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Section B

System Development Process: How to Communicate Your Needs to Developers
Information system development process is comprised of the following activities:

- Requirements elicitation
- Design
- Development
- Pilot testing
- Implementation
- Evaluation
- Deployment
Requirements Elicitation

- During requirements elicitation, the client/user and developer define the problem, the goal(s), actors, and functions of the information system.

- The client/user selects use case(s); with the help of the developers, they create:
  - Use case diagrams, workflow, and data flow diagrams
  - High-level system architecture
  - Non-functional requirements for the information system
  - Hardware and software requirements, system evaluation plan
  - System development timeline and documentation
These requirements are documented in a *functional requirements analysis specification document* that serves as a contract between the client and the developers.

The *specification* is written in a natural language and supports communication between developers and users.
Requirements Elicitation Includes:

- Specifying goals
- Specifying actors (business and technical)
- Specifying functional and non-functional requirements
- Specifying use cases
- Developing models/diagrams
  - Use case, workflow, and dataflow
- Specifying high-level system architecture
- Specifying hardware and software requirements
- Specifying system evaluation plan
- Specifying project timeline and documentation
The result of these activities is a description of the system in terms of goals, actors, functions, and use cases in the format of the Requirement Analysis Document (RAD).
Requirements Elicitation Includes:

- **Specifying goals**
- Specifying actors (business and technical)
- Specifying functional and non-functional requirements
- Specifying use cases
- Developing models/diagrams
  - Use case, workflow, and dataflow
- Specifying high-level system architecture
- Specifying hardware and software requirements
- Specifying system evaluation plan
- Specifying project timeline and documentation
Specifying Goals

FIRST OF ALL, WHAT ARE YOU TRYING TO ACCOMPLISH?

I'M TRYING TO MAKE YOU DESIGN MY SOFTWARE.

I MEAN WHAT ARE YOU TRYING TO ACCOMPLISH WITH THE SOFTWARE?

I WON'T KNOW WHAT I CAN ACCOMPLISH UNTIL YOU TELL ME WHAT THE SOFTWARE CAN DO.

TRY TO GET THIS CONCEPT THROUGH YOUR THICK SKULL: THE SOFTWARE CAN DO WHATEVER I DESIGN IT TO DO!

CAN YOU DESIGN IT TO TELL ME MY REQUIREMENTS?
Defining the Goal

- Defining and communicating the purpose of the information system—the problem it will help to address—by end user to developer is the key issue in the development of an information system.
“My team has created a very innovative solution, but we’re still looking for a problem to go with it.”
How Do We Define Goals of our Systems?

- *CDC Environmental Public Health Tracking Network’s* goal is to build a standards-based, coordinated, and integrated environmental public health tracking (surveillance) network at the state and national level that will allow linkage and reporting of health effects data with human exposure data and environmental hazard data.

Source: Sandy Thames. (2003). PHIN Conference. Atlanta, GA.
How Do We Define Goals of our Systems?

- CDC Public Health Information Network’s vision is to transform public health by coordinating its functions and organizations with information systems that enable:
  - Real-time data flow
  - Computer assisted analysis
  - Decision support
  - Professional collaboration
  - Rapid dissemination of information to public health, clinical care, and the public

Source: John Loonsk. (May 13, 2003). PHIN Conference. Atlanta, GA.
The vision of National Electronic Data Surveillance System (NEDSS) is to have integrated surveillance systems that can transfer appropriate public health, laboratory, and clinical data efficiently and securely over the Internet.

Source: http://www.cdc.gov/nedss
We Define *Goals As:*

- To build the system (EPHTN)

- To transform public health by coordinating its functions and organizations with information systems (PHIN)

- To have integrated surveillance systems (NEDSS)
So …

- “The goal of the system is to build the system” ... ?

- *This is the main reason for our systems failures*

- The goal of the system *cannot* be defined as “to build the system”
  - That is, focus on the process of building, integrating, coordinating, etc.

- The goal of the system must be defined as “what” the system will do when built
Example: Immunization Registries

Let’s attempt to define the goal of *immunization registries* based on this description from the CDC Web site:

“CDC is continuing the investment to assist states in developing immunization information systems (registries)—confidential, computerized information systems that collect vaccination data within a geographic area. By consolidating vaccination records from multiple health-care providers, generating reminder and recall notifications, and assessing clinic and vaccination coverage, registries serve as key tools to increase and sustain high vaccination coverage.

The Healthy People 2010 objective is to increase to 95% the proportion of children aged <6 years who participate (i.e., have two or more vaccinations recorded) in fully operational, population-based immunization registries.”

Example: Immunization Registries

- The goal of the immunization registry is to help prevent spread of infectious diseases by timely administering vaccination to children within a geographic area.

- To achieve this goal, the immunization registry system will support the following functions:
  - *Consolidate vaccination records* from multiple health care providers within jurisdiction
  - *Generate reminder and recall notifications* to providers and patients
  - *Assess clinic performance* in vaccination coverage
Defining the Goal of IS

- Defining the goal of the information system by end user is the key issue in the development of an information system.

- Defining the goal of the information system (i.e., explaining and communicating to developers what solution to what problem is needed) is called *specifying the requirements* of the information system.