Making Ships:

Managing Complex Manufacturing Alongside SAP PS

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Structure of this presentation

Why this Topic?

Why Safran?

Ship Building – and why it is so difficult

    Making Ships: Complex manufacturing in A&D

    What was the problem?

    What was the solution?

    What happened?

Safran: A quick introduction

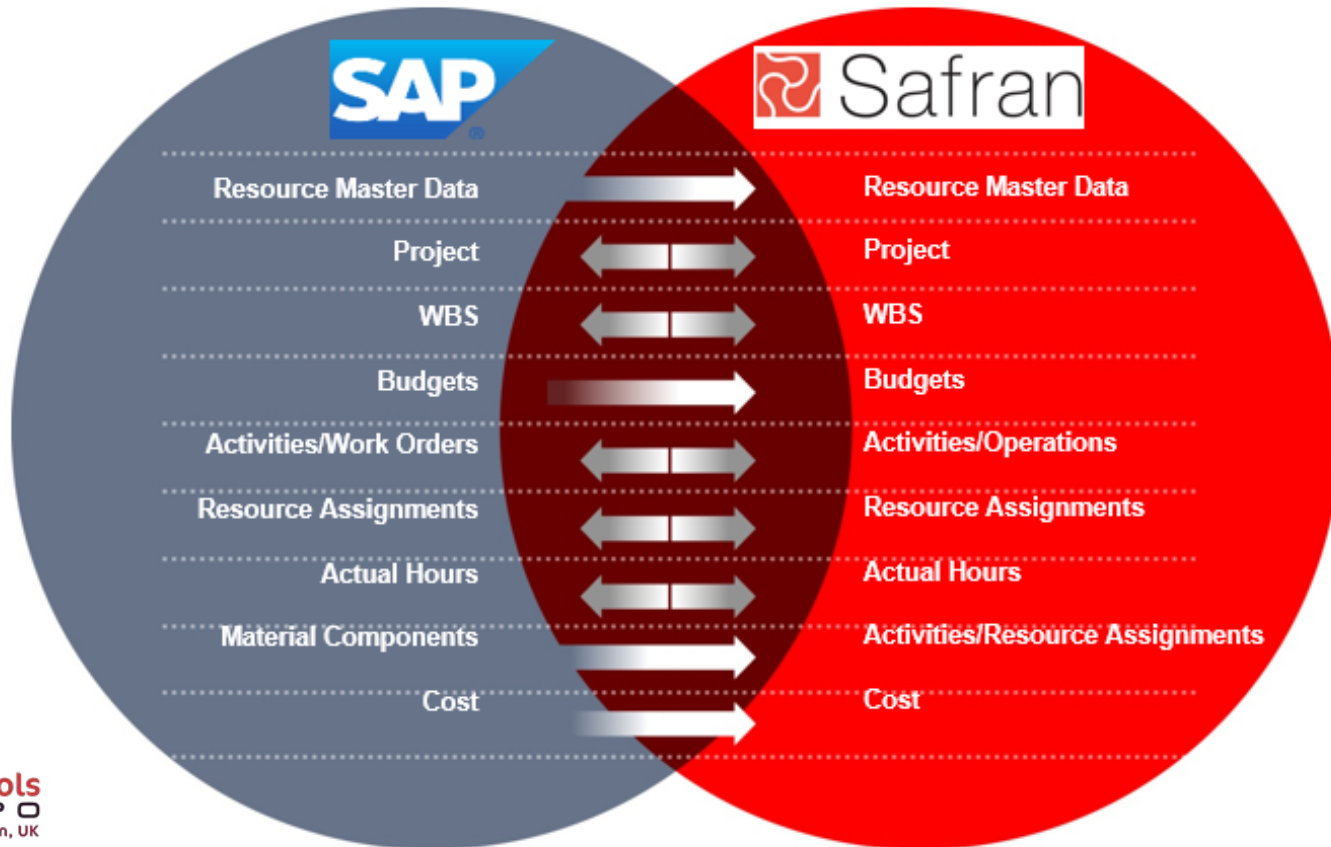Questions?

