



**FRESENIUS  
KIDNEY CARE**



# Innovation Thru Hackathon

*BI Reporting and Data Management*

*February 18, 2020*

*Thrive On*

# We all own compliance

We will conduct business with integrity and honesty in compliance with all laws, company policy and our values.

We are committed to producing products and delivering services that are safe and of the highest quality for our customers.



# Agenda

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- /// Hackathon 15 Mins.
- /// Machine Learning – Text Analytics 30 Mins.
- /// Q&A 15 Mins
- /// Resources & Upcoming Hackathons. (slide appendix)

# Objectives

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- // How we decided on a Hackathon.
- // What was the planning process.
- // What was the goal, expected output from each team.
- // How the teams were put together.
- // Different roles & responsibilities.
- // Final list of topics.



# What is a Hackathon?

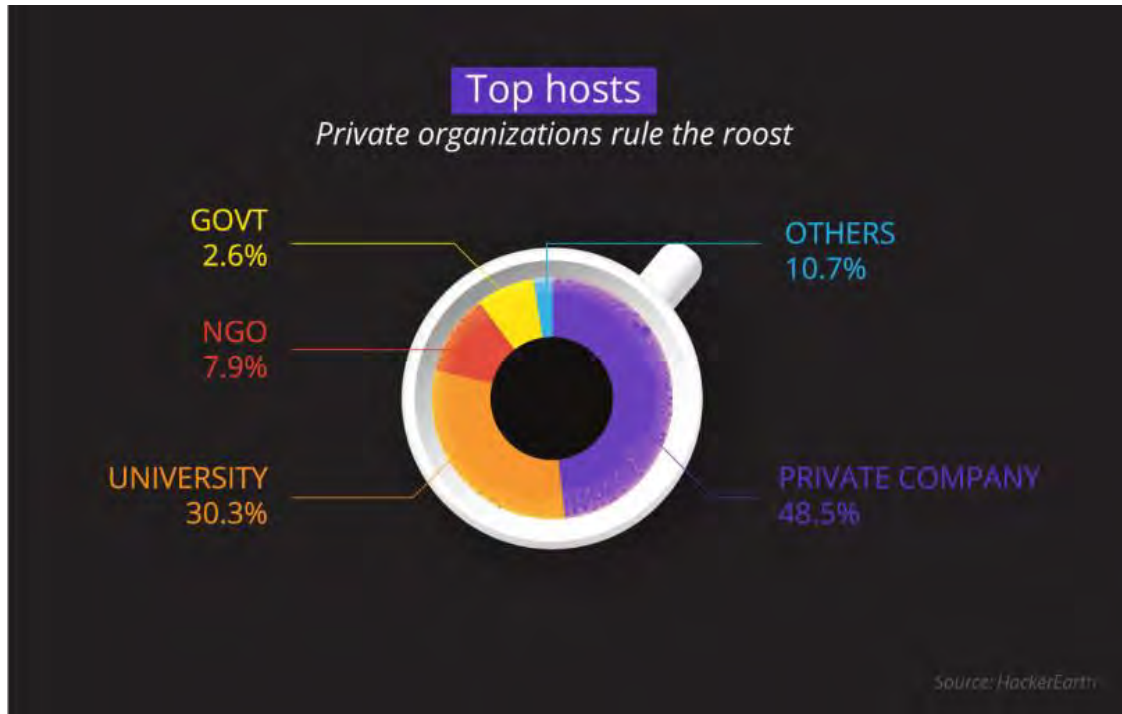
Hacking is creative problem solving. (It does not have to involve technology.)

A hackathon is any event of any duration where people come together to solve problems.

Participants typically form groups of about 2-5 individuals whom dive into problems and come up with solutions.



# Hackathons are taking place all around us.



Source: Global Hackathon Report.

CMS Artificial Intelligence (AI) Health Outcomes Challenge.

