

Transforming Steel Pipe Supply Chain using Integrated Business Planning Systems

**Jindal SAW Limited
P.R.Jindal Group, India**



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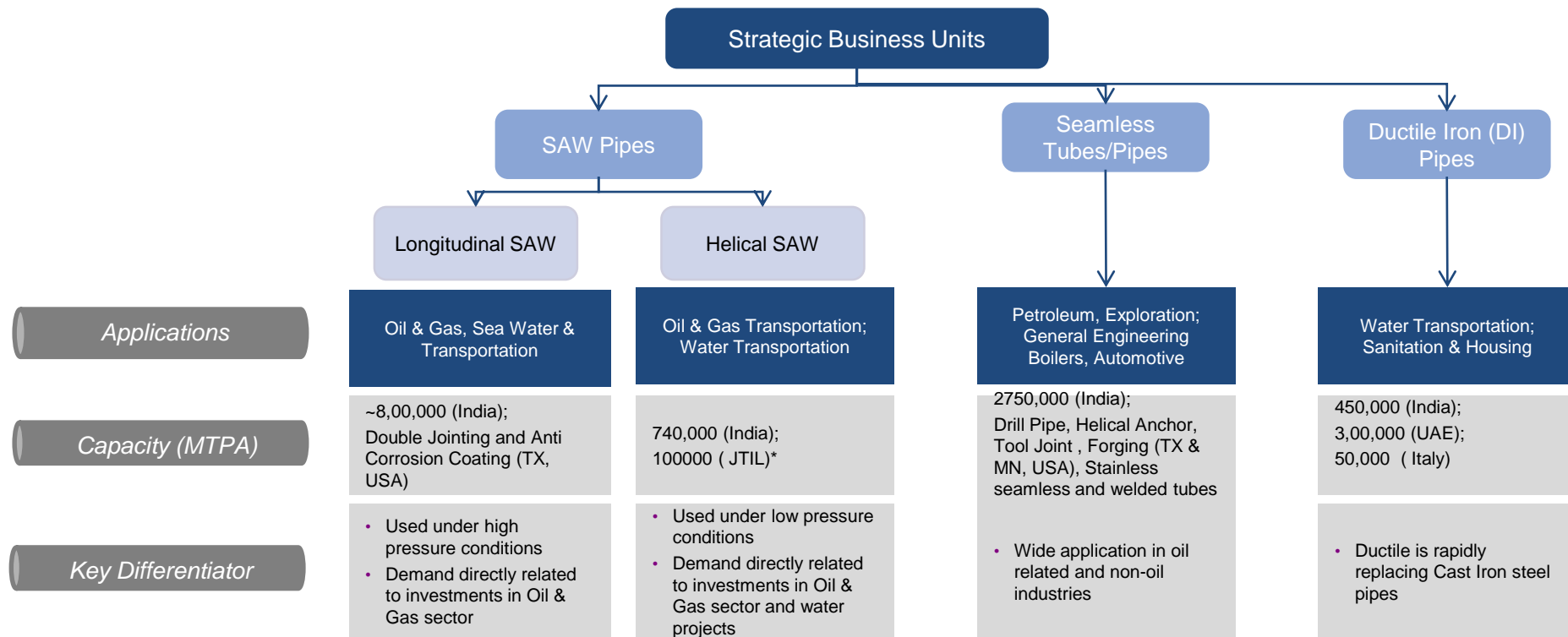
O P Jindal Group - Brief profile



The USD 18 billion O.P. Jindal Group has an asset base of USD 25 billion and human asset base of more than of 70,000 people.

Jindal Saw: Diversified Product Offering

Emerged from a single product to a multi-product enterprise with its products finding applications in oil & gas, water, energy, petrochemicals, engineering, transportation etc



Diversified product offering with none of its business segments contributing more than 25-30% of the total revenue

Jindal Saw : Introduction

Leading
Pipes Manufacturer with
Global Presence

Diversified multi-product
producer

World-class customer
base

Diversified Revenue
Profile

Financial Strength

- One of the largest pipe manufacturer (by capacity) globally – app. 2.9 million MTPA
- 3rd largest producer of water pipes (DI) in the world.
- Only Producer in the world - Offering “Total Pipe solutions” including SAW Pipes, Ductile Iron Pipe and Seamless Tubes.
- Dominant position in energy sector and water sector in India
- Strong Manufacturing & Marketing presence in US, UAE, Europe besides India.

- Produces LSAW pipes, HSAW Pipes, Ductile Iron Pipes, Seamless Pipes and External & Internal Coatings.
- Backward integration to Iron Ore Mines, Pellet and Steel

- Customers include leading players in Oil & Gas, Water Infrastructure Projects, Transportation of Fluids, Boilers, Automotive industry, Steel.
- Global clients roster include, among others, Shell, Chevron, BHPB, Bechtel, Delhi JAL Board, TRISTAR, Lindenberg, GALFAR, , Questar, PDO, Oman Gas, Gulf South and Saipem, Petronet, Saudi Aramco, British Gas, GASCO, ADCO etc..
- Order book of India –app. USD 1100 Million – Exports approx. 30%.

