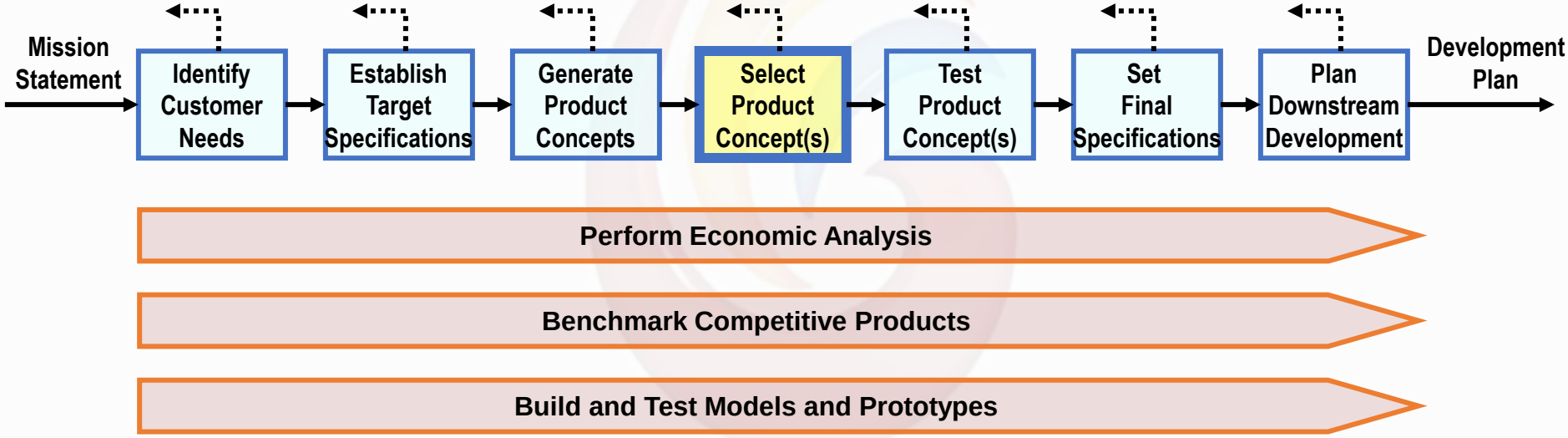
Concept Selection

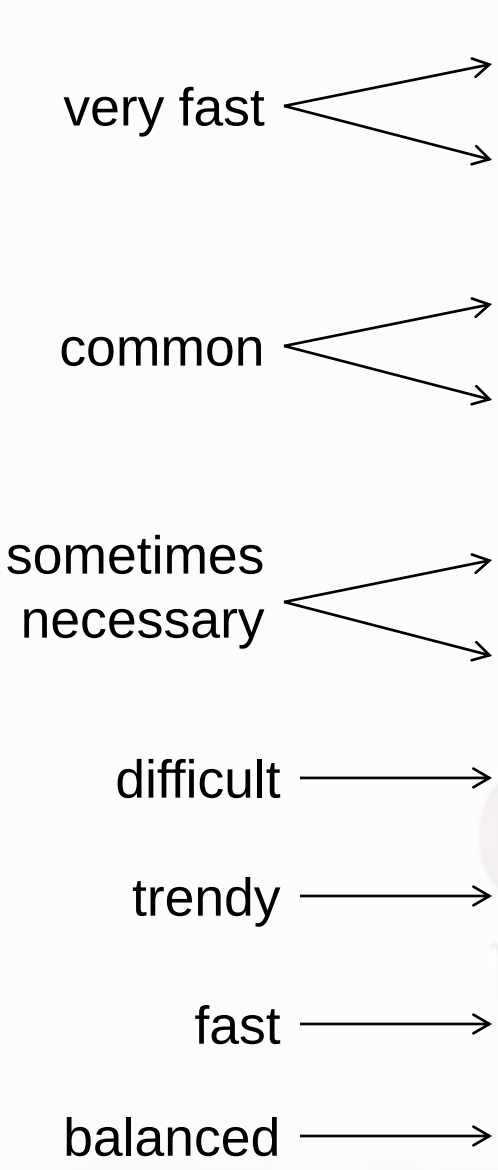
Concept Selection

Concept Development Process



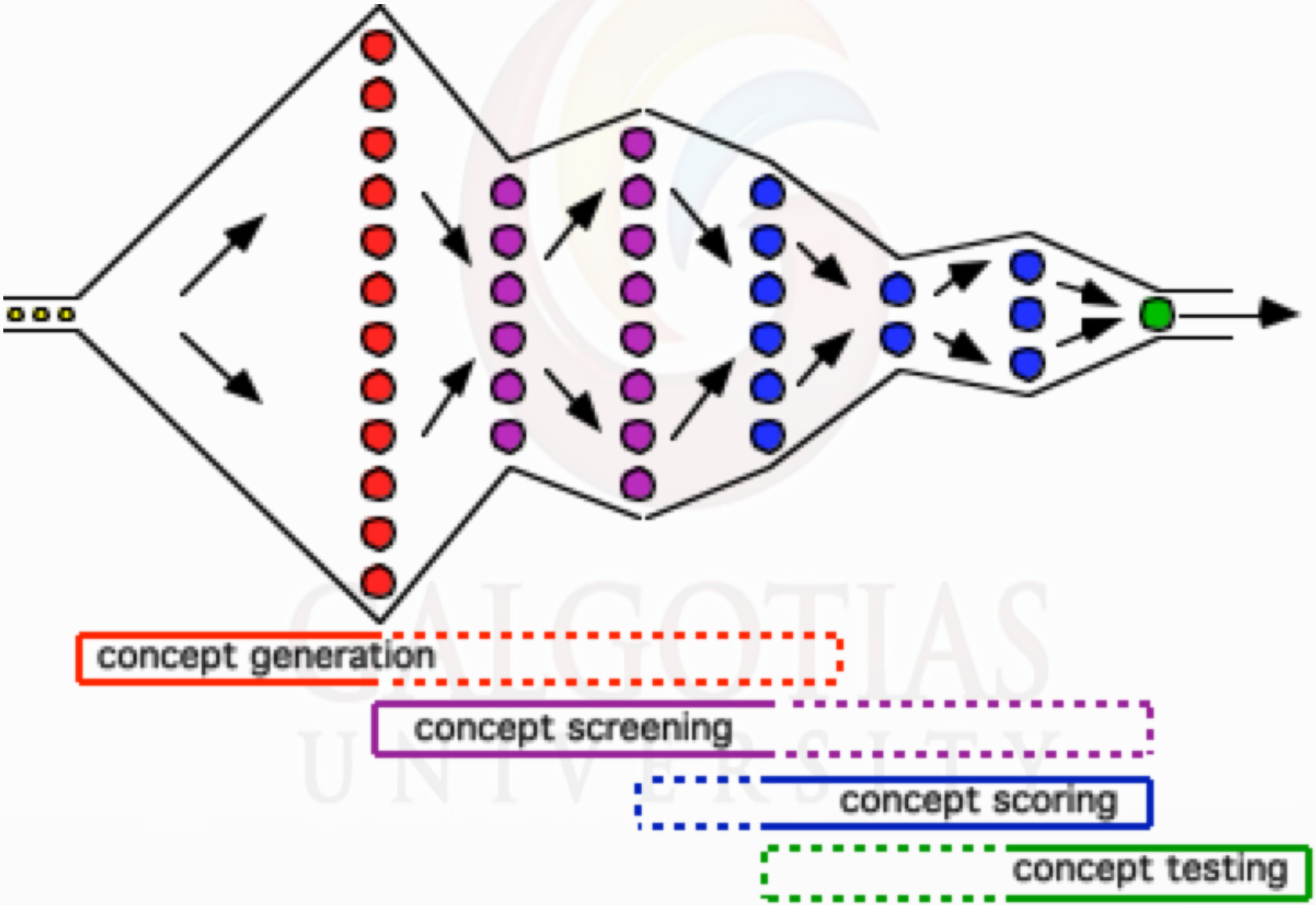
- Simple rating method helps identify the most promising concepts among many.
- Discussion, combination, and refinement of concepts can create even better ones.
- Structured process creates documentation and builds consensus.

