



# Developing Long Term Relations in the Supply of Barley

## A case study of Coors Brewers and Frontier Agriculture

During 2004, Coors and Frontier Agriculture introduced an industry-leading supply agreement. Coors is one of the leading beer producers in the UK and Frontier Agriculture is a leading UK agri-food business which supplies Coors with malting barley. Both companies have participated in a Value Chain Analysis project run by the Food Chain Centre on behalf of the Cereals Industry Forum.

As a result of the project, the two companies have deepened their working relationship. Their supply agreement has been put onto a longer-term, secure footing. Our methodology has demonstrated the potential that can be realised through a partnership approach. As a result, a number of initiatives are being promoted:

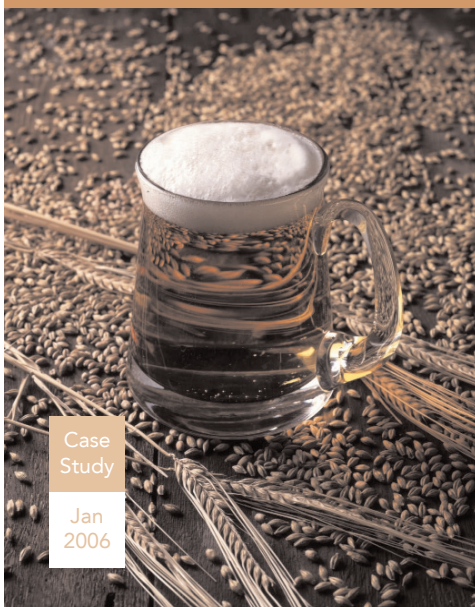
A partnership between



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- developing regional, autonomous laboratories for grain quality testing to reduce inefficiencies in the chain;
- establishing the true quality of grain at the right time and the right place;
- making haulage more efficient through better planning, vehicle utilisation and reduced turnaround times, supported by industry standards for loading and tipping;
- identifying and utilising optimal locations for drying and storing grain across the chain;
- developing a protocol for managing new varieties in collaboration with the whole industry;
- utilising tools like Cropbench to help identify best practice and exploit cost reduction opportunities;
- improving trust and communications across the chain.



Case Study

Jan 2006

## Supply Chain Collaboration

“By developing a greater level of understanding, we have been able to focus on improving the quality of the product and services.”

**Bob Hughes, Coors**

We examined this industry-leading collaboration by asking 15 people (eight from Coors and seven from Frontier) to complete a questionnaire and by conducting a series of interviews with people from both companies.

Overall, we found a strong relationship. The chain is focused on customer requirement. It is well coordinated and there are high levels of cooperation. Both organisations care about the others' success.

Both companies realised that to take the relationship further they would need:

- a greater transparency of risks and rewards to maintain a sense of fairness in the relationship;
- stronger and deeper communications with other areas of the supply chain;
- a structured approach to identifying and exploiting cost reduction opportunities between the two organisations.

This work has helped to strengthen the relationship between Coors and Frontier and our Value Chain Analysis has provided an effective approach to identify and exploit cost reduction opportunities between the two businesses.



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“Barley is more than a commodity – it is a natural ingredient that defines the taste of great beer. We intend to build on the platform of successful co-operation that has been established to drive greater value for our customers, our barley farmers and the beer. ”

**Bill Dobson, Coors**

“It is only by working more closely with our end customers that real supply chain gains can be identified and delivered, benefiting both grower and end user.”

**Jonathan Hoyland, Frontier**

### Delivering value to the customer

A first step for the companies was to develop a shared understanding of value at every stage in the chain. This can help to identify what are the critical activities in the process as well as those that do not add any value. The elimination of these non-value-adding activities provides a way of identifying cost reduction opportunities as well as issues related to quality and service.



