

RADFX SCHEDULING TOOL

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Sponsors:

Michael Mckenna, MDA Scale Micro Electronics

Special Thanks:

NASA Electronic Parts and Packaging (NEPP) Program

Background:

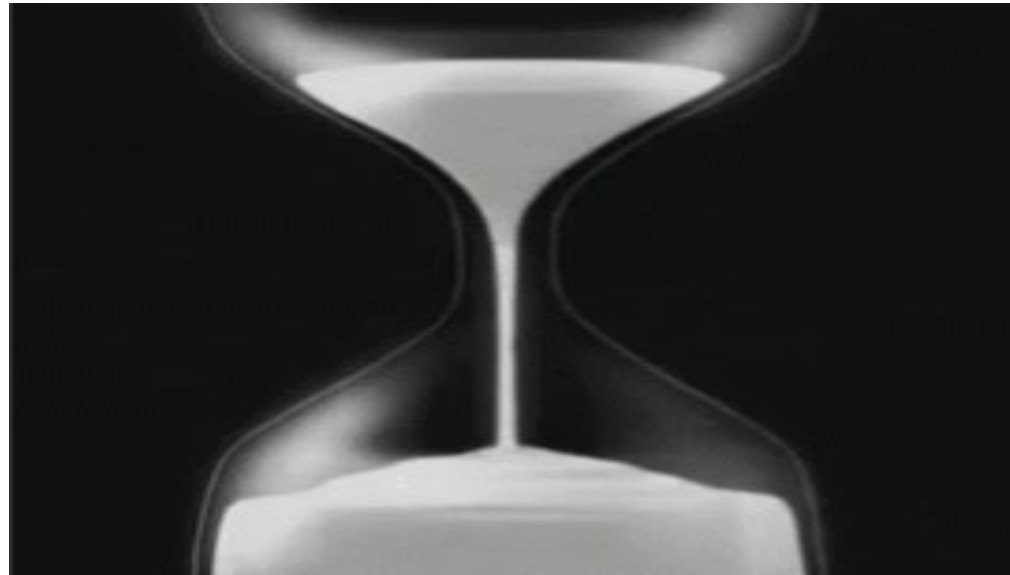
MDA sponsored a Computer Science capstone from the University of Tennessee at Chattanooga to create a tool to assist in the process of requesting and allocating radiation test time to users

For beta testing, contact Daniel Loveless:

Daniel-Loveless@utc.edu

What if I told every radiation test engineer in this room that they have been wasting their time?

Radiation testing coordination is outdated:



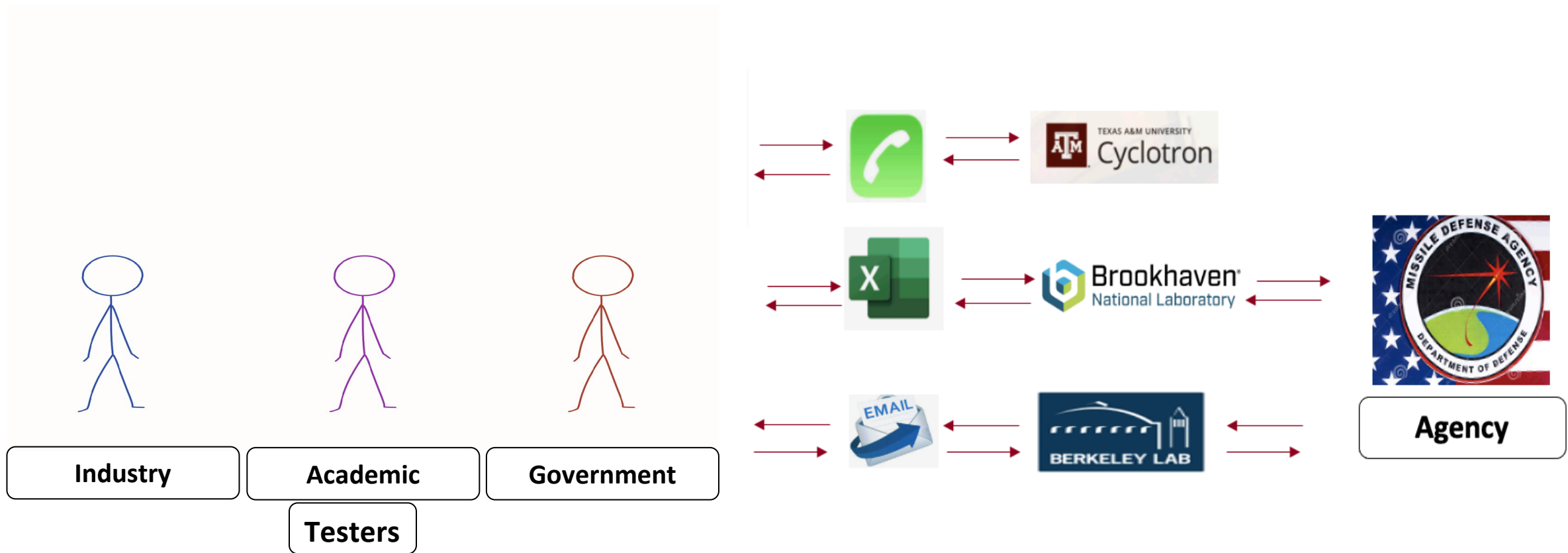
Across multiple facilities there is little organization for managing and allocating beam time to multiple testers
Communication is done through outdated spreadsheets and email

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Why is there a lack of organization?

What if there was something better to connect facilities and testers?



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Our Solution: RADFX

Based off feedback from multiple facilities, testers, and agencies, RADFX was created:
This prototype will be funded by the Missile Defense agency through a SBIR



- ❑ Any tester can access this site and request test time for any facility

- ❑ Functions such as our built-in calendar aid facility managers in scheduling beam time

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Main Focus: Ease of Use



Agency If needed

☐ Reduce the amount of time spent coordinating

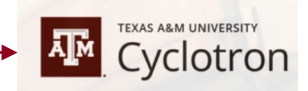
☐ Edit and store fundamental information for each facility

Tester

Tester

Tester

Common Web Application: RADFX



One site to rule them all

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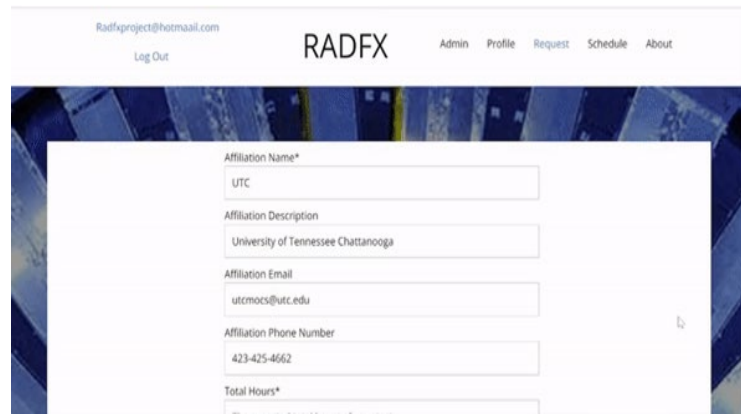


How do all users benefit from RADFX?

