Complaints from facility users and staff about user-friendliness
- Only a rudimentary scheduling function
- Reporting through “canned” reports only; no user-customized reports
- Cannot (yet) accommodate proposals across BNL user facilities, i.e. NSLS-II, CFN, ATF, CSI
- Modifications to the system occur at glacial speed
- 2.25 FTEs currently dedicated to PASS, which also includes needs for improvements to the End-of-Run Form system and Publications database

Consideration of Commercial Systems

Spring 2018

- NSLS-II investigated a commercial proposal system, Fluid Review (Survey Monkey product), as a possible replacement for PASS.
- Fluid Review did not have the functionality or flexibility needed

Fall 2018

- Similar efforts were made with Wizehive (by NSLS-II) and Fluxx (by LCLS) that yielded the same result.

Winter 2018/2019

- Given the disappointing outcomes of the commercial systems, a thorough evaluation of the current PASS system took place

PASS Review Charge

"Perform a review of PASS to determine its strengths and limitations both at present, but more importantly, in the future.

This information will help to guide BNL in determining whether the PASS system has the functionality, flexibility, and expandability suitable for the current and future needs of all user facilities at BNL, or whether another software solution (e.g. commercial vendors) should be pursued to replace pieces or all of PASS."

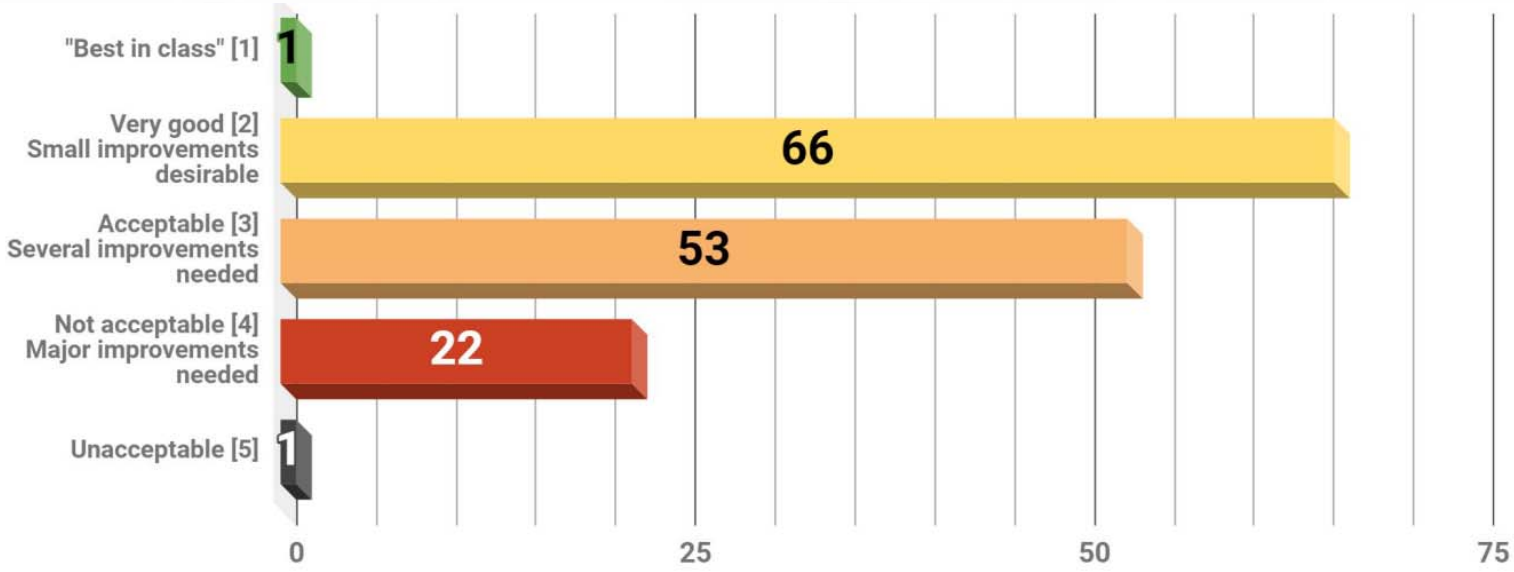
Review Process and Participation

- ~75 reviewers from NSLS-II, CFN, CSI, light source user administrators, PRP members, outside IT/database experts
- Areas reviewed:
  - System Administrator
  - Proposal Submitter
  - Proposal Reviewers – Feasibility, Scientific, Safety
  - Scheduler
  - System Developer

Score	Description
1	"Best in class"
2 (1.5)	Very good Small improvements desirable
3 (2.5)	Acceptable Several Improvements needed
4 (3.5)	Not acceptable Major improvement needed
5 (4.5)	Unacceptable

- Process consisted of a onsite/Skype PASS Overview (2 hrs); remote testing (2 wks), individual written reviews, onsite/Skype 7 group interviews, and online mini-surveys
- ~100 individual ratings; ~600 individual comments: 70% from individual reviews, 28% from group interviews, 14% from PRP survey

Overall Response: Scores



- More than half of the reviewers felt that the PASS system is still in need of significant improvements.
- However, most reviewers are not qualified to determine how much time “small” vs. “major” improvements would take.

