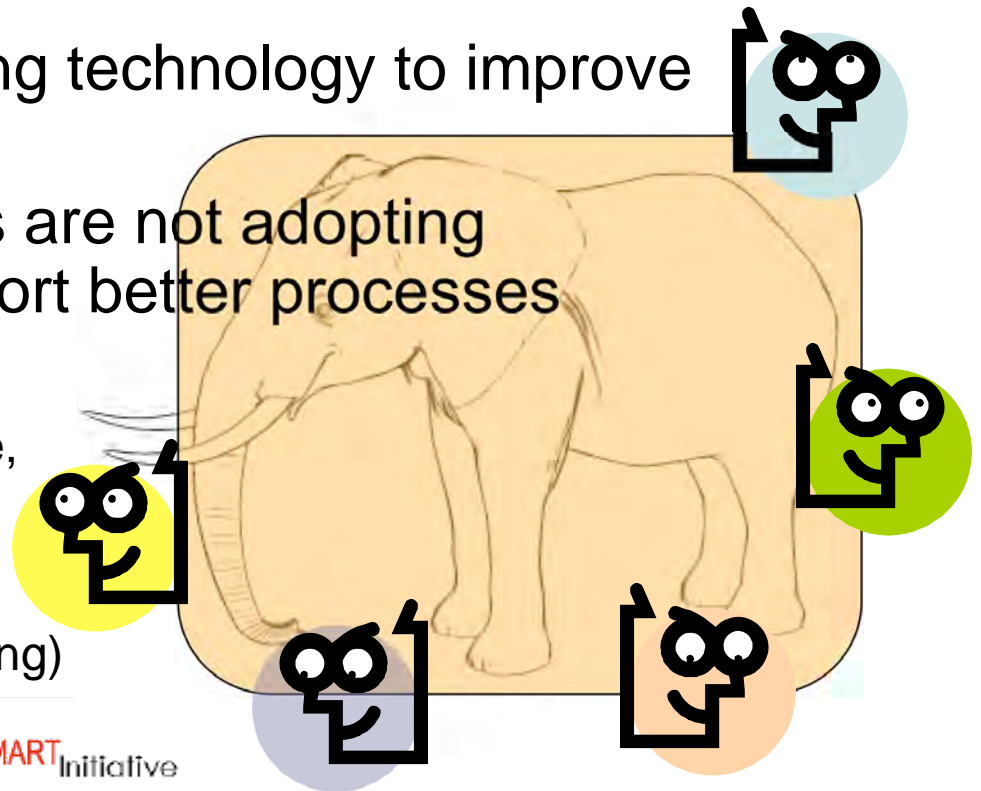




# “The Construction Industry Elephant in the Middle of the Room”

- Construction productivity is going down relative all other industries. (Even Agriculture)
- This is not true in other areas of the global construction industry
- The profession is not adopting technology to improve quality and productivity
- The government and owners are not adopting contracting methods to support better processes

One reason is our individual perspective,  
understanding of the problem,  
and our understanding of the solution  
Called BIM (Building Information Modeling)

