LEAN IN DESIGN FORUM

MAY 31-JUNE 1 • CHICAGO, IL

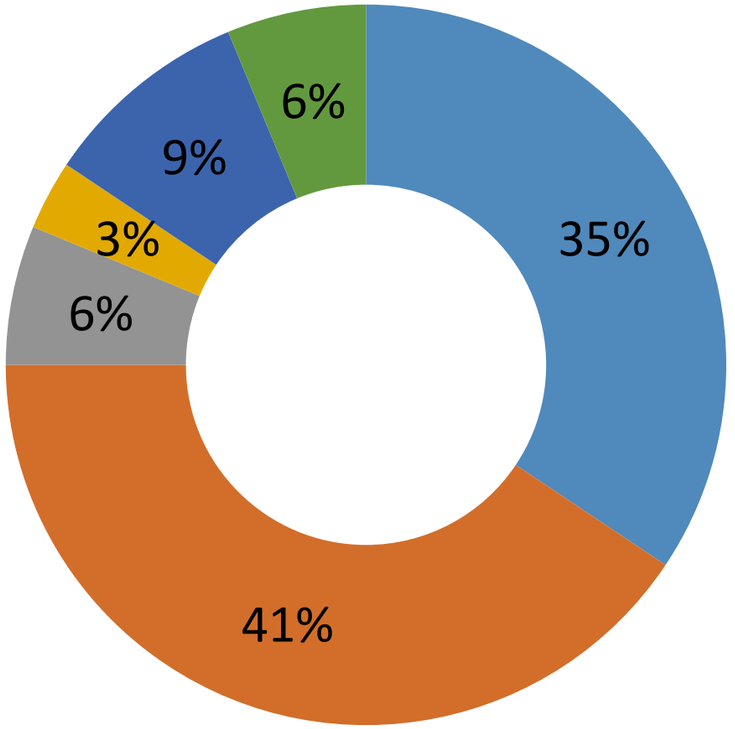
LEAN IN THE DESIGN PRACTICE

Stan Chiu, AIA, LEED AP, HGA

May 31, 2017

Why are we here?

In The Room

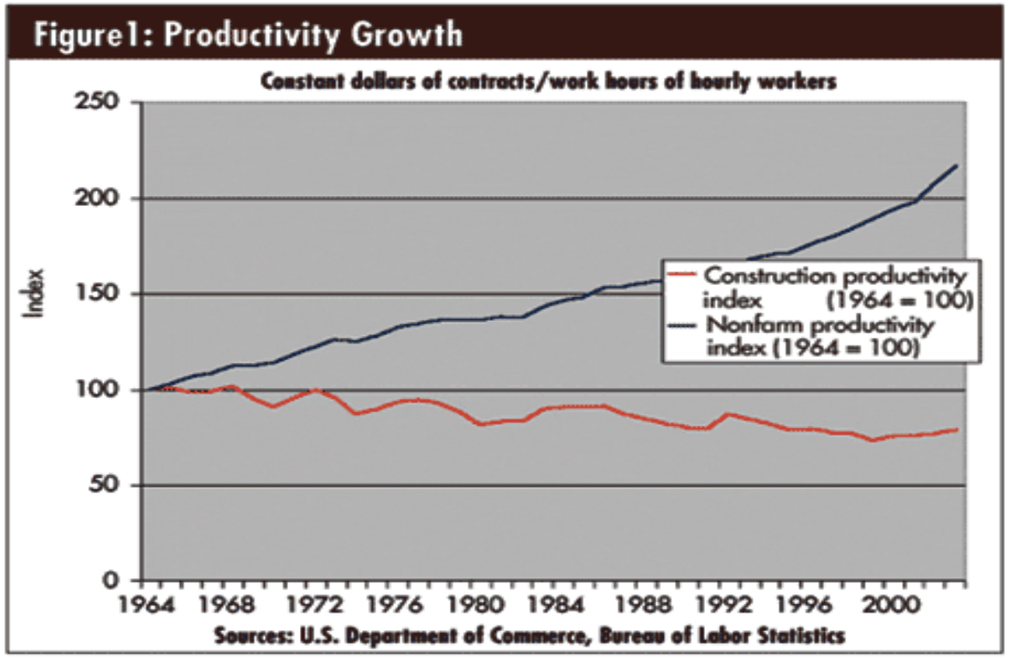


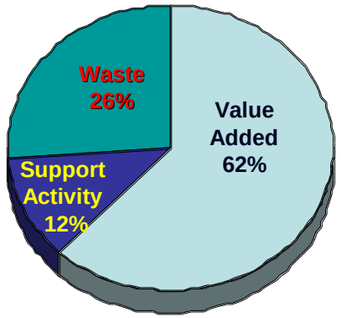
- Architecture/Design/Engineering/A&E
- Construction/General Contractor
- Consultant
- Healthcare
- Legal/Vendor/Supplier
- Owner (My company is a serial builder of capital projects and we engage the various professionals that make up a project team)

Our time today

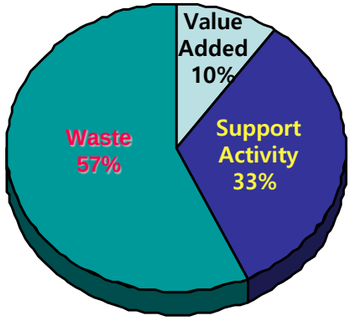
- Intro
- Lean Journeys
- Early returns
- A top down apporach
- A model to go forward
- Close

Our industry





Manufacturing



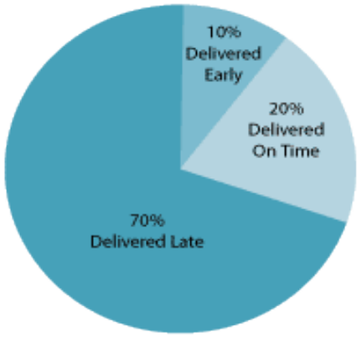
Design and Construction

- 30% of projects don't meet schedule
- 37% construction material wasted
- $1 Trillion per year (2nd after healthcare)

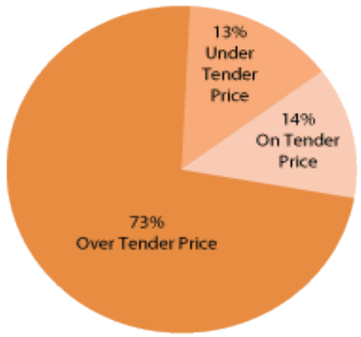
-CMAA / The Economist

Reliable? Sustainable?

Time - 70% were delivered late



Cost - 73% were over budget



Source: Benchmarking the Government Client Stage Two Study December 1999

Energy Consumption	65.2%
Primary Energy Use	>36%
Greenhouse Gas Emissions	30%
Potable Water use	12%
Global raw material use	40%

Construction workers are 2.5 times as likely to die compared with other occupations.


OPPORTUNITY
AHEAD

Three wishes.

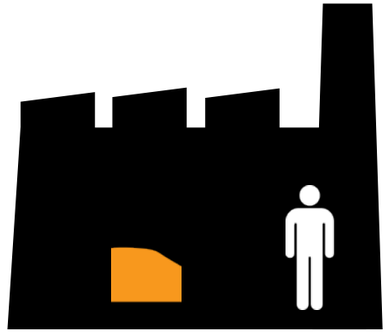
Production Systems

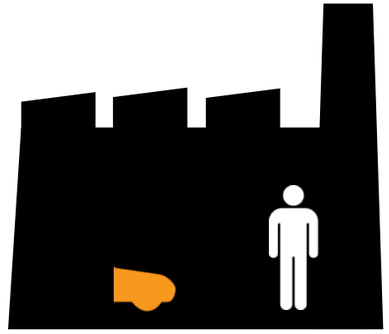
QQQ $$$ CRAFT

Production Systems

QQQ $$$ CRAFT

Q $ MASS

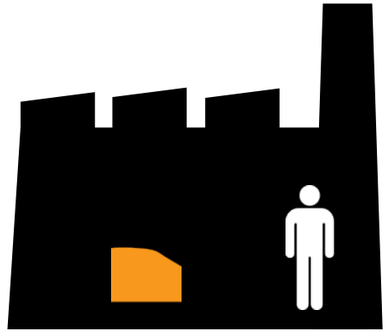


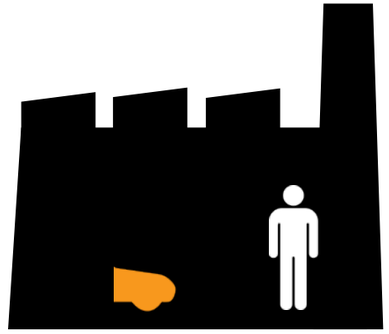


Production Systems

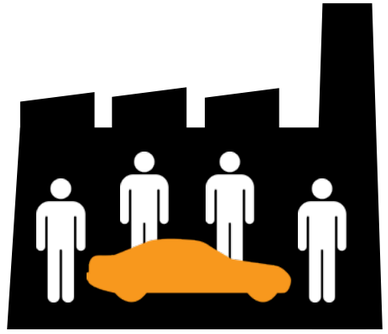
QQQ $$$ CRAFT

Q $ MASS

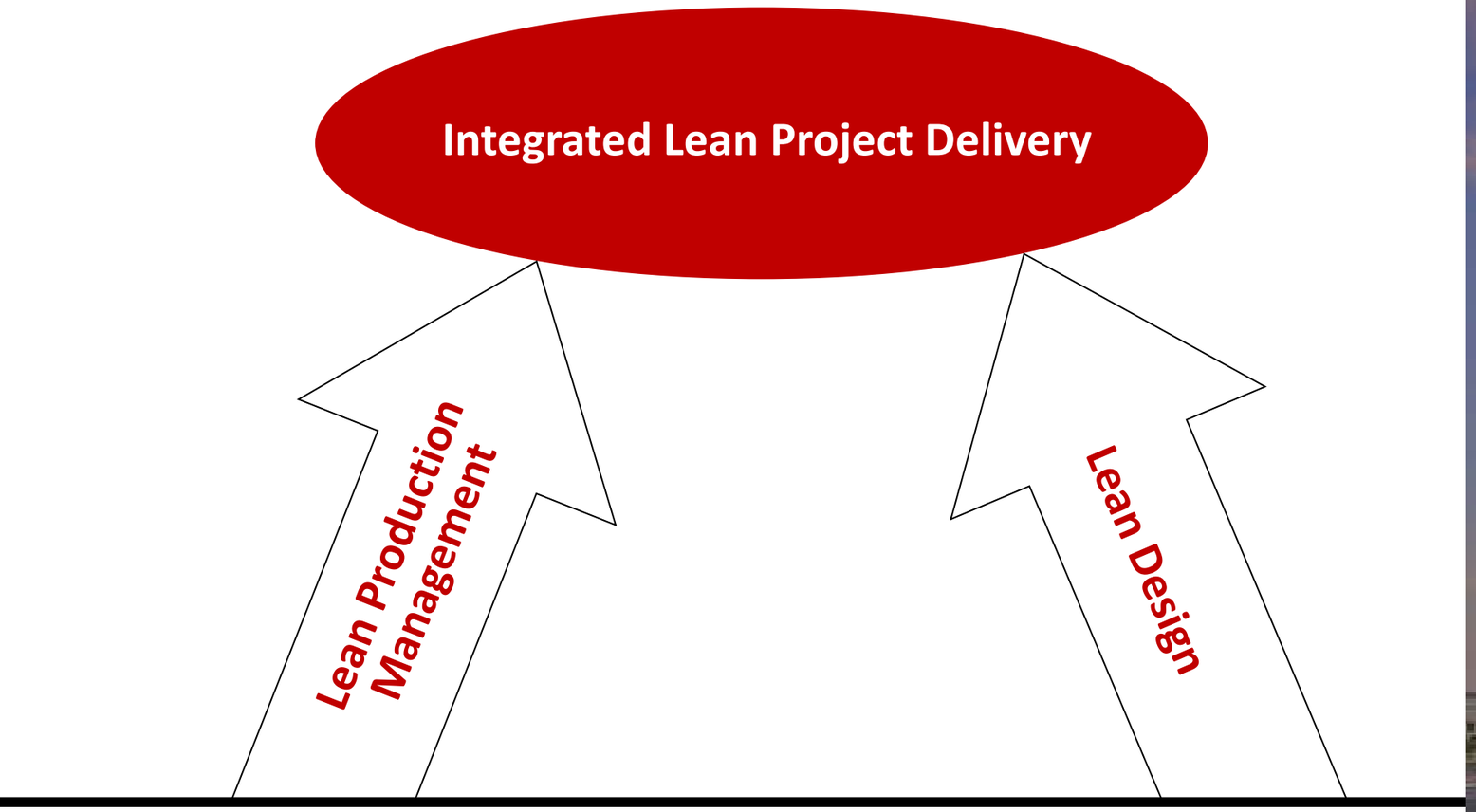




QQ $ LEAN

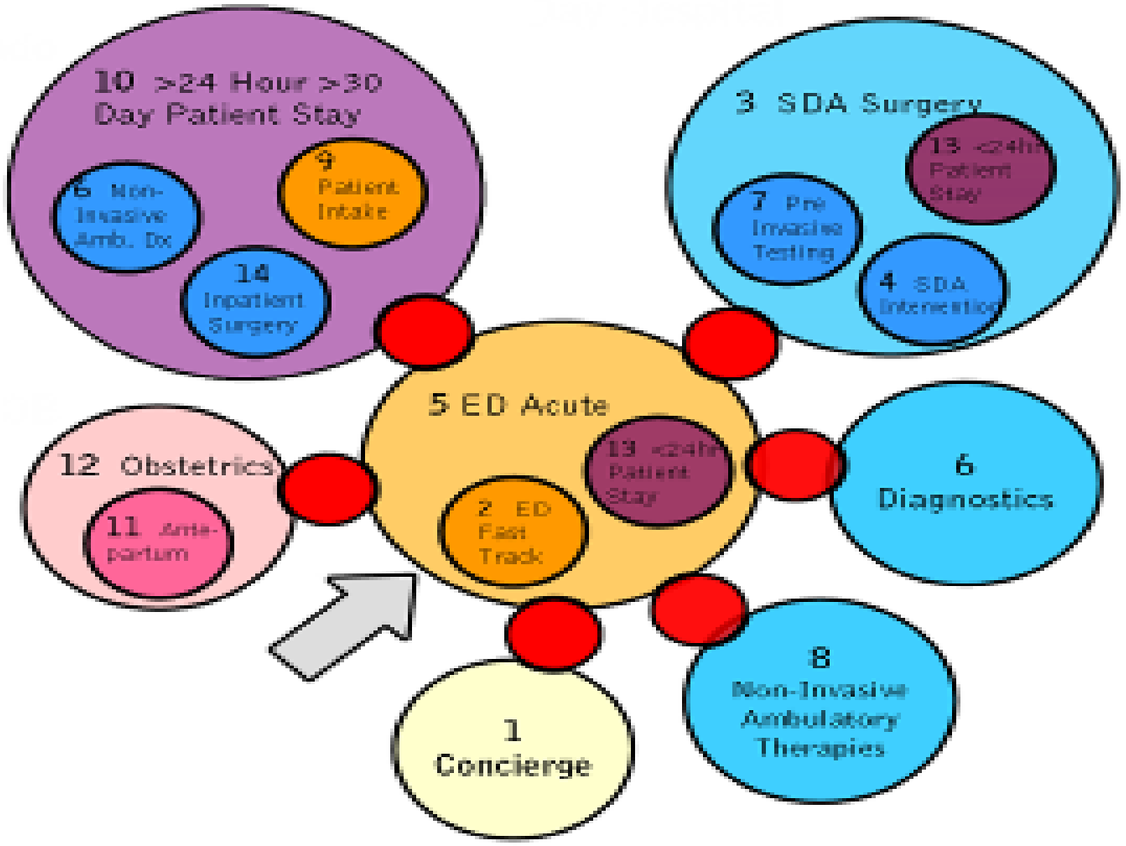


Today's Pillars

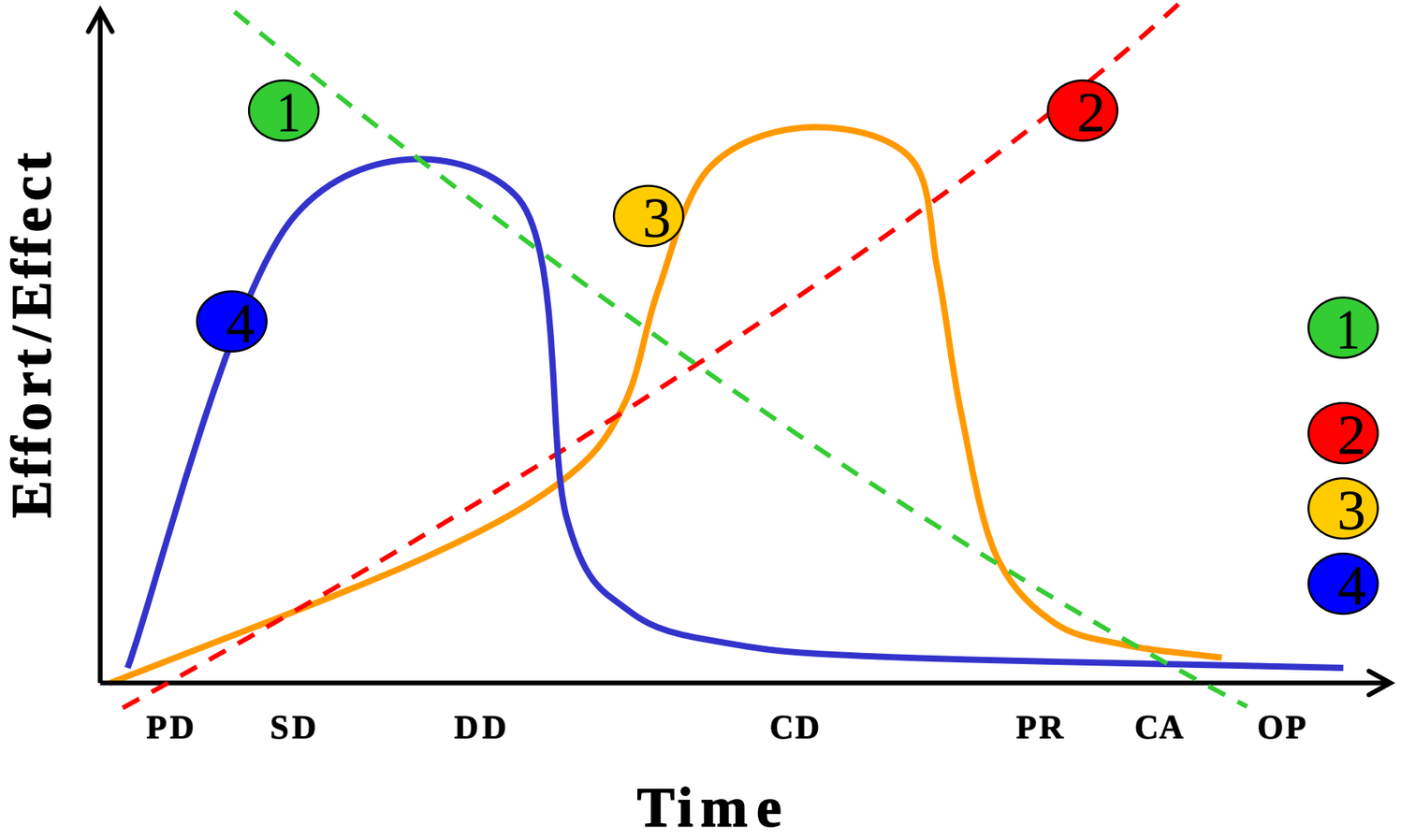


Transactional (manufacturing) lean is…

a recipe, we've done it before and have to do it again and again, the value is in removing obstacles to what the customer really wants.



