

LEAN PROJECT MANAGEMENT “THE HARD WAY”

11.18.11

Mary Heger
Vice President, Information Technology and ASC



THE CHALLENGE

➔ Outdated design which no longer reflected the way we were organized or our corporate vision

➔ Minimal use of interactive or current internet technologies, like mobility, social media, desktop widgets, etc.

Ameren Contact Us Login Search

My Home My Business About Us Our Businesses Investors Careers

Storm Center

- Outage Information
- Power Out? Call Us

Featured Sites

- Customer Service
- Construction Services
- Environment
- Lake of the Ozarks
- Illinois Choice
- IL Rate Relief Programs
- Community Relations
- Natural Gas Center & Rebates
- Rates
- Rate Request: AmerenUE
- Pure Power
- Renewables
- Projects & Initiatives
- Safety
- Diversity Center

Customer Login

UserID (Forgot?)

Password (Forgot?)

go

New User? [Sign Up Now](#)

- Other Logins
- Landlord Direct

Customer News

Updates coming to Ameren.com Web site!

Ameren Contact Us Login Search

My Home My Business About Us Our Businesses Investors Careers

About Us

corporate Information

Media Center

corporate Structure

- Corporate Fact Sheet
- News & Photos
- Awards & Recognitions
- AmerenUE Integrated Resource Plan
- Service Area Map
- Company History Overview
- Ameren History 1902-2002
- Vision, Mission and Values
- myAmeren.com
- Media Contacts
- Sign Up for Alerts
- Ameren Overview
- Generation
- Rates & Regulatory Press Kit
- Poster: Cut Your Home Utility Bills—Conserve!
- Callaway Plant Media Guide
- Senior Management
- Ameren Corporation
- Corporate Structure
- Organizational Structure
- AmerenUE
 - AmerenUE Asset Management & Trading
- AmerenCILCO
- AmerenCIPS
- AmerenIP
- AmerenEnergy Resources
 - AmerenEnergy Generating
 - Ameren Energy Marketing
 - Electric Energy, Inc.
- AmerenEnergy Resources
 - Generating
 - Ameren Services
 - AmerenEnergy Fuels & Services
 - Policy Updates

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Ameren Corporate Home About Ameren News Contact Us Search

Ameren Customers Investors Career Seekers Business Partners Community Members Educators/Students Media

Community Members

- Corporate Charitable Trust
- Missouri Community Members
- Missouri Community Members
- Corporate Diversity
- Environment
- Safety
- Trees & Your Service

Cleaner Air and Energy

That's what recent environmental upgrades at our generating plants in Illinois have produced. [\(play video\)](#)

Delivering Reliable Energy & Protecting Our Environment

Reduce Your Bill

Find ways to reduce your energy bill with tips, tools and rebates. [\(more\)](#)

Quicklinks

- Renewables
- Energy Efficiency
- Wildlife Protection
- Electromagnetic Fields
- Stewardship
- Climate Change

Share f t

➔ Extensive use of visual content – videos, banners, graphics

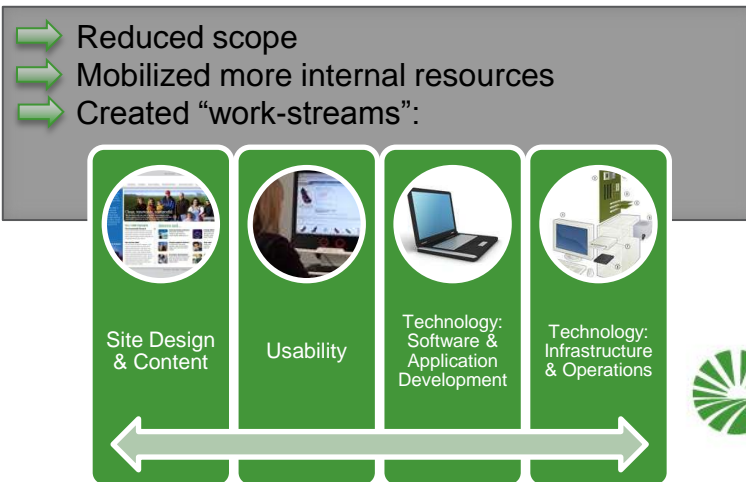
➔ Updated design, structured by company, topic