- Revenue contribution from; Water Sector – 47%, Oil & Gas Sector – 36%, Industrial & others– 18%

- Promoters – Mr. P R Jindal – Industry leader with strong financial strength
- Long Term Debt Rating of AA with stable outlook , A 1(+) for short term financing

Multi Product : Multi Locational : Mutli National

Global Customer Base

Marque customer base across a wide range of sectors and geographies.

Domestic

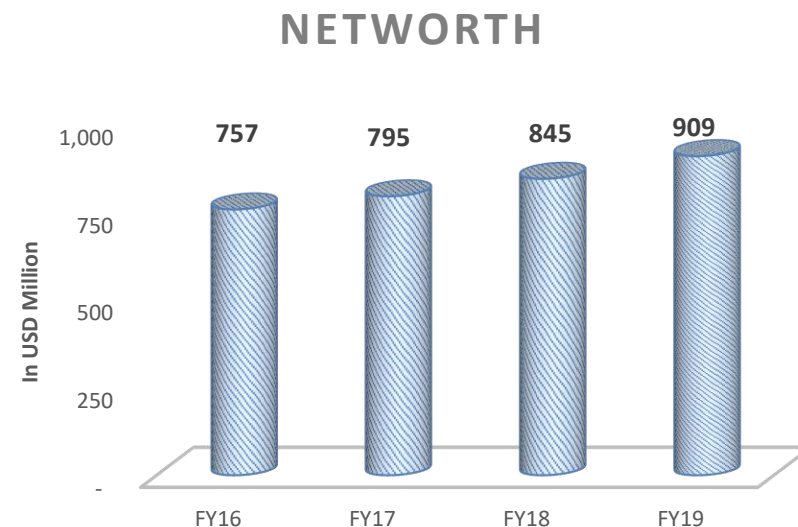
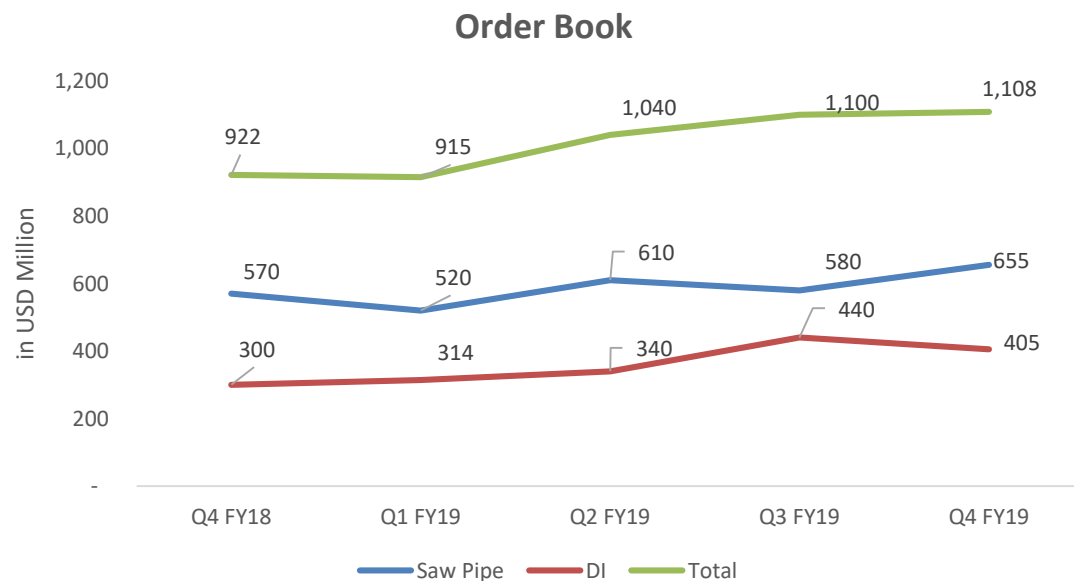
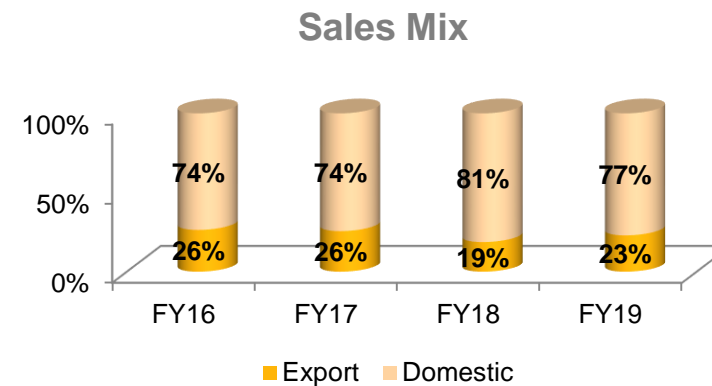
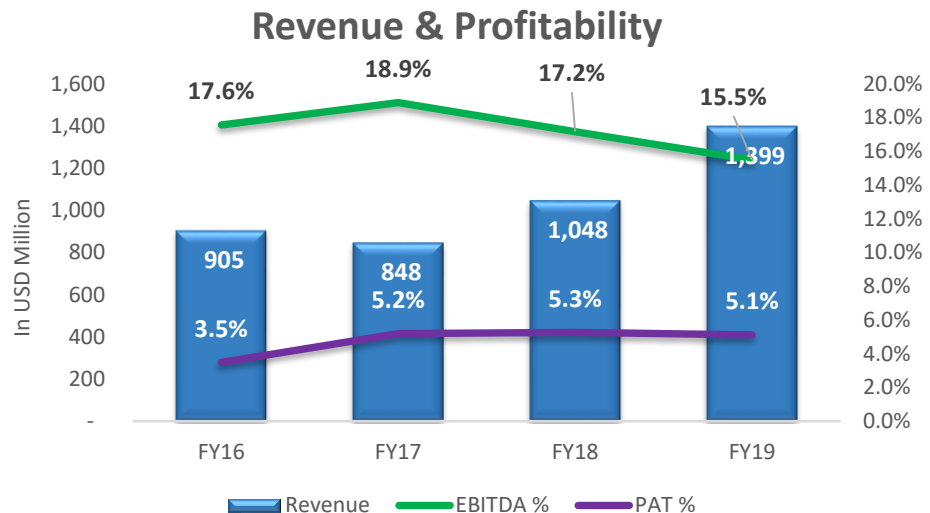


