Flexible Options in MedTech Startup Design

BREATHEBAND

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The problem

5M

children in the U.S. have asthma. It is the most common childhood chronic disease.

and

74,000

hospital stays

767,000

trips to the emergency room.

How can parents prevent their child’s asthma attacks?

The Product

BreatheBand

- Wearable sensor
- Pediatric solution (from 4 to 14 years old)
- Tracks patient data
- Tracks live environmental data
- Alerts parents to prevent asthma attacks

Pricing Options

OPTION A

Gold Member

BREATHEBAND: Alerting System

$799

OPTION B

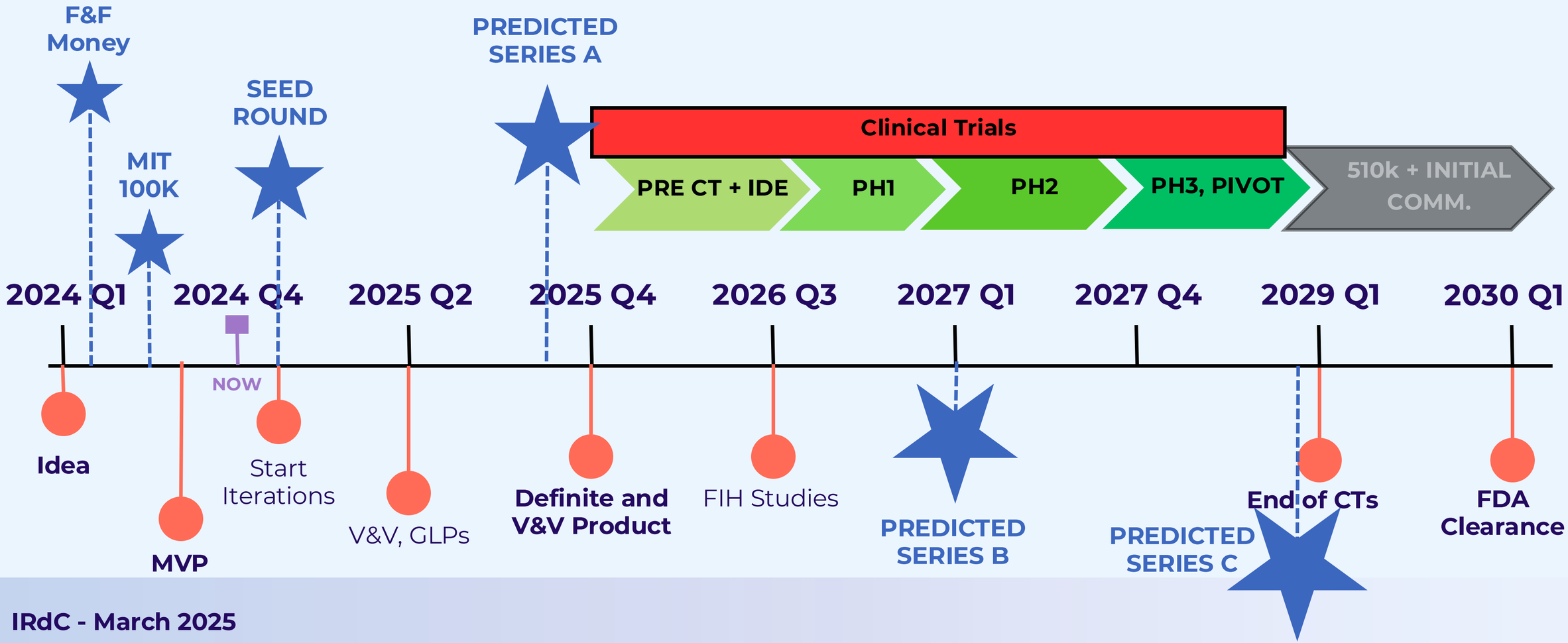
Platinum Member

BREATHEBAND + SIGH: Alerting System + Data

$799 + $9.99/mo

Product Development Roadmap

FDA Class II - 510k Approval



Deterministic Financial Projections

	Pre-Commercialization Stage (2024 - 2029)						Commercialization Stage (2030 -)			
Year	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
$1,000,000x	**Year 0 (2024)**	**Year 1 (2025)**	**Year 2 (2026)**	**Year 3 (2027)**	**Year 4 (2028)**	**Year 5 (2029)**	**Year 6 (2030)**	**Year 7 (2031)**	**Year 8 (2032)**	**Year 9 (2033)**
Sales	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 52.23	$ 105.17	$ 131.48	$ 156.47
Cash Inflow	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 52.23	$ 105.17	$ 131.48	$ 156.47
Variable Expenses (Variable COGS)										
Manufacturing & Materials	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 16.32	$ 31.95	$ 38.62	$ 45.57
