BIM to the MAX: Applying Lean Construction to IPD Projects

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VDC Specialists

Class Summary

Learn how to utilize Building Information Modeling (BIM) and technology to the most opportune level on highly technical projects. We will discuss cloud storage and intellectual property issues, BIM tools, lean principles, paperless efforts, facilities management, and the integrated project delivery (IPD) project advantages and disadvantages.

Key Learning Objectives

At the end of this class, you will have a better understanding of:

- The major differences of an IPD project
- Lean Construction Principles
- Maximizing the use of BIM in Highly Technical Projects
- Demands of BIM in the FiM world
- Cloud storage and IP Concerns

Highly Technical Projects

Typical Building Sectors

- Large Healthcare
- Biotech
- Data Center
- Semiconductor
- Nuclear Research/Power

Advantages of the Project

- Larger Budgets/More Resources
- Technically Skilled Clients
- Highly Skilled Design/Trade Partners
- Higher Continuity of Team Members

PROJECT WINS
BACKLOG
"What if we don't change at all ...
and something magical just happens?"

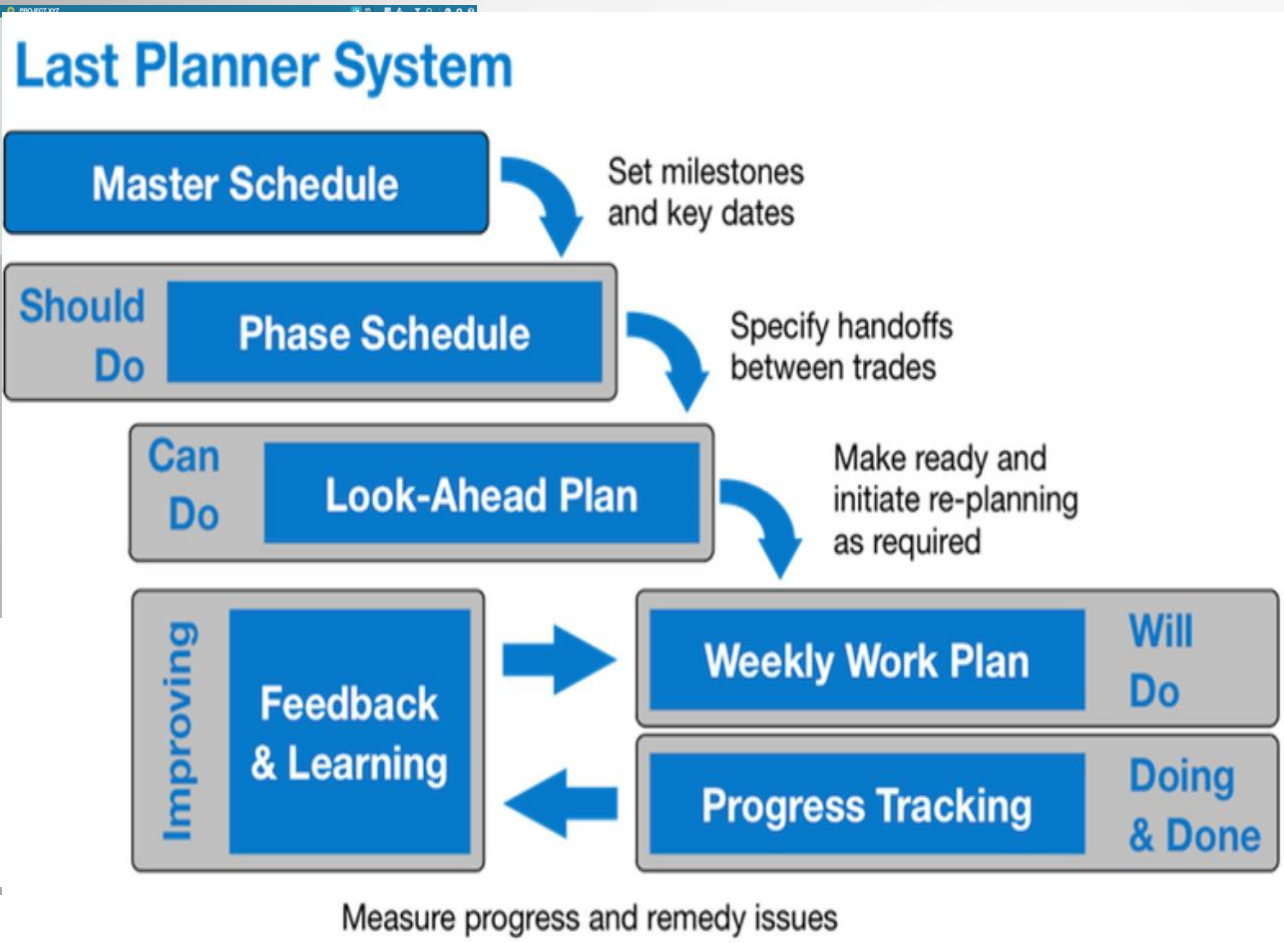
Introduction to Lean Construction Principles

