



CTO

Office of the  
CHIEF TECHNOLOGY OFFICER

# Untangling Wicked Problems Using Human-Centered Design

*Best Practices from the HHS Office of the Chief  
Technology Officer*









Applications

Grants

 **HRSA**

Health Resources & Services Administration



“Cherish being uncomfortable  
because that is what will spark the  
best innovation.”

~ HRSA Ignite Alumni

# Mission of the CTO

Catalyzing innovation, emerging technologies, and data-driven problem solving to reduce costs and improve health and human services for all Americans.

# Showcase

- Ignite Accelerator
- Indian Health Service Health IT Modernization Project
- Immunization Information Systems Project

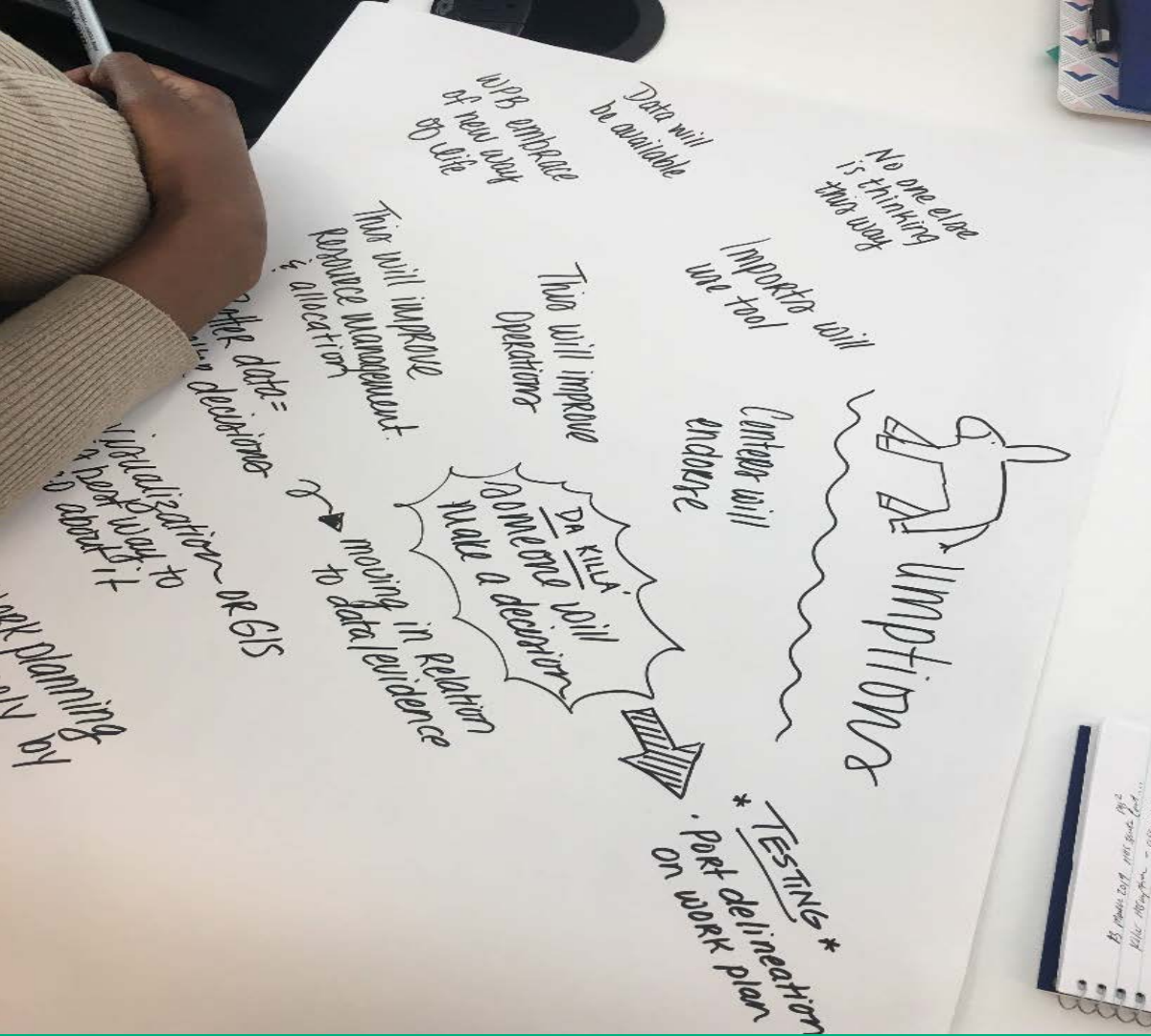


# HHS Ignite Accelerator Program

The HHS Ignite Accelerator, an internal innovation incubator program, stimulates innovative problem-solving by enabling employees across HHS to experiment, test, and validate solutions to key departmental challenges.