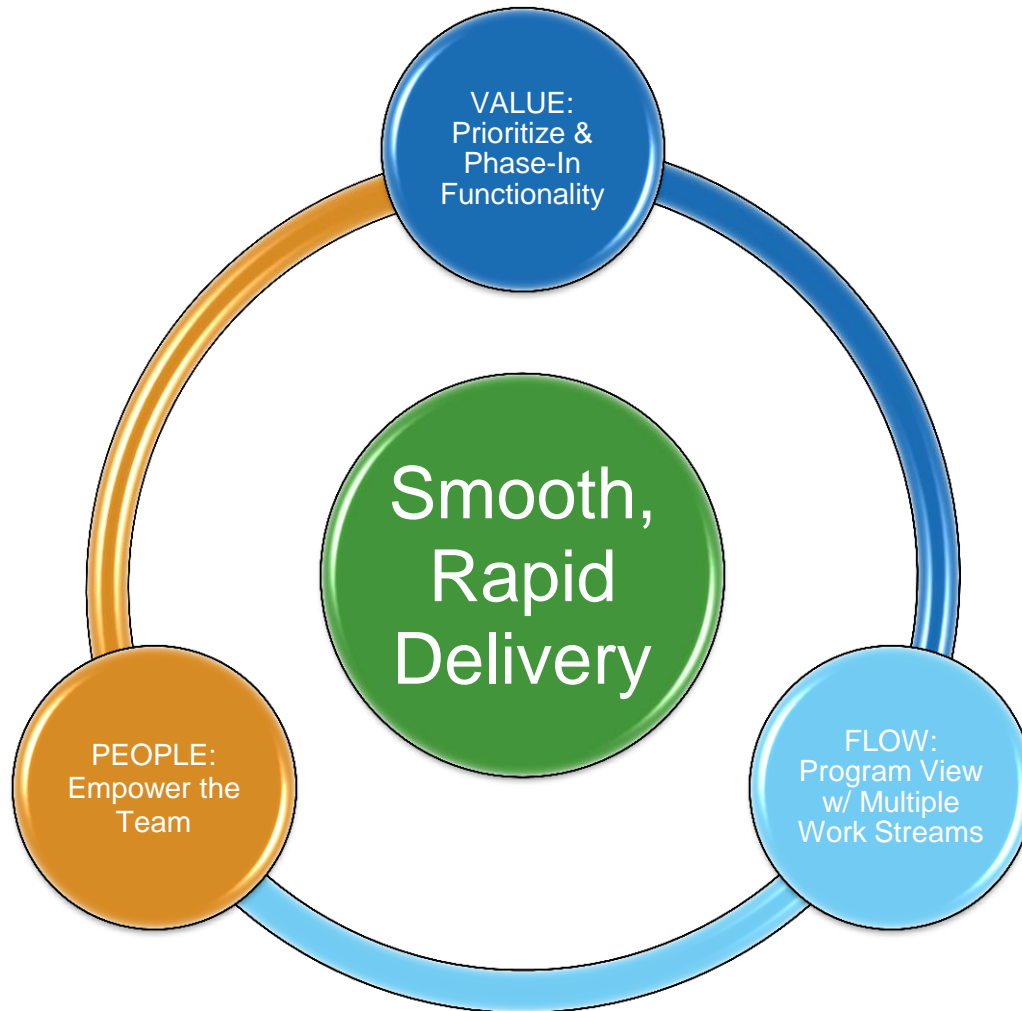
ACTIONS & RESULTS

Month													
1	2	3	4	5	6	7	8	9	10	11	12	13	14
<u>Original Project Estimate: 14 months, \$5.2M</u>													
Prep	Plan & Design			Phased Build/Test & Implement by Site									Close

<u>Actual Project: 6 months, \$3.2M</u>			
Prep	Plan & Design	Phased Build/Test by Site Group	Implement & Close



HOW IT WORKED



APPLYING LEAN PROJECT MANAGEMENT CONCEPTS

- Value Delivery
 - “Brutal” Scope Control - “Hard” Target Date
 - 80% vs 100%
 - Break into pieces
 - Defer 20%
 - Executive Sponsorship
 - Strong leadership from business sponsor
 - Decision turn-around requirements
 - Decision Log
 - Weekly sponsor meetings
 - Results
 - Delivered a functioning website in record time



- Project Flow
 - Organization
 - Program Manager
 - Project Manager for each work stream
 - Internal and External resources
 - On-Going Management
 - Sense of Urgency from Day 1
 - Specific tasks/assignments
 - Daily stand-up meeting
 - Tools
 - Microsoft Project
 - Sharepoint – collaboration
- Team Members
 - Empowered to make decisions and run project



IN RETROSPECT....

