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Float Mapping in Practice
An Interview with Massimoluigi Casinelli
by Aina Aliieva (Alive)

Float Mapping in Practice: Managing Time, Risk and Alignment

Interview with Massimoluigi Casinelli [1]

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Introduction to Interviewee

Massimoluigi Casinelli, CCP is a senior consultant in project planning and controls with over 30 years of experience supporting international engineering and construction companies on complex infrastructure projects. His expertise covers highways, railways, civil and industrial buildings, air terminals, hospitals, and specific contributions in the energy sector. He specializes in setting up and implementing project management systems to measure costs, progress, and performance, mitigate delays, and support claims and risk mitigation. He is the author of international publications, including articles in the Cost Engineering Journal (on schedule delays and concurrent delay analysis) and in the PM World Journal (on EVM performance evaluation in complex projects). He can be contacted at m.casinelli@casinelli.net

Introduction to Interview

When I first came across Massimoluigi Casinelli's article *Float Mapping: An Effective Tool to Optimize Project Planning, Scheduling, and Risk Assessment* in the *PM World Journal*, I stopped

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reading as a casual observer and leaned in as a practitioner. It is rare to find a case study of this depth — most publications lean on theory, but this one was grounded in the gritty reality of a €6B metro project, where every delay carried penalties counted in hundreds of thousands per day.

The concept of float mapping immediately struck me as more than a scheduling exercise. Float mapping is the process of identifying and visualizing how float — the time buffer between activities — is distributed across a project schedule. In practice, it means looking beyond a single critical path to see the full picture: which milestones have no room for slippage, which have a few days of tolerance, and which carry flexibility. By categorizing paths into levels of criticality, float mapping turns float from a hidden number in a CPM calculation into a visible, structured resource.

Why is this powerful? Because projects rarely run as planned. Float values shift as work progresses, and delays often appear first on sub-critical paths. Float mapping allows leaders **to** anticipate these shifts, focus resources where they matter most, and keep contractors, owners, and stakeholders aligned around the same priorities. It makes the invisible visible — revealing where time is fragile, where there is room to maneuver, and how today's decisions shape tomorrow's milestones.

I reached out to Massimo, and what started as an exchange of ideas turned into a collaboration: first a joint webinar, then a series of follow-up questions where we explored both the technical and leadership dimensions of the framework.

What follows is that conversation — an interview blending Massimo's decades of experience on international infrastructure projects with the questions many of us face as project leaders: How do you keep control when complexity multiplies? How do you adapt frameworks born from mega-projects to smaller initiatives? And what does it take to make the schedule the true backbone of decision-making?

Q1. To start, could you describe the metro project overall — its scope, scale, and what it demanded in terms of people and organization?

Massimo: My involvement was during the tender stage, where I supported the joint venture in preparing the technical offer and project plan. The project itself was a €6B metro line — a massive seven-year program that included underground stations and tunnels, as well as elevated bridges and viaducts. At peak, the workforce was expected to exceed 5,000 people, with thousands more involved indirectly through subcontractors and suppliers.

From an organizational perspective, the contractor's full project management structure could surpass 300 professionals, while the Owner's team might reach about 100. In many cases, the Owner also appoints a Project Management Consultant (PMC), which adds another 20 or so specialists. This depends on the specific project management assistance model adopted by the Owner, as in some cases the PMC is in charge of the entire spectrum of project management activities.

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Within the joint venture, the core management team typically comprised about 25–30 key roles, supported by experts in supervision, quality control, quantity surveying, planning and scheduling, cost control, BIM, document management, design, and procurement. Critical subcontractors were also involved early in the tender analysis to validate the schedule and ensure execution strategies were realistic. Altogether, combining management, subcontractors, and laborers, the project easily mobilized several thousand people at its peak.

Q2. Such a large project must have carried heavy consequences for delays. Could you share an example of the contractual penalties tied to missing a milestone?

Massimo: Yes, the contract included several key milestones set by the Owner, and some were directly linked to liquidated damages. These penalties varied depending on the importance of the milestone,. In large EPC projects, interim milestone penalties are typically in the order of *several thousand euros per day* (with overall completion LDs representing the major financial exposure).

