

**SINGH**  
Center for Nanotechnology

## Sharing fabrication processes using Fabublox

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National Nanotechnology  
Coordinated Infrastructure

[www.nano.upenn.edu](http://www.nano.upenn.edu)

# Before onboarding

- Is the proposed project and/or process feasible?

## Join

### Need to use the cleanroom / QNF equipment?

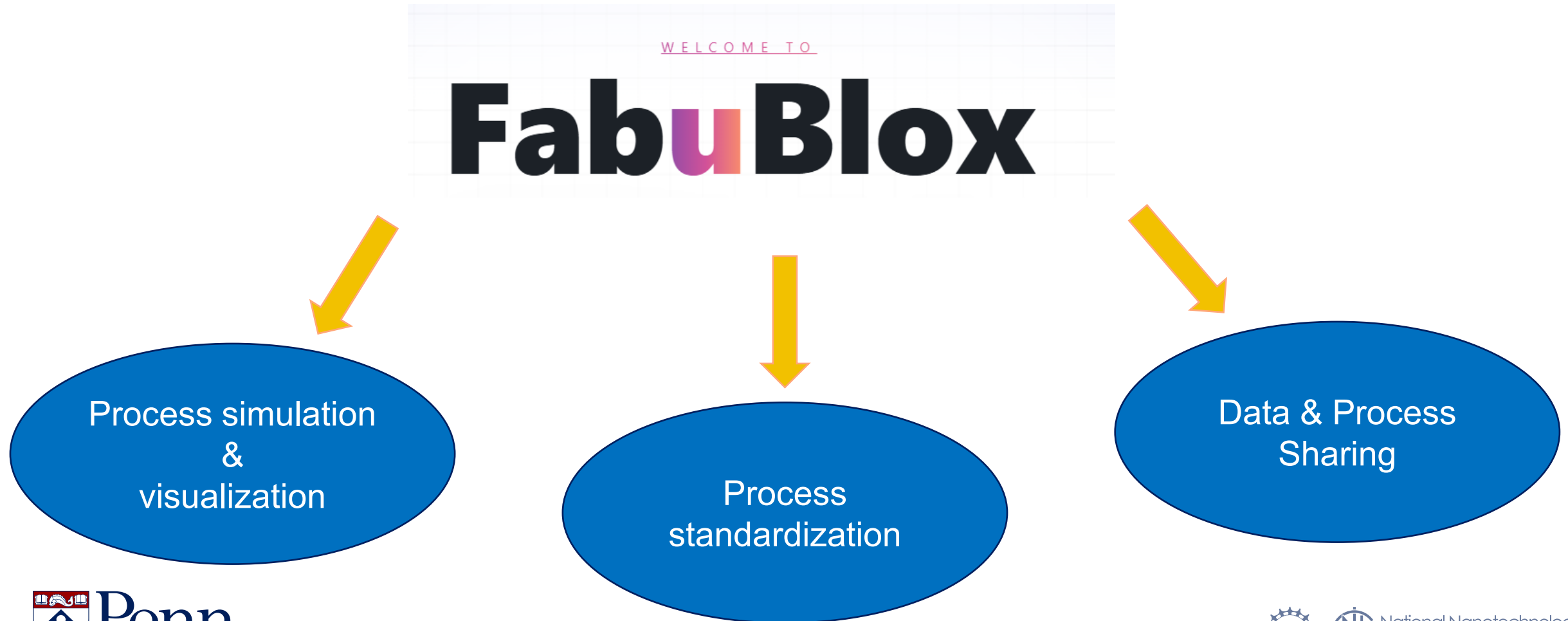
Follow the instructions below for access to the Quattrone Nanofabrication Facility (QNF). Access will be provided once [all steps](#) are successfully completed. Once access is provided, you will be able to enter the cleanroom and request equipment training. More information about the QNF can be found [here](#)

