INEIGHT

TRANSITIONING FROM SCHEDULING TO TRUE PLANNING

PLANNING & SCHEDULING

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Introduction

Is there a difference between "planning" and "scheduling"? These two terms are used interchangeably in the world of project management, but in reality, they represent two very different things.

In this paper, we will discuss some of the predominant trends and challenges facing the project management community today. Additionally, we will introduce how technology, with advancements in analytics and artificial intelligence, can offer a solution to these issues.

Why, with advancement in project management technology, do projects continue to struggle?

Project Performance

"…recent studies assessing the performance of mega-projects have concluded that cost and schedule overruns are common in all industry segments and world regions… Ernest & Young (EY, 2014) concluded that 73% of the mega-projects they studied experienced schedule overruns and 64% had cost overruns. On average, actual costs were 59% higher than original estimates."

-Construction Institute,

RR315-11 - Successful Delivery of Mega-projects

Using the Wrong Benchmark

CAPEX projects don't carry a strong track record for completing on time and to budget. First glances may suggest that execution is largely at fault but perhaps the problem lies in how we measure success. "On time" and "to budget" are benchmarks relative to a target or a plan. Perhaps then, instead of classifying a project as running late and over budget during execution, we should instead question the agreed-upon plan that the project is being measured against.

A project plan is a forecast of what we believe should and will happen during execution. The plan should be built with representation of both what is known as well as what is unknown about the project. This means including all defined scope as well as any potential external project influencers such as risks and opportunities. If we include both, and get it right, then execution is simply a matter of following the plan and success is much more likely.

One of the luxuries of planning is that we get multiple chances to edit and improve upon it, but we only get one chance at execution. This fact leads one to question, why are so many project plans built with such high optimism that they're nearly impossible to achieve?

One of the best quotes about planning was from Sir John Harvey Jones; he stated, "Planning is an unnatural process, it's much more fun to get on with it.

The real benefit of not planning is that failure comes as a complete surprise and is not preceded by months of worry."

What a true statement. Furthermore, even if diligence is given to establishing a sound plan, that plan is then baselined and set in stone rather than being treated as a living document that continually gets updated as the project progresses.

Brain Drain

One of the most disturbing project controls trends of the past decade is the reality that we are experiencing a planning brain drain. The tenured planning community is retiring and being replaced by a new generation of planners that don't yet hold the same institutional knowledge as their predecessors. This new generation is also forced to rely on tools that are decreasingly true to CPM planning and leaning more towards glorified task management.

What is needed to combat brain drain is an effective means of upskilling - that is a means of teaching the upcoming generation of planners not only about how to build reliable project schedules but also specifically about the domain for which they are building the plan.