Variable Salaries	$ 0.00	$ 0.09	$ 0.14	$ 0.21	$ 0.30	$ 0.42	$ 0.77	$ 0.83	$ 1.11	$ 1.33
Total Variable Expenses	$ 0.00	$ 0.09	$ 0.14	$ 0.21	$ 0.30	$ 0.42	$ 17.09	$ 32.78	$ 39.73	$ 46.90
Fixed Expenses (Fixed COGS)										
R&D	$ 0.20	$ 5.50	$ 2.00	$ 1.50	$ 1.00	$ 0.25	$ 0.50	$ 0.80	$ 0.70	$ 1.00
Regulatory	$ 0.00	$ 0.50	$ 5.00	$ 6.00	$ 8.00	$ 6.75	$ 0.50	$ 0.00	$ 0.00	$ 0.00
Marketing	$ 0.00	$ 0.01	$ 0.02	$ 0.05	$ 0.08	$ 1.50	$ 4.25	$ 5.50	$ 6.75	$ 7.00
Product Maintenance	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 6.53	$ 13.15	$ 16.44	$ 19.56
Office Rent	$ 0.00	$ 0.11	$ 0.11	$ 0.11	$ 0.11	$ 0.11	$ 0.11	$ 0.24	$ 0.25	$ 0.25
Insurance	$ 0.00	$ 0.02	$ 0.02	$ 0.02	$ 0.02	$ 0.02	$ 0.03	$ 0.05	$ 0.10	$ 0.21
Fixed Salaries	$ 0.00	$ 0.81	$ 1.27	$ 1.86	$ 2.72	$ 3.82	$ 6.90	$ 7.49	$ 9.95	$ 11.98
Total Fixed Expenses	$ 0.20	$ 6.95	$ 8.42	$ 9.54	$ 11.93	$ 12.45	$ 18.83	$ 27.23	$ 34.19	$ 40.00
TOTAL EXPENSES	$ 0.20	$ 7.04	$ 8.56	$ 9.75	$ 12.23	$ 12.88	$ 35.91	$ 60.01	$ 73.92	$ 86.90
Cashflow	-$ 0.20	-$ 7.04	-$ 8.56	-$ 9.75	-$ 12.23	-$ 12.88	$ 16.31	$ 45.16	$ 57.56	$ 69.57
DCF	-$ 0.20	-$ 6.38	-$ 7.03	-$ 7.24	-$ 8.24	-$ 7.85	$ 9.01	$ 22.59	$ 26.09	$ 28.55
NPV	$ 49.31									

Numbers in $M (x1,000,000)

Unrealistic Static NPV, $49.31M

How does the BREATHEBAND Team Optimize their Chances of Success (maximize profits = maximize NPV)?

BREATHEBAND’s Design and Management under Uncertainty with Embedded Flexible Options!!

