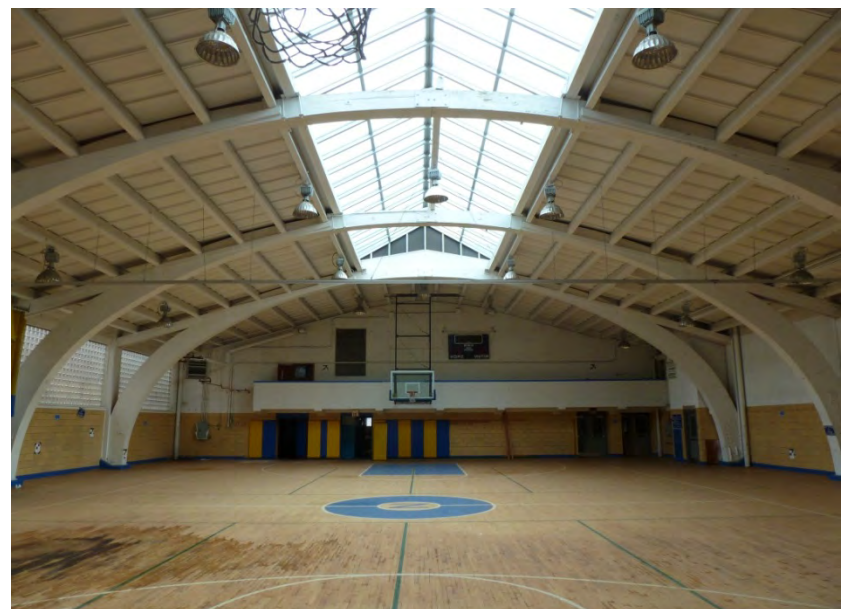




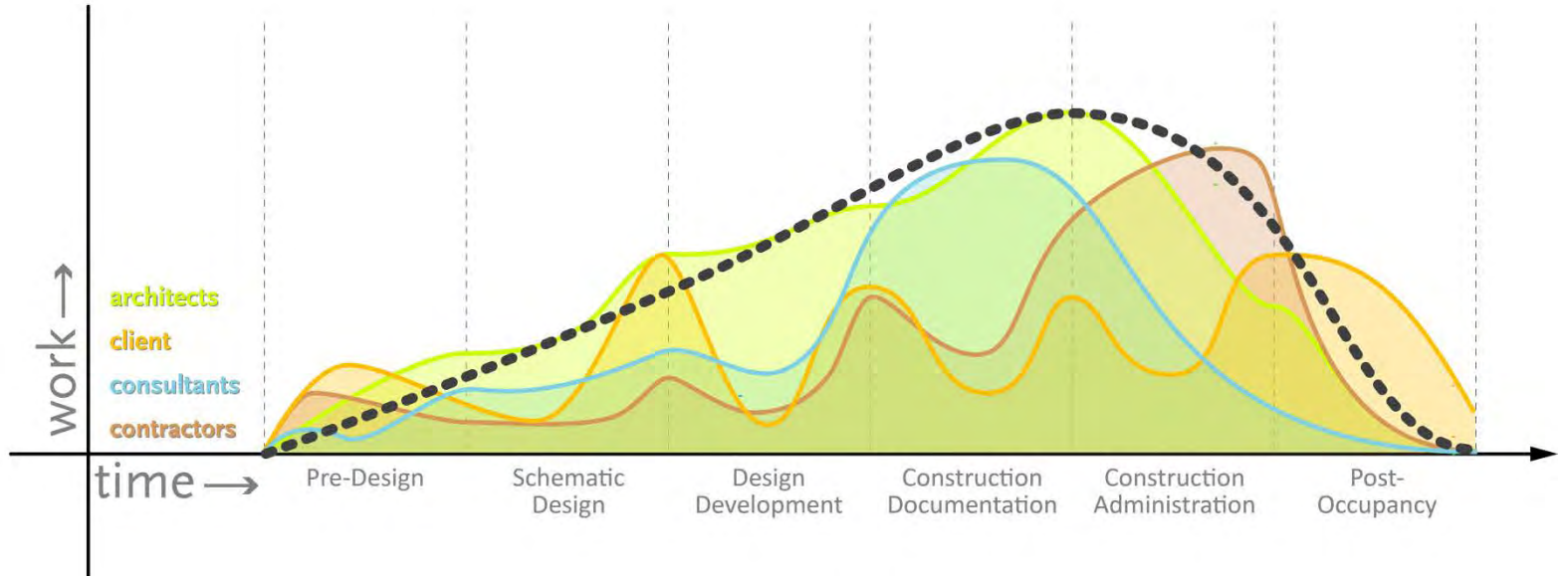
EEB HUB | AEC Platform

October 5th

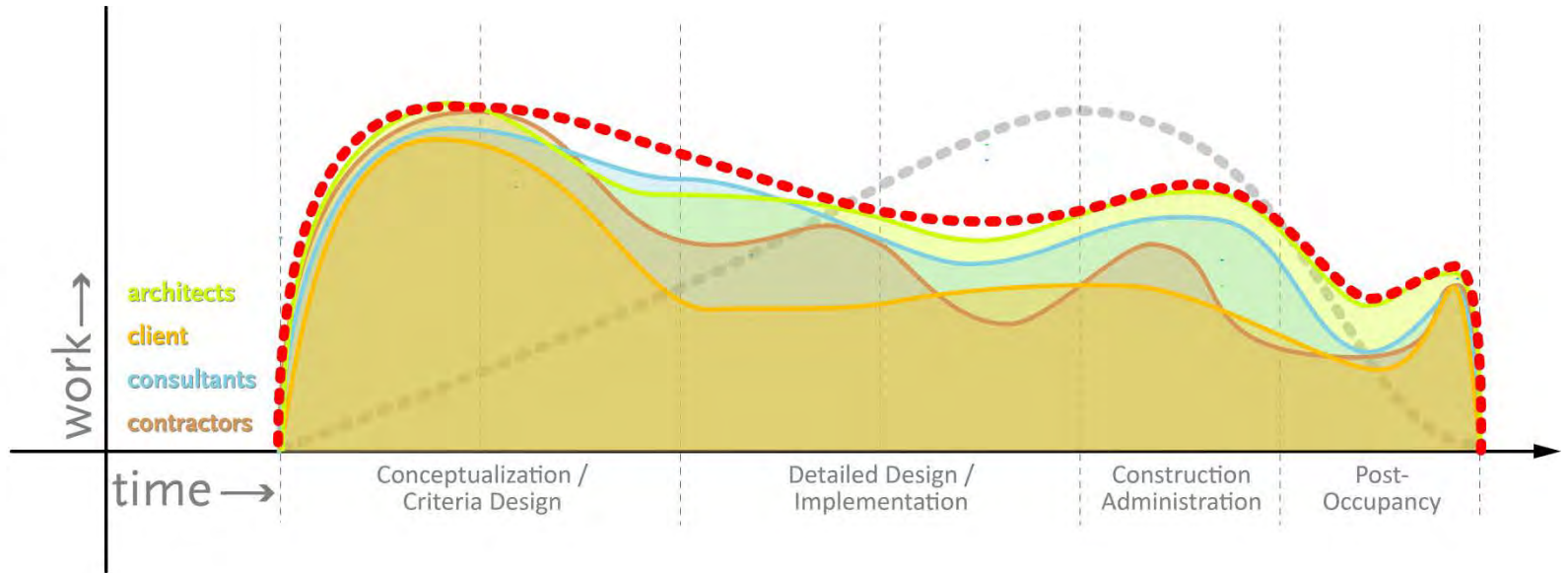


661 EXISTING CONDITION

TYPICAL WORKPLAN



EEB HUB COLLABORATIVE WORKPLAN



GPIC HUB Integrated Project Team A3 Report - PROJECT INITIATION PLAN

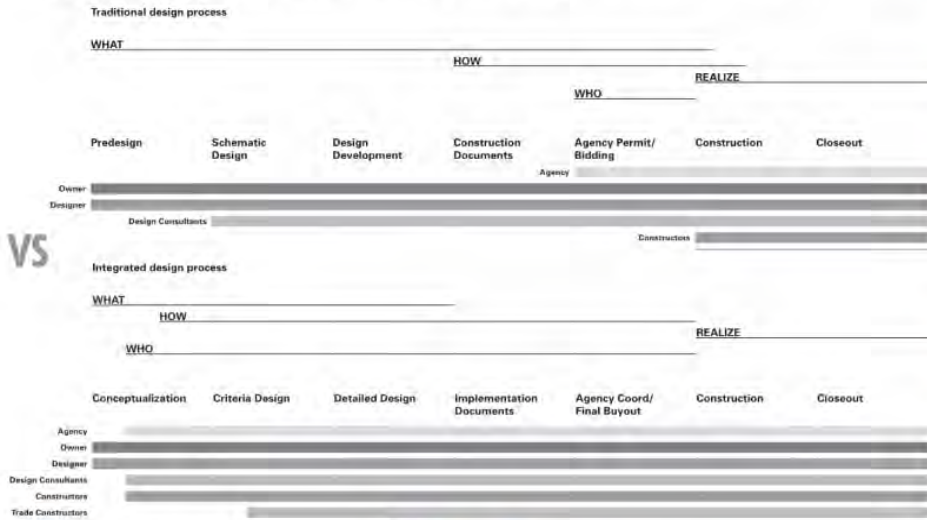
BACKGROUND

The strategic focus of the GPIC EEB Hub is on full-spectrum retrofit of existing average size commercial and multi-family residential buildings. The goals of the GPIC EEB Hub are to: 1) transform building retrofit industry from serial fragmentation to integrated systems methods; 2) improve design tools, building systems, public policies, market incentives, and workforce skills needed to achieve a 50% reduction of energy use in buildings; and 3) stimulate private investment and quality job creation in Greater Philadelphia and beyond.(GPIC 5 year plan; September 1, 2011)

The likelihood of a successful project will be increased by promoting the following objectives: all members of the Project Team collaborating throughout design and construction with all other members of the Project Team; planning and managing the Project as a network of commitments; optimizing the Project as a whole, rather than any particular piece; and tightly coupling learning with action to promote continuous improvement throughout the life of the Project. (GPIC Collaboration Addendum DRAFT v5.0)

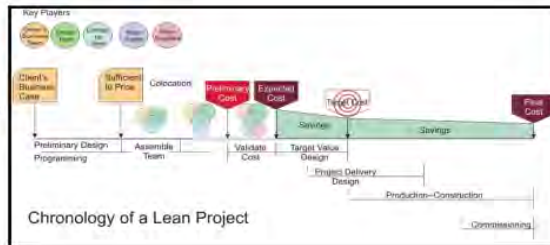
CURRENT CONDITION

