

Innovation Insights from Leading Healthcare Innovation Centers

By Tom Fee, Kurt Baumberger | MarketSquare and Duke Innovation & Entrepreneurship | February 2017

SUMMARY:

Over the last five years hundreds of hospitals and health systems have embraced the need to innovate new methods, devices and approaches to improve healthcare outcomes and address changing incentive and reimbursement models. Some leading healthcare innovation centers manage to launch fifteen or more innovation projects a year, usually taking only six to nine months to develop working solutions. This study surveyed leading innovation centers to understand their key success factors.

Would you like to launch innovations that make huge leaps in performance for your organization and customers? Or has someone in your organization identified a breakthrough medical technology or practice that could revolutionize care access, cost or outcomes? Over the last five years hundreds of hospitals and health systems have embraced the need to innovate new methods, devices and approaches to improve healthcare outcomes and address changing incentive income and reimbursement models. In response they have launched innovation centers to lead the innovations proposed by their staff and physicians. Many of them struggle with importing leading edge innovation methods from other industries. Yet, some leading healthcare innovation centers manage to launch fifteen or more innovation projects a year, usually taking only six to nine months to develop working solutions.

A recent study by MarketSquare (in collaboration with the Duke Innovation and Entrepreneurship Initiative) surveyed fourteen leading innovation centers to understand their key success factors.

1. Use a clear step-by-step **innovation method**
2. Establish an **Advisory Group** to guide innovation concepts and proposals
3. Focus on **consumer needs**, rather than technologies to direct the innovation
4. Generate **Big ideas** by focusing on core outcomes, not the symptoms
5. Minimize early funding by using volunteers and focusing on a **minimal viable product**
6. Support projects with innovation experts (**design, engineering, business**)
7. Utilize an iterative **prototyping** approach to quickly build and test the best product
8. Nurture **publicity and storytelling** to raise visibility, excitement and funding
9. Include **industry experts/ vendors/ investors** to support commercialization
10. Develop **power users** to give hands-on **training and coaching** for innovations to build key behaviors and practical experience

The study identified innovation best practices across five project stages: scoping, design, development, implementation and rollout.