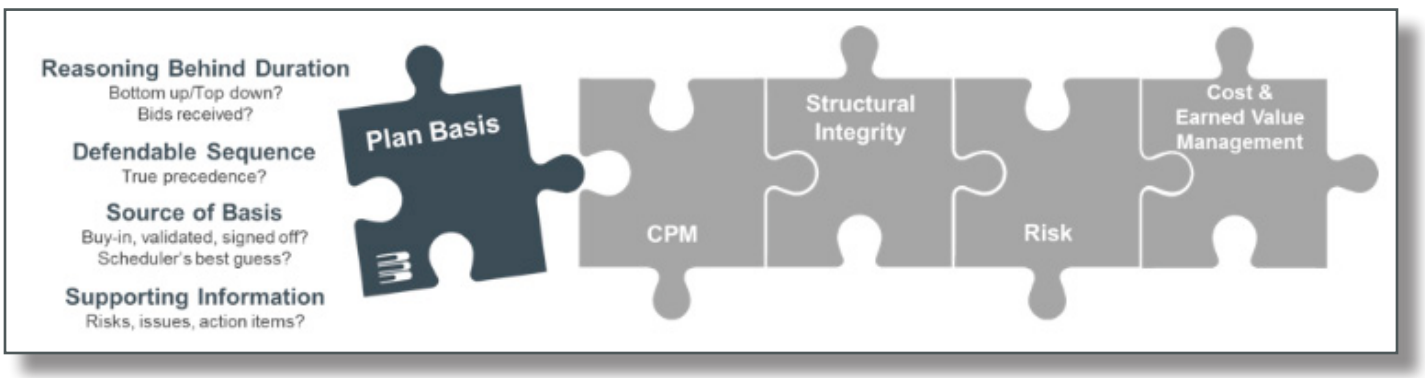
Planning not Scheduling

So back to the question of "planning" versus "scheduling." "Scheduling" is the science (and arguably art) of developing a forecast. In the world of project management, a CPM tool such as Microsoft Project or Oracle Primavera is used to establish a timeline and associated critical path(s). This is done using common building blocks such as durations, logic links, and calendars.

One of the shortcomings of CPM tools is that they do not actually help a scheduler make informed decisions about the correct use of these building blocks. For example, "Should I be using a target date or a constraint?" or "How do I represent this scope starting halfway through another scope item?" Fortunately, today, add-on tools such as schedule analysis software (e.g., Deltek Acumen Fuse) have largely solved these issues. These tools act as checks ensuring the right building blocks are being used, and are being used correctly. However, these tools fall short validating the basis of the forecast. While they can help ensure that an activity has logic links, for example, they can't tell you if the actual duration of the activity is realistic and achievable, or indeed, whether the logic link itself is accurate.

CPM tools are driven by the schedulers using them. They are responsible for adding all of the building blocks (tasks, logic links, calendars, etc.) into the CPM tool to end up with what is known as a CPM schedule.

So, if a scheduler is responsible for building the plan, does that make them a planner? Absolutely not.



A true "planner" is someone that has inherent knowledge about what it is they are building.

How do we address these challenges?

Attributes of a Good Planner

A planner still must carry the scheduling knowledge needed to build a CPM schedule, but the difference lies in their understanding of what the plan is trying to accomplish, in most cases, what is being built. You can be the world's best driver of Microsoft Project, but that only makes you a good scheduler.

To be a good planner you need to have:

- **Data** – the information necessary to add and sequence the schedule building blocks in the CPM tool
- **Knowledge** – knowledge of what it is you are actually building
- **Reasoning** – the action of ensuring your building blocks correctly represent the knowledge of how to execute the project

If you lose the inherent knowledge (through brain drain) or the reasoning (due to lack of experience), your planning team, unfortunately, becomes just a scheduling team.

As mentioned, scheduling is well-served through the combined use of CPM and schedule analysis tools. To get to true planning, we need to address the missing link of knowledge retention and the subsequent re-use of this knowledge in the form of intelligent reasoning. Achieve this, and you ensure your forecast is a truly achievable plan and not just a schedule.

Artificial Intelligence and Machine Learning

Artificial intelligence is being branded as the next big thing in computing. At varying levels, it is already a part of our daily lives. We use Siri on our phones to find out what traffic will be like on our commute from the office. Even household staples such as thermostats now automatically adjust based on our movements around the home.

"Artificial intelligence" is the ability of a computer to perform tasks that normally require human intelligence. To validate this, the Turin Test was a philosophy by Allen Turin that challenged intelligence in a computer. The test required that a human being should be unable to distinguish the machine from another human being by using the replies to questions put to both. While computing power hasn't quite gotten there yet, it is getting closer.

But, do we really want computers building our project plans? Wouldn't we be more comfortable if computers assisted us as planners rather than replaced us? What if a computer could help stop the planning knowledge loss (brain drain) and then, in turn, make suggestions (reasoning) as to how to make the plan more realistic? This supplementary approach is known as "Augmented Intelligence."