1. **Submit the Project Form**, providing information on the nature of your project. Please provide enough detail so we can properly understand your needs.
2. **Book a time to attend the QNF Open Forum**, where you can discuss your project needs with QNF Staff. The Open Forum is held every **Wednesday, 3pm – 5pm**, and can be attended in person in **Singh 035**, or via Zoom.
  - If you are not able to make the scheduled QNF Open Forum times or cannot access the scheduler, contact Eric Johnston ([ericdj@seas.upenn.edu](mailto:ericdj@seas.upenn.edu)) via email to make other arrangements.
3. **Complete the Access Request Form**
  - A form will be sent by our user admin via DocuSign for signature. (Note that selecting "No" at the beginning of the form will prevent the completion of the form so that you can consult with QNF process staff.)
  - **For external users:**
    - You may need to complete an external user agreement if one does not already exist for your organization. This can take an indeterminate amount of time, so make sure to submit this form ASAP.
    - This form will also start the process to get a Penncard. You must pick this up at the Penncard Center on campus and bring a valid ID. **Be sure to also get the information for setting up your PennKey! This is required for NEMO access.** *NOTE: External user Penncards will not have building access until after all steps have been completed.*
4. **Complete the QNF Orientation Video Training and Quiz** just prior to beginning work in the cleanroom (within two weeks.) Confirmation of your test score will be emailed to you. **This may be done concurrently with Step 3.**
5. **Attend the QNF Walkthrough.** Sign up through our [Orientation Walkthrough registration form](#). The walkthrough will begin at the QNF gowning room, which will be all the way to the right (east side) after you enter the building.

- **Staff will review the process flow!**
- **PDFs, .doc, spreadsheets, .ppt ...**

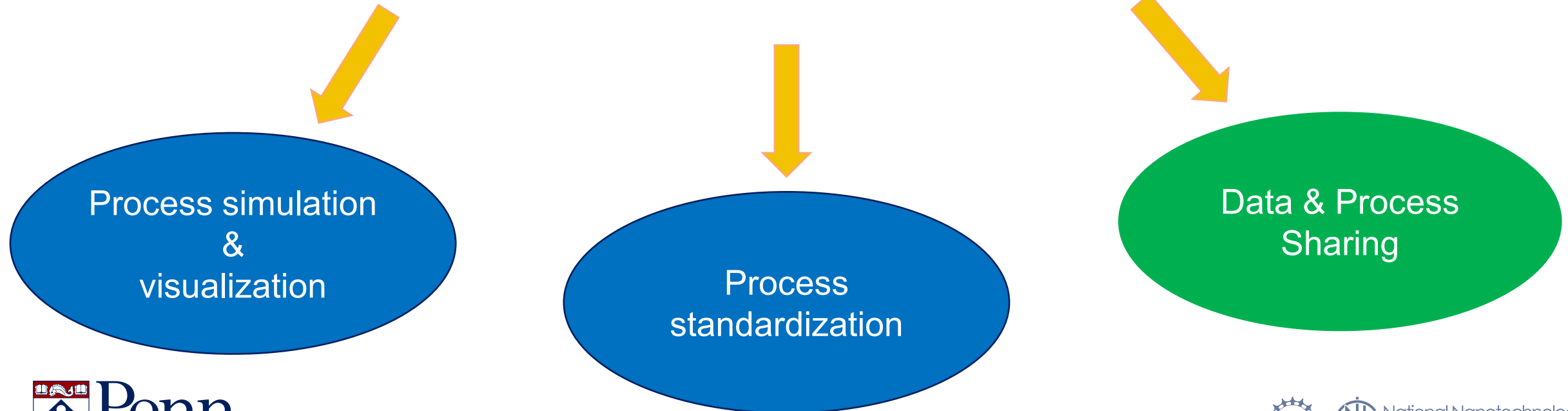
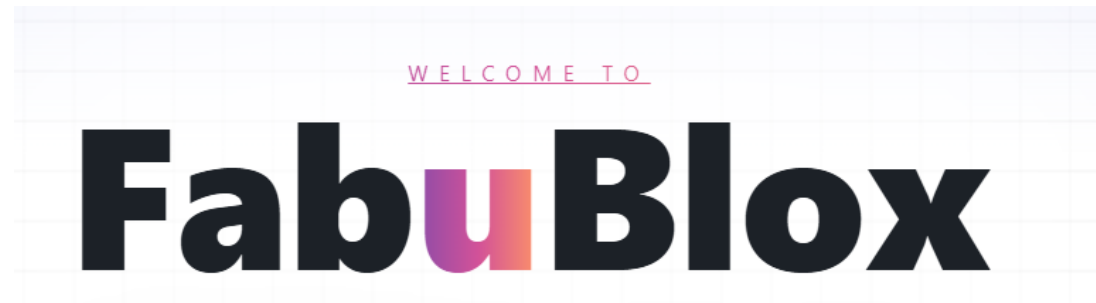
# What is FabuBlox?

- FabuBlox is a cloud-based platform for **designing, simulating, and managing** micro and nanofabrication processes.

