



Construction  
Dynamics  
Solutions

# Recovering Disruption and Delay Costs in Construction

Systematically. Defensibly. Reliably.

Dynamic Disruption and Delay Analysis (D3A)



**Construction Dynamics Solutions** is an independent consultancy dedicated to the recovery of disruption and delay costs on construction projects.

With twenty years of experience in using dynamic simulation to quantify and allocate disruption and delay on complex projects, our consultants have been involved in over a dozen major claims totalling over US\$ 6 bn in damages.

Dynamic Disruption and Delay Analysis (D3A) is based upon the System Dynamics simulation methodology. Thanks to our latest successful claim, this methodology was recently included by the Society of Construction Law in its standard toolset for assessing disruption (Delay and Disruption Protocol, 2<sup>nd</sup> edition 2017).

We are committed to continuous investment to ensure that our work remains at the leading edge of dynamic technology worldwide. By working collaboratively with our clients, we quickly adapt our procedures to fit all operational and legal frameworks.



## Dynamic Disruption and Delay Analysis (D3A)

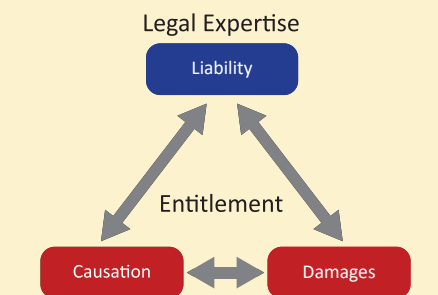
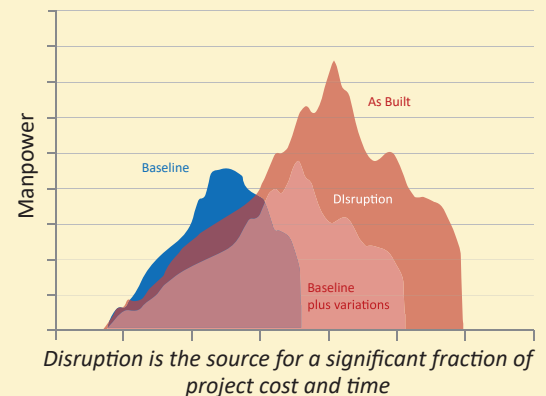
Disruption typically accounts for a large fraction of project costs, yet recovering much of it has historically proven to be difficult:

- Traditional methods cannot establish causation between disruptive events and resulting losses in efficiency (disruption); and
- These methods are also ill-equipped to deal with any disruptive events other than variations (i.e. work holds, design deficiencies, discarded design changes and preferential design).

Regarding delays, traditional analysis tools are unable to deal with the delaying impact of productivity losses and additional rework (i.e. of disruption), which results in underestimation – leading to shorter extensions of time and higher liquidated damages.

**Dynamic Disruption and Delay Analysis (D3A)** overcomes these hurdles. D3A uses a comprehensive causal framework that describes how project decisions and project performance are interrelated. Our simulation models, based upon this framework, unequivocally quantify the disruption and delay caused by any event, and are able to establish in detail the path linking cause and effect.

Because of this, D3A provides our clients with the evidence they need to fully support their claims, both during the course of negotiations and in legal disputes (litigation, arbitration).

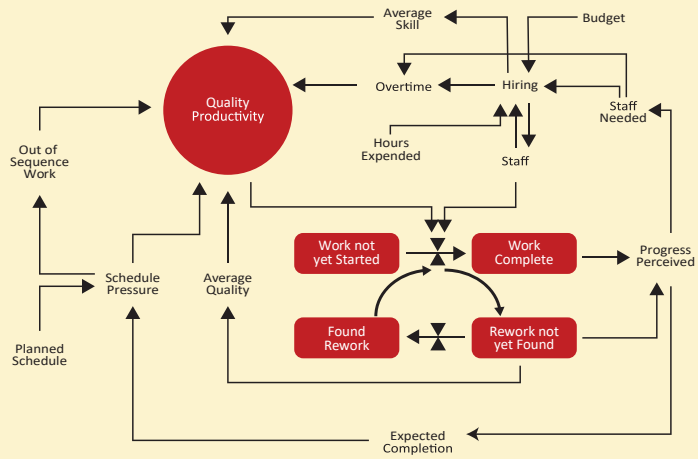


Dynamic Disruption and Delay Analysis  
*'Triad of Proof'*: only D3A deals effectively  
with causation

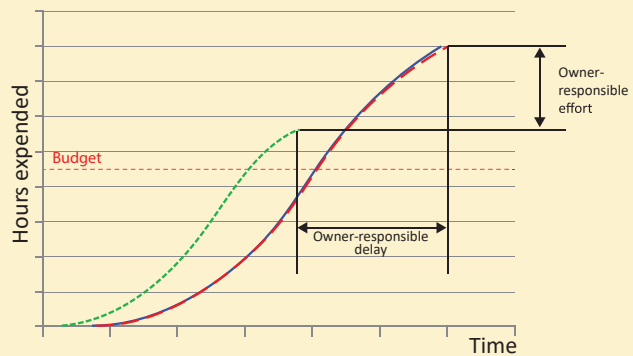
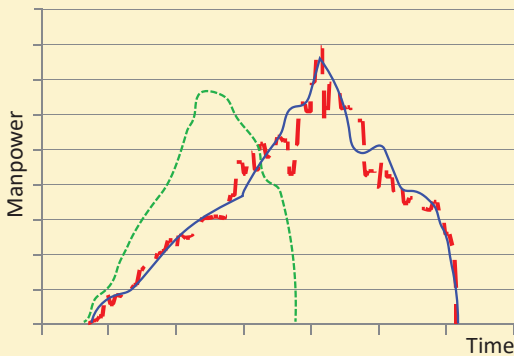
## How does Dynamic Disruption Analysis work?

