HARVARD
University Construction Management Council

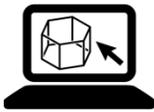# B I M   P R O C U R E M E N T   G U I D E

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YOU ARE HERE

This *BIM Procurement Guide* addresses questions and concerns about integrating BIM into Procurement.

GETTING STARTED

Getting Started with Building Information Modeling (BIM) on a project can be overwhelming – there seem to be an endless amount of technical terms, acronyms, and software programs. The UCMC BIM Subcommittee created the following set of resources to support Harvard stakeholders, whether the language of BIM populates your everyday conversations or this is your first time learning about BIM.

Beginners may find it helpful to start with the *Introduction to BIM* and progress sequentially to *BIM Uses Guide*. Others may start with the *BIM Procurement Guide*, flip back to the *BIM Uses Guide*, and then jump to the *BIM Execution Plan Template*.

"What is BIM?"	"How can I use BIM on my project?"	"Should I use BIM on my project?"	"How can I select a BIM-enabled team?"	"How do I implement BIM on my project"?
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INTRODUCTION TO BIM	**BIM USES GUIDE**	**BIM DECISION MATRIX**	**BIM PROCUREMENT GUIDE**	**BIM EXECUTION PLAN TEMPLATE**
Addresses questions including: • What is BIM? • Why should I use BIM? • Does BIM cost more? • Take longer?	Explains the different ways project stakeholders can use BIM. Future documents reference the *BIM Uses Guide*.	Helps Harvard stakeholders determine if a project can benefit from BIM, and if so, what specific BIM Uses are best suited for that project. * Includes *BIM Decision Matrix* instructions	Includes: • Sample RFP language • BIM-capability evaluation methods • Procurement Best Practices	A standardized framework for teams to plan, document, and implement BIM on a project. * Includes *Guide to BIM Execution Planning*

INTRODUCTION

Owner requests for BIM are the number one driver of industry BIM adoption, according to a 2008 McGraw Hill survey of industry professionals. Therefore, to get a BIM-enabled team, Project Managers need to ask for a BIM-enabled team. The following document outlines Harvard's strategy for including BIM in the Procurement Process.

INCLUDING BIM IN PROCUREMENT

Requests for Proposals ("RFP") need to address the project's Delivery Approach, BIM Uses, and BIM Execution Plan in a comprehensive manner. RFPs should also provide an opportunity for Respondents to demonstrate their capability.

See Harvard's *BIM Uses Guide* for BIM Use definitions.

The objective is to integrate BIM language with the entire RFP, so Respondents understand Harvard's commitment to BIM. BIM requirements are included in multiple sections to demonstrate Harvard's commitment to BIM. At the same time, the language cannot be so specific that it identifies the response Harvard is looking for.

The RFP language is scalable to address different contract forms and project types. For example, a lab renovation doesn't require the same level of BIM implementation as a ground-up project. Therefore, Project Managers should refer to the project's *BIM Decision Matrix* report for BIM Use recommendations.

BIM is 90% sociology (process) and 10% technology (software). Harvard's RFP BIM Language therefore addresses software and technical requirements, process capabilities, and willingness.

DESIGN SERVICE RFP LANGUAGE

The following text should be added to the Harvard Planning and Project Management ("HPPM") RFP for Design Services to include BIM. Text to add shown in quotes. Directions shown in Italics.

Project Description

"The Project will use BIM as part of its project delivery. The Project will use Harvard's BIM Execution Plan ("BEP") Template to define and manage BIM uses and maximize the BIM value during design, procurement, construction, turnover, and facilities management."

Scope of Services

"Respondents will assign a BIM Lead to the Project. The design BIM Lead will be responsible for successful BIM implementation on the Project along with BIM Leads from the design consultants, construction manager, and subcontractors.

The Project will use Harvard's BIM Execution Plan ("BEP") Template to define and manage BIM uses and maximize the BIM value during design, procurement, construction, turnover, and facilities management. The design team will work collaboratively with Harvard and other team members to create a Project-specific BEP that defines uses, software, protocols, standards, and level of development. BIM Uses will include, at minimum:

Refer to the project's *BIM Decision Matrix* report for BIM Use recommendations.

- *[List the "Proceed" BIM Uses, per the project's BIM Decision Matrix Recommendation.]*

The BEP will also define software use, workflows, level of development, model standards, and access to the model. The team is jointly responsible for implementing the BEP to assure success of the Project."

Submittal Requirements

Add to Team Structure: "Indicate which team member will serve as the BIM Lead."

