

# CPFR Benefits Calculator

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# Benefits Calculator

- History of CPFR Metrics Committee
- Objectives of Benefits Calculator
- Use of Benefits Calculator
- Sample Inputs
- Sample Benefits
- Sample Graphs
- Industry Profile Data Collection Sheets
- Industry KPI Data Collection Sheets
- Example of Use of CPFR Benefits Calculator

# Team Mission Statement

- Define desired results and process measurements for the collaborative process of matching consumer demand with efficient and profitable supply.
  - Metrics/measurement systems (then model flows)
  - Common scorecard performance language between trading partners
  - Measurement tool that proves/validates benefits of CPFR
  - Balance between complexity, accuracy and the execution
  - Profitable balance between cost, quality and time
  - Solution that maximizes efficiency across trading partner “control points”
  - As well as within individual trading partners “four walls”

# Output of Metrics Subcommittee

- **A robust benefits model**
  - Define key activities and performance measures for CPFR crossing industry and company boundaries.
  - Can be used by trading partners or individual firms to measure the return on investment of CPFR.
  - Easy to use, cover all portions of the supply chain and can be modified for/by individual users.

# Output of Metrics Subcommittee (cont'd)

- **Illustrative Case Studies and Benchmarks**
  - Minimum, two case studies to be included to demonstrate the use of the model and the ROI on CPFRR.
  - Suppliers and distributors on the metrics subcommittee agree to provide “shielded” publishable benchmarking data.

