Claude Fornarino
IBM ILOG Optimization and Supply Chain Solutions

Soluzioni per ottimizzare e rendere più efficiente la propria “Supply Chain”

Torino, 26 Maggio 2010
From supply chain/network

$$

...To Value Chain
Build Agile and efficient Decision-Support Systems

ILOG BRMS
Automating Policies

IF TO require Truck S and Delivery Region is Germany
THEN Allocate TO to CarrierXX

ILOG Optimization

Minimize Mileage
Maximize Delivery
Minimize Delay

Transaction Data
Capacity Data
ENTERPRISE DATA
Inventory Data
Resources Data

Dashboards
Diagrams
Charts
Maps
Gantt
The Optimization radar goes on when …

<table>
<thead>
<tr>
<th>Resources</th>
<th>Examples of choices to make</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital</td>
<td>Allocate</td>
</tr>
<tr>
<td>People</td>
<td>Acquire, schedule, assign, train</td>
</tr>
<tr>
<td>Time</td>
<td>Allocate</td>
</tr>
<tr>
<td>Equipment</td>
<td>Acquire, schedule, locate</td>
</tr>
<tr>
<td>Facilities</td>
<td>Locate, schedule</td>
</tr>
<tr>
<td>Vehicles</td>
<td>Acquire, route, schedule</td>
</tr>
<tr>
<td>Raw Material</td>
<td>Acquire, assign</td>
</tr>
</tbody>
</table>

**Keywords:** Buy, sell, schedule, assign, staff, plan, create, locate
ILOG Optimization Technology

Pianeta CIO 2010

Middleware & Components
Solution Platform
LoB
IT
OR

Quick Deployment, Vertical Functionality
Unique Customer Requirements
Scalable Enterprise Deployment
Vertical Assets

Performance, Ease of Modeling

CPLEX Optimization Studio

Engines & Tools

ODM Enterprise
Solution Platform

Network
LogicNet+

Production
Plant PowerOps

Transportation
Transportation Analyst

Inventory
Inventory Analyst

ILOG Supply Chain Applications

DB2
WAS
Visualization

Middleware & Components

ILOG Optimization Technology
A July 2008 GAO review of the DDG 1000 Zumwalt destroyer program pointed to several issues across the shipbuilding portfolio, including unexecutable business cases that allow programs to start with a mismatch between scope and resources.

Programs with cost overruns and schedule slippage include Lockheed Martin’s Littoral Combat Ship and the Armed Reconnaissance Helicopter with Bell Helicopter/Textron. The March 2008 GAO assessment found that requirements changed on 63% of programs reviewed once system development began, which contributed to poor program execution.

Supply chain is responsible for executing certain work packages within the project schedule. As part of a solid EVM and project risk management process, the supply chain must reliably execute tasks, but also quickly identify design and schedule changes that contribute to program variances along with proposed mitigation strategies.

(Source: AMR Research/Michael Burkett, Dec 2008)
Facing Volatility

- Demand fluctuation
- Product design and requirement change
- Supply chain impact production and delivery
- Move from product Sales to Services

with major factors…

- Competition, quality, time and cost pressure
- Customer more demanding
- Superior Services expected
- Product Complexity is increasing

Challenges to solve

- Manage & control the supply chain
  - e.g. suppliers, plants, partners
- Increase visibility across the value chain
- Integrate distributed organizations & geographies to execute a corporate policy
- Automate & control your business processes across the entire value chain
- Speed up production while reducing cost
- Continue competitive differentiation
- Accelerate engineering cycle to beat competitions
- Anticipate issues & unexpected events

All industries are seeking real solutions for their Global Supply Chains and Manufacturing Operations
Design and Production Value Chain

- Product Design
- Supply Chain modeling
- Plants Network
- Plant Capacity
- Plant Layout
- Suppliers
- Manufacturing
- Transport
- Inventory
- Demand Planning

- What?
- When?
- Where?
- How?
- With Who?

