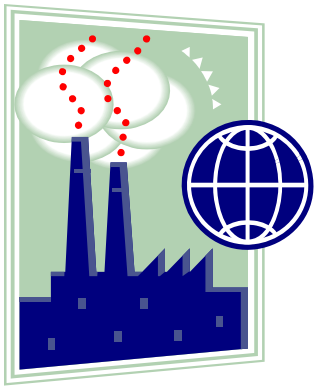
ETO Order Processing in Discrete Manufacturing



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Infosys Technologies

ETO Environment in Discrete Manufacturing

- High customer involvement in Design of the product
- Long lead times for order processing and fulfillment
- Design changes throughout the life cycle of product manufacturing
- The Order to Cash cycle may be preceded by a Quote
- The BOM and Routing of the product is not frozen at Order Entry
- The product to be manufactured may be in a project environment where the costs may be tracked onto a project
- Custom Engineering calculations may be required to be performed before the Bill and the Routing are frozen
- Sometimes the BOM and Routing may change even after production has started

Typical Challenges faced in an ETO Environment

- **Pre-Quote Stage**
  - Estimating for the ETO Order
  - Multiple feeder Product Life Cycle Management systems
  - Seamless Integration between CAD and ERP Systems
- **Post Quote Stage**
  - Orders need to be put on hold to finalize the design and then freeze the BOM and the Routings
  - The Bill and the Routing may change after the WIP Job is released
  - In a Standard Costing environment huge variances may occur between the Standard and Actuals

ETO Solution Mapping – Possible Scenarios

- In Discrete Manufacturing space following two scenarios can occur
  - **ETO in a Project Manufacturing Environment**
  - **ETO in a non-project Environment**

ETO Solution – In Project Environment

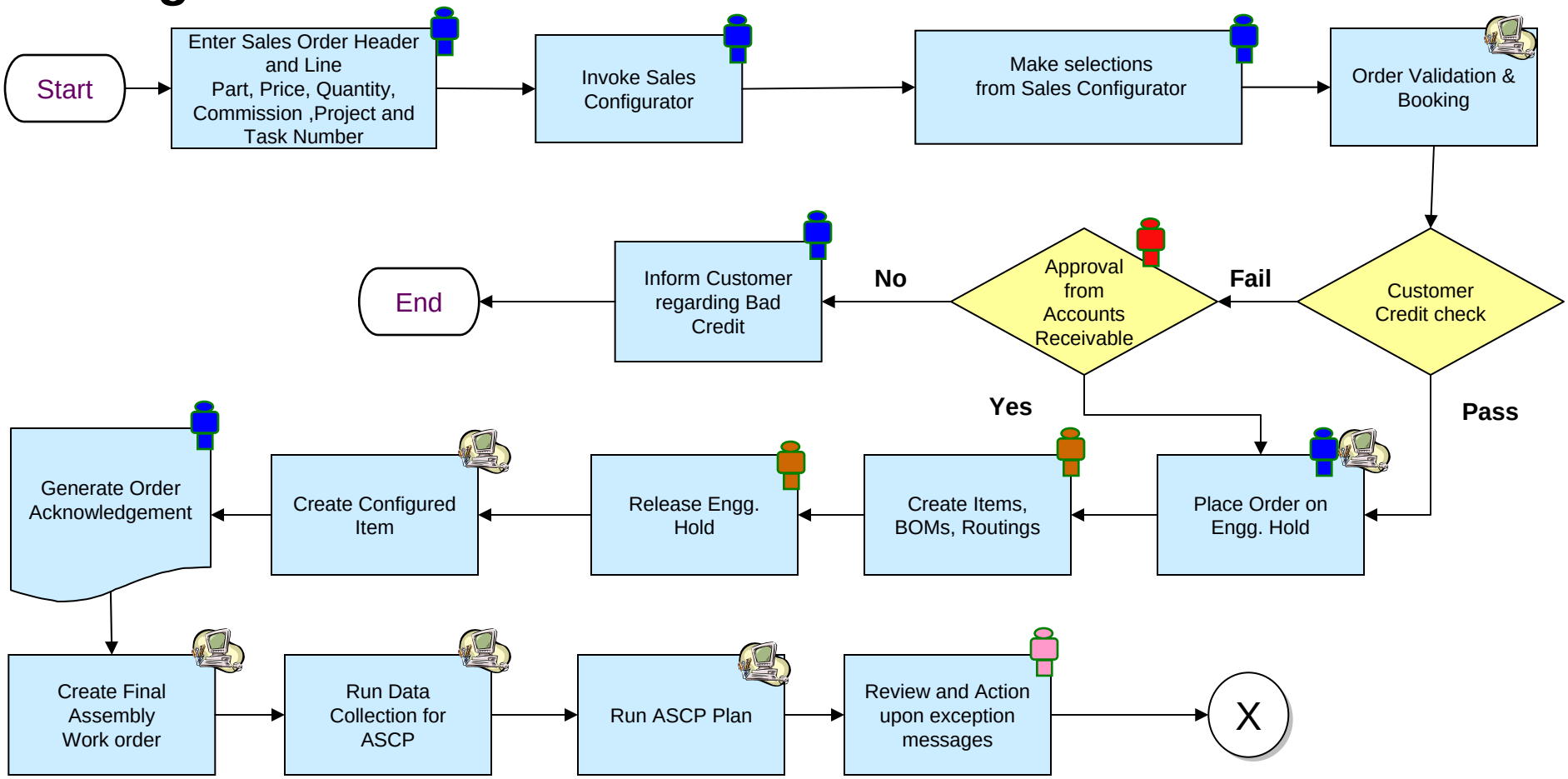
- A typical project environment is one where the design, delivery and post-delivery activities include a combination of products and services engineered specifically to provide a unique solution for the customer.
- The other characteristics of this business are
  - Long execution times with the normal duration ranging from 2-5 years
  - Large capital spends and longer time-to–profit
  - Involvement of the Engineering functions (Design, Prototyping and Testing) throughout the lifecycle of the project
  - Higher levels of risk across technical solutions, costs and timelines

