
Mobilizing Project-Driven Supply Chains in the Chemical Industry

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Agenda

- Research scenario
- Identified challenges
- Proposed solutions
- Mobilization template
- Final considerations



What do the following supply chains have in *common*?



What do the following supply chains have in **common**?

“We finally delivered up to 20 trucks per day from our warehouse [...] to the customer site, which was around 400 km across the mountains.”

Transportation Planner



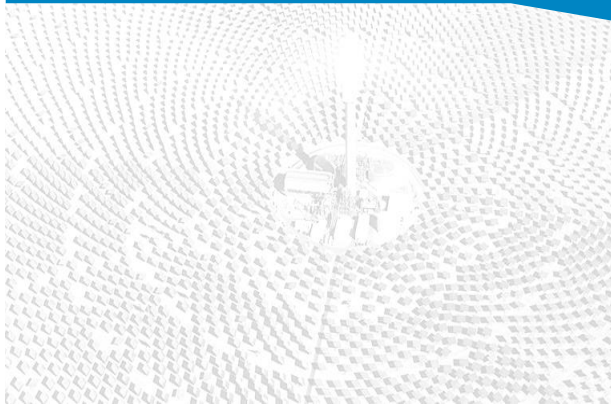
*“It makes it even more complicated because looking at the **solar belt countries**, [...] going to China, Mongolia, going to Saudi Arabia, these are very **special countries** with very special **cultural habits** and you have to consider all these kind of things.”*

Supply Chain Manager

What do the following supply chains have in *common*?

“The mining season is May to October. Break it into two orders: one PO for the first half of the season, and one PO the second half. [...] At the second half of the season, the customer says they do not need as much [...]. At that time, we have to readjust. We don’t know upfront what the second PO will be for.”

Supply Chain Manager



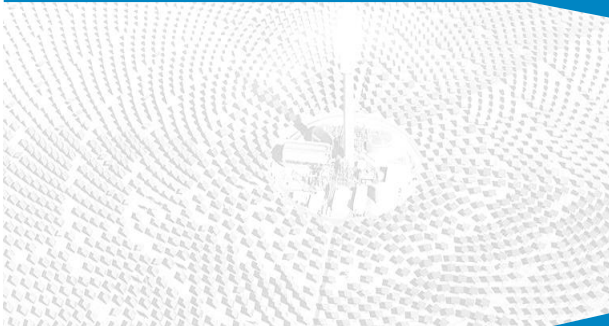
*“This was a project where **all chemical products and equipment** had to be broken down to a certain size to fit through the tunnel. The mine site was at 14,500 feet above sea level and the mill site was at about 11,000 feet and there was one very small road and a number of tunnels.”*

Business Manager

What do the following supply chains have in *common*?

*There is a lot of **competition** out there, [...] so we now essentially sell **commodity chemicals**. It is always the same materials in a lot of cases [...], but we are **no longer able to command** the same sort of **prices** that we used to, we're not making the same sort of **margins** that we used to."*

Supply Chain Manager



*You get an idea of [...] the type of atmosphere we are dealing with, **all the variables** involved: mainly outside influences, inventory control, lack of storage space, challenges of getting product delivered, human intervention or lack thereof, and the weather. It is a **fire-drill** all the time".*

Regional Manager

How can project-driven supply chains be set up in an *effective, efficient* and *repeatable* way?

