National Spherical Torus eXperiment Upgrade

Discussion of NSTX-U as User Facility, Possible new User Group

J. Menard, B. Stratton, S. Gerhardt, M. Ono, R. Kaita, M. Jaworski, G. Tchilinguirian

NSTX-U Research Team Meeting

May 4, 2018

PPPL PRINCETON PLASMA PHYSICS LABORATORY

PRINCETON UNIVERSITY

Agenda

- Jon – Brief overview / context
- Brent – User Facility overview
- Masa – User Facility interfaces, training
- Greg – Experiment Proposal System
- Jon – User Group Definition Working Group

Some context (1)

- NSTX-U is an Office of Science (SC) user facility (see Stratton talk)
- Each year we are required to report user statistics
- We have developed new tools for users to update user status
  - https://nstx-u.pppl.gov/program/user-information-form
- Vast improvement compared to manually e-mailing people (aka T. Egebo)

Program >

User Information Form

NSTX-U is a DOE Office of Science (SC) user facility and is required to track and annually report user statistics.

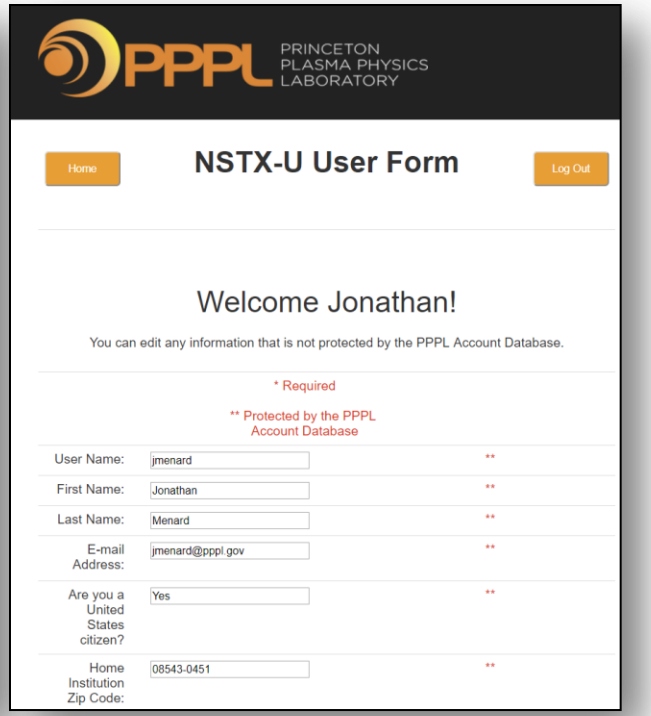
To support this requirement, the NSTX-U Program maintains a user database. This database contains:

- Facility user data fields required by SC
- Additional fields useful for characterizing the research or engineering work of NSTX-U users
- User selections to receive (or not) NSTX-U group e-mails

A very important required data field is the "User Type" defined as follows:

- **On-Site User**: An individual who is physically present at the facility and involved in planning, preparation, execution, and analysis of one or more approved experiments on the facility.
- **Remote Users**: An individual who has been granted authority to participate remotely in experimental planning, execution, and data analysis.
- **Data Users**: An individual who reduces and/or analyzes data provided by the facility but did not participate in the collection, calibration, or reconstruction of that data and who is neither an On-Site or Remote User.

Please enter or update your user information with this **NSTX-U User Form** by logging in with your PPPL account username and password.



Some context (2)

- BUT, user form testing with new international collaborators revealed several bottlenecks in obtaining account (see Ono talk)
- Interfacing diagnostics to NSTX-U used to be rather "informal"
  - Became more rigorous before/during FY16 run post arc-flash
  - Will become even more formal as QAPD and ASO are implemented
- IMHO, SG/TSG one-team structure effective at plan development, executing experiments, but less effective at providing user-driven independent input to inform mid- and high-level program decisions
- **Overall, these are symptoms of larger issue: PPPL and NSTX-U are not very "user centric" compared to other DOE user facilities**
  - Partly due to lab/facility/group size, partly due to focus on Upgrade, Recovery
  - Partly due to emphasis on (excellent) academic environment / approach
- Didn't really have a sense of DOE user facility norms, best-practices
- **What ideas/systems can we learn/borrow from other facilities?**

Agenda

- Jon – Brief overview / context
- Brent – User Facility overview
- Masa – User Facility interfaces, training
- Greg – Experiment Proposal System
- Jon – User Group Definition Working Group

National Spherical Torus eXperiment Upgrade

Operation of NSTX-U as an Office of Science User Facility

B. Stratton, J. Menard, S. Gerhardt, M. Ono, R. Kaita, M. Jaworski, G. Tchilinguirian

NSTX-U Research Team Meeting

May 4, 2018

PPPL PRINCETON PLASMA PHYSICS LABORATORY

PRINCETON UNIVERSITY

NSTX-U is Evaluating how to Improve Operation as an Office of Science User Facility - 1

- NSTX-U is designated as an Office of Science (SC) user facility
  - 27 SC user facilities, including light sources, neutron sources, particle accelerators, supercomputing facilities, nanomaterial centers, and others
  - See https://science.energy.gov/user-facilities/ for information on SC user facilities
  - Two fusion facilities listed:
    - NSTX-U (362 users; $74M annual budget)*
    - DIII-D (618 users; $87M annual budget)*
- We are using the current downtime to investigate how to improve NSTX-U operation as a user facility

*FY16 user numbers; FY17 as-enacted budget numbers not including MIE funding

NSTX-U is Evaluating how to Improve Operation as an Office of Science User Facility - 2

- In a discussion with B. Brown, J. King, and M. Elsayed at SC, it was suggested that we visit other SC user facilities at ANL, BNL, and ORNL to learn about their best practices for operation as user facilities
- Groups of 3-6 NSTX-U staff visited 12 user facilities at ANL, BNL, and ORNL in Dec. 2017 and Jan. 2018
- The visits were very useful: staff at the facilities were generous with their time and we had good discussions at all of the facilities
- SC user definition includes on-site users, remote users, and data users

Brookhaven National Lab (Dec. 4-5, 2017)

- Attendees: S. Gerhardt, M. Jaworksi, J. Menard, M. Ono, B. Stratton, G. Tchilinguirian
- Facilities visited:
  - Relativistic Heavy Ion Collider (RHIC) & STAR Detector
    - 1029 users (incl. STAR & Phenix detectors); $182M*
  - Accelerator Test Facility (ATF)
    - 86 users; $6M*
  - National Synchrotron Light Source II (NSLS II)
    - 477 users (→2500-3000 in several years); $112M*
  - Center for Functional Nanomaterials (CFN)
    - 505 users; $21M*

*FY16 user numbers; FY17 as-enacted budget numbers not including MIE funding

Argonne National Lab (Jan. 11-12, 2018)

- Attendees: M. Ono, B. Stratton, G. Tchilinguirian
- Facilities visited:
  - Advanced Photon Source (APS)
    - 5521 users; $134M*
  - Center for Nanoscale Materials (CNM)
    - 566 users; $25M*
  - Argonne Leadership Computing Facility (ALCF)
    - 1019 users; $80M*
  - Argonne Tandem Linear Accelerator System (ATLAS)
    - 315 users; $24M*

*FY16 user numbers; FY17 as-enacted budget numbers not including MIE funding

Oak Ridge National Lab (Jan. 17-18, 2018)

- Attendees: R. Kaita, M. Ono, B. Stratton, G. Tchilinguirian
- Facilities visited:
  - Oak Ridge Leadership Computing Facility (OLCF)
    - 1186 users; $110M*
  - Center for Nanophase Material Sciences (CNMS)
    - 601 users; $25M*
  - Spallation Neutron Source (SNS)
    - 893 users; $200M*
  - High Flux Isotope Reactor (HFIR)
    - 450 users; $65M*

*FY16 user numbers; FY17 as-enacted budget numbers not including MIE funding

My Favorite User Facility: High Flux Isotope Reactor

- Missions: neutron scattering research, transuranic isotope production, and materials irradiation
- Produces ~10^{15} neutrons/cm^2-s from 9.4 kg of highly enriched U-235 fuel

DOE SC Definition of a User Facility - 1

- A user facility is a federally sponsored research facility available for external use to advance scientific or technical knowledge under the following conditions:
  - The facility is open to all interested potential users without regard to nationality or institutional affiliation.
  - Allocation of facility resources is determined by merit review of the proposed work.
  - User fees are not charged for non-proprietary work if the user intends to publish the research results in the open literature. Full cost recovery is required for proprietary work.

