

## SYSTEMS ENGINEERING

### Project Management

Initiation, e.g., <http://epic/nav/doc/sat/overview.html>)

#### Planning

Defining the System (Requirements)

Project Scoping

Developing WBS

Network Diagrams (Critical Path, PERT, Gantt, etc.)

Risk Management

Estimating

Measurements/Metrics

Developing the Project Plan

Reporting Standards, e.g., <http://epic/nav/doc/sat/Reports/Reports.html>

#### Project Team Selection

Organization Factors

Skills Assessment

Defining Roles and Responsibilities

Subcontracting/Outsourcing

#### Project Monitoring and Control

Scheduling

Tracking Progress

Updating Project Plan

Project Metrics

Managing Changing Requirements

Project Progress/Status Reporting

Sub-systems Integration

Risk Management, e.g., <http://epic/nav/doc/sat/wg14/>

#### Project Closeout

Administrative activities

Contractual obligations

Documenting Lessons Learned

### Process Management (Definition and Improvement)

Process

Practices

Principles

Tools

Culture

### Configuration Management

Configuration Identification

Change Control

Version and Access Control  
Status Reporting

Version Control  
Workspace Management  
Build Management  
Process Control

Requirements  
Tools  
Audits and Reviews

Links: <http://epic/nav/doc/sat/wg8/>

## Systems and Software Engineering

Phases, e.g., <http://epic/nav/doc/sat/plan1.html>

Initiation

Planning, e.g., <http://epic/nav/doc/sat/wg1/>

Sizing

Top-Down estimating

Analogy

Parametric Models (COCOMO, FPA)

System Analysis

Requirements Specification, e.g., <http://epic/nav/doc/sat/wg2/>

Interfaces, e.g., <http://epic/nav/doc/sat/wg5/>

Design

Top Level (Architectural)

Low Level (Detail Design)

Implementation (of the Design, i.e., Coding)

Testing

Planning

Test Scenarios

Test Cases

Test Procedures

Test Scripts

Testing Levels

Unit

Sub-system

System (Integration)

Functionality

Regression

Acceptance

Test Results Procedures

Testbed Identification

Test Database

- Installation Procedures
  - Approach
  - Users Training
  - Documentation
- Maintenance Procedures
- Products/Deliverables
- Reviews
- Data Management, e.g., <http://epic/nav/doc/sat/wg4/>
- Methodology
  - Spiral Model, Waterfall Model, Iterative Development, RAD, JAD
  - Links: <http://epic/nav/doc/sat/wg10/>
- Modeling
  - OO, CASE, Prototyping, Partitioning, UML
- Quality Assurance
  - Quality Models (SEI's CMM)
  - ISO 9000
  - D4000/D5000
  - Activities
  - Metrics Collection
  - SPC use
  - Continuous Process Improvement
- Verification & Validation
  - Products
  - Processes
  - Checklists
  - Criteria
- Measurements/Metrics

Architecture Development (e.g., <http://epic/nav/doc/sat/presentations/architecture/ArchiDiag.html>)

- Tiered
- Layered
- Distributed
- Client/Server
- Component-based
- Links:
  - <http://epic/nav/doc/sat/presentations/archgl.html>
  - <http://epic/nav/doc/sat/presentations/kelly/devel.html>
  - <http://epic/nav/doc/sat/presentations/re-eng.html>
  - <http://epic/nav/doc/sat/proposals/>

"Infostructure"

- Distributed Files System, e.g.,  
<http://eis/nav/doc/sat/presentations/architecture/NETTOP.GIF>)
- Components, e.g., <http://epic/nav/doc/sat/wg7/>
- Access/Ownership Rules

## Software Practices (CMM)

Initial

Repeatable

Defined

Managed

Optimizing

Links: <http://epic/nav/doc/sat/presentations/cmm.html>

## Tools

COTS/GOTS:

<http://epic/nav/doc/sat/presentations/tools.html>

<http://epic/nav/doc/sat/presentations/obg.html>

<http://epic/nav/doc/sat/wg11/>

In-house (Section/TMOD/JPL)

## Training

Topics List

Skills Inventory

Needs Inventory

List of Training Suppliers

Training Planning

Effectiveness Analysis

Links: <http://epic/nav/doc/sat/wg12/>

## Documentation

Across the organization

Repository-based

Standards

Links: <http://epic/nav/doc/sat/wg9/>

## Interfaces

Interaction with outside entities/agencies

Links: <http://epic/nav/doc/sat/wg13/>