

## Managing complexity within the LNG shipping industry

**“Change from doing the things right to doing the right things”**

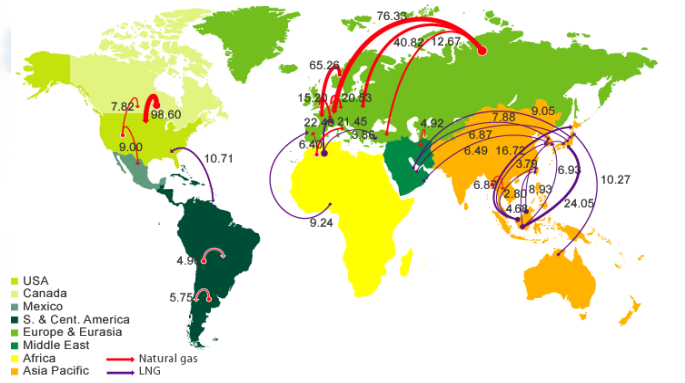
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TruEconomy Consulting  
June 9th 2005

## Agenda

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- General introduction and expectation
  - Background to challenges / opportunities in the bulk shipping industry
  - Background and best practices within Oil and Gas industry
  - The added value of new business tools for the LNG shipping industry

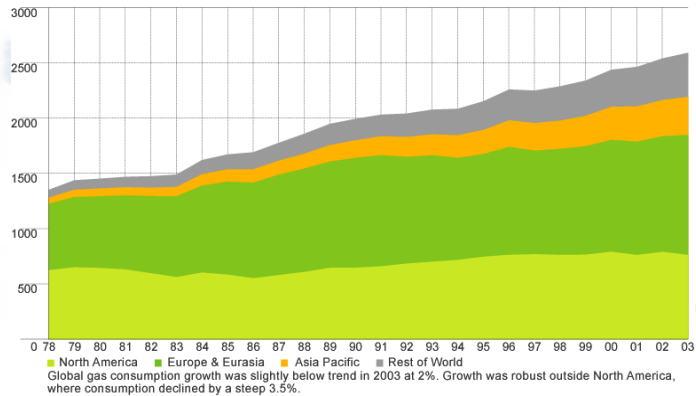
## LNG Shipping overview

Trade flows worldwide (billion cubic metres)



## LNG Shipping overview

Billion cubic metres



## The changing business model within LNG shipping

### Past and current

- Shipping services mainly via contract
- Contract based LNG purchase
- Liner
- 180 carriers: 20 million cbm, ranging from 1 to 145 k cbm
- 900 billion cbm miles
- Contract based investment policy

### Current and future

- Shipping services both via contract, spot
- Both contract and trading LNG purchase
- Both liner and tramp
- Expected 364 carriers in 2010
- Increasing rapidly
- More speculative investment policy

**Towards a projected  
15,000,000,000 dollar business\***

## Shipping Supply-Demand characteristics

### Demand

- Increased demand on flexibility, and efficiency
- Highest standard in quality, safety
- Provide competitive pricing
- High overall service levels
- Political issues
- Economical issues

### Supply

- Capital intensive and fixed asset base
- Global reach
- Overall planning complexity
- Rigid business model

**The challenge is in most effective, efficient  
and reliable supply-demand management**

## Bulk shipping trends

- Responding to customers' market dominance by consolidation and pooling
  - Acquisitions
  - Joint ventures
  - New builds
- Responding to higher service level demanded
- Customer base is looking for logistics service provider that can help them integrate and optimise the supply chain

## The trend influences the way of working

- Realising potential economies of scale
- Managing higher planning and scheduling complexity
  - Less transparency in the internal operations
  - More difficult to evaluate scenarios on feasibility and profitability
  - More difficult to optimise overall supply chain
- Moving towards more general logistics service provider
- Without adjustment of supporting tools it can be questioned whether the best operational, tactical and strategic decisions are made and executed

