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Post-pandemic workforce transformation potential in the engineering consulting industry

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Accelerating disruption: why and how?

Watching the changes COVID-19 brought to the engineering industry, long-time friends and partners Shayne Smith (Strategy Advisor for Engineering Firms) and Daniel (CEO, Wrench Solutions) began wondering about whether 'getting back to normal' was something to hope for or whether the changes we've seen already should be the first step in a longer, more transformative journey. With their combined 50+ years of experience in the industry, they condense their ideas on business models, workforce optimizations, technology adoptions, costs, risks and profitability into a paper that engineering firms can use as a blueprint to future-proof their business. The paper is presented as a series of ideas in an easily readable format and includes real-world examples and references.

This paper covers the following points:

- Engineering industry has successfully virtualized its process and enabled work from home in response to COVID-19, but now expectations have changed (both in the workforce and with customers).
- This is the perfect time to build a lower cost, more flexible platform for growth, both to begin recapturing lost revenues and grow business. Questions to ask: Can you decentralise your workforce and rebuild it to leverage freelance and non -full-time talent? Can you pare back manpower and operating costs even more and put the savings into growing your business into new geographies?
- Why companies should rethink their use of technology - not just for collaboration but as a planning and monitoring business tool for complete project management or project delivery. This is the time to Increase reliance on technology, decrease reliance on human effort.
- In the midst of change, companies should keep sight of the bottom line and get more control over their cashflows by using software technology to 'connect the dots' i.e. to link budget to schedules, deliverables to quality, and so on.

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What has happened so far

Engineering firms have responded well to the COVID-19 (C-19) crisis with many firms surprising even themselves, transitioning virtually overnight to a work-from-home (WFH) reality for much of their staff. Layoffs and staffing adjustments have depended on the type of business, it's customer base, size of the firm, and its ownership structure. Technology, most of it in place before the crisis, has enabled teams to continue to execute projects for their customers remotely. Broad-based adoption of collaboration platforms like BIM360, ProjectWise, Microsoft Teams, Zoom, Slack and many others have begun to define a new way of working.

As leadership teams begin to look beyond their near-term transition plans for "getting back to the office", CFOs are already calculating the potential occupancy cost savings that could be achieved with more progressive WFH strategies. CEOs and their operations leadership are wondering if the higher productivity and billable staff utilization trends they have recently witnessed will align with the value earned

on those projects^[1]. "Were we sufficiently conservative when accruing revenue?" "When can we hire all our people back?" "How long will it take to repair our balance sheets, and keep going from where we left off – y/y growth, quarterly earnings, share price, backlog?"

But there are lots of other questions that might now be asked. Questions prompted and accelerated by this crisis. Questions that your competitors might find the answers to before you do. Disruptive questions.

Your most valuable asset may no longer want to walk through your doors each day. This could be due to personal safety concerns (that will likely abate over time), or the joy of not having to commute/prep for work (not likely to be forgotten), or job security fears (can I work remotely for more than one employer?). How were different groups within your firm treated, and how were they affected? Working from home hasn't been easy, **but the experience might have changed their expectations and perceptions forever.**

And what about your customers? Perhaps you won the battle in getting them to accept digital approvals/sign-offs, deliverables, and attend your remote meetings. But they just watched you serve them in a completely different way – in many ways more efficient, more cost-effective, and maybe you impressed them with how much you accomplished with their projects on the cloud or remotely accessible from your servers.

If everything you do is online, including your internal meetings and discussions, why can't they have complete access? Why can't you now grant them complete transparency as the project evolves day to day? And how will all of this save them money? Maybe your project management and execution wasn't perfect, **but the experience might have changed their expectations and perceptions forever.**

Surprise, it worked! ^[2]



“In less than 48 hours, all of our nearly 5,000 employees were set up and fully functional in their own protected space” - **Anthony Bouchard, President of CDM Smith**



“Our movement to cloud-based platforms such as Autodesk BIM360, Bentley's ProjectWise and Microsoft Team was born out of the need to collaborate across a global company-now it's helping to ensure business continuity of critical infrastructure projects” - **Steve Morriss, President of design and consulting services for the Americas at AECOM**



“Overall, there is no technology or technique we are using that is new, but we are relying more heavily on every opportunity available to execute our work virtually, and there are many technologies that are helping us do so. Almost everything we do is in a web or cloud-based application” - **Sloan Harris, CEO of VLK Architects**



“This crisis has been quite amazing in accelerating the change in how we work. If you asked me six months ago if we could have moved 70,000 of our employees in a matter of weeks, I would have looked at you, like, ‘Uh ... no.’ But we have.” - **Helena Gottschling, Chief Human Resources Officer of Royal Bank of Canada** ^[3]

The golden opportunity to redefine “getting back to normal”

Your current management team will probably never have another opportunity like this to dramatically, and proactively evolve your current business model. If history is any predictor, these types of crises tend to happen about every ten years, and each time there is a lot that changes. Survival inspires innovation, and innovation disrupts the status quo.