International



- Over 30 years of experience in providing SAW pipes to the oil & gas, water sector - caters to top tier oil & gas and EPC companies in India and overseas
- Strong presence in the export market.
- Preferred supplier to global clients due to its stringent quality standards certified by the American Petroleum Institute and other International Standards.
- Building customer relationships over time and successfully generated repeat business

Jindal Saw : Financial Trends (in USD Mio)



Supply Chain Management Initiative with SAP

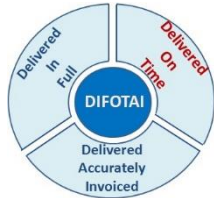


Jindal SAW: Key Imperatives for Supply Chain Planning

Business Requirements



Strategic decision making with Simulations to improve EBITDA



Ability to give a promise date for orders and improve OTIF

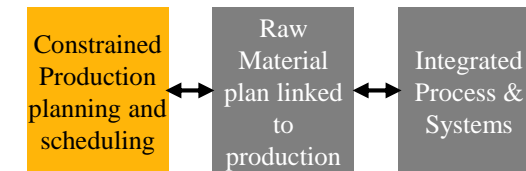
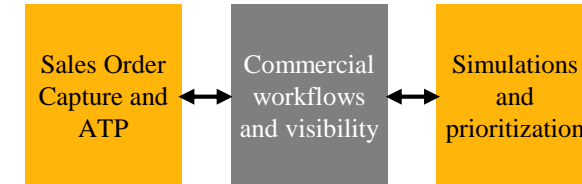
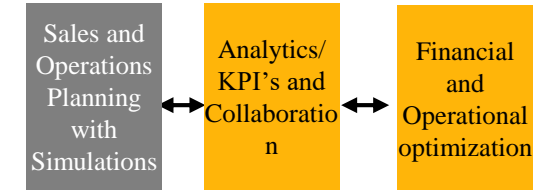


Improve plant yield/capacity utilization with production scheduling

- Forecasting, RCCP, Inventory planning, RM Planning, Product Mix **Simulations**
- Long and mid term view driven by **Analytical insights and tracking of key benchmark KPI's**
- Single plan and balancing of objectives **collaboratively between Marketing, Commercial, PPC, Business heads.**

- The bottleneck capacity situation should be available to marketing and system should give a suggested **ATP(Promise Date)** for an Order
- Simulations to take a high priority order** and its impact on the due date of existing orders. Minimize late penalties and improve agility
- Get single set of planning numbers** for all stakeholders in a single system
- Production **planning considering the constraints** and rules of Capacity, Molds, Raw Material, lot sizes
- Should be flexible to handle the differences in DI/Seamless/Large Dia/Pellets/Fittings planning
- Ability to **handle metal industry nuances-** Automatic clubbing based on machine parameters and the order parameters