In addition to these interim milestone penalties, contracts of this kind also establish liquidated damages for overall project completion. This means that any cumulative delay at final delivery may lead to substantial financial exposure for the contractor — sometimes amounting to millions over the course of the project.

For this reason, schedule control becomes not only a management goal but a matter of economic survival. Maintaining discipline over time performance is essential to prevent financial losses that could seriously undermine — or even jeopardize — the contractor's stability.

The intent was not just to punish delays, but to enforce schedule discipline and create early checkpoints. By doing so, the Owner could mitigate the risk of slippage on the final completion date — ensuring that any deviation was identified and addressed well before it jeopardized the overall program.

Q3. Many project managers are familiar with the Critical Path Method (CPM). In your view, what makes float mapping more effective, or at least different, compared to classic CPM analysis?

Massimo: During the tender stage, CPM was indispensable, not least because it was a contractual requirement. It provided a fully detailed baseline schedule that became part of the

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technical offer. A structured float mapping approach was then applied on top of that schedule to give a clearer view of how float was distributed across both critical and sub-critical paths.

While CPM identifies the critical path and calculates float values, it does not, by itself, immediately reveal how risk and flexibility are spread throughout the network. Float mapping makes this visible. It shows where constraints are tightest and where there is room to maneuver. That clarity was crucial for aligning the joint venture partners and key subcontractors on which areas carried the greatest pressure and which had some flexibility.

This alignment was essential to prepare a realistic, competitive plan that satisfied contractual requirements while also addressing execution risks.

Q4.   Did you use float mapping alongside CPM, or did it replace it in practice?

Massimo: In the tender phase, CPM was indispensable for creating a schedule that met contractual requirements and accurately modeled the project's scope, constraints, and interfaces. Float mapping was not a substitute, but a complementary layer of analysis applied to that CPM schedule.

The two methods were interdependent. CPM guaranteed the technical integrity of the schedule, while float mapping turned the data into a decision-making tool. By highlighting risk areas and opportunities for optimization, float mapping made the schedule more than just a contractual document — it became a shared framework for planning, negotiation, and risk awareness even before execution began. Finally, as described below, float mapping also facilitates schedule risk analysis, expanding the capabilities of the CPM approach and enabling a more intuitive, management-oriented interpretation of project dynamics.

Q5.   If a project manager is leading a $50M initiative instead of a €6B one, how could they apply float mapping on a smaller scale?

Massimo: The principles are just as relevant in smaller projects, even during the tender phase. A $50M project will still rely on a schedule as the central reference for evaluating technical proposals, contractual constraints, and execution strategies.

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Float mapping can be applied in a simplified form. Instead of analyzing thousands of activities, the focus can be placed on a limited number of key milestones and critical interfaces. Even at this scale, float mapping helps identify where the program is most vulnerable and where flexibility exists.

The result is the same: better visibility of risk, more confidence in the plan, and clearer communication both within the bid team and with stakeholders.

Q6. What would be the first step to introduce float mapping in a mid-size project with limited resources?

Massimo: In a mid-size project, the project team should begin by defining the key contractual milestones — at a minimum, the start and finish dates, plus any intermediate milestones critical to delivery. These need to be incorporated into a CPM-based schedule that accurately reflects the project's logic and constraints.
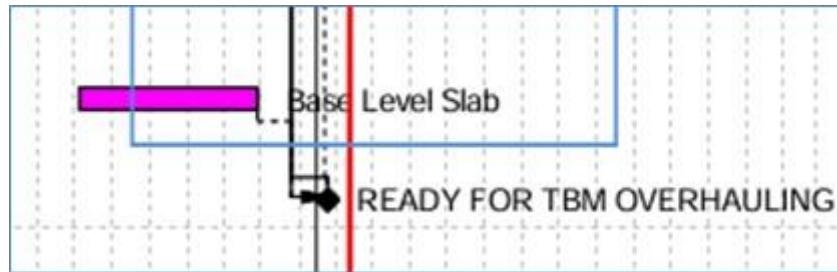
Once that framework is in place, float mapping can be applied to assign levels of criticality to each milestone. Even with limited resources, this simple step immediately highlights where delays would have the greatest contractual or operational impact. It allows the team to concentrate mitigation measures on the areas of highest risk rather than spreading effort too thinly across the entire programme.