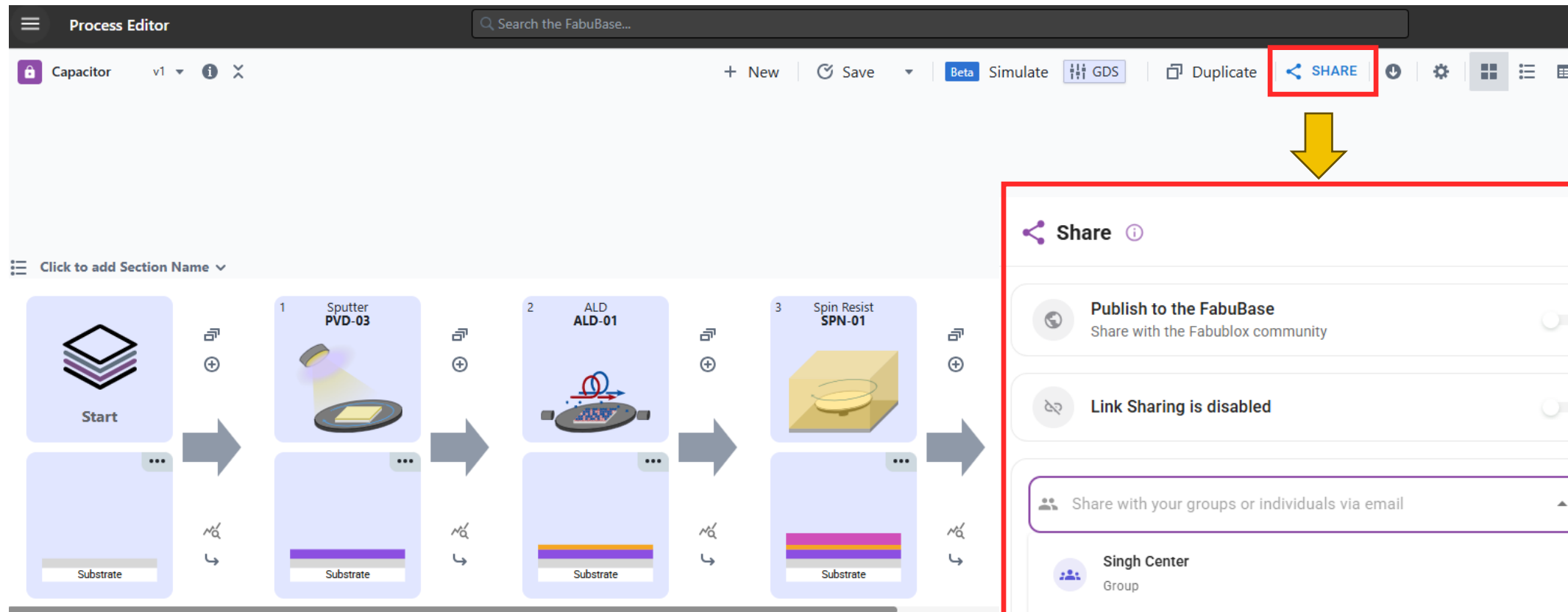


# What is FabuBlox?

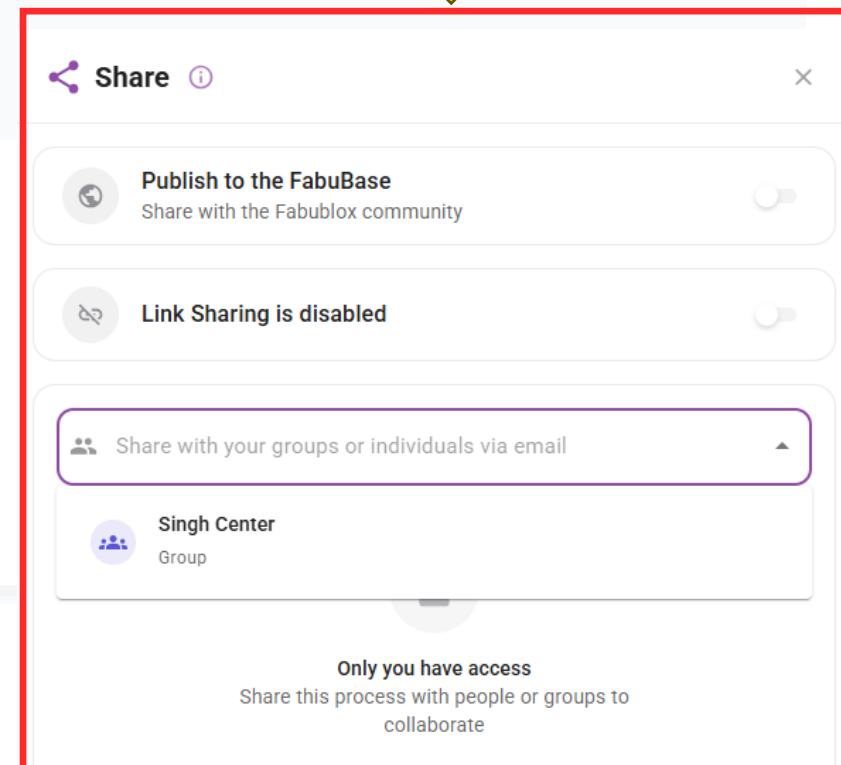
- FabuBlox is a cloud-based platform for **designing, simulating, and managing** micro and nanofabrication processes.