Ignite supports HHS goals:

- Advancing innovation
- Improving customer experience
- Addressing inefficiencies
- Build a 21<sup>st</sup> cent. Workforce



**\$6 Million savings** against cost of \$150,000 for a redesigned ER lobby that resulted in reduced patient wait times at an IHS hospital

**13.5 hours to 5 minutes.** Amount of time saved for a program analyst to conduct a portfolio review of NIH scientific grants using natural language processing

**\$84,000 Cost Savings annually** with an electronic, streamlined process for FDA field investigators

## From Idea to Impact

Over the three month program, Ignite teams have rapidly moved ideas to impact, developing solutions that demonstrate cost savings, improved efficiency, and saved lives.



# Engaging and Empowering People

*“Ignite instilled in us a ‘can-do’ attitude and allowed us to look at problems not as unsurmountable challenges but as problems we could solve.”*  
~ Ignite Program Alumni,  
CMS



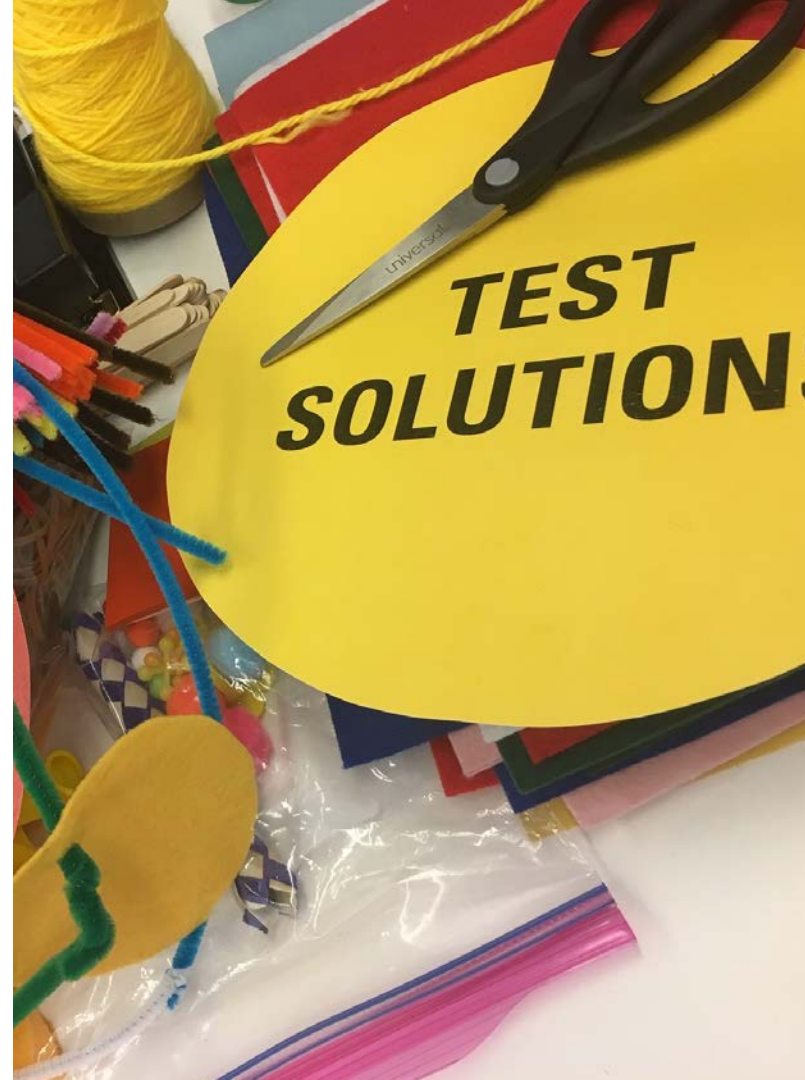


# What have we learned?

5 Lessons for Public Sector Innovators

# Lesson 1: Get Started

- Start doing!
- Start small
- Scope down
- Set up short design sprints



# Lesson 2: Talk to people.

- Talk to your end-users. Like a lot.
- Start by talking to colleagues, friends, others in your network
- Practice your listening and interview skills