I DESIGN

I PRODUCE

clients
Design Supply Chain: Main Flow

**Product Design**

- Airbus AVL2: Generate precedence network from PDM data (Enovia)
- Samsung Electronics: Configure Litho process area

**Supply Chain Level**
- Simulation / Optimization

**Demand Planning**
- Scenario

**Factory Level**
- Simulation / Optimization

**Process Area (Atelier)**
- Simulation / Optimization

**Supply Chain modeling**

- Car Manufacturer Assembly Line Balancing
- Ship Building (Korea) Surface Treatment

**Production**
- Manufacturing
- Transport
- Inventory

**Scenario + Capacity**

**Collaboration**
- Demand

**Scenario**

- BOM / Route

**Ship Building (Korea)**
- Increase the Capacity by a factor 7-8

**Autocomp International**
- Design Inventory Management (Multi Echelon)
Customer cases

• Samsung Electronics workshop setting optimization
  – A standard factory has between 50 and 100 Photo tools
  – ILOG Optimization is used to define the “best” number of photo-litho machines (1 Machine cost US$15-20M) to accommodate a given projected demand and a given set of product routes
  – 5% to 10% savings over the first year of operations

• Ship Building Korea increased capacity
  – Reconfigure the plant to move to construction of 10-20 vessels to 50-100 vessels

• Car manufacturer assembly line design optimization
  – Decrease the time to configure Assembly line by 60% to 70%
  – Finds better solution
    • 5% improvement on overall costs for single model factories
    • 7-8% improvement for multi-model factories
  – Synchronize station tact-time to achieve global line tact-time
  – Increase Production throughput

• Ship Building surface treatment
  – Steel Elements are going through a robotised surface treatment workshop (several robots and tanks)
    • Optimization is used to find the “right” robot moves to achieve a given cycle time.
    • Simulation used to validate Optimization results
Business Challenges for Network Design

- What is the optimal number, location and capacities of suppliers, plants and production lines & processes?

- What is the right number, location and size of consolidation centers, forward DCs, cross-docks, etc.?

- How to best assign customers and products to DCs?

- What is the impact of changes to production and warehousing capabilities on cost and service?

- Determining the trade-offs between
  - Inbound and outbound transportation costs, duties, tariffs, taxes, etc.
  - Transportation costs and fixed facility costs
  - Manufacturing Costs
  - Costs and service levels
IBM ILOG Inventory and Product Flow Analyst: Questions that we answer

What impact does each supplier have on the entire supply chain?

Which facilities should be make to order or make to stock?

How should shipments and production be coordinated?

How can I take advantage of risk pooling to reduce inventory?

Procurement

Packaging & Distribution

Manufacturing

Customer Service

Inventory Questions:
1. Quantity per SKU?
2. Where?

Objective

1. Maximize Service Level
2. Minimize Inventory Cost
Production Supply Chain – Inter-dependency

- **Current Supply Chain**
  - Hierarchical
  - Top-to-Bottom then Bottom-up
  - Inter-Node negotiation

- **3 levels of manufacturing**
  - Completion
  - Green aircraft
  - Primary parts
Level 1:
Automate Planning & optimize Capacity at each level
Decision Support for Planning/Scheduling and Execution

Level 2:
- Vertical Integration
- Scenario Management
- Process/Work Flows

Level 3:
Collaboration & Propagation to drive anticipation at all levels

Level 4: Provide Visibility
- KPI Cockpit Analyzer
- KPI definition at each level

Production Optimization

Vertical & Horizontal Integration into one Global Planning Function including Parts, Assembly and Completion

IBM / ILOG technology: ODME
Scenario+collaboration
Level 1: Automate Planning & optimize Capacity at each level
Decision Support for Planning/Scheduling and Execution

Level 2:
- Vertical Integration
- Scenario Management
- Process/Work Flows

Level 3: Collaboration & Propagation to drive anticipation at all levels

Level 4: Provide Visibility
- KPI Cockpit
- Analyzer
- KPI definition at each level

KPI Cockpit & Data Analysis
- IBM Fishkill
- TSMC

Leading German Car Manufacturer
- Samsung Electronics
- Ship Builders (Korea)
- Hansol Paper

Samsung Electronics
- Ship Builders (Korea)
- Airbus – AVL2
- Samsung Electronics
- Ship Builders (Korea)

- Samsung Electronics
- IBM Fishkill (EFK)

Samsung Electronics
Ship Builders
Port Of Singapore
Execution Virtuous Cycle - Principles

