NBIMS: Future Considerations

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Agenda

- Background Information
- Definitions and Views
- Core Technologies
- Emerging Projects
- Consensus Process

Objectives

- Look at a various items being considered for standardization in the next version of the National BIM Standard
- Status of consensus process
- What to expect when you are ready to vote

Background Information

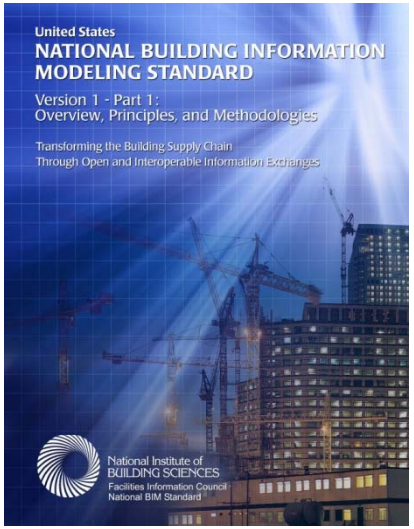
National Institute of Building Sciences

- 1974 - NIBS - Public Law 93-383, Sect. 809
  - Bridge between Private and Public Construction
  - Non-governmental – Unique 501c3 Organization
  - Unique in that it represents all disciplines in industry
- 1992 - Facility Information Council Mission
  - "improve the performance of facilities over their full life-cycle by fostering common and open standards and an integrated life-cycle information model for the A/E/C & FM industry."

- NIBS Related Products –
  - Construction Criteria Base
  - Whole Building Design Guide
  - National CAD Standard
  - National BIM Standard

CONSTRUCTION CRITERIA BASE

WBDG
WHOLE BUILDING DESIGN GUIDE



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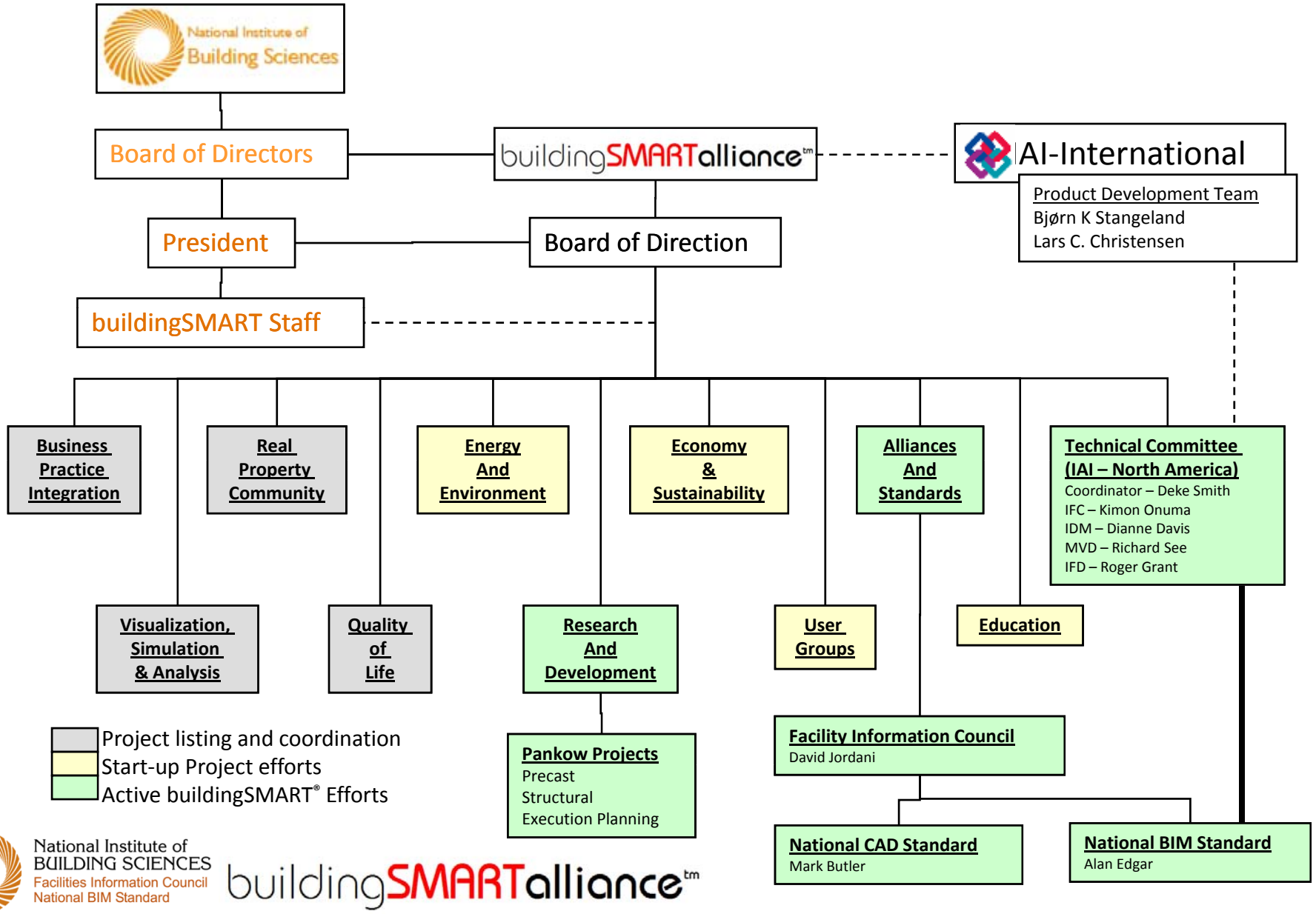
National Institute of Building Sciences Areas of Interest

- Consumer and general interest
- Architects
- Engineers
- Federal government
- State and local government
- Building construction
- Labor organizations
- Housing
- Building materials, Products or software
- Standards
- Real estate, finance or insurance
- Research, testing or other services

buildingSMART alliance: History

- Jan 1995 - IAI Formed – Developed Technology
- Jan 2005 – buildingSMART® Name Coined
- Aug 2005 – Challenge to Create NBIMS
- Feb 2007 – buildingSMART alliance formed
- Jul 2007 – Alliance Kick-off Meeting
- Sep 2007 – Web Site Launched
- Dec 2007 – Magazine, Brochure, Conference and National BIM Standard

buildingSMART alliance: Organization – North America



National BIM Standard Charter

- The Standard shall use the consensus process and consist of, at minimum, the following:
  - BIM Scope
  - Coverage of Version
  - Reference Standards
  - Business Processes
  - Business Rules
  - Data Structures and Models
  - Implementation Guidance
  - Maturity Model

Definition and Views

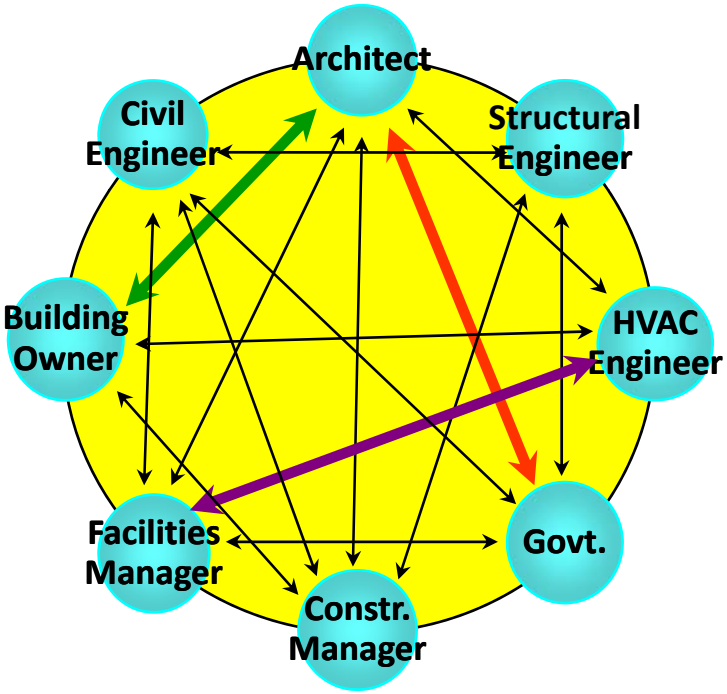
Definition of a Building Information Model

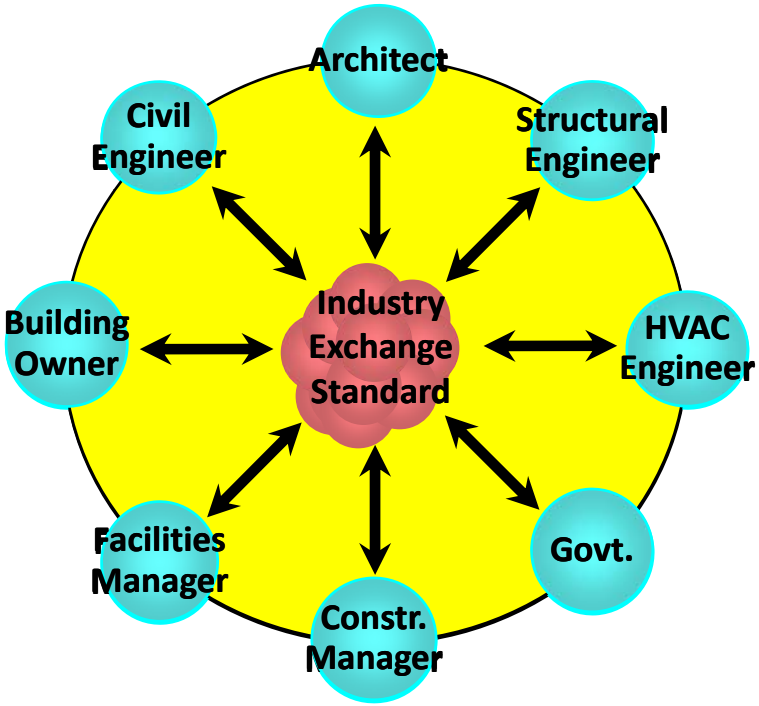
National BIM Standard Definition of BIM

A Building Information Model (BIM) is a digital representation of physical and functional characteristics of a facility. As such it serves as a shared knowledge resource for information about a facility forming a reliable basis for decisions during its life-cycle from inception onward.

