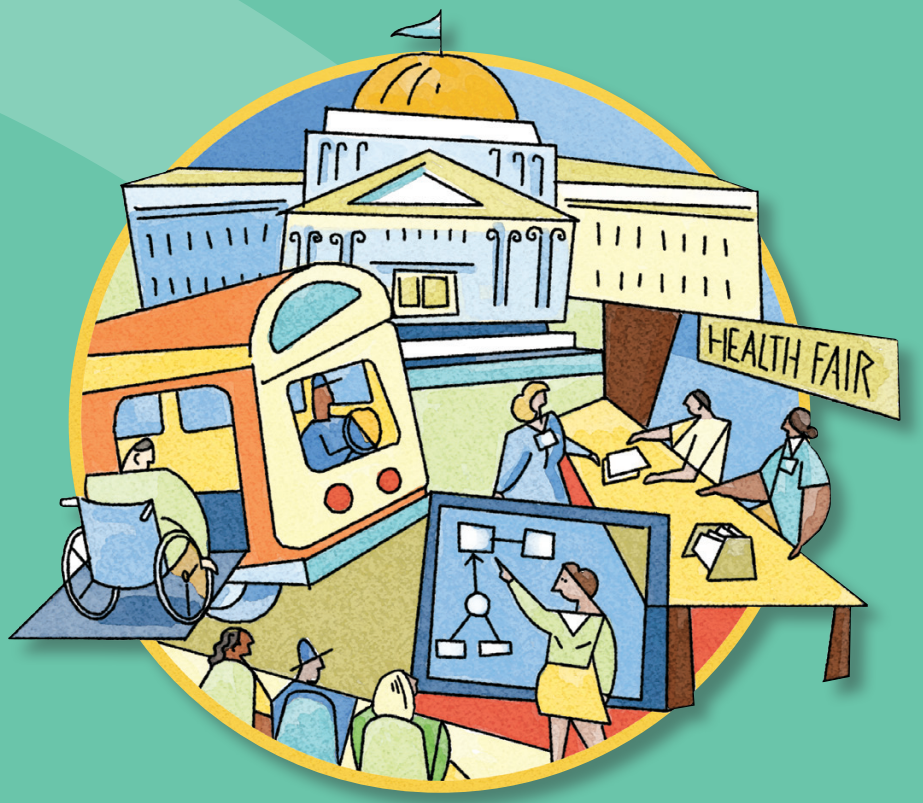
# Finding Common Ground

## Collaborative Requirements Development for Public Health Information Systems




Developed By:

**The Public Health Informatics Institute**

Supported by:

**The Robert Wood Johnson Foundation**

COMMON GROUND
transforming
Public Health
information systems

**In the 21st century, two significant driving forces will dramatically change the public health landscape: the American Recovery and Reinvestment Act (ARRA) and the Prevention and Public Investment Health Fund. The convergence of these forces represents an unprecedented level of public spending to improve health outcomes for Americans.**

Funding from ARRA, through the Health Information Technology for Economic and Clinical Health (HITECH) Act, is designed to stimulate health IT adoption, meaningful use of electronic health records, and health information exchange, with the overall goal of improving the health and care of Americans—in effect, creating an e-health era. This initiative has the potential to change the way public health collects, manages and analyzes data that are critical in supporting decisions on public health services and policies. The Prevention and Public Health Investment Fund is designed to provide for an expanded and sustained national investment in prevention, wellness and public health activities. Both initiatives provide an historic opportunity for public health to align its mission and priorities with healthcare reform efforts in the US.

In order to be effective partners in this new e-health era, public health will need to perform as a cohesive entity across political jurisdictions. Public health agencies at all levels of government must be able to plan effectively, reach consensus on public health goals and priorities, and focus on the improved performance of the public health system as an enterprise in order to electronically link to their private healthcare partners. This necessitates a common understanding of the work of public health and what information systems must do to support this work, and requires the implementation of interoperable information systems across public health, linking to healthcare.

