Creating a Multimedia Narrative to Raise Awareness for Emerging Technologies

An Interactive Qualifying Project

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Abstract

Although internet usage has risen in Switzerland, the public remain uninformed of emerging technologies. The goal of our sponsor, the Swiss Academy of Engineering Sciences, is to educate the Swiss public about emerging technologies through a biannual scientific paper called the “Technology Outlook.” Our project goal is to brainstorm ideas on how to take the scientific text in the Technology Outlook, simplify it, and transform it into narratives on social media platforms that should help increase public interest and literacy. To accomplish this, we sent out a survey to determine what types of narratives and social media platforms would work best for the information in Technology Outlook. We then created prototype narratives using three technologies that presented the lowest knowledge and highest concern in the survey. We finalized the project by creating a content-creation plan for the next Technology Outlook.

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Executive Summary

Introduction

The internet is an ever-growing presence in the lives of everyone around us, yet there remains a lack of knowledge in various topics, notably emerging technologies. These emerging technologies, such as bioplastics, additive manufacturing, and artificial intelligence, require crucial understanding as we head into the future.

In Switzerland, the public's knowledge of emerging technologies has created a major concern for the government. This is due to Switzerland's legislative process which allows the public to directly affect the outcome of future policies through weekly votes. To tackle this concern in Switzerland, the Swiss Academy of Engineering Sciences was founded by the Swiss government. The Swiss Academy of Engineering Sciences (SATW) is a non-commercial, politically independent organization that consists of a network of engineering experts in Switzerland comprised of individuals and organizations alike. SATW is looking to promote the engineering sciences and to emphasize the achievements of outstanding developments across the globe to help promote emerging technologies to the public. SATW also publishes a biannual report called the 'Technology Outlook,' which is a one-hundred-page summary of select technologies that they believe will affect the Swiss economy.

The goal of this project was to examine the Technology Outlook and determine how to present the technologies discussed on social media platforms, in fun and interactive narratives. To do this, we researched various methods through which social media platforms would garner the most attention, and what types of posts attract the most clicks. We then selected three

technologies for which to develop prototype narratives for, to be published on social media by the SATW.

Findings

To gather the data, we released a survey from the SATW Twitter account to reach out to the Swiss public. Through this survey, we managed to find out what emerging technologies they the respondents know of and are familiar with, what types of social media platforms they use most, and what type of media they would most likely use to learn about these emerging technologies. We were also able to determine three technologies to use focus on in our social media campaign narratives. The technologies we had selected were Internet of Things, Digital Sovereignty, and Blockchain. We selected these technologies based on survey questions which asked the survey participants to rank their knowledge, concern, and interest for each technology. The three selected technologies each had relatively low knowledge, high concern, and high interest ratings, apart from Blockchain, which showed low interest. We decided to include Blockchain since it is often misinterpreted with cryptocurrencies, a highly volatile topic, which would lead people away from the technology.

Survey Conclusions

- The respondents were all knowledgeable in technology, so any field that they were lacking knowledge in or were concerned about was shared with the broader public.
- We measured three variables, knowledge, interest, and concern, and we saw that knowledge and interest are positively correlated but each are negatively correlated with concern for the most part.
- We believed that focusing on fields with high concern was the correct way to go about this, as raising knowledge would lower high-concern and raise interest.

- Our respondents' concerns were mainly around privacy and loss of control.
- Our respondents' interests were focused on their relevancy, sustainability, and social impact.
- Our respondents were most likely from the scientific community, so they selected platforms such as LinkedIn and internet blogs, we decided to try and promote the content through other methods such as Twitter and Facebook to reach a broader audience.
- The top 3 mediums that our respondents felt most engaged with were "Typed-out info," "Short videos," and "Infographics," so we decided to do those three with a little bit of the fourth one, "Images," added in.

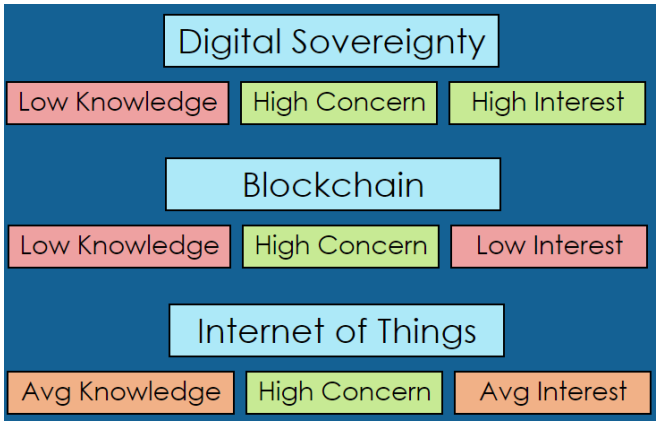

Figure 1. Three technologies chosen from the survey results each with their own rankings.

Together with our sponsors during workshops, we analyzed the survey results and produced narrative ideas for each of the three technologies we selected. We decided to implement our narratives with comic strips for the topics of digital sovereignty and Internet of Things, while we chose an infographic for the topic of blockchain. The digital sovereignty comic strip ventured into the medieval ages to show a king who takes all the crops away from his villagers and sells them, depicting large tech companies taking people's information and selling it. The Internet of Things comic strip featured an Alexa-type robot moving around a house,

ordering different IoT devices around. The comic strip took a more satirical approach, with talking head interviews and facial expressions for each inanimate device. The blockchain infographic used an illustration of a train to help explain the idea of blockchain without using concepts such as cryptocurrency.

The Planning Process

- Initially we approached the planning process with the idea of selecting the platform first, then the medium, and then the content, however we discovered that the method of content first, then medium, then platform was much more conducive to a creative brainstorm.
- While some content may be better suited to a web page, such as the Digital Sovereignty comic, it should still be promoted on other platforms such as Twitter and Facebook.
- Attempt to put a creative spin on the subject matter, as plain science jargon will not attract new members.
- We learned from our survey results that the existing audience for SATW are not entirely indicative of the public, so in order to reach a broader audience platform such as LinkedIn and blogs should not be used but instead the use of hashtags on platforms such as Twitter and Facebook can be used to gain a broader audience and attract more attention to the product.
- Analogies are a simple way to relate a complex subject matter to something simpler and promote comprehension.

Recommendations

Moving forward, we have several recommendations for SATW in the future. First and foremost is a second survey to get public feedback on the prototypes once they are posted. Second is to measure platform engagement with the release of each prototype, to see if there is any increase

or noticeable change caused by the prototypes. Our final recommendation, to use the guide provided and this paper for any future endeavors such as this.

One way to measure the success of this project is to see if it increased engagement and understanding of the material, through a survey. The survey would be sent to evaluate whether the prototypes were more exciting to read than scientific papers, and if not, how to improve. The second way of measuring engagement that we would suggest would be tracking statistics on the relevant platforms. This method is a more passive one but could require check-ins of sorts to get an accurate measure of how engagement is changing over time. We recommend this as a supplement to a primary form of measurement such as a survey, but it can also be used as a limited primary form of measurement.

If SATW is interested in making more content such as this, we created a simplified guide to our process and our recommendations. The guide provides recommendations and suggestions for the timeline of posting our three finalized products and where they should be posted. It also includes suggestions for generating new content in the future if SATW should wish to do so. Through this guide, the SATW should be able to reach out to the public much easier, increasing public literacy and helping the Swiss economy in the future.

Attribution Table

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1.0 Introduction

In Switzerland, the public's lack of knowledge about emerging technologies has created concern because future policies and markets involving these technologies depend on the public's vote. The Swiss Academy of Engineering Sciences (also known as SATW) is a non-commercial, politically independent organization that consists of a network of engineering experts and organizations alike in Switzerland. The individual members are experts of the fields of education, research, politics, and sciences. These members are appointed for life whilst the organizations pay an annual fee to SATW who can then apply for grants for projects and events. SATW is looking to promote the engineering sciences and to emphasize the achievements of outstanding developments across the globe. Yet, while SATW has produced informative papers about disruptive technologies, influencing public education has been slow to come. A major goal of SATW is to keep the public informed about new technologies and ensure economic growth. However, there is difficulty in tackling how information is presented to the public through social and interactive media platforms because of the nature of these platforms themselves. Information posted and widely shared may be biased or objectively false data, and incorrect messaging about new technologies can lead to negative public discourse.

Raising public awareness about emerging technologies has been a long-running problem, as demonstrated by a previous SATW-WPI research collaboration conducted in 2019. The research paper focused on the public's opinions about AI and how they would like to obtain information about it. They found out the average Swiss citizen obtained their information about AI through the internet, notably YouTube and social media platforms. The 2019 research team concluded that tackling how information is presented on these platforms would greatly increase

public knowledge. For example, due to the accessibility, content sharing capabilities, simplicity and real-time nature of the Twitter platform, the public can express their opinions and comments in real time (Li et al., 2017). This creates a significant challenge for the government due to the rate at which misinformation and disinformation can be spread.

The Technology Outlook is a SATW scientific paper that is released biannually and contains information about certain technologies that they believe are relevant to the economy of Switzerland. Although the paper contains valid and truthful information, it takes a scientific approach which makes it difficult and unappealing to read for most of the public. According to the prior study completed with WPI, the public are instead looking for quick bursts of information which include visual stimulation such as pictures and videos. By expanding upon the research of the previous projects and scientific papers, we can recommend an improved approach to developing and sharing content for the Swiss public. This will not only inform them but attract them to continue reading articles and posts put out by SATW in the future. The goal of this approach is to also help address the negative outlook that disruptive technologies already have in the country. By providing the public with an accessible source of scientific information that is easy to read and understand, the difficulty and severity of informing the public through online media sources can be tackled.

Our project goal is to create compelling narratives that will help the SATW tackle the problem of public awareness about emerging technologies in Switzerland. To achieve this goal, we have set out these objectives:

1. Assess the awareness and perception of the Swiss public regarding new and emerging technologies.

2. Create a plan for a social media/multimedia marketing campaign that addresses public concerns and questions.

3. Implement and test a prototype of the social media narrative to inform the Swiss public on the technologies that garnered the most interest.

2.0 Background

2.1 Introduction to the Background

In this chapter, we explore various emerging technologies and how they impact everything from the manufacturing industry to our everyday lives. We explore how such intricate and unique technologies often operate outside of public awareness. We then take a brief look as to the reason such advancements are unknown to the public. Next, we look at past efforts that scientists and researchers have made to try informing the public, before finally analyzing the flaws and strengths of their approaches.

2.2 Perceptions of Technology

Public perception of emerging technologies relies heavily on people's emotions towards these technologies and how they learned about them. A study by Ali Alhakami and Paul Slovic, as quoted in (Lee et al., p. 259), found the following:

> Theoretically, people's gut reactions, or emotional responses, toward science and technology can be expected to have a significant impact on their attitudes toward these issues. This is, in part, a function of directing people's attention to certain aspects of scientific research or of leading them to selectively seek information consistent with their initial feelings, and thus preventing them from making analytical judgments about technology-related hazards, potentially caused by emerging technology (2005).

Previous research has shown that most people tend to learn about technologies through social media and interactive medias. Since these types of mass media can trigger far more emotions in a viewer than scientific papers, many individuals tend to learn information easier on these platforms. To investigate this problem further, we discussed technologies that we believe

are either highly debated, or that contain the most misconceptions around them. From there, we investigated not only what they are, but why the public might have certain opinions about them.

2.2.1 Automation

Even where there might be legitimate concern about artificial intelligence (AI), there are misconceptions about emerging technologies revolving around automation. Misjudgments about AI, drones, and self-driving cars which have been brought about through mass media like movies. Since movies tend to overhype and show unrealistic depictions of AI, as media studies on the topic have shown, people often do not realize how much AI is really used in their everyday lives (Tomboulides et al.,2019). Additionally, biased news outlets typically represent AI and automation in a mostly negative light. A recent IQP, "Innovative Mobility in Switzerland," also found when people knew specifics about autonomous vehicles, they tended to discuss articles about when they failed and injured people (Cruz-Calderon et al., 2020). For example, popular news stations might not find it newsworthy to report on when a commercial flight mostly controlled by autopilot goes smoothly, but it is of interest when a Tesla crashes while potentially using its autopilot.

A 2019 SATW sponsored IQP, "Strategies to Inform the Swiss Public on Artificial Intelligence," showed the Swiss public was generally underinformed or misinformed about AI. It also showed that the movies overhyping AI influenced their view of it (see Figure 1). Also, many people said they did not use or were unsure if they used AI in their everyday life. Considering that the surveys were taken in 2019 and most of the people surveyed were between the ages of 15-25, it is likely that they have used a smart phone, GPS, or Google. So, this question really shows how people do not always realize when everyday technology uses AI and are uninformed about what it really is and how it is used.

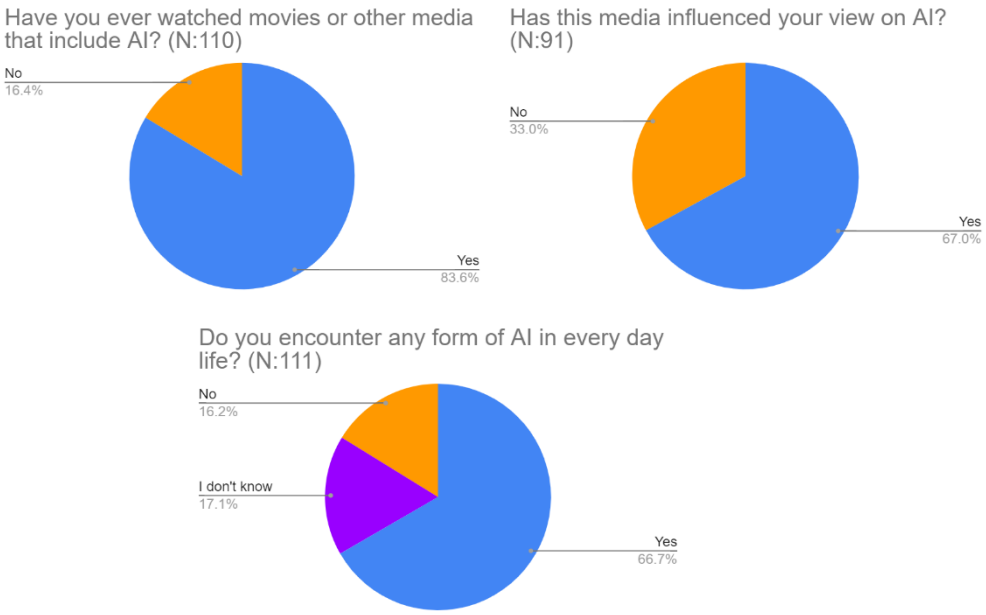

Figure 2. Pie charts are generated using data from "Strategies to Inform the Swiss Public on Artificial Intelligence" (Tomboulides et al., 2019).

People tend to trust automated vehicles more when they frequently used the transport. People were also more likely to trust supervision from an external control room than on the vehicle itself (Nordhoff et al., 2021). At one point, the researchers of the study also gave test rides of an automated shuttle to the study's participants, then asked them how their personal views of automated shuttles had changed. Only 4% of participants felt that their view of automated shuttles became slightly more negative after their test ride, and no one said their view was very negatively impacted by their experience (see Figure 2).

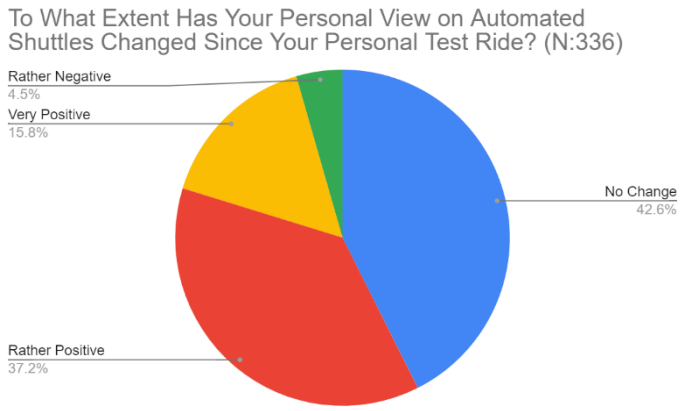

Figure 3. Pie chart we generated using data from "A structural equation modeling approach for the acceptance of driverless automated shuttles based on constructs from the Unified Theory of Acceptance and Use of Technology and the Diffusion of Innovation Theory".

2.2.2 Alternative Energy

In recent years, due to accelerating climate change, alternative energy has been a high-profile talking point across the world. Alternative energy is a broad term that encompasses means of energy production that do not deplete natural resources or intend to cause harm to the environment. With many governments putting more attention towards being environmentally conscious due to rising fears over global warming, pollution, and natural resource depletion, energy production has come as a focus for policymakers and corporations who see a new market. Nearly synonymous with sustainable energy, the idea of alternative energy producers would imply that these energy sources could theoretically remain as an infinite source of power production as natural resources are not constantly required such as fossil fuels. Coupled with this, most sources of alternative energy such as solar, wind and geothermal power produce nearly no emissions of greenhouse gases, thus significantly reducing pollution globally. To minimize the carbon footprint of human activity, it has become a major focus of policymakers, environmentalists, scientists, and those in power to improve education about alternative energy and to spread understanding of the necessity of cleaner energy producers. Ideally, furthering

widespread awareness of alternative energy will incentivize lawmakers to follow through with a healthier production of energy (Farret, 2005).

Some of the most well-known types of alternative energy are solar, wind, and hydroelectric but there are many more types that are used worldwide. Solar energy is the most widespread as it can even be scaled down for use on individual homes or scaled largely up to service entire towns (coupled with other energy sources). Solar energy is produced by one of two various methods: photovoltaics (PV) or by concentrated solar-thermal power (CSP). Photovoltaics produces energy by harnessing the electromagnetic radiation emitted from the sun and converting it to electrical impulses through photovoltaic cells which are placed on the surface of solar panels. CSP produces energy by using mirrors to reflect sunlight back and forth to produce an excess amount of heat which can then be converted to energy. CSP is more commonly found in larger power plants where it is possible to produce and store large quantities of energy. Wind energy is much simpler and is produced most commonly by using a large horizontal axis wind turbine (HAWTs) in which a large blade is moved by the wind. The blade spins a rotor which in turn generates energy. Smaller wind turbines are capable of producing 10,000 kilowatts of power which is enough to power the average Swiss home for a full year, home whilst larger wind turbines, however, can produce upwards of 6 million kWh of power per year which can be used immediately or stored in the form of compressed air. The energy produced is able to easily power over 1,500 Swiss and EU houses per year. Hydroelectric energy is produced by utilizing the flow of water to rotate a turbine similar to the methods of a wind turbine. The water source is usually blocked by a dam and the water is lowered through the turbines which powers a generator as the water is released further downstream. There are many other types of alternative energy such as geothermal which utilizes heat energy either deep in the

earth or near volcanoes, hydrogen gas which can be burned without producing emissions, and biofuels which are produced from burning raw plant material or wood. Alternative energy, despite its many benefits are not as well-known and approved throughout the public and this is the main reason that alternative energy is not more common.

A 2017 study from the University of Medellin in Columbia surveyed people from South America, North America, and Europe about how informed they are about alternative energies (Ramirez et al., 2017). The survey received 1800 respondents spread between Belgium, Canada, Columbia, Chile and France and analyzed their opinions on what is the most important aspect of renewable energy. When prompted people believed that the most important problems related to energy were the reduction of the environmental impact that energy has on the planet (27%) and the development of alternative energy sources (19%). The least common responses were in relation to energy supply (6%) and energy diversification (5%). However, when further prompted about how informed people were about the types of alternative energy, many of the participants were unaware of the options available. Participants were asked to rate how highly (on a scale of 1-5) they believed they understood a list of alternative energies. Geothermal (3.5), solar (3.9), and wind (3.8) energy were all believed to be more highly understood as opposed to options like biofuels, hydrogen gas, and tidal which all received either a 3 or below. This directly correlated with how positively people overall viewed the type of energy production as solar (95% positive), wind (92% positive), and geothermal (85% positive) were both thought to be the most well understood and the most popular amongst those responding to the survey. People were also unable to answer many questions describing geothermal energy. When participants were asked to explain the difference between superficial and deep geothermal energy, 52% of respondents could not answer the question. Additionally, when asked where they believed deep

geothermal energy was present, 21% said they did not know and 30% failed to name countries in which it was present. Altogether, this study further provided insight that even highly regarded forms of energy are underdeveloped in the media.

2.2.3. Cybersecurity

There are few technologies that have an impact on an individual no matter where they are in the world, and if one is connected to the internet, cybersecurity is one of those technologies. As it is an invisible technology, one that works behind the scenes and out of sight, it may go unnoticed more than others. This lack of awareness of cybersecurity can be a risk as the development of encryption, security software, and a person's own online habits directly correlate to the security and privacy of their data. Those who steal this data will then sell it and things such as identity theft become a very real possibility.

According to a 2014 study on cybersecurity in the Czech Republic, it reported that many countries in Eastern and Central Europe have trouble dealing with cybersecurity as it such a new concept to them (Kostyuk, 2014). There have been numerous large scale cyber-attacks that have targeted a great number of systems and put many people's data at risk including the Red October attack that lasted from 2007 to 2013 that planted malware in systems to act as proxies to attack numerous government, diplomatic, and military computers across the globe (Kostyuk, 2014). According to Dobbins et al. (2015), the push to autonomous systems and IoT devices can cause cybersecurity to become an even greater concern as the increased internet access creates new opportunities for potential data leaks.

A 2019 survey in New Zealand focused on the public's concern and habits about cybersecurity and the results appeared to be a bit contradictory. Most of the respondents said that they were concerned or very concerned about their privacy and data on the internet which

conflicts with the data gathered on their habits. Less than 40% of respondents use two factor authentication despite more than 45% being familiar with it, and 68% use a common password and 70% are not using what are considered strong passwords (Tirumala et al., 2019). The results indicate that there is a large disconnect between the public's concern and their actual habits which the authors ascribed to a lack of awareness of cybersecurity itself and the methods available to people to protect themselves (Tirumala et al., 2019). Globally it seems that there is a significant interest in cybersecurity by both the public and governments, however putting those concerns into practice appears to be another matter entirely. A potential solution to this issue is promoting public awareness of cyber threats and protection through public outreach.

2.2.4. Augmented Reality

Augmented reality (AR) is when software overlays computer generated graphics over live video and has been used as a part of the mobile gaming scene to add an extra layer of interactivity. This technology, while it is possible to be used in the daily life of an average consumer in the realm of entertainment, is much more likely to have an immediate impact on industry professionals within fields such as education and construction. The use of augmented reality in a professional industry setting has many beneficial uses, and yet many have never heard of it or used it.

In fact, there are many uses for AR in the workplace whether that be in education or in an industry such as construction. For example, some of the more broad and conceptual parts of AR can be useful in ensuring productivity as according to Antonioli et al. (2014), AR is linked to flow theory and self-determination theory which increases the user's engagement and motivation. Both engagement and motivation are important factors when it comes to education and the workplace. In addition to the more conceptual aspects, its function, which is to overlay digital information over real world images in real time, has many uses in areas such as product

design, manufacturing, training, as well as inspection and maintenance according to Fite-Georgel (2011). However, despite its multitude of benefits, there seems to be a lack of AR tools in the workplace.

There was an online survey done in 2015 that asked the respondents of various professionals in construction companies a variety of questions, one of which being whether their company used augmented or virtual reality. For that question there were only 24 definitive answers that said they did. As described in Figure 3, a figure constructed from that data in the report, those 24 were about 2% of the respondents while the rest where either unsure or answered that no they did not use augmented or virtual reality. When asked what they believed was the greatest obstacle to trying these new technologies about around 1/3 responded that it was due to a lack of knowledge (Holt et al., 2015).

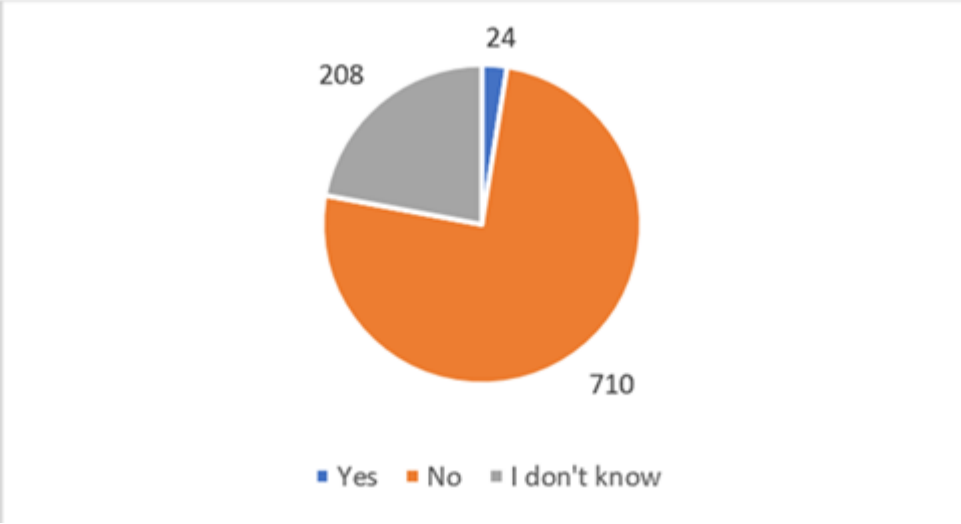

Figure 4. Does the company use AR or Virtual Reality (Holt et al., 2015)?

