

Sioux Meeting Management System

This is an analysis of the Meeting Management System dedicated to the project proposed by Sioux for the 3rd-semester students of Software Engineering at Fontys. This system will consist of a web application that will ease the process of managing meetings and tracking the client's parking spots.

First, an appointment is scheduled with a client that comes by car, then, before the meeting, the client is notified if there is a parking spot available in the main parking lot (if not, he/she is redirected to the other parking space). Another essential aspect happens when the client arrives: using the camera, the client's car can be identified and a notification will be sent to the employee which whom the client will have the meeting, in order to announce the client's arrival.

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The purpose of this system is to ease the entire process of tracking parking spots and meetings.

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Impact on society

What impact is expected from your technology?

What is exactly the problem? Is it really a problem? Are you sure?

The purpose of our app is to improve the whole process of having an appointment at Sioux, for all of these processes actors. First, the secretary's work is made easier with a system that manages the appointments. Then, the employees at Sioux benefit from an automated schedule and real-time notifications at the arrival of clients. The clients themselves also make use of the app by receiving indications about the parking space. All of these features were pointed out in order to resolve the user's problems: creating an appointment (secretary + clients), tracking available parking spots for a nice experience (clients), and being punctual at the meetings (employees).

Are you sure that this technology is solving the RIGHT problem?

Yes, we are confident that our technology is solving the right problem. In order to get to this conclusion, we used the five whys technique on the main problem we needed to resolve: creating an efficient management system for meetings with visitors and keeping track of the parking spaces dedicated to the visitors.

How is this technology going to solve the problem?

Our technology is going to provide a management system for the secretary in order to keep track of the appointments and a smart parking system which will keep the employees informed of the visitor's arrival.

What negative effects do you expect from this technology?

The only negative effect that could happen on the technology itself is limiting the visitor's parking spaces to only visitors with an appointment. Also, the visitors without an appointment that do not find a free parking space, are not redirected to the next available parking lot because we cannot send the location to them.

In what way is this technology contributing to a world you want to live in?

This technology is saving time and also contributes to a nice experience by offering a smooth process for both the visitors and employees.

Now that you have thought hard about the impact of this technology on society (by filling out the questions above), what improvements would you like to make to the technology? List them below.

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We would include also the "unexpected" visitors in this scenario, the ones that do not have an appointment or visitors that come for a special event. We could implement a reservation system in this case.

This way we can improve even more the experience at Sioux.

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Hateful and criminal actors

What can bad actors do with your technology?

In which way can the technology be used to break the law or avoid the consequences of breaking the law?

Our system can be used to break the law under certain circumstances. A hacker can steal data and so violate clients' private data. Also, hacking the secretary panel would give the hacker the ability to create fake appointments or delete/edit the already existing ones. Being aware that this can cause a lot of damage and discomfort for Siouxs clients, we took measures in order to protect sensitive data: encryption, the possibility to have a backup, use of end-to-end encrypted platforms as much as possible.

Can fakers, thieves or scammers abuse the technology?

Yes, malicious users can use our technology to edit and delete existing appointments or create fake ones. Also, they can steal personal data like name, phone number, email and license plate.

Can the technology be used against certain (ethnic) groups or (social) classes?

No, our technology doesn't utilise anything that can be used against certain ethnic groups or social classes.

In which way can bad actors use this technology to pit certain groups against each other? These groups can be, but are not constrained to, ethnic, social, political or religious groups.

The only element that is read by our camera is the license plate. A bad actor may abuse the recognition feature of the different types of license plates (in matters of the country). These can be used to polarize society because they can create a gap between people that live in another country.

How could bad actors use this technology to subvert or attack the truth?

Bad actors can use fake license plates in order to have access to the building. That is why the identity of each visitor should be checked at the entrance.

Now that you have thought hard about how bad actors can impact this technology, what improvements would you like to make? List them below.

In order to secure the use of our technology, we could implement additional

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identity checks like facial recognition.

Regarding the security of our data, we believe that by encrypting our data properly, we can avoid attacks.

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Privacy

Are you considering the privacy & personal data of the users of your technology?

Does the technology register personal data? If yes, what personal data?

Yes, the limitations are clear. The data is collected accordingly to the General Data Protection Regulation. The data helps us identify the visitors and employees in order to provide a smooth process and also helps us track the availability of the parking lot.