A traditional project delivery approach and design process is typically executed in a linear process with select handoffs at defined stages between project stakeholders. A goal of this project is to use Integrated Project Delivery concepts at all project stages which includes an integrated design process through the collaboration of all project stakeholders early. While processes and tools for the traditional design and construction process are well known and documented they are not as defined for integrated project delivery. Differences in key stakeholder engagement a traditional design process and an integrated design process is illustrated in the following image.



GOAL

Establish a strong foundation for Integrated Project Delivery through shared understanding of behaviors, processes and tools needed for success. The chronology of a lean project (image at right) shows the importance of assembling the team and validating the cost model prior to starting the target value design process. In addition an integrated schedule, design and performance metrics must be defined to enable the team to make timely decisions. These elements are critical to inform an integrated design process.

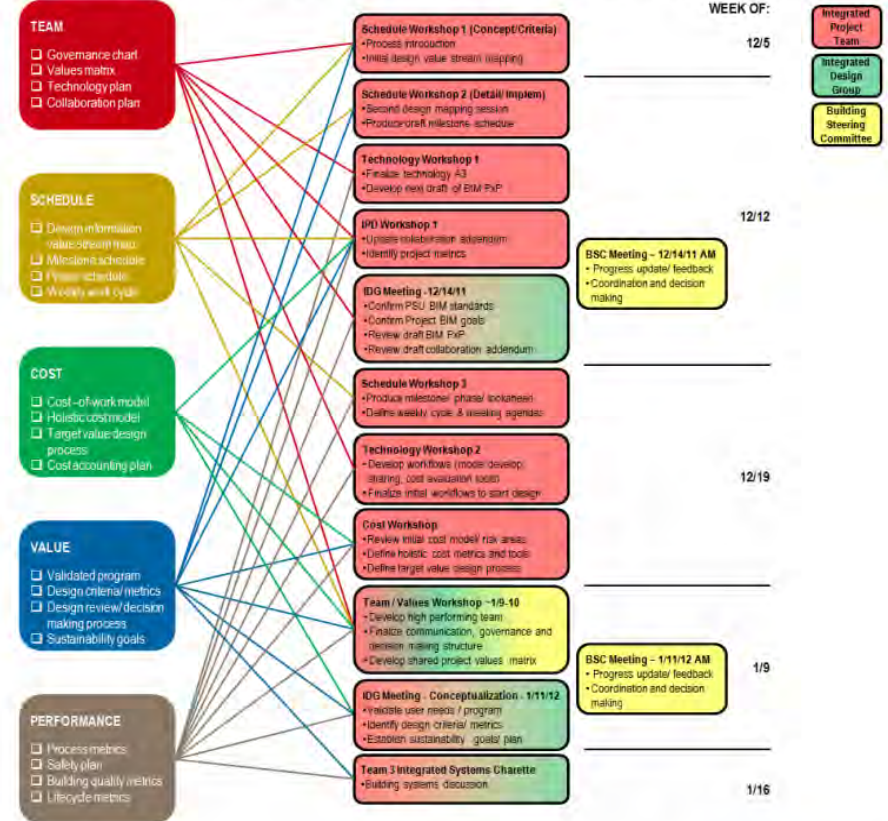


13 DECEMBER 2011

RESPONSIBLE: Building Steering Committee

PLAN

The integrated project team will initiate the project by jointly creating core project processes and tools in order to create a strong collaborative foundation for the entire project. Five key foundational elements are identified on the left with specific deliverables that serve as a critical preface to the beginning of the integrated design process and integrated project delivery method. Each deliverable will be developed through a series of meetings and iterative workshops on the right (participation is per color code on far right).



