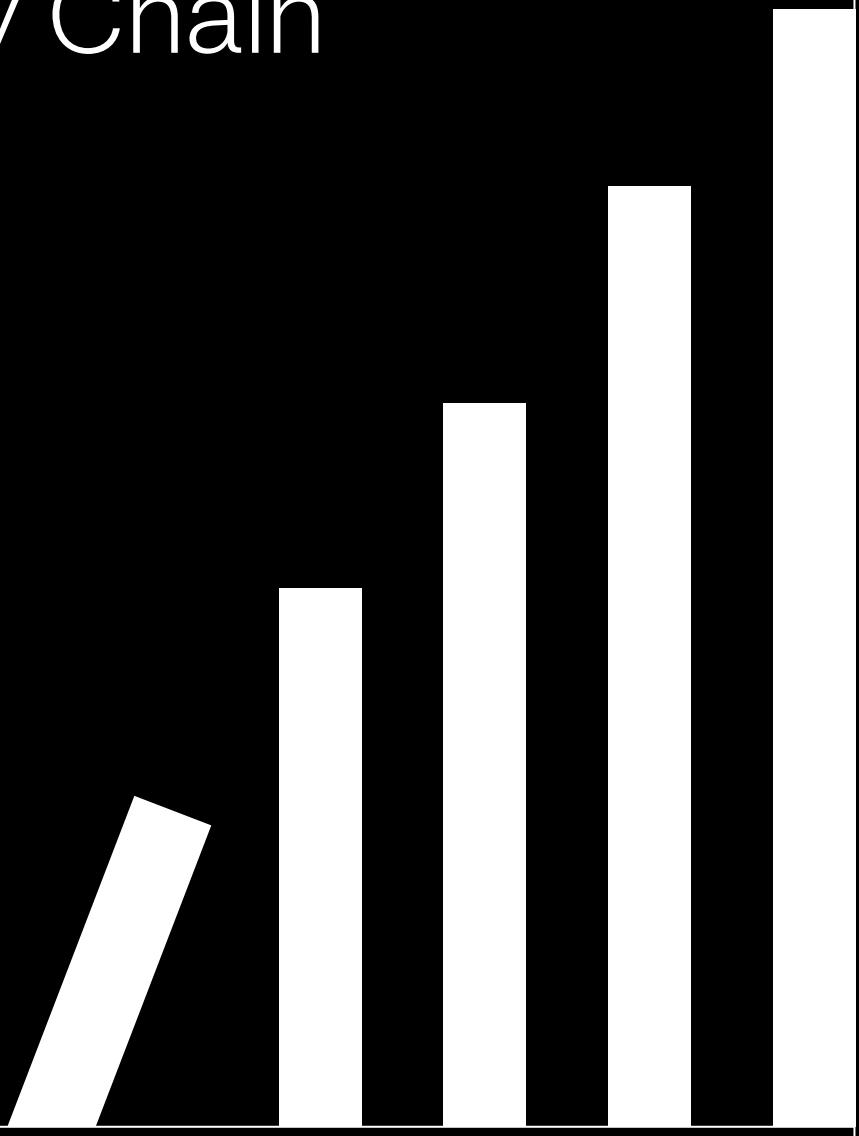
Project Zebra

Building Outside-in Processes: a Charter For Supply Chain Leaders



A call to action for Business Leaders to define and activate outside-in processes to drive more value and mitigate risks in supply chain management.

Table of Contents

The Call to Action

Today's supply chain processes are inside-out and functional. While demand and supply volatility is increasing, organizations and processes respond but struggle to sense. The dilemma? The number and capabilities of sensors and analytics are growing, but there is no way to adapt existing processes to sense and quickly respond. As a result, only 1/3 of business leaders are satisfied with the status quo.