Lean Tech and Platforms

Kanban

Big Room

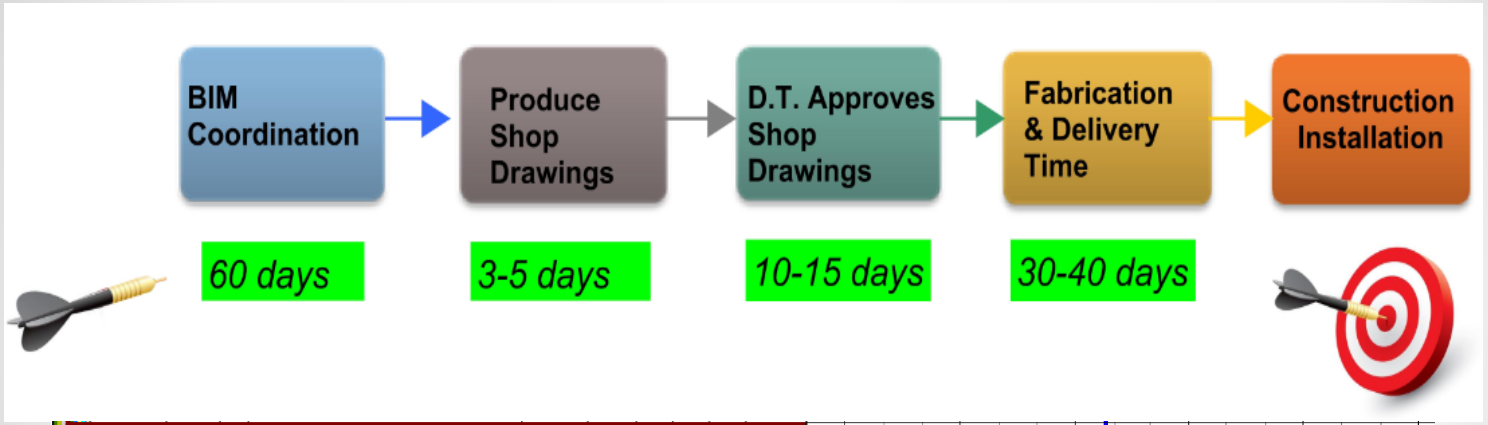
Last Planner

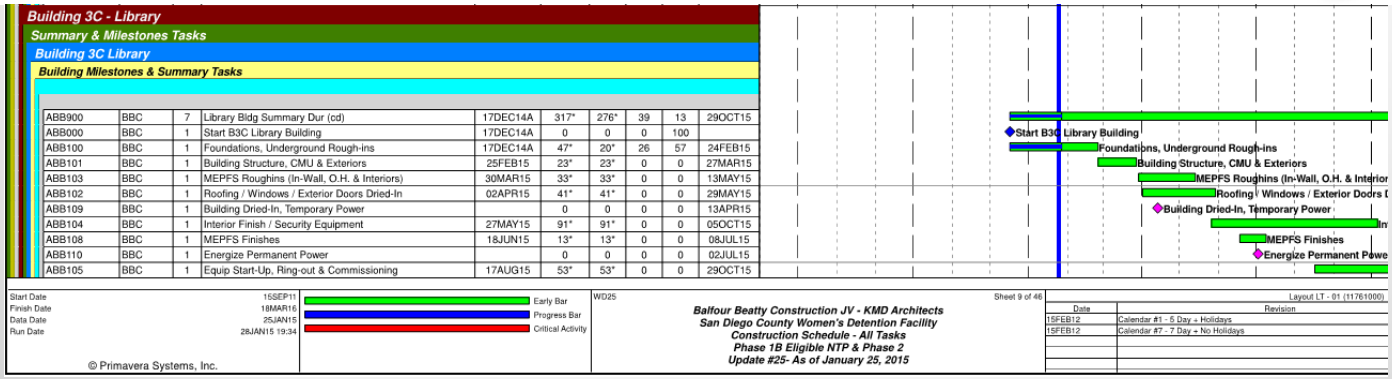


AUTODESK.

Lean Tech and Platforms

BIM Schedule





Pull Plan/Last Planner

Balfour Beatty Construction

Clash Tracking Log

Clash Tracking-Level 7

	4/18/15	4/19/15	4/20/15	4/21/15	4/22/15	4/23/15	4/24/15	4/25/15	4/26/15	4/27/15	4/28/15	4/29/15	4/30/15	5/1/15	5/2/15	5/3/13	5/4/15	5/5/15
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EL vs PT	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
EL vs SL	361	361	361	361	361	361	361	361	361	361	361	8	8	8	8	8	8	8
FP vs PT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FP vs SL	118	118	118	118	118	118	118	118	118	118	118	19	19	19	19	19	19	19
FR vs CT	633	633	633	633	633	633	633	633	633	633	633	426	426	426	426	426	426	426
FR vs EL	129	129	129	129	129	129	129	129	129	129	129	259	259	259	259	259	259	259
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FR vs MP	16	102	102	102	102	102	102	102	102	102	102	102	102	128	128	153	153	153
FR vs PL-PD	1	106	106	106	106	106	106	106	106	106	106	103	103	105	105	116	116	116
FR vs PL-PS	59	113	113	113	113	113	113	113	113	113	113	113	113	113	113	124	124	124
