

Dynamic Strategic Planning Case Studies

- **Situation**
 - 1) Identify critical issues
 - 2) Identify decisions
 - 3) Identify risks
- **Analytical**
 - 1) Define critical issues and risks in numeric terms
 - 2) Calculate expected values

Dynamic Strategic Planning Case Studies (contd)

- **Optimum Decisions**
 - 1) First stage decisions and options for the future
- **Characterize benefits and costs of decisions**

Examples

- **Expansion of Established Industry**
South Africa Power
- **Response to Government Regulations**
PDVSA Corporate Flight Departments
- **Technology Choice**
Mass. Water Resources Authority
- **Time to Market**
NASA Space Computer

Examples (contd)

- **New Product Deployment**
Silicon Wafers / Ceramic Auto Parts
- **Siting New Capacity**
Sydney Airport

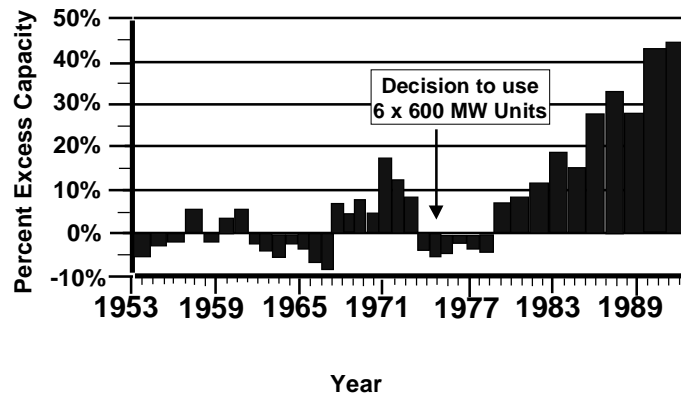
Expansion of Established Industry

Power Station Investment in South Africa (D. A. Aberdein)

- **Situation**
 - Eskom: South Africa Power Utility
 - Variability in electricity demand for the future?
- **Critical Issue**
 - Profits for company

Expansion of Established Industry Power Station Investment in South Africa

Excess Capacity as Percentage of Demand



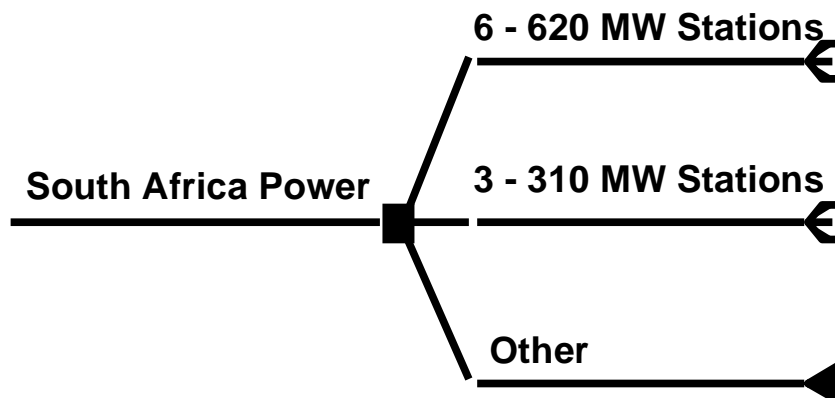
Expansion of Established Industry (contd)

