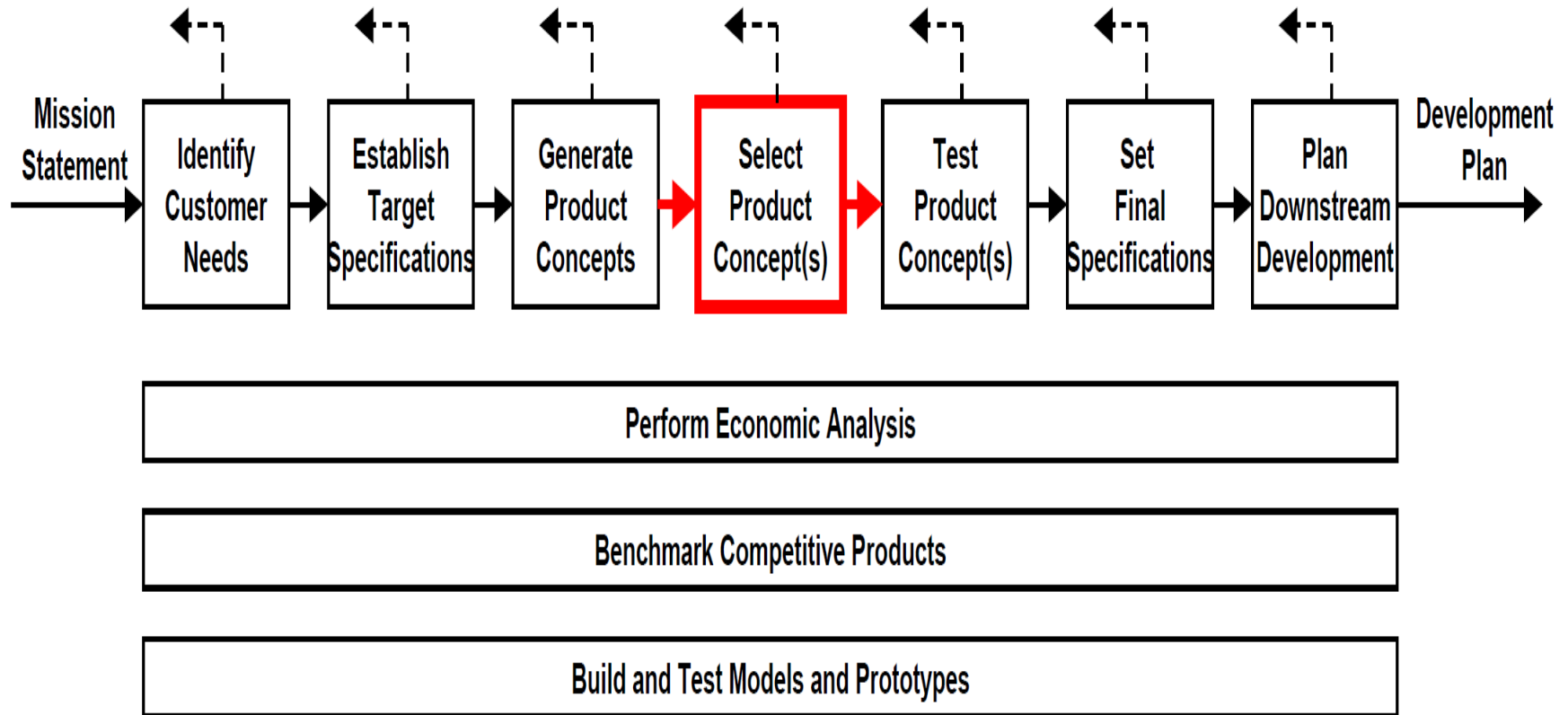


Concept Selection

Concept Development Process

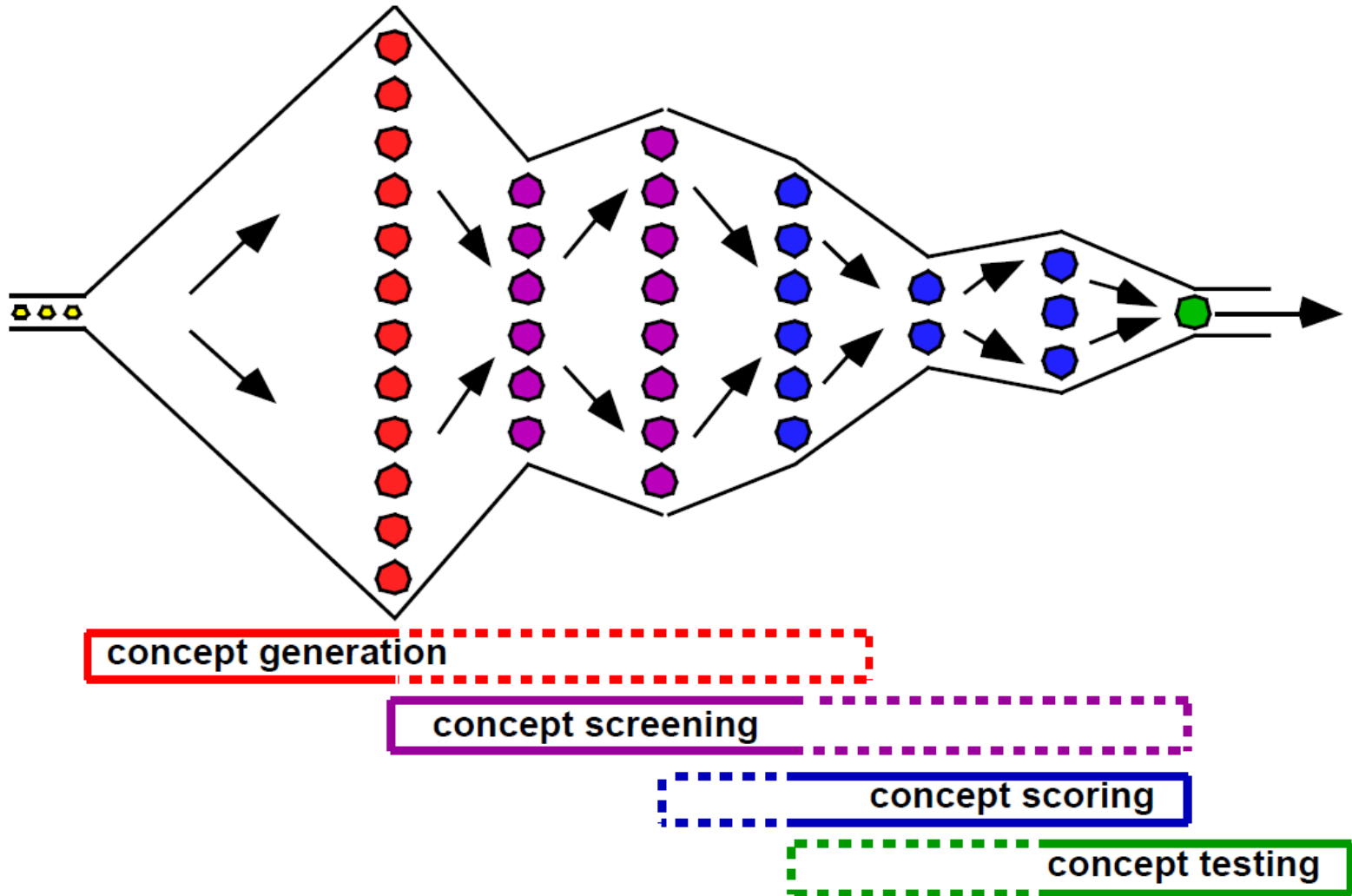


- Concept selection is the process of evaluating concepts with respect to customer needs and other criteria, comparing relative strength and weaknesses of the concepts, and selecting one or more concepts for further investigation and development
- Researches have indicated that choice of concepts dramatically constraints the eventual manufacturing cost of the product.

Benefits of a structured concept selection process

- A customer focused product
- A competitive design: By benchmarking
- Better product- process coordination
- Reduce time to product introduction
- Effective group decision making
- Documentation of the decision making process

Concept Development Funnel



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

Concept Selection Example: Reusable Syringe



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	

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.