Why this Topic?

Safran Market Focus

Safran Integrator for SAP

Why is it so difficult?

- ***Lack of operating standards between facilities***
    - Common scheduling tool needed organisation/between sites
    - Historically Artemis was often used as the scheduling tool – now MSP or SAP PS
- ***Decision making***
    - SAP PS is limited by inconsistent schedule based reporting
    - 'What If' questions and building of possible scenarios limited on many sites
- ***Reporting*** - often cumbersome and driven by Excel and PowerPoint
- ***Resources are scarce*** and critical to production
    - Without ***Resource Levelling*** and advanced resource management there is poor use of scarce resources
- ***Inaccurate forecasting*** – slipped delivery dates/over spend common
    - ***Lack of schedule risk analysis*** that can result in inaccurate forecasting

- ***AND…*** the only existing common tool SAP, lacks the functions and capacity to correct this

For those of you who like the real detail….

- Difficult to filter activities in SAP
- Managing complex multiple SAP projects is time consuming
- Tailored transactions required to extract data from SAP
- Specialised reports require a lot of effort to create
- Need to report with different structures (CWBS, WBS, OBS...)
  - ❖ SAP WBS for finance
  - ❖ WBS by product (Engineering, Supply Chain, Production...)
  - ❖ CWBS for traceability with the contract, more and more contractually required to report in customer´s structure
- Project Builder in SAP is very simple and it is difficult to analyse activities that are impacting the schedule (following the links)
- Risk Management: Not able to run schedule risk analysis based on methods such as Montecarlo.
- Schedule health: To check quality of schedule is not a standard feature in SAP
- Best Practice standards
  - ❖ Defense Contract Management Agency (DCMA) guideline.

Project Controls EXPO
London, UK

Safran

Introducing Navantia

100% Spanish government owned company,
with over 300 years of experience.

Full support of Spanish Navy and Ministry of Defence.

+5,500 Professionals

1st Spanish Naval Technology Company

Exports to +20 Countries

Technology Oriented

Facilities

Fene - Ferrol

+5,500 Professionals

1st Spanish Naval Technology Company

Exports to +20 Countries

Technology Oriented

Madrid

Cartagena

San Fernando - Puerto Real Cádiz - Rota

Company Headquarters

Shipyards

Ship Repair

Navantia Sistemas

Propulsion & Energy

Navantia Products

Naval Vessels

Commercial Vessels & Offshore

Systems

Ship Repairs & Conversions

Diesel Engines & Turbines

Through Life Support

Project Controls – Background

Brief Background

Prior to Navantia as we know it today the current shipyards were divided into mainly Military (Ferrol, Cartagena and San Fernando) and Civil Fene and Puerto Real.

Civil Yards: Due to market requirements had to deal with hard delivery dates and required the use of a common scheduling and reporting system and used BAANIV as its ERP and Artemis as its scheduling tool.

Military Yards: Due to complexity of product, either it be a submarine, corvette or aircraft carrier, operated in a different manner. Program controls was carried out at a very detailed level and used an in house ERP system NECORA. Scheduling was performed at a higher level using Microsoft Project or the like.
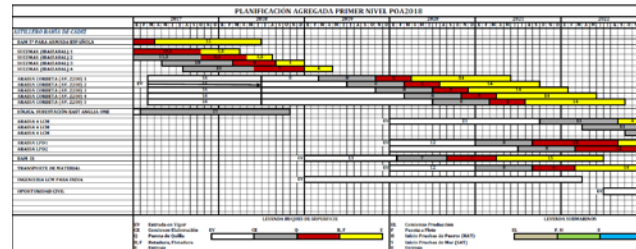
Project Controls — the context

Key Activities
- Design, construction and integration of warships and civil vessels
- Ship repairs & modernizations
- Design and manufacture of Integrated Management Systems
- Through life support for all products.

SAP
- The key mission critical core for all project controls
- Provides a common base for the finance, accounting, procurement and material controls.

Business Process
- Collaboration between Business Units
- Different specific processes depending upon the business unit product
- Monthly report to HQ from each BU = HQ consolidated report.

