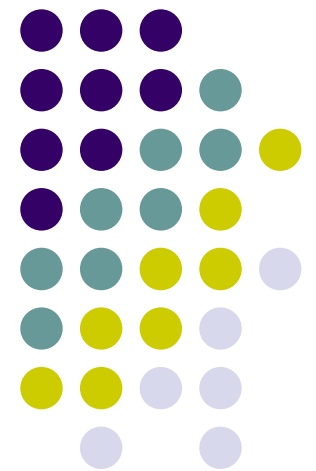
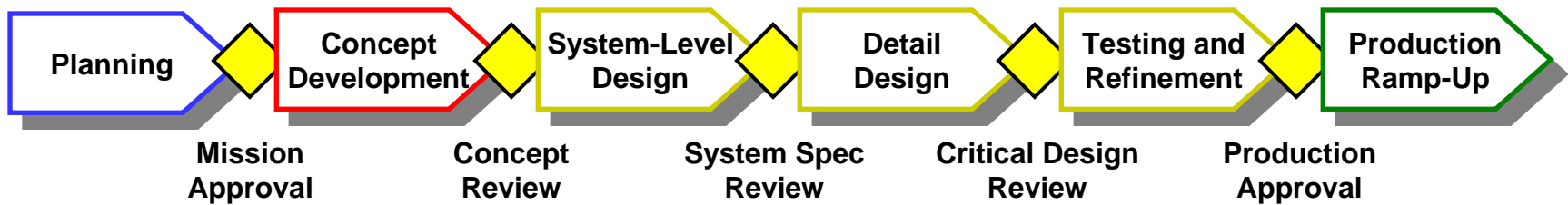


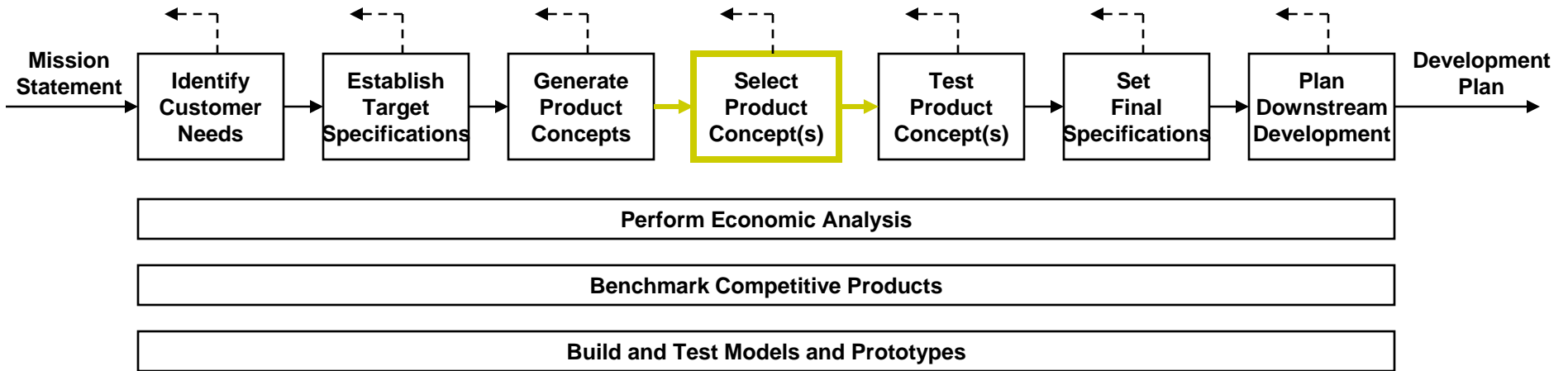
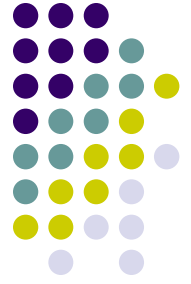
Concept Selection