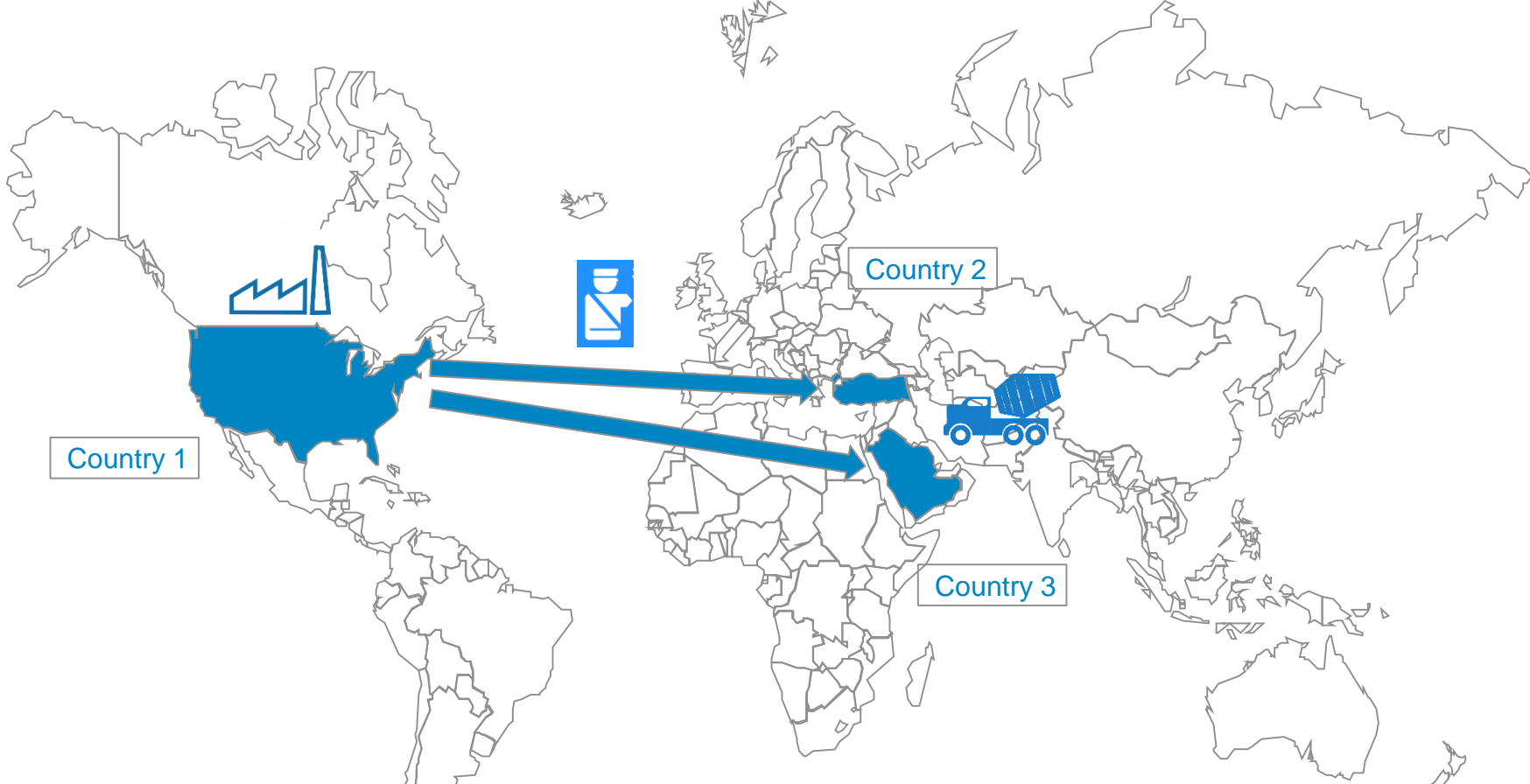
Situation

- **Multiple** project settings
- **Hazardous** materials
- **Remote** destinations
- **Long** supply chains
- **One-off** setup

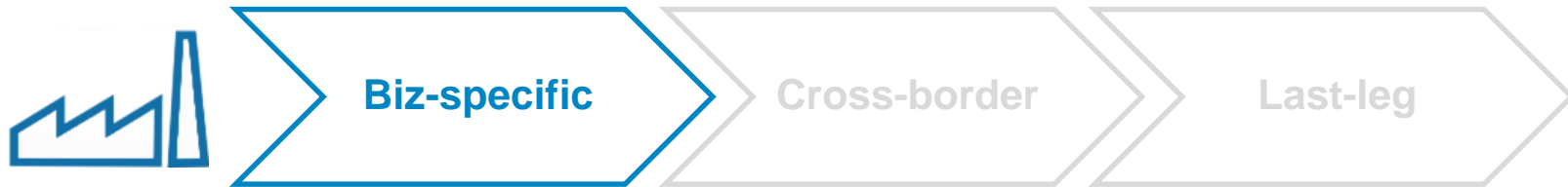
Challenge

- What are the **critical factors** in setting up a project-driven supply chain in the chemical industry?
- How are project-driven supply chains currently managed within the **sponsor company**?
- How are project-driven (or other one-off) supply chains managed **in other fields**?

Identified *challenges* within the sponsor company



Identified *challenges* within the sponsor company



- Demand *changeability*
- Customer-induced *delays*
- Eroding *margins*

Demand tends to be *seasonal, cyclical, and ever changing.*

Customers are likely to request *delaying the delivery* of materials to the project site.

As *new competitors* enter the marketplace, margins shrink.

Identified *challenges* within the sponsor company



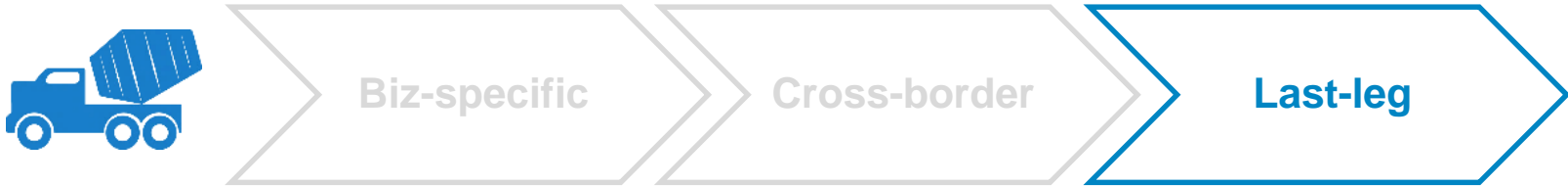
- **Regulatory** differences
- **Customs**-related bureaucracy
- **Dispersed** supply-chain

Transportation regulations *differ widely* across countries, affecting the SC setup.