A basic premise of BIM is collaboration by different stakeholders at different phases of the life cycle of a facility to insert, extract, update or modify information in the BIM process to support and reflect the roles of that stakeholder. The BIM is a shared digital representation founded on open standards for interoperability.

What is BIM? – Interoperability View





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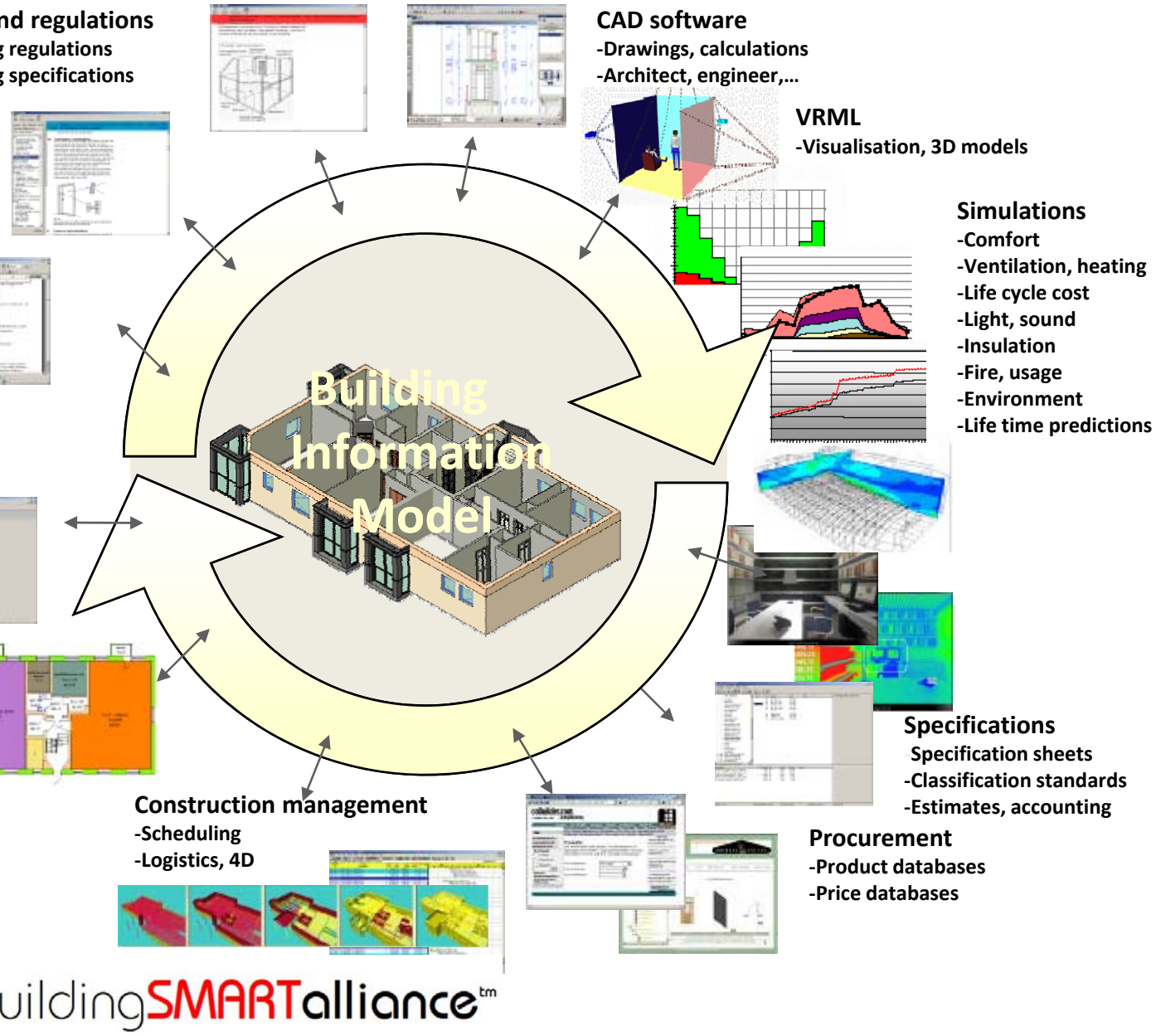
What is a BIM? - Lifecycle Information View



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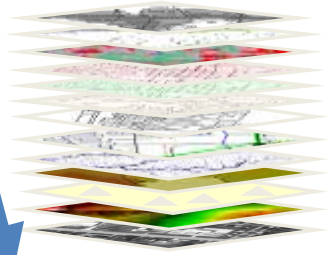
What is a BIM? – Physical & Functional Characteristics View

Designer Data

Geospatial Data



Financial Data

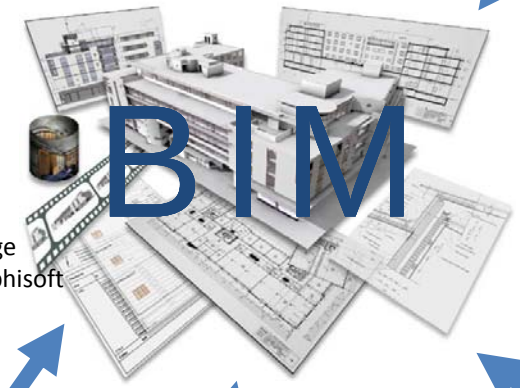


Image Graphisoft

Specifier Data

Owner / Occupier Data

Sustainers Data

Environmentalist Data

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What is a BIM? – Stakeholders View

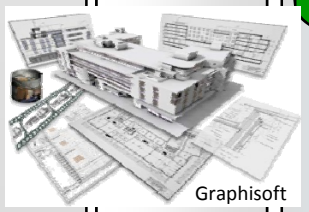
Conception Stage | Project Delivery Selection Stage | Design Stage | Construction Documents Stage | Procurement Stage | Execution Stage | Utilization Stage | Closure Stage

Owner
Planner - Scoping, Simulation
Environmentalist
Realtor
Appraiser
Mortgage Banker

Facility Managers
Maintenance & Sustainment
Safety & Occupational Health
Plant Operator
Renovation & Restoration
Space Manager
Security Manager
Network Manager
CIO
Risk Manager
Insurer
Occupant Support & Way finding
First Responders

Designers
Engineers - Energy Analysis, LEED
Conflict Analyst
Cost & Quantity Estimators
Specifiers
Contract Specialist & Lawyers

Disposal
Recycling
Archivist



Construction Contractors
Sub-Contractors
Fabricators
Suppliers & Manufacturers
Code Officials