FR vs PT	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
MD vs CT	274	274	274	274	274	274	274	274	274	274	274	573	573	593	593	594	594	594
MD vs EL	351	351	351	351	351	351	351	351	351	351	351	509	509	503	503	502	502	502
MD vs FP	654	654	654	654	654	654	654	654	654	654	654	670	670	639	639	663	663	663
MD vs MP	196	196	196	196	196	196	196	196	196	196	196	211	211	198	198	214	214	214
MD vs PL-PD	3	3	3	3	3	3	3	3	3	3	3	12	12	13	13	26	26	26
MD vs PL-PS	29	29	29	29	29	29	29	29	29	29	29	45	45	45	45	40	40	40
MD vs PT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MD vs SL	322	322	322	322	322	322	322	322	322	322	322	15	15	15	15	15	15	15
MP vs CT	1	21	21	21	21	21	21	21	21	21	21	34	34	34	34	34	34	34
MP vs EL	8	8	8	8	8	8	8	8	8	8	8	23	23	25	25	26	26	26
MP vs FP	5	140	140	140	140	140	140	140	140	140	140	140	140	140	140	147	147	147
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MP vs PL-PS	2	2	2	2	2	2	2	2	2	2	2	2	2	17	17	23	23	23
MP vs PT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MP vs SL	164	164	164	164	164	164	164	164	164	164	164	0	0	0	0	0	0	0
PL-PD vs CT	0	0	0	0	0	0	0	0	0	0	0	6	6	6	6	6	6	6
PL-PD vs EL	43	43	43	43	43	43	43	43	43	43	43	42	42	42	42	47	47	47
PL-PD vs FP	4	49	49	49	49	49	49	49	49	49	49	53	53	53	53	60	60	60

