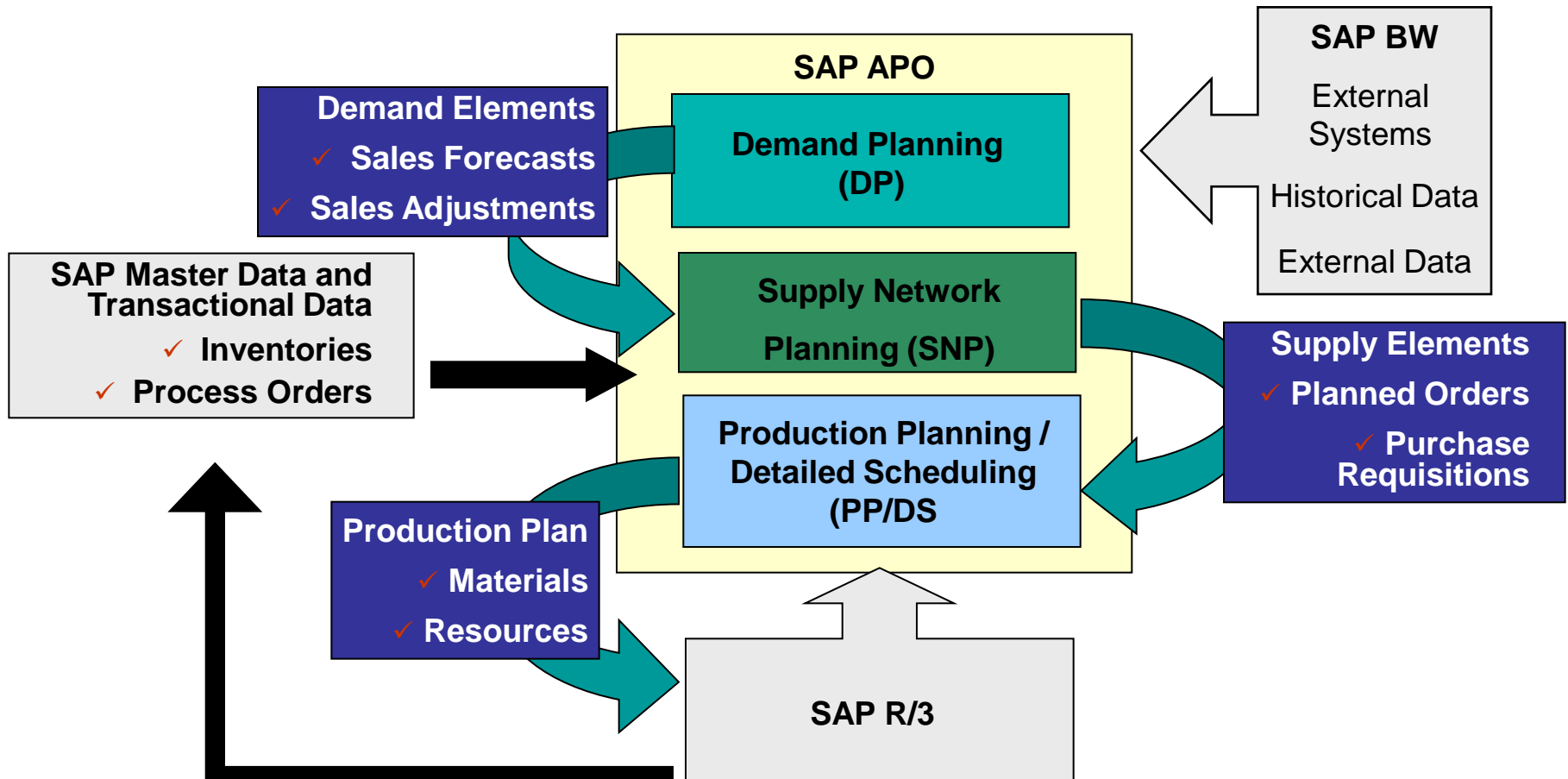# SAP APO (Advanced Planner and Optimizer overview) – <u>Sample</u> training content

