ALIGNED OUTCOMES

Achieving a Higher Level of Power and Control Through The Enterprise Digital Twin

(It Is Easier Than You Can Imagine)

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Aligned Outcomes™
www.alignedoutcomes.com

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EXECUTIVE SUMMARY

An enterprise digital twin has extraordinary power to accelerate business success.

A digital twin is a digital replica of a process, a virtual creation of the elements and the dynamics of a physical thing capturing how it operates. The advantage they can provide for leaders is huge. Here's how they work.

Imagine you are an engineer building an aircraft. The digital twin – a digital version of the aircraft – lets you easily manipulate different variables, like wing angle, on a computer to see how it impacts every aspect of the aircraft's performance. You can test multiple options – hundreds of times in a single day – to hone the aircraft's future performance.

Now, imagine you are a leader at the company that makes this aircraft and you have an enterprise digital twin. A virtual creation of the elements and the dynamics of your organization and how it operates.

This enterprise digital twin lets you manipulate countless variables to see how they impact every aspect of your company's performance. You can test numerous options to explore multiple outcomes – hundreds of times in a single day – ultimately honing your organization's performance in days instead of months! Your team can be focused on any number of transformation challenges from process optimization to digital automation, shared service optimization to functional alignment or evidence-based regulatory compliance, including traceability, to name but a few examples.

An enterprise digital twin gives you the power to see clearly, make better decisions and avoid failure.

Digital twins have accelerated the speed of technological advancement exponentially. Now by entering a series of structured enterprise data into a digital twin, you can in weeks, do the same for your organizational advancement:

- Total and integrated visibility into every process, human capital detail, supporting technologies, deliverables, governance elements and associated costs in your organization
- The ability to test different operating models and visualize the effects on people, technology, deliverables and costs before blueprinting and executing a process change. Visualizing an optimal Integrated Operating Model
- An environment where future leaders are supported to work collaboratively on delivering effective enterprise optimization
- The tools to implement change effectively, delivered efficiently, and realizing the intended ROI
- A stable repository for your organizational operating models that can be used to improve your business continuously and proactively

Executives who have leveraged enterprise digital twins have found projects can be done 2/3 faster and for less than 1/2 the budget

Aligned Outcomes' **Team Enabled Transformation©** is the world's first method that delivers a comprehensive **Integrated Operating Model©** – an enterprise digital twin – seamlessly linking processes, organization, technology, deliverables, governance and costs.

In this white paper we will explore how an enterprise digital twin allows for real time business scenario modeling to measure the impact of competing initiatives so they can be prioritized in light of your organization's strategic plan.

THE RISE OF ENTERPRISE DIGITAL TWINS

The term digital twin was first introduced in 2002 by Dr. Michael Grieves as a concept for building digital representations of physical assets[1]. The digital twin is most commonly used by engineers when designing and testing industrial-grade equipment, as well as by business architects that are modeling business operations[2] such as production lines in manufacturing.

Here, we will be focusing our discussion on digital twins within the scope of business architecture. We reveal how, when taken to the enterprise level, the digital twin can better support leaders who are responsible for planning and executing strategic objectives. Aligned Outcomes has proven that digital twin innovations can vastly simplify major enterprise improvement projects. The digital twin has taken on many meanings since its first inception. General Electric (GE) defines the digital twin as *"software representations of assets and processes that are used to understand, predict, and optimize performance in order to achieve improved business outcomes.[3]"* Aligned Outcomes has turned this definition into reality.

Currently, North American businesses spend approximately $73 Billion USD per year[4] dealing with the problems associated with enterprise optimization via strategic management consulting services. Aligned Outcomes asked: what if complex enterprise improvement projects could be visualized, designed, business-cased and executed with significantly less cost, at high speed, with reduced risk and at a higher success rate? Further, what if these projects could be executed by a company's own subject matter experts, as part of the firm's organizational capabilities?

