

SCRUM'S DISTINCT ROLE DEFINITION COMPLEMENTING LPS & TAKT IMPLEMENTATION

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ABSTRACT

LPS and Takt are lauded for their potential to transform construction's approach to planning and execution. However, more explicit specification of the roles and responsibilities of different levels of management would be helpful towards more effective functioning of the methods. Scrum offers distinct role, responsibility, and accountability definition and this paper examines the applicability of such disciplined role clarity to assist LPS and Takt implementations.

This mixed-methods research uses case study design and data from purposeful semi-structured interviews, observation, a literature review, and project documentation review from four projects in three different construction sectors.

Findings posit that the adoption of role definition of Product Owner, Scrum Master, and Developers from Scrum could bring greater clarity and effectiveness to site management team's delivery. Eliminating duplication of effort and crossover of duties allows greater focus on executing work, preparing work, and stakeholder engagement.

KEYWORDS

Lean construction, scrum, agile, last planner system, takt.

INTRODUCTION & LITERATURE REVIEW

Last Planner® System (LPS) has brought distinct change and advantage to construction delivery over the past 30 years and much research is available to showcase this (Hamzeh et al., 2008; Liu et al., 2010). In the past decade, case studies of successful Takt planning implementation have increased (Frandsen et al., 2013; Binninger et al., 2017; Dlouhy et al., 2018), as well as growing interest in the application of Scrum and Agile from the software industry to aspects of construction delivery (Poudel et al., 2020; Engineer-Manriquez, 2021; Power et al., 2022).

In the 2020 LPS Benchmark, Ballard and Tommelein (2021, p.55) ask if Agile methods could enhance LPS implementation and suggest a rigorous description and evaluation of methods that fall under the Agile umbrella should be conducted to assess if they should be incorporated into future LPS Benchmarks. This paper examines role definition as espoused in Scrum and how that could address an identified gap in both LPS and Takt implementation.

Again, Ballard and Tommelein (2021, p. 54) ask if more definitive specification of the managerial roles above the crew level Last Planners would assist more effect implementation of LPS. Literature and practice fall short of clearly identifying the roles required by participants

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to ensure effective implementation of both LPS and Takt. Table 1 presents how this ‘gap’ has been highlighted and suggestions for addressing it.

Table 1 – LPS Facilitator or Champion or Process Manager or Scrum Master or PMO
[Adapted from Power et al. (2021)]

Publication	Reference to the facilitation / champion / process manager / scrum master / PMO role
Thomassen, et al. (2003, p.65)	Process Manager - An organiser of collaborative planning between the subcontractors. Doesn't hold any formal management responsibilities so can focus on coaching and facilitating effective communication across project teams.
Daniel et al. (2016, p.29)	Internal Facilitator – On two case projects the LPS implementation was internally facilitated. If left to the team themselves it was felt no one would be accountable.
Daniel and Pasquire (2017, p.7)	Lean Champion and Internal Facilitator – Effective facilitation is a prerequisite for effective LPS implementation. Competent Facilitators and Lean Champions, supported with proactive Lean Leadership involvement, increases wider engagement.
Ebbs et al. (2018, p.725, 731)	External Facilitator – Senior management must encourage and support the Project / Site Manager to implement LPS and sustain the effort once the external facilitator departs the project. If the LPS Facilitator has design and / or construction experience it helps build authority and engagement.
Poudel et al. (2020, p.13)	Scrum Master – Having a person like a Scrum Master role in the LPS implementation would assist adherence to the principles and ensure consistent implementation over the duration of the project.
Power et al. (2021, p. 153)	LPS Facilitator – By introducing and ensuring a consistent weekly LPS structure, the LPS Facilitator focuses on implementing all LPS functions which contributes to higher PPC and productivity by stabilising workflow.
Power et al. (2022, p.185)	Scrum Master – The Scrum Masters coordinated the implementation of LPS and Scrum and brought an extra layer of support to site management by coordinating the daily and weekly planning process.
Riekki et al (2023, p.1187)	PMO – The success of the Takt implementation was specifically due to the leadership and enforcement provided by the PMO. If left to the team, Takt would not have contributed as much.