Boston Scientific Connected Patient Challenge

Code for Boston

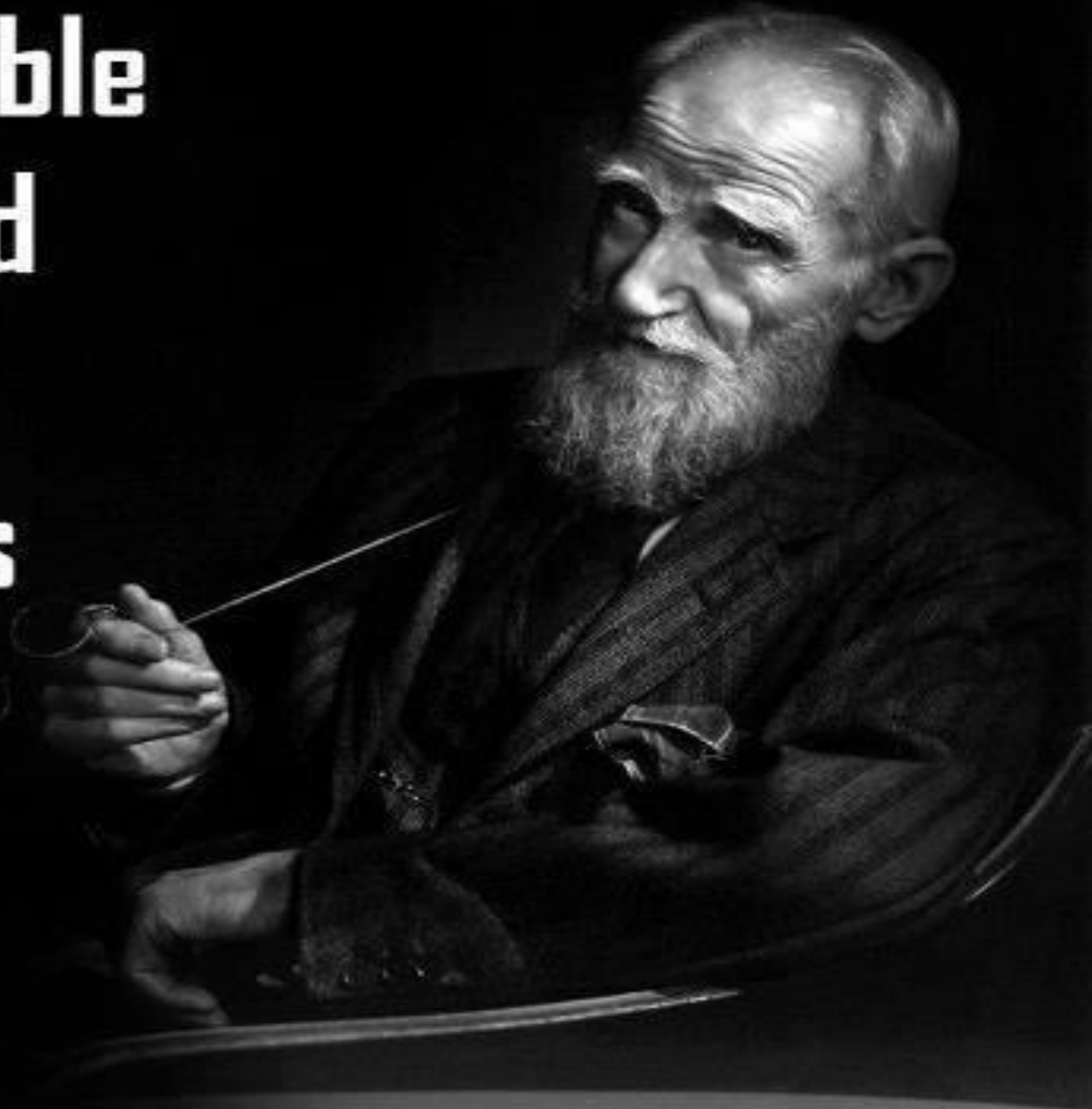
MIT Hacking Health Care

Hacking Public Medicine

Kaggle – various datasets & challenges.

**"Progress is impossible  
without change, and  
those who cannot  
change their minds  
cannot change  
anything."**

**George Bernard Shaw**



# Are You Owning Innovation?

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Innovation at Fresenius Medical Care is dependent on YOU!

“Real change starts with transparency and the willingness to embrace innovation. Transforming healthcare requires the ability to think ahead of the industry. And at Fresenius Medical Care North America, that’s where we live.”

The key to our success, and continued success in the years ahead, is for everyone to own innovation.

