

COMPANY OVERVIEW



COMPANY WEBSITE

www.exyte.net

Exyte (formerly M+W Group) is a global award-winning turnkey project delivery company specialising in the engineering, design, and construction of complex facilities. Exyte is a recognised project partner for clients with challenging project requirements and Exyte operate in the following business segments:

- Advanced Technologies.
- Life Sciences & Chemicals.
- Food & Nutrition.
- High Tech Infrastructure.
- Cleanroom Technologies & Controlled Environments.

Operating since 1912, Exyte employ over 6,000 people who together deliver a global turnover of over €3Billion per annum. Exyte provide clients with full

turnkey project delivery of new facilities and the conversion and extension of existing facilities. Exyte has a strong, mobile, global talent pool to call upon, which is further supported by robust internal IT platforms that simplify project management and information sharing. With its scale, it offers inter-regional technology management, subject matter expertise, and consulting services. Quarter 4 of 2018 is a very exciting period for Exyte as the former M+W’s ATF, LSC, RBS, and DTF business sectors became part of Exyte, a decision arising from a strategic review period and revised focus by the Board of Executives and Owners at M+W Group.

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OVERVIEW OF THE LEAN INITIATIVE

This project involves a Data Centre Procurement Construction & Management (PCM) contract in Denmark, with a budget of more than €200M.

BACKGROUND TO THE LEAN INITIATIVE

Adoption of the Last Planner® System (LPS)

LPS is designed to produce predictable and stable workflow working towards planned objectives. LPS is a system based on Lean principles to achieve 360-degree contribution and commitment by work experts from all disciplines and involve management as well as field operatives. These members of the team are referred to as the “Last Planners”. Consistent “Pull” sessions allow one to determine alternative paths that accomplish the short-term and medium-term project goals. LPS asks for commitments and promises from all relevant stakeholders working together to meet the overall targets scheduled collaboratively. Working backwards from a project critical milestone, team members break down all the steps, understand and agree the exact requirements and potential constraints needed to maintain focus on the

“Project Critical Path”.



Figure 1. Cohesion on the Project Critical Path.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

Last Planner® System & vPlanner® Progress Capture & Weekly Variance Reporting

Traditionally Exyte has been focused on the Critical Path Method (CPM) of project delivery. Whilst this methodology has been the accepted approach to manage schedules of work that are heavily integrated, it has always been a challenge to identify all constraints, issues, and concerns related to delivery of the scope. On the other hand, LPS consists of a series phased workshops allowing stakeholders (client and subcontractors) to break down the project and proactively discuss challenges faced with projects that are becoming increasingly time constrained, whilst upholding the commitment to safety and quality.

Following on from a series of test scenarios and the

phasing-in of LPS on projects, Exyte demonstrated much more rigorous control. The results from a combined approach of allowing a dedicated LPS function to sit alongside the project controls team and feed into the CPM management of the overall programme of works, ensures the entire team is constantly up to date with individual and team deliverables.

In the past, Exyte only used “Primavera” or “MSP (Microsoft Project)” to manage the schedule logic and critical float paths; however, the LPS bolt-on has enabled the delivery teams to agree and own project deliverables from the outset. By capturing the progress and discussing the constraints on a daily basis, Exyte has been able to react much quicker to the mitigation effort required to hit the

interim/completion milestones.

The key to successfully managing multiple work-fronts and ensuring a robust sequence is not only developed but also delivered, is to ensure the Plan Do Check Act (PDCA) cycle is carried out continuously. LPS allows each and every member of the delivery team to contribute issues, concerns, and opportunities in an open forum, and likewise when activities are missed then the forum is collectively responsible for resequencing the particular activity or series of activities that have been missed. There is a focus on daily LPS boards and how the activities are segregated by discipline or subcontractor across a 4-Week and 6-Week timescale. This is a result of a detailed Pull session for a single phase of works which involves parallel work-fronts being worked on. This timescale should be reduced depending upon the complexity and size of scope as the PDCA cycle teaches us that the more complex the work-front the further one needs to break down that piece of scope and carry out the PDCA cycle more frequently. Sometimes the effectiveness of PDCA sessions can be limited to the skillset of the audience, and, therefore, it is of high importance that team members from all stakeholders make an effort to share the information that will feed into the review workshops.

