Security Design Goals
Major Design Impacts
Access Permissions Example
Login and Assignment of Permissions
Accessing Functions and Data
Missclassified Records
Virus Control
Distribution of Media
Identification and Authentication
Access Control
Security - Forward Plan/Conclusions
May 12, 2005

Performance Modeling

ERA SDR - DAY FOUR
- Performance requirements
- Search indices
- Volume of data to be stored in archival storage
- Ingest temporary working storage
- Ingest services
- Network usage

Modeling Activities:

Investigate performance implications of different design decisions

Predict required resources to achieve performance requirements

Objectives

Performance Modeling - A&D Phase
upon frequency of repeated hits
permanent and on-demand indexing will require optimization based
confirming that for concept-based searches, the balance between
performance requirements in a cost-efficient manner
indexing nor on-demand indexing will exclusively satisfy
confirming that for concept-based searches, neither permanent
requirements
of the entire ERA records catalog will satisfy performance
confirming that for description/keyword searches, permanent indexing
Search modeling:
communications
performing budgets can be traded between computation and
performing budgets can be traded between services
assessed
Performance of each service can be independently specified and
each step of a multi-step workflow
SOA means that performance time budget can be allocated for
Design
Performance Modeling - Influence on
Influence on Design (continued)
Media Distribution

Registered

Proportion of assets that must be withheld from the
Proportion of assets returned

Search

Number of pending transactions and requests
Number of subscription services available
Number of valid and invalid user accounts
Log-on & authorization, and account status checks

Specifications Required
Performance Modeling - Additional
Allocation of performance „budget“ to component

- Provide early warning of potential system design problems
- Achieving performance requirements
- Support the quantifiable measurement of progress toward
- Assess periodically throughout system development life cycle

Established for each performance requirement

Measurements (TPMS)

Technical Performance
Measurements
Tracking Technical Performance
Implementation proceeds.

All Models will be updated to reflect measured values as the
- To allow different system management strategies to be evaluated
  System Simulations
  - To feed into lifecycle cost and performance models
  Media Failure Models
  - To model performance under varying load
  System Load Models
  - Modelling at inter-site scale.
  - Improvements to inter-site scale.
  Network Models
  - To assess full-text search capabilities.
  - To predict the price-performance characteristics for the different options.
  Search Models
  - To improve sizing estimates.
  Persistence Models
  - To identify tasks that are performance bottlenecks.
Performance Models

Modelling – Forward Plan
LUNCH
May 12, 2005

Analysis

Availability Modeling and

ERA SDR - DAY FOUR
Agenda

Failure Mode and Effects Analyses (FMEA)

Availability Modeling
**FMEA**

Sample from FMEA worksheets that form the basis of the ERA

<table>
<thead>
<tr>
<th>Compenasing Provisions</th>
<th>Method</th>
<th>End Effect</th>
<th>Local Effects</th>
<th>Failure Mode</th>
<th>Function</th>
<th>Demolition Function</th>
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<tr>
<td>Component</td>
<td>Provisions</td>
<td>Method</td>
<td>Detection</td>
<td>Effects</td>
<td>Local Effects</td>
<td>Failure Effects</td>
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</tbody>
</table>

*FMEA Sample – Ingest (cont.)*
architecture/design changes as required
archive avialability requirements, ensure appropriate
Assess any SYRS requirements changes for impact to compliance

Prior to each Increment CDR
Provide Availability Modeling and Prediction Report (CDRL 163)

Capture measured data from previous increments
Continued compliance with availability requirements
Update availability modeling throughout product design to ensure

Availabililty Modeling - Forward Plan
May 12, 2005

Integration and Test

ERA SDR – Day Four
Forward Plan
Preliminary Test Procedures
Test Artifact Hierarchy
Iterative Test Approach
Integration and Test Environment – System Integration – SWIT
Integration and Test Approach
Levels of Integration and Test
ERA System Design Features for Test
Test Involvement in Architecture & Design

Agenda
System Integration Plan (CDRL L56)

Master Test Plan (CDRL L31)

Initial test planning

Assessment of architecture and design components

Revalidation of verification methods

Test Program

Identification of ERA System features required for integration and design

Test Involvement in Architecture &
Data Recording, Reduction and Analysis

- Data report generation
- Enabling/disabling of data logging
- Specification of data to be logged

Performance Testing

- Enabling/disabling of performance measurement "hooks"
- Internal processing times
- Hooks within software for measurement of response times and
- Automatic generation of system load data

Integration

- Identifying, isolation and purging of test data and associated artifacts
- Emulator Test Tool to generate messages and responses
- External Interface Testing
- ERA System Design Features for Test
Levels of Integration and Testing
Integration and Test - Forward Plan
May 12, 2005

Trade Studies Summary

ERA SDR - DAY FOUR
Software
Enterprise Identity Management
May 12, 2005
Bill Haris

Design Reviews
Increment/Release Requirements

ERA SDR - DAY FOUR
Incorporation/Release Requirements and Design
Closing Remarks