# Sharing Processes



The screenshot shows the 'Process Editor' interface. At the top, there is a search bar and a toolbar with buttons for '+ New', 'Save', 'Beta Simulate', 'GDS', 'Duplicate', and 'SHARE'. The 'SHARE' button is highlighted with a red box. Below the toolbar, the process flow is shown with steps: 'Start', '1 Sputter PVD-03', '2 ALD ALD-01', and '3 Spin Resist SPN-01'. Each step includes an icon, a name, and a 'Substrate' layer. A yellow arrow points from the 'SHARE' button to a 'Share' dialog box on the right.

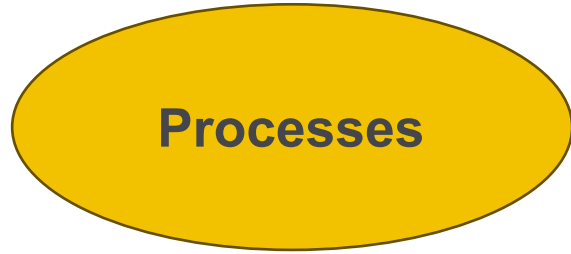


The 'Share' dialog box is open, showing the following options:

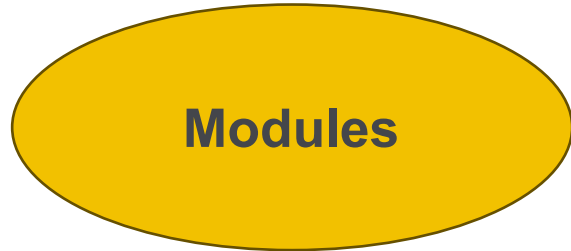
- Publish to the FabuBase**: Share with the Fabublox community (toggle is off)
- Link Sharing is disabled** (toggle is off)
- Share with your groups or individuals via email** (dropdown menu)
- Singh Center**: Group

At the bottom, it says: **Only you have access**  
Share this process with people or groups to collaborate

# What can be shared?



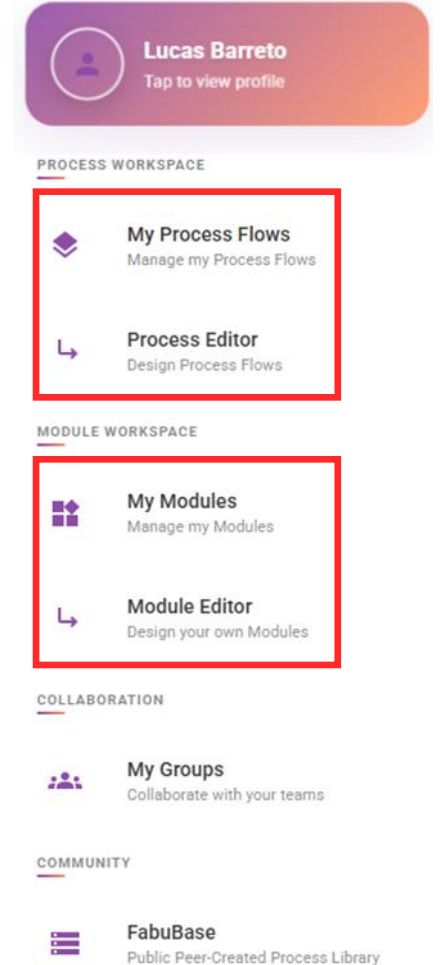
Entire fabrication overflow.



Reusable group of fabrication steps.

Example:

The user wants to fabricate the following structure.



# Modules

Module Editor

Search the FabuBase...