A different 2015 survey about the use of AR in the classroom, asked students in higher education whether they had ever used augmented reality before; 70% of respondents said that had never used AR before and another 25% said that they had used it rarely. Upon further

questioning they were asked about their overall experience with AR and 77% of participants that had used AR before said that it was a positive experience. The survey also asked about their first impressions when dealing with an AR platform, to which around 48% responded that they were apprehensive or intimidated by it (Delello et al., 2015). According to the study, apprehension and feeling intimidated by new technology can potentially be overcome with an increased access to knowledge on these emerging technologies. This was shown by various open-ended responses to the survey conducted with multiple respondents saying that they became less intimidated when exposed to educational material on the technology (Delello et al., 2015).

As these cases demonstrate, there are several challenges when it comes to implementing AR in both an educational and industry setting, one of which seems to be a lack of understanding or awareness of the technology and its uses. When introduced to the technology some may also be too intimidated to use it. However, a potential solution to this seems to be increasing public understanding and awareness of augmented reality, as shown by those in the construction industry that said they lacked knowledge on the subject and those in an educational setting who became less intimated the more they were exposed to it (Delello et al., 2015, Holt et al., 2015).

2.2.5 Manufacturing

The manufacturing landscape is ever-changing, and one of the most significant drivers of this change is the emergence of advanced manufacturing technologies. These changes enable more cost- and resource-efficient small-scale production (Ford & Despeisse, 2016). The manufacturing industry acts as a foundation for many technological advancements, but also requires a lot of funding for research. The adoption of additive manufacturing, also known as 3D printing, and other advanced manufacturing technologies heralds a future in which value chains are shorter, smaller, more localized, more collaborative, and offer significant sustainability benefits (Gebler

et al., 2014). Additive manufacturing covers a broad range of emerging technologies such as bioprinting, genetically modified technology, and alternate protein sources.

2.2.5.1 Types of Manufacturing

Additive manufacturing mimics biological processes by creating products layer-by-layer such as seen in 3D printers. It is less wasteful than traditional subtractive methods of production and holds the potential to decouple social and economic value creation from the environmental impact of business activities (Ford & Despeisse, 2016). Application-oriented examples that are relevant for Switzerland include: the plastics industry, aviation and space sectors of lightweight engineering, mechanical engineering, medical technology, and the turbine industry. These are fields that contribute to Switzerland's prominent global standing when it comes to innovation.

3D bioprinting is an emerging manufacturing technology which holds great promise for a wide variety of biomedical applications, including drug testing, pathophysiological studies, and regenerative medicine (Ruiz-alonso et al., 2021). More complex tissue structures can better reproduce the physiological activity of human tissue. This is increasingly relevant for the pharmaceutical industry, as it allows it to improve predictive in vitro tests and reduce animal testing. Consequently, the interest and investment in this promising technology has dramatically increased during the last five years (Ruiz-alonso et al., 2021).

Genetically modified technology (GMT) remains a highly controversial topic for the global food consumer. GMT was first introduced in the pharmaceutical industry and then applied to agriculture (Kui & Shoemaker, 2018). The most well-known use of GMT is genetically modified food, which is a method to create food with minimal use of animals. The per-acre yields of organic crops are significantly lower than those for conventional. This has been well documented both by meta-analysis of published research comparisons and by public data

generated through USDA commercial production surveys (Savage, 2013). With limited and unreliable terrain to support mass agriculture in Switzerland and the ever-growing population, there is a need for the government and public to be informed and educated about the benefits that GM food can bring to the average food consumer.

Over the past three to five years, new sources of protein such as insects and microalgae have gained ground next to traditional sources such as grains, pulses, and tubers. Assessing the sustainability of such new resources requires comprehensive life cycle assessments (LCAs). In parallel, an interesting trend toward sustainability has developed for some conventional resources, especially proteins in pulses and oilseeds. It finds its roots in the "flexitarian" movement, which is gaining increasing traction among "Millennials", whose diet is mostly vegetarian or vegan with only occasional meat intake (Ballif et al., 2019).

2.2.5.2 Public Perceptions of Manufacturing Technologies

The manufacturing technologies listed above are huge benefactors of economic advancement and social wellbeing for the Swiss. The success of Swiss manufacturing activities depends on the indispensable support to research given by public and industrial cooperation platforms like Innovation Booster Additive Manufacturing (IBAM), Swissmem (leading association for SMEs) and SATW (Anken T. et al., 2021).

Compared to other countries – especially Germany, the United Kingdom, the US and China – Switzerland has not been very active in promoting industry and research for the development of industrial additive manufacturing processes (Ballif et al., 2019). In the EU, animal testing for cosmetic products and their ingredients has now been banned. Switzerland is strongly positioned in all fields that stand to benefit from 3D bioprinting technologies, namely the pharmaceutical and cosmetics industries as well as clinical medicine. Even though

Switzerland boasts a global market leader in bioprinting (regenHU), the country currently has no comparable national strategy geared toward global technological leadership (Ballif et al., 2019). New food technologies have a high potential to transform the current resource-consuming food system to a more efficient and sustainable one, but public acceptance of new food technologies is rather low (Egolf et al, 2019). The global human population continues to grow, and to supply its increasing food demand while environmental resources are limited, new food technologies and new food sources are required (Egolf et al, 2019). But despite the paradigm shift towards vegan-centric diets, alternative protein sources, like in vitro meat (artificial meat,) remain a very controversial topic. People still think that it is far more dangerous than regular meat, while others think that replacing regular meat in meals will cripple cultural foods and recipes. Due to the sensitivity surrounding food sources, and the multicultural setting of Switzerland, this technology requires quite a bit of work and publicity before it can become accepted in most areas of Switzerland.

2.3 Information Disconnect

As explored in the previous section, there is evidence for a significant disconnect of between what is known by experts in the field of a particular technology and public understanding. A major reason for this seems to in part be a lack of accessibility when it comes to the information available. This inaccessibility is in part due to reasons such as a tailoring towards the scientific community, a lack of discussion on social media platforms, and the spread of misinformation. All of which contribute towards distancing the public from ongoing scientific discussion (Dawson 2014, Ndlovu et al., 2016, Ocobock & Hawley, 2020).

As mentioned above, one of the reasons behind this lack of accessibility to scientific discussion is the tailoring of science communication towards the scientific community. On its

own this is not an issue as there should be forums and papers that allow researchers and scientists to discuss their findings with each other and with the scientific community as whole. It is when there is no alternative for the masses that this becomes an issue, as rather than promote awareness of technology it is in fact doing the opposite and keeping the community insular. An example of this was a recent survey that was conducted involving the attendees of Science Cafes and Science on Taps, which are bars and cafes dedicated to the casual discussion of scientific developments and theories in order to promote scientific awareness among the public. The results of the survey revealed that around 73% of attendees were already from science fields, which means that a vast majority of them were already interested in science and that they were not reaching a broader audience (Ocobock & Hawley, 2020).

According to Dawson (2014), there is a sense of social exclusion when it comes to those not directly involved in science communication. This sense of exclusion is created by numerous cultural, geographic, political, educational, and personal barriers that are sometimes believed to have been bypassed just by exposing people to science communication and according to Dawson (2014) this isn't sufficient to change a person's behavior. Social media is a possible way to overcome some of these barriers such as geographical barriers, however, there seems to be a distinct lack of science communication on social media.

Many scientists spread science communication through mediums that are not geared at a general audience such as social media. Instead, they seem to prefer conferences, seminars, and forums of others already involved or interested in scientific discussion. For example, a 2016 survey conducted at the National University of Science and Technology in Zimbabwe found that less than 10% of respondents used social media such as Facebook (7%) or Twitter (2%) for science communication while another 14% responded with blogs for this multiple selection

question. Conferences (73%), seminars (63%), and group discussion (45%) dominated the other forms of communication. In the same survey they found that 52% of the respondents do not have an interest in engaging the public in their findings after publishing them (Ndlovu et al., 2016). This kind of attitude and intentional lack of engagement could further promote the social exclusion proposed by Dawson (2014). When there is this kind of apathy towards public engagement within the scientific community in an international setting, it could certainly promote the continued spread of misinformation.

In an age where the entire knowledge base of the internet is often a few clicks away for many, misinformation is surprisingly prevalent. In fact, according to a survey conducted in the US in 2014 found that "two-thirds of respondents (67%) thought that scientists did 'not have a clear understanding about the health effects of GM crops,' despite broad scientific consensus on the topic" (Scheufele & Krause, 2019). It also appears that faith in journalistic media has gone down considerably with only 8% of Americans saying they have great confidence in journalistic press. This coincides with a lack of science journalism as they no longer have a dedicated journalist to scientific issues, instead assigning business or political journalists in their stead who may or may not have the knowledge base required to accurately report on such developments and who may also add in their own biases in the reporting (Scheufele & Krause, 2019). According to a survey of American students, a majority struggle to "recognize the possible biases of politically charged tweets" as well as "distinguish between a news story and news-like advertisement" (Scheufele & Krause, 2019). This level of news and media literacy combined with a lack of dedicated scientific journalists could possibly allow for the spread of misinformation. With this level of misinformation, it becomes difficult to make informed decisions in discussions and subjects that could impact one's life, and there appears to be a lack

of effort in the scientific community to try and combat this by reaching a broader public (Ndlovu et al., 2016, Scheufele & Krause, 2019).

2.4 Past Efforts by SATW to Inform the Public

In the past, our sponsor, SATW, has worked with WPI on several IQPs, most of which are closely related to our own project. The most recent of which being "Strategies to Inform the Swiss Public on Artificial Intelligence," which provides a lot of relevant data on the public's knowledge of a newer technology taken from our proposed study's exact same population. In their report, the researchers demonstrated how informed the Swiss public is about artificial intelligence and where they receive their information. Overall, the study showed that the sample they studied were generally misinformed or underinformed about artificial intelligence and that they are mostly aware of how the media affects their understanding of it. Towards our particular concern, they also asked how they feel they would best learn about this new technology and where they would be most likely watch videos on the subject. The results show that most people learn best from watching videos, and they tend to watch videos on YouTube (Tomboulides et al.,2019).

Another related IQP SATW sponsored was "Innovative Mobility in Switzerland." In this project they tested the Swiss public's general knowledge and feelings about innovative mobility in Switzerland. They also focused on visions for the future, and helping the public make more informed decisions about new technology in the future (Cruz-Calderon et al., 2020). They surveyed and interviewed a large group of Swiss people to understand their general knowledge and attitudes towards innovative mobility. This is also very relevant to our project because it discusses the public's knowledge and feelings of another form of new technology. They found that the people they surveyed had a general knowledge of the subject, but they lacked a

knowledge of the extent of what had been developed in that field at the time and their specific knowledge tended to be biased towards the technology failing and injuring people (Cruz-Calderon et al., 2020). This shows that this is a recent and consistent problem among the Swiss public.

2.5 Conclusion

Despite the widespread appearance of new technologies in the average person's daily life, there is still a large percentage of society that is uniformed, poorly informed, or simply unaware. Many forms of media and news outlets portray technology in an improper way which affects the opinions and beliefs that public collectively has. A strong disconnect has begun to occur between the general public and the scientific world as a lack of proper communication and discourse has diminished and a spread of misinformation, whether purposeful or accidental, has become greater with the usage of social media. Those who often are not informed about new developments in the scientific fields are less likely to be interested in learning about newer technologies as the methods of communication is often improper or requires a base of knowledge that is not universally attainable. Past attempts that have been made have usually not been properly portrayed and the correct audiences have not been targeted or reached. In order to advance the spread of beneficial development, both politicians and the whole of society need to be provided and incentivized with a more attainable and easier to understand basis of information.

3.0 Methodology

3.1 Introduction

The goal of this project was to design an educational social media narrative to allow the SATW to address the issue of low public awareness and understanding of emerging technologies. Our objectives consisted of the following:

1. Assess the awareness and perception of the Swiss public regarding new and emerging technologies.
2. Create a plan for a social media/multimedia marketing campaign that addresses public concerns and questions about emerging technologies.
3. Implement a prototype of the social media narrative to inform the Swiss public on the technologies that garnered the most interest.

This chapter of the proposal addresses each objective and outlines our intended methods in fulfilling them. We also have addressed possible limitations of each objective and the impact these may have on the outcome of the project.

3.2 Objective 1. Assessment of Knowledge

One of our objectives was to gather data that would aid us in understanding the awareness and perception of the Swiss public regarding new and emerging technologies. These data were used to determine the general public's current knowledge of these subjects and their common misconceptions about new technologies. This analysis enabled us to develop our final social media campaign plan. We were able to clarify what information is already known by the public, what misconceptions might exist, and where the opportunities for an awareness campaign laid.

3.2.1 Data Collection

We created a plan for our marketing campaign that catered to the interest of our target demographic, the Swiss public. This was done by using a survey developed over the summer of 2021. In the survey, the respondents were asked about their knowledge, views, and their questions and concerns about emerging technology. The questions and concerns were an especially important part of our survey because we wanted our social media narrative to answer their questions about new technologies and clarify points where there may be confusion. Clarifying baseline knowledge was also important to us, because sometimes the public does not have enough information or curiosity on a particular subject to ask questions. So, understanding current knowledge helps us pick out subjects to focus on more heavily. To do this, we developed a series of questions to gauge the public's interests and knowledge. See Appendix B for the focus areas, sample questions, and consent agreement presented in the survey. In addition, the survey provided specific examples of types of new and emerging technologies. We discussed some of these different categories of new technologies earlier in this report, like automation, alternative energy, virtual tools, and manufacturing. Additionally, participants were asked about their knowledge of, interest in, and concern about the technologies listed previously along with some additional ones from SATW's 2021 Technology Outlook.

Another important part of our data collection was understanding who we are obtaining it from and our methods of doing so. We collected data from Swiss citizens of varying ages and occupations who use social media. It is also important to note that since we were targeting people who use social media, our audience mainly consisted of younger people. Our sponsor was also looking for younger people as our main audience, which is why we used social media as our

platform for our narrative. Our data was collected through a survey posted online through the SATW twitter account and on a separate post on a Swiss subreddit.

The principal limitation in accomplishing this objective was the number of respondents and their demographic. Having too small or too narrow of a sample size provided data that was not representative of the population we were studying. We did not receive much traction through Twitter and the survey was mainly passed along through word of mouth. We mitigated this by posting the survey through multiple outlets and asked other Swiss technology companies that have relations with the SATW to retweet the survey. This has helped garner younger Swiss respondents with an interest in technology.

3.2.2 Analysis

As described in Appendix B, our survey was a combination of closed-ended and open-ended questions. Our focus was primarily on multiple choice questions, but we also included open-ended questions to gather information from our participants about their perceptions of certain technologies or other opinions. When analyzing the survey, we used Microsoft Excel after copying the data over from Google Sheets and used the cross-tabulate functions to filter our results based on our demographic slices. We then calculated our final numbers and drew our conclusions.

3.3 Objective 2. Creating a Plan

After the data was gathered, compiled, and conclusions drawn from the survey, the next objective was to create a plan for a social media/multimedia marketing campaign that addressed public concerns and questions. Our intended outcome for this objective was to create a narrative that revolved around the interests and concerns of the Swiss public with regards to emerging

technologies to address them more effectively as part of the launch of SATW's 2021 Technology Outlook.

3.3.1 Data Collection

To help achieve our goal of creating a multimedia narrative, we constructed a carefully crafted plan using the survey data and analysis from Objective 1. Our analysis of the results revealed what topics the respondents seemed to already know about, their views on various technologies, the areas they are interested in, as well as common themes in the questions they ask. We also considered the social media report written up and given to us by the SATW for further insight and analysis into public perceptions. The report covered the latter half of 2019 after the SATW's 2019 Technology Outlook was released. This report gave us insight on what types of posts received the most engagement on their social media platforms such as Twitter, LinkedIn, and Facebook, as well as their reach with these posts on said platforms. The following chart shows how we organized our data collection and analysis.

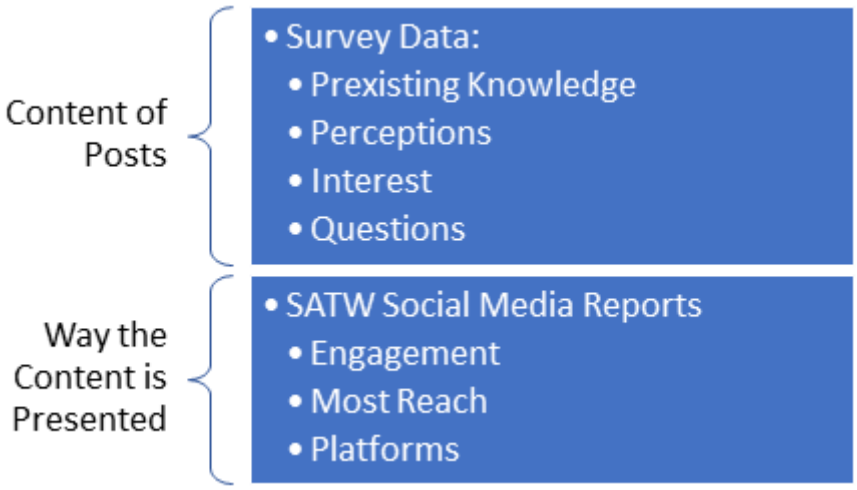

Figure 5. Organization of data collection and analysis.

This objective acts as the intermediary between the data we have gathered and our intended deliverable product of a prototype campaign.

3.3.2 Analysis

We decided to develop our plan in collaboration with our sponsor, because of how this directly impacts the SATW. The SATW was looking for new ideas and perspectives focused on reaching the broader public, which is the insight we sought to bring with this project. They had a vested interest in our creative process and the ideas brought forth. The full multimedia narrative will not be implemented by us. Instead, it will be implemented using the SATW's communications office, so they reviewed any plans we came up with to ensure that it would be something they could feasibly accomplish. The narrative created will also directly affect their image, and thus they held the final decision regarding what content was to be sent out through their various social media channels. Therefore, we believed it to be in the best interest of everyone involved in the project if we created our plan through an iterative workshopping process with our sponsors.

The creation of this plan was a process of iterative workshopping with our team and our contacts at the SATW, Stefan Scheidegger, Esther Lombardini, and Claudia Scharer. In a series of weekly workshops, we presented the analyzed data gathered from our surveys and from there brainstormed a variety of potential ideas for social media posts and their content. Using and combining design thinking techniques such as "Innovation!" and "Iterative improvements for existing products and services" as described by Morrow (2019), ideas were revised, edited, swapped, and changed to fit the goals and limitations of the SATW. We discussed our narrative ideas and where the SATW fit into them through multiple design workshops and meetups.

The plan for the narrative throughout this process eventually was designed to be concept map detailing planned content, what types of posts will the content be displayed on, what platforms those posts will be on, a time frame for implementation, as well as necessary resources and tools. When the plan for the narrative was deemed to be satisfactory by the SATW in terms of scale, content, and message, as well as being within the scope of our own capabilities, we moved on to the next objective, which was to create media and content prototypes based on the plan we created.

3.3.3 Research Limitations

When creating this plan, we considered a variety of criteria and limiting factors. The SATW was looking for a certain level of creativity and uniqueness for this narrative which was something to keep in mind when considering the possible forms of media to use. Our narrative also needed to be able to effectively deliver the information in a way that held the viewer's interest. Additionally, the SATW has limited resources in terms of time and human resources when it comes to social media, which is one of the reasons they were looking for new insight. As we prototyped the implementation of this plan, said limitations also apply to us as we are a four-person team working in a limited time frame. Thus, the plan was made within the bounds of something that is creative, informative, and holds the viewer's attention while not being too costly in terms of time or effort on the SATW's and our part.

Due to these limitations, we were not able to fully utilize our research into what forms of media the Swiss public finds most engaging or interesting in a perfectly unfettered world. For example, videos can be very engaging and persuasive, but their production requires a high time and effort cost that is beyond the scope of what the SATW can commit to regularly. However, design thinking allowed us to work to orient our efforts towards the needs of the Swiss public,

while remaining within the identified constraints of both technology feasibility and business realities.

3.4 Objective 3. Implementing the Prototype

Once a complete understanding of the desires of the Swiss people was gathered and a functional narrative product was designed and identified through the design process discussed in Objective 2, then there was only one final step. The final remaining objective was to implement the narrative about the technologies that garnered the most attention into a final prototype for the social media platform determined to be the most effective. This social media prototype consists of the narrative explanation of technology spread across various forms of media. This was the final step in our set objectives and served to produce a template which can either be implemented in its current state used as a model to develop differing techniques in the future.

3.4.1 Prototype Development

Once the necessary research data had been found and understood, this information was used in developing a proper cohesive narrative format that can be directly employed. The media narrative outcome can be analyzed and interpreted again as a building block for future research questions and could serve as a developmental steppingstone for experts to better reach the Swiss public. This final product is intended to greater develop a method for conveying technological information to various demographics and can likely be adapted for use from different subject areas within the organization. A prototype design can then be repeated and adapted based on a differing demographic target, generation, or location by simply updating the surveys and data gathering phases described in earlier objectives.

3.4.2 Deployment and Testing

Once deployed, the amount of traffic and online interactions will determine the success or limitations of the marketing campaign. The end goal is to achieve an upwards trend in engagement with Swiss communities that had not previously been interested in emerging technologies. Whilst we will likely not be able measure the change in internet traffic to the information and stories provided, these online metrics could serve to indicate the success or level of benefit. If there is no gain in interest detected, then the narrative developed would need to be revised to better fit either the social media platform or the demographic interests. This will help SATW clarify how they can effectively engage with the Swiss public on the topic of emerging technologies.

3.4.3 Research Limitations

Due to time constraints, the final product may not be implemented for a long enough period, if at all, and the data that are returned during the time of analysis will not provide longitudinal feedback as would typically be received from an entire campaign. The final product that is produced through this project may not be implemented to our exact specifications and may instead by altered by the SATW organizations' designers. Limitations in costs, time, and expertise may restrict the ability of the final product to be released to the Swiss public and our prototype may instead end up being used only for research purposes. As this team is not able to revise this product after the conclusion of our project, and likely will not be able to record long term engagement metrics, the results may not be known until another edition of the Technology Outlook produced by SATW is released.

Our methods outlined a specific process to go from collecting raw data to a workable prototype. Our first objective of Assessment of Knowledge was accomplished using an online survey, the results of which we analyzed. We then used said results to fulfill the second objective: Creating a Plan. The plan was constructed keeping in mind the data gathered from the survey as well as the SATW's own restrictions and limitations. Using that plan we then created and implemented a prototype according to our third objective. The key results of said methods and the end products of this process will now be examined.

4.0 Results

The intended result of this project was to involve SATW in the creative process of making a multimedia narrative and for one or more prototypes of products to be implemented by SATW as a part of said multimedia narrative. This chapter will analyze the data gathered by our survey in accordance with our first Objective. Then, it will go over the results of our prototype planning phase which fulfills our second Objective. Finally, it will present the finalized prototypes to be implemented as a part of our third and final Objective.

4.1 Objective 1 Results

A survey was sent out to the Swiss public to measure how informed they are on new and upcoming technology, as well as their concerns and questions regarding said technology. It was also used to get a measure of how they consume media online and what they find to be most

informative and engaging. There were ten questions in total, eight of which were multiple choice with a free response option, while the other two were completely open ended.

