Tri-Service Assessment Initiative
Assessment Architecture Workshop

7th Annual PSM User's Group Conference
Keystone, Colorado
July 16-17, 2003

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Workshop Objectives

- Provide a basis for TAI Assessment Architecture revisions to improve the effectiveness of individual program assessments and systemic analysis results
- Address issue areas in the Assessment Architecture that might require:
  - Clarification
  - Reprioritization
  - Expansion
  - Incorporation
- Identify new areas to be added to the architecture based on emerging acquisition and technical trends

Agenda

- ***Workshop Introduction and Objectives***
- ***Architecture Approach and Rationale***
  - ***Current Assessment Architecture***
  - ***Typology Concepts***
- ***Issue Allocation Exercise***
- ***Re-Architecture Requirements***
  - ***Planned Restructure***
  - ***Key Areas of Interest***
- ***Facilitated Discussion***
- ***Review and Wrap-up***
- ***Outbrief***

Architecture Approach and Rationale

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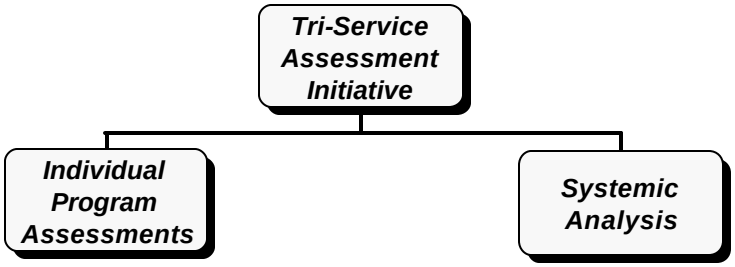

- Independent Expert Program Reviews (IEPR)
- Single Program Focus
- Objective - Improve Program Performance

- Cross-Program Analysis
- Enterprise Focus
- Objective - Identify and Characterize Recurring Performance Factors

TAI Activities are based on an Integrated Assessment Architecture

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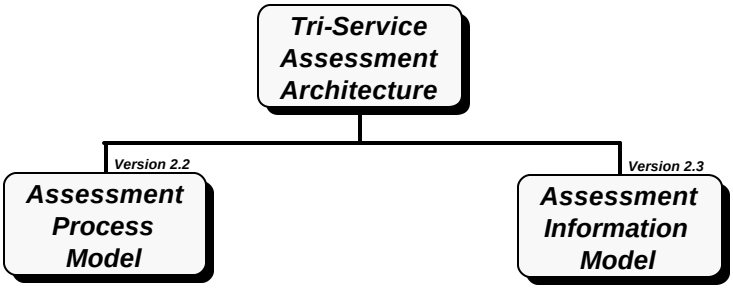
Provide objective performance information to DoD decision makers:

- **Provide assistance directly to DoD Program Managers to help them identify and correct program issues that impact individual program performance**
- **Provide information directly to DoD Enterprise Managers about recurring systemic issues that impact performance across the DoD program base**

Current TAI Assessment Architecture



- Identify and prioritize Program issues
- Develop value-added recommendations
- Generates consistent information sets

- Generic Program issue structure
- Defines assessment "scope"
- Flexible typology