Do you think the technology invades the privacy of the stakeholders? If yes, in what way?

Our technology does require the private data of the stakeholders in order to assure security. We believe people might feel like their privacy is invaded because we request the license plate of each visitor. This type of data, however, is stored accordingly and only used in order to identify the visitor and notify the right Sioux employee.

Is the technology is compliant with prevailing privacy and data protection law? Can you indicate why?

Our technology is compliant with prevailing privacy and data protection law by being designed and used in a way that respects the privacy rights of individuals and adheres to relevant data protection regulations. This can include measures such as ensuring that personal data is collected and processed only with the informed consent of the individual, using secure methods to store and transmit data, and providing individuals with access to and control over their personal data. It is important for companies and organizations that use technology to be aware of and comply with the applicable privacy and data protection laws in order to avoid legal consequences and protect the rights of individuals.

Does the technology mitigate privacy and data protection risks/concerns (privacy by design)? Please indicate how.

Our technology mitigates privacy and data protection risks and concerns in several ways. For example, encryption can be used to protect personal data from unauthorized access or disclosure. Access controls and authentication measures can be implemented to ensure that only authorized individuals are able to access personal data.

In which way can you imagine a future impact of the collection of personal data?

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In the future, we can raise concerns about privacy and the potential misuse of personal data, such as for manipulative or discriminatory purposes. By storing the visitor's data for a long time, evidence of their presence at the company is being kept, which in some cases, can be used in a malicious way

Now that you have thought hard about privacy and data protection, what improvements would you like to make? List them below.

We believe we should implement robust privacy and security measures to protect individual's personal data and ensure that it is used in an ethical and transparent manner. This can include measures such as encryption, access controls, and data minimization. Also, the stakeholders should be provided with clear and concise information about how their data is being collected, used, and shared.

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Human values

How does the technology affect your human values?

How is the identity of the (intended) users affected by the technology?

In terms of user impact, the app is very powerful. Then, of course, the actor's identities will be affected in order to avoid uncertainty: the secretary needs to be reached easily by his/her phone number, at the same time, the employees should be reached easily by the secretary and the clients need to give their data that are necessary to make an appointment. Because our app is dedicated to a specific group: employees and clients or Sioux, having access to the user's identities is an essential part of our system.

How does the technology influence the users' autonomy?

Our technology behaves different dependent on the stakeholder. The employees should be aware that our system is using their email addresses to send notifications on the visitor's arrival. Also, the visitors should be aware that the system will use their data only for the right purposes. Our system is meant to automatize some processes. So, the fewer tasks the user has, the better.

What is the effect of the technology on the health and/or well-being of users?

Nothing that we are aware of.

Now that you have thought hard about the impact of your technology on human values, what improvements would you like to make to the technology? List them below.

One way to improve the impact of technology on human values is to ensure that the development and use of technology are guided by ethical principles and considerations. This can involve incorporating ethical considerations into the design and development process for new technologies, as well as regularly evaluating the potential ethical impacts of existing and emerging technologies. Additionally, it is important to engage in dialogue with a diverse range of stakeholders, including experts in ethics and human rights, in order to better understand the potential impacts of technology on human values and to identify potential solutions. Finally, individuals can play a role in improving the impact of technology on human values by being informed and mindful about the technology they use and advocating for ethical practices in the technology industry.

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Stakeholders

Have you considered all stakeholders?

This category is only partial filled.

Who are the main users/targetgroups/stakeholders for this technology? Think about the intended context by answering these questions.

Name of the stakeholder

Secretary

How is this stakeholder affected?

Manages the appointments and can make sure the

Did you consult the stakeholder?

Yes

Are you going to take this stakeholder into account?

Yes

Name of the stakeholder

Employees

How is this stakeholder affected?

They receive the confirmation of the meetings they have with visitors and also receive a notification upon their arrival.

Did you consult the stakeholder?

Yes

Are you going to take this stakeholder into account?

Yes

Name of the stakeholder

Visitors

How is this stakeholder affected?

Can receive confirmation about the appointment made and it's notified about the parking lot status if it is the case.

Did you consult the stakeholder?

Yes

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Are you going to take this stakeholder into account?

Yes

Name of the stakeholder

Admin

How is this stakeholder affected?