EVALUATE

1. Review status of each individual deliverable during weekly integrated project team meetings (Goolsby/Mordhorst)
2. Complete each deliverable by January 25, 2011, BSC meeting

FOLLOW UP

1. Communicate progress
2. Adjust project initiation plan at conclusion based on lessons learned for use as repeatable process

VALUE MATRIX

To be established at the Team/ Values Workshop

Document Number: GPIC001

Values Matrix

BACKGROUND: All projects need context and background for determining at the outset why the project is being undertaken. What problems does it solve? What does it mean to represent? Who are the Stakeholders and what are their objectives? Development of a values matrix, a representation of the varied values the parties mean for the project to represent, anchors the project in a certain context that allows the parties to work across the creative tensions of varying values and arrive at the best built environment solution.

CURRENT CONDITION: The GPIC is a consortium of Penn State University and a variety of state and federal government entities including E-RIC and the Department of Energy. The goals of the GPIC EEB Hub are to: 1) transform building retrofit industry from serial fragmentation to integrated systems methods; 2) improve design tools, building systems, public policies, market incentives, and workforce skills needed to achieve a 50% reduction of energy use in buildings; and 3) stimulate private investment and quality job creation in Greater Philadelphia and beyond. (www.gpichub.org). The specific project includes the renovation of an existing gymnasium and the construction of a new building. Kieran Timberlake is the project architect and Balfour Beatty is the Constructor.

DEVELOPMENT PROCESS: In order to secure a representative set of agreed values, the stakeholders convened in Philadelphia for a facilitated values development session. Nine categories of values were developed by the group:

- Influence
- Demonstration
- Learning
- Work Management
- Repeatability
- Maximization of Value
- Collaboration
- Regional Optimization
- Systems Integration
- Whole Costing



TARGET CONDITION: The parties agreed to allow Steve DiBartolo, Bevan Mace and Dave Riz to collaborate on a proposed final statement of the Values Matrix.

The team reduced the categories to 7 and developed the following proposed values statements:

Influence: As a regional collaboration creating national energy efficient innovations that foster job growth, economic development we will influence the industry to design, implement and operate integrated energy efficient renovations. We will influence public owners to use integrative project delivery processes.

Repeatable Demonstration: We will demonstrate incorporation of repeatable energy efficient technology, processes and procedures that are affordable, workable and efficient. We will demonstrate that public projects can deliver projects on an integrated basis within the procurement challenges this project faces.

Learning: We will use processes and technologies that allow us to learn and share our learning about the efficacy, affordability, repeatability and constructability of efficient and effective energy retrofits through synergistic integration of dependable components and subsystems

Collaborative Environments: We will create a collaborative, multi-dimensional and highly functional work environment to serve both short and long term goals and provide a nexus for regional demonstration, learning and influence in accordance with GPIC requirements and Penn State educational goals.

Systems Integration: We will create efficient and effective energy retrofits through synergistic integration of dependable components and subsystems.

Cost Certainty - We will be good financial stewards and will spend all available initial funds to maximize scope, minimize long term facility costs and with constant consideration of premium/ affordability.

Time Reliability - We will be a highly reliable team who makes decisions at the most responsible moment and creates a safe and quality work environment.

IMPLEMENTATION PLAN:

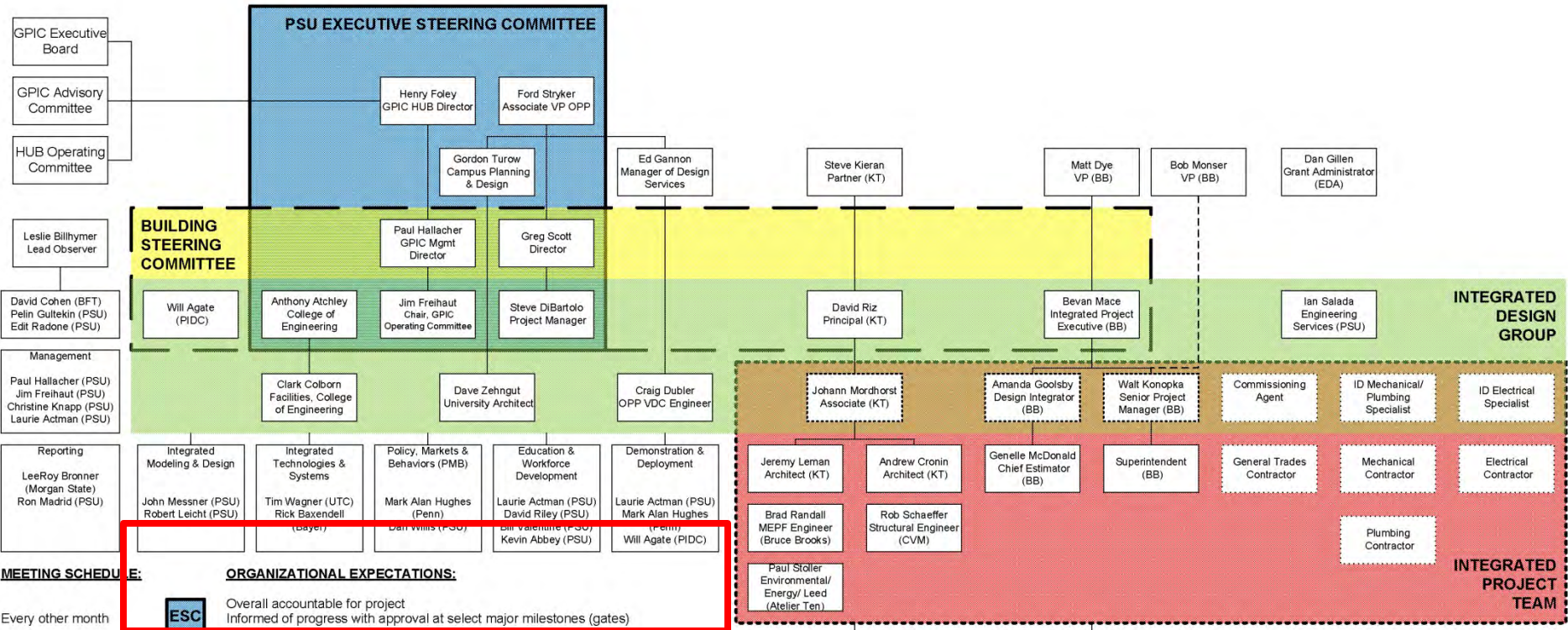
The GPIC team will review the values at the next meeting of the Project Team on February 22. The values will be reviewed, revised if necessary and adopted by the team.

