

Data Requirements for Asset Management

**Corps of Engineers
Asset Risk and Reliability Workshop**

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15-18 August 2006
Alexandria, VA*

Migrating from Data to Information to Knowledge-based Asset Management

- What is the right data?
 - For existing Asset Portfolio?
 - For Acute Pending Failure or High Risk Assets?
 - For Routine O&M for Lowest Life Cycle Cost and Justified Asset Reliability?
- What are the data & information for knowledge development?
 - Asset Description and Condition
 - Functions and associated standards of performance of the asset in the defined operating context
 - Functional Failures and Causes (modes)
 - Failure Effects and Consequences
 - Asset Ranking System in terms of risk and reliability of asset to provide function for mission
 - Proactive Tasks with intervals or condition trigger points to predict or prevent failures with resources required
 - Default actions if there are no proactive tasks possible or are not performed with that resource burden
 - Performance and Benchmarking Data and Information

Forms of Data

- **Text or numerical data**
 - **Drawings, graphics or photos**
 - **Digital data**
 - Batch loaded
 - Real Time from monitors or control systems
 - **Status data**
 - State or condition of an element, component or asset
 - Event: failure, unsat performance, rebuild/replace, extreme out of tolerance operation or duty cycle etc
 - **Software programs**
- Embedded or linked to application database**

Data Management Considerations

- **For Gathering Data** (consider burden, data use and consistency for life cycle of asset)
 - **During scoping, planning, designing and constructing assets**
 - **During O&M**
 - **During Forensic Analysis of Failures**
 - **During Asset Condition Assessment**
 - **During Resource Allocation Analysis**
 - **During Rehab or Replace Analysis**
- **For Retention of Data**
 - **Consider security, access, volume, technical evolution and methods**
- **For Retrieval of Data**
 - **Consider frequency, volume, applicability/maturity, transportability and security of data**

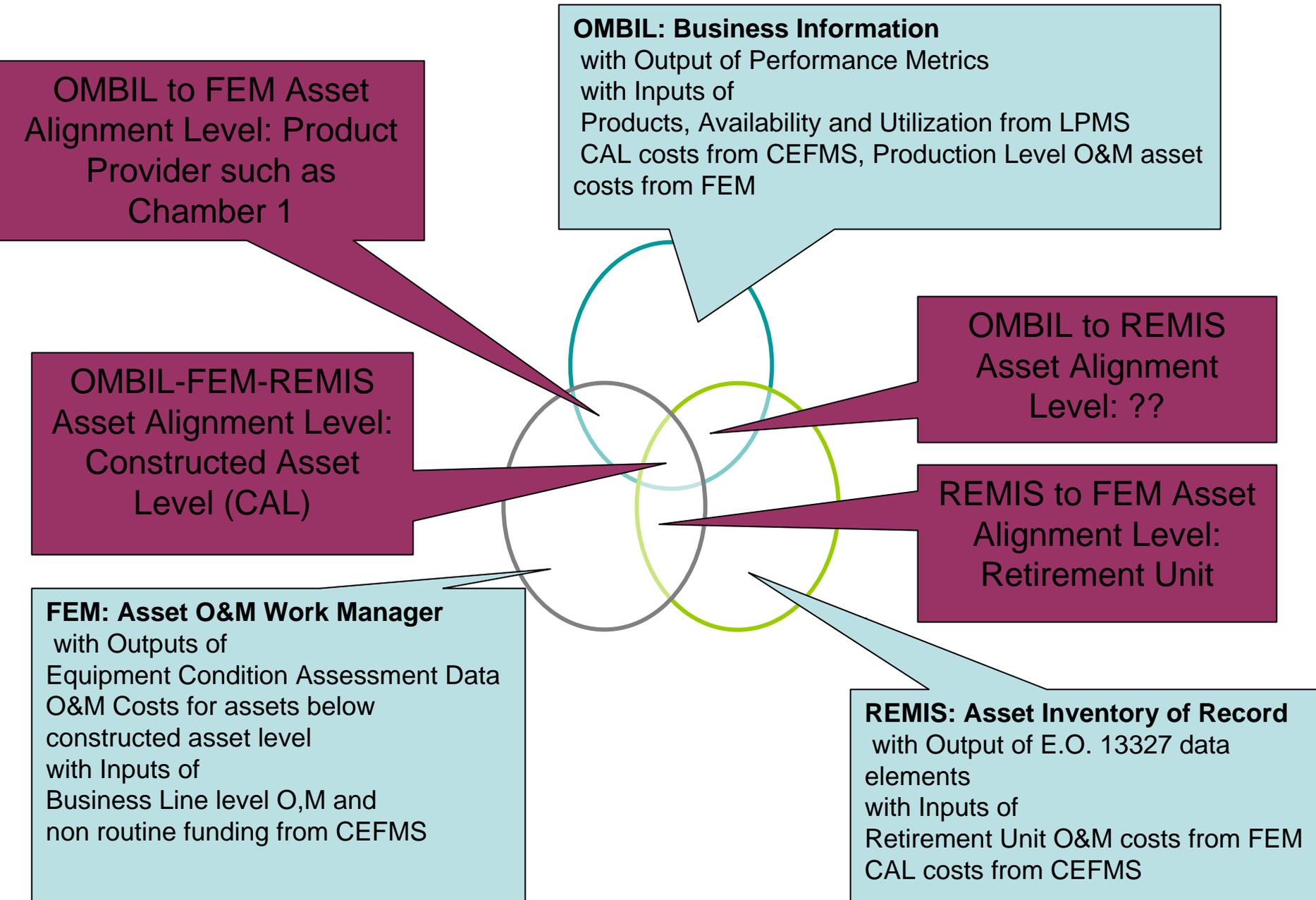
Asset Management Data Consistency Issues