And you might even have some time to think things through. It is likely that the transition from our current circumstance to some form of new normal could take at least 6-12 months. And if you have time, so do your competitors. And so do potential new players in the industry. Under no circumstances – should you be contemplating a return to the way things were! You probably were expecting some things to change, but be prepared to think bigger! ^[4]

Even with all the tools you deployed to manage your workforce, and to manage your costs, there was only so much that could be done. Fixed costs are hard to reduce quickly (that’s why they call them fixed). Salary obligations are your single greatest cost

by far, and reducing that cost is painful. A month or two of really bad utilization can wipe out your profits for the year and blow holes in your balance sheet. So much for being resilient.

Is there a way for you to strengthen the resiliency of your organization by reducing your operating costs going forward? Perhaps you may feel that the starting point is where you are at right now, if you’ve pared back to your core staff. But maybe the organization can do even more. Can you build a lower cost, more flexible platform for growth so that your organization transforms as you begin to recapture the revenue you’ve lost?

Consider this: What if you could reduce your physical infrastructure by 50%? What if your in-office, core/full-time staff contingent only represented 40% of your workforce? Wouldn’t that make you more resilient to revenue shocks?

If a significant proportion of your workforce operated remotely from your physical offices, would it matter where they lived? What if

this gave you access to lower cost labour? Could the inefficiencies and uncertainties associated with a remote workforce be mitigated by technology, your established work processes, or your people culture? By how much could reduce your cost of service delivery? And if that number was 30% or more, wouldn't that be enough to seriously compete on cost and/or add significantly to your profit margins?

Consider also that labour arbitrage, getting the same work done by a lower cost workforce located somewhere else has happened on a massive scale in global manufacturing (to deleterious effect in some cases, as we are seeing now). But it has also occurred in many segments of the professional services sector – finance, IT, software development, in ways that have maintained/strengthened the profitability of those firms, maintained quality of service, and have lowered costs for customers. This hasn't happened to any great extent in the engineering consulting industry. We would hazard a guess that less than 10% of the labour sold/utilized by the larger players into higher cost markets in North America, Australia, and Europe is derived from low-cost jurisdictions elsewhere. For example, why has it been difficult for engineering companies operating in the US to figure out how to combine their offerings with Canadian engineering services that cost 30% less right now (due to exchange rates)? Thinking more globally, there are many jurisdictions that could supply services at costs that are 50% - 200% lower. Agreed, there may be barriers and challenges, but is it really that impossible to tap into pools of lower cost talent to

perform work and deliver services to your customers?

As we think about the opportunities for redefining what “getting back to normal” can look like, it might be a good idea to consider whether our industry is ripe for major cost disruption. Like so many other industries that couldn't, or didn't want to adjust when they had the chance, the assumption is often that customer buying behavior is not likely to change, or that existing relationships can overcome service-delivery pricing pressures.

Today, there appears to be minimal cost difference between equally-qualified players, and that cost is always going up. Rates for engineering services continue to rise in proportion to cost of living, and often at higher rates due to resource constraints and demographics related to an aging workforce. Cost-plus service contracts, or variations thereof, are still prevalent, if not preferred. Combined with salary trends, selling services in this manner does little to stimulate cost innovation. Fixed price contracting does incentivize cost innovation, especially when teams work together to deliver turn-key EPC projects, but there are still very few examples of how engineering firms have lowered delivery costs through more efficient staffing models and/or remote utilization of a lower cost workforce.

So your challenge is to figure out whether your business can disrupt itself, and whether you can chart a path to emerge from the Covid-crisis with dramatically lower cost delivery capability.

Your organization and its customers have learned so much over these past few months. Now is the time for you to seriously consider how to rebuild your company by optimizing your staffing/resource model, rethinking your execution strategy, and by maximizing digital service delivery. People – process – technology. We're going to examine all three in this article, then translate that into the bottom line impacts.