- Advantages
 - Business value delivered quickly
 - Avoided risk of long project with associated overruns
 - Team could tolerate intense 6 month project
 - Burning platform for scope control
 - Budget and plan for postponed scope
- Disadvantages
 - Extremely aggressive work plan and schedule – team fatigue
 - Could have managed scope more effectively
 - Budget and plan for postponed scope
- Applying Lessons Learned
 - Divide projects into small stand-alone components
 - Deliver value quickly - 6 month delivery cycles
 - Manage schedule and budget risks



Lean Construction and Integrated Project Delivery

Timothy M. Gunn - Project Director

Alberici Constructors

November 2011

Presented to PM Symposium



Symptoms of a broken system

- Numerous RFIs and change orders
- Re-design
- Delays
- Cost surprises, spiraling project cost
- Loss of scope to "stay in budget"
- Claims and disputes and lawsuits
- Changing cast of players
- Poorly functioning, un-maintainable designs
- Unmet expectations
- Productivity losses
- No fun



What makes your work unproductive?

- What are the typical roadblocks that make your work unproductive?
 - ✓ Access to the work area
 - ✓ Schedule bottlenecks
 - ✓ Out of sequence work
 - ✓ Loading and hoisting
 - ✓ Material deliveries
 - ✓ Needing information and decisions
 - ✓ Working around material, floor congestion
 - ✓ No clean up
 - ✓ Changes
 - ✓ Not being able to finish what is started
 - ✓ Changing priorities
 - ✓ Too often people walk out of meetings and do their own thing
 - ✓ Selection by price = less quality people and less commitment
 - ✓ No consequence for failure to meet commitments
 - ✓ Sequence, wall studs too early
 - ✓ Redoing and undoing work
 - ✓ Moving material
 - ✓ Uncoordinated design drawings
 - ✓ Compressed time and spiking manpower
 - ✓ Real issues not addressed in coordination meetings
 - ✓ Lack of schedule commitment
 - ✓ Lack of accountability by other team members
 - ✓ “Show” work, show pipe
 - ✓ Jumping around
 - ✓ Late drawing approvals
 - ✓ Other trades in the way
 - ✓ Not having answers to questions
 - ✓ Conflicting motivations
 - ✓ Waiting



Lean Production Theory

- Taichi Ohno - Toyota
- Waste
 1. Overproduction
 2. Waiting
 3. Unnecessary Transport
 4. Over-processing or Incorrect processing
 5. Excess Inventory
 6. Unnecessary Motion
 7. Defects