2yr | 100+ Years | 1Yr

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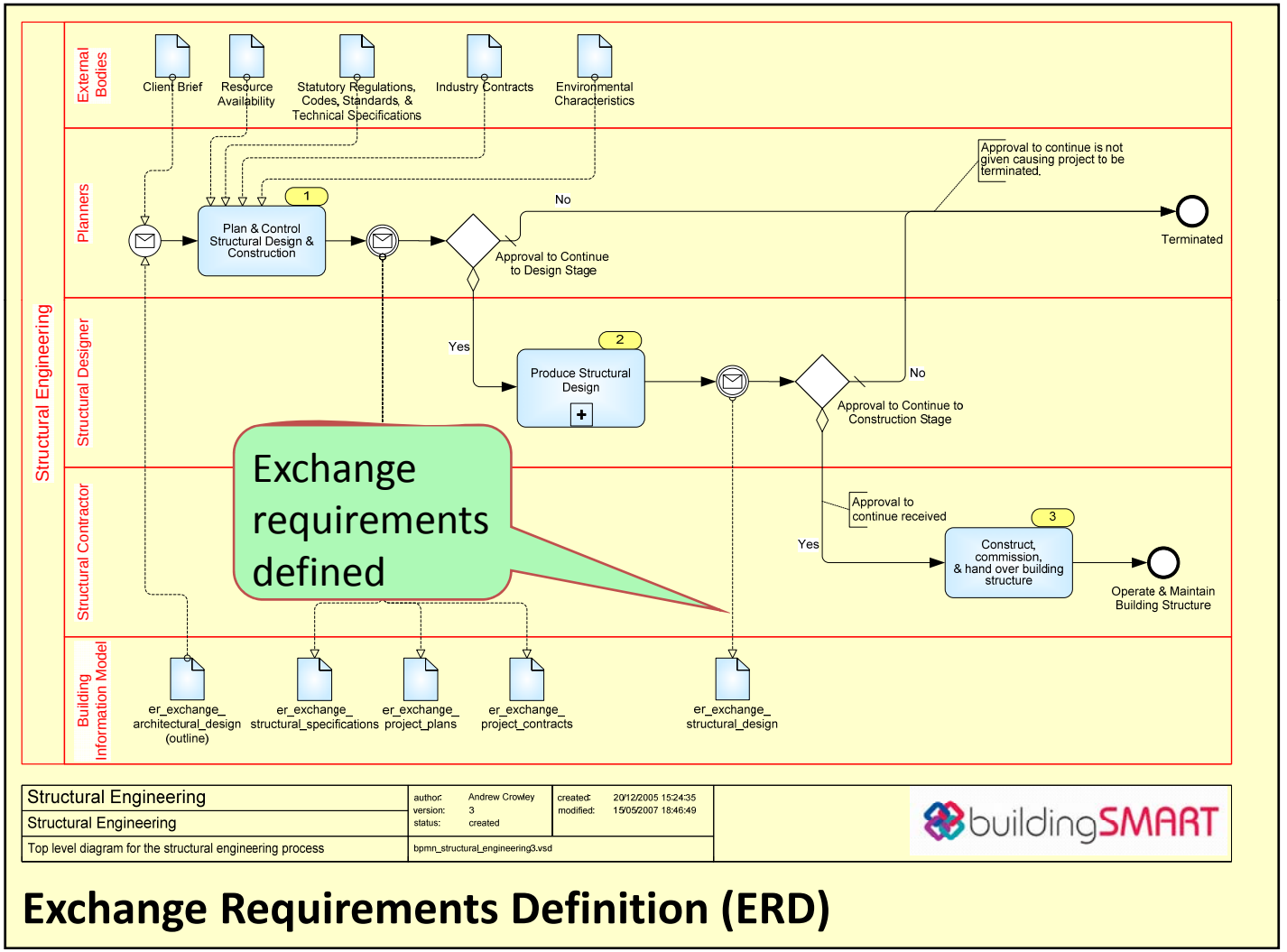
Core Technologies

buildingSMART International

Core Technologies



Exchange Requirements Definition (ERD)

Courtesy European Structural Group and A Crawley

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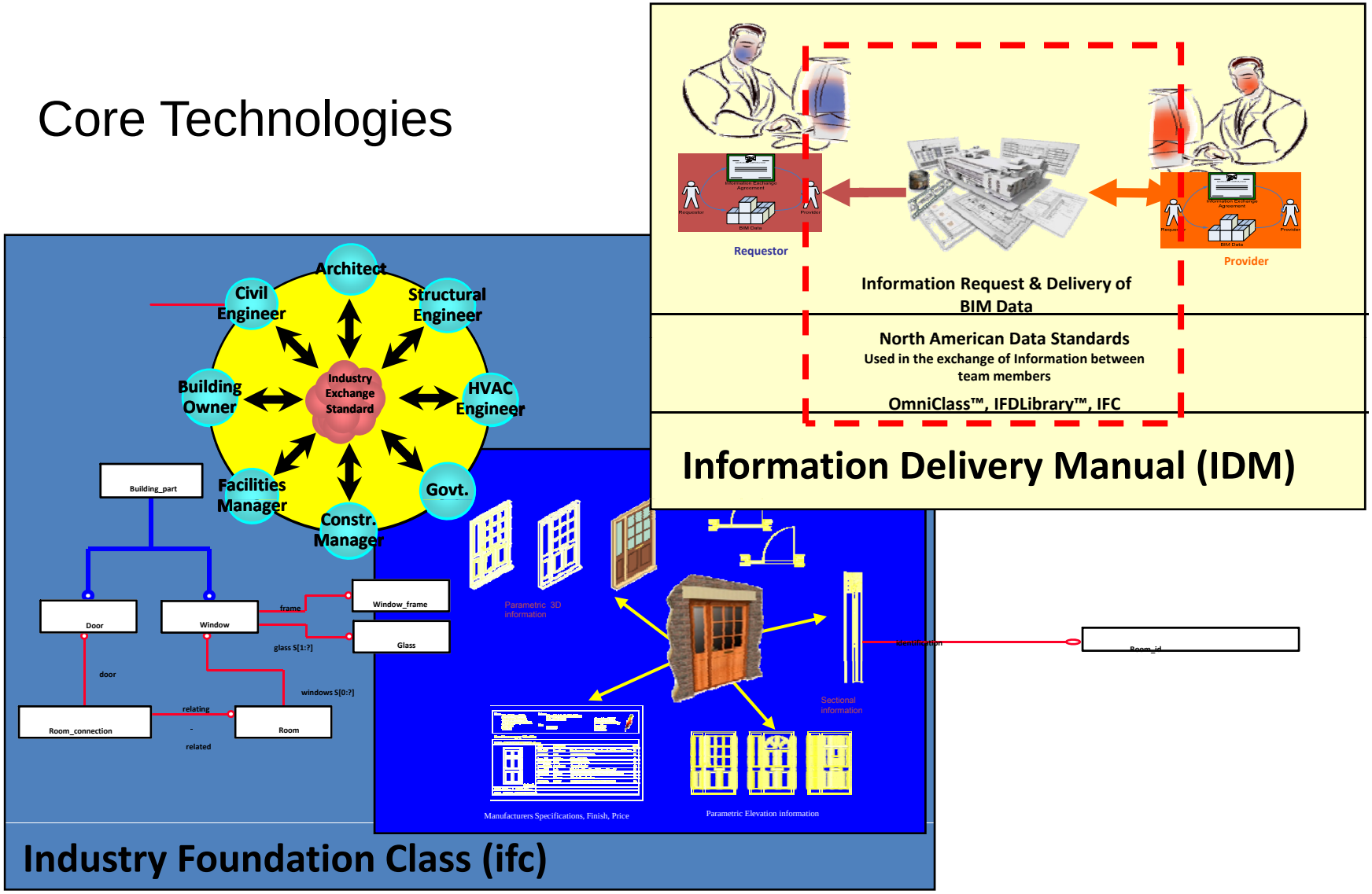
Core Technologies



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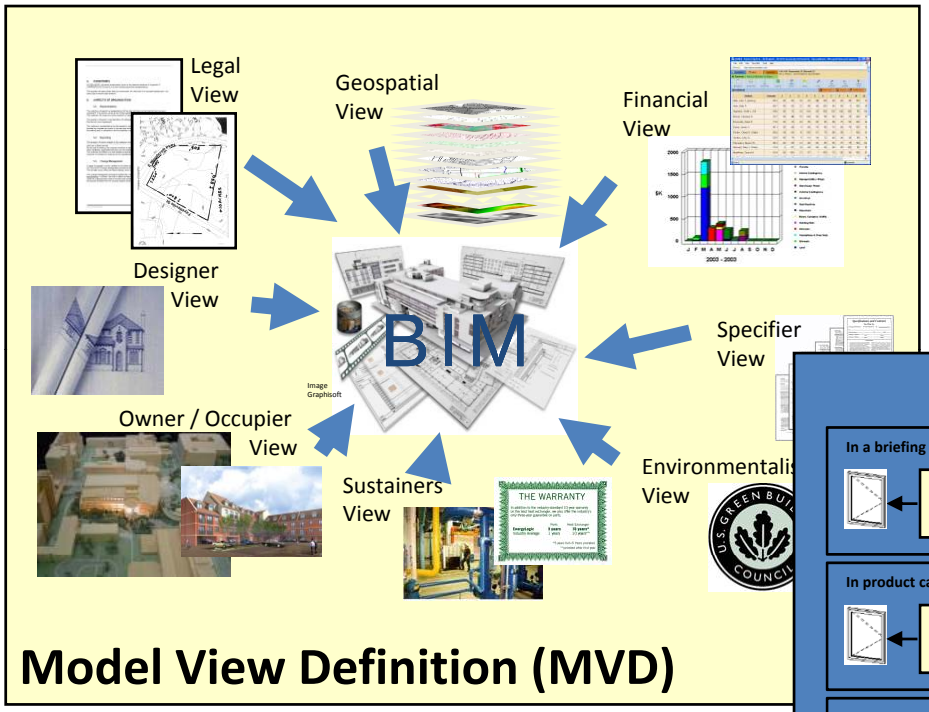
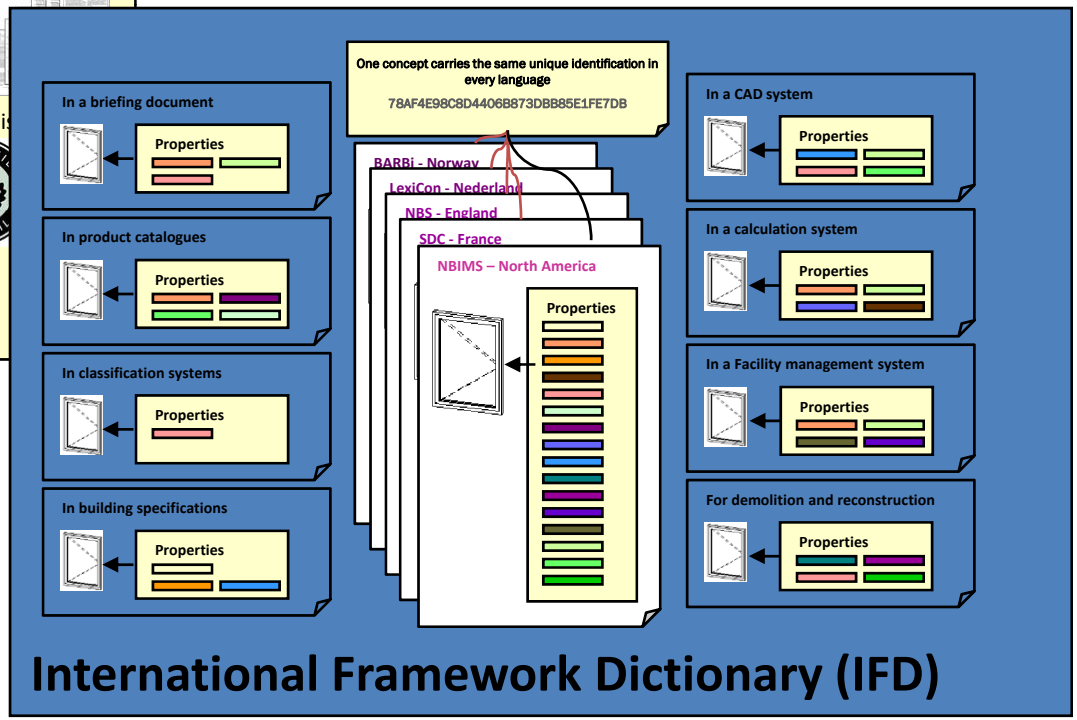
Core Technologies