4.1.1 Survey Responses-Topics

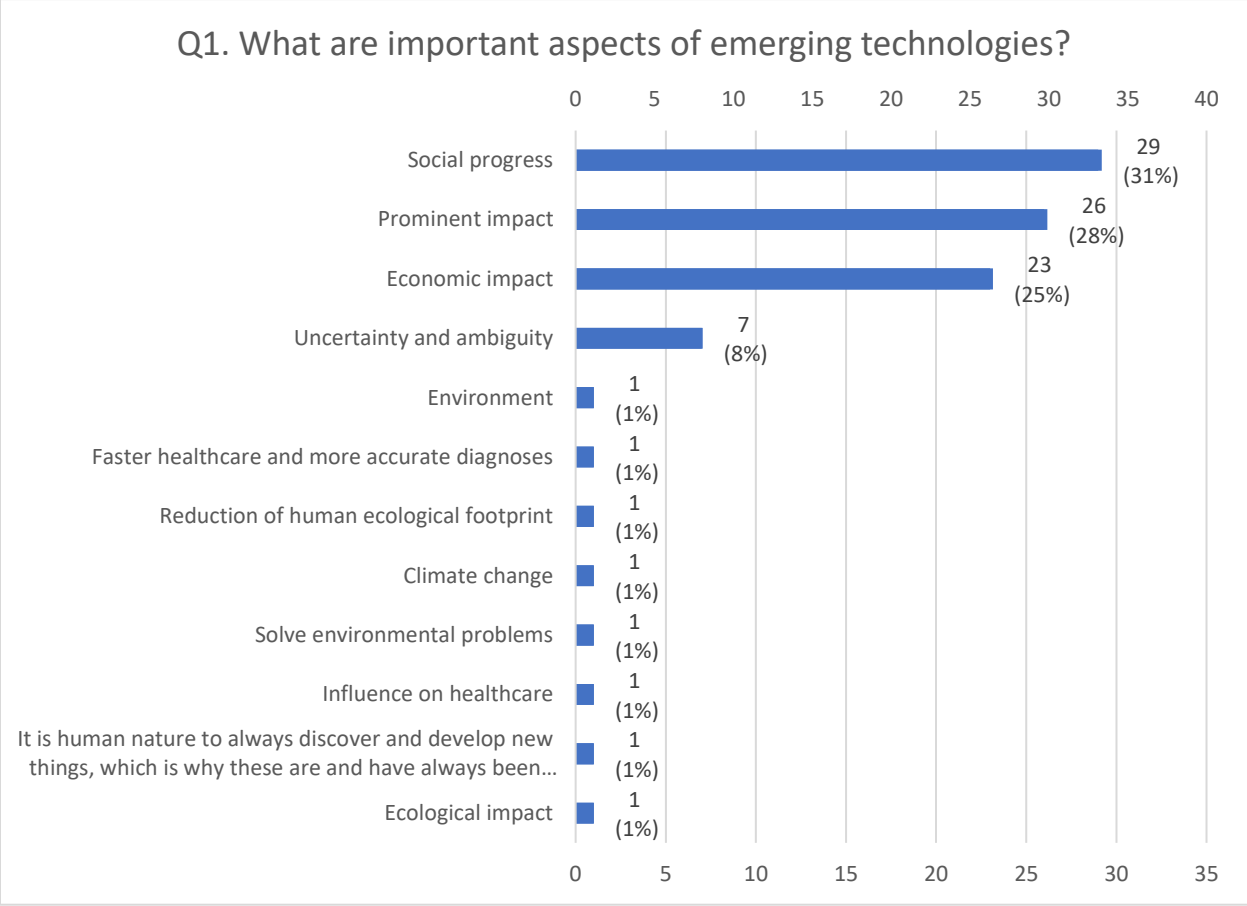

Figure 6. A summary of what the respondents think are important aspects of new technologies.

Figure 6 above shows results from a question that allowed for respondents to select more than one answer, with the four most selected options being existing options and the rest being write-ins. Of the 40 people that took this survey, 29 selected “Social Progress” as an important aspect of emerging technologies. In fact, most respondents felt that emerging technology should leave a lasting impression, as shown by those that selected “Social Progress,” “Prominent

Impact," and "Economic Impact." Interestingly, five people wrote responses that had to do with the environment.

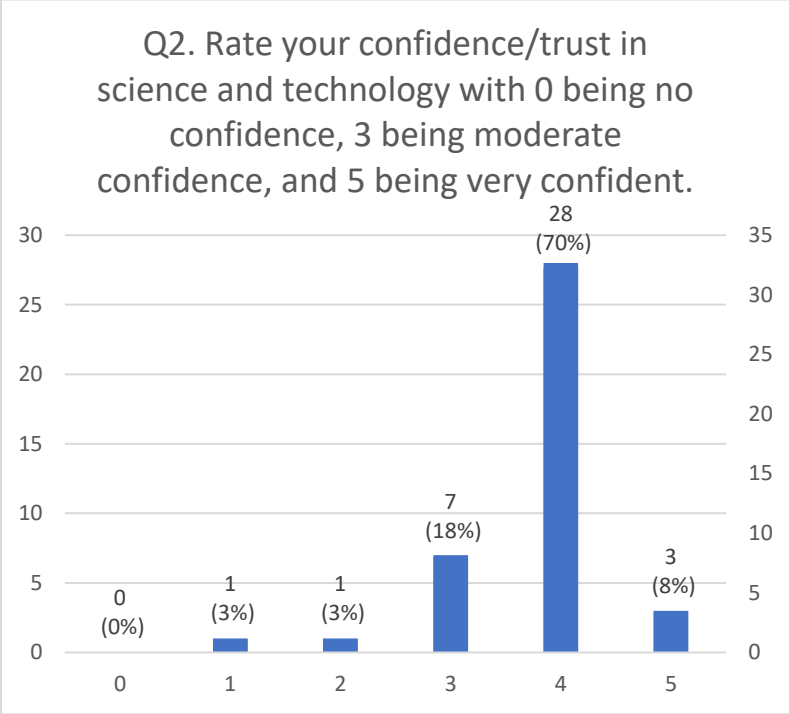

Figure 7. How confident and trusting the respondents were of technology.

Figure 7 above shows results from a multiple-choice question that only allowed one answer, asking for a rating on a scale from 0-5 on how much the respondent had confidence or trusted in science and technology. A large majority of respondents answered with a 4 out of 5; this likely has to do with the pool of respondents to our survey being biased towards these kinds of fields; the survey was sent out onto SATW's twitter page and word of mouth, and thus the people who were exposed to the survey were already in SATW's community which is very technology focused.

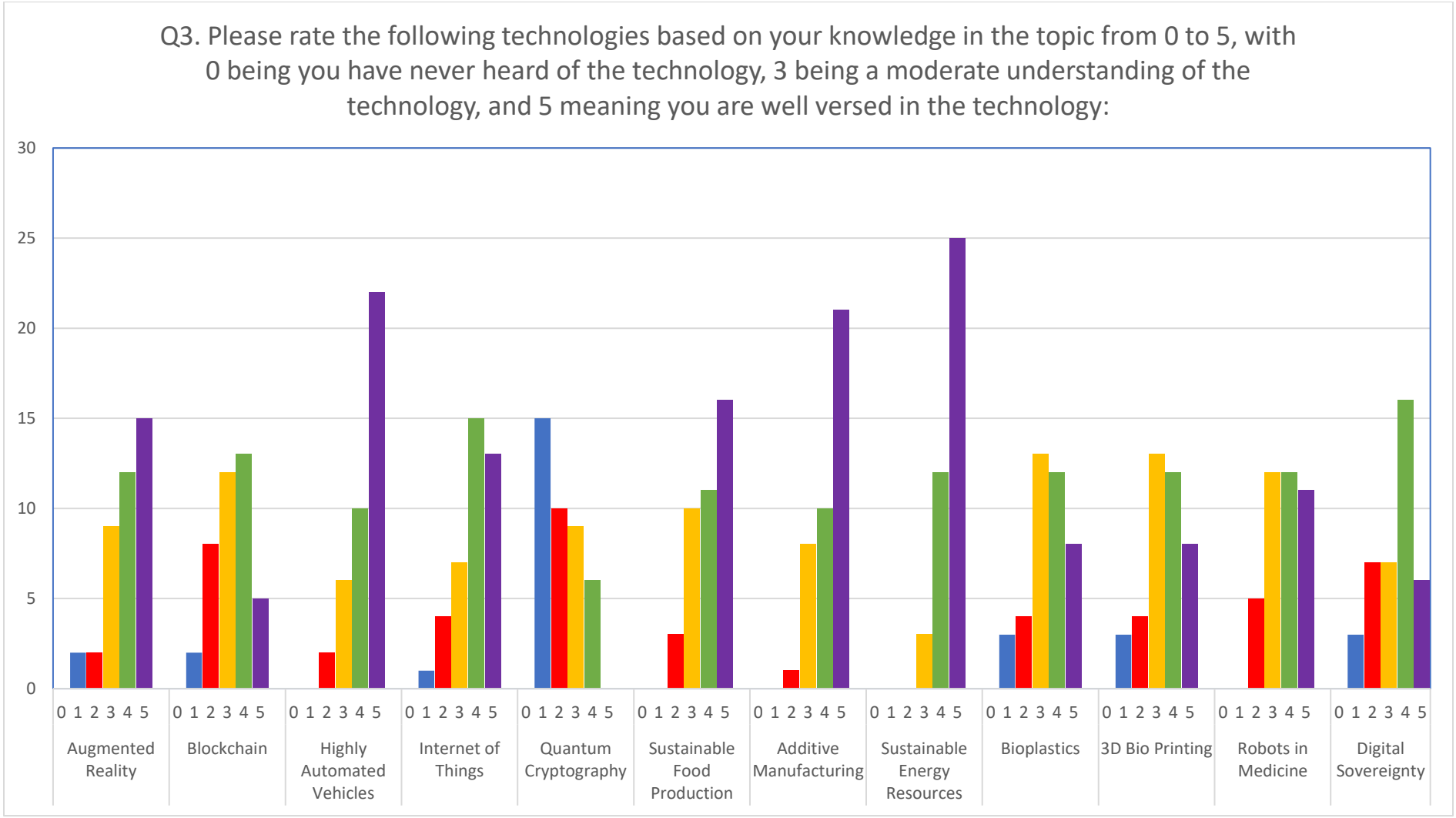

Figure 8. The knowledge rating of each technology.

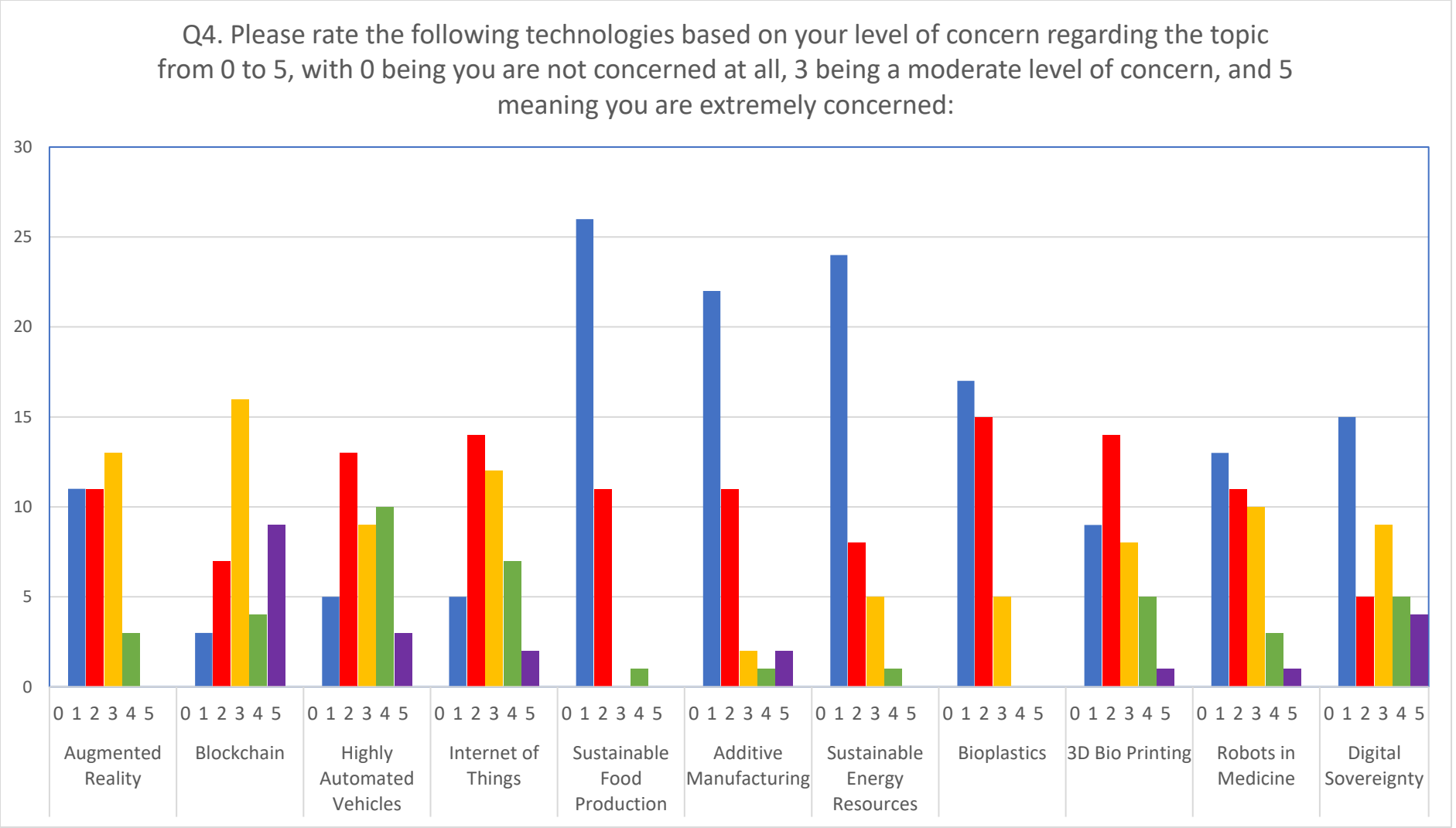

Figure 9. Concern rating of each technology.

Figure 9 shows results from a question that asked for respondents to rate their knowledge in multiple fields of emerging technologies on a scale from 0-5. As visible in Figure 3, something that immediately stands out is that no one answered 0 in any of these fields, meaning that every respondent had at least heard of each technology. There were only three fields which had a majority of responses in one rating, those being “Highly Automated Vehicles”, “Additive Manufacturing”, and “Sustainable Resources”, and the rating that the majority responded with was a 5 out of 5 for all three.

Figure 9 represents responses from a question asking once again for a rating of 0-5 regarding their level of concern on a subject. No one answered with a 0 on this question either, which shows that none of the respondents are dismissing a subject as nothing to be concerned about and that all of them are at least somewhat concerned about all of the selected subjects. However, those with the least amount of concern were also the ones with the most amount of knowledge, with the exception of “Highly Automated Vehicles”, which had a higher level of concern. The subject that takes the spot of “Highly Automated Vehicles” among the three least concerning subjects is “Sustainable Food Production” which had the fourth most ratings out of 5. The rest of the results are more varied and harder to get a clear picture of which is why we then took the average knowledge and concern of each subject.

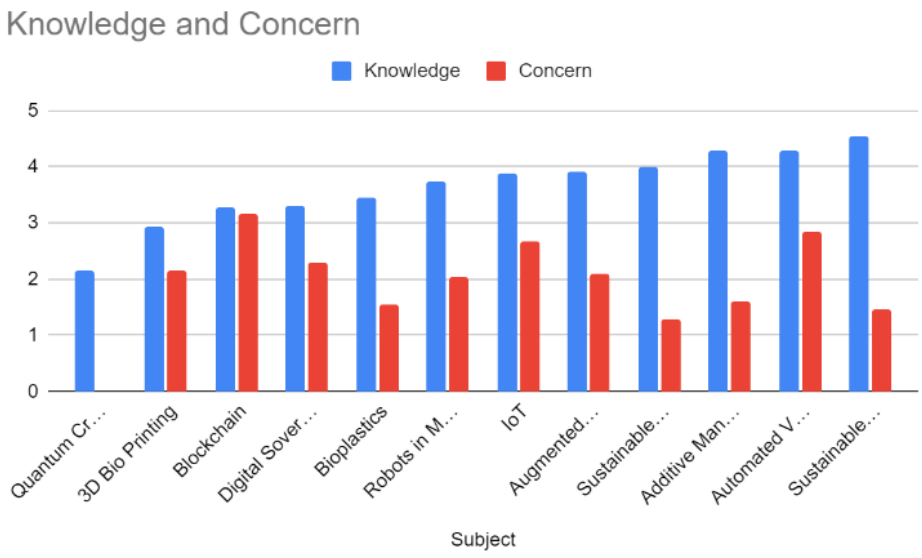

Figure 10. Average knowledge and concern of each subject.

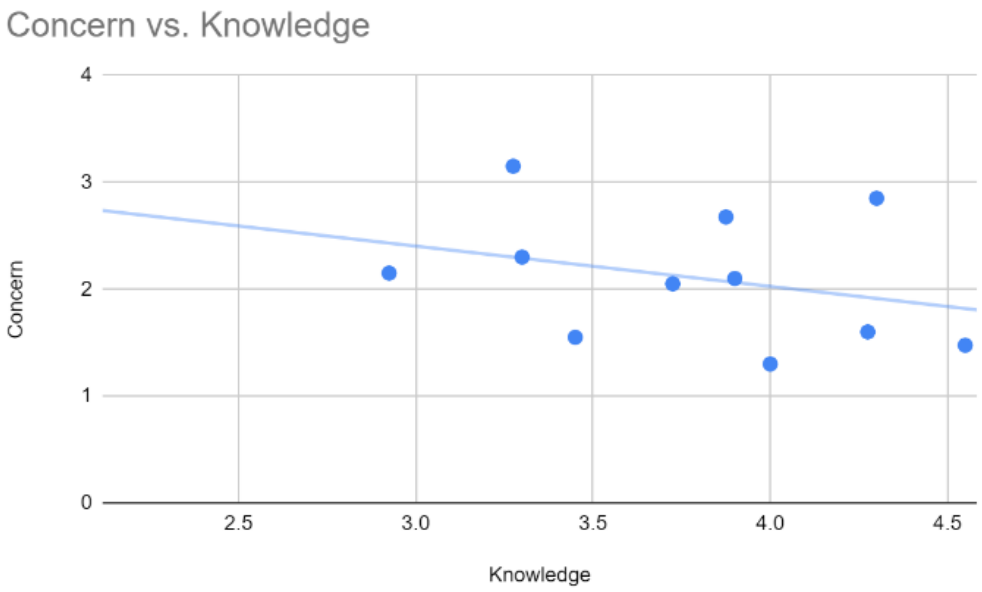

Figure 11. Average knowledge and concern plotted out.

Figure 10 and Figure 11 display the results of that analysis, and from it we can get a better view of the results. Figure 10 is ordered in terms of subjects with the least knowledge to the most knowledge. Something to note is that “Quantum Cryptography” has a 0 in concern; this

is due to an error on our part as we did not include it as an option in Question 4. As such, it was removed from further analysis. Figure 11 is not a comparison by subject, but rather an examination of the relationship between the average concern and knowledge and ratings of the subjects.

Figure 10 ended up being very useful to us as we constantly referred to it later in the process. Key points from this graph are that “Automated Vehicles” has the second highest average knowledge yet also the second highest average concern. This goes completely against the trend shown in Figure 11, which is that higher knowledge corresponds to lower concern. Other subjects that had particularly high concern were “Blockchain,” which had the highest concern and third lowest knowledge rating, “IoT,” with the third highest concern, and “Digital Sovereignty”, which had the next highest concern after “IoT.”

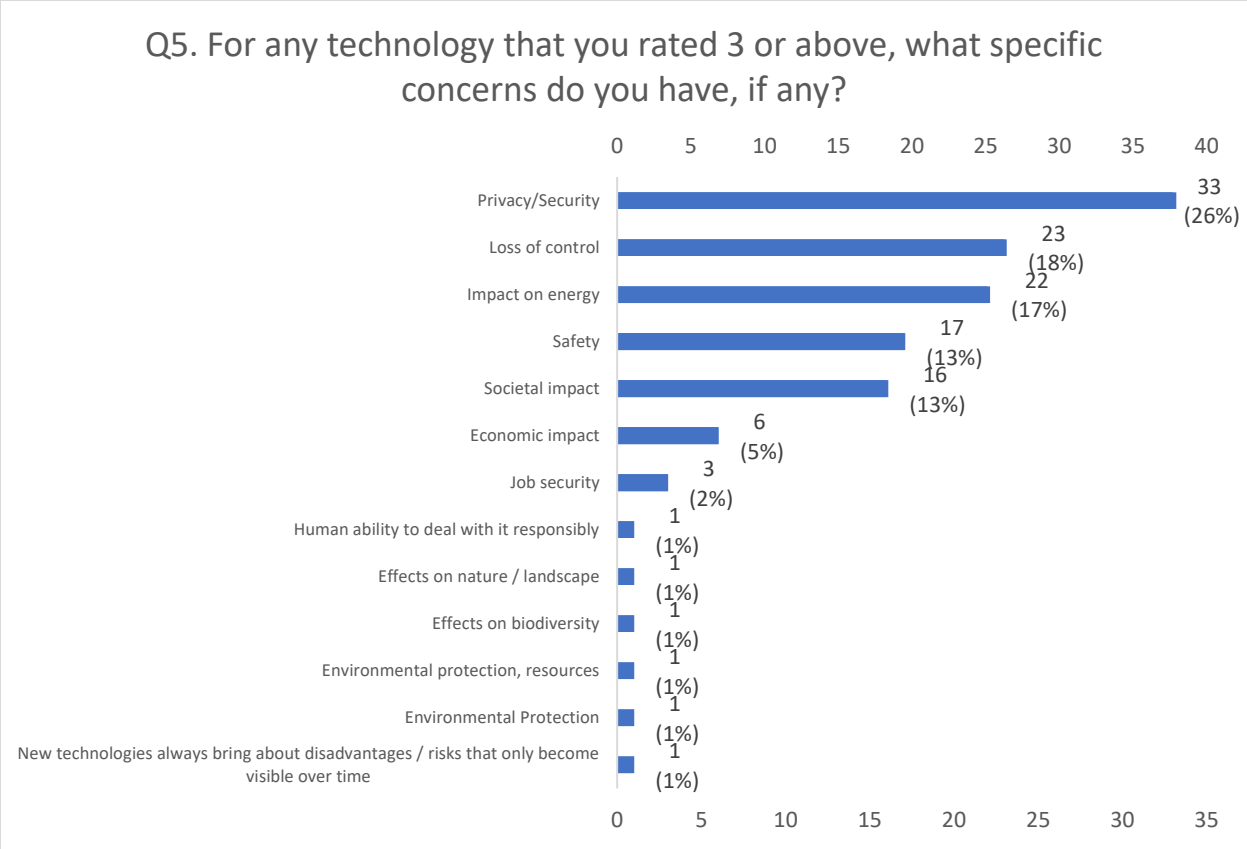

Figure 12. What the respondent's concerns were specifically.

The aim of Question 10 was to provide some clarity to the responses of Question 9. As can be seen in Figure 12, the concerns that a majority of the respondents had were "Privacy/Security" in first place, "Loss of Control" in second, and "Impact on Energy" in third. The two most selected answers, "Privacy/Security" and "Loss of Control", relate heavily to the technologies with the most concern such as "Blockchain," "Automated Vehicles," and "IoT," which confirmed the results of the previous question and provided more insight into what individual aspects of these technologies respondents were concerned about.

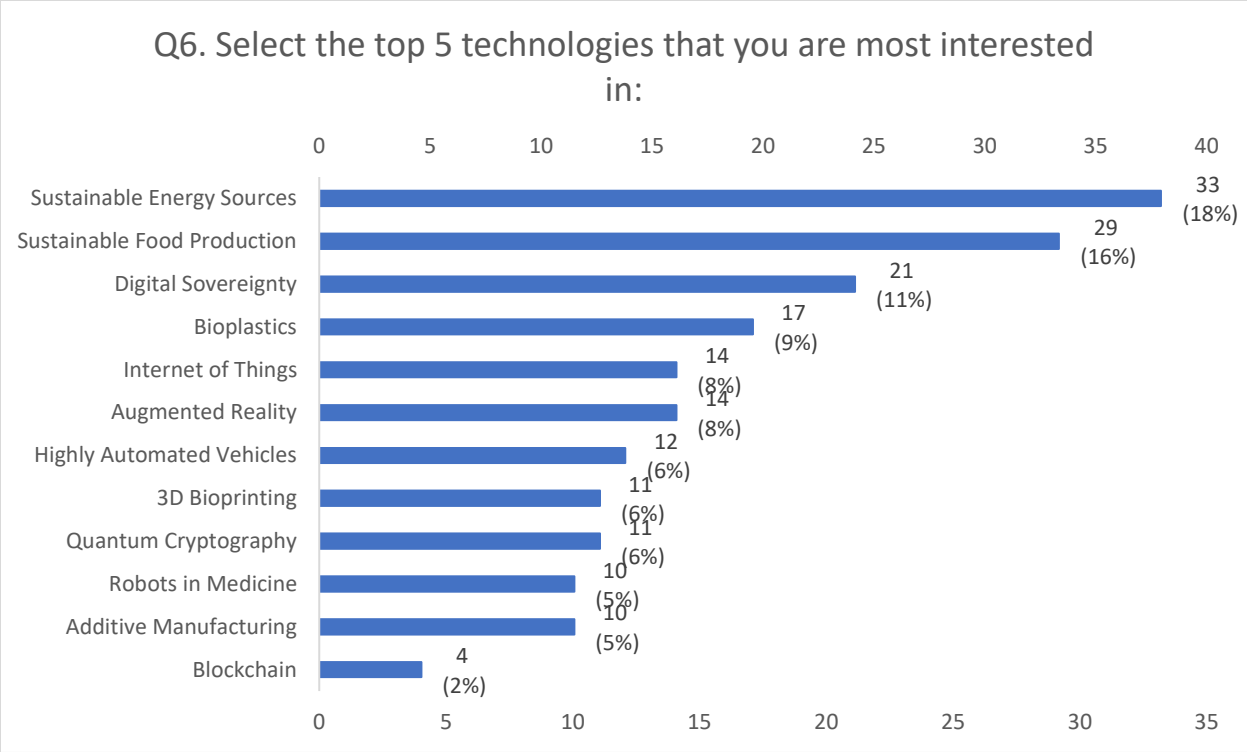

Figure 13. The most interesting topics according to respondents.