Clash Detection Log

	CCS MD	CCS MP	CCS PL_PS	CCS PL_PD	HELIX	COSCO	DCI ENG	R.W. SMITH	S. FOLGER	BRADY
Level LL	100%-12/03/14	100%-12/03/14	100%-12/03/14	100%-12/03/14	100%-12/03/14	100%-12/03/14	100%-12/03/14			100%-12/03/14
Level 1	95%-12/03/14	95%-12/03/14	90%-12/03/14	90%-12/03/14	-	95%-12/03/14	100%-12/03/14	100%-9/12/24	100%-9/21/14	95%-12/03/14
L01 trade's completion					100%-12/13/14	100%-12/13/14	100%-12/13/14	100%-12/13/14	100%-12/13/14	100%-12/13/14
Level 2	80%-12/03/14	80%-12/03/14	90%-12/03/14	90%-12/03/14	-	95%-12/03/14	100%-12/03/14	99%-12/03/14	100%-12/03/14	95%-12/03/14
L02 trade's completion					90%-12/13/14	100%-12/13/14	100%-12/13/14	100%-12/13/14	100%-12/13/14	98%-12/13/14
Level 3	90%-12/07/14	50%-12/07/14	90%-12/07/14	90%-12/07/14	-	95%-12/07/14	100%-12/07/14	100%-12/07/14	100%-12/07/14	95%-12/07/14
L03 trade's completion					75%-12/13/14	100%-12/13/14	100%-12/13/14	100%-12/13/14	100%-12/13/14	90%-12/13/14
Level 4										
L04 trade's completion										

Percent Promised Complete (PPC)

Balfour Beatty Construction

Model Tracking

CCS_MD - EL-Level LL

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Last updated= 11/25/2015 12:08

By- Dusan Selezan

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11/30/2014	✓	0d; 00:24:28	5698	67
12/1/2014		0d; 00:24:28	5698	0
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4/12/2015	✓	0d; 00:34:31	5868	7
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Level 4										
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4/12/2015	✓	0d; 00:34:31	5868	7
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Model Tracking Log

IPD

The IPD Mindset

Openness
Comfortable with being Uncomfortable
Commitment to the success of the Group
“Come to Play” Attitude
“My work and Your work” vs “Our Work”
Pain Share Gain Share
Sharing Data (IP)

IPD Practices

Transparency
Anyone can Facilitate
Multi Party Collaborative form of Agreement
Willingness to participate in all sessions
Responsibility Matrix
Profit Sharing and workload sharing
NDA with a shared Server

IPD Disadvantages

Wrong group members makes it dysfunctional
Higher level of Risk for client
Professional Insurance Policies not used to this format

IPD Examples and Experiences

- Openness
- Commitment to group
- Incorrect Attitude
- Work sharing
- Data Sharing and IP
- Comfortability

"You just have to accept that we are all (professionally) getting into bed with each other, you can keep your clothes on for now, but you just have to jump right in, pull the covers up, and snuggle in.“