Project Planning



PD = Pre-Design
SD = Schematics
DD = Design Development
CD = Construction Docs
PR = Procurement
CA = Construction Admin
OP = Operations

1 Ability to Impact Cost and Functional Capabilities

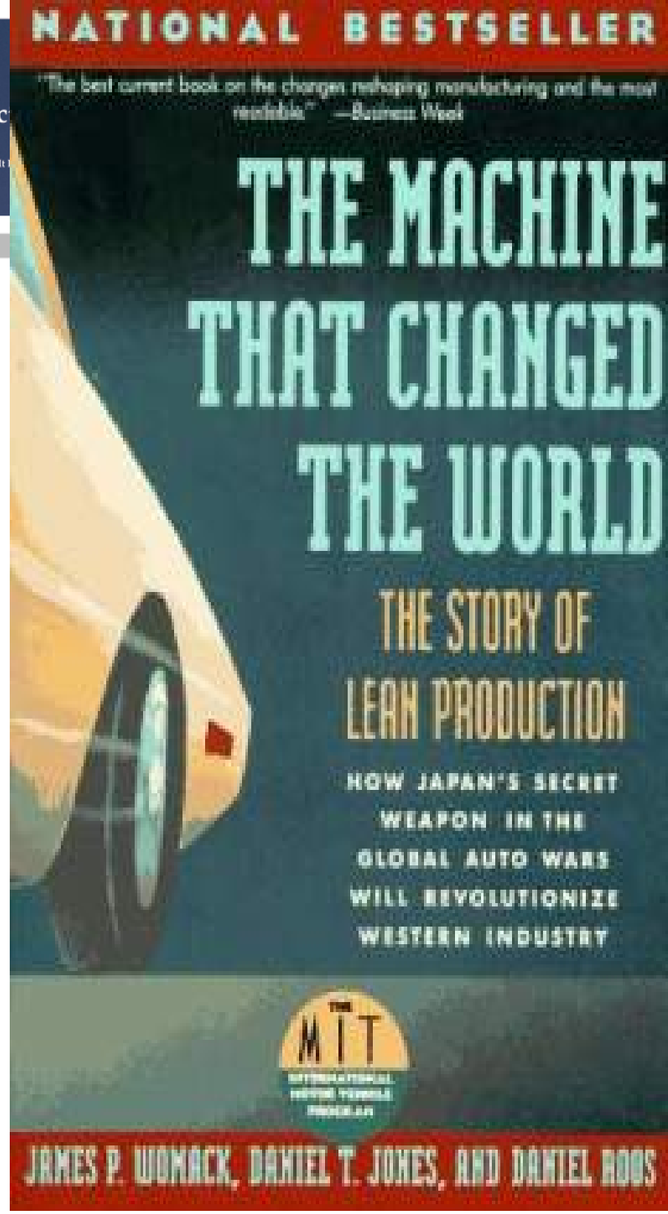
2 Cost of Design Changes

3 Traditional Design Process

4 IPD Method

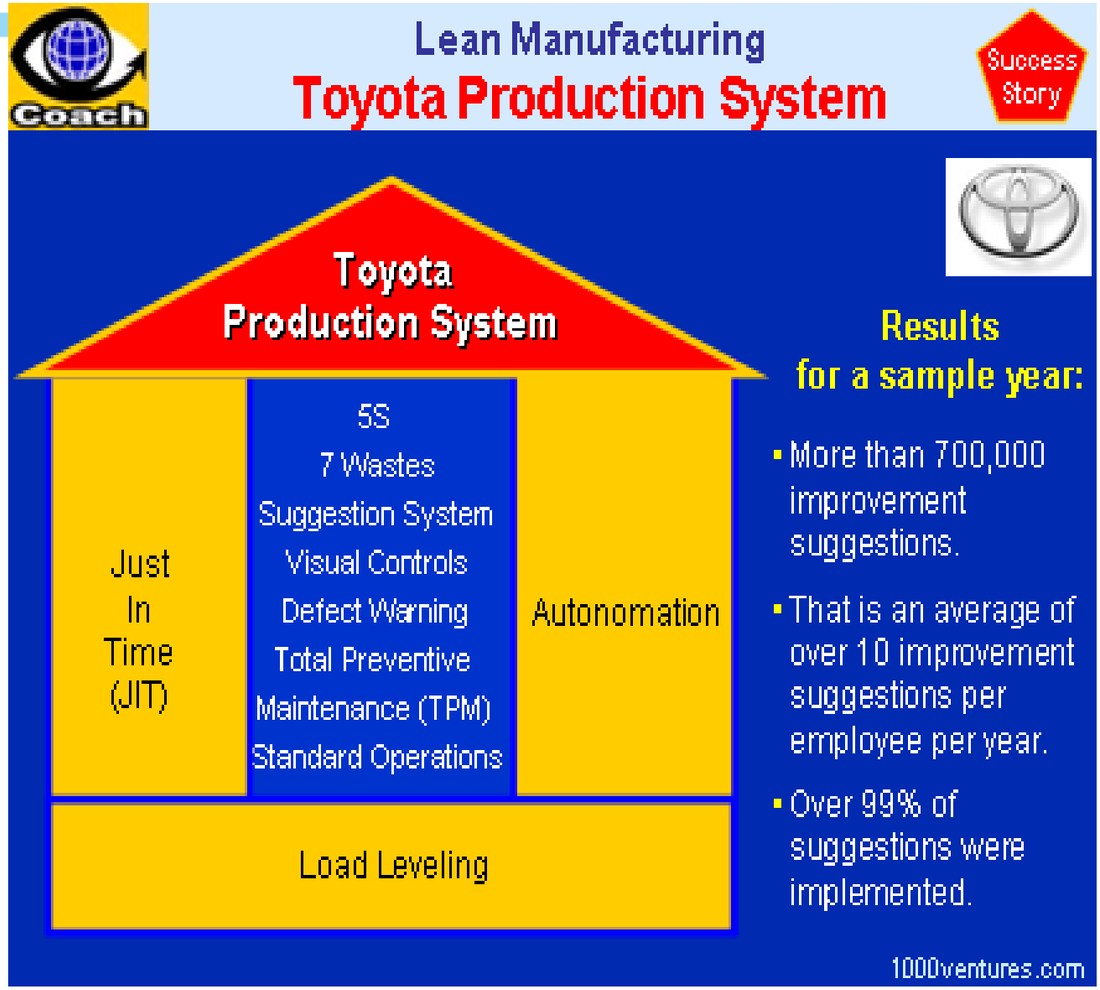
Lean success

- Toyota - #1 global automobile producer in 2007
- All manufacturing now has focus on Lean
- “Just in Time”, “Stopping the Line”, “Built-in Quality,” now part of common vernacular
- Lean has created the modern workforce, and all global organizations employ some versions of Lean within their processes.



Lean manufacturing

- Developed by Toyota after WWII as a way to increase quality and productivity with minimum expertise and resources.
- Focus on elimination of waste within business processes
- Identify cross-functional training of staff to level resource demands
- Recognize supply chain as integral part of quality and production.



lean [lēn]:

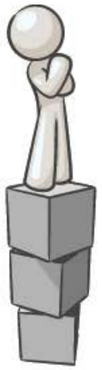
- The systematic elimination of waste within a process

less is more

Waste is: Anything that consumes resources but does not provide value for the customer

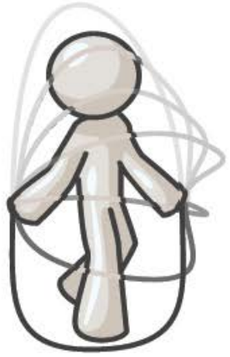
OVERPRODUCTION

WAITING



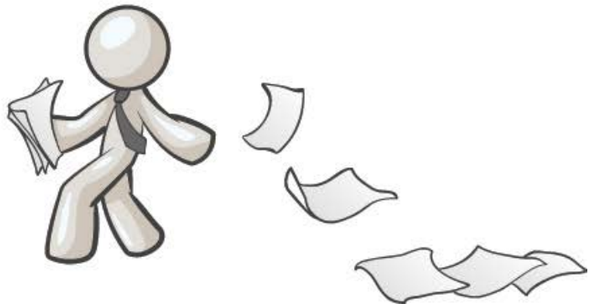
INVENTORY

MOVEMENT



EFFORT

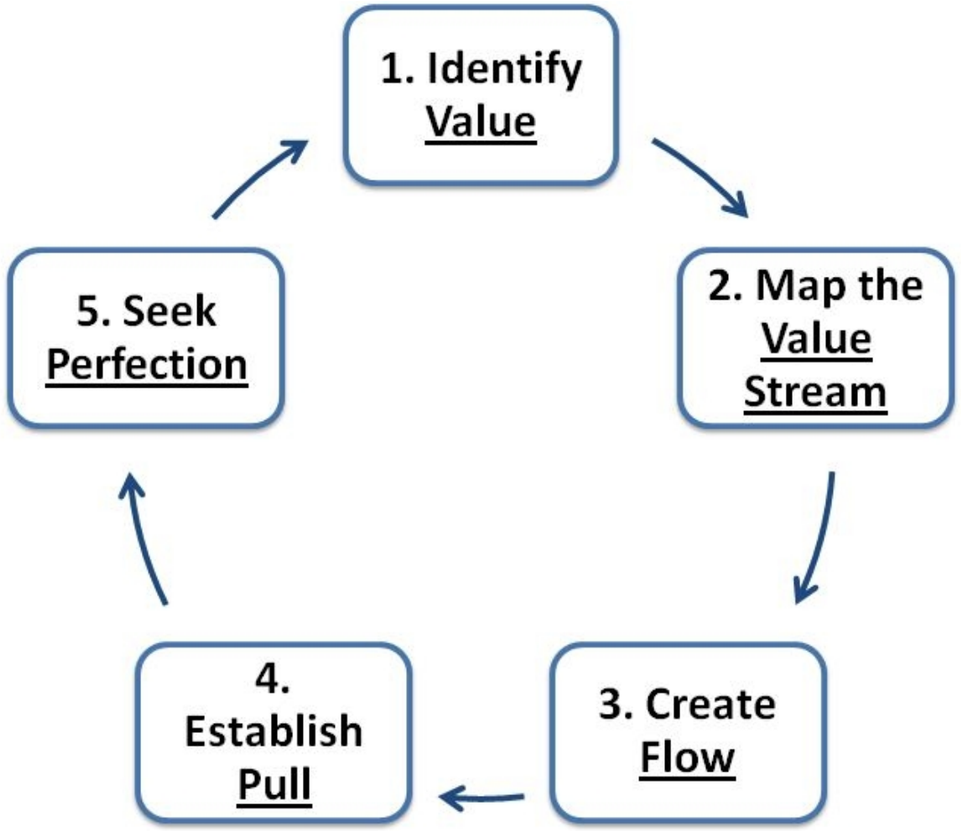
REWORK OF ERRORS



PROCESSING

UNDER-UTILIZED TALENT

Lean manufacturing



Lean manufacturing

Instructions:

- Count off to get into groups of 5 or more people
- Create a process to move the ball through the hands of every person in your group
- You cannot pass the ball to someone next to you
- The ball must return to the person who it started with
- The ball must travel through the air
- The ball cannot be rolled across any surface e.g. floors, walls, tables, etc.

Lean manufacturing

Instructions:

- **NOW** each team is going to create a product
- One product is equal to 8 rounds of passing the ball in the correct sequence
- If you go out of sequence or drop the ball you must start over
- This is a timed event

Lean manufacturing

Instructions:

- Plan (5 minutes)
- Do
- Repeat

Lean manufacturing

Summary definition:

Continual Improvement

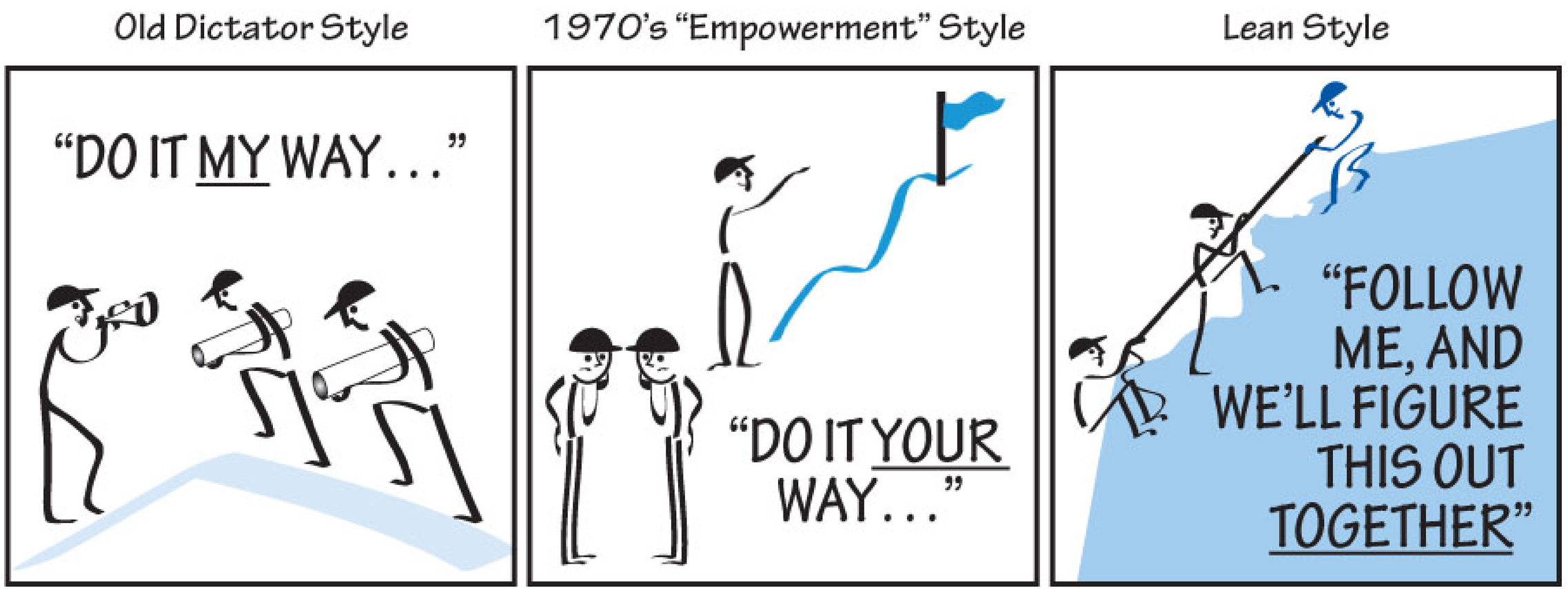
PLUS

Respect For People

Summary outcome:

Adding Value **AND** Reducing Waste

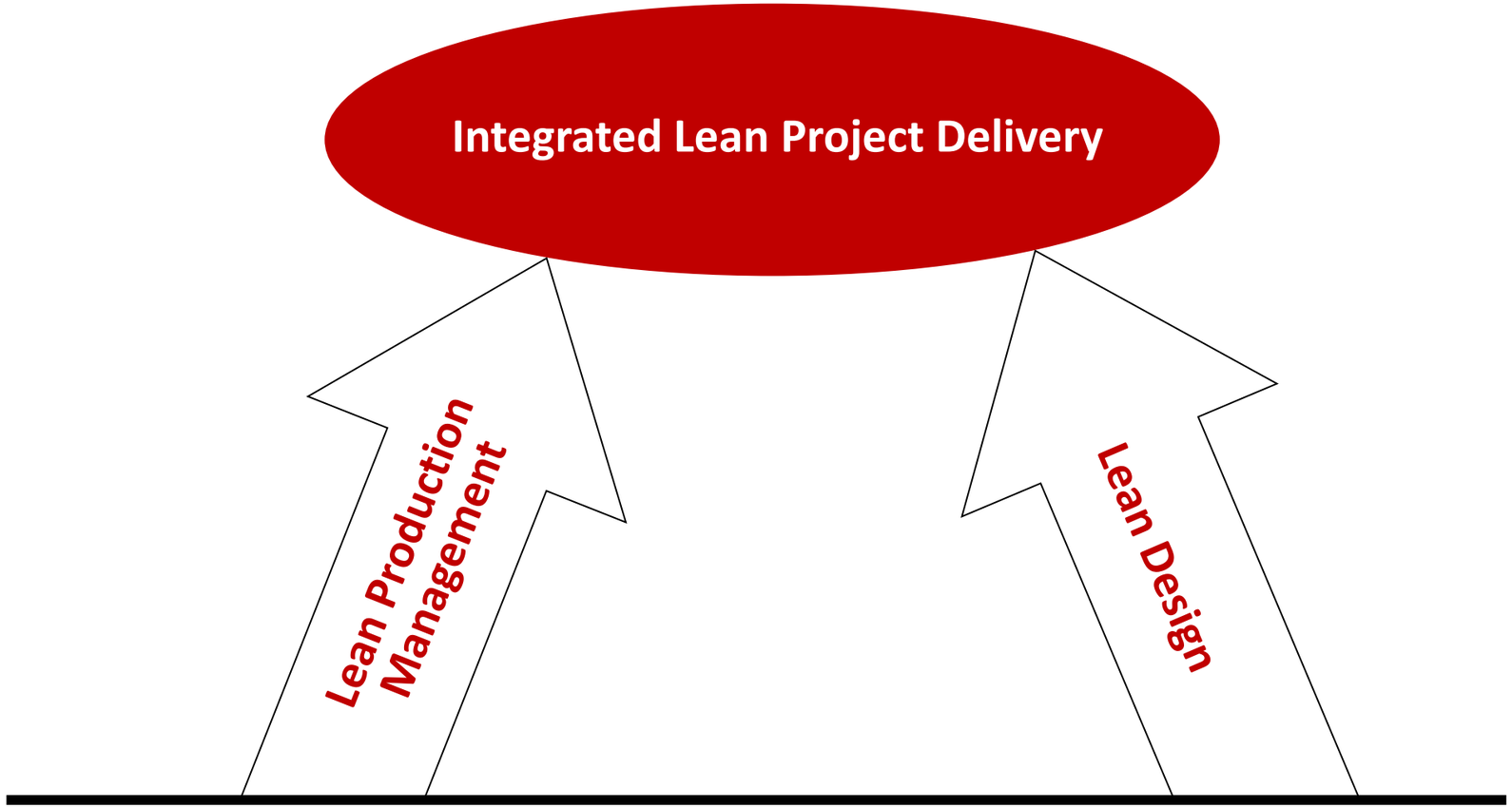
Leadership styles



Debrief

Where did ideas come from?
How were decisions made?
What was leadership like?

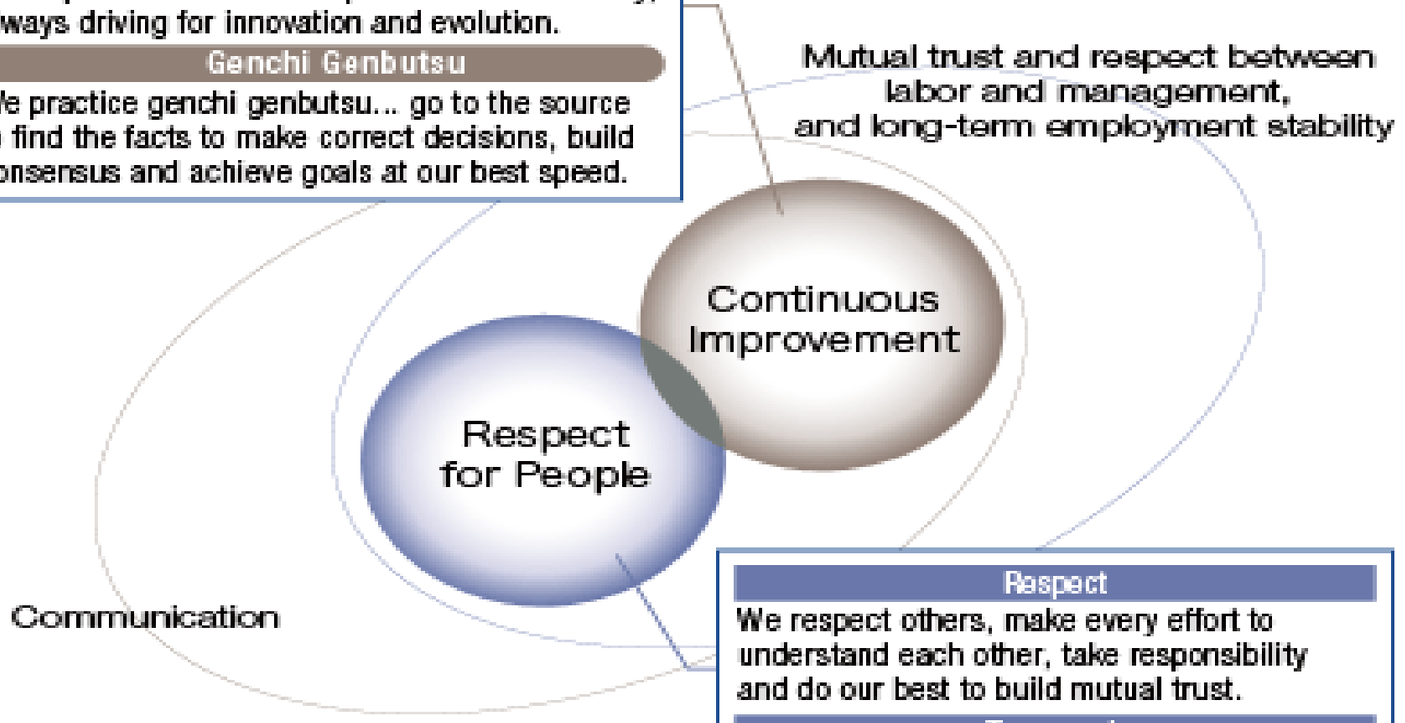
Today's Pillars



Challenge
We form a long-term vision, meeting challenges with courage and creativity to realize our dreams.

