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A GENERAL CONTRACTOR'S LEAN JOURNEY

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ABSTRACT

Lean has been part of DPR Construction's culture since the company's founding in 1990. This is evidenced in the Employee Point of View, an internal document that tells the founders' vision and acceptable social norms, and in the involvement of the company in several pioneering projects implementing a Lean approach. This company has been a pioneer in adopting approaches such as The Last Planner System®, Target Value Delivery, and Integrated Project Delivery. However, when DPR started, it was a small company based in California; now it is a large company with over 13,000 employees in the US, Europe, and parts of Asia. Few companies have been on a Lean journey from the beginning like DPR has. This paper documents the evolution of the Lean culture at DPR Construction, including a timeline of significant events and current challenges, providing a unique perspective on how an organization that has grown so much has adapted its Lean strategies over the years to support its growth. This paper presents a case study of DPR's strategies and its journey to implement Lean and integrate it into the organization.

KEYWORDS

Lean organization, lean strategy, lean journey, culture

INTRODUCTION

Organizational culture plays a critical role in successful Lean implementation. Romo et al. (2025) highlight cultural adaptability, strategic alignment, shared responsibility, and open communication as essential enablers of Lean. Conversely, they identify resistance to change, lack of leadership engagement, and misaligned strategy as cultural barriers. Similarly, Demirkesen et al. (2019) found that lack of top management support, misperceptions surrounding Lean practices, and gaps in information sharing form major obstacles to Lean adoption. The literature published in the International Group for Lean Construction (IGLC) has examples of how Lean has been implemented in construction companies over the years. Thomassen et al. (2003) reported on benefits achieved by MT Højgaard in Denmark by sharing indicators demonstrating superior performance of projects implementing Lean Construction principles and practices, when compared to traditional projects, on customer satisfaction, net and subcontractor profit, and safety, to name a few. Alves et al. (2009) shared findings related to how a group of companies in Brazil (members of INOVACON) joined forces to learn and implement low-cost, low-level of abstraction production planning and control tools alongside the Last Planner System® (LPS) to support Lean implementation. Through a consistent process of collective trial and error, training, and sharing of experiences, these companies succeeded in using Lean to improve their performance and help their workers understand Lean principles and adapt Lean tools to their projects. Similarly, Mourão et al. (2021) discussed the journey of a

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company, which in 1998 aimed at reducing variation and creating more stable processes by implementing ISO 9002 and standardizing its procedures, which were later used in 2004 to implement Lean (Valente et al. 2020). Over the years, the company described by Valente et al. and Mourão et al. created numerous opportunities to learn about Lean implementation and how to support a Lean business model by participating in events, e.g., local workshops, IGLC, and benchmarking visits, and engagement with universities and research groups to keep advancing Lean in their business. These examples indicate a concerted investment in standardization, education, and benchmarking to sustain Lean over the long run like DPR's efforts.

Martinez et al. (2024, 1314), also documented a cultural Lean education program at Implenia, in Switzerland, "a multinational construction service provider developing and implementing a training program aimed at fostering a broader and sustainable integration of Lean Construction practices within the organization". Using an extensive training model, decentralized and regionalized, starting with lean basics, and promoting implementations and a formal graduation process, celebrated by company leaders.

Several IGLC papers have been written about DPR's Lean culture and particular aspects of the company's Lean journey (Hackler et al. 2017, 2018, 2019, 2020). For example, Hackler et al. (2019) documented DPR Construction's Lean Leadership program and how it was scaled and used to reinforce cultural change not only internally but also beyond the company to strategic partners in the company's supply chain. Despite earlier efforts to document the progress made by DPR, as it grew and scaled the use of Lean in its projects, a gap persists in the literature regarding explaining the long-term evolution of a company's strategy and how it intertwined Lean practices in its operations. This case discusses how DPR Construction has experienced major growth over the years, and especially in the last decade and how it continues to work towards deploying Lean in its operations.

This paper contributes to the literature by presenting the long-term Lean journey of DPR Construction, a company whose growth trajectory provides a unique opportunity to study the evolution of Lean culture over time. DPR's journey represents a case exemplar in the IGLC literature, which can offer insights for researchers and practitioners alike about a company's multi-year, multi-front efforts, in dispersed locations to implement Lean Construction. The paper does not represent the description of a formal case study; however, it shares the journey of one of the first companies to support the IGLC, experiment with Lean Construction in large projects, and publish about its journey consistently over IGLC's previous 33 conferences.

