Introduction to Operations Management

运营管理概论

范登波 Thomas VANDENBOGAERDE, CPIM

Thomas.vandenbogaerde@gmail.com

If any question: WeChat: fandengbo85

Thomas VANDENBOGAERDE
范登波

- MSc Aerospace Industrial Engineering, **ISAE-SUPAERO**
- MSc Environmental Engineering, **清华大学**
- **Certified in Production and Inventory Management** by the American Association of Operations Management
- Production Engineer, **Michelin** (France, Algeria, Nigeria)
- Project Engineer, **Lafarge** (China & Nigeria)
- Lead auditor Sustainability, **Ernst & Young** (France)
- Senior consultant, Operational Excellence, **Accenture** (France)
- Senior consultant, Operational Excellence, **Kepler Consulting (China)**
- **Manager, Supply Chain, Freelog Consulting** (Australia)

Countries. Consulting means traveling

Customers. Consulting means diversity.

*Non exhaustive list

Fact #1 Operations Management / Supply Chain Management are **GLOBAL** topics, so…

- Class will be held **in English**, or **in French** when relevant
- Most multimedia items and articles will be **in English**
- Slides will be written **in English**
- The exam will be **in English**
- **This sign**  **means the exam will test you about it**

…

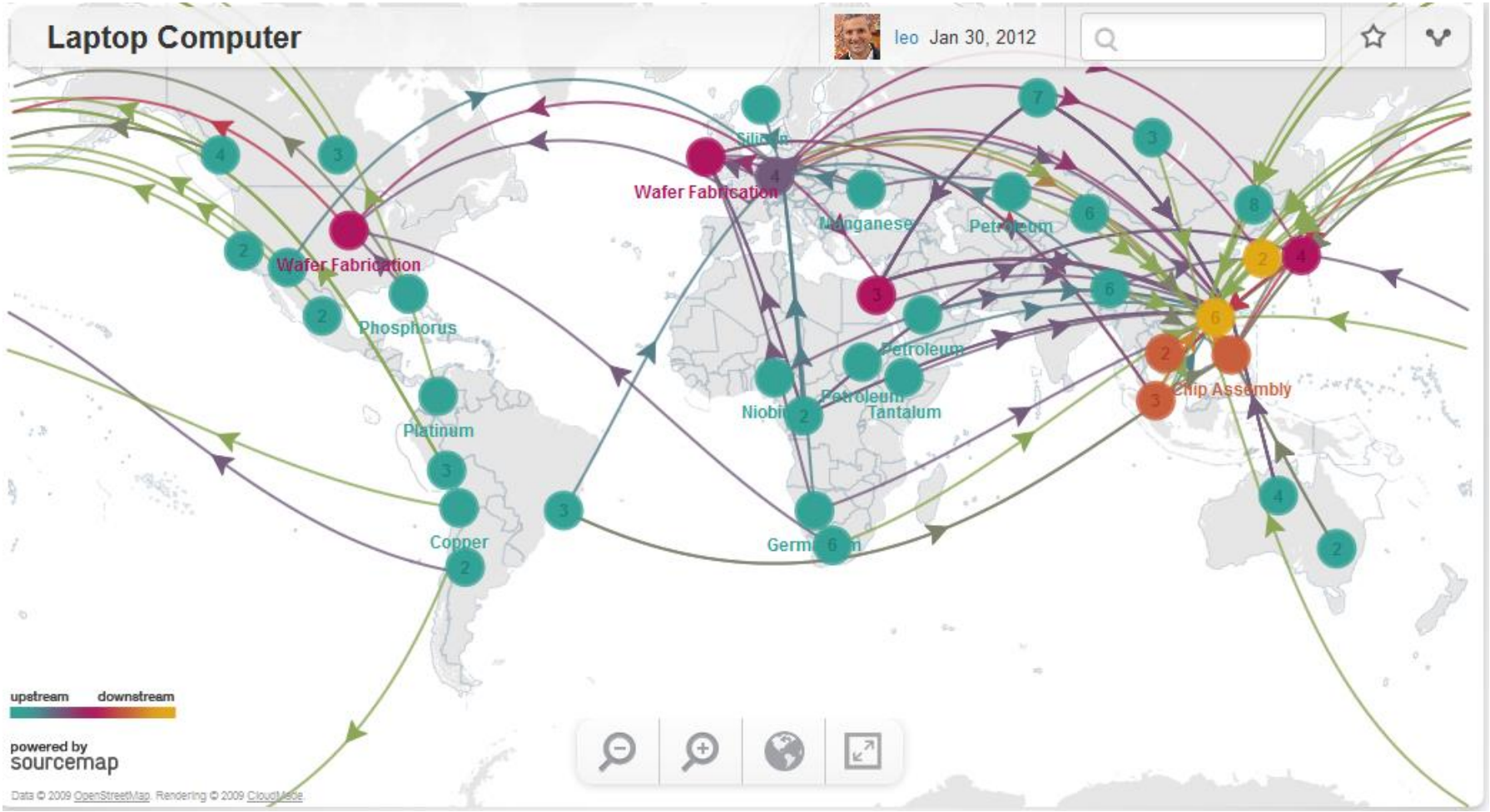
- 我也会说中文，可是我的水平很差 ^_^

The topic is not new…

…the context changed

The scale changed too. 中国制造

How would you make a laptop?



It becomes clear you need planning and management!

By the end of this module, you should be familiar with the following notions:

- Suppliers and Customers
- Production planning techniques
- Inventory management techniques
- Production management
- Lean manufacturing
- Quality management

Official Syllabus

- **SE42 : Aeronautical production and maintenance techniques**
- **Introduction to aeronautical production and maintenance**