Meanwhile, within the industry, there is a step-change in technology capabilities. New forms of analytics, the abundance of data coupled with the lower cost, and improved sensor capabilities offer promise. Still, the question is how to use new forms of data best and unleash value. The answer is a redesign of supply chain processes by business leaders.

o9 wants to help the industry by funding a think-tank initiative to ideate and align supply chain thought leaders globally on the definitions and potential market opportunity for outside-in processes. The goal is to empower a group of diverse supply chain leaders through a joint task force. The group is open and independent based on discussions by volunteers. The goal is to make the final work product from the group open source content for the industry. A working title for this group is building a **Project Zebra**.

"The study of supply chain management is not black and white."

Just as each zebra is unique, each supply chain is different. Can a zebra change its stripes? At first, the scientific community said no, but now there is a belief that some zebras change their stripes as they move to warmer climates. In project zebra, we are testing to see if we, together, can design a different and better supply chain process that starts with the market and translates demand with minimal latency and bullwhip effect.

The initial work of Project Zebra is funded by *o9* in an effort to drive supply chain improvement. The development of the outside-in processes through the work of the group will become an open source shared model to help the industry.

Defining the Market-Driven Knowledge Graph

The market-driven knowledge graph is a business process model to describe an outside-in supply chain. The goal is to use the work of the group to code the graph in software to make the work of supply chain leaders easier. For example, Sales and Operations Planning (S&OP) decision making is a potential use case.

What is a graph database? Using the Wikipedia definition, a "graph database is a type of NoSQL database created to address the limitations of relational models". While the graph model explicitly lays out the dependencies between nodes of data, the relational model and other NoSQL database models link the data by implicit connections. While data in a relational databases are hierarchical, data in a graph database are labeled, directed, and given properties. This is compared to relational approaches where these relationships are implied and reified at run-time."

The Market-Driven Knowledge Graph starts with the market or channel and establishes bi-directional relationships market-to-market. Examples are visible on the following page.

Channel	Enterprise	Suppliers
What is baseline demand? How do I shape demand? What is the impact of demand shifting on cost and inventory? How do assortment changes affect growth targets? What are the market drivers? How do I test and learn cross-channel?	How do I tie business strategy to operational processes? — margin — customer priorities — inventory targets? — customer service? — functional targets Why am I shorting orders? What is the right inventory buffer strategy based on COV? What is the right design of the inventory's form and function based on market shifts and demand and supply variability? How are we managing buffer versus waste in inventory management? What are the issues in supply reliability? How good was the S&OP plan? How do we tie S&OP playbooks to operational effectiveness? How effective are my planning processes?	How do we get the best signals to suppliers? Where are we on driving reliability with suppliers? Quality? What is the impact on corporate sustainability? What is the bullwhip effect of each stage of the supply chain?

What Is An Outside-in Process?

An outside-in process is a departure from inside-out thinking — or the historic definitions — of supply chain management. An outside-in process is a step-change in thinking requiring a redesign. As a result, traditional inside-out processes cannot be converted or evolved to be outside-in.