Objectives

Give a <u>flavor and a glance</u> about this course

- Describe APO.
- Define high level business processes within APO.
- Explain the three different areas within APO:
  - Demand Planning (DP).
  - Supply Network Planning (SNP).
  - Production Planning / Detailed Scheduling (PP/DS).
- Describe the benefits of DP, SNP and PP/DS
- <u>Hands on exercises in the SAP APO system and real life project scenarios</u>
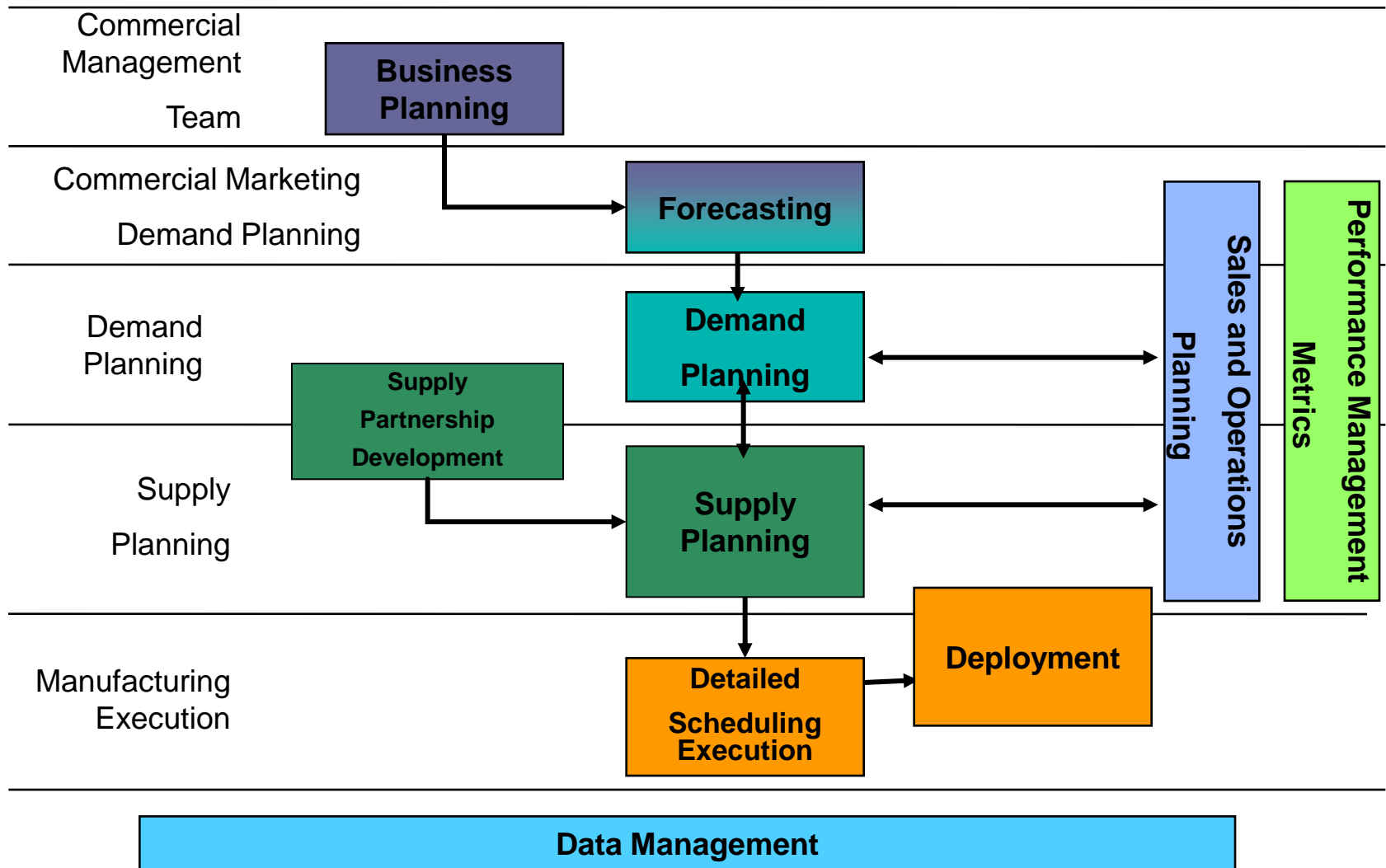
What is APO?

- APO stands for Advanced Planning & Optimization
- It is an SAP application where demand and supply planning processes are performed.

