

Setting the Business Context and Improvement Focus



"Costs are unsustainable. Achieve the best globally landed cost. Quickly!"

Strategic Business Unit
 • All product value streams for Plant 1 Area B

Business Impact
 • Reconfigure operations for the best market position and internal performance

"We've done numerous engineering studies. Don't know which is the best business solution nor specific "cellular" configuration to deploy."



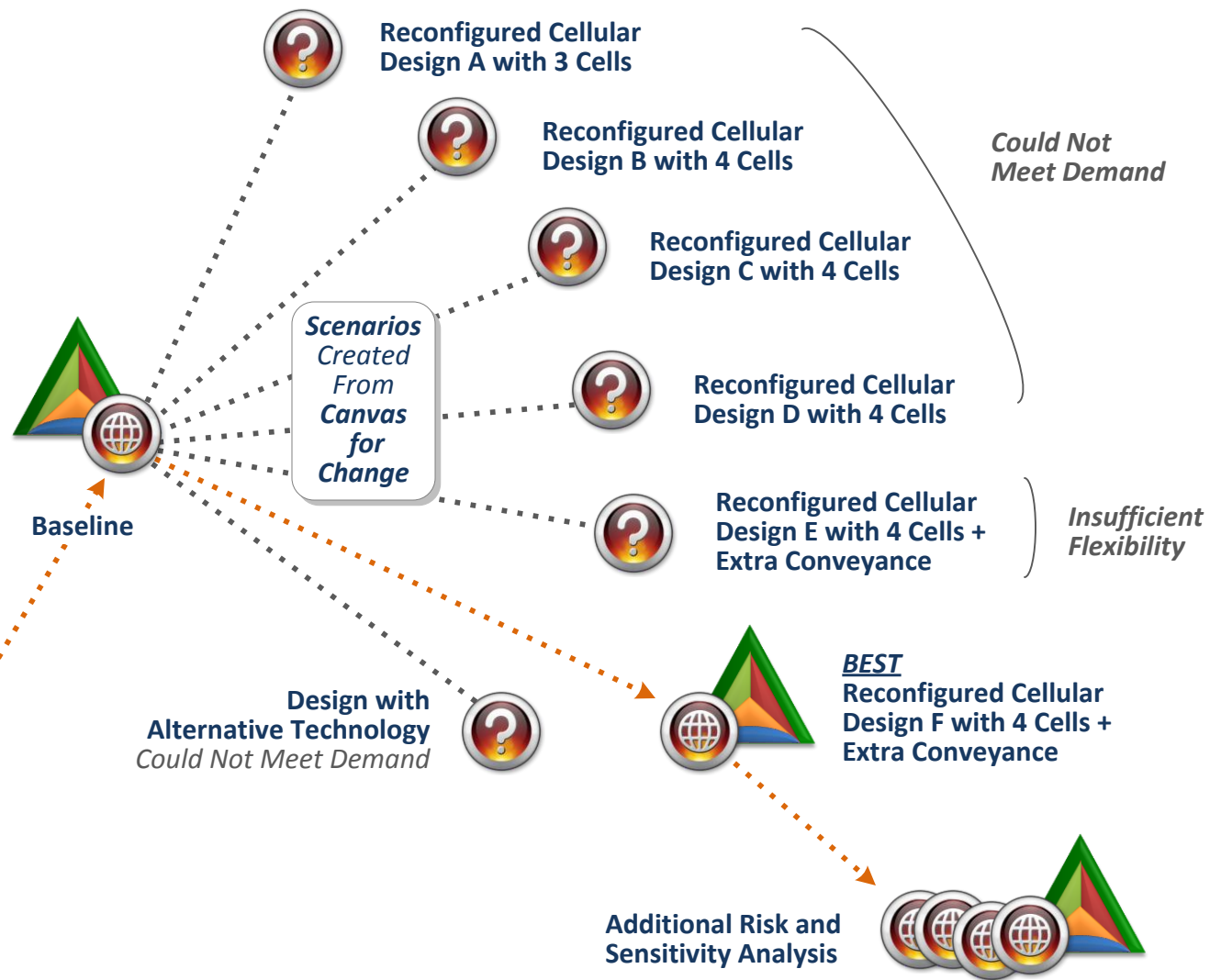
Canvas for Change
 • Rapid restructuring to reduce costs
 • Improve flexibility
 • Determine optimal level of automation
 • Eliminate assets where possible
 • No new investments