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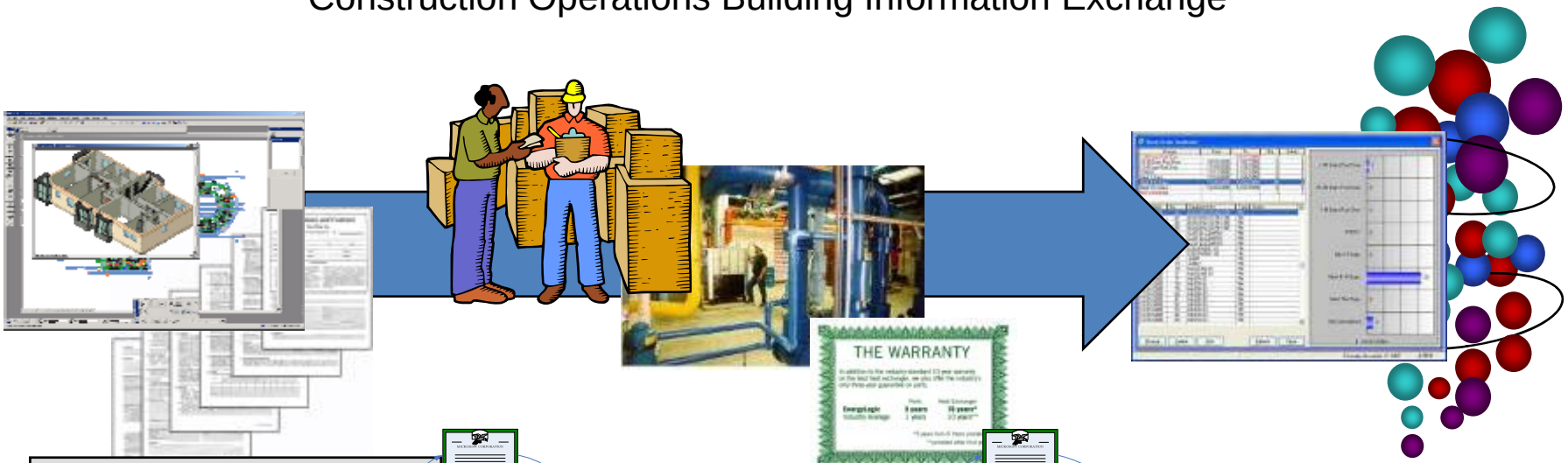
Current Projects

buildingSMART alliance: Emerging Projects

- Industry Foundation Classes (ifc) (Alliance Technical Committee)
- Information Delivery Manuals (IDM) (Alliance Technical Committee)
- Model View Definitions (MVD) (Alliance Technical Committee)
- Industry Framework Dictionary (IFD) (Alliance Technical Committee)
- National BIM Standard (NBIMS) (NIBS FIC)
- National CAD Standard (NCS) (NIBS FIC)
- AECOO Testbed (OGC/buildingSMART/IAI)
- Architectural Precast (Pankow) www.spur.org/pankowreports
- Automated Code Compliance Checking (AC3) (ICC) www.smartcodes.org
- Construction to Operations Building Information Exchange (COBIE) (NASA/COE)
- Early Design Information Exchange (COE)
- Structural Design (Pankow)
- Geospatial Integration (Alliance)
- Object Standards Harmonization (ISO 16739-ISO 15926) (FIATECH)
- Distance Learning (Alliance)
- Continuing Education Principles (Alliance)
- University Education Coordination (Alliance)
- Project Execution Planning for BIM (Pankow)

Business Process Change: COBIE

Construction Operations Building Information Exchange



Conception & Definition Phases

Identify items from the specifications that will require warranty information

COBIE will demonstrate the flow of information through the phases of a facility something that is not yet happening yet Is critical to realize the total potential ROI

Procurement & Execution Phases

Collect information as items are ordered and delivered such as who is warranting, when the warranty starts, how long is the warranty period, what preventive maintenance is required to keep the warranty in force

Utilization & Closure Phases

Read the information collected directly into your CMMS software to ensure that the warranties are supported

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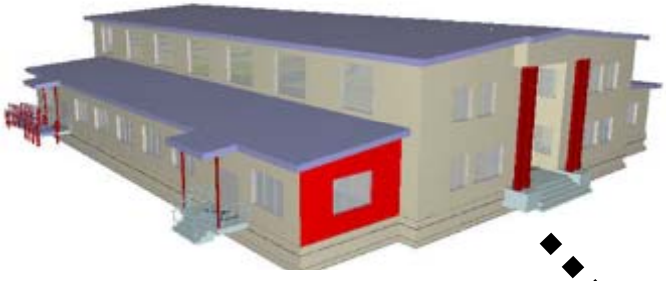
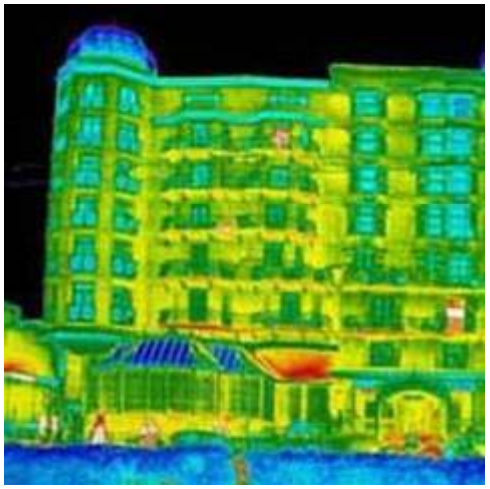
Projects: AECOO Testbed

Energy Code Compliance Checking



SMARTcodes ™ INTERNATIONAL CODE COUNCIL

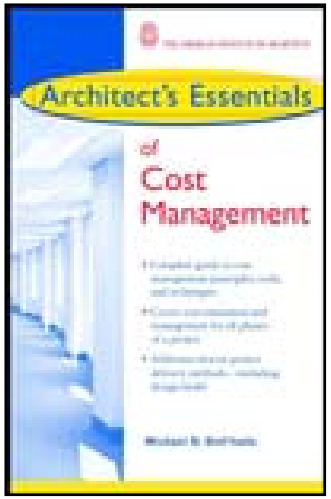


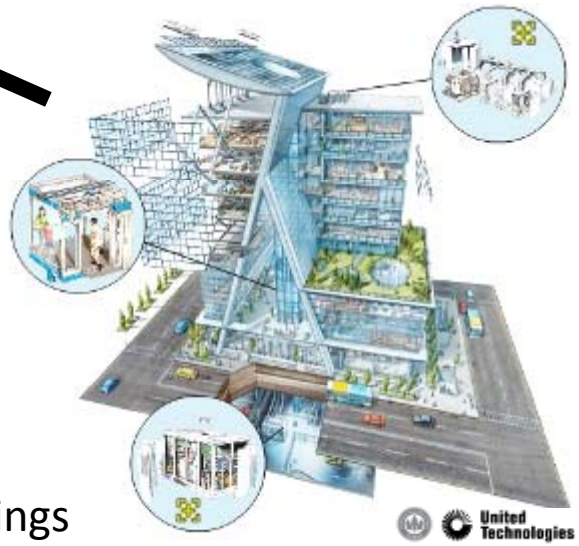
Energy Analysis

OGC®
Open Geospatial Consortium, Inc.