# Common Ground

Recognizing the growing need to help public health agencies develop a cohesive enterprise, the Robert Wood Johnson Foundation engaged the Public Health Informatics Institute (the Institute) in a national initiative called ***Common Ground***. Through this initiative, the Institute led the collaborative development of requirements for information systems that would improve public health preparedness—the ability to respond to public health threats such as infectious diseases, pandemics and bioterrorism—and management of chronic diseases, such as obesity, diabetes and asthma. The Institute served as the National Program Office for the initiative, teaching grantees public health informatics principles and methods, providing technical assistance, and guiding grantees through a methodology for collaboratively defining a common set of information system requirements.

***The goals of Common Ground were to:***

- **Persuade** public health agencies to integrate informatics principles and sound development methodologies to improve the delivery of public health services;
- **Examine** public health agencies' existing business processes and define requirements for the information systems used to support these processes;
- **Help** agencies develop new information system requirements that are more effective and that streamline the delivery of essential public health services;
- **Minimize** duplicative efforts by identifying common business processes and information system requirements that are applicable across the public health field; and
- **Encourage** stakeholders at the local, state, and federal levels to endorse, adopt, and implement redesigned business processes and information system requirements that support public health preparedness and chronic disease prevention and control.

In order to address these goals, the Institute employed its ***Collaborative Requirements Development Methodology***—a coherent and cost effective approach to assisting public health agencies with their information systems needs.

# Collaborative Requirements Development Methodology

The foundation of the Common Ground work was established through a six-month project undertaken in October 2005. With the support of the Robert Wood Johnson Foundation, the Institute worked with the National Association of County and City Health Officials (NACCHO) on a collaboration to define local health department business processes, identify how these processes could be improved for greater effectiveness and efficiency, and use the resulting understanding of the improved processes to describe how an information system should support the agency's work.

**Business Process Analysis**

**think**

*How do we do our work now?*

- Define goals and objectives
- Model context of work
- Identify business rules
- Describe tasks and workflow
- Identify common task sets

**Business Process Redesign**

**rethink**

*How should we do our work?*

- Examine tasks and workflow
- Identify inefficiencies
- Identify efficiencies with repeatable processes
- Refine business processes and business rules
- Remodel context of work
- Restructure tasks and workflow

**Requirements Definition**

**describe**

*How can a information system support our work?*

- Define specific tasks to be performed for optimized business processes
- Describe the implementation of business rules
- Describe in words and graphics how an information system must be structured
- Determine scope of next phase of activities

**Figure 1:** Collaborative Requirements Development Methodology, Public Health Informatics Institute

# The Process of Collaboration

Through Common Ground, the Institute brought together a group of state and local health agencies to work together to:

- Collaboratively think through the tasks that are performed to meet specific public health objectives (analyze their business processes);
- Rethink the underlying tasks to increase effectiveness and efficiency (redesign business processes); and
- Describe what the information system must do to support the performance of those tasks (define system requirements).

The project produced comprehensive documentation of the business processes and information system requirements for chronic disease management and public health preparedness, and helped clarify the information system needs for public health's active involvement in the emerging e-health community.

## Business Process Analysis

At the outset of the project, the Institute introduced grantees to the tools and methodology for performing a Business Process Analysis (BPA). They familiarized participants with Context and Task Flow diagrams, both used to graphically depict business processes, and with the Business Process Matrix, a textual description tool. Grantees used these analysis tools to create a picture of:

- **Who** participates in the process;
- **What** types of information are exchanged between participants in the process; and
- **How** the work is accomplished.

Using the Institute's methodology and BPA tools often provided "aha" moments in which it became clear that some assumptions about the way in which a process occurred were significantly at odds with what was actually taking place. Ultimately, the method of documenting their processes facilitated a clearer and more accurate understanding of the work being performed. This clarity would be essential to defining requirements for information systems that would effectively support the work of the agencies, as well as provide the interoperability needed for participation in health information exchange with other agencies and healthcare providers.

