CO^3 - Horizontal Collaboration

Collaboration **C**oncepts for **C**o-Modality

From CO^2 to CO^3

Dirk ‘t Hooft, project coordinator **CO^3**

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$$\varphi_i(v) = \sum_{S \subseteq N} \frac{|S|!\,(n - |S| - 1)}{n!} \big(v(S \cup \{i\}) - v(S)\big)$$

Supply chain development

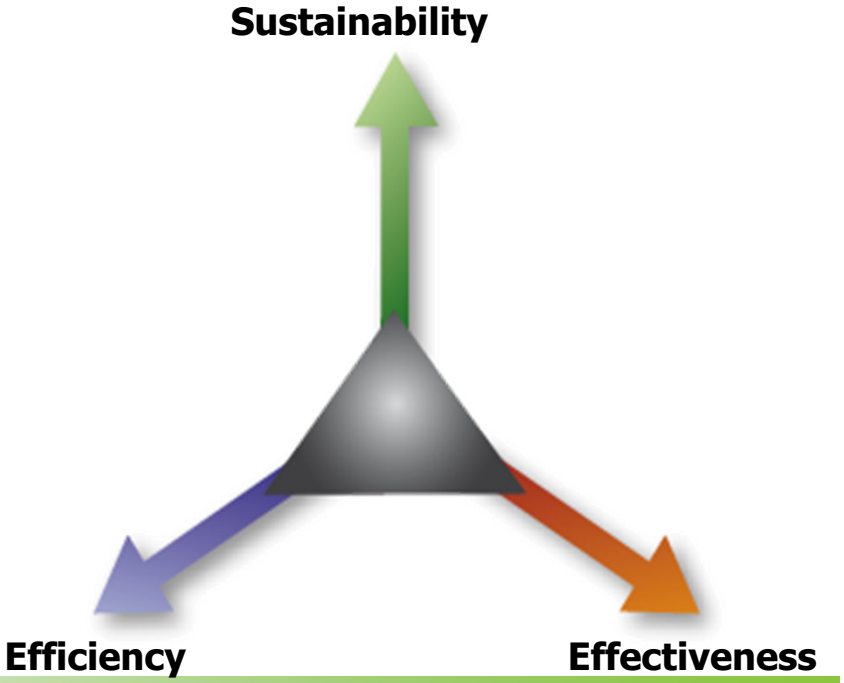
- Before '2006': Trade off between 2 supply chain forces
  - Efficiency ~ Cost
  - Effectiveness ~ Service

- What is missing: Sustainability

The **triple bottom line**

- '2006' Tipping point:

Trade off between
3 supply chain forces
reduces further
optimization potential



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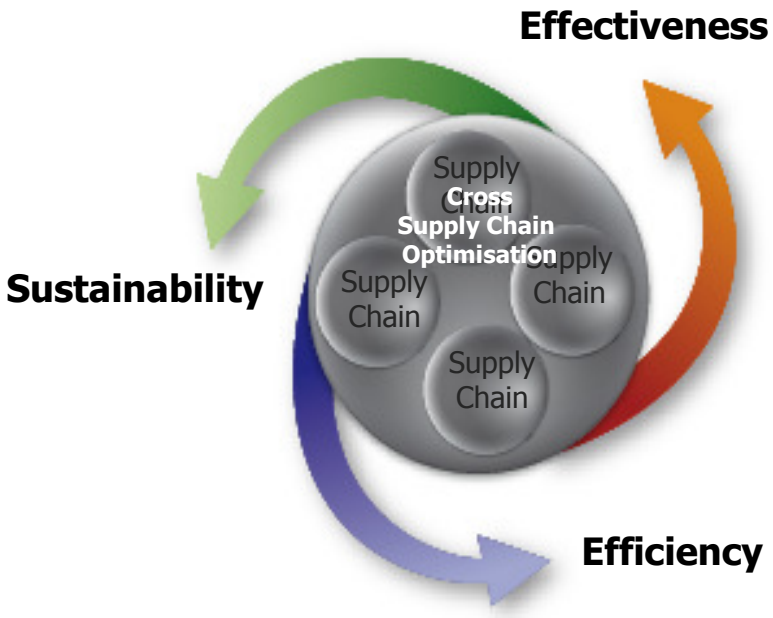
Supply chain development

Proposition:

'Beside technology improvement, only cross-company collaboration can simultaneously improve efficiency, effectiveness and sustainability'



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EU and CO³ Vision

EU Transport Policy Vision (EC 2011):

- Reduce Europe's dependence on imported oil
- Cut carbon emissions in transport by 60% by 2050
- Modal shift: 30% off road by 2030 – 50 % by 2050
- Multi-modal: European corridor network (low carbon/green)

CO³ Vision:

- Improve **efficiency, effectiveness, sustainability** simultaneously with horizontal collaboration and cross-company flow bundling
- *Consolidate and reduce freight flow*
- *Scale up for intermodal (rail/barge)*

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CO³ Consortium

NDL
HERIOT WATT UNIVERSITY
DINALOG Dutch Institute for Advanced Logistics
D'APPOLONIA engineering consulting company
TRI VIZOR The World's First Cross Supply Chain Orchestrator®
ZARAGOZA LOGISTICS CENTER
argus I
pastu consult
KNEPPELHOUT KORTHALS ADVOCATEN
LINDHOLMEN SCIENCE PARK
ITENE
ELUPEG Business Collaboration. Delivered
P&G
Cranfield UNIVERSITY
ARMINES
TU/e
Giventis International

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High Level Industry Board

Asda Stores	Georgia Pacific	Nike
Audi	H J Heinz	Nokia
Bain & Company	Heineken Brew eries	Philipps
Barry Callebaut	Jan de Rijk	Procter & Gamble Europe
Bosch	Kimberley Clark	PTV
Campari	Kraft Food	Rockw ell Automation
CIS di Nola	Kuehne Nagel	Solvay
DHL	Logitech	STEF-TFE
DBSchenker	Marlo	Tesco
Elemica	Mars	Unilever
Estée Lauder	Michelin	Wincanton
European Container Terminals (ECT)	Nestlé	Wolters Kluw er Transport Services

HLIB Mission:

- Review and discuss CO^3 milestones and results
- Gain valuable market feedback for development and success of CO^3 project

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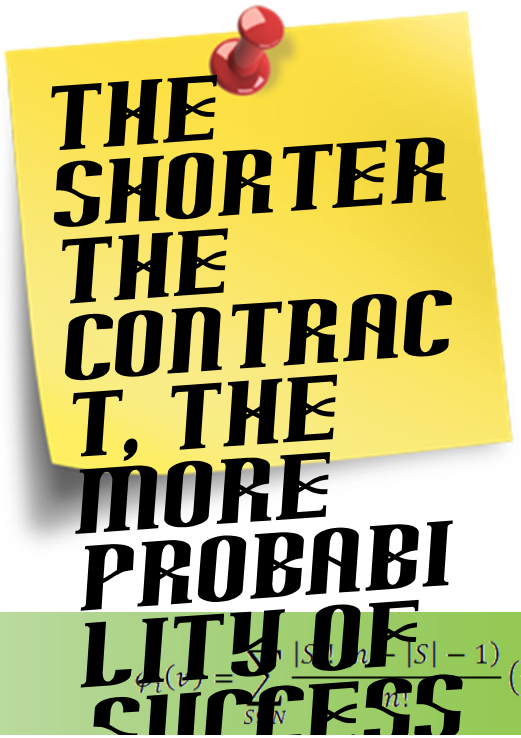
Topics in a horizontal collaboration project

- Awareness
- Matchmaking
- Synergy calculation, critical mass
- Profit and gain sharing
- Entry and exit rules
- Informal meetings at all levels
- Legal foundations and contracts
- And…operational elements
  - Product characteristics
  - Detailed synergy calculation
    - **Build business case**
  - Timewindows and other practicalities
  - Change management
  - IT
  - Pilot project
  - Communication plan



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THE COLLABORATION CHALLENGE

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CO³ Project => FOCUS

- Operational framework
- Legal framework
- Validate framework with test projects
- Mental Shift