- Dynamic Scheduler
- Parameters
- Inputs
- PDP/PGP
- Propagate (Workman)
- Event tracer
- Execute MES, Real Time Dispatcher
- Executed plan
- Monitor/Measure KPI Cockpit
- VISU

BRMS
ODME
Airbus success story

Problem
- Increasing complexity in the Final Assembly Line, 8000 tasks on A380 station 30
- Volatile Market demand; Profitability is a challenge
- Tough competition with Boeing - product costs & capability to deliver on time

Goals
- Increase the productivity by optimizing resources
- Make planning quality independent from planner experience
- Capability to plan activities, outstanding works & manage unexpected events

Solution
- Visual, ergonomic and powerful planning tool running on a standard PC
- Tailored solution using ILOG - Optimization, Business Rules & Visualization
- Delivered by ILOG Professional Services and fully integrated with SAP

Benefits
- Manufacturing know-how of most experienced people capitalized within application
- Harmonization (one common tool) across all AIRBUS aircraft families
- User friendly tool set accepted by all Final Assembly Line planners to drastically reduce planning effort from 7 days to 3-4hours
Over 200 of the Global 1000 use ILOG

Over 200 of the Global 1000 use ILOG

Financial Services: Banking, Financial Markets

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Logo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freddie Mac</td>
<td><img src="image" alt="Freddie Mac Logo" /></td>
</tr>
<tr>
<td>Credit Suisse</td>
<td><img src="image" alt="Credit Suisse Logo" /></td>
</tr>
<tr>
<td>Bank One</td>
<td><img src="image" alt="Bank One Logo" /></td>
</tr>
<tr>
<td>HSBC</td>
<td><img src="image" alt="HSBC Logo" /></td>
</tr>
<tr>
<td>The Royal Bank of Scotland</td>
<td><img src="image" alt="The Royal Bank of Scotland Logo" /></td>
</tr>
<tr>
<td>VISA</td>
<td><img src="image" alt="VISA Logo" /></td>
</tr>
<tr>
<td>Deutsche Bank</td>
<td><img src="image" alt="Deutsche Bank Logo" /></td>
</tr>
<tr>
<td>Fannie Mae</td>
<td><img src="image" alt="Fannie Mae Logo" /></td>
</tr>
<tr>
<td>Countrywide Financial</td>
<td><img src="image" alt="Countrywide Financial Logo" /></td>
</tr>
<tr>
<td>Merrill Lynch</td>
<td><img src="image" alt="Merrill Lynch Logo" /></td>
</tr>
<tr>
<td>Bank of America</td>
<td><img src="image" alt="Bank of America Logo" /></td>
</tr>
<tr>
<td>American Express</td>
<td><img src="image" alt="American Express Logo" /></td>
</tr>
<tr>
<td>UBS</td>
<td><img src="image" alt="UBS Logo" /></td>
</tr>
<tr>
<td>Bear Stearns</td>
<td><img src="image" alt="Bear Stearns Logo" /></td>
</tr>
<tr>
<td>Daiwa Securities America Inc.</td>
<td><img src="image" alt="Daiwa Securities America Inc. Logo" /></td>
</tr>
<tr>
<td>ABN AMRO</td>
<td><img src="image" alt="ABN AMRO Logo" /></td>
</tr>
<tr>
<td>Societe Generale</td>
<td><img src="image" alt="Societe Generale Logo" /></td>
</tr>
<tr>
<td>Equifax</td>
<td><img src="image" alt="Equifax Logo" /></td>
</tr>
<tr>
<td>Citigroup</td>
<td><img src="image" alt="Citigroup Logo" /></td>
</tr>
<tr>
<td>Capital One</td>
<td><img src="image" alt="Capital One Logo" /></td>
</tr>
<tr>
<td>Fidelity Investments</td>
<td><img src="image" alt="Fidelity Investments Logo" /></td>
</tr>
<tr>
<td>Barclays</td>
<td><img src="image" alt="Barclays Logo" /></td>
</tr>
<tr>
<td>Lehman Brothers</td>
<td><img src="image" alt="Lehman Brothers Logo" /></td>
</tr>
<tr>
<td>Prudential Financial</td>
<td><img src="image" alt="Prudential Financial Logo" /></td>
</tr>
<tr>
<td>TIAA CREF</td>
<td><img src="image" alt="TIAA CREF Logo" /></td>
</tr>
<tr>
<td>JPMorgan</td>
<td><img src="image" alt="JPMorgan Logo" /></td>
</tr>
<tr>
<td>Wells Fargo</td>
<td><img src="image" alt="Wells Fargo Logo" /></td>
</tr>
<tr>
<td>Franklin Templeton Institutional</td>
<td><img src="image" alt="Franklin Templeton Institutional Logo" /></td>
</tr>
<tr>
<td>Wachovia</td>
<td><img src="image" alt="Wachovia Logo" /></td>
</tr>
<tr>
<td>Morgan Stanley</td>
<td><img src="image" alt="Morgan Stanley Logo" /></td>
</tr>
<tr>
<td>Commerzbank</td>
<td><img src="image" alt="Commerzbank Logo" /></td>
</tr>
<tr>
<td>Charles Schwab</td>
<td><img src="image" alt="Charles Schwab Logo" /></td>
</tr>
<tr>
<td>Wamu.com</td>
<td><img src="image" alt="Wamu.com Logo" /></td>
</tr>
</tbody>
</table>
Over 200 of the Global 1000 use ILOG