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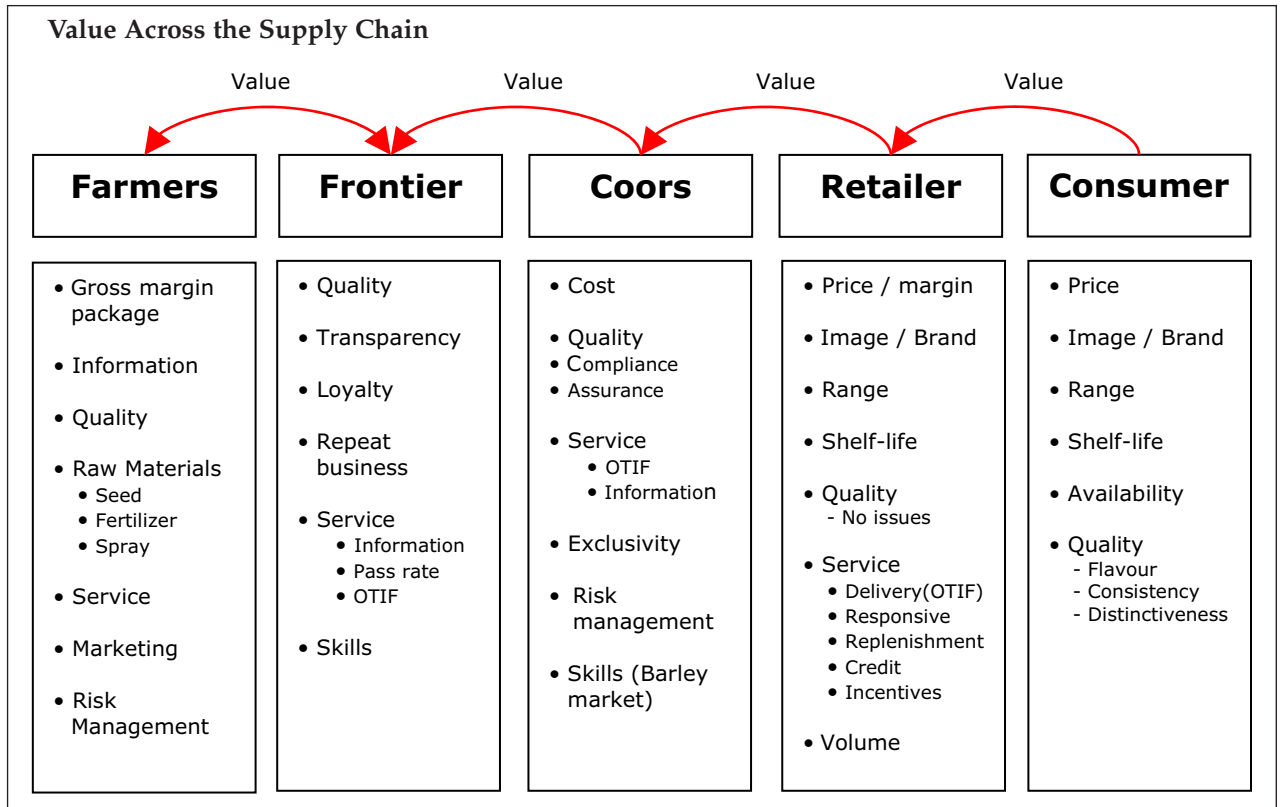
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There are many difficulties in defining and measuring value. In this case, however, precise definition or measurement was not necessary. What was required was a general understanding of how value is perceived across the supply chain, making it visible to all participants. In order to create this picture of value, a team of four people from Coors and Frontier constructed a map of value in the supply chain by brainstorming and analysing value at each stage of the process.



This value map was used throughout the process to understand the impact of various activities on customer value and to define non-value-adding activities in the supply chain.

### Identifying opportunity

The next step was for the companies to map the supply chain in a structured way. This was done in two stages - one looking at the upstream processes at the farm and grain trade stages, and the other looking downstream for the malting and brewing stages.