**Chris Churchill**, Senior Vice President, Corporate Strategy and Innovation

Source: <https://content.intranet.fmcna.com/newshub/2020/01/23/are-you-owning-innovation/>

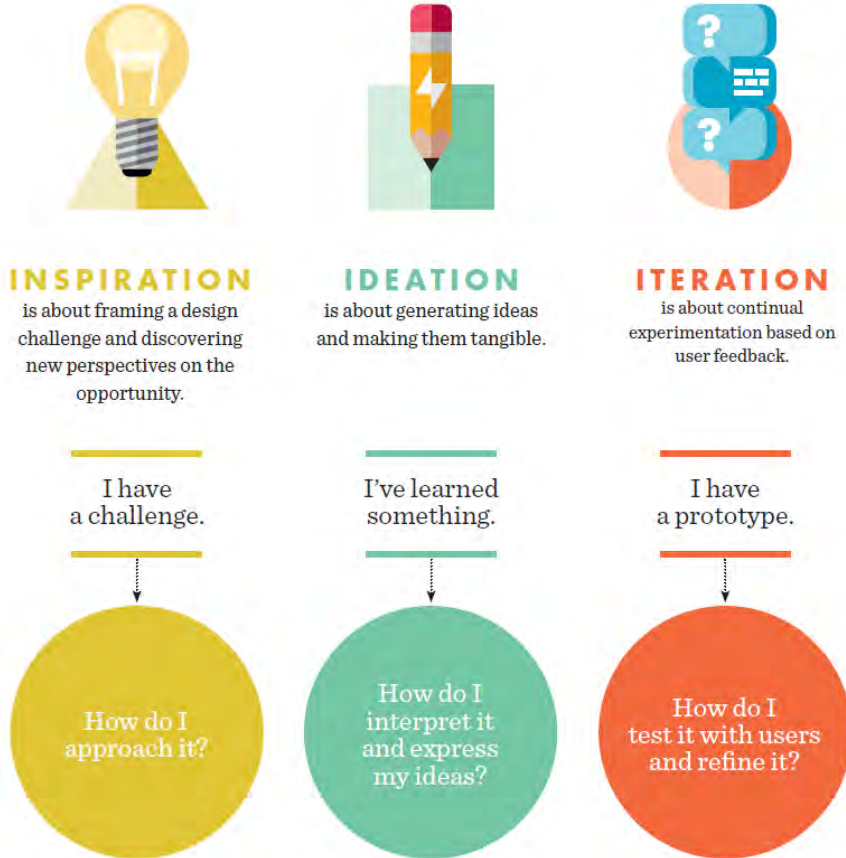


# Corporate Priorities and Department Objectives

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- // Increase Growth Home Program
- // Enhance Patient Population Analytics - > Prescriptive Analytics.
- // Reduce Workload on Clinical Manager
- // Process Improvement
- // Increase Use of Existing Data Assets
- // Innovate

# Leveraged Design Thinking Process



# Department Makeup – Richness in Skills & Experience!

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BI Reporting	Data Management
Business Analyst	Data Architect
Data Analyst	Data Engineer
Solution Engineer	Data Analyst
Solution Lead	Design Lead
UI/UX Designer	Tech Lead
SQL Developer	ETL Developer
UI Developer	
Java Developer	

# Planning Committee

Committee Member	Area
Shantanu A Inamdar	Manager
Margo Weeks	Manager
Kathleen Yatsuhashi	BSA
Vishwanath Karnik	KCNGX
Satya Sundaraneedi	Home
James Brody	Population Analytics
Brian L Shulman	Population Analytics
Jeff St Germaine	BI Labs
Rajasekar Alamanda	BI Labs
Anku Tirumalasetti	Solution Engineer
Pablo More	Solution Lead



# Major Principles

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- // Communicate
- // Collaborate
- // Coordinate
- // Openness
- // Community
- // Experimentation
- // Speed

