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FUTURE OF DATING - MEET ME ON MARS

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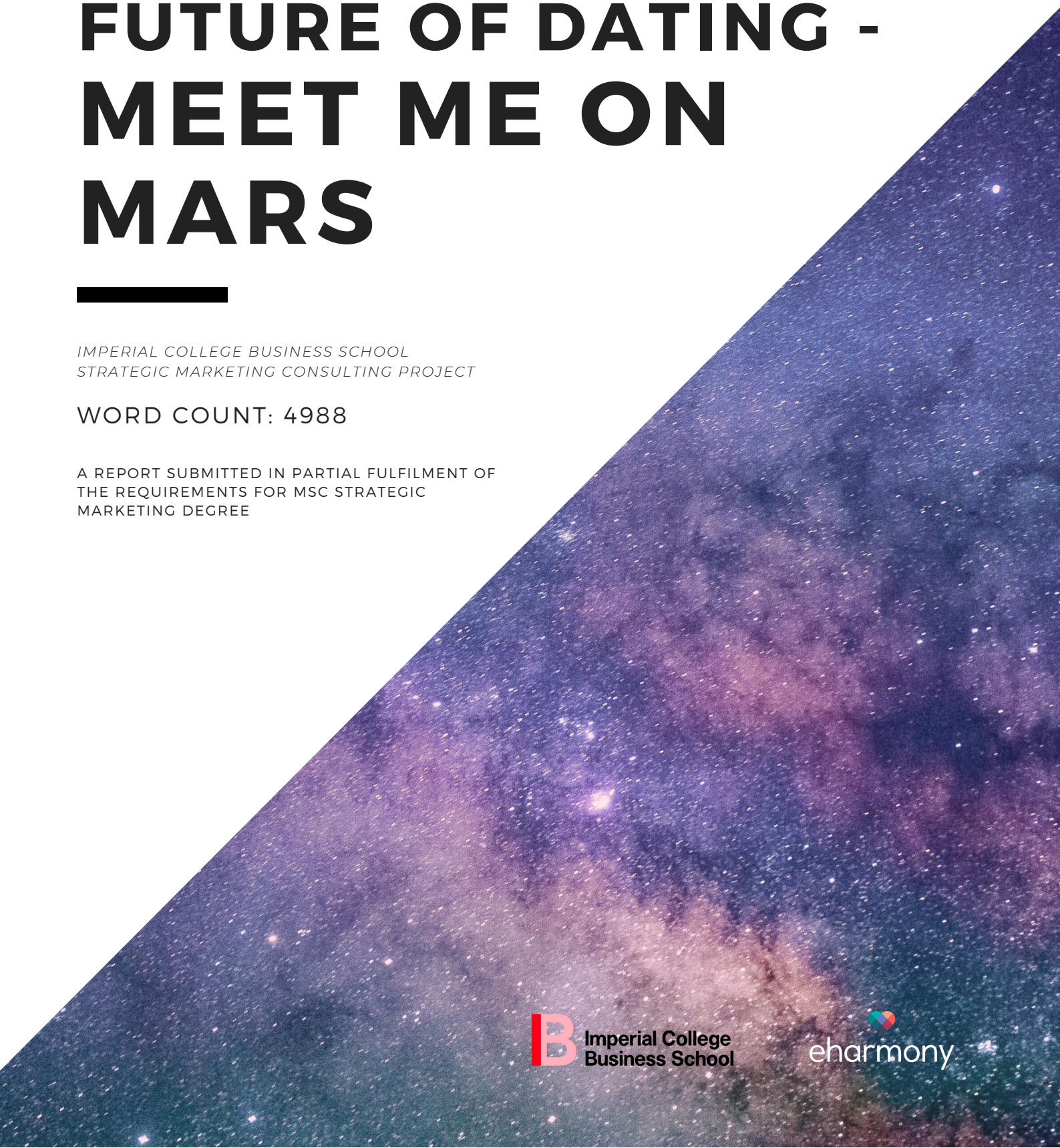
A REPORT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR MSC STRATEGIC MARKETING DEGREE



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Executive summary

Purpose of Report

Technological advancements have enabled new discoveries and allowed space exploration to become a reality. Our client, eharmony is the number 1 trusted dating platform that has constantly embraced the consistent progression of technology to create meaningful relationships.

This project aims at applying future thinking skills to envision an entirely new dating culture, by assessing the feasibility of dating on Mars, outlining possible scenarios exploring the impacts of such dates on human relationships and society as a whole, and ultimately examining how eharmony could capitalise on romantic space trends.

Methods Used

This report utilises a mixed methodology gathering both quantitative and qualitative data to deliver projections and impacts on space dates. While the secondary data is based on peer-reviewed journals and industry reports from reputable sources, a survey was administered to assess consumers' awareness and attitudes towards space dates. A total of 2,006 responses were examined.

Moreover, 8 in-depth interviews were carried out to obtain detailed information on the matter of discussion from experts and university researchers with backgrounds in aerospace, psychology, sociology, and relationship counselling.

Key Results and Conclusion

- Dates on Mars will not happen by the 21st century due to limitations in current space technology
- Space dates are projected to impact human relationships, environment and society as a whole
- Consumer education and research on dates on Moon would be immediate and medium-term business goals respectively for eharmony if they are to capitalise on space tourism trends

Acknowledgement

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1. Introduction

Space tourism is no longer a far-fetched idea with the progress of commercial space tourism by companies like SpaceX and Blue Origin (Scott-Geddes, 2021). Market Data Centre (2022) estimated the global space tourism market is expected to be worth USD 2.58 billion by 2031, reflecting the high growth potential of the industry.

Public enthusiasm for exploring space is also increasing. A poll by Morning Consult (2021) suggests that over one-third of the respondents are likely to participate in civilian space travel in the future, reflecting a growing market interest in travelling and living beyond Earth. Notably, the idea of space tourism is getting popular among younger generations who are more open to new experiences and lifestyles. Research by YouGov (2021) shows that 45% of the 16-34 years old respondents would want to live on Mars in a colony.

Whilst dating on Mars could be an extraordinary experience for lovers and a potential business opportunity for companies, much research has to be carried out. Currently, commercial space tourism is still under development and it is uncertain when such travels will expand to Mars. The feasibility of making Mars a livable, habitual environment is still under question (Inside.com, 2021). A lack of previous customer data would also mean that businesses will face a hard time estimating market sizes and identifying customer needs.

Our client, eharmony is a science-based relationship app specialising in creating meaningful relationships via its unique Compatibility Match System based on users' core values and personality traits. As eharmony prides itself in embracing the consistent progression of technology, exploring an entirely new kind of dating culture

in line with societal development and envisioning the future of dating in space would be a natural next step.

2. Aims and Objectives

Aim:

The aim of this project is to provide a comprehensive view of space dates regarding the feasibility, technicality, motivations, potential scenarios, and customers, of a date on Mars. Moreover, this project serves as a marketing proposal to establish target customer profiles of space dating and advise effective acquisition strategies.

Objectives:

1. To identify the year in which dating on Mars is made possible and become mainstream
2. To identify the factors determining the feasibility of space dates and picture scenarios of dating on Mars
3. To investigate the psychological and sociological impacts of space dates on individuals and society as a whole
4. To define and assess the perception and attitude of the target users regarding space dates
5. To explore the benefits of romantic space trends to eharmony

3. Methodologies

Our consulting project comprises secondary data research and primary research with surveys and in-depth interviews (IDIs).

Apart from the secondary sources of information analysed, our primary research aims to offer a fresh perspective on customers' current perception of space tourism and space dates, and identify potential targets within the existing pool of customers.

A survey was commissioned via Walnut Unlimited from 15th - 18th July 2022, where 2,006 responses were collected. Furthermore, 8 IDIs were carried out to gather insights on the matter of discussion from experts and university researchers with backgrounds in aerospace, psychology, sociology, and relationship counselling (Appendix 1, 2 & 3).