FOLLOW-UP:

The team will use the values in assessing the inclusion or exclusion of various elements in the project, in developing systems for inclusion, in making design and construction decisions and in implementing and operating the buildings after completion. The values may be revisited from time to time to ensure that they continue to represent the core values of the project. All A-3s developed for the project will have a legend (as the one on the right) that will reflect how that A-3 and its suggestions would advance ■, retard ■ or have no effect upon ■ the values developed.

Project Values Measurement

Affect on:	■	■	■
Influence			
Repeatable Demonstration			
Learning			
Collaborative Environments			
Systems Integration			
Cost Certainty			
Time Reliability			



MEETING SCHEDULE:

- Every other month
- Every other Wednesday (1 PM – 2 PM)
- Monthly on Wednesday (2 PM – 4 PM)
- Every Wednesday (10 AM – 3 PM)

ORGANIZATIONAL EXPECTATIONS:

- ESC** Overall accountable for project
Informed of progress with approval at select major milestones (gates)
- BSC** Project oversight (program/ process) and make recommendations to PSU EB
Remove constraints for respective organizations
Manages project and owner contingency
- IDG** Provide input and pull others as needed into design process (proactive not reactive)
Make design decisions within respective target value design clusters (across with unanimous decision)
Make recommendations to BSC
- IPT** Performs the detailed design and construction work
Assemble data and input from IDG and others to provide options, analysis and recommendations
Inform BSC of project progress, issues requiring resolution and overall project metrics performance

INDIVIDUAL EXPECTATIONS:

Each individual is expected to participate and engage fully in their assigned meetings. If for some reason they are not able to participate they are responsible for assigning a delegate who has ability and authority to provide input and make decisions on their behalf.

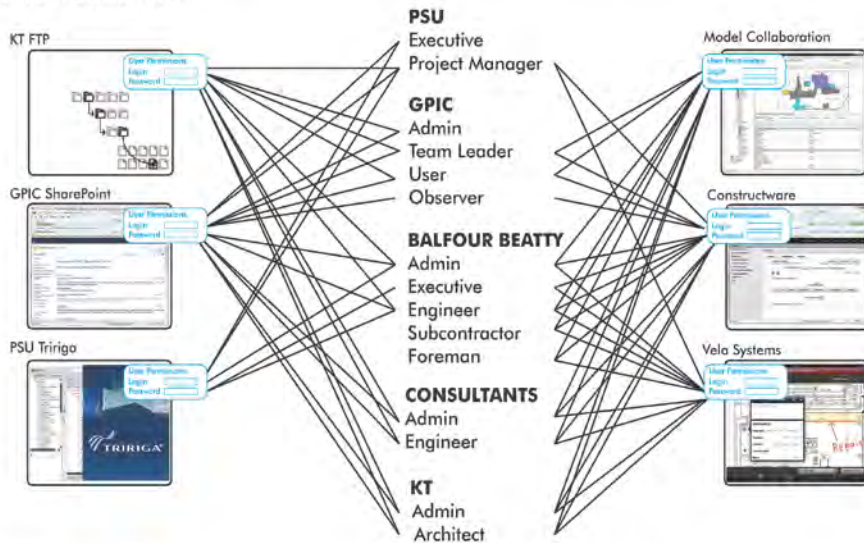
PROJECT INFORMATION TRANSPARENCY

PLAN

BACKGROUND

Contemporary design and construction projects rely on a variety of disjointed software tools and hosting platforms to conduct everyday activities. User interaction with project information requires a deep institutional understanding of which documents are stored where and the navigation peculiarities of each host. The structure results in a condition represented by the diagram below, where each line represents a distinct type of user account for a particular information host.

CURRENT CONDITION



GOAL

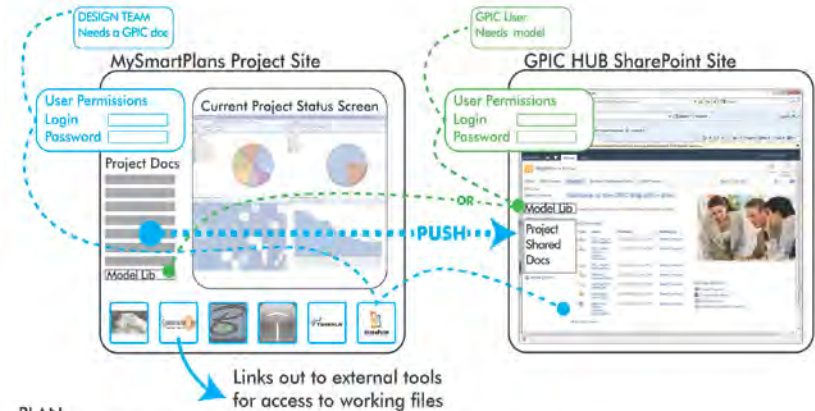
Provide a collaborative, web-based, real-time Project Management Information System (PMIS). The PMIS should be an integrated solution to gather and filter all relevant project data with a unified user interface for increased transparency project wide by including communications, periodic metrics reporting and document control. The PMIS should be accessible to the Owner, Project Manager, Design Professionals, Consultants, CM and GPIC members.

ANALYSIS

On a typical project following the Design-Bid-Build paradigm, project information is partitioned along contractual lines. As the project progresses, background information on why and how decisions were made is filtered out and only the resultant decision is documented and carried forward through the process. Parties with no direct connection to the decision event are afforded little context. Even if all team members were granted access to all project information, specific content is difficult to locate. Owner documents, project design reports, research reports, design drawings, digital models, and construction management documents are all stored on separate hosts to make the best use of available tools. Each host has a unique user interface, operating procedures, and conventions that further complicate the process of accessing information from outside one's own network.

PROPOSAL/COUNTERMEASURE

To achieve increased project information transparency an additional layer is required over the typical structure to aggregate and clearly present project information from a variety of sources. MySmartPlans is a software tool provided by Marathon Digital Services that accomplishes this functionality and provides a clean user interface to facilitate effective collaboration across project teams.