AECOO Testbed

Costing





Green Buildings

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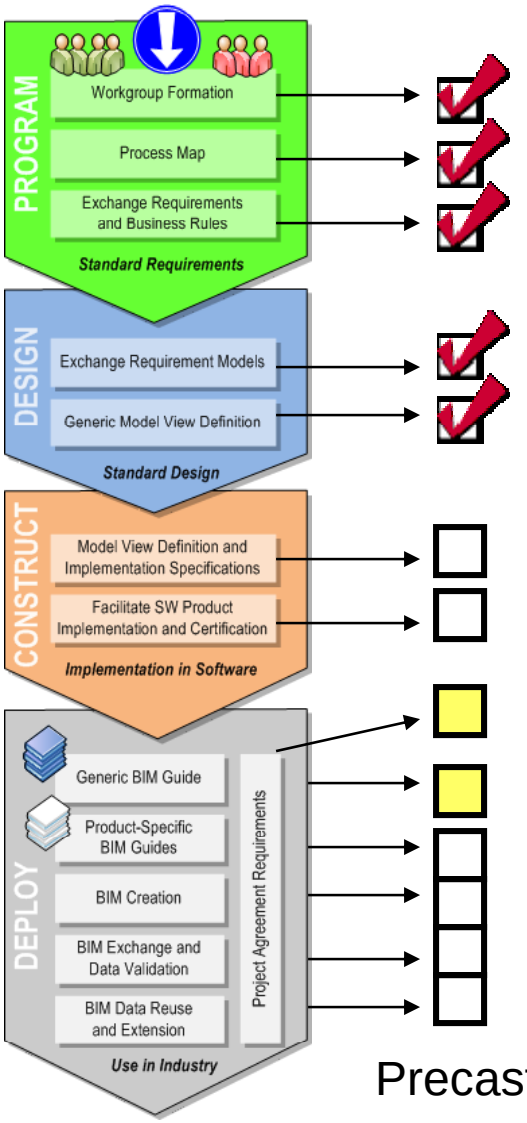
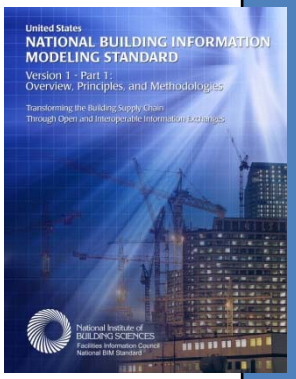
Projects supporting NBIMS



Precast

International Open Standards Based Technology
Ifc, IDM, ERM, MDV, and IFD Library



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BIM Standard

Requirements
Definition

OGC Testbed

Vendor delivered product

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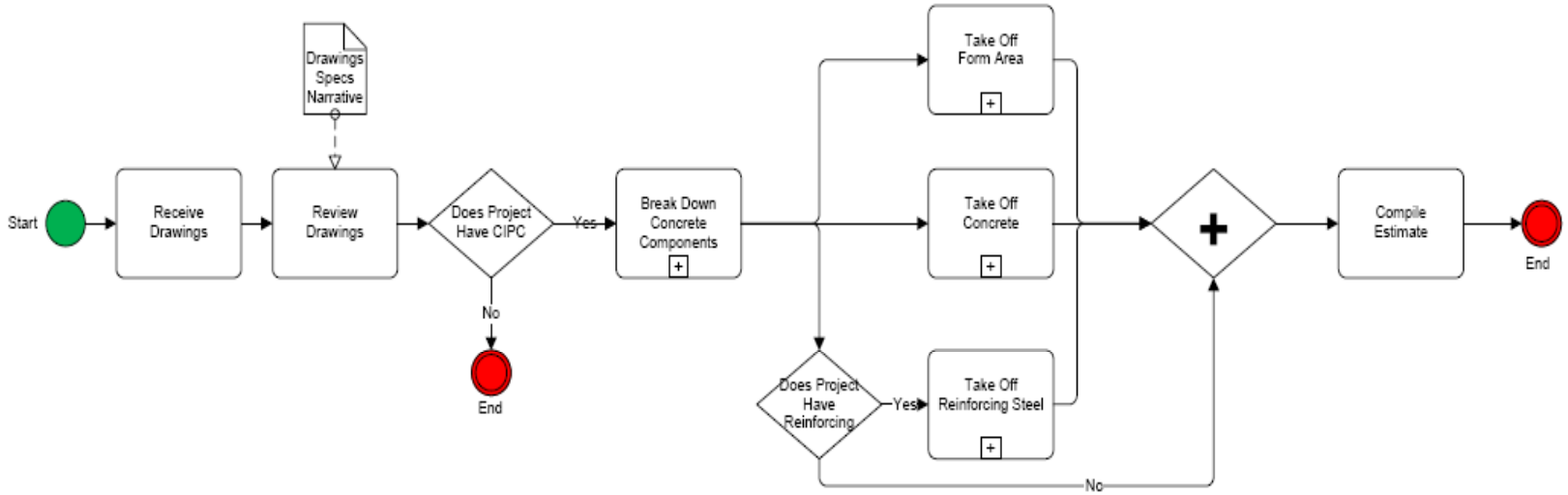
Projects

- Interest groups can organize to develop a project for exchange requirements
- Submit request for exchange requirement
- Example: The Association for the Advancement of Cost Engineering International

