



Mining Financial Model & Valuation



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SHOES.COM

Corporate
Development



Investment
Management

≡GOLDCORP

Corporate
Development



Investment
Banking

Learning objectives



Read a technical report / feasibility study and gather the important economic information



Input all assumptions into a robust and dynamic financial model



Run sensitivity analysis on the value of that asset



Calculate the value of a mining asset



Key Valuation Metrics

Mining Valuation – NPV

Mining assets are essentially one big NPV analysis



Engineering and technical reports

Provide a very detailed plan



No terminal value in a non-renewable industry

Last years are negative cash flow

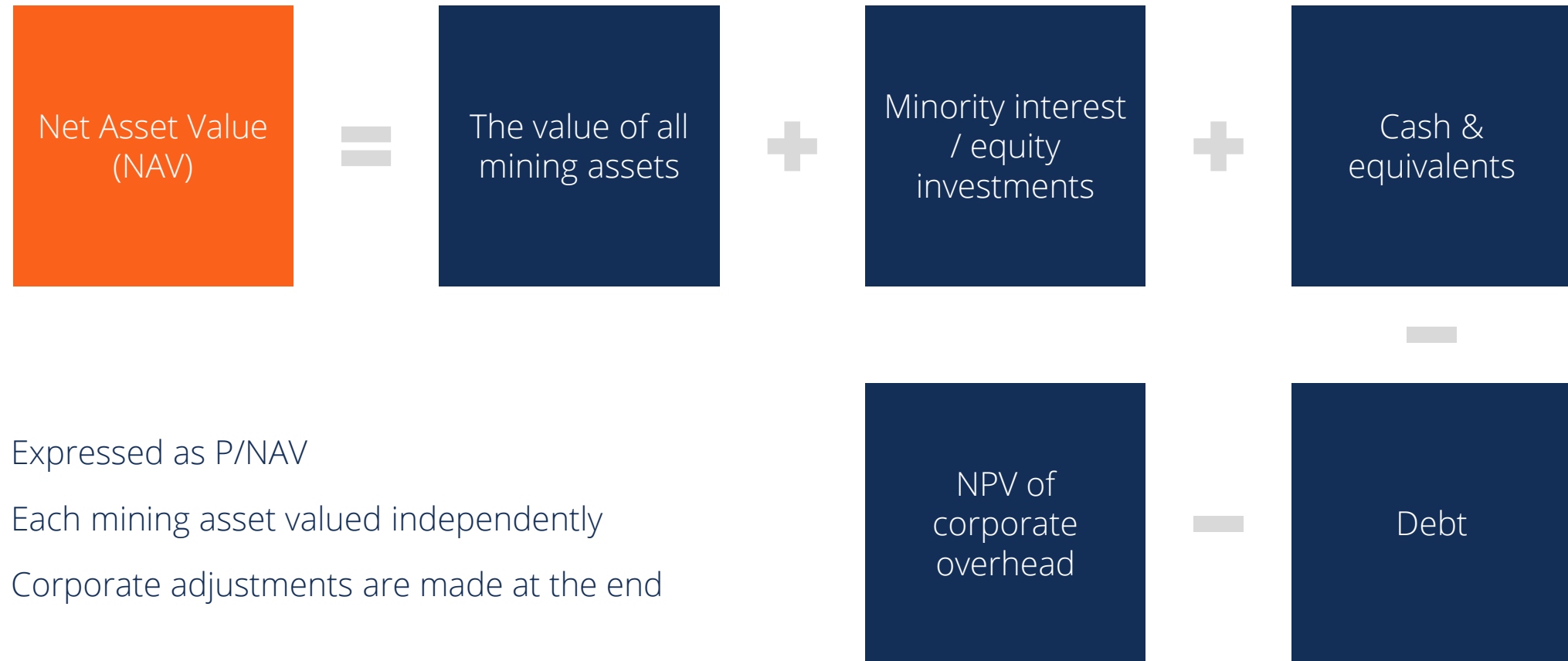


Any mining project/asset with a study is a perfect DCF candidate



Early stage is much harder to value

Equity value metric



NAV Breakdown (\$M)	
Mining Assets	
NPV Sauder Mine	3,000
NPV Keevil Mine	2,500
NPV Chan Mine	2,000
Total	7,500
Plus: Other Assets	
Cash	500
Equity Investments	250
Total	750
Less: Corporate Adjustments	
NPV Corp. G&A	(500)
Debt	(2,000)
Total	(2,500)
NAV	
Net Asset Value	5,750
Market Capitalization	6,120
P/NAV	1.1x

