



# THE VALUATION EXPERTS

## How to value your start-up

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January 2016 | San Francisco

# Overview



- **Introduction to Valuation**
- **Valuation of start-up companies**
- **Valuation of a therapeutic Product**
- **Q & A**

# Venture Valuation



## Mission

**Independent assessment and valuation of technology driven companies / products in growth industries**

**Company and Deals Database - [Biotechgate.com](http://Biotechgate.com)**

- Experts Finance / Biotech-Pharma
- Not a venture capitalist
- International experience
- Track record of over 400 valued companies
- Clients such as Novartis, GSK, Fraunhofer Gesellschaft, European Investment Bank; VCs; Arpida/Evolva

# Valuation of what?



## 1. Valuation of a product

⇒ Licensing deal

⇒ Strategic development decision



## 2. Valuation of a company

⇒ Investment / Financing round

⇒ Merger / Acquisition

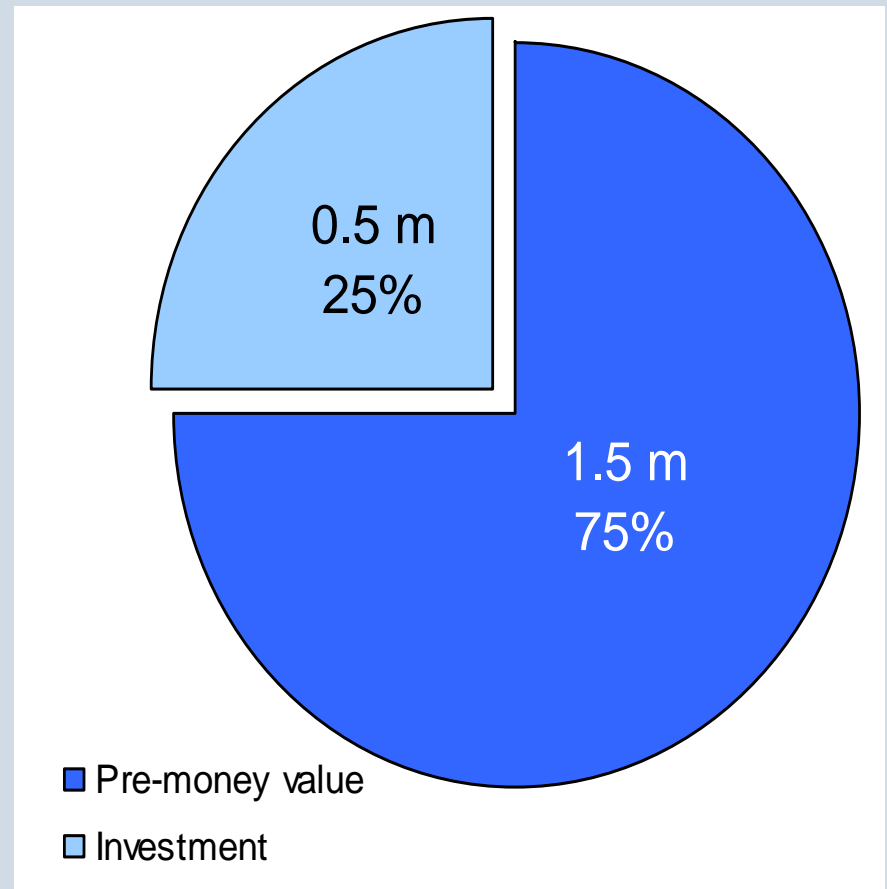
⇒ Measure success of company development



# Why Valuation



- Value before investment (pre - money value): USD 1,5 m
- Investment: USD 0,5 m
- Value after investment (post-money value): USD 2,0 m
- Share Investor:  
 $0,5 \text{ m} / 2 \text{ m} = 25\%$



# Why Valuation



- Out-licensing of a phase II product
- Deal terms:

up-front	USD	1 m
milestones	USD	20 m
royalties		7%
- rNPV of product
- rNPV of deal
  
- ⇒ rNPV of product: USD 30 m
- ⇒ rNPV of deal: USD 10 m
- ⇒ Split Biotech / Pharma: 33% / 66%

rNPV: risk adjusted net present value

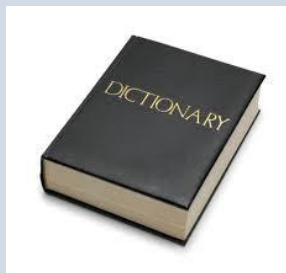
# When do a Valuation?