Kaizen
We improve our business operations continuously, always driving for innovation and evolution.

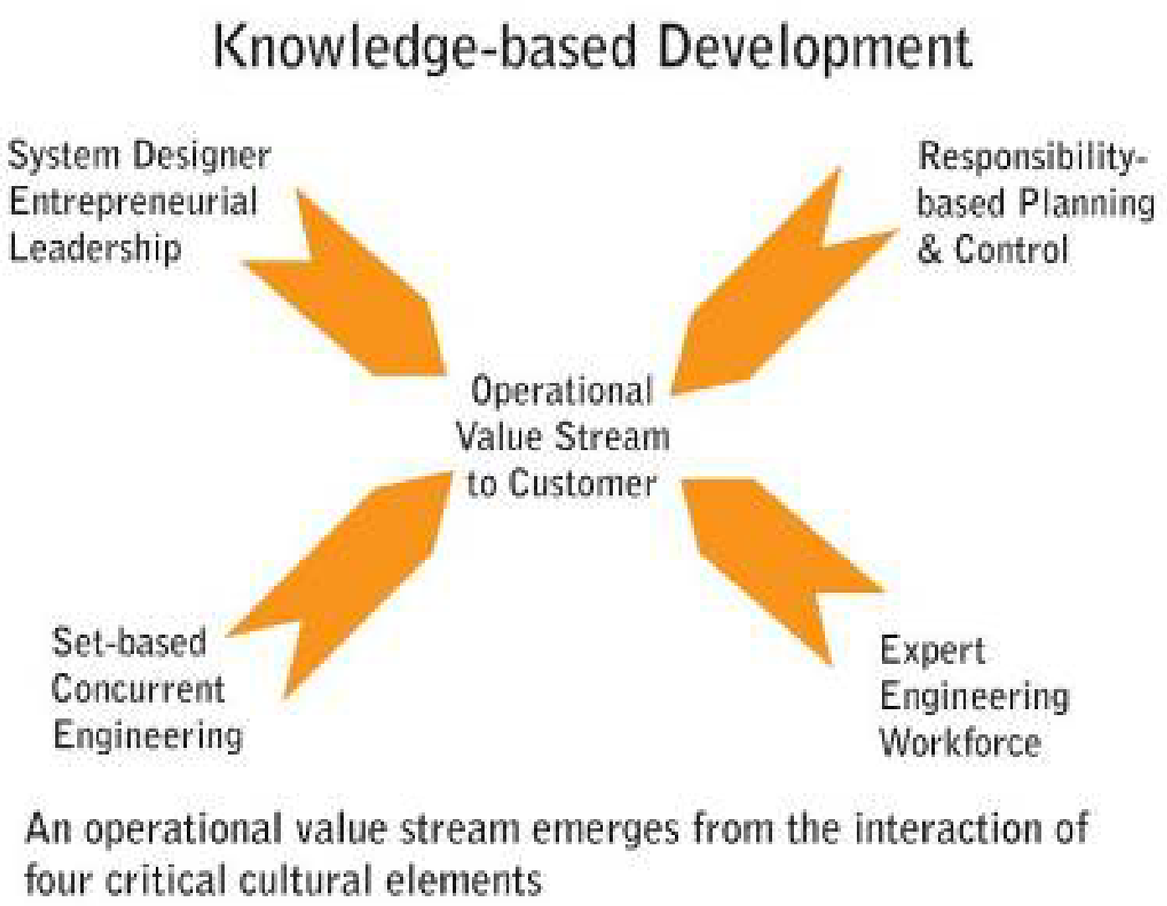
Genchi Genbutsu
We practice genchi genbutsu... go to the source to find the facts to make correct decisions, build consensus and achieve goals at our best speed.



Respect
We respect others, make every effort to understand each other, take responsibility and do our best to build mutual trust.

Teamwork
We stimulate personal and professional growth, share the opportunities of development and maximize individual and team performance.

The lean design world



- Process – Many alternatives from many perspectives
- Workforce – Individual excellence and responsibility
- Leadership – Technical and coaching in nature
- Planning and control – Based on flexible results

Creativity, ideas, innovative, entrepreneurial solutions matched to what the customer might not even know they need

Pull planning

A Project is a Network of Commitments

How can we make the Network clear and transparent?

Risk / Innovation Comparison

3 bicycles, 80% successful components

.8 frame
.8 drive
.8 wheel set
.8 brake
.8 suspension

$= (.8)^5$ = 33% chance of project success

$= (1- .33)^3 = .3 = 30\%$
All three projects fail
Average innovation = 5

80% successful inter-changeable components

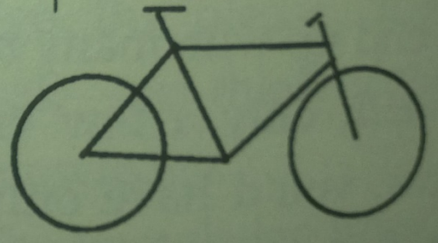
Chance of all components failing
$= (1 - .8)^3 = .008 = .8\%$

Chance of Project success
$= (1 - .008)^5 = .96 = 96\%$
Average innovation = 5

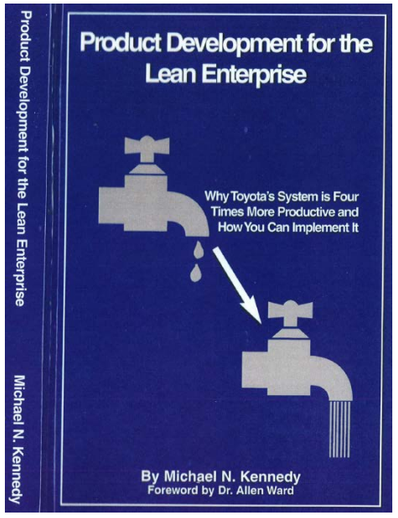
2 component alternatives 80%, one back-up

Project success rate
= 100%

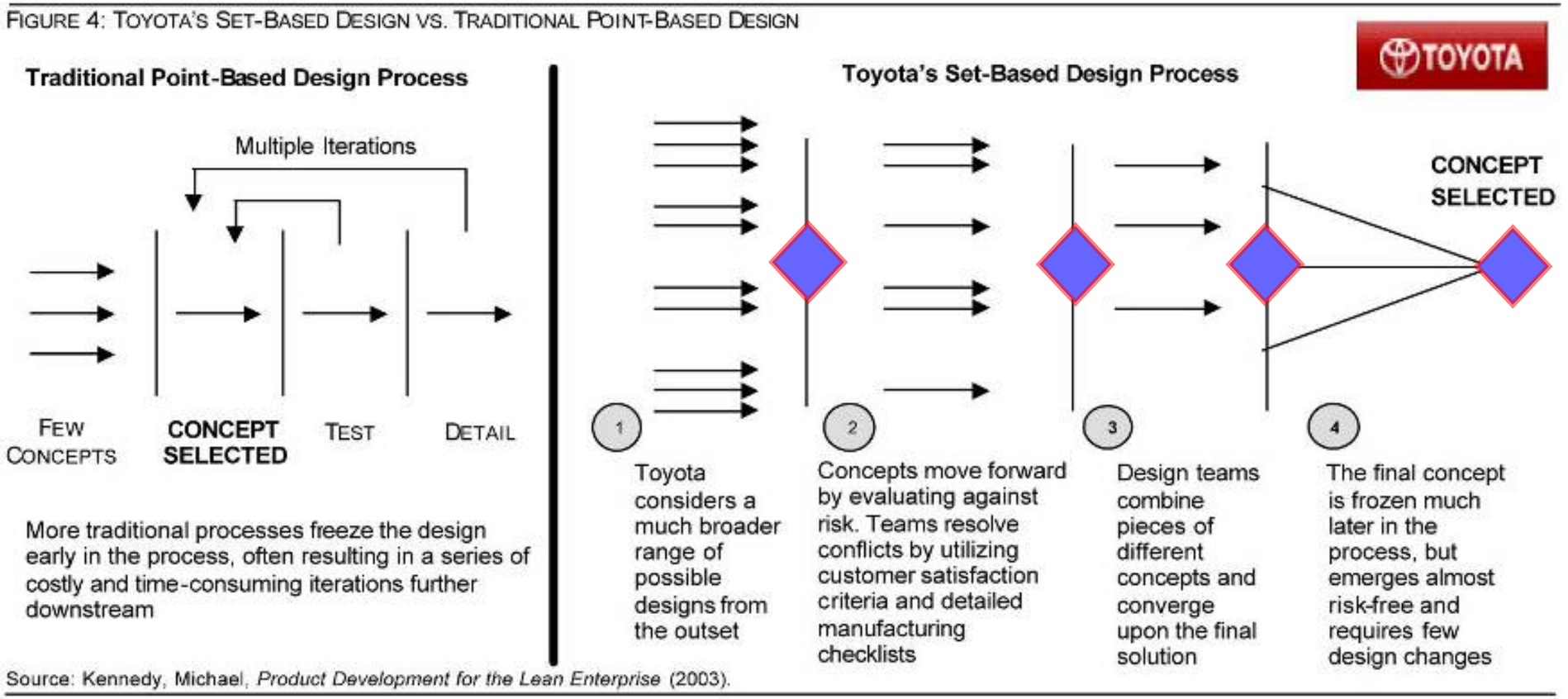
Average innovation
$= 5 \times (1 - (.2)^2) = 4.8$



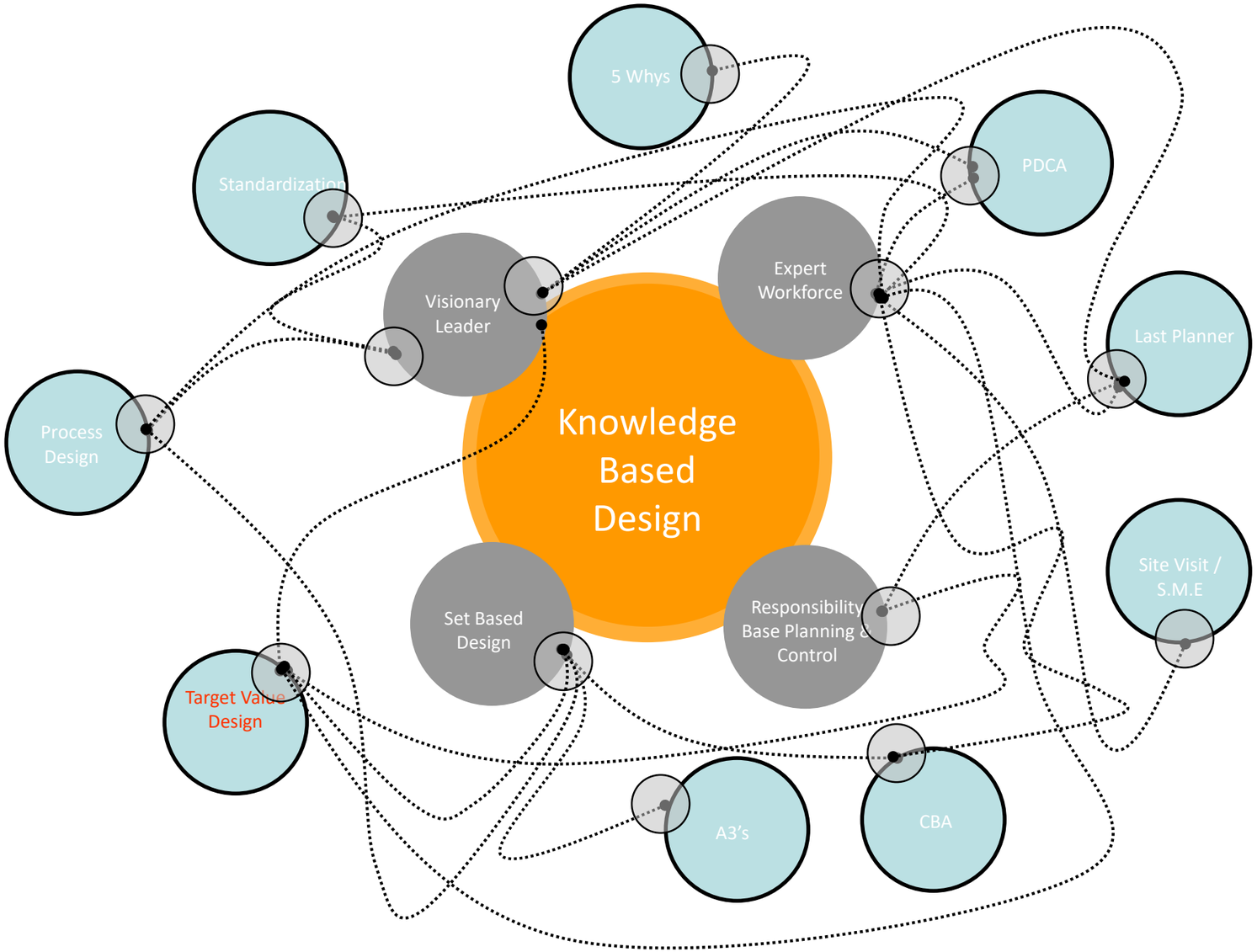
(Figure 5e)



A Set Based Methodology



The Integration Events

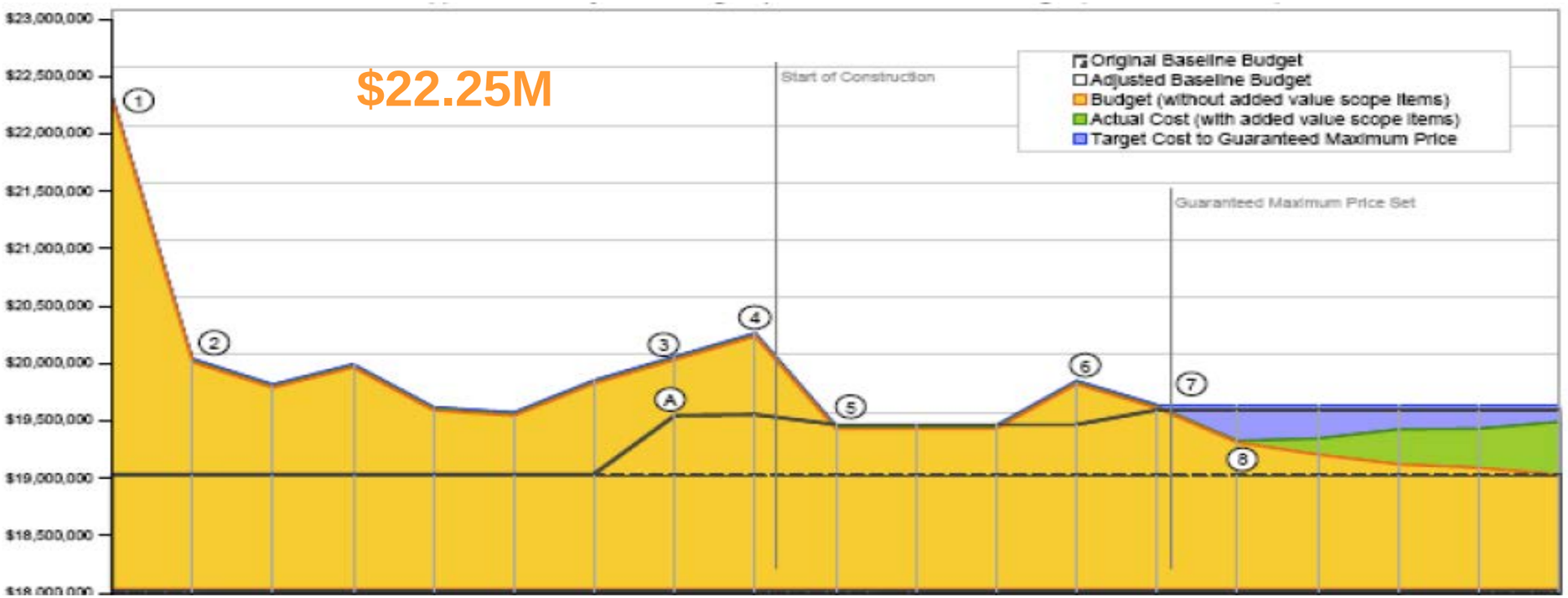

5 Whys
Standardization
PDCA
Visionary Leader
Expert Workforce
Last Planner
Process Design
Knowledge Based Design
Site Visit / S.M.E
Set Based Design
Responsibility Base Planning & Control
Target Value Design
A3's
CBA

Early Returns.

