

Aktuelle Themen der IT

IBAIT 2023

Patrick Gutgesell & Andreas Heck, SAP
March, 2025



PUBLIC

Agenda for Today

<i>Start</i>	<i>Time [min]</i>	<i>Topic</i>	<i>Presenter</i>
10:00	15	Overview + Working Group Assignment	Andreas
10:15	30	Introducing the Challenge	Patrick + Andreas
10:45	45	First Iteration of Business Process + Group Work	Andreas
11:30	15	Break	
11:45	60	Programming + Excercise	Patrick
12:45	45	Mittagspause	
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15:30	15	Break	
15:45	30	Deliverables + Team Roles + GitHub Basics	Patrick + Andreas
16:15	45	Group Work: Iterate your Process + Plan your Project	
17:00	30	Verify Results of Group Work → Exit Gate	
17:30		End	

Who we are...



Patrick Gutgesell

Manager / Team Lead / Architect

Married, one child

Lego

patrick.gutgesell@sap.com



Andreas Heck

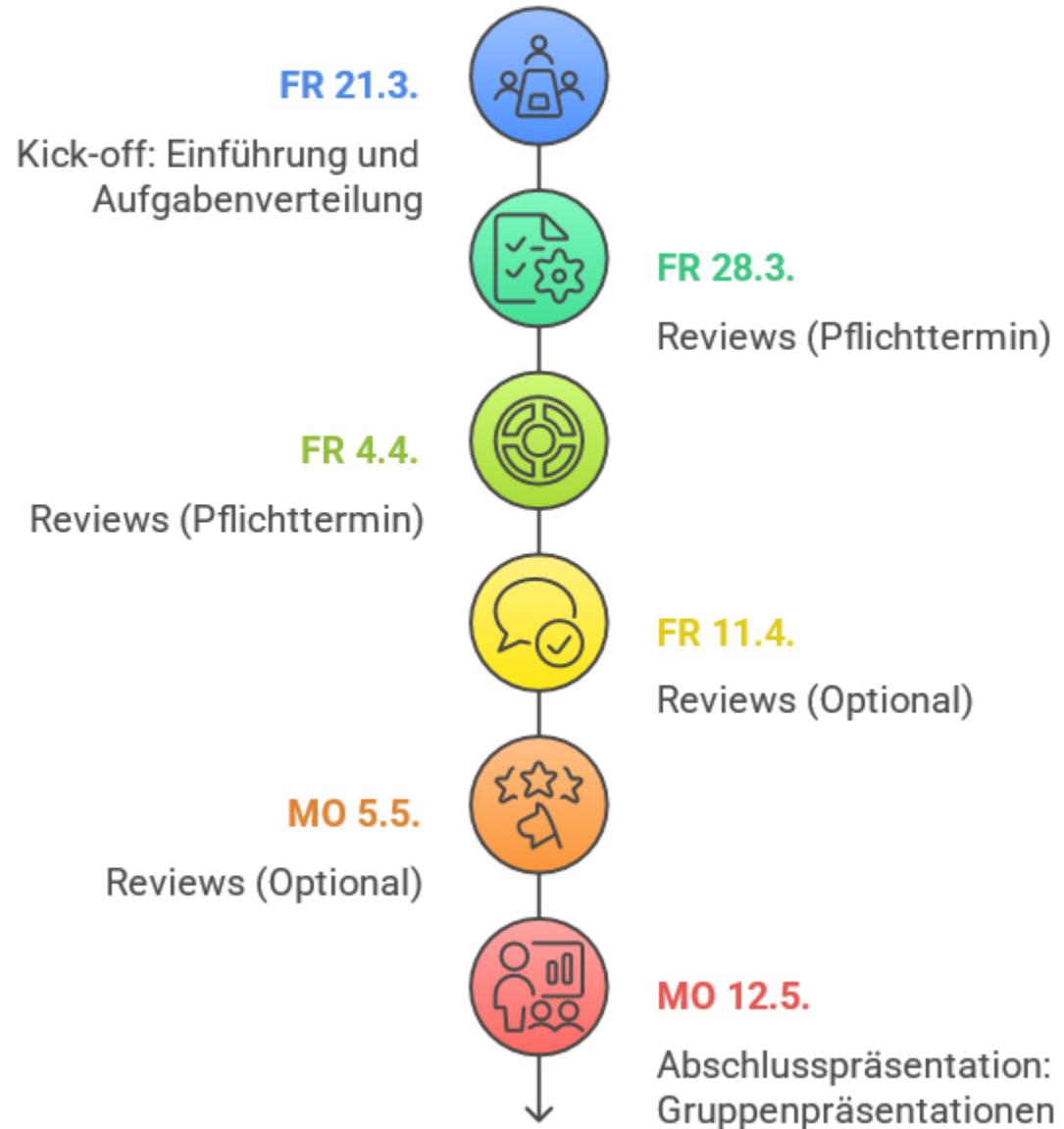
Program Manager for Product Security

Married, two children

Watersports

andreas.heck@sap.com

Zeitplan



Schedule

Datum	Uhrzeit	Veranstaltung	Kommentar	Ort
FR 21.3.	10:00-17:30	Kick-off	Aufgabenstellung, Einführung in Programmierumgebung mit Beispielen, Prozessmodellierung und Arbeitstechniken → Arbeitsgruppen sind Startklar	HWG Raum: A202
<i>Erste Woche</i>				
FR 28.3.	10:00-13:00	Reviews (Pflichttermin)	Review der Designs aller Gruppen, um Abhängigkeiten/Überschneidungen abzustimmen	Online Teams
<i>13:00-15:45 Freie Gruppenarbeit</i>				
FR 4.4.	10:00-13:00	Reviews (Pflichttermin)	Pflicht für ausgewählte Gruppen mit Lücken in den Designs	Online Teams
<i>13:00-15:45 Freie Gruppenarbeit</i>				
FR 11.4.	10:00-13:00	Reviews (optional)	Auf Einladung oder Wunsch	Online Teams
<i>13:00-15:45 Freie Gruppenarbeit</i>				
<i>3 Wochen</i>			<i>Dozenten sind erreichbar bei Bedarf</i>	Online Teams
MO 5.5.	10:00-13:00	Reviews (optional)	Auf Einladung oder Wunsch	Online Teams
<i>Letzte Woche</i>				