Users have the option to view this site from three different user views:

Tester View:

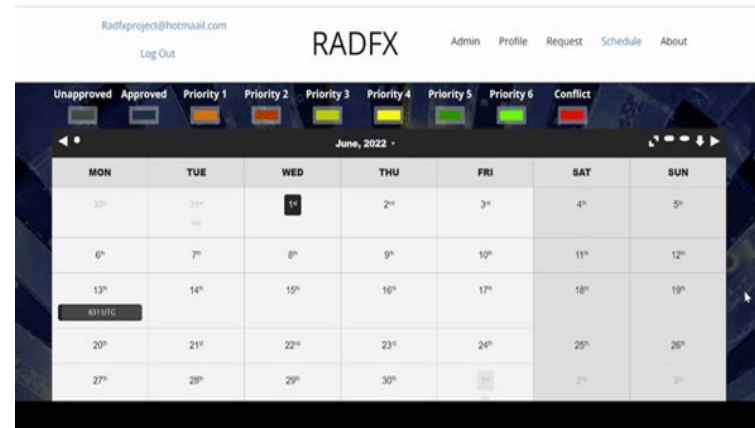
Users wanting to use the cyclotron



A screenshot of the RADFX website's registration form for the Tester View. The form is titled "RADFX" and includes a navigation menu with "Admin", "Profile", "Request", "Schedule", and "About". The form fields are: Affiliation Name* (UTC), Affiliation Description (University of Tennessee Chattanooga), Affiliation Email (utcmocs@utc.edu), Affiliation Phone Number (423-425-4662), and Total Hours*.

Facility Manager View:

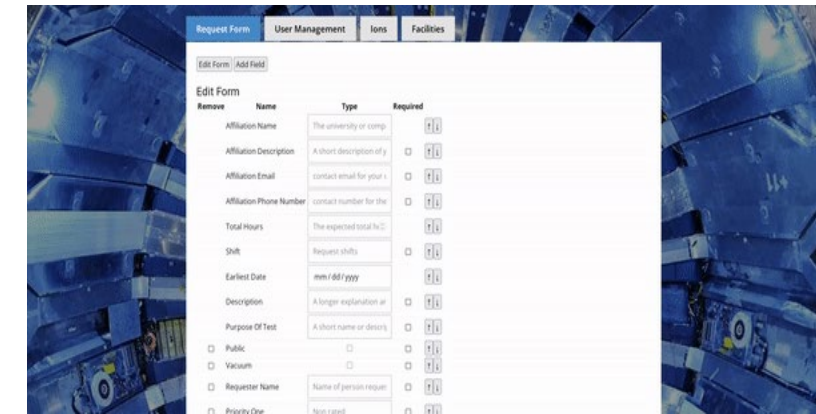
Users scheduling cyclotron access



A screenshot of the RADFX website's Facility Manager View. It shows a calendar for June 2022 with a grid of days from Monday to Sunday. Above the calendar is a navigation bar with "Unapproved", "Approved", and "Priority 1" through "Priority 6" and "Conflict". The calendar shows a request for "6:01 UTC" on Wednesday, June 1st.

Admin/Agency View:

Users administering cyclotron access



A screenshot of the RADFX website's Admin/Agency View. It shows a "Request Form" with tabs for "Request Form", "User Management", "Ions", and "Facilities". The "Edit Form" section includes fields for "Affiliation Name", "Affiliation Description", "Affiliation Email", "Affiliation Phone Number", "Total Hours", "Shift", "Earliest Date", "Description", "Purpose Of Test", "Public", "Vacuum", "Requester Name", and "Priority One".

- Send requests to any facility
- View public calendar
- Check specific facility assets

- Accept/Deny beam time requests
- Edit any form specific to facility
- Schedule with ease