METHODOLOGY

This paper presents a case study of the evolution of Lean culture and strategy across the last 3 1/2 decades of an American General Contractor that has expanded across the US and internationally. To document the practices and evolution of the internal strategies, we looked at published documents, as well as collaborated with internal employees, some of them are co-authors. We have searched for internal documents that are available to the company's employees and external publications in journals and professional magazines to document the company's Lean journey. In addition to combing through internal and external publications about the company's journey to develop a timeline of events, and what was learned from them, the authors also relied on questions asked during a focus group with the company's leadership and leaders in Lean implementation across different geographical divisions in the United States. The questions that started the discussion in the focus group included: 1) How has the company implemented Lean since it started its journey? 2) What challenges can you identify in terms of consistently deploying Lean culture and practices over the years as the company grew, and now, given the current company's size and rate of growth? Results of the focus group informed the discussion presented later in this paper.

The analysis was structured by first reviewing a compilation of sources describing the history of Lean at DPR. Next, an analysis is done of the Lean strategies employed during the company's growth. Finally, a comparison looking at the current operation strategy integrating Lean into the company's goals and operation processes is made followed by a discussion on the tensions of the next chapter of Lean implementation at this company.

HISTORY OF LEAN AT DPR

The history of Lean at DPR has been documented in several studies, internal documents, and professional magazines. Several articles can be found at the iglc.net website, whether written by current and former DPR employees and/or by academics who documented the company's Lean journey, and its multiple experiments, in search of additional clues to document and potentially replicate its experiences internally at other DPR projects, but also at a global scale. DPR Construction was founded in 1990 with a vision to transform construction through collaboration and innovation. Lean principles were integrated early into DPR's culture, emphasizing continuous improvement, waste reduction, and decision-making at the lowest possible level. Over the years, DPR formalized Lean practices through training, software tools, and industry partnerships such as those established with the Lean Construction Institute (LCI), as one of the first companies to back the LCI, and the IGLC.

FOUNDATIONAL COMMITMENT TO LEAN (1990 – 2000)

DPR was founded in 1990 with a vision to approach construction as a service business rather than a broker transaction. Lean principles aligned perfectly with DPR's Core Value of *Ever Forward,* continuous improvement, and its entrepreneurial culture. From the start, DPR emphasized decision-making at the lowest possible level, accountability, and learning—hallmarks of Lean thinking (Maestas and Parrish, 2014). It is also important to note that DPR has committed resources to engage with the Lean Construction Institute (LCI) and IGLC through numerous publications and sponsorship of both organizations' annual conferences. Dean Reed, a DPR employee at the time, was LCI individual member #1 in 1997, influencing not only DPR but also many projects and owner organizations. Dean was later awarded the LCI Pioneer Award in 2020. In addition to engaging with these organizations, since the 1990s, DPR has worked closely with the University of California, Berkeley and Stanford University over the years in multiple research endeavours and industry-related events, demonstrating a commitment to advancing and documenting knowledge and training the next generations of leaders in Lean implementation.

EARLY ADOPTION AND DISCOVERY (2000-2010)

DPR was a pioneer in early project applications of Lean tools, such as the LPS and Target Value Design, on projects including Camino Mountain View Medical Group project and the UHS Temecula Valley Hospital project, which was an 8-Party Integrated Project Delivery (IPD) project. DPR Construction was also the focus of various industry magazines, such as ENR, and industry events highlighting the implementation of new IPD practices for the Sutter Medical Center Castro Valley project, e.g., ENR Cover September 19, 2011. In the late 1990s early 2000s, the implementation of Lean was very much linked to the use of tools until the advent of IPD, which finally brought together the tools used on the Operational side of the business to support, and expand, Commercial and Project Organization terms (Darrington and Lichtig 2018).

In 2005-2006, DPR implemented LPS at a $100M, 250,000 square feet Medical Office Building (MOB) for the Camino Medical Group, an affiliate of Sutter Health, in Mountain View, CA, USA. This led to the spread of LPS implementation in other projects. In addition, early integration of Virtual Design and Construction (VDC) and Lean project delivery was

documented at the same project (Khanzode et al., 2005). Using several of the lessons learned from the project, DPR worked in collaboration with the LCI and UC Berkeley in 2007 to publish "The Last Planner Production System Workbook" (Ballard et al., 2007). Other white papers have been issued outlining the value of the VDC approach on this project.