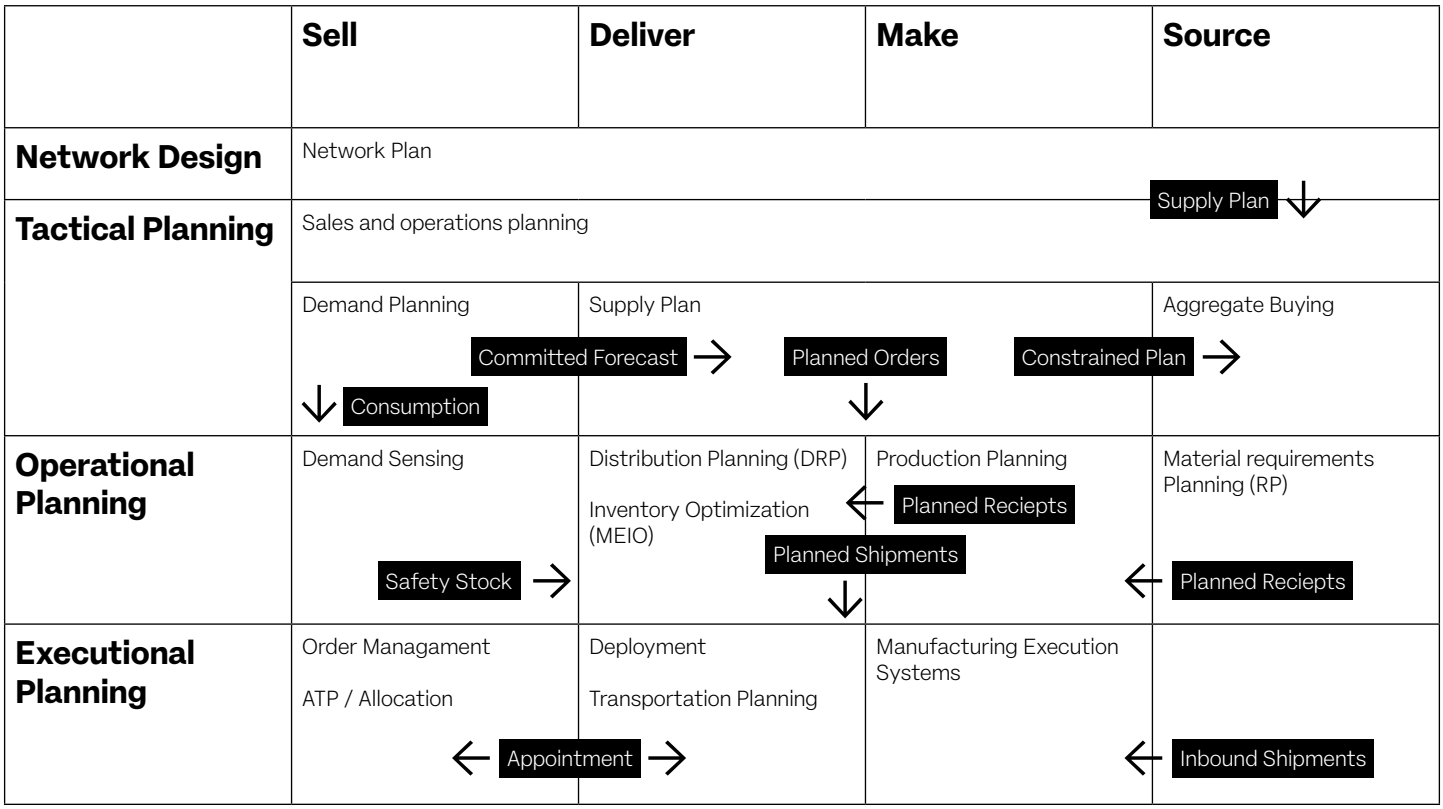
The start of an outside-in process is sensor or market data. Examples include, but are not limited to, weather patterns, geolocation data, rating and review feedback, consumption analysis, pallet and truck sensors, and smart devices. The focus is to improve reliability for a moment of truth: in-stock%, order fill rate, on-time delivery, schedule adherence, forecast-value added, first-pass yield, total costs, inventory effectiveness, or reduction of the bullwhip impact. The goal is to drive insights and align/synchronize make, source, and deliver from the market (buyer) to market (supplier) bidirectionally.

Potential process definitions include baseline forecast alignment, continual COV analysis/ inventory alignment, listening posts, middle-mile orchestration, test and learn, adaptive ETA, and demand orchestration. Each of these examples requires definition and testing.

Current examples of outside-in processes are Vendor Managed Inventory (VMI) and Just in Time (JIT). While these processes are more than a decade old, they are dead-in streets in today's IT architecture. How so? These processes do not connect to supply chain planning as a market signal. Instead, they operate in isolation translating demand requirements into order signals.

As outlined in Figure 2, historic planning processes use order patterns as a demand signal and translate demand into planned orders while managing materials and production capacity as a constraint.

Figure 2. Current Planning Processes



In contrast, in Figure 3, we show some potential outside-in processes.