Risk and Sensitivity
 • Financial risks of demand fluctuations and product mix shifts
 • Process and supply chain risks

Success Criteria
 • Meet demand without excess capacity
 • Reduce product cost by workflow
 • Financial and flexibility tradeoffs
 • Balance needs of all roles/stakeholders



• Quantify Baseline • Optimize Flow and Financials • Risk and Sensitivity



- How many cells required?
- How to configure cells?
- Any unforeseen dependencies?
- Is alternative design better?
- Plus many other objectives to consider simultaneously.



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Profit Mapping

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Business Results

- NPV = \$2,033,365
- 1st year ROI = 199%
- Project ROI = 1,129%
- 5.9% reduction in Cost to Add Value
- Annual Savings = \$619,037
- Additional One-Time Savings = \$133,172
- Total 1st Year Savings = \$752,209
- Breakeven point = 3-4 months



Process Results

- Determined redesign candidates which could not meet demand
- Evaluated alternative processing technologies (could not meet demand)
- Identified optimum flow through value streams
- Identified 4 cells required with non-standard configurations to meet cost and flexibility requirements
- Determined 1 additional forklift necessary to ensure flow
- Reduced assets
- Provided guidance on other improvement opportunities



Additional "Metrics That Mattered"

Additional Metrics of Importance	Scenario 002	Better	Scenario 008
Cost of Goods Manufactured	\$ 1,789,611	→	\$ 1,738,024
Cost to Add Value (Conversion Cost)	\$ 882,411	→	\$ 830,824
Raw Material Cost	\$ 907,200	↔	\$ 907,200
In-process Conveyance Cost	\$ 63,440	←	\$ 63,796
Carrying Cost (Assume 6% COC)	\$ 6,816	←	\$ 6,837
Floor Space Cost	\$ 6,757	←	\$ 6,773
Racks, Containers, Part Bins Cost	\$ 6,670	←	\$ 8,027
Direct Labor: # People	11	←	12
Indirect/Skilled: # People	20	→	17
Quality: First Time	85 %	↔	85 %
Quality: # Scrap Pieces	290	←	394
OEE: Equipment Failure	0.55 %	→	0.52 %
OEE: Equipment Starved	33.0 %	→	14.3 %
OEE: Equipment Blocked	14.0 %	→	10.2 %
OEE: Changeover	0.1 %	→	None
OEE: Equipment Utilization	35 %	→	42.4 %



ProFIT-MAP Workflow Dynamics

- Best way to configure processes for business performance
- Optimize their impact on resources, the supply chain, financials, and customers

Process

Products – demand, mix, production
Operations – stations, performance characteristics
Product Workflows – flow of products across operations
Product Rework and Scrap Behavior
Transportation and Conveyance – on-demand with movement thresholds
Operation Buffers – input, output, recycle, scrap
Work-in-Process Inventory – in production, starting
Inventories – finished goods, raw materials & supplies by MRP, milk run, etc.
Operation Groups – with variable shift schedules
Shifts – active and inactive
Operation Processing Times – scheduled, inactive, job time
Operation Processing States – blocked, starved, set-up, fail, etc.
Constraints – floating and static, in value stream flow
Activities – required to meet the given product demand and mix
Jobs – required to meet demand, created from batching policies
Production Dynamics – variability and interconnections
Operational Policies – including financial, resources, and supply chain

Financial

Cost of Goods Manufactured
Unit Cost
Cost to Add Value
Asset Costs
Direct Labor Costs
Indirect Labor Costs
Transportation Labor Costs
Raw Material Costs
Supplies Costs
Utilities Costs
Other Costs

Resources

Asset Use
Direct Labor
Indirect Labor
Transportation Labor
Raw Materials
Supplies
Utilities

Supply Chain

Finished Goods Inventory and Cost
Raw Material Inventory and Cost
Supplies Inventory and Cost
Work-in-Process Inventory and Cost
Order Management
Procurement



Parametric Systems Approach

- Detailed multi-product workflows
- Second-to-second dynamics
- Focus on flow