Business Process
Concept of Operation

Commercial Management Team

Business Planning

Commercial Marketing Demand Planning

Forecasting

Demand Planning

Demand Planning

Supply Partnership Development

Supply Planning

Supply Planning

Sales and Operations Planning

Performance Management Metrics

Manufacturing Execution

Detailed Scheduling Execution

Deployment

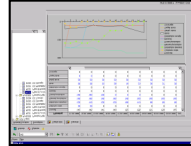**Data Management**

APO Modules Timeline

Production Planning / Detailed Scheduling

The area within APO where short-term planning is completed.

- Material Requirement Planning.
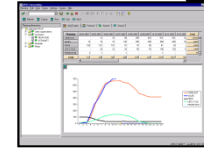- Capacity Requirement Planning.

Supply Network Planning

The area within APO where supply planning information is accumulated from SAP R/3.

- Heuristics Planning or Optimization
- Rough Cut Capacity Leveling.
- Generation of a Master Production Plan for the manufacturing site.

Demand Planning

The area within APO where product demand information is accumulated.

- Statistical Forecasting.
- Sales Pace Tracking.
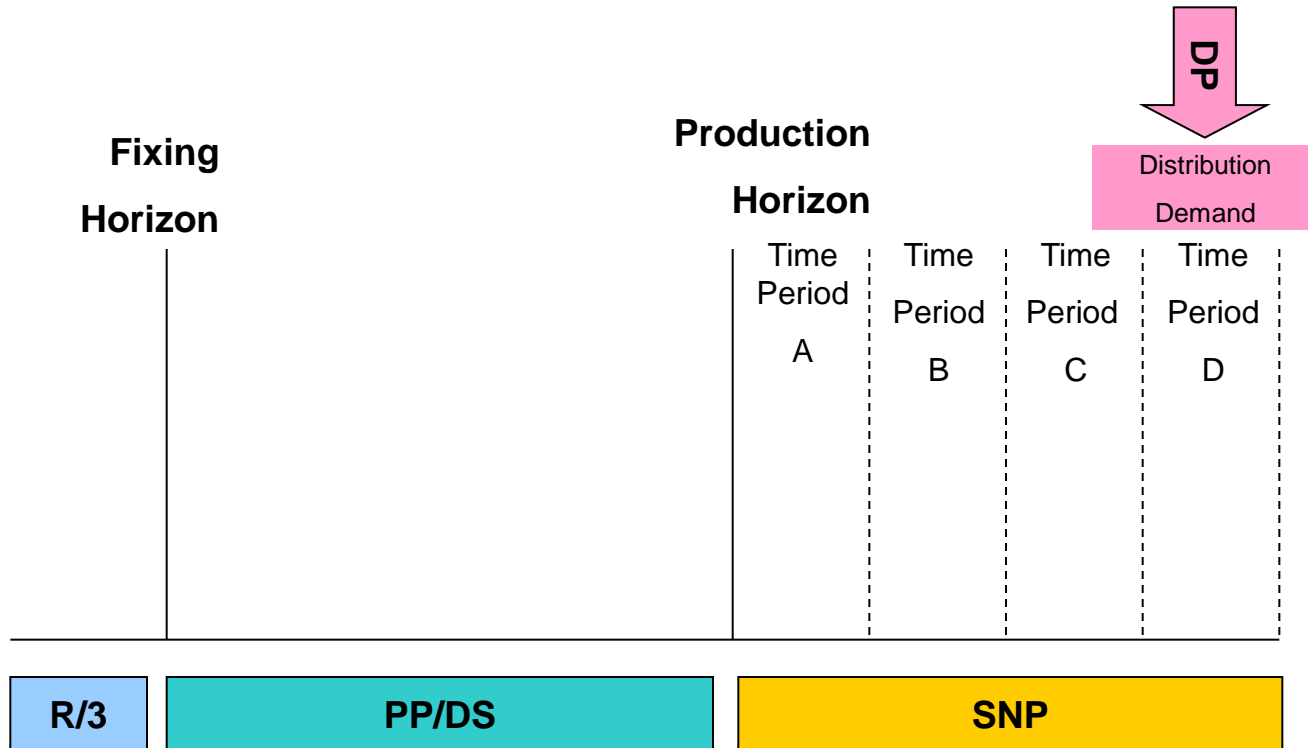- Generation of 36 month Demand Plan.

