



PRACTITIONER HANDBOOK

SMART EOT & DELAY MANAGEMENT

An AI-Driven Practical Guide to TIA, Forensic Analysis and Schedule Risk for Every Industry

DELAY ANALYSIS

TIME IMPACT ANALYSIS

EOT & REA

CLAIMS & QUANTUM

CONCURRENT DELAY

SCHEDULE RISK & QSRA

NEGOTIATION & DISPUTES

AI & ANALYTICS

Includes 7 step-by-step SOPs · ready-to-use templates · worked examples



CONSTRUCTION • DATA CENTERS • IT & TECHNOLOGY • ENERGY • INFRASTRUCTURE

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An AI-Driven Practical Guide to TIA, Forensic Analysis and Schedule Risk for Every Industry

First Edition, October 2026

Written by the P6 Project Controls Team

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PART

1

Foundations

Why time matters, how contracts allocate it, and who is accountable for proving it.

- 01** Why Time Wins or Loses Projects
- 02** Contracts and Time: Universal Principles
- 03** Roles, Governance and a Neutral Standard of Proof





PART 1 | FOUNDATIONS

01

Why Time Wins or Loses Projects

Every project is a promise about time. A contractor promises to finish by a date; an owner promises to provide access, information and decisions by other dates; a technology vendor promises a go-live; a utility promises to energise a substation. When one of those promises breaks, the question is never only **how late** the project will be. It is **why** it is late, **who** carries the consequence, and **how that can be proven**.

This guide exists to answer those three questions with discipline. It treats time as something that can be planned, measured, protected and, when necessary, recovered through a fair and well-evidenced adjustment. The methods apply equally to a hospital, a hyperscale data center, an ERP rollout or a transmission line, because the logic of time does not change from one industry to another. Only the vocabulary and the contract do.

1.1 Time Is a Commercial Asset

Time is priced into every bid, every financing model and every business case. When completion moves, money moves with it, usually in several directions at once.

Party	What a day of delay can cost
Owner / Employer	Lost revenue or service, extended financing and insurance, extended consultant and management fees, knock-on effects on tenants, operations or regulators.
Contractor / Vendor	Extended site overheads and supervision, equipment standby, idle or inefficient labour, head-office overhead not recovered, exposure to liquidated damages.
Subcontractors & Suppliers	Remobilisation, storage and re-handling, lost opportunities on other work, cash-flow strain from delayed milestone payments.
End Users	Delayed access to capacity, facilities or systems; in public projects, delayed public benefit.

Table 1.1 The cost of time is shared, but rarely evenly.

Because every party pays for delay in some form, every party has an incentive to argue about its cause. That is why a delay dispute is rarely settled by opinion. It is settled by the party with the better schedule, the better records and the clearer analysis.



**INDUSTRY LENS | THE PRICE OF A LATE DAY**

- **Data centers:** a missed energisation or commissioning date can defer customer revenue on an entire hall; delay damages are often set per MW per day.
- **IT & technology:** a missed go-live can trigger service credits, parallel-running costs for legacy systems and contract extension fees.
- **Energy & infrastructure:** grid-connection or outage windows may be available only once a season; missing one can move completion by months, not days.
- **Commercial & public buildings:** occupancy dates drive leases, relocations and public commitments that are expensive to reset.

1.2 How Projects Actually Lose Time

Delay rarely arrives as a single dramatic event. More often it accumulates quietly: a late design approval, a submittal returned twice, a crane shared between two areas, a long-lead switchboard that slips a week at a time. By the time the forecast completion visibly moves, several causes have usually overlapped. Grouping causes by who controls them is the first step toward sorting them out.

Source	Typical construction examples	Typical data center / IT examples
Owner-side	Late site access, design changes, slow approvals, owner-supplied materials late, suspension of work.	Late customer design freeze, changes to rack density or power, late network or security approvals, customer environment not ready.
Contractor-side	Low productivity, subcontractor failure, rework, late procurement, poor sequencing.	Vendor staffing shortfalls, failed testing cycles, late equipment orders, integration defects.
Neutral / third-party	Exceptional weather, force majeure events, authority permits, utility connections.	Utility energisation, supply-chain disruption, regulatory or permitting changes, cyber incidents.

Table 1.2 Where delay comes from. Who bears it depends on the contract (Chapter 2).

EXPERT TIP

Classify a delay event by **who controls the cause**, not by who noticed it first. Many disputes start because a party labels an event by its symptom ('late steel') rather than its cause ('late approval of steel shop drawings').

1.3 From Reactive Claims to Smart Time Control

Traditional practice treats delay as a claims problem that begins when a project is already late. By then records are incomplete, positions have hardened and the analysis becomes a reconstruction. Smart Time Control is the P6 Project Controls approach to reversing that pattern: time is managed as a continuous, data-driven cycle in which delay is detected early, analysed while facts are fresh and resolved before it becomes a dispute.