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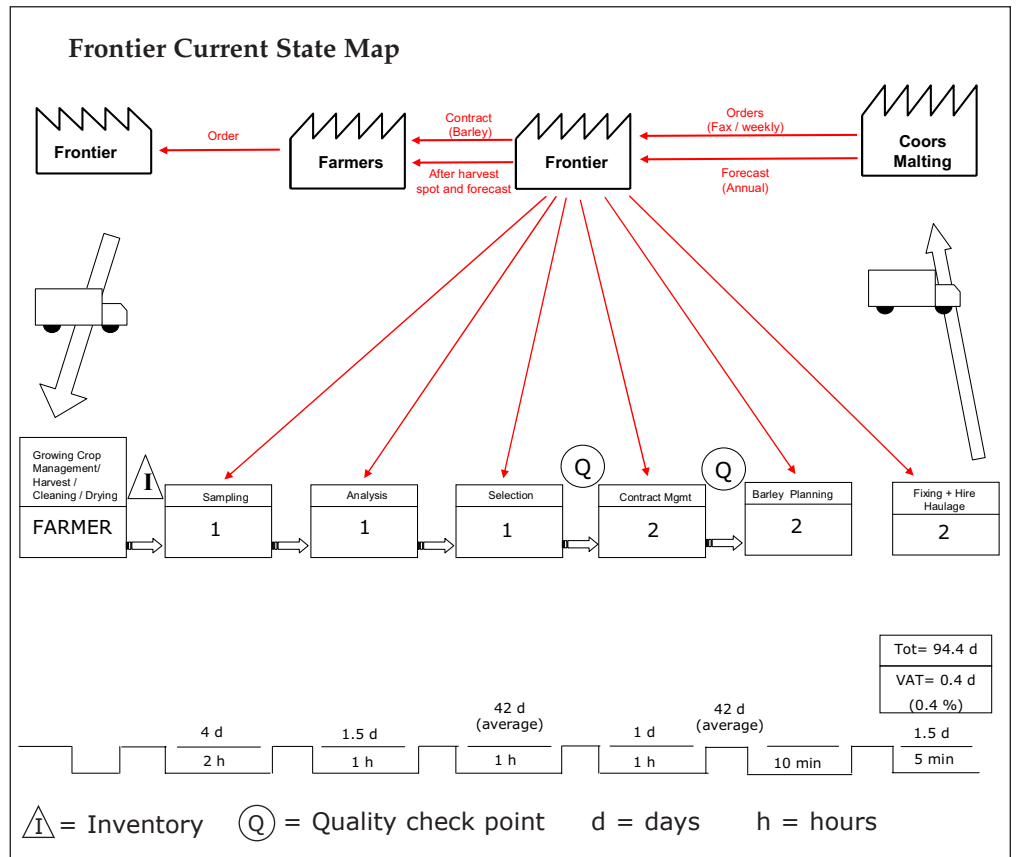
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The upstream map is shown below.



Frontier already plays a double role as supplier of inputs to the farmers and as a link between farmers and Coors. They take responsibility for arranging contracts for the supply of grain and managing the transportation between the farms and Coors.

The upstream stages of the supply chain revealed an average process time of 94 days of which only 0.4 % was classified as value-adding. However, the majority of the time was actually spent during the barley selection and contract management stages. Some other areas of non-value-adding time included rework in re-testing samples and re-planning deliveries. Both haulage and sampling were identified as potential areas for improvement.

The main reason for the time spent in selection and contracting is making sure that the barley meets the specification that was agreed pre-harvest. In case the specification is not met, post-harvest discussions will take place with the grower to decide if another specification can be met or if another market is available for the grain.



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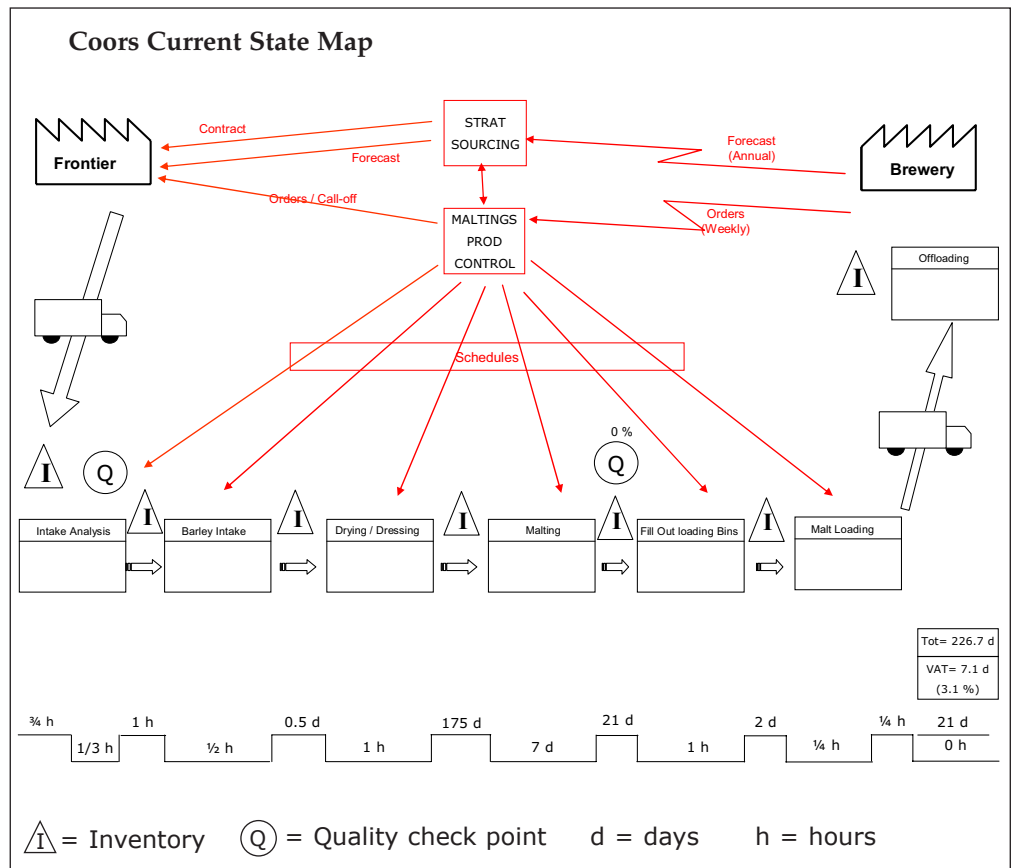
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Our next map depicts the malting stages of the supply chain, all the way through to brewing. This process takes on average 226 days and the proportion of value adding time was found to be 3.1 %. The chart shows that most of the non-value-adding time is work-in-progress inventory between stages. In fact the only other area of waste is waiting times at intake.



