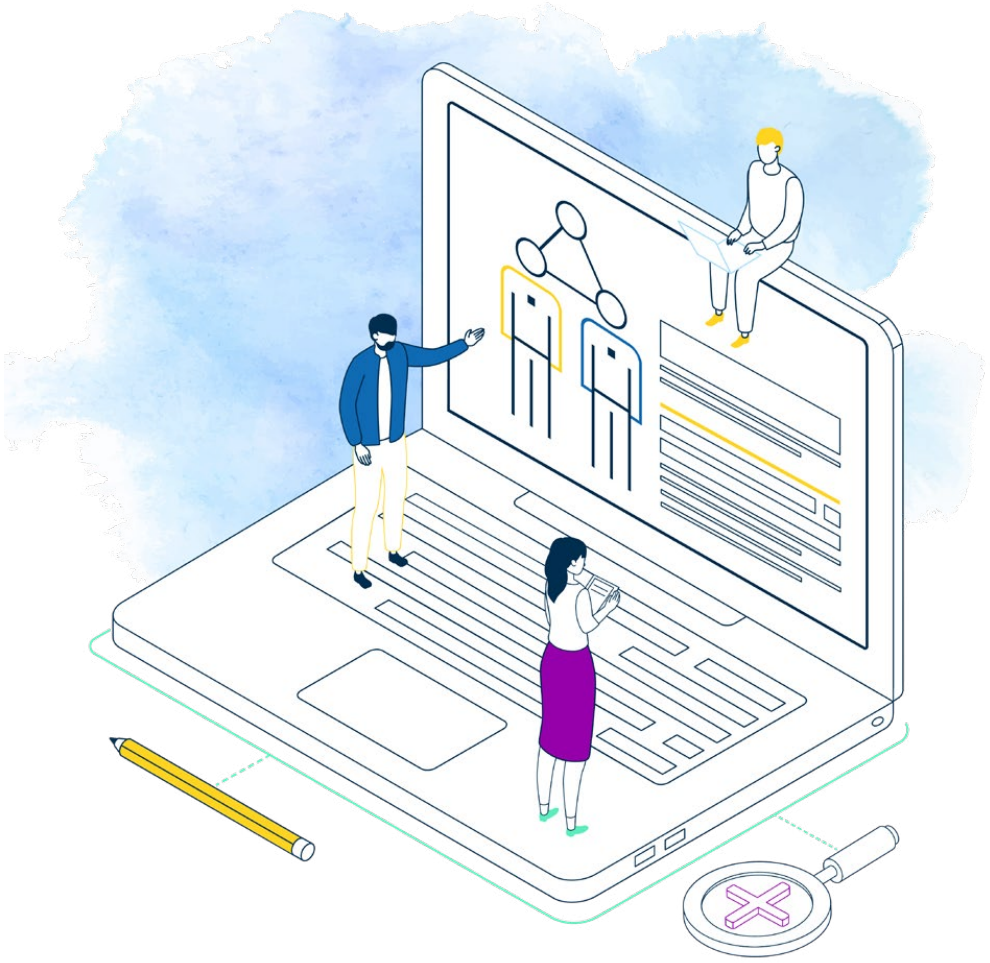
ADEXA Predict, not just response

Digitalization of Supply Chain: Next Stage

A plan is not a plan unless it can be accurately and optimally executed!



Planners spend too much time trying to manually figure out what to do outside of their supply chain planning system, because the systems they use cannot handle the required detail. There are three days a month spent on higher level S&OP plan looking out over the next 12 months, and the other 17 or 18 days are spent on trying to get the rubber to hit the road. If a planning system does not have the ability to handle the detail, then it does not have a good foundation for helping planners every day of the month. Gartner describes this need with their Five Stages of Maturity in Supply Chain Planning Technology.