14 days   14 to 90 Days   90 + Days

Today - *Future*
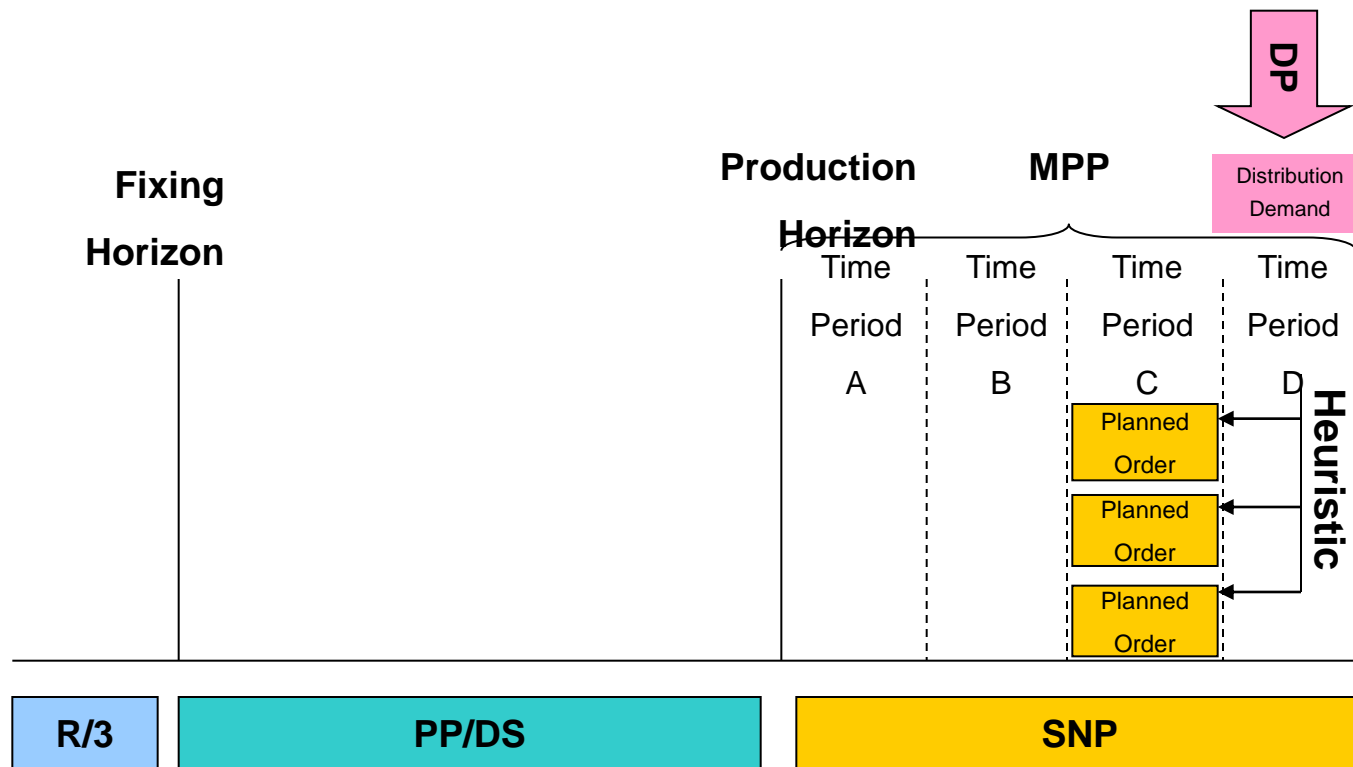
How Does It All Operate?

It all Starts with the 'Forecast' placed on the Distribution Center, which creates 'Distribution Demand' at the manufacturing Plant