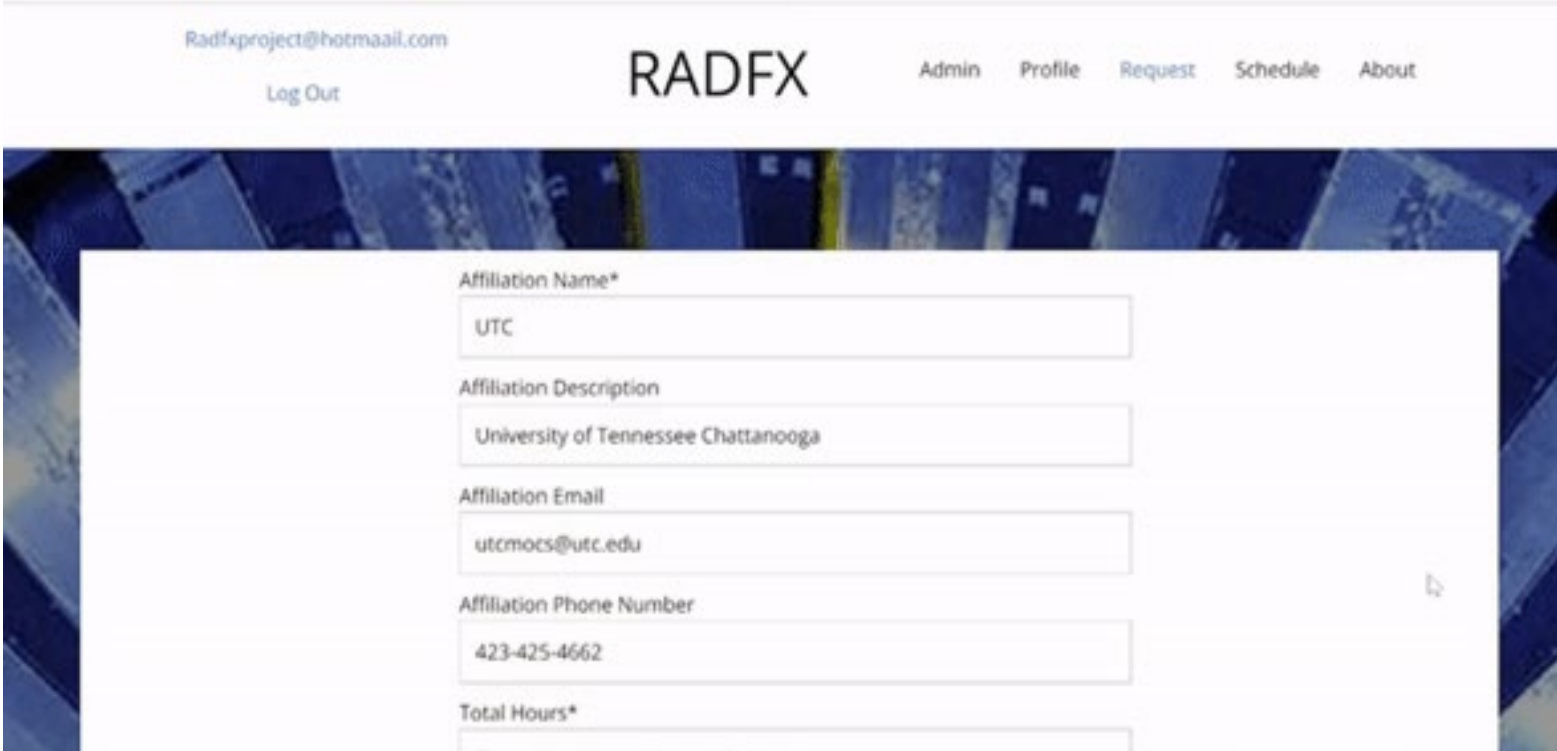
- If facilities use an Agency
 - Access to all features
 - Accept/Deny new user

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Tester view: How do Tester's request beam time?

All in-one request form



The screenshot shows the RADFX web application interface. At the top left, the email address 'Radfxproject@hotmail.com' and a 'Log Out' link are visible. The center of the header features the 'RADFX' logo. To the right of the logo are navigation links for 'Admin', 'Profile', 'Request', 'Schedule', and 'About'. Below the header is a blue-tinted image of a laboratory facility. Overlaid on this image is a white form with the following fields:

- Affiliation Name*: UTC
- Affiliation Description: University of Tennessee Chattanooga
- Affiliation Email: utcmocs@utc.edu
- Affiliation Phone Number: 423-425-4662
- Total Hours*: (field is empty)

1. Enter Contact information

2. Request hours, date, and shifts

3. Choose facility

4. Select preferred ions

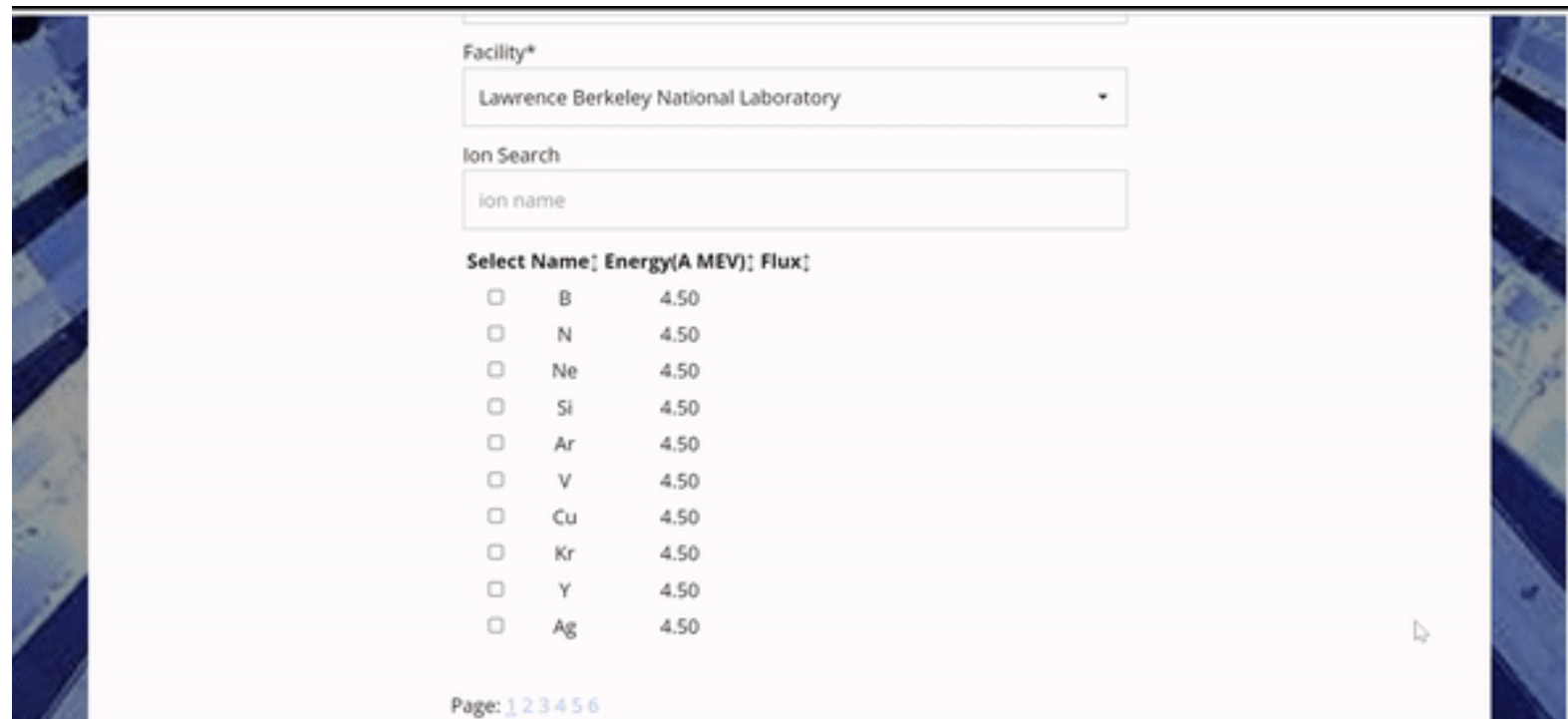
5. Submit

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Tester View: Ion Capabilities Via Request form

Easily sort and search through ions to create a user test plan



The screenshot shows a web interface for selecting ions. At the top, there is a 'Facility*' dropdown menu with 'Lawrence Berkeley National Laboratory' selected. Below it is an 'Ion Search' input field with the placeholder text 'ion name'. Underneath is a table with columns 'Select Name', 'Energy(A MEV)', and 'Flux'. The table lists several ions with their corresponding energy and flux values. At the bottom of the table, there is a pagination control showing 'Page: 1 2 3 4 5 6'.