-Confidential Client Design Manager

BIM Tools

Autocad

Tekla

Inventor

Revit

Navisworks

Building Ops

Sketchup

Synchro

Fuzor

Infraworks 360

Collaboration Tools

B360 Glue

B360 Field

SharePoint

Newforma

Bluebeam Studio

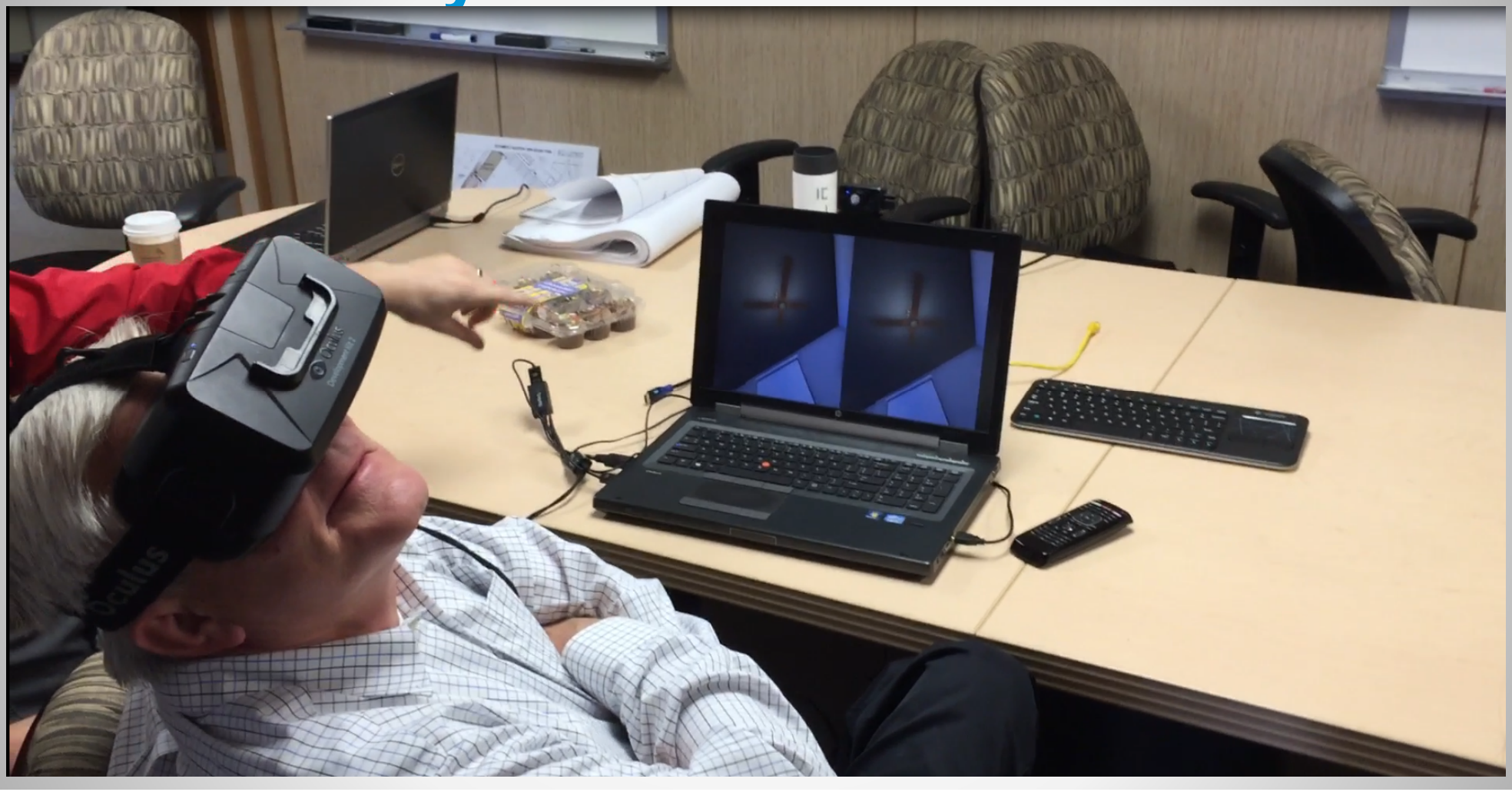
OneNote

Syncplicity

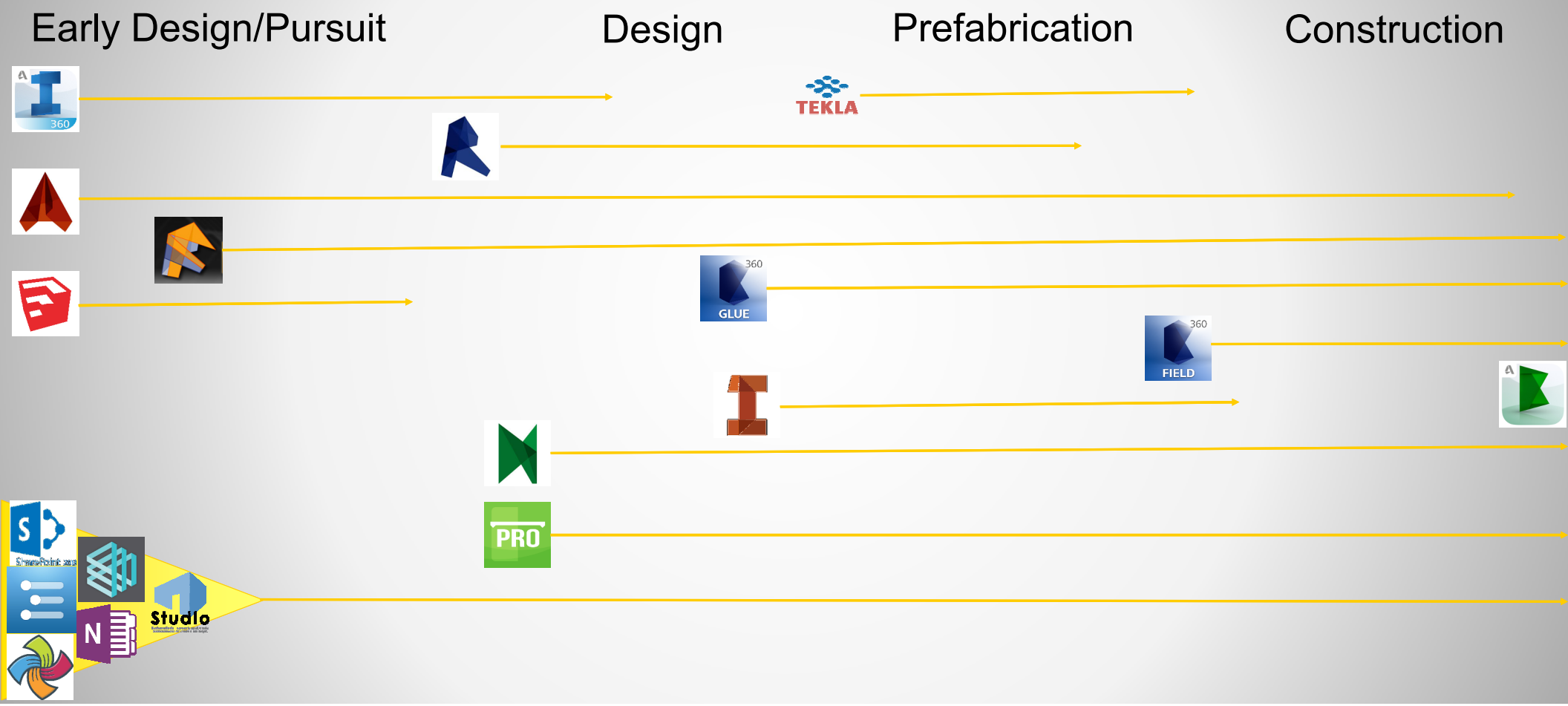
Basecamp

Workflowy

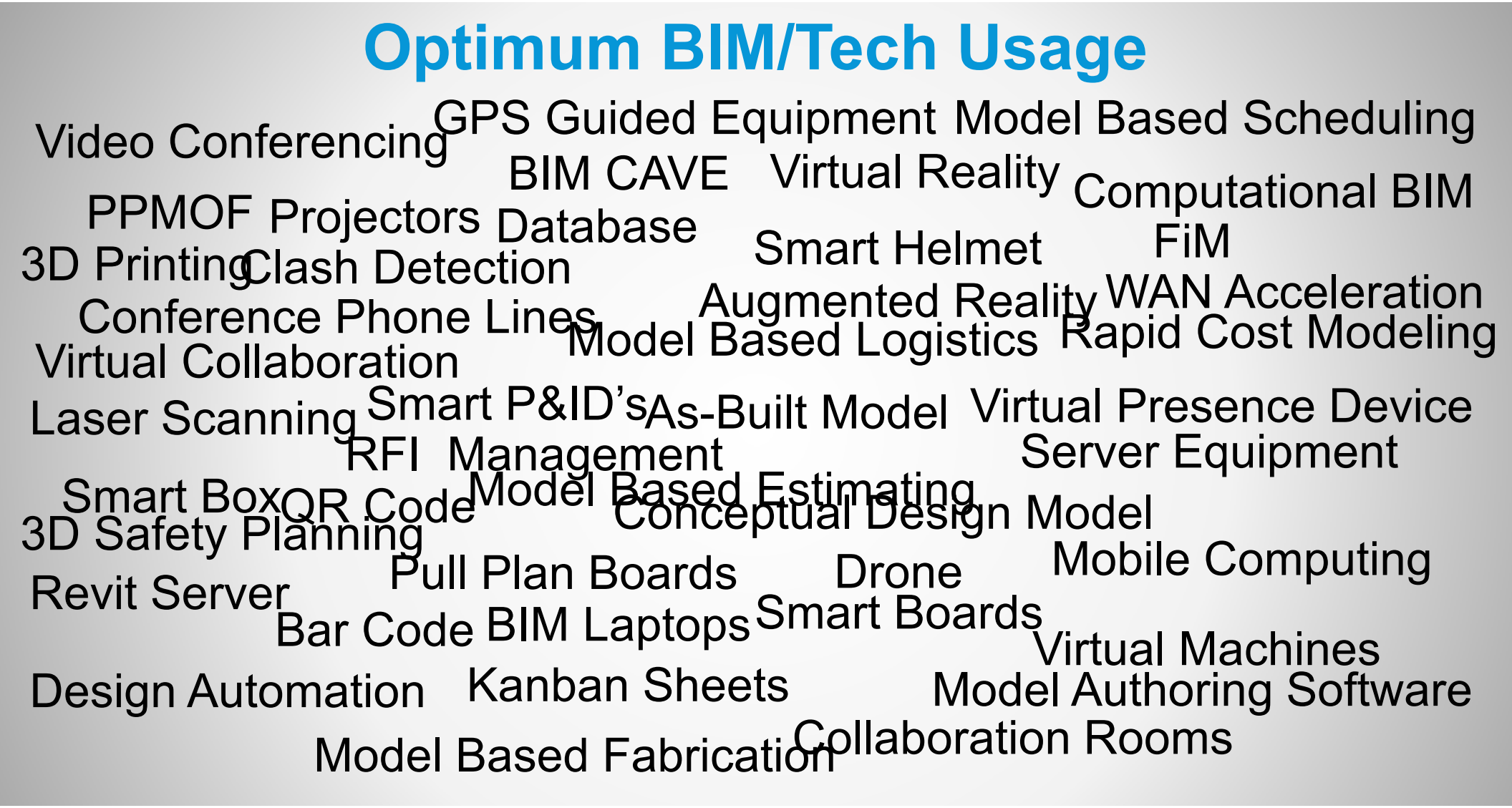