Q7. You mentioned that float levels shift as a project progresses. How often did your team update the float mapping in practice — weekly, monthly, or tied to major milestones?

Massimo: In the tender phase, float mapping was used as part of baseline schedule development — essentially to evaluate risks and opportunities at the bidding stage. During execution, however, updates would typically follow the formal schedule update cycle, which for a project of this size was monthly.

That said, float mapping also had to respond to significant events: completing a critical interface, starting a major construction phase, or any change that could alter dependencies and float distribution. In those cases, it was useful to perform scenario analyses, assessing how alternative progress or delay patterns could affect criticality levels and key milestones. This allowed the project team **to** anticipate possible evolutions of the programme and decide where preventive actions were most effective.

The key is that float mapping must always reflect the latest approved schedule. Otherwise, it stops being a reliable decision-making tool. The integrity of float mapping fully depends on the integrity of the schedule data — if progress updates are delayed or inconsistent, float analysis and scenario evaluation become misleading rather than insightful.

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Q8. Was there resistance from stakeholders when activities moved from lower to higher criticality levels? If so, how did you handle those conversations?

Massimo: Yes, resistance is almost inevitable when an activity moves up in criticality. For subcontractors, this often means tighter deadlines and increased oversight. For the contractor, it can raise exposure to penalties. For the Owner, it may trigger renegotiations about priorities or interfaces. So every party feels the pressure differently.

The challenge is that without a structured framework, these discussions easily turn into arguments about blame. What we did was make the process fully transparent — not only technically, but also through communication. Float maps were shared and discussed during coordination meetings, allowing all parties to review the same data and understand why a milestone had shifted — whether because float had been consumed elsewhere, dependencies had changed, or progress was slower than expected. Once presented as an objective outcome of the CPM logic network, it became less about opinions and more about facts.

For this project, we defined four levels of criticality:

- Level 0: zero or minimal float
- Level 1: high criticality with very limited float
- Level 2: moderate float
- Level 3: low criticality with significant flexibility

Reclassification of levels was validated through the project controls coordination process to ensure consistency and shared understanding. We also tracked float consumption trends, which helped show patterns rather than sudden changes. When stakeholders could see trend lines instead of surprises, resistance softened.

Transparency plus structure transformed the conversation — shifting it from debating *whether* something was critical to deciding *what to do* about it.

Q9. Beyond the technical framework, what was the biggest leadership challenge in driving alignment across so many stakeholders?

Massimo: The most significant challenge was alignment itself. This challenge emerged already during the tender stage, when the joint venture partners had to prepare a unified project plan and technical offer under tight deadlines and diverse internal priorities. On a project of this scale, each partner had different corporate cultures, internal procedures, and business objectives — while the Owner, the Project Management Consultant, and a network of key subcontractors

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added further layers of complexity. Everyone brought their own perspective — and often their own agenda.

Achieving alignment was essential to deliver a coherent and credible project plan that the Owner could trust — not only technically, but also as evidence of the JV's ability to act as a single, integrated entity. Key subcontractors were involved early in the planning discussions to validate schedule assumptions and to strengthen shared ownership of the plan.

Without a shared framework, this diversity would have quickly led to misalignment. Some team members might only focus on the parts of the schedule affecting their scope, while others could argue from budget constraints or contractual interpretations. That fragmentation slows down decisions and breeds conflict.

Float mapping may help to overcome this by providing a common language. By linking criticality levels directly to the CPM schedule, everyone could see the same distribution of float and understand what was at risk. This was critical for building trust: the Owner could see why a subcontractor's milestone had shifted; the subcontractor could see how their delay affected the JV's exposure; and the JV partners could negotiate trade-offs based on facts.