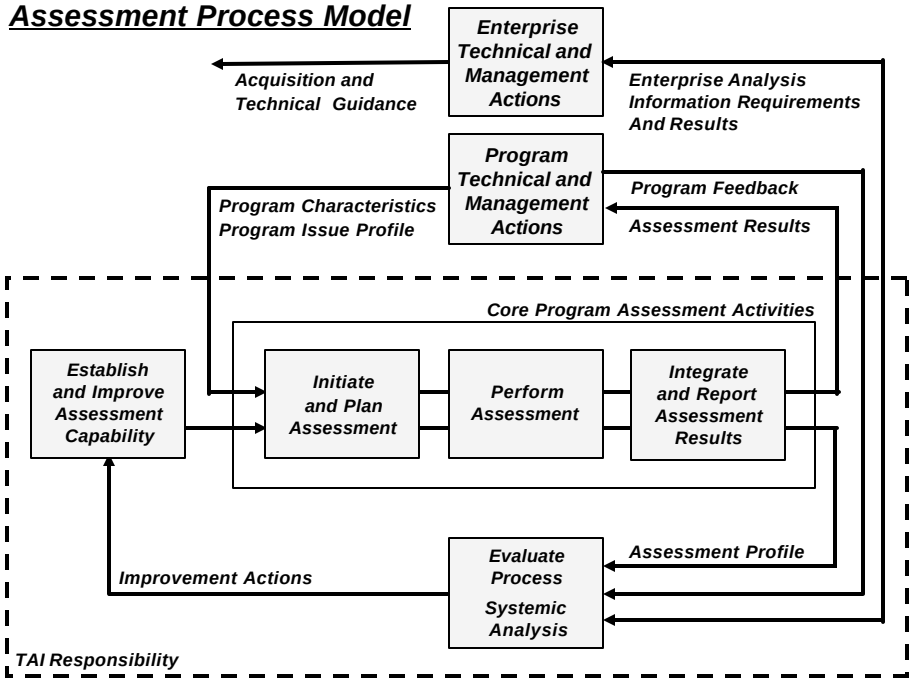
Both Components are Required for Individual Program Assessment and Systemic Cross-Program Analysis

Issue Definition

An area of concern that may impact the achievement of program objectives

- Risk
- Problem
- Area of Uncertainty

Assessment Process Model



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Assessment Issue Categories – Ver 2.3

- *Environment*
- *Mission Requirements*
- *Financial*
- *Resources*
- *Management*
- *Technical Process*
- *Technical Product*
- *Schedule*
- *User / Customer*
- *Project Specific*

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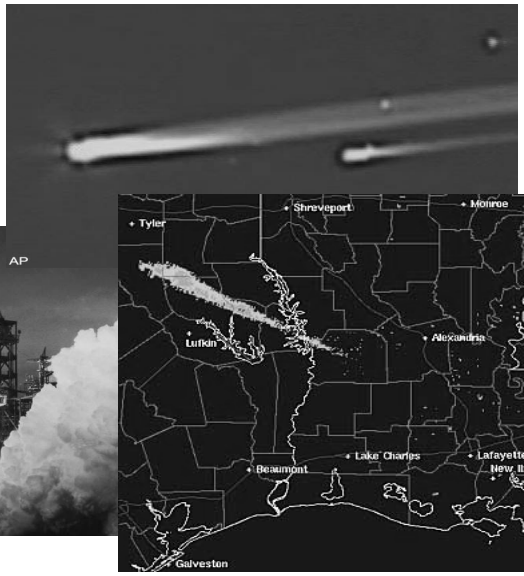
Assessment Issue Typology

How could you classify the elements in this picture:

How could you classify the conversation in this picture:

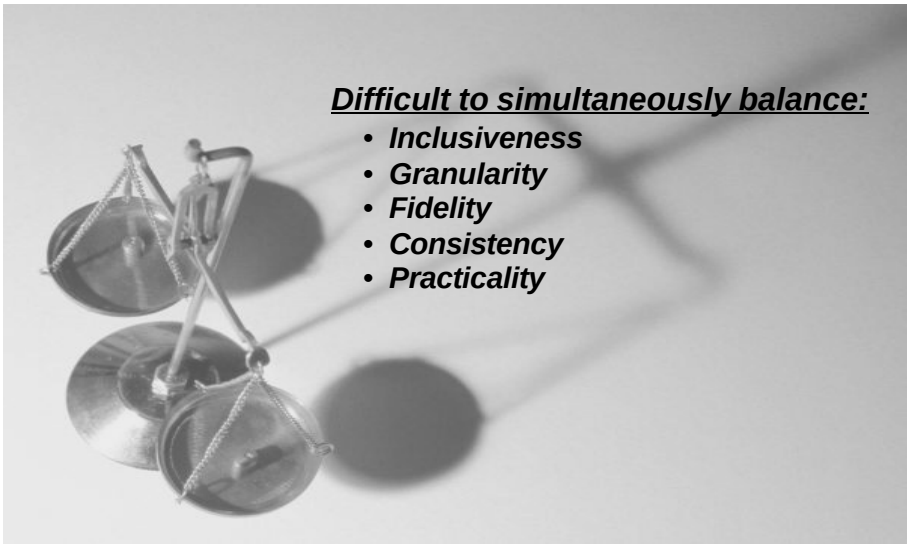
How could you classify the issues involved here:



Why a Typology?