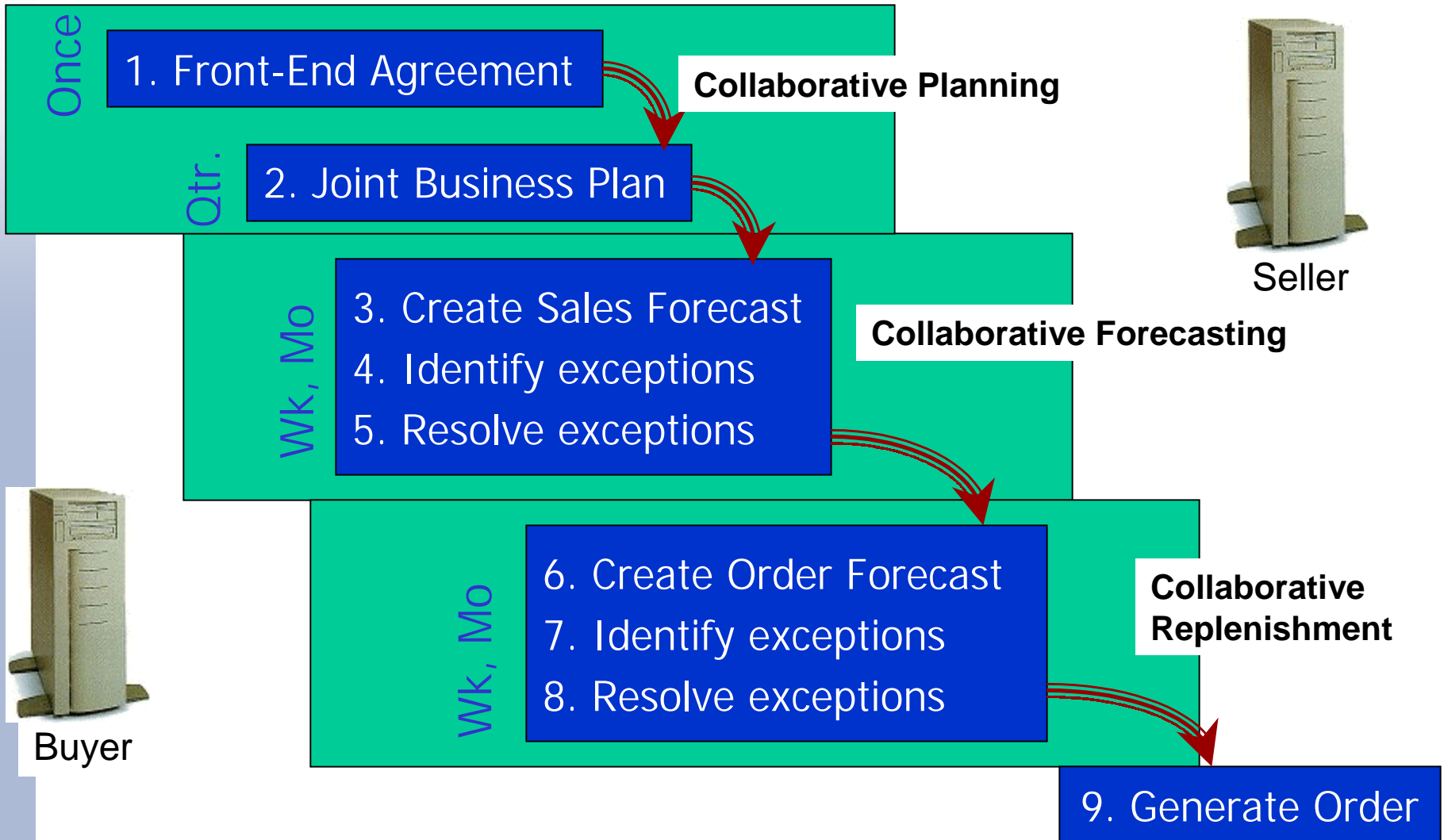
# History

- Working on this process for about one year
- Lots of good efforts aimed at understanding and building model –Milton Merl & Associates, Arena, Novopoint, Kmart, Syncra...and others.
- Initial pass created robust activity based costing calculator and separate performance language.
- Presented revised easier to benchmark, integrated performance measure/benefit model
  - Supply Chain Systems, Inc.

# The 9-step Process

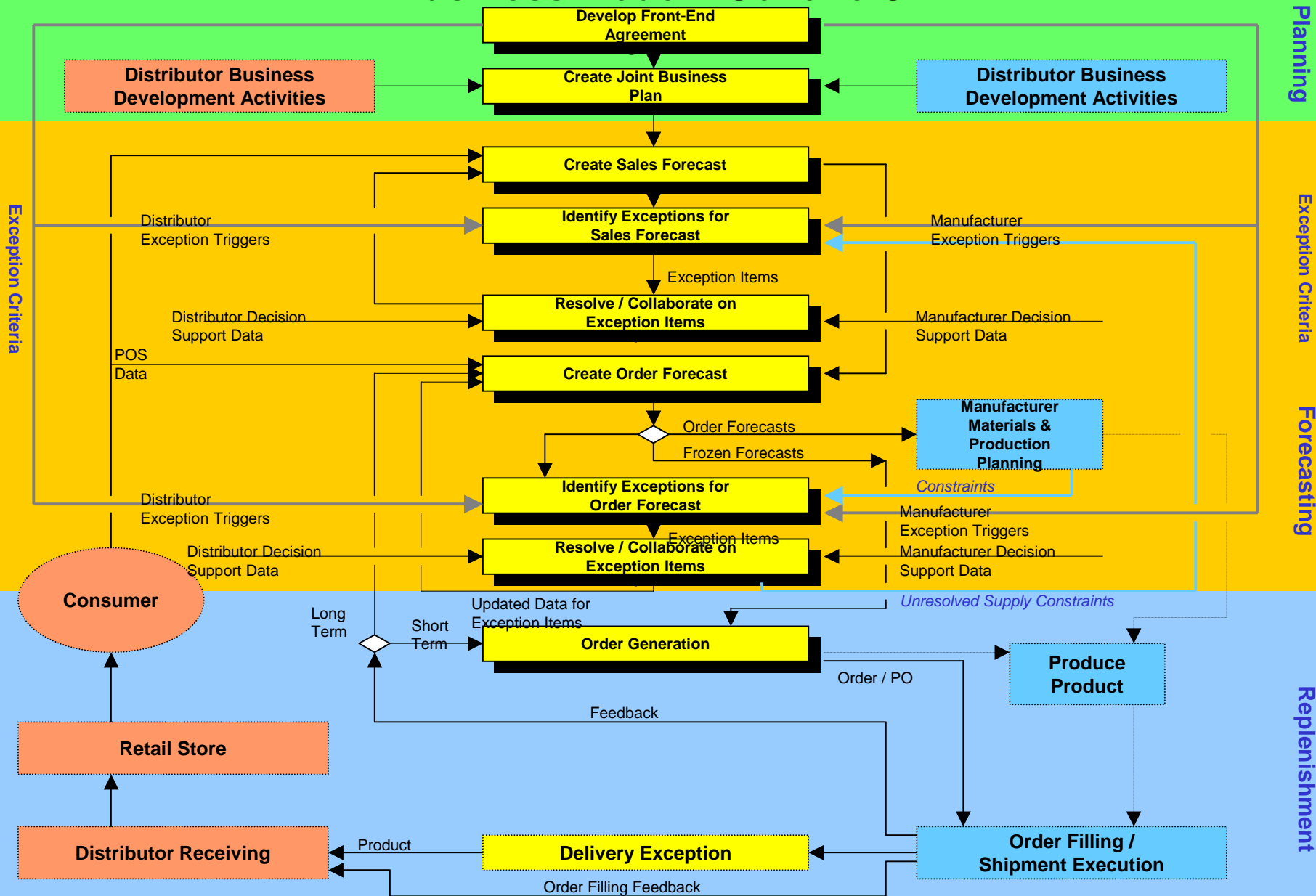
1. Front-end agreement
2. Joint business plan
3. Create sales forecast
4. Identify exceptions
5. Resolve exceptions
6. Create order forecast
7. Identify exceptions
8. Resolve exceptions
9. Generate order