Production Control: Last Planner System™

Master Scheduling

Phase Scheduling

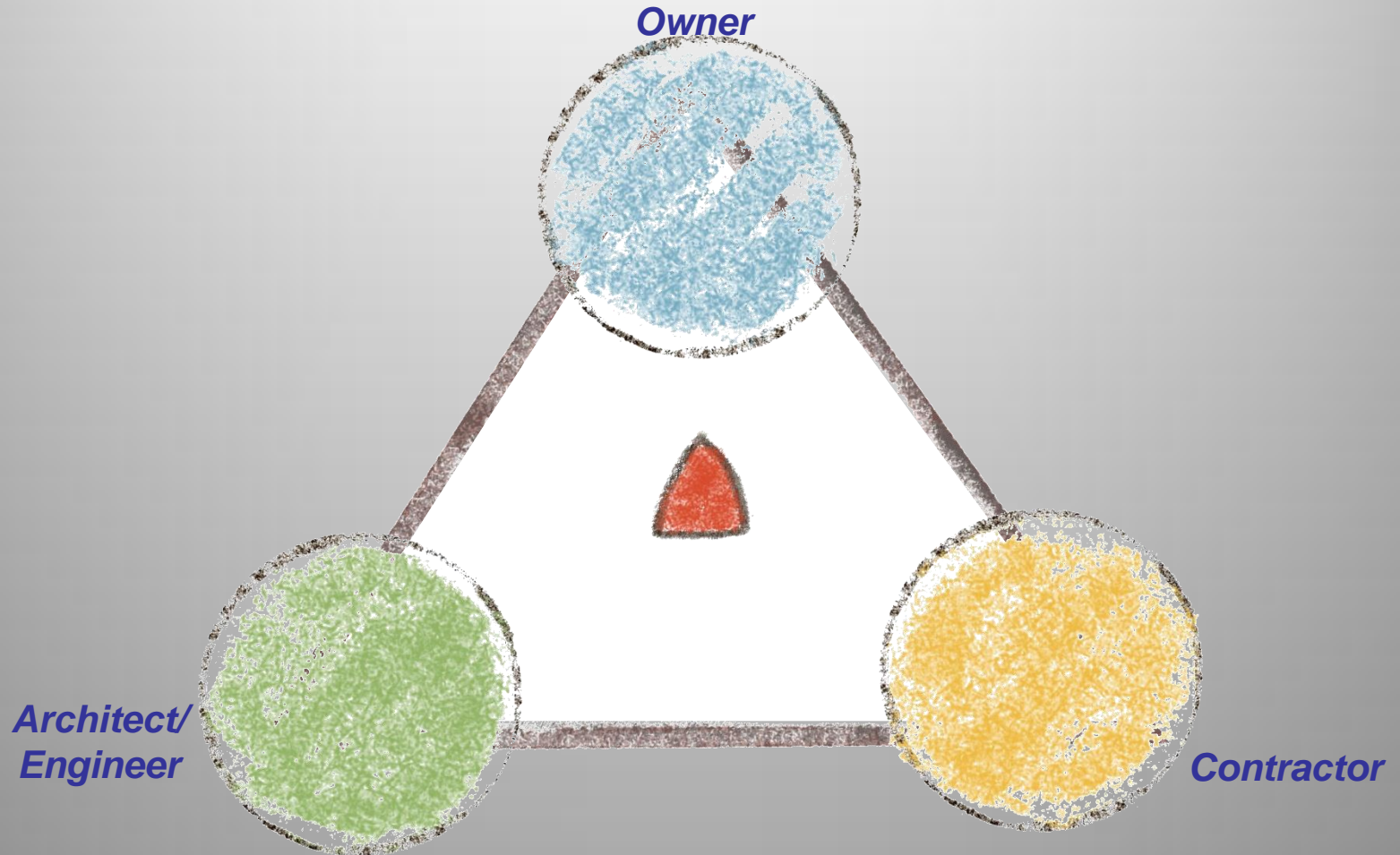
Look-ahead Planning

Weekly Work Planning

Learning



Integrated Project Delivery (IPD)



Integrated Project Delivery

Integrated Project Delivery

- Redefines relationships
- Intensifies collaboration
- Improves communications
- Aligns parties
- Utilizes lean construction techniques
- Drives out waste



So what Is Integrated Project Delivery (IPD)?

- Relational Contract Agreement
- Core Group
- Team Selection
- Target Value Design Process
- Financial/Incentive Agreement
- BIM/3D Modeling
- Production Control System

Based on model behaviors

**Collaborate
Intensely**

**Optimize the
Whole**

**Improve
Continuously**

Innovate

Build Trust



Part 3: Project Outcomes

- SSM Cardinal Glennon Children's Medical Center
 - \$46,000,000
 - 120,000sf addition
 - 60 private NICU rooms
 - 10 OR's
 - Completed August 2007

- SSM St. Clare Health Center
 - \$153,300,000 Replacement Hospital
 - 430,000sf
 - 180 beds
 - 54 acre site
 - First Patient March 30, 2009



Positive Outcomes at Cardinal Glennon

- Schedule
 - All interim milestones met in 18 month schedule
 - Achieved Substantial completion 1.5 months early
- Budget
 - 40% of original Construction Contingency intact
 - No Owner CO's written
- Safety
 - 275,000 total hours, 34,375 WH per incident
 - Clean, efficient site. No facility disruption
- Design
 - On time, as needed, design team engaged, fully coordinated, Owner understood design
 - 63 RFIs



Cardinal Glennon - Aerial View



Cardinal Glennon - NICU Corridor



Cardinal Glennon - NICU Patient Room



Cardinal Glennon - PACU



Cardinal Glennon - Operating Room



Positive Outcomes at St Clare

- Schedule
 - First Patient March 30, 2009 - On Schedule
 - Overcame record Spring 2008 weather and fundamental patient room design change
- Budget
 - On Budget = \$153,300,000
- Safety
 - Over 1.15M workhours
 - OSHA Recordable rate = 0.1739
- Design
 - On time, as needed, design team engaged, fully 3D coordinated, Owner understood design
 - 278 RFIs



SSM St. Clare Health Center



East Courtyard



Visitor Lobby



Patient Room



Conclusions

- **There is waste in conventional construction delivery.**
 - Cost of assigning risk
 - Protective behavior of parties at risk
 - Working & thinking in isolation
 - Dis-incentives for collaboration
 - Neither designer nor builder can optimize by themselves
 - Non-value added work abounds
 - RFIs
 - Duplication of effort (e.g. design docs redrawn as submittals)
 - CYA documentation
 - Unnecessary design detail/inadequate design detail
 - Arguing over change orders



Integrated Project Delivery Offers Real Benefits

By eliminating waste:

- Schedules can be optimized
- Design can be optimized
- Workplaces are safer
- Quality is increased
- Costs can be reduced
- Management can focus on real issues.



