



**BUILDING INFORMATION MODELING
PROJECT EXECUTION PLAN**

**Elementary School
Reading, Pennsylvania**

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Issue #1
14 September 2012

BIM PROJECT EXECUTION PLAN

FOR

Elementary School

DEVELOPED BY



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SECTION A: BIM PROJECT EXECUTION PLAN OVERVIEW

1. REASON FOR BIM PROJECT EXECUTION PLAN:

This BIM Project Execution Plan is a working document that guides our team's decision making process. It defines our goals and objectives and is in accordance with the AEI Competition requirements. This text will help us successfully implement Building Information Modeling (BIM) on this Elementary School project. BIM will help foster collaboration during all planning and engineering phases of this project. The methods through which BIM will be executed are described in this document, especially the interaction between the four engineering disciplines and plethora of technological applications.

2. MISSION STATEMENT FOR PROJECT

The mission for this project is to engineer an Elementary School to meet the needs of both the school district and community. The building design must address safety, functionality, and sustainability. These criteria must be met while providing the most cost-efficient building over its lifecycle. To achieve these goals, all building systems must be seamlessly integrated.

SECTION B: PROJECT INFORMATION

1. **PROJECT OWNER:** Reading School District
2. **PROJECT NAME:** Elementary School
3. **PROJECT LOCATION AND ADDRESS:** Intersection of 13th and Park Streets in Reading, Pennsylvania, USA
40°20'30"N 75°55'35"W
4. **CONTRACT TYPE / DELIVERY METHOD:** TBD / TBD
5. **BRIEF PROJECT DESCRIPTION:** Three-story elementary school with state-of-the-art classrooms; special education classrooms; library, gymnasium, swimming pool, and additional recreational facilities
6. **ADDITIONAL PROJECT INFORMATION:** High performance and energy efficient; security; safety; durability; functionality; adaptability; community connections focus
7. **PROJECT SCHEDULE / PHASES / MILESTONES:**

Project Phase	Start Date	Completion Date
Presentation #1	29 August 2012	14 September 2012
Presentation #2	15 September 2012	3 October 2012
Presentation #3	4 October 2012	24 October 2012
Proposal Presentation	25 October 2012	12 November 2012
Written Submission	13 November 2012	22 February 2013
Final Presentation	25 February 2013	3-5 April 2013

Table 1 Project Milestones

SECTION C: KEY PROJECT CONTACTS

Role	Contact Name	Location	Email	Phone Number
Structural Engineer	Pat Allen	333 Sackett Building	pja5048@psu.edu	304.669.9732
Lighting/Electrical Engineer	Rachel Barrow	333 Sackett Building	rmb5266@psu.edu	757.646.8057
Construction Manager	Alex Byard	333 Sackett Building	awb5154@psu.edu	484.356.3775
Mechanical Engineer	Melanie Fonner	333 Sackett Building	maf1022@psu.edu	412.952.5050
Structural Engineer	Brad Frederick	333 Sackett Building	bsf5038@psu.edu	814.331.9105
Construction Manager	Brian LaChance	333 Sackett Building	bml5082@psu.edu	610.717.7836
Mechanical Engineer	Mike Palmer	333 Sackett Building	amp5439@psu.edu	410.236.0679
Architectural Engineering Professor / Engineering Faculty Consultant	M. Kevin Parfitt	206 Engineering Unit A	mkp@psu.edu	814.865.6394
Architectural Engineering Professor / Architecture Faculty Consultant	Bob Holland	204 Engineering Unit A	rholland@enr.psu.edu	814.865.6394
Teaching Assistant	Ryan Solnosky	203 Engineering Unit A	rls5008@psu.edu	814.865.6786
Construction Management Advisor	Craig Dubler		crd137@psu.edu	814.865.6394
Structural Engineering Advisor				814.865.6394
Mechanical Engineering Advisor	Jelena Srebric	222 Engineering Unit A	jsrebric@psu.edu	814.865.6394
Lighting Electrical Advisor				814.865.6394

Table 2 Project Contacts

SECTION D: PROJECT GOALS / BIM USES

1. MAJOR BIM GOALS / OBJECTIVES:

PRIORITY	GOAL DESCRIPTION	POTENTIAL BIM USES
High	Engineering integration through multi-disciplinary collaboration	Design Reviews
High	Whole-building constructability and operation	3D Coordination
High	Fluid transfer and comprehension of information	Phase Planning
High	Short term and lifecycle cost benefits	Cost Estimation
High	LEED certification	Sustainability Evaluation

Table 3 BIM Goals

2. BIM USE ANALYSIS WORKSHEET: See Section G

3. BIM USES:

X	DESIGN
-	Design Authoring
X	Design Review
X	3D Coordination
X	Structural Analysis
X	Lighting Analysis
X	Energy Analysis
X	Mechanical Analysis
X	Sustainability (LEED) Evaluation
X	Code Validation
X	Phase Planning (4D Modeling)
X	Cost Estimation
X	Existing Conditions Modeling
X	Record Modeling
X	Site Utilization Planning

Table 4 BIM Uses

SECTION E: ORGANIZATIONAL ROLES / STAFFING

BIM ROLES AND RESPONSIBILITIES:



Figure 1 BIM roles and responsibilities

This figure displays the individual disciplines' specific tasks. The center circle shows the synthesis of multidisciplinary integration.