Add to Key Team Members Qualifications: "Include each individual's BIM capability and length of time using BIM as a design tool."
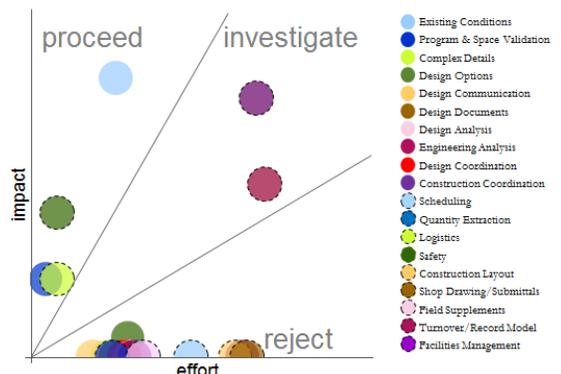
Comparable Projects: "Describe the use of BIM on this project (BIM Uses, software, disciplines, collaboration, etc.)."

Evaluation Criteria

Add Section: "BIM: In its selection process, Harvard considers both BIM skill (experience) and BIM will (aptitude for collaboration). Identify which BIM software Platforms your firm uses and how you use them. What are your experiences sharing models with design consultants, CMs, and subcontractors? (Note: the Project may not take advantage of model sharing.) What are the benefits and challenges your firm has experienced as a result of BIM?

PRECONSTRUCTION AND CONSTRUCTION SERVICES RFP LANGUAGE

The following text should be added to the Harvard Planning and Project Management ("HPPM") RFP for Preconstruction and Construction Services to include BIM. Text to add shown in quotes. Directions shown in Italics.

Project Description

"The Project will use BIM as part of its project delivery. The Project will use Harvard's BIM Execution Plan ("BEP") Template to define and manage BIM uses and maximize the BIM value during design, procurement, construction, turnover, and facilities management."

Scope of Services

Add to Preconstruction section of RFP:

"Respondents will assign a BIM Lead to the Project. The construction BIM Lead will be responsible for successful BIM implementation on the Project along with BIM Leads from the architect, design consultants, and subcontractors. The team is jointly responsible for implementing the BEP to assure success of the Project.

The construction team will work collaboratively with Harvard and other team members to create a Project-specific BEP based on Harvard's BEP Template that defines uses, software, protocols, standards, and level of development.

BIM Uses will include, at minimum:

- *[List the Preconstruction "Proceed" BIM Uses, per the project's BIM Decision Matrix Recommendation. Consider integrating with current Preconstruction Tasks. For example, "Develop a phasing and logistics plan using BIM for the Project and Program"]*

Add to Construction Services section of RFP:

"Implement BIM per the Project-specific BEP:

- *[List the Construction "Proceed" BIM Uses, per the project's BIM Decision Matrix Recommendation.]*

Turnover BIM to Harvard, per the Project-specific BEP."

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Refer to the project's *BIM Decision Matrix* report for BIM Use recommendations.

Submittal Requirements

Add to Organization Chart: "Indicate which team member will serve as the BIM Lead."

Add to Key Team Members Qualifications: "Include each individual's BIM capability and length of time using BIM as a design tool."

Evaluation Criteria

*Add to Minimum Staffing Requirements:* "BIM Lead"

Add to General Project Experience: "Describe the use of BIM on this project (BIM Uses, software, disciplines, collaboration, etc.)."

Add to Specific Project Experience: "Use of BIM to optimize project delivery."

Add Section: "BIM: In its selection process, Harvard considers both BIM skill (experience) and BIM will (aptitude for collaboration). Identify which BIM software Platforms your firm uses and how you use them. What are your experiences sharing models with architects,
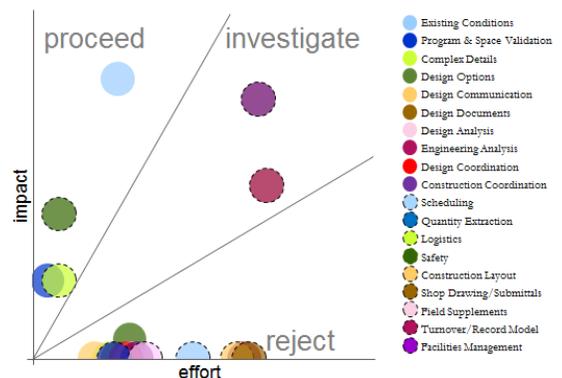
design consultants, and subcontractors? (Note: the Project may not take advantage of model sharing.) How do you integrate BIM into estimating and operational activities?"

EVALUATING TEAM

To evaluate a firm's BIM capability, consider BIM Will and BIM Skill. It is often helpful to assign a point to each criterion to graphically compare firms. Use the Harvard Evaluating BIM Capability template to calculate and graph.