Figure 3. Potential Outside-in Planning Processes

Market	**To**				**Market**
Buyers	Sell	Deliver	Make	Source	Suppliers
— Sensors — Weather — Price — Consumption — Contracts — Competition	Baseline Sensing	Continual Network Alignment	Contract Manufacturing Synchronization	Demand Orchestration	— Sensors — Weather — Price — Consumption/ Availability — Schedule Shifts — Constraints
	Shaping/Shifting Barometer	Middle Mile Orchestration	Adaptive Maunfacturing	Warranty / Quality Sensing	
	Listening	Adapable ETA	Form / Function Inventory Alignment	Supplier Development	
	Test and learn	Lifecycle	Playbook	Multi-tier Shipment Status and Prescriptive Alerting	
	Price Management	Bullwhip Meter Quality of Execution: Plan Compliance			
Moments of Truth					
— In-stock — Availability to commitment	Margin Growth	Order Fill Rate Effective ETA Manufacturing Reliability: First pass yield and schedule adherence			

What Is An Outside-in Process?

Initiative Details

This document's design is to charter an initiative: a group of industry volunteers focused on improving supply chain processes. Small teams of seven-to-nine leaders work on a process definition simultaneously in virtual structured teams through the process. The group will ideate and define how these outside-in processes aggregate to unleash value—the smaller groups will check-in with the larger group monthly for feedback.

In this process, group formation is always critical. To aid in the kick-off of the work, we suggest using these founding principles.

— Process Redefinition. Current definitions are enterprise-centric and inside-out. The business opportunity is multi-tier and outside-in. A paradigm shift in supply chain thinking is needed to reduce waste and improve corporate social responsibility goals. With over 95% of companies stuck at the intersection of growth, inventory turns, and operating margin, the opportunity is to seize new opportunities between industry players to build value chains.

— Focus. The group will focus on the bi-directional definition of processes from the customer's customer to its suppliers' supplier. These processes cross over multiple companies and functions within an enterprise and are starkly different than traditional approaches.

— Open. The sessions are open discussions. The group's work will be facilitated and managed by a program manager funded by *o9*.

— Content Sharing. Intellectual property built as a part of the initiative is shared using the principles of open content sharing. Active sharing through webinars, educational sharing, and written content will follow the work's conclusion.

— Definition of Data Portability and Interoperability. The group will focus on the building of value networks. One of the barriers to the development of B2B processes is confusion between integration and interoperability. Here the group's focus is on data portability and agreement on master data elements. The group's work includes the definition of authoritative and proxy identifiers and the building of a planning master data layer.

— Outcomes. In this process, the group will define metrics and reward systems for the organization to redefine success. Through testing, the effort will quantify the results of outside-in business processes for the business leader.

— Testing. The rise and shifts of new technologies give rise to new opportunities. Examples of new technologies include machine learning, cognitive analytics, blockchain, and cognitive computing. In this effort, technologists and business leaders work together as equals to define new processes, test new technology approaches, and determine the potential impact of outside-in processes for the industry.

Market Opportunity

The redefinition of outside-in processes makes many solutions legacy and opens up a new opportunity for early adopters. This work focuses on a broader definition of decision support and capturing the unique market opportunity.

— Unleashing the Art of the Possible. Redefining Market Potential. The market potential for providers of planning technologies is the redefinition of decision support. While planning is a set of functional applications with acronyms like APS (Advanced Planning Solutions), CRM (Customer Relationship Management), SRM (Supplier Relationship Management), and TPO (Trade Promotion Optimization), the new world of outside-in decision support makes these solutions obsolete. The goal is a more comprehensive solution that senses and translates channel sales to give recommendations market-to-market (channel to sourcing with bi-directional orchestration).

— Limitations in Current Technology. Today's planning applications focus on optimization to drive better answers. The problem is that it is impossible to optimize randomness. With the rise in variability on both the supply and demand side of operations, business leaders struggle with the current systems' fit. As a result, there is a need for better and deeper math to improve outcomes.