- Think ahead
- Be prepared for negotiations
- Know the fundamentals
- What assumptions have been used
- Out-licensing or financing round?

=> On going exercise

# Definitions



- **Value:** implies the inherent worth of a specific thing
- **Price:** depending on the market (supply / demand); whatever somebody is prepared to pay

“Price is what you pay. Value is what you get.”

By Warren Buffett





## Why assessment and valuation of high growth companies?

- Industry lacks transparency
- Valuation is key issue in development
- Very difficult (high uncertainties)
- High potential for investors
- Long investment cycle
- Traditional valuation methods unsuited
- Complex technology and IP situations

# Trends in Valuation



- Pharma companies have gap in pipeline
- Biotech industry has become more mature
- Market for available phase II products is dried up
- Pharma want to be involved from pre-clinical stage
- New demand: Generics, Asia
- New deal and collaboration forms: options

**=> Increasing demand for projects**

# Mind-set of Investors



- Take high risk, but expect high returns
  - Pressure from investors
  - Compete in capital market
- => Different investors for different projects (less VCs more alternative sources)

	Probability of failure	Return
Government Bond	0%	3%
Bonds	5%	5%
Blue Chip Company	10%	9%
Internet company (Nasdaq)	50%	20%
Biotechnology Company	80%	50%

# Mind-set of Pharma



- Fuel pipeline
- Portfolio approach
- Sales force for specific therapeutic areas
- Compete with Investors
- Collaboration vs. acquisition

# Assessment



1. Understand the fundamentals
  2. Assumptions drive the valuation
- => Assessment/assumptions are key

## Assessment:

1. Management 
2. Market  
3. Technology  

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# Valuation Approaches



## 1. Operations-based methods:

⇒ *business plan, fundamentals*

## 2. Market-based methods:

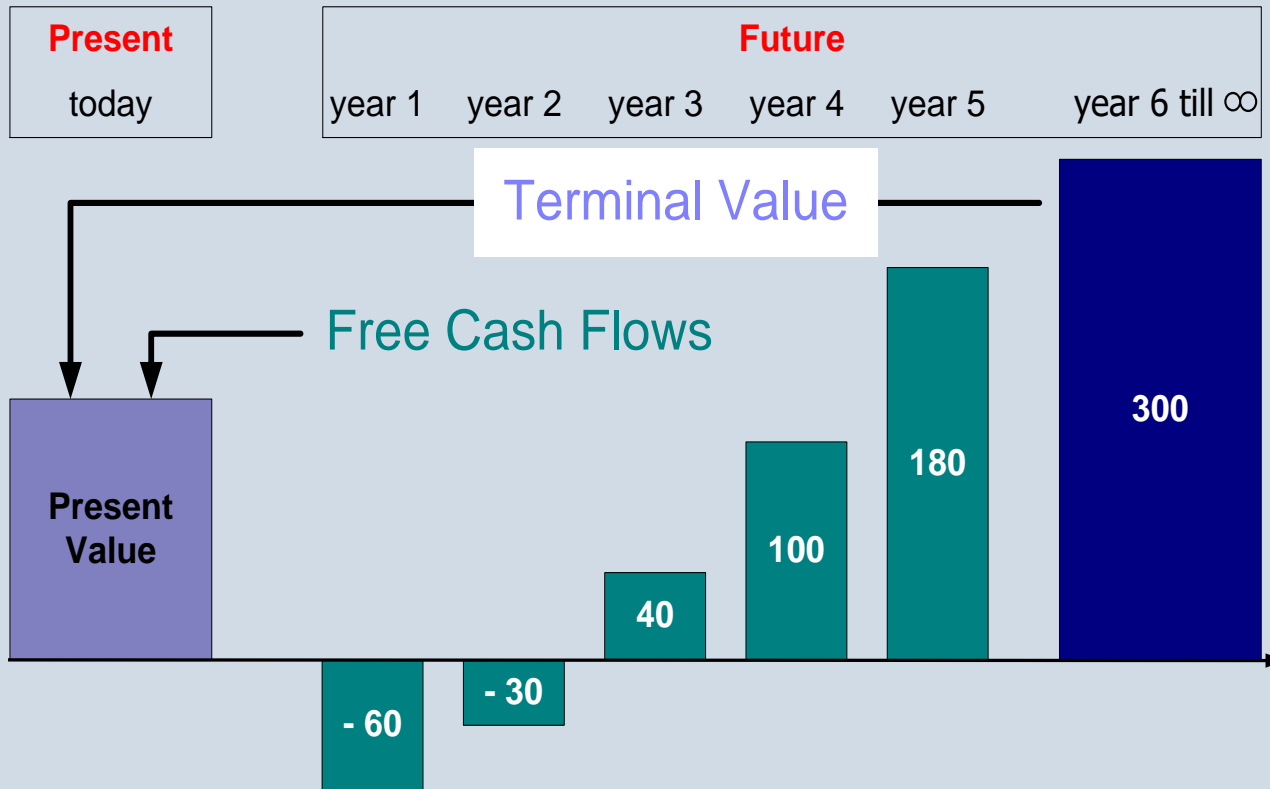
⇒ *price, trends, comparison difficulties*