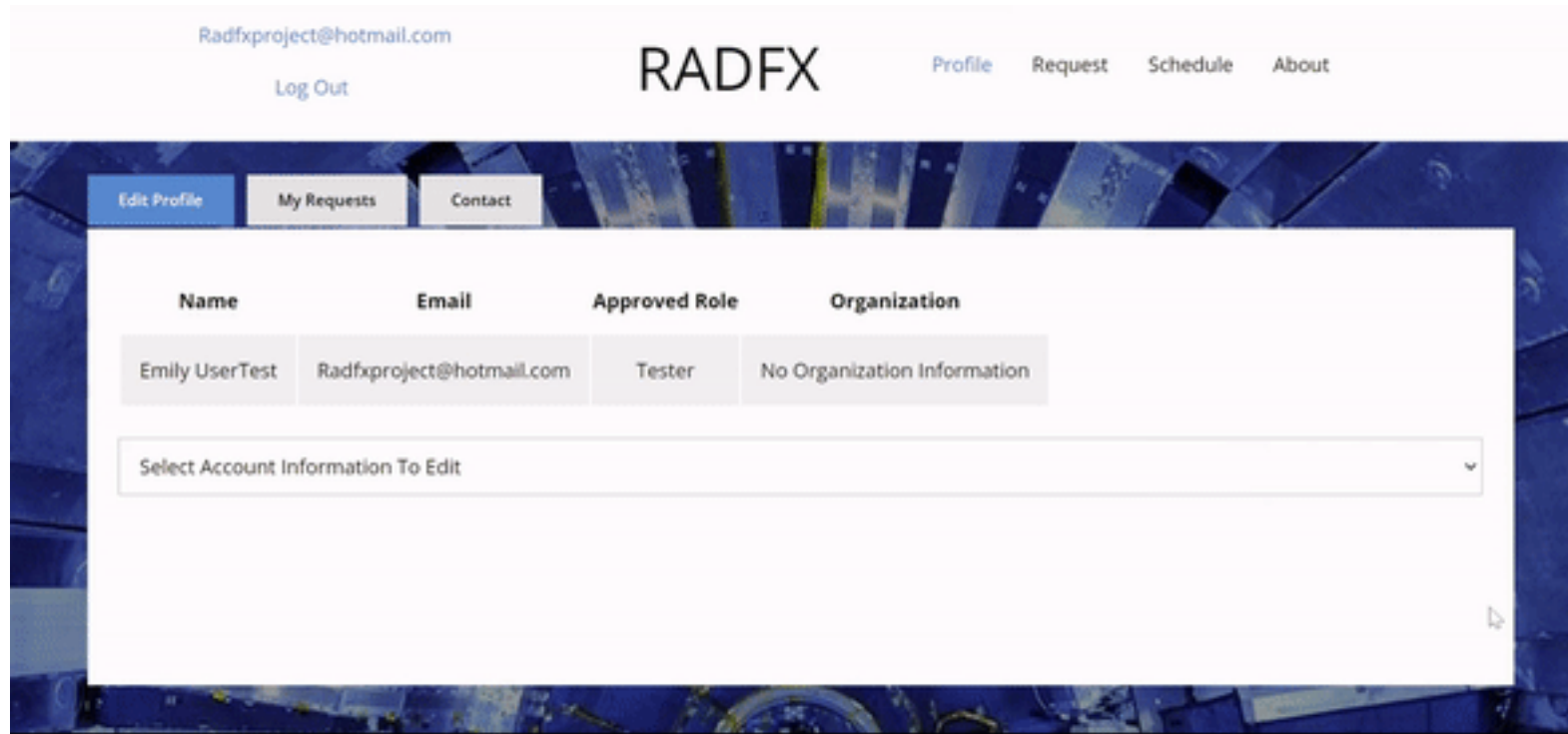
Select Name	Energy(A MEV)	Flux
<input type="checkbox"/> B	4.50	
<input type="checkbox"/> N	4.50	
<input type="checkbox"/> Ne	4.50	
<input type="checkbox"/> Si	4.50	
<input type="checkbox"/> Ar	4.50	
<input type="checkbox"/> V	4.50	
<input type="checkbox"/> Cu	4.50	
<input type="checkbox"/> Kr	4.50	
<input type="checkbox"/> Y	4.50	
<input type="checkbox"/> Ag	4.50	

Reveals available ions for a facility

Select multiple ions

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Tester View: User Profile Page