4. Literature Review (Secondary Research)

Love is generally defined as the most meaningful sentiment the vast majority of people would experience. Despite this indescribable, spontaneous feeling is often perceived to be stemmed from the heart, psychologists have found a series of neuronal changes when people fall in love. This section of the report will explain the chemical changes and the bonding process, specifically in the context of space dating on Mars, with reference to The Three Love Systems by Helen Fisher (1998). The current development of space exploration and an outline of the future of space tourism and the space economy will also follow.

4.1 The Three Love Systems

Fisher (1998) suggested there are three primary brain systems involved in love: Lust, attraction, and attachment. Lust (i.e sex drive), is primarily associated with the levels of testosterone; Attraction is related to obsession, intrusive thinking, and emotional dependency on the loved one. The degree of such romantic attraction is linked to the levels of various neurotransmitters, with dopamine being the most important one (Liebowitz, 1983); Whereas the attachment between couples is mediated by oxytocin and vasopressin (Lim et al., 2004). Although each of the three systems has a distinct constellation of neural correlates, they correlated with each other to a large extent. Fulfilling lust desire, for instance, would also increase the levels of dopamine through sexual stimulation, which makes lovers become more romantically attracted to each other (Melis & Argiolas, 1995).

The three systems tend to be activated at different love stages at different times. For instance, lust and attraction could be triggered instantly when an individual spotted another individual or during the first few dates, whereas meaningful attachments take time to build and are usually shown in stable relationships. Studies have also suggested the presence of some gender differences in the bond-building process.

4.2 Logic Behind Dating App

Dating applications offer a new way to discover relationships based on similarities and complementarity, providing the chance of meeting the best ‘matching’ person. Dating apps emphasise two aspects of the service they offer. Firstly, they emphasise their uniqueness of service, examples include Veggiedate (for vegetarians) and Bristlr (for people looking for those with beards). Second, they emphasise that the online matching system is superior to finding partners offline. OkCupid, for instance, asserts that the service matches partners based on their mathematical algorithm to ensure

the compatibility between users is above 90% (Poulsen, 2014). Favoured by millions of users, online dating apps position themselves as not only an alternative form of meeting partners but also a better way to look for relationships (Finkel et al., 2012).

With regards to the above aspects of dating apps, eharmony positions itself as a unique platform for users who are looking for a serious relationship. The matching system comprising 32 dimensions of compatibility promises users to meet the best partner by prescreening “scientific predictors of relationship success” (eHarmony.com, 2011).

The psychological implications of dating apps also show how people become attracted to meeting people online. Every ‘match’ experience promotes oxytocin and dopamine (Holtzhausen et al., 2020). As dating apps allow multiple matches, recommend the partner continuously and enable users to send their interests to each other, consumers easily get addicted to this system. The excitement of obtaining love from a stranger triggers a release of dopamine which leads users to become more addicted to the rush of good feelings (Holtzhausen et al., 2020).

4.3 How does dating on Mars affect the “love chemicals”?

Although dating on Mars remains impracticable at the moment, the idea of such a date could be seen as providing an exciting, novel experience. According to Duszkiewicz et al. (2007), an increased amount of dopamine release is associated with exposure to novelty. As aforementioned, a higher level of dopamine would enhance and sustain the feeling of romantic attraction, thus providing a beneficial experience for the lovers. Furthermore, the perceived novelty and uniqueness of your partner would fade over time (Fisher, 2016). It is therefore important to put effort into

sustaining the attraction between partners to maintain a long-term relationship, where dates on Mars could help.

For new couples or lovers, dating on Mars could allow the pair to be more attracted to each other by utilising the misattribution of arousal. This could be demonstrated in a classic study by Dutton & Aron (1974), in which men generally find a female more attractive on a suspension bridge than on a sturdy bridge, suggesting that attractiveness is more likely to form in the presence of anxiety or danger. This could be further explained by Schachter & Singer's Two-factor Theory of Emotion (1962): individuals tend to use the immediate environment to search for emotional cues to explain their physiological arousal. In the suspension bridge experiment, physical arousals, such as fast-paced heartbeats or rapid breathing, are misattributed as cues of attraction. It is therefore possible that dating on Mars could produce some extent of anxiety and fright that helps new couples find each other more attractive.

However, currently, there is no evidence on whether this "misattributed attraction" can be as long-lasting as the natural attraction. It is also debatable whether such attraction could be termed "love". Moreover, Mars-dating could be seen as a frightening experience, which produces stress hormones such as cortisol that could potentially affect the release of love hormones. Commercially, it is also uncertain how the vast majority would react to this new dating experience, thus primary research has to be done to gather more information.

4.4 Space Exploration & Space Tourism

By definition, space exploration is the investigation of the universe beyond the Earth's atmosphere by manned and unmanned spacecraft to gain scientific information and understanding of the universe for the benefit of humanity (Logsdon, 2022). Meanwhile,

space tourism has become one emerging concept in the wider tourism industry. Technically, space tourism is the practice of going into space for leisure, which includes sub-orbital, orbital, and extra-planetary spaceflights (FutureLearn, 2022). First-mover companies like SpaceX and Virgin Galactic have plans to provide commercial spaceflight in the near future. It can also refer to hypothetical future space flights conducted for commercial objectives, which is the focus of our report.

4.4.1 Recent Space Achievements

Space technology has shown enormous advancements over the last half-century: from the first artificial satellite launched in 1957 by the Soviet Union (National Geographic, 2022); followed by Neil Armstrong's first step on the Moon in 1969 (ibid); to the recent first commercial space tourism done by Jeff Bezos in 2021 (ibid). With the rapid development of private spaceflight companies providing suborbital and orbital voyages and the optimistic view towards space tourism held by space pioneers like Elon Musk, it is fairly likely that space tourism or commercial space activities will happen sooner than the world expects.

4.4.2 Mars

Mars has always been one of the most researched planets for human settlement and colonisation not only due to its proximity to Earth but also its comparable days and seasons (The European Space Agency, n.d.). Mars is also the only planet that sits within the habitable orbit in our solar system that shares a very similar rotational axis and period with the Earth (Zubrin, 1996). As of May 2021, six uncrewed robotic rovers have been sent to Mars but no humans have yet to set foot on the planet (Drake, n.d.). To push exploration forward, NASA is hoping to send the first human to Mars by the end of this decade by joining forces with SpaceX (ibid).

Despite increasing studies on human exploration in space, research on space tourism is still limited due to the topic's futuristic nature and low utilisation of service, let alone studies that link dating and space tourism together, two seemingly unrelated concepts Furthermore, there is limited market data and audience analysis for space tourism since space travel is still not widely accessible. While current research mainly focuses on the corporate players of space tourism and market segment in terms of regions (ReportLinker, 2021), Futron Corporation (2002) conducted a *Space Tourism Market Study* back in 2002 to examine target customer profiles and customer characteristics for the space tourism market. However, with shifting customers' demands and behaviours, up-to-date customer analysis is needed.

This project thus attempts to address such research gaps by envisioning the future of dating with the specific context of interplanetary dates on Mars, and details the timing, means and effects of such dates.

5. Analysis and Findings

5.1 Space Development

5.1.1 Technology

The whole journey of going to Mars can be broken down into 3 stages – travelling, landing, and terraforming. However, technology gaps exist in each stage, which will be explained below.

5.1.2 Travelling to Mars

Despite human's previous experience of travelling to the Moon, going to Mars is much more difficult. An analogy of 'sea exploration' was used by Knoll (2022) to explain the massive difference in scale – "We've successfully voyaged to an island (the Moon) using a small boat. Theoretically, we can also travel across the ocean to a different continent (Mars). But the scale of the challenge is very different… the whole order of magnitude is more complex and more challenging".