MO 12.5.	10:15-12:45	Abschlusspräsentation	Präsentation der Gruppen, mit Gästen aus den Unternehmen	HWG + Online Raum: C2.015

Aktuell Themen der IT Kurs-Ziele



TEAM-ARBEIT
EINE NOTE



SOFTWARE PROTOTYP
FUNKTIONSFÄHIG, GETESTET UND
DOKUMENTIERT



BUSINESS PROZESS MODELL
MIT MEHRWERT FÜR POTENZIELLE
KUNDEN

Benotung

Die Dozenten entscheiden über die Bewertung pro Gruppe entlang des Beurteilungsbogens <Link wird nachgereicht>

Erreichbare Gesamt-Punktzahl: **100 => Note: 1,0**

Zusammenfassung aus Beurteilungsbogen = Vier Bereiche mit jeweils maximal erreichbarer Punktzahl:

DEVELOPMENT – 30P

- Programmierergebnis
- Technische Dokumentation
- Architektur/Design
- Wartbarkeit
- Clean Code
- Unit Tests

DESIGN – 30P

- Klare Beschreibung des Projekt-Umfangs
- Personas mit Mehrwert
- Prozessdiagramme
- UI-Designs
- Endbenutzer-Dokumentation

PRÄSENTATION – 25P

- Abschlusspräsentation (25min pro Gruppe)
- Mehrwert vermitteln
- Klare Struktur
- Relevante Inhalte
- Antworten auf Fragen
- **Das ganze Team ist aktiv!**

KREATIVITÄT – 15P

- Überrascht uns!

Working Groups

Groups are assembled randomly with the goal to mix+balance companies and genders.

Working members of one group get the same grade for the project work.

Each group must cover several tasks.

→ We recommend to cover specific roles in each group.

Group	Members
1	Fuchs, Marco
	Fuhrmann, Helena
	Herrscher, Elena
	Raffel, Felix Emil Wilhelm
	Schmitt, Tim Joerg
	Wagner, Thies Johannes
2	Blazquez Perez, Daniel Justo
	Hampele, Luc Alex
	Hartmann, Konstantin
	Rohr, Philipp Lennard
	Schmidt, Lisa
	Zeidler, Joline
3	Bretschner, Leonie
	Juston, Jonas Maximilian Wilhelm
	Mountassir, Inas
	Simon, Oliver Michele
	Weber, Vanessa
4	Cornacchione, Marco Antonio
	Domnick, Jonas Fynn
	Knorr, Hannah Alina Zoe
	Ott, Roman
	Vu, Thu Giang

Umfrage zur Vorbereitung

Programmierübungen:

- GitHub-Benutzer
- Java-Entwicklungsumgebung (IntelliJ Idea von JetBrains)
- Java-23-Distribution

Übungen Prozess Modellierung:

- Signavio Account →
[https://academic.signavio.com/p/register?link=37199dce45334
72d8629d5aef7313588](https://academic.signavio.com/p/register?link=37199dce4533472d8629d5aef7313588)



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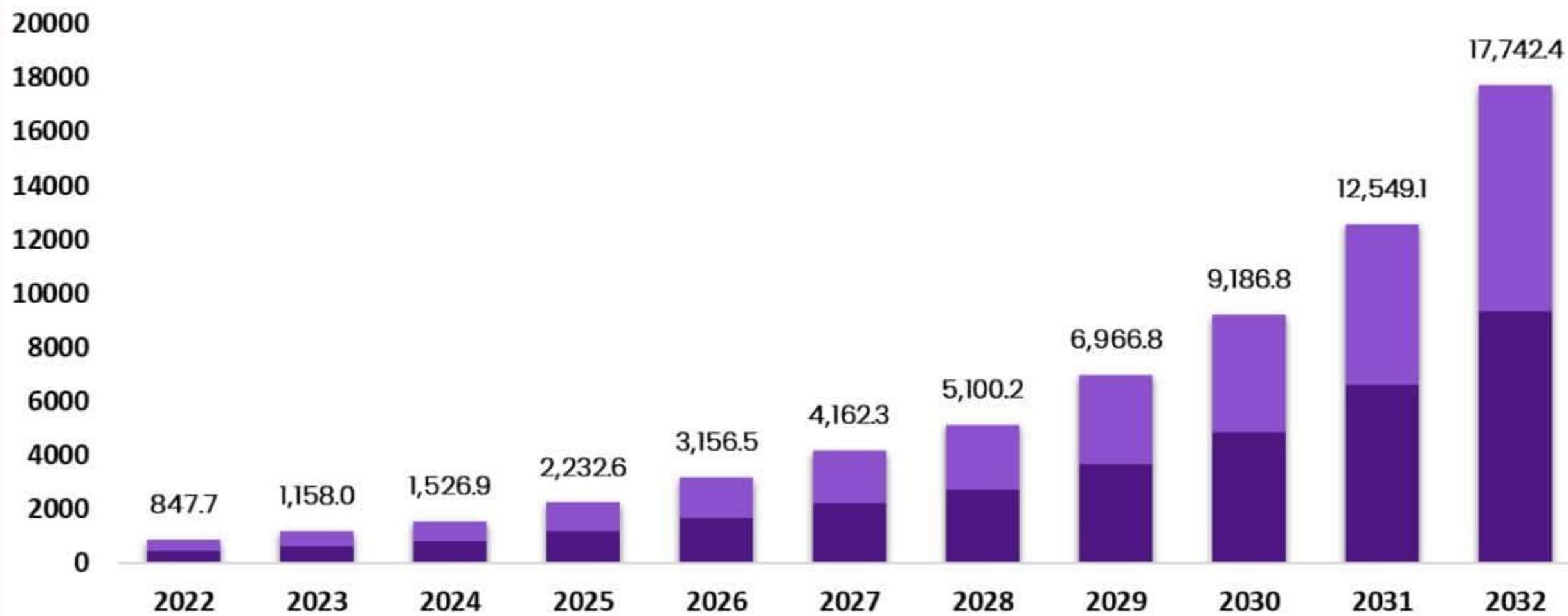
Introducing the Challenge

Space Tourism



Global Space Tourism Market

Size, by type, 2022-2032 (USD Million)



The Market will Grow
At the CAGR of:

36.6%

The forecasted market
size for 2032 in USD:

\$17,742.4M

market.us
ONE STOP SHOP FOR THE REPORTS

Ausschreibung

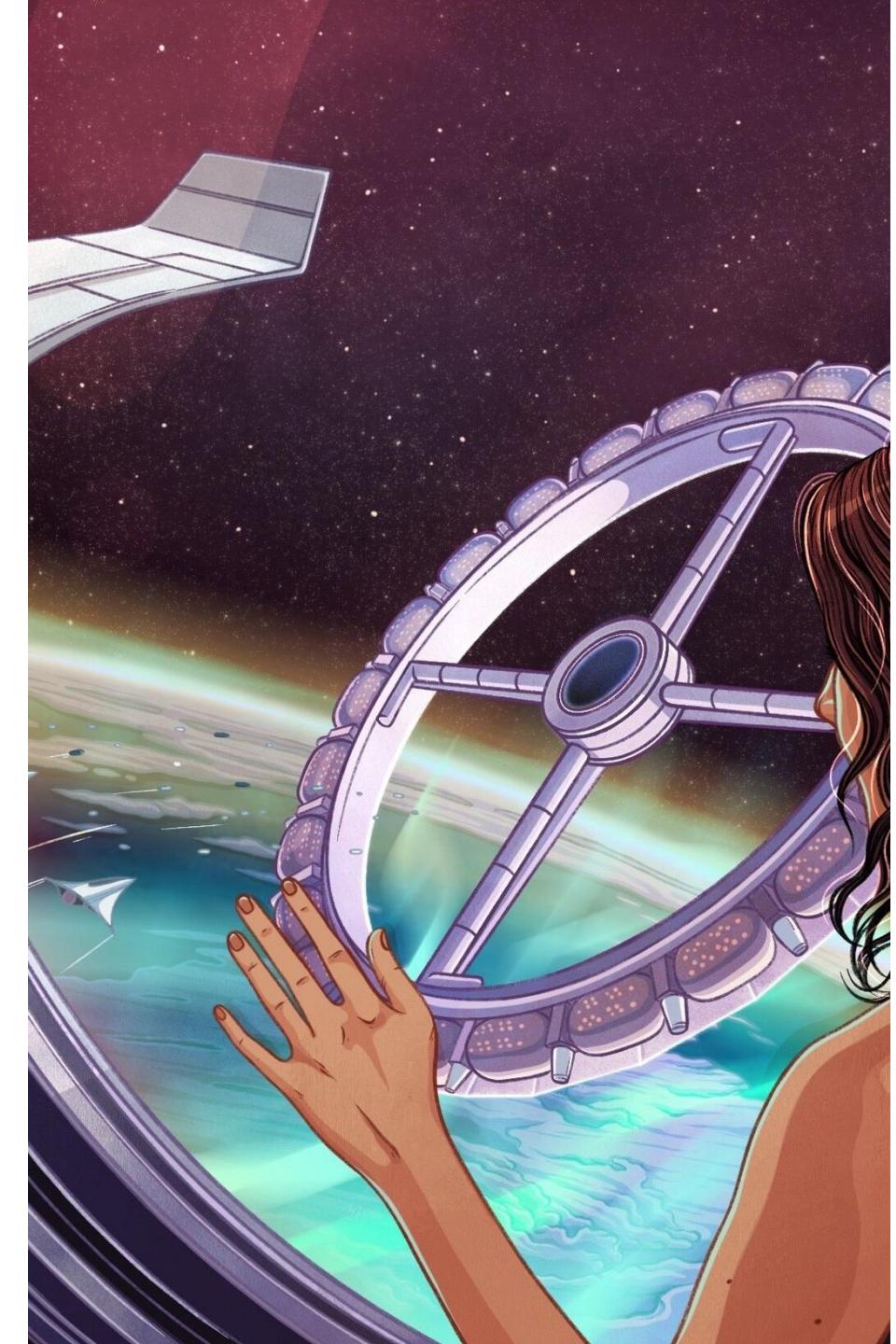
Elon Bezos, ein Pionier auf dem Gebiet der Kommerzialisierung von Weltraumflügen, wurde jüngst für ein Amt in der Politik nominiert.

Bisher schraubt er am liebsten an Autos herum und betreibt nebenbei eine kleine Onlinebuchhandlung.

Doch seine wahre Leidenschaft gehört seiner neuesten Vision:
Weltraumtourismus.

Bezos sucht nach Unterstützung, um sich mit seinem Unternehmen von der Konkurrenz abzuheben.

Er ist auf der Suche nach **innovativer Software**, die seine Geschäfts-Prozesse **wertvoller für die Kunden** macht und **effizienter für sein Unternehmen**.



