# Abstract: Understanding your Science Gateway Users

## A case study of who, how, and why

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ABSTRACT

nanoHUB, founded in 2002, is a science gateway focused on delivering nanoscience related simulation and content to a broad class of users. Early on in the nanoHUB project, our funding agency, the National Science Foundation (NSF), required collection of detailed registration information from our users that is commensurate with research center participant information: name, location, contact info, ethnicity, race, etc. Many potential registering users were turned away during the registration process due to the long registration form and detailed information required. We then migrated towards a much simpler signup method that also enabled the use of social media accounts such as Facebook, Google, and LinkedIn as well as other institutional accounts authenticated by Shibboleth. With this process, we virtually eliminated the request for additional user information and saw a rise in voluntary user registrations, but a loss in information about our users.

Since the technical capabilities were already available within the nanoHUB infrastructure we recently began to ask for small pieces of information again in the registration process to better understand our users. Understanding our users, their organization types, and how and why they come to nanoHUB can inform how we approach behavior-driven services.

To start, we identified organization/position type information from the nanoHUB user base to be the most relevant question to understand user behavior and potential marketability. We therefore reinstated this information as a required registration field for both new and returning nanoHUB users who had not previously provided it (Jan 2018 – Feb 2019). Looking at the aggregate data for 86,209 users with the relevant information, not surprisingly University composed the largest percentage of organization type distribution (83.5% of those who responded) while undergraduate and graduate students composed the largest position type (26%, 25.8% respectively).

In an effort to understand how users found nanoHUB and what marketing efforts were successful for which user type, we added a registration field to learn how the users heard about nanoHUB (Dec 2018 – Feb 2019). For 3,897 users, the three most popular sources were instructors (40%), web search (22.7%), and colleagues (11.8%). We also found that while a large portion of undergraduates (69%) and graduate students (38%) heard about nanoHUB from their instructor, the sources for other organization types were more varied.

Along with understanding the "who" and "how", the next question to ask is "why?" To understand nanoHUB user aims, we added a required registration field about the primary purpose of their visit. The primary purpose for the majority of the users was to run simulations (52%), while a substantial number planned to explore nanoHUB content (28%).

The majority of the nanoHUB registrants indicate that they want to run a simulation. This is not surprising since the use of simulation tools requires user registration. However, the other users who register for content that is in principle open, avail us to new engagement opportunities. The distribution of primary purpose did not significantly differ among different user types.

nanoHUB serves 100 times more visitors with lectures and tutorials compared to simulation users. Only a small fraction of these visitors registers and provide us opportunities for further insight. We need to develop strategies to engage the unregistered users much more intensely as they utilize the content.

In the next steps, we plan to track the landing pages of these users after registration to observe both their starting point and their immediate steps after creating an account. We also plan to note their nanoHUB usage to understand whether their usage patterns reflect the original purpose of the visit, how they evolve over time, and if they differ by user type.

*Keywords—science gateway; nanoHUB; nanoscience; user behavior*