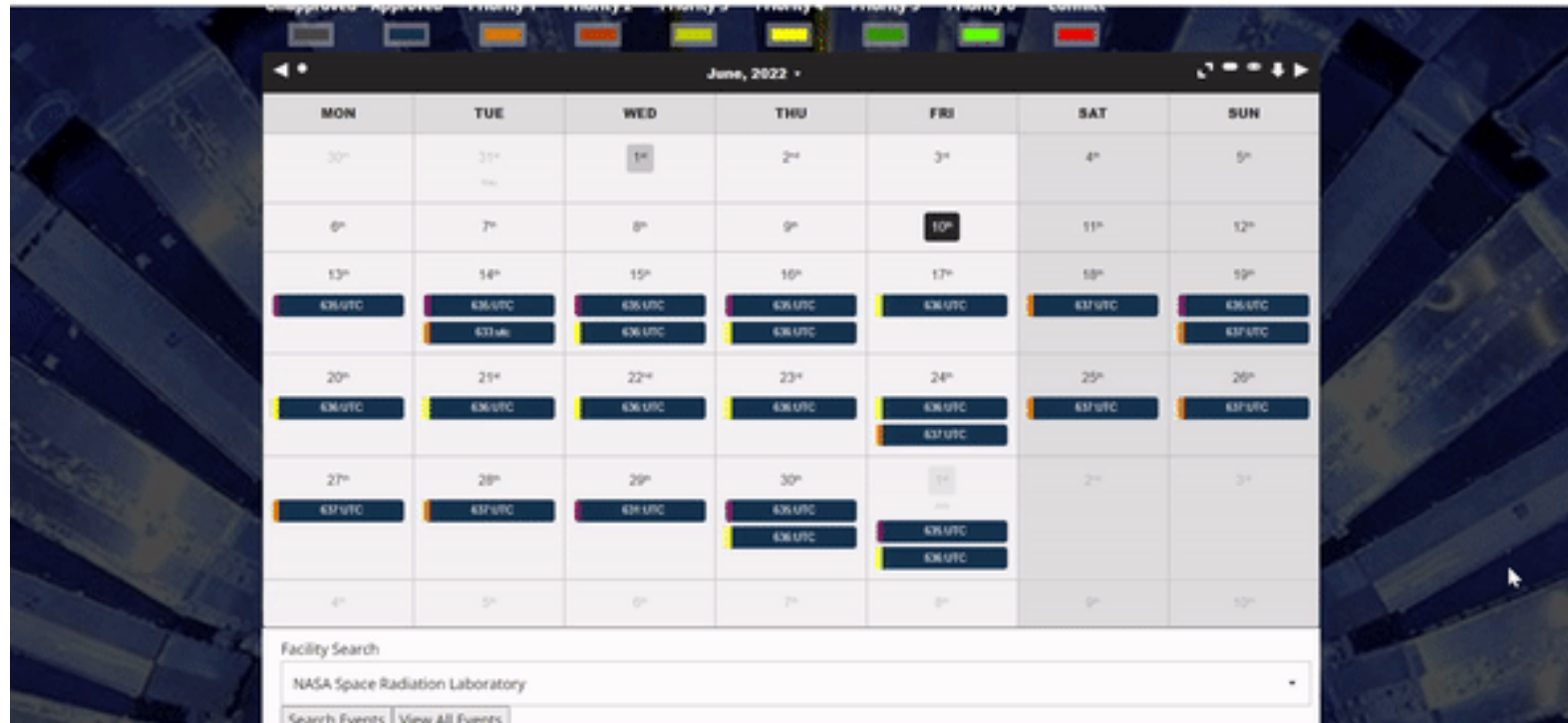
❑ Easily check pending requests

❑ Allows users to view and edit previously submitted requests

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Tester View: Viewing Facilities Published Schedules

Intuitive Calendar



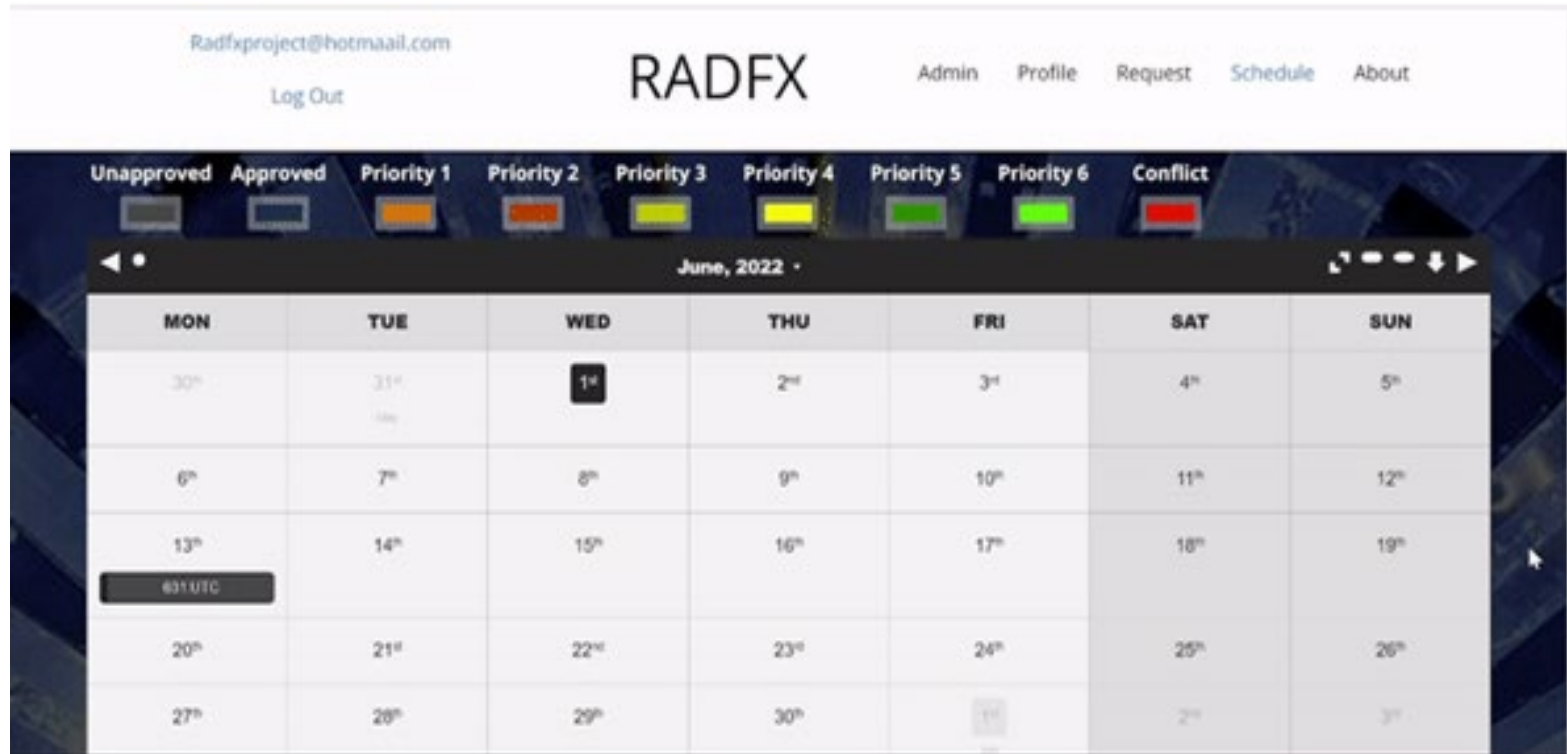
❑ Effortlessly see where your beam time has been scheduled

❑ Simplifies planning your request dates

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Daniel-Loveless@utc.edu

Facility Manager: How does this simplify scheduling for facilities?