Machine learning gives computers the ability to learn without being explicitly programmed, and **augmented intelligence** supplements human thinking rather than replacing it. Steve Jobs described the computer as a "bicycle for the mind." What he was suggesting was that a computer could not do anything more than a human, it just happened to do some things faster, thus making our lives easier. Relate that back to project planning – imagine there was an Augmented Intelligence tool that sat alongside you as a planner.

InEight® BASIS

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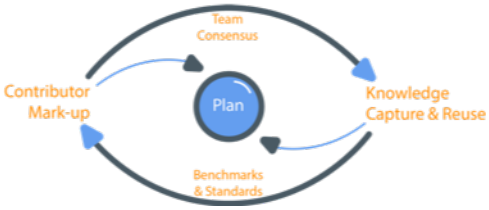
Applying Technology Advancements to our Project Challenges

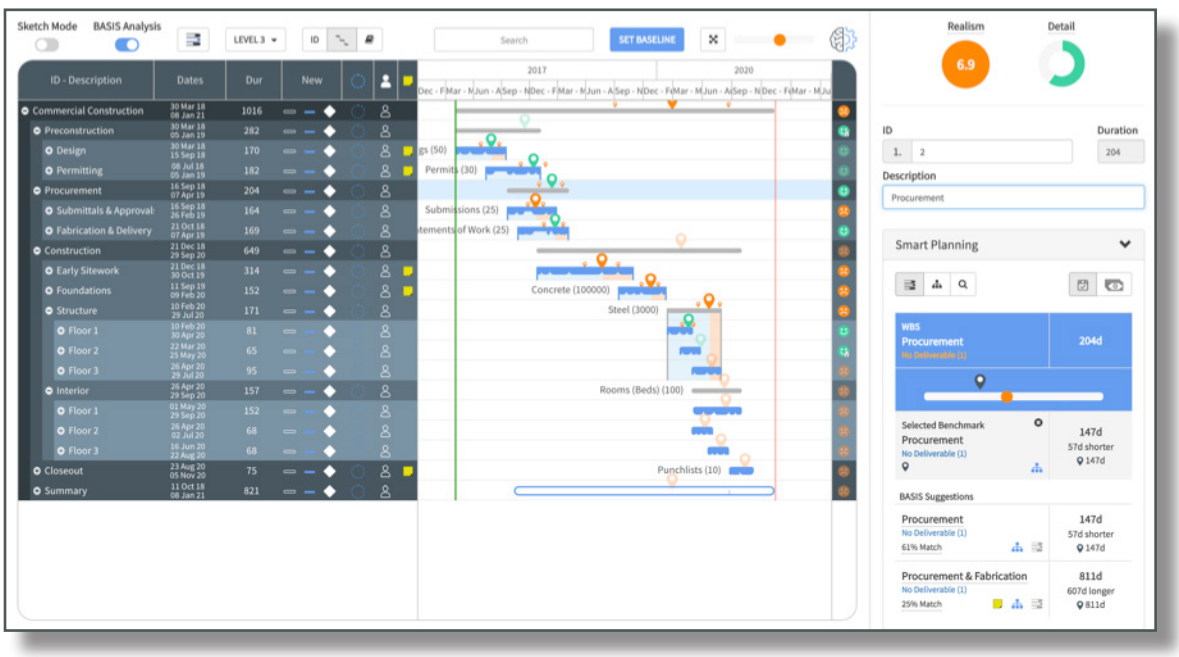


What is needed is the ability to harness the power of technology in a way that facilitates advancing the knowledge of our planning teams, keeping true to the concept that to be a planner data, knowledge, and reasoning is required.

We built InEight Basis to accomplish precisely this. InEight Basis drives plan realism through interactive benchmarking. It provides the perfect blend of both artificial intelligence (to assist the planner) and human intelligence that allows team members (domain experts not part of our planning teams) to contribute their feedback as a natural part of the planning process.

CPM tools remain essential but lack the capability to be effective in gathering expertise directly from those that have it (engineers, discipline leads, experts). Further, that expertise doesn't have a home and isn't an asset that can be efficiently reused without continual reengagement and distraction.