Now... A new Approach

One common system ERP that manages all corporate processes = *SAP*
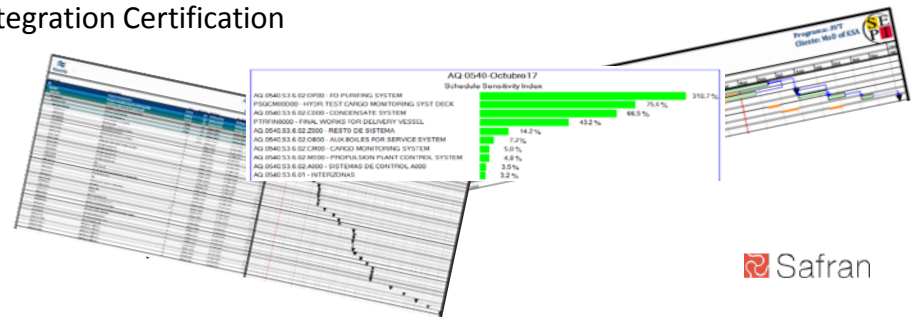*One common scheduling tool* = *Safran*

- ❖ capable of automatically integrating SAP data
- ❖ Optimises all resources and multi project data
- ❖ Providing reports at all management levels.
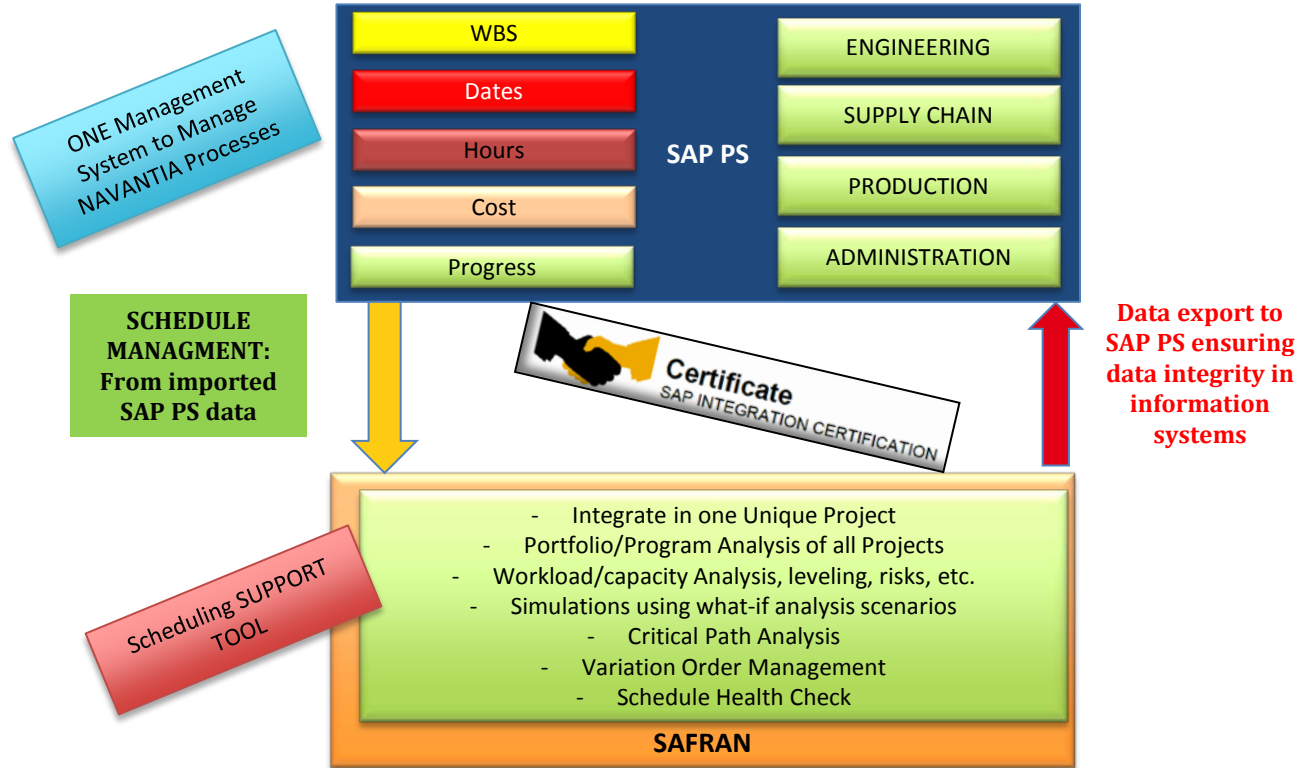
Scheduling tool specifications:

- ❖ Establish reporting commonality amongst all Business Units, independent of their Product
- ❖ Provide multi user capability, as required by complex projects
- ❖ Maintain Baseline integrity
- ❖ Manage Changes, Variation Orders
- ❖ Quick workload/capacity analysis
- ❖ Perform "what-if" scenarios
- ❖ Group Projects at a Program, Business Unit and Corporate level
- ❖ Schedule Risk Analysis
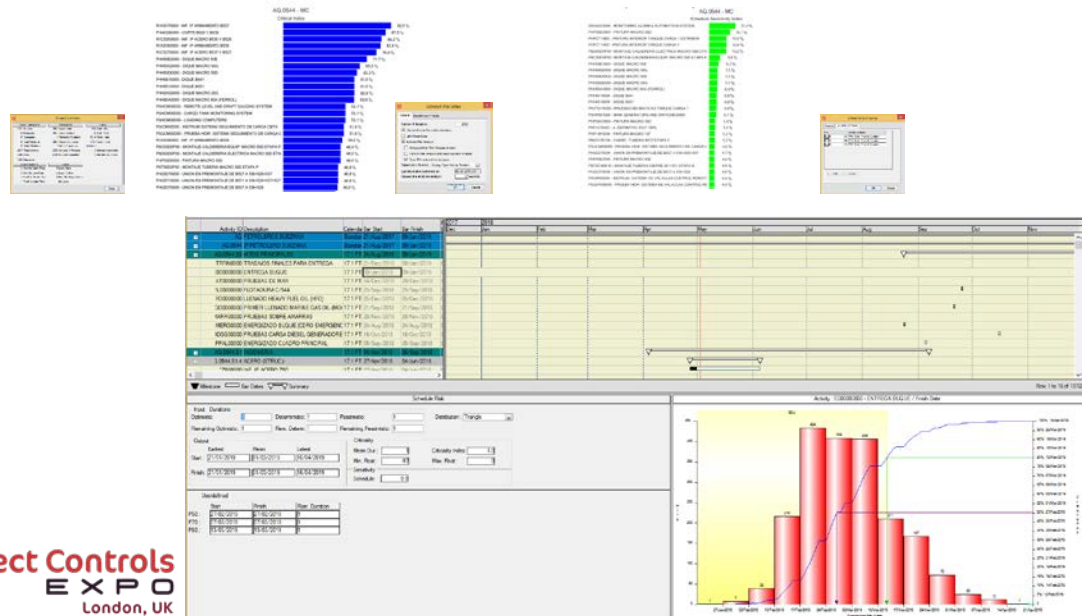- ❖ Schedule Health Check
- ❖ SAP integration Certification

What does this look like?