Despite a strong collaborative arrangement, our work showed that even well-run supply chains have scope for improvement.

- Beer supply chains carry what would appear in other industries as a large amount of inventory. However, the natural cycles involved in growing and harvesting the crop are the main reason for this level of inventory turnover. Therefore, the approach to managing inventory should not be to blindly strive to reduce it, but to determine which are the optimum stock-holding points in order to minimise cost and risk.



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- Quality issues leading to the rejection of samples and deliveries means that the produce does not flow smoothly through the chain. Some of these issues reflect variability found in a natural product. However, it was possible to find a number of areas of opportunity which could improve these reject rates.
- Haulage represents a substantial amount of cost in this supply chain and the analysis has revealed that a number of inefficiencies are present at this stage, including low vehicle utilisation, long turnaround times and a lack of standards for loading and tipping.

“This project has been a catalyst for change in our supply chain.”

**Colin McLean, Coors**

The team brainstormed what the map for this chain should look like in the future. In this streamlined process, Coors would provide Frontier with an annual forecast and weekly orders. Frontier would be responsible for arranging contracts with the farmers to supply Coors’ requirements, and the farmers would place orders of seeds and fertilizers to Frontier. Frontier would then deliver the necessary inputs to the farmers and arrange the collection of the grain and the delivery to Coors.

Inventory is still held at several points in the chain. However, this inventory is carefully managed throughout the year to ensure that holding costs and supply risks are minimised. Similarly, quality control would still be conducted at several stages in the chain, but this process would ensure that the grain is only tested when required.

To achieve this vision an action plan was developed.

Some of the opportunities identified are specific to this supply chain, but a number of them are related to the way the industry is currently organised and an industry-wide solution would be the most appropriate.



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## 1. OPTIMISED GRAIN PRODUCTION: Develop and implement agricultural processes to optimize quality and unit cost

- Improve the process for developing and implementing new varieties. Currently some of the problems include:
  - Weak link at the commercial trial stage
  - Sporadic distribution of seed stock
  - Incompatibility of volumes with commercial malting operations
  - Reliance on informal arrangements with maltsters
- Develop an industry protocol for managing new varieties through this stage. This new protocol should:
  - Involve the breeder as a leading figure to organise growing, storage and distribution of trial stock
  - Improve maltsters' (and other users') willingness to undertake trials
  - Increase the likelihood of success for trials
- Reduction in farm production cost at an industry level
  - Better use of industry benchmarking [Cropbench]
  - Realistic and transparent cost information
  - Standardization of information
- Develop closer collaboration between farmers and grain "users" (i.e. maltsters)

## 2. HAULAGE: Optimise end to end haulage

- Define industry standards for loading and tipping rates
  - Bulk-haulage industry benchmarking
  - Length of loading and tipping time
  - Opening hours for loading and intake
  - Working Time Directive (WTD) implications and definitions
- Improve turnaround time
  - Improve quality of data - Delivery notes
  - Intake analysis close to source
  - Optimize tipping rates
- Minimize haulage costs
  - Improved transport (journey time) – WTD influences
  - Node to node transport
  - Optimise routes





### 3. INVENTORY: Optimizing drying and storage locations with respect to value and time

- Identify the optimum stock-holding points in order to minimise cost and risk
  - Evaluate single point drying
  - Evaluate potential of farm storage (drying and dressing on farm)
  - Evaluate centralized storage (at right point)
- Analysing the cost vs. risk implications of reducing carry over stock