Preston (2022) indicated the total journey time from Earth to Mars could take between 150 to 300 days. This implies a year's worth of resources, including food and water have to be carried. Currently, this is possible for limited-time missions to Mars with a small population, but will not be feasible for a big crew size due to the capacity constraints of spaceships, as suggested by Amato (2022).

Currently, scientists are hoping to shorten the travelling time to 3 months by developing advanced propulsion systems. This could, on one hand, reduce the

resources to be brought onboard; on the other hand, minimise the risk of humans being exposed to the highly dangerous space radiation environment.

Two of the most frequently researched systems are electric propulsion, and nuclear thermal propulsion. Electric propulsion is powered through large solar arrays or nuclear fission generators; Nuclear propulsion uses nuclear energy thermally to propel the spacecraft while using liquid hydrogen as the propellant (Knoll, 2022).

Both existing technologies face limitations – electric propulsion requires much bigger thrusters than any of the current commercial satellite missions; nuclear technology remains controversial as it can pose risks to both astronauts and the environment.

The development of propulsion systems is also a clear trade-off between travelling time and energy efficiency. A shorter travelling time implies greater energy expenditure, which also means higher costs and more environmental harm.

5.1.3 Landing on Mars

Knoll (2022) pointed out that only small robots and vehicles have landed on Mars. To send humans to the Mars surface, the size of heat shields and entry, descent and landing systems need to be much bigger. Currently, no rockets are big enough to carry those landing systems.

5.1.4 Terraforming Mars

To survive on Mars, terraforming is a solution to modify the planet's atmosphere, temperature, and ecology to make it habitable (NSS, n.d.). All interviewees also emphasised the importance of utilising resources on Mars to make living on Mars sustainable, instead of bringing everything from Earth.

5.1.5 Atmosphere

Elon Musk, CEO of SpaceX, has suggested exploding nuclear bombs over the polar caps to create extreme heat, and vaporise the frozen carbon dioxide into greenhouse gases (Delbert, 2020). Alternatively, greenhouse gases can be transported from Earth and emitted by robots to form the atmosphere. However, none of these can convert Mars entirely as technology is not advanced enough to change the whole planet. Knoll (2022) also argued that terraforming is a very long process and it wouldn't be realistic in the near-term prospects.

Additionally, the atmosphere of Mars is not dense enough with a limited level of oxygen content for humans to breathe. Therefore, space suits would mostly be required while walking on Mars. However, space expert interviewees suggest that part of Mars could be transformed into habitats. With buildings like small tents and houses, humans might be able to live within those enclosures without the need for a space suit.

5.1.6 Water Supply

Two of the most reliable methods are extracting ice within Martian soil and purifying them, and also exploring underground liquid water. Currently, more and more deposits of ice are being identified by scientists. However, excavating ice mixed with dust or rocky materials could be very difficult as they can be as hard as concrete. Heating would be required to capture the ice content with further condensation of the vapour. Drilling through the Martian crust and establishing a well would face difficulties as environmental conditions on Mars are significantly different from that of Earth.

5.1.7 Food Supply

Amato (2022) and Knoll (2022) believed food supply on Mars at the initial stage would be a hybrid arrangement between local food-growing and compact sources of food from the voyage from Earth. This is to avoid over-reliance on local farming before agriculture is self-sustaining. The diet on Mars is also expected to be mostly vegan-based as more research is required regarding livestock farming.

5.1.8 Future of Space Development

When asked about how they envision the future of space development would be, most interviewees agree that this largely depends on the support and resources from different parties. Amato (2022) mentioned specifically that claiming humans can colonise Mars in the 2050s is over-optimistic, as space development would not be a profitable investment in the near future. Although suborbital and orbital dates could happen in the next few decades, dating on Mars would only be possible in the next century (ibid). However, both Knoll and Bridges (2022) stated that competition between superpowers like the US, China and Russia could accelerate the process as it puts pressure on all parties to keep pace, just like the space race between the US and the USSR in the Apollo era.

5.1.9 Impacts of Living in Space on Humans

No astronauts have spent more than 2 years in space (Preston & Amato, 2022). It is therefore hard to estimate the physical and mental impacts on humans when they are in outer space for a prolonged period of time. Living in a microgravity environment could potentially induce damage to bone density and muscle strength. Serious mental health issues might also emerge when people are constantly being isolated from the

rest of humanity. All these issues have to be addressed before establishing an entire ecosystem on Mars (ibid).

5.1.10 Timeline of Dating on Mars

Combining all the findings, a two-phased timeline is created to envision the development roadmap (Appendix 4).

Laying a foundation for deep space exploration is crucial for the first phase. In the next 10 years, more long-duration missions to the Moon are to be expected, which act as a stepping stone for human missions to Mars. In this period, suborbital dates can already take place for high net-worth singles. It is projected the first human mission to Mars will happen by 2040. 10 years after that, there will be a rise in lunar tourism while suborbital and orbital space travels become more affordable. Here, dates on the Moon can certainly take place.

As expertise and technology build, humans can start preparing for phase 2 – trips to Mars. All space expert interviewees agree dating on Mars will only come after infrastructure and supply of materials are well established. By 2090, we are envisioning lunar communities to form and by the end of the 21st century, commercial activities, including first dates, can start to take place. Around 20 years from then, dating on Mars is expected to become mainstream.

5.2 Impact on Society & Environment

As space dates are expected to be luxurious enjoyment, it is likely that there will be high-end accommodations and different entertainment facilities. This reflects the

possibility of new societies and cultural formation on Mars, which could potentially impact our current society, the future Martian society and the environment. It is also crucial to understand how these problems could affect relationships between couples and the dating services that eharmony provides.

5.2.1 Social Classes Conflict

As space technology further advances, it is expected that more people will travel to space. Ormrod (2022) suggested two scenarios that are often being imagined – the ultra-rich will go to space for entertainment and colonisation; people who are not as wealthy as the ultra-rich but with specific skillsets will travel to space for work. Such work includes harvesting and returning valuable resources with machines, or constructing facilities in space.

There is also evidence suggesting these imagined scenarios are becoming reality. For instance, Virgin Galactic has started making suborbital space travels available for its customers. With the current space development being unaffordable to the majority, it is reasonable to envision the rich and the bourgeoisie becoming the first group to go to Mars for a non-explorative stay. According to Marxist philosophy, this makes them the ruling class and the pioneers of establishing new societies, cultures and politics on Mars (Clarke, 1982). However, considering the working class and the proletariat might also have to live and work on Mars, this could potentially lead to class conflicts and result in social disharmony.

The presence of social classes might complicate the process of choosing partners when matching through eharmony, as class consideration might become an increasingly important factor. Existing relationships between couples might also be disrupted due to class conflicts.

5.2.2 Widened Wealth Gap

Knoll (2022) suggested that valuable space-based resources exist on planets or asteroids. With only richer countries like the US and private space corporations having the ability to conduct space explorations, they are able to obtain massive wealth by harvesting those resources. Furthermore, as they are the only parties who possess the necessary technology, space-related commercial activities could be sold to other nations or customers at a premium price and potentially widen the existing wealth gap between richer and poorer nations and exasperate inequality (Dickens & Ormrod, 2007; Knoll, 2022; Ormrod & Dickens, 2017).

5.2.3 Environmental Impact: Black Carbon Emission

Space development could also pose environmental threats. Preston (2022) suggested that although the carbon emissions from current space launches are minor additions to the global greenhouse gases; each rocket propulsion would release a harmful, crystalline substance called Black Carbon (BC). BC particles are found to be highly absorptive of sunlight which traps heat within the atmosphere. This could increase the rate of global warming and glacier melting. Eventually, the global atmospheric circulation and the ozone layer could be damaged.

Although the current effect of BC is insignificant due to the small number of rocket launches, consistent future launches in light of space tech advancement could potentially cause adverse impacts on the global environment.

5.3 Impact on Human Relationships

Mars dating triggers a release of adrenaline in the human brain, as it is a thrilling yet stressful experience. Lloyd (2022) and Park (2022) said such adrenaline-inducing dates will get couples closer to each other.