Some Concept Selection Methods



1. Open Multi-voting
2. Secret Ballot Voting
3. Pro/Con or Benefit/Effort List
4. Group Consensus
5. Leader's Decision
6. Client's Decision
7. Market Testing
8. Online Community Rating
9. Screening Matrix
10. Scoring Matrix

Concept Development Funnel



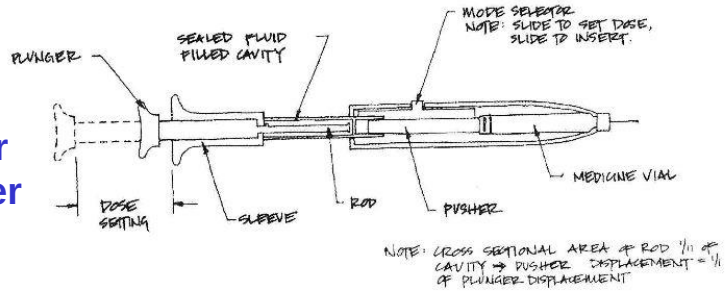
Concept Selection Example: Reusable Insulin Syringe

Concept Selection Process

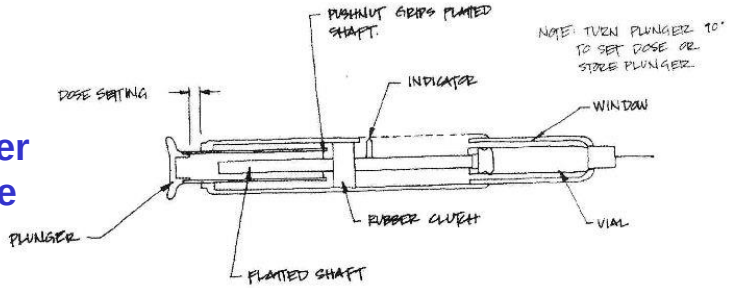
- Prepare the Matrix
  - Criteria
  - Reference Concept
  - Weightings
- Rate Concepts
  - Scale (+ – 0) or (1–5)
  - Compare to Reference Concept or Values
- Rank Concepts
  - Sum Weighted Scores
- Combine and Improve
  - Remove Bad Features
  - Combine Good Qualities
- Select Best Concept
  - May Be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