- Discounted Cash Flows (DCF)
  - rNPV
  - Real Options
  - Venture Capital method
  - Market Comparables
  - Comparable Transactions
- } Operations methods
- ⇒ Mixed method
- } Market methods

⇒ there is no “the right method”

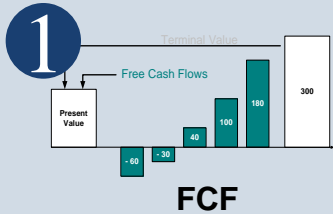
⇒ combination of different methods

# Basic DCF

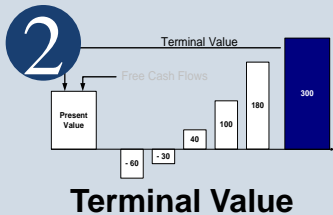




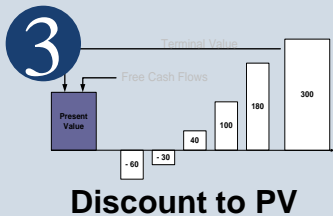
# Discounted Cash Flow



Determine Free Cash Flows for year 1 to 5 or 3/10



Calculate Terminal Value



Discount with Discount Rate



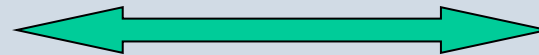
Sum of Free Cash Flows

# Comparable Methods



Company Value:  
USD 10 m  
50 employees

Ratio



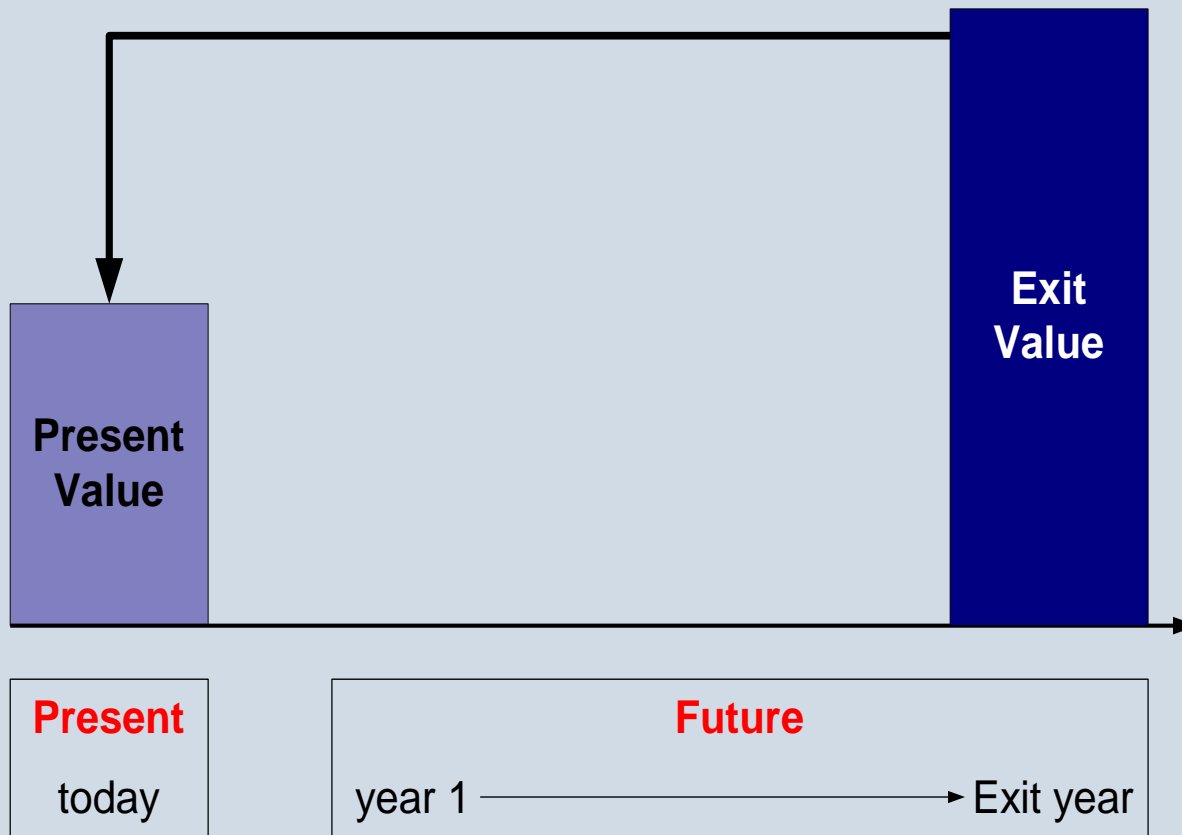
- Revenues
- Earnings
- EBITDA
- Employees
- R&D
- Company specific factors