DOE SC Definition of a User Facility - 2

- The facility provides resources sufficient for users to conduct work safely and efficiently.
- The facility supports a formal user organization to represent the users and facilitate sharing of information, forming collaborations, and organizing research efforts among users.
- The facility does not compete with an available private sector capability.

- The NSTX-U program already meets most of this definition but does not have a formal user organization

Main Topics Discussed on User Facility Visits

- Submission and evaluation of experimental proposals
- Scheduling of approved proposals
- Use of experimental time for facility development
- Structure of the User Group and how it functions
- Management of facility researchers: user support vs. staff research
- Management of parts of the facility provided by users/collaborators
- Configuration management
- User training
- Implementation of the Accelerator Safety Order

Next Steps

- Working Groups will be formed to develop recommendations for changes in how NSTX-U operates in some of these areas
- Goal is to have initial set of recommendations ready to present to FES later this calendar year
- Important to keep in mind that a tokamak is different from other user facilities because the facility and scientific goals are very closely integrated: understanding tokamak physics is the goal of all experiments. This is different from a light source which provides photons to a short-term user experiment that can be from a variety of scientific areas, e.g., biological sciences, materials science, etc. Tokamak teams tend to be well-integrated groups that do not have rapid turnover.

Areas to Examine for Possible Changes

- Should we establish a NSTX-U User Group? If so, how should it be structured?
  - Following slide describes structure of “typical” user group
- Improve ease of training, especially on-line training that new users can do before arriving at PPPL
  - M. Ono will discuss
- Improve NSTX-U experimental proposal submission, review, and scheduling system
  - G. Tchilinguirian will discuss
- Diagnostics: define and document workflow for diagnostic implementation/modification, improve Record of Discussion process, understand how procedure changes arising from new QAPD will impact diagnostic work
- Notes from our lab visits will be cleaned up and made available to the working groups. There is also a lot of useful information on the SC user facility website and the individual facility websites

“Typical” User Group Model

- User Group has a charter and is open to all users
- User Executive Committee (6-18 people) elected by the users to 2-3 year terms on a rotating basis
  - Exception: ALCF UEC is appointed by facility director
- UEC elects vice chair and secretary from its members
  - Exception: CNMS User Group directly elects vice chair and secretary
  - Chair serves for 1 year and is succeeded by vice chair; ex chair then serves ex officio for 1 year
  - Specific facility/lab management personnel are often ex-officio members
- UEC meets periodically (monthly or quarterly) and provides input to facility director/lab leadership on a variety of topics: user experience, research plan, possible facility upgrades, and other topics brought up by users
  - The facilities also have a PAC to provide program guidance
- Annual in-person User Group meeting organized by UEC is held to have presentations and discussions on the above topics, have users present their research, and to conduct elections (in some cases)

Agenda

- Jon – Brief overview / context
- Brent – User Facility overview
- Masa – User Facility interfaces, training
- Greg – Experiment Proposal System
- Jon – User Group Definition Working Group

National Spherical Torus eXperiment Upgrade

User Web Interface Training Processes

M. Ono, B. Stratton, J. Menard, S. Gerhardt, R. Kaita, M. Jaworski, G. Tchilinguirian

NSTX-U Research Team Meeting

May 4, 2018

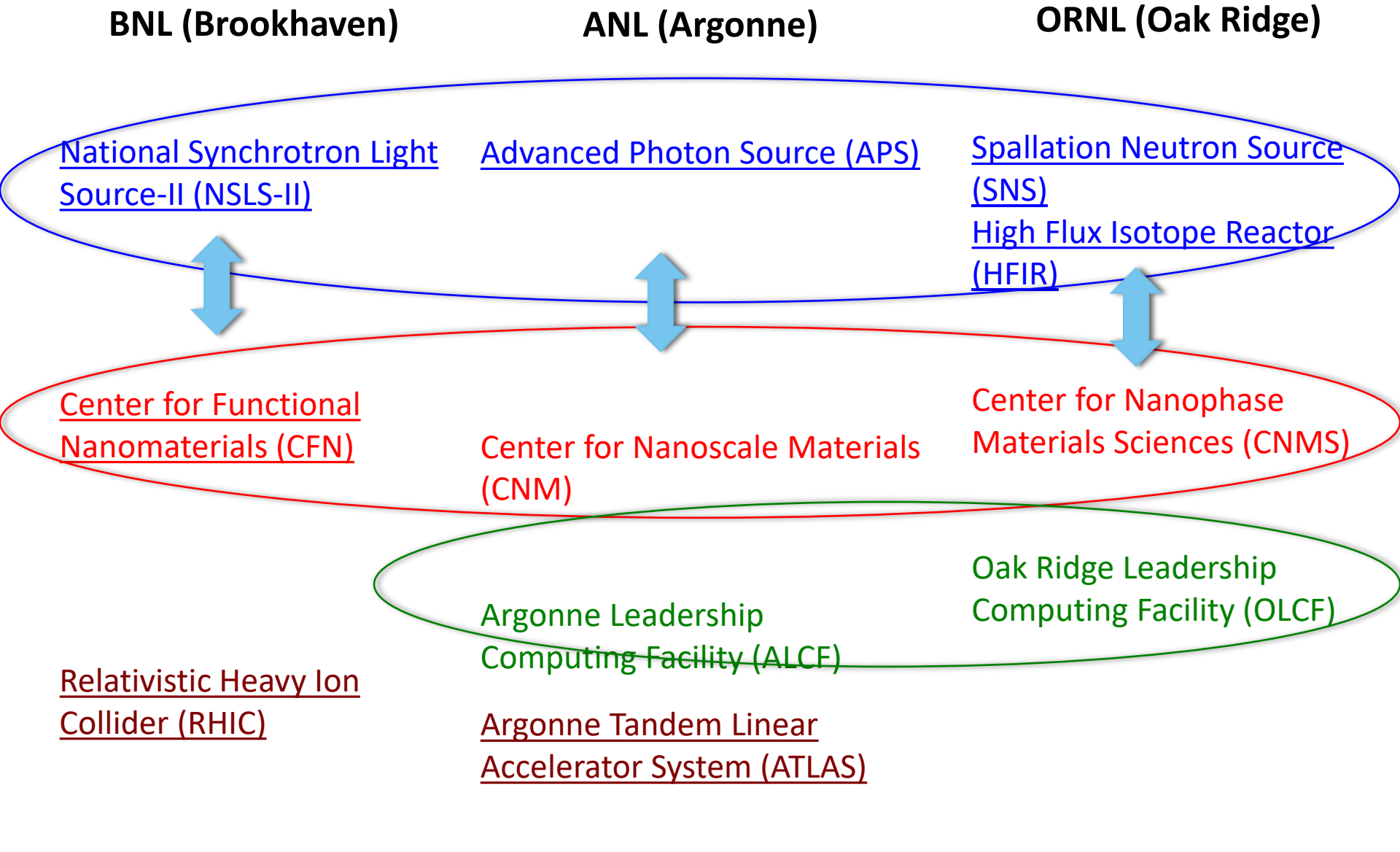
Overall impressions of BNL/ANL/ORNL visits We were given wonderful welcome!