Park (ibid) stated a high level of adrenaline during space travel will encourage couples to become more direct about expressing their romantic feelings. Adrenaline boosts heartbeats, blood pressure and blood flow, getting the individual to be prepared for stressful, sudden or exciting situations (Brown and Dollery, 1984). Park (2022) said that a surge of adrenaline during space travel will therefore lead couples to become more direct and less inhibited in expressing their feelings and emotions towards their partner. This will contribute to getting the couple closer to each other, as well as encourage faster relationship building between them.

Furthermore, there is a high chance of the sense of fear during space travel being misinterpreted as romantic emotions (Park, 2022). As the Misattribution of Arousal (Dutton & Aron, 1974) theory states, bungee jumping, white water rafting, or even watching a horror movie make one want to feel supported and protected by someone else (Lloyd, 2022). In such stressful and fearful situations, the human brain easily finds one another attractive, associating fear with other intensive feelings such as sexual attraction (ibid). In the same context, during space travel, people may misinterpret their fear and stress as love, attraction, and arousal.

Park (2022) and Lloyd (2022) agreed that space date, an irreplaceable extra-terrestrial experience, will encourage couples to build long-term relationships. Park (2022) claimed that sharing an irreplaceable experience such as space dates will deepen the connection between a couple and encourage a surge of hormone bonding

such as oxytocin. A couple will be stimulated, challenged and pushed closer to each other in such a unique and unpredicted situation (Lloyd, 2022). Going through a powerful experience together, a couple can share unforgettable memories which will be key to maintaining a long-term relationship.

Park (2022) and Lloyd (2022) also pointed out potential concerns of space travel on relationships. First, a rush of adrenaline puts the human body in a 'fight or flight' state where the individual easily becomes angry and aggressive. Furthermore, Park (2022) stated that people may not prioritise love and their partner in a situation where basic needs are not completely met. Maslow's (1943) Hierarchy of Needs argues love and a sense of belonging are higher levels of need which is considered after fulfilling physiological and safety needs. During space travel, passengers may find satisfying basic needs such as food and water supplies difficult, or worried about potential accidents and injury. Under the pressure of being in outer space for a long time, individuals might not be seeking love and connections.

5.4 Survey Findings

Our survey findings (Appendix 7) suggest younger generations (between 18 to 34) are more optimistic about dating in space and agree that space dating will lead to a deeper emotional connection. When asked whether respondents think space dating will be realistic in the next 25 years, more than 25% of the younger respondents answered 'yes' compared to only 18% of the total respondents. General attitudes are still sceptical, yet, this could be due to the lack of awareness and inaccessibility of space travel at the moment.

Technology is generally viewed as an important contribution to dating currently and in the future. Around 38% of respondents see online dating as the most trending type

of date right now, and 68% believe that technology plays an important role in future dating and sustaining relationships. Besides, 72% of the respondents are aware of eharmony's presence in the dating app industry. As a dating platform that highly emphasises data and technologies, it can be foreseen that eharmony will benefit from the future market trend as the importance of technology grows.

Singles are generally more optimistic than married or separated couples about adrenaline-inducing dates, as a higher proportion of single respondents agree that these exciting dates could boost attractions and arousals, and bring them closer to their partners.

Furthermore, respondents from social grades D and E are less optimistic about space dates than other respondents that enjoy higher social status. This reflects that space tourism and space dating are generally perceived as luxurious and unaffordable.

Education level and gender, when compared to age groups and marital status, have insignificant influences on respondents' answers. However, as the survey is only distributed within the UK with 88% of respondents being white, the survey results might not accurately reflect the perception of space dates by other ethnicities due to the small sample size.

6. Recommendations and Conclusion

Based on the survey result, a customer persona is created to represent our beachhead segment for dating app providers to target (Appendix 8), while a potential space travel scenario is envisioned in Appendix 9.

Eharmony should consider capitalising and leveraging such romantic space tourism trends as multiple benefits exist. As a first mover, eharmony could offer matching services tailored to users who are interested in space dating, thus helping to grow their user base by attracting a new group of users with specific personality traits, interests or income levels. Besides, adding metrics regarding the interest in space exploration could help improve the accuracy of their current compatibility matching system. This helps consolidate eharmony's position as a leader in data-driven dating platform, strengthening its competitive edge.

Despite space dates would only become feasible later in this century, there are four main marketing suggestions that eharmony can do for the current stage.

First, it is crucial for eharmony to educate consumers about space tourism and stimulate market interest since our survey findings suggest the majority of people are unaware and unsure about going to space. The benefits and attractiveness of space tourism and space dates can be conveyed via various communication materials. Eharmony’s strong brand presence, its leading position of being a tech pioneer and emerging space trends could also complement each other, not only can eharmony actively drive conversations and lead market interests, eharmony can also further tie themselves with the growing trends and become a top-of-mind brand positively associated with technology.

Furthermore, eharmony could start to explore partnership opportunities to build equity and credibility by associating with other industry leaders. For instance, partnering with travel providers like hotels.com who are also looking into the space tourism trend to share consumer data and research studies, or spaceflight companies such as Rocket Breaks for organising sub orbital or orbital dating activities in space anytime soon.

Lastly, we suggest eharmony to promote dating opportunities which can happen in the near future. The idea of dating on Mars is still quite out of reach due to tech limitations. However, it is still within scope to have suborbital dates now or first dates on the Moon from 2050. Changing the context to 'dating on Moon' will still be a futuristic, yet realistic medium-term goal with Moon being a much more feasible and easy-to-reach goal that allows us to test technologies and impacts before preparing ourselves for Mars.

In order to build a solid positioning to differentiate among competitors, using the brand archetype model, there are two brand archetypes that we think eharmony can pursue:

As a trusted dating platform with a long history of matching people, eharmony can position itself as a 'Caregiver' brand committed to helping customers in finding real love through their unique matching system. While tapping into the futuristic and ever-changing space trend, eharmony can also position itself as a 'Creator' where it helps customers in finding the best relationships through embracing new technologies, imagining and shaping a future where exciting and unconventional space dating could take place.

Using the 'future cone' model (Voros, 2003), the projected future suggests humans will continue to carry out more missions on both the Moon and Mars, while the probable future envisions the first batch of humans will only land on Mars in the next

20 years (Appendix 10). However, since the progress of space tourism and space dates largely depends on the support and resources from government and private companies, as well as competition among countries, the exact year for which humans can colonise or even date on Mars remains unanswerable. However, if societies are supportive of the development of space exploration, it would motivate all parties to keep up with one another and eventually accelerate the whole process of space development.

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8. Appendices

Appendix 1: List of Interviewees

Dr Aaron Knoll	Senior Lecturer in Spacecraft Engineering, Imperial College London
Dr Davide Amato	Lecturer in Spacecraft Engineering, Imperial College London
Dr Jae Young Park	Medical Doctor (Acute Medical Unit & Inpatient Psychiatric Unit), NHS
Dr James Ormrod	Senior Lecturer in Sociology, University of Brighton
Dr Louisa J Preston	Lecturer in Planetary Science, University College London
Mr Andrew Bridges	Ex-SpaceX Production Supervisor
Ms Rachael Lloyd	In-house Relationship Expert & trained Life Coach, eharmony
Mr Patrick Rennie	President of Mars Society UK

Appendix 2: Questions for In-Depth Interviews

For Space Experts:

1. What are the current trends in the space travel industry?
2. What is the biggest challenge of space travel & colonisation of space right now?
3. In 50 years (2072), what would the development of space travel become?
4. How long would it take for humans to get fully trained to travel to space?
5. What can you envision about the roadmap to Mars?