10 employees  
⇒ Company Value:  
USD 2 m\*

\*  $(10/50) \times 10 \text{ m} = 2 \text{ m}$

# Venture Capital method



# Example Glycart



- Glycart acquired by Roche

- For USD 180 m

- Swiss company; founded in 2000 spin-off from ETH in Zurich

- Technology platform to enhance the activity of therapeutic antibodies (cancer / autoimmune diseases)

- Pre-clinical products

- Existing collaboration with Roche (1 year)

- 30 employees



# Example Glycart



- Raise USD 31 m in the past
- Planned to raise another USD 35 m => valuation too low
- Acquisition offer by mid-sized Pharma  
=> auction process / parallel fund raising

# Example Glycart



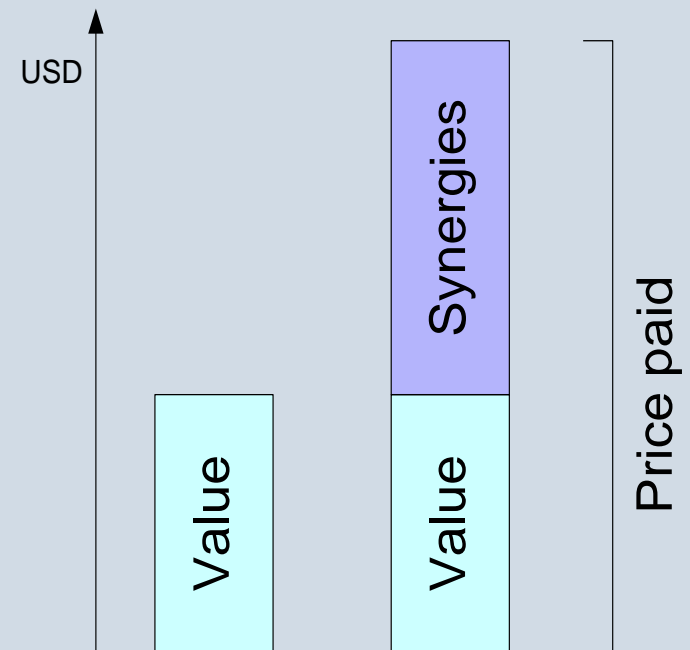
Valuation:

⇒ Pre-clinical compounds USD 180 m?

⇒ Technology Platform?

⇒ Keeping control?

⇒ Value enhancement  
for own products?



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# Product Valuation



## Valuation of a product

- Licensing deal
- Strategic development decision
- Expenses included are only those relevant to the product
- Product not industry comparables required
- Management risks not taken into account