# The CPFR Process





# Business Model - Generic CPFR



Key:

**Distributor Activities**

**Either / Joint Activities**

**Manufacturer Activities**

# CPFR: Why It Works

- Forecasts are constrained by supplier's capacity
- Focuses attention on exceptions
- Mandates reconciliation of exceptions
- Facilitates flexible relationships

# CPFR Benefit Areas

## Inventory

- Storage Costs
- Financing Costs
- Obsolescence
- Outside Storage

## Revenue

- Stock Outs
- Promotion Efficiencies
- Sales Increases from Customer Service

## Process Efficiencies

- Order Management
- Purchasing
- Inventory Control
- Production Labor

## CTM Benefits (Transportation)

- Strategic Rate Management
- Tactical Rate Management
- LTL Consolidation
- Capacity Utilization
- Demurrage

# CPFR Benefits

Benefit	Planning (CPFR 1-2)	Forecasting (CPFR 3-5)	Replenishment (CPFR 6-9)
<b>Inventory</b> <ul style="list-style-type: none"> <li>•Less Inventory Investment</li> <li>•Less Storage Costs</li> <li>•Less Obsolete Inventory</li> <li>•Less Outside Storage</li> </ul>	<ul style="list-style-type: none"> <li>•Reduced Promotional Spikes from Promotion Visibility</li> <li>•Less Diversion</li> </ul>	<ul style="list-style-type: none"> <li>•More accurate Sales Forecast</li> <li>•Coordinated Demand and Supply</li> <li>•Forecast Adjusted by Supply Constraints</li> </ul>	<ul style="list-style-type: none"> <li>•Inventory Visibility</li> <li>•Intransit Visibility</li> <li>•System Calculated Replenishment</li> </ul>
<b>Revenue</b> <ul style="list-style-type: none"> <li>•Fewer Stock Outs</li> <li>•Promotion Efficiencies</li> <li>•Sales Increases from Customer Service</li> </ul>	<ul style="list-style-type: none"> <li>•Predictable promotional response from advance planning</li> </ul>		<ul style="list-style-type: none"> <li>•Inventory Available to Support Sales</li> <li>•Improved Customer Service through Collaboration</li> </ul>

