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Obligatory submission 1:

Task 1: Background for the system

A. What challenges are system supposed to solve? Why would they like to solve these problems?

1. One system will make it easier for the users when using the different companies collected under NorFly. Customers will be familiar to the system which ever company they choose.

2. Assuming an employee can be transferred between companies inside NorFly, a single system will save costs in training employees for a different system.

3. A single system will mean less code to deal with, which means less work needed and more productivity on the single centralised system. In addition, it will be easier to implement new functions this way rather than implementing them for each and every single separate system.

4. Using different systems for each or many companies, communication between them might be an issue in terms of connecting flights,finding alternative routes and comparing prices. With one system the different companies would be able to communicate better.

5. Using different systems means a lot of different customer support, multiple support hotline numbers and multiple support e-mail addresses. With one collected system there will only be need for one sentral of customer support, and a fewer number of support hotlines and e-mail addresses

B. Discuss the different advantages and downsides that may occur as a consequence of sub- optimisation. Reflect on the answer.

Pros:
- Using a sub-optimized system would mean that every company gets a specialized system for their use. And the system will be easier for the user as it doesn't include functions that the user don't need.
- Also new changes can be introduced and tailored to suit each company.

Cons:
- It is expensive since it will require the development of several subsystems in addition to operating and maintaining several subsystems.

- It is harder to make changes as they must be made on different levels, the central and subsystem level.
- It will require a lot of work making the different subsystems communicate with one another, in terms of booking flights, income, etc.
- It will require more training of employees.

Task 2: Stakeholders of the system
Edited 24/02

1. **Name:** Airlines in NorFly
   Responsibilities: Setting up flight schedules and listing prices
   Interests: Satisfied customers and a system that allows control over prices and schedules.
2. **Name:** Airline passenger
   Responsibilities: Ordering a flight ticket and paying.
   Interests: A system that is easy to use and understand, and a secure method of payment.
3. **Name:** Airline managers
   Responsibilities: Planning and maintaining a budget that will make money for the company and make sure every employee gets paid.
   Interests: A system that generates good and informative reports on cost and income of the flight company, and a system that logs the work hours of the employees for correct salary-payment.
4. **Name:** Ticket agent
   Responsibilities: Inform customers about flight routes, departure and arrivals.The ticketing agent is also responsible for selling and/or printing the tickets.
   Interests: A system that makes it easy to search for customers and their flight, and get information about these. They also need a system that makes it easy to print tickets for the customers.
5. **Name:** System developer
   Responsibilities: Develop the system in correspondence with the system requirements and the interests of the other stakeholders.
   Interests: A good system that the stakeholders are satisfied with, this will be good for his reputation
6. **Name:** Flight attendant
   Responsibilities: Making sure, to the best of their ability, that the passengers are comfortable and get food according to their wishes and/or medical conditions
   Interests: A system that makes it easy to retrieve necessary customer information, including and not limited to; food preferences, food allergies, medical condition, handicap

Task 3: Development process of the system

A. To what extent should you expect the requirements to change during the development?
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In this particular system we don't expect big changes to the requirements during the development, we say this because the people making the system requirements probably have a lot of experience with systems for flight companies, and the systems that were in use before NorFly wanted to make a new and gathered system. Therefore, we believe the core features (databases, etc.) will have precise and unchanging requirements, and the requirement changes that might occur are expected to be of a superficial nature (how the system looks), and should be easy to handle.

B. What development processes are best suited for these situations, why?

Agile software development is best suited for this type of situation, this is because it allows the customer to get constant information on how the system looks, and the developers will be able to get constant feedback, and in that way they will know if they are headed in the right direction. This is a very flexible solution taking into account the issues mentioned in point A.

C. What challenges can you be faced with when using certain types of development processes in the case of big geographical distance and cultural difference?

Different people in different cultures may have different preferences for the way they use the system to buy their tickets and manage their reservation. The centralised system will need to take this into account when designing it. For example, it would be a good idea to have a different version of the website for each country, in the very least have different language versions of the website.

In a waterfall development process, each step of the development process would need to be reviewed and checked by representatives from each and every single country that the system is expected to be operating in. As a result, the review process for each step will take an enormous amount of time.

in the spiral model, the possible incompatibilities of the system with different cultures can be incorporated into the risk assessment parts of the spiral model despite the fact that representatives from each country will need to participate in the risk assessment.