# IDEAS Generated thru Brainstorming

IDEAS	Challenge to Resolve	Data Required	Evaluation Criteria	Deliverable
<p><b>Text Analytics of Nurse's Comments:</b> Making sense of free text comments entered by the nurse during the treatment and acting accordingly</p>	nurses enter free text comments from patient entry to treatment complete, but that is not leveraged for any further analysis or future prediction	<p>Not sure of the source</p> <p>Need to check on "Special Attention Orders" data, may be from Chairside.</p>	<p>Text analytics to categorize the comments automatically</p> <p>Predictive model that gives a summary that gives a gist of the patient's history of key parameters</p>	
<p><b>Mobile App Design for Home Patients:</b> Concept Mobile App design that will make dialysis at home simple and easy  (Wireframe or hi-fidelity prototype)</p>	<p>Major challenge for the home patients</p> <p>Another challenge would be "what to do when something unexpected happens?"</p>	No data required	<p>A UI prototype(a wireframe or a hi-fidelity mock up) that shows the entire app flow.</p> <p>User prompts and feedback for clarity.</p> <p>Easy to understand.</p> <p>Easy to navigate.</p> <p>Friendly and minimal design.</p>	
<p><b>Optimizing Fistula Maturation Time:</b> Optimizing the duration for Fistula Maturation</p>	The time taken for Fistula maturation delays catheter removal	Access Management data with various timelines from first consultation to cannulation to maturation	<p>Identify root cause of delays</p> <p>Ideas to minimize delay in the identified area</p>	
<p><b>Survey Responses from Home Therapy patients.</b></p>	identify top 3 pain points and top 3 highlights. With a presentation of the approach and how they reached their conclusions and how each member of the team contributed.	We will refine it to make it easier to consume. We can create a easily consumable data extract (CSV, schema with data in tables, JSON) of the survey responses and the teams can chose to use whatever means they like (manually reading the responses, use Excel, SQL, Python, Tableau, BO, machine learning, NLP).	Evaluation will be based on innovation in approach, most insightful, data driven conclusions, contribution of all members of the team.	
<p><b>Population Analytics</b></p>	Define an approach to identify specific groups of patients that should be evaluated for customized/personalized care that could lead to better health outcomes?			

# Brainstorm List of Topics

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- // Automating BI Lab process flow
- // Text Analytics of Nurse's Comments:
- // Mobile App Design for Home Patients:
- // Optimizing Fistula Maturation Time:
- // **Survey Responses from Home patients.**
- // Population Analytics
- // Data Lineage Tool
- // Data Quality Measurement Tool
- // Data Dictionary Generator
- // **RN Home Visit Helper (Mobile App)**
- // Process Improvement
- // Metric Dictionary/Library/Store
- // Rules Engine Tools
- // Confluence/TEAMS/JIRA
- // Data Feeds - Self Service Marketplace
- // And more..

# Five Domain Tracks & Challenges

Onboarding	Data Quality	Patient Population Analytics	Text Analytics	Rules Engine
Kathleen Yatsuhashi	Vish Karnik	Brian Shulman	Rajasekar Alamanda	Anku Tirumalasett
Shantanu Inamdar	Biksham Balagoni	Caryn Maresic	Sreekanth Dora Bhogoju	Chaitra Manoor
Oksana Malinauskiene,	Carolyn Libby	David Thompson	Srikanth Bellamkonda	Jyothi Rayala
Kavitha Manikandan	Chris Schaefer	Jeff St Germaine	Susan Dunphy	Srinivas Kothamasu
Vijay Medipelli	Debabrata Panda	Laura Francis	Insel Guley	Piyush Dawani
Pablo More	Gayathri Santhanam	Prabin Manandhar	Jean Hamilton	Yamini Pulimamidi
Shawn Scott	Vikas Lal	Satya Sundaraneedi	Sivakumar Subramaniam	Radhika Gadde
Ken Tharrington				Sameer Soni



# Focus Areas & Meeting Spaces

Topic	Meeting Space	Facilitator
UI for Defining Populations / Customized Personalized Care	Shanghai Conference RM @ 32 Hartwell Ave	Brian Shulman
Text Analytics (Nurses Comments)	Chile Conf RM @ 32 Hartwell Ave	Rajasekar Alamanda
Onboarding	Nepal Conf RM @ 32 Hartwell Ave	Kathleen Yatsuhashi
Rules Engine	Daniels Street Conf RM @ 25 Hartwell Ave	Anku Tirumalasetti
Data Quality Measurement Tool	Depot Conf RM @ 25 Hartwell Ave	Vishwanath Karnik

**Each Meeting Space will have a Teams Meeting so remote team members can participate.**

Reach out to the facilitator to be added to the teams meeting.

# Facilitator Guide

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- // Describe the challenge
- // List out team members worked on the challenge
- // List out Ideas / Results
- // Next Steps
- // Lessons Learned
- // Room Materials
- // Logistics (Microsoft Teams, OneNote)

# Process Improvement – Onboarding (Kathleen Yatsuhashi)

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## **CHALLENGE:**

How may we improve our overall onboarding for new employees/contractors?

Can we have a one stop shop for setup needs based on role/project?