Creating a Lean Culture within

- Domesticating the wild lean concept
- Top down / bottom up
- Rapid learning
  - Knowledge transfer
  - Breakdowns as learning events

Sutter Fairfield Medical Office Building



1. Original Concept Construction Budget
2. Start of Target Cost Process
3. Added Scope of Monumental Stairs, Canopy and Trash Enclosure
4. Increased Steel Cost
5. Contingency for Design CompletionEstimating Removed from Target Cost Estimate
6. Flashing / Sheet Metal and Structural Steel BuyoutAmendment to IFOA
7. Savings from Aggressive Buy out
8. Projected Savings from Field Productivity

$19.57M

10/06

4/08

Source: Boldt Construction

SUTTER HEALTH

A Very Big Challenge

Increase Throughput
by 50%
52

Reduce FTE’s
by 40%
42

Reduce Square Feet
by 30%
35

Reduce Time to Build
by 50%
53

Reduce Natural Resource Use
by 25%
28

1/27/2009

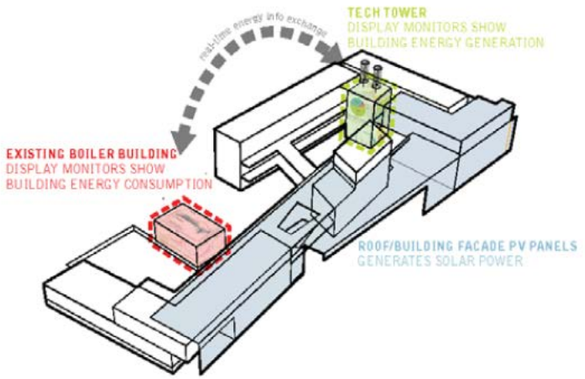
TARGET VALUE DESIGN TEAMS

	1 Patient Management I	2 Patient Management II	3 Staff Efficiency	4 It/Logistics	5 Cost/Schedule	6 Building Systems/Site	7 Security
XO:	Catherine Knox(XO)	Scott Wing (XO)	Evelyn Warner (XO)	Tom Hoerstman (XO)	Dave Wells (XO)	John Paul Peterson (XO)	Vinson Johnson (XO)
AO:	Jesse Springer (AO)	Cindi Ricker (AO)	Dalton LaVoie (AO)	Kevin Parks (AO)	Steven Powell (AO)	Arnie Dun (AO)	Arun Kaiwar (AO)
Design	Jesse Springer (AO) Paul Nagashima Sheila Ruder	Scott Wing (XO) Claudia Latchman	Evelyn Warner (XO) Dalton LaVoie (AO) Jeff Goodale	Tom Hoerstman (XO) Kevin Parks (AO) Neil Cristal	Mike Godfrey Sing-Sing Lee (AO)	John Paul Peterson (XO) Ron Migliori Kathy Blume Gary Lai	Vinson Johnson (XO) Arun Kaiwar (AO) Bill Valentine
Construction	Bart Robeson	Jeff Wellenstein	(OPS Cost)	Brett Nogelberg	Dave Wells (XO) Craig Greenough Erik Winje	Dave Mitchell Tim Belke	Brian Hill
JV	Sina Yerushalmi	Jason Haim	Ken Lee	Steve Keeter	Jeff Rock Sean Luong Brad Jayne	Bob Levine Greg Stirewalt Arnie Dun (AO)	Dave Michaels Steve Carter
Operators	Catherine Knox (XO) Wendy Still Andrew Swanson Helen Byrd Jim Lett Laura Lycan Sharon LaMar	Cindi Ricker (AO) Chuck Spirk Fountain Hutchison Frances Ridlehoover	Haunani Henry Kim Waits Debbie Hoffman Chris Salmon Patti Crome	Dave Noronha Kathy Page Jennie Evans Mike Holston Gene Lucas Joe Sargent Steve Young John Rogel	Susan Lew Steven Powell (AO)	Michael Bean	Tom Felker Marty Arolan IT: Fred Eichstaedt
Team Resources	CEQA-Traci Michel Kerry Hughes William Roush	CEQA-Martin Tuttle John O'Shaughnessy Dennis Hirning	CEQA-Wendy Saunders	CEQA-Todd Chambers	CEQA-Todd Chambers Lauren Trevathan Eric Tjai Dave Redemske Kaushal Diwan	CEQA-Laura Sainz Jim Townsend Larry Summerfield	Steve Keeter Dave Parrish Norm Carlson Don Price Betti Sadler Lisa Heintz
Support Person	Steve Morton	Pamela Adams	Andie Moeder	Edgar Nunnelly	Mitch Vaden	None	Clarinda Bisceglia

Program Cost Model Comparisons

	Dec '08 Cost Model - 7 Sites	Mar '09 Cost Model - 7 Sites	Mar '09 Cost Model - 6 Sites
Direct Facility Design/Build Costs			
Typical Facility	$2,620,113,411	$2,077,070,440	$1,873,912,888
Type 1 Facility	$801,158,438	$672,719,016	$681,826,604
Type 5 Facility	$858,824,328	$718,079,294	$728,412,634
Total Facility Design/Build Costs	**$4,280,096,177**	**$3,467,868,750**	**$3,284,152,126**
Equipment and IT			
Owner Furnished Equipment	$227,279,190	$250,007,111	$228,050,832
CPR IT Program Costs	$198,450,000	$222,760,650	$209,441,104
Subtotal Equipment and IT	**$425,729,190**	**$472,767,761**	**$437,491,936**
Subtotal Facility Direct Costs	**$4,705,825,367**	**$3,940,636,511**	**$3,721,644,062**
Indirect Costs			
Escalation	$350,407,776	$98,753,905	$75,532,711
Program Contingency	$500,582,537	$394,063,651	$372,164,406
Investment Sustainability Fund	$300,000,000	$300,000,000	$300,000,000
Offsite Infrastructure Allowance	$343,697,754	$343,697,754	$314,459,720
CEQA Allowance	$104,000,000	$104,000,000	$84,000,000
Site Adaptation Allowance	$35,000,000	$70,000,000	$60,000,000
Fees and Permits Allowance	$[illegible]000,000	$26,[illegible]000	$23,[illegible]
Programming, Planning, Administration	$121,450,085	$81[illegible]50,064	$779,45[illegible]064
Subtotal indirect Costs	**$2,781,138,152**	**$2,155,965,375**	**$2,[illegible]08,606,901**
TOTAL	**$7,486,963,519**	**$6,[illegible]96,601,886**	**$5,[illegible]250,963**

$7.5B $6.1B $5.7B



SCUP/AIA-CAE EXCELLENCE IN ARCHITECTURE

Honor

Harvard University for Tozzer Anthropology Building with l
Consulting Engineers, PC; Green International Affiliates, In
Inc.; Cavanaugh Tocci Associates

Honor

Los Angeles Community College for Los Angeles Harbor Co
Construction; Saiful/Bouquet; JMC2; Fundament & Associa
Consultancy; Aon Fire Protection Engineering Corp; Finish

Honor

Stanford University for Windhover Contemplative Center w
Rutherford + Chekene; BKF Engineers; Auerbach Glasow F
Earth Works

Lean Design and Construction

- Innovation!
- Alignment with client goals
- Creates stability/predictability on projects
- Identifies and removes waste in current design and construction processes: improving productivity and reducing cost and time to build
- Results in safer projects
- Makes the design and building process fun again

Lean Design and Construction...vs *The Old Methodology*

- Innovation!
- Alignment with client goals
- Creates stability/predictability on projects
- Identifies and removes waste in current design and construction processes: improving productivity and reducing cost and time to build
- Results in safer projects
- Makes the design and building process fun again

- *Jumping in without defining the problem*
- *Waiting for design batches*
- *Design schedule defined by arbitrary milestones*
- *Surprises*
- *Waiting for the bids to come in to know the cost of the project*
- *VE options arriving late disrupting design*

Success stories?

KNOWLEDGE BASED DESIGN

introduction

Knowledge Based Design

KBD initiative

TABLE OF CONTENTS

Knowledge Based Design

STRATEGIC PLAN

KBD CONNECTIONS TO HGA STRATEGIC PLAN

1
DISTINGUISH OURSELVES BY EXEMPLIFYING EXCELLENCE
- Improve design quality
- Advance integration of disciplines
- Cultivate our reputation

2
TAKE ADVANTAGE OF NEW MARKET OPPORTUNITIES
- Innovative clients and design
- Integrate A/E services

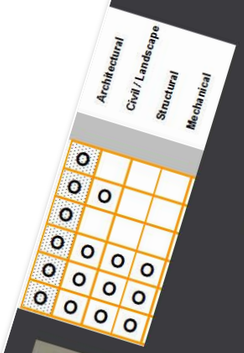
3
ORGANIZE AND MANAGE OUR FIRM EFFECTIVELY
- Responsibility and authority "closest to the action"
- Consistent problem-solving methodology and decision-making

4
PRACTICE STEWARDSHIP
- Culture of mentoring
- Sustainable design

5
FINANCIAL SUCCESS
- Accountability
- Enhance our competitive advantage

We did this right.

EDUCATION SESSION 2



WHERE WE'VE BEEN

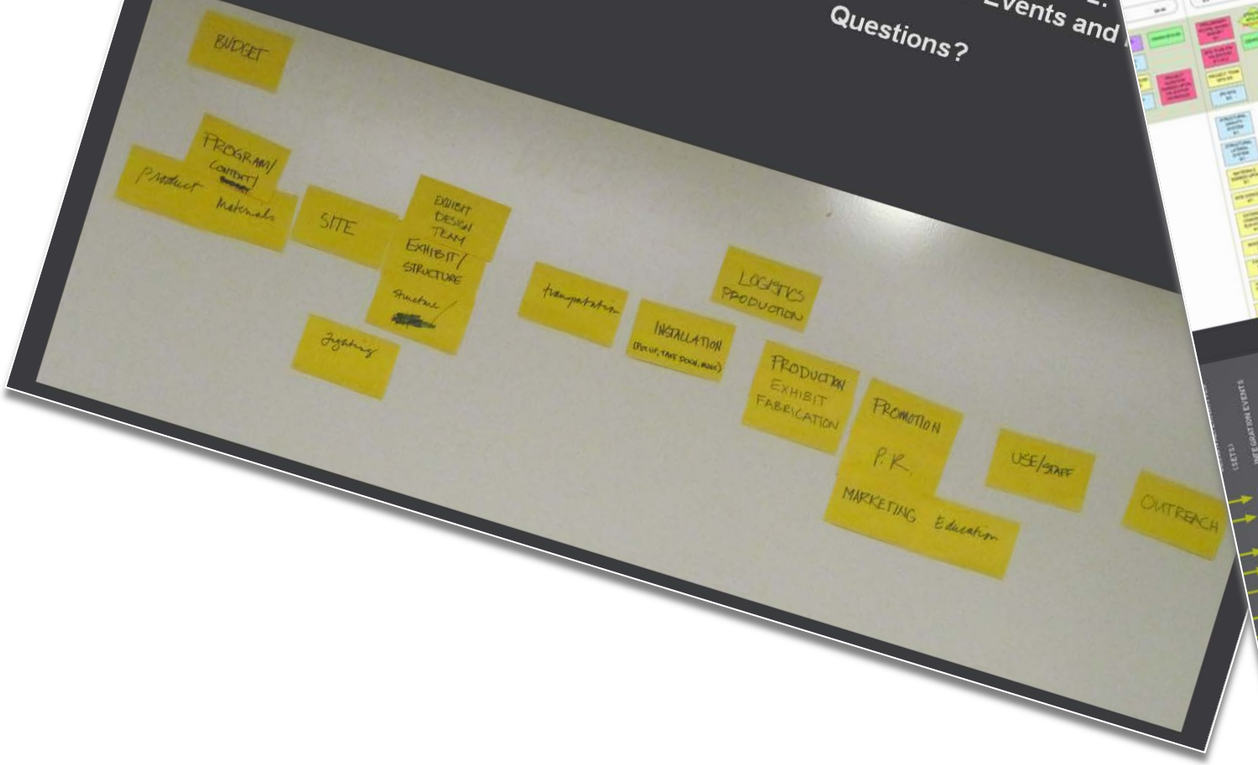
Education Session 1:
Project Team Organization

Your comments re: Session 1?

WHERE WE'RE GO

Education Session 2:
Integration Events and

Questions?

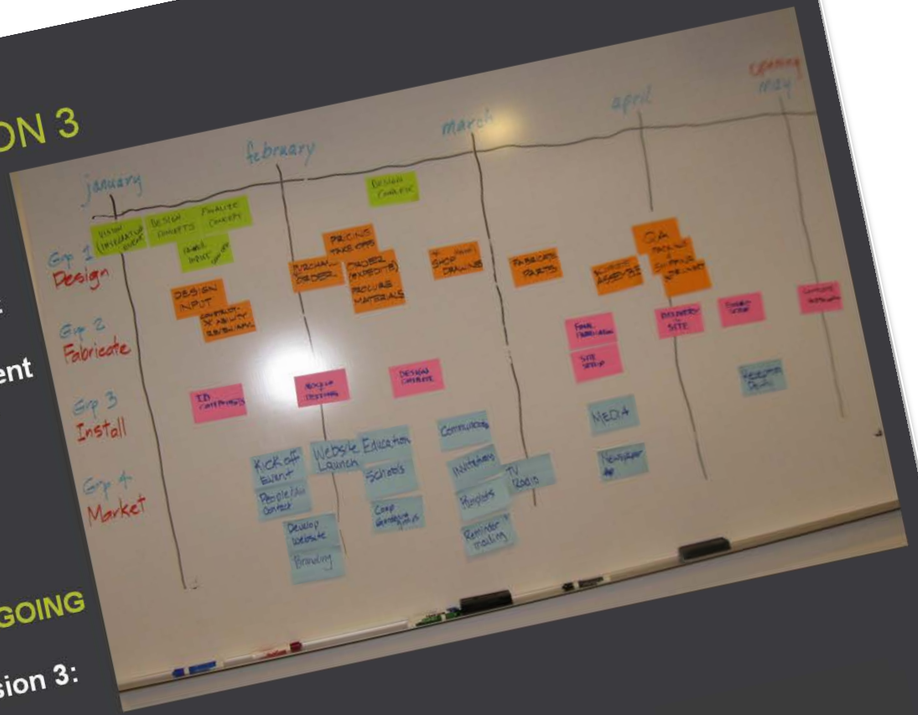


EDUCATION SESSION 3

WHERE WE'VE BEEN

Education Session 2:

- Integration Event
- Pull Schedule

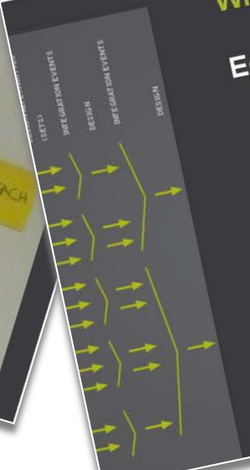


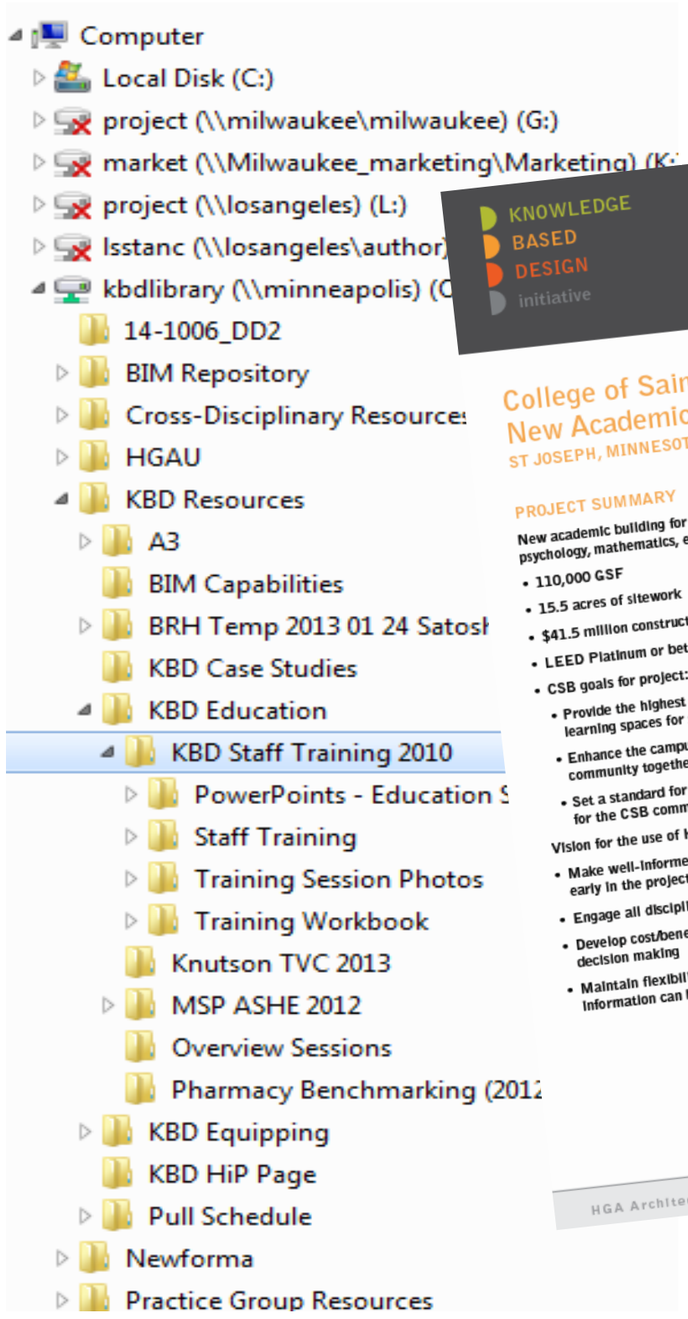
WHERE WE'RE GOING

Education Session 3:

- Knowledge Sharing
- Set-Based Design

Questions?





0223-042-00 & 0223-043-00

College of Saint Benedict
New Academic Building
ST JOSEPH, MINNESOTA

PROJECT SUMMARY

New academic building for CSB housing departments of psychology, mathematics, economics and computer science.

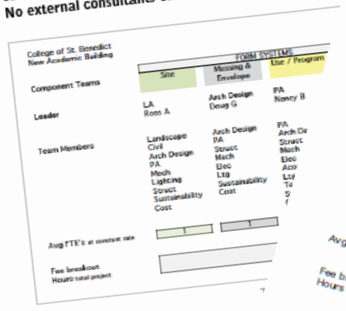
- 110,000 GSF
- 15.5 acres of sitework
- $41.5 million construction budget
- LEED Platinum or better
- CSB goals for project:
  - Provide the highest quality formal and informal learning spaces for students and faculty
  - Enhance the campus as a whole and connect the community together
  - Set a standard for sustainability and stewardship for the CSB community

Vision for the use of KBD on the project:

- Make well-informed integrated design decisions early in the project
- Engage all disciplines as conceptual thinkers
- Develop cost/benefit scenarios to assist Owner in decision making
- Maintain flexibility in the design process so new information can be applied with minimal disruption

TEAM ORGANIZATION

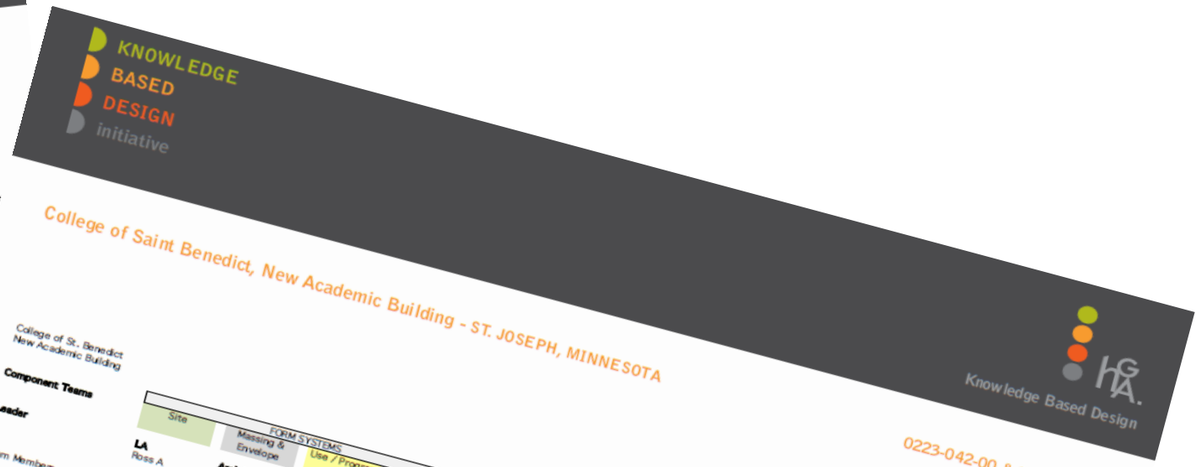
Component Teams were structured around significant buildin components. The Owner had periodic involvement, by choice (not able to commit time and resources needed for highly i tive participation). Contractor was not selected as of com tion of SD Phase, so construction was represented by HG cost estimating. Advised Owner to engage CM for DD P No external consultants on team.



