What is the Purpose and Logic of MRP?
What is the Purpose and Logic of MRP?

- Coordination of Production and Inventory in large, multi-stage production systems
- Used for
  - Scheduling & re-scheduling
  - Capacity Planning
  - Supplier coordination (internal & external)
- Timely dissemination of information
- Time-phased production & procurement
  - with lead time offsets & BOM explosions
- Independent vs. Dependent demand
- Requires centralized information system; hence ERP
- Organizes large complex production and delivery coordination requirements
Criticisms of MRP

• Deterministic Model
• Push system

• poor data ==> GIGO
• Self-fulfilling lead times
• Difficult/costly to install & maintain
• Centralized command & control mindset
Three Principles of Forecasting

1. The Forecast is always wrong
2. The longer the forecast horizon, the worse the forecast
3. End item forecasts are less accurate than aggregate forecasts
What is the Purpose and Logic of ERP?
What is the Purpose and Logic of ERP?

- Financial & Operational Planning & Control
  - uniform business processes
- Integration of corporate data & systems

- Used for
  - Financial analysis & reports
  - Coordinating operations, sales, engineering
  - Supplier coordination (internal & external)
- Timely aggregation and dissemination of information

- Requires centralized information system;
- enables decentralized control?
Criticisms of ERP systems

- Implementation nightmares
- Encourages centralized control
- Enforces uniformity; can stifle innovation
- Very expensive

Management issues:
1. Process redesign
2. Flexibility and internal capabilities
3. Implementation
Lessons from Cisco’s Implementation?

• make it a top priority; resource accordingly
• do it quickly
• rapid prototype iterations
• in-house capabilities
  (outsource capacity, not knowledge)
• need realistic-scale testing
Volatility Amplification in the Supply Chain: “The Bullwhip Effect”

- Information lags
- Delivery lags
- Over- and underordering
- Misperceptions of feedback
- Lumpiness in ordering
- Chain accumulations

SOLUTIONS:
- Countercyclical Markets
- Countercyclical Technologies
- Collaborative channel mgmt. (Cincinnati Milacron & Boeing)
"We are experiencing a 100-year flood." J. Chambers, 4/16/01

LESSONS FROM A FRUIT FLY: 
**CISCO SYSTEMS**

1. **KNOW YOUR LOCATION IN THE VALUE CHAIN**
2. **UNDERSTAND THE DYNAMICS OF VALUE CHAIN FLUCTUATIONS**
3. **THINK CAREFULLY ABOUT THE ROLE OF VERTICAL COLLABORATIVE RELATIONSHIPS**
4. **INFORMATION AND LOGISTICS SPEED DO NOT REPEAL BUSINESS CYCLES OR THE BULLWHIP.**

**Bonus Question:**
How does clockspeed impact volatility?

**Class 8 Wrap-Up**
- MRP for production planning
- ERP Systems: Implementation & Process Design are key
- Bullwhip Dynamics

**Next Time:** Southwest Air
Beef Supply Chain

**Inputs**
- Millions of farmers provide feed and corn input
- Multiple companies provide genetics
- Genetics and feed have a dramatic impact on the animal's development and meat produced
  - Similar genetics and feed lead to little variation (5%)
  - Different feed and genetics lead to wide variation (40%)
- Additionally, animals are subject to animal health products and medications

**Cow-Calf, Dairy Cows**
- 900,000+ operations
- 62% of cow-calf operations have herd size of less than 50
- Numerous inputs affect the product
- Large operations include King Ranch, Lykes Brothers and Desert Cattle
- In addition, there are dairy operations which provide lean cows

**Feedlots**
- 2,000+ operations
- Top 5 control approximately 15% of the market
- Concentrated in 10 states
- Numerous inputs affect the product
- Large operations include Cactus Feeders, ContiBeef and Caprock
- In addition, there are dairy operations and imports (AU-NZ)

**Packers**
- Less than 50 companies
- Largest 4 control dominant share (~75%)
- Various levels of integration into processing
- Largest players offer packing and processing
- Large operations include Excel, Tyson, Swift and Smithfield
- Dairy cows are generally slaughtered by mid sized packers

**Grinder (Processors)**
- ~100 companies
- 800 packers and processor plants in the US
- Midsized companies ($50-500 MM) are generally more focused on processing
- Key suppliers are loyal, highly focused suppliers (Keystone and OSI)

**Distribution Center (e.g., McD)**
- 40 company owned distribution centers across the US
- DCs consolidate products for individual stores
- Stores make one communication to restock the entire store