- **Asset Hierarchy Structure and Levels**
 - **Must follow industrial system logic**
 - **System: Provides Function w/ Measurable Performance**
 - **Subsystem: Supports system and provides defined supportive function**
 - » **Component: Segment of subsystem maintained or replaced**
- **Depth of Asset Hierarchy**
 - **Correlated to criticality of asset and failure modes**
 - **If tracking failure of subcomponents, hierarchy must be to that depth**
- **Asset Classes Established within and across Business Lines and Common Infrastructure**

Current AISs and Fundamental Focus of Each

- **FEM**
- **OMBIL**
- **REMIS**
- **APPMIS**
- **P2**
- **CEFMS**
- **O&M Work Management**
- **Products and Performance Metrics**
- **Real Property Asset Accountability and Inventory**
- **Personal Property Asset Accountability and Inventory**
- **project Management**
- **Fiscal Management**

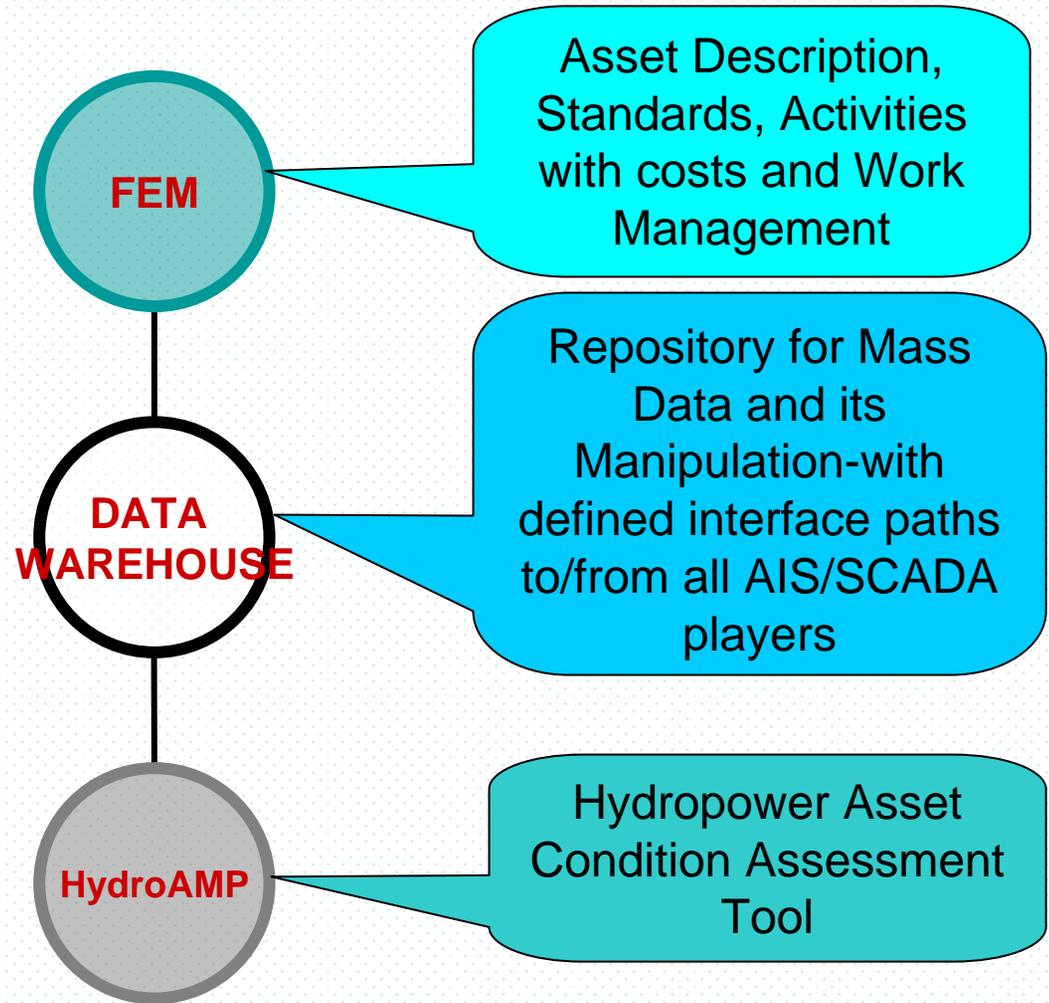
REMIS, OMBIL and FEM Relationships, Navigation Example



