GABA California
German American Business Association

LIFE SCIENCES

DECEMBER 2005 SPECIAL EDITION

SHEER FACTS

GABA'S NEWSLETTER FOR THE LIFE SCIENCES COMMUNITY

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Testimonials

Great and informative evening.
Keep me on the list for further events.

Ramiro Garron,
Project Manager
Bayer Technology Services

It was a great evening. Thanks for making it happen.
I didn't realize how wide an impact these ideas have had.
It was great for me to hear Atul and the others.
I was REALLY happy I wasn't on the panel as it gave me a better chance to listen to the group.

Gregory A. Howell
Co-founder and managing director
Lean Construction Institute

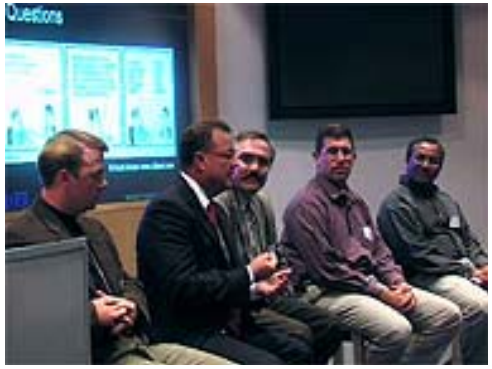
This was a great event. Thank you so much for the invite!

Mike Delgado
Process Equipment Group Manager
Therma

Lean Construction in the Life Sciences: Pro and Cons

Highlights from the Panel Discussion at SAP Labs, Palo Alto.

The goal of the panel discussion was to learn from each other and engage in a dialog about the pros and cons of lean construction in the life science industry. To facilitate the discussion a panel of experts shared their experiences.



Presenter and Panelists:

From left to right

John David Enright, Senior Director of Biopharma Engineering at Chiron
David Long, Senior Project Manager for the Sierra-SAC Region Sutter Health Facility Planning & Development Office
George Zettel, Lean Construction Specialist Turner Construction
Stephen Zoeller, Senior Construction Manager, Genentech
Atul Khanzode, Lean Construction Specialist, DPR

Moderator:
Ulrike Ruppelt, M+W Zander and Chair GABA Life Sciences
and
Heike Abeck,
Chiron, Co-Chair GABA Life Sciences

Background:

Sutter Health Sacramento, Non-profit health care system, 41,000 employees, Sales $5.6 bil. For the execution of more than 100 facility improvement projects for an estimated $6 billion over the next eight years, Sutter has embraced lean construction.

Genentech (South San Francisco, world's second largest Biotech firm, 7,700 employees, Sales $4 bil, over 50 buildings and building the largest mammalian cell culture facility in the world in Vacaville.

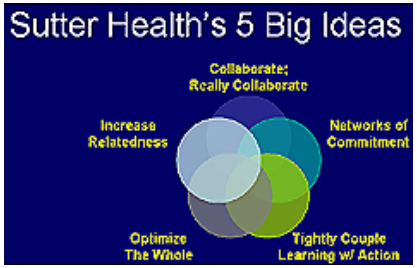
Chiron Emeryville, top biotech firm - soon to be Novartis, 5,400 employees, Sales $1.7 bil, over 34 buildings worldwide, planning a new biomanufacturing facility in Vacaville.

I certainly enjoyed meeting everyone and the discussion on Lean. You guys did a great job organizing the meeting.

Atul Khanzode
Project Manager
DPR

I would like to thank you for the opportunity to participate in the Lean Construction panel discussion last night. It was a very enjoyable and informative event, and a real pleasure to participate in.

Steve Zoeller
Senior Construction Manager
Genentech, Inc



Sutter Health's Goals

- Deliver best value to Sutter Health Affiliates to compliment their mission of patient care
- Innovate and create a project environment that is challenging and engaging
- Push our design and construction players to learn with us

What is Lean Construction?

Atul Khanzode
Lean Construction is the application of Toyota's LEAN PRODUCTION Methodology to the Construction Project Delivery Process

LEAN IDEAL – " a custom product, delivered instantly, without waste

Limitations in the Current Approach

- Activity centered focus ignores effect of workflow variation on performance
- Separates downstream players (construction) from upstream work (design)
- Command and control creates a commitment free zone
  - Requires motivation, ignores promising
  - Fails to produce trust
  - Push planning cannot coordinate the specialists
- Control only as tracking misses the best opportunity for true control

How are Lean Projects Different?

