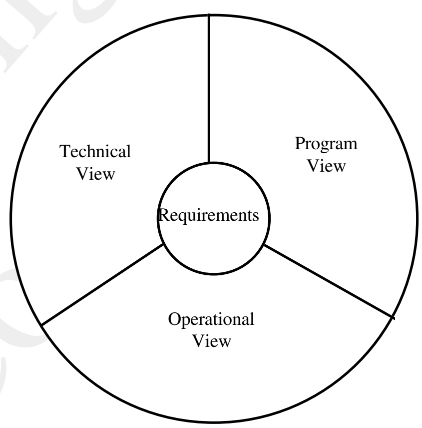
ERIS II Viz Dem Outline
Phase I
June-August 1995

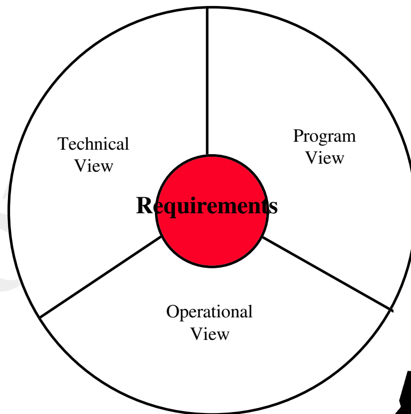
Dr. Gio Wiederhold, Stanford University
Charles Channell, Nancy Lehrer, Dr. Carl Friedlander, ISX

Intro Slide

- Pie Chart
  - Requirements
  - Program View
  - Technical View
  - Operational View



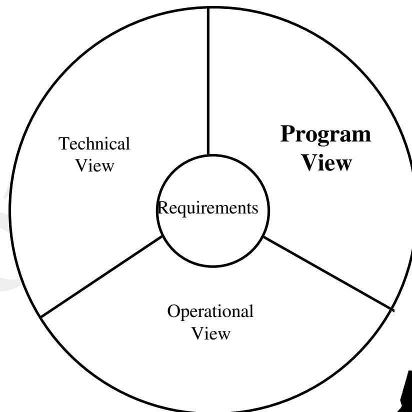
Requirements



Requirements

- Lower <than what> long term data maintenance costs
- Create architecture to support above
- Support integration of existing applications and DBs

Program View



Scenario "programmatics"

- Domain
  - Environmental Restoration
- Organization
  - Environmental Restoration
- Personnel
  - Dave Simmons
  - Mac Galusha
  - Luke ?
  - T.J. Myer

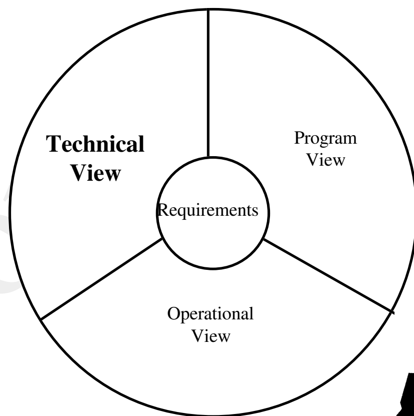
End User Roles

- Public
  - for studies
- Idaho state
  - for validation of reports
- Labs personnel
  - entering data
  - generating reports
- ERIS staff
  - validate Lab data with respect to ERIS data
  - Enter Lab data into ERIS
  - Answer “public” requests and create specialized displays

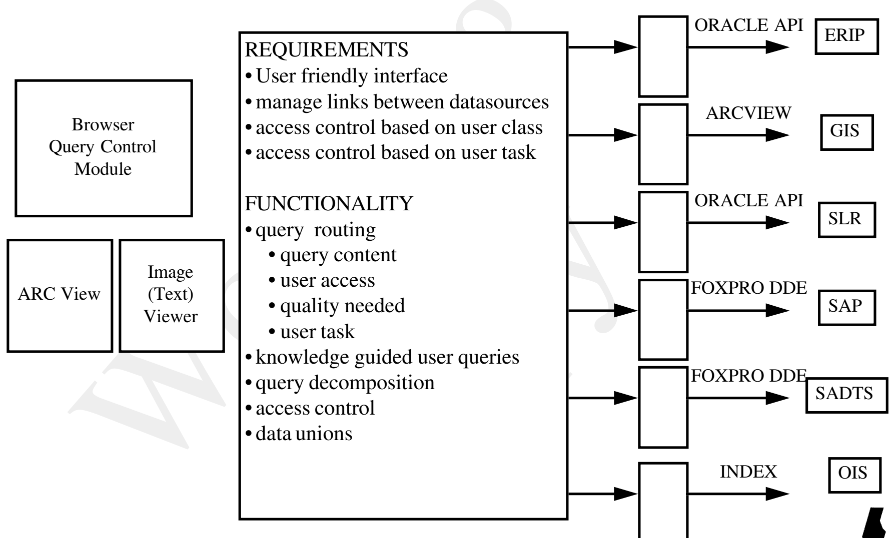
Related Efforts

- Health Information Network (HIN) TRP
  - About 150k over next 1.5 yrs
- Integrated Weapons System Data Base (IWSDB)
  - About 100k over next year
- Object Technology for Rapid Software Development (OTRSD) TRP
  - About 75k over next 1.5 yrs
- Teacher’s Associate
- Air Campaign Plannting Tool (ACPT)
- ISLE