Assets

Liabilities

Equity



Why would a company trade at a premium to its Net Asset Value?

I.e. Why would you pay more than its “worth”

This is a phenomenon with gold companies

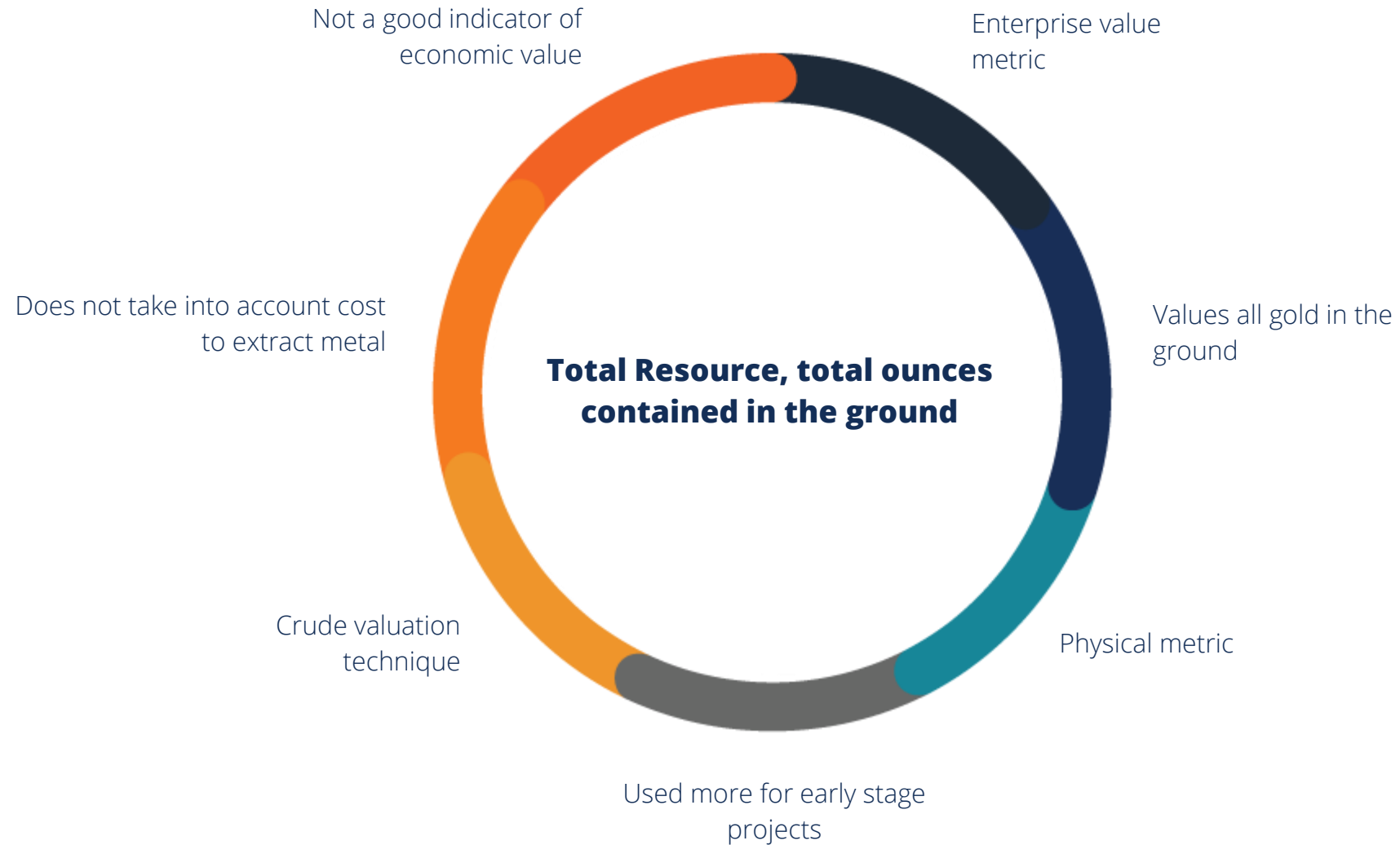
Currently senior gold miners trade from 0.7 – 1.5x
NAV



