Business Case Document

Analysis and Development Project

Group 25: Outsiders

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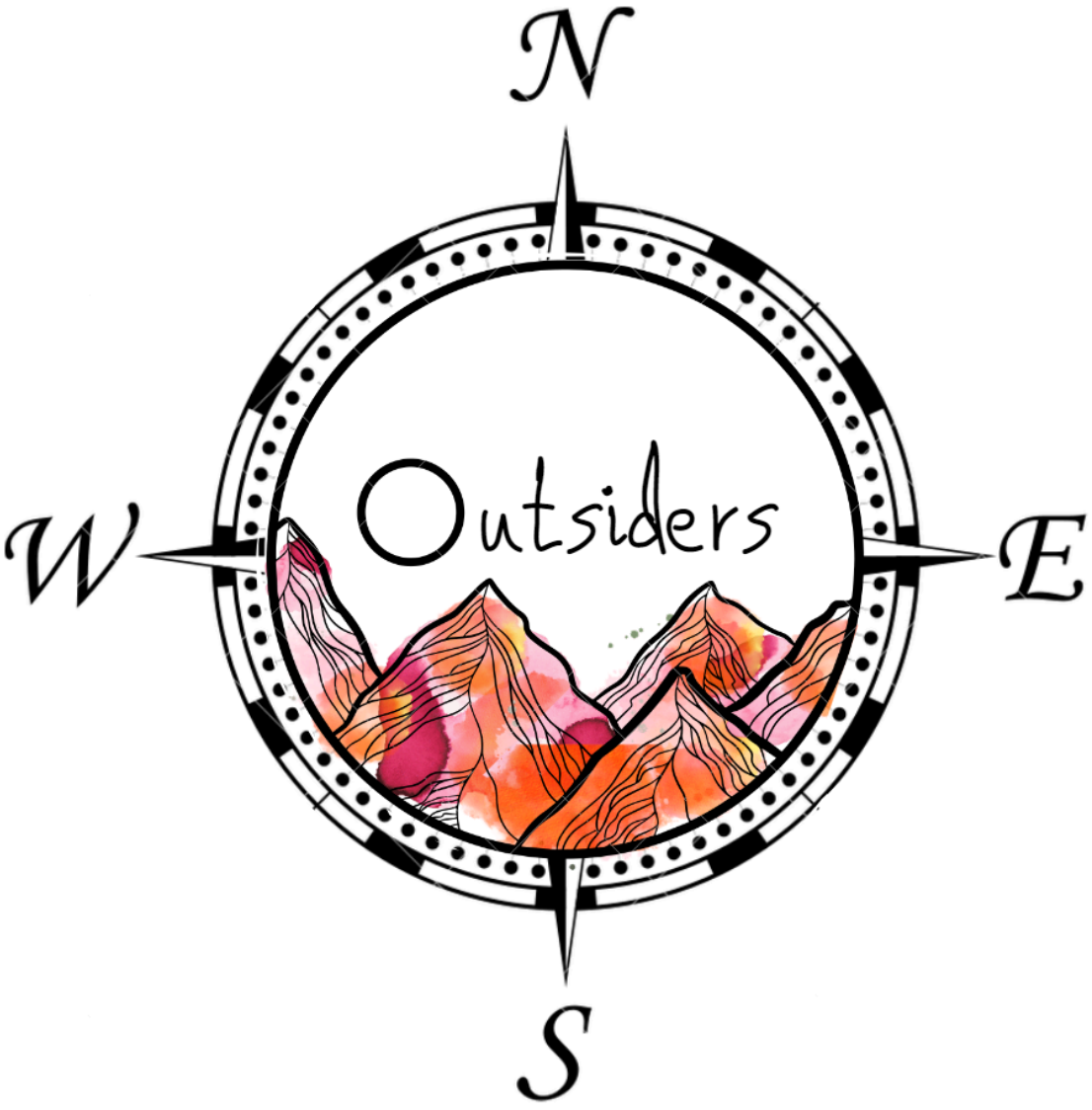


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1. Our concept/product/service

1.1 General concept and background

Outsiders is an app meant to make exploring Mars a lot safer and a little fun. It's built with the safety of the user as the main priority but making a profit is also an important part of the goal. This app has 2 target customers on the Martian planet.

1. The **scientists** on the mars colony: these are the people who regularly leave the surface colony to go out exploring and finding out more about the red planet. With the human race venturing into the unknown, they may need a lifeboat for when they encounter the unexpected on the Martian surface.

2. **Explorers** on the Surface Colony: These are those who dare venture into the unknown ready to face and discover whatever the red planet throws their way. This target group is usually amateurs who just want to explore the red planet on their own.

Outsiders was established to cover people's need for adventures and further exploration of mars and to fulfil businesses' needs for individually gathered data to provide highly personalised services or products. We also believe that our product can contribute to important research and knowledge about the surface of mars. Our concept started with wanting to provide a safe way of exploring Mars for the end-user, but as we realised we were not the only startup seeing the need for such an application, we thought we should rather provide the building blocks of such an application. This way, we also do not limit ourselves to exploration services. Any serious and responsible business can now take advantage of our product and service to provide their end-users with the best solutions possible for their needs.

