

Decisions

How we make them, how they make them

- Not an innate skill (normally)
- Takes practice and experience
- Primary executive role
- Our main concerns will be:
 - Environments
 - Styles
 - Phases
 - Comparisons to machine processes for making decisions
 - Purpose, then v. now

Decisions

Decisions

- Not an innate skill
 - Degree of decision-making skill required
 - The degree of problem complexity
 - Number of criteria considered
 - Because of this, DSS developed
 - Organize, Support, Change
 - Simple decisions don't require any of this
 - Bottlenecks still happen
 - Side note: AI / Expert systems / neural networks / Genetic algorithms / Fuzzy logic

Decisions: Environments

Certainty

Uncertainty

Risk

Decisions: Styles

Analytic

Heuristic

Hybrid (why?)



Decisions: Styles

- The Trade-Off Process
 - Two Columns
 - Pros
 - Cons
 - Updated approach using positives only

The Trade-Off

	А	В	С	D
1	Eat at McDonald's		Eat at health food store	
2				
3	Tastes Better	1	Healthier	1
4	Can get fries	1	Wider selection	1
5	Have happy meals	1	Common food alts	1
6	Many locations	1	Discover new tastes	1
7	Nifty mascot	1	Feel Better	1
8	Cheaper	1		
9				
10		6		5

• Weighting Methods

- Each attribute is assigned a weight (value)
- Each alternative is assigned a grade for each attribute
- Choose alternative with highest total score

Weighting Methods

1	%	Attributes	Car 1	Car 2	Car 3
2	0.2	Manual transmission	2	2	1
3	0.15	Power seats	4	4	4
4	0.1	Engine power	5	5	10
5	0.15	Convertible	10	5	6
6	0.2	CD Changer	10	10	10
7	0.05	Gas mileage	8	10	4
8	0.1	Color	8	6	3
9	0.05	Trunk space	6	7	5
10		Total	6.5	5.7	5.45

- Sequential Elimination by Lexicography
 - Attributes are ranked according to importance
 - Each alternative is assigned a grade for each attribute
 - Only choose alternatives with highest score
 - No regard for scores further down list
 - Repeat until one choice is left

Sequential Elimination by Lexicography

1	%	Attributes	Car 1	Car 2	Car 3
2	1	Manual transmission	10	10	10
3	2	Power seats	2	2	1
4	3	Engine power	5	5	10
5	4	Convertible	4	4	4
6	5	CD Changer	8	10	4
7	6	Gas mileage	10	5	6
8	7	Color	8	6	3
9	8	Trunk space	6	7	5

- Sequential Elimination by Conjunctive Constraints
 - Set up constraints
 - Each alternative must satisfy those constraints
 - If not, that alternative is eliminated
 - Without adjustment, at first
 - If necessary, adjust constraints
 - Run the numbers again

Sequential Elimination by Conjunctive Constraints

	Attributes	Constraints	Car 1		Car 2		Car 3	
1	Manual transmission	5spd/6spd	5 spd	Т	4 spd	F	6 spd	Т
2	Power seats	Yes	Yes	Т	Yes	Т	Yes	Т
3	Engine power	>250hp	400	Т	220	F	350	Т
4	Convertible	Yes	No	F	Yes	Т	Yes	Т
5	Fuel tank	>15 gal	15	Т	12	F	18	Т
6	Gas mileage	>15mpg	12	F	20	Т	16	Т
7	Color	Red/blue/black	Black	Т	Red	Т	Green	F
8	Trunk space	>12 cu. ft.	14	Т	8	F	12	Т
				F		F		F