D. Name some factors you should consider when choosing the type of development process
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How precise the specifications are is an important factor when deciding what type of process to use, if the specification is precise enough to get a good picture of the complete system, a plan-driven approach is a good way to go.
How much we expect the specifications to change depending on the needs of the user and the needs of the customer.
The size of the system is also a factor that should be considered, whereas big systems might need a very strong and efficient core/structure that has to be carefully planned to avoid using excessive hours modifying the structure to implement new functions.
The time span is also an important factor, maybe the core of the system needs to be ready and in use in short time, or maybe the time limit allows for a more elaborate version of the system before it goes into use.

E. Using the previous points, find out which development process is best suited for this situation
We believe using an agile process is the best approach for this system, taking into consideration that the system will have a wide array of users, with different culture and location, it is also to be expected that the customer will change opinion on how the system should be, and requirements may vary. All of these factors can easily be handled using an agile process of development, because this enables frequent contact between the customer and the developer.

Task 4: Requirement specification for the system.

A. Give 10 examples of user stories. Name at least tre different participants. Prioritize them.

1. As a traveller, I want to buy tickets online so I can get to where I want and not have to order through a hotline.
2. As a flight attendant, I want to have access to passenger lists so that i can provide them with the correct food in case of allergies and check that the right people are in the right seats.
3. As a pilot, I want to be able to check the route so i can get to the right place!
4. As a manager I want to handle a centralised system so I don't have to learn a lot of different systems.
5. As a ticket agent I want to have access to arrivals and departures so I can help the customer.

6. As a traveller I want to be able to choose the food on ordering so I don't get something I'm allergic to.
7. As a traveller I want to be able to look for alternative flights, so I can plan my travels.
8. As a ticket agent I want to be able to have access to other companies so I can give the customer information on alternative routes and connecting flights.
9. As a developer I want a well documented system so I can maintain it easier.
10. As a customer I want to be able to cancel my tickets from the website instead of making calls to a hotline.

Three actors (prioritized)
1. Flight customers (main users of the system)
2. Support hotline employees (help people understand and use the system)
3. Manager/boss

B. Choose three user stories for the first iteration.

As a traveller, I want to buy tickets online so I can get to where I want and not have to order through a hotline.

As a manager I want to handle a centralised system so I don't have to learn a lot of different systems.

As a developer I want a well documented system so I can maintain it easier.

C. Make a list of at least 10 functional requirements you want for the system.

1. The system should be able to make a list of all the different airlines in NorFly.
2. The system should be able to make a list of all the different locations the companies in NorFly flies to.
3. The system should be able to make a list of all the different departure times.
4. The system should be able to make a list of all the different prices for the different companies.
5. The system should be able to let a customer order a ticket online.
6. The system should be able to let a customer cancel a ticket online.
7. The system should be able to let a customer reserve a seat for the desired departure.
8. The system should be able to record information on customers and their reservations and purchases.
9. The system should be able to show the position of the crafts in use.
10. The system should be able to update and display information on cancelled flights.

D. Make a list of non-functional requirements (divide them into categories of product-, organisational- and external-requirements).Explain how they should be evaluated.

Product-requirements:
The system should be user friendly, 90% of end users should be able to find the flight booking button in less than 5 seconds on their initial visit.
A test group should be made with at least 50 people who are neither seniors nor children. In addition it should be possible to place a order in as few mouse clicks as possible from the time the user starts making a booking to the time it is completed.

Organisational-requirements:
The system will keep a budget of up to 120 million NOK. This includes software development, external advisory, payment of salaries of internal staff, production and installation of new terminals, training of personnel, and operation and maintenance over a period of years from the time the centralised system has been adopted.

External-requirements:
The centralised system must comply with the personopplysningsloven. The central system must not store user data more than necessary to fulfill the contract between the user and the organisation.

Task 5: Use case for the system.