Cash flow ("CF")

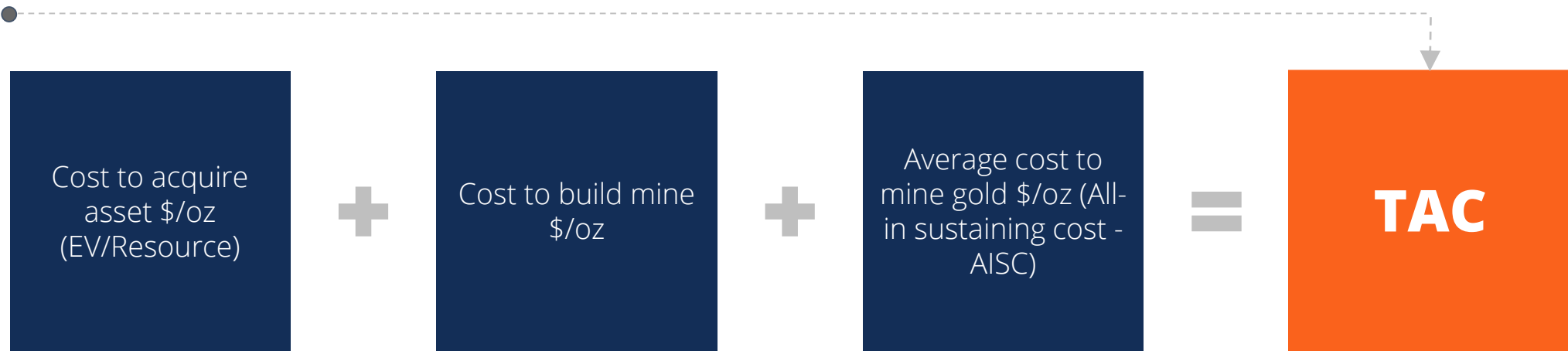


EV/Resource



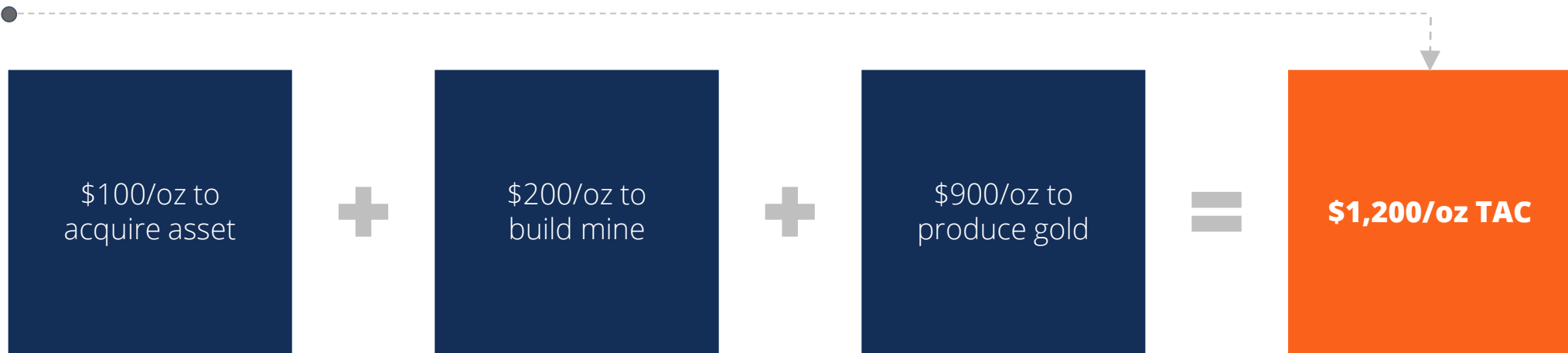
Total Acquisition Cost

"Build it up" to get the total cost of gold



Total Acquisition Cost

Example



Typically want TAC to be <80% of spot price



Financial Model - Assumptions Section

Assumptions Section



Keep all assumptions in one section

Allows for a single location of inputs

Easier for other users to understand