Despite the role definition advanced in Table 1, except for Riekki et al. (2023), it is only a singular leadership role that is being described as opposed to prescribing how a ‘Team’ should interact and coordinate together. Leaving implementation on the shoulders of a single ‘expert’ is not going to create or sustain sector wide LPS or Takt embedment. Additionally, the PMO input as described in Riekki et al. (2023) may struggle to achieve requisite voluntary internal collaboration and the implementation may become reliant on full-time PMO oversight. Riekki et al (2023, p.1189) noted the PMO mandated daily contractor attendance at the planning huddles. This emphasised the need for ownership and accountability for daily huddle implementation in Takt planning. A more distinct definition of all roles involved in deployment of LPS and Takt should be considered. Poudel et al. (2020) suggested using Scrum as a benchmark for clearly defining LPS roles and responsibilities. A brief introduction of LPS, Takt, and Scrum follows.

Last Planner System – A word search in IGLC database for ‘Last Planner’ shows 368 papers, therefore much literature exists to explain LPS. The key concepts of LPS are to assist with

construction controlling and planning and has been extended to setting and seeking production targets for project planning and control in the 2020 Current Process Benchmark (Ballard and Tommelein, 2021). Ballard and Tommelein (2016, p.59) state that LPS addresses the high variability which causes low workflow reliability on construction projects. A critical step was to help project participants improve their commitments and to appreciate the need to deliver on what they said they would do.

Takt Planning - A word search on 'Takt' in IGLC database highlights 97 papers, indicating the increasing popularity of Takt as a production planning process in construction projects. Takt time aligns the output rates of various trades by setting a consistent pace to allow continuous workflow through pre-defined zones. It prioritises flow of work dictated by the pace of the labour crews (Frandsen et al., 2013) and as well as promoting continuous workflow, Takt also seeks more reliable handoffs, and strives to enhance the design of the production system. According to Frandsen et al. (2014) using LPS with Takt offers greater control and stability. Additionally, Takt's continuous planning and system design creates a steadier atmosphere for LPS implementation (Frandsen et al., 2014)

Scrum - A search on 'Scrum' on the IGLC database shows only 8 papers up to IGLC 31. Even though Koskela and Howell (2002) and Owen et al. (2006) posited both LPS and Scrum had the potential to improve the coordination of construction operations, practitioner and academic focus has predominantly been on improving LPS. The Scrum Guide (2020) proposes Scrum helps teams generate value by seeking adaptive solutions to complex problems and thus is called a lightweight framework. Scrum relies on autonomous, empowered, and self-sufficient teams which can make their own decisions to progress towards their objectives. Small batches of valuable work are developed within 'sprints' of one to two weeks duration. Daily Huddles and regular demonstrations allow implementation of change if required. This restricts the chance of miscommunication or misunderstanding of where the true value lies (Sutherland, 2014; Layton et al., 2020; Engineer-Manriquez, 2021).

Construction planning - Construction's approach to planning is confined to transformation of inputs to outputs (Sacks, 2016; Daniel et al., 2020); this limits the collaborative environment needed for efficient and orderly task execution (Demir and Theis, 2016; Ballard et al., 2020). Traditional construction management falls short in the 'flow' and 'value' concepts; Daniel et al. (2020) suggests LPS and Scrum addresses these shortfalls by promoting a more collaborative environment for construction planning. A more complete construction production system is offered with LPS (short term planning, execution, and control – Koskela and Howell, 2002, p.6) and Scrum (focusing on Minimum Viable Product through Sprints – Layton et al. 2020, p.438) complementing the 'transformation' of inputs to a continuous workflow of value outcomes.

While LPS and Takt are lauded and widely publicised as having the potential to transform construction execution effectiveness, there are aspects of Agile and Scrum can also bring distinct advantages to production planning and control (Poudel et al., 2020; Power et al., 2022).

This research poses three questions to address the following hypothesis: A clearer definition of construction management team roles and responsibilities, as defined in Scrum, will assist LPS and Takt to enhance construction delivery.

RQ1 – What are the roles and tasks of construction management teams?

RQ2 – How do construction management teams perceive their roles and responsibilities?

RQ3 – How can the role definitions in Scrum benefit construction management?