# Introduction



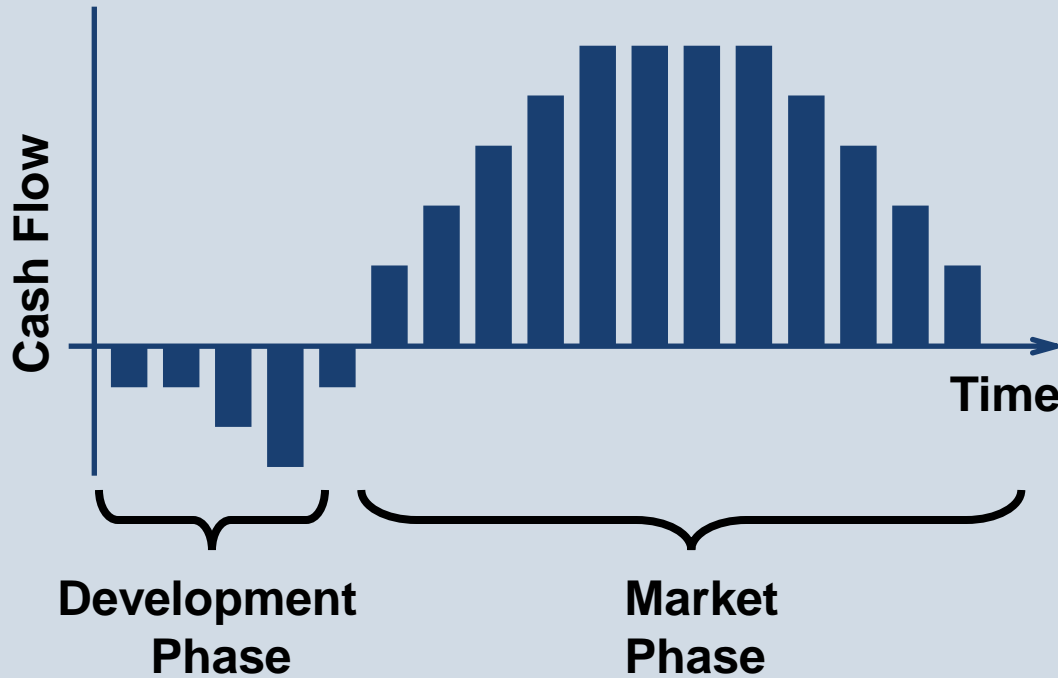
## Input

- Development cost and timelines
- Production / Marketing cost
- Market / expected sales
- Success rate based on historical data

## Output

- Expected annual discounted cash flows

# Valuation components



- Determine timelines and cash flows in each phase
- Develop solid assumptions for all key variables

# Risk-adjusted NPV



$$\sum_{i=1}^T \rho_i \sum_{t=1}^T \frac{DCF_{it}}{(1+r_d)^t} + \rho_7 \sum_{j=1}^5 q_j \sum_{t=1}^T \frac{CCF_{jt}}{(1+r_c)^t}$$

## Risk adjusted Net Present Value

- Also called eNPV
- Method of choice for Big Pharma

### Benefits:

- Helps understand accurate value and maximises deal options
  - Adjusts value for **Development Risk** and **Discount rate**
- ⇒ Risk is split in two components
- 1) Product Risk (attrition rate)
  - 2) General Risk (discount rate)

# Five Step Process



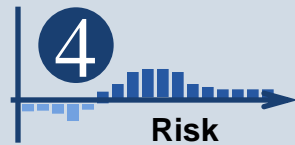
Determine Cash Flows in **Development** Phase



