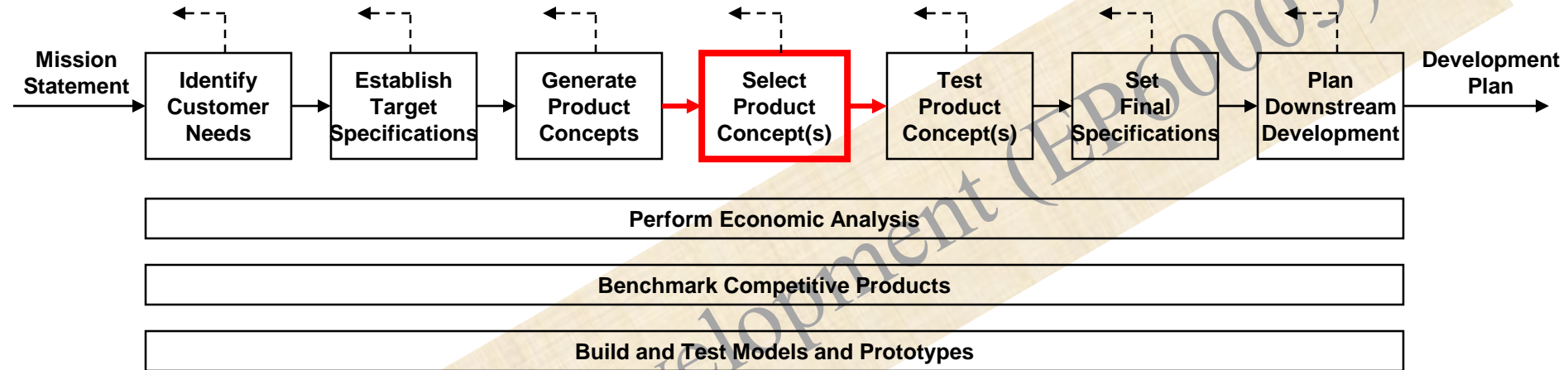


Concept Selection

Product Development (EP600003)

Concept Development Process



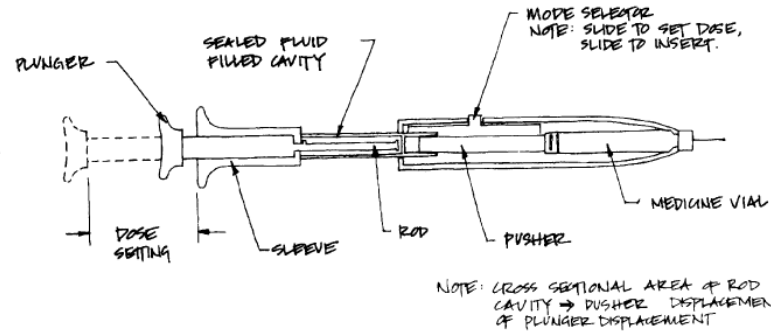


Criteria for choice of concept

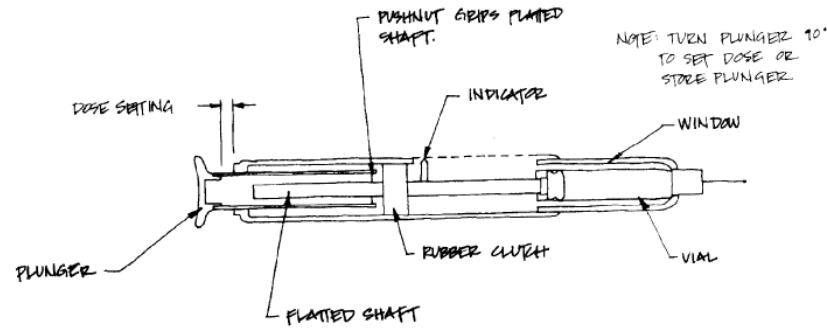
- Ease of handling
- Ease of use
- Readability of dose setting
- Dose metering accuracy
- Durability
- Ease of manufacture
- Portability

Product Development (EP600003)

