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AI Enhanced Communication and the Supply Chain
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ABSTRACT

Supply chain management is about optimizing the business's supply-side activities to maximize customer value and gain a competitive advantage in the marketplace. Information is a key asset to manage the supply chain. Next to structured information there is unstructured information used. At Gather Stars we extract information from unstructured email, IM, and voice communications, making them transparent and allowing management to optimize the entire supply chain process.

INTRODUCTION

Andy Chatha, CEO at the ARC Advisory Group states "The ultimate goal of supply chain management is to develop a supply chain that efficiently achieves the "Perfect Order" – the right goods, at the right time, to the right place, with proper invoicing,[1]"

Systems are very helpful to achieve this. In a supply chain different systems interact with each other as there are multiple parties involved and even within the same organisation different systems are used to manage different processes.

When an unexpected event happens that systems are not designed to resolve, there is an escalation to service agents who manage non-systems-controlled events or 'exceptions' in the supply chain. When the exceptions require actions from an outside party, agents need to cooperate and exchange information to manage the exception. The objective of the service agents is in line with the supply chain objectives to ensure that products will be available at the right time at the right place against lowest cost.

Diagram 1: Systems and non-systems controlled interactions in a typical supply chain

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[1] https://bit.ly/3sjEU2R
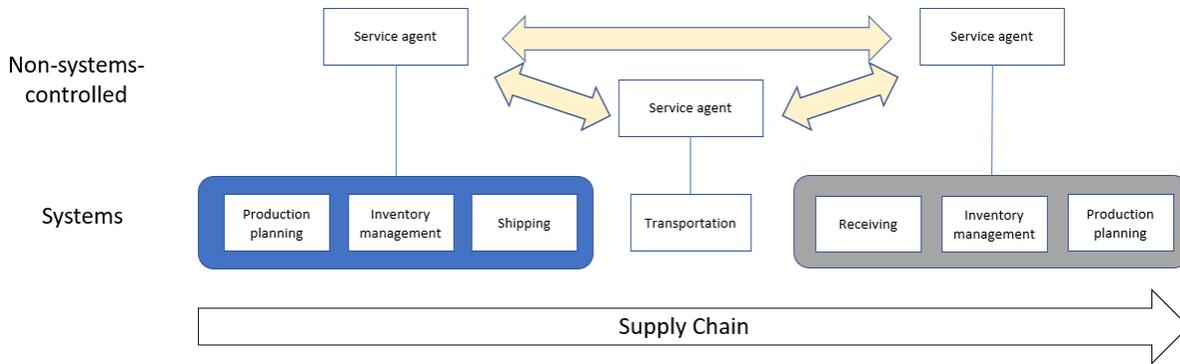
This cooperation and communication process between service agents is highly unstructured (email, phone, etc., no SOP) and therefore the efficiency (time spent) and effectiveness (result) is limited. Furthermore, the transparency to management is restricted to what the service agents report to management, too much or too little could be shared. The concern of management is that the cost involved to operate this labor intensive process is high and the impact on customer satisfaction has limited control or measurement. Since the beginning of the COVID-19 pandemic, this problem has been compounded by the impact of working-from-home.

By structuring digital information, Gather Stars AI is able to achieve critical objectives like:

1. **Prevent** lost time, lost shipments, lost orders, and lost revenue
2. **Predict** delays and escalations
3. **Recommend** actions and information to service agents that support proactive communication
4. **Improve** the supply chain process and reduce the occurence of exceptions

THE HAPPY PATH

Gather Stars software is designed to analyze, and detect problems within the entire Order to Cash workflow. This is essentially a process of exception management. We can view the Order to Cash process like this:

Diagram 2: The Order to Cash Process
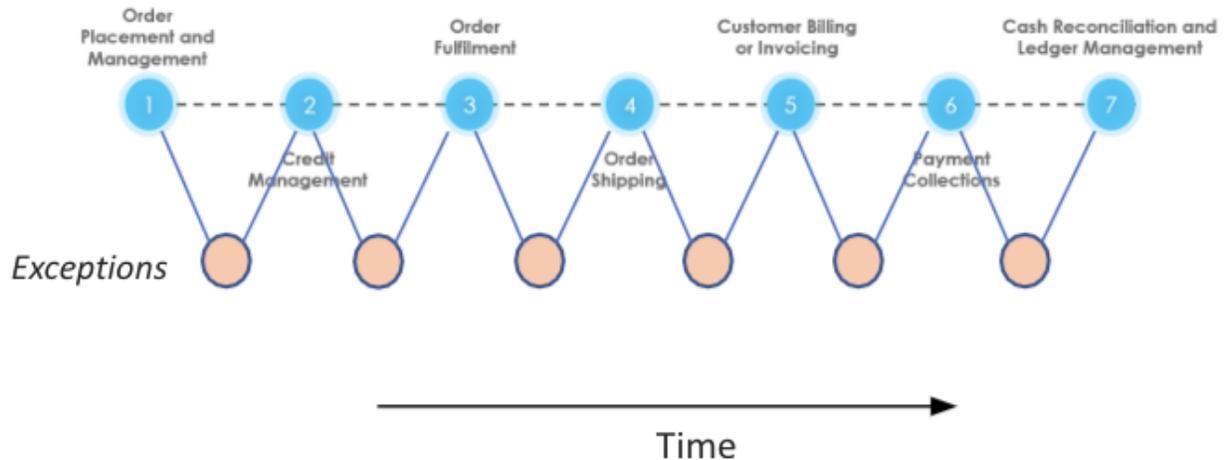
Here we call the dashed line between the blue numbered steps, the Happy Path. This is the process path that is taken when there are no exceptions at any stage. The exceptions in the process are different for each step, however the general rule is that the exceptions should be processed as fast and efficiently as possible. After an exception is dealt with, the stalled process can revert back to the happy path.

Gather Stars processes all communications associated with exception processing using machine learning based processes. The Supply Chain specific AI is trained on how to most effectively address exceptions and understand details of the exception flow within a companies specific network using graph databases, sentiment and tone analysis, etc. The AI can be trained based on specific customer needs, i.e. their existing communications and systems, to enhance its capabilities.

OUTCOME

High quality information exchange results in effective and efficient handling of events. Our analytics provide management with the data necessary to drive continuous improvement through PDCA applied to their staff. Additional tools include:

- In-mail recommendations: to improve the quality of the communication, including who to involve:
    - *Reply text including transaction information*
    - *Meetings and agendas with specific participants*
    - *Changes in tone*
    - *Modification of writing style to match corporate stylesheet*

- Alerts: to prevent out-of control escalations:
  - *Transfer to different agent*
  - *Transfer to more senior staff*
  - *Follow up with third party*
- KPI dashboard, to show the performance of the event management activities. And finally supply chain insight to help proactive management of the supply chain and the event management activities. For example:
  - How does the quality of communication of individual agents develop over time?
  - What is the quality level of each service agent?
  - How many cases are handled by the service agent?
  - How many additional people need to be involved to solve an exception?
  - What is the trend for different types of exceptions?
- Exceptions summary: management summary of email strings