There is a lot of talk about how companies need to reinvent themselves and change their game and so on. I would argue instead that it is a matter of accelerating an already-in progress change. The shift had already begun before the pandemic.

Varghese Daniel

Founder and CEO, Wrench Solutions

Resetting your people strategy

This is the hardest part of the overall equation, but the crisis has already forced you to act. You've had to adjust your billable staff to reduced revenue volumes, and you've minimized costs for your corporate and non-billable staff positions. You've done everything to retain the people most valuable to your operation.

Almost everyone has been working from home, and it's been for a long enough time, that your staff surveys are already showing who wants to (and/or needs to) return to the office, and who among them will contemplate a longer-term shift to a permanent and/or part time WFH arrangement. We know this isn't working for everybody. Studies are now suggesting that that permanent WFH may comprise 20% or more of your professional staff, with perhaps another 40% or more willing to WFH part-time ^[5]. You probably already know what your staff and managers are thinking is possible - the percentages that apply to you. And the challenges relating to culture and connectedness, mentorship and staff development - those discussions are already happening amongst your management and leadership teams. You will figure this out. But let's also think about how WFH arrangements impact the cost equation, beyond just the savings related to reduction of your physical footprint from the employer's perspective, and the value of reducing weekly commuting times from the

employee perspective. Working from home saves money. Consider the typical savings for a mid-level office professional who would willingly work from home on a permanent basis, full-time - clothing, grooming, lunches/socializing, dry cleaning, coffee/snacks, transit costs or gas/car costs. The savings could easily equate to \$700/month in after-tax money (even more if the need for a car can be completely eliminated). That's 15% of an \$80k salary!

Since many might prefer to only WFH part-time, then there would only be a partial savings. There are also considerations for setting up the home office, but in many cases these costs are one-time and/or minor in comparison to annual savings.

Here are some suggestions for your management/HR team, before they start hiring anyone again:

- Figure out which roles in your organization could be considered for permanent or part-time WFH consideration; a reasonable goal might be 20% of your staffing designated as permanent WFH (with minimal expectations to visit the office); the goal related to additional part-time WFH arrangements could be to reduce your "post-Covid" physical footprint by as much as 60%.

- Establish progressive policies and renegotiate contracts for individuals in those roles, mindful of transitions that may be desirable from both employee/ employer perspectives. Share the savings.
- The recent crisis was a stress-test of leadership/delivery capability related to the management of remote resources. Consider whether you want to retain and/or rehire people who did not perform well in these conditions, with full understanding of their circumstances during the crisis. Don't retain the people who can't adjust to this new reality, and promote the people who contributed to enhanced productivity within their teams. Be mindful of the opportunity to redesign your organization for the future.
- Before you add back resources to your project and financial management teams, you need to seriously consider whether improvements to your virtual work environment, involving both new, off-the-shelf technology and changes to your overall work process can help your existing teams manage more projects than they could in your "pre-crisis" configuration. Project management resources are often the most constraining for growth, so figure out how your existing teams can manage twice as much as they could before with improved planning, delivery, and monitoring processes.
- Now the harder part. As you consider the various roles and respective WFH potential across the organization (including the roles to recapture your lost revenues and grow beyond), ask the question whether it matters whether that role needs to be filled by a full or part-time employee, a local contractor, or a "freelancer" working from a location remote from your offices. The traditional consideration that many firms would have given to this before the massive WFH shift during Covid has perhaps changed.
- Experience with the freelance economy might be limited in your firm, but consider the options: conversion of employees to freelancers; re-engagement of departed staff, enhanced use of known subcontractors vs complete strangers from half-way around the world. This shift cannot be made without some experimentation, and without the development of deeper contractor/ freelancer resource pools (captive supply networks: see QDC and Exterran examples below).
- Freelanced resources can augment billable labour to a significant extent, while also supporting some overhead functions. The goal of developing a more flexible resource pool of contractors and freelancers is two-fold: to identify labour sources that lower your overall cost to deliver services, and ensure 100% utilization – to be paid only when you have work for them to do (and as much as they want to do). These resources can be from lower-cost regions domestically, or from international sources.

Leveraging the freelancer economy

Although not yet embraced widely in the engineering industry, online freelancing platforms are helping to create a professional services marketplace.

