

# FCI OPSHAB FALL 2015 & SPRING 2016 INTERNSHIP

## MAIN PROGRAMS / PROJECTS

- **Operation Habitability (OpsHab) Team:**
  - ISS Post Flight Crew Debrief Support
    - Debrief Attendance
    - FCI ISS Crew Comment Cleanup
  - US Sleeping Bag (*Unique Requirements Review*)
  - Emergency Crew Display (*Human Factors/Usability Support*)
  - Track Crew Notes through OPTIMIS
  - Habitability and Human Factors Data Trending
  - SharePoint Work Flow
- **Human Factors Integration Team (HFIT) and ISS Payload Label Approval Team (IPLAT)**

## MAIN DUTIES WITHIN EACH PROGRAM/PROJECT

### **A. ISS Post Flight Crew Debrief Support**

The FCI ISS Crew Comments Database is the most complete and searchable archive of ISS crew post flight debrief feedback in existence. The team works with multiple requesters from the SF branch, the ISS program, the crew office directly, multiple centers to provide crew comments data products that allow the agency to understand crew feedback regarding life onboard ISS over time. The OpsHab team is very small and very busy. Therefore there is a lot to keep up with. I am helping them to catch up on getting data into the database to make it accessible and usable for future requests. This data is an extremely valuable resource for current and future spaceflight programs.

- **Debrief Attendance:**
  - Take detailed notes of what crewmembers and debrief team say.
  - Listen for potential human factors/habitability concerns or common themes.
- **FCI ISS Crew Comment Cleanup:**
  - Edit transcripts using stenographer transcript and my own notes to ensure standard format and question context for archiving crew comments to ensure content supports future search and retrieval.

### **B. U.S. Sleeping Bag (Unique Requirements Review)**

- This was a design meeting to discuss requirements and desirements for a new sleeping bag design for Commercial Crew Vehicles.
- I attended this meeting as the sole OpsHab representative. It was my first real test at being an OpsHab team member, and it happened about a week into my Fall 2015 internship.
- My mentor provided me with crew comment data on sleeping bags/restraints beforehand so I could become more familiar with it.
- My mentor wanted me to attend for the experience, and to bring back any questions that design team might have that are Human Factors related.
- I made the decision to break down the Crew Comment data into more manageable parts by looking for trends. I relied mostly on keywords, and ended up creating a word cloud as well.
- After looking at the keywords and word cloud, I had a better idea about what possible requirements or desirements may be discussed for a new sleeping bag.

**C. Emergency Crew Display (Human Factors/Usability Support)**

- I attended a meeting with a flight controller to provide feedback, from a human factors and usability perspective, about a complex emergency communication display that will be used for commercial vehicles.
- The OpsHab ended up having an incredible discussion where we offered suggestions on how to make the display more user friendly, intuitive and efficient.
- Some of my own inputs were implemented in the revised version of the displays.

**D. Track Crew Notes through OPTIMIS**

- Crew Notes are a method for the ISS crew to provide real time, task specific feedback without having to call the ground directly. This information supplements post flight data that the OpsHab team collects and potentially highlights issues or efficiencies that are not recalled in debriefs. The OpsHab team is interested in assessing Crew Notes data to determine how it relates to post flight Crew Comments data.
- To begin meeting this request, my mentor tasked me to utilize OPTMIS and identify and store Crew Notes that related to habitability and human factors.
- I created an Excel sheet to document the Crew Notes.
- I created easy-to-use drop down boxes within the Excel Sheet, which contain the same names of categories and sub-categories that the OpsHab team uses to categorize Crew Comment Data. This will ensure that Crew Notes and Crew Notes are categorized consistently. This should help make the Crew Notes easy to identify and search for. And in the future, it should make it easy to match Crew Comments and Crew Notes together, when searching for data trends or performing data analyses.

**E. Human Factors Integration Team (HFIT) and ISS Payload Label Approval Team (IPLAT):**

I recently have begun working with the HFIT and IPLAT teams. I am becoming familiar with the processes, and will work with the team in the future.

- The HFIT team is responsible for ensuring that Payloads and Experiments meet the Human factors requirements.
- The IPLAT team is responsible for labeling the Payload/Experiment, including labeling various parts within a Payload/Experiment.
- I will attending trainings and shadow HFIT and IPLAT team members a number of times before being assigned a Payload of my own to work on.