Dependent upon the size of project and level of detail required by the PM team on a project, the daily management of hits/misses and overall progress capture on a weekly basis can become challenging. Therefore, Exyte introduced to its LPS function a dedicated software platform named “vPlanner®” which allows the LPS team to ensure accurate administration of the daily and weekly activities. It also allows the management team to have a historic log on the project decisions that had a particular impact on the project milestones or its ability to complete on time and within budget. The vPlanner® also allows critical path activities to be monitored with renewed focus as all predecessor activities are highlighted red until either mitigated or re-sequenced. In the past, project delivery teams have been focused on the Main Critical Path and the challenges of managing the sequence of activities which are equally critical has been left to the individual who is tasked with planning the sequence using a tool like Primavera. But vPlanner® will instantly highlight multiple paths which have a negative variance assigned to an individual activity and its entire float path to completion using the early/late start and finish free float calculations.

The project data is gathered and a series of weekly and monthly variance reports issued to the entire Project Management team. The reports ultimately capture the number of commitments the team successfully achieved versus the number they had planned to achieve. Following on from this, a senior LPS expert will sit with the package owner and project planner to feed the information back into the overall programme of work to completion forecast.



Figure 2. Collaborative Pull Planning Sessions.

Primavera P6®, Last Planner® System Team, Project Stakeholders, and vPlanner®

Exyte utilise current market-leading project management software packages such as Primavera P6.V8.2® and vPlanner® to allow accurate and timely management of project scope sequencing and mitigation of delays/impacts. These software solutions are combined with the crucial human interactions occurring across numerous integrated scope development workshops and constraint identification sessions held in the early stages of the project. The information from the workshops is captured and assessed by the project controls team and the information is fed back into the master schedule. Variance reporting is a vital output from the LPS team to provide confidence that the project team is not only performing with a good success rate against its own deliverables, but to ensure that the small percentage of failures do not become consistent from a particular discipline or stakeholder.

No one tool or technique provides a catchall solution for focused sequencing and measuring the success rate of the planned activities. The combination of detailed analysis of schedule performance whilst measuring daily and weekly work patterns and requirements for mitigation allows for greater confidence within the team to make a collective mitigation plan. Consensus decision-making is what makes LPS the chosen practice for all Exyte projects where a focus on integrated project delivery (IPD) is high on the agenda.

Ongoing training and coaching is an absolute necessity to allow the open forum to remain focused on the project objectives, and the Lean experts Exyte has on site actively encourage and facilitate the team to open up, be honest, and, perhaps most important of all, provide encouragement to one another. LPS is not a system that can be delivered by a single person using clever analysis software tools. Instead, it is the direct opposite. The following functions are all based around human interaction and are vital to the LPS approach to Lean project delivery:

- Invite the people who will be the last planners to each Pull session and encourage ownership of scope.
- Share and agree the responsibilities for the milestone with all the last planners (owners).
- Brief the entire delivery team on all the work going on in the phase.
- Have each last planner study their scope of work and remain focused on the 6-week look-ahead.
- 6-week & 8-week Look Ahead Schedule – on a weekly basis the contractor will engage in the collaborative planning sessions, which in turn will develop the 6-to-8-week look aheads.
- Work Force Report – the contractor will record the work force requirements as part of the collaborative planning session which will include the following information:
 - o Contractor’s scheduled versus actual manpower by type and total.
 - o Contractor’s administrative headcount.
 - o Major equipment being utilised.
 - o Other pertinent remarks, manpower shortages, visitors, material received, and the like.
- Weekly Quantity/Progress Report – on a daily basis the subcontractor will record on the weekly look ahead whiteboard the activities that were completed the previous day. The project manager will verify that these were complete. The cumulative activities complete will form the basis of the PPC (Planned Percent Complete) for the week. The purpose of this exercise is not to micro-manage the scope but rather provide reassurance that every team and discipline involved with the delivery of scope is aware of the individual responsibility and more importantly the constraints of working in a multi-disciplinary environment.



Figure 3. Weekly Look Ahead.

Once the Pull sessions are compiled on the tag boards and vPlanner®, the LPS team members have a daily meeting to discuss “yesterday’s performance versus today’s goals”. The team is made aware of goals that were achieved and those

activities that were missed. The reasons why the activity was missed is recorded by the Last Planner and LPS team members on a daily basis. This information is then collated and a series of performance/variance on “actual versus percentage project complete” reports are distributed to the entire team. Variance reports are detailed reports that allow everyone to see the exact reason why a planned activity was not completed on the date it was committed to be completed.