Upwork (UPWK on NASDAQ) is the leading freelance platform, used by more than thirty percent of the Fortune 500 and with gross services revenues in excess of \$2B (and millions of discrete projects). The community of independent professionals working via Upwork spans many categories including software development, creative & design, finance & accounting, consulting, operations and customer support—over 8,000 skills are represented. Conventional engineering skillsets and projects are underrepresented.

An annual “Freelancing in America” study, sponsored by Upwork (www.upwork.com) and the Freelancer’s Union (www.freelancersunion.org) has estimated that in 2017, 57.3 million Americans are freelancing (36% of the US workforce) and contribute approximately \$1.4 trillion annually to the economy. Freelance work force growth is accelerating and has outpaced overall US workforce growth by 3X since 2014. Freelancing benefits include independence, flexibility, and the ability to work for multiple organizations.

Building your own captive, freelancing resource pool

Qatar Design Consortium (QDC) is a leading consultancy firm based in Doha, offering architect/engineering services in the infrastructure/buildings sector since 1977. Their 500-person organization is supported by an extensive network of freelancing resources, that they have intentionally developed with their own service providers. Over many years, QDC has worked with its own staff, helping to finance and enable them to perform work as independent contractors, or as external consultants – at first providing them with full-time assignments, but then, over a period of 3-5 years, weaning them from their dependency on a sole-source relationship so that perhaps only 30% of the work done by those consultants is derived from QDC.

Dramatic transformation is possible for even larger organizations

Exterran Corporation is a publicly traded (NYSE: EXTN) global systems and process company offering solutions in the oil, gas, water and power markets. They are a leader in natural gas processing and treatment and compression products and services, providing critical midstream infrastructure solutions to customers throughout the world. Their offices are located in the North and South America, the Middle East, and Asia Pacific. They operate in three primary business lines: contract operations, aftermarket services and product sales.

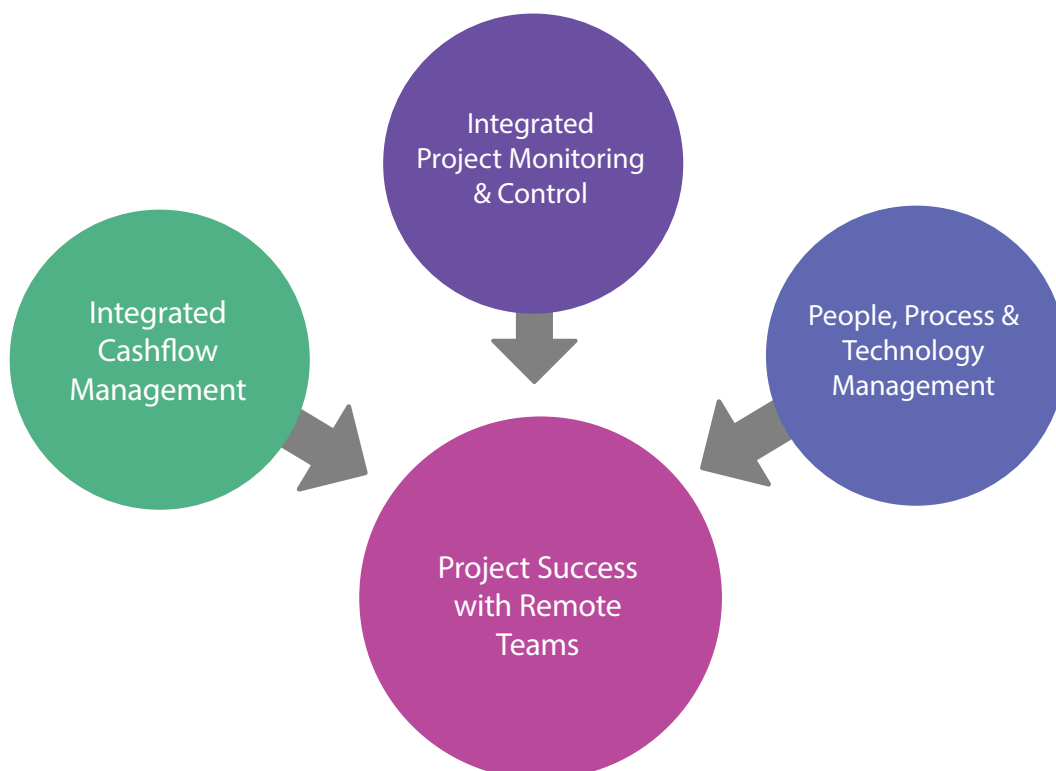
Following one of the last oil & gas downturns, the need to have a single system that connects all their operations, as well as interact with vendors efficiently became critical to execute large global integrated projects. Exterran decided to extend the aforementioned concept to vendors and they became part of this “virtual” global team. This global workforce model has allowed Exterran to leverage their in-house expertise in critical areas, improve global collaboration and minimize project team mobilization needs.

