

Roebling: Overview

Now more than ever, in the age of COVID and relentless, ever-increasing competition globally for projects, profits, and talent, **resilient infrastructure requires resilient infrastructure firms**. Roebling is an AI-powered risk management product that braces firms to withstand unexpected project shocks and remain focused on their core business of improving the built environment.

The infrastructure industry has notoriously tight profit margins. Taking on the wrong project, or even the right project but under the wrong conditions, has the potential to significantly impact a firm's operations and – more critically – its bottom line. This pressure is even more profound post-COVID as firms are under tremendous pressure keep staff fully utilized and are less likely to turn down new work. So assessing and mitigating project risk is assuming an increasingly critical role if firms are to remain profitable and sustain their growth targets.

Roebling's algorithmic approach to assessing risk standardizes how infrastructure firms conduct front-end go/no-go processes and establish contingencies for new projects. It helps them make better, holistic data-driven pursuit decisions, mitigate legal, technical, and financial risks, and makes their projects and firms more resilient in an increasingly interconnected global marketplace for professional services.

Where did the idea for Roebling come from, and what specific problems are we trying to solve?

Top-tier global consultancies like McKinsey have identified the promises that digital risk management holds for innovating in how project risk is assessed. For example, its Global Infrastructure Initiative's London 2018 Summit, "Major Project Delivery and Digital Transformation," produced a an "Outcomes Report" which concluded (in pertinent part) that:

"[w]hile much attention is given to the cost overruns and schedule delays that occur in the delivery phase of major projects, a more strategic, outcomes-focused effort in the planning phase can pay dividends. . . . Contractors and owners can seize [the] opportunity [presented by digitizing and automating systems and processes] by doing the following: improv[ing] risk management through the digitization of processes. Project leadership could see near real-time progress across projects through automated tools and feeds, allowing earlier identification of issues and mitigation, even in pre-construction phases."

Why are front-end risk reviews so critical to infrastructure firms' success? A recent KPMG survey of 150 engineering and construction industry executives globally found that just 36 percent thought their organizations performed risk reviews of their projects efficiently. And 54 percent believed they had failed to identify issues that ultimately led to profit margin erosion.

I built Roebling based on my 15+ years of experience inside the legal departments of two of the largest infrastructure design firms in the world, where the go/no-go process for individual projects and their associated risk review processes were clunky. Project teams spent hours creating risk review packages for senior management that grew increasingly complex, and historical knowledge about delivery models, projects, contracts, and customers was ignored and lost over time.

One significant limitation with existing contract life cycle management tools geared at the infrastructure industry is the proprietary nature of many contracts. (For example, many large technology companies that hire AEC service providers have strict data management protocols around documents that include

their contracts). For this reason, Roebing does not plan to store any native documents but instead summarize key terms and conditions and preserve the substance of them for future users, solving a problem that we think has plagued the infrastructure industry when trying to capitalize on the improved efficiencies offered by contract life cycle management (CLM) and other similar tools.

More about Roebing and how it works

Roebing streamlines a historically manual process and provides firms with a better front-end project risk management experience. It is a web-based project risk review and analytics tool powered by a customizable algorithmic AI. It grades potential projects and contract terms and conditions on a scale (the academically familiar A through F) by flagging major risk issues related to the scope of work, contract terms and conditions, and other key metrics based on user inputs.

From a UX perspective its interface asks users to answer an interactive series of questions about a project (what is the scope? who is the client?) and contract terms (is there a limit of liability? what is the indemnity obligation?). These questions cover five key areas of risk:

- the project location and its description;
- the project client and owner;
- the project team and scope;
- pricing and payment terms; and
- and the legal terms and insurance requirements.

Answering these questions lead users to a “project record dashboard” that provides the project's overall risk score. This dashboard provides project teams and management a quick snapshot of how risky the project could be, allowing them to dive more deeply into contract terms and the pricing model (which they can also create within Roebing).

