

nanoHUB: Experiences and Insights on Care and Feeding of a Successful, Engaged Science Gateway Community

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ABSTRACT

Established in 2002, nanoHUB.org continues to attract a large community of users for computational tools and learning materials related to nanotechnology [1, 2]. Over the last 12 months, nanoHUB has engaged over 1.4 million visitors and 13,000 simulation users with over 5,000 items of content, making it a premier example of an established science gateway. The nanoHUB team tracks references to nanoHUB in the scientific literature and have found nearly 1,600 vetted citations to nanoHUB, with over 19,000 secondary citations to the primary papers, supporting the concept that nanoHUB enables quality research. nanoHUB is also used extensively for both informal and formal education [3,4], with automatic algorithms detecting use in 1,501 classrooms reaching nearly 30,000 students. During 14 years of operation, the nanoHUB team has had an opportunity to study the behaviors of its user base, evaluate mechanisms for success, and learn when and how to make adjustments to better serve the community and stakeholders. We have developed a set of success criteria for a science gateway such as nanoHUB, for attracting and growing an active community of users. Outstanding science content is necessary and that content must continue to expand or the gateway and community will grow stagnant. A large challenge is to incentivize a community to not only use the site, but more importantly, to contribute [5,6]. There is often a recruitment and conversion process that involves, first, attracting users, giving them reason to stay, use, and share increasingly complex content, and then go on to become content authors themselves. This process requires a good understanding of the user community and its needs as well as an active outreach program, led by a user-oriented content steward with a technical background sufficient to understand the work and needs of the community. A reliable infrastructure is a critical key to maintaining an active, participatory community. Using underlying HUBzero® technology, nanoHUB is able to leverage infrastructure developments from across a wide variety of hubs, and by utilizing platform support from the HUBzero team, access development and operational expertise from a team of 25 professionals that one scientific project would be hard-pressed to support on its own. nanoHUB has found that open assessment and presentation of stats and impact metrics not only inform development and outreach activities but also incentivize users and provide transparency to the scientific community at large.

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