DPR created an internal Lean think tank, called PLG: Planning Leadership Group. This group was tasked with integrating Lean thinking into DPR's planning process, which still represents the roots of the current Planning Scheduling Production Planning)(PSPP) group at DPR. During this decade, the DPR strategy was to focus on internal teams; meaning, developing subject matter experts (SMEs) and those individuals who were supporting projects that were going to implement Lean processes. These SMEs facilitated workshops to teach various Lean processes, mostly LPS, but also helped the teams figure out the best implementation strategy for specific projects.

CULTURAL INTEGRATION (2010 – 2020)

After extensive documentation and learning from successful implementations, the next step in the company's Lean deployment strategy was to educate a larger audience and remind employees that Lean is embedded in DPR's DNA. In internal Lean trainings, this DNA is described as "DPR roots are Lean." The company views Lean as a journey, not a destination, and ties it directly to its cultural beliefs and growth strategy. Based on successful implementations, it was determined that there was a need for more hands-on learning. In 2011, DPR created the Production Management Leadership Group (PMLG). This group was tasked with delivering Lean education to different offices and projects around the USA. Lean SMEs developed a 4-hour training program titled "Culture of Lean" through which they graduated almost 75% of DPR employees by 2012. DPR also had this class accredited with the America Institute of Architects (AIA), which allowed external partners in the design community to receive 4 hours of General Learning they need each year. DPR facilitated over 25 sessions across the USA. In addition, a 10-module training course was developed and implemented in 2012 at the request of employees who had completed the Culture of Lean course. This class was a mix of the theoretical side of Lean and covered project implementation strategies.

During this decade, a remarkable Lean project implementation was the UCSF Mission Bay Project. Documented by Reed et al. (2017), the authors claimed that "building a high-performing building requires project teams to integrate their knowledge, organization, and information, leveraging metrics, models (energy, BIM, cost, and schedule), co-location and collaboration, and production management. This model, the "Simple Framework for Integrating Project Delivery" was validated in action on the UCSF Mission Bay Hospitals project. The senior project leaders created an integrated community that employed Lean and VDC methods to create solutions in the best interest of the project" (Reed et al., 2017). This case study was also included in the publication of the book Integrating Project Delivery (Fischer et al., 2017). The book presents integrated systems and organizational approaches across different phases of the project and includes several case studies demonstrating their application. The book builds on DPR's collaboration with Stanford University professor Martin Fischer, Dean Reed, Atul Khanzode, and Howard Ashcraft with Hanson Bridgett.

DPR kept focused on developing training based on Lean principles and mindset, such as the Lean Leadership described in a series of IGLC papers authored by Hackler, Byse and others (Hacker et al. 2017, 2018, 2019, 2020). Lean principles were also embedded in the DPR Design Management Academy (2016-2019). At the same time, the PMLG heightened their focus and were primarily supporting project implementation, where, as the general contractor, the physical work occurs and support is needed.

In 2015, Lean Leadership Training, an 8-week program focused on Lean behaviours (Hackler et al., 2017), had a significant impact on the organization. The journey to scale the

training and the learners' perspectives has been documented (Hackler et al., 2018). Over 1,100 people have been trained over the years. This training was later expanded to include DPR's supply chain and strategic partners, demonstrating the company's vision to streamline its workflow and enhance value beyond the walls of any single project (Heckler et al., 2019). This training continued to be offered regularly until 2023. Lean fundamentals training is still available to DPR's employees and partners who can complete a series of virtual modules.

DPR continued to embrace the LPS and developed one of the first software applications based on it (OurPlan), which Autodesk later acquired in 2017.

In addition, DPR employees, including the President of the company, published a series of IGLC papers on its quality approach, starting with Spencley et al. 2018, presenting a case study where distinguishing features of work were developed in collaboration with designers and builders to align expectations early on and eliminate or significantly reduce the chance of rework. Gomez et al. (2019) presented a case study on quality implementation for concrete, and Gomez et al. (2020) explored the connection among Lean, quality, and psychological safety, to name a few.