The reports are then issued as weekly “Management Information” to all senior management teams and respective subcontractor team leads. The variance report and the impacted work-fronts are the first topic of discussion on the Monday of the following week. Immediate mitigation is sought to recover lost time whilst not losing focus on the scope of work that was planned for the current week. Often the subject of reforecasting will arise, and this would demonstrate a poor approach to the initial plan and subsequent change of approach to execute the remaining scope in the areas planned for.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

Impacts & Outcomes of the Last Planner® System on Exyte Projects

The complexities around implementing Lean and LPS in the construction industry are quite different to other sectors. In the case of the manufacturing industry the suppliers are usually selected quite early, they are then utilised based on the necessary strategic advantages. Reliable flow of the product that is manufactured is hence assured. On the other hand, in the case of construction projects it is seen that the projects are usually quite complex. The systems that are involved are very dynamic and heavily integrated in delivery, and, although a plan is in place, it becomes necessary for that plan to be adjusted based on some of the parameters and constraints at site or within the supply chain. These differences have to be taken into account when the Lean production process is applied to construction. It is this very complexity that warrants the need for a construction technique that will be efficient for the worksite.

LPS is such a Lean construction technique, and as such incorporates the benefits of Lean Construction methodology – “Last Planner is part of a new production management system for one-off project-based production such as that in construction and design. This business strategy allows project managers to significantly improve productivity and client/end-user satisfaction when compared to the equally consistent old way of doing business”.

As with every type of fundamental change to the way an organisation delivers its projects, LPS was a challenging concept for the Exyte project teams to accept with immediate enthusiasm. Therefore, it became very apparent early on that coaching, handholding, and systematic Pull sessions must be structured to ensure each Last Planner believed they were enabled. Also, LPS is not there to replace current CPM progress methods, but rather to complement them and to alter stakeholder mindsets into starting a Pull session with an end result in mind and then working collectively to achieve that result through the agreed sequence.

The application of Lean principles and methodologies in Exyte, and increasingly across the wider construction sector, are now well-communicated and implementation is becoming widespread. Other industries that use Lean in their delivery models are showing positive results and are reaping rewards which may seem alarming, but which are entirely realistic if the model is unilateral in approach.

Lean practitioners ranked Lean project delivery benefits as follows in a 2013 McGraw Hill Construction survey:

1. Improved safety.
2. Greater customer satisfaction.
3. Higher quality of construction.
4. Reduced project schedule.
5. Greater productivity.

6. Reduced costs.

7. Better risk management.

The industry cannot maintain the approach of “it will do” and expect improved results. Early adopters to Lean project delivery have started their journeys and hold a competitive advantage and a track record of better project outcomes. A commitment to continuous and shared learning will improve the industry with added value and reduced waste. The benefits of Lean design and construction are proven, but this new way of operating is not without challenges. Cultural change is probably at the core of slow adoption within companies and organisations. Change is difficult and there really needs to be a commitment at leadership level. However, frustration with traditional project delivery methodologies suggests this is a perfect time for change.

Exyte’s use of Lean and LPS on this project had a surprising by-product. It enhanced safety culture onsite so much that the goal of zero incidents was reached – safety being something Exyte track constantly and regard as the first priority in delivering successful projects worldwide. The major benefit of all Lean project delivery methods is to cut down on overall project waste (time, effort, information, cost, quality), and LPS does seem to involve a lot of effort to essentially organise a team of professionals who, one could argue, should already be well aware of the scope and individual deliverables. But Exyte believe that the upfront effort and time afforded to the phased Pull sessions provide much less wastage in the latter stages of the project when often the deliverables are overlapped and work-fronts are congested. An unforeseen impact of this type of Lean approach is that often it is seen as an additional function to the daily site meetings when in actual fact it should replace the need to have multiple meetings, and the more Pull sessions that are held the more every Last Planner becomes aware of their deliverables on a daily basis. Finally, investment of time and resources are required from both client and contractor if the LPS concept is to be truly successful on a project.

The overall outcome Exyte seeks from each LPS session is the improvement of the PPC. The values indicate that the project performance improved with time. This improvement was noted after LPS was implemented in Phases 1 and 2 of the projects. The case study hence indicates that the LPS is able to improve efficiency in productivity. In improving project management processes by means of individually planned phases and look ahead weeks, it also helps reduce the stress on project managers and hence is vital to construction project management. It should be noted that LPS does not focus on the issues from a unilateral angle but rather it takes into account a multitude of factors, thereby improving the processes. Also the documentation of events and processes has greatly improved the accountability on projects.