RADFX Calendar tool

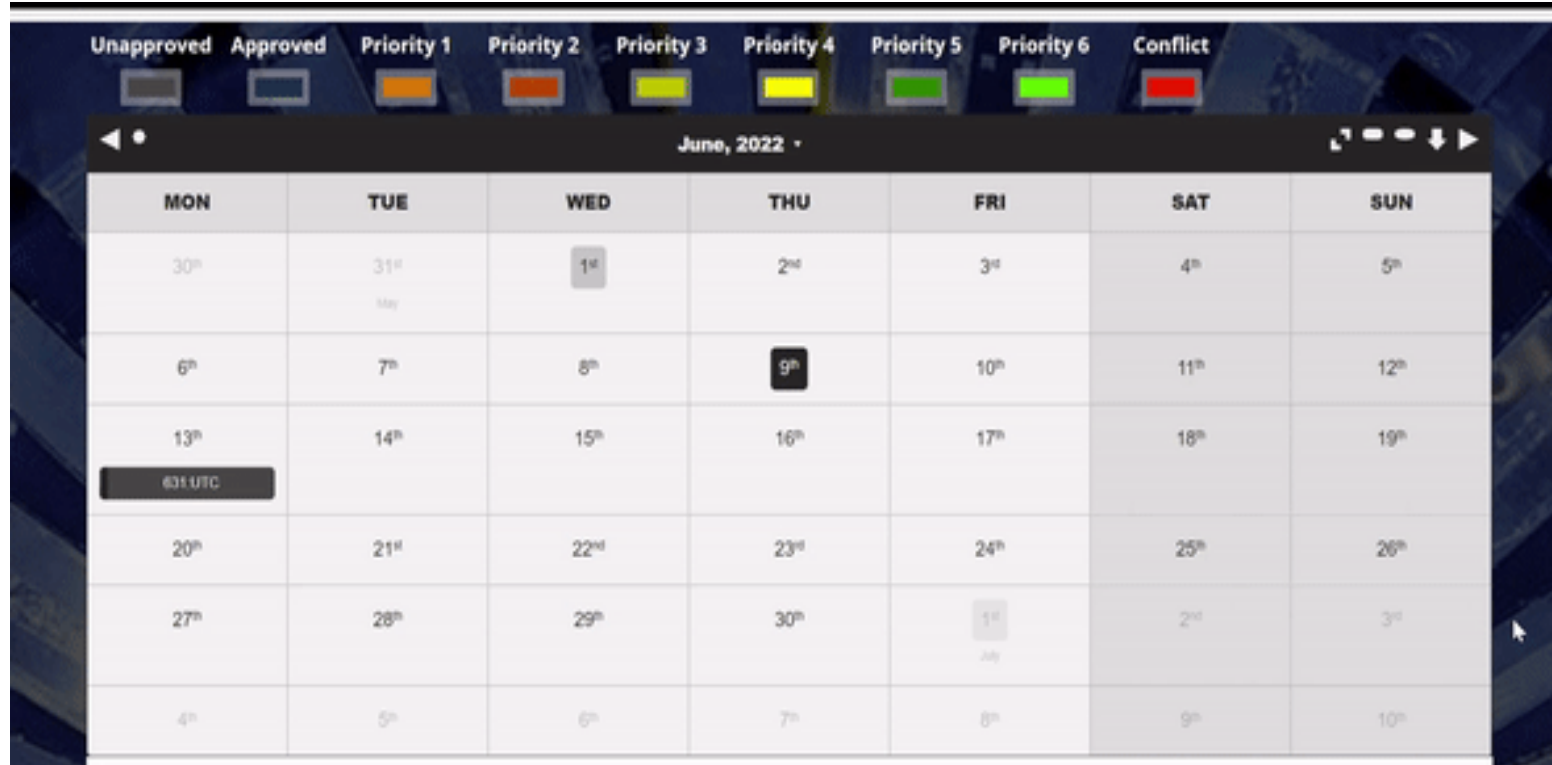


No more outdated scheduling

Clean visuals and responsive UI

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Facility Manger: Flexible Drag Drop Calendar



❑ Facilities can easily adjust tester's requests

❑ The drag and drop feature alleviates stress on facility managers and MDA employees

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Daniel-Loveless@utc.edu

Facility Manger: How does this fix scheduling conflicts?

Conflicts are highlighted in Red

The screenshot shows a scheduling interface for June 2022. At the top, there is a legend with color-coded boxes for 'Unapproved' (grey), 'Approved' (blue), 'Priority 1' (orange), 'Priority 2' (red), 'Priority 3' (yellow), 'Priority 4' (light green), 'Priority 5' (green), 'Priority 6' (bright green), and 'Conflict' (red). Below the legend is a calendar grid for June 2022, with columns for MON, TUE, WED, THU, FRI, SAT, and SUN. The calendar shows dates from 30th to 10th. A 'Conflict' is highlighted in red on Wednesday, June 1st. There are also two 'Approved' items highlighted in blue: '631 UTC' on Monday, June 13th, and '632 UTC' on Tuesday, June 14th. The interface includes navigation arrows and a 'Facility Search' field at the bottom left.

MON	TUE	WED	THU	FRI	SAT	SUN
30 th	31 st	1 st	2 nd	3 rd	4 th	5 th
6 th	7 th	8 th	9 th	10 th	11 th	12 th
13 th	14 th	15 th	16 th	17 th	18 th	19 th
631 UTC	632 UTC					
20 th	21 st	22 nd	23 rd	24 th	25 th	26 th
27 th	28 th	29 th	30 th	1 st	2 nd	3 rd
4 th	5 th	6 th	7 th	8 th	9 th	10 th

