Implementation of Prizes and Challenges at Health and Human Services

President's Council of Advisors on Science and Technology

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Challenge Implementation Strategy

- Delegation of Authorities to Operating Divisions
  - Prior to America COMPETES Act most agencies had limited prize and challenge authorities
  - Push authorities down to program level to enable use with other procurement tools
  - Leadership engagement from the beginning
- Program Management and Implementation (Innovation Council)
  - Starter kit of policies and management principles
  - Office of the National Coordinator contract for challenge management
  - Outreach and communication
  - Connect challenges to specific cross-agency activities (Health Data Initiative, Million Hearts, Healthy People 2020, etc.)
  - Marketing strategies
  - Challenges initially focused on information dissemination, migrated to apps development (dashboards), then to platform creation (web services)
- Challenge Guidance and Resources found at: http://www.hhs.gov/open/initiatives/challenges/index.html

Examples of Challenges in Information Technology
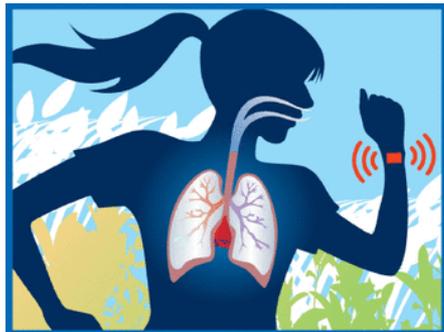
i2 Developer Challenges

- Background – HealthData.gov Platform
    - Part of the HHS Open Government Plan, the HealthData.gov Platform is flagship initiative and focal point in helping to establish learning communities that collaboratively evolve and mature the utility and usability of a broad range of health and human service data
    - Leverages Web oriented and Cloud-based architecture and frameworks and standards, running open source software
    - Facilitate better integration, analysis, and interpretation of our data, helping meet the growing demand for more public and private sector value added information services
    - Seven i2 challenges phased in over 1 year

i2 Developer Challenges

- What we are trying to accomplish:
  - Use of technology to find solutions that drive better outcomes, engage users in their health, and improve health care quality
  - Improve data liquidity and integration
  - Improve enhancing the capabilities and technology components of the HealthData.gov platform
- Goal:
  - To create open source platform for apps to benefit the uses of data

i2 Developer Challenges

- ## Challenges:
  - ### Three domain specific
    - Improve the integration and liquidity of data made available
    - Phase One: **Metadata Domain Challenge** –
      - Requests the application of existing voluntary consensus data standards for metadata common to all types of government data
      - Invites new designs for health domain specific metadata to classify datasets in our growing catalog, creating entities, attributes and relations that form the foundations for better discovery, integration and liquidity.
  - ### Four platform specific
    - Enhance the capabilities of the technology components
    - Phase One: **Simplified Sign-On Platform** – Requests the development of a replicable open source virtual machine environment demonstrating how HDP components (with an initial emphasis on Virtuoso, Drupal 7, CKAN, OntoWiki, and Solr) can leverage WebID's, contributing to simplified sign-on for humans and machines.

NLM Show Off Your Apps: Innovative Uses of NLM Information

- What we are trying to accomplish:
  - Increase the use of the National Library of Medicine's Open Data
  - Increase the use of Application Programming Interfaces (APIs)
- Goal:
  - To show the value and usability of National Library of Medicine Data

NLM Show Off Your Apps: Innovative Uses of NLM Information

- Challenge:
  - Develop innovative software applications to further NLM's mission of aiding the dissemination and exchange of scientific and other information pertinent to medicine and public health
  - Winners:
    - **GLAD4U; Jerome Jourquin & Bing Zhang:** GLAD4U (Gene List Automatically Derived For You) is a new, free web-based gene retrieval and prioritization tool, which takes advantage of the NCBI's Entrez Programming Utilities (E-utilities).
    - **iAnatomy; Anouk Stein**: Learning anatomy interactively with a touchscreen device is dynamic and engaging. Having it as an app, makes the information available anywhere, anytime.
    - **KNALIJ; Alan Finkel:** The KNALIJ web application addresses the challenges and opportunities posed by 'big data' with a new generation of information visualization tools.
    - **NLMplus; Weizhong Zhu & Antonio Zamora:** NLMplus is an innovative semantic search and discovery application developed by WebLib LLC, a small business in Maryland.
    - **Quertle; Jeff Saffer:** Quertle is an innovative website for searching and investigating the biomedical literature.

- What we are trying to accomplish:
  - Improve data integration, i.e. connecting, visualizing and analyzing data
  - Improve community engagement
    - Customizing sensor combinations for local needs
    - Collecting and responding to local input
    - Making sensors that fit individual lifestyles
- Goal:
  - To better understand and leverage connections between environmental quality and public health

- Challenge:
  - Develop innovative solutions that connect timely location-specific air pollution data and human health measurements to provide a more detailed picture of air quality's impact on our health

- Two-phased Challenge
  - Phase 1: Written Proposal – Open to everyone
  - Phase 2: Prototype Development & Proof of Concept Data – Invitational

- ## What we are trying to accomplish:
  - Change the way IT applications are being developed
    - Developed in a piecewise fashion (not delivered in a big system)
    - Developed in an agile like fashion (as opposed to waterfall methodology)
  - Using crowdsourcing as a mechanism for solving problems

- ## Goals:
  - To test how open source technology can reduce costs and reduce time to implement new solutions in state programs.
  - To inform and drive the use of a shared services model for Medicaid Management Information Systems initiatives as a Medicaid Information Technology Architecture best practice for States to adopt as they update and modernize their systems.

Centers for Medicare and Medicaid Platform Challenge

- Challenge:
  - To produce and evaluate a prototype shared services solution for States to leverage in verifying Medicaid provider eligibility.
- Omnibus Approach & Contest Types – 150 contests in 32 weeks
  - Open and directed innovation contests
    - Idea generation & conceptualization
  - Creative Concepts
    - Logo, wireframes, storyboards, mobile screen
  - Software Contests
    - Software specification, system architecture, module architecture, module architecture, component design, component development, user interface prototype, assembly, test scenarios, test suites, bug hunts, content creation

"Go Viral" IOM-NAE Health Data Collegiate Challenge

- Challenge:
  - **Identify** a health problem
  - **Assemble** an interdisciplinary student team with health related and computer science / engineering majors
  - **Develop** an app using data from the HHS Health Indicators Warehouse and other data sources
  - **Demonstrate** how the solution will promote action that will improve community health
- Sponsored by the Institute of Medicine of the National Academies and the National Academy of Engineering (NAE)
- Connect at: www.facebook.com/goviraltoimprovehealth

"Go Viral" IOM-NAE Health Data Collegiate Challenge

Challenge Winners

- In 2012, 51 teams registered for the Challenge
  - **1st place – VaxNation (Baylor College of Medicine / University of Texas)**
  - 2nd place – RaysAwareness (Rose-Hulman Institute of Technology)
  - 3rd place – HealthyState (Indiana University)

- In 2011, 27 teams registered for the Challenge
  - **1st place – Sleep Bot (NYU, Cooper University, Northwestern University)**
  - 2nd place – Freebee (Arizona State University)
  - 3rd place – IMPAct (Arizona State University)

Summary

- Addressing opportunities for additional platforms for featuring challenge competitions

- Demonstrating benefits of tapping into networks and use of challenge management paradigms

- Proving to be an effective means to address new concepts and engage new developers of IT platforms and applications

- Gaining experience, leveraging challenge management expertise - It's still early!

- Continuing efforts to strengthen challenge design