Industries that follow this business model include

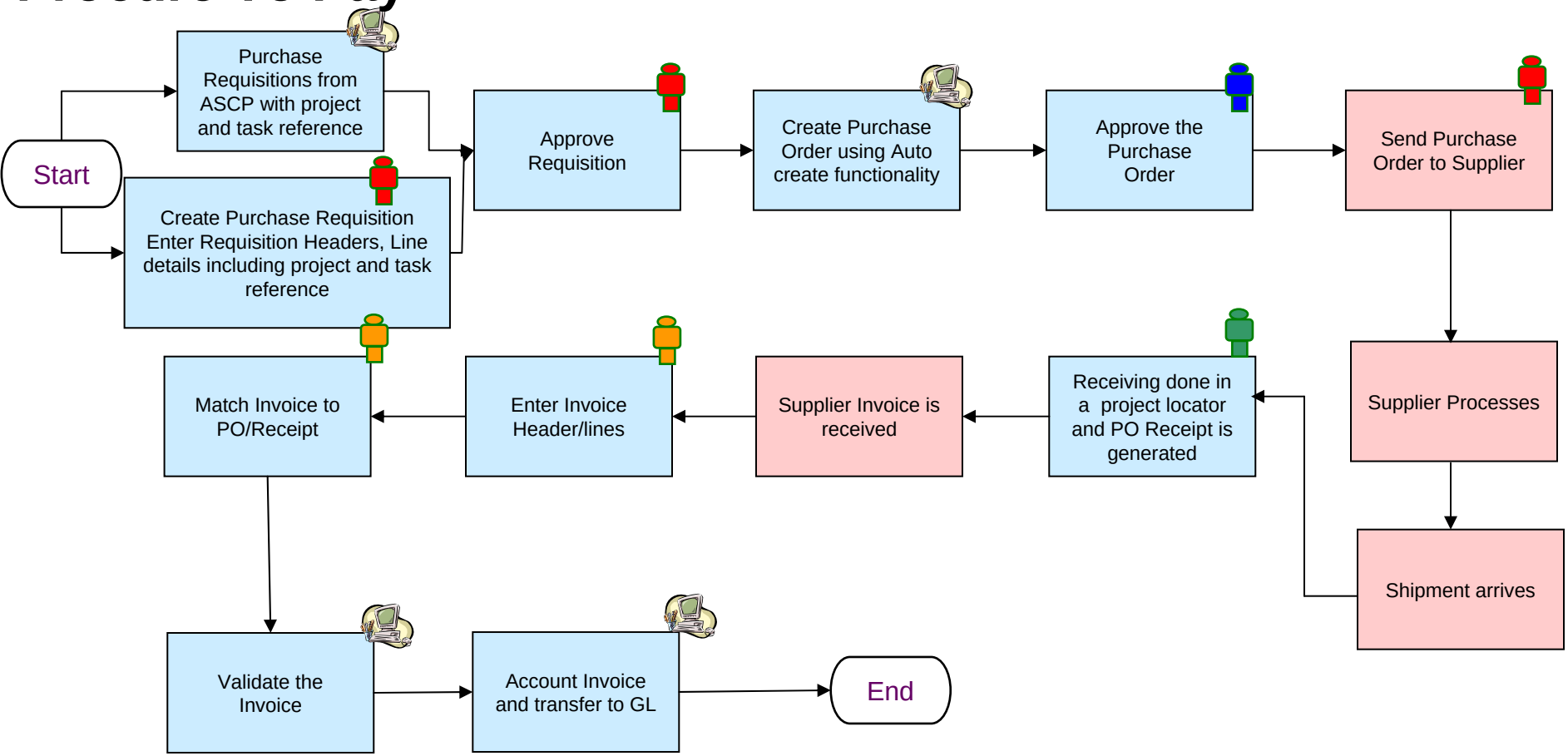
- Aerospace & Defense industries
- Infrastructure Development and Construction
- Process Control and Automation for Manufacturing and Utility Plants