> *Mission: We provide the safest way for people to explore Mars at their own pace.*
>
> *Vision: To improve the quality of end-user services by providing the needed tools to explore the surface of Mars individually or together with friends .*

1.2 Concept requirement description

1.2.1 Community aspect

To make our app more engaging and bring the community together, we want to give out small rewards in Marscoin to incentivise people to go explore mars. Of course we will need to cap this, an end-user would only be able to gain a limited amount of Marscoin every day. This way they can't exploit our app. We hope this will add value and be an inspiration for Martians to go explore and enjoy the planet safely.
We consider our customers as a community and we already already see them using our products, as well as all other businesses who might have use for our collected, existing or not yet founded, who could benefit from our services either only for exploration and testing purposes. We want to contribute to a very strong business environment on Mars, to increase value creation and work opportunities.

1.2.2 Visualisation component

Data visualisation is a key component for our customers as well as the demonstration site. Our customers will have access to our app via their wristband to see a visual representation of the gathered user data. Graphs will display a measured value of the minerals that are present at certain locations and show their evolution during the selected data. Also, the map will be a very important aspect of our POC. When customers open our app the first thing they will see is a map with their location on it. They will also be able to see other pinpoint locations already made by other people to visit.

1.2.3 API

The API will follow the OpenAPI specs and contain real-time data(location) from our customers that use our app. The data in this API will be the same data that we use for our POC. MarsTransit will be the first company to use our API. The API will show the following data: the latitude and longitude of the person.
We will also use an API that will collect the minerals on specific pinpointed locations. This API we will only use in our POC to generate charts.

1.2.3 User data collection

To collect user data we have a section where people can leave their company email, company name, and phone number if they want to get in touch to have more information or buy our products, the information will be stored in our database. When someone shows interest by leaving this information we will retrieve the information and contact them for further conversation regarding a possible buy.

1.2.4 Usage incentive

Data storage is one of our main incentives. Our business partners pay for data storage and access the collected data from our database. By providing the data storage we make sure that we keep a connection with our partners and continual use. We believe that our partners have the desire to create the best possible solutions for their end users, based on the data gathered from our API. We want to increase our customers' intrinsic motivation by providing real-time location of our customers. We want to create possibilities and consequently stimulate the company's passion and purpose. To fulfil this we will make sure that the service we provide is what the partnership business wants and needs. We want to have close contact with our customers and always improve our services based on their feedback. To realise this we want to send out a feedback sheet and from this create quarterly evaluations of our services that can help us evolve and improve.

1.2.5 Profitability

The business will create revenue from two sources; revenue is generated from selling the gathered data to other companies. This is the main money income of our company. Taking this into account, we must provide our customers with a data storage feature. This establishes a stable, monthly income and will make up a substantial part of our revenue. Our second income source is from advertising companies within our app. This will add a small second revenue income for our company. Our income sources are limited, however, each company provides us with a stable income source we can rely on.

1.2.6 Security

Risk 1 → Theft of stored individual user data

To defend our databases against data theft we need to take the following measures:

- Our employees need to be authenticated before accessing the platform. The employees of our customer companies also have to pass authentication before accessing their platform.
- Two-factor authentication to mitigate the chances of unauthorised access. To access the platform you will need to scan your MarsID, if the scanned MarsID is listed as an authorised user to the platform it wants to enter, a message will appear on the user's phone and ask for a chosen pin code. If the pin is authenticated the user will access the platform.
- Strictly limit our employees' access to stored data. We want to restrict access only to those who need access to perform daily tasks. This will limit the chances of a malicious insider stealing data that is easily accessible.
- Encrypt sensitive data stored in our database. As we store a substantial amount of personal data we will encrypt the MarsID connected to the data measures.

If the incident occurs:

- If someone has stolen the collected user data we need to investigate who, if it was an insider or a hacker, and of course we need to figure out how and where it might have been poorly implemented security measures, especially if it was done by a hacker. Finding out how is an important aspect to further secure our application.
- When it comes to data theft the most important thing is to try to avoid the incident from happening, by taking action before it happens.
- Notify our affected customers.

Risk 2 → Data tampering

To defend our databases against data tampering we need to take the following measures:

- We encrypt our data to a format that cannot be read without a decryption key. Even though the encrypted data can still be tampered with, it would not be in a purposeful way and therefore it is mitigating the consequences.
- When data is transferred from the chip to our database we will use SSL.
- Setting up firewalls is important to shield our network from outside attacks and will mitigate both data tampering and theft.
- Regular data backups.
- Authentication and authorization.
- Using secure communication protocols.

If the incident occurs:

1. If we detect that someone has tampered with data we need to figure out what data has been modified, how much and who is concerned (if it is collected user data or administrative data regarding for example users and access rights).
2. Notify our affected customers.

