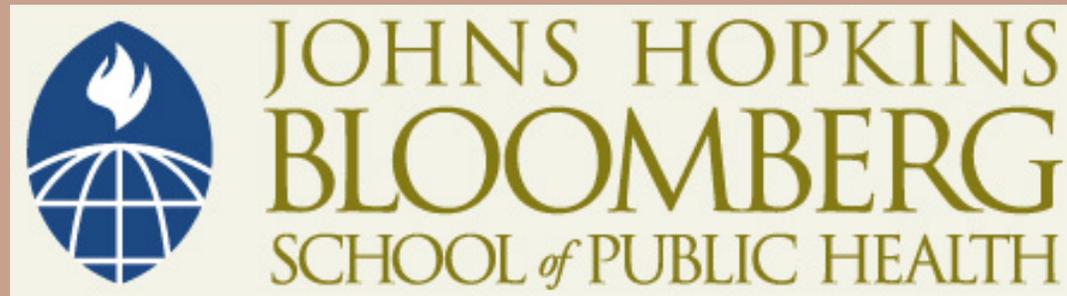


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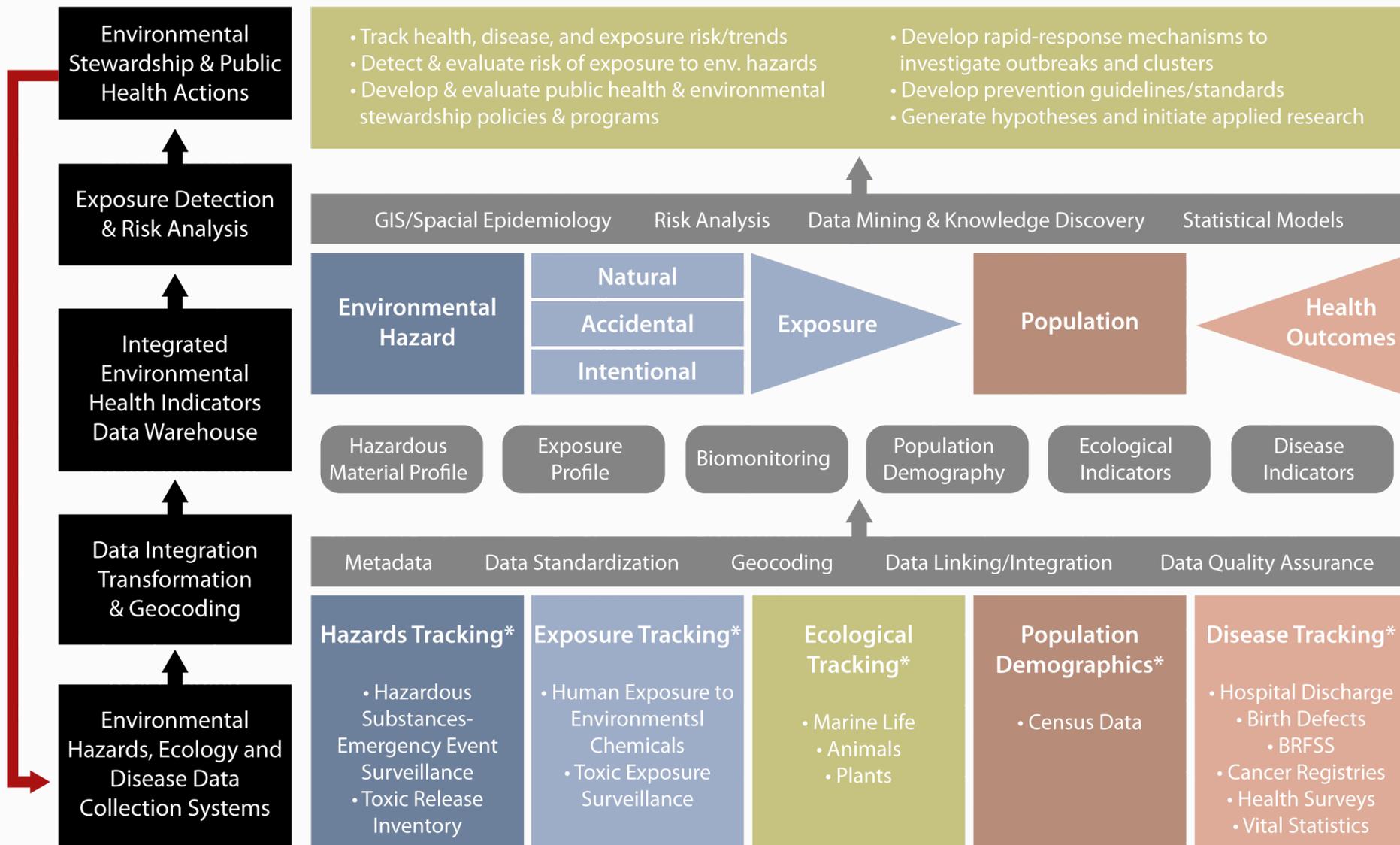
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JOHNS HOPKINS
UNIVERSITY