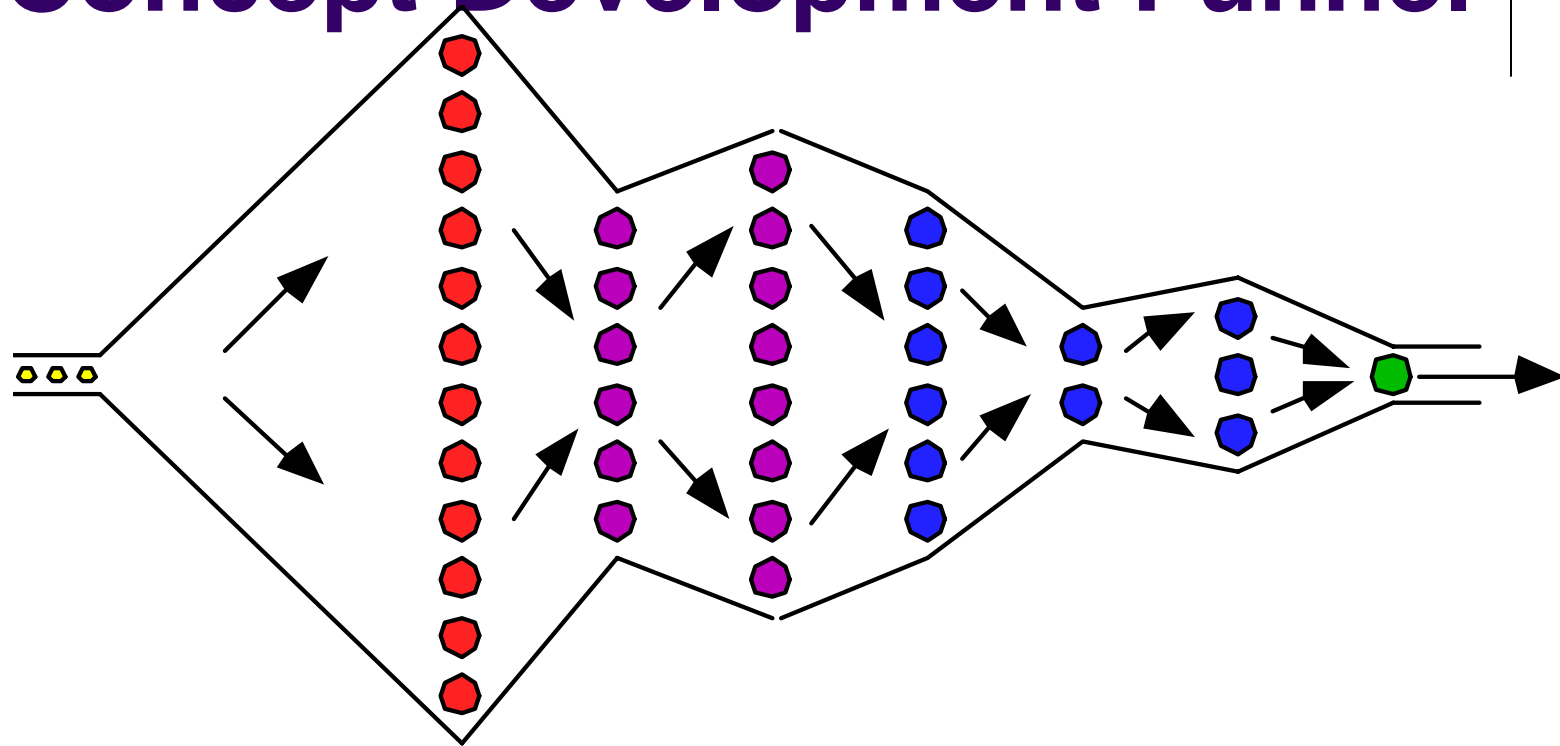
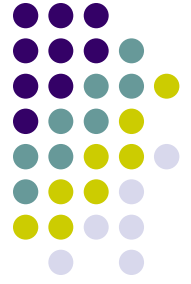
Product Development Process



Concept Development Process



Concept Development Funnel



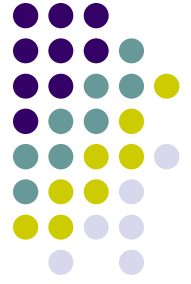
concept generation

concept screening

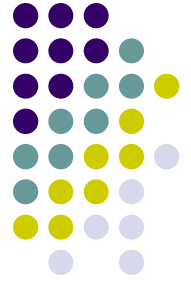
concept scoring

concept testing

Concept Selection Process



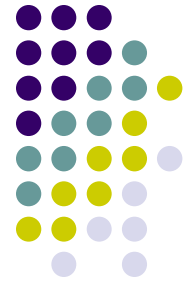
- Prepare the Matrix
 - Criteria
 - Reference Concept
 - Weightings
- Rate Concepts
 - Scale (+ – 0) or (1–5)
 - Compare to Reference Concept or Values
- Rank Concepts
 - Sum Weighted Scores
- Combine and Improve
 - Remove Bad Features
 - Combine Good Qualities
- Select Best Concept
 - May Be More than One
 - Beware of Average Concepts
- Reflect on the Process
 - Continuous Improvement



Selection Process Outcomes

- Team Consensus on Superior Concept
 - “Green Light”
 - Everyone “On Board”
- Conditional Consensus
 - More Information on some Criteria
 - Market or Technical Feedback
 - Consensus on Disagreement
- No Consensus
 - Criteria not Understood
 - Back to Needs