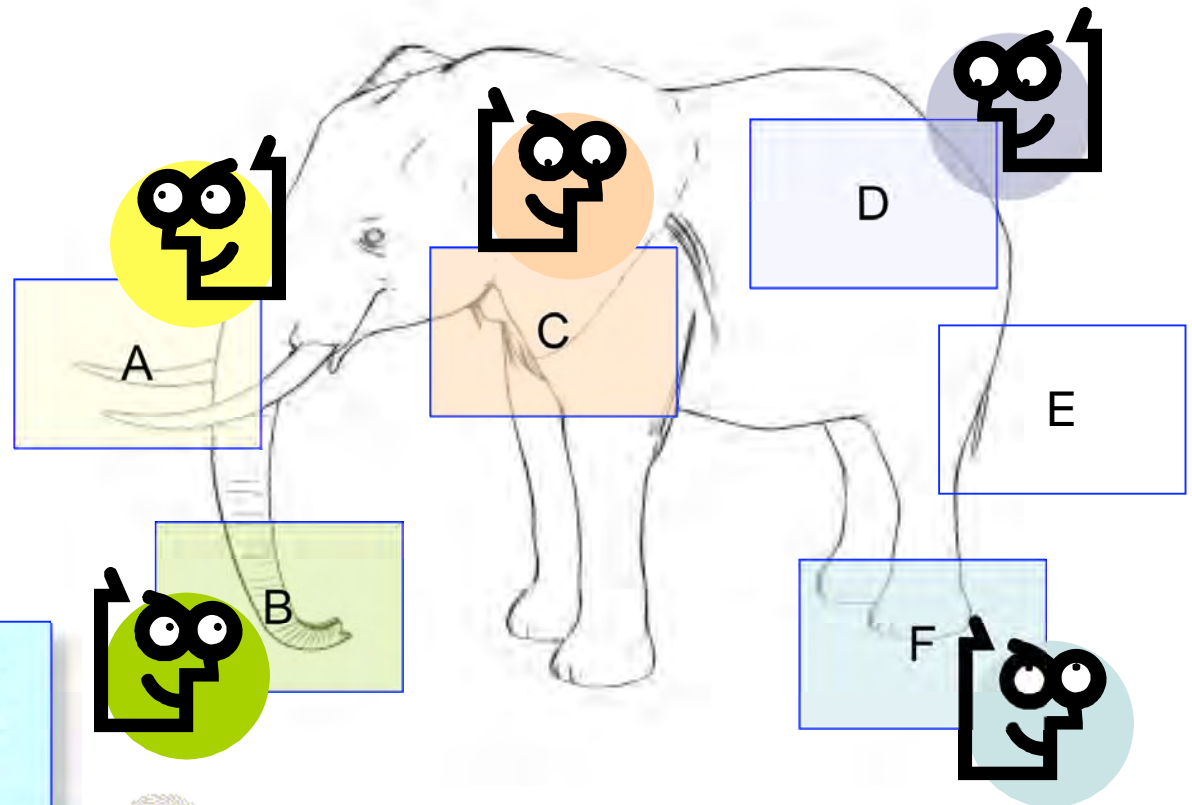




# Describing the NBIMS Elephant

## Facility Life Cycle

- A. Planning
- B. Design
- C. Construction
- D. Operations
- E. Sustainment
- F. Mission