- Aircraft lifecycle
- Engineering along the lifecycle
- Overview of aeronautical production
- Overview of aeronautical maintenance
- **Forecasting**
- Production : demand characteristics, forecasting techniques
- Maintenance : failure models
- **Inventory management**
- Production : inventory classification, economic order quantity, ordering policies
- Maintenance : spare parts management, costs and regulation
- **Production planning**
- Sales and operations planning, master scheduling, MRP
- Capacity planning
- Production scheduling
- **Lean manufacturing**
- Production activity control : kanban
- **Reliability – Availability – Maintainability – Safety**
- Reliability analysis, regulation
- **Aeronautical maintenance program**
- Maintenance in an airline company
- Regulation : JAR 145, 66, 147
- Organization of a maintenance department
- **Prerequisites**
- Probabilities and statistics MA13

And whatever you future job, or your future company,

be able to understand **interactions** between:

- MARKETING
- PURCHASING
- PRODUCT DEVELOPMENT
- PRODUCTION & QUALITY
- HUMAN RESOURCES
- and FINANCE.

Fact #2 If it's not fun, it's not sustainable

- You need to **SEE** things. We'll watch and comment!
- This is an introduction! No PhD level equations, but orders of magnitude to understand and/or learn
- **Exam:**
  - Multiple choices: notions and vocabulary (English)
  - Calculation exercises (Maths)
  - An « open » question to solve (English)
  - **No documents**

Why is operations management important?

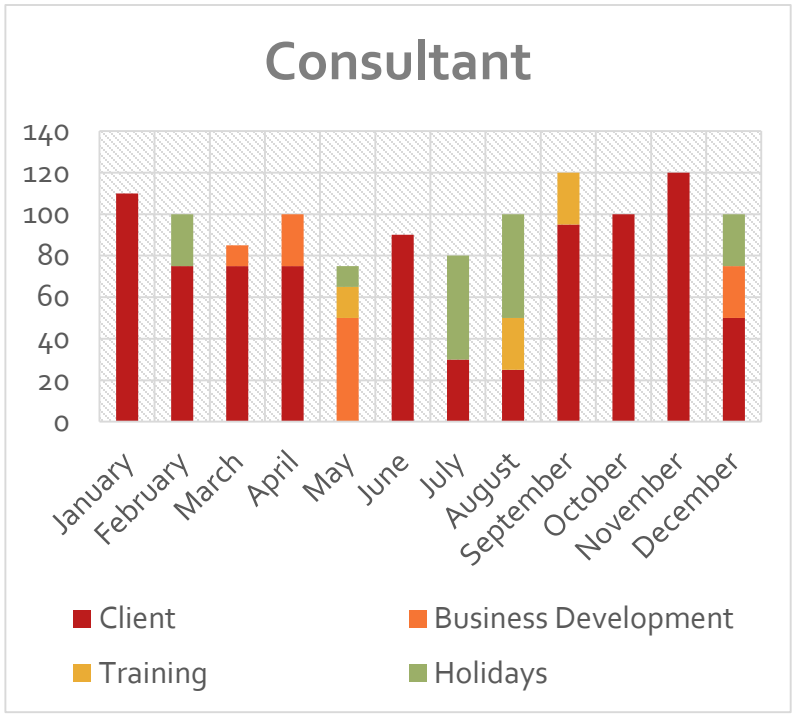
- Before of 中国制造 - « made in China »
- Your R&D can create a good product, but then you need to produce it
  - **THE RIGHT QUANTITY**
  - **AT THE RIGHT TIME**
  - **IN THE RIGHT PLACE**

