Adexa Genie©: Introducing **Q**
Frequently asked Questions

What is Adexa Q?

Q is a distributed intelligent agent (process) that constantly runs to perform a specific set of business processes. Each **Q** is responsible for a specific task.

Some examples are collaboration with suppliers/customers, understanding their behavior, checking waste, monitoring cost, performance of resources, carbon emission, demand planning improvement, factory planning or supply chain planning. They can form avatars of the person who is charge to interact, decide and improve the physical world.

How many Qs are there?
As many as your business processes or KPIs that your organization can monitor. Examples are: track the lead-time of suppliers, availability of resources and the changes in their efficiency, correctness of safety stock levels etc.

How do they do it?
Each **Q** is capable of sensing relevant data, possessing algorithms to act on what is received and learn over time in order to detect patterns. They use a variety of AI and ML algorithms in order to learn and get better at their job. They are also capable of communicating with each other. For example, when a delivery is sensed to be late by supplier **Q** then the latter informs the planner **Q** to see if it has an impact on the promised delivery date. If so, the planner **Q** will send a message to the customer **Q** to inform the users and/or customer. They also communicate with users when they run out of options in order to learn what other options are available. For example, partial delivery might be acceptable or a call to the supplier might resolve the problem rather than automated messaging to expedite.

Q is an *avatar* of the person in charge of the business process

FAQ continued

How does Adexa deploy Qs?

Adexa's approach is based on a three-pronged methodology:

Self-Correcting the model of the supply chain (i.e. keeping the digital twin up to date as the physical changes)—this is critical for planning in a metaverse where digital and physical are merging together. The task of **Q** here is to ensure the digital representation of the physical world is as identical as possible. Examples are supplier leadtimes changing over time, set-up times changing, equipment availability being subject to seasonal variations, customer behavior of having rush orders frequently and so on.

Self-Improving the policies. Each **Q** is responsible to monitor certain KPI(s) and look for improvements. Examples are policies used in demand planning, safety stock levels, handling priorities, lowering production cost by avoiding excessive use of substitutes, avoiding weak links in the supply chain when only one supplier or supplier's supplier is available etc.

Self-Optimizing algorithms. Even **Q**s themselves can improve their own performance by examining and monitoring their own behavior when exposed to data so that much faster results are obtained and learned. For example, improving the speed of search algorithms in Gradient Descent or performing Tagged search to avoid dead-ends in a tree search type of algorithm.

What is the advantage of Q architecture?

- No decision or data latency
- System keeps improving and gets better over time
- Scalable architecture—in contrast to having a big chunk of software such as S&OP or S&OE
- Adaptable to the business. System changes as the business changes
- New constraints such as sustainability, compliance, traceability etc. can be adapted
- Cause and effect analysis
- New discoveries such as new policies in demand planning can be discovered by Q using mutation algorithms
- Decisions are made in real-time based on monitoring and observing data patterns
- Predictive and prescriptive by having a true digital twin, understanding cause and effect and therefore predicting potential issues in the future and offering solutions

Examples of Qs currently in action

- Demand planning policy improvement
- Factory respond planner and scheduler
- Safety Stock level optimizer
- Supplier behavior monitoring and collaboration
- Factory Resource availability predictor to perform probabilistic planning
- Customer ATP/CTP Responder
- Monitoring weather and regional events

Click Here to see **Q**s in action.

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