Question 11 introduced the third and final measurable variable that we used in our analysis: Interest. While concern and interest in a new technology might be similar in some respects, they also differ in certain ways. Concern is essentially a focused type of interest: all concern is interest but not all interest is concern. This can be seen in Figure 13, where subjects that might not have had a high level of concern have a high level of interest. Two subjects that had both high concern and high interest were “Digital Sovereignty” and “IoT” which stands in stark contrast to the subject with the highest concern, “Blockchain”, which presents the lowest interest rating by a large margin.

Figure 14. Word-map created from responses to what specifically is interesting to them.

The seventh question on the survey was an open response which asked a similar question to that reported in Figure 12. It asked what specific aspects respondents found interesting about the technologies they ticked off in Question 11, the results of which can be found in Figure 12. Figure 14 is a word-map of the responses given to Question 12: the larger the font, the more common the response. As is shown in the above figure, some of the more popular reasons that people were interested in these technologies were sustainability, societal and social implications, their relevance, as well as new opportunities and potential they might bring or. Something that we took note of was that the word “sovereignty” by itself had quite a few mentions while the word “digital” did not.

Figure 15. Average knowledge plotted against interest.

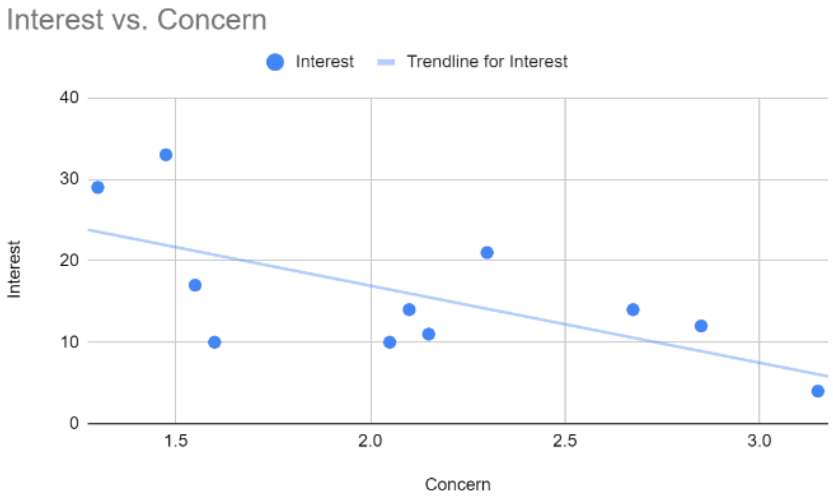

Figure 16. Average concern plotted against interest.

Figures 15 and 16 provide a similar analysis to that shown in Figure 11, except with interest. Figure 15 measures knowledge against interest and it shows that if a respondent was knowledgeable on a subject then it was more likely for them to be interested in it; this seems to be a generally reasonable assumption, but it is nice to have a representation of it. Figure 16, on the other hand, is a bit more surprising at first as we expected that if someone was concerned

about a subject then they would be more interested in the subject. However, that is not the case as seen by the negative correlation between concern and interest; a reason for this can be found when looking at the other two variables being measured by this survey.

We have already established that knowledge and concern have a negative correlation while knowledge and interest share a positive correlation. So, if interest goes up, so does knowledge, but because of knowledge going up concern then goes down. It appears from this analysis that if a person is interested in a subject, then they will seek out more knowledge on the subject, and because their knowledge increases, their concerns about the subject decrease. This presents a problem, however, as if a person is not interested in a subject then they are not inclined to seek out knowledge on the subject and thus their concern does not decrease at all. An example of this can be seen with "Blockchain" which has the highest concern, lowest interest, and third lowest knowledge. However, there are outliers to this analysis and these observations are by no means the case with every subject, as some subjects naturally lend themselves to lower concern even with low interest, as is the case for "Additive Manufacturing." There are even those with high concern and high interest, such as "Digital Sovereignty" and "IoT", which have low and middling knowledge, respectively. We used these three variables in determining which topics to cover.

4.1.2 Determination of Topics

Our survey up until this point measured three variables for each field, and those were the respondents' knowledge, concern, and interest in those technologies. To represent our findings with these three variables, we constructed a matrix and fit various subjects into categories where we felt they belonged.

	High Interest	**High Knowledge**	**High Concern**	**Low Interest**	**Low Knowledge**	**Low Concern**
High Interest		Sustainable Food	**IoT**		Bioplastics	Sustainable Energy
High Knowledge	Sustainable Energy		Augmented Reality	Additive Manufacturing		Sustainable Food
High Concern	**Digital Sovereignty**	Automated Vehicles		**Blockchain**	**Digital Sovereignty**	
Low Interest		Additive Manufacturing	3D Bioprinting		3D Bio Printing	Additive Manufacturing
Low Knowledge	**Digital Sovereignty**		**Blockchain**	**Blockchain**		Robots in Medicine
Low Concern	Sustainable Food	Sustainable Energy		Robots in Medicine	Bioplastics	

Figure 17. Matrix of the three variables: interest, knowledge, and concern.

Figure 17 is the aforementioned matrix with the three variables: interest, knowledge, and concern. We primarily used Figures 10 and 13 for the construction of Figure 17. Using this figure, we decided that we wanted to focus on subjects that had a higher concern, as we felt that addressing concerns of the public was more important than talking about subjects that respondents already felt confident in. We did consider the possibility that our respondents were not a great representation of the Swiss public. This was determined due to Question 2, as well as Questions 8 and 9 which will be discussed later on in this paper. Based off the results shown in Figure 7, we determined that the respondents had a higher-than-average technological literacy and trust in technology. However, we concluded that if the demographic we surveyed has these concerns and lacks knowledge in these subjects despite being more immersed in these fields than others, then it would be fair to assume that the general public might also be lacking knowledge in these fields and have similar if not greater concerns.

As we examined Figure 17, we looked for any subjects that appeared more than once, especially if they appeared in a high concern row/column. The first subject we identified was "Digital Sovereignty", which had high concern, high interest, and low knowledge, as well as appearing in a number of responses to Question 7 (as shown in Figure 9). Next was "Blockchain" which had high concern, low interest, and low knowledge. We decided to go with this subject despite the low interest rating as we felt we could address some basic concerns and get people interested in the topic by providing entry level information; this would hopefully invite people to pursue more knowledge on the subject and address their concerns. Both "Blockchain" and "Digital Sovereignty" are also relevant due to their nature as digital fields and concepts. We selected "IoT" due to the mixture of high concern and high interest, and a middling knowledge, which we assumed would be even lower in terms of the public due to the

previously mentioned potential above-average knowledge of technology of our survey respondents.

The next couple of questions in our survey moved away from these technological subjects and instead asked respondents about their online media use.

4.1.3 Survey Responses-Platform and Medium

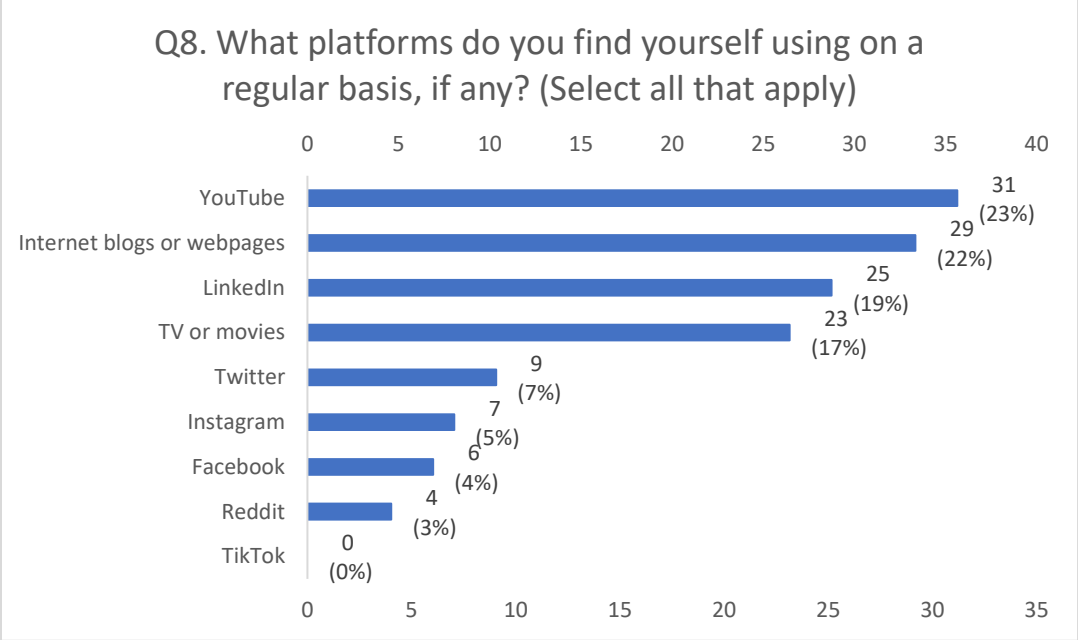

Figure 18. What social media platforms the respondents found themselves using regularly?

Figure 18 shows the results of Question 8, where respondents were able to select more than one answer, when asked about what online media platforms they found themselves using regularly. This question had two goals: One was to help determine what platforms might get the most interaction and the second was to assess the demographic that this survey was able to reach. While the first meaning of this question did not end up being all that useful due to a variety of reasons that will be addressed later, this question still helped us assess the demographic of our survey respondents. For example, going into this project we had no real intention of creating content for “TikTok”; however, including it as an option on this question, allowed us to guess the

age range of respondents as well as how involved in new social media trends they were. Not surprisingly, there were no respondents who used “TikTok” on a regular basis; this, along with the low usage of other social media platforms such as “Twitter”, “Instagram”, and “Facebook” as well as the large amount that use LinkedIn, showed us that our respondents were probably on the older side and did not use social media too much outside of their work. Granted, the conclusions we drew come from the perspective of people living in the U.S. and we recognize they are mere speculation.

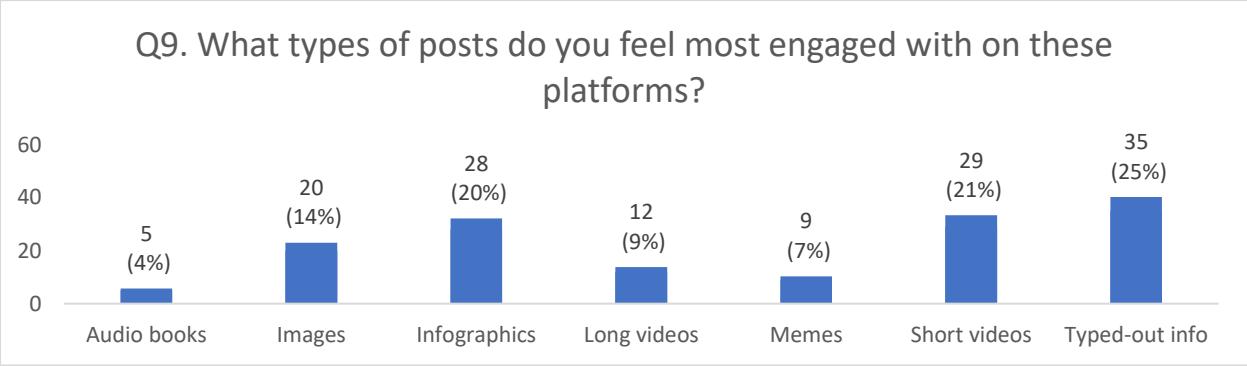

Figure 19. The types of posts respondents felt most engaged by.

The results of Question 9, another multiple selection question, are displayed by Figure 19, and the results were pretty in line with what we expected, based on the results shown in Figure 18 and our own preconceptions going into this project. “Typed-out info” has the most votes, with only 5 respondents not selecting it, followed by “Short Videos” with 29 out of 40 respondents and “Infographics” with 28. “Images” also had many votes, with half the respondents selecting it; it is also 8 votes ahead of the next most popular type of post, “Long Videos.” This is again indicative of the demographic we surveyed, due to the overwhelming number of votes for “Typed-out info,” such as reports, which is exactly the type of content we were attempting to move away from, as that is what the SATW’s Technology Outlook is.

Figure 20. Word map of the results from Question 10 asking if new technology was helpful or harmful.

Question 10 of the survey was less about the content or posts on platforms and more of another way to reveal the opinions of those that answered the survey. The question was whether or not they felt that new and emerging technology is helpful or harmful for Switzerland, and Figure 20 shows the most words in the responses to the question. A good number of responses answered that it depends on the technology, or that any technology could be harmful if not used correctly, and that it could be helpful, but any new technology should be carefully examined. So overall it seems that our survey respondents are accepting of technologies that they know more about and that choices regarding these technologies should be informed decisions. This essentially reaffirms the need for our project, as our goal is to educate the public on new and emerging technologies.

Our survey results, while they were fewer than what we hoped for, were useful, nonetheless. They also had a clear bias as many of the respondents were of a similar mind to one another. Knowing this, we were able to separate ourselves from the data and analyze the results

holistically. We analyzed the data we received and decided to create content for the subjects of “IoT”, “Digital Sovereignty”, and “Blockchain” based on the three variables we measured as well as the free responses, overall concerns, and relevancy of the topics. Next, we had to create a plan on how we would go about creating this content, on what platform, and in what form.

4.2 Narrative Plan Creation

After analyzing the results from the survey answers, the next objective was to identify how we would tackle the social media campaign. Our original approach was to first identify a suitable platform for each selected technology (IoT, Blockchain, and Digital Sovereignty), decide the best medium to present it in, and lastly create the content. However, after bouncing around ideas with our sponsors, we decided to change our approach to make it more suitable for our limited time. Instead, we first created a narrative for the technologies, chose the best medium to tell each story, and then put them out to the public on a specific platform.

4.2.1 Internet of Things (IoT)

When discussing how to create a narrative for IoT, our group first began by setting an educational objective for the narrative. Our survey results showed that most survey participants had a lot of knowledge of IoT, but still felt very concerned with the concept. We wanted to display to the viewers of the narrative that IoT are helpful in our daily lives by showing them the various tasks they can perform. We believe that showing the public the many uses of IoT could help reduce its concerns with the technology.

After multiple sessions of brainstorming, we came up with the basis for our IoT narrative, centered around the life of an Alexa-type robot that would order objects around the house. We chose to present this narrative in a comic strip involving comedic elements such as talking head

interviews, facial expressions on inanimate objects, and satire-filled dialogue. Please see Appendix ## to view the completed comic strip.

4.2.2 Blockchain

Blockchain presented our group with the greatest challenge when deciding how to create a narrative, due to the complexity of the technology itself. It required us to spend a large amount of time researching the topic so that we could gain a good enough understanding to create a narrative. According to the survey results we received, blockchain was not a particularly sought-after technology that our participants wanted to learn about, but it also contained the highest concern from the survey participants. This made it seem counter-intuitive to present it as a narrative. However, we concluded that due to its relevance with cryptocurrencies, which have become infamous, blockchain gets mistaken with cryptocurrencies, and the technology behind blockchain gets ignored. We wanted to show the public the uses of blockchain beyond cryptocurrencies and how it can be applied to many industries in various fields.

We settled on the idea of an illustration of a train since it resembles the image of a blockchain. It would also be easier to use the idea of a train to help explain the complexities and security measures of blockchain. For the infographic, we decided to use questions as subtitles instead of plain subtitles, to try and pique the curiosity of the reader. We also decided to make use of bright colors and visuals to make the infographic more readable. Please see Appendix E to view the completed infographic.

4.2.3 Digital Sovereignty (DS)

When first brainstorming ideas for digital sovereignty (DS), our team decided to use the word ‘sovereign’ as a basis for our narrative. Alike blockchain, digital sovereignty held a low knowledge basis among our survey results with high concern. We concluded that since DS is

such a broad term and can be applied to many aspects of life, our survey participants and possibly the broader public, must not have a singular idea of what DS can refer to. This gave us the idea to focus on creating a story that would help clarify the concept of digital sovereignty.

With the help of our sponsor, we settled on a medieval storyline showing villagers having their resources exploited by their king. The king would come down from his castle on a hill to take away the crops of the villagers, which can be related to people giving away their personal data. The king would then sell these crops to a mysterious trader for money, which he would then keep for himself. After having had enough, the villagers decide to go against the king and hunt him down. The comic strip will end with the villagers dethroning the king and obtaining the rights to keep their food and trade freely with the food. This symbolizes the great fight over sovereignty of our own data in the digital world.

4.3 Prototyping and Implementation

We had a plan for our topics, now we needed to follow the plan and create our prototypes and final products. To fulfill this objective, we used the programs Gimp, Adobe Illustrator, and Canva to develop repeated drafts until we reached a final product that we were satisfied with. By the end of this process, we had two comics, an infographic, and a short video.

4.3.1 IoT

We started the prototyping process for IoT by drawing out quick ideas on the whiteboard. We came up with two concepts fairly quickly, but we expanded on them and made them more entertaining as we were creating the prototypes. The first comic shows something like an Amazon Alexa or Google Home telling all the other smart appliances what to do before the owner comes home. For example, the curtains, the lights, the Roomba, and the thermostat are all

shown. The second comic is supposed to be a combination of IoT and sustainable energy. It shows each of the smart appliances explaining their functions and how they help conserve energy, but then cuts to the vaguely Alexa/Google Home listening in to the owner's conversation and taking notes.

Figure 21. Portion of Final draft of IoT prototype.

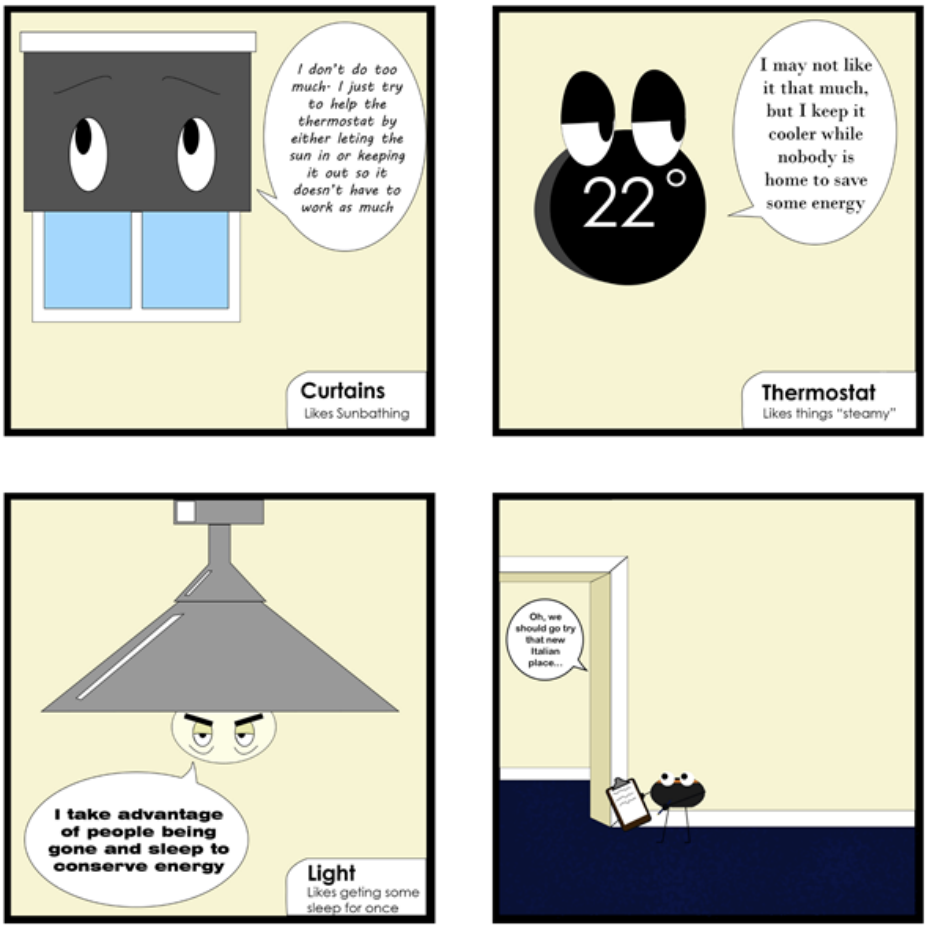

Figure 22. Final draft of second IoT prototype.

Figure 21 is a portion of our first comic; the full version, which is in the appendix, is an expanded version of the whiteboard concept that has also been put into a short stop motion-like video. The comic also includes more jokes than the original, like the Roomba being kicked and crying, to make the cartoon more entertaining. Then, Figure 22 shows the 4-panel comic from the second comic from the whiteboard. It is styled like a talking head interview from a reality TV show to make it more interesting and through subtle jokes.

4.3.2 Digital Sovereignty

We began the prototyping process for Digital Sovereignty by having a brainstorming session around a whiteboard. The results of said brainstorming session can be found in Figure 16. We came up with one idea at first and decided to stick with it. This was because we were unsure of how many ways we could come up with to explain the same concept, much less make it compelling. We decided on an establishing shot of a castle on a hill in the background with dirty huts in the foreground and crops growing in the field. We decided on the following characters and props: The “King” represented internet service providers and large companies with media platforms while the “farmers” are the users and the “crops” are their data. Then, the “King” comes to take the “crops” from the “farmers”, and the “farmers” don’t like the fact that their “crops” are being stolen so they gather together to stage a revolution. Meanwhile, the “King” is selling the “crops” to a mysterious and wealthy third party, however before the transaction can go through, the “farmers” bust down the “King’s” door and execute him with a guillotine, all with comical expressions.

Once we finalized those ideas and sketched them out on the whiteboard, we decided to make a more permanent prototype.

Figure 23. Finalized Version of Digital Sovereignty product.

Our finalized version, shown in Figure 22, was created in Adobe Illustrator and consists of six separate panels as planned in Figure 21. This prototype is meant to convey a concept through an analogy to make it more accessible and understandable. The cartoonish style and slightly comedic tone are meant to make the prototype more engaging and compelling to follow than a regular infographic. The result was accomplished in around two weeks of time; however, a repeat attempt may not take as long as we were new to Illustrator and there were several technical difficulties. Practice and more use of the program would most likely reduce the time it would take to make a product such as this in the future, and the quality would likely increase as well.

4.3.3 Blockchain

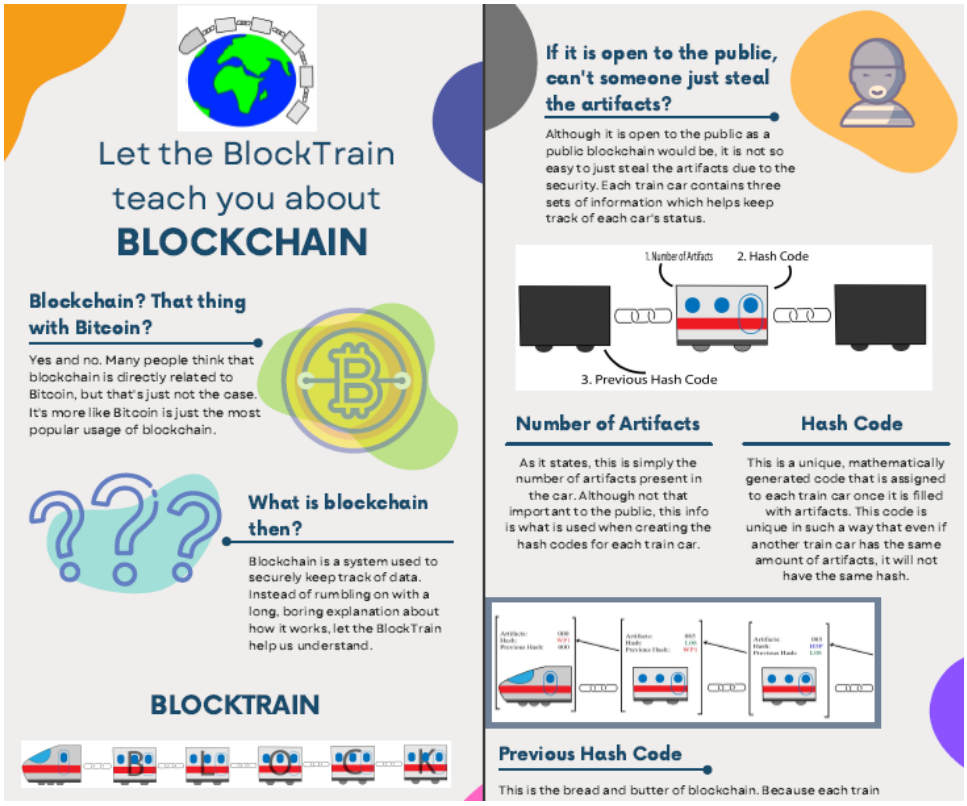

Figure 24. Excerpt from finalized blockchain prototype.