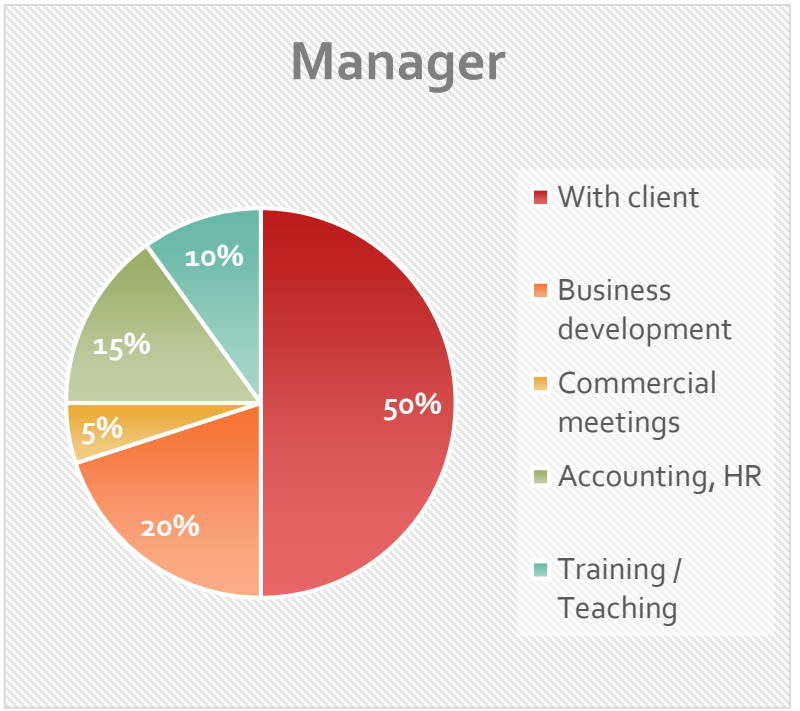
Fact #3 However rational you may be, people are designing systems and products with and for people.

- A manager is not only someone who is on time and on budget
- You cannot be right alone.
- Too rational can (unexpectedly) lead to a loss of efficiency. You still need to remain flexible.

Timetable of a consultant = Flexibility, Seasonality

(a bit like Operations Management)





ATR Spare Parts division – Lean program definition and deployment

Context

Operations in Services Division could require the interaction of several services to fulfill a customer demand (Front Office, Spare engineering, Contract Administration, Claims service, Repair management, logistics, ….) – those interfaces generate several Non-Value-Added for customers.
The Service Division (after sales) requested external support to initiate Lean “culture” deployment within the organization

Objectives

- Structure the Global Lean Program
- Identify main improvement areas to launch proof of concept lean action (VSM and Kaizen)
- Train a core team as Green, Yellow and White belts
- Support trainees on VSM and Kaizen

Approach

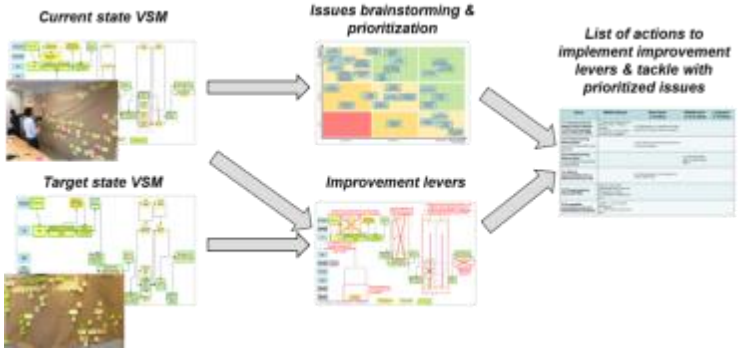
- Build a diagnosis of main process and organization in order to identify the best process to initiate
- Training a core team as Green, Yellow and White belts
- Drive the first VSM and Kaizen workshops as proof of concept
- Structure the Global Lean Program and align top management on priorities (governance, training sessions , program drum-beat, communication supports)
- Support « do with » trainees on their first workshops