SECTION F: BIM PROCESS DESIGN

- 1. LEVEL ONE TEAM PROCESS OVERVIEW MAP:** Attachment 1

- 2. LIST OF LEVEL TWO – DETAILED TEAM MEMBER PROCESS MAP(S):**
Attachment 2

SECTION G: BIM INFORMATION EXCHANGES

BIM Goal Use Analysis Worksheet				
BIM Use	Project Importance	Disciplines Involved	Discipline Importance	Necessary Data
	High / Med / Low		High / Med / Low	
<i>Design Phase</i>				
Design Review	High	CM SE ME LE	High High High High	Constructability input to design models Structural design models Mechanical design models Lighting / Electrical design models
3D Coordination	High	CM SE ME LE	High High High High	Design models Design models, ETABS and SAP models Design models Design models, ceiling plans
Structural Analysis	High	SE	High	Local codes, ETABS and SAP models
Lighting Analysis	High	LE	High	AGI and Daysim models
Mechanical Analysis	High	ME	High	Energy model and equipment sizing and selection
Energy Analysis	High	ME LE	High High	Preliminary Vasari model and later more accurate energy model AGI - lighting power density information
Sustainability (LEED) Evaluation	High	CM SE ME LE	High High High High	Materials and energy data Material efficiency data Energy model and IAQ information AGI and Daysim analysis
Phase Planning (4D Modeling)	High	CM	High	Design models, project schedule
S.F. / Detailed Cost Estimation	High	CM	High	Materials, building statistics
Existing Conditions	Med	CM SE	Med Med	Site data Ggeotechnical report
Record Modeling	Med	CM SE ME LE	Med Med Med Med	4D coordinated model Structural and ETABS model Model and equipment selection Analyses and models
Site Utilization Planning	High	CM	High	Site layout, equipment, material laydown, project schedule

Table 5 BIM Goal Use Analysis

The above table describes each of our team's BIM uses and the result of each.

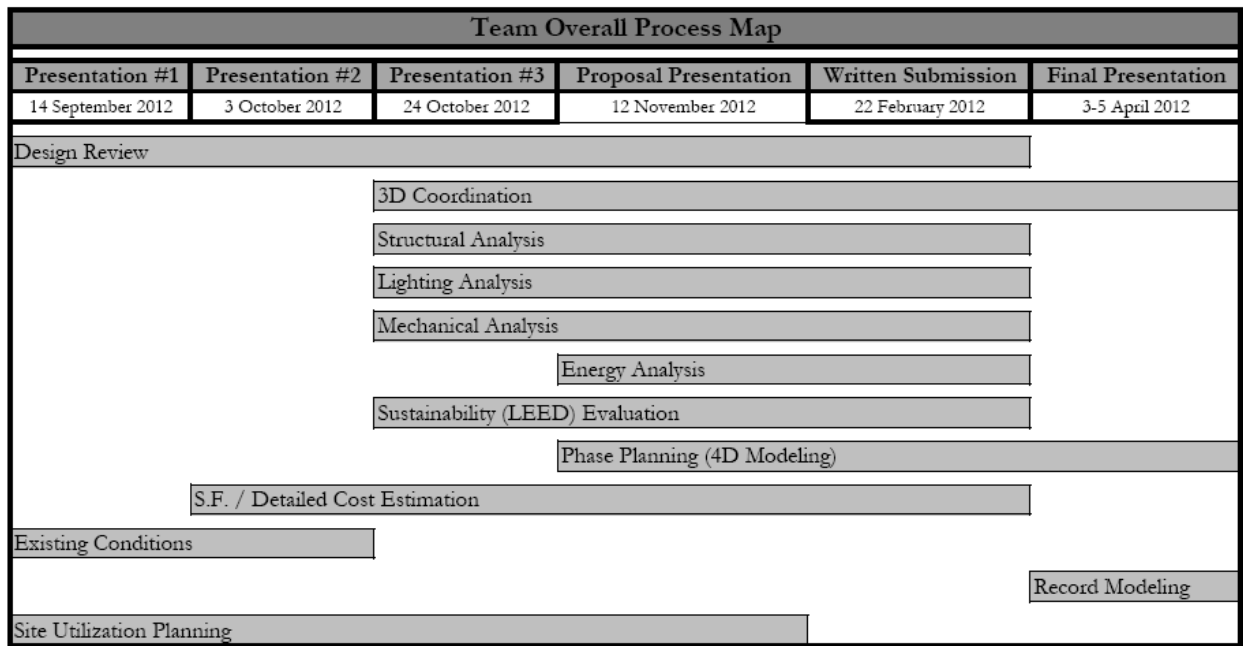


Table 6 Team Overall Process Map

This figure summarizes our Team Overall Process Map and the duration of each BIM use by phase.

See Page 15 for more information exchanges between various technologies.

SECTION I: COLLABORATION PROCEDURES

1. COLLABORATION STRATEGY:

- Weekly meeting schedule – time (see schedule below) and location (333 Sackett Building)
- Team communication – group text messaging, Google Docs, common file storage
- Continual interdisciplinary interaction for building systems' integration
- Team leaders selected based on project phase
- Meeting minutes issued and discussed after each meeting to accomplish team objectives by next meeting date

2. TEAM DECISION MAKING PROCESS:

- Phase I: Idea(s) presented
- Phase II: Ideas(s) discussed
- Phase III: Reach consensus
- Phase IV: If step 3 fails, closed vote – need 4 votes in favor to proceed

3. MEETING PROCEDURES / TIMES:

Meeting minute structure:

- 1.1 Old Business
- 1.2 New Business
- 1.3 Team Schedule
- 1.4 Team Deliverables
- 1.5 Construction Management
- 1.6 Structural Engineering
- 1.7 Mechanical Engineering
- 1.8 Lighting / Electrical Engineering
- 1.9 Future Business

Construction managers are responsible for recording and publishing meeting minutes. Construction managers will host and lead all meetings unless it is deemed prudent by all Nexus team members that another discipline should host and lead the meeting based on the project phase. A blank copy of the meeting minutes template is attached for reference.

