

Learnings from a Five-Year Partnership With One of the World's Largest Providers of Oil & Gas Products and Services to the Energy Industry

## Chapter 3

# Lean Product Development - Project Management and Set-Based Development



### RESULTS AT A GLANCE

**\$160 Million**

Increase in annual New Product Revenue

**42%**

reduction in product development lead time

**39%**

Increase in projects completed annually with a constant size workforce

**11%**

Reduction in average cost/project

## The Situation

Development teams at the client faced many challenges. The Organizational Culture had evolved through a long history of mergers and acquisition, there were 7 primary product lines, tightly controlled regulatory and customer requirements, general resistance to change and obfuscated accountability. Geographically, the organization faced Western/Eastern Hemisphere management cultures, their teams were spread across 13 time zones, and teams suffered a lack of autonomy at the working level.

Slow technology development caused long time to market resulting in loss of revenue, customers, and market share. Development delays also reduced the value of the business cases because products were not delivered during the market growth phase with adverse effects on the organization's competitiveness and ability to secure tender awards.

Project Managers had a diminished role in the organization, there were significant tracking/reporting delays with limited visibility of project status. Project Managers were primarily focused on providing monthly updates of projects to management, with limited team interaction. There were no mechanisms for identifying and solving project problems and there was a heavy reliance on engineering supervisors to 'manage it all'.

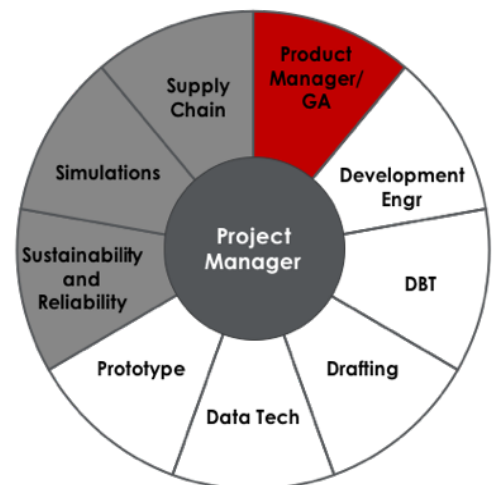
## Argo's Actions

Argo helped the client reorganize into cross functional teams with clearly defined roles and responsibilities called Product Development Teams (PDTs). Focus groups were used to navigate the organizational complexities and create the structure for strong collaboration.

### Project Management Focus

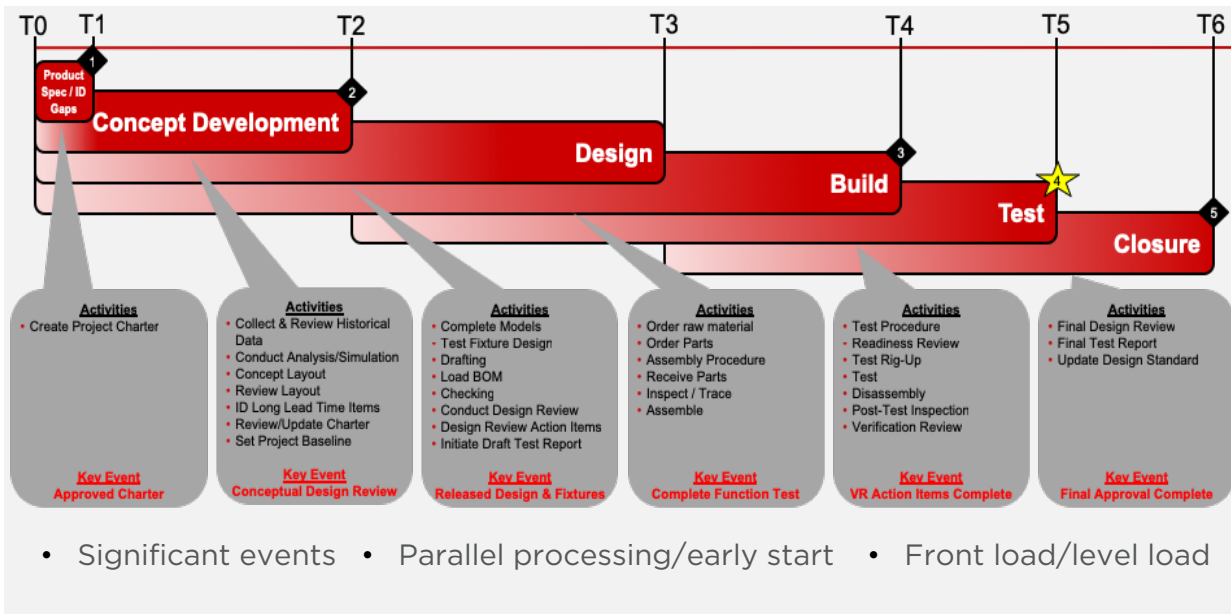
Cross-functional team: a group of people with different functional expertise working toward a common goal

- PDT (Product Development Team)
- Co-locate
- Collaborate
- Integrate VOC
- Minimize and simplify documentation requirements



A standard project cadences was developed and implemented. Although most projects were very similar in terms of resource requirements and activities, every project had an independently constructed development plan. The duration of similar activities for different projects varied widely and were typically independently scheduled in a sequential sequence. For example, long lead material procurement, would not begin until the design was 100% complete and signed-off. The rationale was that raw materials could not be ordered until the Design stage was completed, because design reviews could potentially cause a material change. In reality, the material to be used was typically understood very early in the development process, and in virtually all cases material selection was limited to 2 choices - one simply a higher strength alloy.