A. Draw a use case diagram that includes all the essential use cases mentioned in task 4
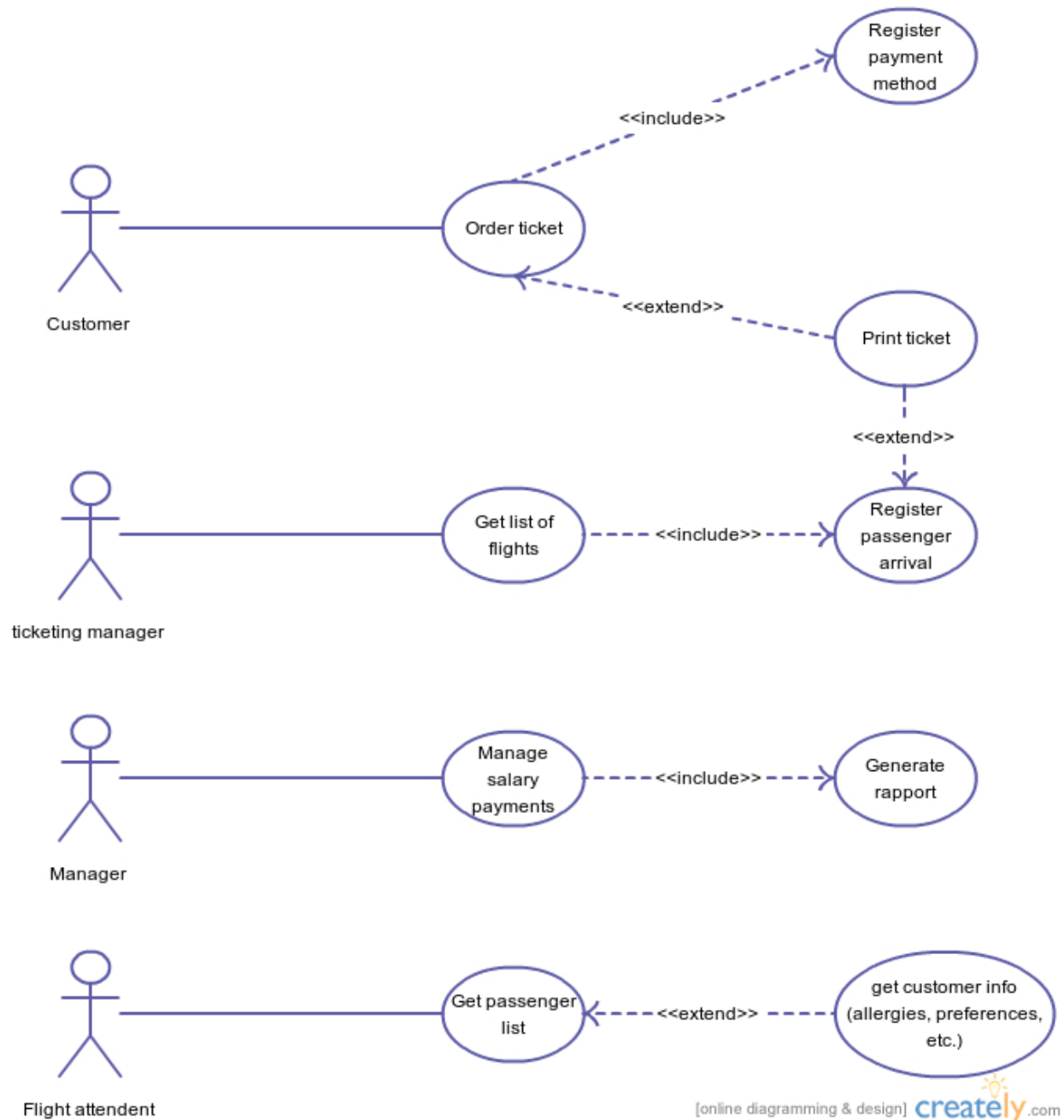
B. Make a description of one of the use cases described in part A. Provide pre and post conditions and alternative flows

<u>Function</u>: Ordering tickets
<u>Description</u>: The system displays fields for user to enter desired routes and date in addition to choices for number of travellers.
<u>Inputs</u>: Name,desired routes, date and number of travellers.
<u>Source</u>: User keyboard
<u>Outputs</u>: Database collection
<u>Destination</u>: Main control database
<u>Action</u>: Error message if the fields are not filled out correctly, otherwise directs the user to the payment window. The system gives out the receipt and tickets as well as registering and storing the required user data. That can be handled by customer support.
<u>Requirements:</u> Correctly input data.
<u>Pre-condition:</u> The fields are empty and ready for new input.
<u>Post-condition:</u> The fields are filled out and the
<u>Side effects:</u> none

Hovedløp:
1. The system displays fields for user to enter desired routes and date in addition to choices for number of travellers.
2. The user inputs the information in the required fields.
3. The system validates the information and checks for avaible fligths.
4. The system directs the user to the payments screen.
5. The user inputs credit card information and other required data.
6. The system withdraws funds from the users account.
7. The system displays approval and sends out an email with tickets.
8. The system stores the required user data that can be handled by customer support.
9. Everybody is happy.

Alternativt løp 1, steg 2: Informasjon i lånesøknaden er ikke komplett og korrekt
A1.1. Systemet returnerer lånesøknaden til søker for ytterligere utfylling.
A1.2. Systemet setter lånesøknadens status til "Avventer".

Alternativt løp 2, steg 3: Det er ikke tilstrekkelig kredittinformasjon om søkeren
(kredittrapport er ikke tilgjengelig eller er for dårlig)
A2.1. Systemet sender beskjed til søker om at søknaden er avslått
A2.2. Systemet setter lånesøknadens status til "Avslått".