- The lab and facility existence is tied strongly to Users.
- There is an expectation for in-house staff to support users.. Devotes significant resources for Users…
- Lab web site is very friendly to Users with detailed and easy to follow instructions.
- The web-based training even those quite specialized ones is available through the lab-wide web site for all facilities. Readily accessible!
- The required web-based training is expected to be taken prior to the arrival.
- The laboratory check-in process was streamlined and relatively quick.
- The visitor badge are issued to individual and can be taken home.

Overall impressions of BNL/ANL/ORNL visits
We were given wonderful welcome!

- The lab and facility existence is tied strongly to Users.
- There is an expectation for in-house staff to support users.. Devotes significant resources for Users…
- Lab web site is very friendly to Users with detailed and easy to follow instructions.
- The web-based training even those quite specialized ones is available through the lab-wide web site for all facilities. Readily accessible!
- The required web-based training is expected to be taken prior to the arrival.
- The laboratory check-in process was streamlined and relatively quick.
- The visitor badge are issued to individual and can be taken home.

BNL/ANL/ORNL facilities are synergistically coupled Several thousand users nationally and internationally



Light Sources and Nano Centers are intimately coupled
These facilities are built at similar time!

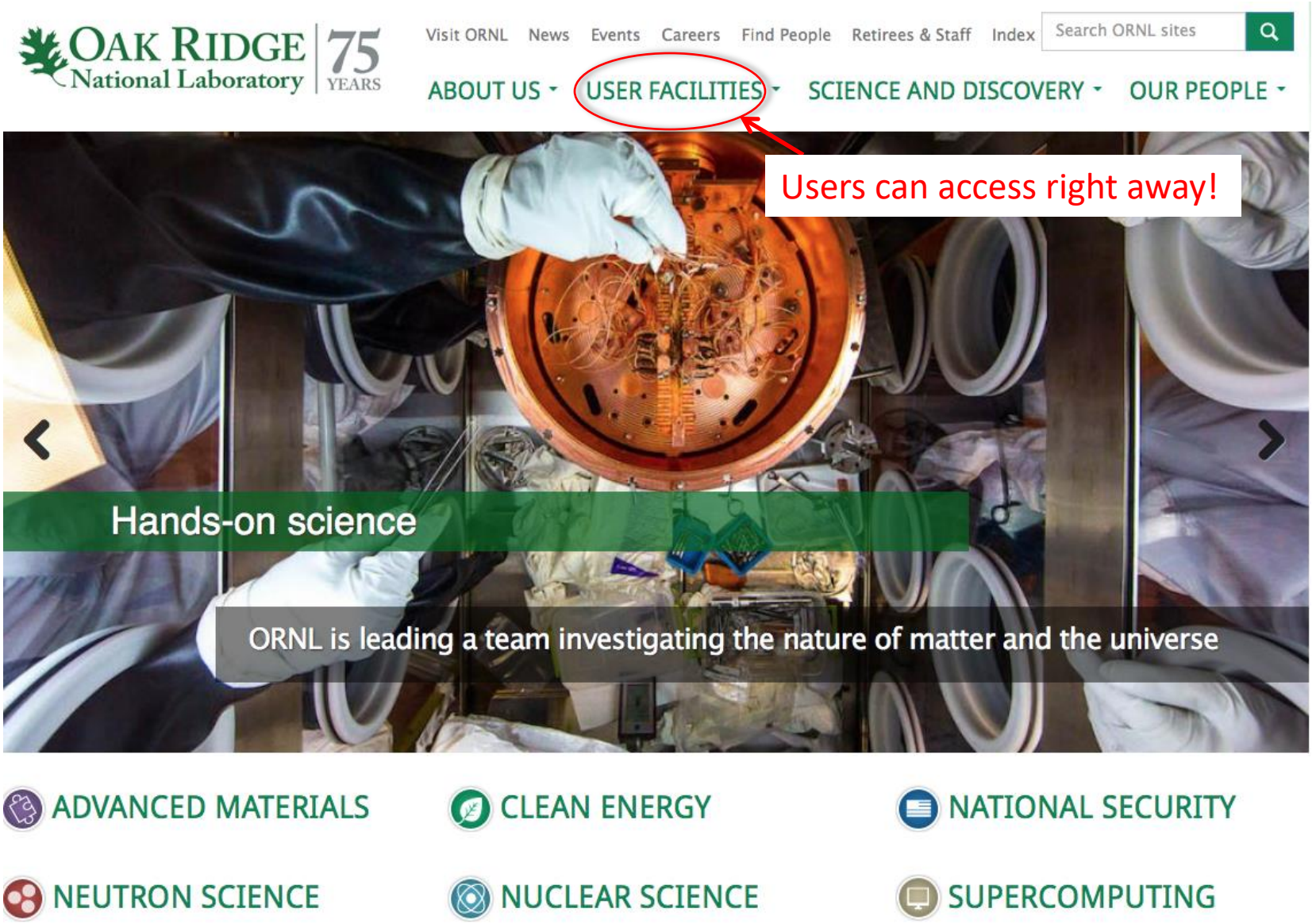
ANL (Argonne)

Advanced Photon Source (APS)

Center for Nanoscale Materials (CNM)

Dedicated CNM beam lines at APS

https://www.ornl.gov
ORNL Web Front Page



https://www.ornl.gov/content/user-facilities

OAK RIDGE National Laboratory | 75 YEARS

Visit ORNL | News | Events | Careers | Find People | Retirees & Staff | Index | Search ORNL sites

ABOUT US | USER FACILITIES | SCIENCE AND DISCOVERY | OUR PEOPLE

Home | About ORNL | User Facilities

User Facilities

Large # of User Facilities!