Key Capabilities needed

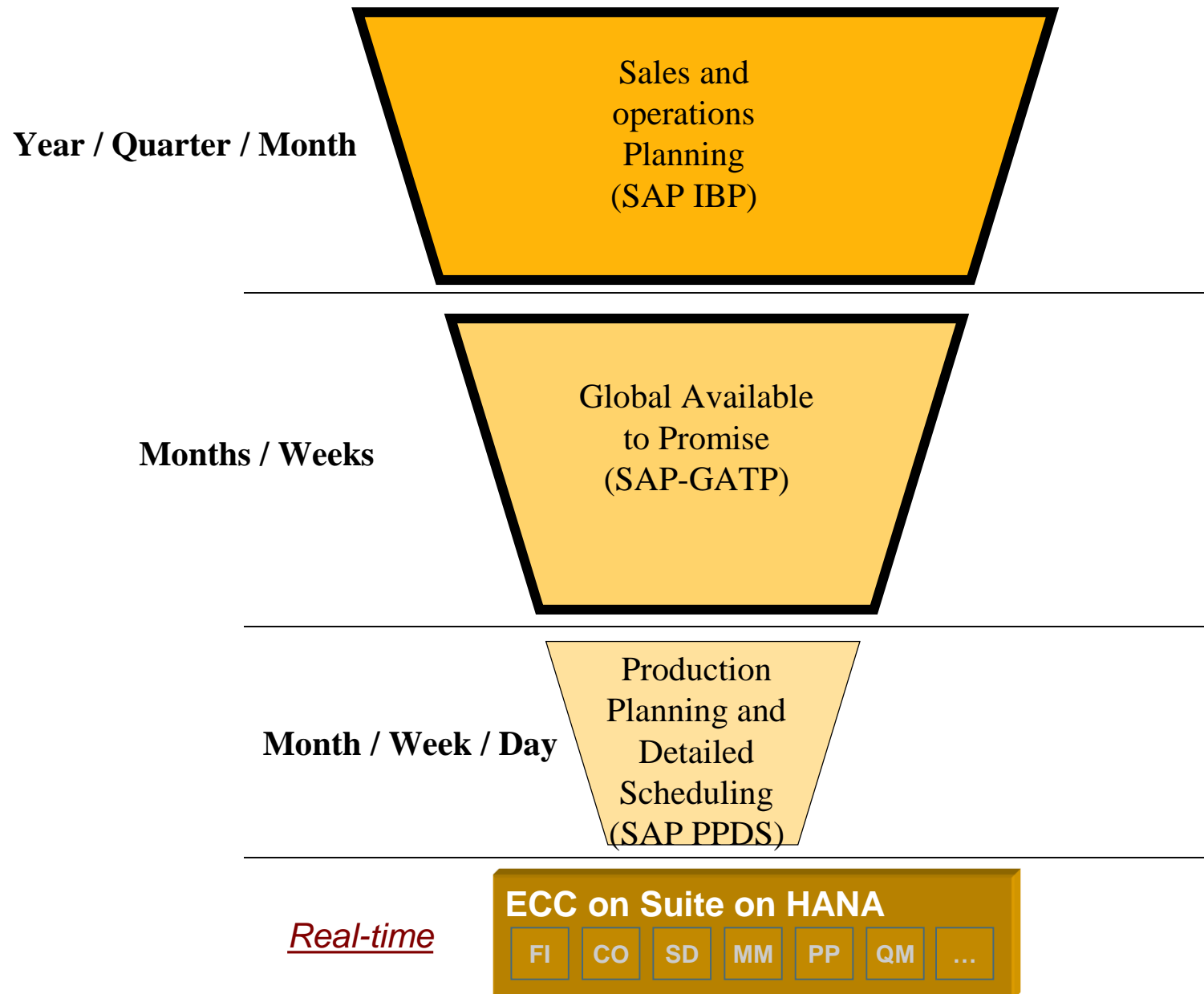


Supply Chain Management – Project Objectives

- **Business / Sales Plan** – Finalization, Review and Modification with various dimensions
 - Business Vertical (Seamless, Stainless etc.)
 - Time Period (Year, Quarter and Month)
 - Customer Category (Export, Domestic, Geography, Zone etc.)
 - Sales Group (PSU, OEM, Trader etc.)
 - Product Family (Hot Finish, Cold Finish, API)
 - Product Segment (Bearing, Hydraulic Cylinder, Alloy Boiler etc.)
 - Customer level
- **Promise date for Made-to-Order**
 - Sales Team to commit Order Delivery Dates at the time of confirming an Order
 - This requires backward Planning with time-to-produce and lead times etc
 - Finished Goods → SFG → Raw Material
 - Netting off free Material Availability (FG, SFG at all levels and RM)
 - Available Capacity, Alternate Routings
 - RM procurement lead time

- **Sales Order – Approval Process**
 - Marketing Head
 - Quality
 - Finance
- **Post order Production Planning process**
 - Generate Planned Order for FG, SFG at all levels
 - Alerts if RM not available → to raise PR & PO
 - Production Plan visibility on planning / Dash Board
 - Planned Order assignment based on raw material availability.
 - Billet Cut / Coil Slitting Optimization
 - Tracking of Production through a Pipe Tracking System
 - As per routing
 - For Each Cluster of Work Centre
 - Recording of Prime, Rejects and Scrap
 - Declaring Inventory (SFG, FG) basis
 - Quality Inspected/pending

