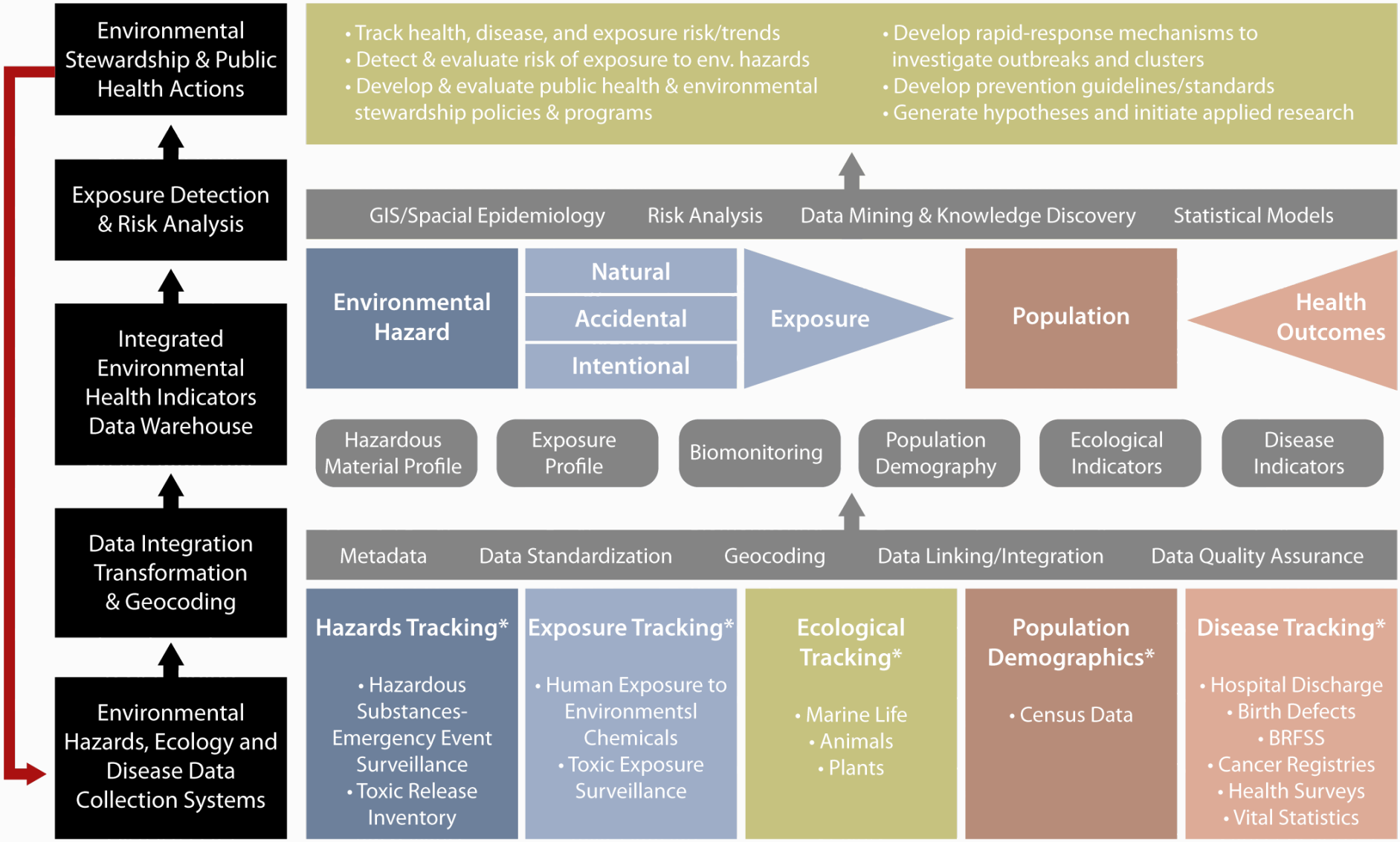
JOHNS HOPKINS
UNIVERSITY

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

Knowledge level

- 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

Information level

- The *bottom layer* of the EPHTN architecture shows Data from data sources on hazards, exposure, disease outcomes, and affected population

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

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

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

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*

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