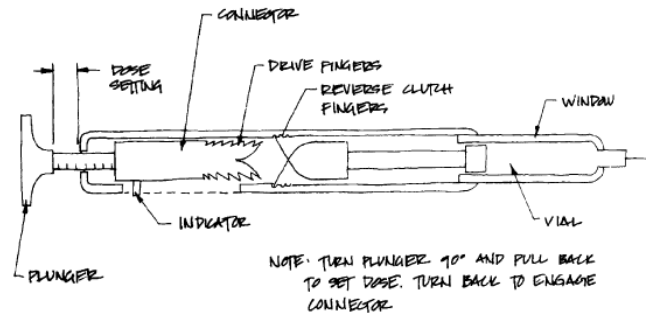
Concept A:
Master Cylinder



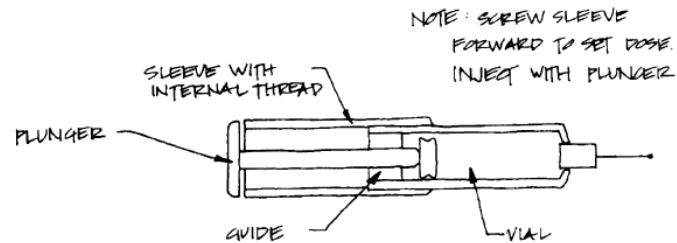
Concept B:
Rubber Brake



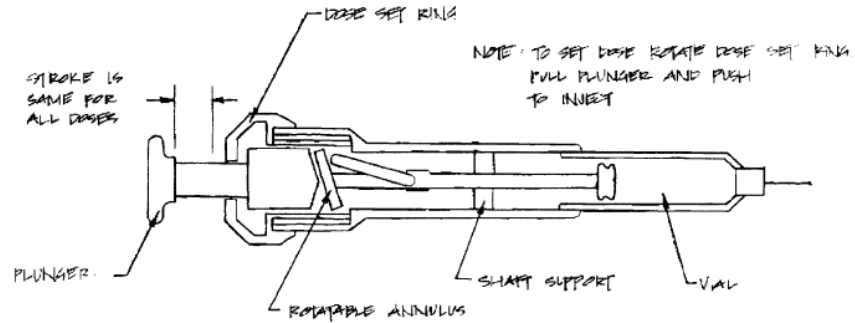
Concept C:
Ratchet



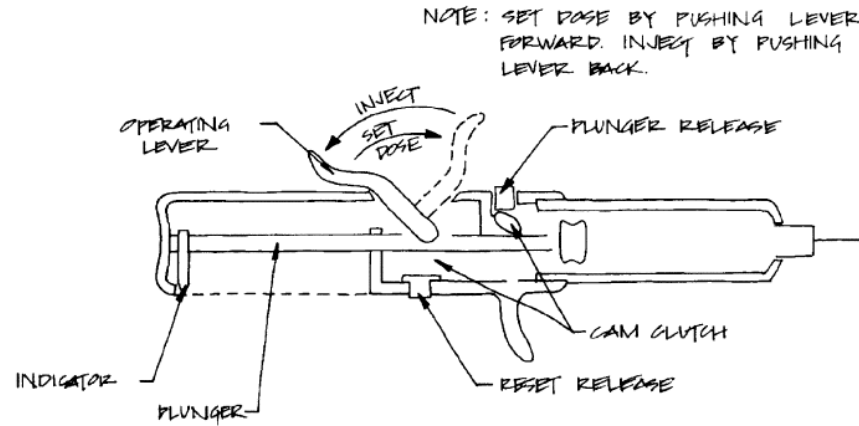
Concept D:
Plunge Stop



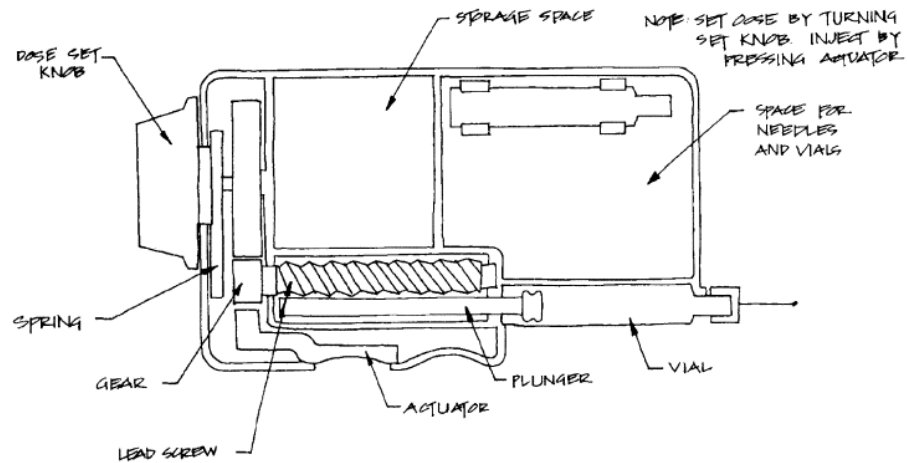
Concept E:
Swash Ring



Concept F:
Lever Set



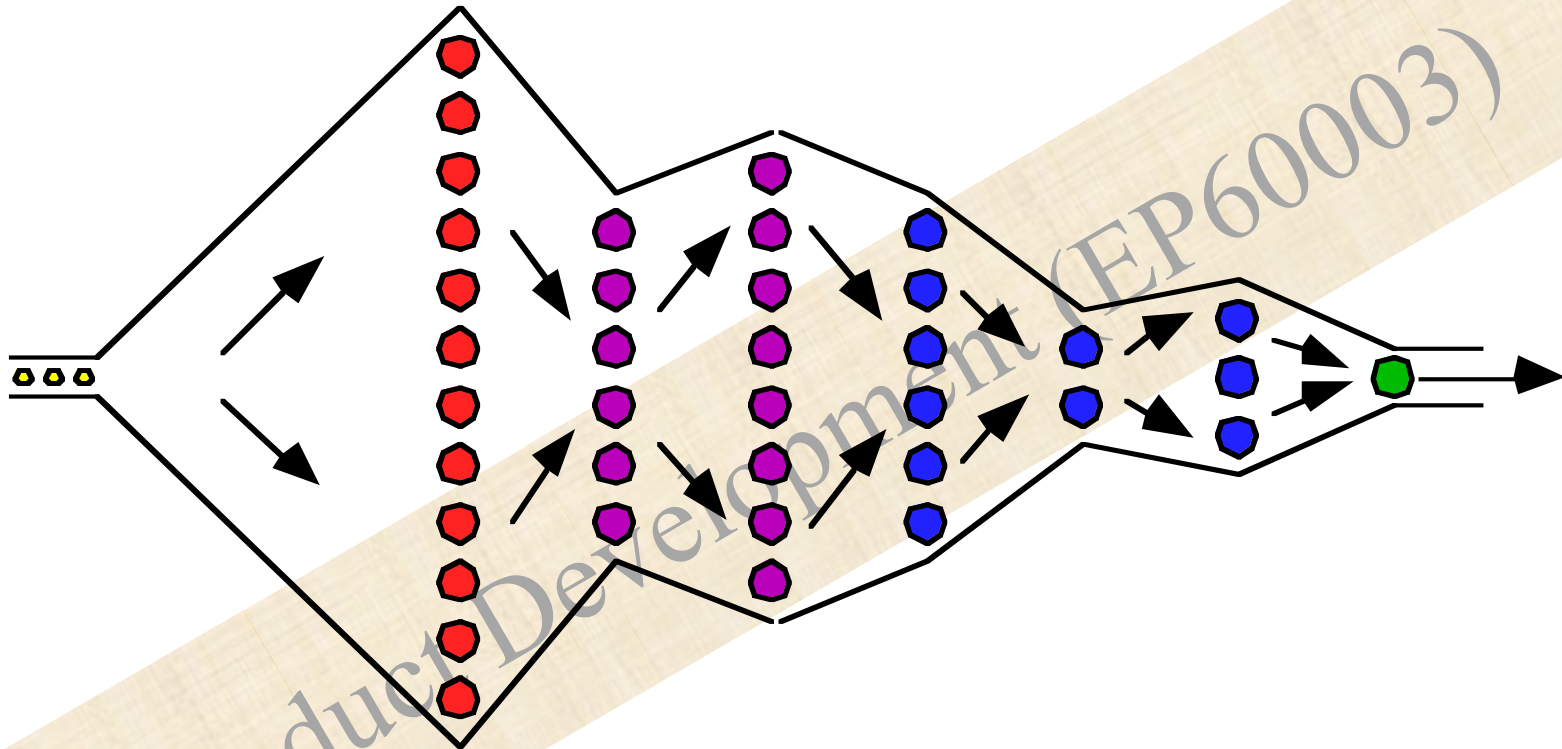
Concept G:
Dial Screw



Questions asked

- How can the team choose the best concept? (abstract designs)
- How can a decision be made that is embraced by the whole team?
- How can desirable attributes of otherwise weak concepts be identified and used?
- How can decision making process be documented?