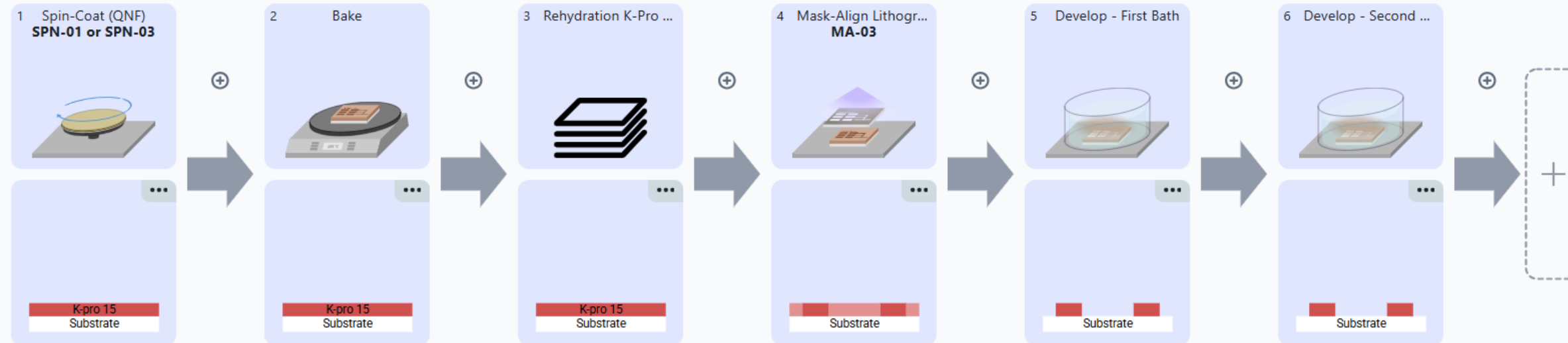
K-pro 15 (QNF) i

+ New

Save

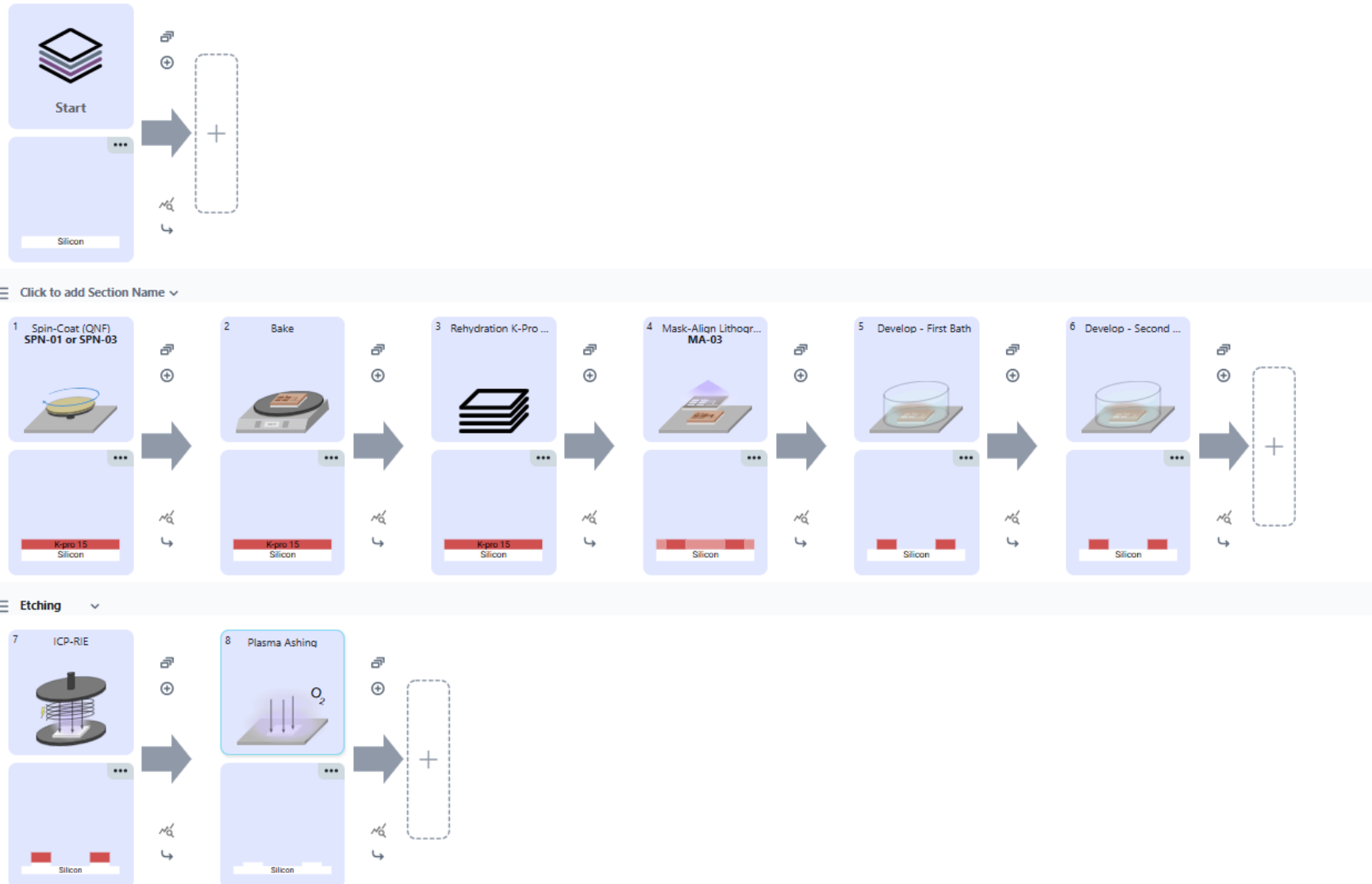
Duplicate

SHARE





# Modules



# What can be shared?

Processes



Entire fabrication overflow

Modules

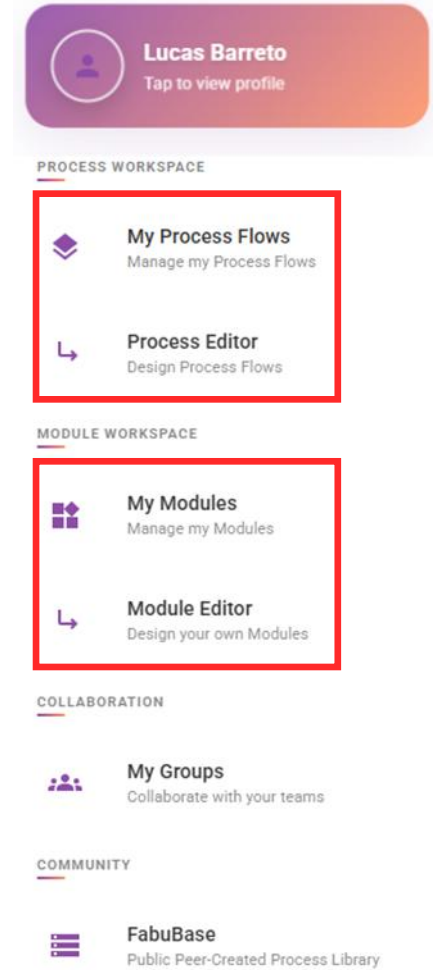
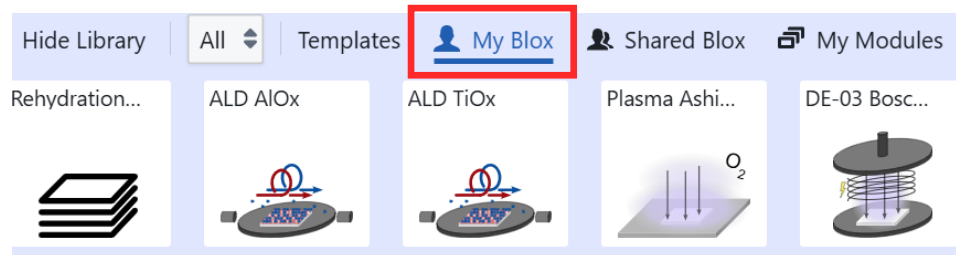