Fixing Horizon

Production Horizon

DP

Distribution Demand

| Time Period A | Time Period B | Time Period C | Time Period D |

| R/3 | PP/DS | SNP |

Note: In pharma industry (Vaccines product segment), there is a "**Frozen Horizon**" instead of a Fixing Horizon. PP/DS heuristics is not scheduled to run within the frozen horizon. Only the PP/DS planner can manually create or change the PP/DS orders within the frozen horizon. R/3 is involved but it is the PP/DS set up that protects PP/DS orders within this horizon.
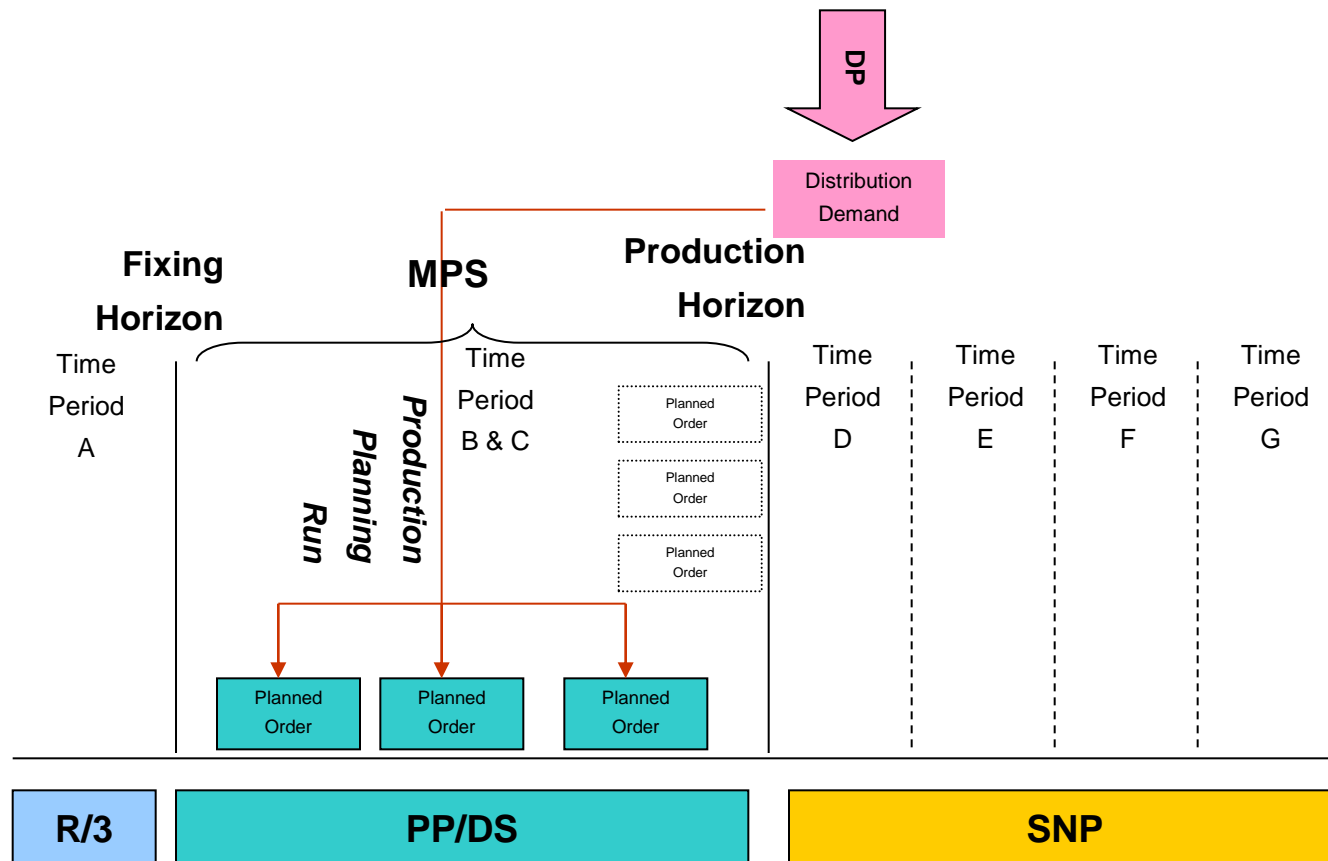
How Does It All Operate?

'Heuristics' planning is performed at the supply planning level to create a 'Master Production Plan (MPP)'