Project in Progress

AACE International Quantification Process and Standards for BIM

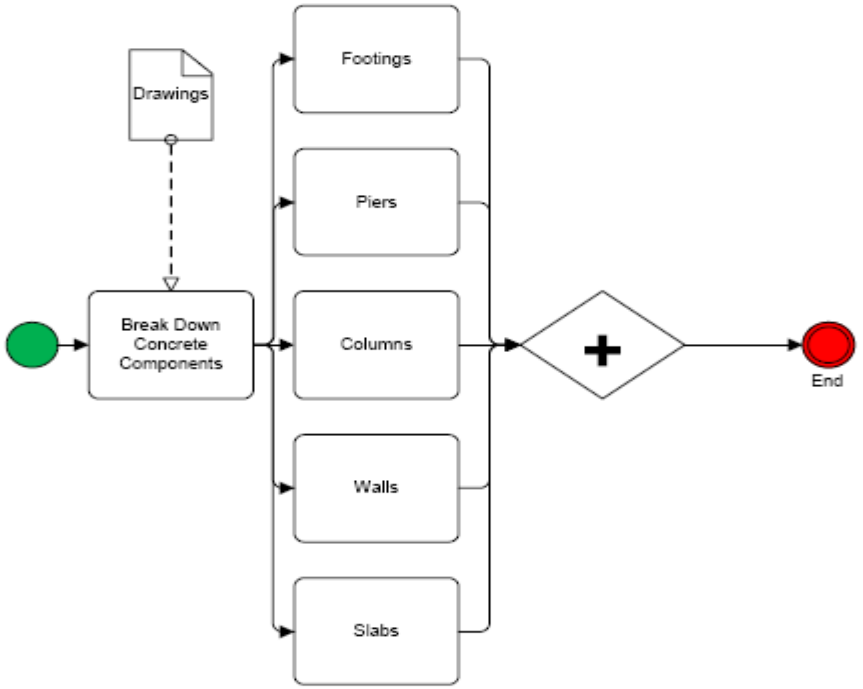
Main Process Flow



Project in Progress

AACE International Quantification Process and Standards for BIM

Break Down Concrete Components



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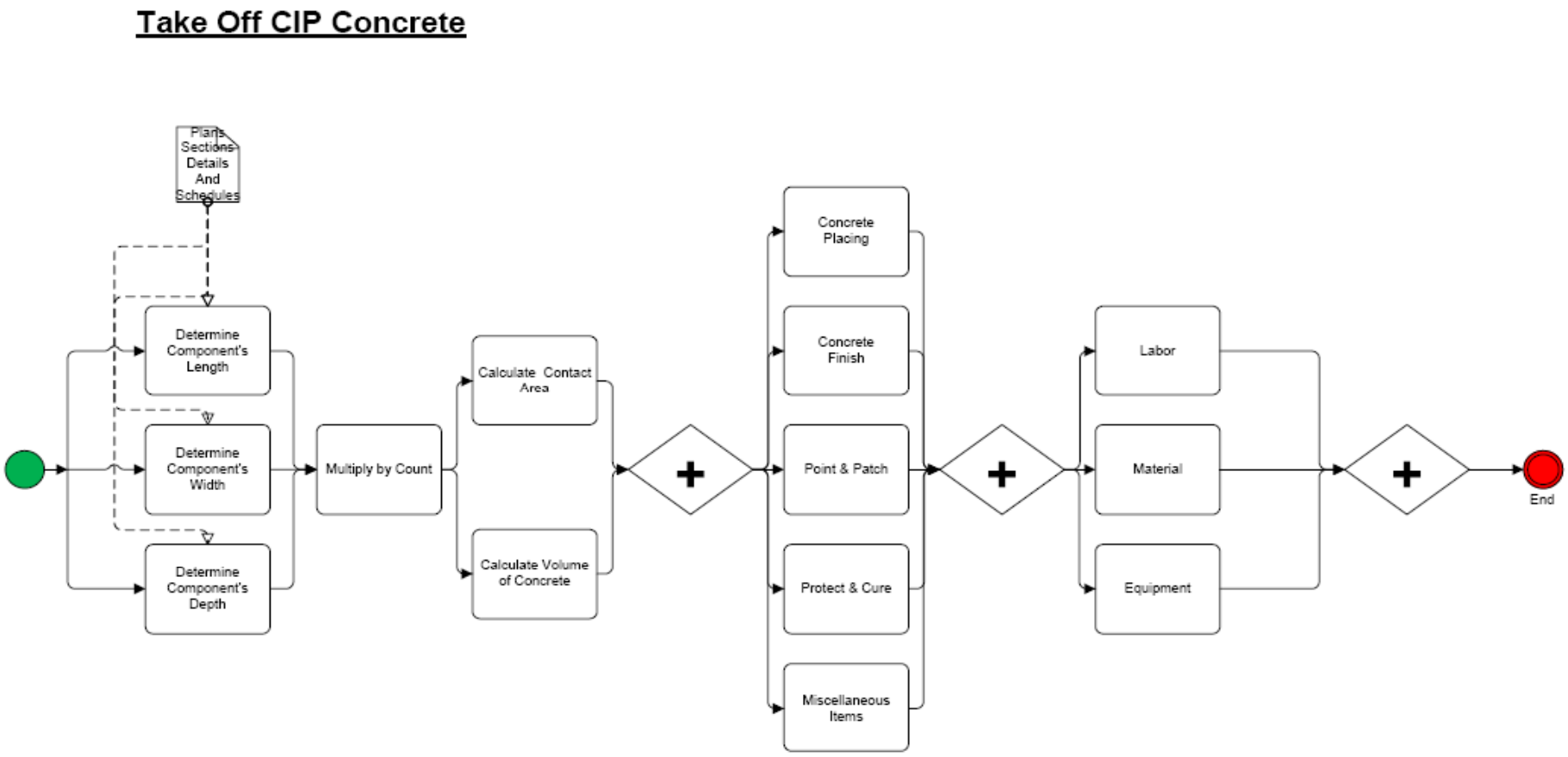
Project in Progress

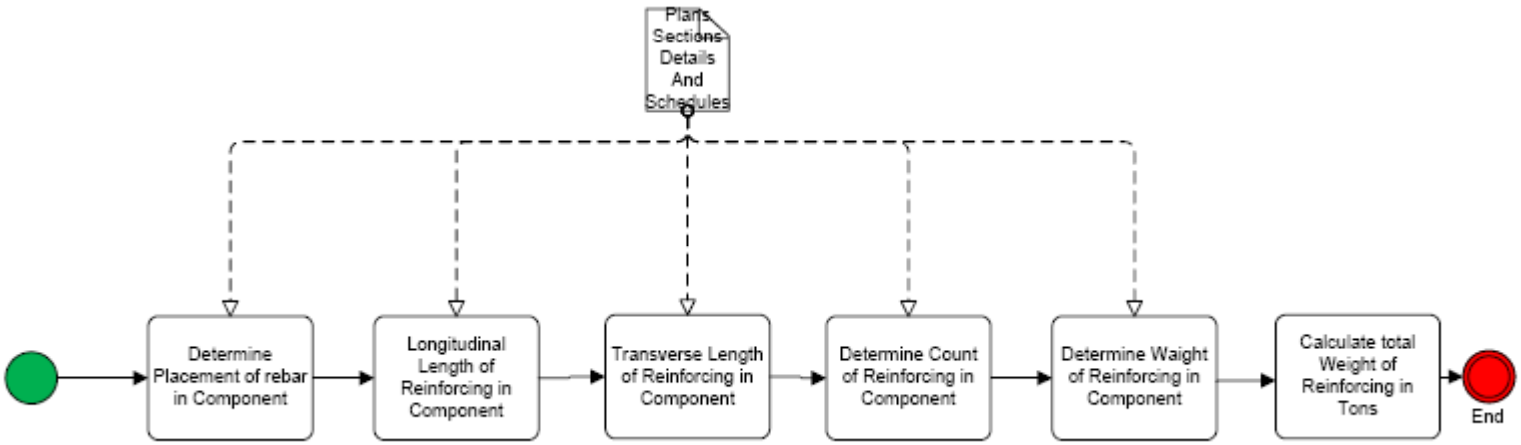
AACE International Quantification Process and Standards for BIM



Project in Progress

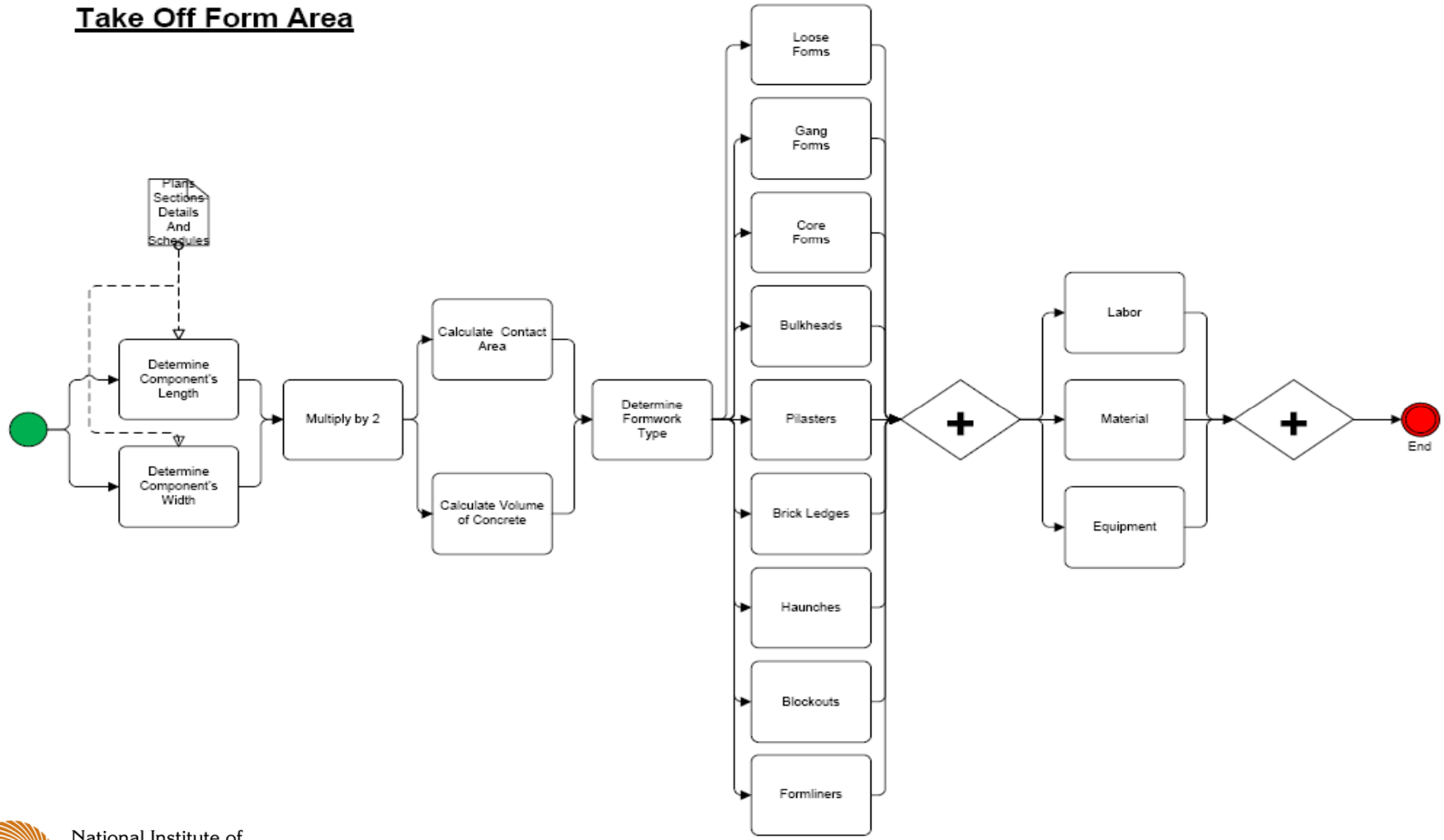
AACE International Quantification Process and Standards for BIM