Example: Concept Screening



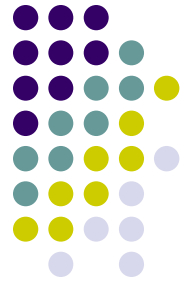
SELECTION CRITERIA	CONCEPT VARIANTS							REF.
	A	B	C	D	E	F	G	
Ease of Handling	0	0	-	0	0	-	-	0
Ease of Use	0	-	-	0	0	+	0	0
Number Readability	0	0	+	0	+	0	+	0
Dose Metering	+	+	+	+	+	0	+	0
Load Handling	0	0	0	0	0	+	0	0
Manufacturing Ease	+	-	-	0	0	-	0	0
Portability	+	+	-	-	0	-	-	0
PLUSES	3	2	2	1	2	2	2	
SAMES	4	3	1	5	5	2	3	
MINUSES	0	2	4	1	0	3	2	
NET	3	0	-2	0	2	-1	0	
RANK	1	3	7	5	2	6	4	
CONTINUE?	Yes	Yes	No	No	Yes	No	Yes	

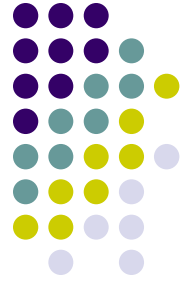


Example: Concept Scoring

		Concepts							
		A (reference) Master Cylinder		DF Lever Stop		E Swash Ring		G+ Dial Screw+	
Selection Criteria	Weight	Rating	Weighted Score	Rating	Weighted Score	Rating	Weighted Score	Rating	Weighted Score
Ease of Handling	5%	3	0.15	3	0.15	4	0.2	4	0.2
Ease of Use	15%	3	0.45	4	0.6	4	0.6	3	0.45
Readability of Settings	10%	2	0.2	3	0.3	5	0.5	5	0.5
Dose Metering Accuracy	25%	3	0.75	3	0.75	2	0.5	3	0.75
Durability	15%	2	0.3	5	0.75	4	0.6	3	0.45
Ease of Manufacture	20%	3	0.6	3	0.6	2	0.4	2	0.4
Portability	10%	3	0.3	3	0.3	3	0.3	3	0.3
Total Score		2.75		3.45		3.10		3.05	
Rank		4		1		2		3	
Continue?		No		Develop		No		No	

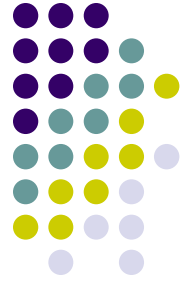
Concept Selection Exercise: Mechanical Pencils





Retail Prices of Five Pencils

- Classic \$ 13.26
- Side Fox \$ 2.55
- Retro \$ 0.93
- Plasma \$ 6.55
- Flex Fit \$ 4.85



Remember...

The goal of concept selection is not to

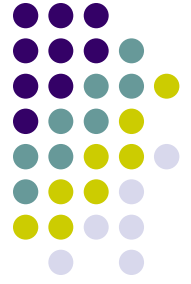
- Select the best concept.

The goal of concept selection is to

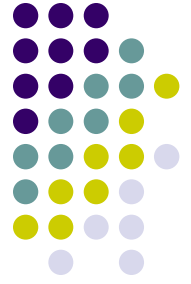
- Develop the best concept.

So remember to combine and refine the concepts to develop better ones!

Caveats



- Beware of the best "average" product.
- Perform concept selection for each different customer group and compare results.
- Check sensitivity of selection to the importance weightings and ratings.
- May want to use all of detailed requirements in final stages of selection.
- Note features which can be applied to other concepts.

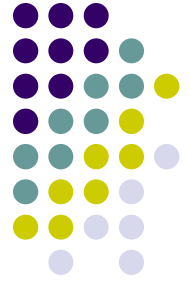


Next Week

- Tuesday: Teams 1 to 5
 - No Class for Teams 6 to 9
 - Use this time for team meeting!

- Thursday: Teams 1 to 9
 - No Class for Teams 1 to 5
 - Use this time for team meeting!
 - Nokia?

PD Efficiency



The right questions will improve PD efficiency

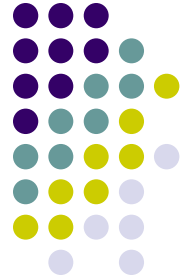
- Identify risk in your project
- Formulate questions, that if answered, will reduce/eliminate risk
- Use models/prototypes to get the answers
- Target individual questions at first.

Repeat as necessary.

Can use other tools to answer questions.

Further Reading

- Stuart Pugh
“Total Design”



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Spring 2006

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