The table below illustrates the common meeting times for all team members, shown in purple, for integration of BIM deliverables. The other shades indicate individual discipline meeting times.

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8:00							
8:30							
9:00							
9:30							
10:00							
10:30							
11:00							
11:30							
12:00							
12:30							
1:00							
1:30							
2:00							
2:30							
3:00							
3:30							
4:00							
4:30							
5:00							
5:30							
6:00							
6:30							
7:00							
7:30							
8:00							

Table 7 Nexus weekly meeting schedule

NEXUS
Construction Managers
Structural Engineers
Mechanical Engineers
Lighting / Electrical Engineer

4. MEETING TYPES:

Meeting Type	Project Stage	Frequency	Participants	Location
BIM Execution Plan	Presentation #1	5x / week	All	333 Sackett
3D Coordination	Presentation #3	3x / week	All	334 Sackett
Structural Analysis	Presentation #3	3x / week	All	335 Sackett
Lighting Analysis	Presentation #3	3x / week	All	336 Sackett
Mechanical Analysis	Presentation #3	3x / week	All	337 Sackett
Energy Analysis	Proposal Presentation	1x / week	All	338 Sackett
Sustainability (LEED) Evaluation	Presentation #3	2x / week	All	339 Sackett
Phase Planning (4D Modeling)	Proposal Presentation	3x / week	All	340 Sackett
S.F. / Detailed Cost Estimation	Presentation #2	3x / week	All	341 Sackett
Existing Conditions	Presentation #1	3x / week	All	342 Sackett
Record Modeling	Proposal Presentation	1x / week	All	343 Sackett
Site Utilization Planning	Presentation #1	2x / week	All	344 Sackett

Table 8 Meeting Types

The table above displays the meeting types (based on BIM Uses) and their respective frequencies. Each team member is invited to all meetings, for full integration purposes, to garner full comprehension of all disciplines' aspects.

