An Overview of Financial Model Components

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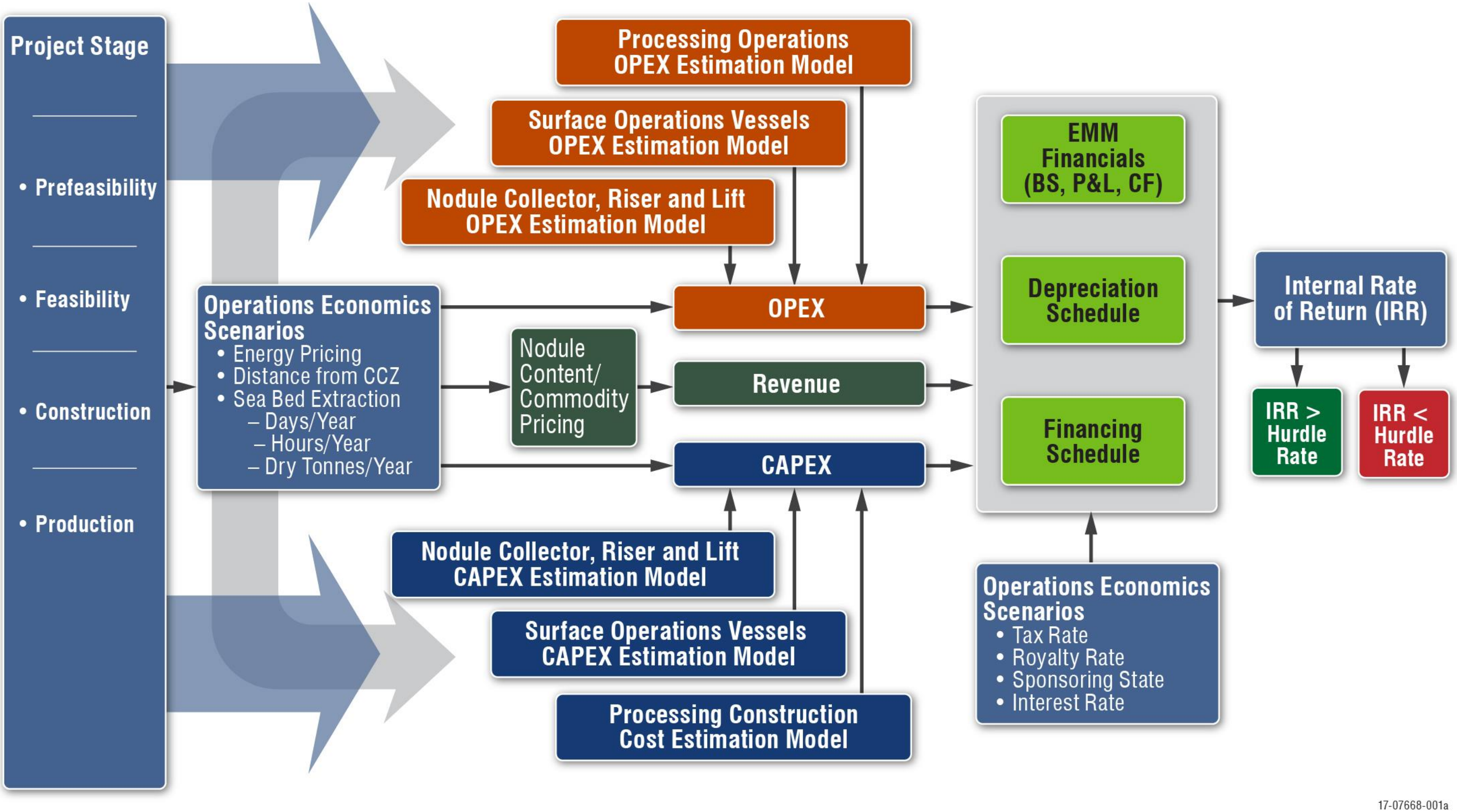
Economic Model



Cost fidelity will evolve upon completion of each project stage

Components

Item #	Title	Description	Comment
1	**Pre-Feasibility Study** Duration 3-4 Yrs Equity Financing	A range of options for the technical and economic aspects of a project which are used to justify continued exploration, complete required project permitting or to attract a joint venture partner.	Environmental Cruises, Resource Assessments, System Operational Views, Business Case development
2	**Feasibility Study** Duration 3-4 Yrs Equity Financing	Comprehensive study of a mineral deposit in which all geological, engineering, legal, operating, economic, social, environmental and other relevant factors could reasonably serve as the basis for a final decision by a Financial Institution to finance the development of the deposit for mineral projection. Other wise known as a "bankable" feasibility study.	Focused on the development of a detailed system design and equipment testing, conditional on having a regulatory framework in place.
3	**Construction** Duration 2-4 Yrs Equity/Debt Financing	Once all the licenses are in place, including permitting for the processing plant, the contractor will engage financial institutions on funding the construction of the various system components.	The Collection, Surface and Processing Segments production and final integration and system level test.
4	**Annual Tonnes Collected** 3MT	The amount of dry metric tonnes collected annually of Polymetallic Nodules from the Clarion Clipperton Zone	System design, including collector width, speed, based on available mining days Clear distinction between Dry and Wet Nodules
5	**Nodule Ore Content** (Grade)	The percentage by weight of metal ore per metric tonne, for Ni Cu, Co and Mn.	Each license holder must validate collected nodule assay tests. For nodules, this is measured in "dry" nodules

