



#### 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

![](_page_6_Picture_7.jpeg)

### 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

![](_page_7_Picture_9.jpeg)

### 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

![](_page_8_Picture_5.jpeg)

### 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

![](_page_9_Picture_10.jpeg)

### 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

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#### 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

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