INNOVATION STAGES



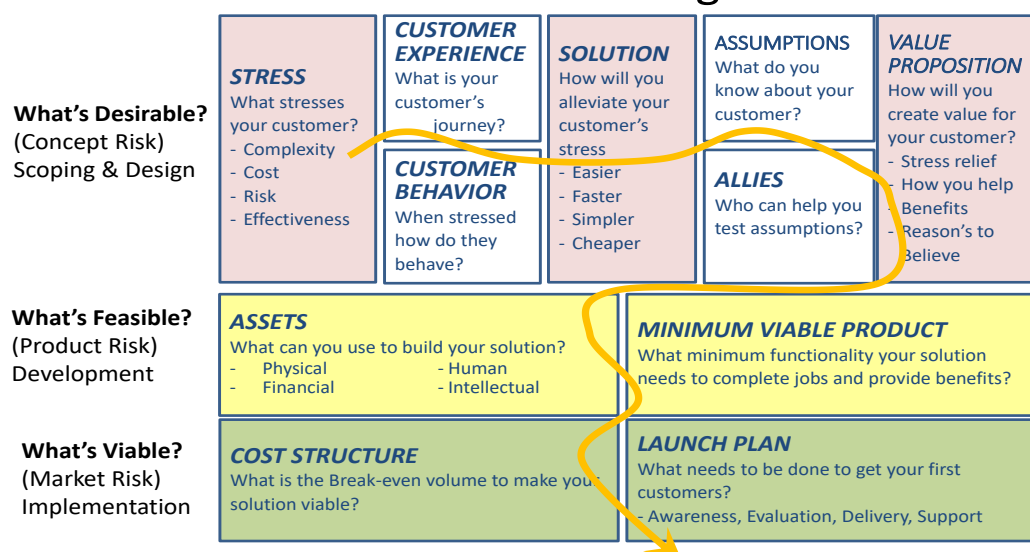
ORGANIZING FOR INNOVATION

The innovation centers on average review 50+ innovation proposals and launch 15 projects annually. The larger centers launch more than 50 projects a year. Their central innovation staff ranges from fewer than five to more than thirty, depending on their approach. Many agree that developing a prototype quickly (in six to nine months) is important. Otherwise the project loses momentum and falters. Each of the organizations has developed unique approaches with critical paths and differing levels of central staff support, although most utilize Design Thinking and prototyping techniques. The Mayo Clinic has created the Fusion Innovation Model and shared their insights in their book *“Think Big, Start Small, Move Fast – A Blueprint for Transformation from the Mayo Clinic Center for Innovation.”* Another practical guide and roadmap to innovation is *“Innovation Navigation – How to get from idea to Reality in 90 days.”* Both books are available www.amazon.com. All of the leading innovation centers in the study provide a common set of competencies, including:

- Support innovation projects with central capabilities
 - ✓ guide innovation proposals and business cases,
 - ✓ train innovation techniques,
 - ✓ manage projects - driving to results,
 - ✓ develop vendor and community partners
- Provide standard methods, tools, expert staff and toll gates
- Organize Advisory Board and project funding
- Promote Innovation Challenges (competitions)
- Promote innovations across social media/community outreach
- Manage leadership engagement and expectations

Most of the organizations support early stage selection, design thinking and innovation training. They have a varying emphasis on developing vendor partnerships and product commercialization depending on the organization’s focus on internal improvement versus industry wide change.

Innovation Navigation



CUSTOMER INSIGHTS - SCOPING

The initial innovation step of Scoping focuses on selecting opportunities. This includes defining the opportunity, identifying customer needs, screening potential solutions, identifying existing alternatives and proposing a project. During this initial step the centers guide potential projects by:

- Opportunity Definition- create a simple, focused project proposal
 - ✓ Customer Problem- Specifically, who and what to improve? How BIG is the opportunity?
 - ✓ Measuring Risk Appetite- Where are you today? What are you willing to do?
 - ✓ Set your Direction- What you do and don't want?
 - ✓ Project Charter- List what, who and how you will develop an effective innovation
- Team Building- champion, staff, customers and supporting experts (e.g. analyst, designer, engineer)
- Team Training- provide teams with innovation skills and tools
- Advisory Board Review – enlist external experts to provide innovation guidance
- Innovation Selection – periodic Advisory Board reviews or Innovation Challenges
- Funding –internal and external resources for solution development

The leading innovation centers can complete the scoping step in six to seven weeks. The studied innovation centers require innovation teams to use at least two methods for verifying the core customer innovation need, including market reviews, physician insight and focus groups. Then to identify comparable innovations, teams use three methods to detect competitive alternatives, including literature review, market searches, vendor interviews and other industry queries. About 70% of projects require Advisory Panel review of the proposal and 70% have external experts on their panel. Most of the organizations (85%) require innovation proposals to support their core mission and strategy. Finally, 63% of innovation projects receive external funding (grants, investment). External funding provides another desirability hurdle and helps teams to coalesce their innovation into a concise message and initial value proposition (potential benefits).

A number of centers emphasized their commitment to innovation funding, so that projects do not lose funding mid-stream. During the initial phases the benefits are often hard to quantify, leaving projects vulnerable to cost reduction efforts. This can undermine staff commitment and support for innovation efforts. The solution is for executives to commit to minimal funding through initial development prototyping effort.

DESIGN PROCESS

Design is the next step in innovation and receives the most publicity. Design Thinking concepts were integrated into most of the studied innovation center approaches to assist teams in focusing on customer needs.