Determine Cash Flows in **Market** Phase



Discount with **Discount rate**

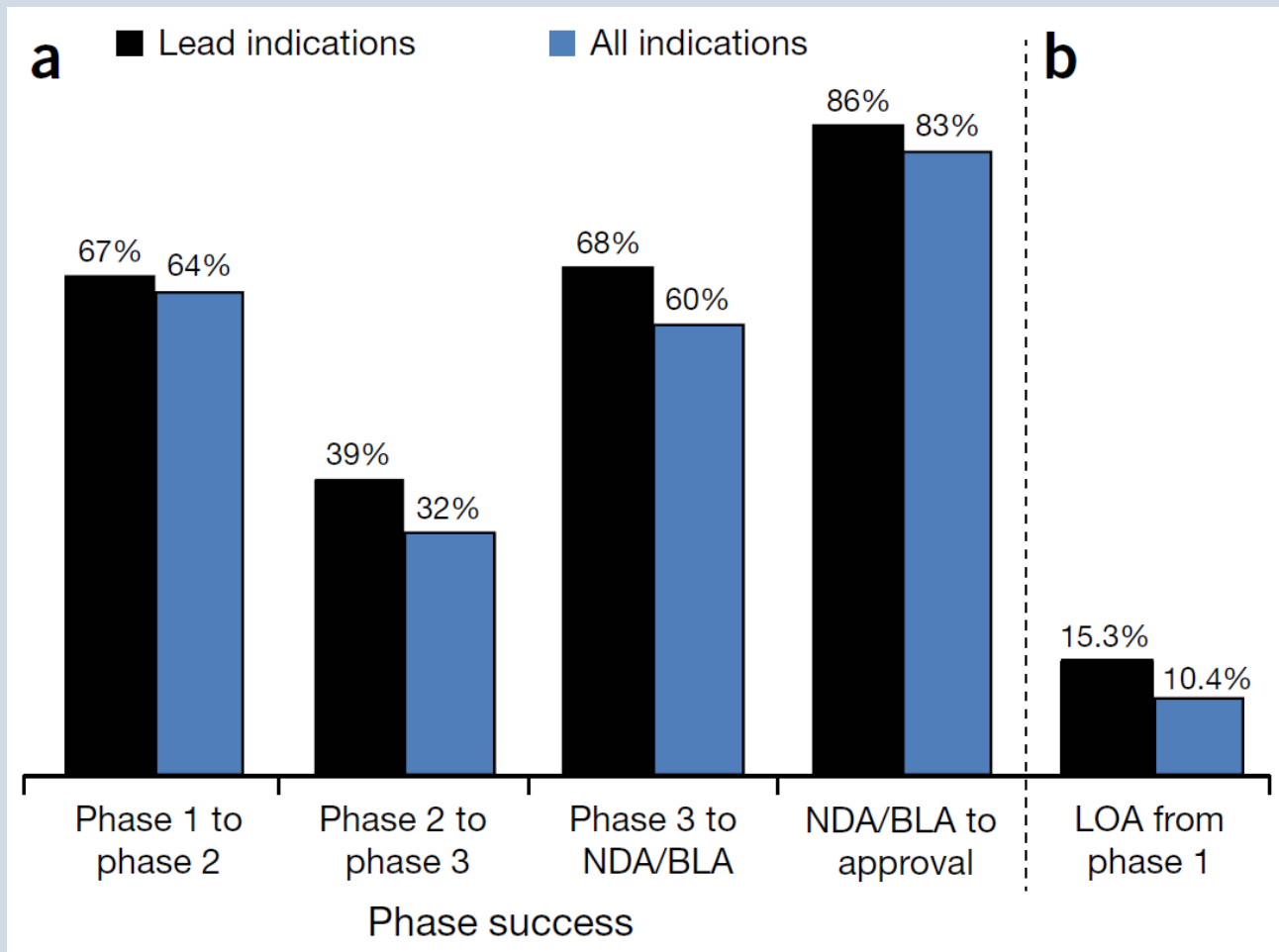
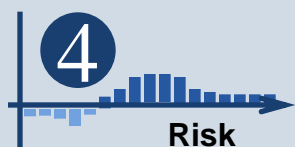


Adjust for **Risk** (success rates)