Take Off Reinforcing Steel

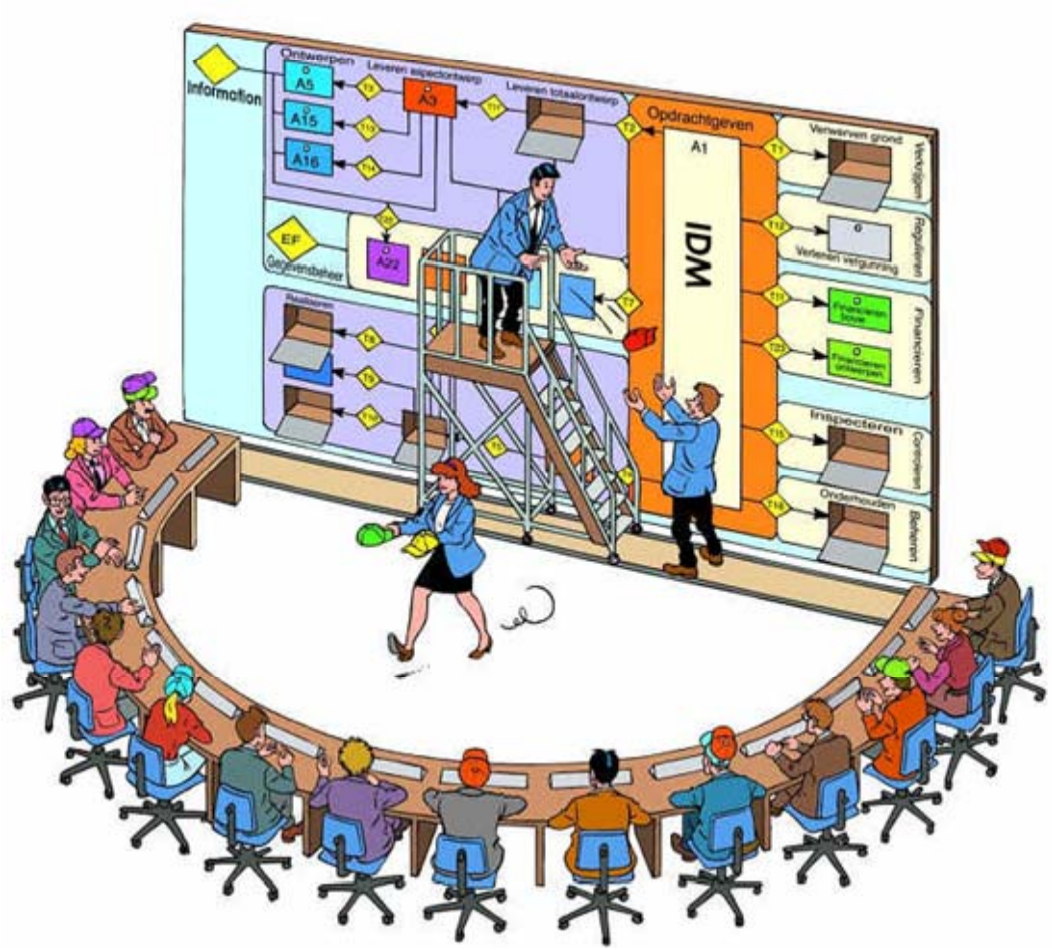


Project in Progress

AACE International Quantification Process and Standards for BIM



Information Delivery Manual



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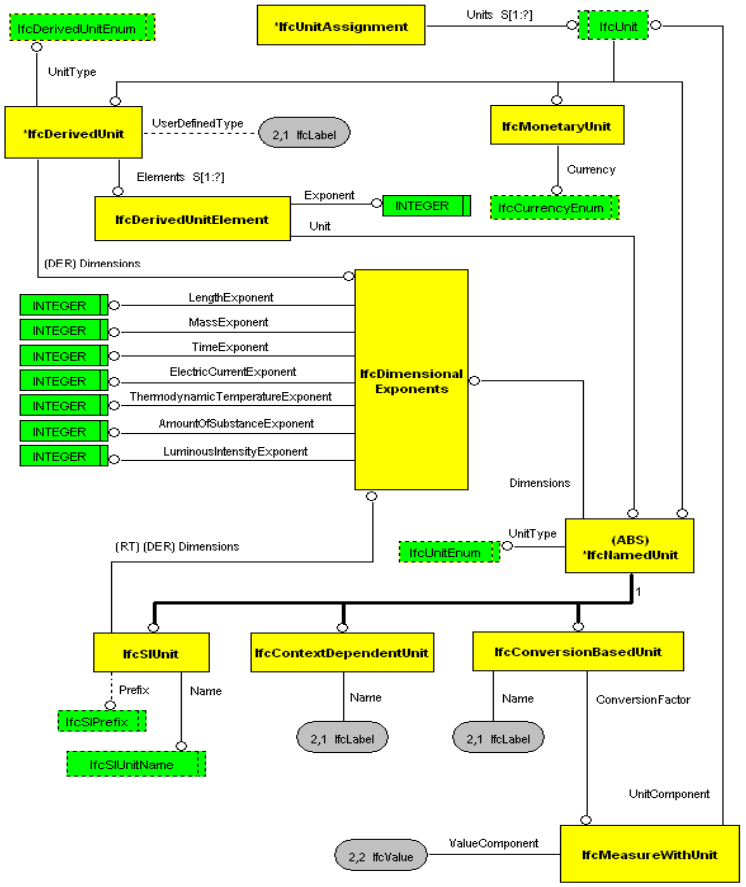
Industry Foundation Class



- Exchange Requirement
- Process map
- Information Delivery Manual
- Industry Foundation Class
  - www.iai-international.org

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Section 5 – NBIM Standard Development Process

Chapter 5.6 Consensus Process Update

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Consensus

- Why consensus?
- Consensus how?
- Consensus about what?
- Consensus process development

Why Consensus?

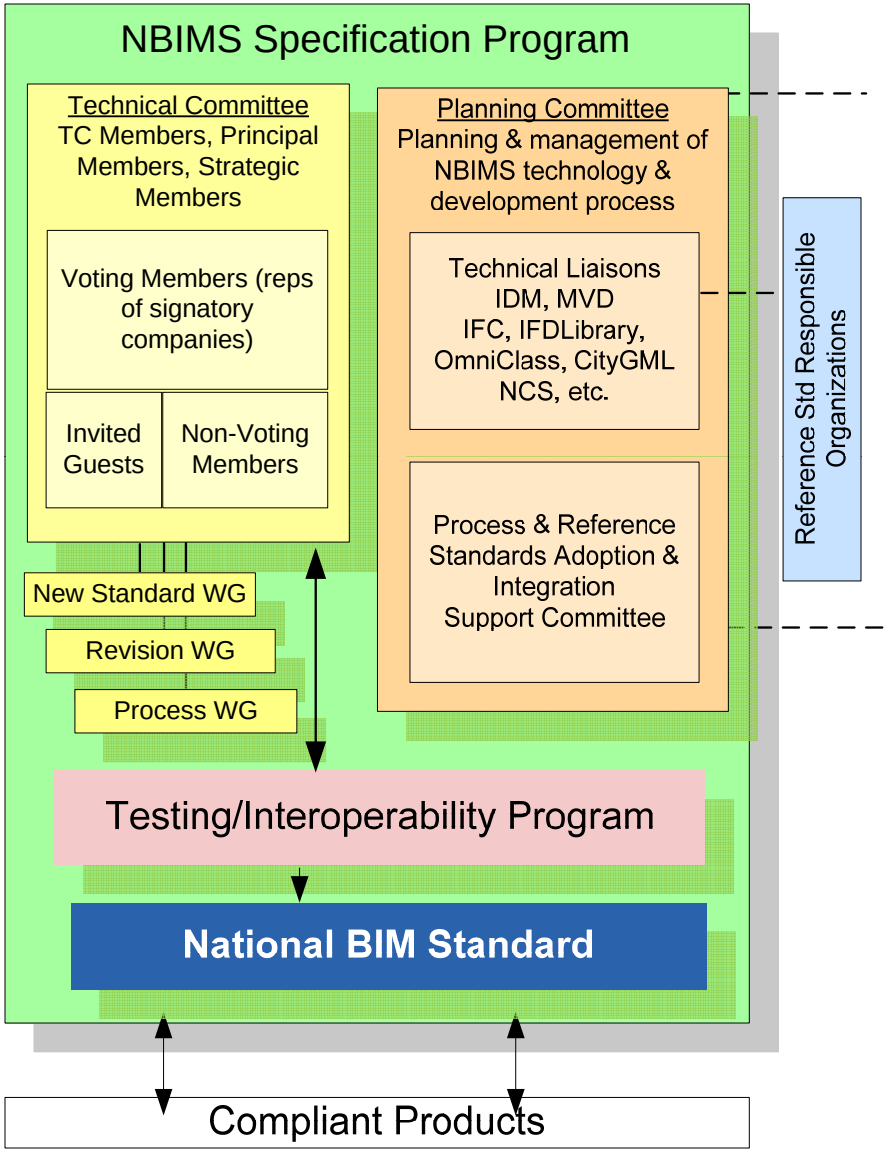
- Required by the National Institute of Building Sciences
- Required in the Charter of the National BIM Standard
- The National BIM Standard is driven by multiple areas of interest and stakeholders
- It is a democratic process for a community driven standard

Consensus How?

- Consensus through community review and discussion of ballot items within the context of the exchange requirement the ballot item represents, and the stakeholders within the process.