Import and customs procedures create *bureaucratic delays*.

Flows of product and information call for additional *coordination efforts* and enhanced *decision-making processes*.

Identified *challenges* within the sponsor company



- **Remote** destinations
- **Extreme weather** conditions
- Equipment **unavailability**
- Lack of **storage capabilities**
- **Cultural** differences

Geographical constraints and limited infrastructure add *complexity* to the SC.

Exposure to the elements affects *packaging* and *transportation* strategies.

Unavailability of specialized transportation equipment creates *tradeoffs* in SC performance.

Lack of suitable interim storage facilities creates *disruptions* in the supply chain.

Cultural differences can generate miscommunication, which may create *barriers* to an *effective execution* of the project.

Identifying solutions through cross-learnings from *humanitarian* and *military* supply chains



Shared characteristics

- *Temporary* nature
- High *uncertainty*
- *Remoteness* of locale

Proposed *solutions* to address the identified challenges



- ***Pre-planning*** processes
- ***Upfront*** contracting
- ***Vendor managed*** inventory
- ***Modularity***
- Systems ***integration***
- ***Provisions*** on delays
- ***Risk-sharing*** mechanisms
- Continuous ***reorganization***

- ***Centralized*** knowledge base
- Specific ***supply chain roles***
- Knowledge ***transfer***
- ***Guidelines*** and ***templates***
- Physical ***proximity***
- Distribution ***frameworks***

- ***Centralized***-logistics provider
- Local ***expert*** presence
- ***Relationship***-building and ***asset***-sharing

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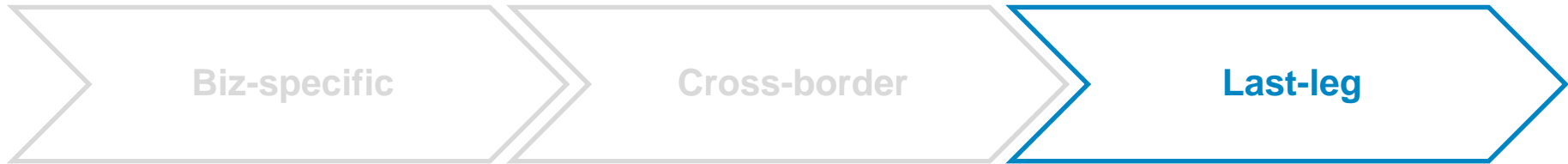


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Effective, efficient and repeatable setup process for the sponsor company

Mobilization template

- Set of *mobilization-related questions* based on proposed solutions
- Used as
a *guideline* for setup
a *validation tool* for completion

Mobilization process

- *Step 1: Mobilization planning*
- *Step 2: Mobilization execution*
- *Step 3: Mobilization gate review*
 - Approved (A)
 - Conditionally Approved (CA)
 - Failed (F)

Mobilization template example



- **Pre-planning** processes
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- Is there an adequate **S&OP process** in place?
- Has demand been “**sensed**” based on information coming directly from the customer?
- Has demand been **shaped** to meet supply?
- Has demand been **quantified** and with what level of uncertainty?
- Has **supply chain personnel** been involved in the S&OP process?
- Have decisions been made on **capacity** investment or divestment accordingly?

Mobilization template example



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- Have key carriers been **vett**ed?
- Has the option of **flexible** transportation contracts been discussed with key carriers?
- Have alternative **courses of action** been considered?
- Have alternative **replenishment procedures** been developed accordingly?
- Are **quick funding** solutions in place for emergency replenishment?

Mobilization template example



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- Continuous *reorganization*

- Is the customer **high** uncertainty, **low** lead-time?
- Can holding inventory **close to the customer** be considered a viable option to achieve a quick response to changes in demand?

Final considerations

Factors towards successful change

- **Commitment** from leadership
- Translation of mobilization template for **integration** into company supply chain
- **Lessons-learned** process to be consolidated into the mobilization template

Applicability to chemical industry

- The template has potential to be **adapted for other** chemical project driven SCs

Applicability to other project-driven industries

- Opportunity of dialogue between SC fields towards **enhanced collaboration**.
- Potential to apply research to project-driven supply chains **beyond the chemical industry**, such as construction, ship-building and rail.

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Thank you!