PLAN

Who/What/When/Where/\$

The MySmartPlans project site will be built and managed by Balfour Beatty Construction. It is anticipated that the setup will require one (1) month with ongoing periodic maintenance as new tools are added to the project tool box.



Approximate cost for duration of project: \$40,000

EVALUATE

MySmartPlans will be deemed effective if all users groups are able to interact with the project site and extract specific project data related to any phase of the process. Usage data can be tracked for each group and a brief follow up survey will be used to solicit feedback on the user interface and perceived effectiveness of the tool.

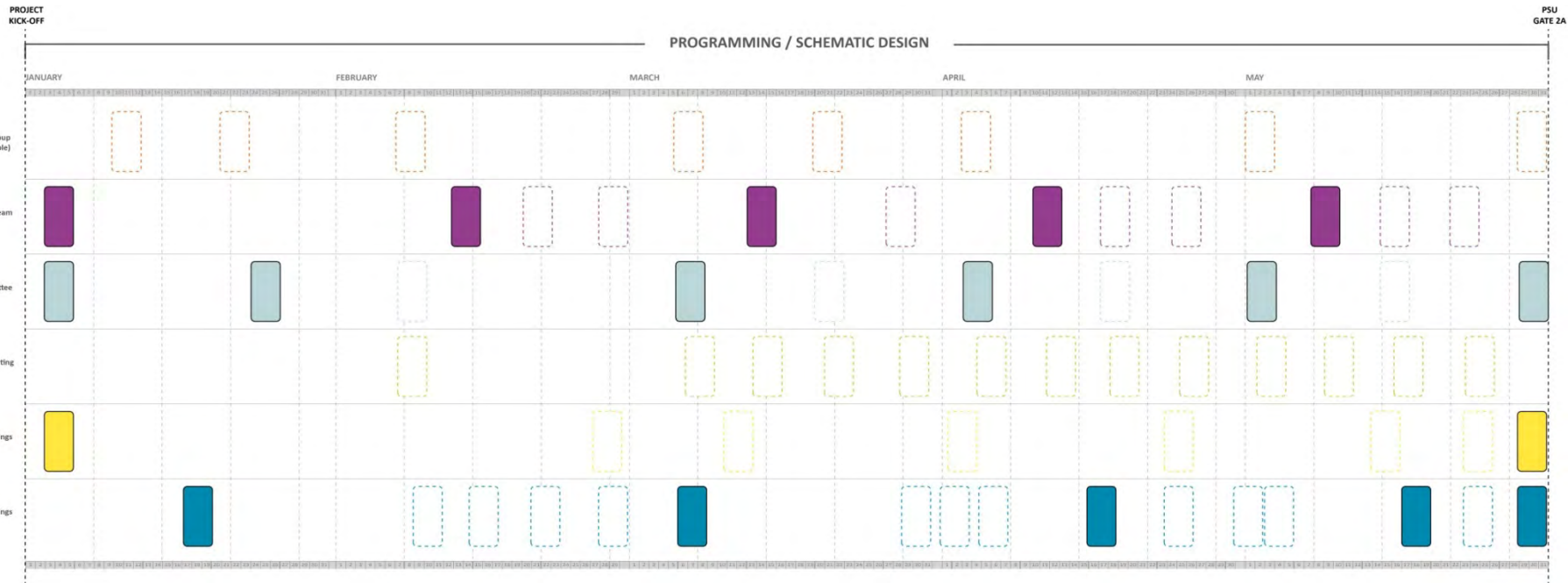
FOLLOW UP

Aggregate usage data
Develop a survey for users.

TRAFFIC LIGHT



Document Number: IM001

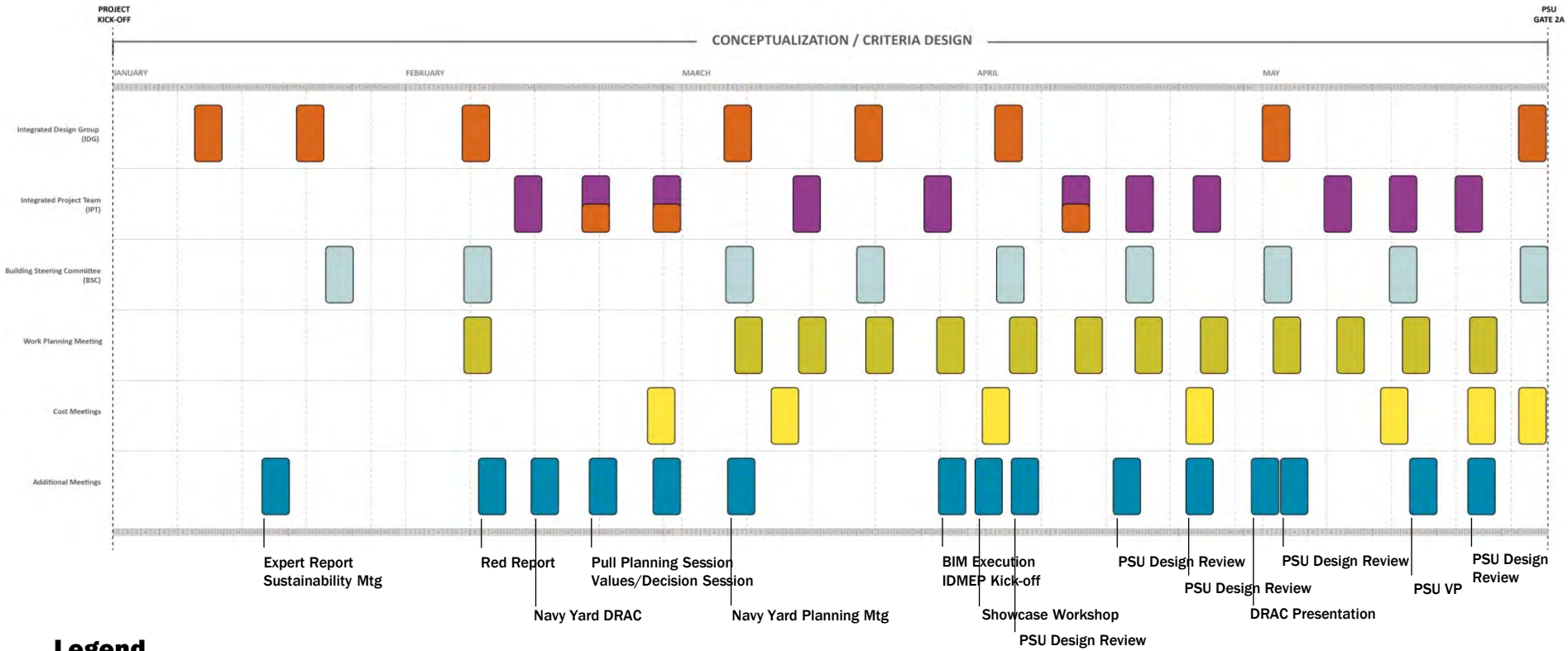


Legend

- IDG Not Applicable
- Project Team
- Building Steering Committee
- Work Planning Meeting
- Cost Meeting
- Additional Meetings