Overall Response: Sentiment Analysis

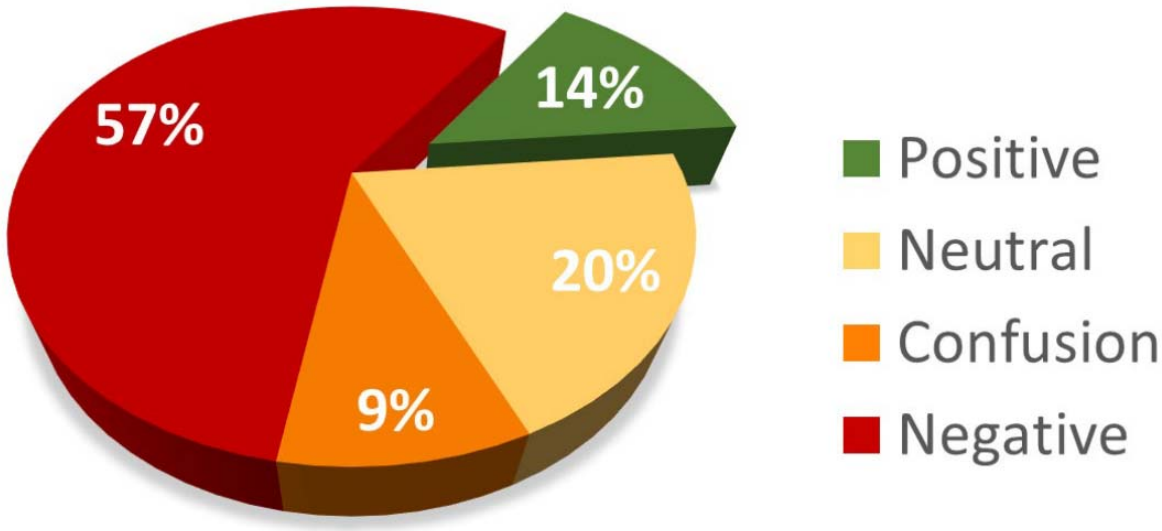


Figure 10 Results from the Sentiment Analysis of 608 independent comments about PASS collected during all stages of the review process.

Based on written comments, only 14% of the reviewers were happy with PASS.

Findings

- Poorest scores: PRP review, allocation and scheduling
  - User admin and most reviewers use tools outside of PASS to perform review and allocation.
  - Scheduling function is incredibly rudimentary
- Best scores: source code, system infrastructure, flexibility in managing resources, and system admin usability
  - PASS database appears adequate
  - PASS has a customizable functionality, especially liked by user admins (e.g. adding beamlines, editing proposal types and questions)
- Safety reviewers are satisfied with the system's current configuration but would like minor improvements

	Average Rating
Proposal Submission Process	2.6
SAF Submission Process	2.5
Allocation	3.5
Running Reports	3
Managing Resources	2
Feasibility Review	2.5
PRP Review	4
Safety Review	2.2
Scheduling	3.5
API Access	2.7
System Infrastructure	2
Database	--
Source Code	2
Flexibility	2.7
Usability for System Admins	2
Average	2.6

More Findings

PASS Perception

- "New" vs. "old" (NSLS) PASS: looking backwards to the old system instead of looking forward to what's expected / needed today
- Many users fault or praise "PASS" for things that aren't PASS (e.g. Google sign on)

Management

- Ownership must be defined clearly (ITD, NSLS-II, BNL??)
- Resource/budget need transparency
- Vulnerability with only 2 knowledgeable developers
- Little or no documentation
- Need to have more user training/demos

Development

- The "user experience" (UX) leaves users **confused** and **frustrated.**
- Change request process is laborious and needs to be revamped.
- Need to investigate the flexibility and robustness of PASS APIs.
- Need to further investigate expandability and extensibility.
- Workarounds by staff should not be required.

Recommendations & Path Forward

Decide whether to abandon PASS

1. If yes, update budget structure and pay minimum maintenance support only until a new system is deployed.
2. If no, fix in its current form:
   - Focus on NSLS-II needs, slowing down on peripheral efforts like publication database, end-of-run form, and satisfying other user facilities.
   - Change the management process including identifying ownership, an effective change process, timelines, and budget transparency.
   - Stress test the expandability of system to ensure it can handle a large volume of proposals.
   - Test the flexibility of the database by attempting to implement PASS at another user facility (e.g. LCLS) in its current form.
   - Demonstrate ability to interface with other systems (e.g. ALS scheduler)
   - Hire a separate set of skills to focus on UX design / development.
   - Apply data visualization with business analytics, e.g. Microsoft Power BI.

Common business software across light sources

- All 5 DOE light sources have interest in cloud-based, commercial proposal systems.
- Joint meeting held at SLAC in October 2018 to discuss the possibility of pursuing a single path together.
- Given the outcome with Fluid Review, Fluxx, and WizeHive, regular teleconferences are now being held.
- Gartner Consulting recommended the following Enterprise High-Productivity Application Platforms capable of addressing a universal proposal platform. They were:
  - Salesforce
  - OutSystems
  - ServiceNow
  - Mendix
- Service Now is being considered as a common platform; effort led by the APS
  - Mostly a “service ticket” software tool
  - Used by NERSC for their proposal system
- Other possibilities: Microsoft or Amazon cloud services, to build the application(s).

Summary

- Reviews of commercial software systems including Fluid Review, Wizehive, and Fluxx did not yield a viable software package to supplement or replace the PASS system.
- A thorough review of the PASS system took place over the past 2 months and included 75 reviewers, more than 100 scores, and 600 additional written comments.
- Findings recommend that the flexibility and extensibility of the PASS database should be tested by implementation at another user facility.
- The ability for the database to reliably interact with other external software modules should be tested.
- The user experience needs a complete overhaul.
- In the end, NSLS-II needs to decide whether to abandon PASS or fix it using the recommendations of the review committee.