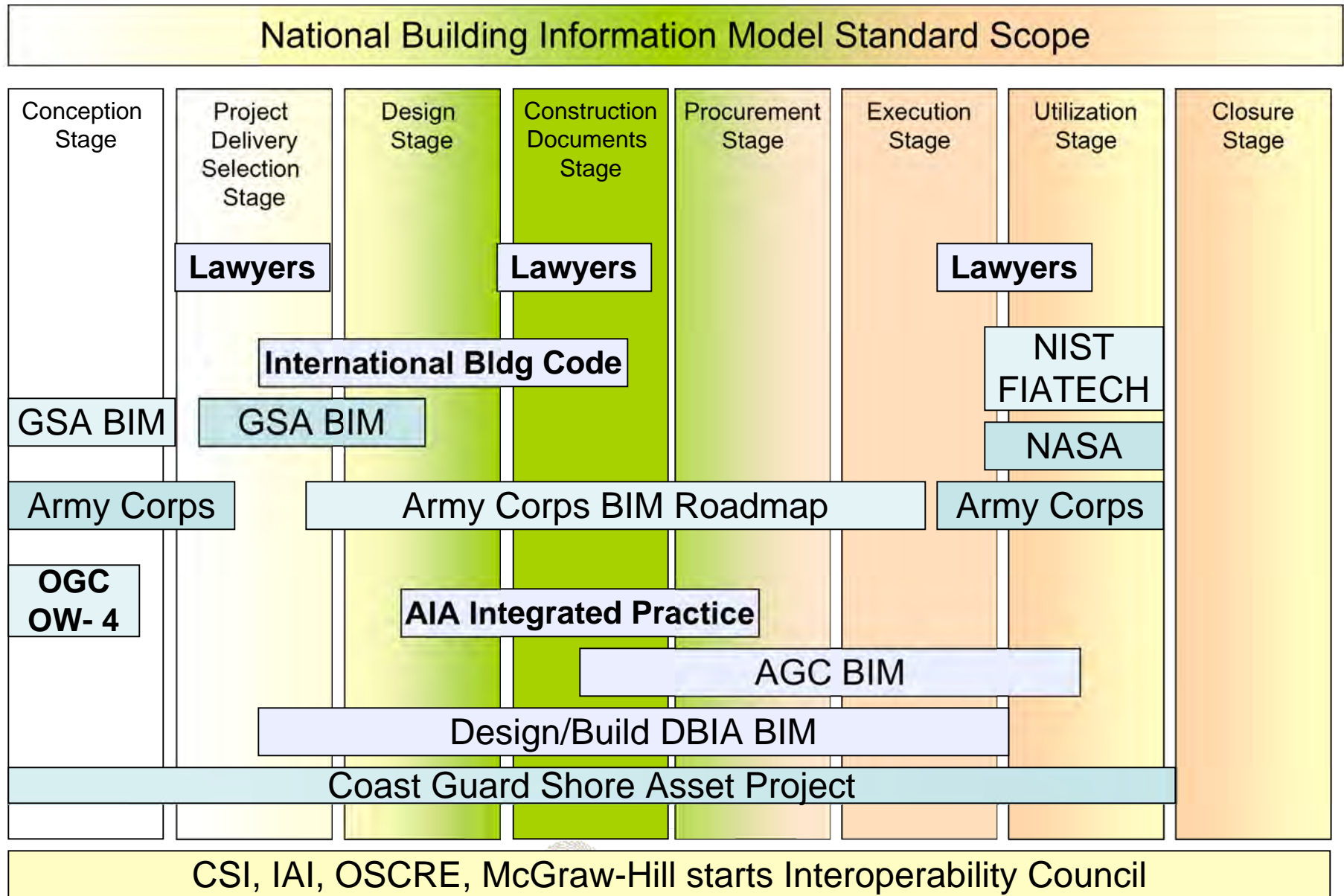
We need to look at the elephant as a whole to appreciate the animal



## McGraw-Hill Survey

- 65% of firms use 3D
- Growing awareness of BIM as data and graphics
  - Unsure how to implement
- Software companies cannot solve the BIM issues
- Industry must solve the BIM issues
  - Information Flow
  - Contract Documents
  - Better Software to support process

# Coverage of various BIM Implementations Update





# Existing & New Scoping Partners

- **CERL/NASA-Develop BIM Exchanges from COBIE**
  - The Construction Operations Building Information Exchange (COBIE) project was undertaken to facilitate the capture of electronic products, equipment and system information and transfer that information directly to Computerized Maintenance Management Systems (CMMS). In the long term, COBIE supports the exchange of information between the Building Information Models (BIM) of designers and builders to the facility-wide models required by facility operators.
  - Planning-Support of exchanges with planning team
- **AGC-**
  - Coordinate with Mike Tardiff & Dave Lukens COO, AGC on agcXML effort with NIBS
  - Coordinate and support process strategies for C3T- Collaboration Techniques, Tools and Technology group of AGC- "Contractor's Guide to Get Starting with BIM".
- **GSA-**
  - This group is currently working on creating a GSA-BIM Space Guide-moving into Phase II. Is there coordination with OSCRE? Turnover to NBIMS.
- **CSI-BIM review-Approved Mapping of Omni Class**
- **NIST/FIATECH/CIFE-Information Packet & Handover Guide Coordination-Started**
- **IAI International, Ga Tech, LBNL-Coordination of IDM database form for Scoping**
- **LEED-Develop interest in organization for committee development-End of July**
- **Green Building-** Is developing exchanges for BIM into energy-End of July
- **Orcutt-Winslow-** Process Diagrams (National AIA BIM Award Winner)
- **VBR-** Review and process exchanges



## Scoping Update



- Modified Goals

- Provide an integrated source, resource and workplace for exchange standard work and best practices
  - Seek, Add, and Modify over time
  - Web-enabled, searchable database
- Seek out groups that are working on these activities and provide tools to support those actions that feed the broader NBIMS activities
- Develop a unified and cohesive representation of BIM information flows for use in projects, contracts, and technology from this work