# CPFR Benefits

Benefit	Planning (CPFR 1-2)	Forecasting (CPFR 3-5)	Replenishment (CPFR 6-9)
<p><b>Process Efficiencies</b></p> <ul style="list-style-type: none"> <li>•Order Management</li> <li>•Purchasing</li> <li>•Inventory Control</li> <li>•Production Labor</li> </ul>		<ul style="list-style-type: none"> <li>•Reduced production overtime due to production smoothing</li> <li>•Reduced forecasting time (depending on current capabilities)</li> </ul>	<ul style="list-style-type: none"> <li>•Reduced time to understand inventory, intransit, and demand for each trading partner</li> <li>•Reduced time to place orders (system generated)</li> </ul>
<p><b>Transportation (CTM)</b></p> <ul style="list-style-type: none"> <li>•Strategic Rate Management</li> <li>•Tactical Rate Management</li> <li>•LTL Consolidation</li> <li>•Capacity Utilization</li> <li>•Demurrage</li> </ul>		<ul style="list-style-type: none"> <li>•Long term forecast between shipping and receiving locations necessary for strategic rate negotiation</li> </ul>	<ul style="list-style-type: none"> <li>•Advance visibility of planned replenishment allow time for LTL consolidation and improvement of capacity utilization</li> </ul>



## Benefits Calculator Features

- Simple to use with minimal data entry
- Adaptable to all industries through industry profiles
- Adaptable to all types of companies within an industry, ie. suppliers, manufacturers, distributors, and retailers
- Realistic view of benefit potential based on:
  - Industry benchmarks
  - Current position on metric scales
  - Individual company strategy
- Graphical display of benefits



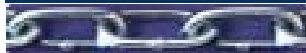
# Proposed Use of Benefits Calculator

- Available on CPFR Web Site
- User will fill out simple data entry from Income Statement and operations metrics
- User will specify current and desired position on KPIs
- Review ROI Summary
- Review ROI Graphs



# ROI Calculator

## Main Menu



Supply Chain Systems,  
Linking People, Process, and Technology

**Arena Group Consulting Inc.**





## Customer Information

Company Name: XYZ Inc.  
 Contact Person:  
 Contact Phone:  
 Address:  
 Date:

Scope of Analysis: Both ▼  
 Type of Company: Manufacturer ▼  
 Type of Industry: Food and Beverag ▼

Sales per year (\$)	\$	1,000	Inventory (% of COGS)	Millions
Material Costs	\$	400	Raw Materials	\$ 18.90
Production Costs	\$	150	MRO	\$ 6.30
Logistics Costs	\$	80	WIP	\$ 6.30
COGS	\$	630	Finished Goods	\$ 63.00
			Total Inventories	\$ 94.50

## Benchmarks





	Current Benchmark		Desired Benchmark	Target Value
Material Turns	21.16	Best in Class	New Industry Standard ▼	30.00
Finished Goods Turns	15.87	Average	Best in Class ▼	30.00
Service Level %	95.00%	Average	Best in Class ▼	97.00%
Out of Stock %	5.00%	Average	Best in Class ▼	1.00%
Obsolete/Sales	3.00%	Average	Best in Class ▼	1.00%
Full Truck %	70.00%	Average	Best in Class ▼	80.00%
Empty Miles %	20.00%	Average	New Industry Standard ▼	12.00%
Logistics Costs/Sales	0.08	Average	Best in Class ▼	0.05

■ [Main Menu](#)

# ROI Summary

(in millions)

## Benefit Categories

		CPFR Total	CTM Total
 <i>Inventory Total</i>	\$ 2.77	\$ 2.77	\$ -
 <i>Transportation Total</i>	\$ 3.56	\$ -	\$ 3.56
 <i>Process Efficiencies</i>	\$ 0.35	\$ 0.23	\$ 0.12
 <i>Sales Total</i>	\$ 6.75	\$ 6.75	\$ -
Total Recurring Savings	\$ 13.43	\$ 9.74	\$ 3.68
Total One-Time Savings	\$ 11.31	\$ 11.31	\$ -

# ROI Summary

## Collaborative Planning, Forecasting, and Replenishment

(in millions)