Most companies are currently looking to get to what Gartner refers to Stage 3 of supply chain planning. That is having the capability of System of Records (SoR) for their planning environment. SoR implies a unified system for planners which is mainly horizontal across the supply chain. Although Stage 3, or SoR, is very important but it lends itself to a lot of manual planning and intervention by the planners in addition to scenario and what-if analysis. This is not a very productive use of planners' time and skill set. Furthermore, given the exponentially large number of options and scenarios, it is almost impossible to have a dependable plan let alone an optimal plan. To help planners, SoR systems need to be fast to respond. However, most vendors oversimplify the model of the supply chain in order to get quick answers at the cost of inaccurate plans. The latter results in much manual intervention by the planners and even worse it is not a plan that can be executed. Hence, taking away productivity from the execution side of the business. This lack of smooth transition between planning and execution is typically because S&OP systems lack proper modeling to allow for execution, what is referred to as Sales and Operation Execution (S&OE). The modeling of almost all S&OP systems is fundamentally the same as spreadsheet planning, i.e. fixed lead times, bucketed capacities and pre-defined bottleneck resources, all of which are false assumptions.

Although Stage 3 can be beneficial, but once it is implemented, the need for Stage 4 becomes even more desirable. It is imperative that systems that are deployed for S&OP are capable enough to take the supply chain to stages 4 (Systems of Differentiation) and 5 (Systems of Innovation); or else multiple systems will have to be deployed for S&OE capability. Stages 4 and 5 depict accurate analytics, no touch decisions and automation of planning process. This is what is known as Digitization of supply chain the basic components of which are model accuracy and configurability.

Digitization of supply chain is a lot more than just collaboration, scenario analysis and Visibility. Digitization brings together disruptive technologies such as machine learning, big data analysis, artificial intelligence (clever search algorithms) to generate plans that are accurate, reliable, automated and improve by usage-Hence intelligent systems. The digitized supply chain delivers accurate plans without much input from the users, reduces cost, minimizes potential risk to the supply chain, improves productivity (usage of resources at high level and execution level) as well as responds to unexpected events while executing the plan.

In order to keep the accuracy of the model the system has to be configurable as supply chains change all the time. Adexa provides a flexible way to mold the system into the planning environment through the use of Attribute-based planning (ABP). ABP enables the users to define any attribute or property as a constraint that can be used to search for the optimal plan. Suppliers, subcontractors, equipment, materials, orders, even customers have attributes that need to be accounted for every time a plan is made. In the absence of attributes number of SKU's would increase excessively, the search time would grow exponentially, and plans will have to be manually adjusted. All of which reduce usability of the plans, i.e. quality of the plan and time needed to produce the plan.Automation of planning in stage 4, offers repeatable and optimal plans that are fit enough to be executed every time. To this end, one can perform order level pegging, planning and scheduling, precision ATP/CTP, optimal utilization of resources, causal analysis, minimal inventory for the right level of customer service and accurate financial and operations predictive analytics. Examples of these are pharmaceutical companies, defense contractors, semiconductor fabrication lines, apparel manufacturers, amongst others, that have come to Adexa specifically to address their accuracy of plans and their adequacy for execution.

Combining S&OP with S&OE in a unified data model is a unique feature of Adexa solutions. It implies one point of integration with ERP and PLM. It also implies that using abstraction, planners can operate at any level of detail going from very high level network planning and supply planning all the way down to resource level planning and even sequencing of resources as well as ATP/CTP capability. Thus, planning, predicting risk, responding to changes, tracking the plan and reacting to events that cause changes in the plan automatically.

In summary, a “good enough” plan may be good enough just for a short time. A good-enough-plan is not optimal causing suboptimal performance and financial losses that go undetected. It also limits one’s ability to go to stages 4 and 5. It is a constant drain on planners’ productivity since it requires a lot of time spent by planners to make manual adjustments to the plan as well as spend more time trying to execute and tackle unexpected problems that are inevitable in any supply chain.Adexa’s use of AI algorithms results in optimal answers much faster than the conventional search algorithms.

Adexa deploys in-memory search algorithms such as Gradient Descent and Constraint Propagation to arrive at a decision in fraction of the time needed by its competitors. It is best to conclude this paper with a quote from one of our clients, an executive of a global manufacturer of storage devices: “when we started using Adexa, for our main product line, the planners of these product lines went home before 5PM while others had to stay until late at night to finish their job!” Needless to say, that since then other divisions of this company have also adapted Adexa’s planning solutions! The planners of this company are now engaged in much more value-added activities than trying to simply make plan adjustments and what-if analysis. Plan accuracy matters!

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Let’s make **accurate** plans together!

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