Roebing's algorithm also identifies and displays the highest risks for each project and contract – a critical first step in preventing project profit margin erosion, developing adequate contingency, and bracing infrastructure firms to withstand the shocks of problem projects. (Ultimately the algorithm will also provide suggested risk mitigation measures for those highest risks and automatically update the financial model with a suggested contingency.)

Projects can be saved from the dashboard in order to provide users with succinct and easy access to key historical data about their clients, projects, and contracts. And Roebing also allows users to run analytics on the portfolio of projects they've created to identify key trends, frequent risks, and other metrics that can be customized based on user preferences.

Roebing is therefore a direct answer to McKinsey's charge that firms need to make a “more strategic, outcomes-focused effort in the planning phase” with respect to digital innovation. Finally, and as a quick side note, Roebing is named for John Roebing, the civil engineer who designed the Brooklyn Bridge, and his wife Emily Warren Roebing who supervised its completion while her husband was bedridden with the bends after he took a trip to observe one of the underwater footings during construction.

Why Roebing should appeal to infrastructure firms

The majority of AEC firms are small (600,000 in the U.S. alone, according to recent Census data), do not have in-house legal counsel or risk management professionals on staff, and may not have the resources to hire independent outside professionals to assess project and contract risks. They may also lack the

ability to even develop their own risk profiles to identify key aspects of projects that should be mitigated by contract or insurance. And many firms – both large and small – are so hungry for work to keep the lights on that they may ignore or fail to invest in simple risk management tactics.

We think that small- to mid-sized infrastructure firms will be extremely attracted to a low-cost, user-friendly risk management tool. Roebling offers the possibility of performing intelligent risk reviews much more quickly, efficiently, and cheaply than through a manual or outsourced risk management approach. It could also help firms administer their contracts more efficiently by storing data about contract requirements around change orders, scope, insurance limits, and other matters that – if not addressed during the course of a project – can dramatically impact the firm's and a project's profitability and success. And by aggregating and eventually anonymizing project and contract data, it could help firms benchmark against industry-standard metrics, which would be a valuable tool for both firms and their insurers when assessing risk.

Current status and next steps

The Roebling MVP was built using Sonata modules in a test environment on the Symphony framework and is currently being hosted at AWS at test.roebling.io. We've beta tested it on our own projects, calibrated it against industry form contracts and projects, and provided access to industry contacts – all of which has elicited good feedback. Much of that feedback we've been able to implement in the current version of the product. But there is much more to do.

For example, we think that a Roebling API could ultimately synchronize with Salesforce or other CRM software platforms, allowing Roebling's conclusions to live on within a firm's opportunity record, easily accessible to future project teams working on the project or task orders underneath a framework contract. It could send email reminders about key risk mitigation measures – like contract notice requirements – to certain team members or be customized with other alerts (like if a project record is created that contains certain risk triggers or troubling contract terms).

Eventually, Roebling could also allow firms to establish their own unique risk profile. For example, if a firm did not want to pursue any work where it will take on construction risk (or only wants to take it on if the project is worth less than a certain dollar amount), it could automatically flag those projects (and contracts) with that trigger. (This means that different firms using Roebling will get different results even if their inputs are identical.)

And the more firms that use Roebling, the more of a "baseline" that will exist for different projects against which firms could benchmark their projects, contracts, and risk tolerances, creating a virtuous flywheel network effect that will attract more users to the platform. For example, using AI and, perhaps eventually, machine learning, Roebling could aggregate anonymized data about projects that use the platform. It could produce different scores against different baselines depending on project market sector, geography, and scope to allow users to better compare their projects against what is "market" for their location or selected baseline. This data would also be extremely valuable to other stakeholders besides users of our product – from insurers and underwriters to consulting and analytics firms.

Ultimately, we hope to launch a feature that provides Roebling's users with a geographic "heat map" of global project risk. Firms could identify where in the world contract terms are particularly egregious, or where claims are more frequent. They could use the heat map as a barometer of how their peers are negotiating key terms, allowing them to improve their pursuit and pricing decisions and buffer against potential project shocks.