<table>
<thead>
<tr>
<th>Public: Government</th>
<th>Distribution: Travel &amp; Transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNITED STATES POSTAL SERVICE</td>
<td>FedEx</td>
</tr>
<tr>
<td>U.S. AIR FORCE</td>
<td>ups</td>
</tr>
<tr>
<td>USDA</td>
<td>SAS</td>
</tr>
<tr>
<td>U.S. ARMY</td>
<td>MENLO WORLDWIDE</td>
</tr>
<tr>
<td>NAVY</td>
<td>B SNCB</td>
</tr>
<tr>
<td>GROUPE LA POSTE</td>
<td>SOUTHWEST.COM</td>
</tr>
<tr>
<td>THE PENSION SERVICE</td>
<td>AmericanAirlines</td>
</tr>
<tr>
<td>Department for Work and Pensions</td>
<td>Delta</td>
</tr>
<tr>
<td>Los Alamos National Laboratory</td>
<td>AIR FRANCE</td>
</tr>
<tr>
<td>Lockheed Martin</td>
<td>OCEANIC</td>
</tr>
<tr>
<td>U.S. NAVY</td>
<td>Lufthansa</td>
</tr>
<tr>
<td>Raytheon</td>
<td>TNT</td>
</tr>
<tr>
<td>GENERAL DYNAMICS</td>
<td>OOCL</td>
</tr>
<tr>
<td>NORTHROP GRUMMAN</td>
<td>AIRFRANCE</td>
</tr>
<tr>
<td>Thales</td>
<td>YELLOW</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td>SCHNEIDER NATIONAL</td>
</tr>
<tr>
<td>MITRE</td>
<td>ROADWAY Express</td>
</tr>
<tr>
<td>Federal Communications Commission</td>
<td>CSX</td>
</tr>
<tr>
<td>Raytheon</td>
<td>KLM</td>
</tr>
<tr>
<td>Thales</td>
<td>QANTAS</td>
</tr>
<tr>
<td>Raytheon</td>
<td>CONTINENTAL AIRLINES</td>
</tr>
<tr>
<td>Thales</td>
<td>IBERIA</td>
</tr>
<tr>
<td>Raytheon</td>
<td>AMERICA WEST AIRLINES</td>
</tr>
<tr>
<td>Thales</td>
<td>BNSF RAILWAY</td>
</tr>
<tr>
<td>Raytheon</td>
<td>AMERICA WEST AIRLINES</td>
</tr>
<tr>
<td>Thales</td>
<td>AMERICA WEST AIRLINES</td>
</tr>
<tr>
<td>Raytheon</td>
<td>MAERSK SEALAND</td>
</tr>
<tr>
<td>Thales</td>
<td>MAERSK SEALAND</td>
</tr>
<tr>
<td>Raytheon</td>
<td>MAERSK SEALAND</td>
</tr>
</tbody>
</table>
Over 200 of the Global 1000 use ILOG