For blockchain, we began the prototype process by first learning more about blockchain. This led us to the idea of a train that represents how blockchain works. The realization of our first and most fleshed-out idea can be seen in Figure 23, with a series of questions and answers written out alongside bright and colorful imagery. We settled on one story for blockchain since it is such a complex topic and would require quite an in-depth knowledge of to create another narrative.

The basis of the infographic is that there are preset questions which we had made to try and emulate what an ordinary person would want to learn about blockchain. This made the infographic feel much better to read. As we continued brainstorming questions, it also allowed us

to refine the prototype and fix any gaps in the train idea that would not be able to answer a question clearly. We also decided to create outlier questions such as trying to steal from every train car at the same time, which presented our team with challenges that allowed us to test out our bitcoin knowledge.

The final plan was to have each question be followed by an image or doodle that would help illustrate the question and answer it visually. This would help excite the reader and lead them to explore more answers to questions that they could be curious about. Our plan also included some short animations, if possible, to boost the interactivity of the infographic page.

In conclusion, we created three prototype narratives through data analysis of the survey results and through multiple workshops. We used this experience to recommend the SATW on how to tackle narratives in the future.

5.0 Conclusions and Recommendations

In this section we will go over what conclusions we have drawn from our experience during this project, as well as recommendations for future steps SATW should take.

5.1 Conclusions

The following is a summary of our conclusions based off our first two objectives, as our conclusions from our third objective are essentially our finalized prototypes.

5.1.1 Survey Conclusions

- The respondents were all knowledgeable in technology, so any field that they were lacking knowledge in or were concerned about were likely shared with the broader public.
- We measured three variables: knowledge, interest, and concern of emerging technologies, and we saw that knowledge and interest are positively correlated but each are negatively correlated with concern for the most part.
- We believed that focusing on fields with high concern was the correct way to go about this, as raising knowledge would lower high-concern and raise interest.
- Our respondents' concerns were mainly around privacy and loss of control.
- Our respondents' interest was focused on their relevancy, sustainability, and social impact.
- Our respondents were most likely from the scientific community, so they selected platforms such as LinkedIn and internet blogs as their most commonly used media platforms. We decided to try and promote the content through other methods such as Twitter and Facebook in an attempt to reach a broader audience.

- The top three mediums that our respondents felt most engaged with were “Typed-out info,” “Short videos,” and “Infographics,” so we decided to do those three with a little bit of the fourth one, “Images,” added in.

5.1.2 The Planning Process

- Initially we approached the planning process with the idea of selecting the platform first, then the medium, and then the content; however, we discovered that following the order of content first, then medium, then platform was much more conducive to a creative brainstorm.
- While some content may be better suited to a web page, such as the Digital Sovereignty comic, it should still be promoted on other platforms such as Twitter and Facebook.
- We attempted to put a creative spin on the subject matter, as we knew plain science jargon would not attract new viewers.
- We learned from our survey results that the existing audience for SATW was not entirely representative of the general public, so in order to reach broader audiences, platforms such as LinkedIn and blogs should not be used exclusively, but instead hashtags on platforms such as Twitter and Facebook could be used to gain a broader audience and attract more attention to the products.
- Analogies are a simple way to relate a complex subject matter to something simpler and relatable and promote comprehension.

5.2 Recommendations

Moving forward, we have several recommendations for SATW in the future. First and foremost, we recommend a second survey to get public feedback on the prototypes once they are posted. Secondly, we recommend measuring platform engagement with the release of each prototype, to

see if there is any increase or noticeable change caused by the prototypes. Our final recommendation is to use the guide provided and this paper in Appendix E for any future endeavors such as this.

One way to measure the success of this project is to see if it increased engagement and understanding of the subject material. A follow-up survey could be all-encompassing, covering all three topics and their respective prototypes, or there could be a survey after each prototype is released. If the first option is pursued, then there is the risk of the prototypes and the impression they left not being fresh enough in the public's minds and data might not be as specific as it could be. On the other hand, surveys after each prototype could get repetitive and cause a loss of engagement. In terms of the questions on the survey, one of the first ones should be whether viewers actually engaged with or were aware of the prototype. Next, we feel that it would be useful to include questions that ask for a rating of the respondent's knowledge and/or comprehension of the related subject before they engaged with the respective prototype (similarly to our initial survey). A similar question should be asked about interest before interacting with the prototype and then add counter parts to these questions asking about the same variables after engaging with the prototype; this would provide a before/after comparison. We also suggest including free response questions asking if there was anything in particular that respondents liked, disliked, or would change in the prototypes. Lastly, we would include yes or no questions asking whether or not they would want to see more of this type of content in the future from SATW, and what subject(s) they would like to see covered in the future. These are merely our suggestions for a survey to gauge engagement, there is also the more indirect way of measurement which would be through platform statistics.

We also suggest tracking statistics on the relevant platforms. This method is a more passive one but could require check-ins of sorts to get an accurate measure of how engagement is changing over time. This method is less work intensive and is also not reliant on people responding, but there would be no possible measurement in a change of knowledge/comprehension, interest, or concern, and there would not be a direct way for respondents to give feedback. In short, we recommend this as a supplement to a primary form of engagement measure such as a survey, but it can also be used as a limited primary form of measurement.

If SATW is interested in making more content such as this, we created a simplified guide to our process and our recommendations. The guide can be found in Appendix F, and it provides recommendations and suggestions for the timeline of posting our three finalized products and where they should be posted. It also includes suggestions for generating new content in the future if SATW should wish to do so.

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Appendices

Appendix A: Summarized Project Schedule

Tasks	Summer	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
Post online survey								
Analyze and review online survey responses								
Workshop 1								
Workshop 2								
Workshop 3								
Workshop 4								
Workshop 5								
Create a prototype social media post								
Implement the prototype								
Reiterate and revise the prototype								
Final Workshop								
Finalize everything and prepare for presentations								

Appendix B: Survey Consent Agreement and Questions

The following is the consent agreement given to all survey participants before the survey:

We are a team of students from Worcester Polytechnic Institute, and we are working alongside the Swiss Academy of Engineering Sciences (SATW), a Swiss government organization that educates the public about emerging technologies that will help boost the Swiss economy. The SATW puts out informative, scientific papers biannually called Technology Outlooks, that contains information regarding a range of emerging technologies and how they will help the Swiss population.

A major problem encountered by the SATW has been in trying to reach a broader audience. To help tackle this problem, our project aims to create a plan to help the SATW create social media posts that will be informative and fun to read. To do this, we must reach out to the Swiss public and find out what technologies people have the most interest in, what technologies people lack the most information in, and what types of social media posts garner the most feedback. Thank you for taking this survey.

All the information you provide will help us with our research and project development. You are not obligated to answer any question that you feel uncomfortable with.

You must be 18 yrs or older of age to participate in the survey. You may also stop the survey at any given time. The data collected will be anonymous and will not identify you by name. If you do not consent to the use of your answers, you are not required to continue. The survey should take around 5 to 10 minutes to complete and consists of multiple choice and short-text questions that focus on emerging technologies.

If you have further questions about this research, you may send us an email at gr-satw-a21@wpi.edu.

Our team members: Kurtis Kiai, Benjamin Martin, Eric Johnson and Kayla Lepping.

I allow my answers to be used for scientific research purposes and agree that I am of age 18 yrs or older.

- Agree
- Disagree

<u>The following is the survey questions following the consent form:</u>

What are important aspects of emerging technologies?

- Economic Impact
- Relatively Fast Growth
- Uncertainty and Ambiguity
- Prominent Impact
- Other:

Rate your confidence/trust in science and technology with 0 being no confidence, 3 being moderate confidence, and 5 being very confident.

0 1 2 3 4 5

Please rate the following technologies based on your knowledge in the topic from 0 to 5, with 0 being you have never heard of the technology, 3 being a moderate understanding of the technology, and 5 meaning you are well versed in the technology:

Augmented Reality	0	1	2	3	4	5
Blockchain	0	1	2	3	4	5
Highly Automated Vehicles	0	1	2	3	4	5
Internet of Things	0	1	2	3	4	5
Quantum Cryptography	0	1	2	3	4	5
Sustainable Food Production	0	1	2	3	4	5
Sustainable Energy Resources	0	1	2	3	4	5
Bioplastics	0	1	2	3	4	5
3D Bioprinting	0	1	2	3	4	5
Robots in Medicine	0	1	2	3	4	5
Artificial Intelligence	0	1	2	3	4	5
5G Applications	0	1	2	3	4	5

Please rate the following technologies based on your level of concern regarding the topic from 0 to 5, with 0 being you are not concerned at all, 3 being a moderate level of concern, and 5 meaning you are extremely concerned:

Augmented Reality	0	1	2	3	4	5
Blockchain	0	1	2	3	4	5
Highly Automated Vehicles	0	1	2	3	4	5
Internet of Things	0	1	2	3	4	5

Quantum Cryptography	0	1	2	3	4	5
Sustainable Food Production	0	1	2	3	4	5
Sustainable Energy Resources	0	1	2	3	4	5
Bioplastics	0	1	2	3	4	5
3D Bioprinting	0	1	2	3	4	5
Robots in Medicine	0	1	2	3	4	5
Artificial Intelligence	0	1	2	3	4	5
5G Applications	0	1	2	3	4	5

For any technology that you rated 3 or above, what specific concerns do you have, if any?

- Economic Impact
- Job Security
- Impact on Energy
- Societal Impact
- Privacy/Security
- Loss of Control
- Safety
- Other:

Select the top 5 technologies that you are most interested in:

- Augmented Reality
- Blockchain
- Highly Automated Vehicles
- Internet of Things
- Quantum Cryptography

- Sustainable Food Production
- Additive Manufacturing
- Sustainable Energy Resources
- Bioplastics
- 3D Bioprinting
- Robots in Medicine
- Artificial Intelligence
- 5G Applications

For the technologies selected above, what specific questions would you be interested in learning the answer to, if any?

What platforms do you find yourself using on a regular basis, if any? (Select all that apply)

- YouTube
- TikTok
- Twitter
- Facebook
- Instagram
- LinkedIn
- Reddit
- TV or movies
- Internet blogs or webpages

What types of posts do you feel most engaged with on these platforms?

- Short videos
- Long videos
- Images
- Audio books
- Infographics
- Memes
- Typed-out info

-

Do you think emerging technologies are beneficial or detrimental to the future of Switzerland? Explain.

Thank you for participating in the survey. If you have further questions about this research or questions presented in the survey, you may send us an email at gr-satw-a21@wpi.edu.

Appendix C: Survey Results

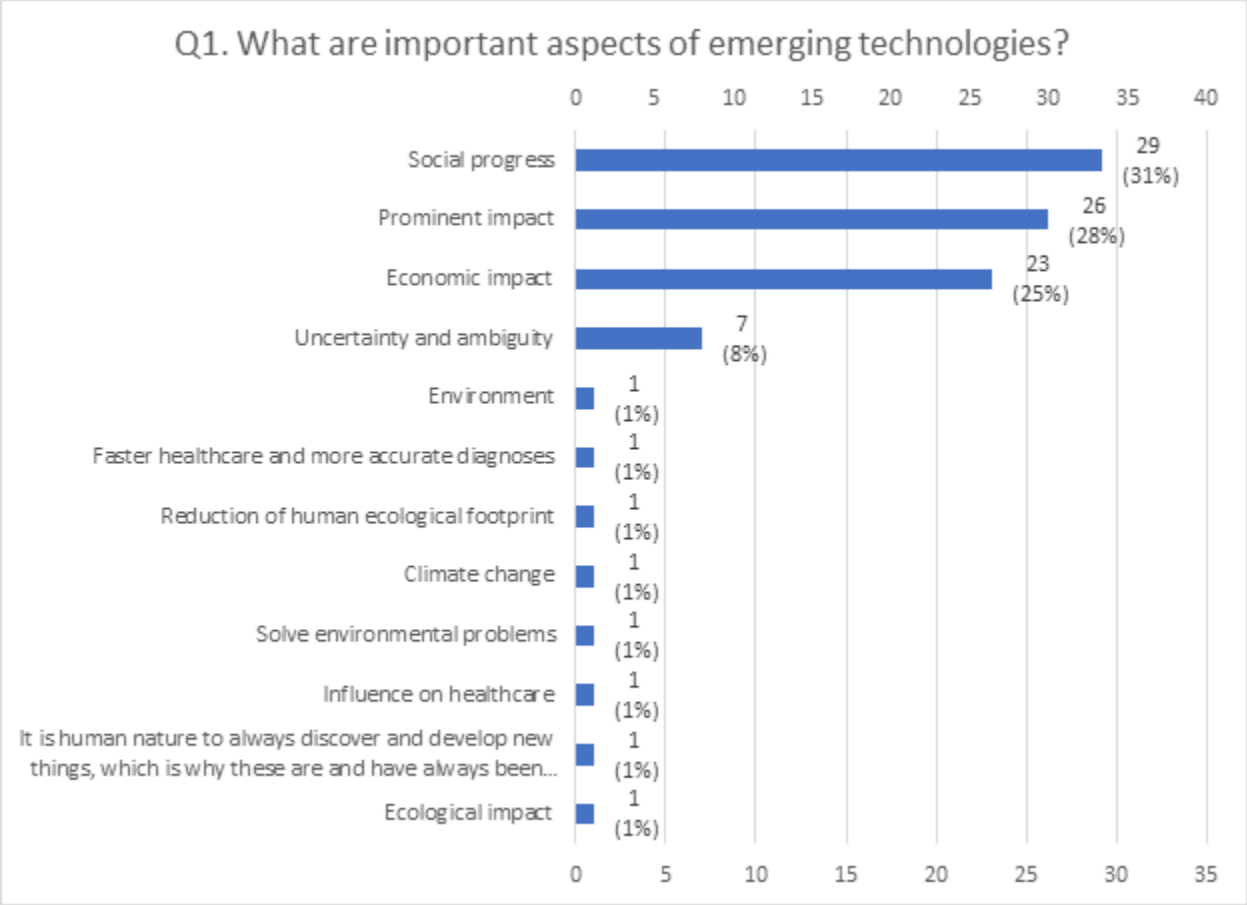

Figure 25. Results of the first question on the survey.

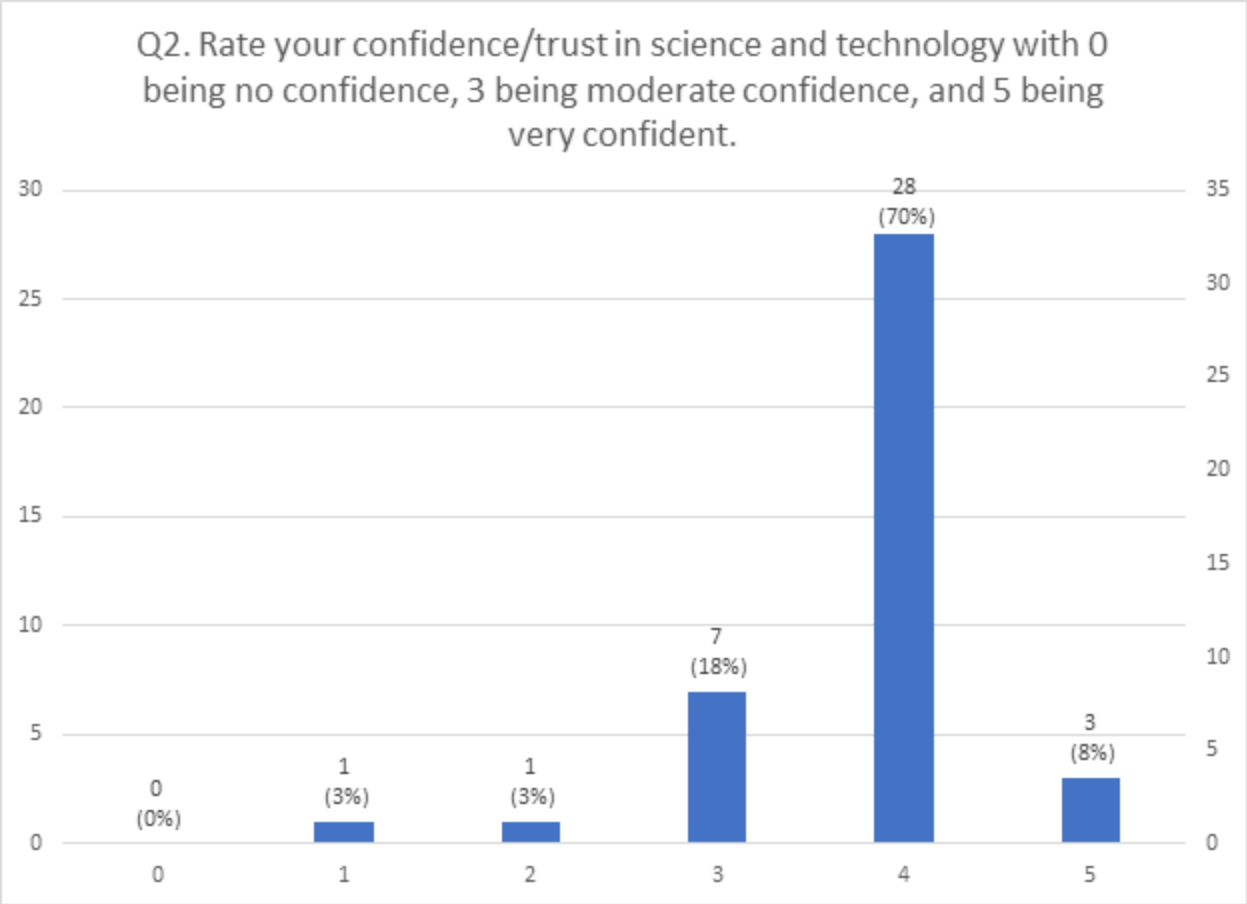

Figure 26. Results of the second question on the survey.

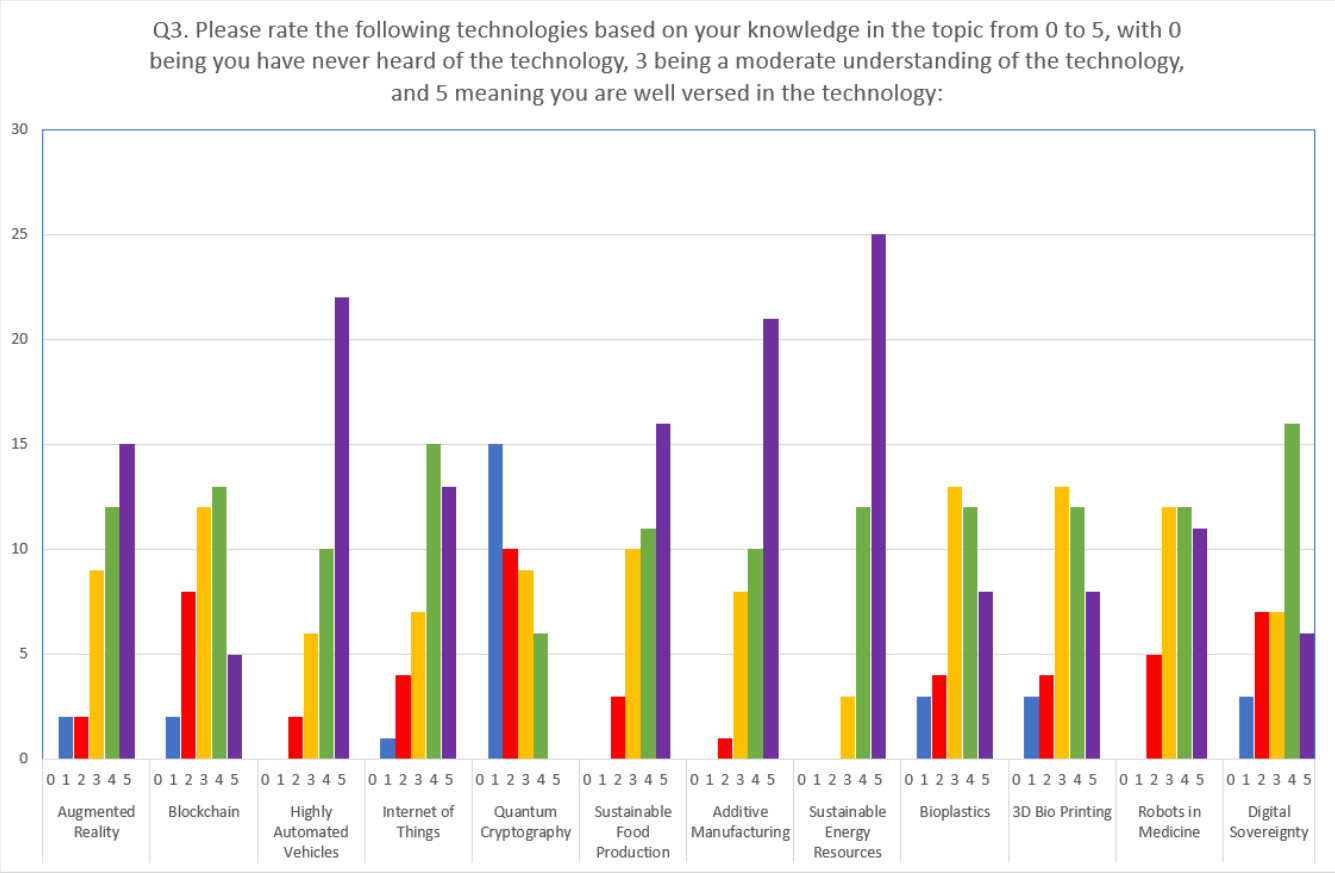

Figure 27. Results of the third question on the survey.

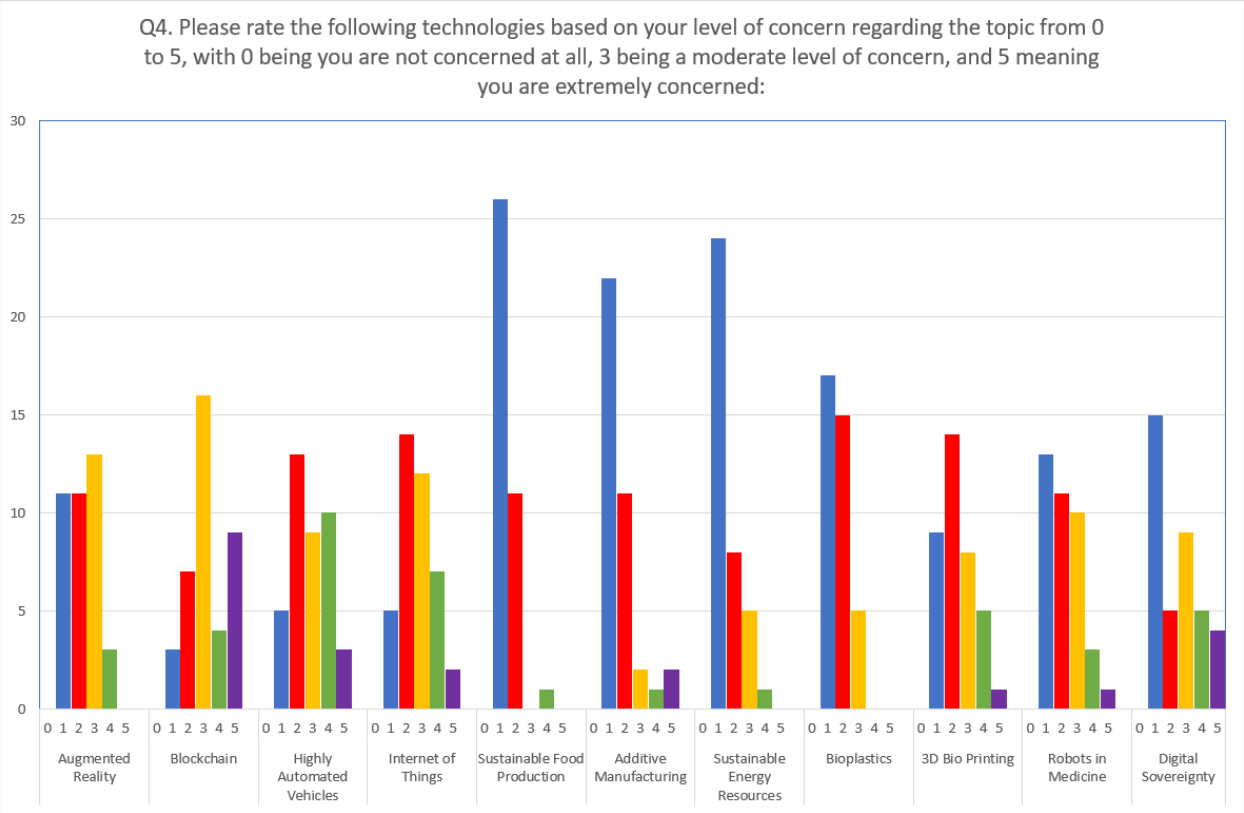

Figure 28. Results of the fourth question on the survey.