**F. Habitability and Human Factors Data Trending**

- Project is still in the preliminary planning pages.
- I have attended meetings with my mentor and a research assistant from Ames.
- I also attended a "Data Days" conference to learn more about data analysis and data trending, and to seek out potential resources and SME my team could collaborate with.
- Coordinated contact and meeting with JSC Chief Knowledge Architect (CKA) to initiate discussion on how onsite resources could be applied to ongoing crew comment data assessments. Currently awaiting approval from the Crew Office to provide an initial data set to the CKA. OpsHab would not have been aware of this resource had I not attended data days or took initiative and discussed the work our team does during the "Data Days" conference.

**G. SharePoint Work Flow**

- Project is still in the preliminary planning pages.
- I have attended a meeting with my mentor, teammate, and two SharePoint SMEs in order to start the discussion and establish action items.

**MAJOR PROGRAM/PROJECT ACCOMPLISHMENTS****A. ISS Post Flight Crew Debrief Support**

I am supporting debriefs, becoming an ISS ops expert, and cleaning notes to help the OpsHab team populate the database. Sometime after transitioning as a full-time employee, one of my primary tasks with the OpsHab team will be helping the team build out quick requests for data and support dissemination and use of data. As I do my projects and tasks, I am learning about ISS ops, human factors and habitability, and building the content and increasing the value of the FCI ISS Crew Comments Database, which currently consists of 70,000 comments (and continually growing!)

- **Metrics - Debrief Attendance**
  - Attended 8 debriefs as a note taker for Expeditions 44/45
  - Attended 25 debriefs as a note taker for Expeditions 43-46
- **Metrics - FCI ISS Crew Comment Cleanup**
  - Cleaned 3 Crew Comments for Expeditions 41/42
  - Cleaned 5 Crew Comments for Expeditions 42/43
  - Cleaned 7 Crew Comments for Expeditions 44/45
  - Cleaned 3 Crew Comments for Expeditions 45/46

**B. U.S. Sleeping Bag (Unique Requirements Review)**

- During the actual meeting, I took notes and made a special note on areas where I thought OpsHab could assist. I then brought this back to the team.
- As I reviewed my notes and compared to the Crew Comment data, I noticed that a lot of the requirements / desirements matched up with what was noted in the data.
- However, I also noticed some inconsistencies in what the design team was saying versus what the data said. I brought up these potential causes of concern to my mentor and team.

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**B. Track Crew Notes through OPTIMIS**

- Collecting and documenting Crew Notes is something that the OpsHab team has not done in the past, but it is something that the Crew Office has charged our team to do.
- Established an efficient way of categorizing the Crew Notes.
- So far, I have documented 15 Crew Notes relating to human factors and/or habitability.

**C. HFIT and IPLAT familiarization & support**

- Attended eLabel training session for trainers.
- Attended meetings with HFIT/IPLAT team members in order to learn about the processes and about specific Payloads that I will be working with in the future.
- Co-Supported 1 Final HFIT as an IPLAT representative.
- Co-Supported 1 Final HFIT as an HIFT and IPLAT representative.

**D. Habitability and Human Factors Data Trending**

- B. After attending the “Data Science Days” conference, I was able to identify several resources and SMEs that could be collaborated with.
- C. I arranged a meeting with one SME, the Chief Knowledge Officer at JSC, and that meeting led to him agreeing to collaborate with the OpsHab team, so as to potentially help the team in several areas, including but perhaps not limited to, the following:
  - Efficiency in searching for/finding data within the database
  - Somewhat automated trending method

**PROCESS IMPROVEMENTS OR EFFICIENCIES DEVELOPED BY INTERN****A. Track Crew Notes through OPTIMIS**

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**IMPACT OF INTERNSHIP ON CAREER OR EDUCATIONAL GOALS**

- The internship solidified my educational and career goals, which are as follows:
  - Pursue an M.S. in Human Factors.
  - Pursue a PhD in either Human Factors, Cognitive science/psychology, or Behavioral neuroscience/neuroscience.
  - This internship experience solidified my goal of working for NASA as either a contractor or a civil servant. Not only that, but my internship led to a job offer with the team I am currently interning with.