STRATEGIC AND OPERATIONS INTEGRATION (2020-2025):

Lean is Integrated into DPR's strategic areas of focus (Figure 1). The rationale for the need for focus emerged after a leadership meeting (2019 at Stanford University), highlighting the importance of controlling the company's ability to proactively anticipate and plan for potential challenges through an integrated design-to-build approach across the project lifecycle, thereby maximizing the use of VDC, prefabrication, Self-Performed Work (SPW), and data. This means:

- making the design more buildable by maximizing the company's strategic areas of focus through design-to-build. This includes developing design management processes and competences, which provide greater opportunity for prefabrication through design optimization and scope packaging, thereby supporting speed, quality, and safety in the field. Enabling Design for Manufacture & Assembly (DFMA), a process that leverages the company's expertise driving the work and the high repetition of common elements to fine-tune design for optimum performance, ease of assembly, and predictable outcomes.
- using VDC to identify and incorporate as much prefabrication and consistent SPW and trade partner details as reasonable, increasing prefabrication on projects, as mentioned by designing for it and driving fabrication level design early with VDC, but also by creating a library of standardized products without sacrificing flexibility and customization, and by developing a network of prefabrication assembly facilities.
- performing SPW on projects by incorporating and updating our best SPW details for highly productive installations, and
- being more disciplined in the consistent input and capture of data so that we may learn and improve throughout the project lifecycle and on the next project. The company has invested in AI development and education for employees.

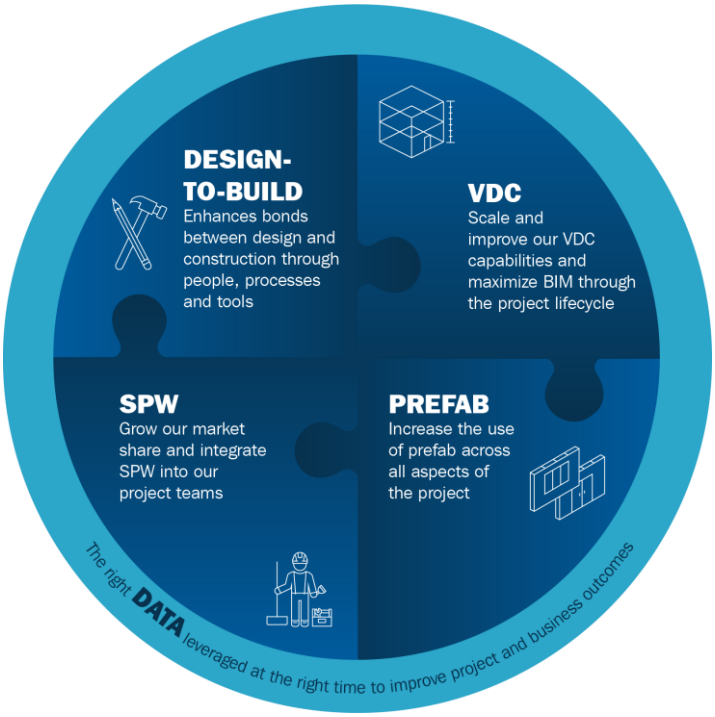

Figure 1: DPR's strategic areas of focus, which include design-to-build, VDC, prefab, SPW and data.

These four strategies connect with Lean principles, processes and tools, much of the design to build approach at DPR is based on designing processes and product alongside each other, to bring clarity by aligning expectations among stakeholders to increase value to the customer and reduce waste. This happens by not allowing a poor design to continue unnoticed all the way to the construction phase and instead making sure the design is ready to be built in an effective and efficient way. This includes leveraging VDC to align expectations, coordinate the design, and bring constructability and clarity to builders. Use prefabrication as much as possible as part of the design strategy and use internal self-perform work capabilities to use the companies' trained builders that understand the companies' processes and standards for concrete, drywall, doors frames and hardware, and certain electric scopes. Finally, being disciplined in capturing data to continuously improve project and business outcomes.

Between 2021- 2025 DPR developed and rolled out a new Operations Framework (as part of Integrated Do Work), known as the Best Builder Framework (BBF). The BBF is DPR's integrated project execution approach designed to deliver predictable outcomes and improve project performance for customers, teams, and the company. It is not a rigid set of procedures but a structured guide that provides clarity on what leads to successful projects, how individual actions contribute to overall success, and how to align goals, resources, and behaviors across teams. The BBF operationalizes Lean principles at DPR by embedding them into project planning, execution, and team culture. It acts as a bridge between Lean philosophy and practical implementation, ensuring DPR projects deliver value, efficiency, and customer satisfaction. The BBF has five goals (Figure 2). To achieve each goal, objectives, guidelines, and standardized processes are associated. BBF embodies DPR's core value of "Ever Forward," which mirrors the Lean philosophy of continuous improvement and learning; it is meant to be improved over time. BBF promotes early stakeholder involvement and integrated workflows. It includes Lean tools such as the LPS, Takt Planning, Target Value Design (TVD), Set-Based Design, Choosing By Advantages (CBA), and A3 Problem Solving. These practices ensure reliable flow and predictable outcomes. BBF links individual actions to project goals, fostering a culture of accountability and respect for people—central to Lean thinking. The BBF helps