- The standards approved through the consensus process will serve both the requestor of information and the provider of information

Organization – National BIM Standard



Developing and Documenting a Consensus Process

- NBIMS Consensus Process Task Team: a working group for research and development for the Specification Review and Balloting of candidate standards

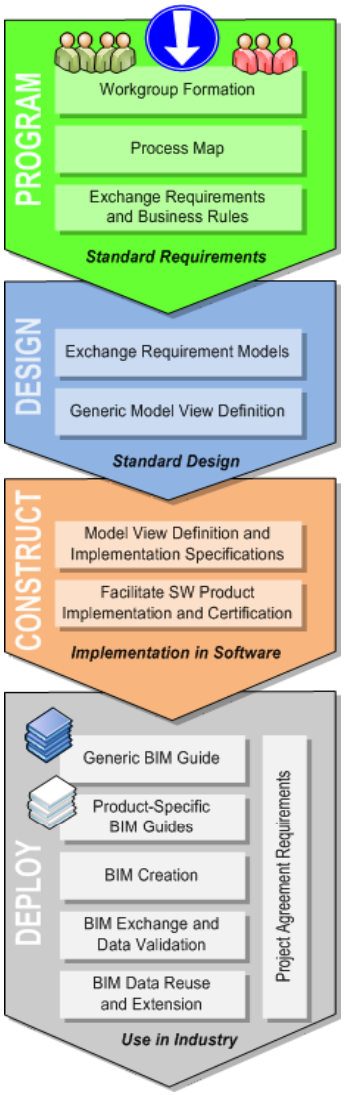
- Reference documents
  - National CAD Standard
  - OpenGeospatial Consortium
  - OmniClass Classification System

Consensus about What?

- NBIMS Consensus is about draft standards between development phases, and consensus about standard specifications once through the development phases.

- Standard development phases include: programming, design, construction, and deployment

NBIM Standard Development Process



- Programming Phase – Capture user knowledge through use of the IDM process
- Design Phase – Generic software concepts are developed to represent data for exchange requirements
- Construction Phase - Generic MVD from the Design Phase are developed into technology specific MVDs and implemented into pilot software products
- Deployment Phase – End-user adoption of NBIM Standard concepts and products in project agreements, generic and application-specific BIM guides, certified software, validation of the construction and contents of a BIM, and using model exchange files
- *Approval methods in the Consensus Process apply to all phases of the NBIMS Development and Use Process*

Standard of Standards

- The National BIM Standard is a standard of standards
- NBIMS is an exchange standard
  - Specification for exchange requirements in addition to a methodology for exchange
- Specification candidates are developed by external organizations
  - Presented to the National BIM Standard for review, discussion, and balloting

Standard of Standards

– User-facing standards
  - Information Delivery Manual is the exchange definition written in non-technical prose for use by end-users. Describes the business process, stakeholders, exchange points, information requirements and business rules.

– Vendor-facing standards
  - Model View Definitions is the technical exchange definition for use by software developers.

Project Initiation

- Interest group initiates and develops a project definition
- NBIMS Project Committee Role
  - Facilitate discussions and assist in formation of workgroups when formal development is suggested
- Purpose of this phase
  - Identify concepts, connect people, knowledge and activities present in the community
  - Explore community consensus around concepts

Project Initiation to Workgroup

- Requirements Definition activities employ Information Delivery Model methodologies
- Focus is on defining an IDM within the business context
- Workgroup membership composed of domain subject matter experts and experienced practitioners

Workgroup to NBIMS Consensus Ballot

- Workgroup has completed the IDM process

- Alternative outcomes to Workgroup Activity:
  - Promote IDM to an NBIMS Consensus Ballot
  - Or, continue phase development activity
  - Or, put development on hold
  - Or, terminate development

National BIM Standard Consensus Ballot to Consensus Vote

- The consensus process is a formal process used to move draft standards from one major development phase to another
- Includes issuance of Standard specifications
- *Includes consensus voting, which is believed to be essential in order to achieve an open and transparent, inclusive, and representative standard*

Consensus Process Development

- The NBIMS Consensus Task Team is scheduled to submit a draft of the Consensus Process to the Executive Committee by August, 2008.

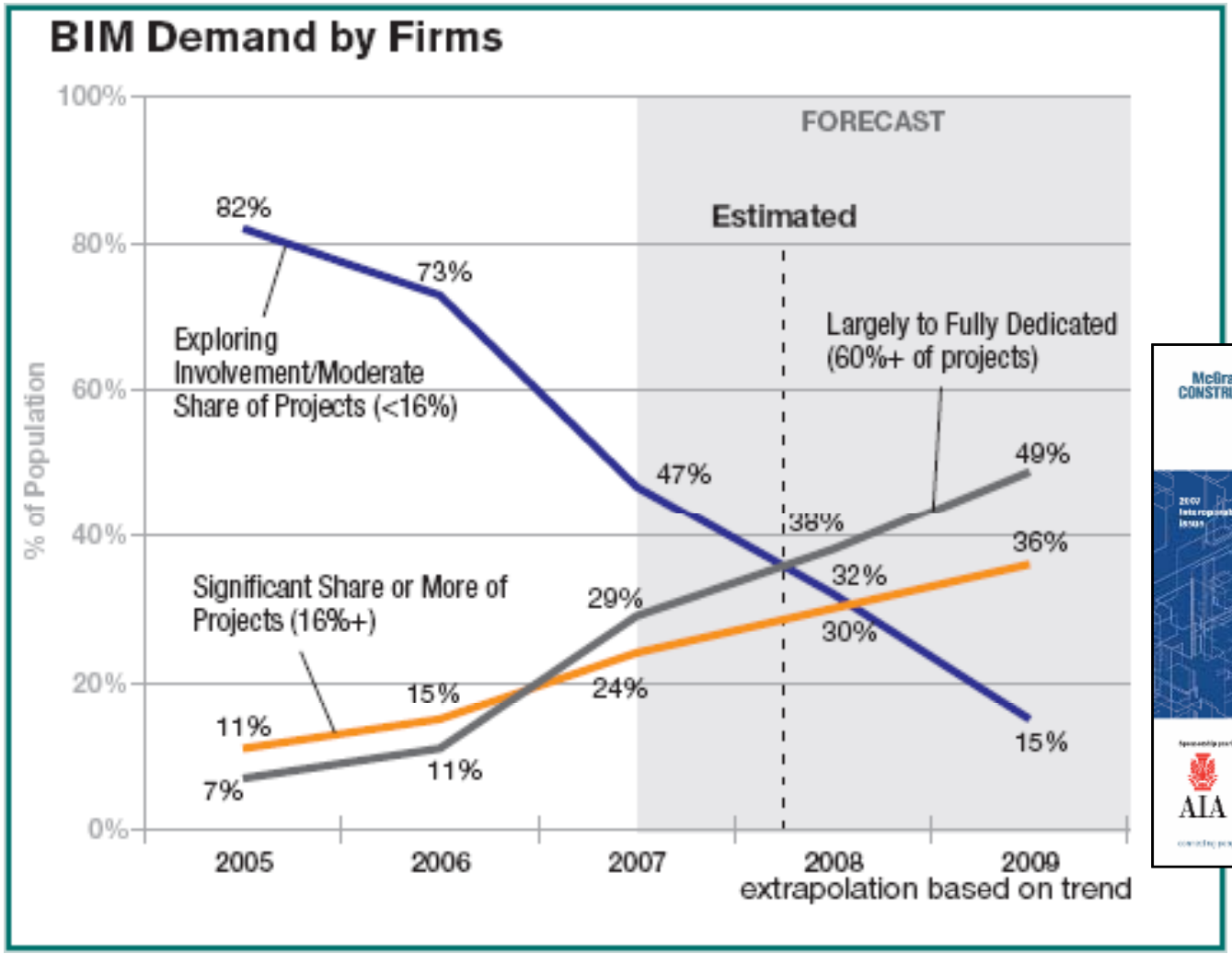
- Working to ensure preliminary consensus process diagram reflects all stakeholders, products, and the process

- Emphasis on the National BIM Standard as community driven

NBIM Standard Consensus Process

- **Items currently under consideration:**
  - Policy and methodology for establishing and maintaining Committee Members eligible to vote on ballot items
  - A definition of the process for the intake of candidate specifications
  - Defining a process for evaluation of offered candidates against NBIMS criteria
  - Establishing procedures for the assignment of candidates to subcommittees for review, development and recommendation to voting members
  - Definition of the rules, requirements, and procedures for promoting a candidate through draft, review, and balloting stages
  - Establishing a methodology and mechanism for publishing candidate specifications, discussions, revisions, approved ballot items, balloting results, etc.

Tipping Point



Time is of the essence

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Next Steps

- Draft recommendations for consensus process to include:
  - Standard specifications to ballot items
  - Ballot items to consensus vote

- Items planned to be balloted:
  - Exchange Requirement Release for Public Use
  - Model View Definition (MVD) for Public Use
  - Other items in development

What to Expect

- Expect a website where ballot items are posted for review and the voting process
- Expect an announcement to all members eligible to vote on items
- Expect that the ballot item has been through a rigorous review and discussion by a workgroup of subject matter experts and interested individuals
- Expect to participate. Join the NBIMS committee at http://www.facilityinformationcouncil.org/bim/committee_join.php

Questions?

Thank you

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