Aligned Outcomes has brought the power of the enterprise digital twin within affordable reach of all executives by delivering a digital, evidence-based enterprise operating model platform. Aligned Outcomes can train subject matter experts from within the business work with tools, data and methods to better visualize, analyze and calibrate their operations against the company's strategic goals. By exploiting a digital landscape, business leaders can then rapidly test, foresee, and plan future business improvements, while planning and documenting the necessary changes to their business operations. Aligned Outcomes' offerings create enterprise digital twin operating models which include, but are not limited to, processes, human capital detail, supporting technologies, services/deliverables, reporting/regulatory frameworks, and cost models. Leadership teams can now exploit the original vision expressed by GE's definition of the digital twin – *"by better understanding, predicting and optimizing performance to achieve improved business outcomes.[5]"*

[1] Grieves, M., Virtually Intelligent Product Systems: Digital and Physical Twins, in Complex Systems Engineering: Theory and Practice, S. Flumerfelt, et al., Editors. 2019, American Institute of Aeronautics and Astronautics. p. 175-200.

[2] Grieves, M., Digital Twin: Manufacturing Excellence through Virtual Factory Replication, in Research Gate, 2015.

[3] "Digital Twin: Digitize Assets and Processes to Enable Better Industrial Outcomes." GE Digital. General Electric, n.d. https://www.ge.com/digital/applications/digital-twin.

[4] Statistics Canada, 2017 & Dun & Bradstreet, Management Consulting Industry Profile, 2019

[5] "Digital Twin: Digitize Assets and Processes to Enable Better Industrial Outcomes." GE Digital. General Electric, n.d. https://www.ge.com/digital/applications/digital-twin.

ANALYZING PROBLEMS AND TESTING SOLUTIONS FASTER AND MORE COMPREHENSIVELY

The enterprise digital twin is a highly detailed picture of a business's current operations and how the business functions to generate profit. Executives who leverage the digital twin create a digital landscape of their business operations to better visualize how varying elements interact to generate value. Furthermore, businesses who have a detailed digital landscape of their current business operations can analyze a vast array of business problems and design improvements for rapid implementation within their future business operations.

For example, one of the biggest optimization challenges in business-to-consumer (B2C) industries such as financial services and aerospace, is ensuring tight alignment between their customer journey and how the business operations deliver value to the client. When the customer journey and the business operations are misaligned, it typically generates customer dissatisfaction. The most common approach when attempting to solve these types of problems starts with the specific client journey issue, then working backwards into the organizational and process structure.

Executives who leverage an enterprise digital twin will have at their fingertips, a clear visualization of how the client journey is supported by their current business operations (processes, human capital detail, supporting technologies, services/deliverables, reporting/regulatory frameworks and cost models). When client journey issues occur, managers can more rapidly assess the specific problem and test future improvements that support their client journey within the digital twin, before expending resources and making physical changes, while avoiding the creation of new problems elsewhere within their future business operations.

EXTENDING THE POWER OF THE DIGITAL TWIN

Executives are constantly looking for ways to make better decisions. Decisions with a higher potential for success – faster. Executives who leverage enterprise digital twins have access to vast amounts of information and analysis about their current business operations. Their teams can then rapidly assign strategic criteria to better inform and guide decision making. The digital model allows leaders to be more objective in their decision making, while developing more precise, evidence-based business cases to address problems in the future.

For example, by understanding how technology supports the execution of key processes, leaders can then sort out legacy systems and patchwork applications. From there, innovative optimization opportunities, such as those offered by digital automation can be designed and implemented to improve employee productivity, better supporting the customer journey. When delivered effectively, these types of projects save time, resources and improve customer satisfaction. Unfortunately, current consulting-based methods are costly, largely manual and take enormous commitments of time. Evidence proves that in 70% of cases, traditional projects under-achieve against targets in terms of scope, budget and/or schedule[6].