### 4. QUALITY: Establish the true quality of the produce as early as possible (after harvest and prior to delivery)

- Eliminate industry inefficiencies due to multiple testing
  - Work towards the establishment of regional autonomous labs
  - Analysis is not transferable at present
  - Standardized and single not multiple sampling/testing by regional labs
  - Farmers to provide certificate of analysis of grain in store
  - No need for further investment for testing labs
  - Central database to share information
  - Stepping stone towards vendor assurance

### 5. TRUST AND COMMUNICATION: Improve trust and communication across the chain

- Establish closer collaborative relationships across the chain
  - Improve communication across the chain, involving all participants
  - Stronger and deeper communications with other areas of the supply chain
  - Structured approach to identifying and exploiting cost reduction opportunities between the two organisations



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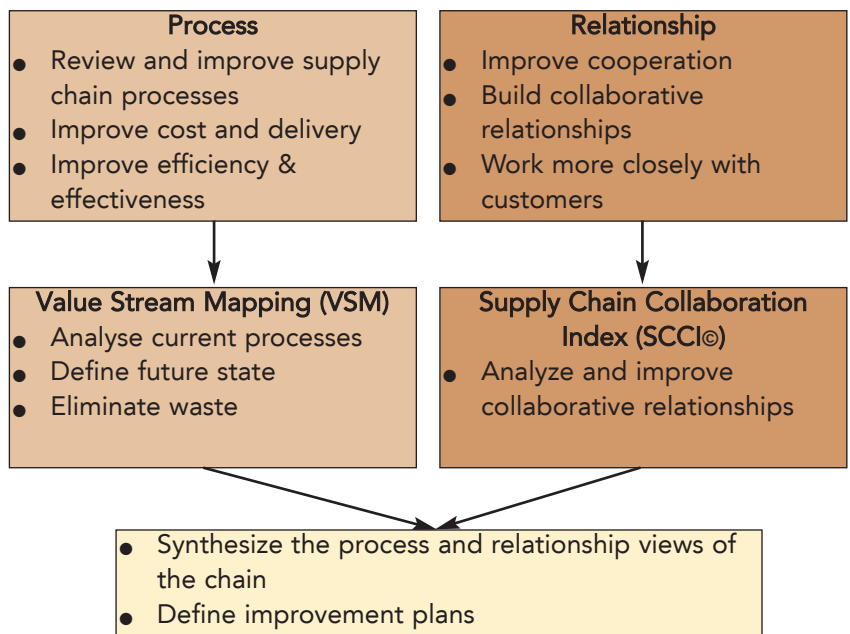


## Our method

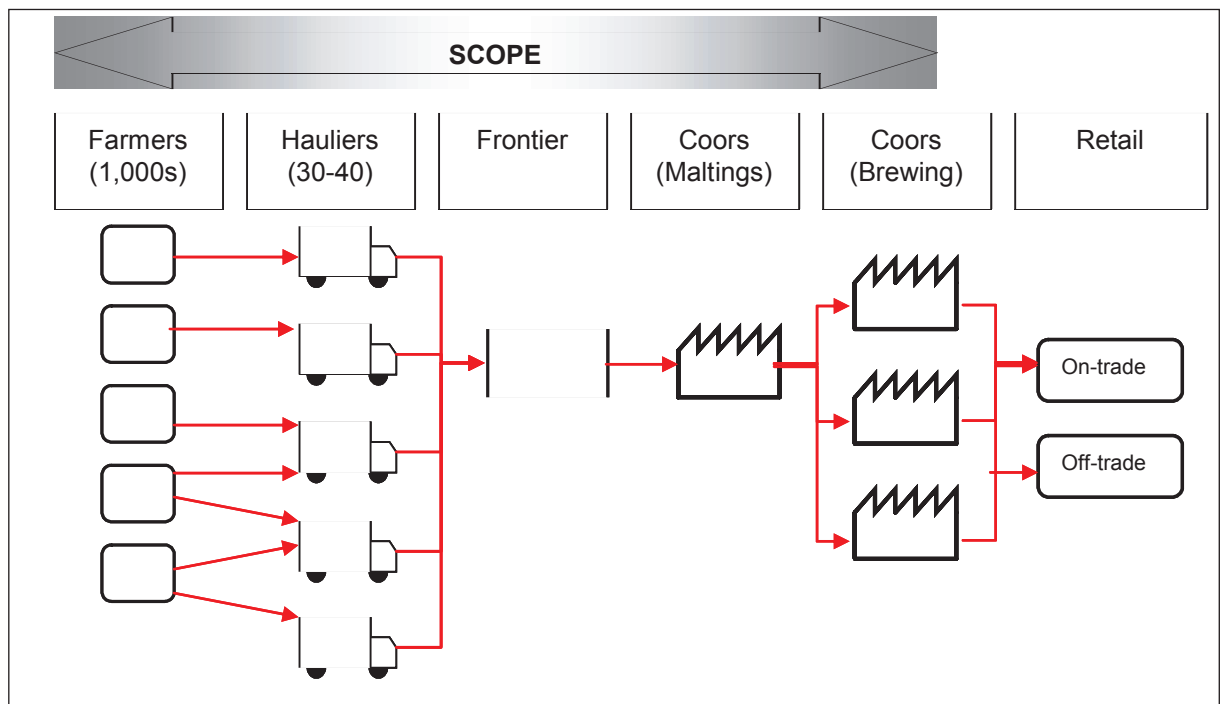
Our method for this project examined both the personal and organisational relationships in the chain as well as the processes involved. Each of these two aspects of the supply chain was analysed using different tools.