Process Flows

Configure To Schedule



Procure To Pay

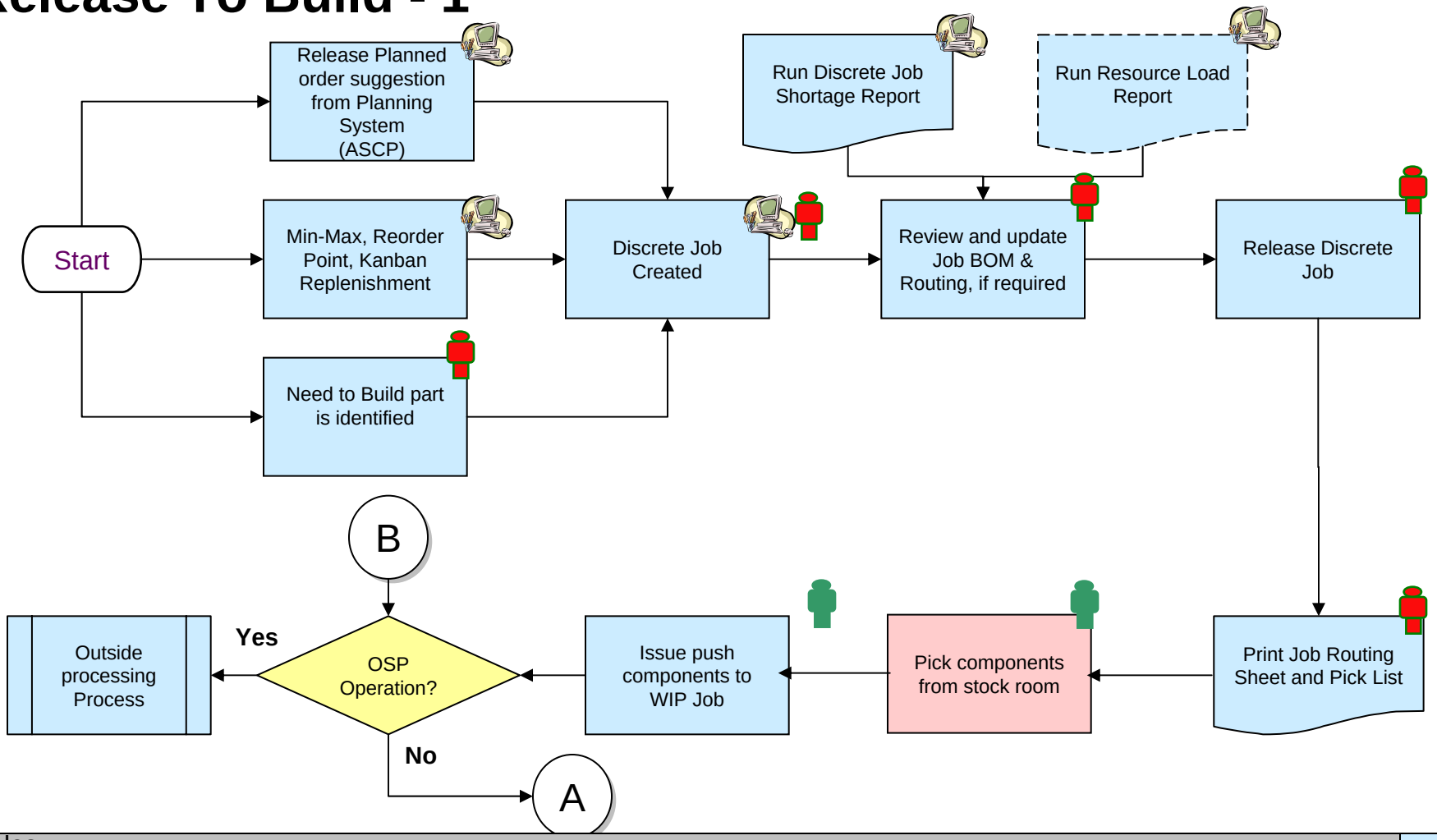


Roles

Payables
Receiving
System
Shipping
Buyer
PO Manager

ORACLE
External

Release To Build - 1



Roles

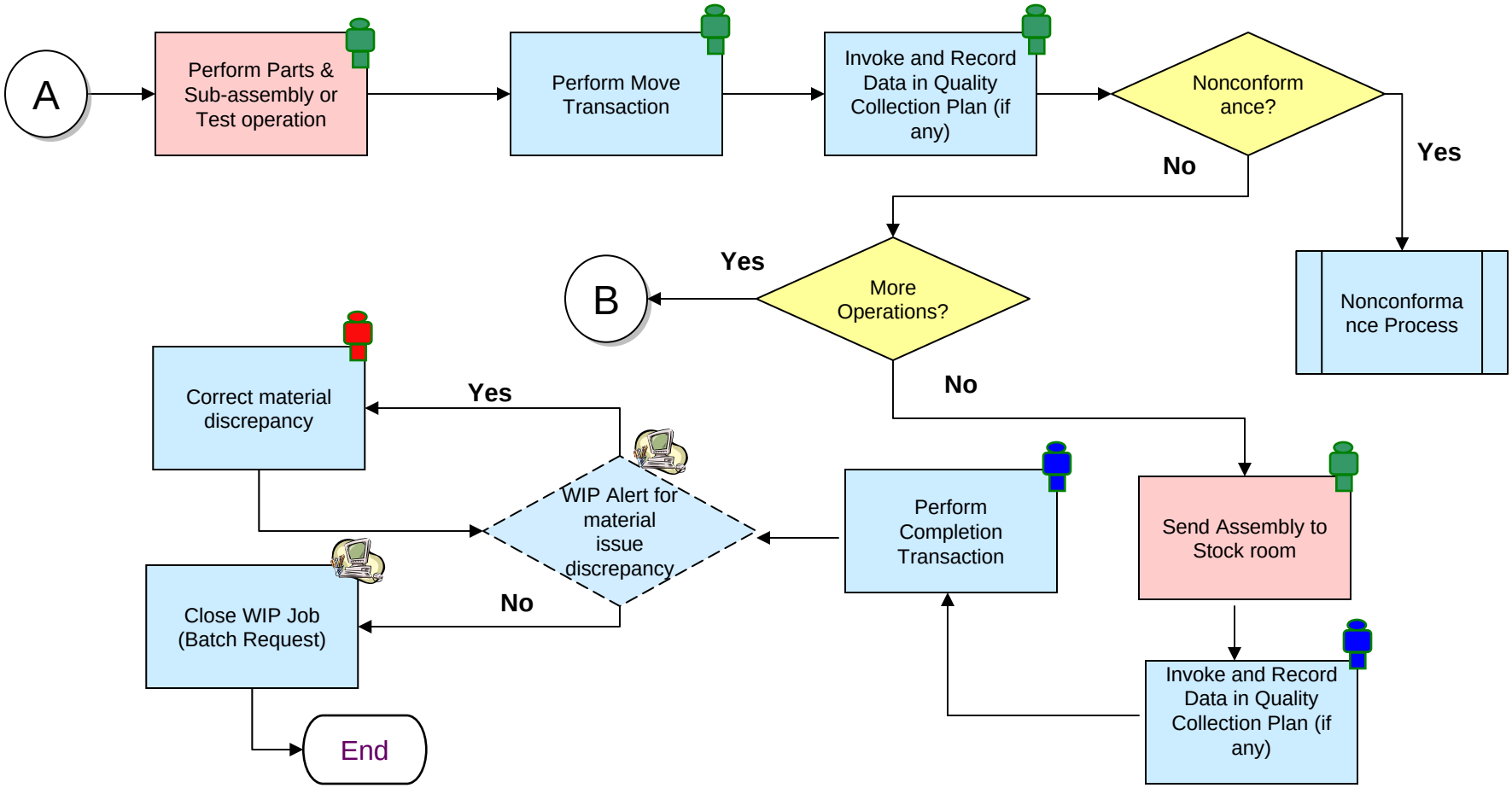
Custom

System | Supervisor | Stockroom | Shop floor

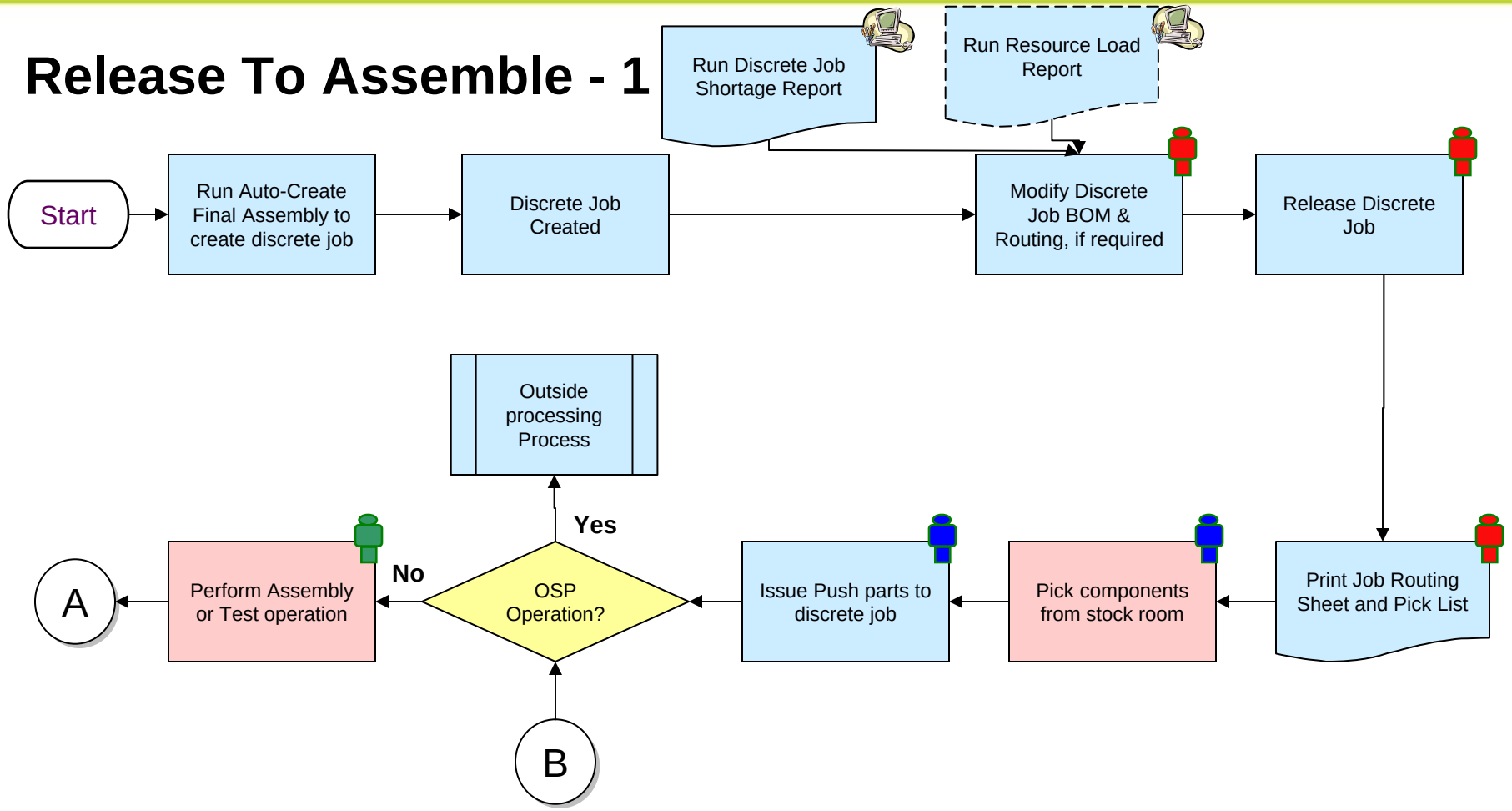