- ? *Helps address a wide scope of issues*
- ? *Provides a consistent assessment baseline*
- ? *Reduces problems associated with taxonomies*
- ? *Permits use of other classification schemes*
- ? *Keeps focus on issue characterizations*
- ? *Allows "fuzzy" associations*
- ? *Facilitates capture of new issues/patterns*
- ? *Supports multiple perspectives (program team)*
- ? *Helps capture context information*
- ? *Helps with cause-effect analysis*
- ? *Facilitates better systemic analysis*
- ? *Allows "flexible" but consistent quantifications*

Limitations



Difficult to simultaneously balance:

- *Inclusiveness*
- *Granularity*
- *Fidelity*
- *Consistency*
- *Practicality*

What the Typology Isn't

- ? ***A check-off list***
- ? ***All inclusive***
- ? ***Skewed to a perspective or issue***

How Did We Get Here?

- ***Need to deal with messy environment***
- ***Multiple use model - program assessments and systemic analysis***
- ***Degree of Issue relationship complexity***
- ***Multiple and diverse program issue dimensions***
- ***Need for model stability through Phase 2***
- ***Structured typology development:***
  - ***Evaluated alternative approaches***
  - ***Examined initial TAI assessments***
  - ***Incorporated risk and measurement analysis experience***
  - ***Need to identify "integrated", not stovepiped corrective actions***
- ***IEPR multi-organization review***
- ***Senior technical committee review/inputs***

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Issue Category: Environment

Issue Category	Issue	Sub-Issue
1.0 Environment	1.1 Regulatory Environment	1.1.1 Legal 1.1.2 Policy 1.1.3 Reviews / Audits / Assessment
	1.2 Workplace Environment	1.2.1 Cooperation 1.2.2 Morale 1.2.3 Culture
	1.3 Political Environment	1.3.1 Legislative Agendas 1.3.2 Customer's Agenda 1.3.3 Supplier's Agenda

Examples:

- ***1.1 Stringent security level requirements***
- ***1.1 Change in Ada policy***
- ***1.2 Always in reactive mode; poor morale; high overtime rate***
- ***1.3 High congressional expectations***
- ***1.3 Early decision to split prime contractor roles & responsibilities from one prime to another***

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Issue Category: Mission Requirements

Issue Category	Issue	Sub-Issue
2.0 Mission Requirements	2.1 Operational Requirements	2.1.1 Reasonableness 2.1.2 Stability 2.1.3 Dependencies 2.1.4 Change Tolerance .

Examples:

- ***2.1 Operational Requirements Document (ORD) is out of date***
- ***2.1 Pressure at the DoD/senior-service level to be focused on operation and test results***
- ***2.1 Complex technical and domain knowledge needed***
- ***2.1 Mission success depends on other platform information***

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Issue Category: Financial

Issue Category	Issue	Sub-Issue
3.0 Financial	3.1 Funding	3.1.1 Sufficiency 3.1.2 Timeliness 3.1.3 Continuity / Stability 3.1.4 Flexibility
	3.2 Budget	3.2.1 Allocation 3.2.2 Variance 3.3.3 Control

Examples:

- ***3.1 Inadequate funding post operational test***
- ***3.2 Budgets are split equally among primes, and must be constantly re-balanced whenever the level of effort changes.***