### Benefit Categories

		Collaborative Planning	Collaborative Forecasting	Collaborative Replenishment	Inventory Visibility	CPFR Total	CTM Total
Investment Return from Inventory R	\$ 0.90	\$ 0.18	\$ 0.27	\$ 0.27	\$ 0.18	\$ 0.90	\$ -
Inventory Storage Costs	\$ 1.13	\$ 0.23	\$ 0.34	\$ 0.34	\$ 0.23	\$ 1.13	
Inventory Obsolescence	\$ 0.57	\$ 0.11	\$ 0.17	\$ 0.17	\$ 0.11	\$ 0.57	
Reduced Third Party Storage	\$ 0.17	\$ 0.02	\$ 0.05	\$ 0.07	\$ 0.03	\$ 0.17	
<b>Inventory Total</b>	<b>\$ 2.77</b>	<b>\$ 0.54</b>	<b>\$ 0.83</b>	<b>\$ 0.85</b>	<b>\$ 0.55</b>	<b>\$ 2.77</b>	<b>\$ -</b>
Strategic Rate Management	\$ 1.00					\$ -	\$ 1.00
LTL Consolidation	\$ 0.08					\$ -	\$ 0.08
Automated Load Tendering	\$ 1.04					\$ -	\$ 1.04
Truck Utilization	\$ 0.33					\$ -	\$ 0.33
Rail Utilization	\$ 0.78					\$ -	\$ 0.78
Demurrage	\$ 0.01					\$ -	\$ 0.01
Backhaul	\$ 0.33					\$ -	\$ 0.33
<b>Transportation Total</b>	<b>\$ 3.56</b>					<b>\$ -</b>	<b>\$ 3.56</b>
Inventory Control	\$ 0.08	\$ 0.02	\$ 0.02	\$ 0.02	\$ 0.02	\$ 0.08	
Logistics	\$ 0.12						\$ 0.12
Order Management/CSR	\$ 0.10	\$ 0.02	\$ 0.03	\$ 0.03	\$ 0.02	\$ 0.10	
Purchasing	\$ 0.05	\$ 0.01	\$ 0.02	\$ 0.02	\$ 0.01	\$ 0.05	
<b>Process Efficiencies</b>	<b>\$ 0.35</b>	<b>\$ 0.05</b>	<b>\$ 0.07</b>	<b>\$ 0.07</b>	<b>\$ 0.05</b>	<b>\$ 0.23</b>	<b>\$ 0.12</b>
Increase sales	\$ 3.30	\$ 0.99	\$ 0.99	\$ 0.99	\$ 0.33	\$ 3.30	\$ -
Margin Improvement	\$ 1.25	\$ 0.38	\$ 0.38	\$ 0.38	\$ 0.13	\$ 1.25	\$ -
Customer Retention	\$ 2.20	\$ 0.66	\$ 0.66	\$ 0.66	\$ 0.22	\$ 2.20	\$ -
<b>Sales Total</b>	<b>\$ 6.75</b>	<b>\$ 2.03</b>	<b>\$ 2.03</b>	<b>\$ 2.03</b>	<b>\$ 0.68</b>	<b>\$ 6.75</b>	<b>\$ -</b>
<b>Total Recurring Savings</b>	<b>\$ 13.43</b>	<b>\$ 2.61</b>	<b>\$ 2.92</b>	<b>\$ 2.94</b>	<b>\$ 1.27</b>	<b>\$ 9.74</b>	<b>\$ 3.68</b>
<b>Total One-Time Savings</b>	<b>\$ 11.31</b>	<b>\$ 1.13</b>	<b>\$ 3.39</b>	<b>\$ 4.52</b>	<b>\$ 2.26</b>	<b>\$ 11.31</b>	<b>\$ -</b>

# Detailed Benefit Calculations

## Investment Return from Inventory Reduction

Total Cash Infusion from Reduced Inventory  
 Cost of Capital  
 Working Capital Increase