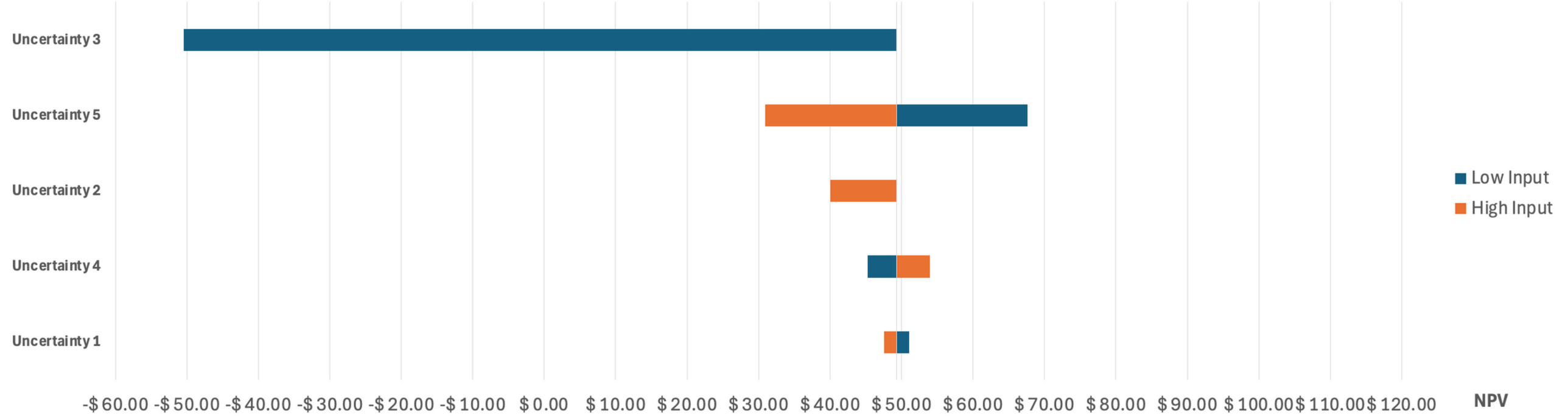
The Five Major Uncertainties

1. The Five Major Uncertainties

1.1. *Variability in Costs (Pre-commercialization Stage)* - Increase/Decrease in R&D Costs During the Development Phase (Pre-commercialization).
1.2. *Increase in Costs (Pre-commercialization Stage)* - Increase in Regulatory Costs coming from clinical trials (FDA approval).
1.3. *Decrease in Revenue (Post-commercialization Stage)* - Decrease in Demand (Overall, Gold and Platinum).
1.4. *Variability in Revenue (Post-commercialization Stage)* - Decrease/Increase in Platinum (Subscription) Demand.
1.5. *Variability in Costs (Post-commercialization Stage)* - Variability in Manufacturing and Materials Costs.

Uncertainty #	Stage	Magnitude	Effect	Affected Parameter
i	Pre-comm.	20%	+ or -	R&D Costs
ii	Pre-comm.	50%	-	Regulatory Costs
iii	Post-comm.	50%	-	Demand/Revenue
iv	Post-comm.	25%	+ or -	Demand/Revenue
v	Post-comm.	30%	+ or -	Manufacturing Costs

Tornado Diagram



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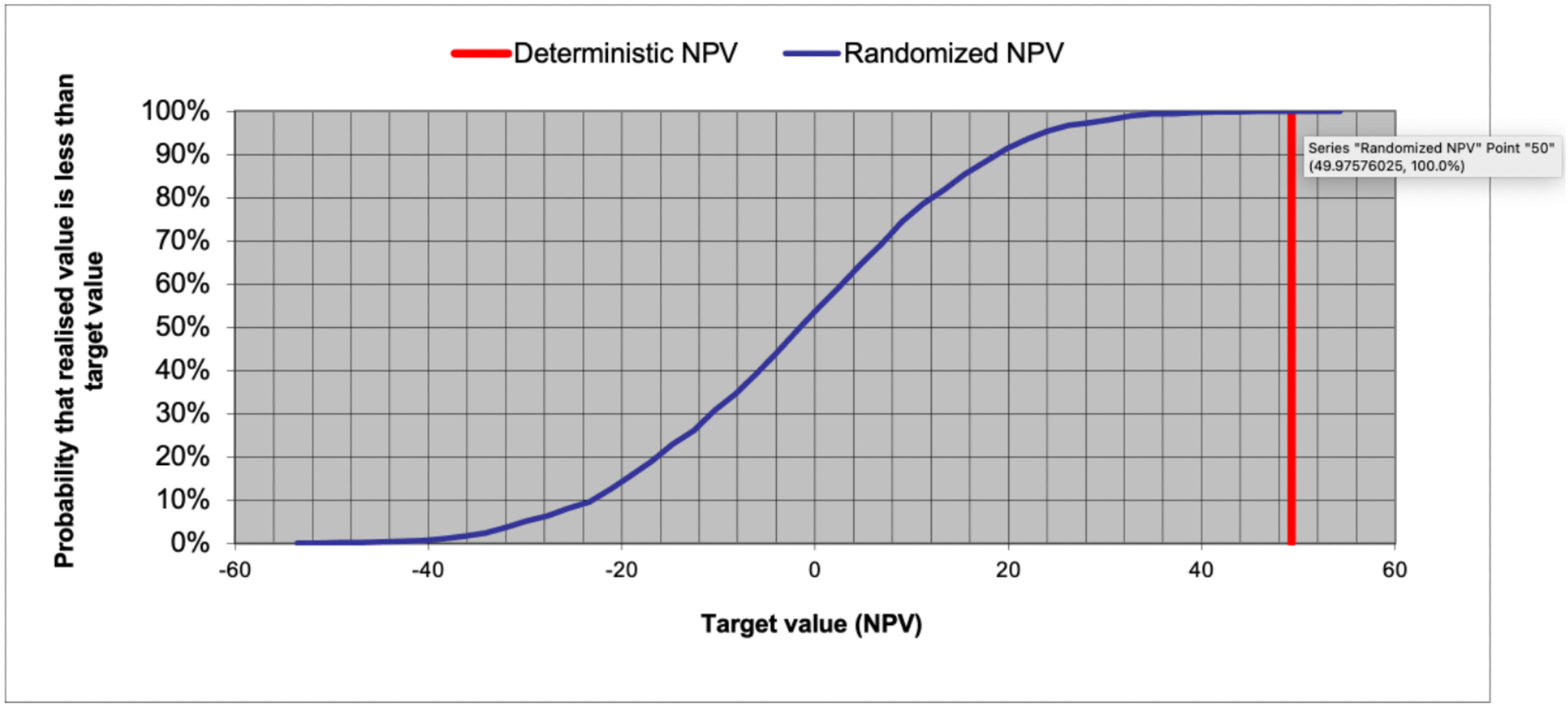
Randomized Financial Projections