Concept Development Funnel



concept generation

concept screening

concept scoring

concept testing

Methods to choose concepts

- External decision – customer, client etc.
- Product Champion – member of the team
- Intuition - feel
- Multivoting - votes
- Pros & cons – SWOT
- Prototype & test – test data
- Decision matrices - weighted

Why Structured Method?

- A customer – focused product
- A competitive design
- Better product-process coordination
- Reduced time to product introduction
- Effective group decision making
- Documentation of the decision process

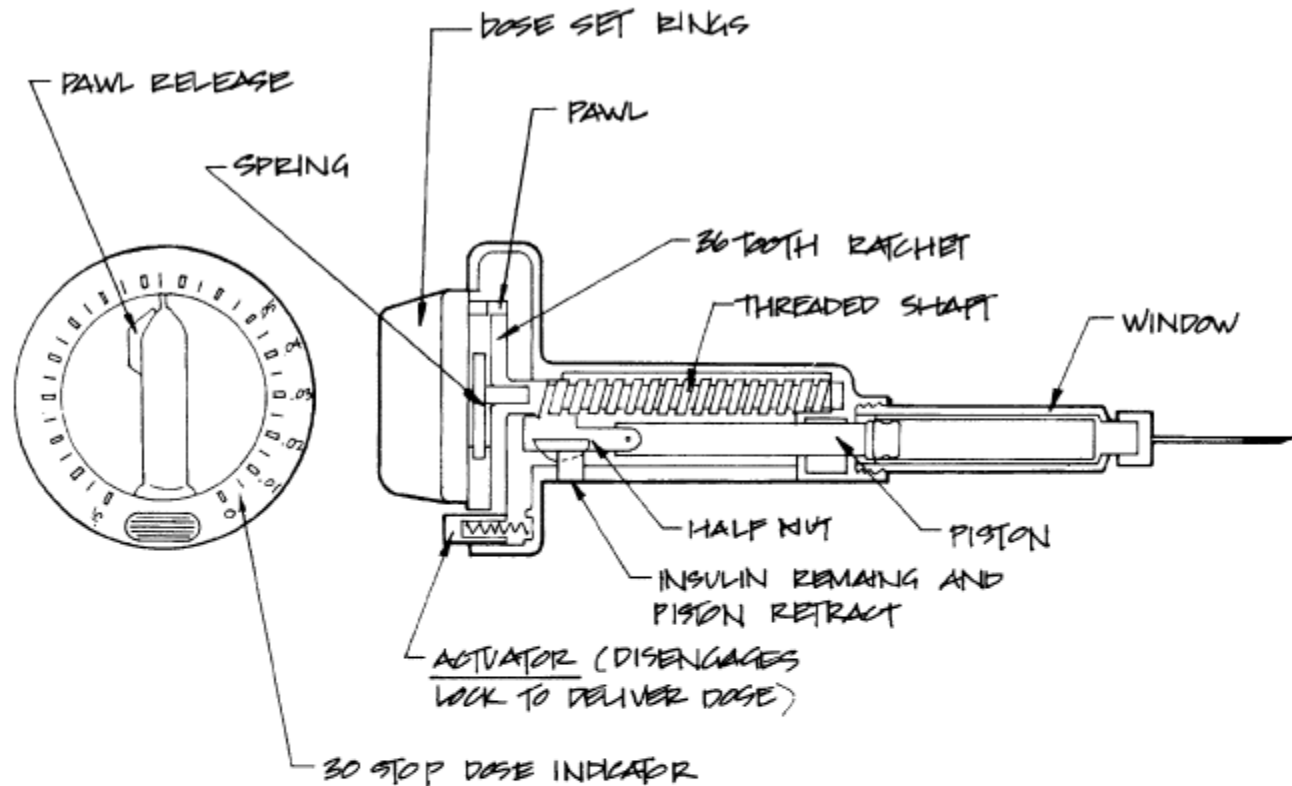
Concept Selection Process

- Prepare the Selection 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

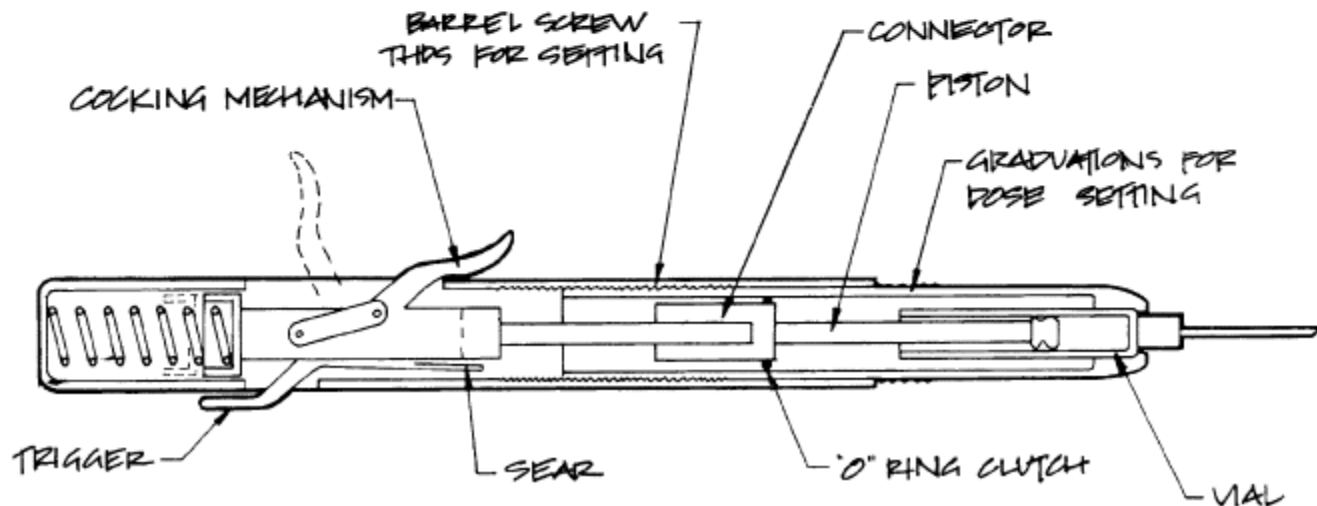