METHODOLOGY

Mixed methods were adopted with case study design in accordance with Yin (2009). The first author worked as LPS Facilitator across the four projects: two residential, one commercial, and one pharmaceutical. Dissimilar roles and responsibilities were witnessed between different sectors and from project to project. This impacted the effectiveness of the LPS implementation and therefore it became important to examine the disparity in roles and responsibilities. Table 2 presents the research sequence and participants.

Table 2 - Research sequence and participants

Steps	Source	Project and Participants
1	Integrative Literature Review	Construction, Lean, Lean Construction, Agile, Scrum Literature. Scrum Guide 2022.
2	Project Documentation	LPS documentation & data; Lessons Learned; Meeting Minutes; Procurement Logs; Safety & Quality Registers.
3	Direct Observation	Direct Observation / Shadowing of Site Management personnel on 4 projects over 8 months.
4	Purposeful Interviews	Interviews with Site Management teams on four projects (4 X PMs, 4 X Superintendents, 3 X Site Supervisors). N = 11.

A mixed-methods approach was selected as both quantitative and qualitative models can complement and compensate each other's weaknesses (Steckler et al. (1992). The resulting triangulation adds to the validity of the findings (Bogdan and Biklen, 2006). In accordance with Creswell (2009) a sequential explanatory approach was adopted. The quantitative data was gathered over an 8-month observation period and the qualitative data gathering followed. The quantitative data was analysed and influenced the approach to the qualitative data gathering (Creswell et al., 2003).

Four projects across different sectors were deliberately selected to increase validity and to offer a broader perspective, as advocated by Yin (2009) and Stake (1995). The researcher visited the projects weekly over a period of 8 months and accompanied and observed site management executing their daily duties on the projects. The project managers, superintendents, site supervisors, and crew leaders were the focus of the observation. Interviews were conducted with four project managers, four site superintendents, and three supervisors from the four different projects.

FINDINGS & DISCUSSION

Table 3 takes the definition of Scrum roles from the 2020 Scrum Guide and, while maintaining Scrum terminology, proposes how these could align with current construction management roles. It is important to distinguish between a Product Owner (PO) and a Project Manager (PM). Layton et al. (2023) state the Product Owners primary job is to take care of the business side of the product or service and is responsible for maximising the value of the product resulting from the Scrum team's work (p.32). However, in traditional project management, the Project Manager carries huge responsibilities, which are broad, all inclusive, and often too much for one person to deliver effectively (p.173).

Table 3 - Scrum roles applied in construction (adapted from Scrum Guide, 2020).

Scrum title / Construction title	Responsibilities	Accountabilities
Product Owner (PO) / Project Manager (PM)	Ensures overall project progression. Owns the backlog, breaks it down, and prioritises the order and sequence. Owns Sprint Planning and Stakeholder Reviews.	Managing the product backlog. Keeping the product goal to the fore. Creating, ordering, and communicating the product backlog. Ensuring the product backlog is transparent, visible, and understood by all. Being available to the team to resolve escalated impediments.
Scrum Master (SM) / Superintendent	Connects interested parties and ensures backlog items are called into the sprint backlog. Holds daily huddles with team, tracks work progression, highlights blockers and constraints.	Coaching and mentoring team members to become self-managing. Assisting the scrum team focus on progressing highest value items to defined completion. Removal of constraints and any challenges to the scrum team's progress. Adhering to the scrum framework process while developing and improving scrum adoption. Helping the scrum team understand the need for precise product backlog items, facilitating stakeholder collaboration as requested and as needed.
Developers / Supervisor & Crew leaders, Designers, Engineers, Inspectors	Implementing effective and value-creating work methodologies that remove wasteful practices. Decides what work gets done in each sprint. Own getting the planned work completed. Demonstrate the completed work is ready for the next user.	Creating a plan for the Sprint from the Sprint backlog. Instilling quality by ensuring the definition of done is adhered to. Adapting the plan each day towards the Sprint goal. Ensuring any constraints are raised as early as possible. Holding team members accountable for progressing the plan.

RQ1 – What are the roles and tasks of construction management teams?