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6	**Recovery/Yield**	The amount in (%) of metals that can be recovered from the available minerals in the ore.	Various processing techniques will have different recovery (yield) rate for each metal
7	**Operational Mine Life**	The years of mine production to be included in the cash flow analyses	As discussed in prior workshops, 25 -30 years are options
8	**CAPEX Collection System**	Upon the completion of the design, development, production and testing of a prototype thru the Pre Feasibility and Feasibility Phases, the actual build out of the Collection System, including collectors and Riser and Lift System.	The total capital required will be based on the system engineering, prototype development phases of the project. ISA Exploitation Regulations will impact the Collection System capital estimates.
9	**CAPEX Surface Vessels**	Upon the completion of the design, development, production and testing of a prototype thru the Pre Feasibility and Feasibility Phases, the actual build out of the Surface Vessels, including the mining ship, transport bulkers, and other surface vessels to transport the polymetallic nodules to the processing plant location.	The total capital required will be based on the system engineering, prototype development phases of the project. ISA Exploitation Regulations will impact the Surface Vessels capital estimates.

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Item #	Title	Description	Comment
10	**CAPEX Processing Plant**	Upon the completion of the design, development, production and testing of a processing plant prototype thru the Pre Feasibility and Feasibility Phases, the system build out of a full scale processing plant for polymetallic nodules.	The total capital required will be based on the system engineering, prototype development phases of the project. ISA Exploitation Regulations will impact the processing plant capital estimates. The location of the processing plant may optimize operating expense (OPEX), and permitting requirement and timelines.
11	**Recapitalization Estimates**	Each capital item will have a useful life in which a retrofit/upgrade will be required to ensure optimal usage. A percentage of the original capital estimate may be used and be part of OPEX maintenance.	The life cycle concept of operations will be updated to reflect the available mining operational days. Collector, Riser and Life System are expected to have the highest recapitalization costs.
12	**CAPEX Development Period of Performance**	Each segment of the system will have a capital development timeline based on the prototypes completed during the Feasibility Phase.	The equity and debt financing will reflect these timelines.

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13	**Collection System Operating Expense** (OPEX)	The annual operating expense for the collection system, including labor, other direct costs, fuel, and maintenance. Collectors, Riser and Lift System are included.	Exploitation License may impact operating expense for the Collection System.
14	**Surface Vessels OPEX**	The annual operating expense for the surface vessels including labor, other direct costs, fuel, and maintenance. Mining ship, Bulkers, Hi Speed, Survey and Support Vessels	Exploitation License may impact operating expense for the Surface Vessel OPEX
15	**Processing Plant OPEX**	The annual operating expense for the processing plant, including labor, other direct costs, fuel, and maintenance. An additional power plant may be included to provide electricity.	Exploitation License may impact operating expense for the Processing Plant OPEX
16	**Working Capital**	Working capital is the amount of funds which are necessary to an organization to continue its on-going business operations, until the firm is reimbursed through payments for the goods or services it has delivered to its customers.	A percentage of sales may be an assumption used to derive working capital. This would result in a negative cash flow early in the project.
17	**Production Phase-In Period**	The period in time required to meet full production. Which measurable will trigger full production?	OPEX may be consumed at a higher percentage compared to revenues.
18	**Equity Contributions "Investment'**	Equity financing is the process of raising capital through the sale of shares in an enterprise. Equity financing essentially refers to the sale of an ownership interest to raise funds for business purposes.	The Pre-Feasibility and Feasibility are expected to be 100% equity funded. Construction will include equity and debt.

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19	**Debt to Equity Ratio**	The debt-equity ratio compares a company's total liabilities to its total shareholders' equity.	Mining companies have historically high ratios. Recently these same mining companies have been selling assets (Mines) to reduce debt and associated interest expense.
20	**Financing Interest Rate**	Interest rate is the amount charged, expressed as a percentage of principal, by a lender to a borrower for the use of assets. Interest rates are typically noted on an annual basis, known as the annual percentage rate (APR).	The types of loans will also determine the interest rate. For example, the processing plant may have construction type loans addressing multiple phases of the project and deferred principal payment schedule.
21	**Weighted Average Cost of Capital**	Weighted average cost of capital (WACC) is a calculation of a firm's cost of capital in which each category of capital is proportionately weighted.	The percentage return on investment that debt/equity holders of private corporations assume prior to investing. Also representing the opportunity cost of the capital. If this return is not achieved, the corporation is effectively losing money on the investment as the same capital could be invested in other projects.