Achievements

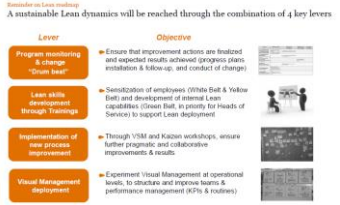
- **More than 30 people trained in Green / Yellow belts**
- **More than 70 people trained as White belt**
- **Lean Program drum-beat PMO set-up**
- **4 VSM workshops**
- **15 Kaizen workshops**
- **NVA reduction leaded to <4 months ROI**

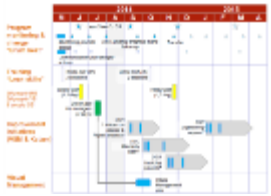
Illustrations

- VSM and Kaizen workshops



- Global Lean Program structure





Kuehne+Nagel – A350XWB Production Logistics

Context

AIRBUS has outsourced its logistics to KUEHNE+NAGEL in 2007. AIRBUS has launched a study to co-design the logistics for Centers of Excellence and Final Assembly Line from sourced product reception to points of use.

Objectives

- Define best assumptions from existing data and related model to update the study
- Define best standardized processes, means / solutions to reach the best compromise both for recurring and non recurring costs for the production ramp up

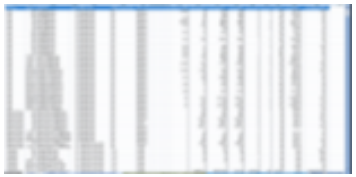
Approach

- Modeling macro level budgets (CoE: Hamburg, Stade, Bremen, Nantes, Saint-Nazaire, Saint-Eloi, Broughton, Getafe, Illescas & Puerto Real / FAL in Toulouse)
- Defining standards
- Collection of existing enablers, lean process in Airbus
- Standard selection criteria workshops
- Tender process on selected standardized means
- Catalogue publication (processes, handling/storing means)
- Defining complete solutions (by section & segment family)
- Validating budget and defining through a gap analysis with the A340 a drill down
- Mitigating data uncertainty risks through complementary analysis
- Defining the best amendment to existing contract between Airbus and Kuehne+Nagel

Achievements

- **Data referential, assumptions and model budget**
- **Detailed budget and solution description (layout, processes, means, organization)**
- **Gap analysis (A350XWB Vs A340)**
- **Contract amendment**

Illustrations



AIRBUS USA – Integrated « end-to-end » delivery solutions

Context

The new FAL in USA will receive consolidated parts from Hamburg before shipping.
Initial plan was to have the same processes as for FAL-China which requires a strong level of handling (wrapping & several medias changes).
An opportunity has been identified to design a new concept of integrated solutions for the overall process (handling and parts damage risks reduction)

Objectives

- Design delivery solutions (trolleys, boxes, ….) to be used in the overall process: from Hamburg hub to the point of use in the production station
- Build a Business Case to compare new concept with existing solution (Investment and Recurring Costs perspective)
- Support on the call-for-tender and the co-engineering phase with suppliers

Approach

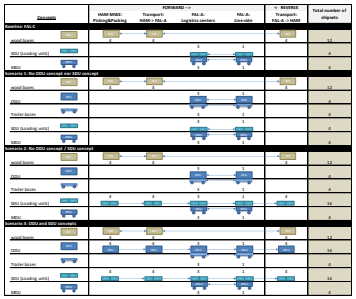
- Asses the need and standardize delivery solutions (trolleys)
- Build baseline and three different scenarios costs (investment and recurring costs aspect)
- Write technical specifications for delivery solutions
- Technical support for Call-for-Tender
- Ensure co-engineering phase with selected suppliers
- Support implementation with production, logistics and suppliers

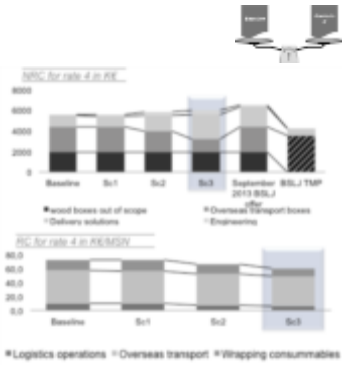
Achievements

- **New end-to-end concept acceptation by main stake-holders (production and logistics)**
- **Business case benefits confirmed by sourcing and operations implementation**
- **Detailed co-engineering phase coordination between delivery solutions suppliers and production *(on going)***
- **Delivery solutions implementation *(on going)***