Lean Projects focus on:
- Improving the Reliability of Planning Process / Workflow
- Improving the Reliability of Commitments

Lean Projects use:
- The Last Planner System™ to plan work
- Use constraints analysis and "Look-ahead" planning to remove constraints and improve reliability.
- Constraints such as: Lack of resources, Design Coordination, Owner decision, Incomplete Data, Pre-requisite work, Agency

2.) Increase Relatedness Among All Project Participants

- People come together as strangers on projects
- Healthcare projects require learning, innovation, and collaboration
- That takes deep relatedness
- Learn to build relationships intentionally
- Key skill is listening

Make and get good promises, **build trust**

4.) Optimize the Project

- Optimize at the project level
  - Not the subcontractor / performer group
  - Not the activity level
- Think work streams
- Think systems
- Think customer outcomes

Pursue planning reliability before worker productivity

What is Lean Construction? Continued

- Value based and value stream oriented
- Eliminating waste in the project delivery process

Waste is defined as everything that is not adding value.
How do you do that?
First of all you have to identify value: What is the value in every specific process step?
Then you do a process analysis for every individual process: What really influences the success of other project steps and what is only nice to have

1.) Collaborate, Really Collaborate in design, planning and execution

- Finding and working to a common purpose
- Discover why others are there
- Aim for coherence by aligning rewards and systems
- Learn from people who will perform
- Reinforce positive iterations (learning)
- Avoid negative iterations (rework)

3.) Three kinds of work on projects:

- Three kinds of work on projects
  - Design (from nothing to something)
  - Material transformation
  - Coordination of action
- Coordination is possible among performers in the conversations people have with each other
- Building Trust by cultivating commitment-making through encouraging public promising

5.) Tightly Couple Action with Learning

- The "DNA" of the Toyota Production System
- Toyota designed their whole system to eliminate waste and produce value at the demand of their customer
- Key factor is giving performers throughout the process the opportunity to learn while in action

Does Lean Construction increase cost?

John-David Enright: The Biotech industry is all about time-to-market. Facilities are very expensive. Lean Construction has the ability to minimize our exposure to capital risk. That is why it is well worth it even if it does not equal substantial savings in the end. In the Biotech industry only 1 out of 10 products makes it and therefore the risk of investing in capital needs has to be minimized. This risk and the net present value can be minimized if the lead time required for construction can be shortened. Because this might allow the commitment for capital to be postponed until further development or clinical data on your efficacy of your drug is available.

Dave Long: Initially costs are increased in implementing, ramp up and start up of the Lean principles. However, due to enhanced cost control, learning and commitment reliability savings will be encountered down the road. Our business is to provide healthcare, because we are hoping to be able to provide care to more patients in our facilities. Even if we have a small percentage of cost savings in our 5-8 billion dollar program, we could potentially add an additional hospital in a needy community.

Do you use Lean Construction?

Steve Zoeller: I am currently using some aspects of lean construction. I am locking in costs by using activity factors. Fluor Daniel actually did cost from the ground up. I can see benefits in scheduling and also was able to actually conduct fabrication off completed shop drawings**.**

What can you say about the challenges caused when Lean Construction team members left Turner?

George Zettel: At the point of having the medical office building's core and shell weather-tight, and about 25% of interior started, our Project Manager and our Project Executive both left Turner to become part owners of two new construction companies. Both of these people were very experienced and it is hard to replace that level of talent now days even with a four week notice. I stepped in to play the project executive role, and we hired the project manager through his new company as a consultant to keep continuity in the project. Since we had 75% of the project complete, the experience of our project engineer, superintendent, key subcontractor foremen in utilizing the lean scheduling tools gave us the momentum and bench strength to keep the project proceeding ahead of schedule. We were also very fortunate to have earned a high level of trust and very strong relationships with the owner, the facility end-users, and the design team, Boulder and Associates. Even though our superintendent was skeptical at the start of the job, the smooth work flow from improved subcontractor coordination was convincing enough to keep using the tools even with a change in our senior staff. Now our superintendent is an advocate of lean construction and is working to incorporate the lean concepts on his new projects.

Do you have personal experience with lean?