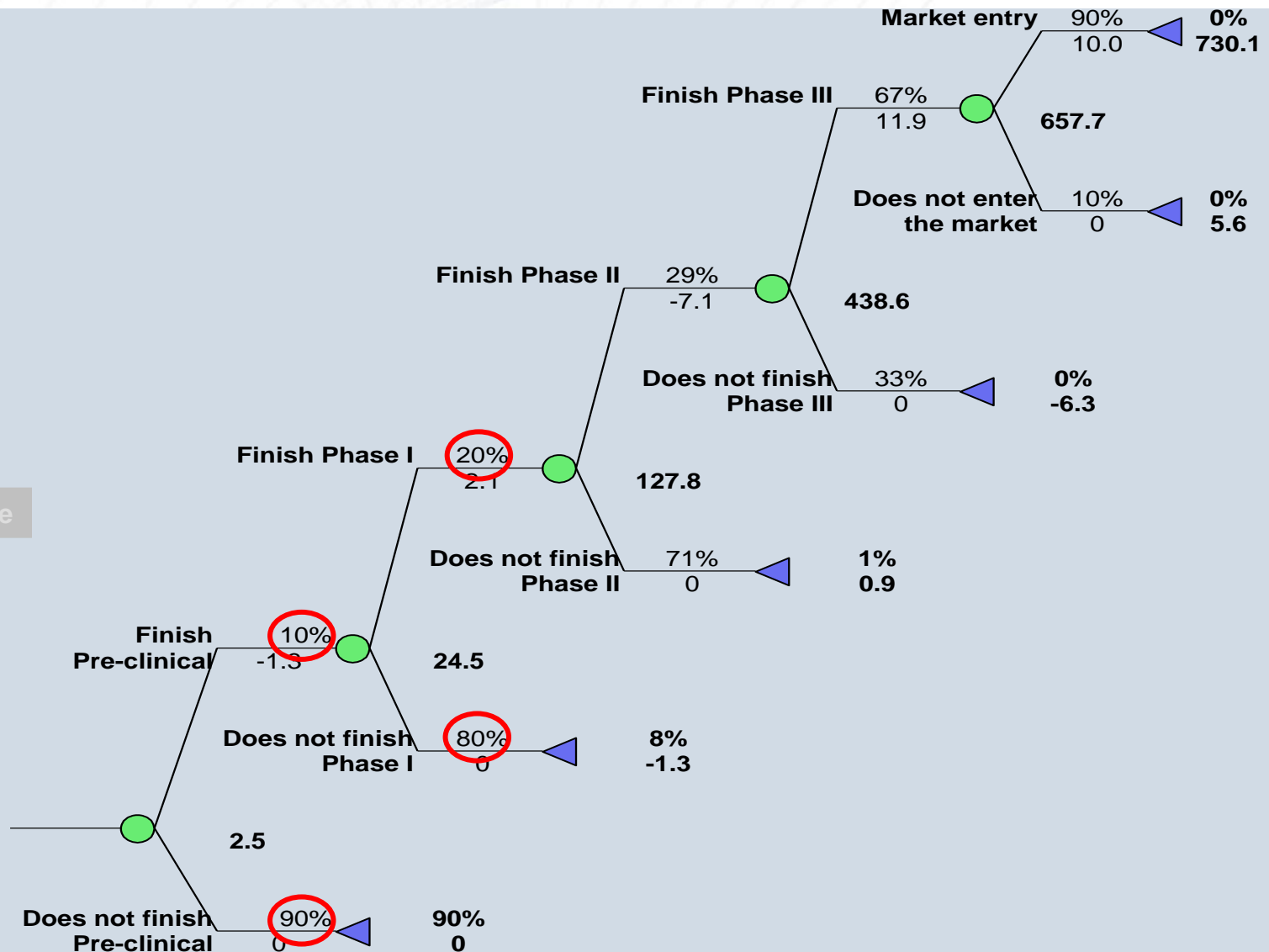
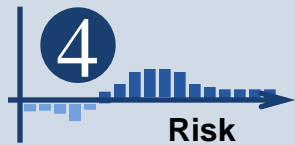
Sum cash flows

# Success rates



Source: Nature Biotechnology; Clinical development success rates for investigational drugs; January 2014

# Risk-adjusted NPV

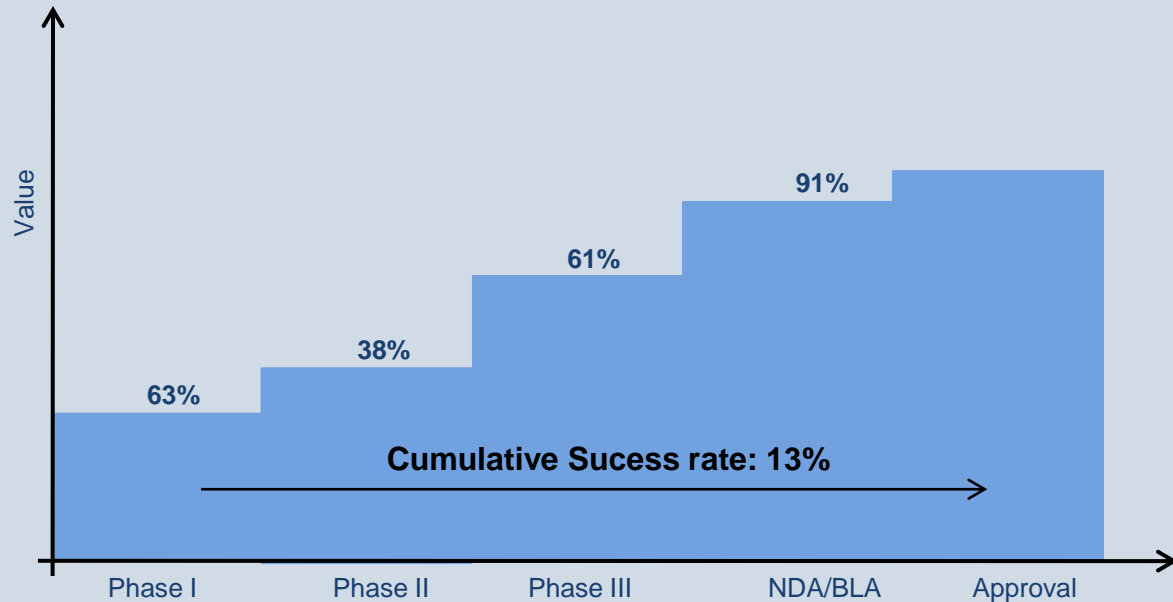
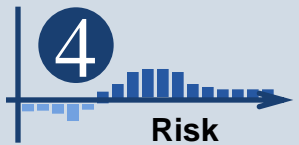