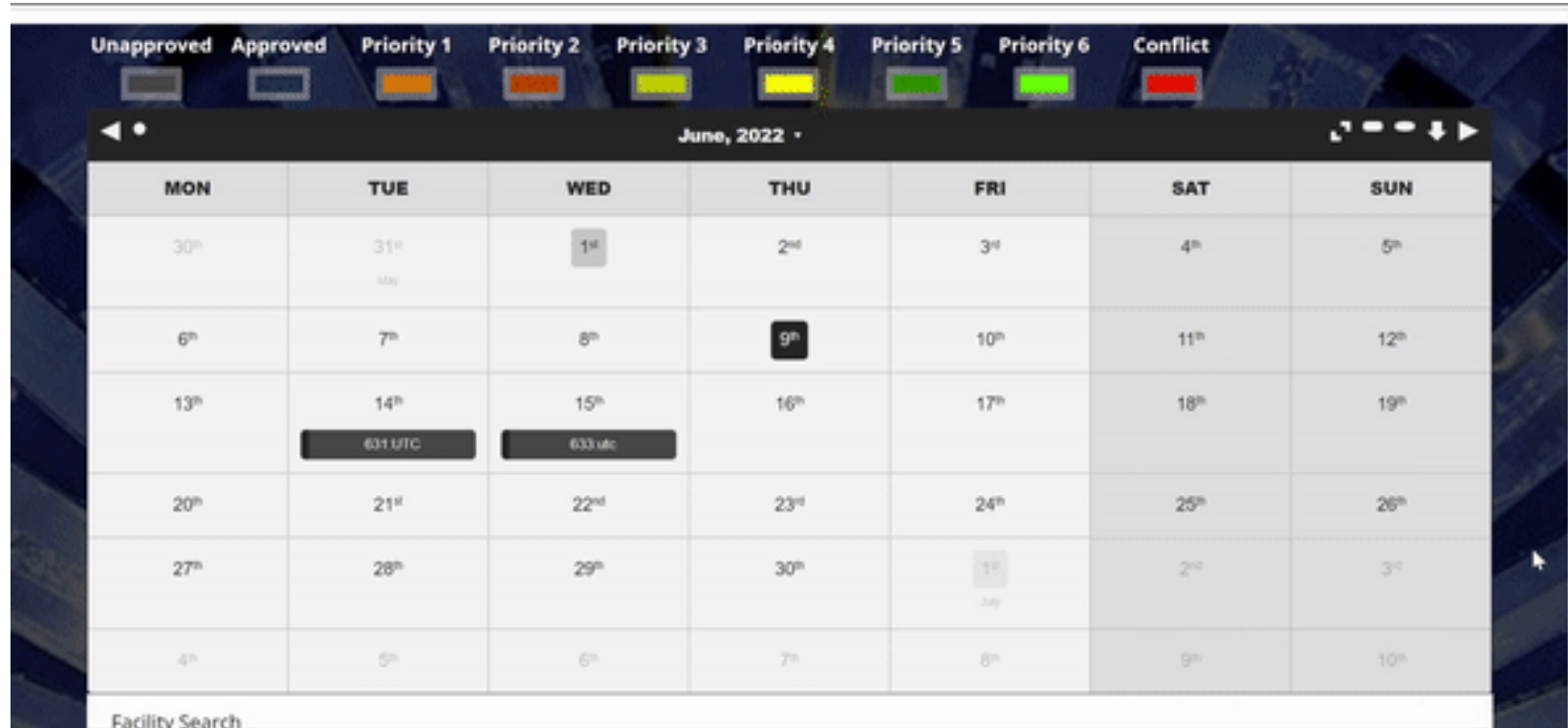
- ❑ Color-coding is used to increase readability for facility managers

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Facility Manager: Request form Approval via Calendar

Immediate Communication

- 1) Right click a potential test request
- 2) Verify information
- 3) Approve or deny
- 4) Notifies testers immediately on test approval



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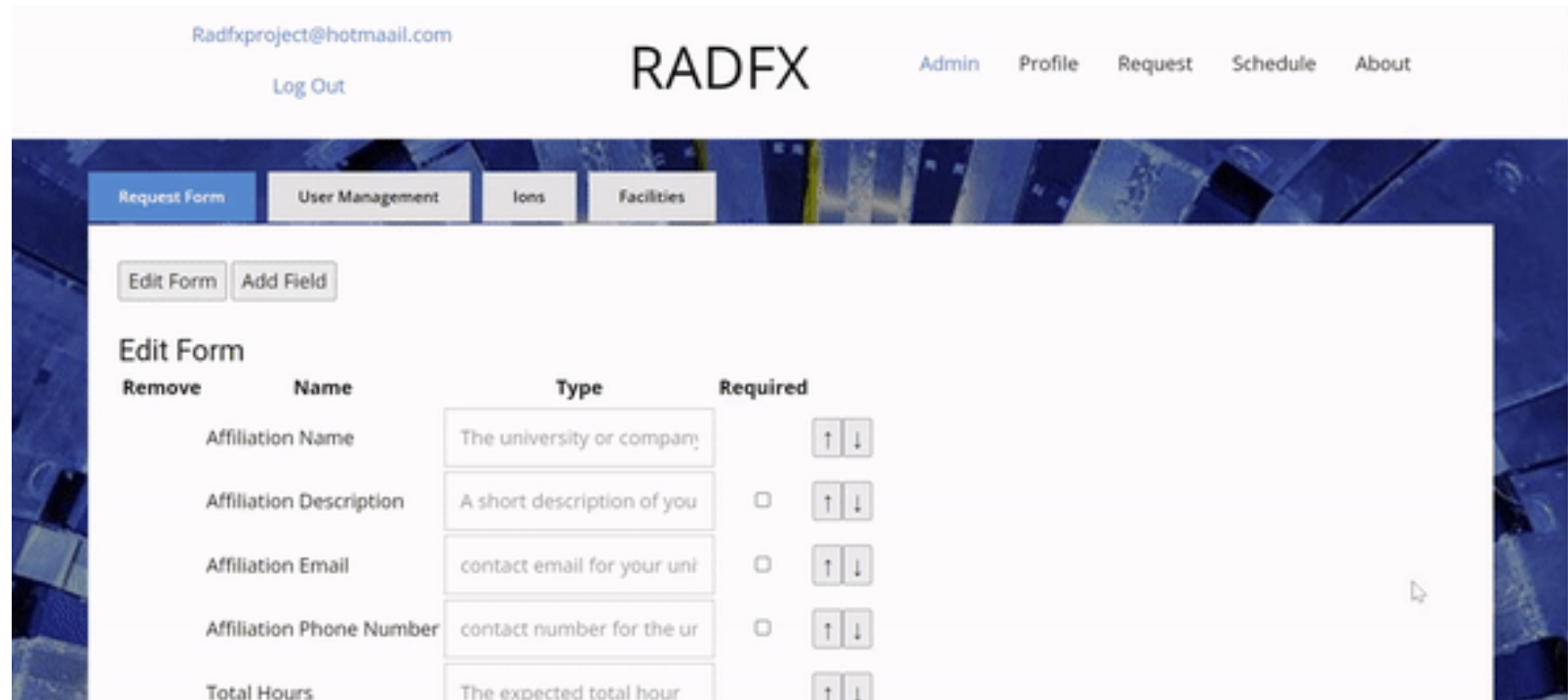
Daniel-Loveless@utc.edu