This model closely mimics the advertising and media model, where the workforce maybe located at different parts of the globe and interact seamlessly with a global network of vendors. Each project has a main hub in the region and global satellite teams working in different time zones allowing Exterran to make 24/7 progress on their projects. To ensure effective communication on these fast-paced projects, Exterran swiftly moved their operations to the virtual space by setting up a global online collaboration and information sharing platform on which vendors, consultants, and in-house teams would interact. The strategy showed success and Exterran is looking at expanding this concept to other operations.

Resetting your work process expectations

When people work remotely, enforcing adherence to processes and quality standards is vital in order to maintain the quality of the deliverables, because failure to do so will result in expensive rework, even more expensive than when work was more centralized and less remote. Most companies struggle to achieve consistent adherence to quality processes at the best of times, and in remote working situations, this challenge is amplified unless processes are well documented, monitored, and ideally, integral to the way work flows through your delivery systems.

Project success with remote teams will likely require you to rethink how you plan your work, since better planning allows team members to be more productive as they work independently or in smaller teams to produce deliverables as part of an overall project effort. Better planning and coordination will ensure that team morale remains positive because everyone knows what to do and what the budget and schedule expectations are for each deliverable they are working on. Better planning and coordination can also dramatically improve cashflow management and your ability to effectively monitor and control the project as it proceeds.



Cash is king...

Most organizations will have some method of predicting the inflows and outflows of cash as it relates to a specific project – billing milestones, expected payment dates, and payment obligations to the project team, and external subcontractors and suppliers. These systems need to be able to address the specific deliverable granularity required by the project contract, and they need to be able to provide a baseline against which actual billing, receipts and payments can be tracked. Accurate and timely project progress information is crucial in being able to establish the basis for payment, and perhaps more importantly, for partial payment when some aspects of the work have been delayed (the reasons for which you will also need to know!).

Think about your work process as it relates to cash, and certain minimum expectations are likely to emerge, likely incorporating the following features:

- Contract payments should be linked to contract performance. For example, if Payment milestones apply then they should be linked to the performance of work represented by specific activities in the project schedule so any delay in completion of the activity will raise an alarm about delay in the cashflow.
- As the progress of the work is captured in the system, the earned value of that work is calculated. If the work is not progressing as per the baseline schedule (S-Curve), alerts are generated, and corrective action can be taken.
- By linking the budgeted labour cost and its distribution amongst work packages, the expenses based on actual timesheets can be analysed for each work package and aggregated to indicate the project cashflow. Earned value management enables labour performance to be analysed by comparing the earned value with the actual costs to identify performance problems and improve forecasts for the remainder of the project. Earned value enables the measurement of productivity in terms of either dollars or labour hours making it an extremely valuable tool for managing a modern workforce which is likely to be comprised of internal, WFH contingent and freelance workers
- The system should improve the timeliness of invoicing and payments by enabling online visibility and creating alerts for payments and receivables with ageing information.
- For contractors, earned value management enables the profitability of each work package to be monitored online as the work progresses, it identifies trends and enables the necessary corrective actions to be taken including recording of the trends for lessons learned.

- For owners and contractors alike, earned value management promotes proactive risk management including the establishment of contingency budgets which are frequently reassessed and monitored as they are utilized throughout the project.
- Ultimately, your work process should allow project managers to calculate the total cost to complete the work, at both the package level and overall project level (equals the cost spent + change orders (if applicable) + cost to be spent to complete the work)

Cost control is too often managed by organizations independently (or in MS Excel without integrating the spreadsheet with the scheduling system), and sometimes done as a corrective action, reactively not proactively. By integrating the project scope, costs and schedule with the work breakdown structure, and by defining effective methods of measurement for earned value management, a single source of the truth is created enabling project cost and schedule performance to be monitored as the project progresses. When there is a variation in the budget due to changes or delay, the impact on the cost can be immediately seen.