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Issue Category: Resources

Issue Category	Issue	Sub-Issue
4.0 Resources	4.1 Personnel	4.1.1 Qualifications 4.1.2 Staffing 4.1.3 Availability
	4.2 Facilities	4.2.1 Capital Equipment 4.2.2 Infrastructure
	4.3 Tools	4.3.1 Support Tools 4.3.2 Information Systems
	4.4 Government Furnished	4.4.1 Equipment 4.4.2 Information
	4.5 Supplier Furnished	4.5.1 COTS 4.5.2 Non-Developed Items (NDI) 4.5.3 Developed Items (DI)
	4.6 Prime Contractor / Supplier	4.6.1 Integrity 4.6.2 Longevity
	4.7 Subcontractors / Vendors	4.7.1 Integrity 4.7.2 Longevity 4.7.3 Dependencies

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Issue Category: Resources (continued)

Issue Category	Issue
4.0 Resources	4.1 Personnel
	4.2 Facilities
	4.3 Tools
	4.4 Government Furnished
	4.5 Supplier Furnished
	4.6 Prime Contractor / Supplier
	4.7 Subcontractors / Vendors

Examples:

- ***4.1 Always in reactive mode; poor morale; high overtime rate***
- ***4.1 Resources diverted to solve another programs problems***
- ***4.2 Limited access to test facilities***
- ***4.2 & 4.3 No program level technical support***
- ***4.3 Not enough support tools available to operate at maximum efficiency***
- ***4.7 Obsolete equipment***
- ***4.7 Key vendors are in financial trouble***

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Issue Category: Management

Issue Category	Issue	SubIssue
5. Management	5.1 Acquisition Strategy/Process	5.1.1 Acceptability 5.1.2 Feasibility 5.1.3 Suitability
	5.2 Project planning	5.2.1 Acceptability 5.2.2 Feasibility 5.2.3 Suitability
	5.3 Program & Project Management	5.3.1 Organization 5.3.2 Suitability 5.3.3 Change Tolerance
	5.4 Contracting and Subcontracting	5.4.1 Conditions / Constraints 5.4.2 Cost Accounting 5.4.3 Progress Tracking 5.4.4 Arrangements 5.4.5 Timeliness 5.4.6 Change Management
	5.5 Communication	5.5.1 Interfaces 5.5.2 Openness 5.5.3 Teamwork

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Issue Category: Management (continued)

Issue Category	Issue
5. Management	5.1 Acquisition Strategy/Process
	5.2 Project planning
	5.3 Program & Project Management
	5.4 Contracting and Subcontracting
	5.5 Communication

Examples:

- ***5.1 Lack of overall system acquisition planning***
- ***5.2 Always in reactive mode; poor morale; high overtime rate***
- ***5.2 Lack of measures of effectiveness***
- ***5.3 Poor organizational structure***
- ***5.4 Inaccurate estimates by developers***
- ***5.5 Poor project communications between developers***
- ***5.5 Unclear roles/responsibilities among teams, IPTs, etc.***

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Issue Category: Technical Process

Issue Category	Issue	Sub-Issue
6. Technical Process	6.1 Conformance	6.1.1 Compliance 6.1.2 Performance Consistency 6.1.3 Process Consistency
	6.2 Capability	6.2.1 Fitness for Purpose 6.2.2 Efficiency 6.2.3 Enhancement

Examples:

- ***6.1 Lack of complete trouble report information***
- ***6.1 Software versions are not under CM control – poor change management – "lost" software baselines***
- ***6.1 Requirements poorly managed***
- ***6.2 Systems engineering development processes inadequate***
- ***6.2 Test failure analysis is unproductive***
- ***6.2 Process maturity level inadequate for the required effort***
- ***6.2 Lack of documented knowledge and understanding of the program development interrelationships***

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Issue Category: Technical Product

Issue Category	Issue	Sub-Issue
7. Technical Product	7.1 Product Line	7.1.1 Architecture 7.1.2 Scale 7.1.3 Complexity 7.1.4 Technology Effectiveness 7.1.5 Interoperability
	7.2 Product Requirements	7.2.1 Completeness 7.2.2 Correctness 7.2.3 Feasibility 7.2.4 Stability
	7.3 Quality	7.3.1 Usability 7.3.2 Technical Performance 7.3.3 Dependabi lity / Reliability / Availability 7.3.4 Supportability / Maintainability 7.3.5 Reusability 7.3.6 Portability 7.3.7 Efficiency
	7.4 Product Risk	7.4.1 Human Factors 7.4.2 Safety 7.4.3 Security