— Functional Definitions. Today's leaders are seeking cross-functional solutions that are less functional and more adaptable. The problem? As organizations change and people move in and out of jobs, the initial solutions cannot evolve. With employee turnover, they deteriorate. Consequently, 90% of forecasting solutions degrade the demand signal. Many organizations would be better off to use the prior month sales (naive forecast) as a signal than the output from most systems.

Value For Business Leaders

The primary value for outside-in processes is to align the supply chain response with markets with minimal latency. Decreasing the time to sense and more accurately translating market requirements to the overarching supply chain response will:

— Improve the Time to Respond. Reduce the time to sense market shifts by 85% and enable the adaptive enterprise. Early results indicate a potential improvement of 25-30% inventory reduction and a 5-7% asset improvement by better aligning manufacturing assets with demand.

— Align the Organization to Drive Growth. Drive growth by improving order fill rates and providing visibility of market opportunities. The magnitude of the opportunity requires testing, but initial results support a 5-10% improvement in line-order fill rates.

— Minimize Customer Service Failures. Improve service with downstream partners. In the consumer products industry, the potential is to reduce shipping deductions by 65%. Today, the average manufacturer is spending 12M in fines to North American retailers.

Goals

The group's goal is to provide an environment for industry sharing, learning, and testing of outside-in capabilities. With the testing of new approaches, the respective ROI will be shared with the industry to spark new approaches.

Boundaries

As with all group dynamics, individuals attending the sessions come from different points of view and backgrounds. We don't know the answer, but together the group will create a new way of thinking about how analytics and sensing can redefine decision support. Diversity is encouraged, but there are all boundaries.

— No Selling. The group is not a selling environment for technology or services. While initially kicked-off by o9, the work product will become open source content for the market.

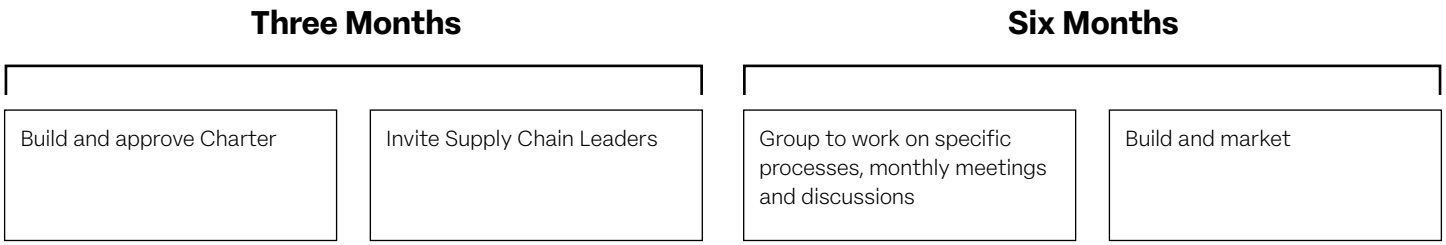
— Innovation. Ideation. It is an appropriate venue for thought leaders to share opinions and visions. However, no one contributor should dominate the conversation. The work by design is collaborative.

— Open Sharing. The group's efforts will be given to the broader community through open-source.

— Cross-Industry. Each industry and value chain has stark differences. The initial work will focus on outside-in process flows that are industry and value chain agnostic.

Working Groups

Within the effort, work moves through voluntary working groups. An impartial industry expert will facilitate these. The goal of these working groups is to test new approaches and technologies. This group's overarching goal is to publish results to help the industry understand the relative return on investment (value).



Initially, the group will work on two work teams—one focused on demand and one targeting supply processes. Each subgroup will define outside-in processes for their focused area.

Roles

o9 contributors. *o9* to provide two facilitators and a program manager. Each of the facilitators is assigned to a workgroup. The facilitators' goal is to take notes, and then scribe process flows with a visual facilitator. The graphic facilitator is hired as a contract employee by *o9* and will take a visual record of each discussion. Each session is recorded. At the end of the session, the collection of visual captures are to be compiled in a book, "Building the Market-Driven Knowledge Graph." Each participant's viewpoint is captured via zoom or another reference media, at the beginning of the work, during two checkpoints in the middle of the process at the end. The video footage will be consolidated into a small production on "The Quest to Build Outside-in Processes." The *o9* employees will coordinate the archiving and conduct continual check-ins with the participants.