Reusable group of fabrication steps

Blox

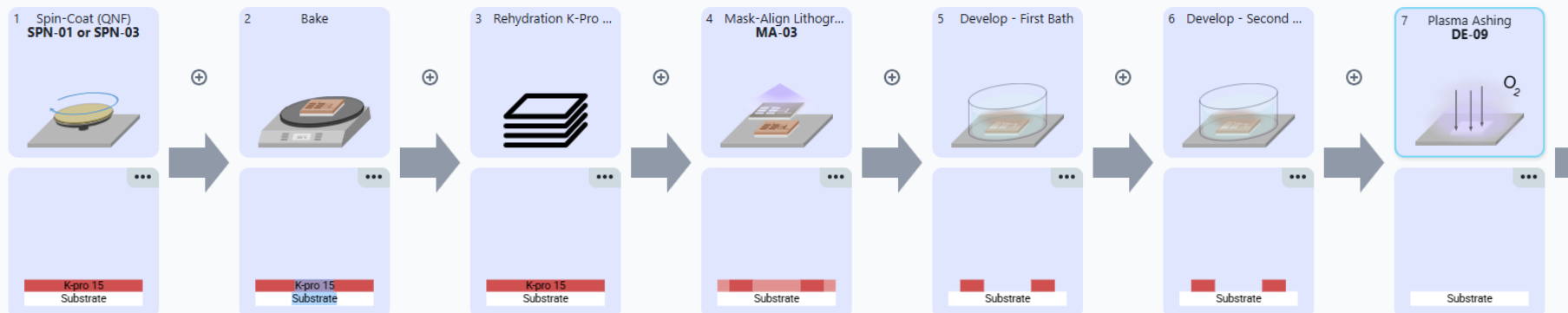


Single fabrication step



# Sharing Blox

K-pro 15 (QNF) + New Save Duplicate SHARE



1 Spin-Coat (QNF)  
SPN-01 or SPN-03

2 Bake

3 Rehydration K-Pro ...

4 Mask-Align Lithogr...  
MA-03

5 Develop - First Bath

6 Develop - Second ...

7 Plasma Ashing  
DE-09

Kpro 15 Substrate

Kpro 15 Substrate

Kpro 15 Substrate

Substrate

Substrate

Substrate

Substrate

Substrate

Share "Plasma Ashing "