6. In your opinion, what would be the expected year that humans can:
    - Go to Mars
    - Travel frequently to Mars (commercial space travel)
    - Colonise Mars
7. What kind of people do you think would be the first generation to colonise Mars?
8. What do we need to live on Mars? What would be the necessary infrastructure needed?
9. Will the travel duration to Mars be shortened by technology development?
10. Do you see dating in space becoming possible in the future? Are there any challenges or concerns?
11. What would be the impacts of colonisation of Mars and increased space travel to planet Earth?

For Sociologists:

1. Are there any sociological issues regarding humanity's engagement with space?
2. What implications will the colonisation of other planets have for our wider society in the long run? (i.e. will we be a two-tiered system, planet earth versus a new civilisation?)

For Psychologists:

1. What chemicals would be released between different types of lovers?
    - Intimacy
    - Infatuation (passion)
    - Empty love (commitment)
    - Consummate love (deep bond formations)

2. What chemicals would be released during the encounter with something unknown? (I.e. excitement & fright)
3. How might such chemical release/psychological state affect an individual? (I.e. defensive state, behaviour change)
4. How might such chemical release/psychological states affect how one interacts with others? (e.g. more/ less willing to open up to others)

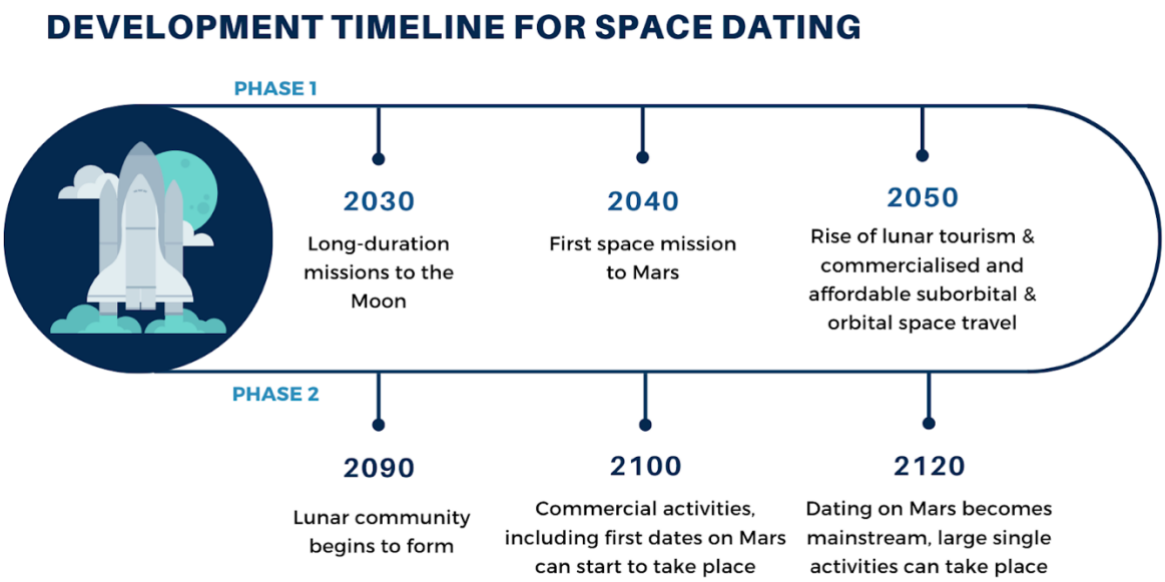
For Relationship Experts:

1. How has the mode of dating evolved in recent years? What are some emerging future trends?
2. Can you foresee any changes in the way people date and pursue relationships as technology advances?
3. In your opinion, what kind of impact do you think adrenaline-inducing dates have on relationships?
4. In your opinion, do you think dating in space will contribute to a better relationship?
5. Do you see space dates becoming the next normal in dating in future years?
6. What would be dating companies' role in space dating in the future?
7. How would eharmony contribute to shaping the dating culture in the future?

Appendix 3: Interview Responses

https://drive.google.com/drive/folders/1oRF6VwoRkmufRPosU_f46JseWntzJdSA?usp=sharing

Appendix 4: Development Timeline for Space Dating



Appendix 5: Survey Questions

1. How do you think the way in which people date has evolved over the last couple of years? Do you think people are likely to be...

- Mainly dating online
- Mainly dating in person
- Mainly meeting though mutual connections
- All of the above
- Don't know

2. In your opinion, what do you think are some of the emerging future trends in the next few decades?

- Using video call (e.g. Zoom, WhatsApp) rather than meeting someone face to face
- People consciously choosing to be single, and not dating or marrying at all

- Slow dating (people taking their time to get to know each other before deciding if they want to pursue a relationship)
- Virtual Reality (VR) dating (going on dates using VR technology in the metaverse)
- People going on more activity dates (sporting activities, hiking, paddle boarding, etc)
- Sober dating (people going on dates where they don't drink alcohol)
- People rating emotional intelligence over physical attractiveness
- Space dates (couples being able to travel out of space to go on dates)
- Other (please specify)
- I don't know

3. How important do you think technology will be in the way that people date and pursue relationships going forward?

- Very important
- Quite important
- Not that important
- Not at all important
- I don’t know

4.1. Adrenaline-inducing dates boost arousal and attraction (e.g. bungee jumping, white water rafting, mountain trekking and rock climbing) (How much do you agree or disagree with the following statements about adrenaline inducing dates such as skateboarding, karaoke or even skydiving? By adrenaline inducing dates, we mean activities that will allow you to get to know your partner more intensely to deepen intimacy bonds.)

- Agree strongly
- Agree slightly
- Neither agree nor disagree
- Disagree slightly

- Disagree strongly
- Don't know

4.2. Adrenaline-inducing dates mean you don't get to talk and connect (How much do you agree or disagree with the following statements about adrenaline inducing dates such as skateboarding, karaoke or even skydiving? By adrenaline inducing dates, we mean activities that will allow you to get to know your partner more intensely to deepen intimacy bonds.)

- Agree strongly
- Agree slightly
- Neither agree nor disagree
- Disagree slightly
- Disagree strongly
- Don't know

4.3. Adrenaline-inducing dates means you have a shared experience and brings you closer together (How much do you agree or disagree with the following statements about adrenaline inducing dates such as skateboarding, karaoke or even skydiving? By adrenaline inducing dates, we mean activities that will allow you to get to know your partner more intensely to deepen intimacy bonds.)

- Agree strongly
- Agree slightly
- Neither agree nor disagree
- Disagree slightly
- Disagree strongly
- Don't know

4.4. An adrenaline-inducing date is thrilling (How much do you agree or disagree with the following statements about adrenaline inducing dates such as skateboarding, karaoke or even skydiving? By adrenaline inducing dates, we mean activities that will allow you to get to know your partner more intensely to deepen intimacy bonds.)

- Agree strongly
- Agree slightly
- Neither agree nor disagree
- Disagree slightly
- Disagree strongly
- Don't know

5. In your opinion, do you think the adventure of dating in space will contribute to a more heightened emotional connection?

- Yes
- No
- I don't know

6. Do you see space dates becoming realistic in dating in the next 25+ years?

- Yes
- No
- I don't know

7. Have you heard of eharmony? eharmony is a dating app that gets to know you better to match you better.

- Yes, because I have used eharmony
- Yes, because I have been on their site
- Yes, I have heard of them
- No, I have never heard of them
- Don't know

8. Demographic: Marital status

- Single
- Married or co-habiting (including civil partnership)
- Widowed/Separated/Divorced
- Prefer not to answer

9. Demographic: Tenure

- Owned outright - without mortgage
- Owned with a mortgage or loan
- Rented from the council
- Rented from a housing association
- Rented from someone else
- Rent free

10. Demographic: What is the highest educational level that you have achieved to date?

- Secondary school, high school, NVQ levels 1 to 3, etc.
- University degree or equivalent professional qualification, NVQ level 4, etc.
- Higher university degree, doctorate, MBA, NVQ level 5, etc.
- Still in full time education
- No formal education
- Don't know

11. Demographic: How many cars are there in your household?

- None
- 1
- 2
- 3+

12. Demographic: To which of the following ethnic groups do you consider you belong?

- White
- Mixed
- Asian or Asian British
- Black or Black British
- Chinese
- Other ethnic group

- Prefer not to answer

13. Demographic: Which of the following best describes your current working status?

- Working full time - working 30 hours per week or more
- Working part time - working between 8 and 29 hours per week
- Not working but seeking work or temporarily unemployed or sick
- Not working and not seeking work
- Retired on a state pension only
- Retired with a private pension
- Student
- House person, housewife, househusband, etc.