Digital twin innovations allow executives to account for all current and future business operations (processes, human capital detail, supporting technologies, services/deliverables, reporting/regulatory frameworks, cost models). The digital twin provides executives with an unprecedented level of insight to help better understand cost models, and end-to-end processes to deliver phased improvement projects that add minimal disruption day-to-day business operations, while fully delivering the enhancements and associated cost benefits.

Actual projects where executives have leveraged Aligned Outcomes enterprise digital twin offerings have reported significant and specific benefits. In aerospace, an international airline completed a full operational turnaround and upgrade of their maintenance division in 2/3rds of the original project plan time. A national retailer streamlined their processes to reduce inventory across their supply chain by $100m. A small-scale industrial manufacturer was able to re-visualize the alignment between their production line and operating software to uncover and solve chronic profitability issues in just 14 days. A financial services firm streamlined their cyber-crime operations through a complex divisional merger, holding current headcount steady and mapping out >$50m of unplanned resource savings over three years.

[6] Kotter, John P. “Leading Change” Harvard Business Review Press, 2012.

WORKING ACROSS YOUR ORGANIZATION – DIGITAL TWINS HAVE ALREADY DELIVERED BUSINESS VALUE

Three Examples

In addition to supporting better decision making by providing fundamental business optimization modelling and complex transformation planning, the enterprise digital twin innovation helps executives to better tackle specific strategic challenges faced in today's current environment. Further to the actual project results outlined above, Aligned Outcomes has developed additional offerings to align with and accelerate a client's optimal adoption of the following strategic initiatives.

1. Accelerating Digital Automation

In an article published by the Harvard Business Review titled *"Before automating your companies processes, find ways to improve them"*, Thomas H. Davenport and David Brain discuss how digital automation projects can achieve better cost savings by looking at an entire process, not just the processes that are being automated[7]. Traditional Business Process Management techniques tend to only focus on the processes that are being automated making it difficult to achieve complete end-to-end problem resolution. By using the enterprise digital twin to plan future business operations, leaders can better understand the full business value generated from a digital automation project, along with what the business needs to do to prepare and execute a digital automation initiative.

Consider the following examples of digital automation. In the mining sector, low commodity pricing is forcing companies to seriously consider their business models and search for digitization opportunities. BDO Global believes that blockchain will *"become a necessity to Canadian mining companies by 2020"* because it "*has the potential to revolutionize financial services by making transactions cheaper, quicker, and more transparent and trustworthy." "Think of blockchain as a version of the Internet that can carry out various transactions but is virtually impossible to hack."*[8]

Another example is Robotic Process Automation (RPA). The financial services sector is leveraging this capability to automate repeatable white-collar tasks, freeing up valuable human capital to apply skilled people to more complex decision-making work. Within a large bank's cyber-crime management division, client file data gathering, and validation is a great application for RPA. This makes their cyber professionals more available to focus on resolving the client problem and identifying cyber-crime avoidance tactics.

[7] Davenport, Thomas H., and David Brain. "Before Automating Your Company's Processes, Find Ways to Improve Them." Harvard Business Review, June 13, 2018. https://hbr.org/2018/06/before-automating-your-companys-processes-find-ways-to-improve-them.

[8] Dewhurst, Charles. "BDO's Energy 2020 Vision: The near Future of Mining." BDO Global. BDO Global, January 2018. https://www.bdo.global/en-gb/home.

Both blockchain and RPA's are now relatively easy concepts. The resulting applications are not too difficult to build. However, implementation complexity grows when designing how blockchains and RPA's actually fit within a division's existing operating model. How does a business wire the digital automation into an existing process value chain and account for the key processes, the resulting human capital shifts while maintaining business effectiveness and regulatory compliance? By leveraging an enterprise digital twin, the business can precisely visualize how the digital automation will fit in the current state process chain, define the business case, test for effectiveness and plan an execution that will rapidly achieve the objectives.