- Decisions

- How large an incremental plant size for capacity expansions

6 x 620 MW or 3 x 310 MW

Expansion of Established Industry (contd) Decisions



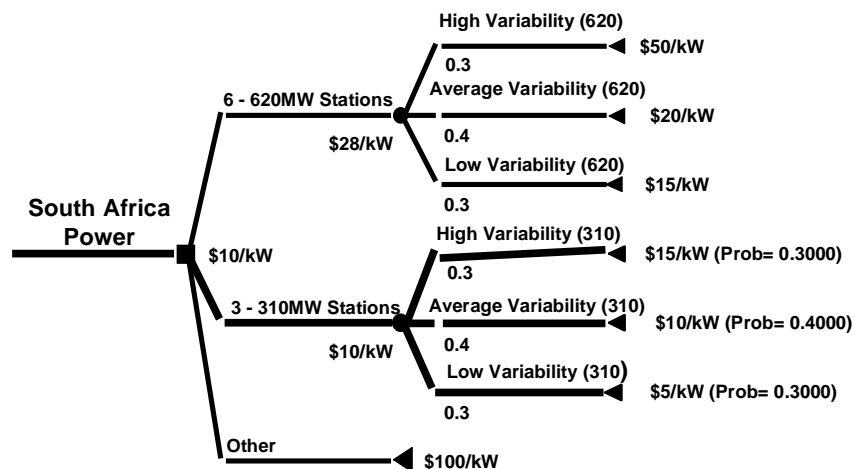
Expansion of Established Industry (contd)

- **Risks**
 - Over or under capacity due to variability in electricity demand in the future
- **Optimum Decisions**
 - Smaller plants
- **Benefits and Costs of Decision**
 - Some loss of economies of scale
 - Facilitate capacity additions as needed

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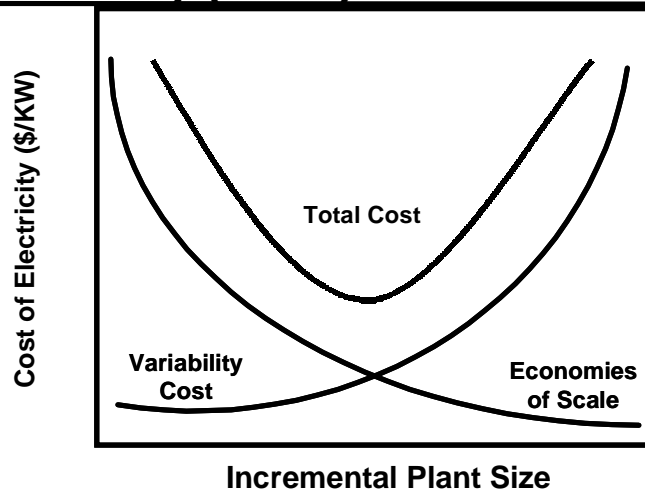
Expansion of Established Industry (contd) Decision Tree



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Expansion of Established Industry (cont')



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Response to Government Regulations

Petroleos de Venezuela Corporate Flight Departments (A. D. Ungredda)

- **Situation**
 - PDVSA: Venezuela's state-owned oil monopoly
 - Internal corporate flight departments (CFD)
 - Government announces that all state aircraft must be sold

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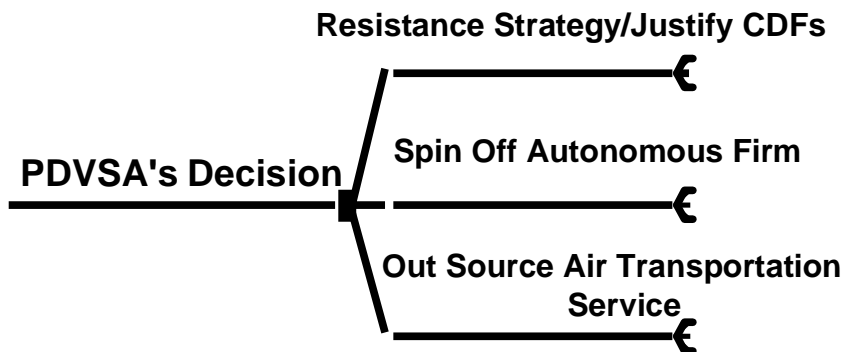
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Response to Government Regulations (contd)

Petroleos de Venezuela Corporate Flight Departments (A. D. Ungredda)

- **Critical Issue**
 - Effects on company performance from restructuring of air transportation services
- **Decisions**
 - Resist elimination of internal CFD
 - Spin-off CFD as autonomous entity
 - Out source services from external suppliers