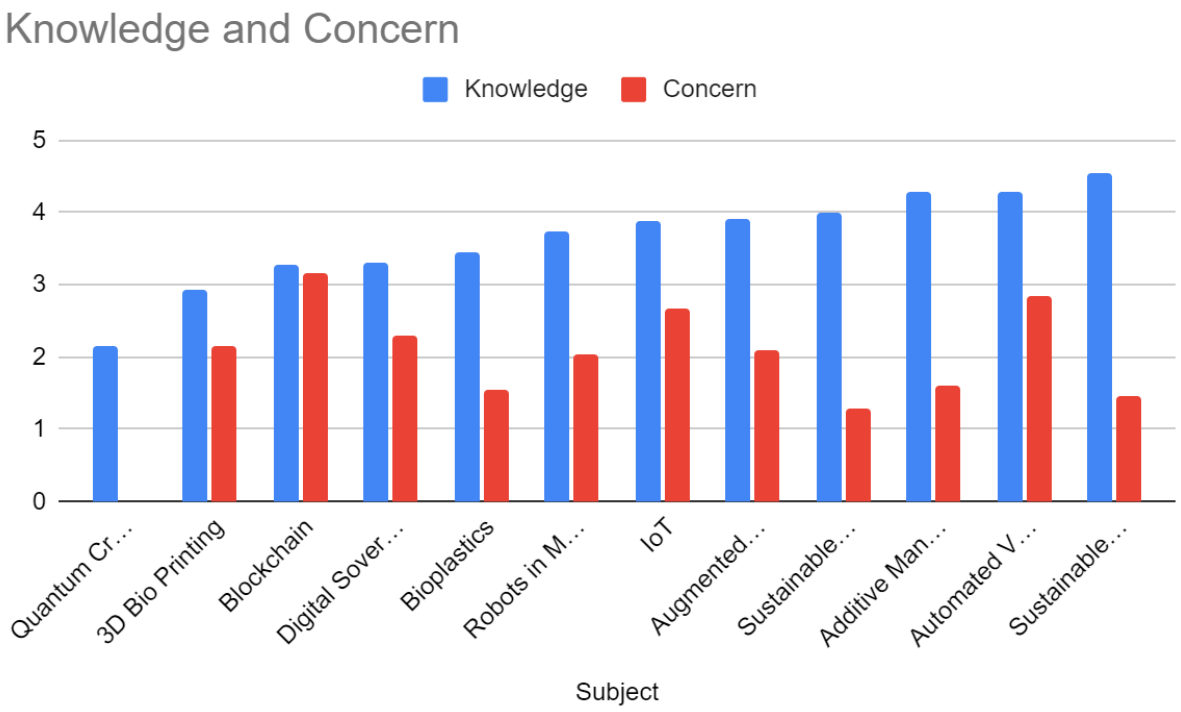

Figure 29. Average Knowledge and Concern of each subject.

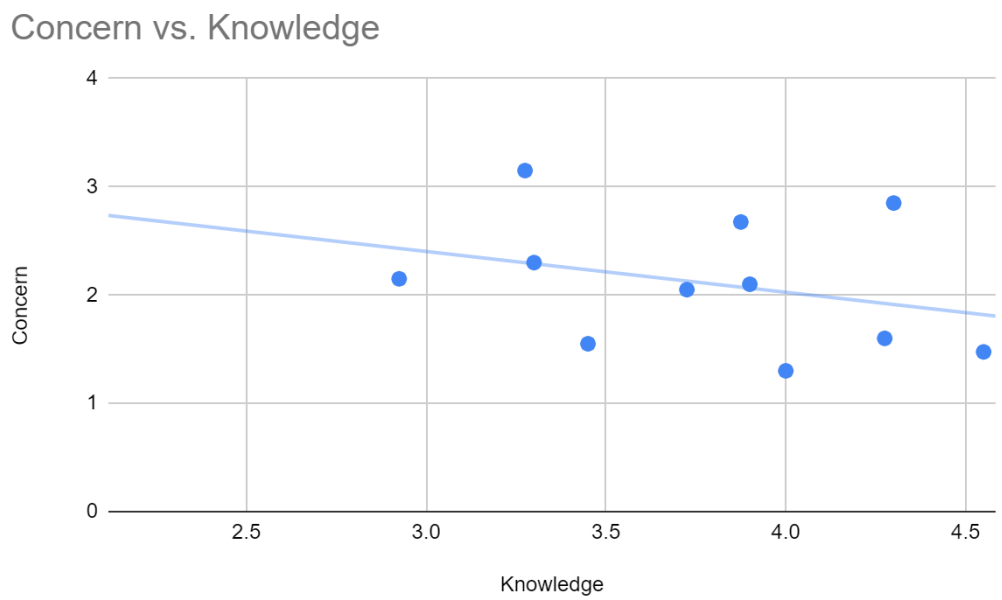

Figure 30. Average Knowledge and Concern from Figure 5 plotted out.

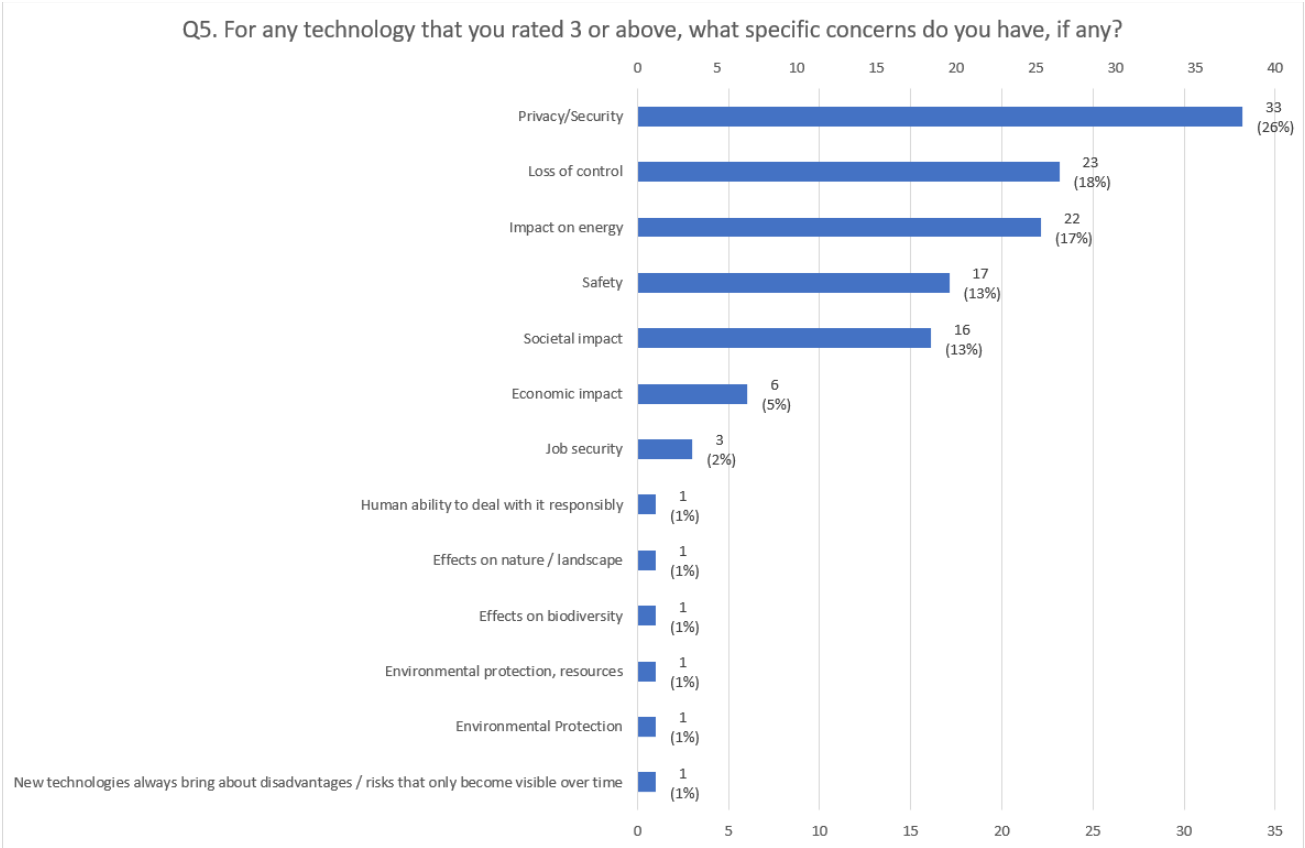

Figure 31. Results of the fifth question on the survey.

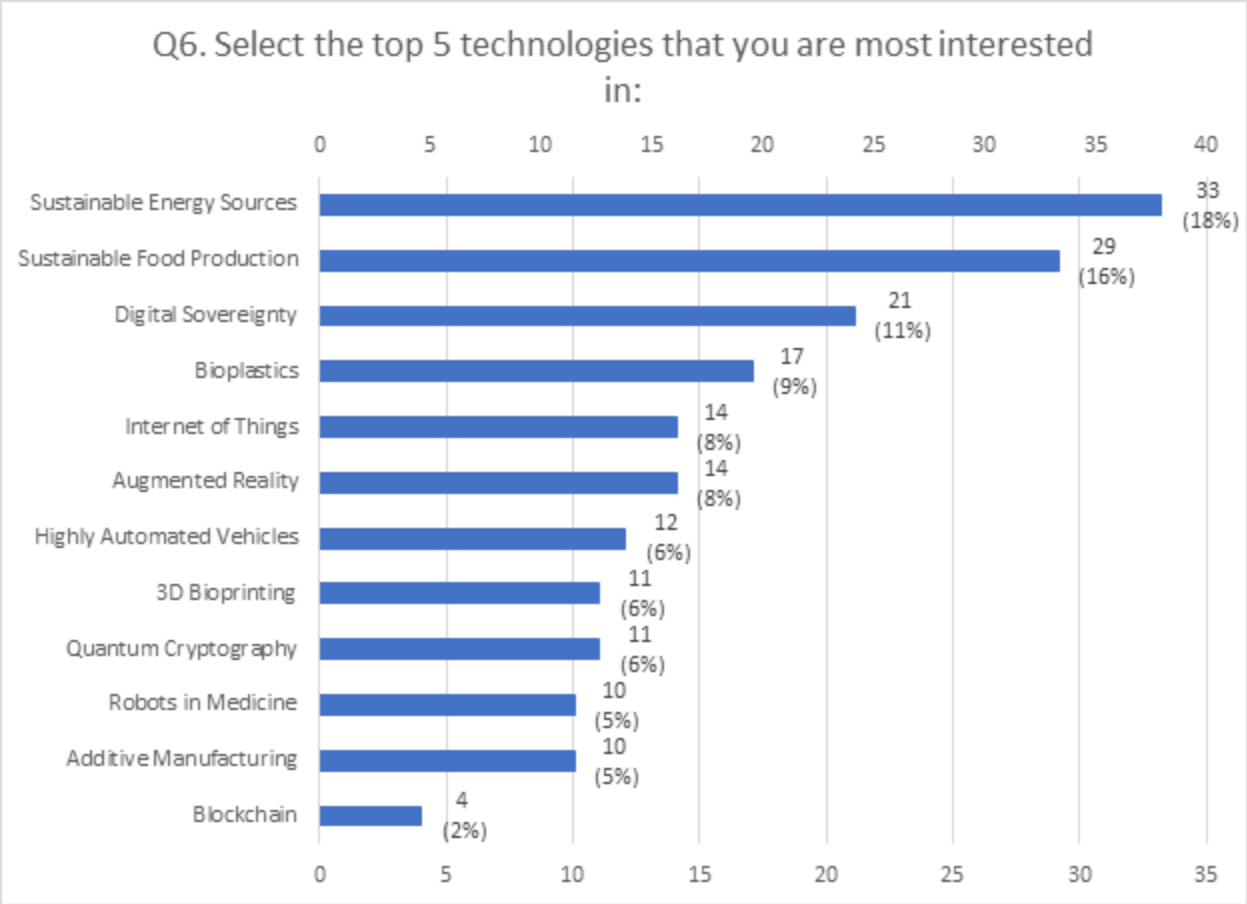

Figure 32. Results of the sixth question on the survey.

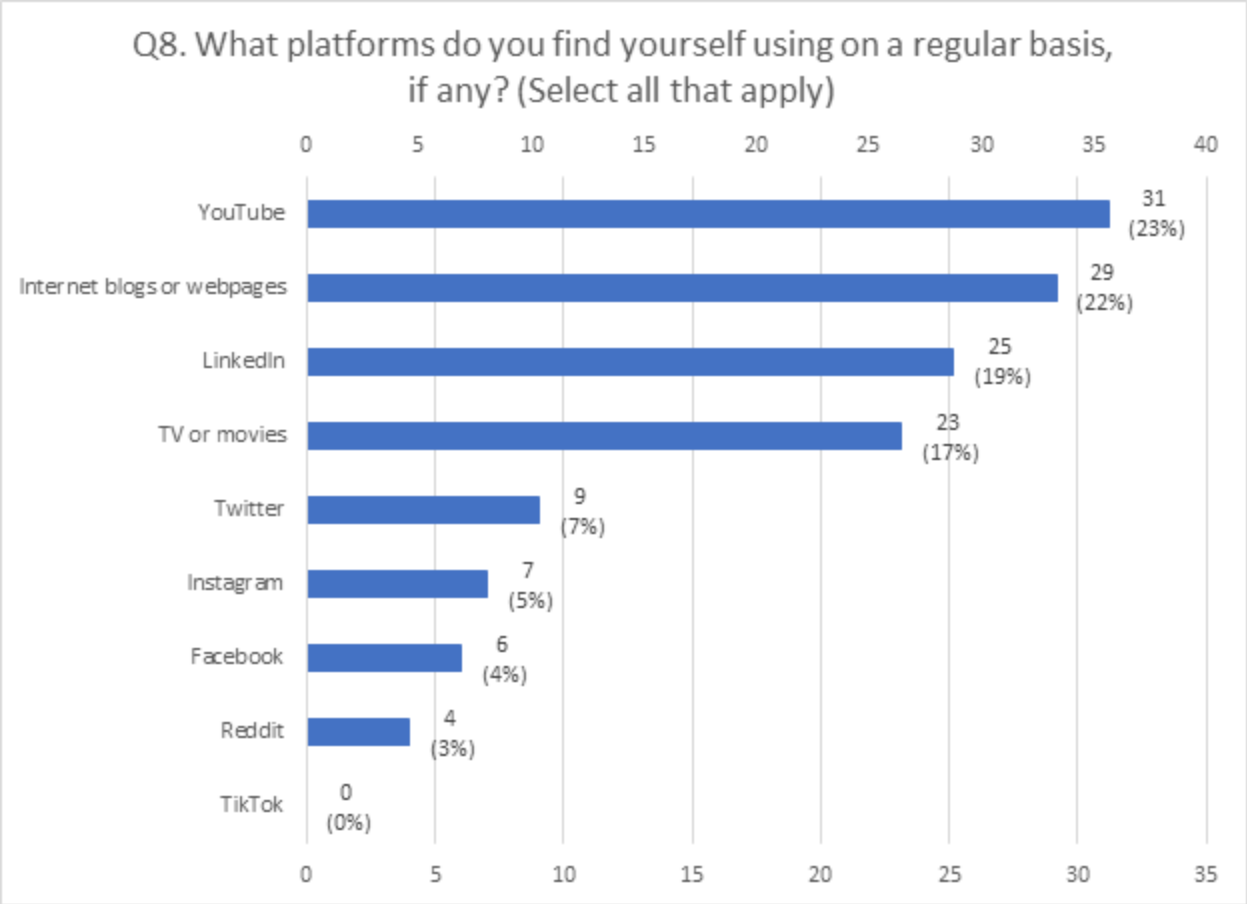

Figure 33. Results of the eighth question on the survey.

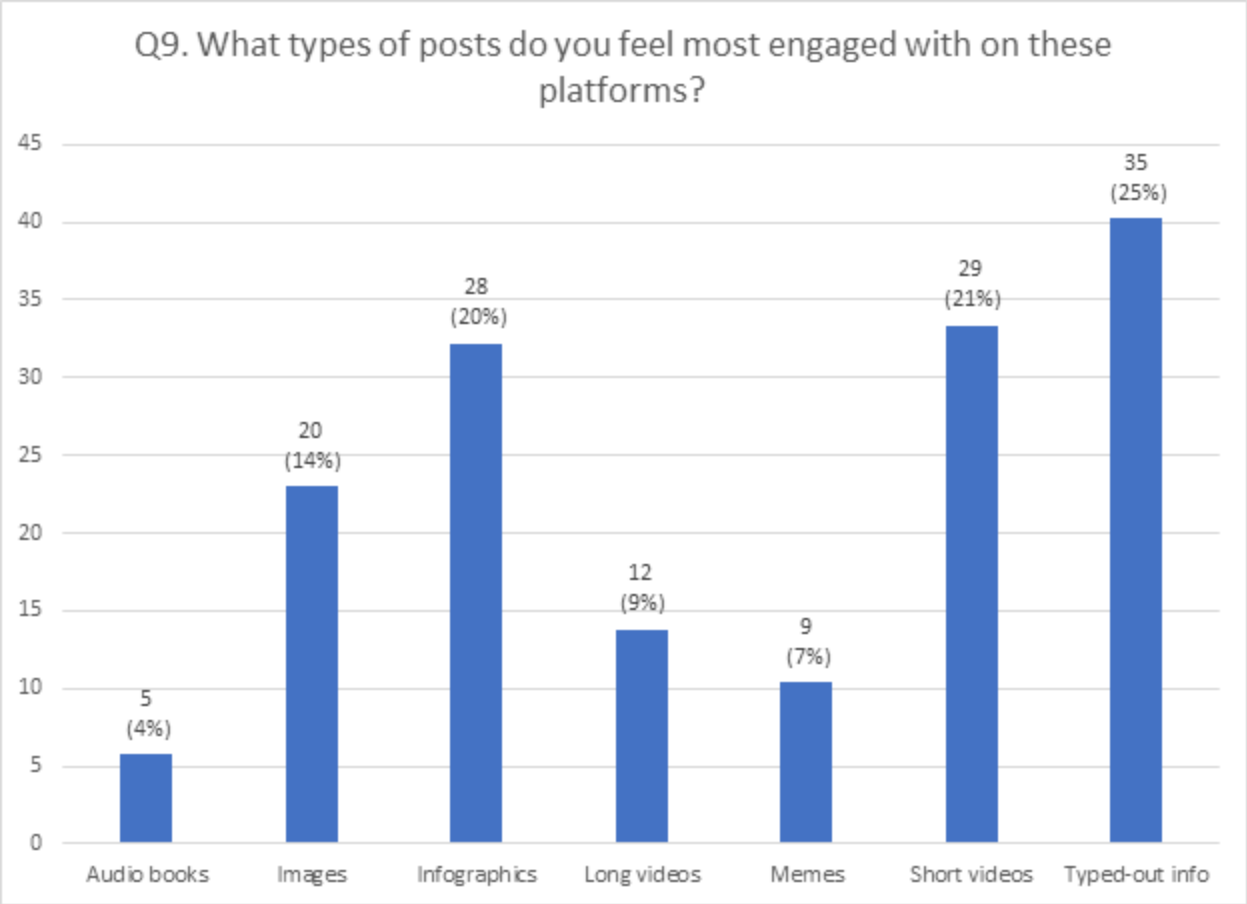

Figure 34. Results of the ninth question on the survey.

Appendix D: Whiteboard sketches and early prototypes

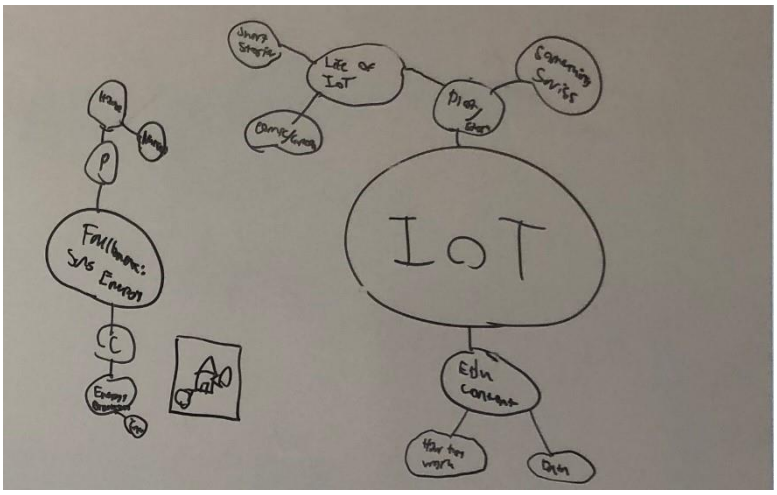

Figure 35. Internet of Things idea sketches.

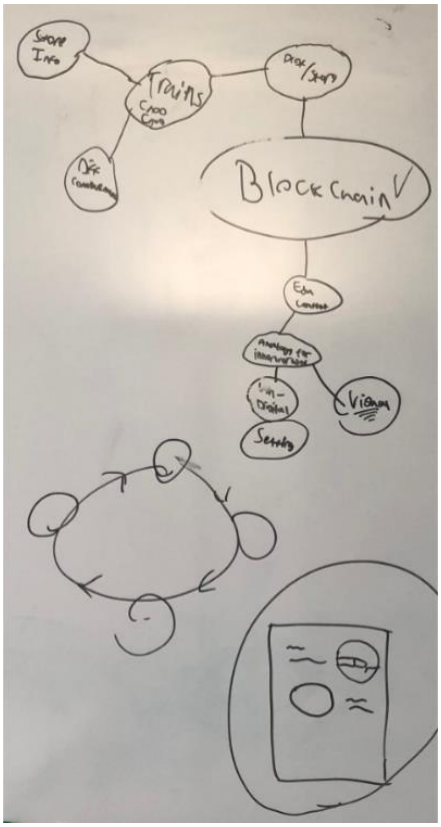

Figure 36. Blockchain idea sketches.

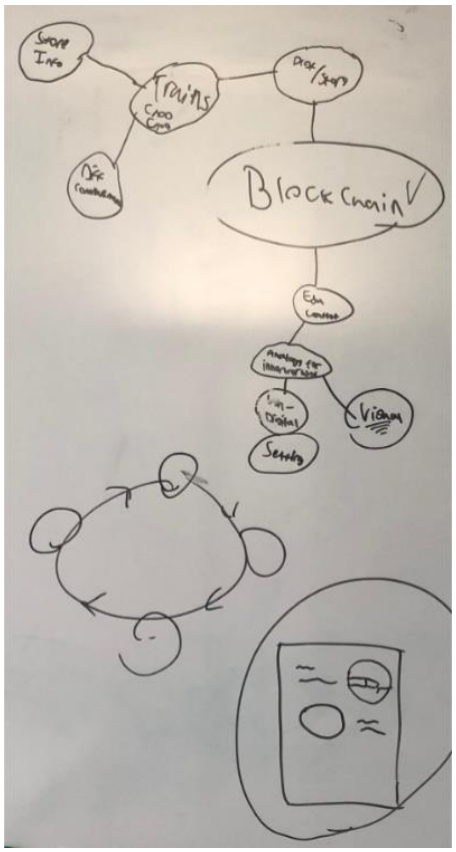

Figure 37. Blockchain idea sketches.

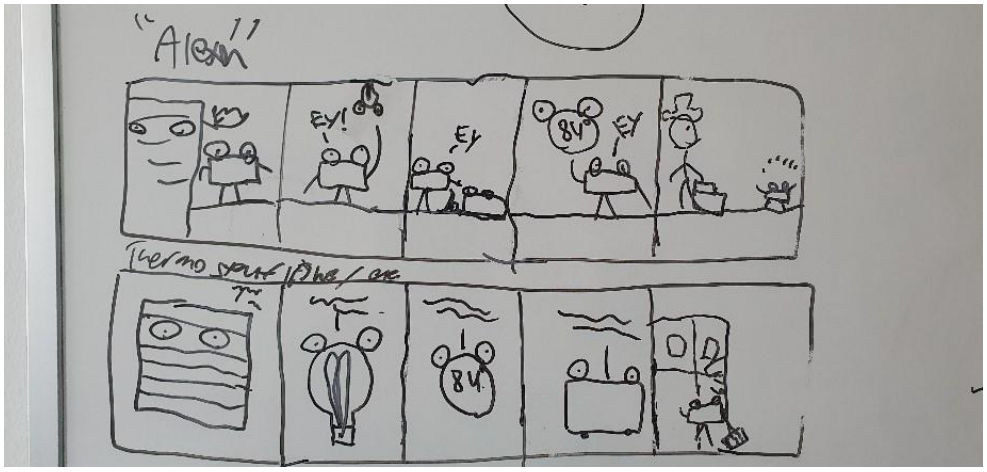

Figure 38. Brainstorm of IoT.