March 2012

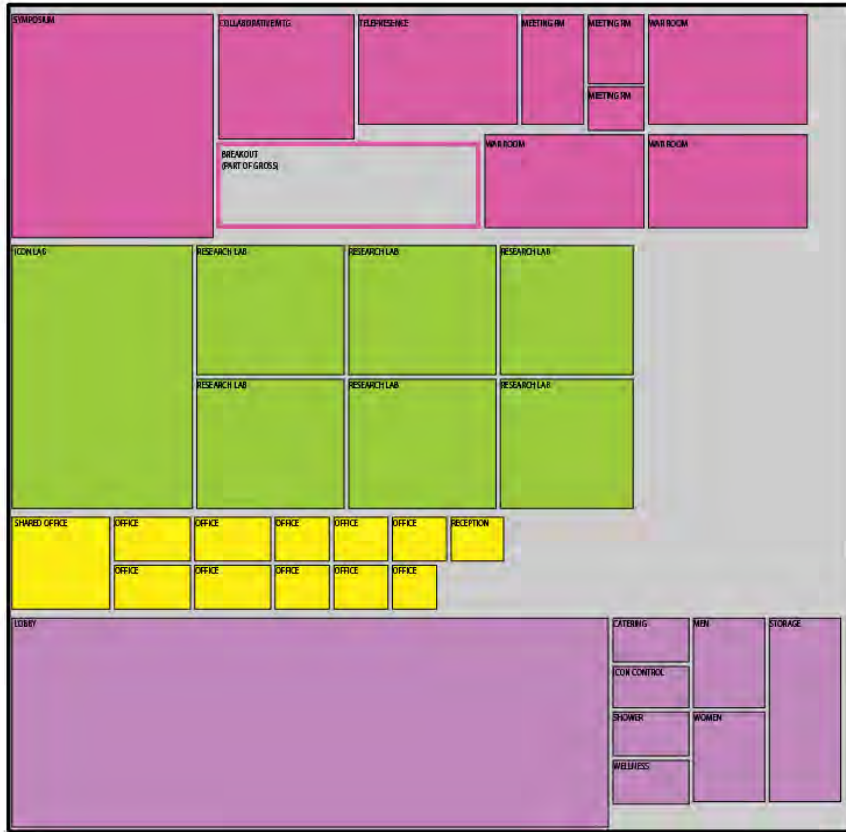
				1	2 Weekly Work Planning Call Schedule Session am	3
4	5	6 04 Early packages By <u>conf call</u> ?	7 BSC 1-2pm IDG 2-4pm 01 Syst. report 02 Org. report Master plan workshop	8 Weekly Work Planning Mtg. 9:00am typical	9	10
11	12	13 Energy model call- A10/KT/BBA/PSU	14 Integrated Project Team Session (OAC) w/PSU 1-4pm 05 Exterior1 06 Systems2 02 Organize1 Systems options feedback by PSU	15 Weekly Work Planning Mtg. 9:00am Energy model call initial - A10/KT/BBA	16	17
18	19 DOAS discuss with Stan <u>Mumma</u> (tbd)	20 A10 Model Starts Energy model call follow-up – PSU/ A10/KT/BBA	21 BSC 1-2pm Integrated Project Team Session (OAC) 1-4pm 07 Site1 08 Structure2	22 Weekly Work Planning Mtg. 9:00am	23	24
25	26	27	28 Integrated Project Team Session (OAC) w/PSU 1-4pm 09 Organiz2 10 Exterior2	29 Weekly Work Planning Mtg. 9:00am	30	31



Legend

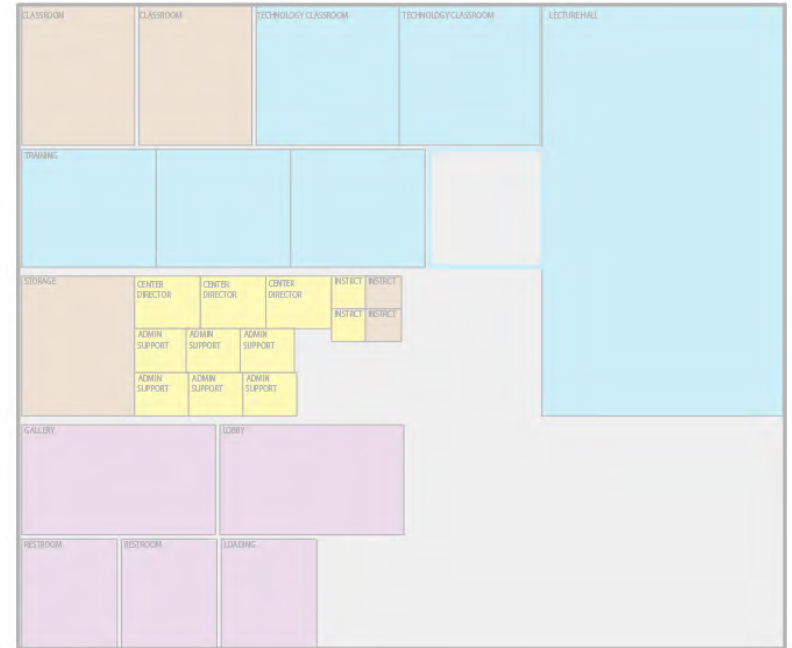
- Integrated Design Group (IDG)
- Integrated Project Team (IPT)
- Building Steering Committee (BSC)
- Work Planning Meeting
- Cost Meeting
- Additional Meetings