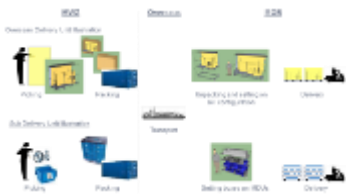
Illustrations

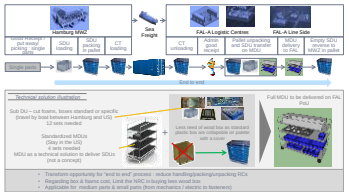
- Scenarios and Business Case synthesis illustrations





- Proposed solution illustration





DUBAI WORLD CENTRAL Aviation District – Next generation aeronautical valley design

Context

In order to take advantage of Dubai geographical position, its government launched an ambitious program to become an air traffic hub between Asian and Western continents.

Business and technical challenge was to design a solution with high level of technical performance and having a very competitive business model from a real estate standpoint.

Objectives

- Yield a wide & global set of aerospace industries with a tailor made offer
- Consolidate the full General aviation District with capabilities to support Commercial Aviation, cargo and some militaries overhaul
- Design new solutions to tackle lack of spares, lack of expertise and lack of qualified technicians
- Balance cost of these new developments keeping airside / landside square meter benchmarked prices

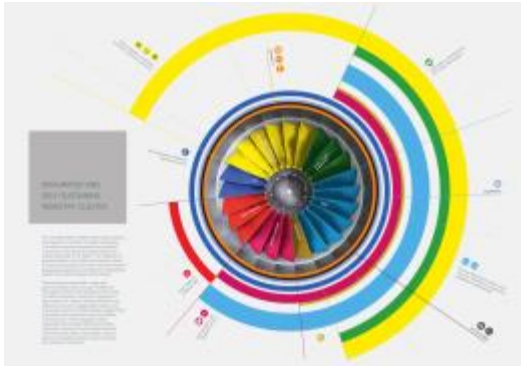
Approach

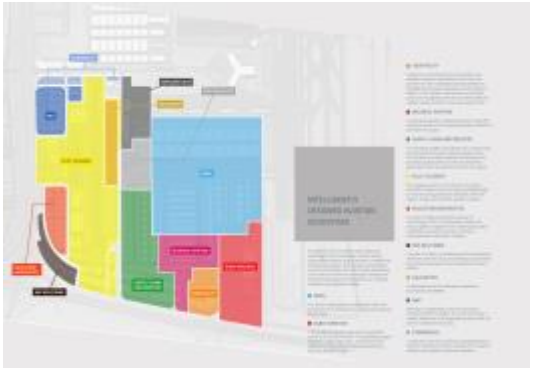
- Real Estate strategy re-oriented in “Full service rental”
- Development of a global Knowledge Center dedicated to the valley activity – redefinition of shared activities and competitive activities
- Optimization of logistics and customs organization
- Implementation of a Part 147 university directly in the heart of the valley

Achievements

- **Official launch of the Aviation District of DWC in November 2013**
- **New diagnostics and documentation management capability delivered to Dubai Government**
- **Specific of 14 industries settlement in the AD delivered in November**

Illustrations





SAFRAN (Sagem Defense & Security) - Cassiopée Services Strategy Design

Context

- Sagem, Safran Group - high-tech company, is a global leader in solutions and services in optronics, avionics, electronics and critical software for the civilian and military markets.
- declining sales of avionics and selling software dedicated to the analysis of flight airlines, in a general context of intensification and diversification of competition.

Objectives

- Recovery of sales and margin in Large Europe and Americas
- Middle East and China penetration with sustainable results
- Introduce more predictability in the sales forecasts

Approach

- Dematerialization strategy offers. “as we cannot sell the products anymore, give them !!! ".
- Conversion to a range of services with high added value, named “CASSIOPPEE”.
- Enrichment supply through acquisitions and expansion of its offering to business aviation.

Achievements

- **Official launch @ HAL Orlando in April 2011**
- **Signature an exclusive agreement with the CAAC (Civil Aviation Administration of China) in June 2011 @ Paris Airshow**
- **Signed an exclusive agreement with the company MBM (Dubai royal family) @ Dubai Airshow in November 2011**

Illustrations

CASSIOPEE
The Aviation Services Constellation By Sagem