## Simultaneous /Cadence Development



Proponents of the status quo insisted that ordering 2 kinds of raw material was WASTEFUL since only one would be used. This failed to recognize the significant VALUE of shorter project durations, which easily off-set the cost of additional material let alone that it could be used on another project.

## A Holistic Approach Example

At some time in its history, the organization decided that it could reduce drafting costs by out-sourcing drafting to a low-cost country based on a significantly lower hourly rate. Evaluating the singular metric of 'Drafting Dollars Spent' showed significant savings, although somewhat less than anticipated. However, the outsourcing forced development teams to communicate with drafters 11 time zones away. Every interaction with drafting resulted in a full day lag regardless of how big or small the request. Drafting is a highly iterative process and was very tedious for the development teams causing significant delays in projects. Many engineers struggled within the boundaries set up by this scheme. Out of frustration, others created a work-around by doing their own drafting, realizing they could complete the work much faster themselves. It becomes obvious that the cost of drafting is much HIGHER than simply an hourly rate. It was better to pay engineers to do the drafting locally than deal with all the delays even though it was paid at an engineer rate and pulled a critical resource from actual development work. The solution was simple; (re-)hire drafters and integrate them within the PDTs. The teams have cited this example as a major contributor to their reduced project lead time.

## Argo's Actions (continued)

Upon evaluating the development process and rationalizing it against Lean Development Principles, Visual Management was initiated so the organization could 'see the work', and 'see the issues'. This included clear KPI's and dashboards aligned from working teams to global reporting levels. Visual Management enabled the Product Development Teams to effectively manage projects in real time, allowing the organization to see at a glance the progress and status of every project in an intuitive and understandable way. Visual Management created a mechanism within the development organization for a complete understanding of the development efforts across the product portfolio. Visibility enabled effective management of the work dynamics by adjusting and addressing issues as they arose in real-time.

## Visual Management

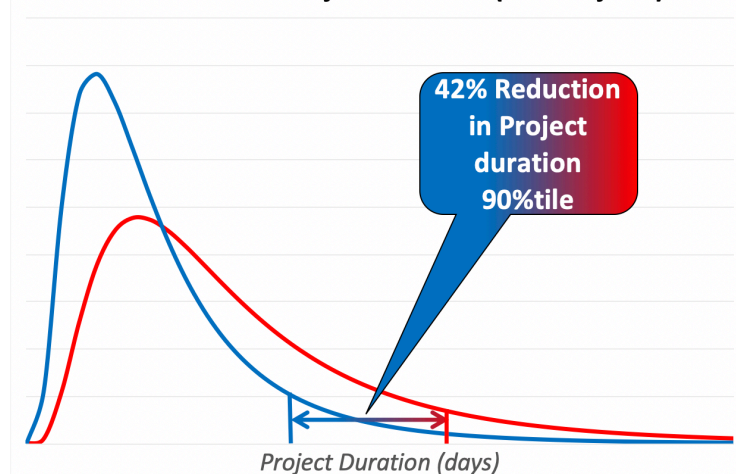


1. Create systems that show abnormalities
2. Quickly solve problems & improve the system
3. Share the learning
4. Leadership integral to success of the system

## Results

Through the application of Lean Product Development principles and team/individual coaching, the organization learned to see and address the critical issues, hold the entire Value Chain accountable, and proactively allocate resources in a way that minimizes unexpected disruption while creating and deploying reusable knowledge. This resulted in greater innovation and increased market share with satisfied customers.

**Distribution of Project Duration (150 Projects)**



In addressing the client organization's methods and culture by implementing principles of Lean Product Development they were able to **reduce development lead time 42%**. This allowed the same organization to **deliver 39% more projects** while only increasing spending 24%, resulting in an average **reduction of the cost per project of 11%**.

## About the Authors

**GREG ESPER, P.E.** is Director of Product Innovation and Value Management at Argo. He has responsibility to deliver sustainable results with clients through team engagement. Greg has more than 35 years of experience in Mechanical Product and Manufacturing Engineering and Management and has spent 17 years advising and assisting global clients with Lean New Product Development and Manufacturing Excellence.

[g.esper@argoconsulting.com](mailto:g.esper@argoconsulting.com)

**DANTAR OOSTERWAL**, Senior Vice President & Partner, is Argo's Lean Innovation & Product Development Practice Leader. He is highly regarded as a global thought-leader in Lean Innovation & Product Development systems. [d.Oosterwal@argoconsulting.com](mailto:d.Oosterwal@argoconsulting.com)

**ANDREAS DÖRKEN**, Senior Vice President & Partner, is Argo's Head of Operations Europe and Co-Head of the Product Innovation & Value Management practice. He has over 25 years of experience working in industrial firms and consulting.

[a.doerken@argoconsulting.com](mailto:a.doerken@argoconsulting.com)

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