Building 661



GROSS AREA 35,293 SF
PROGRAM NET AREA 21,200 SF

Building 7R

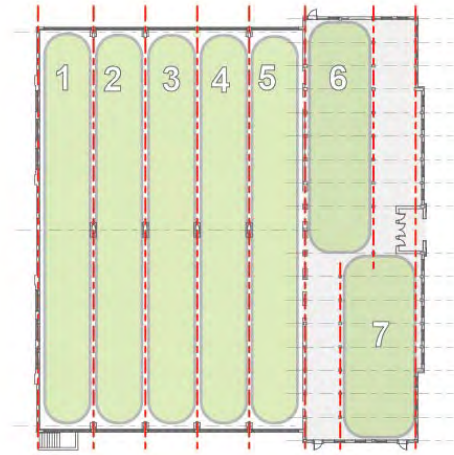


GROSS AREA 25,250 SF
PROGRAM NET AREA 15,750 SF
NET/GROSS RATIO 62.4%

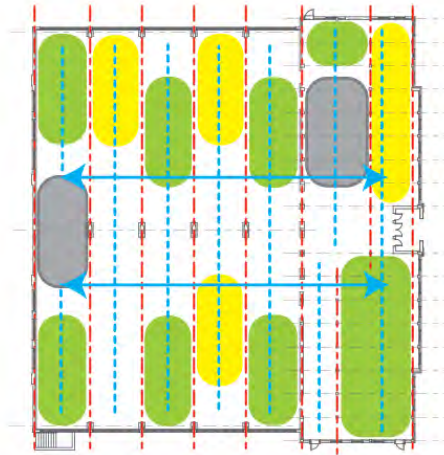
AREA DESIGNATED FOR SHELL: 4,500 SF



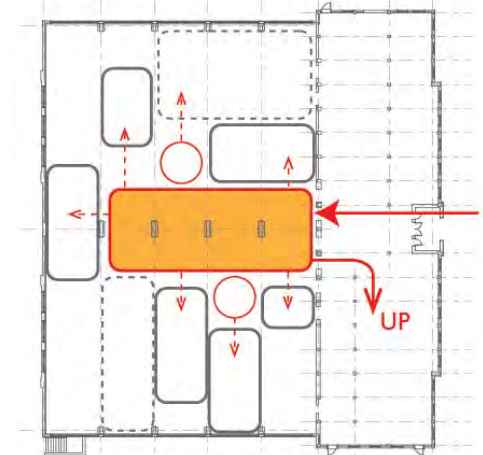
Building 661: Concepts



EXISTING STRUCTURE



PROGRAM DISTRIBUTION



VISITOR CIRCULATION

Building 661: Plans



FIRST FLOOR PLAN



SECOND FLOOR PLAN

Generate list of possible system options



Vett list and develop initial system pairings



Design and refine system options/combinations



OR

Establish recommended systems package(s)



1 C
2 A
3 B

Present refined system options to GPIC/PSU for approval

OR

Optimize integrated solution

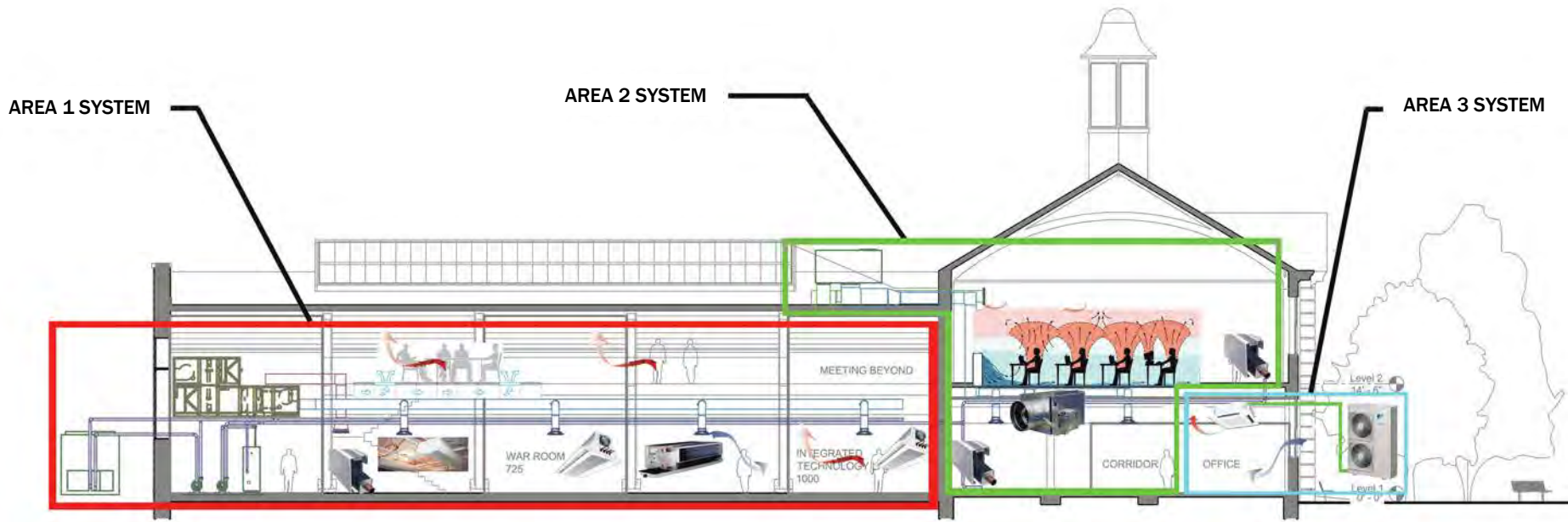
Analyze multiple options Performance/LCC/Values

Area System Summary

Area	Vent	Heat	Cool	Distribution
1 High Bay	Rooftop dedicated outdoor air ventilation system for humidity control, pressurization, and some temp control.			Units Ducted local to space (UFAD for Mezz)
		Hi eff Boiler	Air cooled chiller	Chilled Beam
				Perimeter Fin Tube
2 HeadHouse 2 nd Flr	Rooftop unit for outdoor air, pressurization, heating, and cooling.	Rooftop unit with gas fired furnace possibly supplemental terminal heating	Rooftop unit with chilled water coil.	UFAD or Displacement VAV
3 HeadHouse 1 st Flr	Natural Vent	Air side heat-pump with VRV for main plus hot water convectors as back-up	Air cooled condensing unit with VRV	VRV

GPIC 661 HVAC System Relative Cost Summary

Recommended System Selections for Bldg. 661	Cooling Means	Heating Means	Reheat	OSA Delivery	Distribution Means	Terminal Units
Increasing HVAC Costs ↓	Natural Ventilation	Electric Preheat	Electric	Natural Ventilation (Operable Windows)	Underfloor Air	VAV's
	Dx RTU's	Electric Boiler	Hot Water	Dx DOAS	Sheet Metal Ducts (all air system)	Fan Powered Boxes with Sensible Coils
	Chilled Water (Air Cooled Chiller)	Gas Boiler Standard Efficiency		55F CHW DOAS with Dx trim coil	Geothermal (wshp piping)	WSHP's
	VRV	Gas Boiler High Efficiency		42F CHW DOAS	VRV (refrigerant piping)	VRV Units
	Geothermal	Geothermal			Chilled Water (Insulated Piping)	Chilled Beams