Technical View

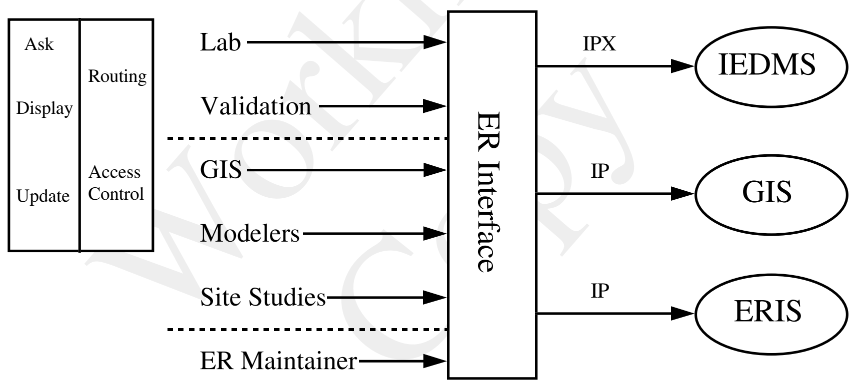


System Architecture



System Architecture

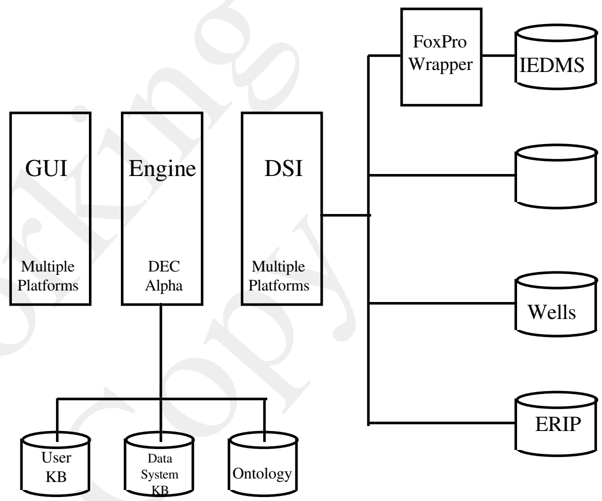
- Objective: Provide a single access point to E.R. data including IEDMS and ERIS. User gets “correct” data displayed appropriately based upon user task.



Mediator Functionality

- Information access
- Fusion
- Derivation

System Architecture (alt)



System Maintenance

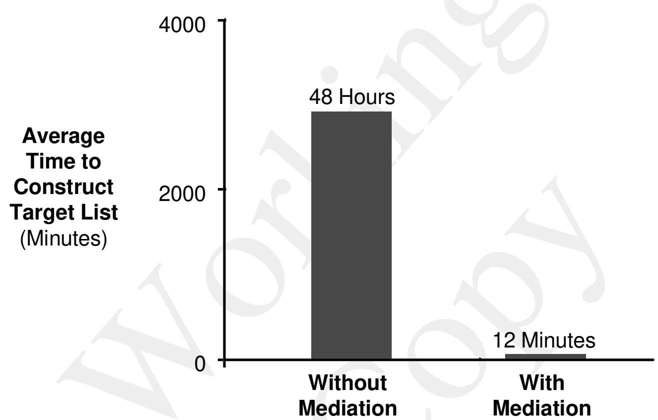
- How is a legacy application incorporated into mediated architecture?
- How is a new mediator created? and “posted”?
- How are mediators modified when a DB, DB schema and information source changes?
- How are mediated applications updated with new mediators? modified funcitionality?

Metrics

I^2 Valuation Model

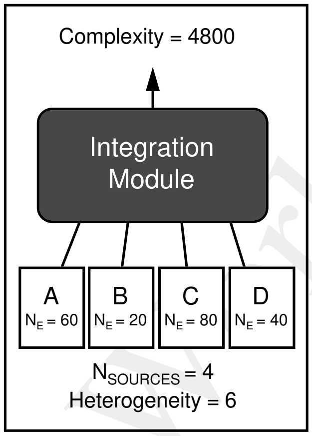
- Complexity Model – *Breadth of Coverage*
  - number of services, information sources integrated
  - size and complexity of information sources
- Cost Model – *Evolution Over Time*
  - Initial development cost
  - Recurring Maintenance
  - Continuing Evolution
- Performance Model – *Operational Effectiveness*
  - Quality
  - Timeliness
  - Cost in person hours/level of effort/$

Metric Mining: ACPT



Air campaign planners used mediated and non-mediated methods to access target databases while constructing target lists to satisfy a specific air campaign objective.