ORACLE

External

Release To Build - 2



Release To Assemble - 1



Roles

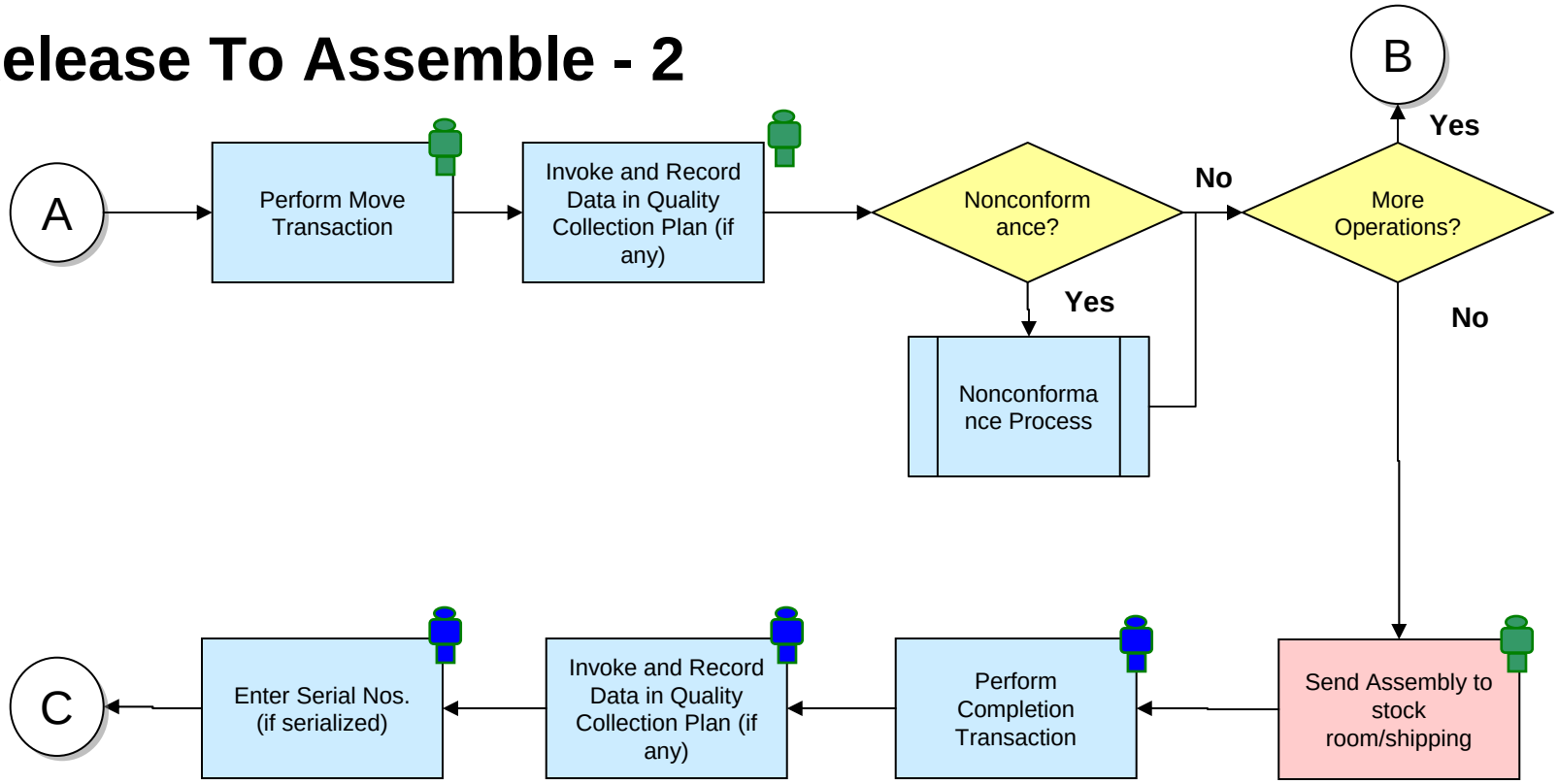
Custom

System | Supervisor | Stockroom | Shop floor

ORACLE

External

Release To Assemble - 2



Roles

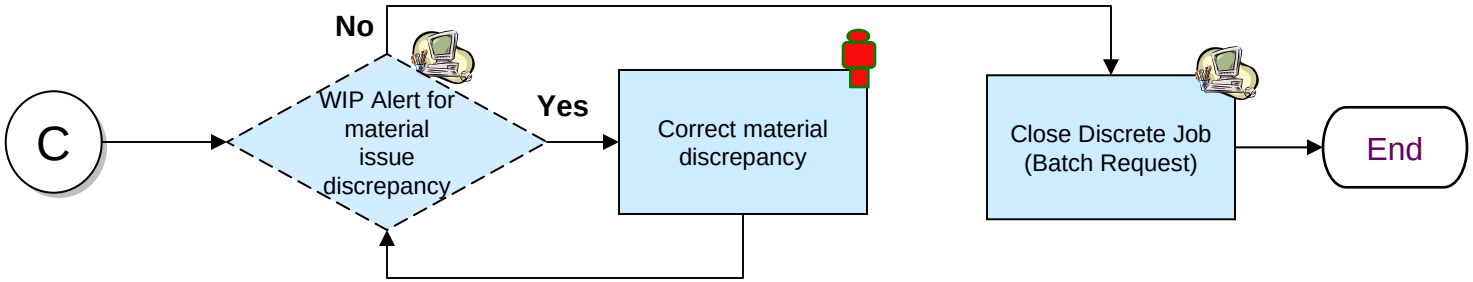
Custom

System | Supervisor | Stockroom | Shop floor