Another potential challenge would be maintaining alignment as the project evolves. Float values are dynamic — they shift every time progress changes. By regularly monitoring float consumption trends, project teams could identify systemic inefficiencies early and bring them into discussion before they turn into disputes. For example, recurring delays on non-critical paths might gradually erode float until those paths move into higher criticality. Presenting these patterns visually can make the risk real and actionable, rather than abstract.

Maintaining alignment as the project evolves is always critical for informed decision-making. When properly applied, as described, float mapping can be a valuable support tool for sustaining that alignment throughout the project lifecycle. Ultimately, alignment is not a one-time achievement but an ongoing discipline. Tools like float mapping help sustain that discipline, keeping teams focused on shared priorities even as the project landscape shifts.

Q10. Looking back, what is the one lesson you would highlight for project managers who want to keep control over complexity, no matter the scale?

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Massimo: If I had to pick one lesson, it is this: make the schedule the non-negotiable reference point for every decision. Time constraints directly impact cost, risk, and ultimately project success. Whenever discussions drift into subjective preferences or competing priorities, the schedule — if it is robust and continuously updated — brings everyone back to reality.

Float mapping strengthens this principle because it makes risks visible before they become claims or crises. By showing exactly where float is being consumed, where criticality levels are shifting, and how trends are developing, it gives project managers the ability to anticipate problems rather than react to them. In practice, that means fewer surprises, earlier interventions, and more credibility in front of stakeholders.

Beyond this, float mapping can also support *Quantitative Schedule Risk Analysis (QSRA)* by clarifying which paths and milestones are most sensitive to uncertainty. This integrated view — where schedule logic, float distribution, and probabilistic risk are connected — enhances governance and decision-making at every level.

I would also add that float is not just a number; it is a resource. It represents flexibility, a margin that can be allocated or lost. Treating float as a managed resource — mapping it, monitoring it, and negotiating around it — turns time into a strategic asset.

So my message is simple: never let the schedule become a static document filed away after contract award. Keep it alive, enrich it with tools like float mapping and QSRA, and make it the backbone of leadership. If you do that, you stand a far greater chance of controlling complexity, whether the project is €6 billion or $50 million.

Closing

When I first read Massimo's article, what struck me was not just the technical sharpness but the practicality of it — a framework developed under the pressure of preparing a €6B metro project tender, not from an academic desk. Through our webinar and this extended conversation, it became clear that float mapping is not a luxury reserved for mega-projects. It is a way of thinking: of treating time as a resource, of making risks visible before they harden into disputes, and of creating a language that stakeholders can align around when everything else pulls them apart.

For me, that is the real lesson. Tools matter, but leadership comes from how we use them. Float mapping shows us that clarity, discipline, and transparency are not abstract values — they are practical levers for maintaining control and fostering informed decisions. And whether you are managing a billion-euro metro or a fifty-million-dollar transformation, those levers make the difference between drifting into conflict and steering toward delivery.

You can review a recording of this interview using the following QR code:

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Aina Aliieva (Alive) is an experienced Agile Coach and a Business Consultant with 20 years of experience in different industries, from hospitality and tourism to banking and engineering, a Founder & CEO at Bee Agile - a boutique company with a mission of bridging Humans & Machines.

She is a keynote speaker on Agile, Project Management, Cybersecurity, Negotiation, People Management, and Soft Skills topics. She was a guest instructor at NASA in 2022 & 2023 with topics on Conflict Resolution & Negotiation and Facilitation Techniques.

Her book, "It Starts with YOU. 40 Letters to My Younger Self on How to Get Going in Your Career," hit the #1 position in the #jobhunting category on Amazon and is featured in a Forbes Councils Executive Library.

She also contributed to the books "Mastering Solution Delivery: Practical Insights and Lessons from Thought Leaders in a Post-Pandemic Era", "Green PMO: Sustainability through Project Management Lens", "Agile Coaching and Transformation: The Journey to Enterprise Agility". She is a lead author of an amazon bestseller "Evolution of the PMO: Rise of the Chief Project Officer"

Aina was also a Finalist in the Immigrant Entrepreneur of the Year category in 2021 by the Canadian SME National Business Award

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