

# Planning for Promise (PFP)

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SKU items: 255  
PC parts: 180 includes PCB  
PCB models: 82  
PCB parts: 130  
Time bucket: 6 months

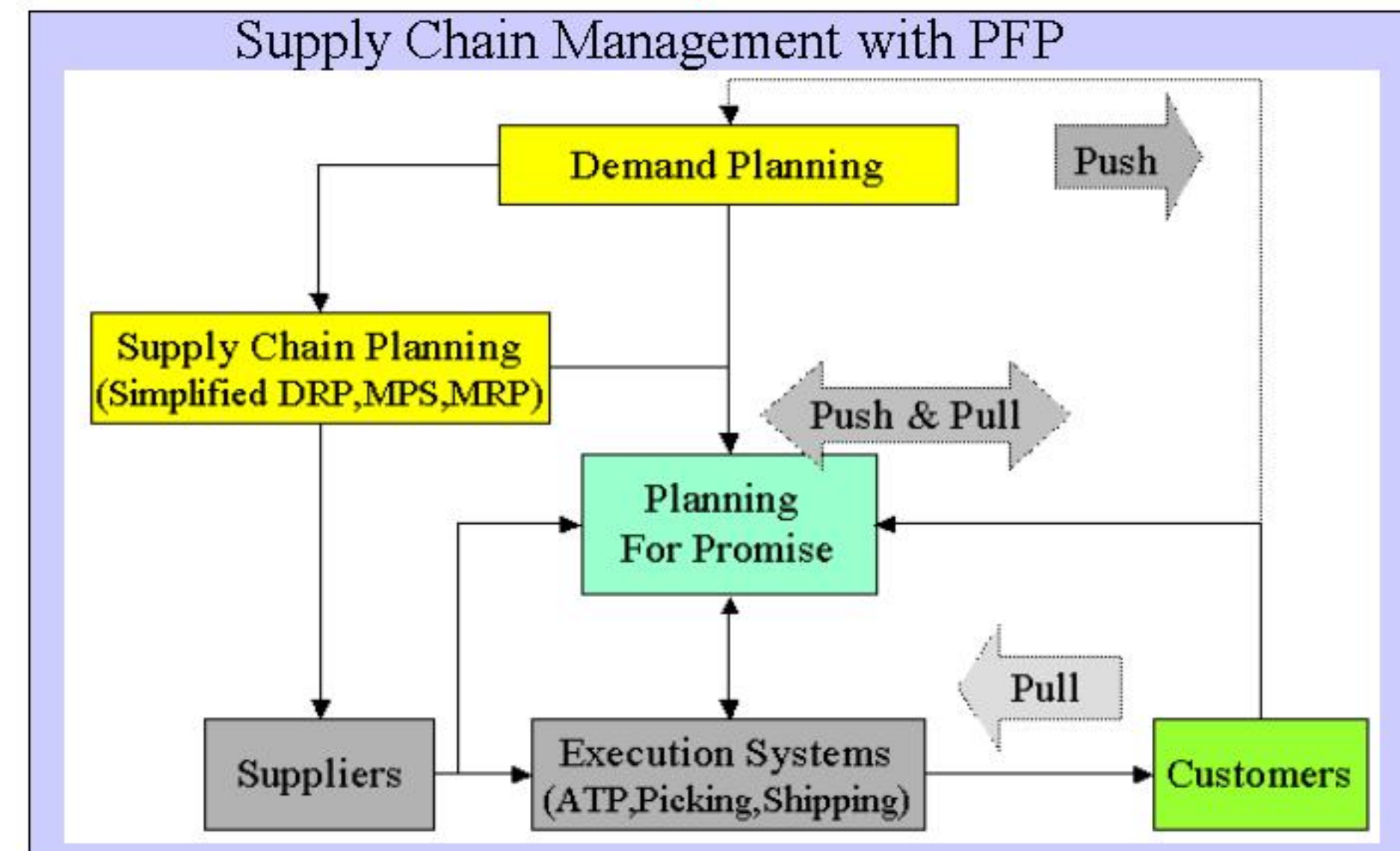
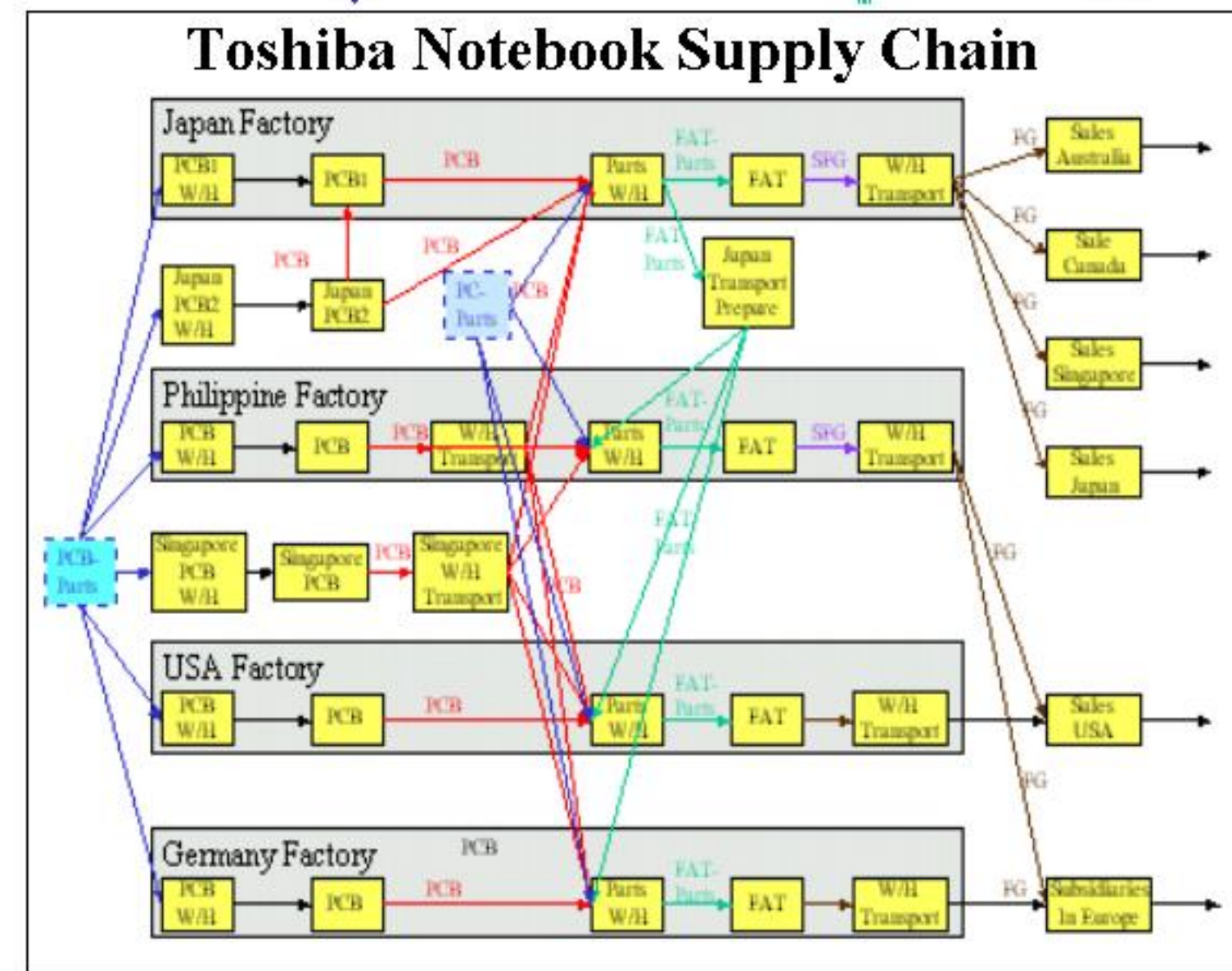
Decision variables:  
1.4 million  
Constraints:  
1.2 million

**Research Objectives**

- Development of global supply chain optimization model for tactical-level decision support
- Use of model to investigate operational policies and business strategy

**Model Considerations**

- Objective Functions**
  - Profit, Order Fill-Rate, minimum fill rate, cost, denied orders
- Decision variables**
  - Demand commitments for the  $k$ th product in sales  $s$ :  $C_s^k(t)$
  - Product delivery from the  $m$ th manufacturer to the  $s$ th sale:  $D_{ms}^k(t)$
  - Production of the  $k$ th product in time period  $t$ :  $P_m^k(t)$
  - Material delivery from  $r$ th supplier to the  $m$ th manufacturer:  $C_{mr}^k(t)$
- Constraints**
  - Supply chain capability constraints
  - Transshipment of material, semi-finished and finished goods
  - Material constraints
  - Material substitutions
  - Material compatibility
  - Global bill of material (BoM)
  - Production capacity
  - Transportation capacity
  - Business priority
  - Duty (tax) constraints
  - Currency constraints
- Research issues:**
  - Effective modeling for large global supply chain systems
  - Efficient algorithms for solving mixed integer programs
  - Business policy analysis



## Experimental Results