14. Demographic: Do you have any children aged 18 or under? If so, how old are they?

- No children aged 18 or under
- Yes - children aged under 5 years old
- Yes - children aged 5 to 10 years old
- Yes - children aged 11 to 15 years old
- Yes - children aged 16 to 18 years old
- Prefer not to answer

15. Demographic: What is the combined annual income of your household, prior to tax being deducted?

- Up to £7,000
- £7,001 to £14,000
- £14,001 to £21,000
- £21,001 to £28,000
- £28,001 to £34,000
- £34,001 to £41,000
- £41,001 to £48,000

- £48,001 to £55,000
- £55,001 to £62,000
- £62,001 to £69,000
- £69,001 to £76,000
- £76,001 to £83,000
- £83,001 or more
- Prefer not to answer

16. Demographic: What was your age on your last birthday?
    - 16-17
    - 18-24
    - 25-34
    - 35-44
    - 45-54
    - 55-64
    - 65-74
    - 75+
    - Prefer Not to Say
17. Demographic: Which of the following describes how you think of yourself?
    - Male
    - Female
    - Prefer not to answer
    - In another way
18. Demographic: Which of the following ITV1 regions do you live in?
    - ITV1 Anglia
    - ITV1 Border
    - ITV1 Central
    - ITV1 Granada
    - ITV1 London

- ITV1 Meridian
- ITV1 Tyne Tees
- ITV1 Wales
- ITV1 West
- ITV1 Westcountry
- ITV1 Yorkshire
- STV
- UTV

19. Demographic: Social Class
    - AB
    - C1
    - C2
    - DE
20. Demographic: GO Regions
    - Scotland
    - North East
    - North West
    - Yorkshire and the Humber
    - East Midlands
    - West Midlands
    - Wales
    - East of England
    - London
    - South East
    - South West

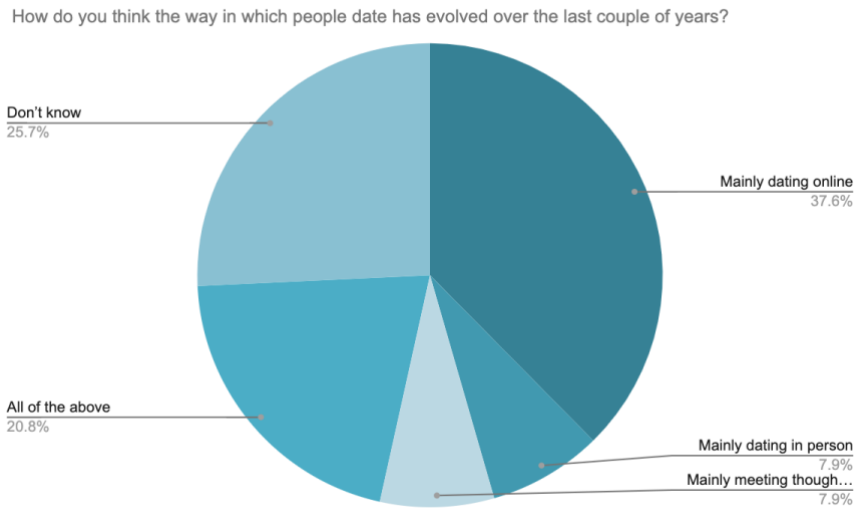
Appendix 6: Survey Raw Data

https://docs.google.com/spreadsheets/d/1tJMRXGOWOtLK0d_sYGLw0zuAdCglziiX/edit?usp=sharing&ouid=100495491491611903897&rtpof=true&sd=true

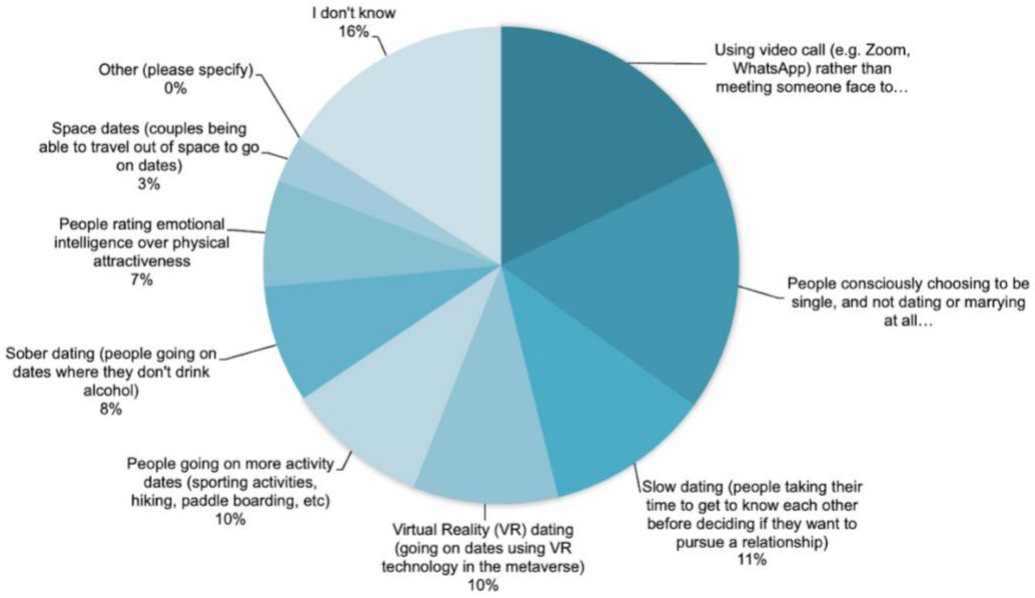
Appendix 7: Survey Findings

1. How do you think the way in which people date has evolved over the last couple of years?

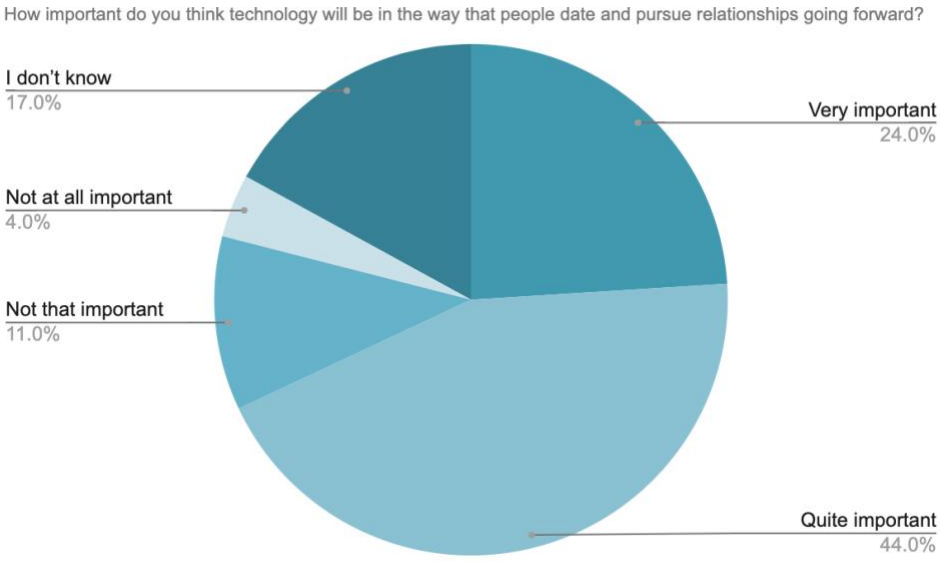
Do you think people are likely to be..