1.3 SWOT-analysis

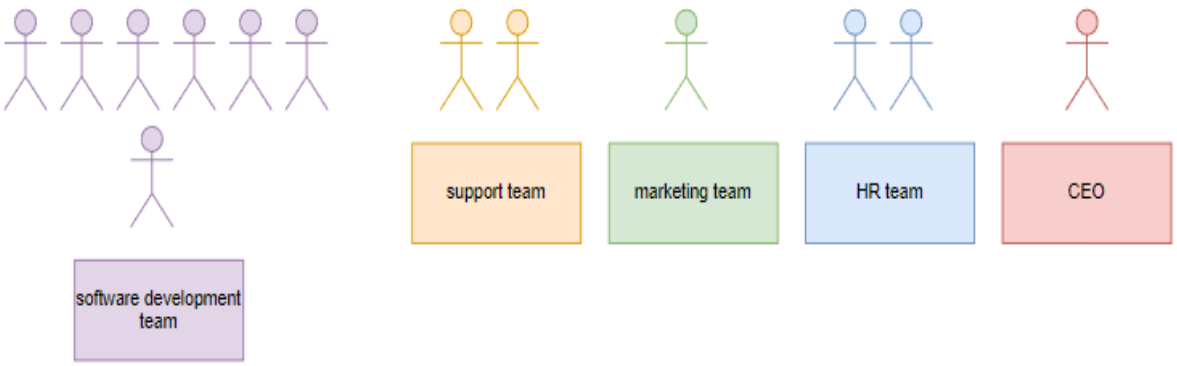
Strengths	Weaknesses
S1 We have a unique product/service which makes us an exclusive provider among potential customers. **S2** We will try to listen to our customers to try and get feedback that we can use to improve our services. **S3** Our customers continue to use our service because we provide a FREE-to-use app. **S4** We can attract a large variety of potential partners, ranging from hospitals/emergency services who want to use it for the location of a wounded person, to the entertainment industry that can use our pinpointed locations to build theatres or create nice games in those locations.	**W1** As a new company the required trust might not be present among our customers. **W2** If our partners can not provide a useful service to the end-users with the help of our devices, our users won't use our application anymore. So our partnerships have a huge influence on our service **W3** Only one huge income source and a couple of smaller income sources. If our main income source disappears then we lose almost all our income.
Opportunities	**Threats**
O1 We already have the technology for further explorations on other planets/moons etc. **O2** Provide an end-user platform if we ever want to expand our business and service. **O3** Solutions will be more personalised and the need for our product and service will grow as new businesses are founded and require our data.	**T1** A software malfunction in our applications can cause serious damage to our users. **T2** No connection due to weather or difficult terrain. If our user doesn't have a connection then the SOS signal won't work.

2. Organisational structure

2.1 Our team

Our team consists of solely full-time employees. These people will be handpicked by the HR team to ensure the safety and reputation of our company. As we are on Mars, we take for granted that a lot of processes will be automated and not require humans. Our team will consist of the following:

- **Software development team** → This team will be responsible for the development of our software. Consisting of 7 people in total, 3 people will be working and monitoring the front-end and 3 other people will be maintaining and working on the back-end of our company. Lastly, we also have an experienced project manager who will be monitoring and helping others with their work.
- **Support team** → The support team consists of 2 full-time employees and will work closely with our customers to help them with issues.
- **Marketing responsible** → Our marketing responsible will take care of campaigns and promotion. Currently, this team only consists of 1 employee but we might expand as we see fit over the years.
- **HR team** → Our HR team consisting of 2 people will be responsible for hiring trustworthy and highly skilled people to work at our company since we try to expand our services rapidly. These people will also be responsible for finding new valuable partnerships for our company. We might also consider expanding this team with an extra member.
- **CEO** → Lastly we have of course our CEO, responsible for aiming our work towards our mission and vision, and being the face of our company.



3. Risk management

ID	*Description*	*Consequences*	*Steps*	*Impact*	*Risk profile*	*Probability*	*Action*
R1	Our satellites break down due to an incident.	Our system will be temporarily down.	- Deploy more than one satellite to ensure a backup. -when necessary build a radio tower instead of a satellite to ensure a signal.	High	Major	Low	*Reduce*
R2	Cybercriminals upload malware to damage the collected data.	Possible deleted files and lost connection with the hardware. Can cause serious disturbance for our customer-provided services.	- Install a robust anti-virus software(3rd party maybe). - Provide patches to the software. - Frequent data back-ups. -bounty hunter program	High	Major	Low	*Reduce*