## **IDEAS:**

Define what tools are required based on role (BSA, UI Developer, SQL Dev, Solution Engineer, Solution Lead, etc.)

Define universal access

Define project specific access

Define Distribution List to add resource.

Identify tasks that can be automated

# Rules Engine Tools (Anku Tirumalasetti)

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## **CHALLENGE:**

Fluid Management project team needs a rules engine to take input and come up with recommendations based on the Fluid Management Algorithm. “Open Rules”, an open source rules engine has been identified. What are some other use cases?

## **IDEAS:**

What other tools are out there?

What are limitations of each?

What are benefits of each?

What is integration criteria for evaluation?



# Text Analytics of Nurse's Comments (Rajasekar Alamanda)

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## **CHALLENGE:**

Nurses enter free text comments from patient entry to treatment complete, but that is not leveraged for any further analysis or future prediction.

## **IDEAS:**

How might we make sense of free text comments entered by the nurse during the treatment and acting accordingly? What are some possible use cases for leveraging this?



# RESULTS



# Thank you!

Please submit your challenge, please include contact info and department affiliation.

**[Hackathon\\_challenge@fmc-na.com](mailto:Hackathon_challenge@fmc-na.com)**



# Resources & Upcoming Hackathons



# Questions to aid in Brainstorming

What	Who	Why	Where	When	How
What is the problem?	Who is involved?	Why is the problem important?	Where does the problem occur?	When did the problem begin?	How can this problem be an opportunity?
What would we like to know?	Who is affected by the situation?	Why does it occur?	Where was it already resolved before?	When do people want to see results?	How could it be solved?
What are the assumptions that are scrutinized?	Who decides?	Why was it not yet solved?	Where did similar situations exist?	When can the project be started?	What has already been tried to solve the problem?

# Random List of Hackathons

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Saturday March 28, 2020

Hacking Public Health @ Harvard T.H. Chan School of Public Health

<https://www.eventbrite.com/e/2020-hacking-public-health-tickets-92027142661>

MIT Hacking Medicine, Friday April 17<sup>th</sup> thru Sunday April 19, 2020

<https://grandhack.mit.edu/boston/>

Health Hackathon Database (MIT)

<http://hackingmedicine.mit.edu/resources/health-hackathon-database/>

MIT Sloan School of Mgmt. - Solveathon (May 2020)

<https://solve.mit.edu/>

Hackathon Guide

<https://hackathon.guide/>

The 8 Best Websites to Find a Hackathon — The Hack Life Guide

<https://medium.com/@jonathanallengrant/the-7-best-websites-to-find-a-hackathon-the-hacklife-guide-3e420f2a565b>



# Tech User Groups & Innovation Labs & Robotics

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Boston Area User Group Calendar

<http://www.bugc.org/>

Tech Events Network

<https://techeventsnetwork.com/cities/boston/>

MedTech Boston

<https://medtechboston.medstro.com/>

Boston User Groups

<https://www.bostonusergroups.org/>

2020 Guide to STEM Programs in Massachusetts (Boston Tech Mom)

<https://www.bostontechmom.com/2020-guide-to-stem-programs-in-massachusetts/>

Harvard Business School Innovation Lab

<https://innovationlabs.harvard.edu/>

Boston University Innovation / Build Lab IDEA Conf 2020 @ Boston Univ.

<https://www.bu.edu/innovate/>

National Robotics Week, April 4-12 2020

<https://www.nationalroboticsweek.org/>

Mass Robotics

<https://www.massrobotics.org/>



# Startup / Tech Showcase Resources / Machine Learning

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Tech Venture Café (Thursdays)  
<https://venturecafecambridge.org/>

Boston New Technology  
<https://bostonnewtechnology.com/>

Mass Technology Council  
<https://www.masstlc.org/>

Data Space / Data Lab (Machine Learning, Using CoLab)  
<https://www.meetup.com/Data-Space/>

# Design Thinking Resources

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## **Boston Children's Hospital - "Can we hack our way to better health care?"**

<https://vector.childrenshospital.org/2013/10/can-we-hack-our-way-to-better-health-care/>

## **Boston children's Hospital Accelerator ("The Innovators Roadmap PDF Guide)**

<https://accelerator.childrenshospital.org/>

## **Library: Support \ Project : FKC Hackathon - Design Thinking - Innovation**

<https://fmcna.sharepoint.com/sites/FMC-BI/bi/bisup/bi%20documents/forms/all%20by%20library.aspx>