## Scoping Update Working From

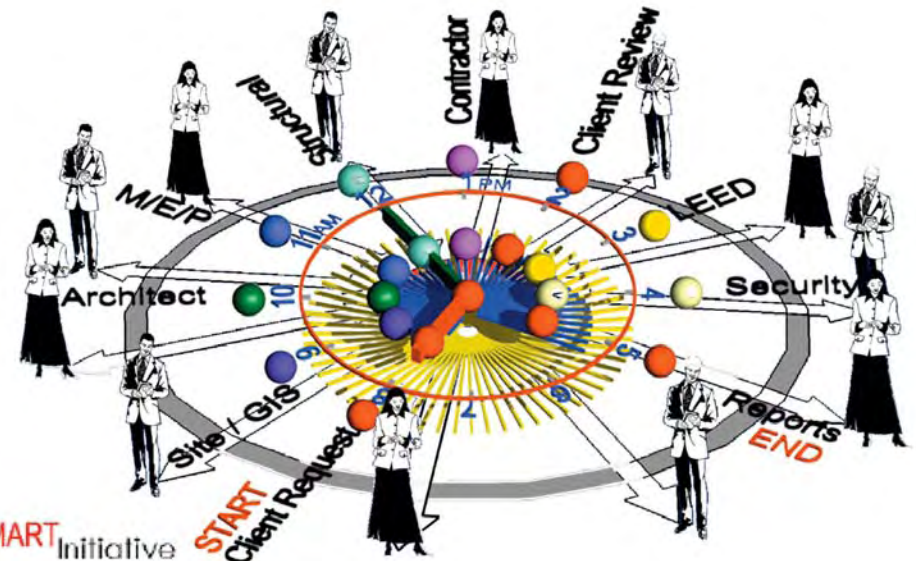
NBIM standards will merge data interoperability standards, content values and taxonomies, and process definitions to create standards which define "business views" of information needed to accomplish a particular set of functions as well as the information exchange standards between stakeholders.

NBIMS Website



# Simplify and Develop a User Friendly, Databased, Web Friendly IDM

- Current Use Case, IDM and Information Package documentation is more complex than regular users want to deal with.
- Doesn't Lend Itself to Knowledgebase development
- Asked to go to Lisbon in Sept. to present-open exchange with IAI international





# IDM Methodology

- Considered too complex for average user (international & national)
- Doesn't lend itself to knowledge base development and data mining

## **PM - Process Map**

Gives an overview of the process, describing its objective and describes the stages in a project at which the business process is expected to be relevant. It also identifies all the sub processes.

## **ER - Exchange Requirement**

A non technical description of the information required as input to the process and the expected source of that information together with a description of the expected results of the process; the output. Each requirement for information exchange is described individually.

## **FP - Functional Part**

A description of the technical actions within the process mainly targeted towards the SW implementers. This again leads to the specific IFC capabilities supporting the actions and prescribed values of attributes where appropriate. The FP can be supported by an IFC schema view for the process (in EXPRESS, ifcXML and other formats). For solution providers, descriptions of IFC capabilities will also be developed for reusable 'functional parts' which are commonly occurring sets of data that may be used by any number of processes/ER's. FP gives the background for answering the questions of what data that is needed in a specific case for generating Model View Definition. On the basis of this, SW will certify to provide content that is captured using the model view definition format.



## NIST/FIATECH aecxml

Name of Use Case, which should be related to the result, purpose or the event of the use case.

Who	Creation Activity	Information Package	Consumption Activity
Which project role creates the information	During what project activity is this information created	Describe the information package contents	Project or life cycle activity (s) that use (s) the information

**Purpose:** The main purpose of the Use Case and what the participants expect of the transaction.

**Description:** A paragraph(s) describing the goal and the scenario illustrated by this Use Case. This should include the type of transaction, description of the business processes and context, stage(s) of a capital facilities project during which the Use Case occurs and any relevant information on the disciplines or market segments to which the use case applies.

**Actors:** Who or what participates in the Use Case. That includes what individuals, organizations, job functions, software applications, software functions or machines collaborate in the Use Case.

**Data Content:** What data are in scope of this Use Case.

**Applications :** What computer applications are likely to produce the data of this use case or receive and use the exchanged data of this Use Case.