R3	Due to security breaches, database information is leaked or deleted.	Personal and valuable data can be accessed or sold by malicious actors to third parties. Data loss will gravely damage both our customer end-user services and especially our reputation.	- Limit employees' access rights to strictly necessary actions. - Screen employees before hiring.	High	Major	Low	*Reduce*
R4	One of our partners stops working with us.	Not able to provide a third-party service. If one of our key partners stops losing access to our satellites.	-We are trying to be technically independent. -We are actively searching for new key partners. -having multiple partners will make us less vulnerable.	Low	Minor	Low	*Accept*
R5	People try to maximise the earnings of MarsCoins via our application.	loss of money for our company.	-We set a maximum amount of Coins that can be earned per day.	Minor	Major	Low	*Reduce*

R6	The SOS button doesn't work.	Travellers can be in danger without any solution to stay alive.	-Our system tracks the vital constants of the user like heart rate, health, etc. When a problem is detected, we are immediately notified.	major	Major	Low	*Eliminate*

4. Strategic partnerships

4.1 mars transit

Mars Transit, a travelling company, will help us with picking up or dropping off explorers at the pre-pinned locations. They will also use our API to know people's real-time location. They will use this information to know if someone is too late for a train or an appointment. This way they can foresee a possible solution to the problem.

4.2 MarsMind

We will use MarsMind's service to track our users' vital information like health, injuries, etc. this will be a very important aspect for hospitals, they will need this data to ensure an efficient service when emergency service arrives thanks to our real-time tracking system. Also, we will need their service if our SOS button system stops working for any reason, this will count as a safety fail. The rescuers will know the degree of urgency when they arrive on site.

4.3 Nasa/SpaceX

These key partners are necessary to achieve our aim for safe exploration. Our principal partners will be SpaceX and NASA. We will be able to use their satellite systems to track the users and in return, we have an agreement to give our data that our clients collect from the Mars field (soil, minerals, other findings, etc). These are strategic key partners because there is a need to map the planet. They will make sure we have an all-time stable network connection with the satellites.

4.4 Wristband Company

Our last current partner will be the Wristband Company which will allow our app Outsiders to be available to all martians. Because of our partnership with them, they will install the app automatically when the wristband gets assembled. Of Course they also benefit from this, the more the planet is charted the more people will come to populate mars so the more wristbands.

5. Marketing and sales

5.1 Market objectives

1. We want to achieve a substantial customer base within the first year.
2. We want to expand our customer base within the first three years to ensure a solid customer base if, in the future, a competitive company is founded.
3. We want to make more partnerships with other companies to ensure we have a big enough buffer when other partnerships go bankrupt or don't want the data anymore.
4. We want to continuously follow up and connect to our existing customers to increase loyalty and ensure continuous use of our services.
5. We want and expect to increase our revenue by 320% in the first six years.
6. We want to increase our customer satisfaction every year.

5.2 Market and target group

Our goal is to aim our service to end-users that want to explore Mars in a very safe way knowing that someone will always be ready to help them out. We want to connect to health companies, researchers/scientists, the transportation sector and so many more companies in other fields that could use the information our company gathers. As a business-to-consumer but also a business-to-business company, we aim towards other companies with a certain range and big consumer size, as well as the ability to use our product with awareness, but especially caution because of the sensitive information. To begin with, we will start aiming towards health-related hospitals, the more hospitals we can provide our info the less the chance of serious casualties. As the company grows and our visibility increases within the first couple of years we will expand our market. Being a business-to-business company our target group for income consists of businesses, and in

general, we will target those who can benefit from the data collection we offer. The need for this kind of data is present in the market, and we believe it will continue to be even more attractive as technology and society develop and companies can provide better services to their customers, based on individually collected data.

5.3 Product

Our app is meant to make exploring Mars a lot safer and a little fun. It's built with the safety of the user as the main priority. With our built-in emergency SOS trigger, our users never have to worry about their safety when they go outside the colony to explore. It comes with a GPS tracking system which makes it easier to pinpoint your location and allows our satellites to scan your location and add it to our database. It also makes it easier for us to locate our users in case of an emergency.
For the less curious users, all previously visited/pinned locations get published on our app so they can easily select a mapped location to visit. There are more features to be added and further developed in the future.
The already-issued MarsApp comes pre-installed with the wristband which opens up the red planet in an innovative and fun way. Our users get to enjoy the full martian experience outside the designated colonies safely.

5.4 Prices



1 MarsCoin (MC) = 1 Euro (€)



In the first year of production we aim to sell our mineral data devices at 10000 MC each month as a subscription. Our real-time tracking data is somewhat more sensitive data and we will be very careful who we sell this data to. But we want to sell this data for 350 000 a month. This is because this data is very sensitive and not easy to get. This price is based on the yearly costs we have.
Our variable costs are really low, this is a good aspect because we don't need to worry about huge sums of money flowing out of the company. On the other hand, our salary takes up a huge part of our costs. This is with a reason because we want to reward our employees for their hard work and dedication. Over the next 10-15 years we aim to have our ad revenue and selling mineral data take both 30% of the total income of the company. This would be a huge step in diversification and would help when one income source shuts down.