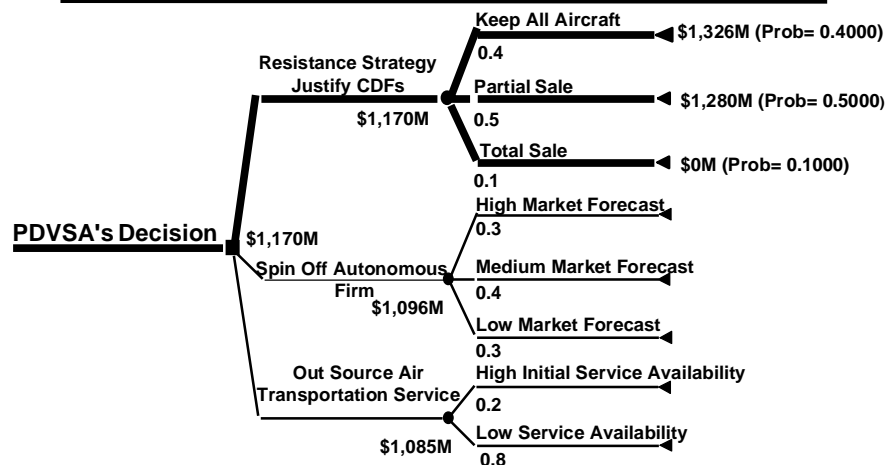
Response to Government Regulations (contd) Decisions



Response to Government Regulations, (contd)

- **Risks**
 - Enforcement actions and punitive costs imposed by government
- **Optimum Decision**
 - Partial Compliance
- **Benefits and Costs of Decisions**
 - Mitigates costs to company
 - Potentially causes some administrative disruption

Response to Government Regulations (contd) Decision Tree



Technology Choice

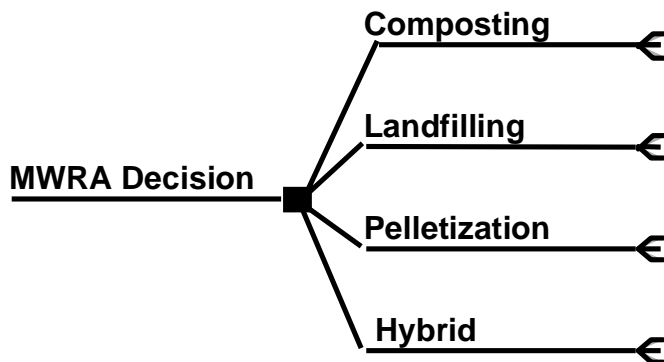
Mass. Water Resources Authority (H. D. Nababan)

- **Situation**
 - \$6 Billion Boston Harbor clean-up project
 - Disposal of wastewater treatment sludge
- **Critical Issue**
 - Optimum technology

Technology Choice, (contd)

- **Decisions**
 - Select Technology**
 - Pelletization
 - Composting
 - Landfilling
 - Hybrid system

Technology Choice, (contd) Decisions



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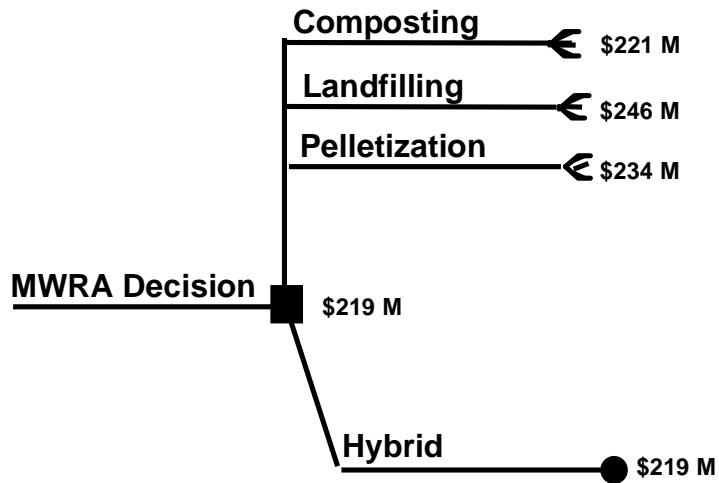
Technology Choice, (contd)

