

Q1

To estimate cash flows of the proposed Alternium pool over the next 10 years

### Sheet 1

- I have found the **cost of servicing and the pricing of each participant** over the next 10 years taking into account the given inflation rate
- Based on the data given for the year 2020, I have calculated **the participation** in millions for without Alternium and with Alternium in both the categories, 'US & Russia' and 'International'. I have also calculated according to new plan to Alternium in isolation to international Participants.
- I have used these calculated data numbers to find the **total cost of service incurred and Total Pricing** in millions for without Alternium and with Alternium in both the categories, 'US & Russia' and 'International'.
- From this, I subtracted without Alternium values from with Alternium values so that I could get **Total cost of Services and Pricing for Alternium specifically**, which can be used for projecting the cashflows of the proposed project, Alternium.
- I have depicted the **data calculations in the form of bar and line charts** for easy interpretation.

### Sheet 2: Negative Cashflows

**Assumption taken: Most recent year is 2022 and next 10 years is 2023 to 2032.**

- I have started with **expenses required (negative cashflows)** in ten years duration for Alternium.
- **R and D expenses** were directly mentioned in the question
- **For introductory costs (Infrastructure)**, I have taken into consideration the number of years and I have calculated **depreciation**.
- For server Facilities and Costs, data was given for most recent year, which I have taken as 2022. I have used this data to calculate the number of participants that the server can support.  
**Assumption: I am considering all server purchases to have identical servers in terms of usage and capacity.**  
**Assumption: Alternium purchases a separate server in yr1 and further purchases as its required.**
- **Similar** to depreciation of infrastructure, I have calculated the depreciation of server based on the number of years its being used.
- Depreciation consists of depreciation on infrastructure and depreciation on server.  
**Assumption: I have considered the utility of 2<sup>nd</sup> server similar to the first server in terms of years.**
- For G and A expenses, I have taken accountants allocation for 2022 (as it's the most recent year) I have added this to further years plus the increase in value given.
- For Advertising Costs, I have calculated the total cashflow with and without Alternium. As we have to evaluate the project of potential pool, Alternium, I found the difference of the two which was cashflows for Alternium only.
- I had calculated Total Cost of Servicing on SHEET 1, so I have taken that table to Negative Cashflows sheet.

### Sheet 3: Positive Cashflows

- I have taken the data of Side benefits for 2022 and used the given inflation rate to find the positive cashflows of all the 10 years
- Next there are exchange charges given in the question that are charged from each participant annually. So, I found the total number of participants of Alternium for each of the 10 years in SHEET 1 and used that data to calculate exchange rates. I multiplied the total participants to exchange rate given.

### Sheet 4: Question 1 Answer

- For all the years 2022 (most recent) to 2032, I have calculated the revenue. For this I have taken into consideration the Annual charges/fees charged per participant and the Side Benefits.
- I have taken all components of expenditure referencing them to previous sheets and then found the total expenses
- I have then found the profit after deducting expenses from the revenue.
- I have then taken tax rate given in the question into consideration and found the Tax Value of the Profit generated. This helped me to find the Profit After Tax.
- I have used Working Capital data mentioned in the question to find the Cash receivables and inventory. This helped me to find the Total Receivables. I also calculated the cash payable. This helped me to calculate the net working capital of the Alternium.
- In order to find the incremental cash flow of Alternium into Universal Pool, I added the depreciation back into the receivables as depreciation is non-cash expenditure. The obtained result is the Incremental cash flow from the proposed Alternium Pool to the Universal swap over the next 10 years.