streamline processes and drive clarity for project teams, while also providing a way to measure operational success through metrics associated with each Goal. As DPR becomes a larger organization, the need for the BBF Framework was urgent to also provide consistency across regions and clients.

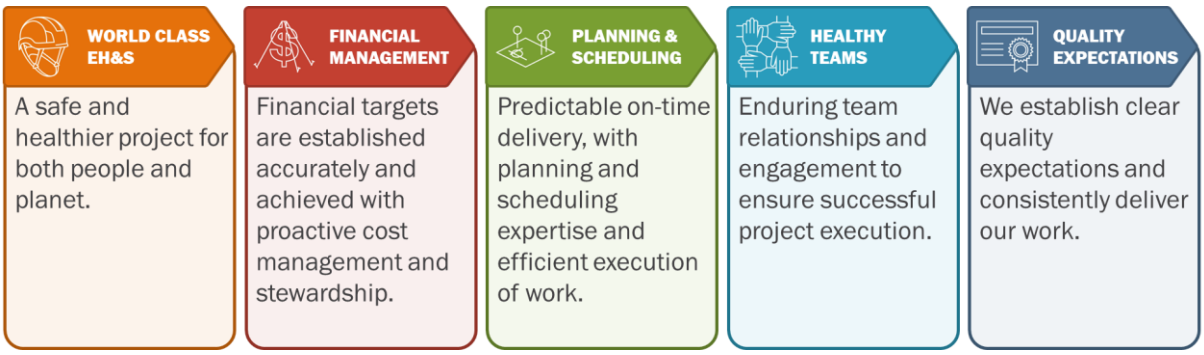

Figure 2: BBF goals

The current Lean @ DPR approach emphasizes supporting project implementation but lacks an identified leader to put an organizational support structure in place. To support a new and sustained growth path for an organization that is much larger than when it started over 30 years ago, DPR intends to build on existing capabilities while scaling Lean implementation. In this regard, the company named a "Healthy Teams & Lean Leader", currently staffed by Chris Dierks, to lead the development and deployment of the strategy to strengthen DPR's core values and how they manifest across its businesses.

DPR has implemented Lean practices across various sectors, beginning with healthcare, with clients such as Sutter Health, UCSF, Atrium Health and Banner Health. These practices have expanded to life sciences projects across the USA for large biotech clients. Moreover, these practices have expanded to other DPR's core markets such as Advanced Tech, Higher Education, and Commercial Buildings. Recent examples include a Higher Ed/Healthcare project that used CBA since pursuit to understand customer expectations and deliver more value to the client (Arroyo et al, 2022), a Healthcare project that utilized TVD, Design for Manufacture & Assembly (DFMA), and Takt Planning to accelerate schedules and improve quality (Arroyo et al., 2025), and a Data Center project that implemented a pproduction system design, location-based management (LBM), takt planning, work structuring, and behavior-based quality system for earthwork (Simmons et al., 2025).

While the motivation to write this paper was mainly to document DPR's journey and share it with the IGLC community and beyond, it is important to notice that in 2025 the company's leaders went through some reckoning as they evaluated DPR's standing in its Lean journey. After some candid conversations with a group of DPR leaders who participated in a focus group in late 2025, participants singled out some areas in which the company needs to work on to continue its Lean journey. The company wants to regain its standing as a Lean leader in construction and reinforce that Lean is part of its identity by more intentionally marketing its efforts in Lean implementation and its related benefits. Additionally, the company intends to provide on-demand training for employees and projects seeking to develop and grow talent who can implement and expand the use of Lean based on the strategic areas of focus discussed below. This is critical as the company has experienced fast growth over the past few years, which made the consistent deployment of Lean a challenge.