Solution components for Supply Chain Management

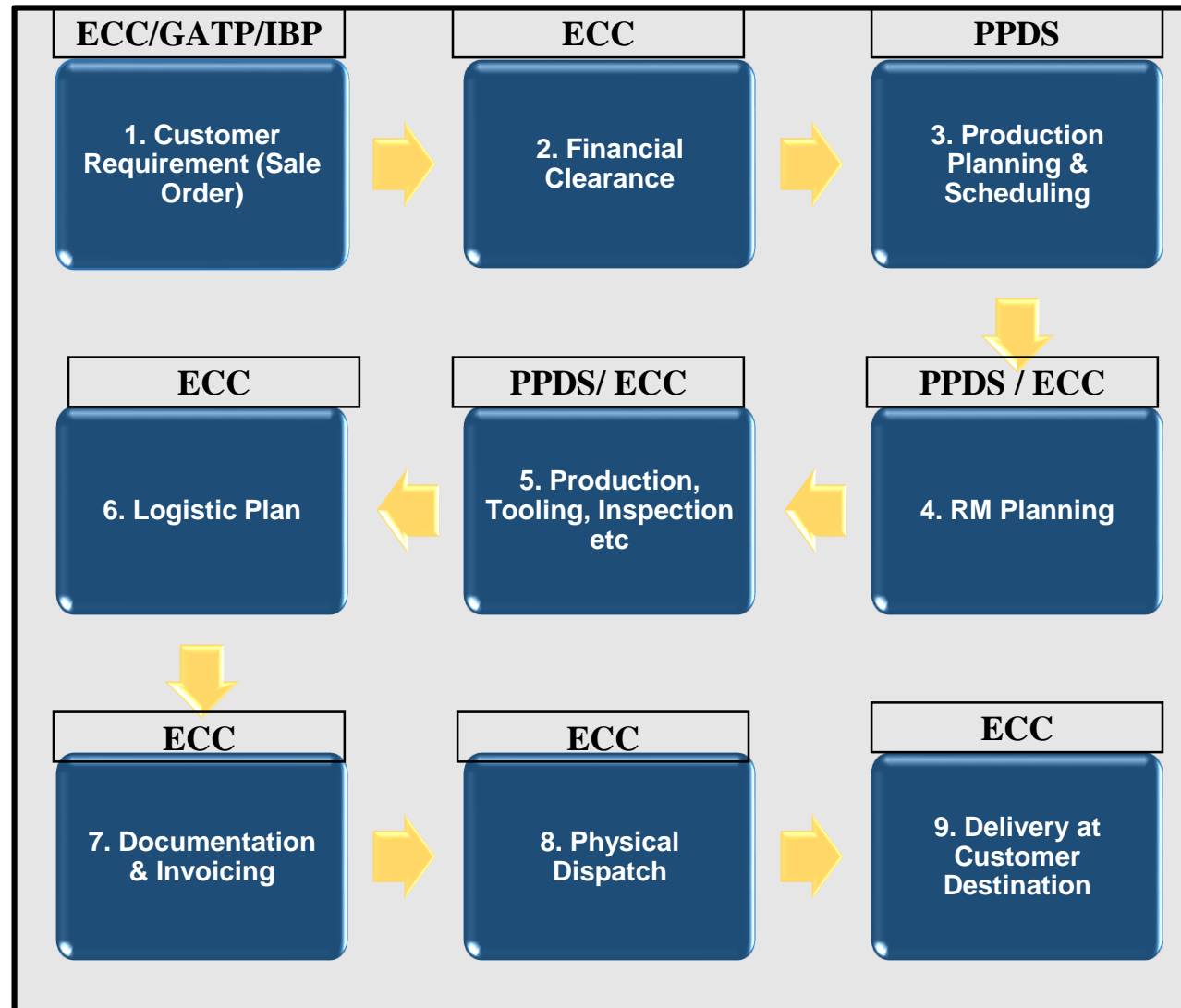


Key Focus Areas by SAP Modules

S&OP	<ul style="list-style-type: none">• Assessing unconstrained Sales Volume – How much can JSAW sell if there are no back-end constraint• Overlaying critical supply capacity constraints, thereby arrive at a constrained sales plan• This Output to be used to drive order promising
GATP	<ul style="list-style-type: none">• GATP Simulations with S&OP created allocations• S&OP output will be used to feed allocation metrics that will drive order promising
PPDS	<ul style="list-style-type: none">• Planning Ready SAP System• Production Plan considering RM/WIP availability and Lead time constraints• Visibility of capacity bottlenecks basis the production load• Increased granularity in Production plan based on improved product definition and execution process• Integrated planning for FG, SFG and RM• Resolution of capacity bottlenecks• Order clubbing based on characteristics / attributes and streamlined resource loading• Synchronized plan and schedule across stages of production