2. In your opinion, what do you think are some of the emerging future trends in the next few decades?



3. How important do you think technology will be in the way that people date and pursue relationships going forward?



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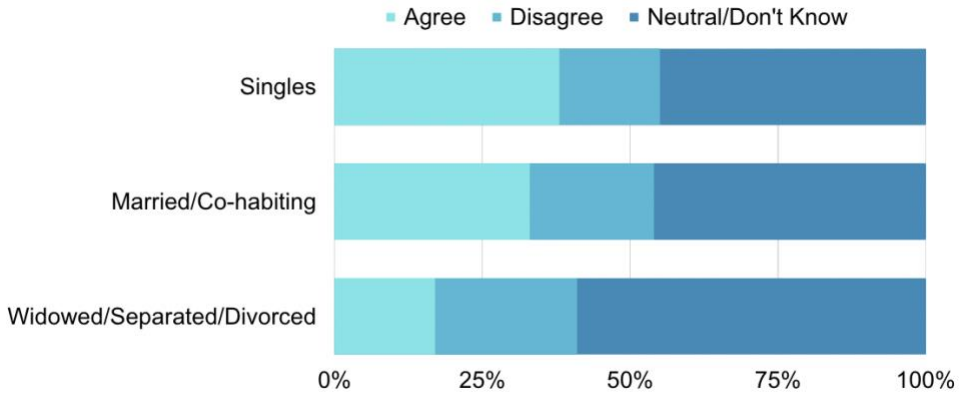

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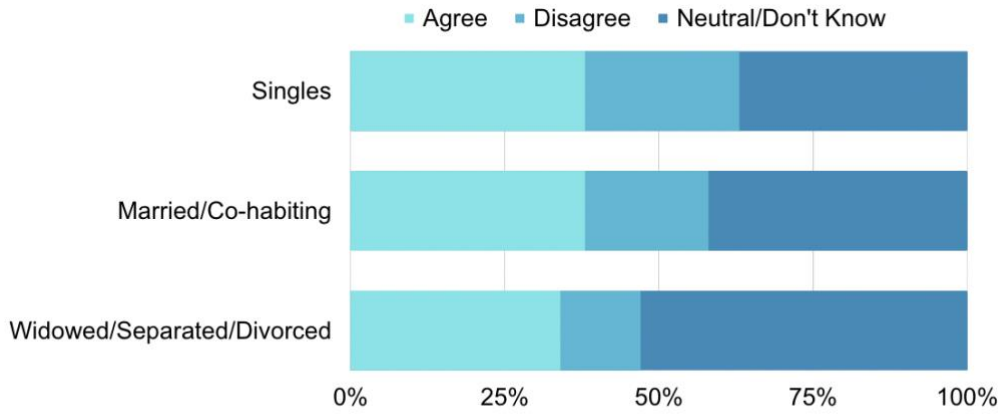

4.3. Adrenaline-inducing dates means you have a shared experience and brings you closer together (How much do you agree or disagree with the following statements about adrenaline inducing dates such as skateboarding, karaoke or even skydiving?

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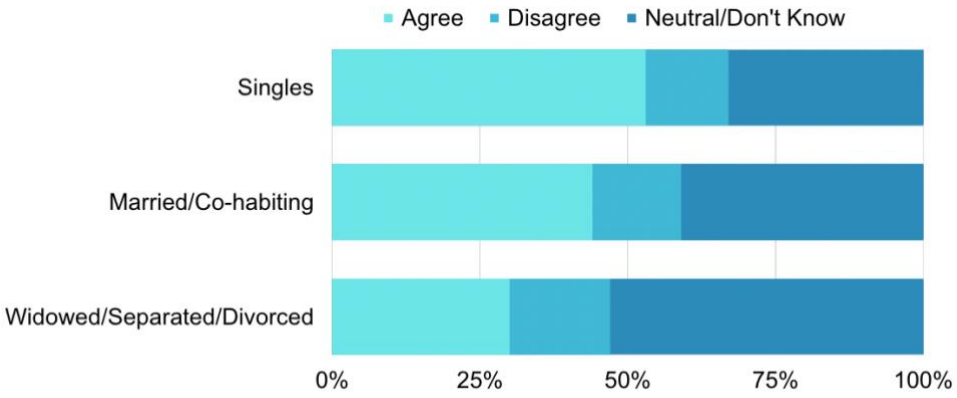

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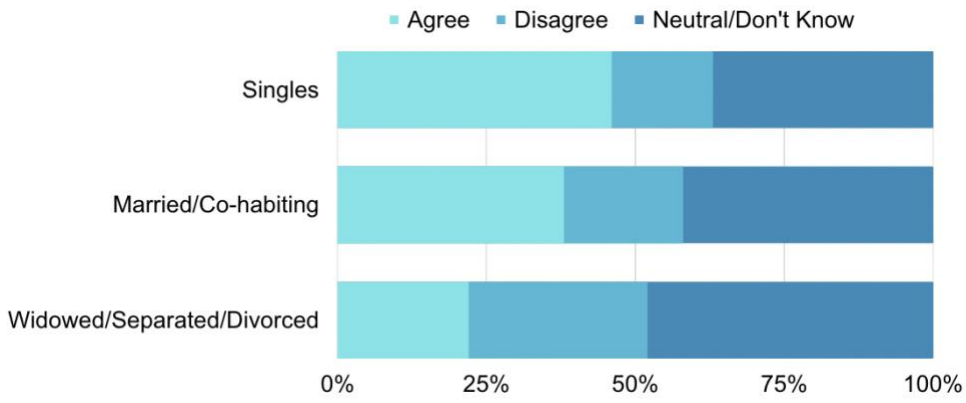
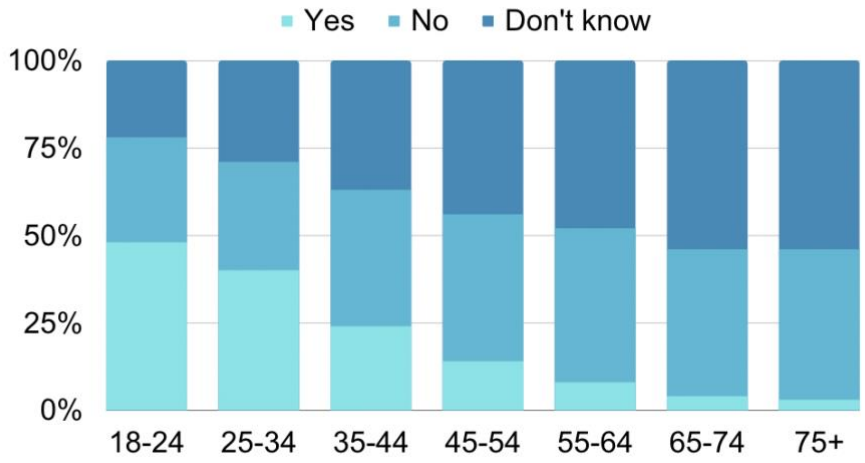
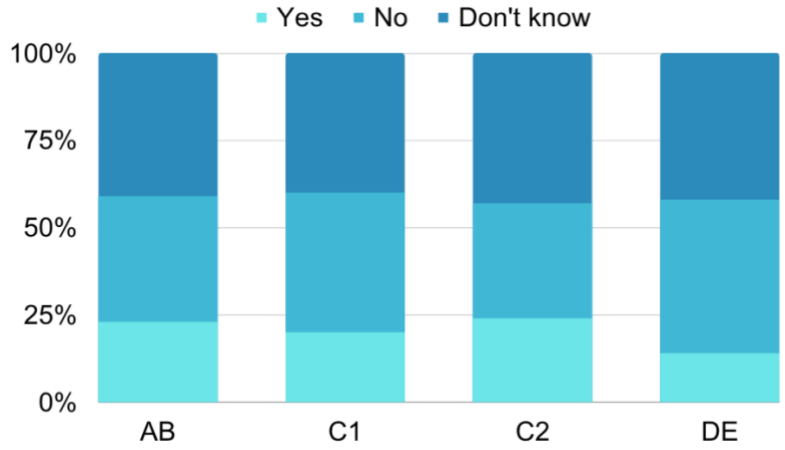


5. In your opinion, do you think the adventure of dating in space will contribute to a more heightened emotional connection?