A Direct Observation (DO) exercise was carried out with the site management team members as they carried out their duties. Table 4 presents a collation of the observations and notes gathered from both the DO and the documentation review. This highlights that the project managers duties involved much liaison and coordination with subcontractors along with involvement in fixing day-to-day problems. A key observation was the impact of the competence and experience of the Superintendents on where the PM could focus their time. Inexperienced and less qualified Superintendents necessitated PMs to become more involved in day-to-day issues which left less bandwidth for higher level lookaheads and client liaison. The middle management role of the Superintendent finds itself pulled towards more face-to-face and day-to-day 'firefighting' and coordination of subcontractor's work. The extent of this depends on the ability of the site supervisor to execute their role and on the personality of the

PM. If the PM tends towards micromanagement and more face-to-face engagement with those executing the work, the function of the Superintendent can become confused and frustrated.

Table 4 – Current site management duties.

Project	What are management doing?		
	Project Manager	Superintendent	Site Supervisor
Project A - Residential	Upward reporting; coordinating external inputs; weekly meetings and reports.	Solving issues; uploading inspections & audits; meetings; safety & quality issues	Ensuring materials are available; ensuring next work zone was available to crews.
Project B - Commercial	Involved in day-to-day problem solving; status meetings; liaising with utility companies and external bodies.	Resolving design issues; ordering materials; responding to subcontractor queries.	Ensuring safety & quality inspections occur and any actions are closed out. Assisting crews with problems.
Project C - Residential	Coordinating subcontractors; scheduling; communicating with cost control; meetings; status reports for clients and senior leadership; Liaise with utility providers, client visits, senior management visits.	Providing inputs for reports; running production, safety, and quality meetings; managing subcontractor's work; coordinating design requests & site raised RFIs; Value Engineering exercises.	Directing crews to locations; resolving daily issues; coordinating plant and managing deliveries.
Project D - Pharmaceutical	Client liaison; reports; meetings; lookaheads; team update meetings.	Attending safety and quality briefings; meetings; liaising with design teams; signoffs.	Day to day safety, quality, and production visits and signoffs; escalating issues for resolution.

From table 4 the Superintendent role duplicates aspects of both the PM and Supervisors roles while its own key duties are unclear. Rather than having defined boundaries the Superintendents role can cross into the PM realm and cross on in some cases completely overlay the role of the Supervisor.

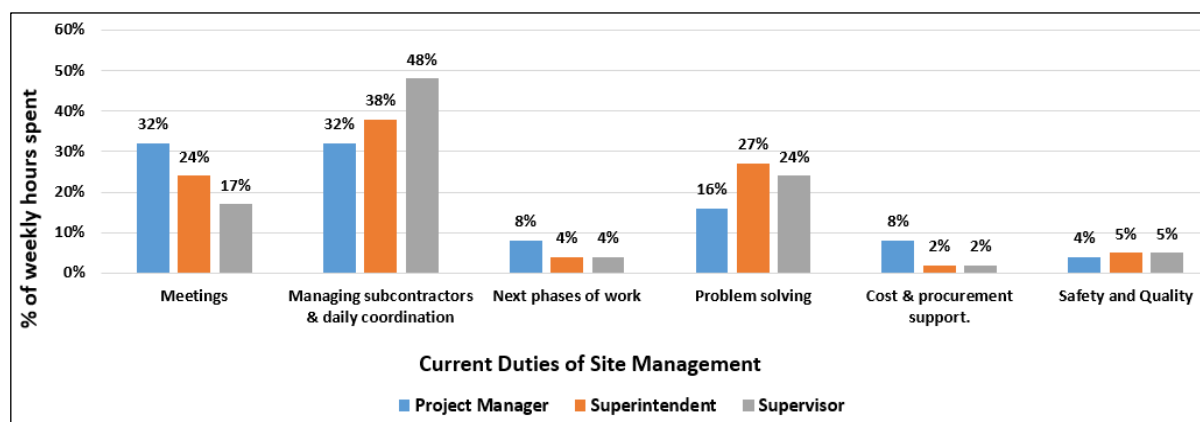


Figure 1 – Current duties of Site Management.

The Supervisor appears to be executing tasks that are helping the crews deliver their work. However, there is inconsistency in the ability of Supervisors – some are competent enough to

deliver excellent management, while others are drawn to micromanagement of subcontractors to compensate for both poor contractor management and the Supervisor's own 'comfort' of being close to the work and away from management duties. Key standout points from figure 1 are the amount of time spent in meetings, managing subcontractors and daily coordination, and problem solving. Additionally, it is obvious there is duplication of effort across the PM, Superintendent, and Supervisors as all three expend a similar amount of time attending meetings, managing subcontractors and daily coordination, and problem solving.