Figure 1.1 The Smart Time Control cycle.

Stage	What good looks like
Plan	A logic-driven, resource-realistic baseline that the other party has reviewed and accepted (Chapter 4).
Monitor	Regular updates with actual dates, remaining durations and a narrative, supported by daily records (Chapter 6).
Detect	Early-warning indicators such as float erosion, slipping near-critical paths and late approvals, flagged before completion moves (Chapters 5 and 25).
Analyze	A Time Impact Analysis for live events, or a forensic method for past ones, chosen to fit the records (Parts 4 and 5).
Resolve	A timely notice, a verifiable submission and a fair determination of time and, where due, cost (Part 6).
Learn	Realised risks and delay data feed the risk register and the next baseline (Part 7).

Table 1.3 Smart Time Control stages and where this guide covers them.

1.4 Where AI Fits, and Where It Does Not

Artificial intelligence is changing how schedules are checked and how evidence is gathered. Used well, it lets a small team review a 20,000-activity schedule, read thousands of pages of correspondence and spot a slipping path weeks earlier than a manual process would. Used carelessly, it produces confident answers that cannot be tested, which is the one thing a delay analysis must never be.

AI adds real value when it:

- **Screens schedule quality** at scale: missing logic, constraints, out-of-sequence progress, suspicious duration changes between updates.
- **Extracts facts from documents:** dates, instructions, RFIs and approvals pulled from letters, minutes and reports into a searchable timeline.





- **Detects patterns and trends:** float erosion, recurring late approvals, productivity drift and repeat causes across projects.
- **Forecasts and simulates:** probabilistic completion dates and what-if scenarios that help teams choose mitigation early.

AI cannot replace:

- **The CPM calculation and its logic.** Entitlement is demonstrated with a transparent schedule that another expert can re-run and reach the same result.
- **Contractual judgement.** Whether an event is excusable, compensable or time-barred is a question of contract and law, not pattern recognition.
- **Professional accountability.** A named analyst must stand behind every conclusion and be able to explain how it was reached.

RED FLAG

Never submit an AI-generated conclusion that you cannot reproduce by hand. If a reviewer, dispute board or tribunal asks 'how did you get this number?', the answer must be a traceable method and data, not 'the tool said so'.

1.5 How to Use This Guide

The guide has two volumes. **Volume 1, the Practitioner Handbook**, explains principles, contract frameworks, methods and judgement calls: the 'why'. **Volume 2, the Quick-Reference SOPs**, turns each process into numbered steps, inputs, outputs and a one-page checklist: the 'how'. Handbook chapters point to the relevant SOP so readers can move from principle to action quickly.

It is written from a **neutral standpoint**. Each procedure shows how to prepare a robust submission and how to test one, because the same standard of proof should apply on both sides of the table. Throughout the chapters you will see six recurring features:

Feature	Purpose
Across Contracts	How a principle applies under FIDIC, US federal, AIA and IT / technology agreements.
Industry Lens	How the topic plays out in data center, IT, energy and building projects.
Worked Example	A short, original numerical example that shows the principle in action.
Expert Tip	Practical advice from field experience that saves time or strengthens a position.
Red Flag	Common mistakes that weaken a submission or a review.
Do it in ControlsIQ	How to carry out the step faster using the ControlsIQ project-controls platform.

Table 1.4 Recurring features in this guide.



DO IT IN CONTROLSIQ

Upload your Primavera P6 schedule (XER or XML) to ControlsIQ to see portfolio health, critical path and float trends in one dashboard, the starting point of the Smart Time Control cycle.

Try it at contrlsiq.com → info@contrlsiq.com



**KEY TAKEAWAYS**

- ✓ Delay disputes are won with better schedules, records and analysis, not stronger opinions.
- ✓ Classify each delay by who controls its cause, then let the contract decide who bears it.
- ✓ Manage time as a continuous cycle: Plan, Monitor, Detect, Analyze, Resolve, Learn.
- ✓ Use AI to screen, extract and forecast, but keep every conclusion reproducible and owned by a named analyst.





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WHAT'S INSIDE

30 chapters, 150 pages

From baseline quality to disputes, across every industry

Delay analysis, five ways

One worked project analysed with all five recognised methods

Time Impact Analysis

Fragnet design, report structure and a full reviewer case study

EOT, REA and claims

Notice to determination; US federal REAs; quantum and LDs

Concurrent delay

Four tests, legal approaches and a worked example

Schedule risk and QSRA

A real Monte Carlo example with P50/P80 and drivers

7 step-by-step SOPs

One-page procedures and checklists for daily practice

Ready-to-use templates

Notice of delay, REA letter, registers and determination record

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