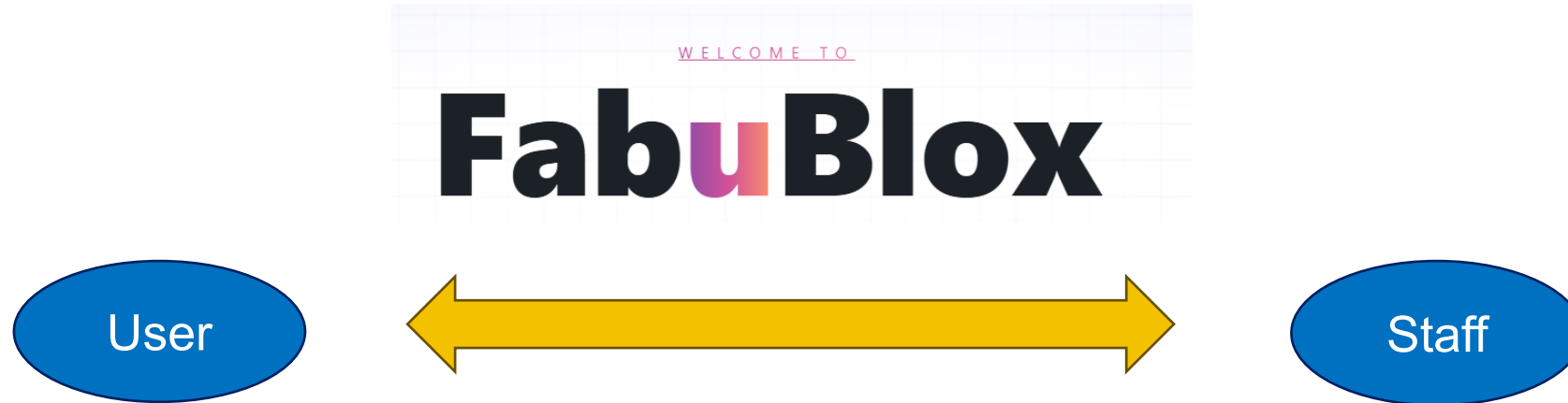
Singh Center

Done

Hide Library | All | Templates | My Blox | Shared

Rehydration... | ALD AlOx | ALD TiOx | Plasma As

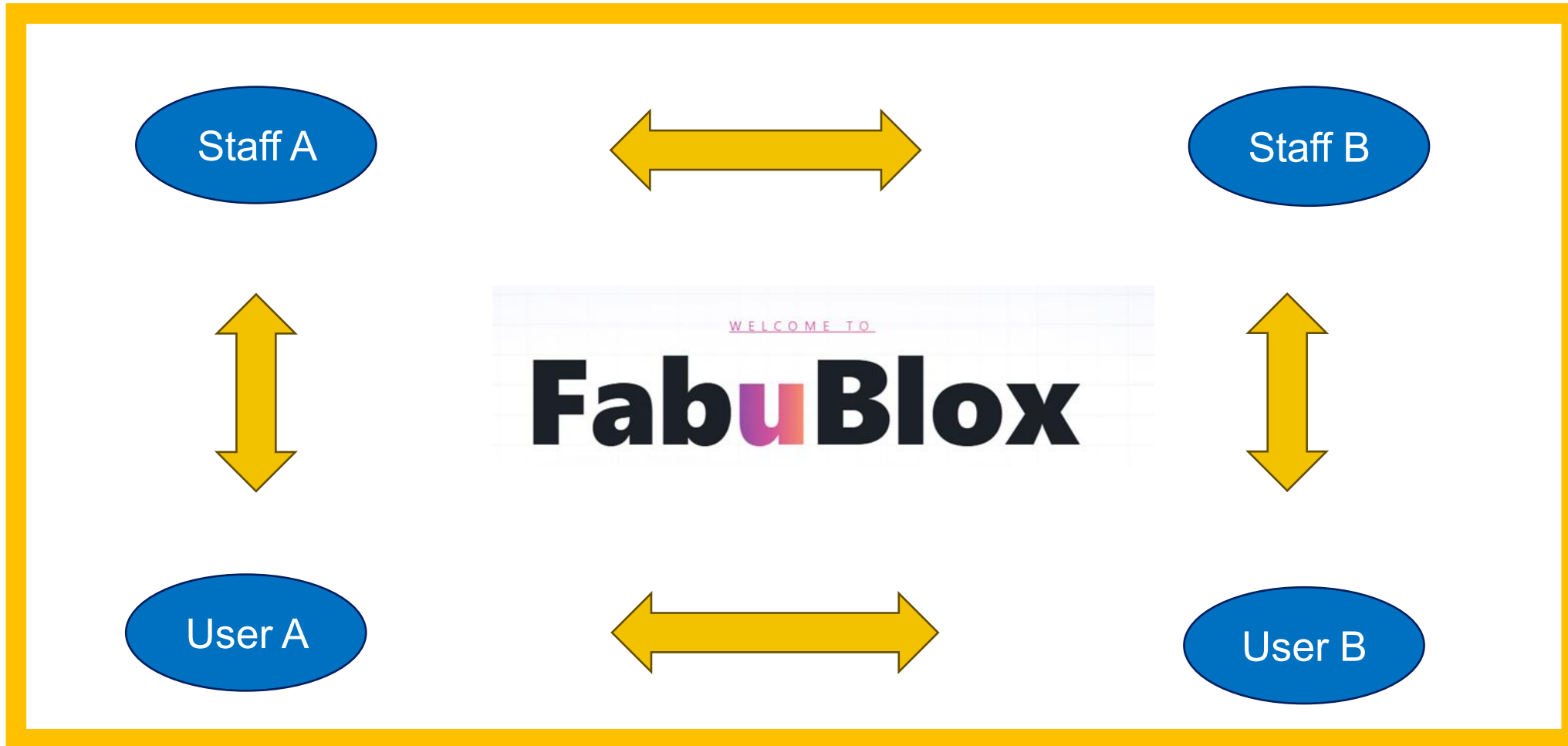
Share | Edit | Delete



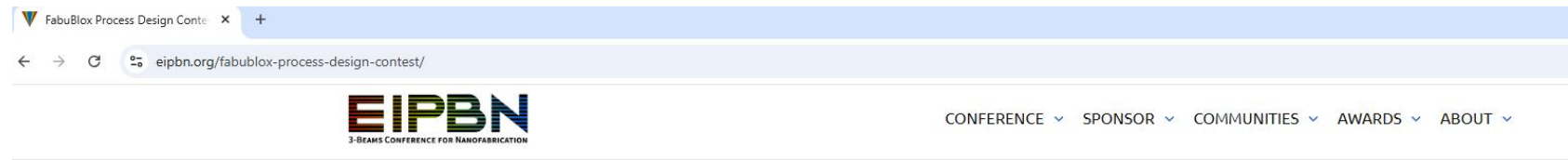
- The process designer can simulate the structure before starting the process.
- The process will not be stored in scattered formats (PDFs, notebooks, spreadsheets, PPTs).
- Reduce the user's process development time.
- Enables staff to review, modify, and update processes online.
- Supports process approval workflows.
- Encourage users to use standard and well-documented processes.
- What else?

# Benefits of sharing processes using Fabublox

FabuBlox enables structured, collaborative, and shareable fabrication workflows.



# Benefits of sharing processes using Fabublox



## FABUBLOX PROCESS DESIGN CONTEST

### All EIPBN attendees are eligible to participate!

Introducing the inaugural FabuBlox Process Design Contest. Join our EIPBN group on FabuBlox to share your process. If your abstract is accepted and you have a FabuBlox process, join our group to share it with this year's attendees. Enter the contest by filling out the form and become eligible to win a **cash prize** announced at the banquet with the micrograph contest! Your process will be judged on the following criteria:

1. **Impact** of fabricated devices
2. **Difficulty** (pushing resolution limits, fabrication techniques used, etc)
3. **Complexity** of process flow/fabricated devices
4. **Completeness** of documentation including metrology images and data
5. **Creativity** in problem solving (e.g. use of novel techniques, workarounds for traditional limitations)

### Contest Steps

1. Have a FabuBlox account ([create FabuBlox account](#))
2. [Join EIPBN on FabuBlox](#) to share your process.
3. Complete the form using the link below to be considered for the contest.

 [Submit your Process Design](#)



Thank You!

# Questions? Comments?

Laboratory A



Laboratory B