ONE Management System to Manage NAVANTIA Processes

SAP PS

- WBS
- Dates
- Hours
- Cost
- Progress

- ENGINEERING
- SUPPLY CHAIN
- PRODUCTION
- ADMINISTRATION

SCHEDULE MANAGMENT:
From imported SAP PS data

Certificate
SAP INTEGRATION CERTIFICATION

Data export to SAP PS ensuring data integrity in information systems

Scheduling SUPPORT TOOL

- Integrate in one Unique Project
- Portfolio/Program Analysis of all Projects
- Workload/capacity Analysis, leveling, risks, etc.
- Simulations using what-if analysis scenarios
- Critical Path Analysis
- Variation Order Management
- Schedule Health Check
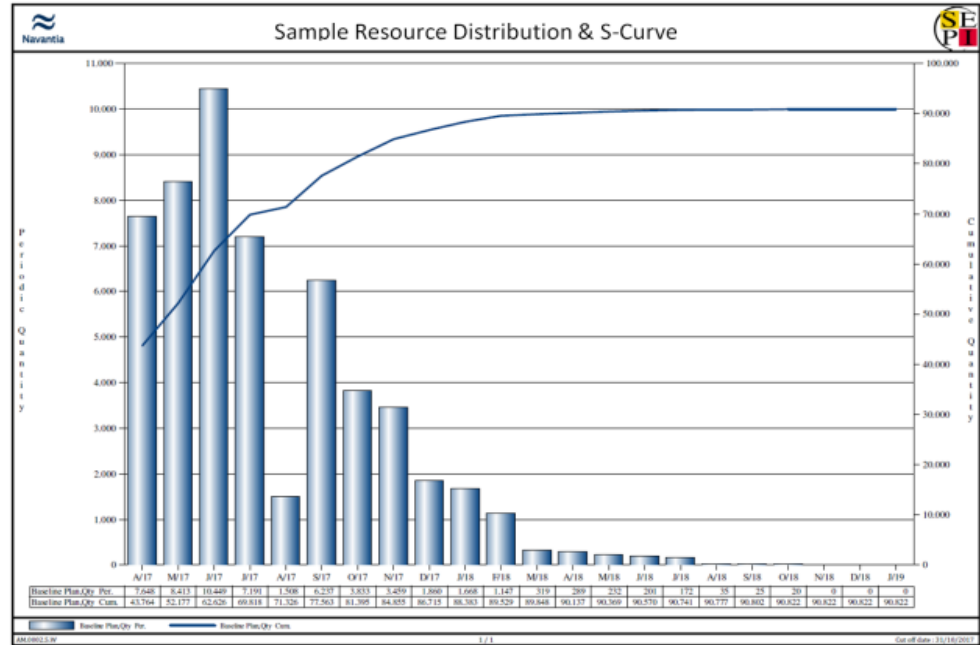
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Project Controls EXPO London, UK

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What did they gain?

- A readily available and powerful scheduling tool
- Optimisation of resources and control of complex projects
- Increased time for decision making and planning
- A smooth transition to Best Practice planning and Safran Project
- Fast schedule Risk analysis using Monte Carlo method
- User defined probability outcomes
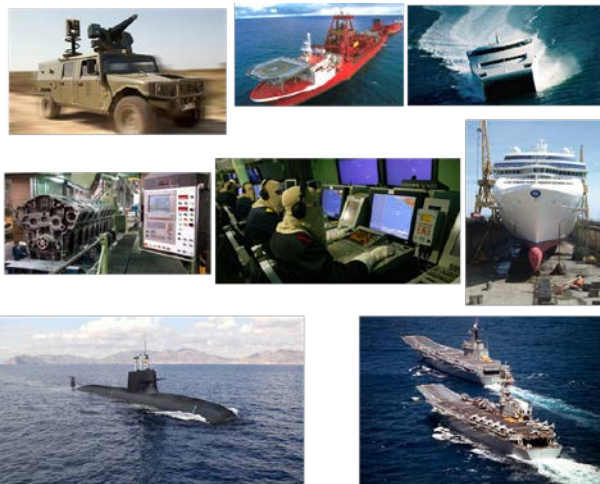- More accurate forecast and performance information to stakeholders

What did they gain?

Resource loaded schedules showing actual and future workload to provide quick high level information to assist in decision making

Sample Resource Distribution & S-Curve
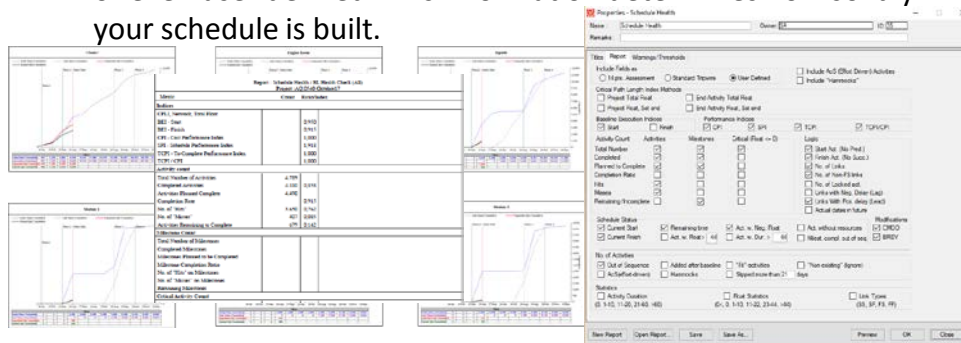
What did they gain?