What does 'interactive benchmarking' mean? Organizations have had the ability to compare plans and have traditionally called that 'benchmarking.' InEight Basis turns this static process into an interactive way to calibrate a plan, new or existing, against standards and historical projects, and even providing the capability to align your plan with those benchmarks. Each project has unique characteristics, and in the past, this has made it difficult to compare one plan to another or to a standard. InEight Basis normalizes the benchmarking process by allowing you to refine how benchmarks are applied. For example, a hospital build project for a structure with 250 beds requires more scope than a hospital build with 100 beds. Likewise, there are scope related differences between FPSO projects. Apply benchmarks, normalized for your unique project, and improve your ability to utilize your history and standards. Imagine being able to take it a step further and incorporate risk events, issues, opportunities, and more, all while calibrating your plan.



We know that plans should readily consider our history, experience, or standards that help determine how realistic a plan is. The best plans are not built in isolation but rather with a diverse team, where each member has expertise to contribute.

The unfortunate truth is that most schedules are built absent that expertise often because capturing that feedback is difficult, time-consuming, and considered a distraction from the work at hand. InEight Basis introduces the concept of Markup Review Cycles. Think of it as an equally effective alternative to schedule review and risk workshops.

An InEight Basis Markup Review Cycle allows the plan owner to solicit feedback from the right team members at the right time. Review cycles can be simple requests to update or 'buy-in' to activity durations or to identify risk events that could impact scope and work in the plan. Alternatively, the request can be to detail plan the work (activities) that support specific scope elements (deliverables).

All feedback is stored in a unique Markup Layer, specific to each contributor, thereby maintaining the integrity of the original plan. The plan owner leverages InEight Basis to aggregate, analyze, and apply the right feedback to the plan. This process allows the plan owner to 'flatten' contributor feedback into a consensus-based plan that can be exported to Primavera or Microsoft Project.

How do we capture & reuse knowledge? Beyond simply capturing feedback, InEight Basis gathers this expertise and stores it, turning knowledge into a tangible asset, a digital asset for the organization to continue to build upon and draw from. The InEight Basis Knowledge Library continues to learn from each interaction with the team. It is a reciprocal relationship; the knowledge base can feed your plan while simultaneously consuming information from contributors during a markup review cycle.

Does this truly result in a BETTER plan? Leveraging InEight Basis has a compounding effect on the achievability of a plan. Obtaining expert feedback combined with the capture and reuse of knowledge impacts the quality and realism of the plan. InEight Basis measures plan maturity with unique indices focused on plan 'realism', buy-in, and alignment with project objectives. Each of these indices is a unique measure of plan realism and readiness for execution, all with the goal of executing better, more achievable, knowledge-driven plans.

Conclusion

While many believe the terms “planning” and “scheduling” are interchangeable, the fact is, they are very different. With the advances made in CPM scheduling tools, building a schedule is faster and easier than ever. Planning, on the other hand, requires more than just slick software and a basic understanding of scheduling building blocks. Planning requires knowledge and understanding of the project (i.e., experience). It requires reasoning and the ability to transform project data into a usable plan.

About the Author

Dr. Dan Patterson founded BASIS which InEight acquired in 2018 and re-branded as InEight Basis. Since becoming a member of InEight’s executive leadership team, Dan is focused on expanding his vision of creating next generation planning and scheduling software solutions for the construction industry.

As a globally recognized project analytics thought leader and software entrepreneur, Dan has more than 20 years of experience building project management software companies. Throughout his career, Dan has focused on solution innovation and project management, including advanced scheduling, risk management, project analytics and AI.

Dan is a certified Project Management Professional (PMP) by the Project Management Institute (PMI). He attended the University of Nottingham in the UK where he earned a bachelor’s degree in civil engineering and a PhD in construction management.

For more information about InEight Basis’ planning and scheduling solutions, visit ineight.com/contact.