DESIGN THINKING

Design Thinking was developed in the 1980's as a set of creative techniques by architects and designers. The tools were customized for business in the 1990's and are widely used by innovation labs across industry. The core of Design Thinking is human-centered design methods that focus on identifying customer behavior and needs. Some practitioners define the process as a system of overlapping spaces rather than a sequence of orderly steps. Design thinking activities include **Empathizing** with the customer, **Defining** customer needs, **Ideating** with creative tools, **Prototyping** in quick iterations to test ideas and **Testing** ideas by observing customers using the solution.

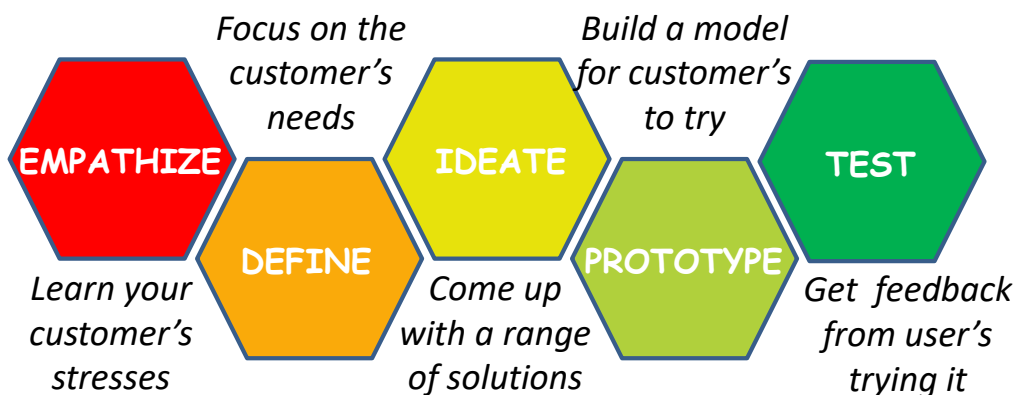
The key steps in the design phase include:

- Identify Customer Stress- Which customer problem are you relieving, specifically?

- Map Customer Experience – What else stresses the customer journey?
- Test Assumptions - What don't you know? What assumptions are facts versus myth?
- Create Solutions – What breakthrough will relieve the stress?
- Recruit Allies – Who can help create the best solution? (Peers, vendors, customers, etc.)
- Define a Value Proposition – Why is your Design Story compelling? What are the benefits?
- Review by Advisory Board – Can your Design Brief (product pitch) endure criticism?

The studied innovation centers take an average of 12 weeks to complete the Design stage. This compares to four to six weeks for similar level design efforts in other industries. 90% of the organizations use Design Thinking techniques. And 50% of projects use Agile design or Use Cases to integrate direct customer feedback into the design process. More than 60% of projects use a hybrid team with central innovation experts supporting the core team of operating staff. 85% of projects have project managers and 50% have designers and IT developers. Less than 20% of projects use external professional support, other than product experts (e.g. vendor, designer, engineer).

DESIGN THINKING



DEVELOPMENT PROTOTYPING

After Design, projects enter a Development stage to demonstrate a working solution (product). During development the project team uses a wide range of capabilities to model, test and improve their design into a minimum viable product (MVP). A minimum viable product is a working model that embodies the least number of requirements to meet the customer's needs, no extra bells and whistles. The steps in development include:

- Expand Core Team- include additional experts (engineers, IT developers and customers)
- Refine Buyer's Needs – Expand the customer needs to buyers, decision makers and users
- Focus on Feasibility – How can we prove the concept? What are the key requirements?
- Define a Minimum Viable Product – What can you build or demonstrate, fast?
- Add Assets– What assets do you have or need? Who else can help from the outside?
- Prototype - Create a simple working solution that customers can experience
- Agile Testing – Use an iterative testing method of “trial and learning” to create a working MVP
- Feedback Plan – Show and tell how the MVP meets customer needs to gain valuable feedback
- Review by Advisory Panel – receive expert guidance on the MVP and potential barriers