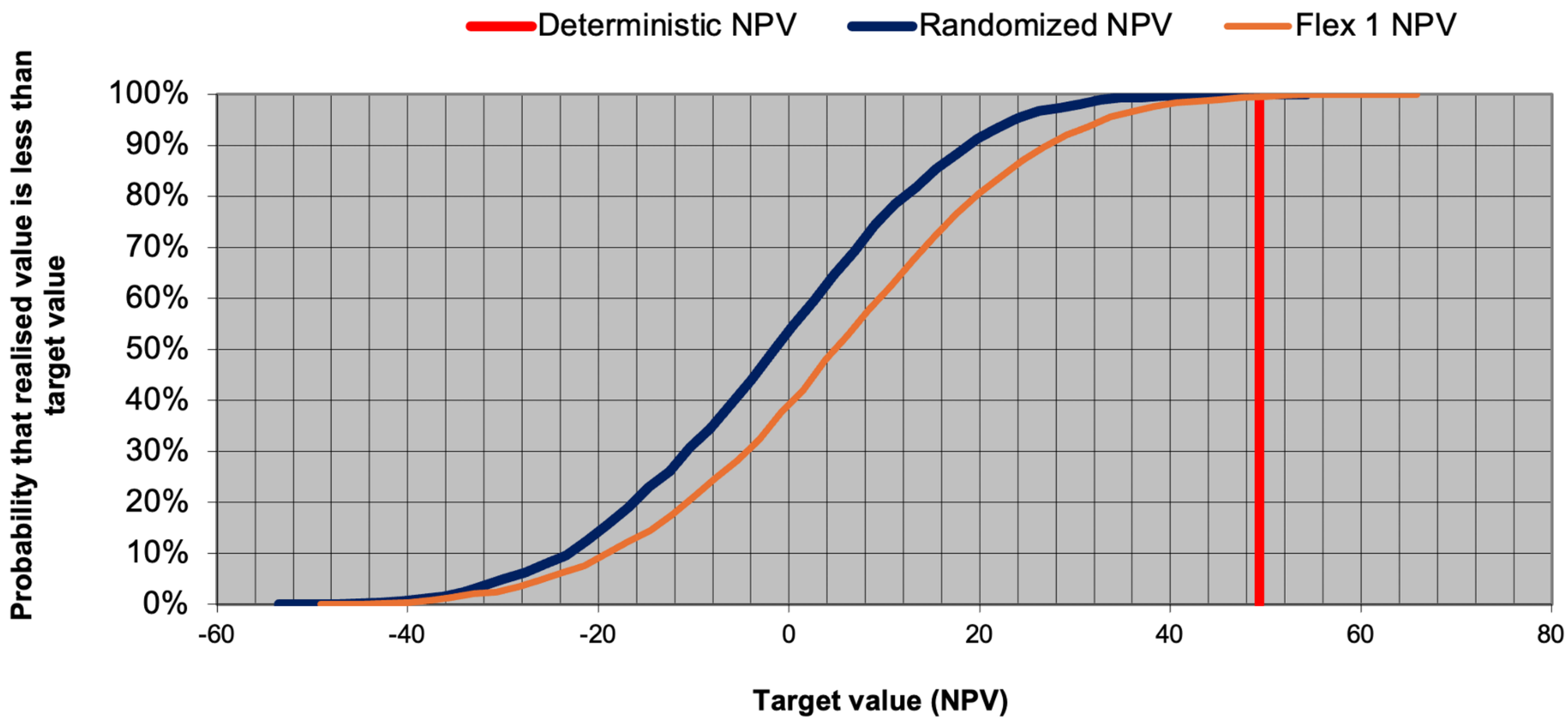


Realistic (Randomized) NPV < Static NPV, with a probability of 99.9%

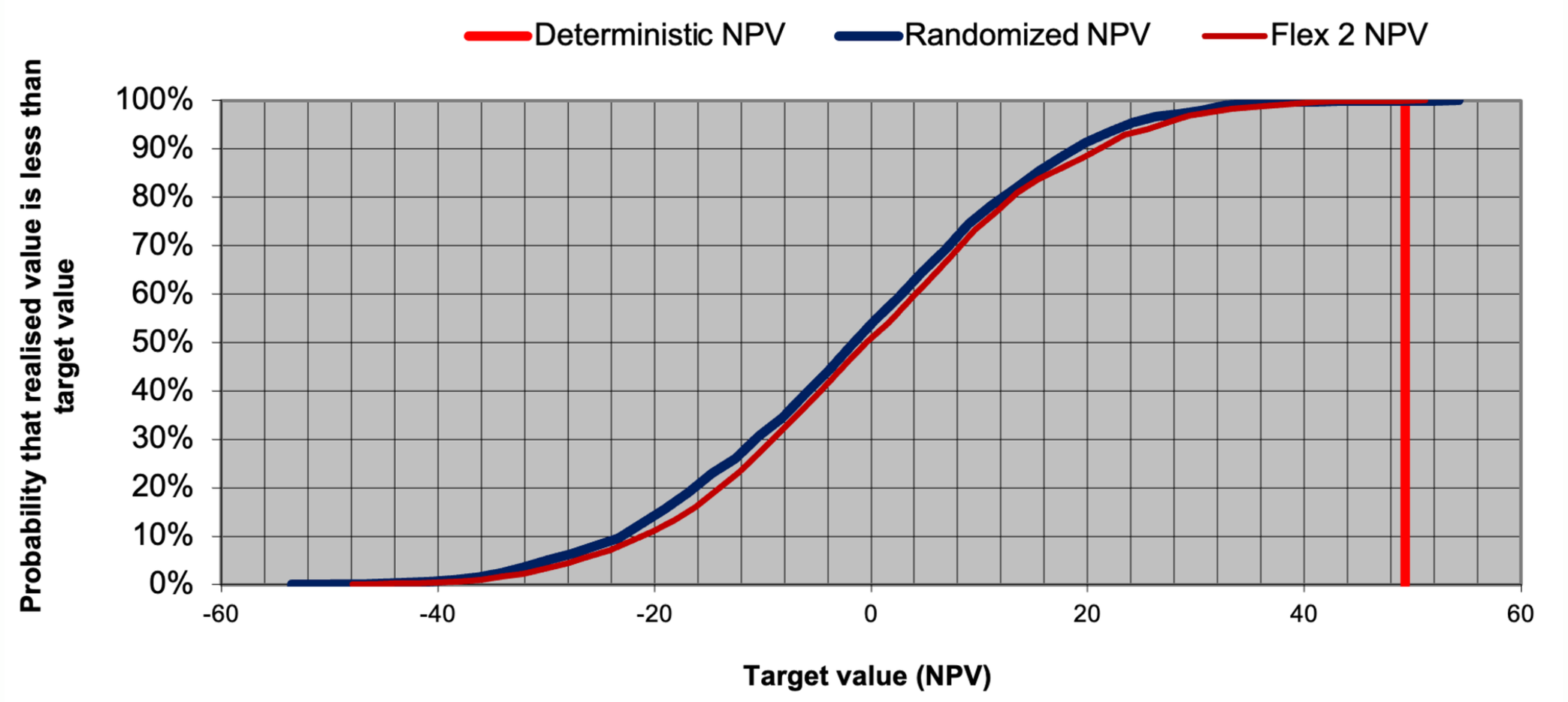
FOs and DRs Summary

Flexibility Option	Description	Decision Rule (DR)
FO #1	Increase product unit price if development costs are higher than expected.	If Product Development Cost is at least 10% higher than expected, increase Product's Base Price by 10%.
FO #2	Increase manufacturing and raw materials investment when economic conditions are favorable.	If Manufacturing costs are more favorable than the average/predicted cost, invest heavily to cover subsequent years.
FO #3	Cancel the project if early-stage development costs are significantly higher than expected.	If Product Development Cost is at least 25% higher than expected in Year 2 (pre Clinical Trials), cancel the project.