In answering RQ 1 the research finds significant crossover of roles and responsibilities and a distinct lack of structure and definition across the levels of construction site management.

RQ2 – How do construction management teams perceive their roles and responsibilities?

After analysis of the quantitative data, semi-structured interviews were conducted with the site management team. These interviews were transcribed and merged with the themes presented in table 5.

Table 5 - Collated interview findings

Theme	Project Managers	Superintendents	Site Supervisors
Meetings	Some days are end-to-end meetings purely because the organisations mandate specific reviews must be held. Preparation and follow up takes a lot of time.	Noted that PMs almost always request Superintendents to attend the same meetings in case a specific answer is required.	Supervisors feel they have nothing to contribute to most meetings they are requested to attend. More effective communication and updates would keep them informed.
Subcontractor coordination	Subcontractors prefer to discuss issues directly with senior site management	Are involved in too much coordination with PMs reaching across them and Supervisors escalating every issue.	Are involved but are fearful of making an error as ultimately the PM or Superintendent will have the last say.
Problem solving	So many issues are escalated to PM level for resolution and verification.	Don't feel adequately empowered to decide as the PM needs to know to be aware of any impacts and may impose an alternative solution.	Will escalate every issue to Superintendent and PM level for decision. They see themselves and 'carriers' of the problems to be solved. Very little decisions are made at their level.

Analysis of table 5 and the interview texts reinforces the crossover of roles and responsibilities and the absence of structure and definition across the levels of construction site management. PMs stated they are constantly 'pulled' towards coordination and problem solving. Some stated they were 'good' at this when they were in Superintendent roles and now find it difficult to delegate responsibility and empower others to develop in the role themselves. Past relationships with subcontractors mean it is easy for subcontractor leadership to bypass other levels of site management and come directly to the PM – this adds to the workload as unforeseen issues that could have been resolved at Supervisor and Superintendent level are now burdened on the PM. This adds to frustrations at Superintendent and Supervisor level and reinforces the siloed mentality when the team should be fostering a collaborative planning environment. The absence of a visual plan of upcoming tasks means that Superintendents keep their own lookahead in their head as two stated in the interviews. None of the Superintendents or Supervisors referred to the master schedule. They noted that was the job of the project scheduler and the PM to

manage the schedule. However, only two PMs referred to the schedule with two others attending a weekly meeting with the scheduler to review progress and update the schedule. In answering RQ 2 the research finds an absence of role definition and no hierarchical management structure that would keep resolution of issues at the lowest levels to protect the PMs capacity. An absence of clear responsibilities for Superintendents and Supervisors highlights underutilisation of their talent and capability. Inconsistency could be addressed with specific training to ensure standardisation of the roles.

RQ3 – How can the role definitions in Scrum benefit construction management?

From RQs 1 and 2 the following issues emerged:

- Unclear roles and responsibilities for the levels of construction management.
- No tiered work execution and impediment escalation process to filtered out issues as they rise through levels of management.
- Poor discipline around, and protection of, access to PMs time and calendar.
- Lack of standardisation of competency expectation for roles leads to gaps requiring to be filled by others in the team.
- No specific, short-term, lookahead planning process results in firefighting to resolve impending issues.

LPS and Takt bring order and structure to construction delivery. When used in conjunction with Agile and Scrum approaches there is an opportunity to create a more stable environment to assist construction teams. This stability aligns with Koskela and Howell (2002) and Owen et al. (2006) who identified the advantages Scrum and LPS brought to traditional practices.

Table 6 - Phases of Agile and Scrum, LPS, and Takt planning practices.

Agile & Scrum practices	Last Planner System	Takt
Product Goal – The goal of the initiative and how that supports the company's strategy		
Product Roadmap – Broad list of features that assist achieve the product goal.	High-level Milestone Plan.	Overall Process Analysis
Release Planning – Timescale for release of increments of value	Phase Pull Plan & 6 week lookahead.	Takt Analysis & Takt Planning
Sprint Planning – establish specific iteration goals and tasks.	Make Ready Planning & Commitment Planning	Process Planning
Sprint – fixed-length timeboxes designed so Developers can create a development rhythm.	Execute Weekly Work Plan	Weekly Work Plan
Daily Scrum – Coordinate work for the day.	Daily Huddles	
Sprint Review – demonstration of working product and receiving feedback from stakeholders.	Learning from PPC & RNC report.	
Sprint Retrospective – Team improvement of environment and processes to optimise efficiency.	Implementing improvements.	