ORACLE

External

Release To Assemble - 3



Roles

Custom

System Supervisor Stockroom Shop floor

ORACLE

External

Challenges in Project Environment

The key challenges are

- Visibility and control of the work breakdown structure, budgets, revenues, task status and other Key Performance Indicators (KPI) across various business functions.
- Cost Capture and assignment to the project from various modules like Purchasing, WIP, Service and Finance (Timecards and Expense Reports)
- Integration between project management applications and the supply chain to ensure control and optimum fulfillment of project demands

Oracle Project Manufacturing supports the following key areas:

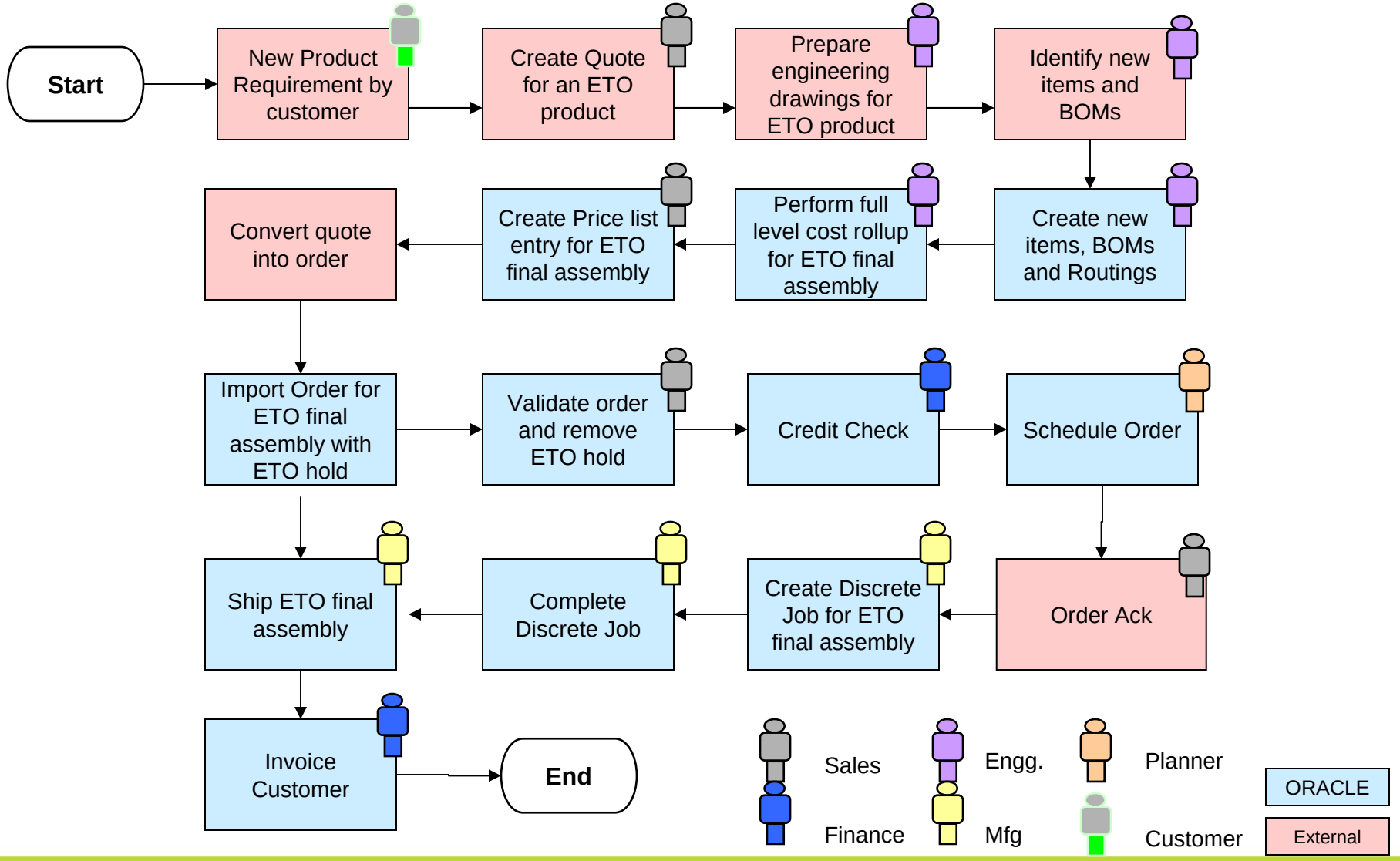
- Project manufacturing sales management and fulfillment, costing, Advanced supply chain planning.
- Project manufacturing procurement and shop floor execution, including Flow Manufacturing integration
- Assemble-To-Order and Pick-To-Order environments