Example: Concept Screening

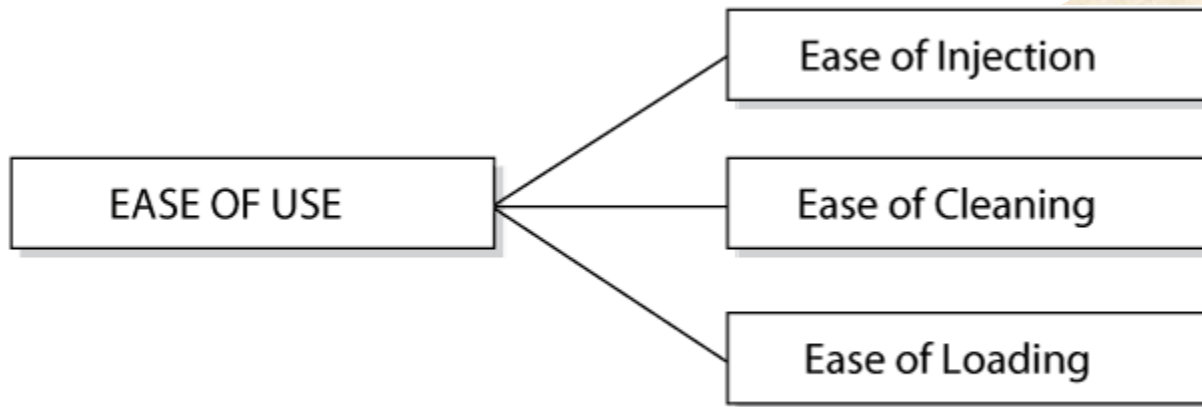
SELECTION CRITERIA	CONCEPT VARIANTS							REF.
	A	B	C	D	E	F	G	
Ease of Handling	0	0	—	0	0	—	—	0
Ease of Use	0	—	—	0	0	+	0	0
Number Readability	0	0	+	0	+	0	+	0
Dose Metering	+	+	+	+	+	0	+	0
Load Handling	0	0	0	0	0	+	0	0
Manufacturing Ease	+	—	—	0	0	—	0	0
Portability	+	+	—	—	0	—	—	0
PLUSES	3	2	2	1	2	2	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	

Concept G+:
Dial Screw+



Concept DF:
Lever Stop





Example: Concept Scoring

		Concepts							
		A (reference) Master Cylinder		DF Lever Stop		E Swash Ring		G+ Dial Screw+	
		Rating	Weighted Score	Rating	Weighted Score	Rating	Weighted Score	Rating	Weighted Score
Selection Criteria	Weight								
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.