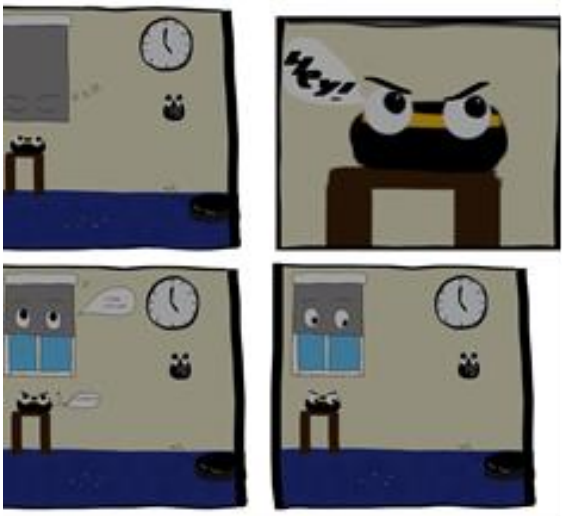

Figure 39. Initial draft of IoT prototype.

Figure 40. Initial draft of second IoT prototype.

Figure 41. Brainstorm of Digital Sovereignty.

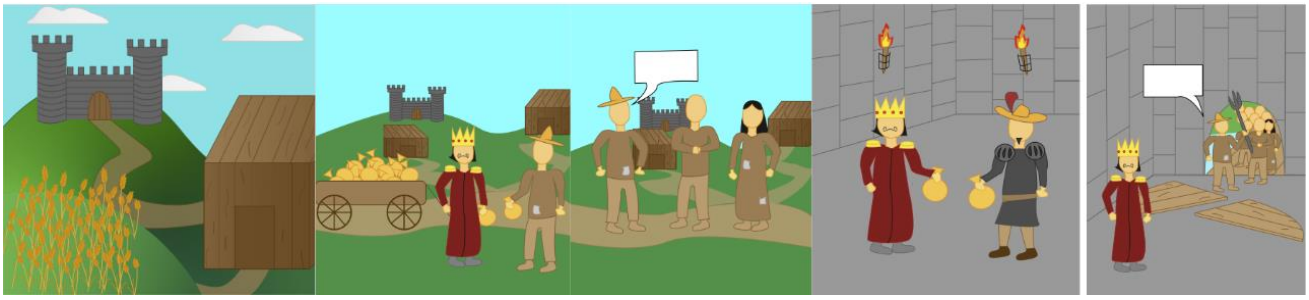

Figure 42.Second draft of Digital Sovereignty prototype.

Appendix E: Finalized prototype narratives

Figure 43. First final panel of Digital Sovereignty.

Figure 44. Second final panel of Digital Sovereignty.

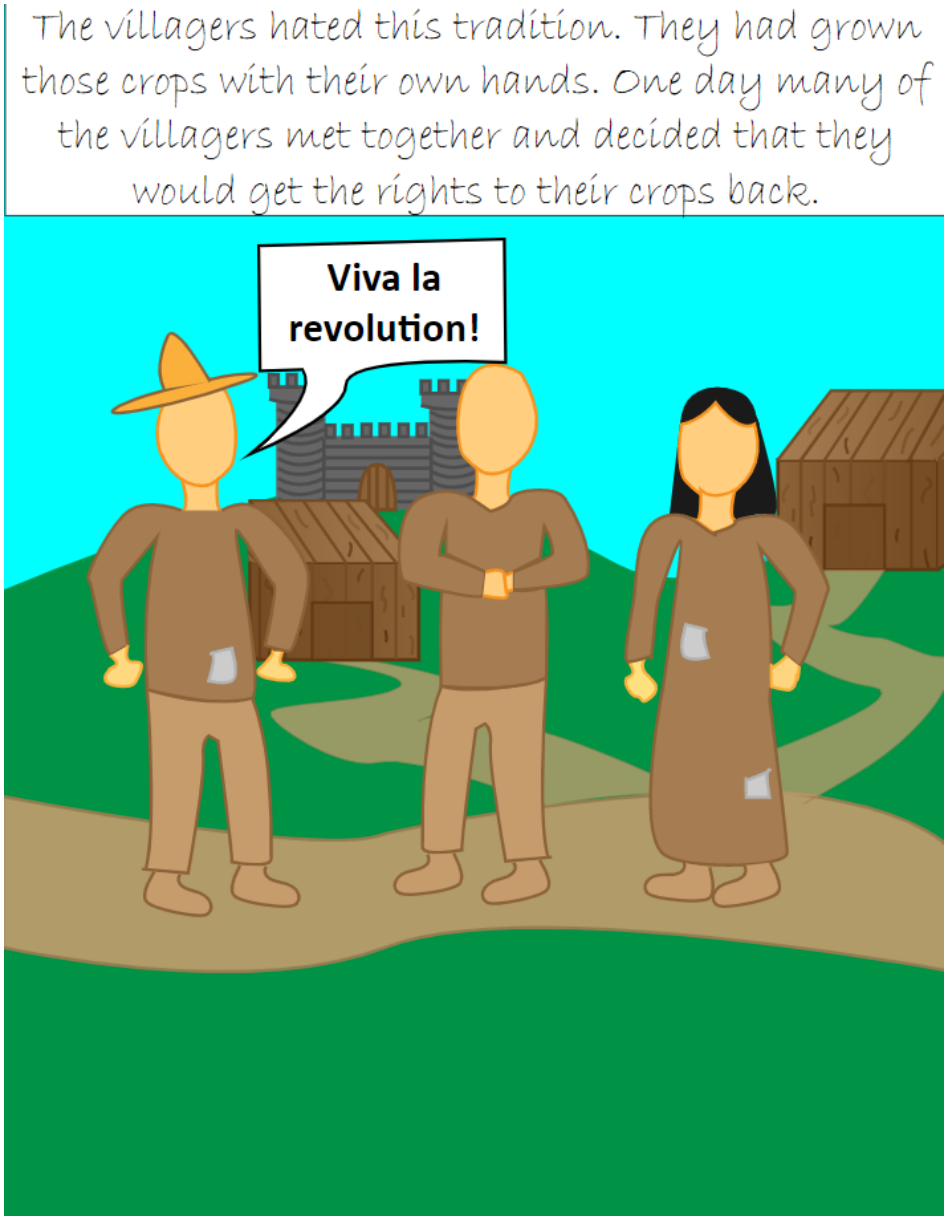

Figure 45. Third final panel of Digital Sovereignty.

Figure 46. Fourth final panel of Digital Sovereignty.

Figure 47. Fifth final panel of Digital Sovereignty.

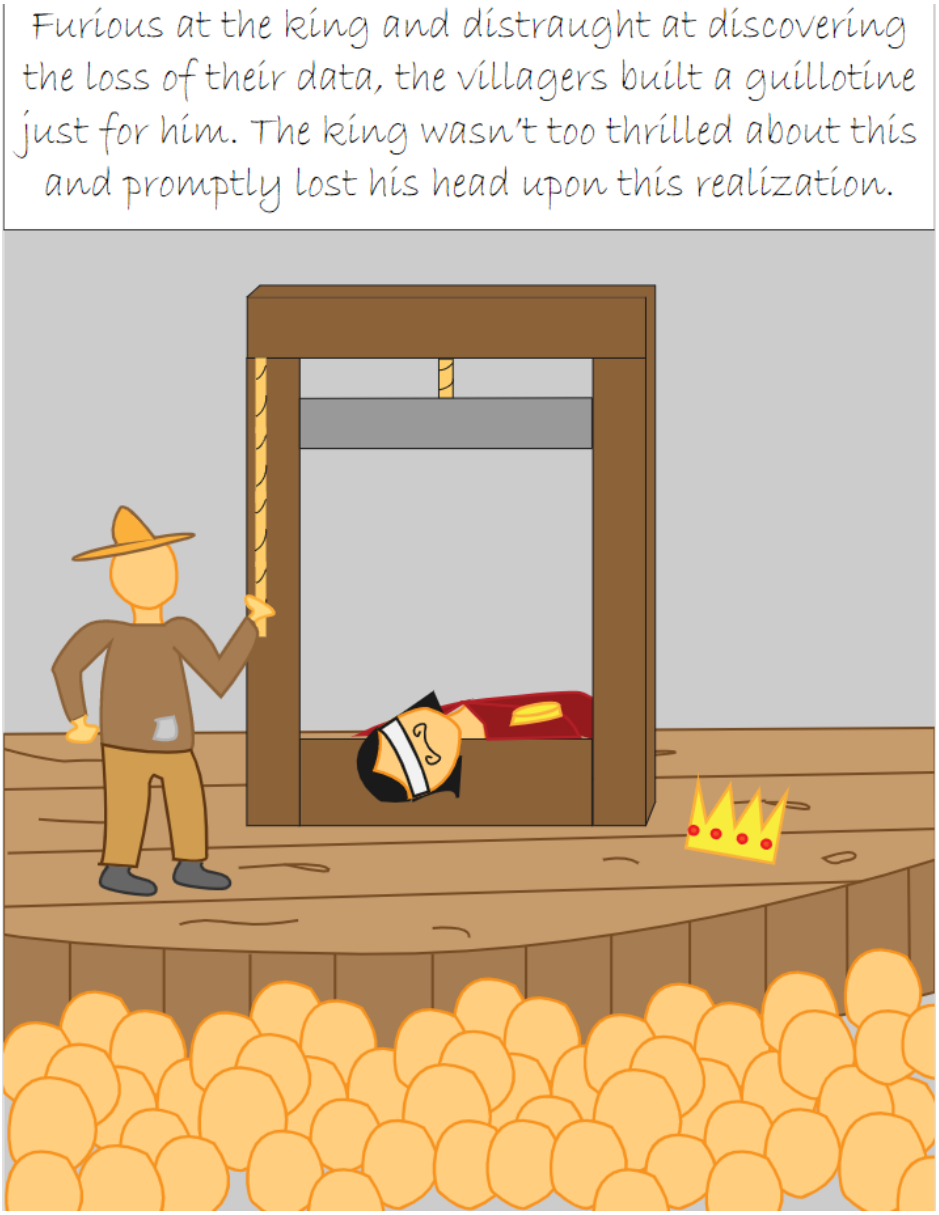

Figure 48. Sixth final panel of Digital Sovereignty.

Figure 49. Final panel of Digital Sovereignty.

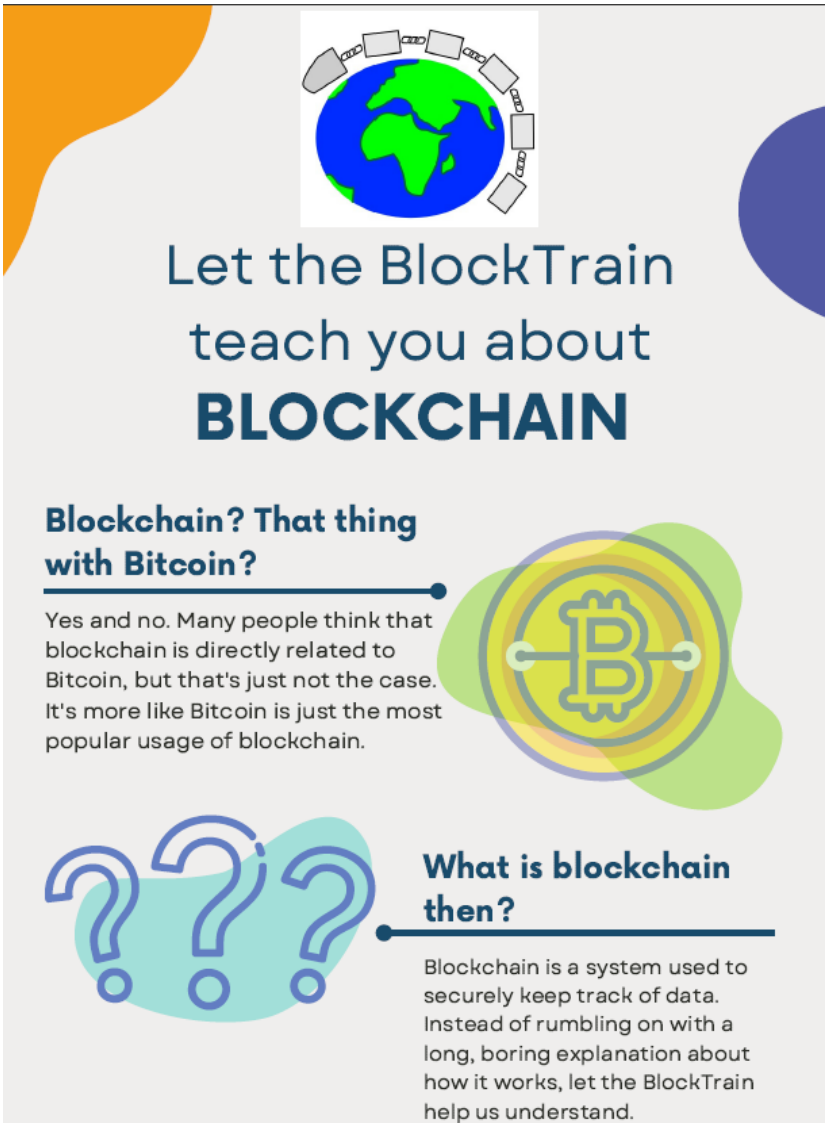

Figure 50. First half of page 1 of Blockchain infographic.

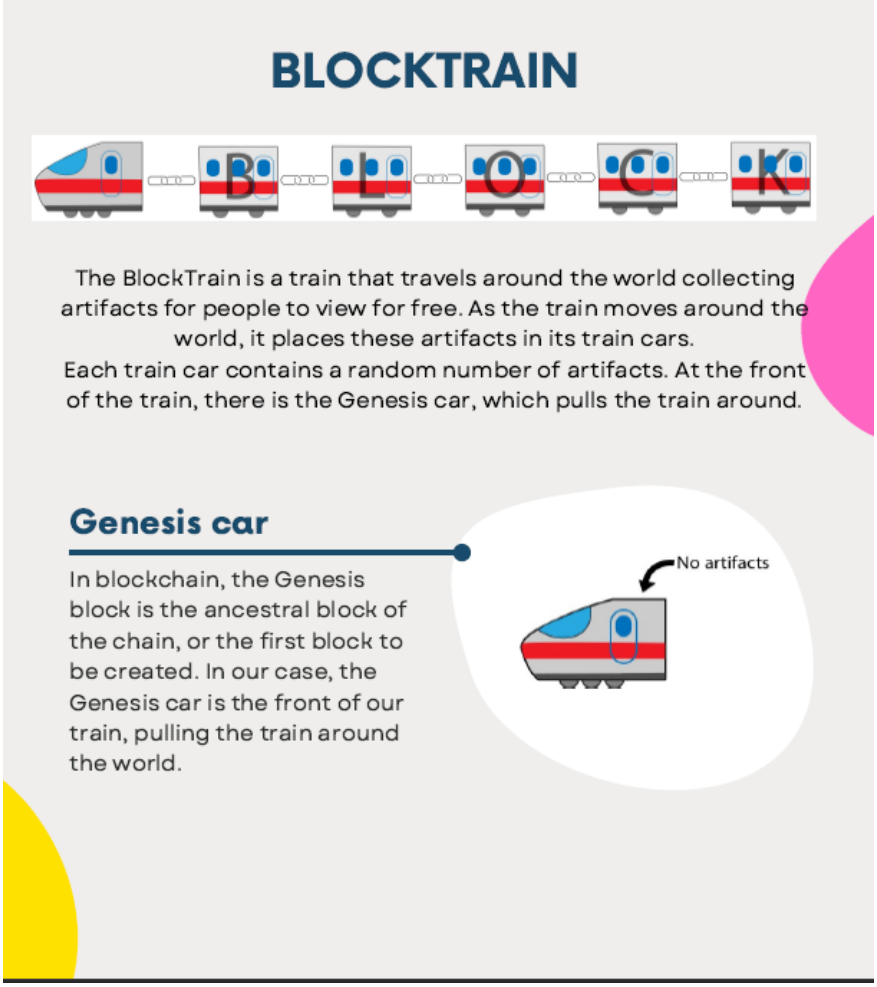

Figure 51. Second half of page 1 of Blockchain infographic.

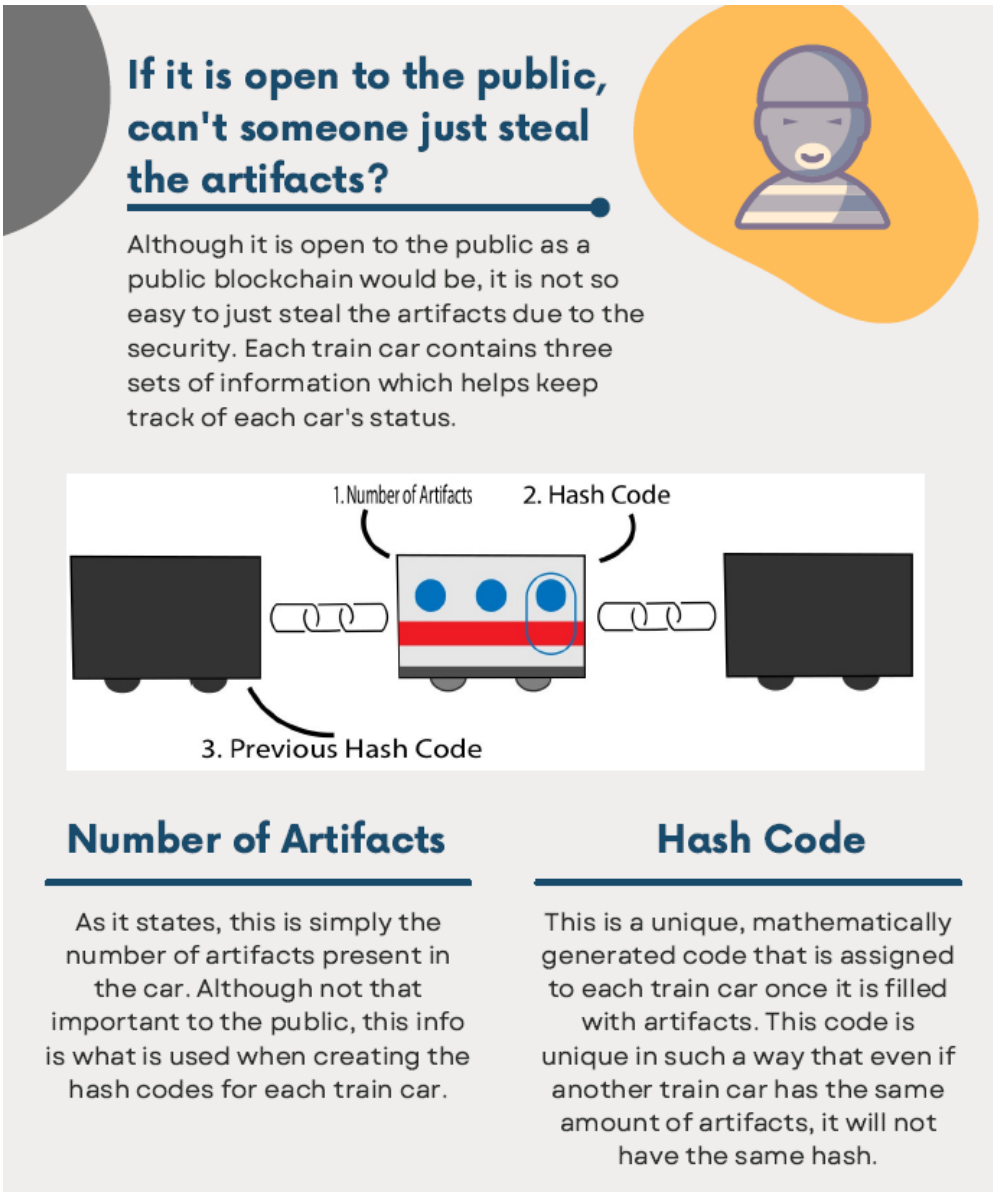

Figure 52. First half of page 2 of Blockchain infographic.

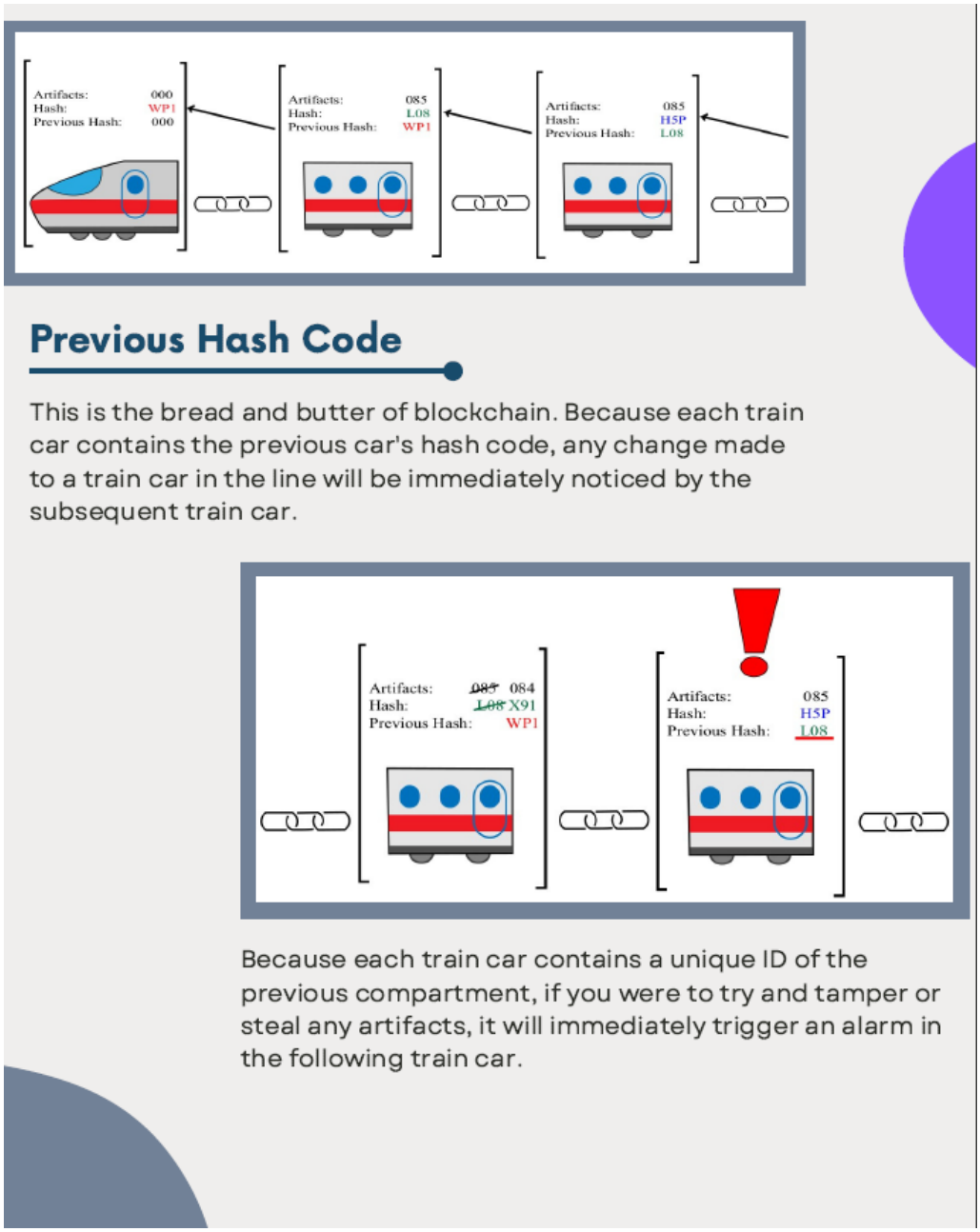

Figure 53. Second half of page 2 of Blockchain infographic.