ETO Solution – In non-Project Environment

- This is typically employed by organizations that manufacture Engineer to Order products based on customer specifications but they typically don't use projects to track the product manufacturing
- In most cases a design close to the product being requested by the customer would have been manufactured before but there would be significant effort in designing for their current order as well
- This would involved creation of new items, Bills and Routings as part of the design process before the order is progressed
- The actual Bill and Routing for the ETO Product may eventually change based on changing requirements from the customer through the Order to Ship process
- Typical Industries in this non project space include:
  - Industrial Manufacturing units
  - Custom Electronic Equipment Manufacturing

Process Flows

Process Flow – ETO Sales Order Processing



Challenges in non-Project Environment

- Estimating for the Quote to the customer
- Continuous changes in the Bill and Routing for the end product even after WIP Job is released
- Cost Rollup Issues due to continual changes in Bills and Routings
- Planning for the Raw Material for ETO Orders
- Managing lead times for purchasing. In most cases buyers don't have time to negotiate good prices with suppliers as most ETO jobs are special and already running late in terms of customer promise dates

Typical Issues faced

- Bills and Routings change after the Job is released to the floor
- Engineering hours spent on the design is so significant that it needs to be somehow built into the product standard cost as direct labor cost
- Costing accounting does not want to see variances in all ETO Jobs. Some organizations keep rolling up the standard cost till job is completed
- Product lead times management
- Complex Materials purchase
- Planning for raw materials
- Integration between CAD and ERP Systems

Solutions to some of the Gaps in ETO Order Processing

- Automatic Holds on Sales Orders based on certain conditions that are fulfilled using Holds API. The logic for this could be derived from
  - Engineering calculations that are run automatically which put the Order Line on Hold
  - One of the options in the configurator selects an item that puts the item on hold based of an Item attribute or flexfield setup
- Automatic Notification to Engineer when the Order is put on hold
- Custom program to release holds based on certain conditions that are fulfilled
- Customization of ECO Workflow to notify and execute certain actions for work to be done for the ECO by the concerned departments

Typical Benefits reaped by companies who implemented the ETO Solution

- Cycle time reduction in processing ETO Orders
- Coordination among various departments involved like Engineering, Purchasing and Operations to schedule ETO Orders in advance using the ECO Workflow
- In a ETO Project based scenario the costs for the ETO Order are collected onto a project
- Oracle PLM solution implementation helped to reduce the cycle time for creation of Items, BOMs and Routings for new ETO Orders
- Semantic search/ attribute catalog category based search capabilities helped designers to search for already existing BOMs/Items in the system to make sure the new item being created did not exist in the system

The Road Ahead...

There is no complete solution available in this area as yet. Some of the areas that could definitely be improved upon in the coming years include

1)Backward and Forward integration between ERP and CAD systems

2)Better estimation capabilities for ETO Orders the pre-quote stage

3)Whenever an ETO Order is to be manufactured using Project Manufacturing there are way too many steps required in Projects area to process the same. Need is for a simpler interface

4)Enhanced search capabilities for Designers to search for ETO Items, BOMs and Routings

Q & A

Thank You