The Component Team structure he value engineering early in Scher on the team was engaged in the first day of the project. Early t Predesign team to all team m understanding of the project perspective. Key team mem mechanical, electrical and day participated in meetings with the Co knowledge of how the design of their system to the College's needs. This multidisciplinary proces

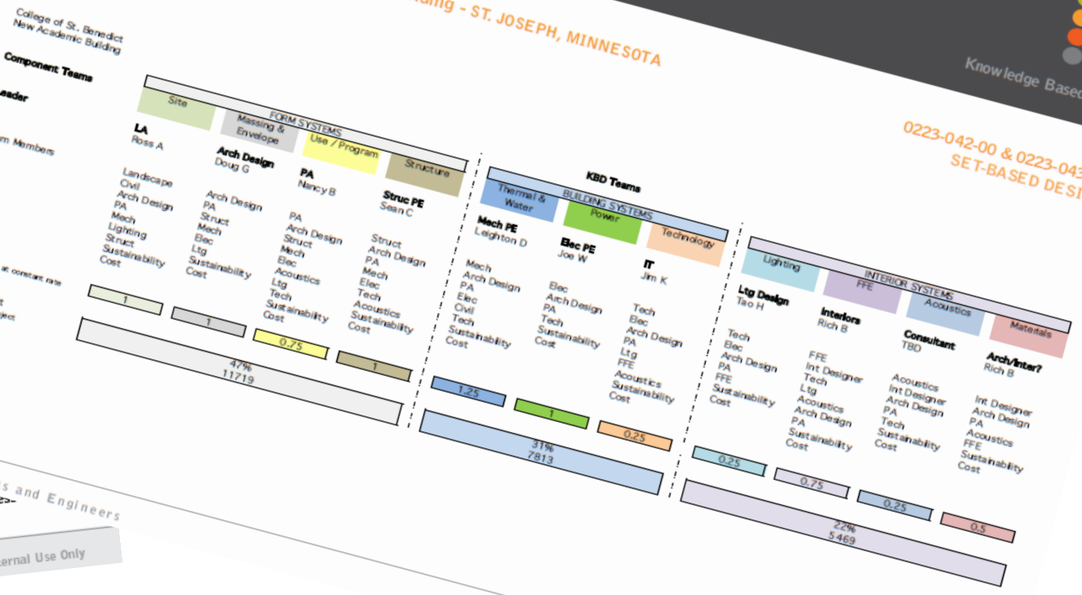
HGA Architects and Engineers

*For Internal Use Only



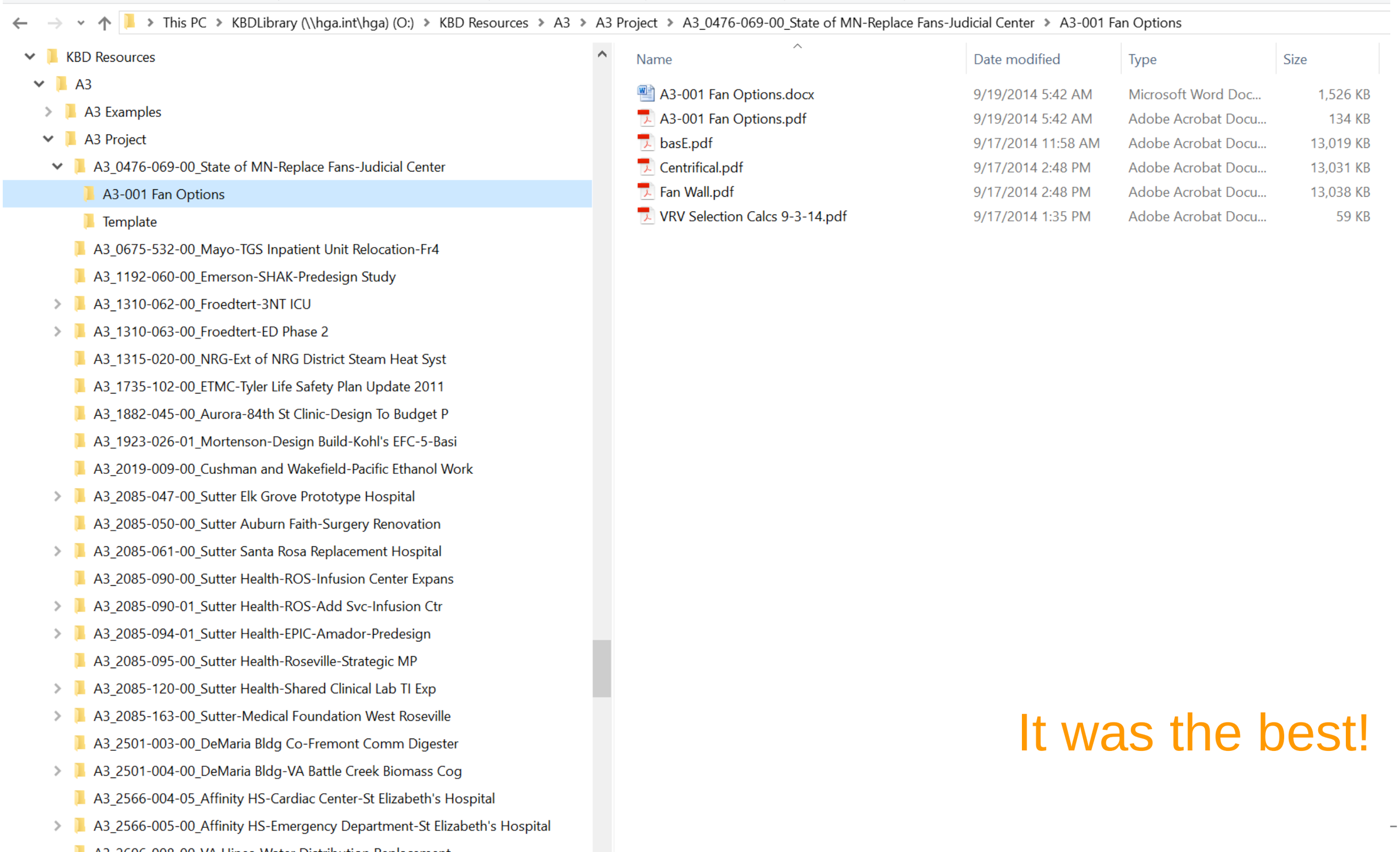
College of Saint Benedict, New Academic Building - ST. JOSEPH, MINNESOTA

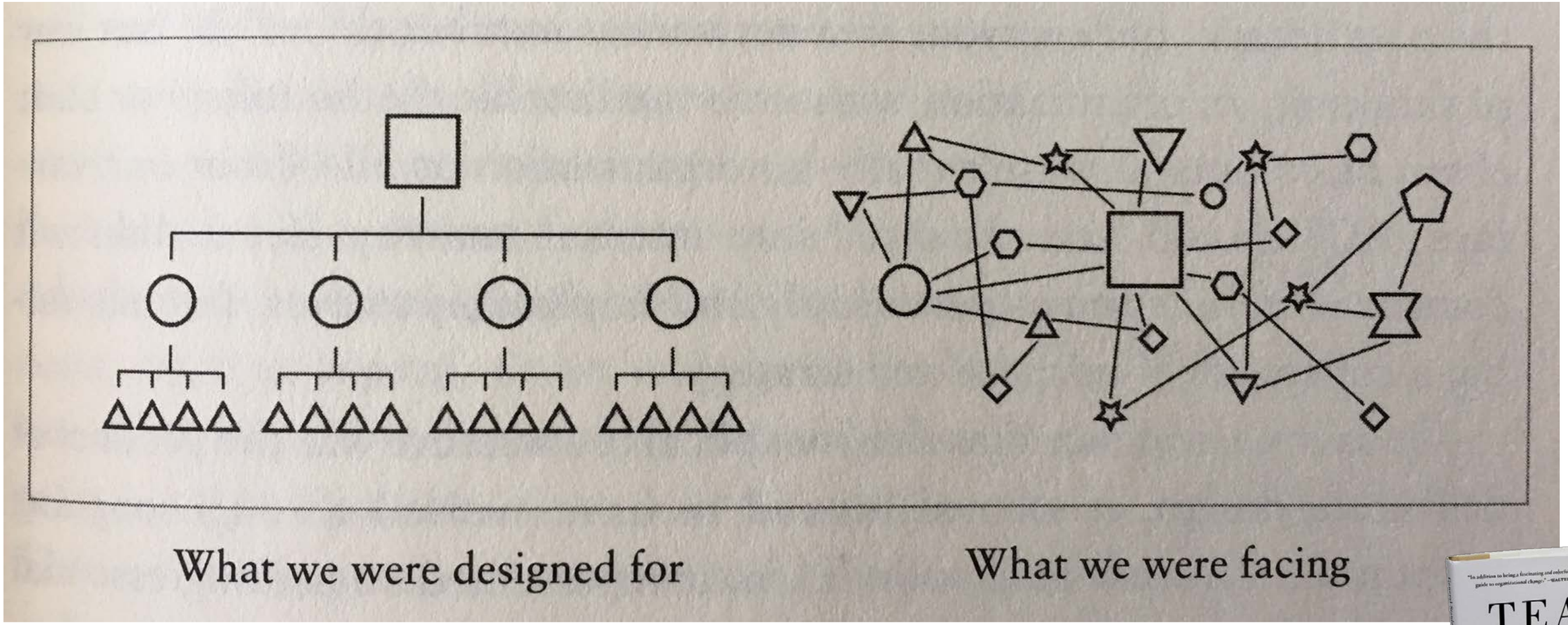
0223-042-00 & 0223-043-00
SET-BASED DESIGN



HGA Architects and Engineers

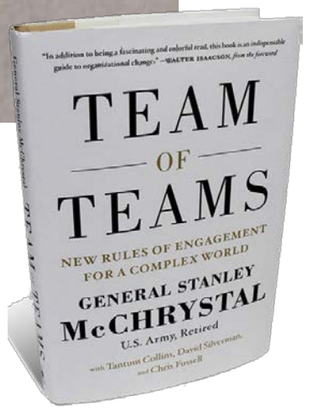
*For Internal Use Only


This PC › KBDLibrary (\\hga.int\hga) (O:) › KBD Resources › A3 › A3 Project › A3_0476-069-00_State of MN-Replace Fans-Judicial Center › A3-001 Fan Options
KBD Resources
A3
A3 Examples
A3 Project
A3_0476-069-00_State of MN-Replace Fans-Judicial Center
A3-001 Fan Options
Template
A3_0675-532-00_Mayo-TGS Inpatient Unit Relocation-Fr4
A3_1192-060-00_Emerson-SHAK-Predesign Study
A3_1310-062-00_Froedtert-3NT ICU
A3_1310-063-00_Froedtert-ED Phase 2
A3_1315-020-00_NRG-Ext of NRG District Steam Heat Syst
A3_1735-102-00_ETMC-Tyler Life Safety Plan Update 2011
A3_1882-045-00_Aurora-84th St Clinic-Design To Budget P
A3_1923-026-01_Mortenson-Design Build-Kohl's EFC-5-Basi
A3_2019-009-00_Cushman and Wakefield-Pacific Ethanol Work
A3_2085-047-00_Sutter Elk Grove Prototype Hospital
A3_2085-050-00_Sutter Auburn Faith-Surgery Renovation
A3_2085-061-00_Sutter Santa Rosa Replacement Hospital
A3_2085-090-00_Sutter Health-ROS-Infusion Center Expans
A3_2085-090-01_Sutter Health-ROS-Add Svc-Infusion Ctr
A3_2085-094-01_Sutter Health-EPIC-Amador-Predesign
A3_2085-095-00_Sutter Health-Roseville-Strategic MP
A3_2085-120-00_Sutter Health-Shared Clinical Lab TI Exp
A3_2085-163-00_Sutter-Medical Foundation West Roseville
A3_2501-003-00_DeMaria Bldg Co-Fremont Comm Digester
A3_2501-004-00_DeMaria Bldg-VA Battle Creek Biomass Cog
A3_2566-004-05_Affinity HS-Cardiac Center-St Elizabeth's Hospital
A3_2566-005-00_Affinity HS-Emergency Department-St Elizabeth's Hospital
Name
Date modified
Type
Size
A3-001 Fan Options.docx 9/19/2014 5:42 AM Microsoft Word Doc... 1,526 KB
A3-001 Fan Options.pdf 9/19/2014 5:42 AM Adobe Acrobat Docu... 134 KB
basE.pdf 9/17/2014 11:58 AM Adobe Acrobat Docu... 13,019 KB
Centrifical.pdf 9/17/2014 2:48 PM Adobe Acrobat Docu... 13,031 KB
Fan Wall.pdf 9/17/2014 2:48 PM Adobe Acrobat Docu... 13,038 KB
VRV Selection Calcs 9-3-14.pdf 9/17/2014 1:35 PM Adobe Acrobat Docu... 59 KB
It was the best!



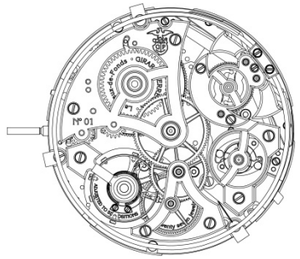
What we were designed for

What we were facing

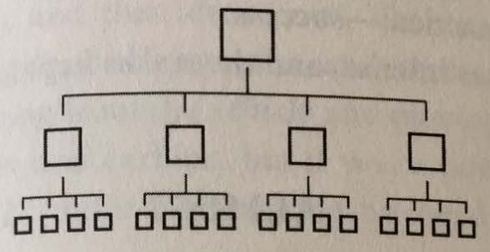


Complicated

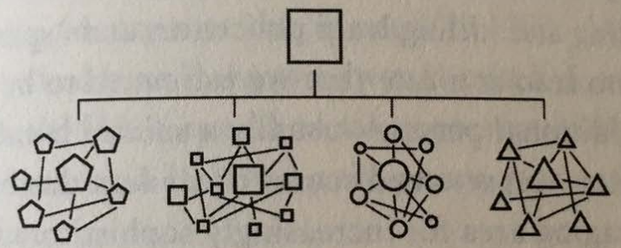
Complex



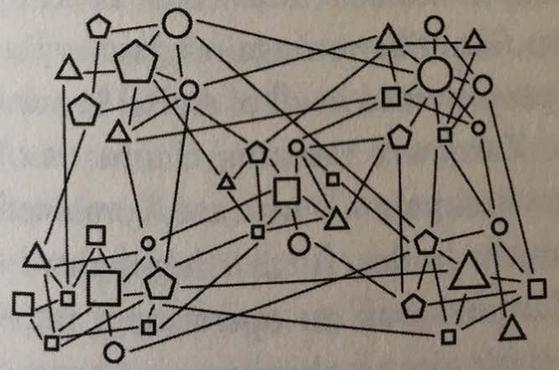
	Complicated	Complex
In planning	•Describe *What*; dictate *How* •Focus on details •Coordinate everything centrally •Deliberate tradeoffs •Solution is often reached through a series of algorithms	•Describe *What* but not *How* •Only key details—the fewer, the better •Limit central coordination to what's absolutely necessary •Tradeoffs not always foreseeable, and they can shift over time
Goal	Optimal solution	Good enough to learn from and adjust
Focus on	All the details	Potential side effects
During execution	•Make sure plan is adhered to •Adjust to make things more efficient •Compliance	•Measure results against all desired outcomes •Don't get attached to any particular course of action •Adjust constantly and learn



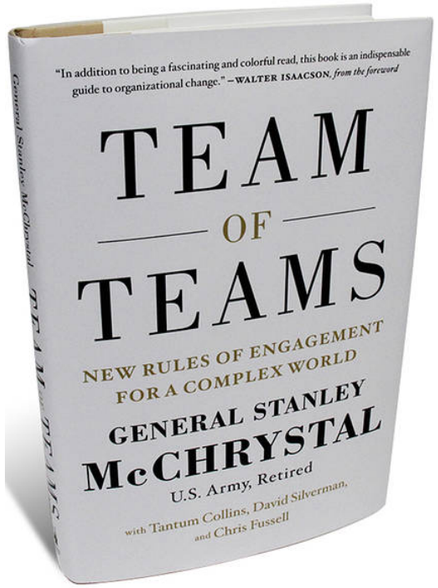
Command



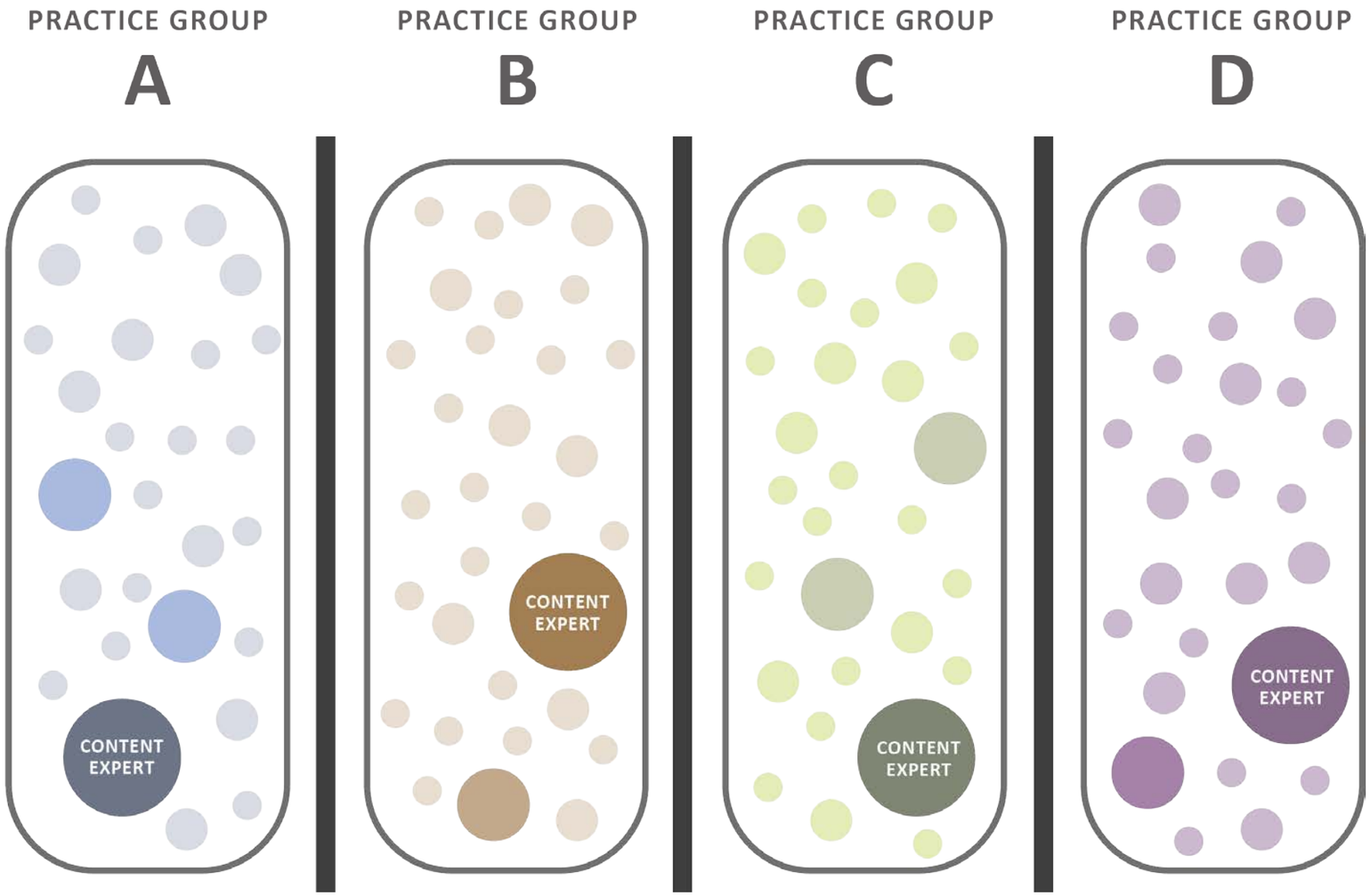
Command of Teams

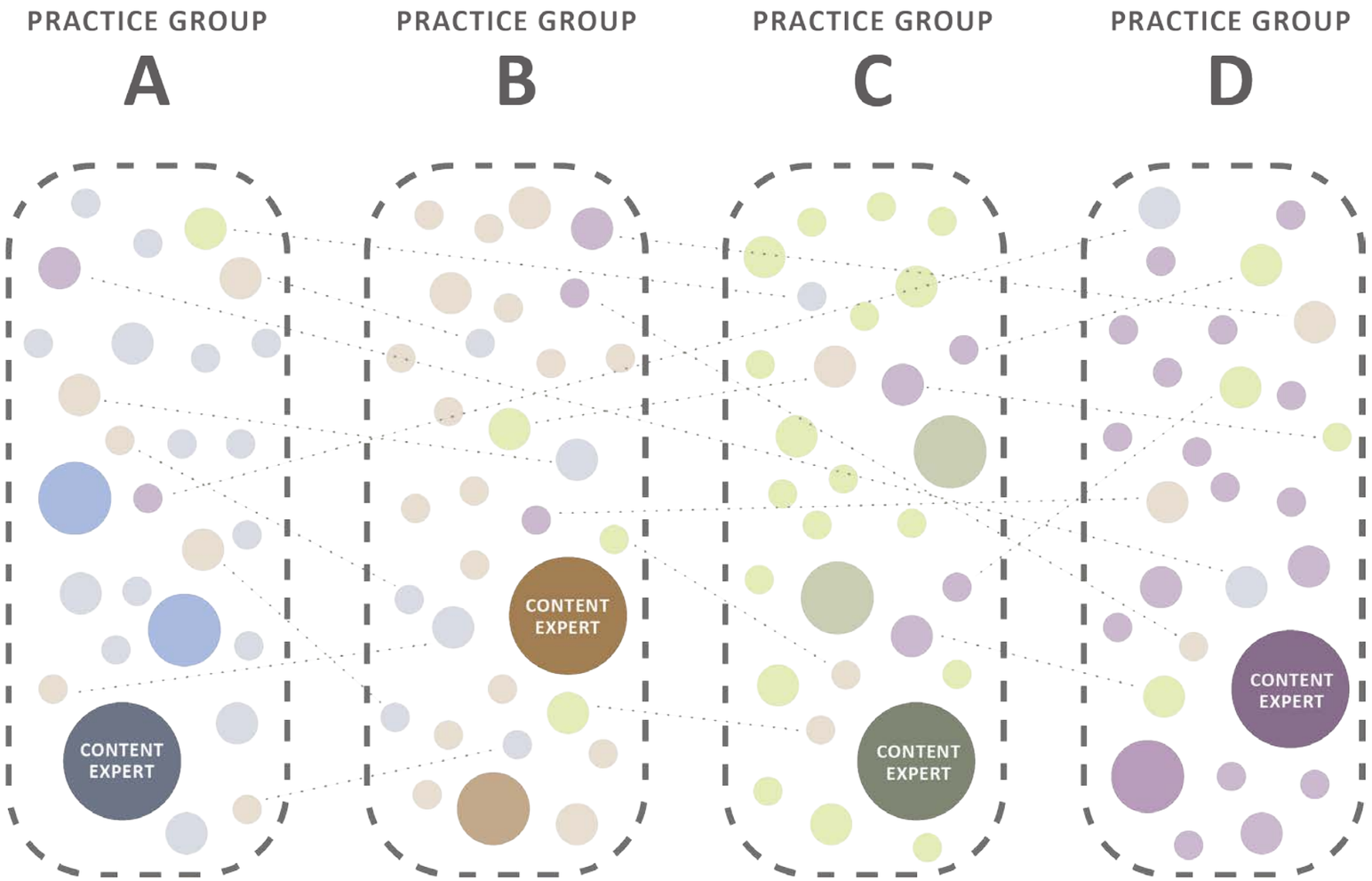


Team of Teams



MAY 31-JUNE 1 • CHICAGO, IL


PRACTICE GROUP
A
CONTENT EXPERT
PRACTICE GROUP
B
CONTENT EXPERT
PRACTICE GROUP
C
CONTENT EXPERT
PRACTICE GROUP
D
CONTENT EXPERT