- **Risks**
 - High cost or failure of system
- **Optimum Decisions**
 - Hybrid options or Parallel development efforts
- **Benefits and Costs of Decision**
 - Minimizes potential of ending up with ineffective technology
 - Some loss of economies of scale

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Technology Choice, (contd) Decision Tree



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Place here Tree 1 of case study trees

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Place here Tree 2 of case study trees

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Place here Tree 3 of case study trees

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Technology choice: Mass. Water Resources Authority

Expected cost for different Reliability levels

(\$ x 10⁶)

Alternatives	Case 1	Case 4
	R= 95%	R = 90 %
Single: Composting	221	231
Landfill	246	253
Pelletization	234	242
Hybrid: with Landfill	218	221
Without Landfill	192	200

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Technology choice: Mass. Water Resources Authority

Expected cost for different discount rates

(\$ x 10⁶)

Alternatives	Case 2	Case 1	Case 3
	R=4%	R=6%	R=8.6%
Single: Composting	246	221	196
Landfill	271	246	220
Pelletization	263	234	205
Hybrid: with Landfill	239	218	198
Without Landfill	211	192	172

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Time to Market

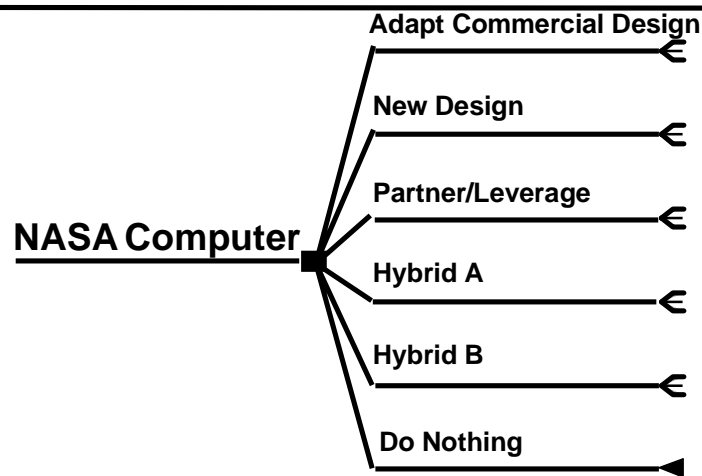
NASA Embedded Space Computer (H. F. Benz)

- **Situation**
 - High performance computer for interplanetary missions
 - Must resist high levels of cosmic radiation
 - Expensive and time consuming to develop

Time to Market, (contd)

- **Critical Issue**
 - Meeting window of opportunity for launch date
- **Decisions**
 - Adopt commercial system
 - Design new system
 - Partner with firm to leverage resources
 - Hybrid approach
 - Do nothing

Time to Market, (contd) Decisions



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Time to Market, (contd)

- **Risks**

- Opportunity lost to complete new system by deadline
- Beaten to market by competition

- **Optimum Decisions**

- Parallel Arrangements (Hybrid)