Simplifies model structure

Sensitivity Analysis

Has to be conducted on same tab as the input

Simplifies sensitivity analysis

All prices and figures are typical in REAL DOLLARS

Assumptions Section

Resource details

- Ore (tonnes)
- Grade (g/t)

Major assumptions include

Metal prices

Capital cost

Payability & Terms

Milling rate

Recovery

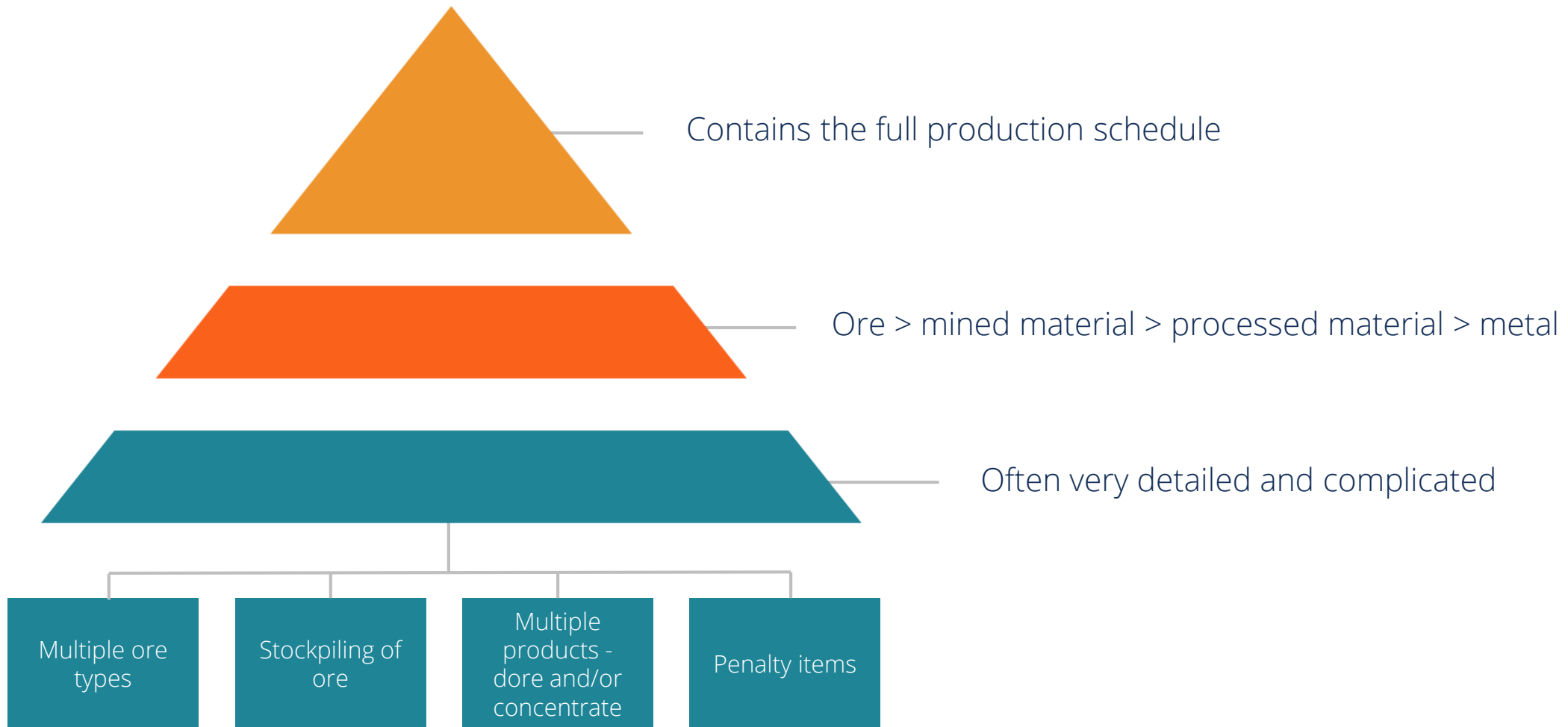
Operating costs
(unit costs)





