

Component 4: Introduction to Information and Computer Science

Unit 9: Components and Development of Large Scale Systems

Lecture 2

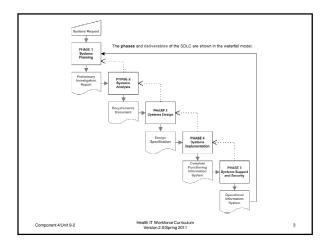
This material was developed by Oregon Health & Science University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000015.

Systems Development Lifecycle (SDLC)

- 1. Systems Planning
- 2. Systems Analysis
- 3. Systems Design
- 4. Systems Implementation
- 5. Systems Support and Security

Component 4/Unit 9-2

Health IT Workforce Curriculum Version 2.0/Spring 2011



SDLC Spectrum/Alternatives

- Sequential or Big-Design-Up-Front (BDUF)
 - Waterfall (previous slide)
 - Capability Maturity Model (CMM)
- Incremental and Iterative Development
 - Rational Unified Process (RUP)
 - Dynamic Systems Development Model (DSDM)
 - Spiral Approach
 - Agile Methodologies
 - Extreme Programming (XP)
 - Scrum
 - Rapid Application Development (RAD)

Component 4/I Init 9-1

Health IT Workforce Curriculum Version 2.0/Spring 2011

1. Systems Planning

- · Analyzing the business case
- · Managing systems projects



Component 4/Unit 9-2

Health IT Workforce Curriculum Version 2.0/Spring 2011

Analyzing the Business Case

- Capture knowledge about how the business will function both with and without the final solution.
- Prove the solution meets the needs of the business to enable funding, approval and prioritization.
- Provide a consistent message to different audiences.



Component 4/Unit 9-2

Health IT Workforce Curriculum Version 2.0/Spring 2011

Managing Systems Projects

- Planning
- Scheduling
- Monitoring
- Controlling
- · Reporting



Component 4/I Init 9-2

Health IT Workforce Curriculus

2. Systems Analysis

- · Requirements modeling
- Data and process modeling
- · Object modeling
- Logical vs. physical models
- Development strategies

Component 4/Unit 9-2

Health IT Workforce Curriculum Version 2.0/Spring 2011

Requirements Modeling

- Definition
- Tools and Techniques
 - Fact-finding
 - Interviews
 - System requirements checklist
 - Future growth



Component 4/Unit 9-2

Health IT Workforce Curriculum Version 2.0/Spring 2011

Requirements Modeling

- Requirements Modeling Methods
 - Joint Application Development (JAD)
 - Rapid Application Development (RAD)
 - Agile Methods

JAD, RAD and agile methods all use teams made up of users, managers and IT staff.



Component 4/Unit 9-2

Health IT Workforce Curriculu

Data and Process Modeling

- Data Flow Diagram (DFD)
- Data Dictionary
- · Process Description Tools



Component 4/Unit 9-2

Health IT Workforce Curriculum Version 2.0/Spring 2011

Data Flow Diagram PATIENT PATIENT • Processes INFORMATION · Data Flows ADMIT PATIENT Data Stores · External Entities ADMISSION FORM PATIENTS TREATMENT SYMPTOM DIAGNOSE PATIENT TREAT PATIENT Health IT Workforce Curriculum Version 2.0/Spring 2011 Component 4/Unit 9-2

Data Dictionary

- aka Data Repository
- Data Element = Data Item = Field
- Data Structures = Records



Component 4/I Init 9-

Health IT Workforce Curriculu Version 2.0/Spring 2011

Process Description Tools

- Modular design
 - Logical or Control Structures
- · Structured English
- · Decision tables
- · Decision trees

Component 4/Unit 9-2



Logical or Control Structures Sequence VERIFY DRUG CODE VERIFY DRUG PRICE Selection HOURS VES VES VES PRICE CALCULATE OVERIFY BY STOCK LEVEL Selection FOR THE STOCK LEVEL FOR THE STOCK LEVEL FOR THE STOCK LEVEL FOR THE STOCK LEVEL FOR THE STOCK