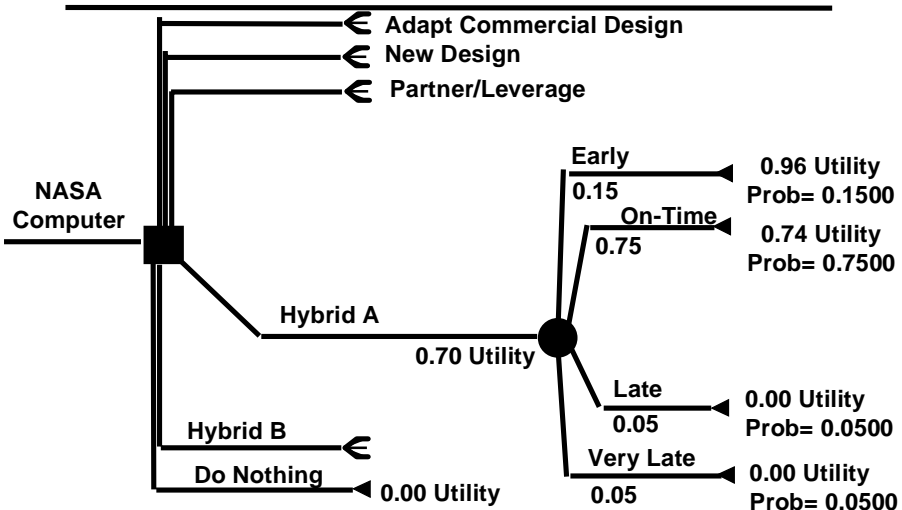
- **Benefits and Costs of Decision**

- Maximizes chance of utilizing window of opportunity
- Delays and extra costs in setting up contract arrangements

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Time to Market, (cont') Decision Tree



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Place here Tree 4 of case study trees

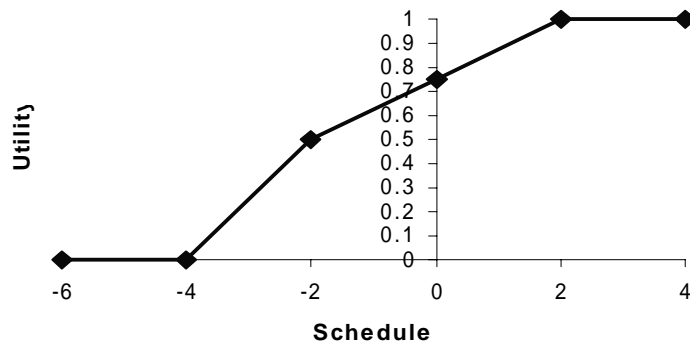
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Place here Tree 5 of case study trees

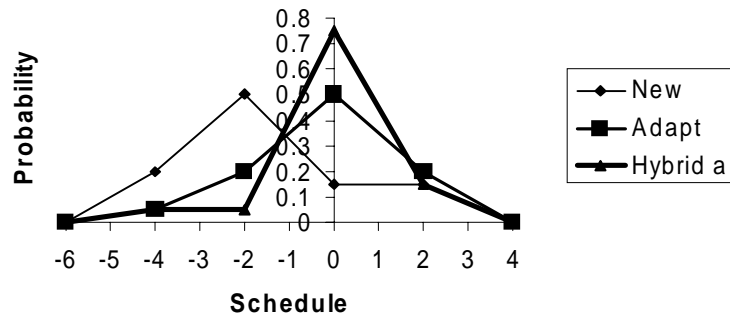
Time to Market NASA Embedded Space Computer

Utility vs. Schedule



Time to Market NASA Embedded Space Computer

Probabilities vs. schedule



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New Product Deployment

Newcomer in the Silicon Wafer Industry (M. Kimura)

- **Situation**
 - Japanese silicon wafer industry
 - Growing market for large diameter silicon wafers
- **Critical Issue**
 - Rate of market penetration

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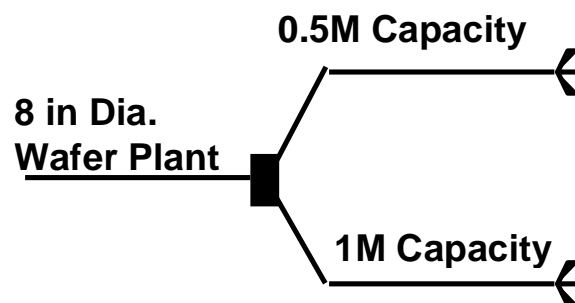
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New Product Deployment, (contd)

Newcomer in the Silicon Wafer Industry (M. Kimura)

- Decisions
 - Price of wafers relative to leading companies
 - Type of wafer: small or large diameter
 - Capacity of plant (initial and later expansions)