The cornerstone of our approach is a simulation model of your project. Built upon a causal framework that has proven its validity over the course of the past four decades, the base model is tailored to reflect the particular characteristics of your project (budgets, schedules, disruptive events, staffing practices, etc.), and calibrated to independently reproduce its 'as-built' performance.

The disruption caused by change events is then determined by running additional simulations in which said events are excluded - the 'but-for' scenarios.



D3A is based on a proven causal framework that describes how change events have long-lasting impacts on project performance



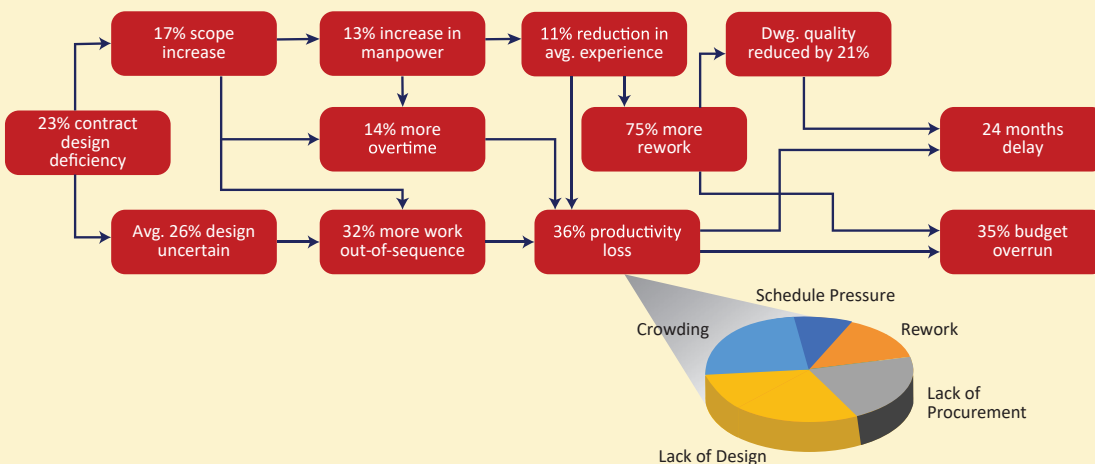
By simulating the project under different conditions (with and without disruptive events), D3A is able to determine the full impact that these events had on project performance

## Advantages of Dynamic Disruption Analysis

D3A allows us to significantly improve our clients' recovery rates on disruption and delay costs on large construction projects:

- Our fact-based approach includes all types of disruptive events, from simple variations to more complex changes (for example, non-contractual applications of commenting and approval processes).
- D3A takes into account all significant change events, irrespective of the party responsible for them. This allows it to evade the 'total claim' trap, and to account for self-inflicted damages.
- D3A specifically accounts for the disruption caused by every disruptive event, quantifying it and establishing a clear causal narrative that describes how the disruption came to be.
- D3A is based upon the scientific method: our simulation models are checked against all the relevant information about the project, and are refined until they are fully consistent with all the available information.

D3A delivers the most compelling and undisputable evidence to substantiate disruption and delay claims.



On top of quantifying the disruption and delay caused by a given change event, D3A also provides a full causal narrative of how this came about



## A success story: 100% disruption recovery on the 'Tuxedo Park' project

Tuxedo Park was a design-bid-build development in the MENA region, budgeted at about US\$ 1 bn. It overran its budget by US\$ 300 mn and finished 2.5 years late.

The contractor 'knew' that the owner had substantially impacted the project, but conventional analysis and the existing data trail did not (appear to) support this view.

A forensic D3A analysis unearthed additional heads of claim, and proved that 60% of the overrun, and almost all the delay, had been caused by the owner.

In international arbitration, the tribunal decided that the evidence produced by the analysis was credible and defensible, and awarded the contractor full recovery of the owner-risk disruption and delay as determined by D3A.



## A world-class team, delivering solutions customised to the needs of our clients

Led by Dr Sam Mattar and Mr Alexander Voigt, our dedicated team of experts offer bespoke solutions based on their multi-sectoral experience in the construction industry - from rapid initial assessments that will identify major disruption sources and determine the overall viability of a claim, to fully defensible expert evidence that will hold up in front of any tribunal.



### Dr Sam Mattar

With over 40 years' experience in the construction industry, Dr Sam Mattar has been engaged as an engineer, project manager, professor, claims lead and arbitration support in North America, Europe and the MENA region. He has published over 40 papers in refereed journals and is the recipient of the Thomas Fitch Rowland Award (American Society of Civil Engineers) in 1985, and the Distinguished Service Award of the Project Management Institute in 1984.

*“ We are proud to have been the first to successfully introduce 'System Dynamics' to construction claims in the Middle East... a decade ahead of its inclusion in the Delay and Disruption Protocol of the Society of Construction Law.*

### Mr Alexander Voigt

Alexander has over 20 years' experience in dynamic simulation, having led consulting teams preparing over a dozen major claim analyses worldwide. Throughout his career he has developed and taught System Dynamics, Project Management, and Project Management Institute (PMI) accredited professional development programmes, and he is also a regular speaker at international conferences.



*“ D3A fully represents and simulates all disruption and delay issues on major construction projects, providing full visibility to our clients, judges and arbitrators.*

## Global Reach

We support major projects world-wide from locations in:

Barcelona | Beirut | Doha | Dubai | Muscat | Riyadh | Istanbul | Sofia  
Hong Kong | Seoul | New York | Houston | St Helier

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