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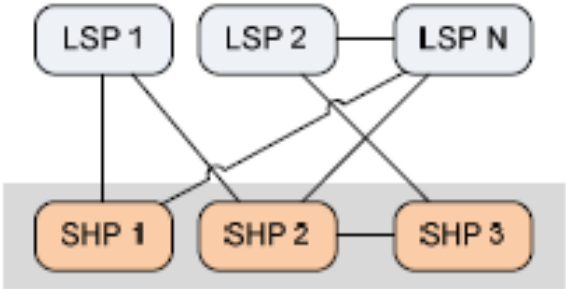
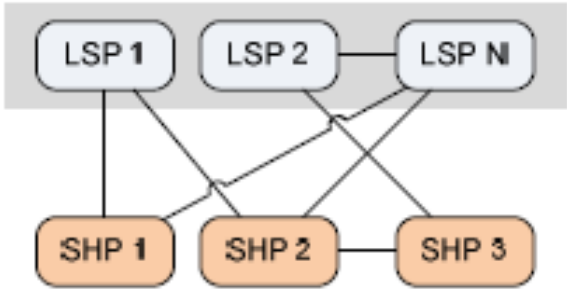
Operational Framework

Shipper collaboration



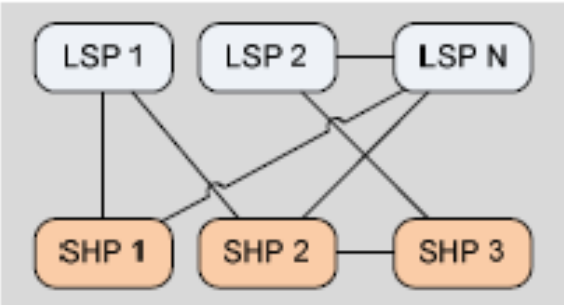
Multiple shippers are outsourcing the transport flows to one single carrier company (Purchasing group)

LSP collaboration



LSPs join forces to make use of each others' networks to improve efficiency and avoid empty running

Network collaboration



CO³ -> Best setup = LSPs and shippers work <u>actively</u> together !
Network collaboration offers most opportunities to improve efficiency as transport orders of shippers can be synchronized over time.

For a **sustainable success** and to oversee complete network need for new functionalities => **<u>trusted party</u>**

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Operational Framework

- Trustee
- General supply chain optimization tools
- Synergy calculation
- Matchmaking
- Gain sharing (from randomly to dynamic and full transparent either pure mathematics or with notion of game theories (eg. shapley value)
- CO2 calculation
- Entry and exit
- Stability
- Modal shift
- Legal foundations

➢ Only 1 target: **maximize total community gains**

TOOLS FOR DEVELOPING THE UPERO

DIFFERENT TOOL USAGE DEPENDING ON TYPE OF COLLABORATION

$$\varphi_i(v) = \sum_{S \subseteq N} \frac{|S|!\,(n-|S|-1)}{n!}\left(v(S \cup \{i\}) - v(S)\right)$$

Gain sharing methods

- Rules of thumb (Relative to...)
  - **Number of drop-off points**
  - **Number of shipments**
  - **Total weight of shipments**
  - **Total revenue**
  - **Equal amount**
- Game theoretical distributions
  - Shapley Value
  - Nucleolus
  - Compromise Value

$$\varphi_i(v) = \sum_{S \subseteq N} \frac{|S|!\,(n - |S| - 1)}{n!} \big(v(S \cup \{i\}) - v(S)\big)$$

Shapley value

- Shapley value's formula:

$$\phi_i(v) = \sum_{S \subseteq N \setminus \{i\}} \frac{|S|!\,(n-|S|-1)!}{n!}(v(S \cup \{i\}) - v(S))$$

- It is based on a company's **marginal contribution** to groups of other companies

- The only gain sharing concept that satisfies all the following fairness properties:
  - **Efficiency**: The complete savings of collaboration are distributed
  - **Monotonicity**: If player A adds more value to every coalition than player B, player A will get a higher payoff
  - **Dummy**: A player that adds no value to any coalition, will receive no payoff
  - **Symmetry**: If two players add exactly the same value to every other coalition, they will get the same payoff
  - **Individual fairness**: No player will suffer from collaboration (cost level after collaboration is not higher then individually, i.e. without collaboration)

Possible legal obstacles

- Standard / model contracts
- General terms and conditions
- How to divide costs and benefits
- Entry / resignation of (new) partners
- How to deal with decrease and increase of volumes
- Competition law
- Confidential information

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Legal framework

A) Cartel prohibition (Art. 101 EU), but is <u>not prohibiting</u>

- ❑ cooperation between non-competitors; -> OK
- ❑ cooperation between competing companies that cannot independently carry out the project or activity covered by the cooperation - OK