DP

Fixing Horizon

Production Horizon

MPP

Distribution Demand

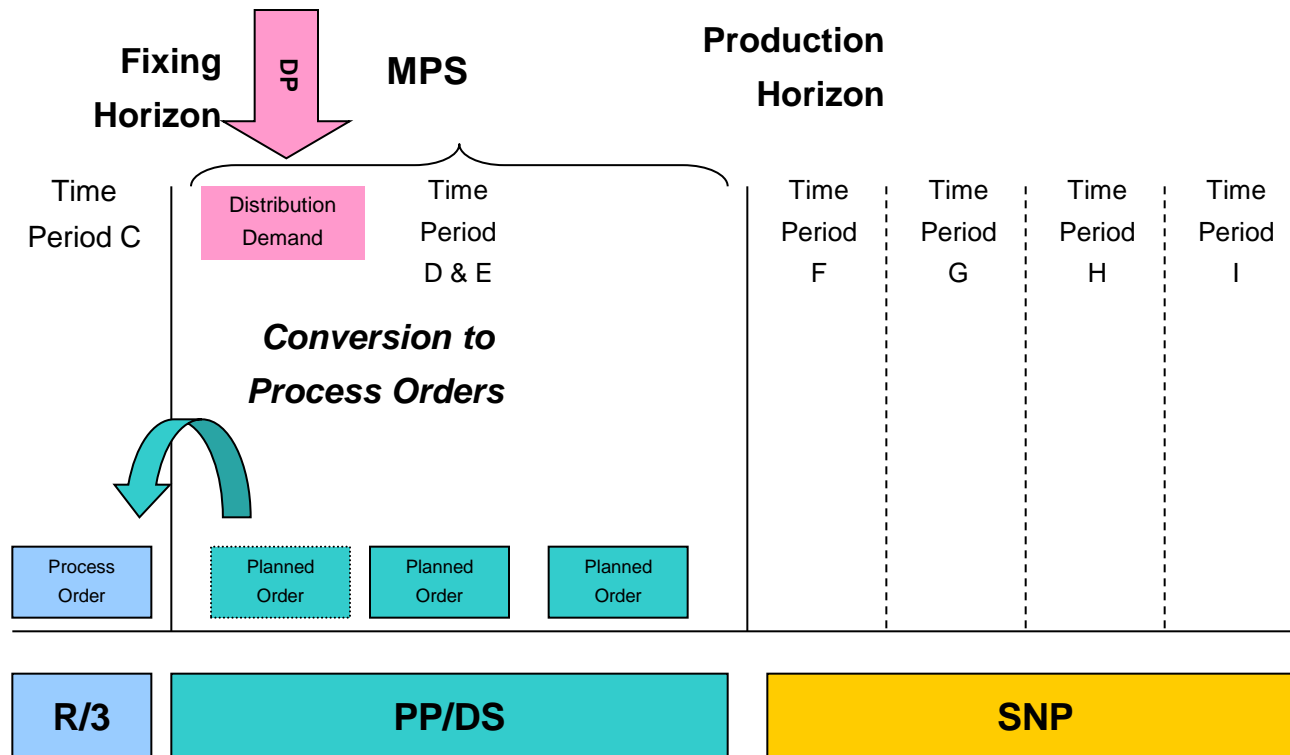| Time Period A	Time Period B	Time Period C	Time Period D
		Planned Order	
		Planned Order	**Heuristic**
		Planned Order	

R/3	PP/DS	SNP

How Does It All Operate?

'Master Production Plan' is converted into a 'Master Production Schedule' through PP/DS 'Heuristics'

DP

Distribution Demand

MPS

Fixing Horizon

Production Horizon

| Time Period A | | Time Period B & C | | Time Period D | Time Period E | Time Period F | Time Period G |

Production Planning Run

Planned Order

Planned Order

Planned Order

Planned Order | Planned Order | Planned Order

R/3 | **PP/DS** | **SNP**

How Does It All Operate?

'Master Production Schedule' (MPS) is committed to the shop floor

APO Interface with SAP R/3

T E K N Ө K R E T
DELIVERING PASSION THROUGH BETTER SUPPLY CHAIN

SAP

APO

Master Data:

Products, Production Process Models, Resources, Transportation Lanes

Demand

Planned Order → Process Order → Process Order → Inventory

SAP R/3

Master Data:

Materials, Bills of Materials, Recipes, Production Versions, Resources, Info Records

Planned Order → Process Order → Process Order → Inventory

Convert, Release

Confirm, Receive

* With the implementation of PP/DS process orders can be maintained in APO

- Product Master Data:
  - Products with MRP type "**X0**" (externally planned) are created in APO.

- Key data in R/3 used to create APO product:
  - Product number.
  - Product / location combinations.
  - Minimum / maximum / fixed lot sizes and rounding values.
  - Safety stock.
  - Production horizon.

- Key data in R/3 used to create APO resources:
  - Factory calendar.
  - Standard capacity based on shifts.
  - Number of capacities for multi-activity resources.
  - Utilization factor.

- Key data in R/3 used to create APO Locations
  - Plants/DC's such as GU09, RM06, KX31, PR16 etc.
 - Locations can also be vendors and customers.