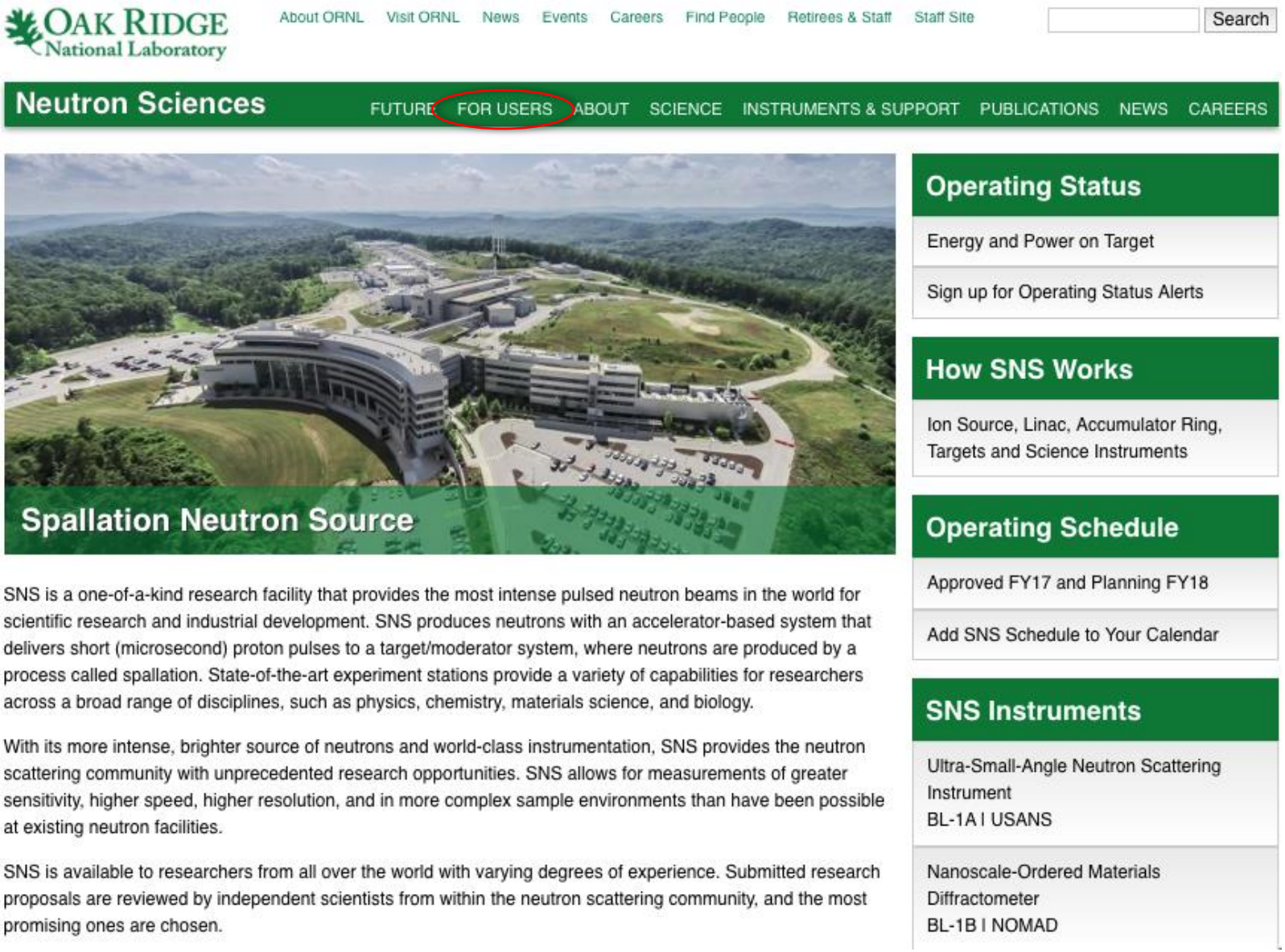
The Titan supercomputer enables researchers across the scientific community to acquire unparalleled accuracy in their simulations and achieve research breakthroughs more rapidly than ever before.

Each year, more than 3,200 scientists from universities, laboratories and private industry around the world conduct experiments at ORNL's scientific user facilities. ORNL's user facilities offer a diverse set of tools for experiments across a range of fields, including biology, materials and energy sciences, physics, engineering, and chemistry. ORNL's user facilities include world-leading facilities for neutron scattering, high performance computing, material and nanoscale research, and additive manufacturing.

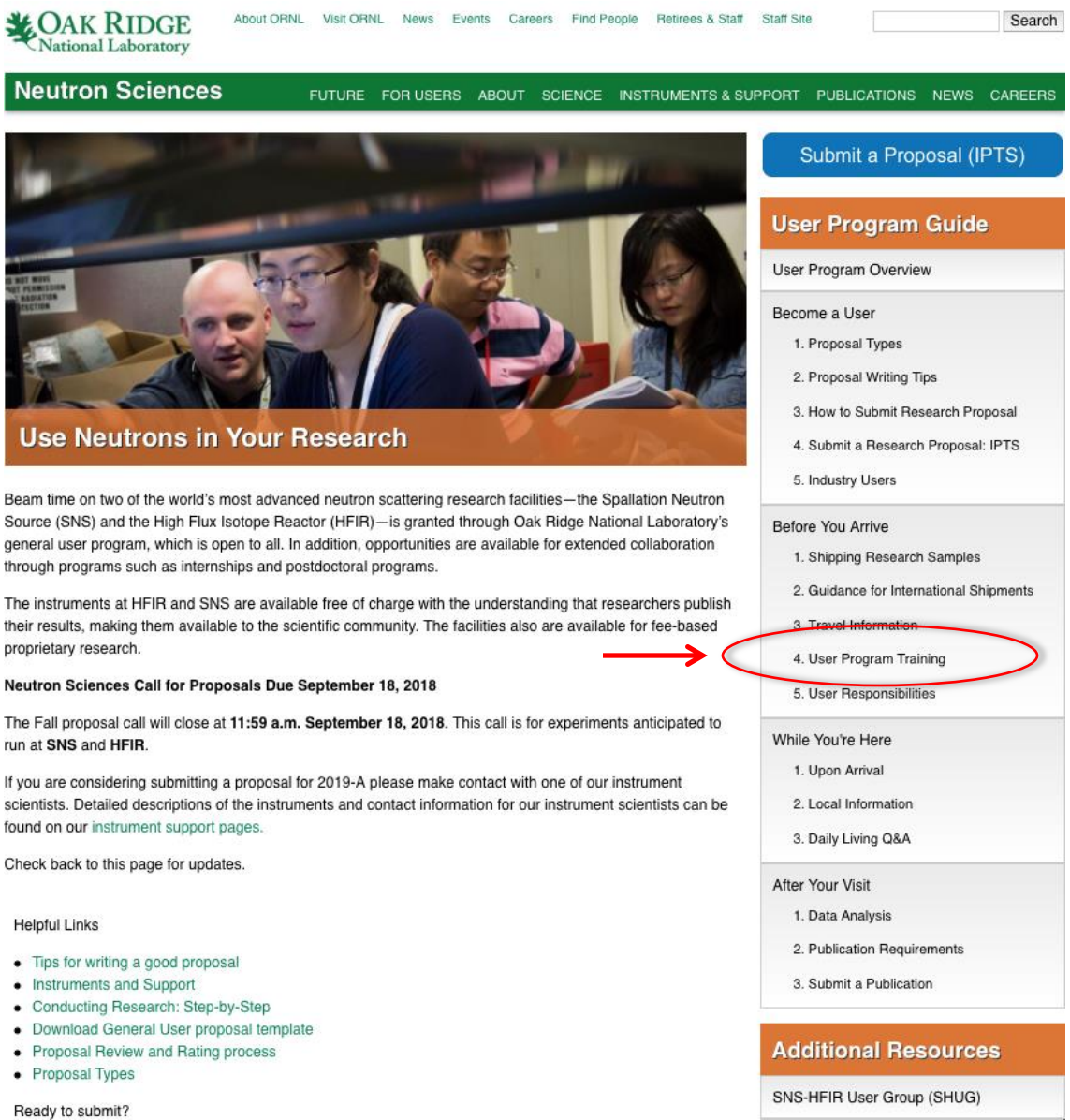
User Facilities

- User Portal
- Building Technologies Research and Integration Center (BTRIC)
- Carbon Fiber Technology Facility (CFTF)
- Center for Nanophase Materials Sciences (CNMS)
- Center for Structural Molecular Biology (CSMB)
- High Flux Isotope Reactor (HFIR)
- Manufacturing Demonstration Facility (MDF)
- National Transportation Research Center (NTRC)
- Oak Ridge Leadership Computing Facility (OLCF)
- Spallation Neutron Source (SNS)