B) EU Guideline (2011/C 11/01) on Art. 101 EU 'horizontal co-operation agreements' *is <u>not prohibiting</u>* Horizontal Collaboration, if using a **trusted party** (eg 'joint purchasing organisation')

Legal role of Trustee to comply with EU law:

- ❑ no direct information exchange between the parties
- ❑ trustee do not compete with the parties on the selling market,
- ❑ all information necessary for the purchases is only disclosed to the joint purchasing organisation, not to the other parties
- ❑ example: quality specifications, quantities, delivery dates, maximum purchase prices

⇒ Horizontal co-operation agreement is not violating EC Competition law !

⇒ Recommendation: Use a trustee to avoid anti-trust !

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Test projects

Validation of the operational and legal framework in praxis:

1. **Road bundling between 2 Shippers**
2. **Multimodal partnership between multiple shippers**
3. **Retail distribution bundling**
4. **Warehousing and value added logistics clusters**

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Test projects

CO³ is looking for Shippers and LSPs interested in participating in the CO³ test projects!

CO³ Trustee: TRI-VIZOR
Application: by 1st July 2012
E-mail: contact@co3-project.eu

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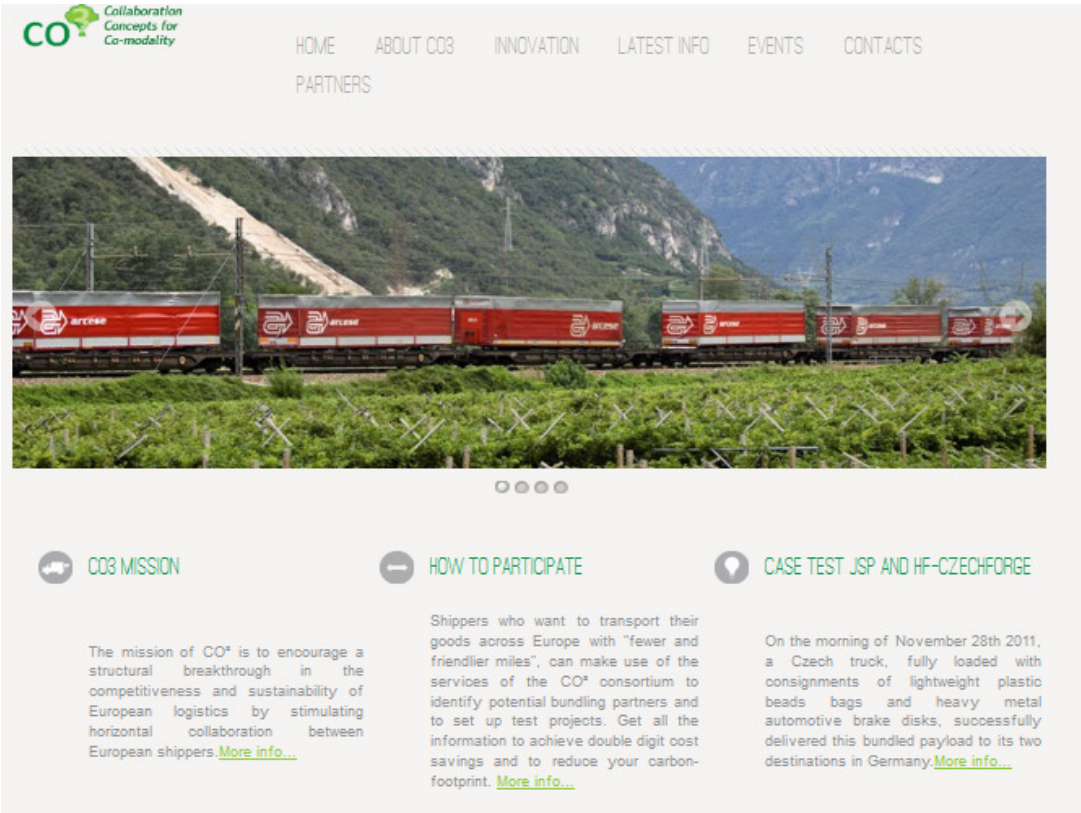
MORE INFORMATION AVAILABLE

ON OUR WEBSITE

www.co3-project.eu



Join our group on LinkedIn

Thank you!

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