**Performance Goals:** What relevant performance goals are required for the proper performance of the Use Case.

**Preconditions:** What conditions are expected to exist prior to the start of the Use Case.

**Begins When:** What starts or triggers the performance of this Use Case.

**Ends When:** When is the Use Case finished.

**Exceptions:** What exceptional outcomes are there besides the normal one expected for a successful performance of the Use Case.

**Post Conditions:** What is the state of "the system" after the use case has been completed

**References:** If this use case references other works or documents, or other use cases the references to these sources are placed here.

Title- Exchange Title takes the Name of the Party Requesting Information (We can know what information we want but can only speculate on the information others need. Therefore, specify who you are and what you need. The second half will be defined by the other actor.)

TITLE:

<b>WHO</b> (is requesting) Actor Requesting Information to Support a Process or Decision (Authoritative Reference OMNI CLASS – Table 33 & 34)				<b>WHY</b> (project/process benefit) Why is this information important for a project activity (Authoritative Reference OMNI CLASS- Table 32)				<b>WHEN</b> (Choose 1) Using CSI OMNI-Class Phases Tied to Ifc Phases (Project Lifecycle)			
Real Estate		Lighting Designer		Concept of Need		Research		Stage 0 Portfolio Requirements		Stage 6 Coord'd Design & Procurement	
Owner Agent		Surveyor		Societal Req		Programming		Stage 1 Conception of Need		Stage 7 Production Information	
Developer		Landscape Architect		Project Req		Licensing		Stage 2 Outline Feasibility		Stage 8 Construction	
Tenant		Contractor		Code Req		Bonding		Stage 3 Substantive Feasibility		Stage 9 Operations & Maintenance	
Contract Adm		Estimator		Development		Regulating		Stage 4 Preliminary Concept Design		Stage 10 Disposal	
Planner		Scheduler		Planning		Costing		Stage 5 Full Conceptual Design		Stage 11 (new) Turn-Over	
Architect		Specifier		Designing		LEED or Green Cert.		<b>Additional WHEN Information</b>			
Interior/Space Designer		Procurement		Specifying		Occupant Standard		Iterative Process <small>Part of a sequential exchange</small>			
Engineer		Manufacturer		Proposing		Owner Standard		Multi-Phase Exchange <small>Cumulative Data over multiple phases (may not be sequential)</small>			
Structural Eng		Sub-Contractor		Surveying		Construction		Decisional Exchange <small>When a decision is formalized &amp; accepted as fact</small>			
Mechanical Eng		Code Officer		Estimating		Fabrication					
Electrical Eng		Environmental Regulator		Scheduling		Progress Decision					
Environmental Eng		Facility Mgr		Public Relations		Other					
Conveyance Eng		Facility Maintenance									
		First Responder									

<b>WHAT</b> (Information in BIM or BIM Integrated Data that supports the request and benefit)									
Object Class	Groups/Systems Classification Data		Geometry	Relationships	Analysis Context	Units of Measurement <small>(May be a Derived Data Report)</small>		Representations	
Site	Entity Name Attribute	MEP/HVAC	Centerline	Approval	Loads (structural)	Volume	Combined Measure	Editable Model	
Build'g Component	Product Code (Uniformat)	Lighting	3D Bounding (mass)	Decision	Levels (lumen)	Quantity	Ratio	Shape Model	
Analytical Component	Manufacturer Data	Tele-communications	3D Geometry Set	Constraint	Ambient weather	Area	Count	Projections	
Building Space	Source Data	Assemblies	3D Surface Model	Document	Time	Space	Measure Qualifier	Analysis Model	
Connections	Resource Data	Relations	3D Solid Model	External Library/Data Ref		Length	Date/Time	Textual Report	
Features	Grouping	Layer	3D Volume	Material	Analysis Quantifier	Height	Order	Drawing	
Grid or Control Elements	Exterior	Structural	3D Shape	Cost	Analysis Method	Width	Depth	Detail	
Planer Projections	Interior	Piping	Planer Projections	Time	Analysis Parameters	Currency			
	Story	Controls	Sections	Location	Analysis Results				
		Stakeholder Classification							

For WHOM