## Business Process Redesign

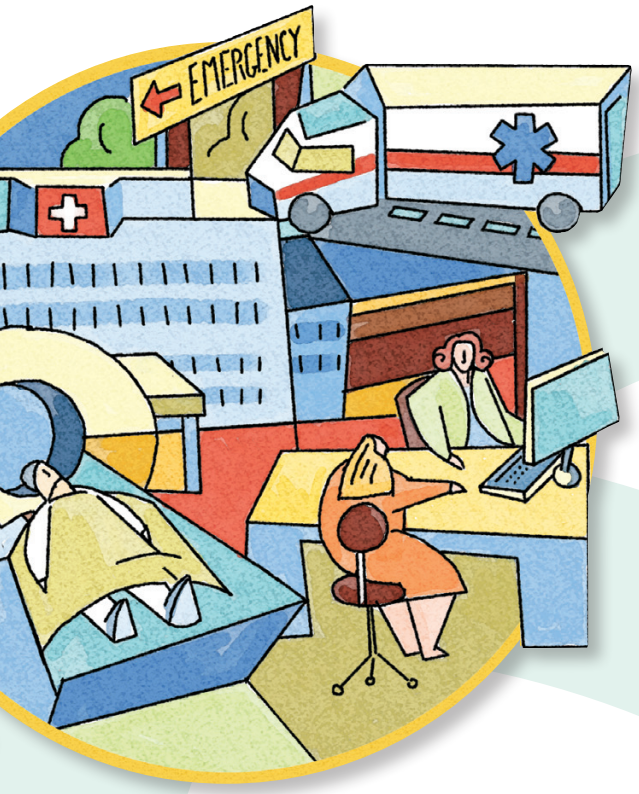
Having completed the BPA process, the participants looked for processes that were not working as well as they could, were inconsistent, or were outdated; that is, processes that were accomplishing the right things, but needed to do so more effectively and efficiently. Participants were asked to consider the proposed redesign in terms of feasibility and likelihood of success and positive impact. Based on these guidelines and armed with the Institute's methodology for Business Process Redesign (BPR), the groups worked collaboratively to redesign several key processes.

## Requirements Definition

Through the Requirements Definition phase of the ***Common Ground*** program, participants explored the importance of defining information system requirements, in terms of informing and streamlining the time-consuming, expensive work of system design and development. They learned to clearly define what the organization needs and wants from the information systems that support the activities within its business processes—to answer the question "How can an information system effectively and efficiently support our work?" Specifically, they:

- Defined the tasks to be performed for optimized business processes;
- Described the implementation of business rules;
- Described in words and graphics how an information system must be structured; and
- Determined the scope of the next phase of activities.

Participants learned that a good information system requirement is clear, concise and measurable. They used the Task Flow diagrams from their BPA/BPR work to identify activities that are or could be supported by an information system; uncover the requirements for supporting them; and prioritize and validate the identified requirements. In the end, the grantees collaboratively developed and documented detailed requirements for a number of common chronic disease management and preparedness processes.



# Common Ground, Uncommon Communication

The collaborative approach enabled the ***Common Ground*** grantees to reach agreement on and begin to use common vocabulary and definitions to describe their business processes, and provided opportunities for the different agencies to review and learn from each other's approaches for carrying out core business activities. This commonality enabled participating agencies to collectively gain and articulate a clear picture of how information systems should support their work. Perhaps more importantly, it communicated a unifying prospect of public health nationwide, a critical perspective for integrating public health into the overall e-health system.

## About the Public Health Informatics Institute

The Public Health Informatics Institute is a program of the Task Force for Global Health, a 501(c)(3) non-profit organization. Our staff is comprised of professionals in the areas of public health, healthcare information systems and communications—all well-versed in the current and emerging issues facing public health. The Institute is known for its expertise as a neutral convener of public health professionals and their stakeholders, transforming health practitioners' ability to apply information effectively in order to improve health outcomes worldwide.

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