# Success rates

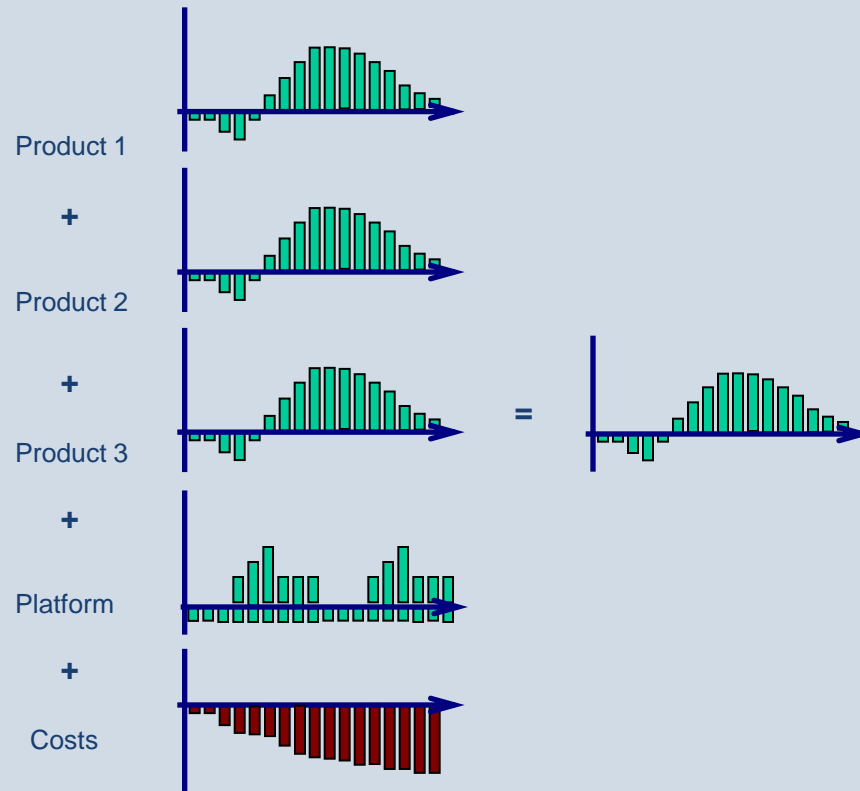


## The relation between Risk and Value

- Completion of a phase → Direct value increase



# Company Valuation



## Early stage company

Sum-of parts valuation

Total value of project



# Deal terms



- Front/ back-loading a deal can heavily influence deal structure
- Deal terms dependent on needs of both parties

In USD m	Payment of	rNPV* (or up-front)
<b>Up-front</b>	1 m	1 m
<b>Finish Pre-clinical</b>	1 m	0.44 m
<b>Finish Phase I</b>	1 m	70'000
<b>Finish Phase II</b>	1 m	17'000
<b>Finish Phase III</b>	1 m	8'000
<b>Approval / Enter market</b>	1 m	5'000
<b>Royalties</b>	1%	0.70 m

\* Time value of money and Risk adjusted

# Timing of payments (II)



- Two very different deal structures can look identical

Cash Flow



- Non-discounted, non-risk adjusted

1

rNPV



- 25 million upfront
- 300 million milestones
- 5% royalties

2

rNPV



- 5 million upfront
- 50 million milestones
- 12% royalties

# Conclusion



- Valuation is key in the development of a start-up
- Valuation is not easy
- Value  $\neq$  Price
- Its all about the assumptions
- Deal  $\neq$  Deal
- Be prepared



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Thank you for listening!

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