Workflow Envisaged post Year / Quarter / Monthly planning

Process Flow



Enablers

WORK ENVIRONMENT

- HARMONIOUS
- INTEGRATED
- TRANSPARENT

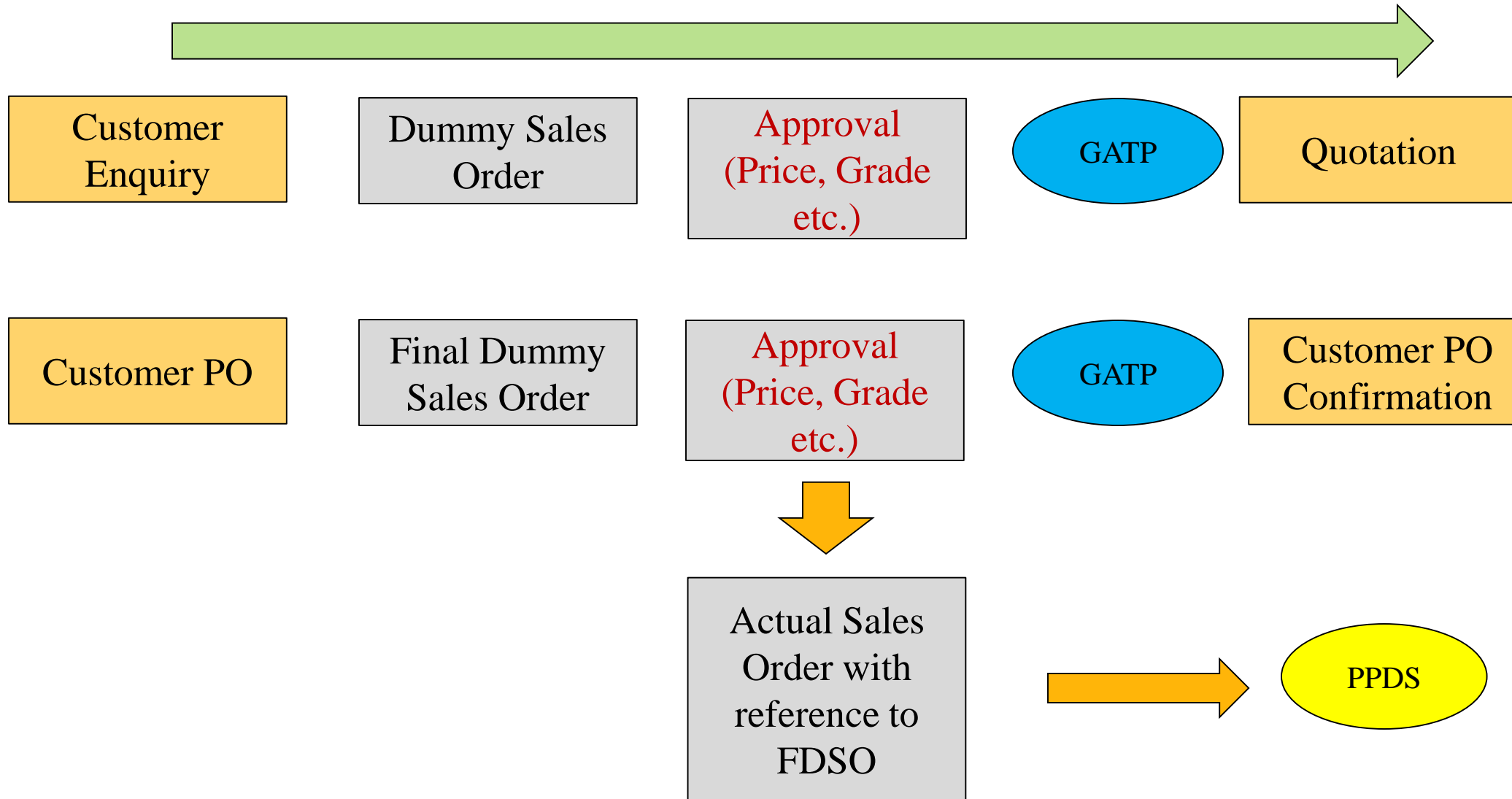
TOOLS

- TECHNOLOGY
- PROCESSES
- INTERVENTION

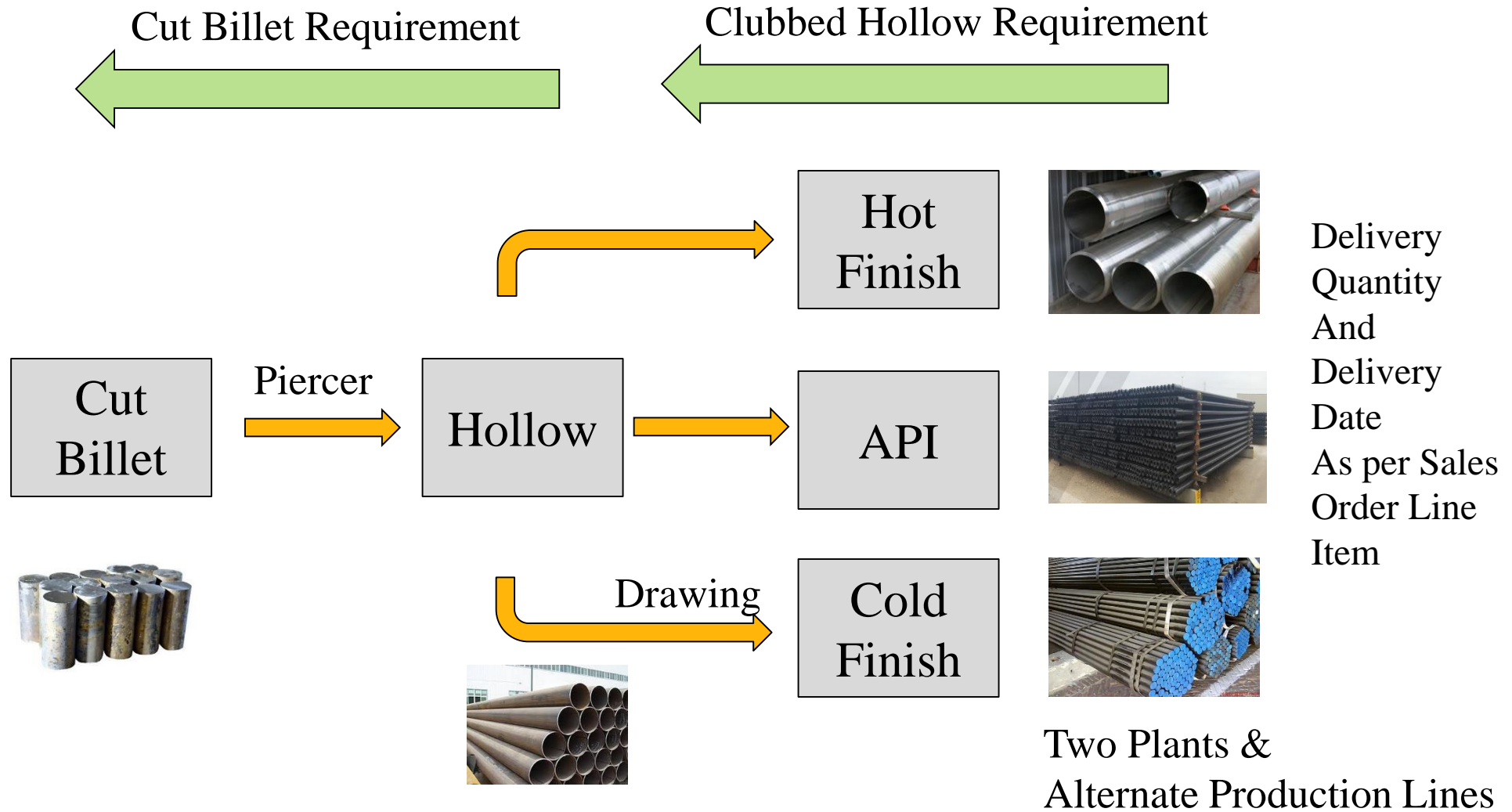
ROLES

- Collect & Process Data
- Disseminate information
- Observe & Discuss bottlenecks
- Implementation of Business Plan
- Stores Management
- Cost Control
- Feedback & Reporting

Supply Chain Management- Approval Process ECC



Supply Chain Management- PPDS Design for Seamless



Transformation from Complicated SFG and RM planning from Excel to PPDS

Seamless Pipe Division

- Clubbed Hollow requirement as per Sales Order
 - Material Grade
 - OD & Thickness
 - Length
- Cut Billet requirement

Stainless Pipe Division

- Slit Coil planning
- Mother Coil Slitting Plan
- Mother coil procurement plan as per multiple sales orders

Gaps in SAP needing Customisation

Seamless Pipe Division- Hollow & Cut Billet Optimization



Raw Billet



Cut Billet
(OD 160MM)
Length ???



Hollow (OD 88.90MM)
(Thickness 17.05MM)
Length ???

Charge 5.3 Meters
After CFS with two Draw 10.60 Meters
2 Cuts would give 5.3

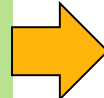


CFS Tubes
(OD 61.00MM)
(Thickness 12.3MM)
(Length 5 Meter)

Stainless Pipe – Mother coil planning

Sales Order

- Grade: 30400
 - Thickness: 3.5mm
 - DIA:129mm
- Sales Order + Line Item
is sorted in ascending
order of DIA required



Search for Slit coil

- Grade: 30400
- Thickness: 3.5mm
- DIA:129mm ~ <= 140mm with
selection on least remainder
(Rounded up 10mm)



