

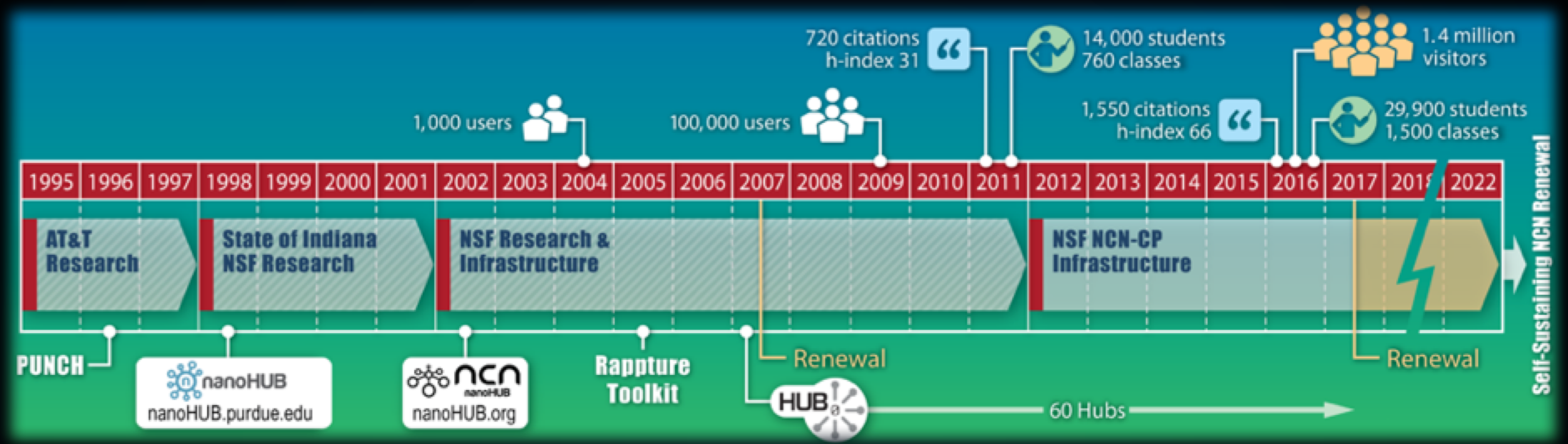
[Elevating nanoHUB to the Next Level]



Analysis of nanoHUB.org from a Business Perspective

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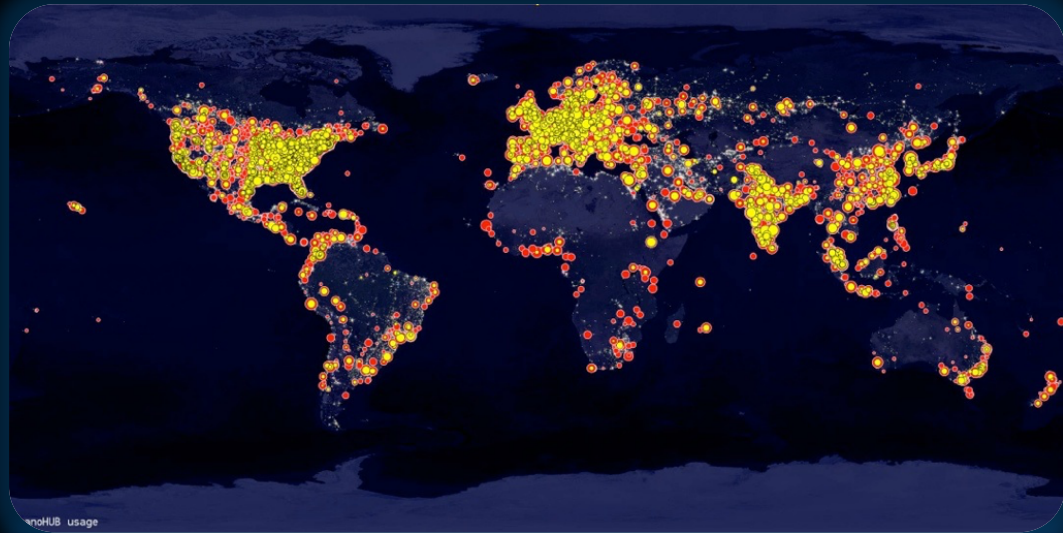
A short history of nanoHUB