Table 6 presents the phases of Agile and Scrum, LPS, and Takt planning practices and how they equate to each other within each method. Takt is precise, fragile, and needs LPS to support its implementation. LPS is a broader, more accommodating framework but the literature has specifically stated that better definition of the roles and responsibilities would assist improving LPS. Scrum is more general, all-encompassing, and being the least structured, can be used to manage any type of work or project. It is flexible and adaptable to almost any scale of problem.

In addressing Ballard and Tommelein's (2021, p. 54) request for clarity regarding the LPS specific or supporting roles and responsibilities of management above the crew-level Last Planners, the research presents the following role descriptions as an antidote to the current issues highlighted in RQs 1 and 2, and in research and practice. The role descriptions contribute to a more supportive management structure for LPS and Takt implementation.

Construction Scrum Master (CSM): This research proposes the Scrum Master role as the key facilitator of production in construction. They are accountable for the team's effectiveness and in construction this can be specifically measured by PPC. The critical roles can be listed as:

- Coaching the supervisors and construction crew leaders in self-management and engaging cross-functionally at crew level.
- Assisting the team define high-value releases of work that progresses the project towards the product goal.
- Facilitating and encouraging the identification of constraints / impediments to the team's progress as early as possible (includes procurement, resource, equipment, design lookaheads). Owning the removal of these constraints / impediments.
- Ensuring all weekly events take place, whether Scrum framework, LPS, or Takt; must have daily huddles, weekly planning sessions to lookahead, identify constraints, make tasks ready, agree weekly work plan, generate PPC and reasons for non-completion of tasks to promote new learning.

The Scrum Guide (2020, p.3) proposes the Scrum Master must create a working atmosphere for success where:

1. A Product Owner organises the proposed work into a Product Backlog.
2. The Scrum Team progresses through a batch of work and turns it into a value deliverable during a Sprint.
3. The Scrum Team and stakeholders review the output and consider and amendments to carry into the next Sprint.
4. Repeat.

If the equivalent role in construction is the Superintendent it therefore infers that this person holds key and pivotal accountabilities for the project's progression. The Superintendent therefore should hold the competencies and soft skills that include a deep knowledge of the construction process plus servant leadership skills to serve both the Product Owner (Project Manager) and the Developers (Supervisors and Crew leaders). The Scrum Guide (2020, p.6) adds the Scrum Master is 'accountable', 'serves', and most importantly are '...true leaders who serve the Scrum Team and the larger organisation'. This would be like the 'facilitator' role as described by Power et al. (2021, p.150) and the 'process manager' as suggested by Thomassen et al. (2003, p.65).

Construction Product Owner (CPO): It is important to remember the distinction between Product Owner and Project Manager. The construction PM role addresses many aspects of management, and we propose it additionally uses aspects of the Scrum Product Owner responsibilities to better 'serve' the Scrum Master and Developers. Critically, we require the CPO to empower the CSM and the Developers to execute their own roles and responsibilities while knowing where and when to distance themselves from the day-to-day running of construction production. Before listing the proposed CPO roles and responsibilities it is important to note that support must be available from higher management levels to ensure the CPO is not overburdened and has the capacity to serve the CSM and the Developers. In aligning with the role as defined in scrum, the CPO should focus on the 'What' and the 'When' – what value needs to be delivered by when? The critical roles are:

- Developing and communicating the Product Goal – value to be delivered, scope, schedule, budget, stakeholder management.
- Creating the Product Roadmap and Product Backlog items – project phases, execution strategy, sequencing.
- Sequencing the backlog before handing off to the CSM and Developers for refinement and execution.
- Ensure clarity around the backlog items so the value required is understood by everyone.

The CPO represents the company and stakeholders, and any scope addition can only be with the CPO's agreement. If capacity allows, the CPO can also work with the CSM and Developers, but roles and responsibilities must be clear, or all will revert to the status quo.