Employing technology

Technology platforms can be implemented to provide project managers with the accurate project progress information they need to be able to forecast schedule and

cost variances, early enough to allow them to avoid serious problems. Automation of project workflows, with pre-defined rules of credit for key workflow stages, provides an accurate basis for management of earned value, without requiring input from individual team members, and avoiding different interpretations of how much work has been completed.

In making the shift to WFH, many companies have now successfully set up a digital collaboration platform, with video-conferencing, and design-interfacing tools. They now have a way to allow employees to share data, interact, discuss, meet deadlines, and keep work going without too much disruption. By utilizing cloud work platforms, existing processes have been translated into the virtual space. Initially, work will be accomplished using the established process - but without the safety net of dedicated human overseers and careful manual management. Not only will previous inefficiencies exist, they'll most likely be amplified. That's why companies need to set up new ways to manage resources working remotely, and to enforce protocol across teams, more aggressively than before.

Moving forward, your goal should be to optimize how your teams can work more remotely over the long term, by developing a transparent, online environment that fosters accountability and improves productivity. You will need to measure at least four parameters: Quality, Progress/Performance, Resources and Risk.

Quality can be measured by:

1. Defining the workflow process and monitoring its adherence
2. Enforcement of a quality checklist
3. Measurement of design quality issues from comments
4. Comments tracking and closing
5. Quality reporting.

Project progress / performance can be measured by:

1. Project planning and budgeting
2. Planning of packages and deliverables
3. Activity assignment of tasks based on workflow
4. Monitoring progress of deliverables within design collaboration platforms
5. Earned value based monitoring of deliverables and packages performed by teams using units of both dollars and hours.
6. Setting KPIs based on schedule adherence and timely completion of work
7. Measuring team performance and project performance
8. Creating dashboards for schedule, cost, quality, progress.

Note: Consider automated reporting for self-monitoring teams, with a goal to limit need for custom reporting and management intervention. This can maximize the time for scope change and customer relationship management.

Resource planning/management can be measured by:

1. Role-wise resource planning of projects

and packages using an agreed resource breakdown structure (RBS).

2. Deliverable-wise monitoring of resources duration from timesheet
3. Measure KPIs in real time and show performance of each resource in terms of both hours and dollars.
4. Resource planning and utilization across multiple projects
5. Resource optimization with contingency analysis based on projects under execution, to be started, and in the pipeline
6. Use Agile methodologies for execution such as rolling wave planning and by setting small teams with automated reporting.

Risk can be measured by:

1. Identifying, analysing and assessing the major risks in the overall project
2. Separately identifying the individual deliverable risks
3. Establishing contingency budgets and monitoring plans for risk mitigation at organization level, project level and work package level.
4. Tracking labour hours expended by individuals and teams, monitoring productivity and checking for fatigue
5. Online reporting of risk in risk heat map
6. Health and safety reporting of resources recording working remotely and from office.
7. Using the project planning and control system for continuous feedback on project performance and cost and schedule risks.

Integrate people & processes with new technology

Research has shown that the productivity of people working remotely decreases over a period of time due to lack of motivation, isolation, mental health issues and in some cases may even cause them to leave their job. One way to address this, which has proven effective, is to create a friendly sense of collaboration and competitiveness within the team. Having a project platform on which everyone works in the same virtual space, which is transparent, and where people can see how their colleagues are performing, is an effective way to encourage team comradre and performance. Systems that incentivize good performance can build a strong team spirit where team members support each other, people feel valued and more motivated.

Apart from employee morale, ensuring adherence to processes is the big challenge with remote teams. Technology can solve

both these challenges, but it has to be integrated with other systems to function optimally. For example, a cloud-based system like SharePoint can store all documents and their revision histories, as can collaboration tools such as Teams, Zoom etc, but the communications and files for this data has to be maintained independently, which entails a lot of manual effort. Reports for monitoring the deliverables and project are created manually, which can be error-prone and time consuming.

Technology solutions can address:

- Proper work assignment of resources and real time monitoring of work.
- Connection between all the stakeholders on a digital platform, to ensure that work is executed as per the quality management process which is defined in the system.
- Easy digital collaboration between the stakeholders, which results in less rework.
- Automatic maintenance of all the documents with their revisions in the cloud, which creates a digital audit trail.
- Secure access to all project information from anywhere, anytime.

Impacts on profitability and your income statement

Post-pandemic realities have provided us with the opportunity to contemplate new labour force strategies, WFH cost impacts, and improved processes to allow us to effectively manage a more remote workforce. How might all of these considerations impact your bottom line, as well as the competitiveness and resilience of your company?