Current	New Processes	Savings / Yr
	\$ 11.31	
	8%	
	\$ 0.90	

## Inventory Storage Costs

10.0% Improvement from Collaborative  
 Total Finished Good & Raw Material Inventory  
 Inventory Carrying Costs  
 Savings from Collab. Planning Improvements  
 One time cash infusion from reduced inventory

Moderate ▼

Current	New Processes	Savings / Yr
	10.00%	
\$ 113.1	\$ 101.8	\$ 11.31
\$ 11.3	\$ 10.2	\$ 1.13
		\$ 1.13
		\$ 11.31

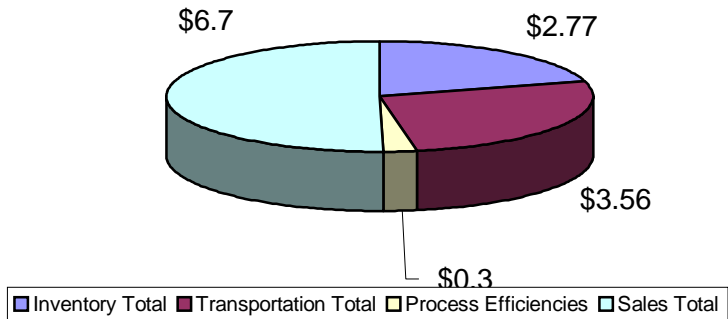
## Inventory Obsolescence/Damage

Inventory Obsolescence/Damage

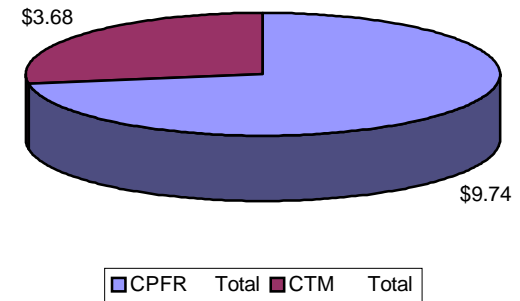
Current	New Processes	Savings / Yr
\$ 5.66	\$ 5.09	\$ 0.57