- Started with a problem – how to easily share code with a colleague → PUNCH & nanoHUB
- NCN officially established and funded by the US National Science Foundation in 2002
- Content beyond code added in 2004 – simulation “and more”
- Rappture Toolkit lowers barriers for developers and brings a truly interactive experience for users



Fast Facts



“ALWAYS ON, AROUND THE GLOBE”

- 5379 resources including 435 simulation tools
- Nearly 1.5 million worldwide visitors annually
- 13,000 simulation users, 800,000+ simulation runs
- Nearly 30,000 students using 200 tools in formalized courses
- 1700 papers in the literature refer to nanoHUB
 - 23k+ secondary citations
 - H-index of 72



We're Successful - What's Next?

- Established gateways resemble a young company or startup
- Need to start asking questions from a business perspective
- Scientists and infrastructure experts often lack business expertise
- Limited resources available to dedicate to exploring the gateway from a business perspective
- Look for creative ways to leverage human capital available in academic environment



Harnessing Academic MBA Program

- **Pros**

- Eager teams trained in state of the art business practices
- Low to no cost way to explore business issues
- Win/win for gateway and business schools
 - Gateways work with a dedicated business team
 - Business teams experience with an organization different than many standard businesses

- **Cons**

- Quality of teams can vary
- Difficult to maintain continuity beyond semester project



Study # 1 – Spring 2014

- nanoHUB proposes it's first Experiential Learning Initiative (ELI) Project to Krannert School of Business MBA teams
- Project objective -
 - Look at nanoHUB's content delivery mechanisms
 - Explore and propose possible monetization strategies
- Team's approach -
 - Analysis of nanoHUB data, identification of services offered and possible revenue model, identification of possible commercial competitors, user survey



Results – Study #1

- Proposed nanoHUB content strategies -
 - B2C (Business to Consumer) – simulations, courses, downloads
 - B2B (Business to Business) – bundles packaged for institutional entities
- Survey results indicated that B2C has modest revenue potential but care must be used not to disrupt user base
 - Development of nanoHUB Pro subscription with enhanced services
- Recommendation to explore bundling based on Harvard Business Publishing as a model



Study #2 – Fall 2014

- nanoHUB engages with second ELI Team
- Project objective –
 - Explore the potential customer base/market size of nanoHUB
i.e., what communities/users could we be reaching that we are not
- Team's approach –
 - SWOT and Porter Five Forces analysis
 - Market analysis using PEEST approach for US/Global
 - Competitive benchmarking



Results – Study #2

- Potential market is huge ~ 10 million worldwide
- Significant growth possible outside US
- B2C opportunity utilizing revenue sharing/licensing fees
- nanoHUB is in early stages of exploring revenue sharing with a commercial materials information management entity serving industry users



Study #3 – Fall 2015

- First Executive MBA (EMBA) team – experienced professionals pursuing an MBA after time in the workforce
- Project objective –
 - Explore strategies for sustainability through
 - User growth/retention
 - Engagement of community / movement toward society
 - Transition from Outreach to Marketing
- Team's approach –
 - Data analysis, ecosystem analysis, competitor analysis, business model analysis
 - Survey



Results – Study #3

- A broad long term Road Map

Foundation

- Kick off marketing
- Invest in Website and user data tracking.
- Revisit organizational structure and improve staffing plan
- Engage in NSF
- Engage NNCI

Extension

- Complete branding exercise.
- Infrastructure transition
- Begin Industry engagement
- Scale conference
- Extend NNCI Engagement

Expansion

- Expand industry partnerships
- Approach Steady State
- Hosted conference



Lessons Learned

- To be successful, meaningful engagement is key
 - Agreement on confidentiality and work product ownership
 - Critical for project team to understand that gateways are atypical of businesses they may be used to working with
 - Defined leadership on project team and gateway team to manage contact
 - Regular contact – weekly or twice monthly over a 3 month project
 - Awareness on client and team side of scope creep
 - Final handoff of all materials generated in project
 - Helpful if project team is open to fielding small, future questions
 - Understand that this is the first step in an ongoing process