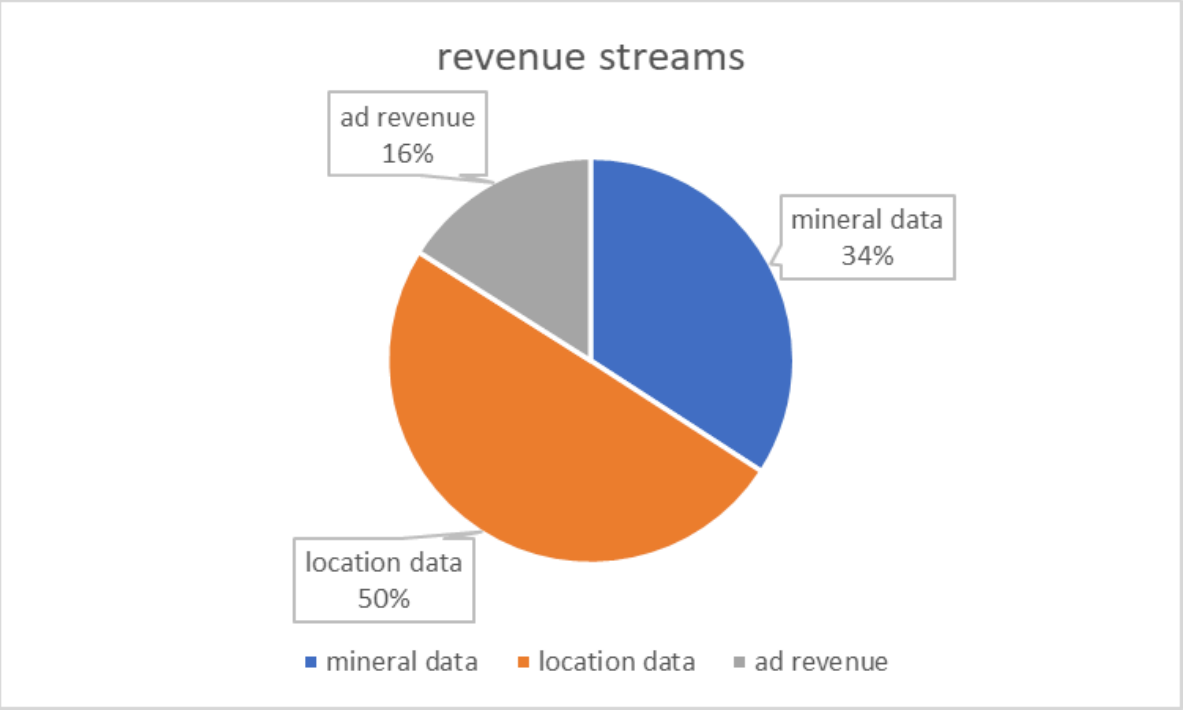
6. Financials

6.1 Revenue

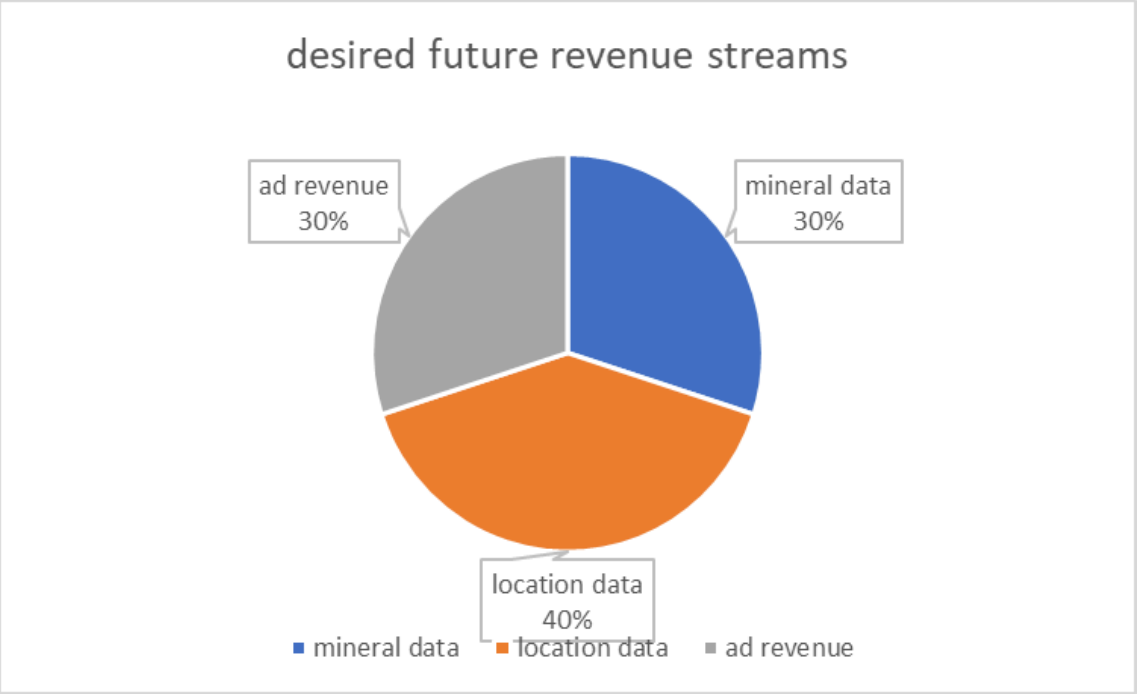
Our revenue streams consist of **selling mineral data, selling real-time location data and advertising**. By selling our mineral data we have a solid start income for our company. This income won't be our biggest revenue but will help us in diversification in our financials in case our main income source fails.