Financial Model - Mining Section

Mining Section



2 main approaches include:

Mineral Inventory approach

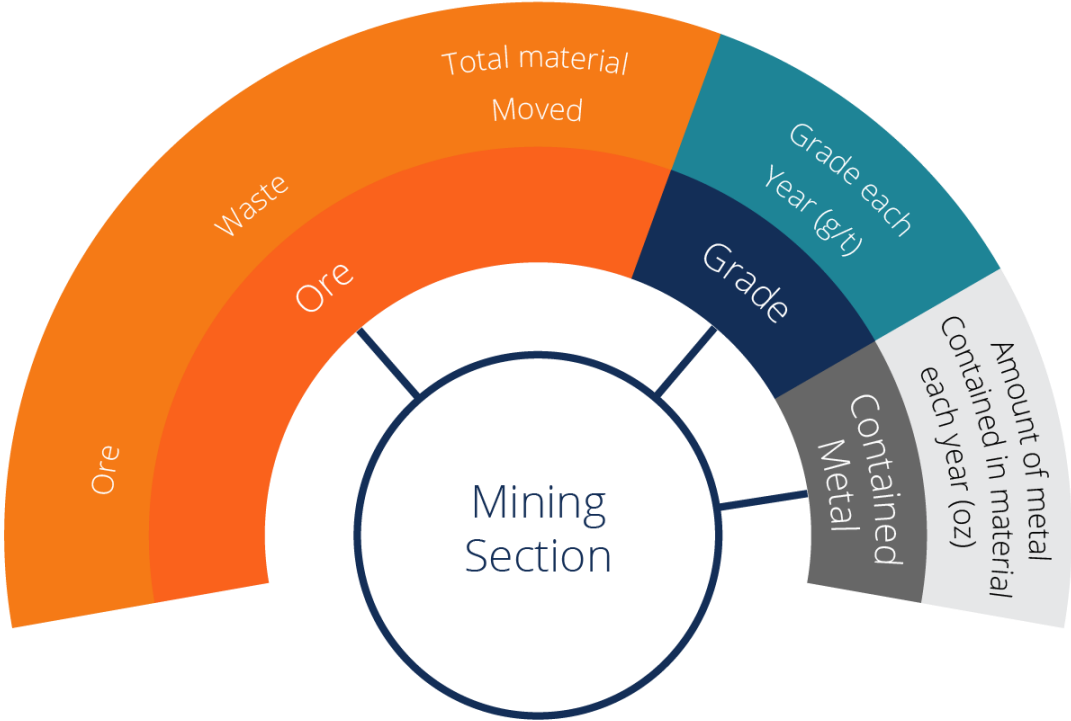
Slowly deplete reserves at a constant rate and grade