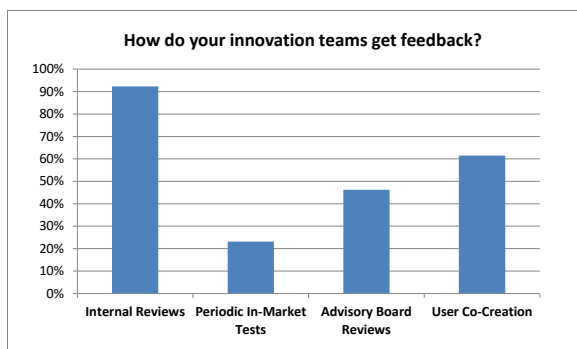
Many of the innovation centers are working on products such as mobile applications and medical devices. To assist in the development of these products they acquire or partner with IT developers and Maker Labs to provide the hands-on development expertise to build minimal viable products. University of Texas Medical Branch (UTMB) has created a MakerHealth Space that is open to all UTMB staff and students to use 3D printing, laser cutting, textiles, electronics, hand & power

tools, and more to fabricate prototypes. Brigham and Women's uses “hackathon” techniques to effectively bring IT developers, designers and entrepreneurs together to create mobile application prototypes and other healthcare innovations (over 5 months' time).

PROTOTYPING

Prototyping and **Agile** are methods for quickly developing and testing a proposed working innovative solution. **Prototyping** focuses on fabricating or demonstrating a working solution with available capabilities. These are often minimal products or practices that are created with “duct tape and balsa wood” to allow customers and staff to experience the solution and offer quick feedback.

The **Agile** Method was developed by software developers to shortcut the long delays typical of software design by working directly with customers in quick, iterative two week sprints. Over each two week period the developers work daily with customers to trial the capabilities and usability of the developing solution. Daily “scrums” provide team review sessions that coordinate the work and focus the development on the most promising results. Most Agile development projects require more than three 2-week sprints to produce their minimally viable product. This is a high involvement, fast paced endeavor that can produce a working prototype quickly and can also burn out a team if not managed appropriately. It is also known for delivering a very different solution than the starting proposed solution by working closely with customers to redefine needs. The Agile Method can be applied to many types of innovation and provides an integrated set of tools and methods for iterative design, development and testing.



The studied innovation centers take about five months to complete the development phase. All of them use piloting to confirm solution feasibility. This includes three or more rounds of prototyping. During the development stage

90% use internal review panels and user/customer co-creation to provide feedback, 70% use review sessions during prototyping. About 90% also access expertise and partnerships with Academic Centers and Vendors to reduce risk. Given the need for development speed, 75% use direct project meetings to inform leaders of the innovation progress versus written reports or other project tracking techniques. 70% utilize their Advisory Board for guidance during development, with many Advisory Board members acting as mentors to projects.

IMPLEMENTATION PILOTING

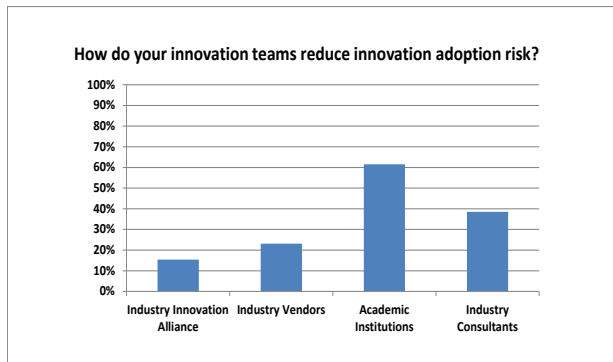
Developing a minimally viable product is just the start - real benefits only come from implementation. The Implementation step requires a much broader effort to a larger, diverse community with a more sophisticated product delivery process. This is the time to review a business case, which requires plans for operations, delivery, customer service, training, maintenance, performance goals, financial benefits and budget. Implementation requires:

- Enlarge the core team with additional users, customers and potential vendor
- Organize a Business Case
 - ✓ Cost Structure – What’s your Breakeven? Risk vs Reward?
 - ✓ Launch Plan – How will you go to “market”? How to package and deliver the solution?
 - ✓ Vendor Partnerships – If you plan to commercialize, get a vendor partner involved early
 - ✓ Identifying Initial Innovators – Who to “sell” to first?
 - ✓ Value Proposition – a short and persuasive customer message, summing up the key benefits

- Training – innovation often requires essential behavior change and training is key
- Deployment – piloting the MVP with a range of different customer groups
- Winning Early and Often- small successes and lessons learned to build momentum
- Promoting Success – use social media to get the message out about results and new customers
- Integrating Lessons Learned – broader use provides additional product needs and improvements

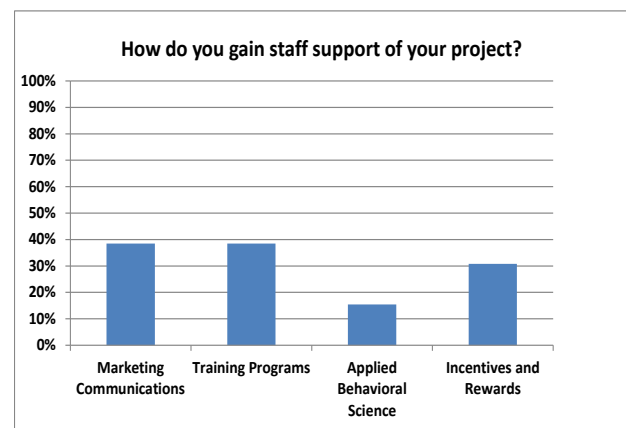
Many centers commented on the resources and work required to scale-up for implementation. As the first step in implementation they run several pilots of the product solution to develop an understanding of the required range of customer needs and product flexibility. Dignity Health’s strategic innovations effort uses a practice called “Run, Run, Jump”, that requires technology partners to run two pilots (Run, Run) before the implementation Jump. The first pilot tests feasibility in a unit that has a high likelihood for product adoption and success. The second pilot tests viability by mixing things

up with a very different demographic, fee structure and without a project champion. Finally if the innovation pilots succeed, Dignity commits to full implementation by working closely with the company and potentially investing in them.



Our survey of leading innovation centers found that the average Implementation phase takes about 3 months. Given the magnitude of an implementation, over 50% of the centers use Critical Path Analysis to optimize time and coordinate the key efforts in the launch plan. Almost every project (86%) provides launch training to staff and customers. Training is

critical because most innovations require major behavior change. Products can easily fail if the staff and customer try to use their old behaviors with the new solution. “When you change from nails to screws, you better take away the hammers or will find a lot of screws nailed into the walls.” 40% of projects use marketing and general training to build staff support. Finally, building momentum is important and more than 50% of the centers actively use word of mouth to build support. Powerful word of mouth persuasion comes from pilot staff spreading stories through the grapevine.



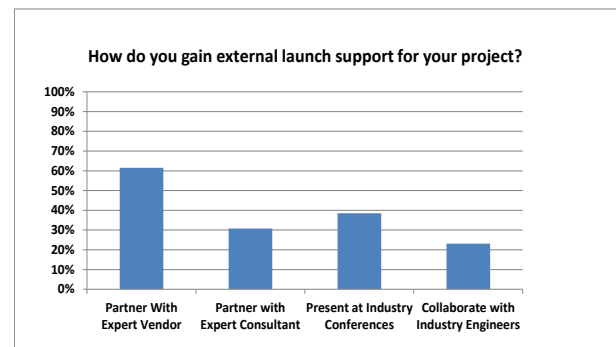
ROLLOUT/ SCALING-UP ACTIVITIES

Finally, the Rollout (commercialization) step must scale up the solution to offer to a mass market, either your entire organization or the market place. Here a vendor partnership can bring operations, sales, distribution and support expertise capable of effectively marketing, delivering and maintaining your product at a mass scale. Even if you are keeping the solution internal, they can provide invaluable lessons learned about scaling a new product quickly.