New Product Deployment: Wafers (contd) Decisions



New Product Deployment: Wafers (contd)

- **Risks**
 - Over capacity and bankruptcy
- **Optimum Decisions**
 - Intermediate initial capacity for plant
- **Benefits and Costs of Decision**
 - Reduces risks of catastrophic losses
 - Some loss of scale economies

Place here Tree 6 of case study trees

Place here Tree 7 of case study trees

New Product Deployment

Ceramic Automotive Parts (F. Field)

- **Situation**
 - Demand for more fuel efficient automotive engines
 - Reciprocating parts
 - Ceramics have excellent properties but are difficult to manufacture

New Product Deployment, (contd)

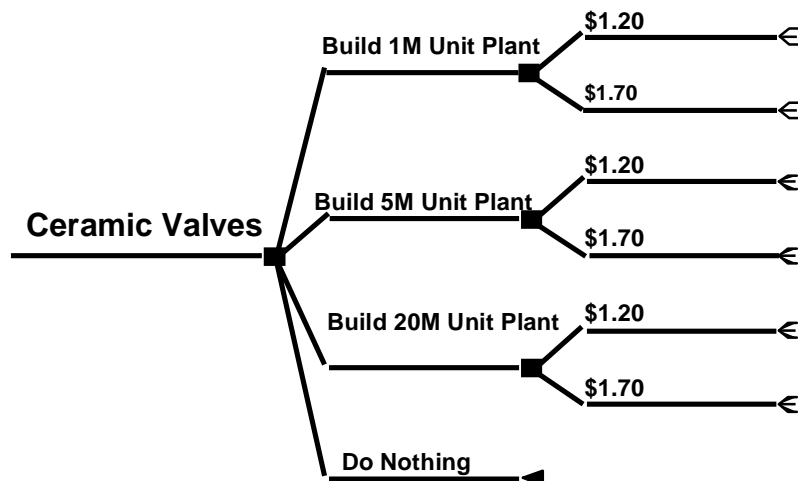
Ceramic Automotive Parts (F. Field)

- **Critical Issue**
 - Rate of market penetration
- **Decisions**
 - Price
 - Plant size (initial and later expansions)
 - Product features: weight and reliability

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New Product Deployment: Ceramics (contd) Decisions



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New Product Deployment: Ceramics (contd)

- **Risks**
 - Over capacity and bankruptcy
- **Optimum Decisions**
 - Intermediate initial capacity for plant
- **Benefits and Costs of Decision**
 - Reduces risks of catastrophic losses
 - Some loss of scale economies

Place here Tree 8 of case study trees

Place here Tree 9 of case study trees

Siting New Capacity

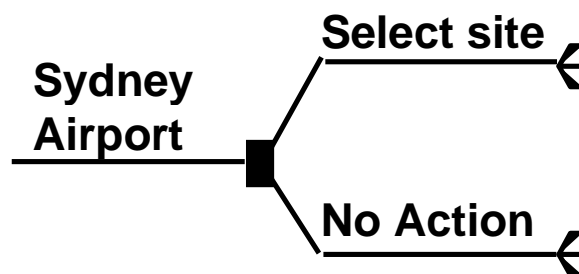
A New Airport for Sydney Australia (R. de Neufville)

- **Situation**
 - Major hub of air travel
 - Many previous attempts to locate second airport during the past 20 years
 - Air transportation is central to the economy

Siting New Capacity (contd)

- **Critical Issue**
 - Selection of site
- **Decisions**
 - New sites or no new airport

Siting New Capacity, (contd) Decisions



Siting New Capacity, (contd)

- **Risks**
 - Site will be unavailable when needed
- **Optimum Decisions**
 - Purchase site ahead of time for its use as an option
- **Benefits and Costs of Decision**
 - Insures ability to expand if necessary
 - Cost of acquiring and holding onto property

Siting New Capacity, (contd) Decision Tree