- **Supply Chain Collaboration Index (SCCI®):** the purpose of this tool is to capture quantitative and qualitative data to reveal the dynamics of long-term collaborative business relationships. The method has been developed by Cranfield Business School and proven in a large number of multi-million pound bilateral relationships in the public and private sectors. Measurements from both sides of a collaborative relationship are taken in order to assess five key dimensions (creativity, stability, communication, reliability and value) and seven additional characteristics (long term orientation, interdependence, collaborative behaviour, trust, commitment, adaptation and personal relationships).
- **Value Chain Analysis (VCA):** was used to visualise and understand the flow of material and information as a product makes its way through the supply chain. From a map of the current state of the chain, improvement opportunities were identified to help the companies reduce their costs and improve quality and service.

## Methodology



The analysis covered the chain from the point the grains are harvested at the farms to the point the malt is delivered at the breweries. The final distribution and retail stages were left outside the scope. The diagram presents a depiction of the scope of the project.



The specific objectives for this project were the following:

- to analyse collaboration across the supply chain;
- to analyse the current supply chain;
- to improve the current situation.

This approach required a total of 11 contact days with the participants. The table outlines the activities taking place in each of these contact days.

Day	Event	Description
0	Project Launch	<ul style="list-style-type: none"> <li>● Define scope, objectives and project plan</li> <li>● Appoint relationship managers</li> <li>● SCCI questionnaires are distributed</li> </ul>
1	Initial Orientation Workshop	<ul style="list-style-type: none"> <li>● Present initial Supply Chain Collaboration results</li> <li>● Introduce principles of successful supply chain collaboration</li> <li>● Introduce Lean Principles, tools and techniques</li> <li>● Agree on Team members and Diarise Events</li> </ul>
2	Workshop: Current State (Off-site)	<ul style="list-style-type: none"> <li>● Select Product</li> <li>● Construct a Current State Big Picture Map.</li> <li>● Identify possible quick wins</li> </ul>
3,4,5	On-site Mapping & Collaboration Interviews	<ul style="list-style-type: none"> <li>● Map processes within each facility along the supply chain</li> <li>● Conduct SCCI Interviews</li> </ul>
6,7	Workshop: Full Chain Current State Map (Off-site)	<ul style="list-style-type: none"> <li>● Discuss SCCI report</li> <li>● Update current state map with Quick Wins through project.</li> <li>● Brain storm ideal state and analyse top ideas</li> <li>● Develop ideal state map based on consumer value</li> </ul>
8	Workshop: Future State Map	<ul style="list-style-type: none"> <li>● Rationalise Ideal to Future State</li> <li>● Ensure KPI alignment of projects</li> <li>● Identify vital few projects</li> </ul>
9	Prepare Presentation	<ul style="list-style-type: none"> <li>● Firm proposals to project sponsors, benefit allocations and milestones.</li> </ul>
10	Presentation	<ul style="list-style-type: none"> <li>● Joint presentation of recommendation to senior management</li> <li>● Provide final report</li> <li>● Decisions taken regarding improvement projects</li> </ul>

The Cereals Industry Forum is very grateful to Carlos Mena from Cranfield Business School for help in preparing this case study.



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