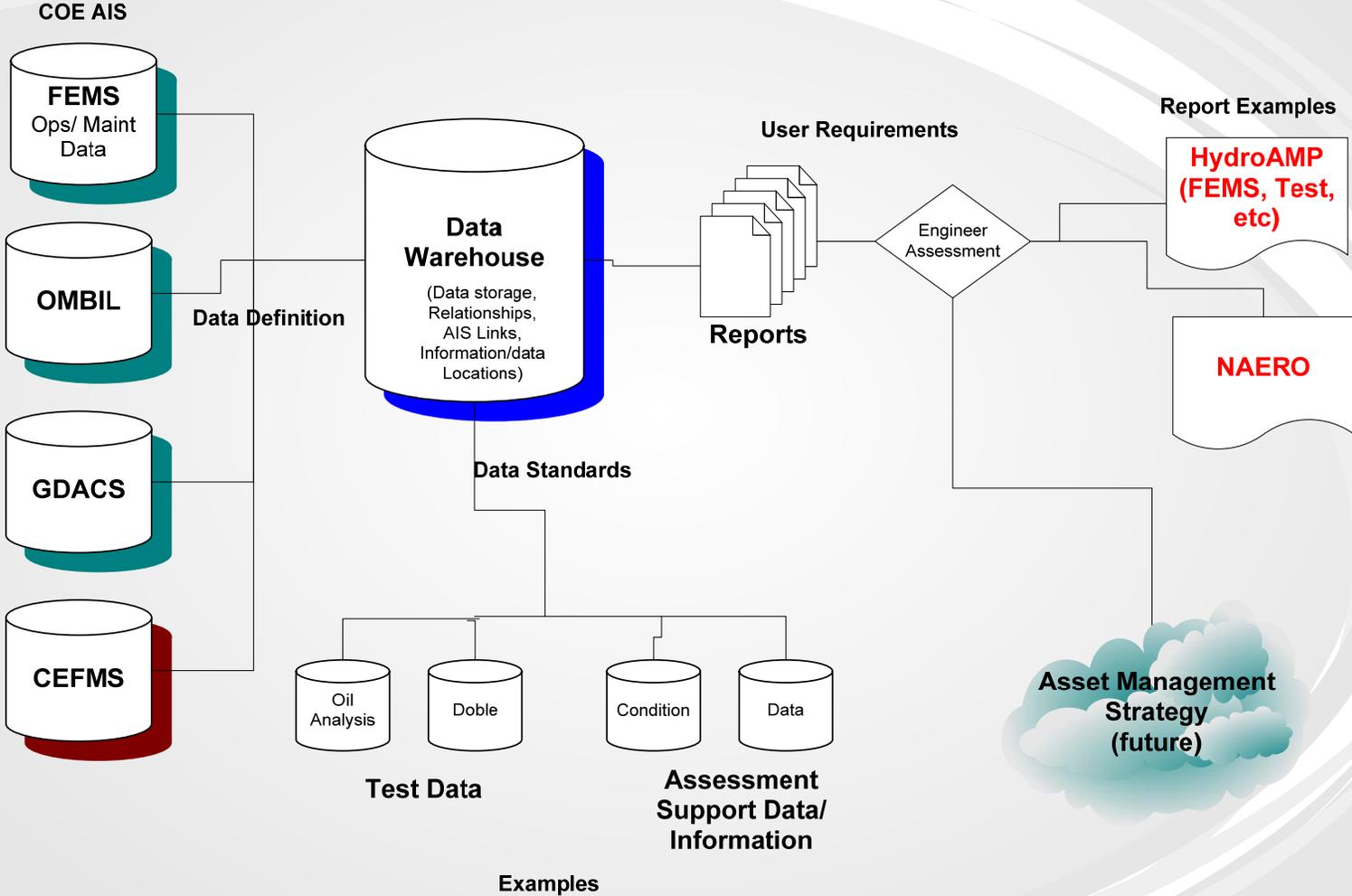
Current Asset Condition Assessment Tools

- **HydroAMP**
- **BUILDER**
- **Gate and Valve, Lockwall, Operating Equip CIs**
- **Embankment, Spillway, Tainter Gate, Concrete Dam Monolith CIs**
- **RecBEST comparative condition rating**
- **ERGO/EMS/HEP elements**
- **??**
- **Hydropower Assets**
- **Building Assets**
- **Navigation Assets**
- **FDR Assets**
- **Recreation Assets**
- **Environmental Stewardship Assets**
- **Water Supply Assets**

An Example



Data Warehouse (Long Term)





Questions?