Virtual Reality Possibilities



BIM Tool Timeline Overview



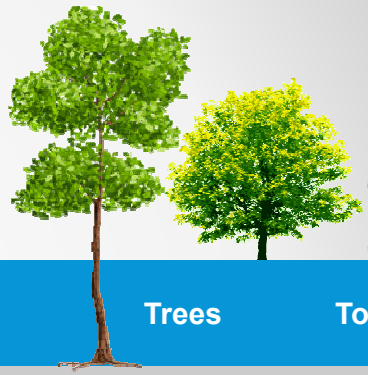
Optimum BIM/Tech Usage



Paperless Tools

Cloud Tools

Highly Technical Project Printing Costs



Building Sector	Volumes	# Milestones	Printed Copies	Addenda Pages	Total Cost	Trees	Tons of paper
Large Healthcare	30	3	36	45	$ 519,696.00	584	1,472.39
Biotech	28	3	31	39.2	$ 417,612.16	469	1,181.82
Data Center	25	3	38	31.25	$ 456,950.00	513	1,293.14
Semiconductor	35	3	39	61.25	$ 657,111.00	738	1,859.59
Nuclear Research	30	3	42	45	$ 606,312.00	681	1,715.83

Working in the Cloud and IP Concerns

- Cyber Security
- Protecting your IP
- NDA, CNDA
- Testing, Testing, Testing!
- New platforms need to be vetted with extreme prejudice