Thank You



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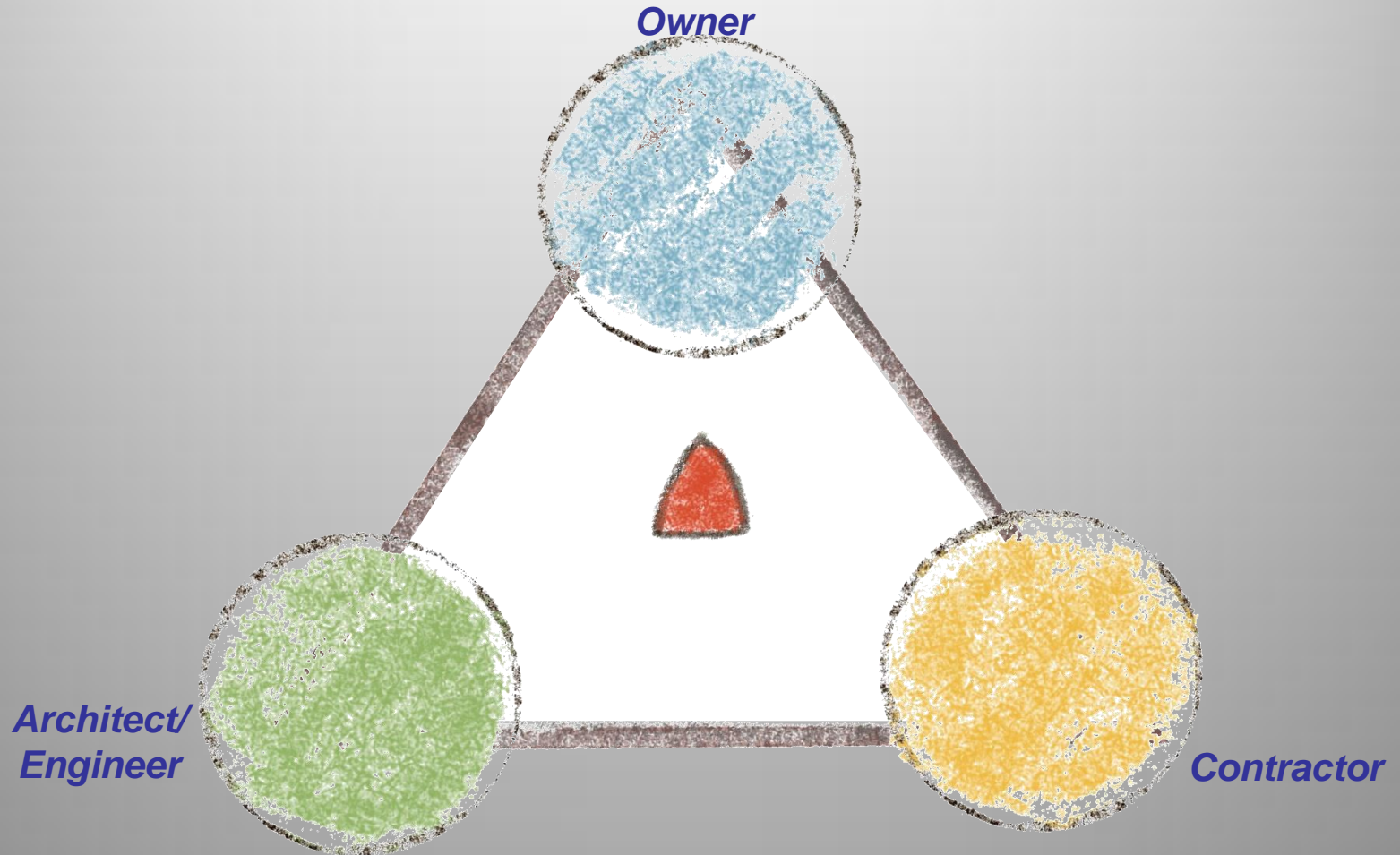
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