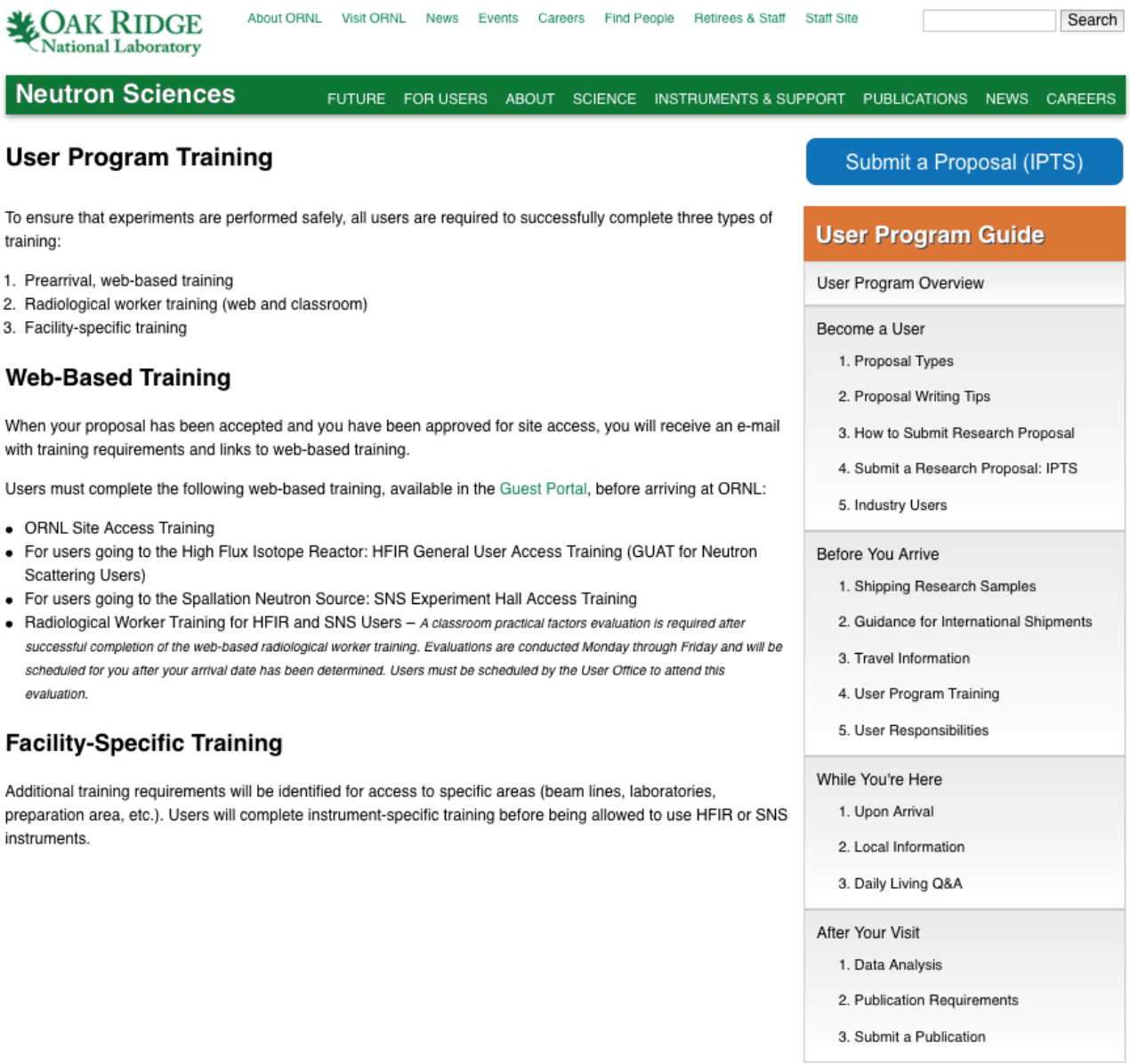
https://neutrons.ornl.gov/sns Users site is readily accessible



https://neutrons.ornl.gov/users before/while/after instruction



https://neutrons.ornl.gov/users/training clear instruction and ready web access



OAK RIDGE National Laboratory

About ORNL | Visit ORNL | News | Events | Careers | Find People | Retirees & Staff | Staff Site | Search

Neutron Sciences FUTURE | FOR USERS | ABOUT | SCIENCE | INSTRUMENTS & SUPPORT | PUBLICATIONS | NEWS | CAREERS

User Program Training

To ensure that experiments are performed safely, all users are required to successfully complete three types of training:

1. Prearrival, web-based training
2. Radiological worker training (web and classroom)
3. Facility-specific training

Web-Based Training

When your proposal has been accepted and you have been approved for site access, you will receive an e-mail with training requirements and links to web-based training.

Users must complete the following web-based training, available in the Guest Portal, before arriving at ORNL:

- ORNL Site Access Training
- For users going to the High Flux Isotope Reactor: HFIR General User Access Training (GUAT for Neutron Scattering Users)
- For users going to the Spallation Neutron Source: SNS Experiment Hall Access Training
- Radiological Worker Training for HFIR and SNS Users – *A classroom practical factors evaluation is required after successful completion of the web-based radiological worker training. Evaluations are conducted Monday through Friday and will be scheduled for you after your arrival date has been determined. Users must be scheduled by the User Office to attend this evaluation.*

Facility-Specific Training

Additional training requirements will be identified for access to specific areas (beam lines, laboratories, preparation area, etc.). Users will complete instrument-specific training before being allowed to use HFIR or SNS instruments.

Submit a Proposal (IPTS)

User Program Guide

User Program Overview

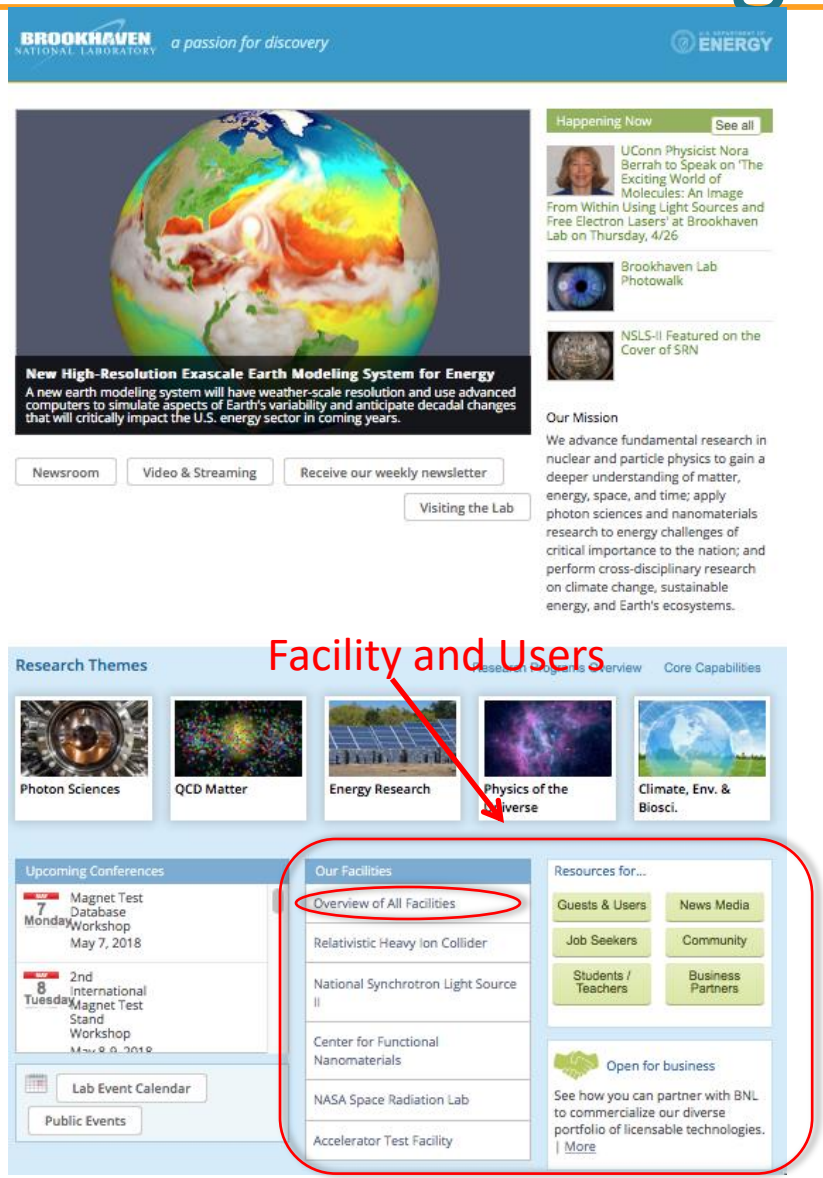
Become a User
1. Proposal Types
2. Proposal Writing Tips
3. How to Submit Research Proposal
4. Submit a Research Proposal: IPTS
5. Industry Users