2. Shared Services Optimization

The enterprise digital twin provides an analytical tool for executives to inspect how their business operations are functioning as a whole. Executives can now see how their human capital, that are typically divided into functional units and departments, are working together to support the value delivered to customers. Often, large enterprise organizations leverage a shared service infrastructure to optimize service delivery and reduce costs. Shared services groups can now access a deep view of a department's operations to find new opportunities that deliver value and align tightly with their shared objectives.

Executives who lead departments leveraging shared services can often find engaging with these shared services groups difficult when trying to solve problems or uncover future opportunities. Building a guiding coalition amongst leaders for a major inter-departmental project with full buy-in, support and prioritization can be challenging when departmental leaders need to justify why their project should be a priority. Especially when the shared service team may be focused elsewhere within the larger enterprise. Departmental leaders can become better customers of shared services by leveraging the digital twin to pinpoint the exact pain points within their operation. Departmental leaders can approach shared service leaders with visual requests of what they would like to achieve and collaborate with both areas to determine the best solution moving forward.

[9] Kell, Georg. "Five Trends That Show Corporate Responsibility Is Here to Stay." The Guardian. Guardian News and Media, August 13, 2014. https://www.theguardian.com/sustainable-business/blog/five-trends-corporate-social-responsbility-global-movement.

[10] Robert Eccles, Ioannis Ioannou. "Is Sustainability the Key to Corporate Success?" The Guardian. Guardian News and Media, January 6, 2012. https://www.theguardian.com/sustainable-business/sustainability-key-corporate-success.

3. Evidence Based Regulatory Compliance

The digital twin has been proven to be very efficient in helping companies design, implement, maintain and demonstrate compliance to regulators. The digital twin provides an evidence-based picture of how the company's business operations are compliant. Working with regulators can be difficult when their inquiries span multiple functions across a business operation.

Demonstrating to a regulator that a business operation is fully compliant can take weeks when trying to build artifacts from scratch. Often the business must prove that their processes, human capital, training, supporting technology and reporting are in full alignment to validate compliance. An enterprise digital twin enables executives to generate a picture of a specific process and its supporting resources at an appropriate level of detail in a matter of minutes instead of weeks. Moreover, the business can more easily adapt and plan the future of its business operations as regulatory demands change.

Evolving stakeholder expectations are now placing increased value on sustainability. Environmental, Social and Governance (ESG) are three factors that potential investors are assessing when considering future financial performance. A *"company's long-term financial success goes hand-in-hand with its record on social responsibility, environmental stewardship and corporate ethics."*[9] Multiple studies have proven that *"companies that manage their environmental and social performance have superior financial performance and actually create more value for their shareholders."*[10] ESG rating agencies are beginning to compare companies to one another based on generating an overall rating. By leveraging an Enterprise Digital Twin, executives can assure that their business operations are fully aligned with the ESG rating stated within their annual report, thus attracting new potential investors.

BENEFITS FROM USING DIGITAL TWINS

Across the diverse digital twin projects Aligned Outcomes has implemented, we have learned a lot and understand the critical success factors that enable organizations to get the most benefits out of their digital twins.

Executives and management teams can now analyze problems and test potential solutions by leveraging the digital twin to better visualize their current and future business operations.

Executives we have worked with have experienced the following benefits by leveraging the enterprise digital twin:

1. Full visualization of their business operations that enables evidence-based observation, analysis and iterative problem solving.
2. Rapid digital twin creation with insight into current and future business operations.
3. Costed business models that are planned, tested and business-cased before approving project funding.
4. Clear execution plans that are cost effective, delivered on schedule, and won't disrupt the business.

Management teams have experienced the following benefits by leveraging the enterprise digital twin and associated methodology:

1. Subject matter experts are fully engaged and can now visualize, test and iteratively plan their ideas in the digital twin. They experience seeing their fresh ideas considered, tested and possibly implemented.
2. Gain access to a platform that minimizes the necessity for constant data entry, with a tightly managed workflow.
3. Teams are engaged across the business operation and can now work collaboratively across divisional boundaries to co-visualize and test solutions that can be delivered on schedule.
4. Management team's observations are now fully evidence based, tested, and iterated with executive stakeholders.