The second and main source of income would be selling real-time location data. This is of course very sensitive data therefore our HR department is handpicking trustworthy companies that can use this data in a very useful way. For example emergency services or transportation services.

The third and last source of income is advertising revenue. Again, this is an income source that will help with diversifying our revenue sources. We plan to expand this service more and more the further we go in the future, so this service will count as our second largest source of income.



Average representation of expected revenue stream shares in the first three years.



We hope to have advertisements as a constant revenue stream after 10 years, building up to stand for 10% of our total revenue after 15 years.

As seen in the first diagram above we will have 50% of our income from selling our location data in the first few years. In the “Desired future revenue stream” we see a more even spread of revenue streams. This is of course preferable compared to having our income consist mostly of selling location data as it gives a more safe and more stable company. Also, considering being on Mars in an unpredictable society and future, we do not dare to trust continuous customer base growth. This is also why our variable cost of the MarsCoin incentive keeps relatively low.

6.1.1 Pricing

We wish to adjust the shares of our revenue streams to be more equal over the years. One reason for this is that when our income from selling the real-time location data somehow shuts down, most of our revenue would go with it. The tables below show how we wish to price our service over the next three years. The increase in customers is based on the assumption that the demand for our data will increase in the first years. Naturally, the biggest cost is the salary of our team which results in loyal and hardworking people that care about the business.

subscriptions	price/month	price/year
Mineral data	10 000	120 000
Location data	29 100	350 000
advertising	6 250	75 000

7. 6.1.2 Revenue calculations

Customer base			
	Year 1	Year 2	Year 3
Mineral data	0	2	4
Location data	0	1	2
advertising	0	2	3

	Mineral data selling (starting from year 2)	**Location selling data (starting from year 2)**	**Add revenue**
Year 1	**0**	**0**	**0**
Year 2	**240 000**	**350 000**	**150 000**
Year 3	**480 000**	**700 000**	**225 000**

Yearly income for selling data and ads are the numbers we at least expect to see. As we already have a partnership with 1 company for selling our real-time location data and 2 companies (one of which is the mining colony) to sell our mineral data. Finding companies to place ads on our platform is way less difficult and we don't see any problem with this. We do believe we have an advantage by being business to business because we can expect large income for selling our data. We also have the advantage of businesses seeing big potential in acquiring this important data.

Revenue first year → 0
Revenue second year → (120 000 * 2) + (350 000 * 1) + (75 000 * 2) = 740 000
Revenue third year → (120 000 * 4) + (350 000 *2) + (75 000 * 3) = 1 405 000

6.2 Costs

6.2.1 Fixed costs

Fixed costs		
	Monthly cost	Yearly cost
Building*	10000	120 000
Salaries	salaries	salaries
API mars weather**	20	240
Electricity	1 000	12 000
heating	1200	14400
TOTAL	12 220	146 640

*Building bought for 1 200 000 and paid over 10 years

**API we are going to use to get the information of the weather of mars

Salaries				
	People	**Per hour**	**Monthly cost**	**Yearly cost**
CEO	1	70	11 200	134 400
Software dev. team	6	40	38 400	460 800
Support team	2	20	6 400	76 800
Marketing team	1	30	4 800	56 600
HR team	2	30	9600	115 200
TOTAL			70 400	843 800

Fixed costs monthly → 12 220 + 70 400 = 82620

Fixed cost yearly → 146 640 + 843 800 = 990 440

6.2.2. Variable cost

Variable cost			
	Year 1	Year 2	Year 3
VPS	240	350	570
Marscoin incentive	20 000	20 300	20 750
total	20 240	20 650	21 320