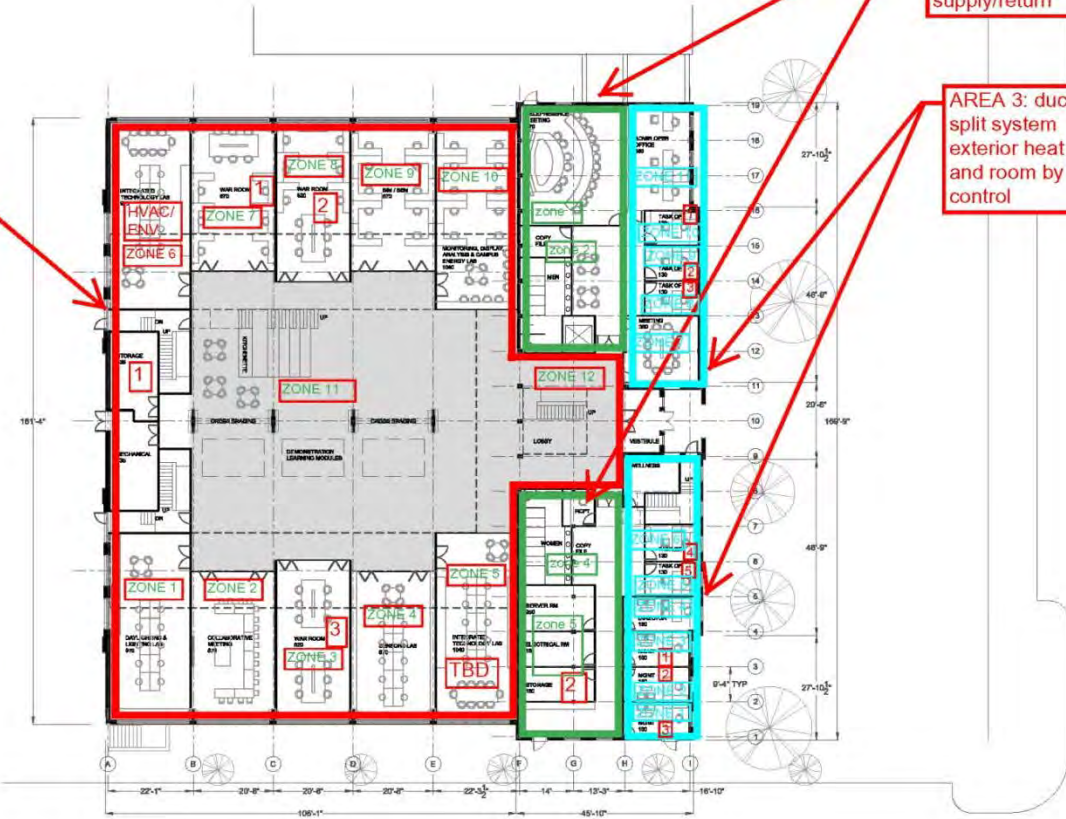


Area Locations

AREA 1: DOAS with chilled beams and fin tube.

AREA 2: RTU (1st floor) with VAV boxes, reheat coils, and overhead supply/return

AREA 3: ductless split system exterior heat pump and room by room control



FIRST FLOOR PLAN



Area Locations



SECOND FLOOR PLAN

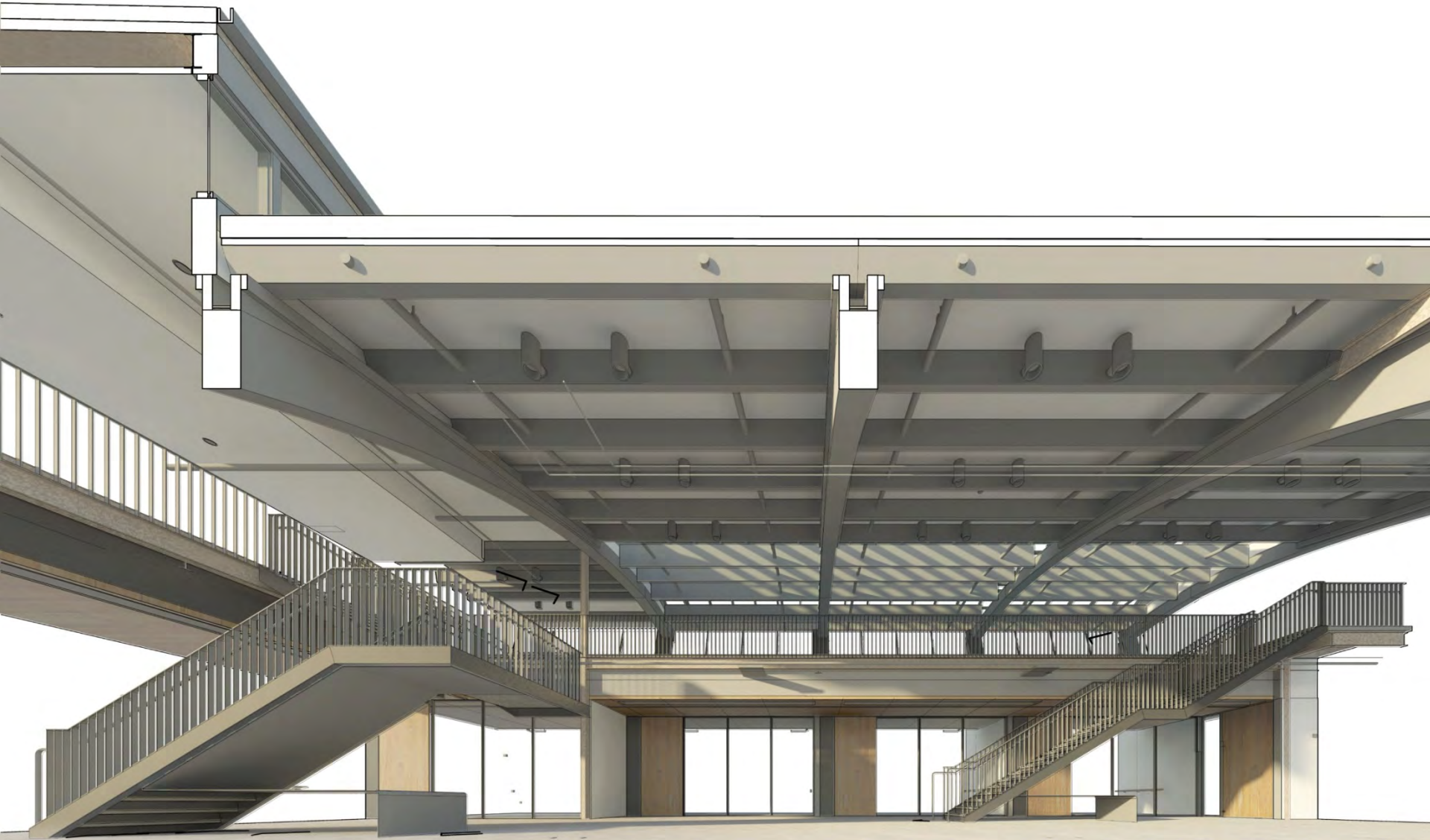




OVERALL CUTAWAY VIEW



FIRST & SECOND FLOOR LOBBY VIEWS



ATRIUM – CUTAWY VIEW