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Issue Category: Technical Product (continued)

Issue Category	Issue
7. Technical Product	7.1 Product Line 7.2 Product Requirements 7.3 Quality 7.4 Product Risk

Examples:

- ***7.1 No system-level architecture planning***
- ***7.2 Insufficient requirements process***
- ***7.2 Unreasonable RAM requirements given use of COTS***
- ***7.3 No independent second party analysis of test results***
- ***7.3 Late discovery of defects***
- ***7.4 Product safety issues overlooked***

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Issue Category: Schedule

Issue Category	Issue	Sub-Issue
8.0 Schedule	8.1 Progress	8.1.1 Estimation Accuracy 8.1.2 Visibility 8.1.3 Progress Performance 8.1.4 Rework
	8.2 Dependencies	8.2.1 Complexity 8.2.2 Contingency

Examples:

- ***8.1 Inability to track status***
- ***8.1 Costly and time consuming rework***
- ***8.2 Inappropriate models used for cost and schedule estimates (calibration inadequate and inappropriate confidence levels used)***
- ***8.2 No technical or management trade space***

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Issue Category: User/Customer

Issue Category	Issue	Sub-Issue
9. User/Customer	9.1 Satisfaction	9.1.1 Involvement 9.1.2 Usability
	9.2 Transition	9.2.1 Transition Support 9.2.2 Training

Examples:

- ***9.1 Perceived poor system performance***
- ***9.1 Feedback from users is ignored***
- ***9.2 Little thought given to transitioning system to operational forces***

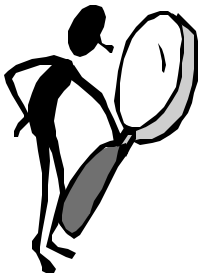
Issue Category: Project Specific

Issue Category	*Issue*	*Sub-Issue*
10. Project Specific	10.1 User Defined	10.1.1 User Defined

Examples:

- ***10 Family of systems: management and technical considerations***
- ***10 Interoperability at the service and DoD level***
- ***10 Systems interoperability management***

What Have We Learned?

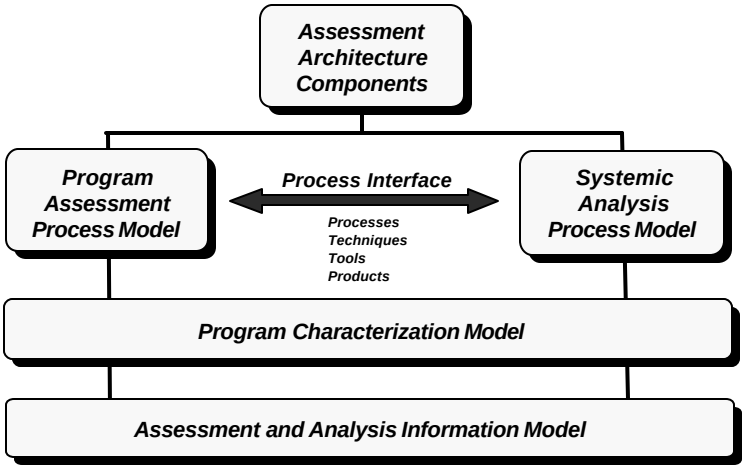


- ***Works relatively well in practice***
- ***Needs real experience to use it***
- ***Must listen closely to what is not said***
- ***Some issue areas not covered well, especially "emerging" areas***
- ***Some unevenness in granularity, fidelity, consistency***
- ***Takes time to overcome stovepipe thinking***

Issue Allocation Exercise

Re-architecture Requirements

TAI Assessment Architecture



Proposed Re-Architecture Approach

- Identify and prioritize assessment and analysis information needs
- Define and describe:
  - Program Characterization Model
  - Assessment and Analysis Information Model
- Re-define and describe the Program Assessment Process
- Re-define and Describe the Systemic Analysis Process
- Define an information based "use" model
- Performance evaluation