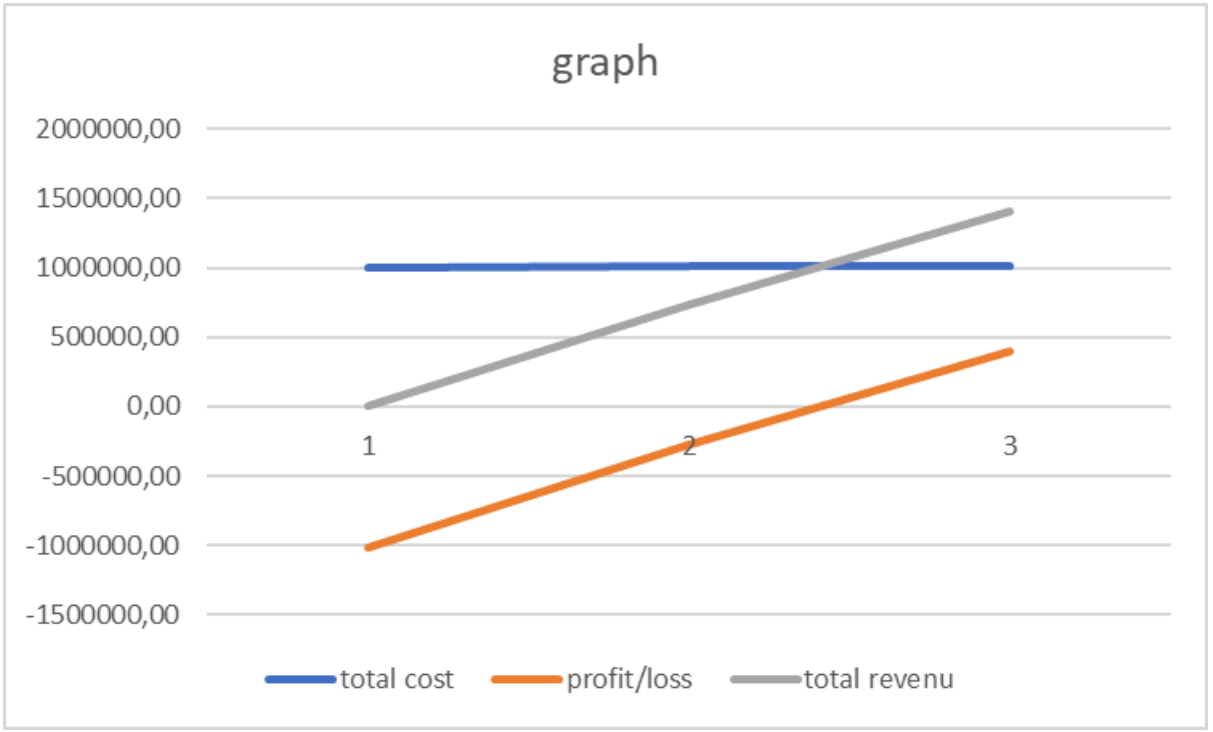
*The amount of Marscoin we need to give out each year as an incentive. Each year we have a pool of rewards. These are going to be increased slightly the more users we get. Each user gets 0.5mc for each 5km explored. Once this pool of rewards is empty people will need to wait for the creation of the next yearly pool.
** virtual private server: the more users we get the bigger our server is going to be.

Total cost year 1 → 990 440 + 20 240 = 1 010 680
Total cost year 2 → 990 440 + 20 650 = 1 011 090
Total cost year 3 → 990 440 + 21 320 = 1 011 760

6.3 Break-even analysis

	Fixed costs	Variable cost	Mineral data selling (starting from year 2)	Location selling data (starting from year 2)	Add revenue	revenue/ cost
Year 1	990 440	20 240	0	0	0	-1 010 680
Year 2	990 440	20 650	240 000	350 000	150 000	-271 090
Year 3	990 440	21 320	480 000	700 000	225 000	393 240

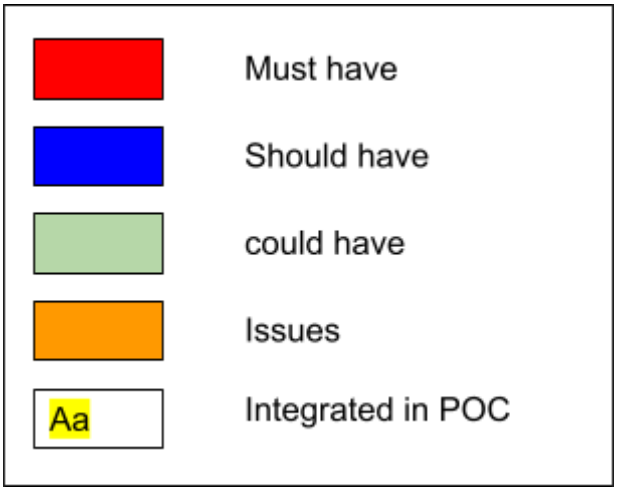
Based on the tables provided above, we start to be profitable after approximately 2.5 years.



6.4 Finance mix

To get an initial starting we would like to sell 15% of our shares to 2 investors. This will give us around 1.5 million as starting capital in the company. We would also like to get a 500 000 loan from the bank. This will give us a starting capital of 2 million. If things turn out for the worst (for example not being able to finish the product in 1 year) we have the margin to get another 500 000 loan. We would also like to have another 15% of the shares free so our employees have the opportunity to buy into our company. This will ensure that our employees stay with us and are trustworthy. Of course this will go gradually and that 15% will be sold to employees over many years.