Manages employee list and secretary accounts.

Did you consult the stakeholder?

Yes

Are you going to take this stakeholder into account?

Yes

Did you consider all stakeholders, even the ones that might not be a user or target group, but still might be of interest?

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Now that you have thought hard about all stakeholders, what improvements would you like to make? List them below.

We would involve stakeholders in the design and implementation process to ensure that their needs and concerns are considered and addressed (secretary and employees). Also, conduct regular evaluations and assessments of the technology to identify and address any potential negative impacts on stakeholders. We would also provide training and support to stakeholders to ensure that they are able to use the technology effectively and efficiently (secretary).

We would establish clear communication channels and procedures for stakeholders to provide feedback and raise concerns about the technology.

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Data

Is data in your technology properly used?

Are you familiar with the fundamental shortcomings and pitfalls of data and do you take this sufficiently into account in the technology?

Yes, dependent on the available data offered by the client, the secretary can verify a visitors identity. If the data given is wrong or fake, the visitors identity cant be proven and that could be a threat to security.

How does the technology organize continuous improvement when it comes to the use of data?

We keep our data saving policies up to date with the latest regulations and practice the latest security trends in the field.

How will the technology keep the insights that it identifies with data sustainable over time?

The technology will have its data backed up periodically.

In what way do you consider the fact that data is collected from the users?

Collecting data from the users is necessary for the technology to function properly.

Now that you have thought hard about the impact of data on this technology, what improvements would you like to make? List them below.

We could always take more measures to make our technologys data more secure.

- We could always take more measures to make the dataflow of our application smoother.

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Inclusivity

Is your technology fair for everyone?

Will everyone have access to the technology?

Everyone that wants to have an appointment at Sioux will have access to the technology. So yes, everyone will have access to it.

Does this technology have a built-in bias?

The goal of our app is to connect our users in an efficient way, depending on their needs. However, there might be contradictions with the data that we need to store, more exactly the license plates. We are aware this is of course confidential and well make sure this details will be used strictly for identifying the visitors in order to notify the employee which the visitor has the meeting with.

Does this technology make automatic decisions and how do you account for them?

The only automatic process is that the unavailable time slots for meeting with an employee are not shown anymore as an option when creating an appointment. This is meant to ease the process and it works on a first come first-served basis.

Is everyone benefitting from the technology or only a a small group? Do you see this as a problem? Why/why not?

Everyone is benefitting from the technology in the scenario that our technology is needed, of course.

Does the team that creates the technology represent the diversity of our society?

Yes, we have a diverse team, from different cultural backgrounds and that helped us in seeing different aspects of our technology.

Now that you have thought hard about the inclusivity of the technology, what improvements would you like to make? List them below.

Our technology is not making any discrimination in any way. Also, each stakeholder has access to the features that are truly necessary to them. We might improve how our system deals with physically impaired people. The people in this situation may mention this at the moment of making the appointment and the closest parking spot to the entrance can be kept especially for them.

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Transparency

Are you transparent about how your technology works?

Is it explained to the users/stakeholders how the technology works and how the business model works?

Explaining how the technology works is important. How can a client make an appointment? How is this stored? How is the employee made aware of this appointment? How is the employee notified when the client arrives? How can the client know if there are available parking spots? Because the users have different kinds of interaction with the app, there is no need to explain to them the whole technology. However, the secretary, being responsible for greeting and taking care of the clients, should be aware of how the whole system works. We can include an explanation in the secretary panel. Of course, we will not share the personal data of the clients or the employees or the details of the meetings, this kind of data is confidential and only the secretary can have access to them but only for management purposes.

If the technology makes an (algorithmic) decision, is it explained to the users/stakeholders how the decision was reached?

The technology does make algorithmic decisions. It is explained in our documentation how it gets to said decisions, and we have also talked over it and discussed it with our stakeholders.

Is it possible to file a complaint or ask questions/get answers about this technology?

The stakeholders/product owners can ask questions and give us feedback if they think something can be improved.

Is the technology (company) clear about possible negative consequences or shortcomings of the technology?

Possible shortcomings of the technology have been discussed with our stakeholders and they are aware of them.

Now that you have thought hard about the transparency of this technology, what improvements would you like to make? List them below.

We can have an in-depth discussion with the stakeholders about the possible shortcomings of the technology and try to come up with solutions together if its a serious problem.