John David Enright:
My experience goes beyond lean construction. Biotech has issues because it is regulated; Quality Assurance, validation etc. are involved. However most of the time we do not start from a clean slate, we do retrofits, tying into existing systems. Once we tie in it is not validated anymore, and that affects the FDA license. Business continuity is at risk, the way to manage this is to remove some of these dependencies. Instead of just doing an FAT, we try to do the IQ and OQ at the supplier site. And we try to minimize the impact of the qualification procedure on construction.
Historically everything is done on site, this is an internal struggle, and we have to change the mind set

George Zettel:
I have experience with a facility upgrade, using tools such as the "6 week "Look ahead" schedule and weekly plans to facilitate discussion and inform contractors etc. when surgeries are taking place and the roof is not opened during surgery. These plans allow for work flow, less surprises, heightened awareness and force the customer to communicate expectations and allow him to determine the value.

How do you control cost?

Dave Long: This is the 5 billion $ question. Often you obtain a year to year incremental approval. However in lean, we control cost collaboratively from all sides. Engage all groups as early as possible, to collectively work on tracking the cost of the project. It is also helpful to break into disciplines such as: piping, MEP, painting etc and have each group control cost in their area. If one area goes over and another goes under, this can be managed by the competitive model. They can negotiate with each other and level out the cost.

George Zettel: We control cost by breaking up the design team in sub teams with specific area responsibilities such as the exterior skin and they are accountable e.g. for the affordability of the solution. We set the expectation that the design is affordable, passes through code and can be build in time. Sometimes redesign is needed but if discussed with the full team in advance redesign should be minimal.

John David Enright: Chiron has a Capital planning process. We reinvest about 5-8% of the facility value on an annual basis. The internal customer goes through a process to request a project. Then it is verified whether the project is in line with the business strategy. Each project is evaluated by a Preliminary Project Plan and Project Execution Plan (PEP). The average cost of creating a PEP is close to $100K. This effort and knowledge is used to draft a Request for Expenditure. Then contracts are formed and the rates are locked in. After this the PM is responsible to manage the Approval For Expenditure, budget, and timelines etc.

Steve Zoeller:
Develop estimates early in conceptual design. For Preliminary design, manhours, quantities should be known. From this information one can pull the manhours and quantities and look at any point in time and achieve a pretty accurate cost. The detail helps.

Toyota production system was around before lean. At GM it was critical that everybody could stop the line, by pulling the string. In order to make this work, how do you set up the reporting relationships on projects?

Dave Long: There needs to be empowerment to say no. The subcontractor should be able to say;" No wait a minute, your change just caused my area to go over budget.

But then owner needs to decide whether this change adds value. That's why it is called Target Value Design.

George Zettel:
I have organized and worked with teams for many years, often times forced marriages between architect and owner, or contractor and owner are seen. These situations should be avoided and a common ground should be found.
In Europe they use relational contracts and partnering. In the US often the risk is pushed to people that cannot control the risk, for example suppliers, builder, design team are expected to show how and why they can do this.

Have you finished a facility using lean construction principles?

Dave Long: Yes, we completed a medical facility and office building using "Last Planner" and success and savings were observed. We are currently using lean methods on a $200M medical campus.

John- David Enright:
This is simple, as Jack Welch said, everybody should be empowered, but you also have to be accountable. Each Project needs a sponsor and a driver. People want to feel engaged and want to be accountable, so if you give them the opportunity to be involved in meetings and reviews, they will feel empowered and should be accountable

Is it necessary to use the same team again and again to realize the cost savings?

Dave Long: We will continue to face that the loss of one person can effect the project. Others are learning to fill in. And subcontractors are filling in, they have become promise addicts. Very exciting.

How does lean come into play in the design phase?

Audience:
We need to start applying lean to the design phase of the projects. Set based design, avoids rework and carries several design options forward so that we can look at the implications for each one. To carry all options and allow them to fail instead of picking one option that seems the most efficient might seem more expensive and longer initially to the owner but a collaborative team that analyzes various options is actually better.

John David Enright:
I would agree, I want the designed to be fully worked out and analyzed before it comes into my facility.
I don't care what you do, as long as you don't try to work out the details it in my facility. In our facilities, we are currently retrofitting an existing facility for $17M, but we found out that the HVAC design does not fit. We had to come up with several options, drop ceiling, change control limits etc. If a
3 D model would help work out these problems that is great. I agree, that more options should be analyzed and as much work as possible prior to going into the facility should occur.