Mother Coil Slitting Optimization

- (minimize scrap)
- Grade: 30400
 - Thickness: 3.5mm
 - Width: Largest First
for Net Requirement

Project Time Lines

SOH Migration	Jan	Feb	Mar	Apr
Project Preparation	■			
Sandbox Build	■			
Sandbox Migration		■		
ABAP and Functional Fixes		■		
SIT		■		
Development Migration		■		
Quality Migration			■	
UAT			■	
ABAP and Functional Fixes			■	
Production Migration				★
Hypercare				■

IBP S&OP	Jan	Feb	Mar	Apr	May	Jun
Project Preparation	■					
Blueprint		■				
Rel1 Build		■				
Rel1 UT			■			
Rel1 SIT			■			
Rel1 UAT			■			
Rel1 Go Live				★	★	
Rel2 BBP Refine				■		
Rel2 Build				■		
Rel2 UT					■	
Rel2 SIT					■	
Rel2 UAT					■	
Rel2 Go Live						★
Support						■

APO GATP	Jan	Feb	Mar	Apr	May	Jun
Project Preparation	■					
Blueprint		■				
Rel1 Build		■				
Rel1 UT		■				
Rel1 SIT			■			
Rel1 UAT			■			
Rel1 Go Live			★	★		
Rel2 BBP Refine			■			
Rel2 Build			■			
Rel2 UT				■		
Rel2 SIT				■		
Rel2 UAT				■		
Rel2 Go Live					■	
Support						★

APO PPDS	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Project Preparation	■									
Blueprint		■								
Rel1 Build		■								
Rel1 UT			■							
Rel1 SIT			■							
Rel1 UAT			■							
Rel1 Final Prep				■						
Go Live				★	★					
Rel2 Design Confirmation				■						
Rel2 Build				■						
Rel2 UT					■					
Rel2 SIT					■					
Rel2 UAT					■					
Rel2 Final Prep						■				
Rel2 Go Live						★				
Rel3 Design Confirmation						■				
Rel3 Build						■				
Rel3 UT							■			
Rel3 SIT							■			
Rel3 UAT							■			
Rel3 Final Prep								■		
Rel3 Go Live									★	
Support									■	