5. ELECTRONIC COMMUNICATION PROCEDURES:

File structure

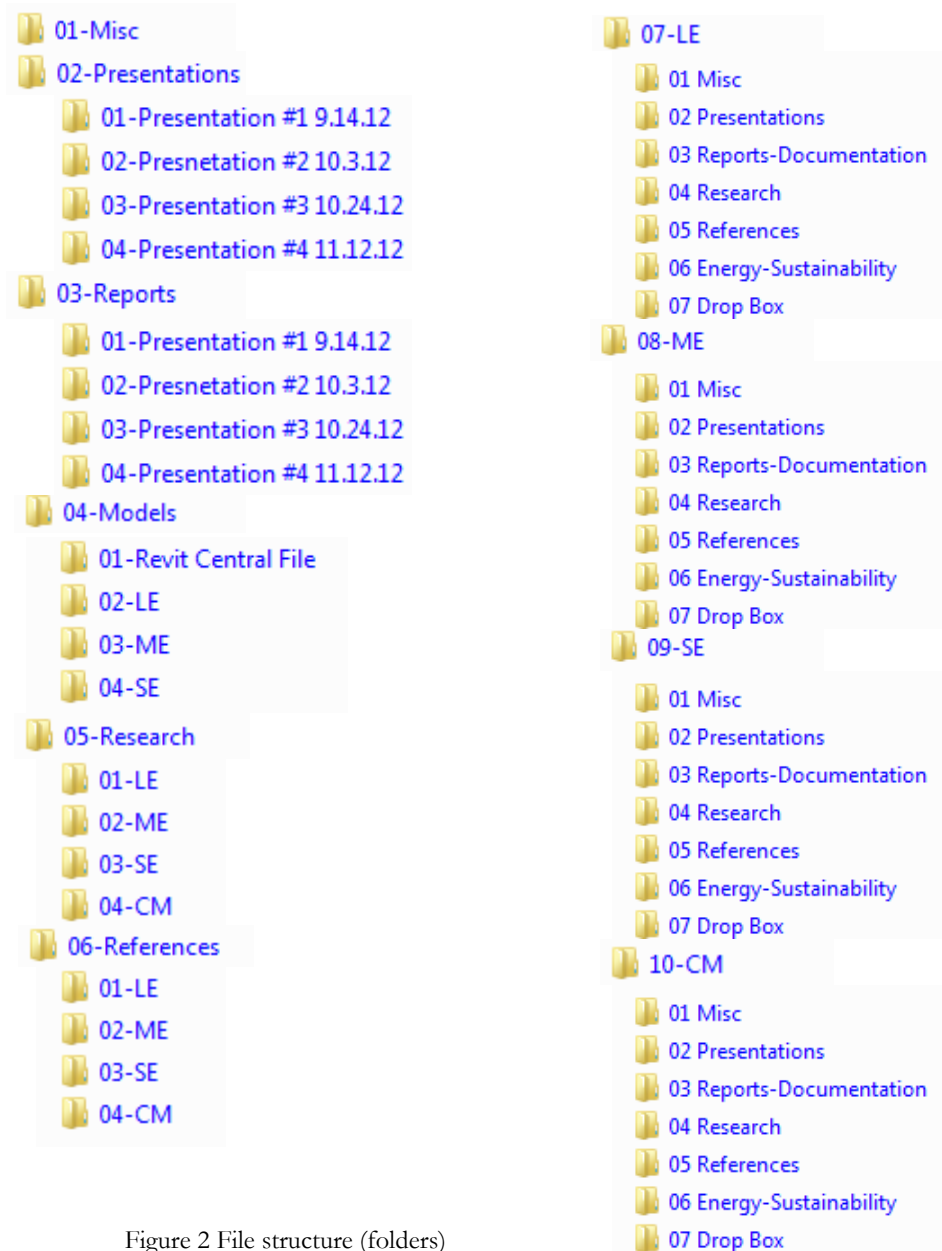


Figure 2 File structure (folders)

File naming structure: date_file name
i.e. 9.10.12 BIM Ex Plan

6. MODEL STRUCTURE AND INFORMATION EXCHANGE:

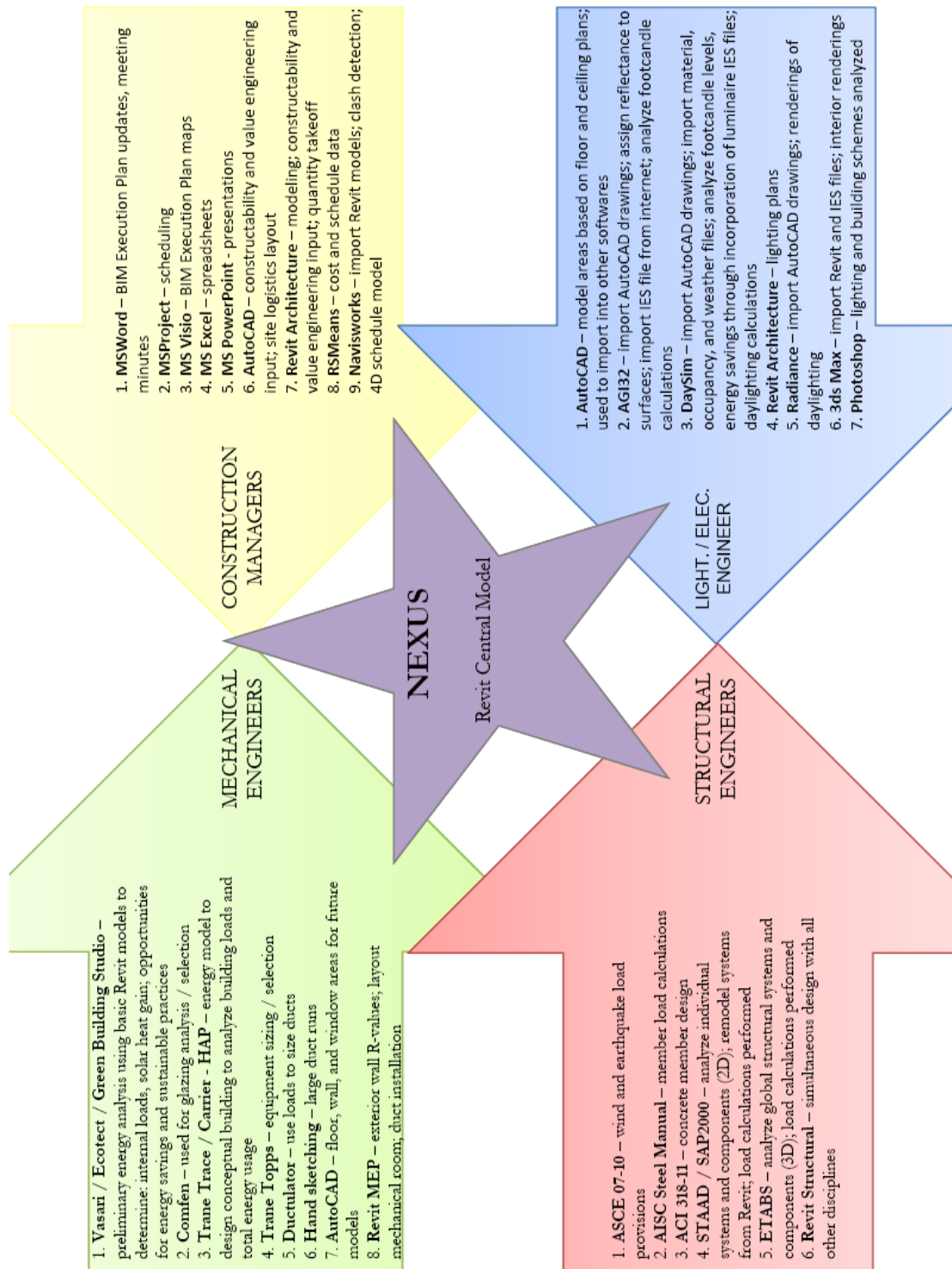


Figure 3 Information Exchanges

The information contained in these models will be utilized to develop the integrate Revit Central Model.