The key steps in Rollout include:

- Social Media – mass broadcast of solution success measures to reinforce new behaviors
- Crossing the Chasm – package the solution for “mainstream” users with benefits for every demographic
- Vendor Partnering – finding a vendor to provide marketing, sales, operations, and customer service to scale your innovation for the mass market
- Create Demand – use marketing builds awareness and demand
- Qualify and Close – develop a sales approach to persuade customers to try the innovative solution
- Fulfill and Thrill – operations delivers product to customers, focusing on training new behaviors
- Love and Nurture – innovation also scares people and customer service helps them adopt, retain and sustain the new solution (and new behaviors)

One organization was creating innovative post-acute care partnerships in the community for high risk patients with clinical, social and financial issues. To overcome early skepticism of a hidden agenda from community providers the innovation center turned back to the community and asked what benefits were valuable – “what do you need?” Then they used the community’s words in their message, simple and direct, providing a constant flow of social media (special interest stories on successfully meeting needs) to reinforce the program’s goals and outcomes.



The study found in the Rollout stage that more than 75% use social media and event marketing to build community awareness of their innovation. 70% of innovation teams depend on vendor partnerships for product rollout/commercialization. And, more than 60% use a combination of workshops, on-the-job training & coaching to build practical experience and reinforce key behaviors during the rollout. Training that focuses on new behaviors and practical experience is key to adoption.

THE BOTTOMLINE

The leading healthcare innovation centers are quickly learning and applying the innovation techniques developed from other industries. Although many believe healthcare is different due to the risk aversion inherent in patient care, leading healthcare innovation centers are accelerating innovation – coming closer to the 90 day innovation cycle accomplished in other industries. They are achieving this by adopting new innovation methods, teams, guidance and project management. There are many lessons to learn about successful innovation, including:

- **Scoping** an innovation project is about potential opportunity, not a business case. Often the innovator only has an untested idea about how to make a breakthrough and is unable to quantify the final capabilities or benefits. So use internal and external expert support to select and guide the projects to early demonstration of a feasible solution.
- **Design** focuses on meeting a customer's need more than creating a new technology. So include customers and use Design Thinking techniques to focus the team on human-centered solutions. Innovation design teams often include a designer, engineer, trainer, analyst and project manager, as well as users and customers.
- **Development** uses prototyping to quickly create a working minimally viable product that meets customer requirements. Adding developers (IT and engineering) provides essential expertise. This iterative “trial and learning” process includes users and customers to create a working model. Most innovations require at least three iterations.
- **Implementation** can require extensive new training and support capabilities, so run pilots first to test feasibility in a broader community. Include vendors, trainers and other implementation experts to ensure that the solution is not only feasible, but also flexible and resilient.
- **Rollout** (commercialization) requires an ongoing infrastructure of promotion, sales, operations and customer service. Vendor partners can provide these capabilities and provide the expertise for serving the marketplace. If you plan on commercialization from the beginning, include a vendor partner from the start.

Finally, move quickly because innovation is perishable. Project teams can lose momentum and fail if they are unable to develop a working model (product or process) in six to nine months. Start by adopting an innovation methodology to expedite your innovation process. Effective, human-centered innovation emphasizes behavior change and without it innovation usually fails. These innovation methods assist in adopting external innovations as well. With the accelerating pace of healthcare innovation, the sooner you develop innovation capabilities the faster you can provide them to your organization and community.

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Thank you to Centre for Aging & Brain Health Innovation, Baycrest Health Sciences, Brigham and Women's Hospital, The Cleveland Clinic, Emory & Georgia Tech Healthcare Innovation Program, Florida Hospital, Johns Hopkins Health System, Partners Healthcare, Stoeckle Center for Primary Care Innovation, The Mayo Clinic, Spectrum Health, Stanford University Medical Center, Palo Alto Medical Foundation of Sutter Health, U.C. Berkley, WellStar Health System and Wake Health for their contributions to this study.