Before You Arrive
1. Shipping Research Samples
2. Guidance for International Shipments
3. Travel Information
4. User Program Training
5. User Responsibilities

While You're Here
1. Upon Arrival
2. Local Information
3. Daily Living Q&A

After Your Visit
1. Data Analysis
2. Publication Requirements
3. Submit a Publication

https://www.bnl.gov/world/
BNL Web Front Page



https://www.bnl.gov/science/facilities.php Nice Facility Overview Page

BROOKHAVEN NATIONAL LABORATORY *Our Science* U.S. DEPARTMENT OF ENERGY

Our Science | Photon Sciences | QCD Matter | Energy | Physics of the Universe | Climate, Env & BioSci

Core Capabilities | Facilities

Brookhaven's Research Facilities

Tools of Discovery

Brookhaven National Lab excels at the design, construction, and operation of large-scale, cutting-edge research facilities—some available nowhere else in the world. Each year, thousands of scientists from laboratories, universities, and industries around the world use these facilities to delve into the basic mysteries of physics, chemistry, biology, materials science, energy, and the environment—and develop innovative applications that arise, sometimes at the intersections of these disciplines.

Brookhaven Lab is noted for the design, construction and operation of large-scale, cutting-edge research facilities that support thousands of scientists worldwide.

Relativistic Heavy Ion Collider

The Relativistic Heavy Ion Collider (RHIC) smashes particles together to recreate the conditions of the early universe so scientists can explore the most fundamental building blocks of matter as they existed just after the Big Bang. This research unlocks secrets of the force that holds together 99 percent of the visible universe—everything from stars to planets and people—and triggers advances in science and technology that have applications in fields from medicine to national security. More than 1,000 scientists from around the globe—including hundreds of students training to be part of our nation's future high-tech workforce—conduct research at RHIC.

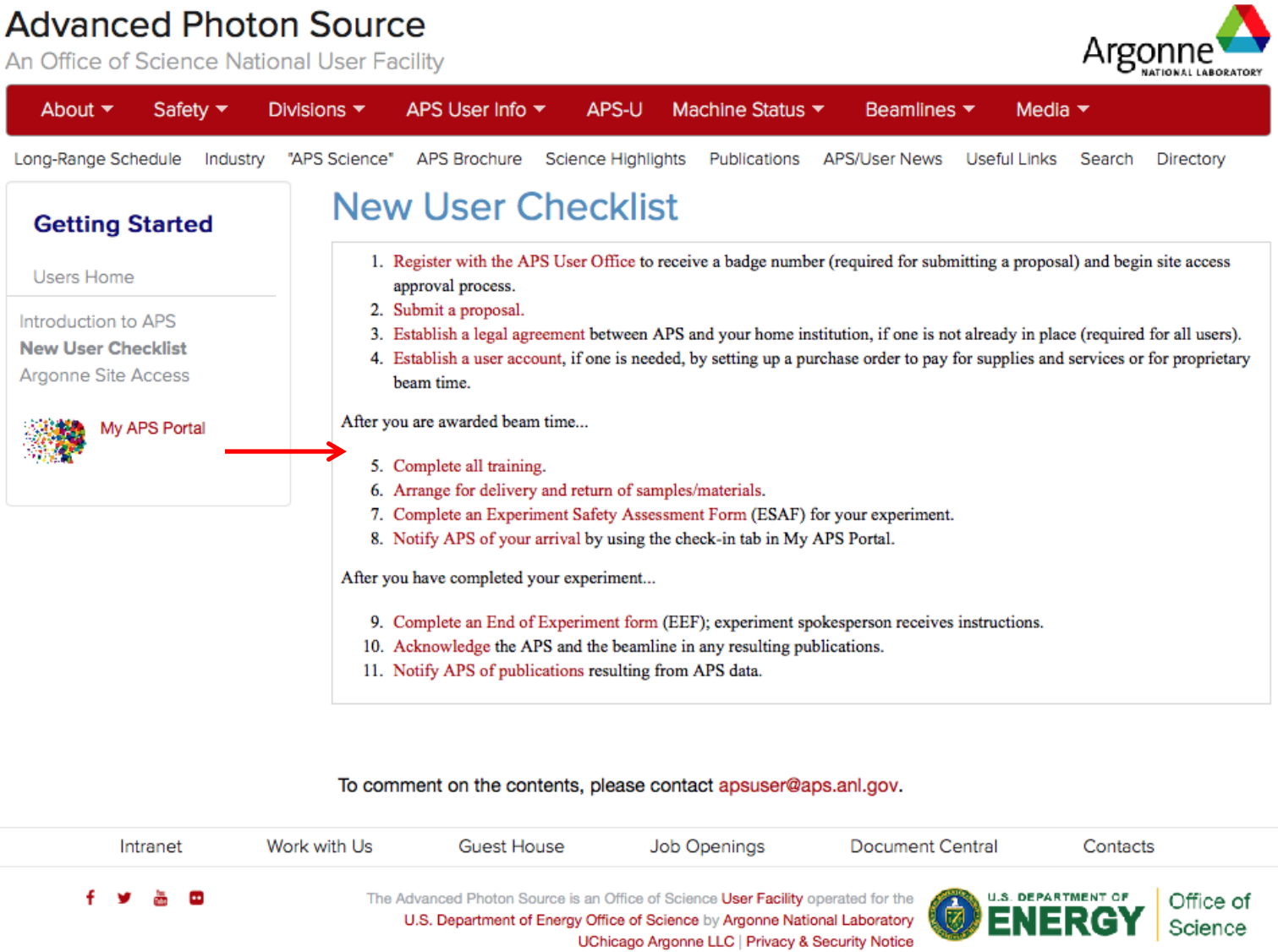
National Synchrotron Light Source-II

The National Synchrotron Light Source II (NSLS-II) generates intense beams of x-ray, ultraviolet, and infrared light and offers an array of sophisticated imaging techniques to capture atomic-level "pictures" of a wide variety of materials, from biological molecules to semiconductor devices. NSLS-II has a nanometer-scale resolution—a key resource for researchers at Brookhaven's CFN—and will enhance the development of next-generation sustainable energy technologies and improve imaging of complex protein structures.

Center for Functional Nanomaterials

The Center for Functional Nanomaterials (CFN)—one of five Nanoscale Science Research Centers funded by the Department of Energy's Office of Science—provides state-of-the-art tools for creating and exploring the properties of materials with dimensions spanning just billionths of a meter. CFN scientists are dedicated to atomic-level tailoring that addresses a wide range of energy challenges. CFN focus areas include: improving solar cells and other electronic nanomaterials; designing more efficient catalysts; developing new capabilities and uses for electron microscopy; nanofabrication based on soft and biological nanomaterials—all aided by theory and advanced computation.

https://www.aps.anl.gov/Users-Information/Getting-Started/User-Checklist



Advanced Photon Source
An Office of Science National User Facility

Argonne NATIONAL LABORATORY

About | Safety | Divisions | APS User Info | APS-U | Machine Status | Beamlines | Media

Long-Range Schedule | Industry | "APS Science" | APS Brochure | Science Highlights | Publications | APS/User News | Useful Links | Search | Directory

Getting Started

Users Home

Introduction to APS
New User Checklist
Argonne Site Access

My APS Portal

New User Checklist

1. Register with the APS User Office to receive a badge number (required for submitting a proposal) and begin site access approval process.
2. Submit a proposal.
3. Establish a legal agreement between APS and your home institution, if one is not already in place (required for all users).
4. Establish a user account, if one is needed, by setting up a purchase order to pay for supplies and services or for proprietary beam time.