SECTION M: PROJECT DELIVERABLES

BIM Submittal Item	Project Phase	Due Date	Format
BIM Execution Plan, Base Model, Research	Presentation #1	14 September 2012	MS Word, Excel, and PowerPoint, Adobe PDF, Autodesk Revit Architecture
TBD	Presentation #2	3 October 2012	TBD
TBD	Presentation #3	24 October 2012	TBD
TBD		12 November 2012	TBD
Written Submission	AEI Submission	22 February 2013	TBD
Final Presentation	AEI Competition	3-5 April 2013	TBD
Final Documentation	Documentation	April 2013	TBD

Table 8 Project Deliverables

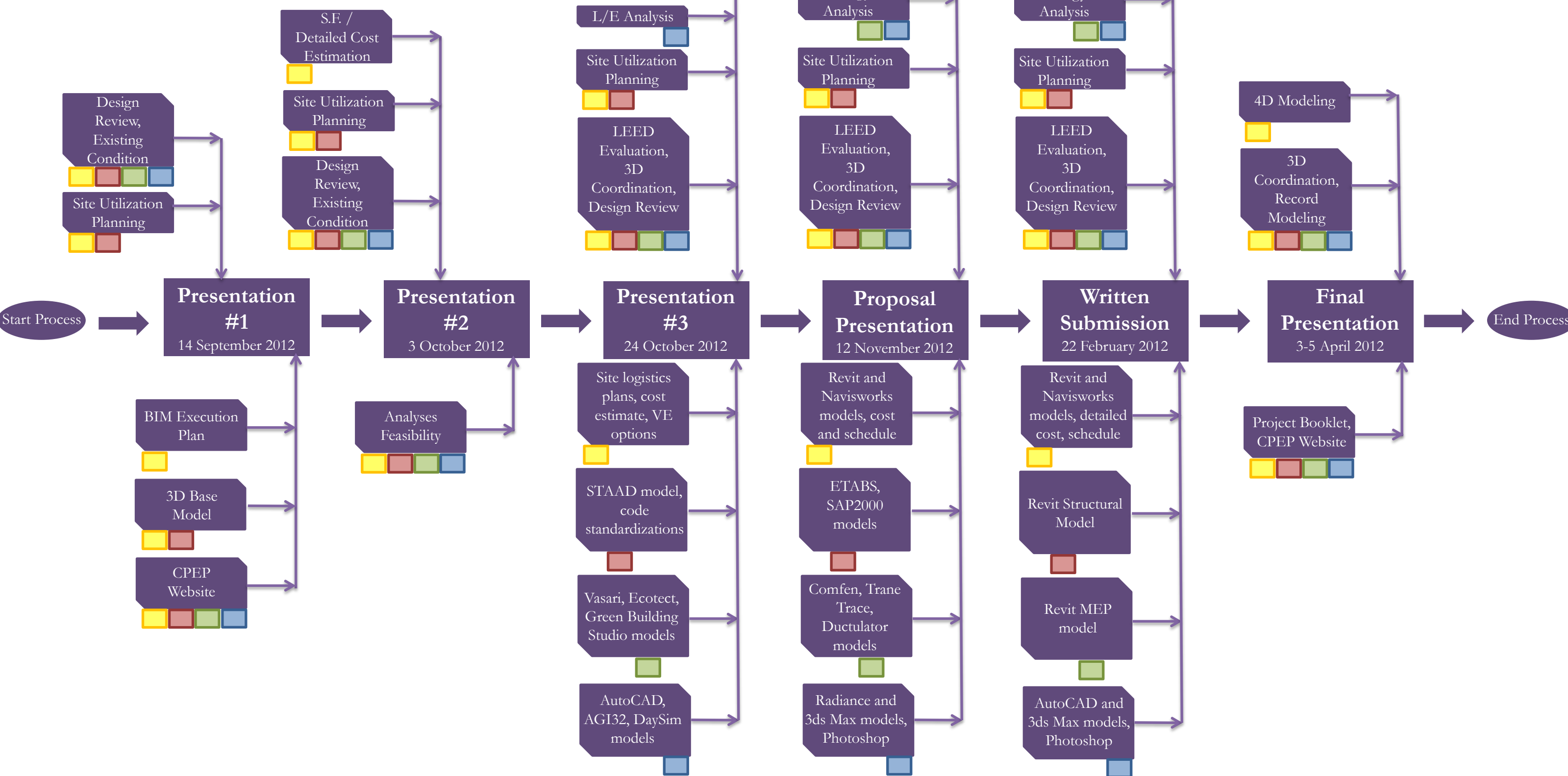
SECTION N: LESSONS LEARNED

Coming Soon

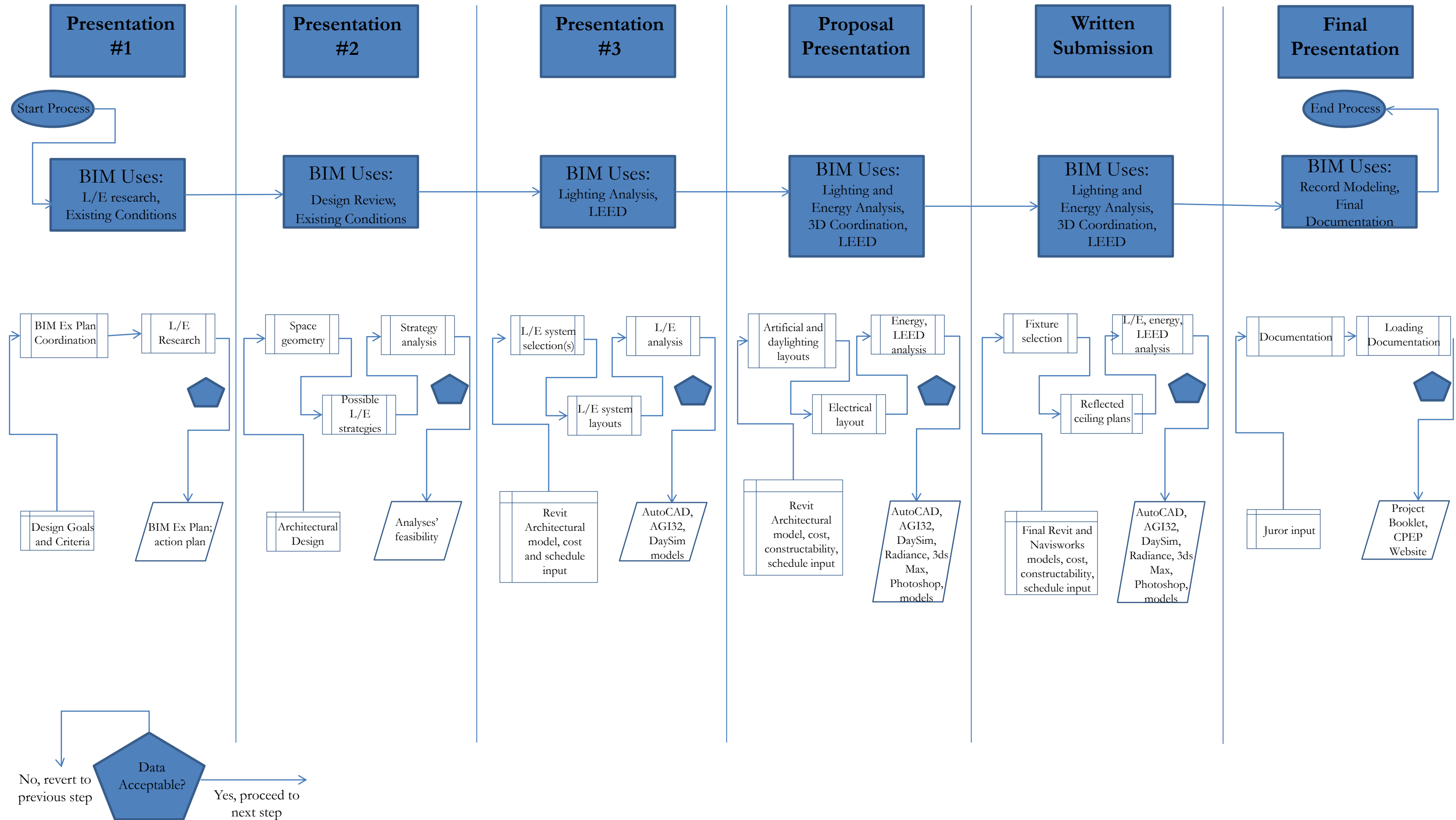
SECTION O: ATTACHMENTS

1. **LEVEL ONE TEAM PROCESS OVERVIEW MAP:** [From Section F]
2. **LEVEL 2 DETAILED TEAM MEMBER PROCESS MAP(S)** [From Section F]
3. **MEETING MINUTES TEMPLATE:** [From Section I]

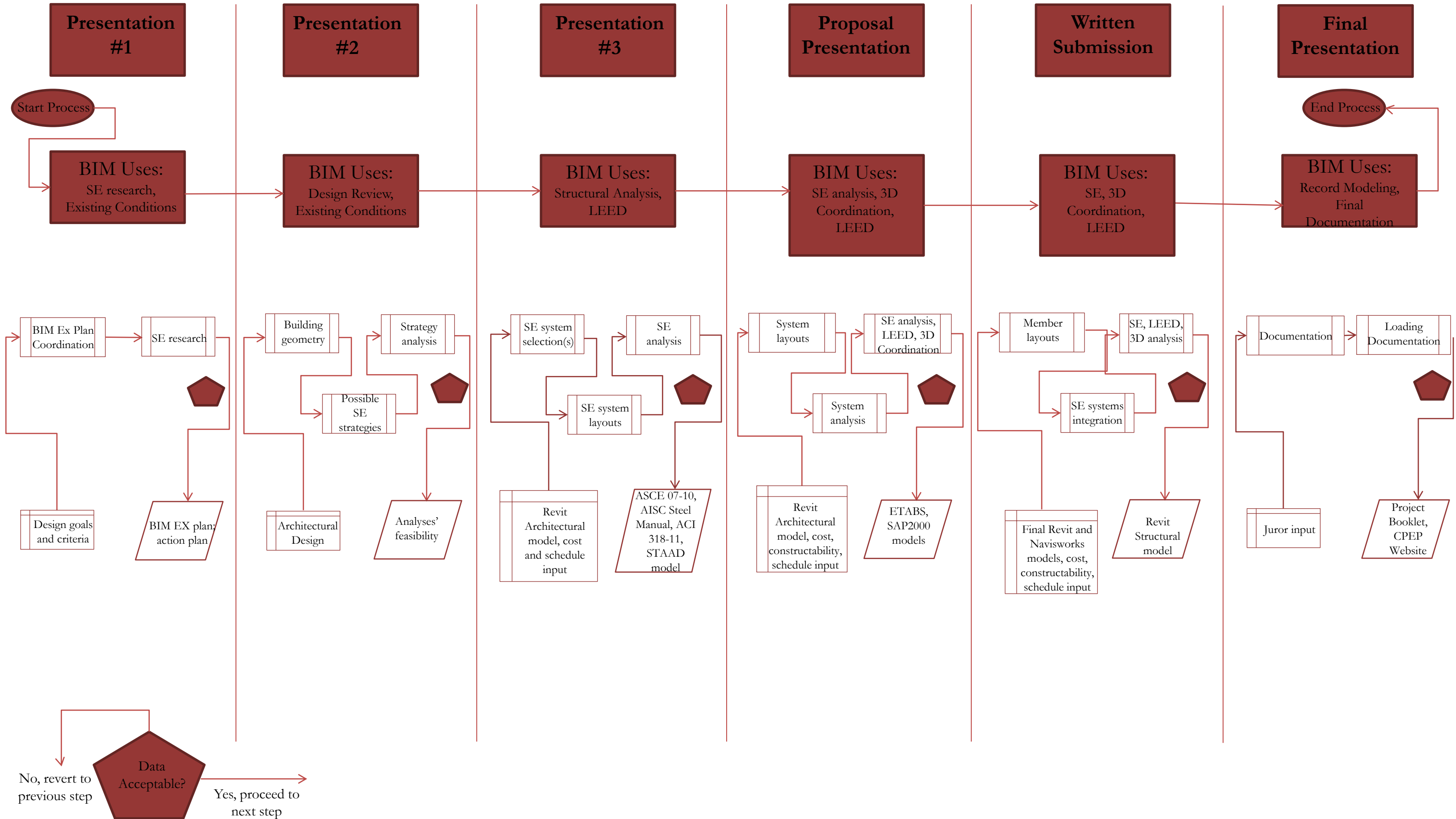
- Construction Managers
- Structural Engineers
- Mechanical Engineers
- Lighting / Electrical Engineer