ALIGNED OUTCOMES ARE SUCCESSFUL OUTCOMES

Lessons From The Real World Of Enterprise Digital Twins

Aligned Outcomes has worked over the past ten years with executive leaders and their teams from companies of all sizes to bring the power of the digital twin to their current and future business operations. By leveraging client-directed application development, Aligned Outcomes' innovative platform, now in Version 3.1, has emerged, featuring tightly managed workflow and fully integrated data management. Aligned Outcomes' methodology is team oriented (Team Enabled Transformation©) and enables a company's subject matter experts to fully visualize, test and iteratively plan their ideas within the digital twin (Integrated Operating Model©). The digital twin has brought significant competitive advantages to all industry sectors and has been proven to support major business challenges that include process optimization, functional alignment, digital automation, regulatory compliance, acquisition integration and right-sizing.

Aligned Outcomes' offerings provide the tools and methods that enable an executive team to adopt the Enterprise Digital Twin approach within their organization. Ultimately, a client's own subject matter experts can engage on all transformation projects, developing competitive advantage capabilities in-house. Experts from Aligned Outcomes are available to support a client in the following ways:

1. Introduce the client to the Platform and Method by leveraging AO's experts and equipment. Typically, this is ideal for a first project. AO works closely with the client, creating a joint AO/Client project team.
2. Going forward, clients might decide to rapidly adopt the Enterprise Digital Twin approach within their firm. In this case, AO provides a proven training program enabling subject matter experts to fully utilize the platform.
3. In support of this approach, the AO platform can be accessed via AO's cloud software as a service offering. The platform is also available for licensing and installation behind the client's firewall.
4. Alternatively, select clients choose to leverage AO's experts and tools on an ad hoc basis, bringing the AO team in periodically to execute narrowly defined transformation projects.

Through experience with Aligned Outcomes, clients have learned many practical Enterprise Digital Twin (EDT) execution lessons:

- EDT projects are not that hard. They take less time than you think from concept through to completed roadmap. Small projects approximately two weeks; larger projects six weeks.
- Selecting and setting up the project leaders, their mandate and the authority of the steering team is critical. EDT projects generate a high level of enterprise transparency so require commitment to stay the course with leadership oversight and clear communication.

- EDT projects have been effective across a very wide range of business improvement project types. Any optimization idea that could benefit from deep insight, visualization and analysis can leverage this approach.
- Shared services departments love EDT's. They provide costed roadmaps and clear organizational change control.
- Implementing an EDT is faster, cheaper and more agile than implementing an ERP. Often the EDT is leveraged to improve the performance of a new ERP project or optimize a mature ERP implementation.
- These projects are evolutionary, typically this leads to reconfiguring the resources you have; far less disruptive than more revolutionary approaches which result in removing people and/or changing technology and assets.
- EDT projects do not require complex pre-integration into current systems. While the digital twin leverages existing information and models, projects start fast and can on-ramp easily into existing initiatives. This launch speed is created through a series of structured interviews with subject matter experts which are loaded for analysis and modeling in the digital twin database.
- The most effective EDT projects begin within the pure "wiring" of business process across an enterprise. Once the "wiring diagram" is validated with facts, the more opinion-oriented human resource details and technology elements are added to the model.
- Project leaders typically start with a single process or department for a quick win. This approach builds a stronger team as the project moves towards completing its overall objectives.
- After your team masters small projects, they are ready to scale up to larger ones; the steps and success factors are the same. It typically will take 3 projects to develop the organizational habits and muscle to make EDT's part of the company.
- The methods that support EDT's are easily taught and adapted with your organization.
- The transitional roadmaps supplied by an EDT cuts implementation time and cost by 40 to 60%.
- Consider implementing bonuses or success fees for EDT's. The extra motivation adds purpose and energy and is more than compensated by the ROI of a successfully completed project.


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