FM and FiM

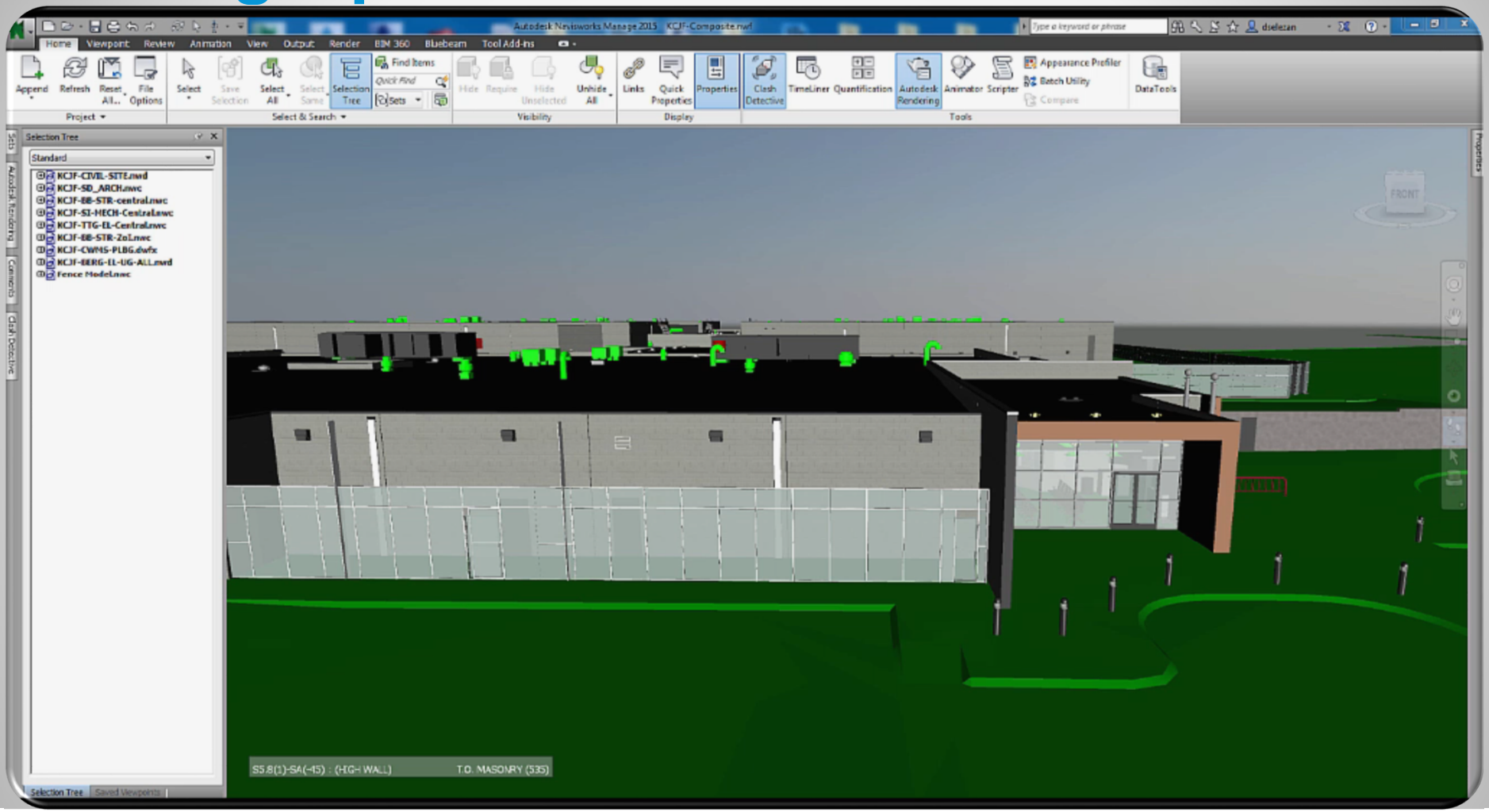
Attribute Management

- COBie
- BIMLink
- Schedule Exports
- Stand alone PDF's
- Project Atlas
- "In the Model then why externally?"
- Open Dialogue with Client FM

Building Ops and Other Platforms

- Mobile-first building maintenance and asset management
- Integrates 3D as-built models with information collected in field and all close-out documentation

Building Ops



Summary

- Have an open mind
- Come together early
- Plan with the end in mind
- Understand the tools you want to use
- The uncomfortable feelings slowly go away
- Success is not guaranteed

Be heard! Provide AU session feedback.

- Via the Survey Stations, email or mobile device.
- AU 2016 passes awarded daily!
- Give your feedback after each session.
- Give instructors feedback in real-time.

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