To establish a baseline for comparison, we looked at a typical income statement for a well-performing engineering consulting company with \$100M net revenue, making a 10% profit (before interest, shareholder bonuses, and taxes). That way, all the costs we will be referring to can be interpreted as a percentage of net revenue. We considered about 25 labour and non-labour cost categories, including indirects, non-billable/reimbursable, and fringe. Direct Labour (excl. fringe and bonus) was \$36M (or 36% of net revenue), leaving a Gross Profit of \$64M, less Total Overheads of \$54M.

We then evaluated the financial implications associated with the transformation potential addressed in this white paper to attempt to quantify the overall effect:

- We postulated a workforce transformation that preserved 40% of the existing Direct Labour workforce as

full-time staff requiring some in-office presence, while 20% would permanently WFH, and the remaining 40% would be freelance/subcontracted;

- The permanent WFH shift in Direct Labour would result in salary reductions and productivity improvements of \$500k (w/ savings shared between employer and employee);
- The cost reduction goal associated with the freelance/subcontracting portion of the labour was 20% (assumed access to lower cost labour pools through remote engagement). This equated to about \$3M in savings.
- WFH was maximized for corporate staff, resulting in some salary reduction / productivity savings of \$200k for finance/acctg and \$200k for IT and marketing.
- It was assumed that HR costs would be similarly reconfigured, but that overall costs would increase by \$200k to account for more sophisticated remote team management approach
- Costs for technology were assumed to increase by \$1M/yr to account for annual subscriptions pertaining to an enhanced online PM software environment
- Occupancy costs would decrease by \$2.5M due to smaller office footprint due to WFH and remote staff. Associated depreciation/amortization costs would decrease by \$300k

- Non-productive, non-billable costs associated with staff utilization were reduced by \$1.7M due to a smaller full-time workforce. Note: The reduction in paid time-off costs associated with a smaller full-time workforce were not considered, as these might be incorporated into the rates for freelance/subcontracted resources.
- No additional savings for non-billable, direct labour costs were accounted for in our model (i.e., for accounting, BD, and HR related activities), but we did assume that almost 30% of these costs would apply to the non-permanent workforce.
- All existing fringe costs (payroll tax, medical, pension, etc) were also

maintained for the same reason as above (ie, these might be included in the rates charged by freelance/subcontract resources). It is highly probable that there are additional savings to be explored here.

- Travel costs were reduced by \$500k to account for improved remote management and engagement.

The net effect of all these changes was an improvement in overall profitability of at least \$8M, or an 80% profit improvement to our comparison baseline. A more aggressive push for cost reduction in some of the categories we've noted could result in doubling the baseline profitability.

	Old Normal	New Normal
○ Revenue	\$100 M	\$100 M
○ Direct Labor	\$36 M	\$32.5 M
In Office	\$36 M	\$15M ✓ (40% staff)
Work from Home	\$0 M	\$6.5M ✓ (20% staff) Incl. \$500k savings: salary reduction and productivity
Freelancers	\$0 M	\$11M ✓ (40% staff) Incl. \$3M savings: access to lower cost markets and competitive pricing
○ Gross Profit	\$64 M	\$67.5 M
○ Indirects and Non-Billable	\$54 M	\$49.8 M
Corp and Indirects	\$19.8 M	\$18.1 M ✓ Incl. \$1M additional tech upgrades; \$2.5M occupancy savings; \$0.2M corp. cost savings
Non-Billable	\$15.3 M	\$13.6 M ✓ Incl. \$1.7M savings non-billable staff utilization
Fringe	\$11.2 M	\$11.2 M ✓ Payroll/Medical/and Pension left as is (although savings likely)
Other Non-Labour	\$7.7 M	\$6.9 M ✓ Incl. \$500k travel and \$300k depreciation savings
○ Profit Before Interest & Tax	\$10 M	\$17.7 M

But that's not the whole story. Transformation of the labour force allows the overhead costs associated with freelance/subcontract to be quickly shed in situations where revenue drops suddenly. We looked at how our transformed and baseline company performance would compare in a situation where revenue drops by 40%. We did not consider corporate cost adjustments, which might apply equally to both situations. The reduced fixed overheads and resource flexibility of the transformed company allowed it to maintain a break-even position, compared with a best-case loss of approximately \$5-6M for our baseline (due to higher fixed overheads, severance and non-billable utilization costs).