After you are awarded beam time...

5. Complete all training.
6. Arrange for delivery and return of samples/materials.
7. Complete an Experiment Safety Assessment Form (ESAF) for your experiment.
8. Notify APS of your arrival by using the check-in tab in My APS Portal.

After you have completed your experiment...

9. Complete an End of Experiment form (EEF); experiment spokesperson receives instructions.
10. Acknowledge the APS and the beamline in any resulting publications.
11. Notify APS of publications resulting from APS data.

To comment on the contents, please contact apsuser@aps.anl.gov.

Intranet | Work with Us | Guest House | Job Openings | Document Central | Contacts

The Advanced Photon Source is an Office of Science User Facility operated for the U.S. Department of Energy Office of Science by Argonne National Laboratory
UChicago Argonne LLC | Privacy & Security Notice

U.S. DEPARTMENT OF ENERGY | Office of Science

https://www.aps.anl.gov/Safety-and-Training/Training/For-Users-and-Employees/Required-Training-for-Users

Advanced Photon Source
An Office of Science National User Facility

Argonne NATIONAL LABORATORY

About ▾ | Safety ▾ | Divisions ▾ | APS User Info ▾ | APS-U | Machine Status ▾ | Beamlines ▾ | Media ▾

Long-Range Schedule | Industry | "APS Science" | APS Brochure | Science Highlights | Publications | APS/User News | Useful Links | Search | Directory

Safety & Training

Safety & Training Home

EFOG Group
User Safety Support Staff
All Safety Staff
Electrical Safety
Electric Equipment Inspectors
Safety Committees
Beamline Safety Coordinators Meetings
Safety F.A.Q.

Required Training for Users

All APS users, including APS staff, resident users, general users, etc., must complete the required "core" courses listed below before participating in an experiment, either hands-on or remotely. Additional training requirements may be identified in the experiment safety assessment.

- A user (or employee) badge number is required to take training
- APS user core courses can be taken remotely, through the My APS Portal, or in the User Office.
- CNM user courses and additional safety courses are available on the remote training system; some can be taken only from within the Argonne network.
- APS users can check whether your training is up to date in My APS Portal.

Remote training login

Able to access and take training remotely!

User Type	Description	Required Training (retraining interval)
Non-resident user Hands-on	Actively participates in an experiment at APS	• **APS101:** Advanced Photon Source User Orientation (2 years) • **ESH100U:** Argonne National Laboratory User Facility Orientation (2 years) • **ESH223U:** Cyber Security Education and Awareness (1 year) • **ESH738, GERT:** General Employee Radiological Training (2 years)* • **APS2##:** Sector-specific Orientation (## is sector number) (2 years)**
Remote	Not present at the APS for the experiment but manipulates the beamline remotely	• **ESH223U:** Cyber Security Education and Awareness (1 year)
Mail-in	Not present at the APS and mails in samples for beamline staff to run	• No training required
Off-site	Not present at the APS but is a collaborator on the experiment	• No training required

NSTX-U/PPPL could adopt more User oriented approach

Need to make User related information and training more accessible

- If we were to host considerably larger number of Users, we need to improve efficiency:
  - Facility related information should be more readily accessible to Users on the web page.
  - Clear instruction should be also available for the research host to host a User.
  - Useful information is contained in the PPPL procedures but they are not easily accessible particularly from outside.
- At present, the Duo authentication system is required for access:
  - Without Duo, not much one can do remotely.
  - Duo is required to access for example the PU training site including the cyber security training. Duo is not easy to set up from a foreign country for the first time User. We need to come up with an acceptable solution soon….

The BNL/ANL/ORNL visits were truly informative!

What we can adopt for NSTX-U however needs some considerations

- BNL/ANL/ORNL facilities have more than an order of magnitude larger # of users than fusion / NSTX-U.

- Facility user program and accommodation resources are also more than an order of magnitude larger than available at PPPL.

- Light source facility operations are relatively well defined and understood unlike fusion plasmas which are still being actively researched.

- But we have many areas where we can/should improve efficiency for long-standing and new users:
  - Web can be made to be more facility/user friendly.
  - Training can be made more remotely accessible
  - Presently many bottlenecks for becoming an off-site collaborator
  - User culture could be fostered more at NSTX-U and PPPL

Agenda

- Jon – Brief overview / context
- Brent – User Facility overview
- Masa – User Facility interfaces, training
- Greg – Experiment Proposal System
- Jon – User Group Definition Working Group

National Spherical Torus eXperiment Upgrade

User Facility Experiment Proposal System

G. Tchilinguirian, B. Stratton, J. Menard, S. Gerhardt, M. Ono, R. Kaita, M. Jaworski

NSTX-U Research Team Meeting

May 4, 2018

PPPL PRINCETON PLASMA PHYSICS LABORATORY

PRINCETON UNIVERSITY

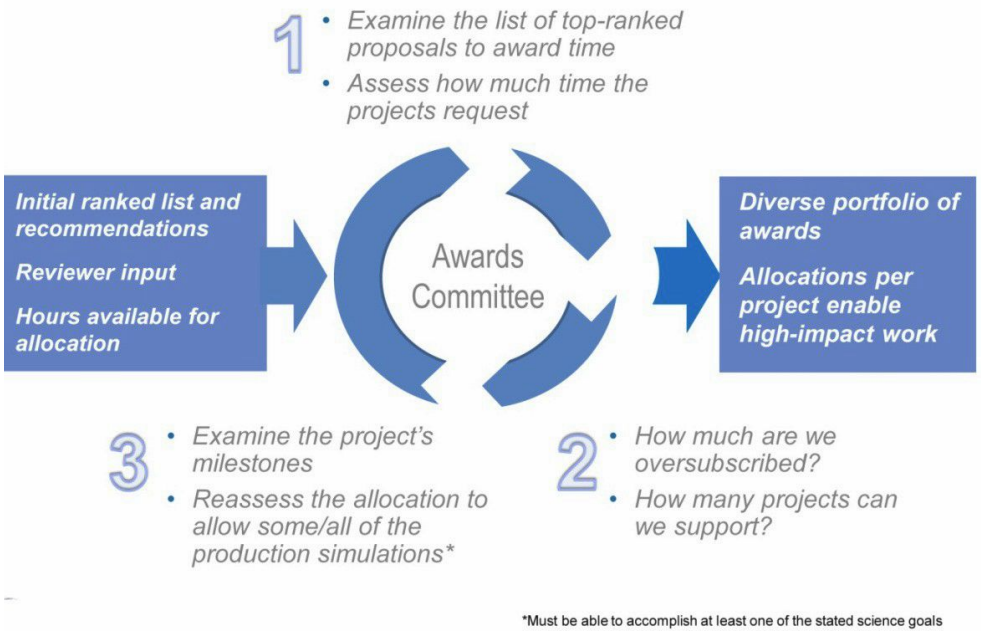
Experiment Proposal System?