Use of tailored reports. Reports can be provided as required by each Program by simply filtering attributes, use of alternative Outline Codes... with all 'S' curves and Histograms built in

Progress Reporting

Schedule Health Check. Capable of providing automated predetermined reports such as the 14 point assessment, standard or even user defined. This information determines how solidly your schedule is built.

Safran SAP Integrator

- Navantia now uses Safran for all programs to provide:
  - More visibility to the Navantia ERP system SAP
  - Fast updating of schedule information in accordance with any changes to build strategy, changes in scope of work...
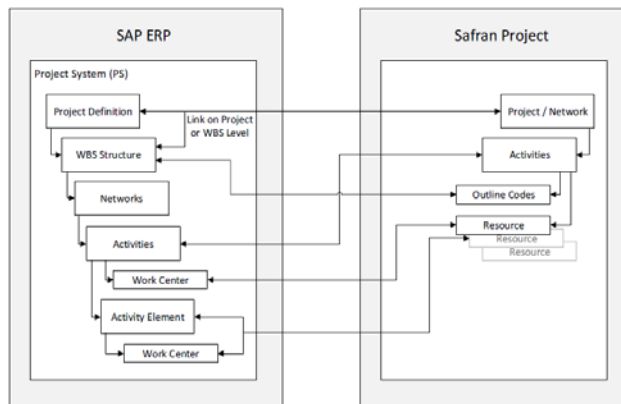

Figure 2 SAP Project System Scenario

- Reduction in manual labour and import of files
- Use of the Integrator to obtain actual live data from SAP
- Transfer this information to Safran Project
- Data can be analysed and then synchronize results automatically to SAP.

The Way Forwards

Development of Corporate Standards

This ensures, regardless of the Business Unit, reports are being issued to Headquarters with the same format and information.

Safran SAP Integrator

Implement the use of the Integrator in new programs.

Take another step forward and further customize to include Navantia work processes.
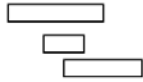
Introduce Best Practice

Provide advanced training and scheduling methods including best practices to Navantia schedulers based on lessons learned to date.

Safran Risk

Now that we have implemented a common scheduling tool the next step is to use these schedules and associate with risks. This is currently being analysed.

Safran

Safran Products

SAFRAN PROJECT

Project Planning and Execution Software. Plan, Schedule and control complex projects with embedded Schedule Risk Analysis and extensive reporting capabilities.
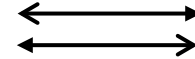
SAFRAN RISK

Project Risk analysis Software. Confidently deliver your project on-time and on-budget with our advanced quantitative schedule and cost risk analysis solution

SAFRAN INTEGRATOR
FOR SAP

Integration Solution for SAP PM and SAP PS. Applications. Provides smooth flow and a reliable exchange of data between SAP and Safran project

Use Cases

COMPLEX MANUFACTURING

Optimisation of complex manufacturing schedules against scarce resources and using embedded activity, cost, and risk analytics. Integrated with SAP and complementary to SAP PS.

CAPITAL PROJECTS

Bringing together project scheduling, planning and risk management in an intuitive interface, our powerful software is robust enough to transform management of even the most complex mega projects.

SHUTDOWNS & TURNAROUNDS

Safran software streamlines STO planning and execution. SAP integration and out-of-the-box reporting are just part of our comprehensive solution to keep these high-pressure projects on track.

OPERATIONAL MAINTENANCE

Whether your maintenance project is standalone or interdependent, Safran's flexible solutions will help you get more out of your resources and streamline your schedules.

Questions?