PRACTICE GROUP
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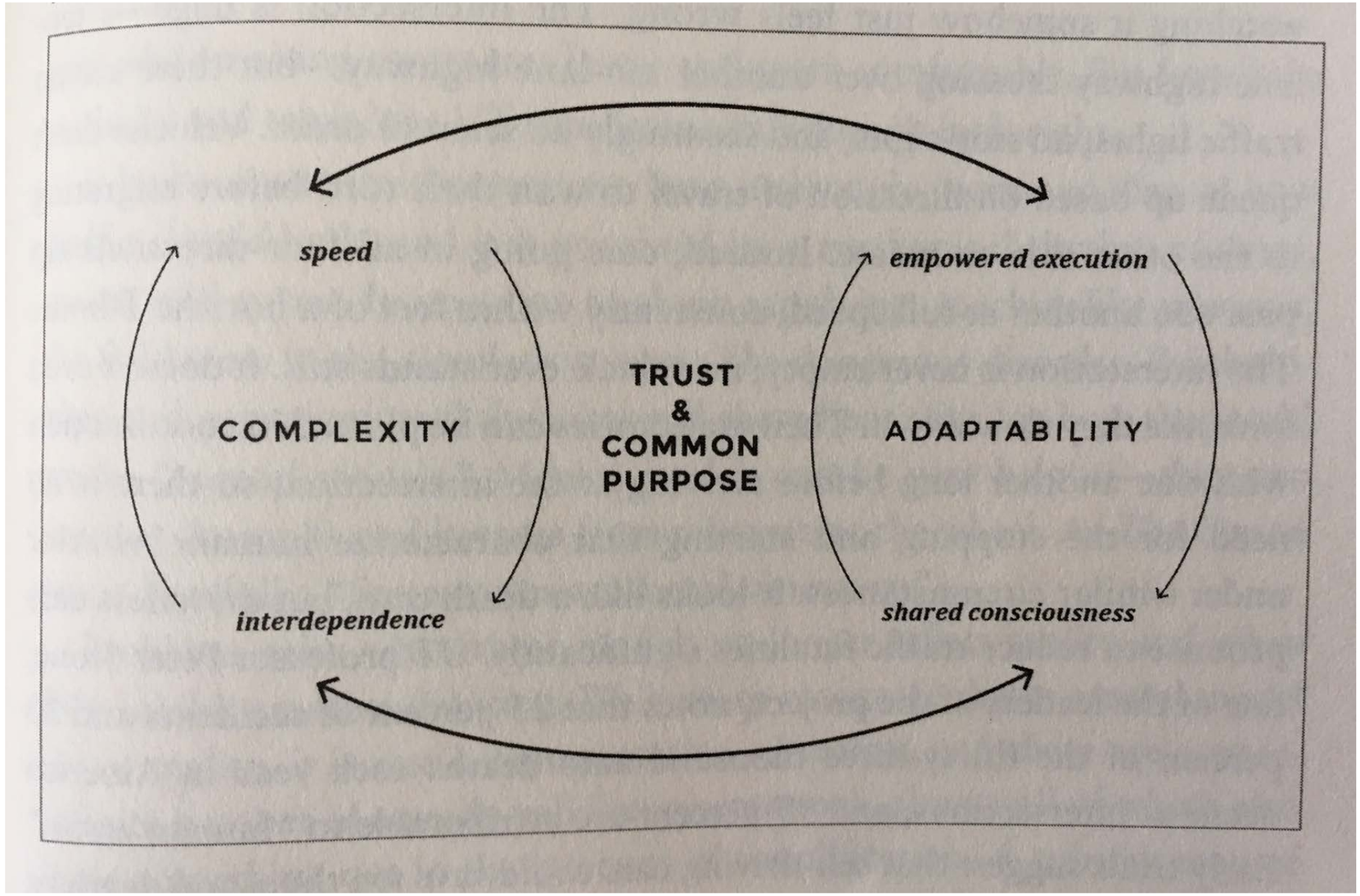
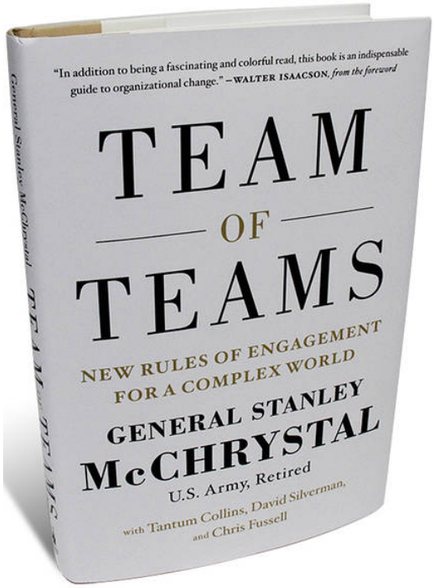
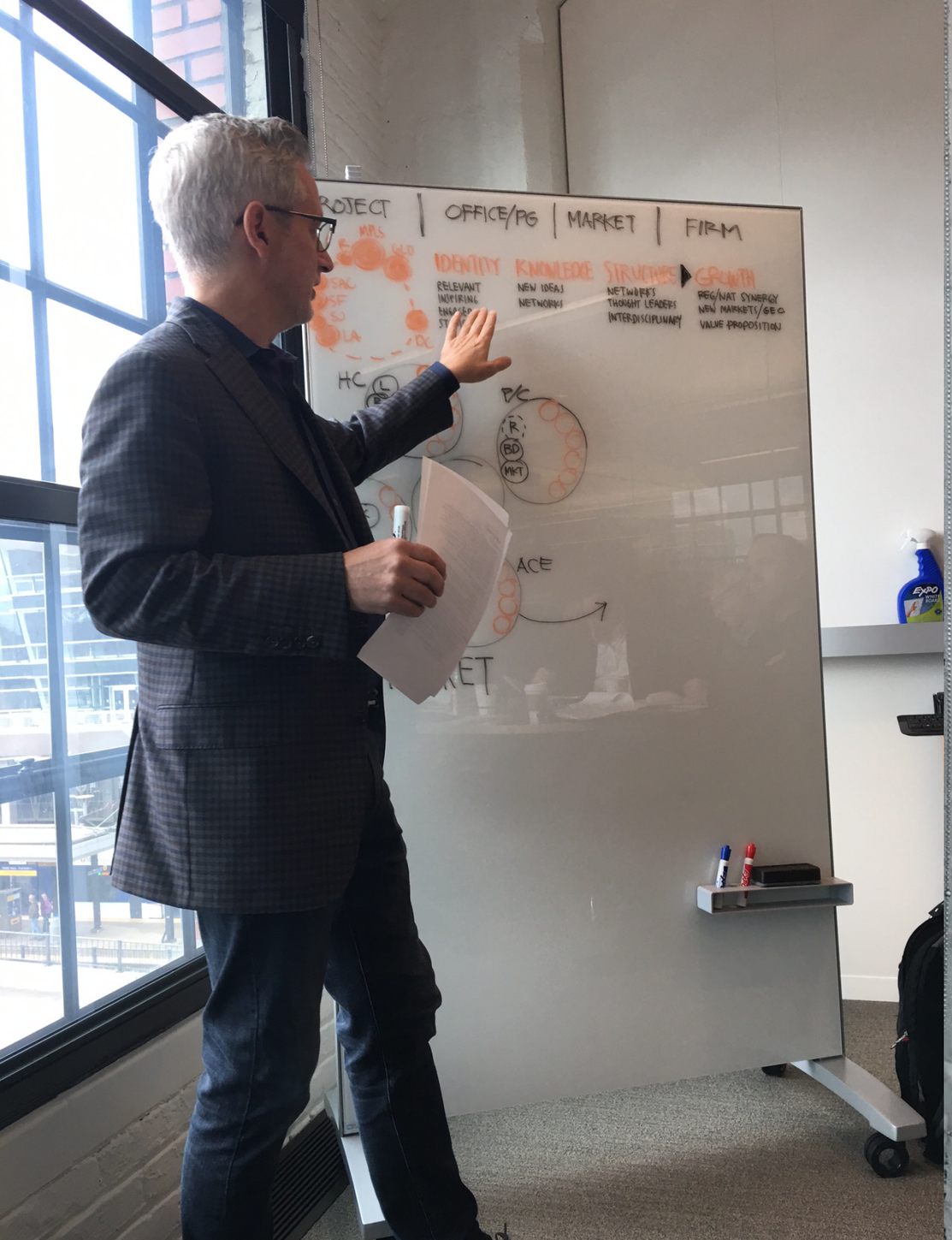
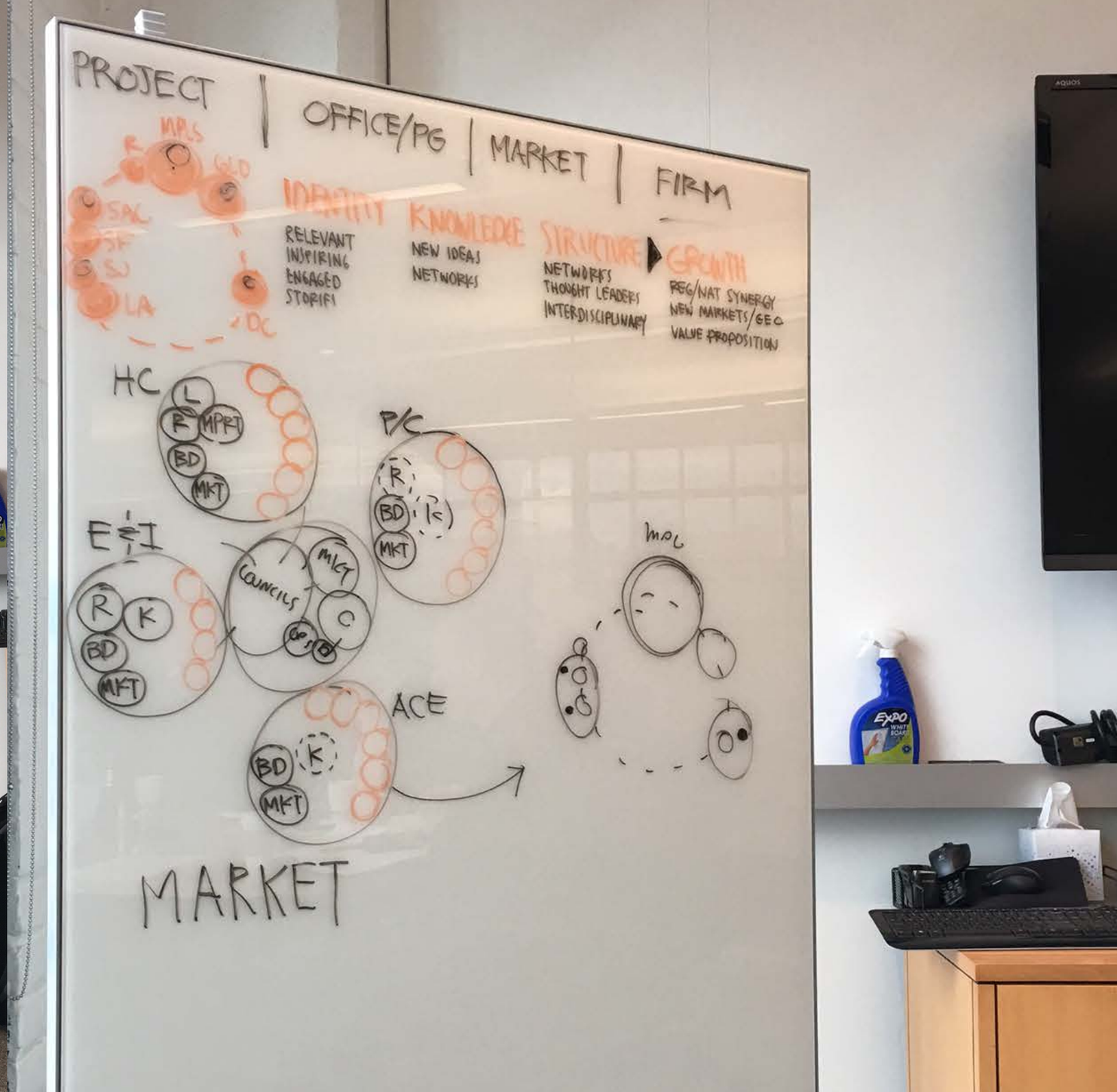

speed
empowered execution
COMPLEXITY
TRUST
&
COMMON
PURPOSE
ADAPTABILITY
interdependence
shared consciousness


"In addition to being a fascinating and colorful read, this book is an indispensable guide to organizational change." – WALTER ISAACSON, from the foreword
TEAM
OF
TEAMS
NEW RULES OF ENGAGEMENT FOR A COMPLEX WORLD
GENERAL STANLEY
McCHRYSTAL
U.S. Army, Retired
with Tantum Collins, David Silverman, and Chris Fussell


PROJECT | OFFICE/PG | MARKET | FIRM
IDENTITY KNOWLEDGE STRUCTURE GROWTH
RELEVANT
INSPIRING
NEW IDEAS
NETWORKS
NETWORKS
THOUGHT LEADERS
INTERDISCIPLINARY
REG/NAT SYNERGY
NEW MARKETS/GEO
VALUE PROPOSITION
HC
P/C
ACE
MARKET


PROJECT | OFFICE/PG | MARKET | FIRM
RELEVANT
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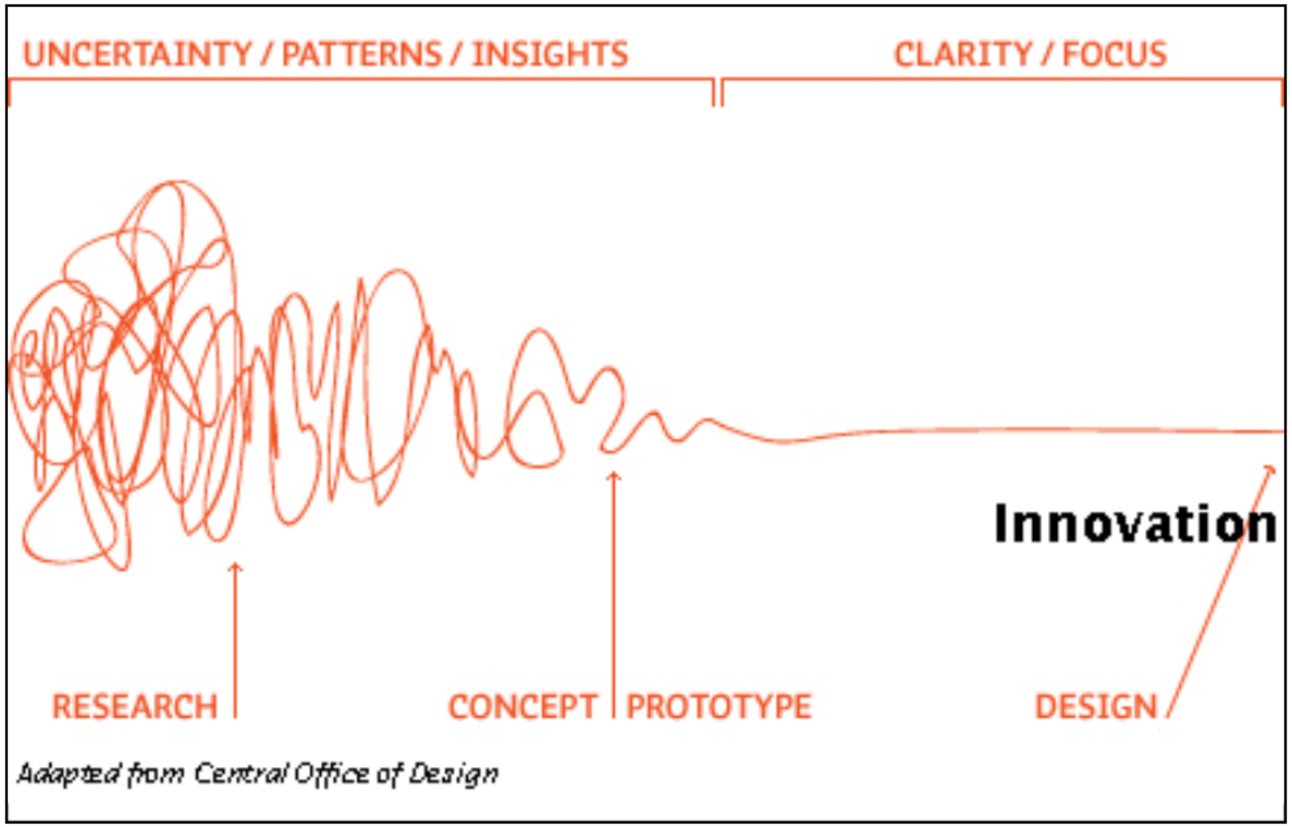
NEW IDEAS
NETWORKS
NETWORKS
THOUGHT LEADERS
INTERDISCIPLINARY
REG/NAT SYNERGY
NEW MARKETS/GEO
VALUE PROPOSITION
HC
P/C
E&I
COUNCILS
ACE
MARKET

Obstacles on the journey?

The model evolves

Design Thinking as a Strategy for Innovation



What is Design Thinking?
Design Thinking is a methodology used by designers to solve complex problems, and find desirable solutions for clients. A design mindset is not problem-focused, it's solution focused and action oriented towards creating a preferred future. Design Thinking draws upon logic, imagination, intuition, and systemic reasoning, to explore possibilities of what could be—and to create desired outcomes that benefit the end user (the customer).


What and Why
How
A question, vision or statement of intent
A clear opportunity or brief on which to base ideas
A functioning and proven concept
Understanding people's daily experiences
Mapping who's involved
Identifying themes
Understanding causal influences
Seeking feedback from users
Rapid testing of ideas
Measuring impact
Refining the business model
1. Discover
2. Define
3. Develop
4. Deliver

A Framework for Design Thinking

1. Discovery

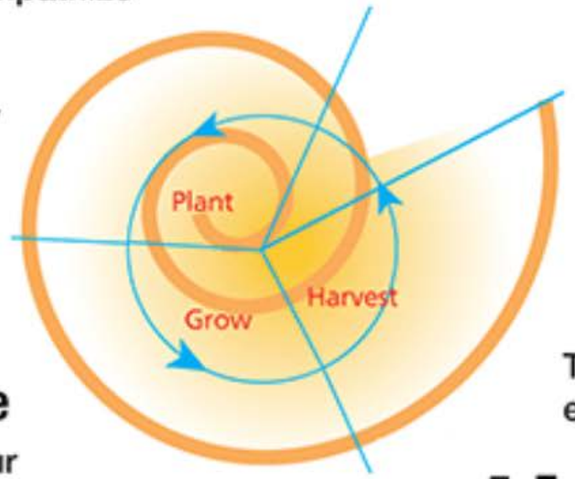
Choose an affirmative, strategic topic. Gather data. Understand & empathize with unmet needs.