BIM Will

Factors that impact BIM Will include:

- BIM Lead's capability to bring a team together. [1 point for teaming]
- What is the firm's most innovative BIM Use?
  - ○ [1 point for an innovative BIM Use.]
- How innovation-ready is the overall team? Does the Design Principle or Superintendent seem truly on board with the process or are they merely talking the talk?

  - ○ Team expresses passionate interest in innovation and new processes. [1 point]
  - ○ Team is using buzz-words and simply talking the talk. [0 points]
- How flexible does their process seem? This is especially important for contractors' preconstruction processes.
  - ○ Process seems rigid [0 points]
  - ○ Process has a framework, but can accept new protocols and workflows [1 point]
- For CM/GC: How will they use the design models?
  - ○ A response of "Designers don't model well for construction, so we will create our own model." [0 points]
  - ○ "Architects don't model well for construction, so we will modify the design model and then use it all or partially." [1 point]
  - ○ Note: Some architects don't model with construction in mind; others do. In any case, contractors shouldn't "throw away" the design model – it is highly useful. Furthermore, Harvard doesn't want to pay for two models!
- What is their experience with BIM Execution Planning (BEP)?
  - ○ None [0 points]
  - ○ Projects with separate BEPs for Design & Construction [0 points]
  - ○ Participated in BEP [1 point]
  - ○ Lead BEP [1 point]
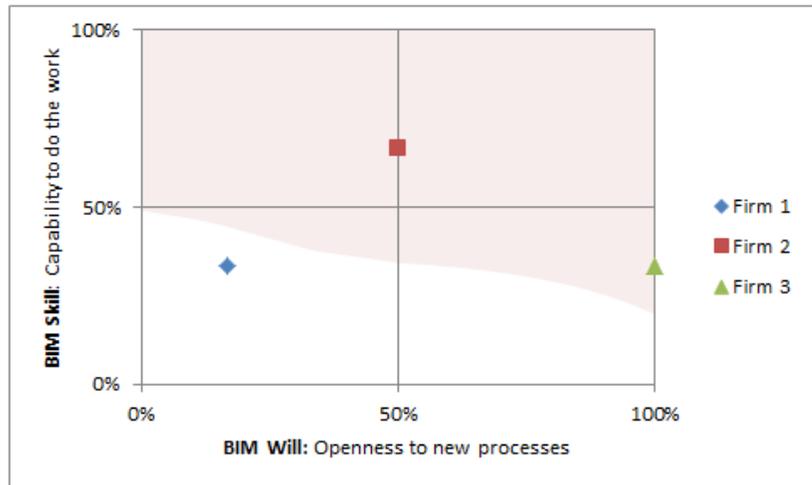
BIM Skill

Factors that impact BIM Skill include:

- Is the BIM Lead experienced with the project type at hand? [1 point for project experience]
- Is the BIM Lead technically savvy? How technically savvy do they seem? [1 point for technical savvy]
- What percentage of their proposed project team can use BIM software to complete day-to-day tasks?
  - ○ 100% [0 point] A response of 100% isn't likely truthful.

- o Designer: <70%; CM/GC: <20 [0 point, unless the team provides a clear training plan]
  - o Designer: >70%; CM/GC: >20% [1 point]
  - o Note: Although a design team needs more activity in the BIM than a CM/GC team, neither will succeed if BIM isn't integrated into day-to-day tasks.
- For designers, explain how their firm creates drawing details and schedule from the model.
  - o Completely sketched (2D, CAD) [0 points]
  - o Sketches line work (2D) on top of model (3D) objects [1 point]
  - o Modeled fully in 3D [1 point]
- What percent of projects in their office are using BIM? Although % of projects isn't the only indicator of BIM skill, it does imply experience with BIM on multiple projects as well as having multiple teams trained.
  - o > 75% [1 point]
- What criterion would prevent them from using BIM on a project?
  - o A response of "Team members aren't using BIM" indicates that they rely heavily on team members to successfully use BIM. [0 point]
  - o "Project budget doesn't justify expense" indicates the firm hasn't achieved an internal BIM ROI, so doesn't have it quite figured out. [0 point]
  - o "Project scope/scale doesn't require BIM" indicates that they understand that BIM doesn't make sense for some project types. [1 point]
- For GC/CM, how do they use the model to put actual construction work in place? Give examples.
  - o "Clash Detection" Although clash detection is important, using it for coordination doesn't indicate High BIM skill. [0 point]
  - o Direct from Model Layout [1 point]
  - o Fabrication [0 points, unless the CM illustrates a key role in the fabrication workflow]
  - o Delivery Tracking [1 point]
  - o Formwork [1 point]