Section D

System Architecture

System Architecture



*Based on risk assessment and national priorities.

Adapted by CTLT from Nabil Issa, CDC/NCEH, Brussels, Belgium June 2002.

Architecture

- The *top layer* of the diagram depicts environmental stewardship functions aimed to solve environmental health problems (knowledge)
 - That is, system goals
- The *middle layer* shows the relationships between data on hazards, exposure, outcomes, and affected population
 - This data is manipulated/analyzed/displayed (that is, statistically analyzed, mined, GIS-based) and presented as information
- The *bottom layer* of the EPHTN architecture shows Data from data sources on hazards, exposure, disease outcomes, and affected population

Knowledge
level

Information
level

Data
level

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

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Testing

- During **testing**, developers find differences between the system and its model by executing the system (or parts of it) with sample input data set
- The *goal* of testing is to discover as many faults as possible so that they can be repaired before the delivery of the system
- During **unit testing**, developers compare the object design model with each object and subsystem
- During **integration testing**, combination of subsystems are integrated together and compared with the system design model.
- **System tests** are planned during requirement elicitation and analysis activities; integration tests are planned during system design activity

Four Levels of Information System Evaluation

- Level I: technical level—*does system work?*
 - Does system support data entry (input)?
 - Can system generate reports (output)?
- Level II: usability level—*does the user like the system?*
 - Does user like screen layout, color scheme, font size (input)?
 - Does user like the report layout, font size (output)?
- Level III: functional level—*does system support user functions?*
 - Does system support the user workflow and dataflow?
- Level IV: knowledge level—*does system support defined goals?*
 - Does system support user expectations in solving the problem?

Pilot Testing

- The first three levels of system evaluation are conducted during **pilot testing**—a step that follows the system development phase prior to the full implementation
- System faults detected during the pilot testing are documented in the *Pilot Testing Report*, corrected and tested again; and documented in the *Pilot Testing Report* again
- Accepted by user after pilot testing, the system is ready to be implemented

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Information System Development Timeline

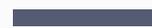
- Information system is a commercial product; as any commercial product, it has a strict timeline in which it is delivered as follows:
 - Requirement analysis and design: two to three months
 - Development: six months
 - Pilot testing - during the ninth month
 - Implementation: 10-24 months
- If you do not have working system in two years:
 - You incorrectly specified the requirements
 - You chose wrong vendor
- Next slide shows the example of the information system development timeline and deliverables by system design phase

Timeline and Deliverables

Month

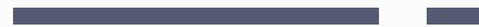
1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6

Requirement elicitation
and design



Requirement Analysis Document (RAD)

System development



System Development Specification Document

Pilot testing



Pilot Testing Protocol and Report

System implementation



System Documentation Prototype

System evaluation



System Evaluation
Protocol and Report

System operation



System Documentation
and Operational Manual