*But what about PRA? Check out the 18F methods cards:*

<https://methods.18f.gov/discover/stakeholder-and-user-interviews/>



## Lesson 3: Find your tribe

- Connect with a community of peers
- Join listservs ([Digital.gov](https://www.digital.gov) has a great list of COPs!)
- Be active in the community



# Lesson 4: Gather your Champions

- Identify leadership who are supportive of your vision
- Align efforts with strategic goals and priorities
- Practice telling your story





# Lesson 5: Constantly be learning

- Get trained
- Document your process
- Set metrics to measure your progress
- Test through small iterations
- Turn failures into opportunities for learning
- Look outside

IDEALAB

# HHS INNOVATION DAY

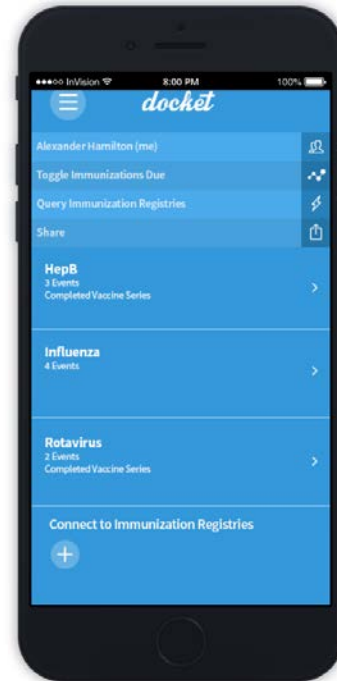
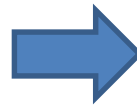
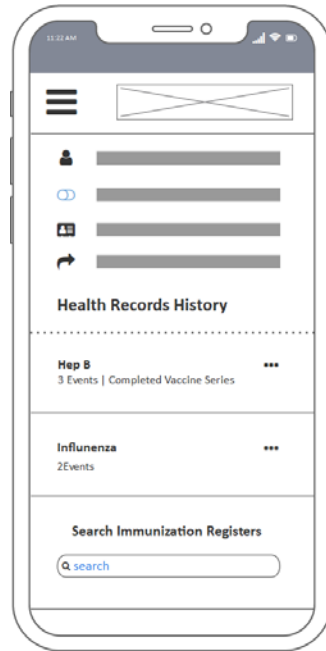
2019: A HEALTH ODYSSEY

JUNE 12TH, 2019 #Innovation



You can be an agent for change.

# Immunization Information System – Lessons from Usability Testing



# Immunization Information System

- 7 iterations of testing on a low-res prototype
- Key themes from testing were:
  - **Identity proofing:** Found various approaches to ID proofing that made sense to users
  - **Accessibility:** Change terms to make them more user-friendly and understandable
  - **Usability:** Changes in user-interface, including adding new functionalities like reminder recall
  - **Sharing:** Users want to exchange data outside the app
- Moving to the high-res testing phase





# HHS / IHS

## HIT MODERNIZATION PROJECT

### WHAT ARE THE MOST APPROPRIATE NEXT STEPS IN HIT MODERNIZATION FOR IHS?

Using both internal and external expertise informed by IHS and Tribal leadership, the HHS/IHS HIT MODERNIZATION PROJECT identifies and evaluates **HIT SOLUTION OPTIONS** to provide guidance to IHS, HHS, and Tribal leaders on the next steps in their modernization process.

Gathered user needs by engaging with over 2000 users from IHS, Tribal, and Urban (I/T/U) sites



Conducted and analyzed interviews

Visited I/T/U sites

Developed, implemented, and analyzed data calls

Analyzed system capabilities



Evaluated the existing system

Determined alternative options and best practices



Performed extensive literature research

Consulted with the project Technical Advisory Commission (TAC)