The gap in performance is even greater if we consider a three-year performance track record, say with two normal profit years, and one "disaster" year with the 40% revenue drop. In the baseline case, profitability over

three years would average \$5M/year, while the transformed case would average \$12M/year (ie. a potential valuation difference of at least \$60M).

Finally, let's consider the potential reduction in costs to deliver projects. By implementing the improvements we've addressed, a transformed company will have lower labour and overhead costs (potential 8% reduction), can expect improved utilization of its project management resources (potential 7% reduction), and should be able to improve the efficiency of its overall project delivery process (potential 15% reduction). These targets are realistic, and if each are brought to bear on a specific project endeavor, our transformed company could underbid a baseline competitor by 30%, all other factors being equal. Not a bad competitive advantage!

Use this white paper as a blueprint to transform your workforce and how you do work!

We realize that many of the issues we've brought forth can be extremely challenging to implement. But the challenges our industry has already experienced in adjusting to the pandemic and in now having to contemplate a post-pandemic work environment have hopefully prepared us to take a serious look at how to optimize our industry and improve our profitability, our competitiveness, and our resiliency.

Good luck!

Let's talk



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Shayne Smith, P. Eng. is Director, Strategy at Wrench Solutions. His 30+ year career in the consulting engineering industry includes leadership roles in both private and publicly traded consulting firms, each with global projects in many different industry sectors.

As the CEO of a 1,000-person engineering company in 2007, Shayne's passion for project management excellence led him to Wrench Solutions, becoming their first North American customer. He believes that Wrench can create accountability and transparency in how complex projects are controlled and managed.

Shayne stepped away from full-time work in 2017 after working for eight years in a number of senior operational and business development roles at a top five ranked ENR firm with over 15,000 staff. Throughout his career, he has served on numerous for-profit and not-for-profit boards and continues to work with boards and executive teams to improve and optimize organizational performance. Shayne is a licensed professional engineer, having graduated from the University of Waterloo, Canada. (Mech Eng 1988).



Varghese Daniel

Chief Executive Officer, Wrench Solutions
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Daniel is the co-founder and CEO of Wrench Solutions. Passionate about the transformative power of information technology, he and friend Aju Peter began with an idea for collaborative data processing for manufacturing companies, which they successfully sold to Kennametal Widia & Mico Bosch (and for which they won funding from the Government of India).

Daniel went on to create SmartProject, the world's first integrated information platform for construction projects, which is used by EPC firms worldwide on 9000+ projects across 27 countries. His focus today is developing global markets for SmartProject. He holds an M.E. in Mechanical Engineering from the National Institute of Technology, Jaipur, India.

Endnotes

1. "3rd CEO Forum Webinar: AEC Industry Response to COVID-19; Strategies & plans for an evolving crisis, with an eye on a post-crisis era"; virtual panel discussion hosted by AEC Advisors on April 24, 2020
2. "2020 Top 500 Design Firms: Will COVID-19 Change Design?", Gary J. Tulacz, Engineering News Record, April 29, 2020 (<https://www.enr.com/articles/49286-top-500-design-firms-will-covid-19-change-design>)
3. "Is the office era over? The surprising truth about working from home", Eric Andrew-Gee, The Globe and Mail Report on Business, May 29, 2020 (<https://www.theglobeandmail.com/business/article-is-the-office-era-over-the-surprising-truth-about-working-from-home/>)
4. "From thinking about the next normal to making it work: What to stop, start, and accelerate", May 15, 2020, Kevin Sneader, Shubham Singhal, McKinsey & Company (<https://www.mckinsey.com/featured-insights/leadership/from-thinking-about-the-next-normal-to-making-it-work-what-to-stop-start-and-accelerate>)
5. "Remote working: the new normal for many, but it comes with hidden risks – new research", March 18, 2020, Dave Cook, University College London (<https://theconversation.com/remote-working-the-new-normal-for-many-but-it-comes-with-hidden-risks-new-research-133989>)



About Wrench Solutions

Wrench Solutions is a leading provider of project management information solutions for the engineering and construction industry. Through our proprietary platform called Wrench SmartProject we help owners, contractors, designers, and consultants coordinate and synchronize all the elements of their projects and ensure the proper management of project stakeholders, information, and resources in accordance with the company's defined standard processes. To date, Wrench SmartProject has been used on more than 9000+ projects across 27 countries. Visit www.wrenchsp.com to learn more about SmartProject.



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