A System that can manage up to thousands of:

- User proposals per run year
- Proposal review and approval processes
- Proposal resource requests
  - Support personnel requests
  - Hardware Integration (electrical, clock, trigger)
  - Machine (Specific Beamline, Conditions)
  - Software/Computing
- Assignment of reviewers/mentors/facilitators

Example of Proposal System Flow

Submit Proposal



Machine Time

Solutions Vary Throughout DOE

Some Examples:

- **P**roposal **A**llocation & **S**afety **S**ystem (PASS) (NSLS2, BNL)
- **C**enter for **F**unctional **N**anomaterials **P**roposal **S**ystem (CFNPS) (CFN, BNL)
- **G**eneral **U**ser **P**roposals (GUP) (APS, ANL)

Differences:

- Solutions vary from homegrown to Commercial
- Small to Large User and IT support groups
- Features (ex. Rapid Scheduling at CFN)

Solutions can vary, even at the same site!

Some Attempts at Homogeneity

DOE Leadership Computing Facilities (LCF)

- Partnership between facilities
- Use a common Web-Based proposal system
- Can schedule time at either facility
- Provides training to users ahead of machine time

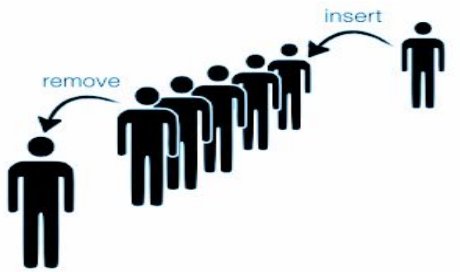
Light Sources Currently working with vendor

- Origin of system was a DOE National Lab
- Project went commercial

Scheduling Users

Oversubscription common to most facilities that

- Have consistent conditions
- Have a Large User base
- Have less unscheduled downtime



SNS Explained Block vs. Group Scheduling

- Block: Good for facility but slips impact more users
- Group: Good for the users but less efficient for facility

NSTX-U vs. Visited Lab

Some Key Attributes:

NSTX-U	Experiments We visited
Long term User assignments	Rapid User turnover
Variable physical machine interfaces (by location), Machine conditions vary during run	Typically a standard physical machine interface, consistent machine conditions
Smaller user base (~300)	Large User base (up to 2000)
No dedicated User support team, small IT team (supports all of PPPL)	Large User support and available IT teams
Communication through web status, personal email, phone	Some have centralized status/scheduling communication
Data is centralized, nearly all machine and diagnostic data available through MDSplus	Data policy varies from “No Policy” to “doggy bag” to some centralized machine condition data

Could We Borrow or Unite?

- Adopt other UF's systems
  - Common commercial product for light sources "on the way"
  - Some Similar attributes (see table)
  - Most have mature SW/Systems
  - Try to port PASS or GUP to NSTX-U?

- Partner with other fusion facilities
  - D3D
  - NIF (They use a commercial system)
  - CMOD (What did they use?)

These approaches suffer if our workflow differs greatly

A Possible Proposal System

We **could** develop a NSTX-U User Proposal & Scheduling system (NUPS):

- Web based proposal submission, training portal
- Submission review and approval tracking dashboards
- Early identification of experimental requirements
- Scheduling of experiments with “like” condition requirements
- A consistent user experience
- Improved integration efforts by operations staff

PPPL’s forthcoming Document Management System will have the foundation for many of these capabilities built-in or available

A Possible Communication System

NUPS **could** communicate:

- Proposal submission status
- Requirement review status
- Machine conditions
- Availability of resources
- Schedule updates/changes
- Daily logbook mailing
- 5pm meeting transcript
- User Surveys after EXPs complete

What Gains Will We Realize?

Opportunity for NSTX-U to:

- Better serve the Users
- Be efficient despite having a small “User Office”
- Prepare Users ahead of visit
- Keep engagement high through better communication
- Solicit feedback from users after EXPs conclude

Conclusions

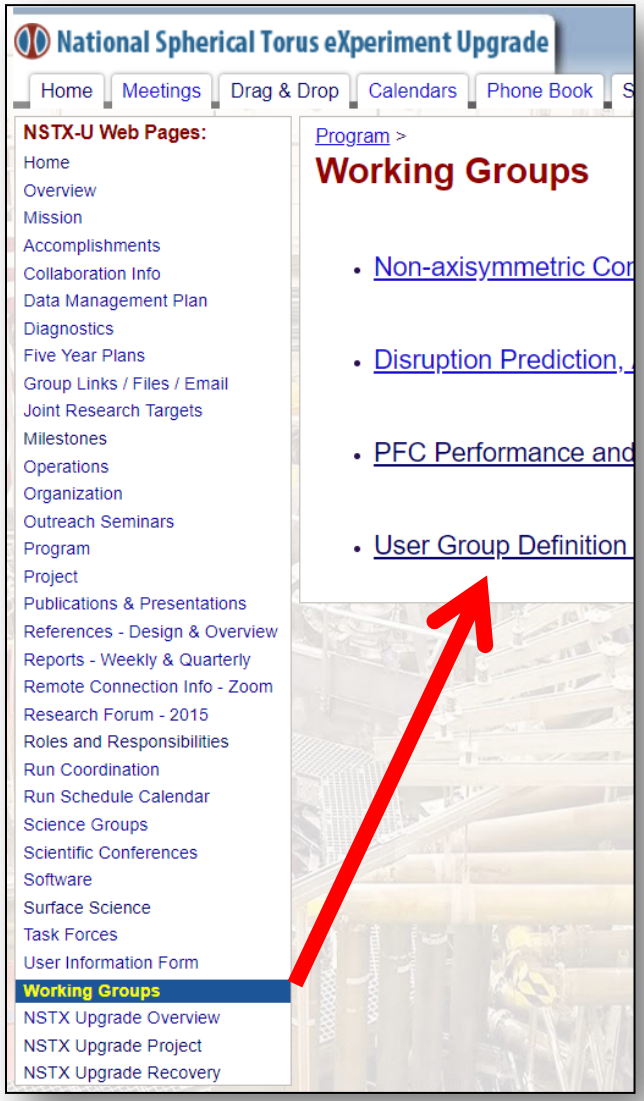
- Many different systems exist to support Users at other facilities
- NSTX-U is not like other User facilities we visited
- Investigate solutions already in the Fusion community
- A proposal and communication system can improve efficiency and User experience

We should work together to define needs, scope, requirements, workflows!

Agenda

- Jon – Brief overview / context
- Brent – User Facility overview
- Masa – User Facility interfaces, training
- Greg – Experiment Proposal System
- Jon – User Group Definition Working Group

“User Group Definition” Working Group



Program > Working Groups >

User Group Definition

Leader: Brent Stratton
Deputy: TBD

File archive

Group E-mail List: *Click to Join*

Meetings

Memos

Action Items

Charges:

1. Get user/potential user input on the utility of having an NSTX-U User Group
2. Develop, prioritize, time-phase a list of user group topics for WG - examples:
   - User Group structure, governance, charter, executive committee, need for existence
   - User interfaces to facility: user status, training, proposal submission, review, scheduling, ...
   - Diagnostic documentation, implementation and modification workflow, impacts of QAPD and ASO
   - Data analysis tool development and prioritization
   - Outreach to broader community to describe / inform NSTX-U mission, capabilities, opportunities
   - TBD, i.e. any topic the users think is important for users!
3. Begin one or more WG sub-tasks / sub-groups to address WG topics

Tasks: Organize meetings and reports to address above charges

Due dates:

Charge 1 - June 1, 2018 - Use charge 2 as a guide, report to NSTX-U directorship

Charge 2 - August 3, 2018 - Report to Research Team on list from Charge 2

Charge 3 - sub-groups, tasks, due-dates TBD