EVOLUTION OF LEAN AT DPR

Table 1 presents DPR's Lean Milestone, along with the company's approximate revenue at that time. It is important to note that the company's size has increased significantly since 2020. With

the pandemic, many in-person training sessions were suspended; LCI conferences and the IGLC congress were held online; and many new employees did not have the opportunity to visit projects to learn how to implement DPR's Lean approach.

Table 1: DPR's lean milestones and revenue over time

Year	Lean Milestone / Strategy	Approx. Revenue
1990	DPR founded; focus on technical building and collaborative culture.	~$0.75M
1997	Active member of Lean Construction Institute (LCI); Dean Reed was member #1.	~$500M (est.)
2000	Adopted Lean principles informally; emphasis on waste reduction and collaboration.	~$2B
2006–2013	Applied Lean tools: Early project applications of LPS on projects such as Camino Mountain View. 2010 -2013 Temecula Valley - Early project application of Target Value Design, now known as Target Value Delivery, and an IPD Agreement	~$3–4B (est.)
2011	Culture of Lean class rolled out and about 75% of DPR employees completed it by 2012.	~$3–4B (est.)
2012	Launch of OurPlan (LPS software), later acquired by Autodesk. DPR served as the GC for the Sutter Medical Center Castro Valley hospital project, the first Sutter IFOA project. The project team was on the cover of ENR, September 19, 2011 DPR Developed 10-modules for Lean processes. DPR also developed a pull plan game that used wooden pieces to teach LPS concepts to builders and designers which is part of the AGC Lean Training Classes	~$4B (est.)
2015	Formal Lean Fundamentals and Leadership Training introduced. DPR was the GC at UCSF Mission Bay, where the team implemented an IPD approach.	~$4.5B (est.)
2017	Publication of Integrating Project Delivery book; Lean/IPD/VDC integration (Fisher et al, 2017).	~$5B (est.)
2019	Atrium Health: 1Billion+ Lean project initiated.	~6B (est.)
2020	Lean is embedded in DPR's culture; advanced practices like Takt Planning and DfMA. DPR formal strategy development: VDC, Prefab, Design to Build, SPW, and Data)	~$6.4B
2021	The Sutter Santa Clara East project began, leveraging Lean, Takt, VDC, and Prefab to accelerate renovation projects to market.	~$6.9B
2023-Current	DPR could integrate all strategies into Large Hyperscale Data Center projects, leveraging Design to Build, VDC, Prefab, SPW, and Data to deliver fast-paced projects predictably.	~$9.4B
2024	Lean is associated with major IPD or IPD-like projects in several regions.	~$10.8B
2025	Focus on supporting large projects and scaling Lean practices. Development of DeciLean (CBA software) by VConstruct. Lean at DPR –Revamp, led by Chris Dierks	~$14 B

DISCUSSION

As stated, DPR Construction has a foundational commitment to Lean, which is currently integrated into DPR's operations practices and engrained into the company culture. However, as the company has grown new challenges and strategic tensions have appeared as discussed below.

1. NAMING LEAN VS INTEGRATING LEAN ON EVERYTHING

The term Lean is not used internally as it used to be before integrating the term into the BBF. This leads to new employees lacking awareness of DPR's rich Lean history and ingrained practices. Some Lean-embracing clients have perceived it as a lack of commitment to Lean, and in some cases, this might be perceived as lack of clarity of purpose and creates confusion for external partners not familiar with internal processes and language. Reclaiming the company's identity and connection to Lean is important not only internally but also for the broader ecosystem. As a strategy to reaffirm Lean as a cultural foundation. DPR has decided to create a new Lean badge, and the operations leaders are supportive of making sure Lean processes are labelled as such in the Best Builder Framework. A review of over 200 operation processes supporting DPR's five goals, we have identified over 40 processes that will be labelled and connected with a Lean background.

2. STANDARDIZATION VS. INNOVATION

As the company grew, the BBF has made leaders standardize processes, best practices and called out specific standard procedures to ensure data accuracy and learning across projects; on the other hand, some long-time employees have perceived it as a hindrance to innovation and to their ability to choose what processes and how to implement them in their projects.

Maintaining common practices without stifling experimentation has been studied (Valente et al., 2020). At DPR, our goal is to promote standardization where needed, and at the same time create clear mechanisms for receiving feedback from project teams and activate the network of goals and objective champions to continuously improve processes and supporting tools. To support the standardization of practices, without stifling new ways of doing work, innovations are also being studied as proof of concepts and pilots to learn from implementations without risking inconsistent results or lack of discipline.