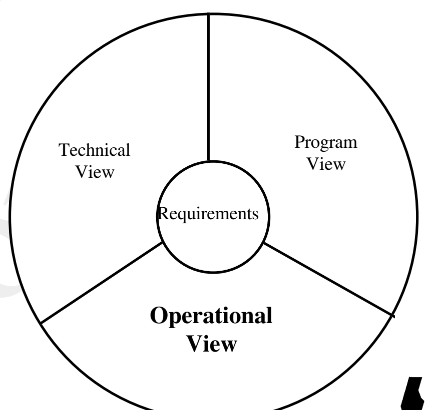
Complexity Model



- Total development and maintenance costs are a function of the costs for individual **integration modules**.
- The costs of individual **integration modules** are a function of module **complexity**.
- Module **complexity** is estimated as a function of the parameters representing the information sources being integrated.
- This estimation function can be tested against empirical data.

$$\text{Module Complexity} = F(N_{SOURCES}) + F(N_{ENTITIES}) + F(\textit{Heterogeneity})$$

Operational View



Scenario Description

- Project Manager Joe analysing results of a SAP for a site assessment of a warm waste pond.
- Queries ERIS II for the SAP for site Pond-3 in mid-August for review.
- Wants to see a geo-spatial presentation of levels of contamination by Cs137. Wants levels of contamination displayed as colors in a countour map. Will need to determine volumes of soil to be removed for cleanup.
- Joe notices a spike of contamination in a far corner of the pond and wishes to investigate.
- Joe asks if the data is available from a different/earlier/raw source and recieves confirmation that the data is avialable in the form of reports from the testing lab (paper) and IEDMS.
- Joe request the same query from IEDMS and notices the same spike.
- Joe clicks on the spike and is presented a tabular representation of the data for that sample, SAMPLE 29. Joe requests the lab report for SAMPLE 29. And notices a mismatch between the data in the lab report and the display.
- Joe brings up a mail screen and sends Mac a data correction notice. The notice prompts Joe to fill in the sample number and sources of both accurate and inaccurate data.
- Joe continues with a listing of the status of all samples
- Joe requests a plot of the verified samples

Login

- Provides context
  - project mgr
- security
- default setup
  - most recent Projects this person in charge of
- Questions
  - Login to what? (runs GUI to engine, logs onto the engine)
  - When on PC or Mac, access by running a program
  - How flexible is the system
  - Does system need to know domain and relationships?

Select data set function

- User is T.J. Myer -> project list
- Chooses project
- Chooses SAP
- Add-to, delete-from, list of data
  - Samples are the items of interest (main key)
- Defines elements he is interested in
- Save set (for future recreation/plotting)

Plot data function

- Select type of output
  - graph (2d)
    - choose x,y, type of chart (similar to Excel)
  - listing
    - choose sort criteria, include columns (similar to Excel)
  - plot (2d, 3d+)
    - Choose background
    - Choose x,y, colors (features provided by GIS)

Help Available

- Acronyms (alpha list with click to additional info)
- Terms and definitions
- sites and locales (map overlays, well locations)
- Documents access (catalog and/or on-line access)
- Forms
- Personnel (POCs, REs)
- Canned Queries (macros, maybe implemented the same as *sites and locales* above)

Phase 2 Application Final Exam

- Create useful mediators incorporated into the application
- Access SAP and display sample indices
- Access sample analysis
- Plot results using GIS

Additional user classes

- Additional user classes beyond the *project mgr*
  - Data entry
  - data maintenance
  - auditors
  - application developers/maintainers

Scenario Overview (Data Entry)

What will the system look like from the person entering the data?

- Who, what, how, where?
- What database to change?
- What fields?
- Error correction/detection?

Scenario Overview (Data/Info Request)

- How will the system look from an end-user (query) standpoint?
- Select information sources?
- Select display formats?
- Ultimately have a Common User Interface

Scenario Overview (Data Maintenance)

- What does a mediated system look like?
- Legacy Application
  - How to incorporate into a mediated architecture
  - Wrapping the application or disassembly/reassembly
- New Information Needs
- DB changes
- Network Changes
- Mediator Toolkit?
- Communications Infrastructure
  - Network
  - Protocol