Detailed Mine Schedule approach

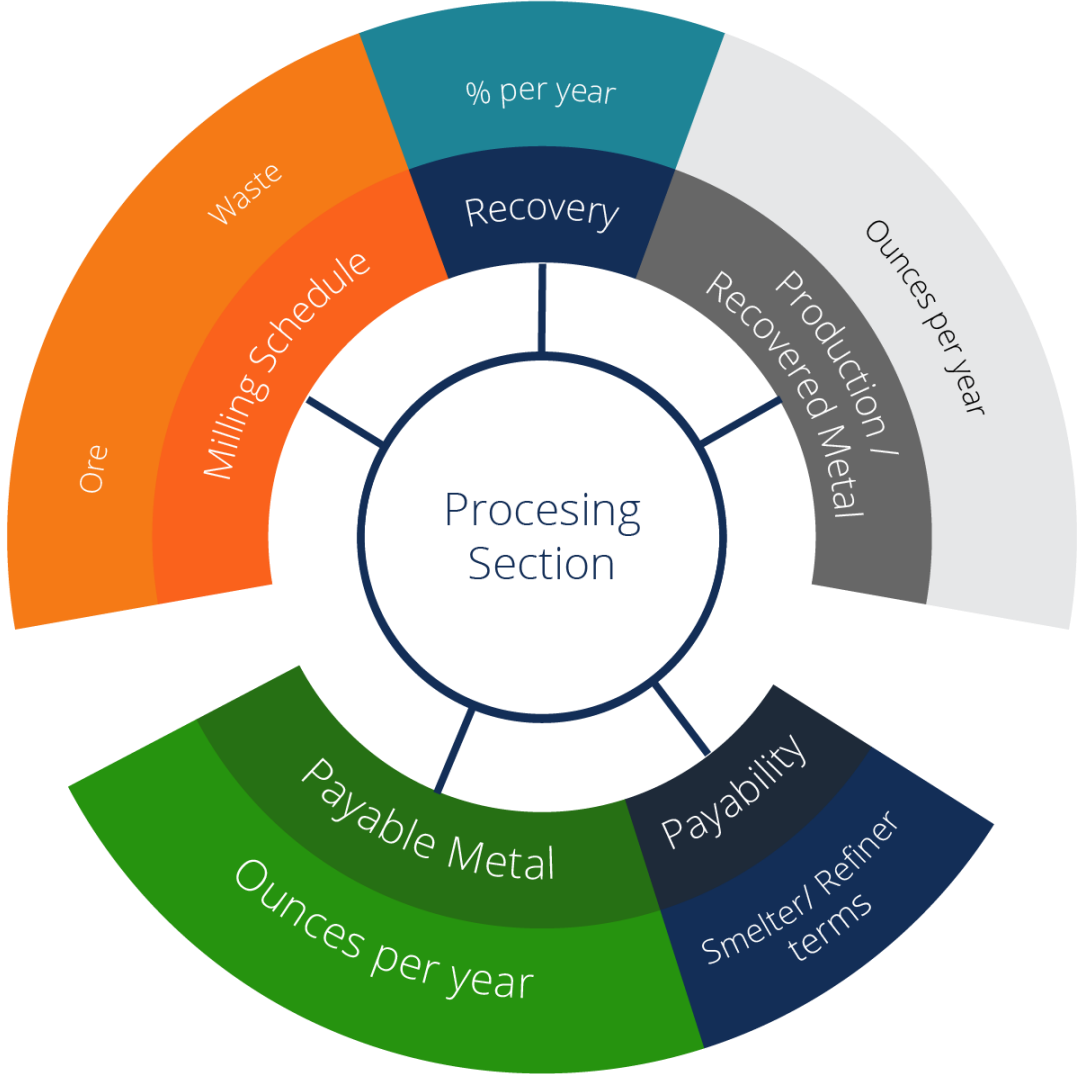
Specific volume and grade each year



Mining Section



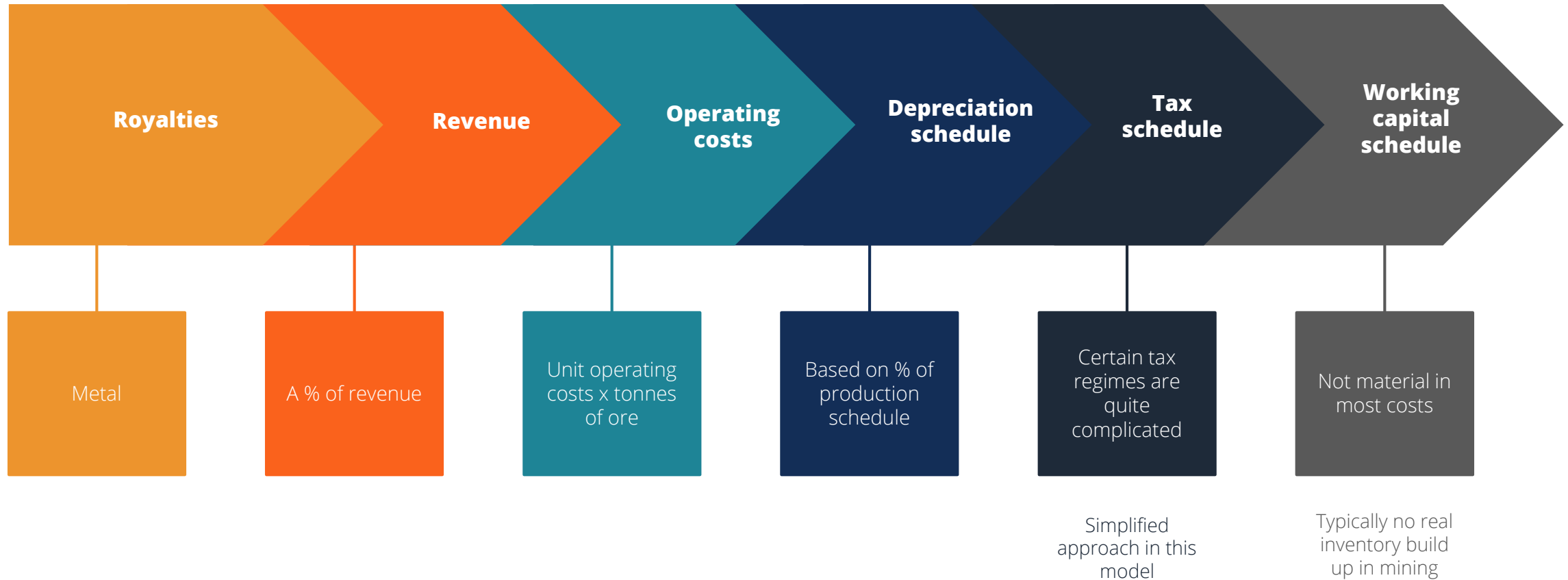
Mining Section





Financial Model - Financial section

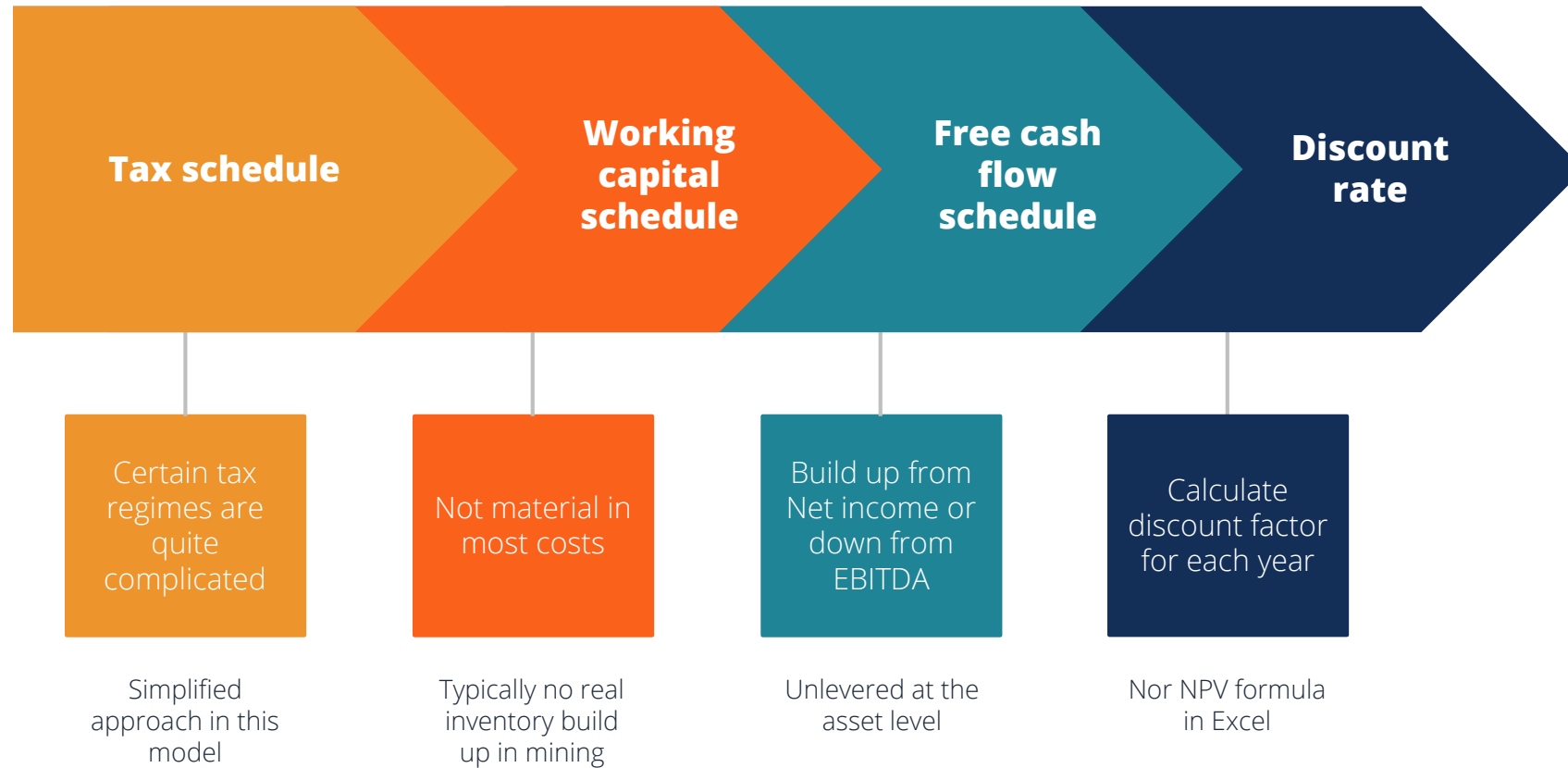
Financial Section





Financial Model - DCF Section

DCF Section



Discount rate

Currently lots of debate over discount rates

5% (real) is tradition in gold industry

WACC over long term is about 5-6% (real)

Gold companies have a low beat

Country risk premiums should be considered