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Sustainability

Is your technology environmentally sustainable?

In what way is the direct and indirect energy use of this technology taken into account?

Although our app is expected to consume a significant amount of energy like any other software, our IR sensor system can be able to produce energy using solar panels. The efficiency of an infrared plastic solar cell can be five times higher than that of a regular solar cell. The work of these plastic solar cells is similar to that of other solar cells, but the size of the cells is smaller. Despite this, they capture almost all of the Sun's rays. That was also a factor in our choice of the right type of sensor to use in our parking system.

Do you think alternative materials could have been considered in the technology?

A few different types of sensors can be used in a parking system, including ultrasonic, infrared, and cameras. Ultrasonic sensors can measure the distance to an object, which can be useful for detecting when a car is entering or leaving a parking space. Infrared sensors can be used to detect the presence of a vehicle in a parking space, while cameras can be used to provide a visual representation of the parking lot and help with monitoring and tracking vehicles.

However, we chose infrared because it can be used also to receive energy.

Do you think the lifespan of the technology is realistic?

The lifespan of the technology used in a parking system and meeting management will vary depending on a number of factors, including the quality of the equipment and how well it is maintained. In general, however, most technology used in parking systems is designed to be durable and long-lasting, so it is reasonable to expect that it will have a reasonable lifespan.

What is the hidden impact of the technology in the whole chain?

The "hidden impact" of the technology used in a parking system is its potential to have unintended consequences or adverse effects on the people and environment around it. For example, the use of technology in parking systems can sometimes lead to increased traffic and congestion, as drivers may be more inclined to drive around looking for available parking spaces if they can see them in real-time on their phones. This can increase emissions and contribute to air pollution. Additionally, the use of technology in parking systems can sometimes lead to the displacement of street parking for local businesses and residents, as parking spaces may be converted to paid or reserved areas for users of the technology. On the appointment management

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system side, there is a potential for it to have unintended consequences or adverse effects on the people using it. For example, the use of technology in appointment management can often lead to increased efficiency and convenience, but it can also lead to increased expectations for availability and accessibility.

Now that you have thought hard about the sustainability of this technology, what improvements would you like to make? List them below.

We would like to put infrared sensors' advantages into practice. Infrared sensors are environmentally friendly because they do not emit any harmful substances into the atmosphere. They work by detecting changes in infrared radiation, which is a type of electromagnetic radiation that is naturally present in the environment. Infrared sensors are often used in applications such as motion detection, temperature measurement, and thermal imaging, and they do not produce any emissions or waste products. Additionally, infrared sensors are often used in energy-efficient systems such as smart thermostats and automatic lighting systems, which can help to reduce energy consumption and lower greenhouse gas emissions.

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Future

Did you consider future impact?

What could possibly happen with this technology in the future?

This kind of system can be implemented in other companies. Because it makes it easier to manage the parking lots and meetings, it can provide a smooth process and a nice experience both for the employees and the clients.

Sketch a or some future scenario (s) (20-50 years up front) regarding the technology with the help of storytelling. Start with at least one utopian scenario.

In a utopian scenario, the system would provide a smooth parking process mostly for businesses with visitors, but not limited only to them. It would minimize the time visitors need to look for a parking spot as much as possible by telling them exactly which spot is free and where the spot is.

Sketch a or some future scenario (s) (20-50 years up front) regarding the technology with the help of storytelling. Start with at least one dystopian scenario.

In a dystopian scenario for our system, it would be completely useless as cars are fully A.I. operated and businesses have adapted to that, providing alternative and more efficient ways of dealing with parking in accordance with that.

Would you like to live in one of this scenario's? Why? Why not?

I would personally prefer to live in the first scenario mostly due to the fact that our system would have made a great impact on society.

What happens if the technology (which you have thought of as ethically well-considered) is bought or taken over by another party?

We believe that the technology can cause harm to the clients if the data is not properly protected by the party which takes over the system.

Impact Improvement: Now that you have thought hard about the future impact of the technology, what improvements would you like to make? List them below.

- By keeping the system up to date with the progress of A.I. technology, it could avoid the danger of being rendered completely useless, it could even be one of the main components in the parking algorithms of A.I.

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- We could emphasize the importance of keeping the data of the application secure in the case of it being taken over by another party.