# CPFR® Summary Benefits

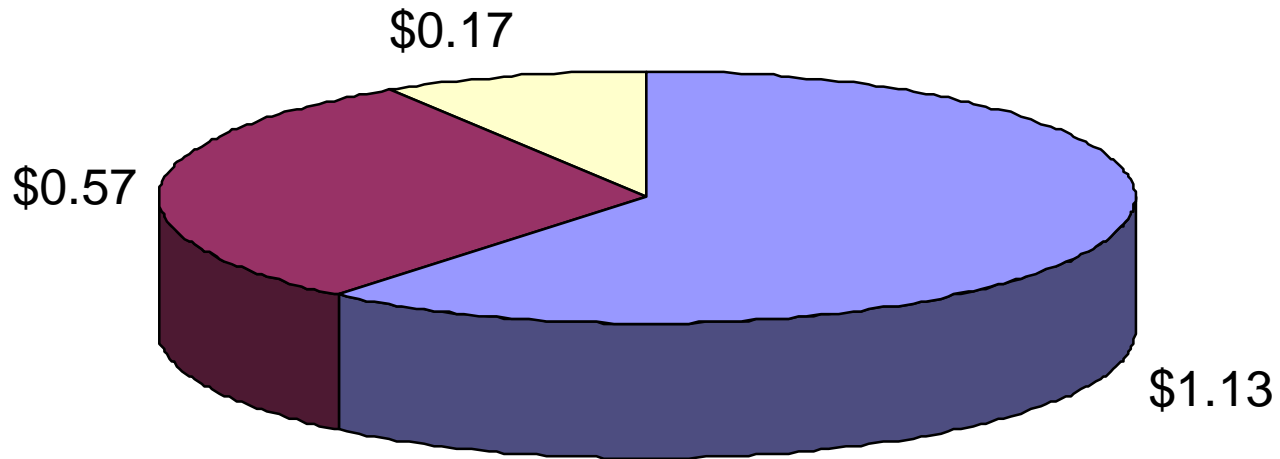
## Total Benefits from Collaboration



## Total Benefits from Type of Collaboration



# Total Inventory Benefits



Inventory Storage Costs Inventory Obsolescence Reduced Third Party Storage

## Financial Input:

	Supplier		Manufacturer	
	Factors	Millions	Factors	Millions
Sales per year (\$)		\$ 1,000.0		\$ 1,000.0
Material Costs	55%	\$ 550	40%	\$ 400
Production Costs	15%	\$ 150	15%	\$ 150
Logistics Costs	8%	\$ 80	8%	\$ 80
Cost of Goods Sold		\$ 780		\$ 630
Gross Margin		\$ 220		\$ 370
Administrative Budgets (Percent of Sales)	Factors	Millions	Factors	Millions
Purchasing	0.10%	\$ 1.0	0.20%	\$ 2.0
Inventory Control/Distribution	0.08%	\$ 0.8	0.10%	\$ 1.0
Outbound Logistics	0.05%	\$ 0.5	0.20%	\$ 2.0
Inbound Logistics	0.01%	\$ 0.1	0.02%	\$ 0.2
Order Management	0.10%	\$ 1.0	0.20%	\$ 2.0
Demurrage Costs (% of total transp	0.50%	\$ 0.40	0.50%	\$ 0.40
Annual Outside Storage Costs/Year (	1.00%	\$ 5.5	1.00%	\$ 4.0
Cost of Capital		8%		8%
Inventory Carry Costs (Excl. Capital)		10%		10%

## Operational Input:

	Supplier		Manufacturer	
	Factors	Millions	Factors	Millions
Inventory (% of COGS)				
Raw Materials	2.50%	\$ 19.5	3.00%	\$ 18.9
MRO	1.00%	\$ 7.8	1.00%	\$ 6.3
WIP	0.50%	\$ 3.9	1.00%	\$ 6.3
Finished Goods	12.00%	\$ 93.6	10.00%	\$ 63.0
Packaged Goods	0.00%		0.00%	
Other	0.00%		0.00%	
Total Inventories		\$ 124.8		\$ 94.5
Percent of obsolete/damaged finished goods		5%		5%
Number of Sales Orders Per Year	30.00%	60,000	100.00%	50,000
Number of Invoices Received Per Year	50.00%	30,000	100.00%	50,000

# CPFR KPIs and Benefits

KPI Area	Benchmark to Benefit Relationship	Benefit Area			
		Inventory	Staffing	Transportation	Sales
Inventory	Direct	x	x		
Forecast Accuracy	Indirect	x	x		
Service Level	Direct				x
Lead Time	Indirect		x		x
Unplanned Changeover	Direct				x
Obsolete	Direct				x
Sales	Direct				x
Distribution	Direct			x	
Planning	Indirect	x	x		
Data Synchronization	Direct		x		



# Industry Benchmarks

# Supplier

# Manufacturer

## Inventory Turns (Sales/Inventory)

### Material Days of Coverage

Best in Class

30

25

Average

25

15

Low

20

12

### Finished Goods Coverage

Best in Class

25

30

Average

15

20

Low

10

10

CPFR

### Service Level

Best in Class

0.98

0.97

Average

0.96

0.95

Low

0.94

0.92

### Out of Stock

Best in Class

0.01

0.01

Average

0.01

0.05

Low

0.02

0.10

### Obsolete/Sales

Best in Class

0.01

0.01

Average

0.01

0.03

Low

0.02

0.05

### Full Truck %

Best in Class

0.95

0.80

Average

0.92

0.70

Low

0.90

0.60

CTM

### Empty Miles

Best in Class

0.10

0.10

Average

0.15

0.20

Low

0.20

0.30

### Logistics Costs (Transportation/Sales)

Best in Class

0.08

0.05

Average

0.08

0.08

Low

0.12

0.12



# Next Steps

## Work Process to Complete ROI Calculator

- Validation of model across industries
- Refine model with Pilot application
- Research standards used to drive model across multiple industries
- Post Benefit Calculator on CPFRR Web Site