Agency/Admin View: Flexible Request Form

Both Facilities and Admins can adjust any request form to accommodate facility changes and availabilities

❑ Add or remove fields

❑ Adjust order with ease



The screenshot shows the RADFX Admin interface. At the top, there is a user profile for 'Radfxproject@hotmail.com' with a 'Log Out' link. The main navigation includes 'Admin', 'Profile', 'Request', 'Schedule', and 'About'. Below this is a sub-navigation bar with 'Request Form', 'User Management', 'Ions', and 'Facilities'. The 'Request Form' section is active, showing 'Edit Form' and 'Add Field' buttons. The 'Edit Form' page displays a table with columns for 'Remove', 'Name', 'Type', and 'Required'. The table lists several fields: 'Affiliation Name' (text input, required), 'Affiliation Description' (text area, optional), 'Affiliation Email' (text input, optional), 'Affiliation Phone Number' (text input, optional), and 'Total Hours' (text input, required). Each row has a 'Remove' checkbox and 'Required' status (checkbox or up/down arrows).

Remove	Name	Type	Required
<input type="checkbox"/>	Affiliation Name	The university or company	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Affiliation Description	A short description of you	<input type="checkbox"/>
<input type="checkbox"/>	Affiliation Email	contact email for your uni	<input type="checkbox"/>
<input type="checkbox"/>	Affiliation Phone Number	contact number for the ur	<input type="checkbox"/>
<input type="checkbox"/>	Total Hours	The expected total hour	<input checked="" type="checkbox"/>

❑ Code designed for ease of use

❑ All done through the website

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Admin view: Customize Ion Availability

Remove Name	Energy	Max Energy	Flux
<input type="checkbox"/> B	4.50	44.90	Flux
<input type="checkbox"/> N	4.50	67.44	Flux
<input type="checkbox"/> Ne	4.50	89.95	Flux
<input type="checkbox"/> Si	4.50	139.61	Flux

Select ions by facility

Add remove, and edit ions

Provide testers with the information they need

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Agency/Admin View: Adaptable Facility Management

Aids in facility management as radiation testing expands

- ❑ Add additional descriptive fields
- ❑ Add and remove facilities as the tool grows

Request Form User Management Ions Facilities

Edit Facility Add Facility Edit Facility Form Add Field

Edit Facility

Facility
Lawrence Berkeley National Laboratory

Name*
Berkeley

Description*
Lawrence Berkeley National Laboratory

Operation Hours
The hours the facility is open for tests

Switching Times
the amount of time required for the facility to switch energy levels

Max Energy Required

Color*

Submit

- ❑ Edit facility information
- ❑ Assign colors on the calendar

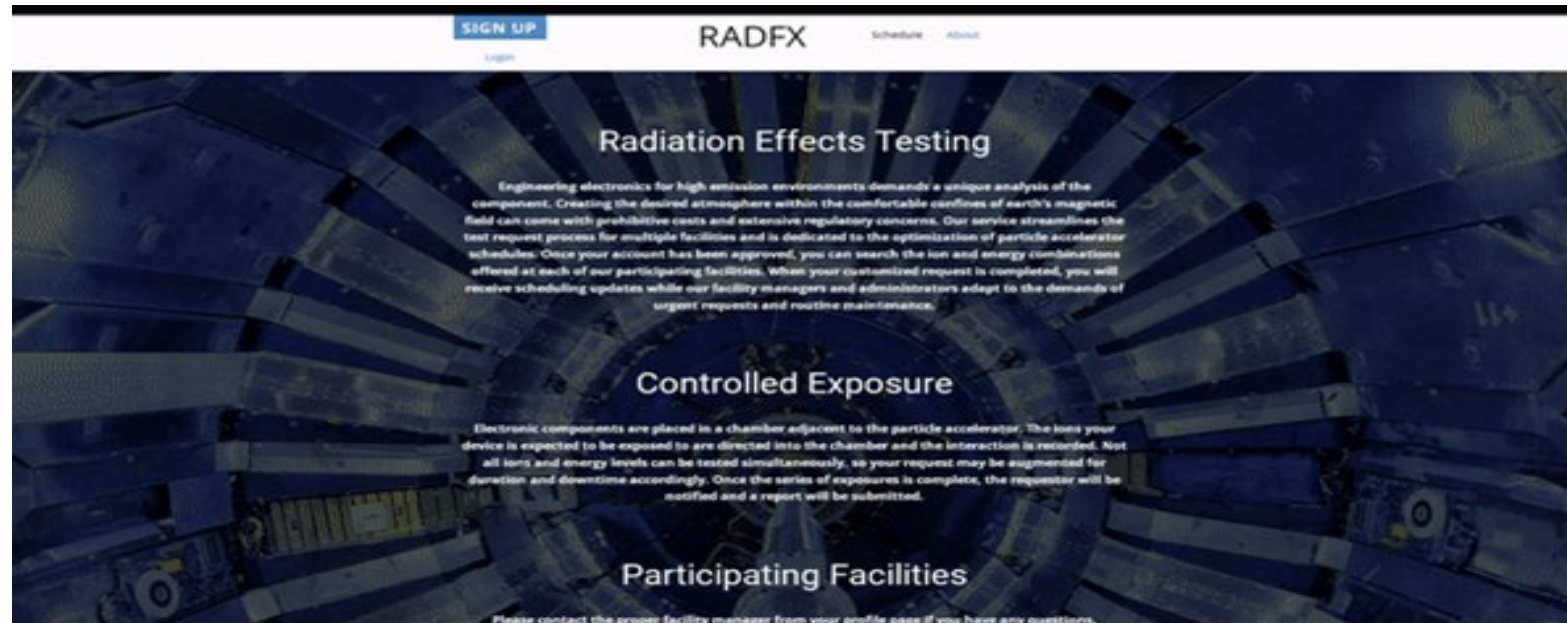
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We would love to hear what you think!

We need your help!

For those of you interested in beta testing, request an account here:

<http://Radfx-a.research.utc.edu>



❑ Thank you so much to the NASA Electronic Parts and Packaging (NEPP) Program

❑ Thank you to Dr. Loveless and Michael Mckenna

Questions?

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