(By Age group)

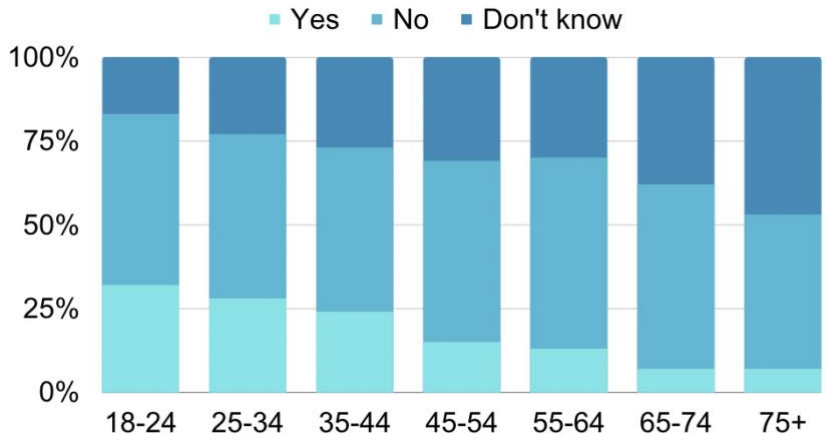


(By Social class)

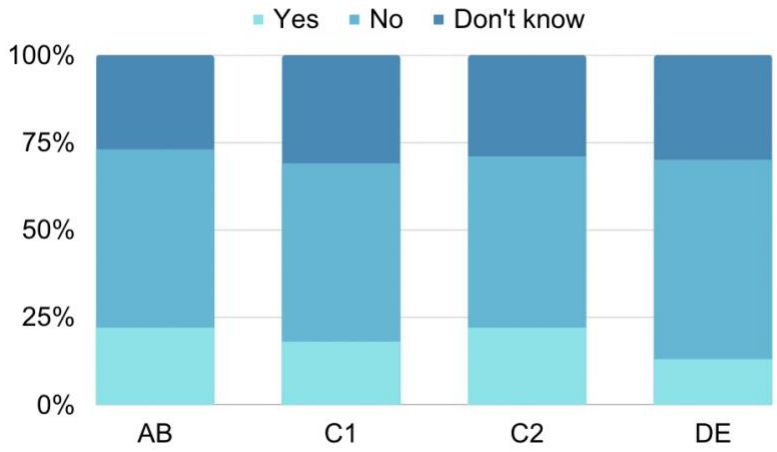


6. Do you see space dates becoming realistic in dating in the next 25+ years?

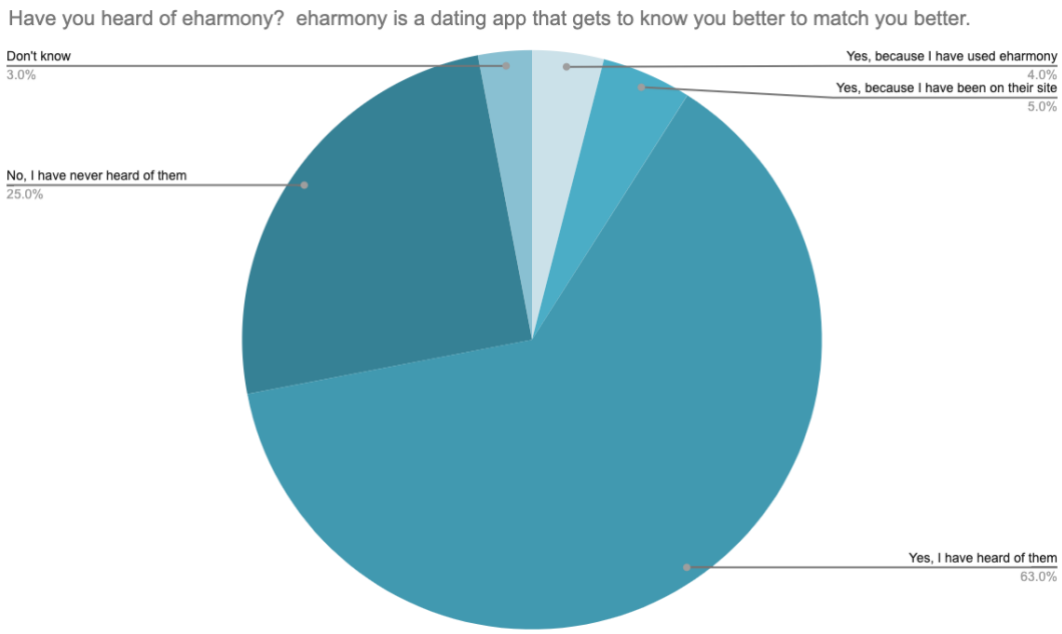
(By Age group)



(By Social class)



7. Have you heard of eharmony? eharmony is a dating app that gets to know you better to match you better.



Appendix 8: Customer Persona for Space Dates

Xandric

Age: 34
Occupation: Chip Engineer
Location: London, UK

Description

Xandric is a chip engineer at a robotics company located in London. He is working with several other clients in different countries such as the US.

Personality

Adventurous
Outgoing
Open-minded
Confident

Hobbies

Travelling
Scuba Diving
Hologram Sports
Stargazing

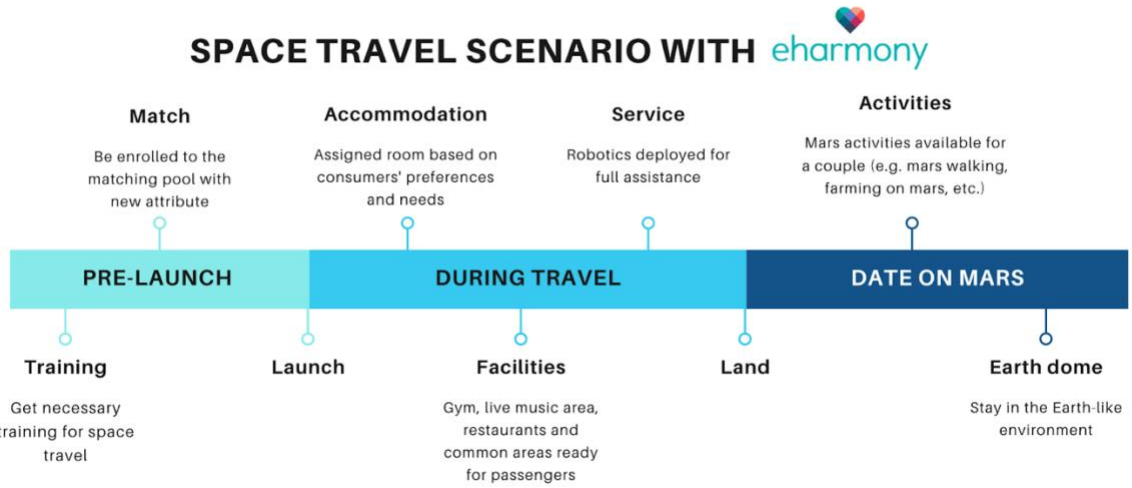
Motivations

Xandric's main motivation is to **stay on top of emerging technology trends**. He wants to **try out new things and meet new people** to share his experience.

Goals

Xandric's goal is to **find a partner open to trying out and enjoying new experiences with him**. He is **looking for a long-term relationship partner** who has the same interest as him.

Appendix 9: Potential Space Travel Scenario with eharmony



Appendix 10: Projection of space development through Future Cone