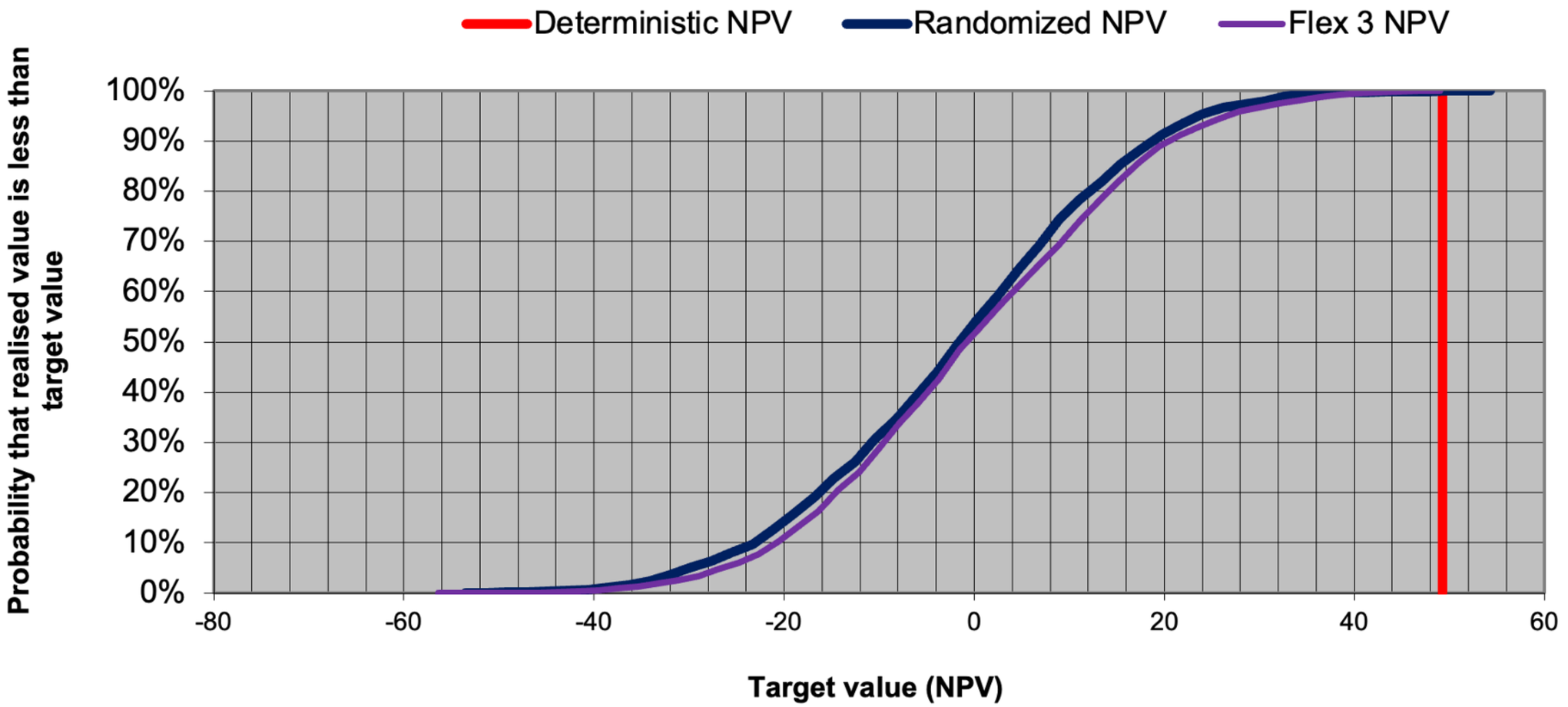
FO #1 Simulation



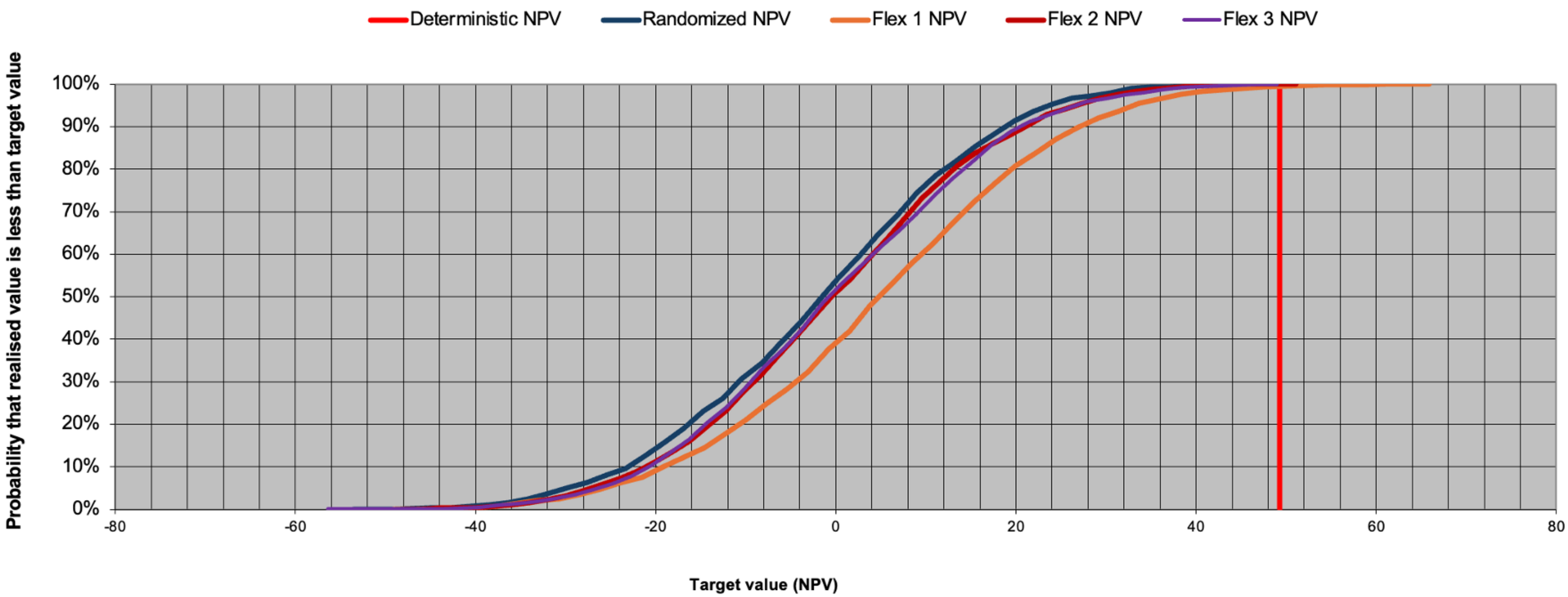
FO #2 Simulation



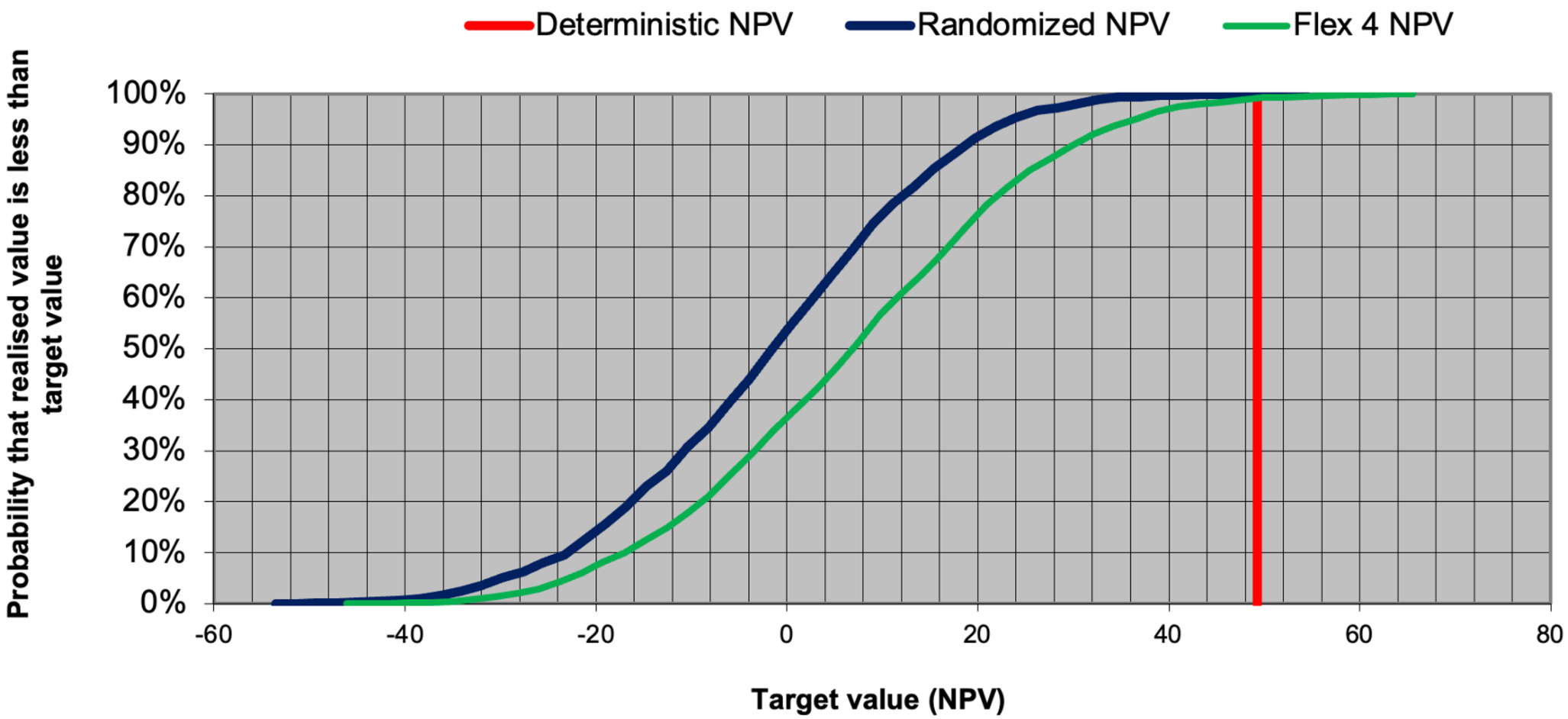
FO #3 Simulation



FOs #1, #2, #3 Comparison



FO #4 Simulation



FOs KPIs Summary

Values	Base Uncertainty	FO #1	FO #2	FO #3	FO #4
Min	- $53 M	- $54 M	- $53 M	- $46 M	- $43 M
Max	$47 M	$60 M	$53 M	$53 M	$64 M
Average	$-2 M	$6 M	$1 M	$0 M	$7 M
Std. Dev	$16 M	$18 M	$16 M	$17 M	$18 M
Value at Risk, P5	- $29 M	- $23 M	- $27 M	- $27 M	- $22 M
Value at Risk, P10	- $22 M	- $17 M	- $21 M	- $22 M	- $16 M
Value at Gain, P90	$17 M	$27 M	$22 M	$21 M	$30 M
Value at Gain, P95	$24 M	$34 M	$28 M	$27 M	$36 M

Recommendations & Conclusion

Account for Uncertainty

No startup is free from unexpected situations

Implement FO #1

Adjust pricing based on development costs

Implement FO #3

Include "self-destruction mode" to limit losses

Conduct Market Research

Understand customer needs before setting price

Partner with MedTech Investors

Leverage industry expertise for accurate modelling

Thank You