### Sheet 5: Question 2 Answer

- To calculate the requirements, I have taken the cashflows and profit after tax from the Sheet 4: Question 1 Answer, so that I can use the data further.
- I calculated the Book Value of the assets in the depreciation table made on Sheet 2: Negative Cashflows.
- I have added the book value to the 10<sup>th</sup> year's profit after taxes.
- I have taken Profit after tax to calculate NPV
- I have used the cost of capital percentage given in the question to find the NPV of the project Alternium.
- Next, I have made NPV Profile by using different rate of interests from 1% till 25%
- These calculations have given me a range of NPV values for different interest rates.
- I have tabulated the interest rates used and the NPV thus obtained
- I used this table to diagrammatically depict the NPV for different interest rates.
- I then used Goal seek function of excel to make NPV =0. I thereby found IRR, the interest rate corresponding to the zero NPV

Sheet 6: Question 3 Working

- **Assumption: The Alternium lasts for 15 years.**  
This is because after 15 years, cryptocurrency being a comparatively newer investment area, will be quite developed. At that stage, the growth of this industry, participants, expenses, competition, all these parameters will have significant change. Also, cryptocurrency being highly dependent on technology and technology is bound to innovations, it is reasonable to estimate Alternium to last for 15 years.
- **Assumption: None of the dependent factors stated in the above assumption, change drastically any time before next 15 years duration.**
- **Assumption: With increasing participants, the project will have more server expenses, depreciation of infrastructure.**
- **Assumption: It is highly growing industry, so it will have larger profits after tax for next 5 years after 10<sup>th</sup> year**
- Keeping these assumptions in mind, I have calculated the participation, cost of servicing, pricing, all expenses and revenue of the Alternium for 2033 to 2037 (year 11 to year 15)  
I have used the same growth rate given in the question for next 10 years, to estimate for next 5 years after 10th year

Sheet 7: Question 3 Answer Part 1

- For all the years 2022 (most recent) to 2037 (next 15 years), I have calculated the revenue of Alternium. For this I have taken into consideration the Annual charges/fees charged per participant and the Side Benefits just as Sheet 4: Question 1
- I have taken all components of expenditure referencing them to previous sheets and then found the total expenses
- The difference here comes in depreciation of infrastructure and the Server
- Keeping in mind the increasing rate of participants and the capacity calculations done previously, one server is needed. Also, the second server gets used up after 4 years and the third in next 4 years. This changes the amount of depreciation considered for each question.
- For infrastructure, the number of years increases thereby decreasing its depreciation value calculated earlier.
- I have then found the profit after deducting expenses from the revenue.
- I have then taken tax rate given in the question into consideration and found the Tax Value of the Profit generated. This helped me to find the Profit After Tax.
- I have used Working Capital data mentioned in the question to find the Cash receivables and inventory. This helped me to find the Total Receivables. I also calculated the cash payable. This helped me to calculate the net working capital of the Alternium.
- Similar to Question 1, the incremental cash flow of Alternium into Universal Pool. I added the depreciation back into the receivables as depreciation is non-cash. The obtained result is the Incremental cash flow from the proposed Alternium Pool to the Universal swap over the next 15 years

### Sheet 8: Question 3 Answer Part 2

- To keep the project structured, I have taken the next calculations as part 2 of Question 3
- To calculate the requirements, I have taken the cashflows and profit after tax from the Sheet 7: Question 3 Answer Part 1, so that I can use the data further.
- Similar to Question 2, I have taken Profit after tax to calculate NPV
- I have used the cost of capital percentage given in the question to find the NPV of the project Alternium.
- Next, I have made NPV Profile by using different rate of interests from 1% till 30%
- These calculations have given me a range of NPV values for different interest rates.
- I have tabulated the interest rates used and the NPV thus obtained
- I used this table to diagrammatically depict the NPV for different interest rates.
- I then used Goal seek function of excel to make NPV =0. I thereby found IRR, the interest rate corresponding to the zero NPV

Inferences:

From Question 1 and 2:

For next 10 years, the NPV of the project for given interest rate, the cost of capital is positive.

The IRR comes out to be 22% which is more than cost of capital (11%). Therefore, the Project Alternium will add value to the Universal Swap.

So, Based on NPV and IRR it's a good investment to make.

From Question 3

Keeping the stated Assumptions in mind,

For next 15 years, the NPV of the project is positive is higher than that calculated for first 10 years

The IRR comes out to be 29% which is more than cost of capital (11%). Therefore, the Project Alternium will add value to the Universal Swap and also higher than that calculated for first 10 years.

So, Based on NPV and IRR its good investment for Universal Swap for term 10 years to 15 years.