Requirements user stories



7.1 As a scientist I want to:

- be able to pinpoint or locate newfound minerals on the map, because I want to know where the interesting spots are for different minerals.
    - add a button that can pinpoint the location you are at.
    - add a form to let the user input which mineral he/she found.
- track down interesting locations to extract soil, because I want to study the different properties of Martian soil.
    - add a choice overview of locations where the scientists can go for soil extraction

- be able to track down minerals, because I want to go back and gather some.
    - add a choice overview of locations where the scientists can go for mineral gathering/research
- pinpoint safe/dangerous places, because when I go back I want to know if I need to bring extra equipment to explore the place.
    - add an option that says this is a dangerous/safe location

- go explore with other scientists, because we can cover more ground with more members
    - add something which can send requests out to other scientists
- keep track of volcanic activity from explored locations, because I want to know when the volcano is gonna erupt.
    - add something where scientists can input the activity of volcanoes

7.2 As a regular Martian explorer I want to:

- pinpoint /map interesting locations on the planet because I want to go back to explore them some more.
    - add a button to pinpoint
- plan a trip because I don't want to go through the same locations over and over again.
    - give the user a map to pinpoint where you want to go

- be able to set a route to a previously explored location because I start my next exploration trip from there.
    - give the user a choice of previously explored location

- go explore with my friends because it's fun to do things with your friends.
    - a button to choose whether you want to share your location or not
    - add something which can send requests to friends(maybe)
- go explore with strangers because with more explorers we can cover more ground.
    - a button to choose whether you want to share your location or not
    - add something which can send requests out to strangers(maybe)

7.3 As an external company I want to:

- use the data for :
    - knowing where people are

7.4 As an explorer in general I want to:

- be able to have an estimated time of my journey to an explored location because I want to know how long I'll be gone from the colony.
    - fetch data from the other group to know how long the trip takes
- be rescued when I'm in danger because I don't want to die.
    - add SOS button
    - if vitals get below a certain point make sure the user can send out an SOS signal
- be able to know if a new location is discovered as soon as it is added to the database because I want to be able to have the choice to go there
    - add a push notification to the main screen on the update of the database.

- be able to scan my current area because I want to be able to use the data to explore further.
    - add an option to scan the current area around you
- be alert when dangerous weather is coming up because I want to be in a safe location when the actual weather is coming by.
    - notification of dangerous weather conditions

- be able to earn an extra MarsCoin or two, because I want to use it for personal gain.

Requirements feature list



Scan current area

As a regular martian explorer I want to go explore with other scientists because we can cover more ground with more members

- add something which can send requests out to other scientists

As an explorer in general I want to be able to scan my current area because I want to be able to use the data to explore further.

- add an option to scan the current area around you

emergency weather alert

As a scientist I want to keep track of volcanic activity from explored locations because I want to know when the volcano is gonna erupt.

- add something where scientists can input the activity of volcanoes

As an explorer in general I want to be alerted when dangerous weather is coming up because I want to be in a safe location when the actual weather is coming by.

- notification of dangerous weather conditions

emergency distress signal

As an explorer in general I want to be rescued when I'm in danger because I don't want to die.

- add SOS button
- if vitals get below a certain point make sure the user can send out an SOS signal

pinpoint current location

As a scientist I want to be able to pinpoint or locate newfound minerals on the map because I want to know where the interesting spots are for different minerals.

- add a button that can pinpoint the location you are at.
- add something to let the user input which mineral he found.

As a regular martian explorer I want to pinpoint /map interesting locations on the planet because I want to go back to explore it some more.

- add a button to pinpoint

search explored locations

As a scientist I want to track down interesting locations to extract soil because I want to study the different properties of Martian soil.

- add a choice overview of locations where the scientists can go for soil extraction

As a scientist I want to pinpoint safe/dangerous places because when I go back I want to know if I need to bring extra equipment to explore the place.

- add an option that says this is a dangerous/safe location

As a regular martian explorer I want to be able to set a route to a previously explored location because I start my next exploration trip from there.

- give the user a choice of previously explored location

redirect users to Mars Transit for trip/travel planner

As an explorer in general I want to be able to have an estimated time of my journey to an explored location because I want to know how long I'll be gone from the colony.

- fetch data from the other group to know how long the trip takes

locate minerals

As a scientist I want to be able to track down minerals because I want to go back and gather some.

- add a choice overview of locations where the scientists can go for mineral gathering/research

explore with others

As a regular Martian explorer I want to plan a trip because I don't want to go through the same locations over and over again.

- give the user a map to pinpoint where you want to go

As a regular Martian explorer I want to go explore with my friends because it's fun to do things with your friends.

- a button to choose u want to share ur location or not
- add something which can send requests to friends(maybe)

As a regular Martian explorer I want to go explore with strangers because with more explorers we can cover more ground.

- a button to choose whether you want to share your location or not
- add something which can send requests out to strangers(maybe)

progress tracker

As an explorer in general I want to be able to earn an extra MarsCoin or two because I want to use it for personal gain.

Attachment A: Business Model Canvas