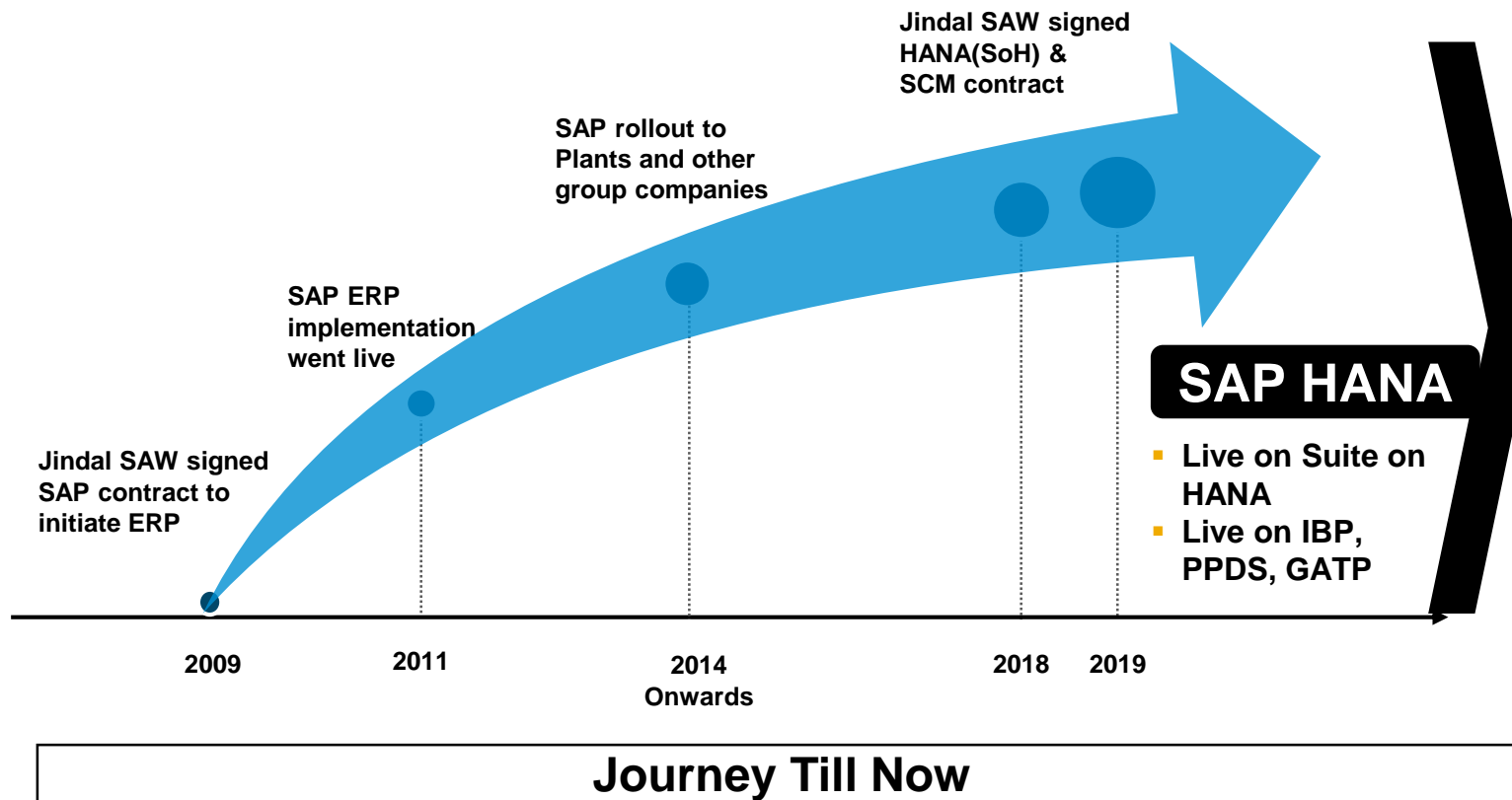
Key Success Factors

- Strong stakeholder and senior management commitment
- Risk identification early in project and mitigation strategies
- Manageable and realistic scope of project
- High performing team (JSAW, SAP and IBM) and synergies
- Business benefit focus
- Gap resolution approaches on the project
- Full time availability of core team for design, training and testing.
- Dynamic Changes in requirements - to be avoided

Value and Benefits of Supply Chain Management initiative

- Streamlined Yearly / Quarterly / Monthly planning process with S&OP getting established
- Integrated production planning through system leading to less people dependency
- Capability to promise and deliver order on time
- Integrated Sales order supply chain with least manual interventions
- The key process gaps have been customized on same SAP platform leading to less complexity of maintaining another system
- Expected improvements in plant utilization and EBITDA margins once roll outs are complete and shift happens to next maturity level

Digital Transformation Journey with SAP and way forward



Analytics Initiative

SCM Roll out to other businesses and shift to next maturity level

Plan to deploy S/4 HANA

Build further on Supply chain foundation

Next phase of digital Journey

Thank You