2. (Re)Frame opportunity

Look for patterns & insights. Question assumptions. Frame your POV. Define your scope.

3. Incubate

Switch gears. Feed your brain with diverse stimuli. Meditate. Sleep on it.



4. Ideate/ illuminate

Experiment. Explore possibilities. Envision a desired future. Co-create in diverse team. Make your ideas visible.

5. Evaluate/Refine ideas

What is desirable, feasible, viable about your ideas? What are the constraints?

6. Rapid Prototype /test

Think big, act small, fail fast; learn from end-users and refine.

7. Deliver

Final testing, approval and launch.

8. Iterate & Scale

Evaluate. Learn. Create. Innovate.

The perfect Lean Design Firm

IDEO, Palo Alto, California

Mainstreamed the idea of “Design Thinking”

-Utilize Going to the Gemba

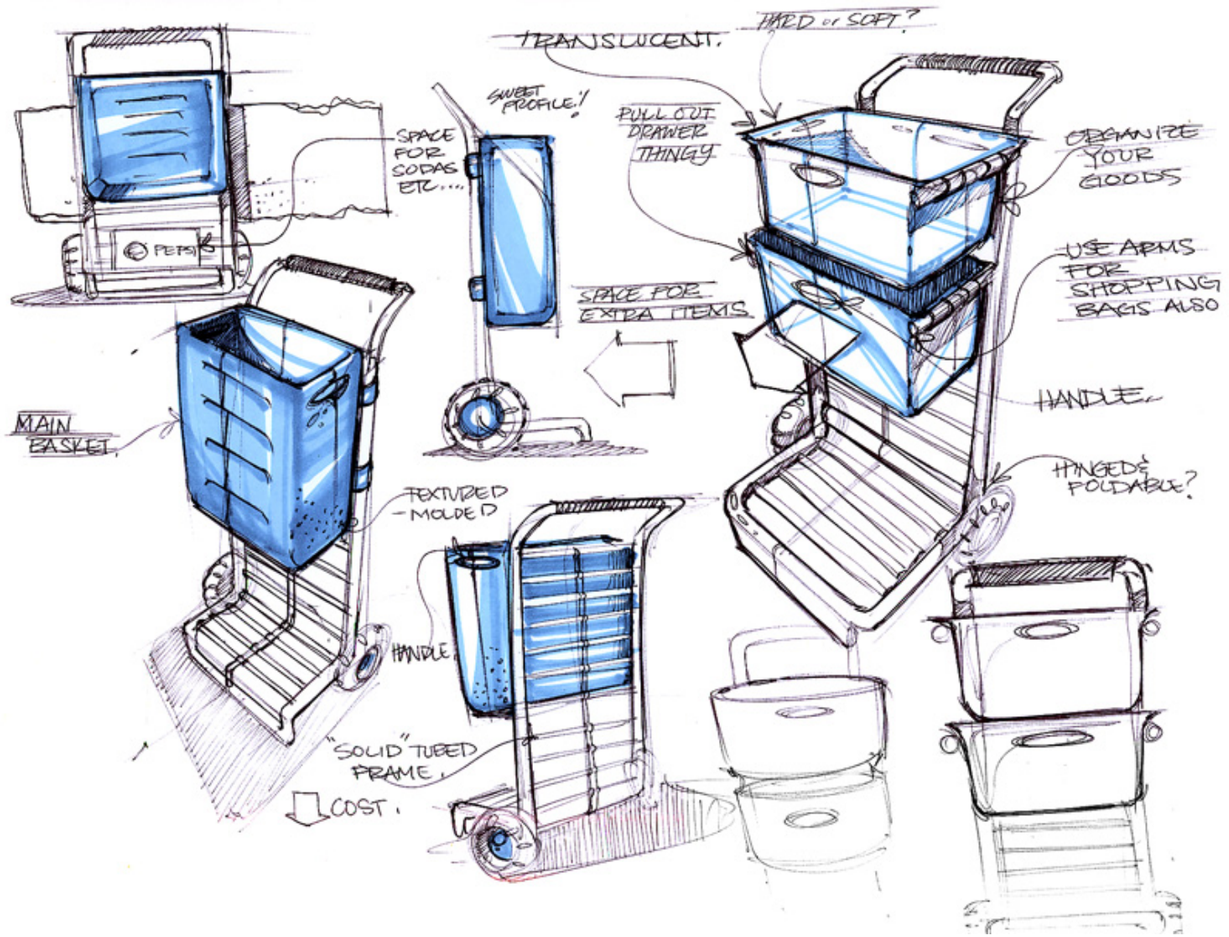
-QFD studies

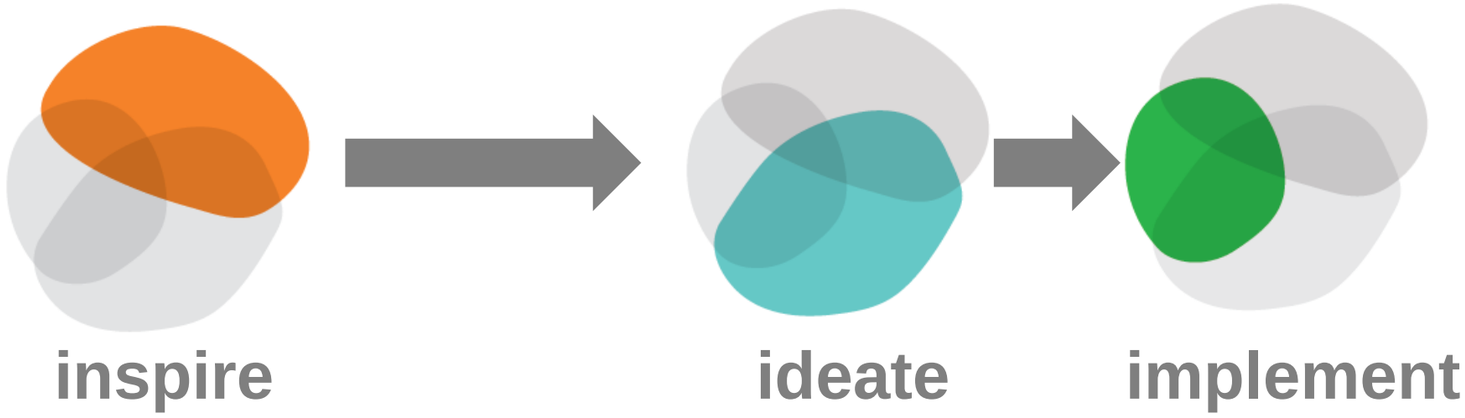
-Rapid Proto-typing

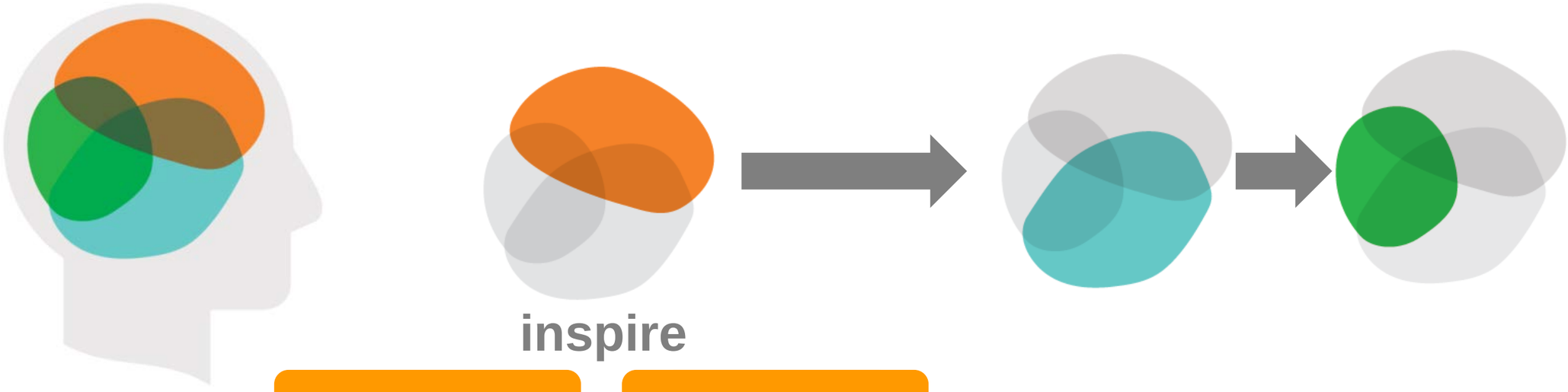
-Cross-Functionally trained teams

-TRIZ, etc. All without calling “It that”

-…and neutral Standard of Care issues



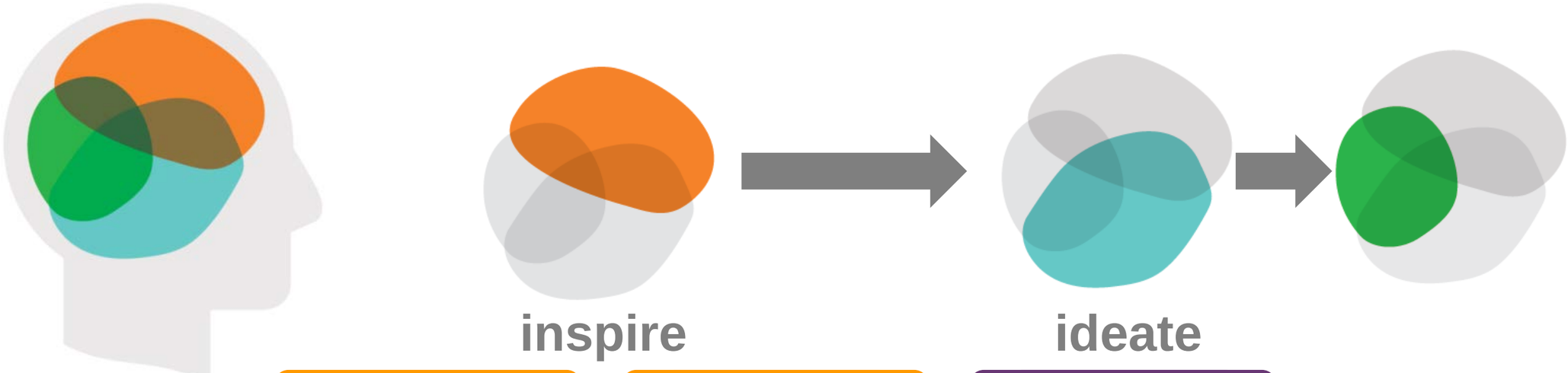

inspire
ideate
implement



inspire

Vision	Current State
Mission Goals Desired outcomes Workplan Team Data request	Shadowing Interviews Volumes / Thruput Workflows Benchmarks

success → big questions

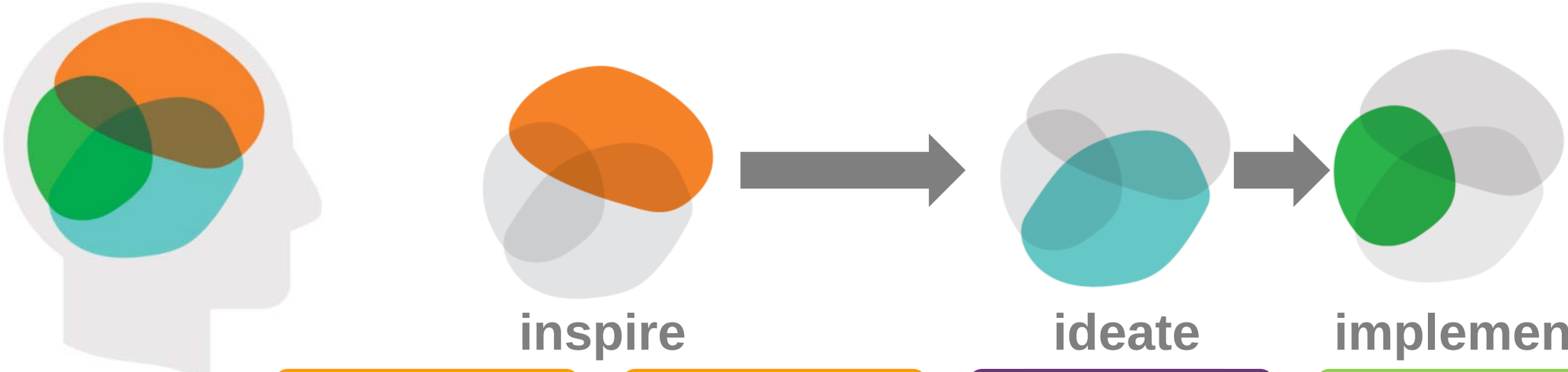


inspire

ideate

Vision	Current State	Future State
Mission Goals Desired outcomes Workplan Team Data request	Shadowing Interviews Volumes / Thruput Workflows Benchmarks	Big Ideas Process maps Prototypes VR Extreme Schemes

success → big questions → big ideas



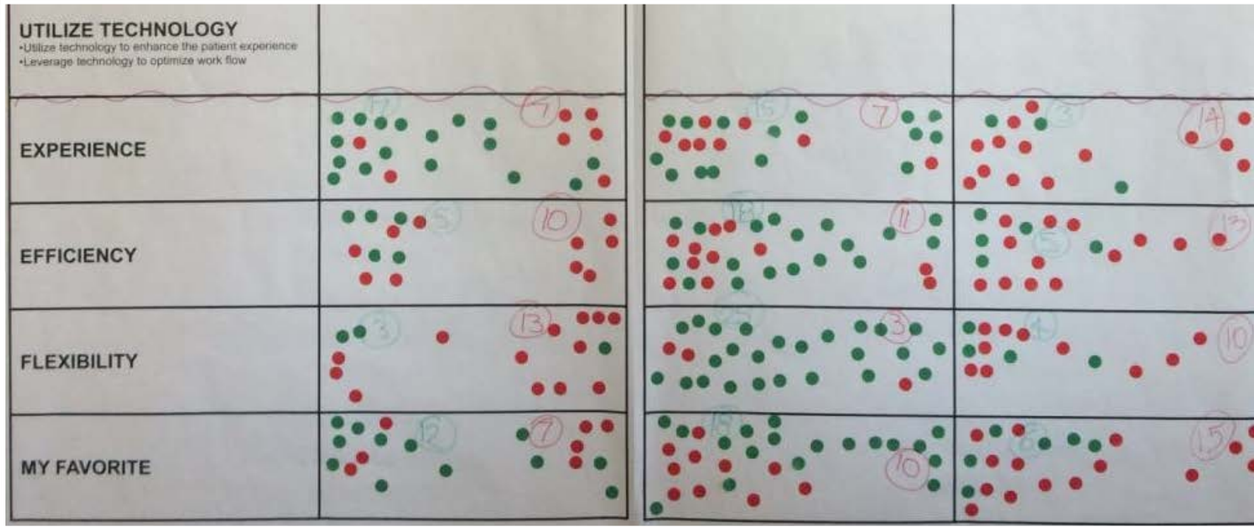
inspire ideate implement

Vision	Current State	Future State	Design State
Mission Goals Desired outcomes Workplan Team Data request	Shadowing Interviews Volumes / Thruput Workflows Benchmarks	Big Ideas Process maps Prototypes VR Extreme Schemes	Integrated solution Phasing Constructability

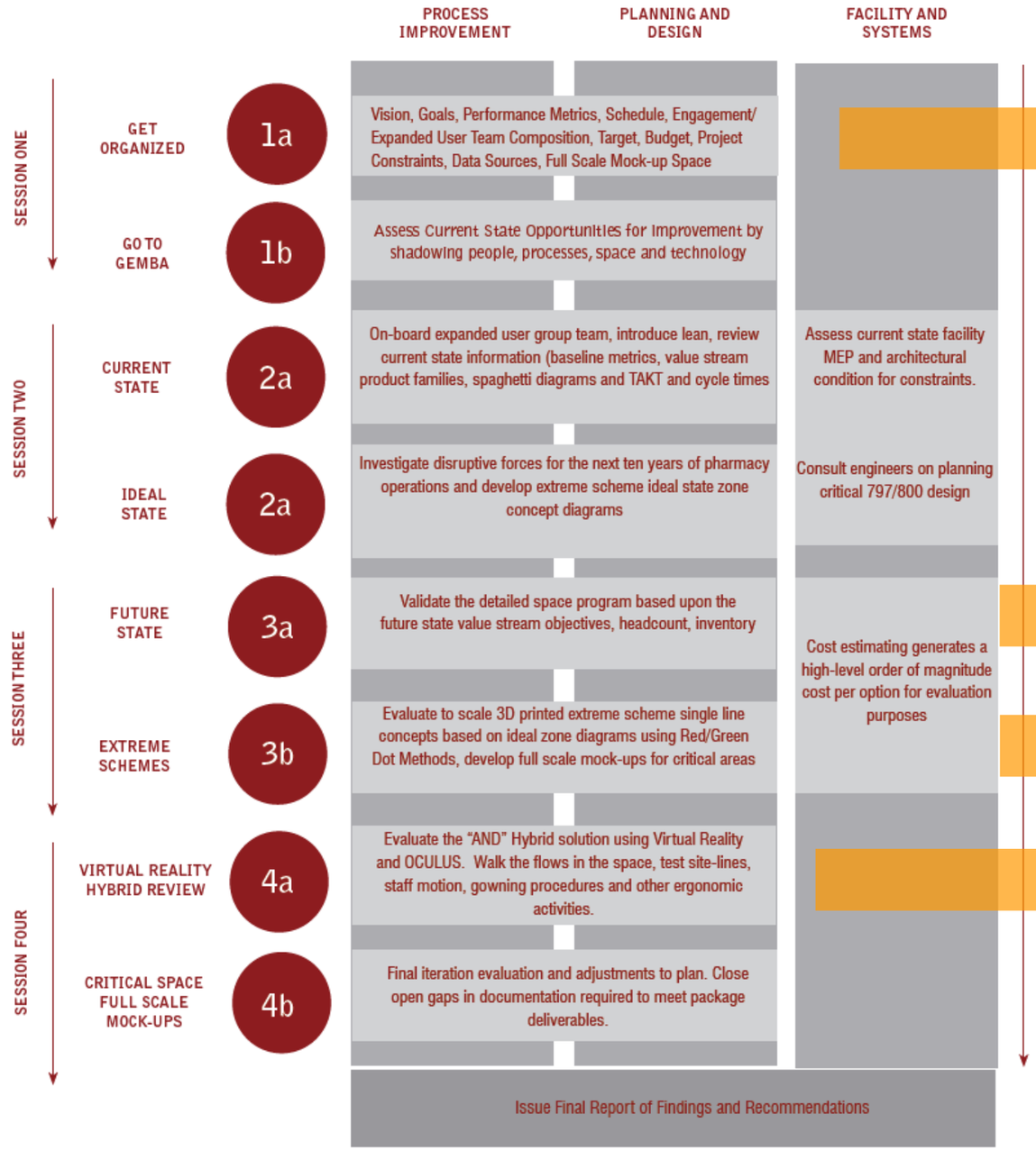
success → big questions → big ideas → the answer

ID	Description	Recommended NOW / Recommended FUTURE	Contextual	Scale	Unifying	Representative	Connection	Heritage	Hospitality	Program Efficiency	Safety	Comfort	State-of-the-Art	Precision	Quality	Competence	Spatial Quality	Comfort & Control	Daylight & Views	Oasis	Circulation	Structural Efficiency	Mech Efficiency	Other Efficiency	Envelope	First Cost	Life Cycle Cost	Ease of Maintenance	Operations
	Weighting		10	10	8	8	8	10	10	10	8	8	10	10	8	8	8	10	8	8	8	8	8	8	8	10	10	10	10
IDEA-1		216	1	-1	1	2	1	-1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	-1	-1	-1	-1
		Needs Investigation / Needs Investigation	10	-10	8	16	8	-10	10	10	8	8	20	20	16	8	8	10	8	8	8	8	8	8	8	-10	10	10	10
IDEA-2		236	1	1	1	2	1	-1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	-1	1	1	1
		Needs Investigation / Needs Investigation	10	10	8	16	8	-10	10	10	8	8	20	20	16	8	8	10	8	8	8	8	8	8	8	-10	10	10	10
IDEA-3		302	1	2	1	1	1	2	2	1	2	2	1	1	1	1	1	1	1	2	1	2	1	1	1	1	1	1	1
		Needs Investigation / Needs Investigation	10	20	8	8	8	20	20	10	16	16	10	10	8	8	8	10	8	16	8	16	8	8	8	10	10	10	10


BUILDING STACKING
VOTING MATRIX
WORLD PEACE
HYBRID A
HYBRID B


UTILIZE TECHNOLOGY
•Utilize technology to enhance the patient experience
•Leverage technology to optimize work flow
EXPERIENCE
EFFICIENCY
FLEXIBILITY
MY FAVORITE


INSTRUCTIONS
CLINICIAN
PATIENT
FLEXIBILITY
CRITERIA
PATIENT AND FAMILY FRIENDLY
EFFICIENT FLOW AND OPERATIONS
BEST MEETS BUSINESS PLAN



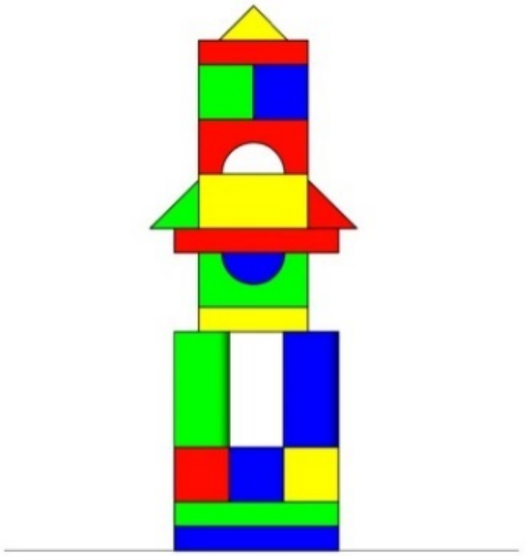
Goals.