<table>
<thead>
<tr>
<th>Communications: Telecommunications</th>
<th>Retail</th>
<th>Communications: Energy &amp; Utilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>verizon</td>
<td>ebay</td>
<td>ExxonMobil</td>
</tr>
<tr>
<td>orange</td>
<td>L.L.Bean</td>
<td>DTE Energy</td>
</tr>
<tr>
<td>Level(3) Communications</td>
<td>LINENS-N-THINGS</td>
<td>bp</td>
</tr>
<tr>
<td>swisscom</td>
<td>Hallmark</td>
<td>OLJEDIREKTORATET</td>
</tr>
<tr>
<td>Bouygues Telecom</td>
<td>Hallmark</td>
<td>Norweigian Petroleum Directors</td>
</tr>
<tr>
<td>TELEGLOBE</td>
<td>Hallmark</td>
<td>Q Hydro Quebec</td>
</tr>
<tr>
<td>NTT</td>
<td>Hallmark</td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>ERICSSON</td>
<td>Hallmark</td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>@ Bellsouth</td>
<td>Hallmark</td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>AVAYA</td>
<td>Hallmark</td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>MCI</td>
<td>Hallmark</td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>NOKIA Connecting People</td>
<td>Hallmark</td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>O2</td>
<td>Hallmark</td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>Qwest</td>
<td>Hallmark</td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>T-Mobile</td>
<td>Hallmark</td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>vodafone</td>
<td>Hallmark</td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>AT&amp;T</td>
<td>Hallmark</td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>Telefonica</td>
<td>Hallmark</td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>ALCATEL</td>
<td>Hallmark</td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>Sprint</td>
<td>Hallmark</td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>france telecom</td>
<td>Hallmark</td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>Lillian &amp; Vernon</td>
<td></td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>EDF</td>
<td></td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>Pacific Gas and Electric Company</td>
<td></td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>ABB</td>
<td></td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>TVA</td>
<td></td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>CALPINE</td>
<td></td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>BR</td>
<td></td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>PETROBRAS</td>
<td></td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>CALIFORNIA ISO</td>
<td></td>
<td>Hydro Quebec</td>
</tr>
<tr>
<td>internal ILOG Document</td>
<td></td>
<td>Hydro Quebec</td>
</tr>
</tbody>
</table>
## ILOG Optimization and Supply Chain Solutions by Industry Sectors

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Industrial</th>
<th>Public</th>
<th>Communications</th>
<th>Financial Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Products</td>
<td>Automotive</td>
<td>Healthcare and Lifesciences</td>
<td>Media</td>
<td>Banking</td>
</tr>
<tr>
<td>Production Planning and Scheduling</td>
<td>Sales &amp; Operations Planning</td>
<td>Nurse Scheduling</td>
<td>Ad Scheduling</td>
<td>Cash Management</td>
</tr>
<tr>
<td>Network and Inventory Optimization</td>
<td>Aerospace &amp; Defense Master production Planning Complex project scheduling</td>
<td>Production Planning and Scheduling Network and Inventory Optimization</td>
<td>Energy &amp; Utilities Smart Grid Asset Optimization</td>
<td></td>
</tr>
<tr>
<td>Retail</td>
<td>Aerospace &amp; Defense Master production Planning Complex project scheduling</td>
<td>Government (Post Office) Network optimization Transportation planning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network, Inventory, and Product Flow Optimization</td>
<td>Electronics Complex project scheduling Master production planning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Campaign Optimization Workforce Scheduling</td>
<td>Chemical and Petroleum Network and Inventory Optimization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel and Transportation Network Optimization Transportation Planning Asset Optimization</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Industry Solutions:
- **Consumer Products**: Production Planning, Sales & Operations Planning.
- **Industrial**: Automotive, Aerospace & Defense, Electronics, Chemical and Petroleum.
- **Public**: Healthcare and Lifesciences, Nurse Scheduling, Production Planning and Scheduling, Network and Inventory Optimization.
- **Communications**: Media Ad Scheduling, Energy & Utilities Smart Grid Asset Optimization.
- **Financial Services**: Banking Cash Management.
Auto End-to-End View of Manufacturing Planning & Scheduling

Optimization-based MPO Solutions

Planning
- Demand Planning
  - Consensus Forecast
- Forecast Netting
  - Netted Forecast
- Sales & Operation Planning
  - S&OP
  - Supply Commits
- Master Production Schedule
  - Proc. Forecast (Enterprise Items)
- Car Sequencing
  - WIP Schedule
  - Procurement forecast