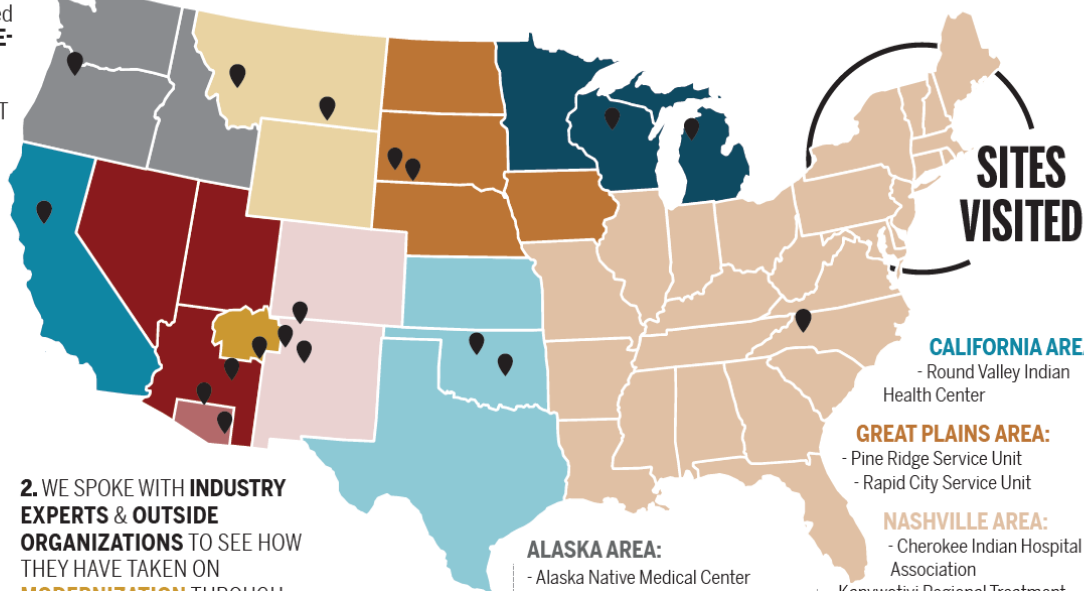
The project team developed and implemented a **THREE-PRONGED APPROACH** to better understand the current state of the IHS HIT systems and the unique needs of its users.

**1. WE ENGAGED WITH END USERS** IN VARIOUS ROLES THROUGH **SITE VISITS** AND A **DATA CALL QUESTIONNAIRE**, AND **VIRTUAL FOCUS SESSIONS** TO UNDERSTAND THE END USER EXPERIENCE:

**DATA CALL**  
**1,877**  
RESPONSES FROM  
**226**  
FACILITIES

**SITE VISITS**  
**25**  
VISITS TO I/T/U  
FACILITIES

**VIRTUAL FOCUS SESSIONS**  
**13**  
SESSIONS WITH  
SUBJECT MATTER  
EXPERTS WITHIN THE  
I/T/U NETWORK

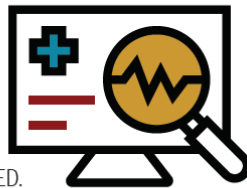


**2. WE SPOKE WITH INDUSTRY EXPERTS & OUTSIDE ORGANIZATIONS** TO SEE HOW THEY HAVE TAKEN ON **MODERNIZATION** THROUGH:

- A **LITERATURE REVIEW** of publications about HIT use and modernization in resource-constrained areas.

- Formation of a **TECHNICAL ADVISORY COMMISSION** consisting of 8 IT industry experts & Tribal leaders to provide guidance and recommendations

**3. WE EXAMINED RPMS** THROUGH A **TECHNICAL ASSESSMENT** THAT EVALUATED THE EXISTING ARCHITECTURE TO SEE IF IT COULD BE MODERNIZED.





## USERS TOLD US A MODERNIZED SYSTEM INCLUDES:

Seamless **DATA SHARING** between facilities and external databases to provide continuous care for patients, even if they move to a different reservation, city, or state

An **EHR INTERFACE** that is easy to learn, navigate, and designed to support all areas of care, including clinical decision making tools to assist them in providing their patients the best care possible

**ADEQUATE TRAINING** and guidance on the system, its capabilities, and how it fits into their workflow

**INCREASED RESOURCES**, including up-to-date hardware and bandwidth that allows them to easily provide care to their busy patients



TRUE MODERNIZATION WILL HAVE **INTEROPERABILITY.**”



# RECOMMENDATIONS



Honor the Federal-Tribal Government Relationship and its Unique Complexities



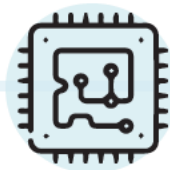
Ensure Consistent Organizational Governance and Leadership



Create an Engaging, Modern, Convenient System for Patients



Engage End Users to Understand Their Needs



Modernize the IHS HIT Infrastructure to Meet Current and Future Needs



Facilitate Continuity of Care by Providing Full Support for Data Exchange and Interoperability



Improve Analytics and Business Intelligence



Strengthen IHS HIT Security and Compliance

# Requiring Usability through Regs

ONC (Office of the National Coordinator of Health IT) in its certification of Health IT requires usability testing- called Safety Enhanced Design

Technical outcome – Developer must have applied UCD process according to ISO standards for usability

<https://www.healthit.gov/test-method/safety-enhanced-design>



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