Working Groups

Under direction by Lora, the Coach/Provocateur: Lora Cecere, Founder of Supply Chain Insights, Lora, serves as a coach and provocateur for the group. She will kick-off the sub-groups, educate and align the teams on the work plan, and work with each group to facilitate a work product. A successful outcome is for the group to define Level 1, 2, and 3 process flows for a Market-Driven Knowledge Graph. The knowledge graph's design is to embed the process definition into advanced analytics to streamline process improvement.

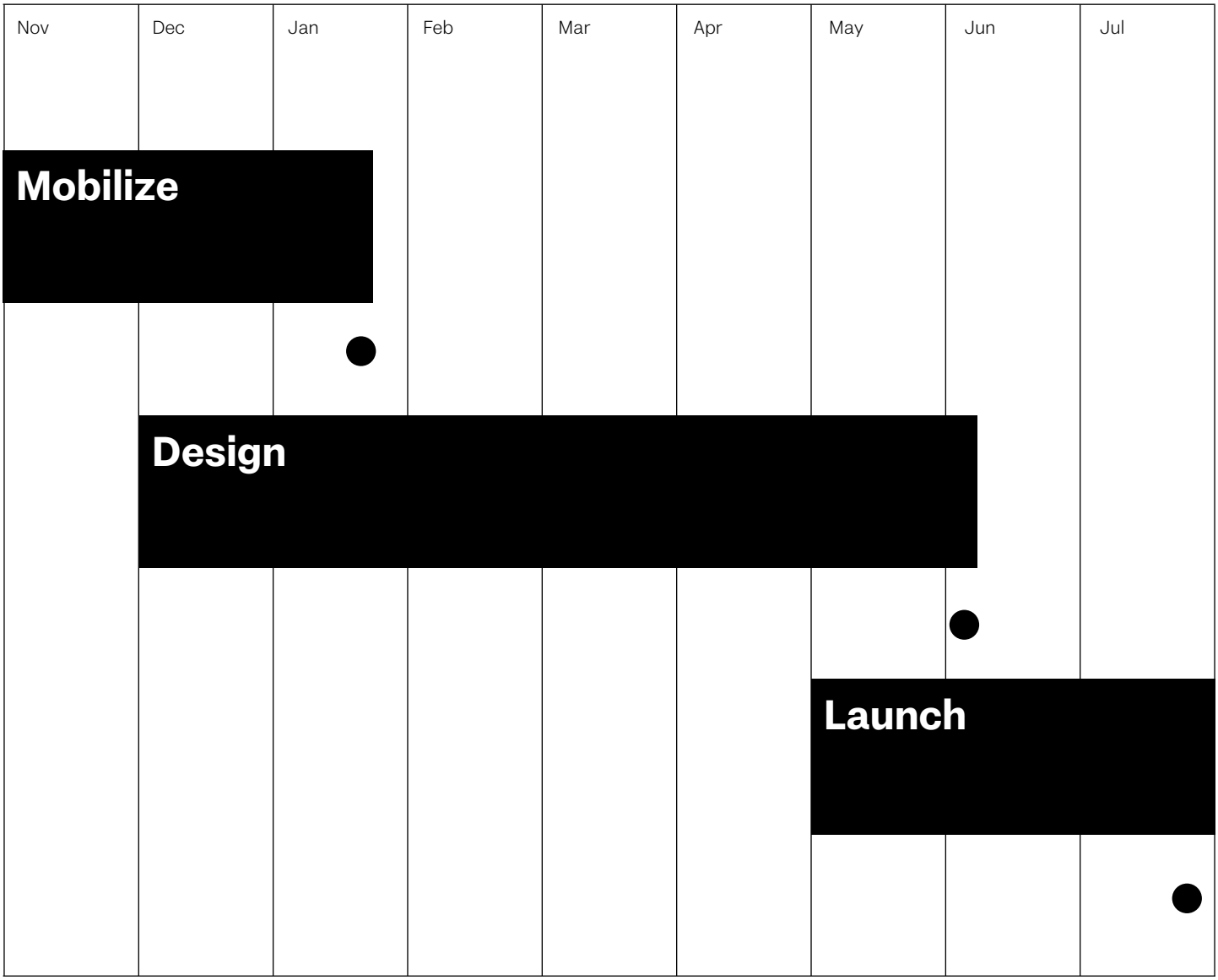
— Demand: The demand team comprises 5-8 business leaders, an academic contributor, and a thought leader.