Some Things To Consider

- Different User Applications
- Organizational Perspectives
- Issue Responsibility Allocations
- Emerging Issue Areas

Architecture Applications

- Independent Expert Program Reviews (IEPR)
- Program Capability Evaluations (PCE) - Oversight
- "New Start" Program Planning

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Organizational Perspectives

- ***Independent Expert Program Reviews (IEPR)***
- ***Program Capability Evaluations (PCE) - Oversight***
- ***"New Start" Program Planning***
- ***Organizational Perspectives***
- ***Short and Long Term Issues***
- ***Issue Responsibility Allocations***

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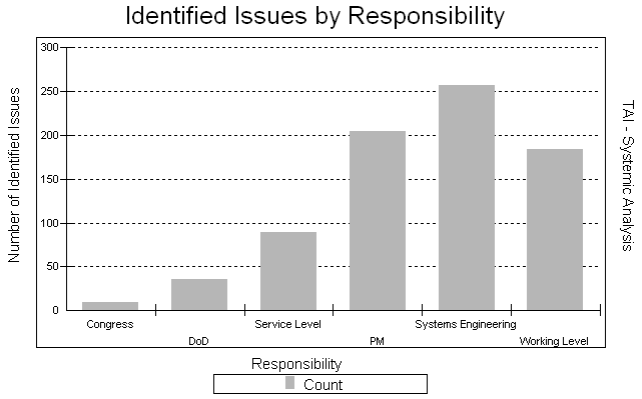
Issue Responsibility Allocations

Complex issues with multiple interactions across all levels of DoD management



Systemic Findings - Emerging Issues

- ***Supplier program management and control***
- ***Direct congressional to supplier "plus up" funding***
- ***Massive mission based acquisition and supplier organizations***
- ***Increasing system interoperability and codependency***
- ***Extensive design for mission resiliency***
- ***Fewer and less experienced resources***
- ***Increasing cost consciousness***
- ***Technology integration and update***
- ***CMMI, Evolutionary Spiral, Capability Based Acquisition, Best Practices, others …***

Emerging Issues

- ***What will acquisition need to look like in 2010 – 2025?***
  - ***Evolutionary/Spiral Development Program Management?***
  - ***Capability Based Acquisition?***
  - ***New Acquisition Process?***
- ***Impacts***
  - ***Acquisition & Program Management***
  - ***Systems Engineering***
  - ***Technical Processes***
  - ***Other Issues?***

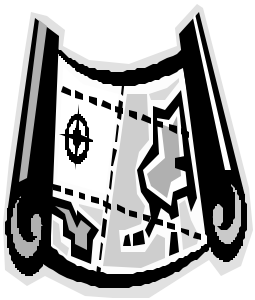
Future Warrior

Re-Architecture Requirements

- ***Assessment and Analysis Information Model***
  - *Systems Engineering*
  - *Systems Interoperability*
  - *Process Adherence and Capability*
  - *Technology Integration*
  - *Organizational Structure and Interface*
  - *Production Capability*
  - *Risk/Change Management*
  - *Measurement*
  - *Development Methodology*
  - *Acquisition Strategy*
  - *System Safety*
  - *System and Information Security*
  - *Corporate Enterprise Issues*
  - *New and Emerging Trends / Issues*
- ***Program Characterization Model Information Needs***

Facilitated Discussion

What Do We Need to Do?



- ? ***"Last shot" at major typology revision***
- ? ***Look for issue areas that are missing***
- ? ***Look for issue areas that need revising***
- ? ***Characterize above issue areas, balancing:***
  - ***Inclusively***
  - ***Granularity***
  - ***Fidelity***
  - ***Consistency***
  - ***Practicality***

Do NOT be concerned with typology structure!!

Discussion Approach

- ***Group Discussions***
  - ***Review the baseline requirements***
  - ***Add - modify requirements***
  - ***Prioritize list***
  - ***Facilitated discussion***
- ***Detailed Requirements Generation***
  - ***Smaller, more focused groups***
  - ***Typology modification documentation***
- ***Workshop Outbrief***

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