Ordering
- Order Processing
  - Confirmed Order
  - Due Date Quote
  - Delivery Commits
- Manufacturing
  - FP Procurement suggestion
- Pack&Ship
  - QA’d Material
- Receiving
  - Material Delivery
  - ASN

Production
- FP Procurement Suggestion

Material Management
- Supplier Collaboration
  - PO
- Suppliers
  - ASN
  - R

Procurement
- QA’d Material
- ASN
# Railroad Applications

<table>
<thead>
<tr>
<th>High Speed</th>
<th>Conventional Train</th>
<th>Urban/suburban train</th>
<th>Freight conventional</th>
<th>Freight multimodal</th>
<th>Material</th>
<th>Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Trip plan</td>
<td>• Trip Plan</td>
<td>• Schedule</td>
<td>• Vehicle routing &amp; delivery scheduling</td>
<td>• Vehicle &amp; container loading</td>
<td>• Fleet management</td>
<td>• Track allocation</td>
</tr>
<tr>
<td>• Time table optimization</td>
<td>• Network + Time table optimization</td>
<td>• Time table optimization</td>
<td>• Network + Time table optimization</td>
<td>• Time table optimization</td>
<td>• Workshop organization</td>
<td>• Track Maintenance planning</td>
</tr>
<tr>
<td>• Drivers, crew management</td>
<td>• yard, crew, driver scheduling</td>
<td>• Drivers management</td>
<td>• Drivers management</td>
<td>• Drivers management</td>
<td>• people planning</td>
<td>• Resources allocation</td>
</tr>
<tr>
<td>• HS Train management</td>
<td>• train + car management</td>
<td>• shuttle train management</td>
<td>• Fleet assignment + rolling stock management</td>
<td>• terminal management</td>
<td>• locomotives, cars, management</td>
<td>• Assets management (ie rails,..)</td>
</tr>
<tr>
<td>• Reservation • Back office • yield</td>
<td>• Ticketing • Reservation • Back Office</td>
<td>• Ticketing (contactless) • Back Office</td>
<td>• Back office • Tariff, invoicing</td>
<td>• Back office • invoicing</td>
<td>• security management</td>
<td></td>
</tr>
<tr>
<td>• Rail Station management</td>
<td></td>
<td></td>
<td>• warehouse management</td>
<td></td>
<td></td>
<td>• physical network supervision</td>
</tr>
<tr>
<td>• security management</td>
<td>• security management</td>
<td>• security management</td>
<td>• Derailment prevention</td>
<td>• Security management</td>
<td>• Security management</td>
<td>• Security management</td>
</tr>
</tbody>
</table>
Processes and steps

**Project Definition**

- Discovery Workshop
- Assessment

**Project Implementation**

- Pilot Project
- Application Finalization

- Open Up: iterative Methodology

**Going Live**

- User Training
- Go-Live Support
- Knowledge Transfer

**Post Go-Live**

- Additional deployment license / License agreement extension
- Multi-site Deployment
- Application Maintenance

**Project development license / ALA / SALA**

- ALA / SALA

**time**
Middleware & Components

Solution Platform

LoB

IT

OR

Quick Deployment, Vertical Functionality

Unique Customer Requirements

Scalable Enterprise Deployment

Performance, Ease of Modeling

Vertical Assets

ODM Enterprise

Solution Platform

Network
LogicNet+

Production
Plant PowerOps

Transportation
Transportation Analyst

Inventory
Inventory Analyst

ILOG Supply Chain Applications

ILOG Optimization Technology

Middleware & Components

ILOG Engines & Tools

CPLEX Optimization Studio

DB2

WAS

Visualization

Engines & Tools

Ease of Modeling

Performance, Scalable Enterprise Deployment

Vertical Assets

ILOG Optimization Technology

ILOG Supply Chain Applications

Quick Deployment, Unique Customer Requirements
ILOG Vision for Survival

In a Challenging Economy

Provide Visibility

Make Better Decisions, Faster

Optimize Your Business
Grazie dell’attenzione

Claude Fornarino

IBM ILOG Optimization and Supply Chain Solution

fornarin@fr.ibm.com