- Key data in R/3 used to create APO PPMs:
  - **Bill of Material:**
    - Contains only input and output products planned in APO.
    - Quantities (input and output).
  - **Recipe:**
    - Phases (includes resource consumption).
  - **Production Versions:**
    - Validity dates must be accurate.
    - Must be "not locked".
    - Lot sizes must be accurate (match Material Master).

APO DP Functionality

- Demand Planning is the area within APO where product demand information is accumulated.

- Functionality includes:
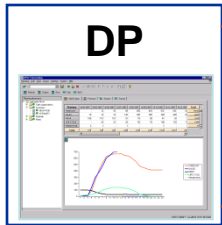
  - Generation of Statistical Forecast based on sales history.

  - Consensus Demand Forecast for 36 months.

  - Ability to manually adjust demand for market developments.

  - Proportional allocation of forecast to required selling Distribution Centers for reduction.

- Demand planning enables supply forecasting and planning demand in consideration of historical demand data, causal factors, marketing events, market intelligence, and sales objectives.

- Results from the planning process can be automatically fed to other nodes of the supply chain.

- Alert tool for exceptions

DP
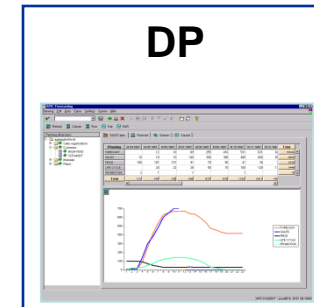
- **The area within APO where the supply planning information is accumulated from SAP R/3.**

  ◆ Heuristics Planning.

  ◆ Optimization.

  ◆ Capacity Leveling.

  ◆ Generation of a Master Production
  Plan for the manufacturing site

SNP

Benefits of SNP
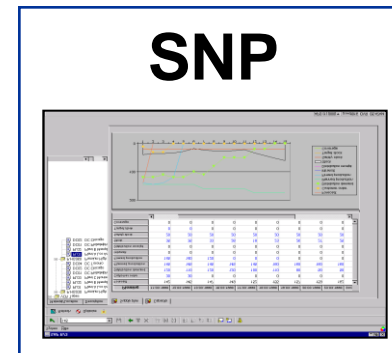
- Creates a very close match between supply and demand by integrating purchasing, manufacturing and distribution, into one consistent model.

- Able to synchronize activities and plan material flow throughout the entire supply chain.

- Enables dynamic determination of how and when inventory should be distributed.

SNP

APO PP/DS Functionality
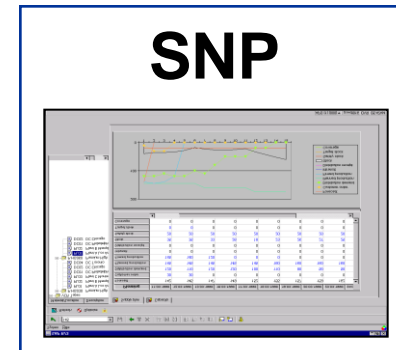
- PP/DS is a component within APO that is used for short-term planning.

- PP/DS allows for material and capacity requirement planning for in-house production, external procurement, and stock transfer in a production plant at the operational level.

Production Planning / Detailed Scheduling

Benefits of PP/DS
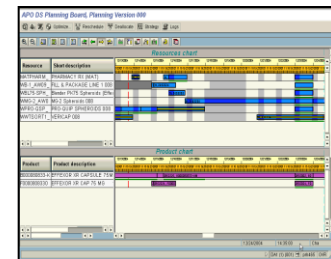
- A real time integrated solution for detailed scheduling and planning of production.
    - Tightly linked with R/3 order execution
- Time continuous planning – for example orders are planned to the second.
- Cross plant planning with order pegging
- Alert tool for exceptions – over coverage and under coverage
- On-line graphical planning tool
    - Drag and Drop capability – Manual rescheduling
    - Dynamic charts
    - Simulation mode

Hands on exercises in the SAP APO system and real life project scenarios

You should now be able to:

- Describe APO.

- Define high level business processes within APO.

- Explain the three different areas within APO:
  - Demand Planning (DP).
  - Supply Network Planning (SNP).
  - Production Planning / Detailed Scheduling (PP/DS).

- Describe the benefits of DP, SNP and PP/DS

THANK YOU