— Supply: The supply team comprises 5-6 business leaders, an academic contributor, and a thought leader.

The first six months of work will define and package the level 1–3 processes, while the second six months will test the concepts and then launch the industry usage model. In Table 4, we share a possible timeline for the first six months of work.

Timeline

Figure 4. Suggested Timeline



Meet the Team

Fred Baumann is the Vice President Industry Strategy at o9 Solutions. Fred has responsibility for o9's industry strategy for the Americas. Fred's prior career experience includes IBM, JDA, and The Pillsbury Company (Now General Mills). He received his undergraduate degree at Georgia State University and an MBA with distinction from the University of Arkansas, Sam M. Walton School of Business where he had a core focus in supply chain management. Fred was an advisory board member of the Collaborative Planning, Forecasting and Replenishment (CPFR) VICS and GS1 industry subcommittee. Fred is a facilitator of the demand group and a key member of the Project Zebra team.

Lora Cecere (Twitter ID @lcecere) is the Founder of Supply Chain Insights LLC and is the author of the popular enterprise software blog Supply Chain Shaman currently read by over 320,000 supply chain professionals. She writes as a Linkedin Influencer and is a contributor for Forbes. Lora is an author of ten books, including Bricks Matter in 2012 and Metrics that Matter in 2014. In her spare time, you will find Lora gardening, quilting or working on her next book. She is a coach and facilitator for Project Zebra.

Tanguy Caillet is VP Global Industry Solutions for Manufacturing at o9 Solutions. After 20 years Supply Chain consulting, with a keen interest in Planning and Technology topics, and leading the EY Global SC Planning, he decided to take an opportunity in the Natural Ingredient industry as SVP Group Supply Chain in 2019. That experience reinforced his beliefs that Technology, today and tomorrow, is and will be a strong enabler to new ways to plan and take decisions in businesses. That's why he moved to o9, as a believer that a leading solution can truly change the way we run companies. In his spare time, Tanguy's is playing squash with his 2 kids, gardening, cooking or playing piano. He is a facilitator and key member of the Zebra Project.

Meet the Team

Lukasz Zieba is *o9*'s Client Partner working with the EMEA team. Lukasz is from Poland and lives in Warsaw. He studied Quantitative Methods in Economy and for the last 13 years has been developing and deploying global supply chain platforms for Procter & Gamble. His focus areas are: value engineering and data centric supply chains. Lukasz is also a project manager of project Zebra making sure that contributors and facilitators can spend time on productive design work, and that outcome gets successfully shared with the broader community.Privately, Lukasz is father of two: boy and a girl and spends any free time he has with them.

Igor Rikalo is President and COO of *o9* Solutions, responsible for daily operations of the company across all regions and for scaling its business by working alongside some of the world's smartest minds.

Prior to this, Igor performed variety of customer facing roles at i2 Technologies. i2 is often cited as the thought leader in supply chain management and credited with creating more value for clients via supply chain planning than any other solution provider. Igor's educational background include graduate degrees in Electrical Engineering and Master of Business Administration from Texas A&M University.

Success

We define success as releasing a set of educational materials to unleash new market potential by June 2021. Ideally, this initial work will be followed by a series of tests to confirm the value propositions.

The work product is analogous to the SCOR framework but represents a Market-Driven Knowledge Graph set of flows using the Art of the Possible.