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Item #	Title	Description	Comment
22	**Depreciation Schedule**	Depreciation is an accounting method of spreading the cost of a tangible asset over its useful life. Businesses depreciate long-term assets for both tax and accounting purposes. For tax purposes, businesses can deduct the cost of the tangible assets they purchase as business expenses; however, businesses must depreciate these assets in accordance with tax rules about how and when the deduction may be taken.	Each capital Item will have an individual depreciation schedule based on the useful life. The residual value is the value of the capital item after full depreciation.
23	**Commodity Prices**	The forecasted price of Nickel, Copper, Cobalt and Manganese per metric tonne for the next 30 years. Moving averages may be one approach for modeling.	Commodity Prices may vary depending on business model assumptions. Manganese is complex due to the variety forms in which it is sold: Electrolytic Manganese Metal (EMM), FeMn, SiMn
24	**Inflation**	Inflation is defined as a sustained increase in the general level of prices for goods and services. It is measured as an annual percentage increase. As inflation rises, money you own buys a smaller percentage of a good or service.	The time value of money. Used in mining companies to escalate costs and revenue over time versus keeping them constant. Some economic models will have no inflation, which will keep revenue and expenses in constant year dollars.

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Item #	Title	Description	Comment
25	**Operational Cash Flows**	Operating cash flow is a measure of the amount of cash generated by a company's normal business operations. Operating cash flow indicates whether a company is able to generate sufficient positive cash flow to maintain and grow its operations, or it may require external financing for capital expansion.	The collection of Polymetallic Nodules will require significant up front investments (negative cash flow) by the contractors who will model positive cash flows based on revenue generation through distribution to the various metal commodity markets.
26	**Internal Rate of Return**	The internal rate of return (IRR) is frequently used by corporations to compare and decide between capital projects, The IRR is the interest rate (also known as the discount rate) that will bring a series of cash flows (positive and negative) to a net present value (NPV) of zero (or to the current value of cash invested).	Defined as a percentage return based on a series of negative and positive cash flows. Typically the IRR is compared to company "Hurdle Rates" representing the minimum return a project should obtain. Exceed and the project may proceed. If the IRR equals the WACC, the NPV is zero.
27	**Net Present Value**	The net present value approach is the most intuitive and accurate valuation approach to capital budgeting problems. Discounting the after-tax cash flows by the weighted average cost of capital allows managers to determine whether a project will be profitable or not. And unlike the IRR method, NPVs reveal exactly how profitable a project will be in comparison to alternatives. The NPV rule states that all projects which have a positive net present value could be accepted while those that are negative should be rejected.	The present value of project cash flows until end of project life. If $0, then the NPV generated is equal to the WACC. Companies will review each projects IRR and NPV and will only invest in those that provide the highest return.

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28	**Hurdle Rate**	The IRR percentage required for an entity to invest in the opportunity. An IRR that is greater than the Hurdle Rate, will be an investment opportunity that will be assessed by a corporation. A Hurdle Rate is normally greater than the Weighted Average Cost of Capital (WACC).	A hurdle rate is the minimum rate of return on a project or investment required by a manager or investor. The hurdle rate denotes appropriate compensation for the level of risk present; riskier projects generally have higher hurdle rates than those that are deemed to be less risky.
29	**Exploitation License Application Fee**	A fee payable to the ISA in accordance with the Exploitation Regulations for the processing of a Plan of Work for Exploitation	The application fee for an exploitation contract will be higher than an exploration application given the ISA significant workload prior to granting the license. The value of $1M was discussed at the previous workshop in London.
30	**Exploitation Annual Fees**	An Annual contract administration fee as prescribed by ISA Regulations.	Methodology of calculation and amount of fee(s) under discussion, but $100K was discussed at the previous workshop in London.

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31	**Ad Valorem Royalty, Light vs Full.**	A royalty payable as compensation for extraction of the mineral resources, which possibly could have a lower percentage collected during the early phase of the project.	Continued discussion item from the prior workshops.
32	**Environmental Bond**	A potential financial guarantee or security to secure compliance with environmental obligations.	Under discussion / consideration
33	**Environmental Liability Fund**	A potential general environmental liability fund to cover any liability gap for environmental damage.	Under discussion / consideration.
34	**Seabed Sustainability Fund**	A potential fund to promote and develop Marine Scientific Research (MSR) in the Area together with capacity building / technical assistance.	Under discussion / consideration
35	**Sponsoring State Fiscal Regime**	The sponsoring State's responsibility is to ensure the contractor's compliance with the ISA Mining Code, by means of adopting laws and administrative measures for enforcement, which have to be "no less effective" in the case of environmental protection	The fiscal aspects of sponsoring state for exploitation is not developed, but laws and administrative measures may result in monitoring tax or others.
36	**Corporate Tax Rate of Sponsoring State**	A corporate tax is a levy placed on the profit of a firm to raise taxes. After operating earnings is calculated by deducting expenses including the cost of goods sold (COGS) and depreciation from revenues, enacted tax rates are applied to generate a legal obligation the business owes the government. Rules surrounding corporate taxation vary greatly around the world and must be voted upon and approved by the government to be enacted.	The national tax rate applied to individual contractor's profits dependent on sponsoring State and is part of the sponsoring State's fiscal regime.

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