Construction Developer (CD): The Developers consist of the construction supervisor, design team members, quality inspectors, safety auditors, and crew supervisors. These are the Last Planners who are at the point of work planning and execution and deliver the real value on projects. It is therefore critical that those doing the work are working on the correct tasks in the correct order and that all distractions and constraints / impediments are removed to allow smooth flow of inputs. An effective CSM will facilitate this environment and the CD's will be excused from unnecessary meetings and non-value adding 'time-stealing' events – they can focus totally on production, safety, and quality. The CD's will be accountable for:

- Collaborating on building a Sprint Backlog, effectively make-ready planning and commitment planning in LPS and Process Planning as in Takt.
- Ensuring quality completions by agreement on Definition of Done.
- Reviewing and adapting daily at the Huddle to ensure focus on the Sprint Goal.
- Expecting ambitious standards and accountability from others on the Team.

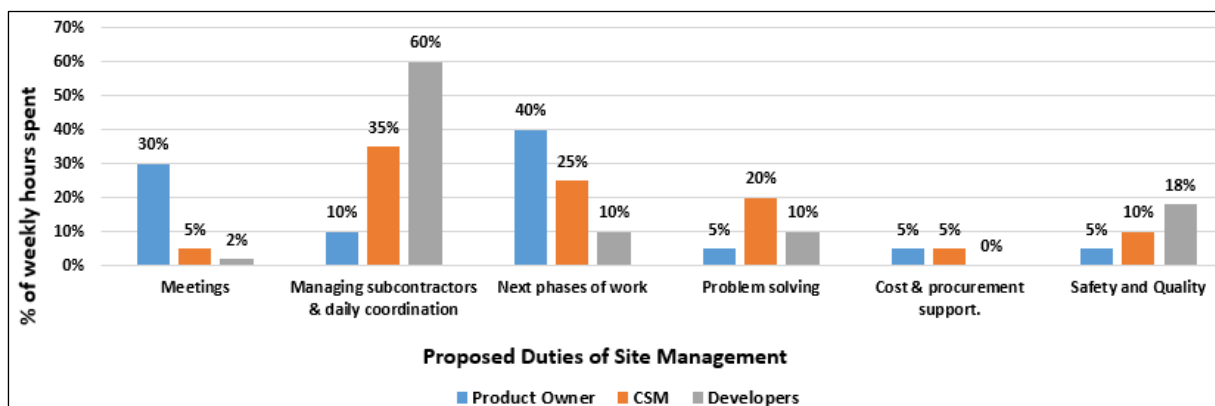


Figure 2 – Proposed duties when aligning to Scrum roles.

Figure 2 proposes how weekly duties should be reordered to allow each role focus on their highest value items. In comparison with figure 1, Project Manager equates to Product Owner, Superintendent equates to Scrum Master, and Supervisor equates to Developer. The CPO focuses on the next phases of work and ordering the backlog while shielding the CSM and Developers from unnecessary meetings. The CSM runs the weekly and monthly operations, coordinating all inputs are in place by ensuring all tasks are constraint free. The Developers execute the daily work in accordance with the weekly work plan and contribute to the look ahead planning sessions. All problem solving is kept closest to the workplace if possible.

CONCLUSION & RECOMMENDATIONS

The paper demonstrates the critical role of the CSM in ensuring a flow of ready works is available for weekly execution. This differs from the ad-hoc current state of PM's and team member's planning processes and specifically addresses a gap in current LPS and Takt execution. The value add of the new role brings clarity and definition to all management teams responsibilities relating to site production planning and control. Other benefits accrue from coaching and mentoring supervisors and crew leaders, releasing the CPO / PM to shield the execution team, prioritising highest value tasks to be worked on, and provides oversight of an effective constraint identification and resolution process. Adhering to the proposed roles would bring better order and structure to the construction management team – the CPO / PM could focus on managing the project without distraction; the supervisors and crew leaders could focus on progressing through weekly lists of constraint-free tasks to be executed. Companies should develop and codify the role of the CSM allowing a pathway of career progression towards more effective CPOs. The role takes the ordered backlog from the CPO / PM and supports the Developers in executing each phase of project execution. The CPO / PM shields the CSM and Developers from all unnecessary distractions like meetings and longer-term planning.

Next steps would be the testing of this proposal on a project and to examine what findings can be brought forward to better support current LPS and Takt implementation practices.

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