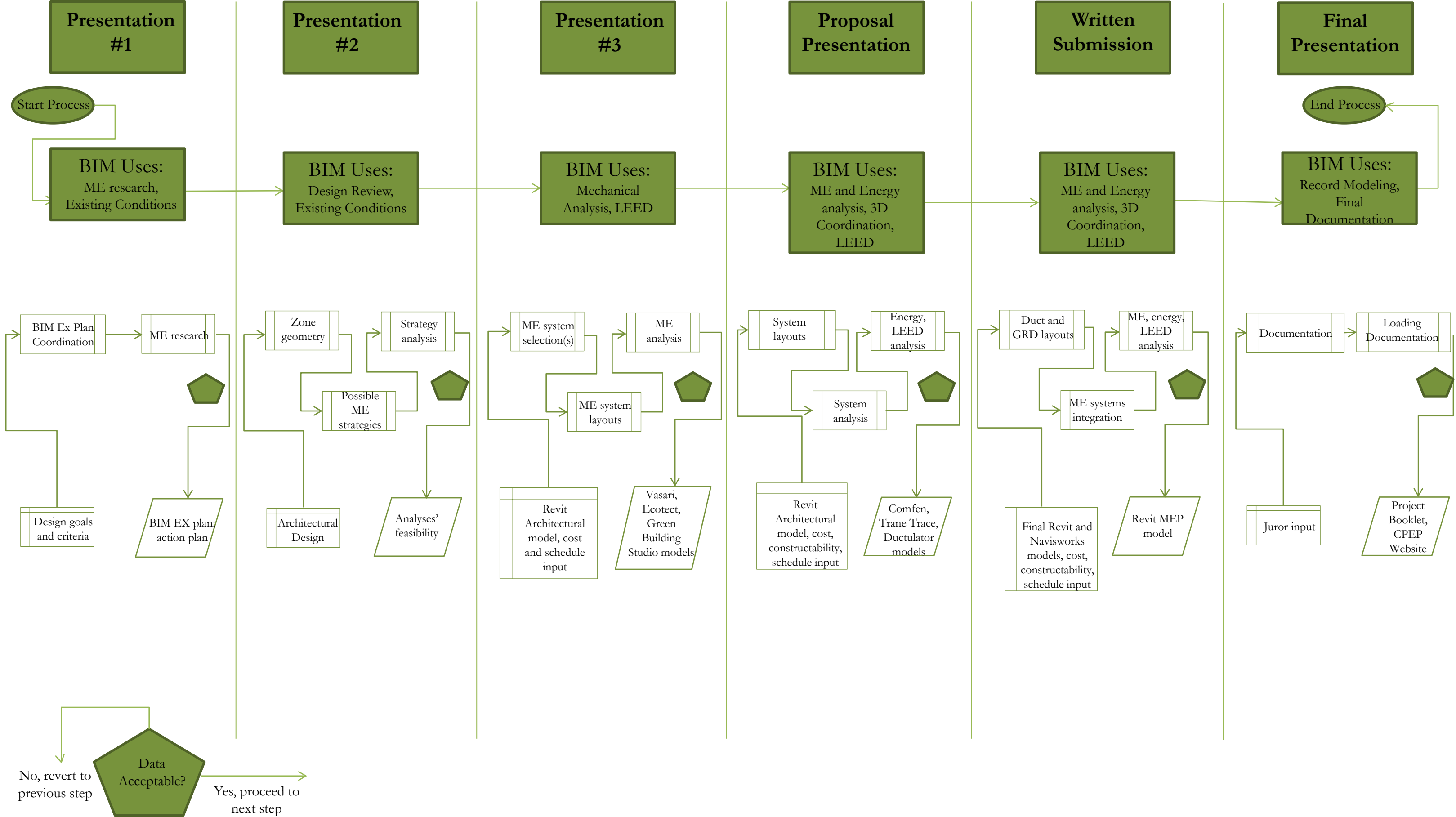
Lighting / Electrical Engineer



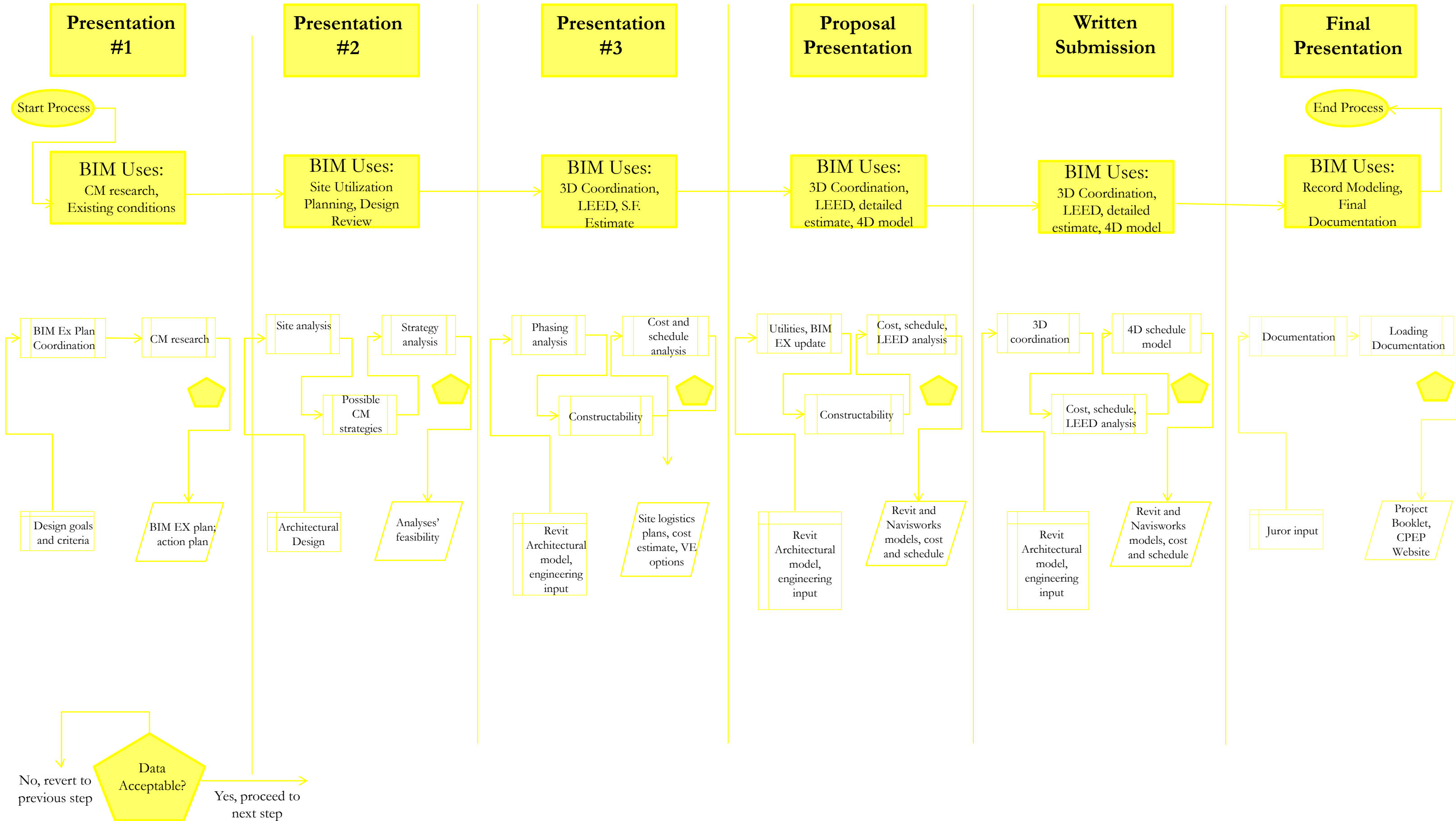
Structural Engineers



Mechanical Engineers



Construction Managers





Meeting: #1

Location:

Time:

Topic:

Nexus team members present:	Initial	Date
Patrick Allen	_____	_____
Rachel Barrow	_____	_____
Alex Byard	_____	_____
Melanie Fonner	_____	_____
Brad Frederick	_____	_____
Brian LaChance	_____	_____
Michael Palmer	_____	_____

Guest(s) present:	Name	_____	_____
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1.1 Old Business

1.1.1

1.2 New Business

1.2.1

1.3 Team Schedule

1.3.1

1.4 Team Deliverables

1.4.1

1.5 Construction Management

1.5.1

1.6 Structural Engineering

1.6.1

1.7 Mechanical Engineering

1.7.1

1.8 Lighting / Electrical Engineering

1.8.1

1.9 Future Business

1.9.1



Published by,

Name

Signed _____

Dated _____

By initialing and dating above, all Nexus team members present, and any guests present, agree to being present at this official Nexus team meeting, and agree to being held responsible for any tasks, and their successful completion by the stated date, assigned during this meeting.

These meeting minutes accurately reflect what occurred during the specified time of the official Nexus meeting. Any team members present, or guests present, that do not agree with what is contained within, must respond to the author of these meeting minutes within 48 hours to discuss revisions and a republication of amended meeting minutes.