3. CORPORATE VS. BUSINESS UNIT LEADERSHIP

The need for consistency across a large organization also calls for corporate Lean leadership in addition to Business Unit (BU), representing the local regional office leadership. However, the knowledge of local markets, clients' needs, and specific cultural ecosystems is not easy to see from a national level; there is a natural tension on how to lead the industry to promote Lean at scale. The company has recently chosen to have a Corporate Lean Leader to help drive consistency across projects and regions. The focus in the short term is to support large projects and leverage Lean processes that are part of the BBF.

4. PROJECT-BASED VS. GENERAL TRAINING

Developing a successful training strategy for a $14 billion revenue and 13,000 people company across regions is not easy. There is a natural tension between letting business units create and deliver their own training, versus upholding a centralized approach that leverages virtual opportunities. In person on demand training is still the preferred choice for project teams, however, is not easy to deliver it considering the current scale of the company's operations. A major question here is how DPR activates the core elements of its DNA (the who we are at its core) that made it grown into a $14 billion business. Long-term clients who recognize Lean and its benefits also recognize DPR's pioneer efforts in this area. However, how does that continue

to hold in existing markets, and grow in new ones, as the company expands its portfolio of business in the United States and abroad. The role of the "Healthy Teams & Lean Leader" becomes a focal point to consistently lead this charge.

5. EXPERTS VS GROWING PEOPLE

DPR has hired several world-class experts on Lean topics, however there is a tension sometimes on how to use the expert's time, supporting projects for the immediate need versus growing people and building future capacity.

In DPR's Lean journey, a recurring challenge aligns with what systems thinkers describe as the "expert paradox," a reinforcing loop articulated by Senge (2006) in The Fifth Discipline. As DPR has expanded in size and technical complexity, certain Lean champions and subject-matter experts have become the default problem-solvers on high-pressure projects. Their mastery of tools such as LPS®, Takt Planning, Target Value Delivery, CBA, and IPD workflows makes them indispensable—yet this very reliance often leaves them too busy to coach or develop others, creating a capability trap in which urgent tasks crowd out learning, as Senge describes. This dynamic reinforces itself: the more the organization depends on the expert, the fewer opportunities there are to build distributed capability, limiting organizational learning and constraining Lean scalability (Senge, 2006). In construction environments where schedules are tight and decisions are fast paced, this paradox becomes especially acute, generating bottlenecks that inhibit continuous improvement. Breaking the cycle requires deliberate leadership action—creating protected time for coaching, designing roles that reward teaching, and establishing structures that ensure expertise becomes a shared organizational asset rather than an individual bottleneck. Another potential solution to address the training is to formally create a 'train the trainer' group to scale the teaching and learning opportunities beyond the Lean experts (Tsao and Howell 2022).

6. CAREER PATHS FOR LEAN VS. INTEGRATING LEAN COMPETENCIES

Another strategic tension is creating specific career paths that require high-intensity lean knowledge or integrating Lean competencies into all operations roles.

At DPR, there are several current career paths, which are commonly designated as field-based (e.g., Field Engineer, Superintendent) or project management (Project Engineer (PE), Project Manager (PM), Project Executive (PX)). However, some fields, such as VDC, also have specific PE and PM roles. Currently, Lean competencies are integrated into several operational roles, which has been important as the company grows. However, some projects require greater emphasis on production management and Lean principles, and the company is exploring the creation of new roles focused on Lean principles to support IPD projects during design and construction.

CONCLUSION

This paper documents the DPR construction Lean Journey and serves as a unique case study on how a company has grown over 35 years and how Lean has played an integral role in its success. This paper also presented the challenges ahead and the opportunities to further improve and leverage Lean principles within the organization.

DPR Construction provides a unique example of a company that pursued Lean principles from its founding and sustained them through decades of rapid growth. The company's evolution illustrates how Lean culture, leadership systems, and operational structures must adapt as organizations scale. DPR's journey offers valuable lessons for contractors and industry partners seeking to embed Lean deeply and durably within their organizations.

Limitations of this paper include that the lessons learned from this case study are bound to its history and location. DPR Construction is a general contractor founded in Silicon Valley,

California, that later expanded to the rest of the USA, parts of Europe, and Asia. The particular challenges and strategies may not apply to other parts of the world. However, some struggles on a Lean journey, such as maintaining a Lean culture in a growing company, can be universal.

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