## The missing link for optimised planning and scheduling

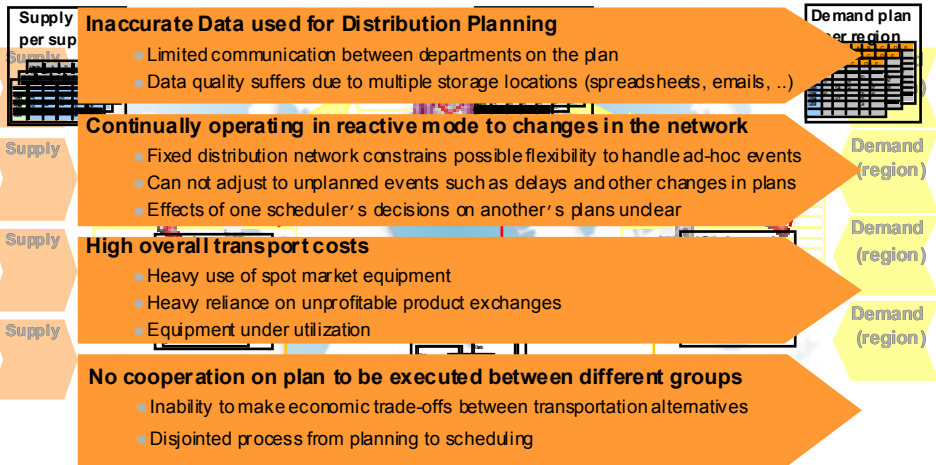
- Shipping industry has long-time (successfully) relied on home grown software solutions and highly experienced planners and schedulers
- There has not been any tool available within the shipping industry so far, to deal with the increasing complexity

## Developments

Shell and i2 Technologies, with years of operational research, co developed a new decision support solution specifically for Oil and Gas bulk distribution to support:

- Perform what if analysis and do scenario analysis
- Fully integrate the downstream supply chain operations
- Introduce full scalability

# Optimising the SC in the downstream Oil and Gas business



# Optimising the SC in the downstream Oil and Gas business



\* CapGemini

## The decision challenges faced by LNG shipping operations

- **Strategic**
  - What markets do I serve
  - What is the optimal fleet size and vessel dimensions
  - What is the optimal ratio chartered versus wholly owned vessels
  - What is the optimal spot contract ratio
  - How do we deal with LNG production fluctuations
- **Tactical**
  - What service levels are needed for individual customers
  - How many vessels should be operated in what region
  - What are the best contracts for specific customers and regions
  - What are the customer and port focus
- **Operational**
  - What is the most optimal schedule and plan taking into account constraints
  - Which vessel transports what specific load
  - How do I deal with unscheduled events and opportunities and worldwide events
  - Do I reject or accept a selling opportunity
  - What are potential scenarios for different business drivers

## Proven fact I

### Single geographical zone for Oil Major

- **Reduced transportation costs of USD 5 m/a (9% of total transportation cost)**
  - Reduced spot transportation unit purchases: USD 2.5 m/a, due to (primarily) better asset utilization of wholly owned part of the transportation units
  - Reduced demurrage costs (only for wholly owned part of the fleet): USD 2.5 m/a
- **Inventory reduction 15%, representing:**
  - One time inventory savings of USD 65 m
  - Annual repetitive inventory holding cost savings of USD 6.5 m

## Proven fact II

### National Oil and Gas Company

- **Reduced transportation costs of USD 9 m/a (4,5% of total transportation cost with 27 vessels), of which USD 3.2 m/a due to better utilization of wholly owned transportation assets**
- **Inventory reduction of 22% representing:**
  - One time inventory savings of USD 82 m
  - Annual repetitive inventory holding costs savings of USD 15 m, of which USD 11 m savings due to less 3rd party logistics services costs
- **Improved margins due to reduced reliance on prompt purchase of product USD 12m/a:**
  - Revenue sourced by spot purchases decreased with 3.3%, margin improvement of (average over all products) 17 %

## Methodology

	Format	Duration	Objective	Deliverable
1. The integrated logistics workshop	Workshop	1 day	Determine fit and benefits of DPS	Board presentation
2. Strategic integrated logistics study	Study	3 weeks	Develop solution blueprint and business case	• Solution architecture • Quantifiable savings • Implementation plan
3. Implementation	Project	3-4 months	Configure & deliver the solution	Integrated logistics solution

## Summary

- Customers will be more demanding on supporting new business model. Shipping companies have to be ready to support these
- Based on the downstream Oil and Gas industry best practices and years of operational research within diversity of industries new business tools have been produced
- Opportunities on savings and improved business performance
- Unlimited scalability
- Integration with customers assets and systems
- Currently customised and available for the shipping industry

Going from  
do the things right  
towards  
**Do the Right things**

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