Discount factor formula:

1

$(1 + \text{Discount rate})^{\wedge (\# \text{ years})}$





Sensitivity Analysis

Sensitivities

There is not “one number” for value

Once the model is setup sensitivity can be analyzed

All the key inputs should be sensitized



Metal prices

Capital cost

Payability & Terms

Payability & Terms

Milling rate

Recovery

Operating costs (unit costs)

Operating costs (unit costs)

Sensitivities – Data Tables



Sensitivities – Data Tables



EBITDA Margin (%)	Enterprise Value (\$M)							
	Product Price (\$unit)							
		6.00	7.00	8.00	9.00	10.00	11.00	12.00
	45%	-1,036	-764	-491	-219	54	312	507
	50%	-880	-577	-274	28	315	534	746
	55%	-734	-401	-68	259	516	750	983
	60%	-590	-227	134	456	711	965	1,219
	65%	-447	-54	333	630	905	1,181	1,456
	70%	-304	120	504	803	1,100	1,396	1,693
	75%	-161	290	658	976	1,294	1,612	1,929

Thank you

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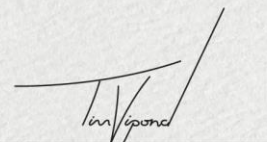
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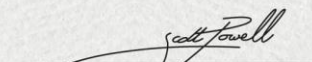
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Director