Big ideas.

Extremes.

Hybrid.

…Implement.



Front Elevation

	Pull Planning Training - Manufacturing Tower	Elevation	
		Project number: Project Number; Date: Issue Date; Drawn by: Author; Checked by: Checker	S1
		Scale: 6" = 1'-0"	

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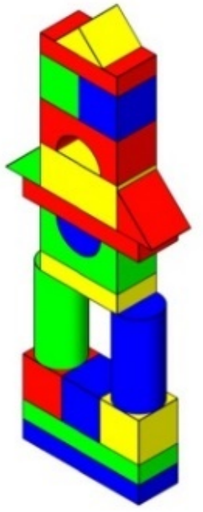

3D View

	Pull Planning Training - Manufacturing Tower	3D View	
		Project number: Project Number; Date: Issue Date; Drawn by: Author; Checked by: Checker	S2
		Scale:	

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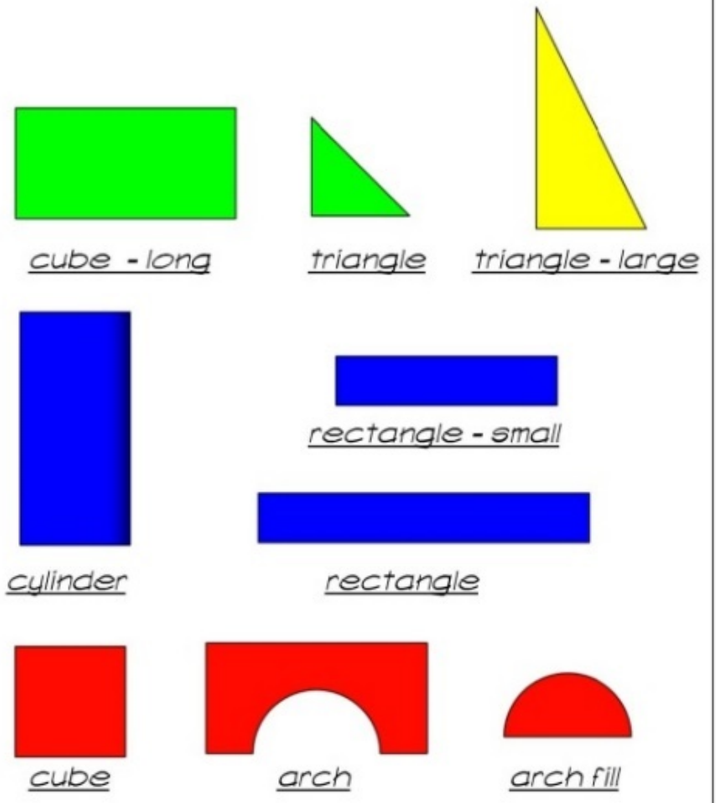

Block Names

	Pull Planning Training	Elevation	
		Project number: Project Number; Date: Issue Date; Drawn by: Author; Checked by: Checker	S1
		Scale: 12" = 1'-0"	

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SIMULATION

Listen. Engage. Enjoy.

Thank you!

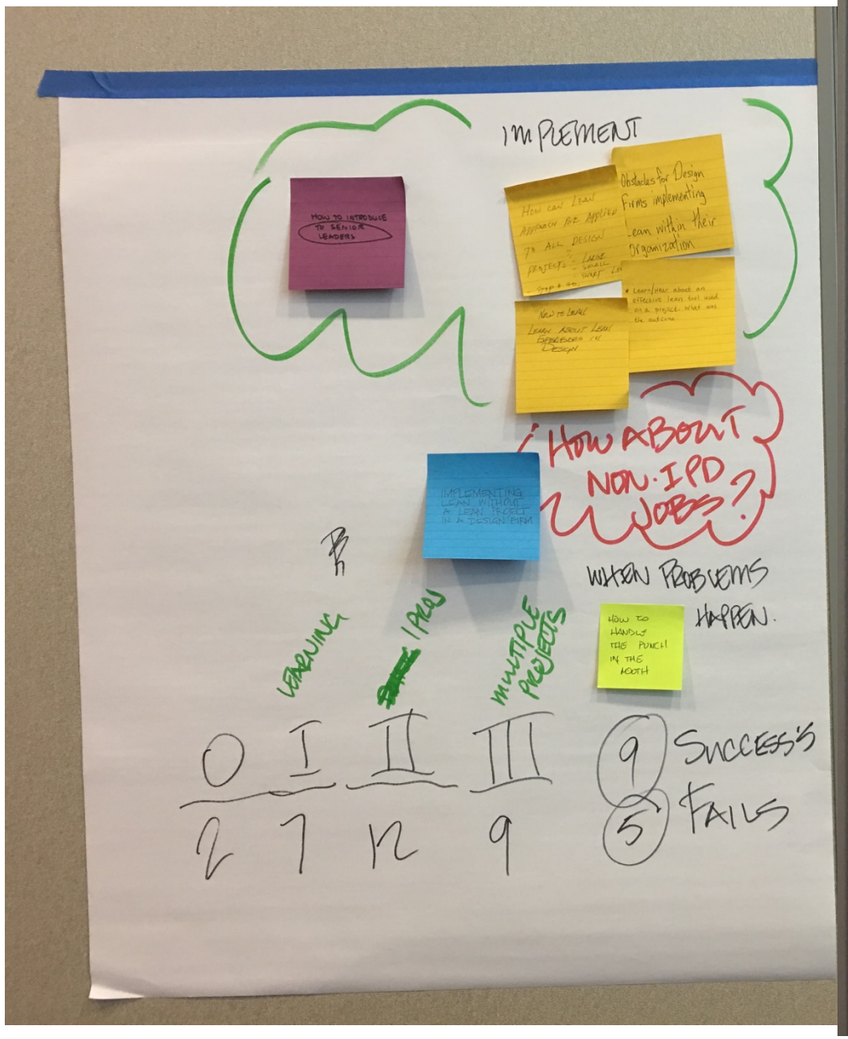
Your Suggestions To Improve This Workshop

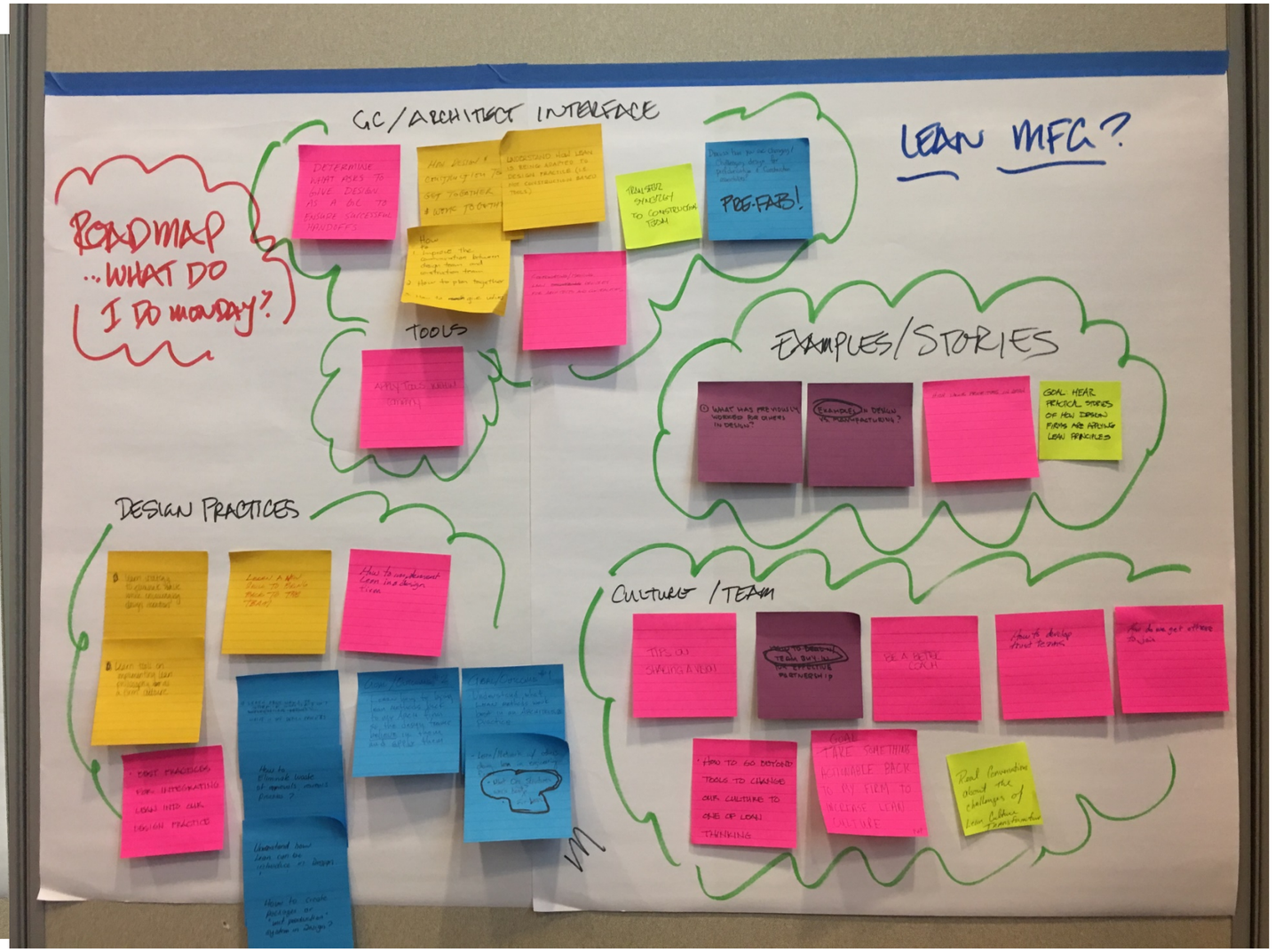
PLUS

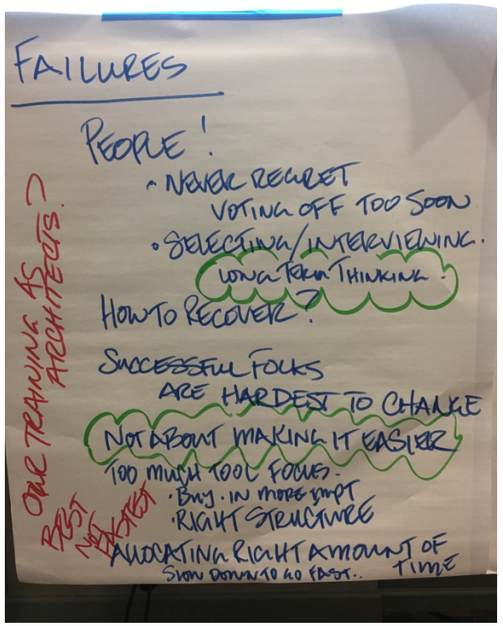
Things that helped me today – it added value for me

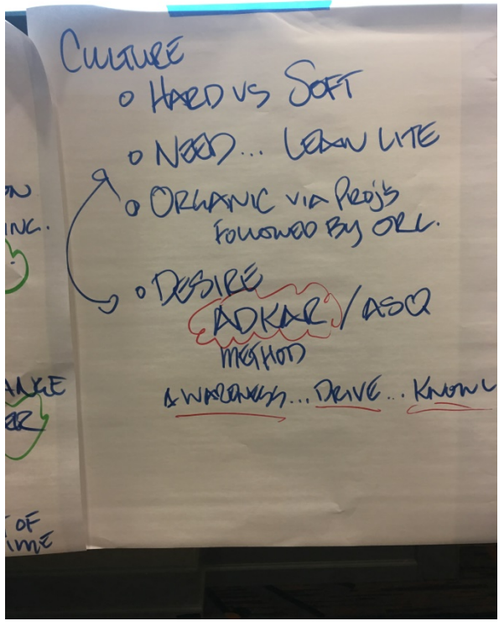
DELTA

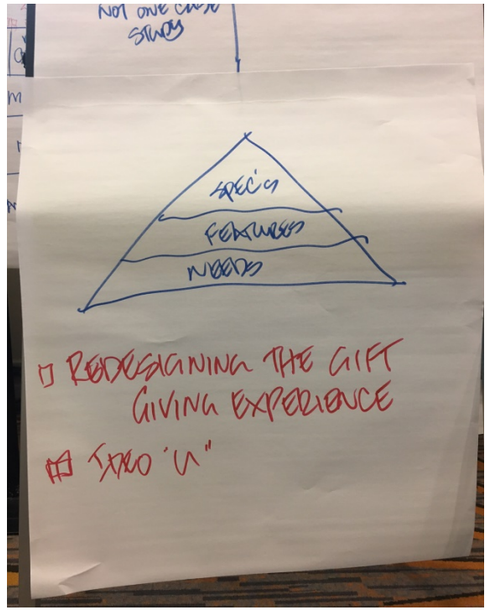
Things we should change that would help you more – ways we would add more value…

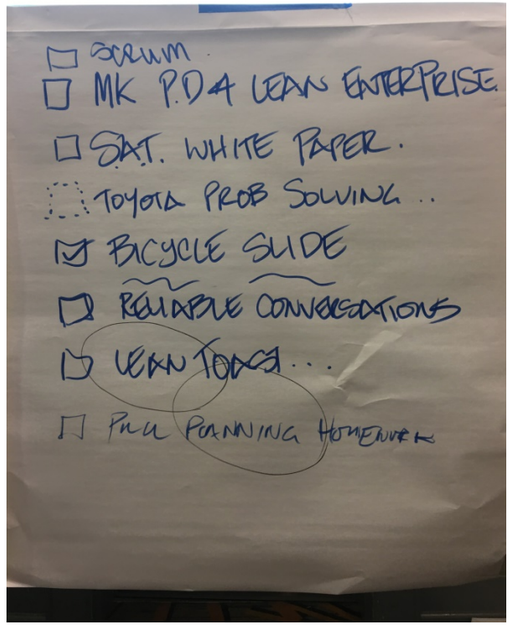

IMPLEMENT
HOW TO INTRODUCE TO SENIOR LEADERS
Obstacles for Design Firms implementing Lean within their Organization
HOW ABOUT NON-IPD JOBS?
IMPLEMENTING LEAN THINGS IN A LEAN PROJECT IN A DESIGN FIRM
WHEN PROBLEMS HAPPEN.
HOW TO HANDLE THIS PENCIL IN THE MOUTH
LEARNING
I PLAN
MULTIPLE PROJECTS
0 I II III
2 7 12 9
9 SUCCESS'S
5 FAILS

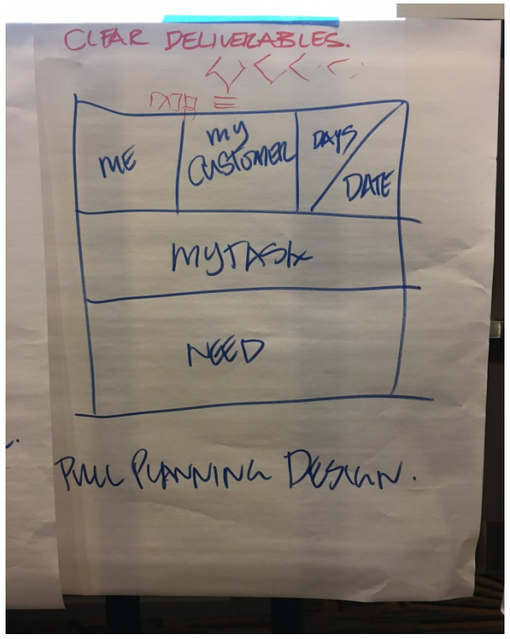

ROADMAP ..WHAT DO I DO MONDAY?
GC/ARCHITECT INTERFACE
DETERMINE WHAT ROLES TO GIVE DESIGN AS A GC TO ENSURE SUCCESSFUL HANDOFF
PRE-FAB!
LEAN MFG?
TOOLS
EXAMPLES/STORIES
GOAL HEAR PERSONAL STORIES OF HOW DESIGN FIRMS ARE APPLYING LEAN PRINCIPLES
DESIGN PRACTICES
CULTURE /TEAM
TIPS ON STARTING A VENT
BE A BETTER COACH
TAKE SOMETHING ACHIEVABLE BACK TO MY FIRM TO BECOME LEAN THINKING

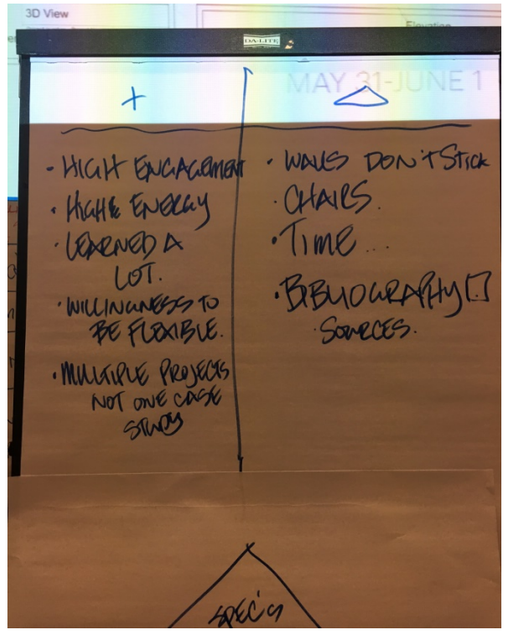


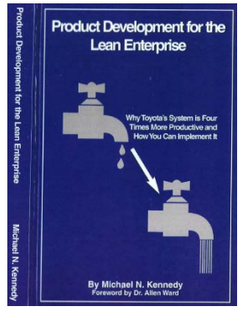


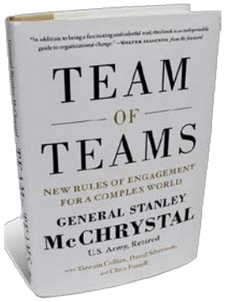


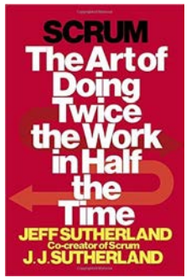












Michael Kennedy,
Product Development for the Lean Enterprise

Stanley McChrystal, *Team of Teams*

Jeff and JJ Sutherland, *SCRUM*

Toyota Business practices:
https://www.dropbox.com/s/q1cx6iigzrkpwao/Toyota%20Business%20practices.pdf?dl=0

Study Action Teams:
https://www.dropbox.com/s/53l68n42vikitan/Study-Action-Teams-Opening-Minds-for-Organizational-Change-LPC.pdf?dl=0

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Tools

Resources

Training

Research

Collaboration