Syringe Example: Concepts

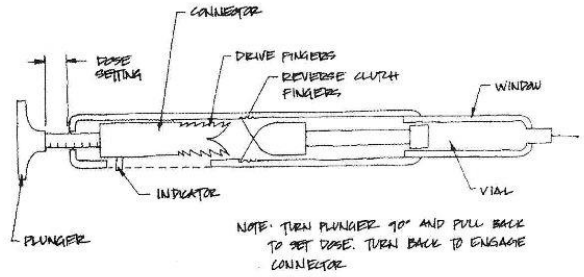
A. Master Cylinder



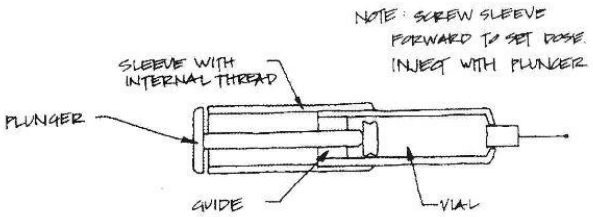
B. Rubber Brake



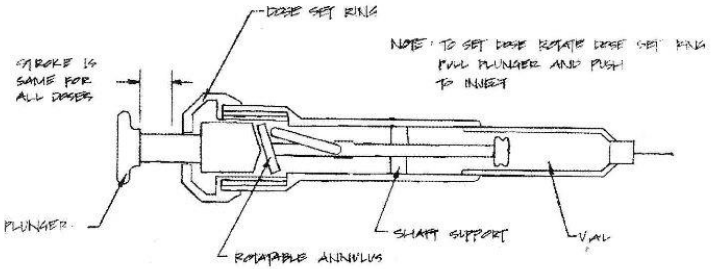
C. Ratchet



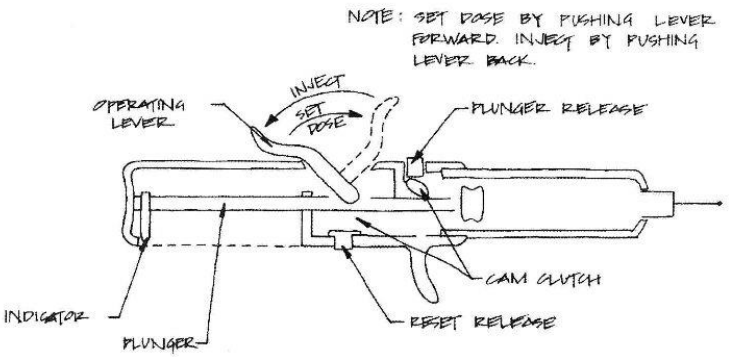
D. Plunge Stop



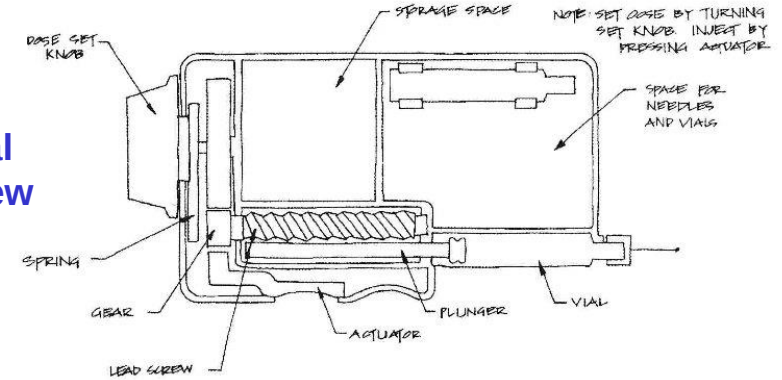
E. Swash Ring



F. Lever Set



G. Dial Screw



Syringe Example: Concept Screening Matrix

	Concepts							
	A	B	C	D	E	F	G	REF.
Selection Criteria	Master Cylinder	Rubber Brake	Ratchet	Plunge Stop	Swash Ring	Lever Set	Dial Screw	Existing Product
Ease of Handling	0	0	–	0	0	–	–	0
Ease of Use	0	–	–	0	0	+	0	0
Readability of Settings	0	0	+	0	+	0	+	0
Dose Metering Accuracy	+	+	+	+	+	0	+	0
Durability	0	0	0	0	0	+	0	0
Ease of Manufacture	+	–	–	0	0	–	0	0
Portability	+	+	–	–	0	–	–	0
Plusses	3	2	2	1	2	2	2	0
Sames	4	3	1	5	5	2	3	0
Minuses	0	2	4	1	0	3	2	0
Net	3	0	-2	0	2	-1	0	
Rank	1	3	7	5	2	6	4	
Continue?	Yes	Yes	No	No	Yes	No	Yes	

Syringe Example: Concept Scoring Matrix

		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

Concept Selection Caveats

- The goal of concept selection is not to select the best concept. The goal is to create and develop the best concept.
- So remember to combine and refine the concepts to develop better ones!
- Beware of selecting the *best average* product.
- Note features which can be applied to other concepts.
- You can perform concept selection for each different customer group and compare results.
- Check sensitivity of selection to the importance weightings and any uncertain ratings.
- The full set of detailed requirements can be used in the final stages of selection.

References

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2. Stephen C. Armstrong (2005), Engineering and Product development Management– The Holostic Approach, Cambridge University Press, ISBN: 978-0-521-01774-9.
3. IbrahimZeid (2006), Mastering CAD/CAM, 2nd Edition, Tata McGraw-Hill, ISBN: 978-0-070-63434-3.
4. Anoop Desai, Anil Mital and Anand Subramanian (2007), Product Development: A Structured Approach to Consumer Product Development, Design, and Manufacture, 1st Edition, Butterworth-Heinemann, ISBN: 978-0-750-68309-8.

Thank you