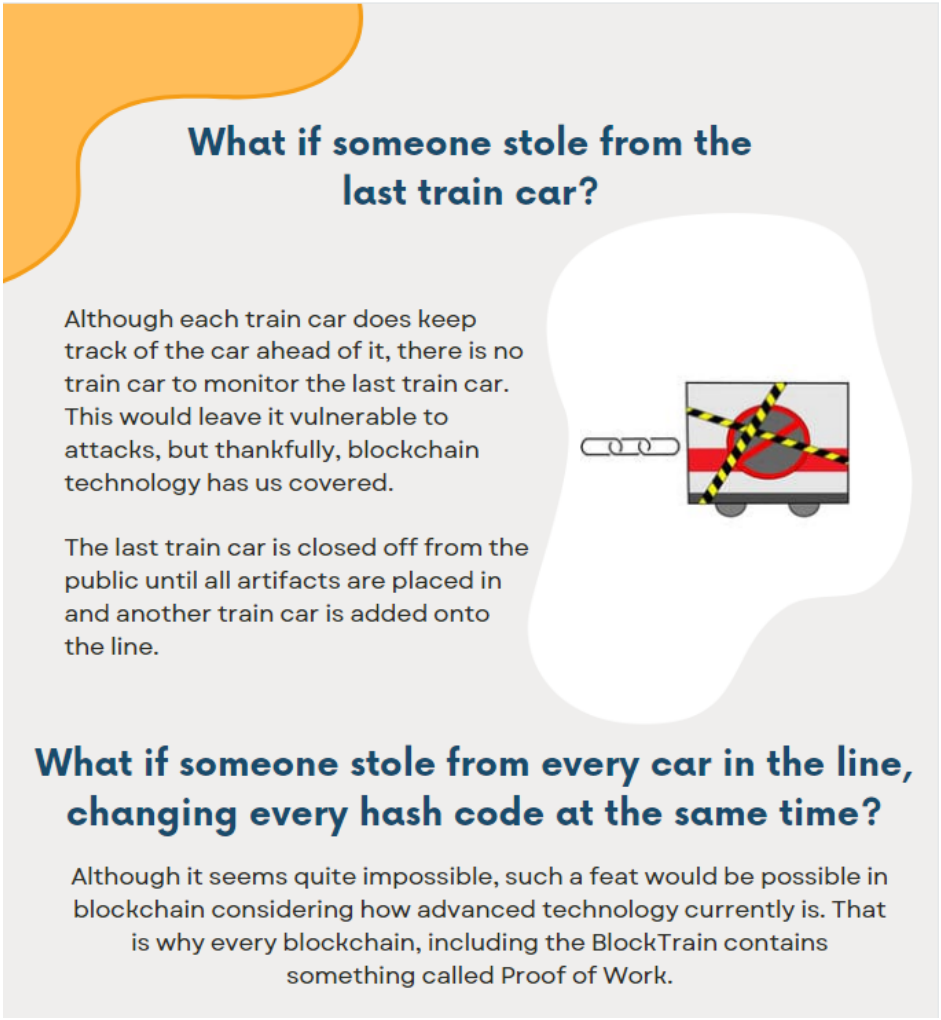

Figure 54. First half of page 3 of Blockchain infographic.

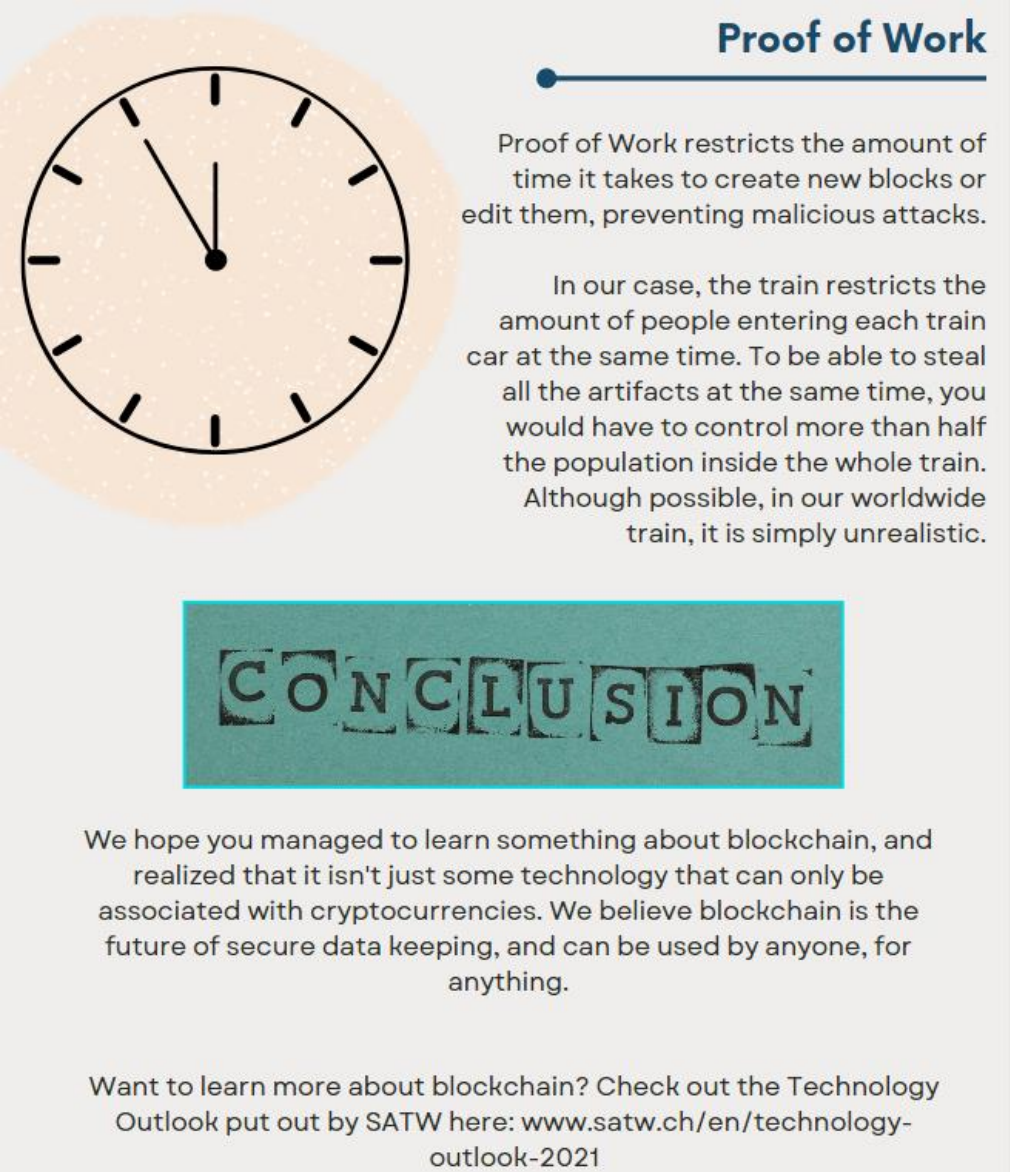

Figure 55. Second half of page 3 of Blockchain infographic.

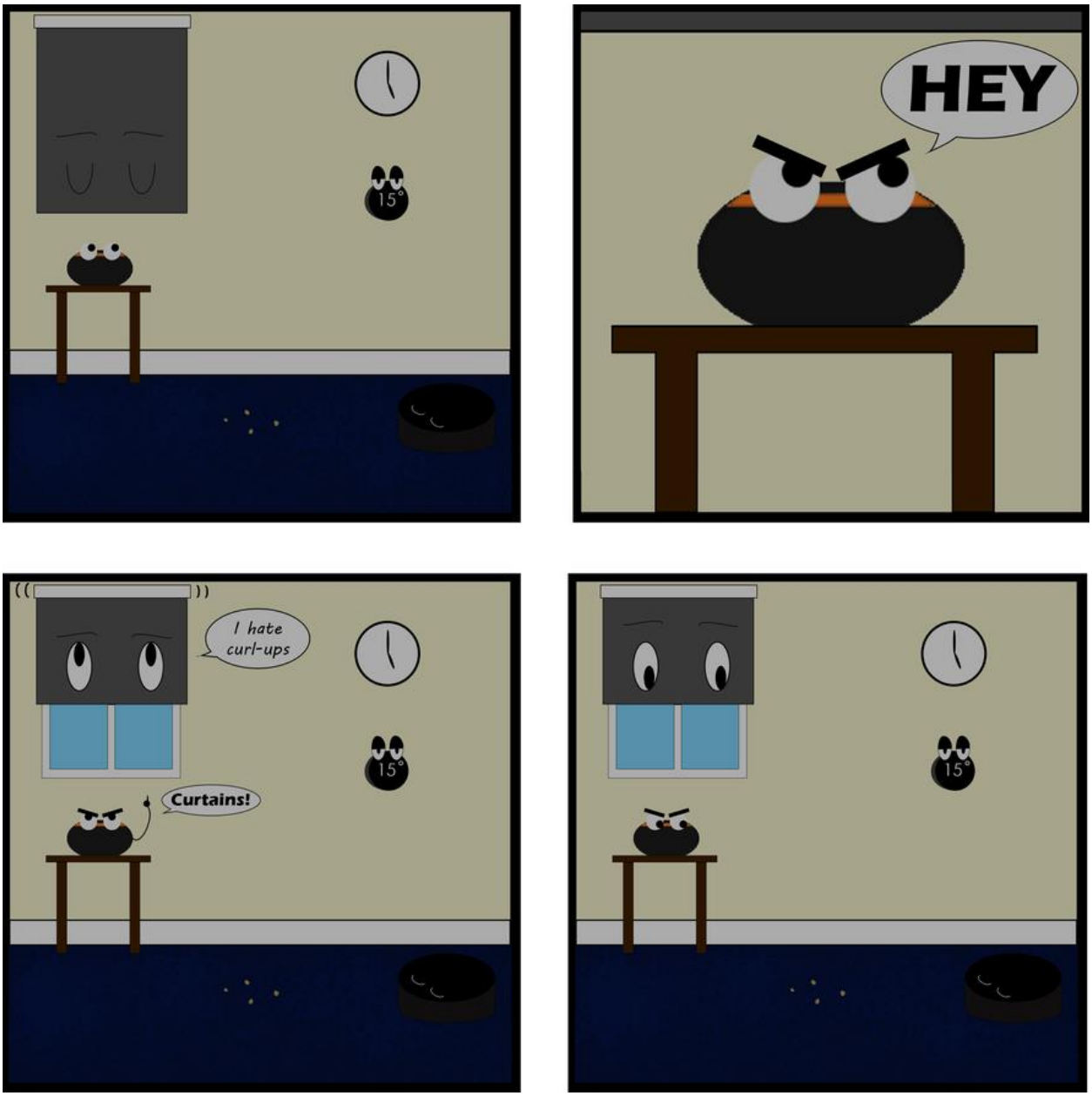

Figure 56. First panel of the IoT comic strip.

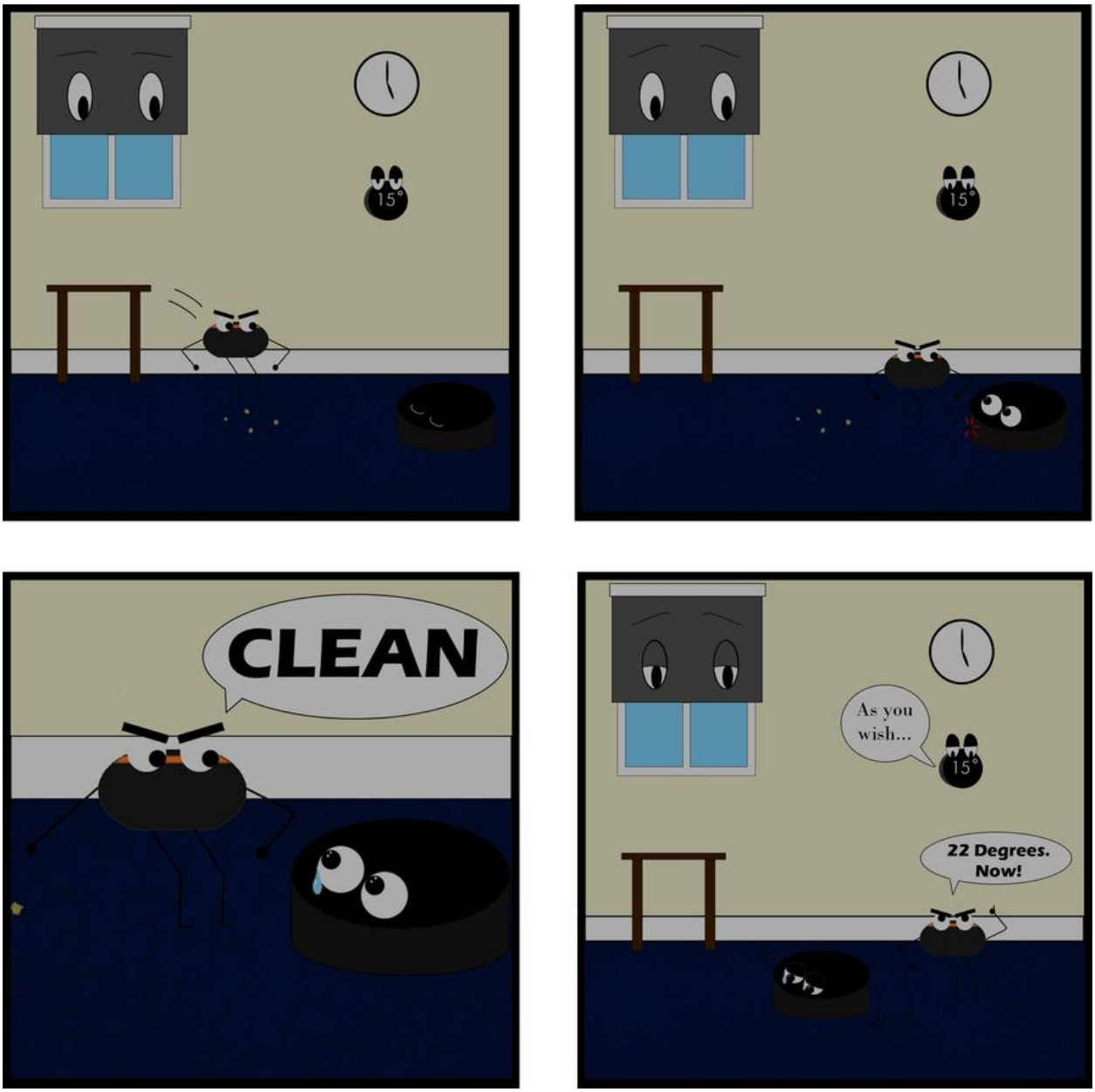

Figure 57. Second panel of the IoT comic strip.

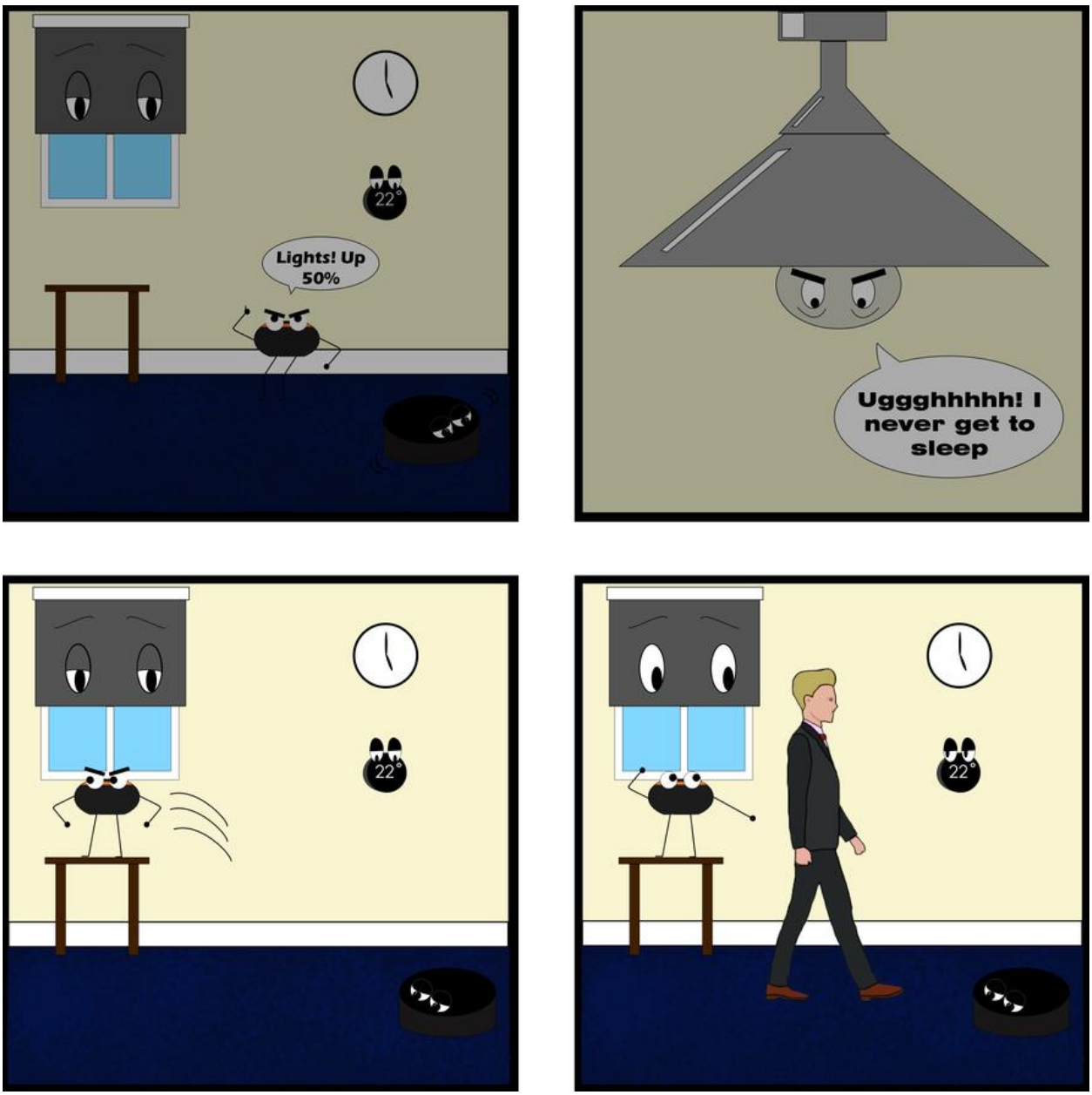

Figure 58. Third panel of the IoT comic strip.

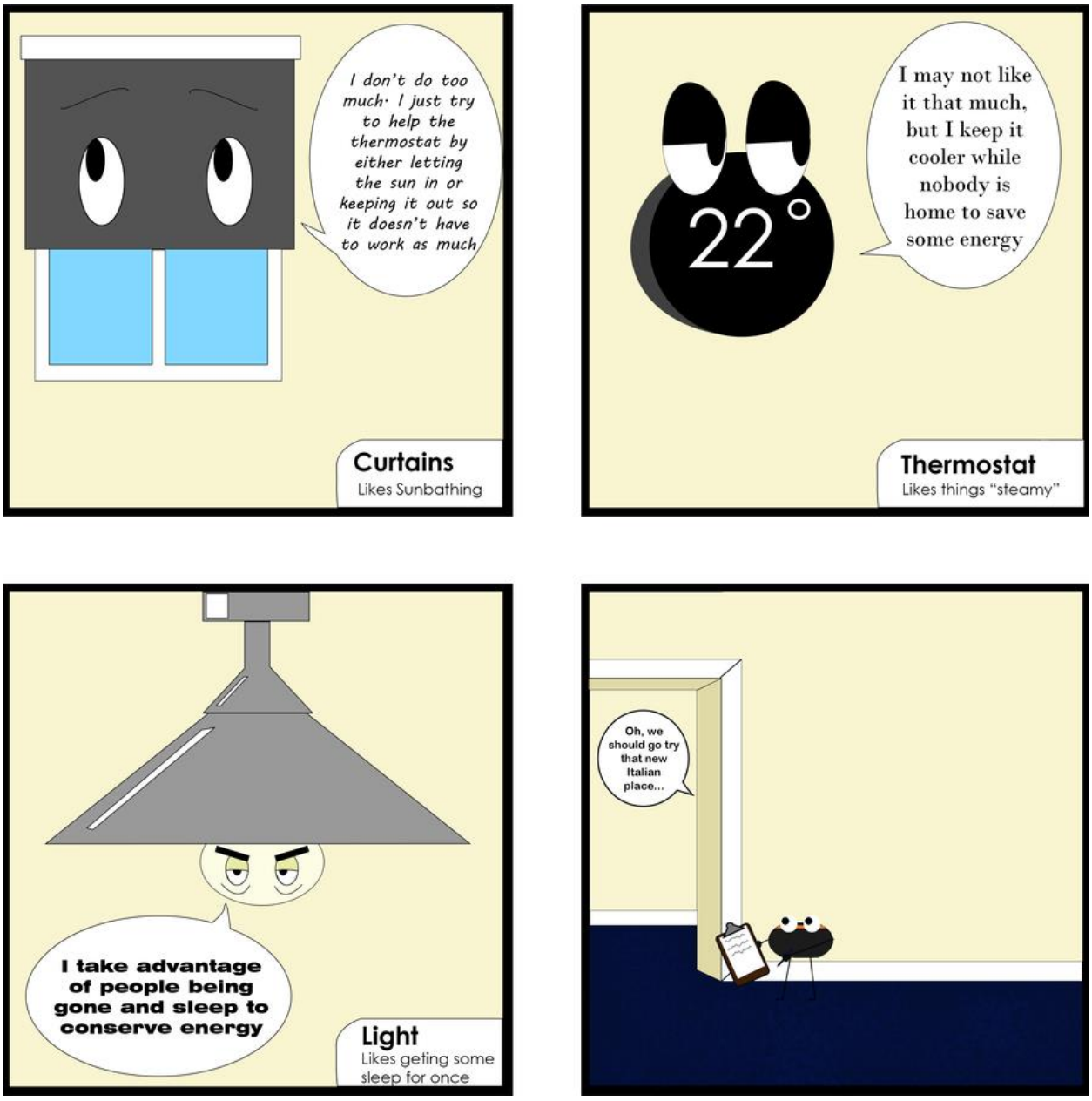

Figure 59. Second IoT comic version.

Appendix F: Guide for SATW

Plan for Initial Prototypes

Where

- Digital Sovereignty: SATW webpage with a link to it posted on both Twitter and Facebook.
- Blockchain: Image of the infographic should be posted on Facebook and Twitter.
- IoT: Video posted on YouTube with a link posted on both Twitter and Facebook, the comic should be posted on those same platforms.

Timing

Time of Day:

- In the morning 45 minutes before the work day starts.
- During lunch break.
- After average dinner time.

Timeline 1:

- Post every other week.
- Order of posting: Digital Sovereignty, IoT Video, Blockchain, IoT Comic.
- Survey for each product sent out the week after they are posted OR one cumulative survey sent out once all products have been posted.

Timeline 2:

- Post every month.
- Order of posting: Digital Sovereignty, IoT Video, IoT Comic, Blockchain.
- Survey for each product put out a week before the next one is posted.

Plan for Future Prototypes

Schedule

We recommend SATW assess how much of an additional workload they are able to accommodate with the goal of producing content either on a monthly, bimonthly, or trimonthly schedule. We suggest a bimonthly schedule, but it depends on SATW's resources.
Creating the type of content we produced will most likely not be too work intensive as instead of doing multiple products at once it will be one every two months.

Towards the end of the month that the product is posted, the SATW should send out a survey asking for feedback on the most recent product and what topics the audience would like to see covered in future in products. The identified topics would not be used for the very next product coming out in the following month but rather for the one after it. If SATW were to go with a trimonthly schedule, simply send out the survey in the middle of the second month.

Content

In terms of the subjects covered we recommend using future surveys to determine what to focus on; however, the SATW may refer back to this three-variable matrix we made for future inspiration.

	High Interest	High Knowledge	High Concern	Low Interest	Low Knowledge	Low Concern
High Interest		Sustainable Food	**IoT**		Bioplastics	Sustainable Energy
High Knowledge	Sustainable Energy		Augmented Reality	Additive Manufacturing		Sustainable Food
High Concern	**Digital Sovereignty**	Automated Vehicles		**Blockchain**	**Digital Sovereignty**	
Low Interest		Additive Manufacturing	3D Bioprinting		3D Bio Printing	Additive Manufacturing
Low Knowledge	**Digital Sovereignty**		**Blockchain**	**Blockchain**		Robots in Medicine
Low Concern	Sustainable Food	Sustainable Energy		Robots in Medicine	Bioplastics	

In terms of the medium, it could depend on the topic, but we recommend infographics and comics, as those are relatively simple to make, can be shared across many platforms, and are easy to post. A short slideshow-like video for longer comics can also be done with a basic video editing software, and a simple voiceover can be added if necessary/wanted.

We recommend taking into consideration the survey results and what the audience finds engaging. These products are also not meant to provide super in-depth explanations, but rather giving entry level knowledge and addressing some concerns. If the SATW finds itself covering a topic more than once, then we recommend sticking with the same medium but finding a different aspect of it to explore each time.

In our experience, analogies and allegories have been the easiest way to do this work; however, this suggestion may not be necessary or fit well with all topics.