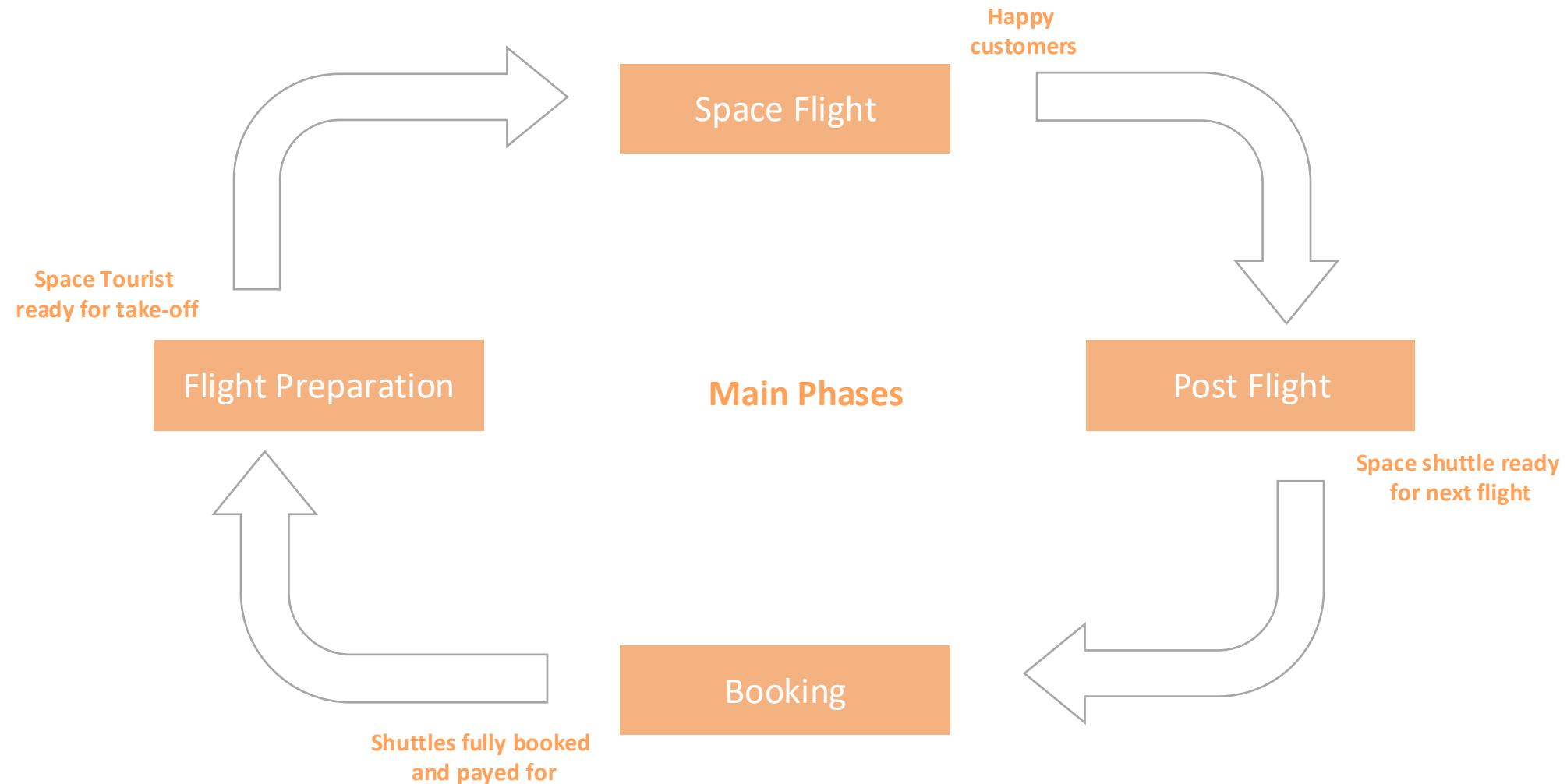
Die Aufgabe

Überzeugen Sie Elon Bezos von Ihrer Idee:

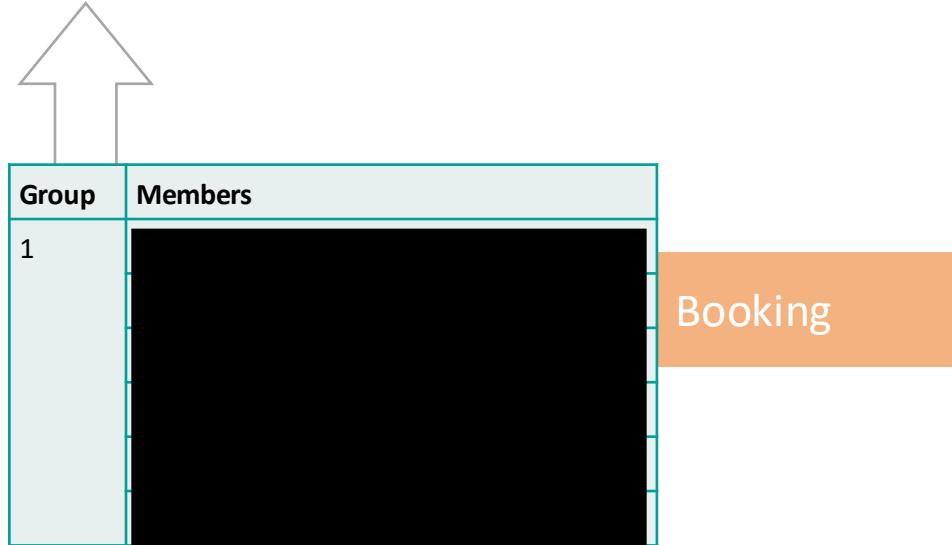
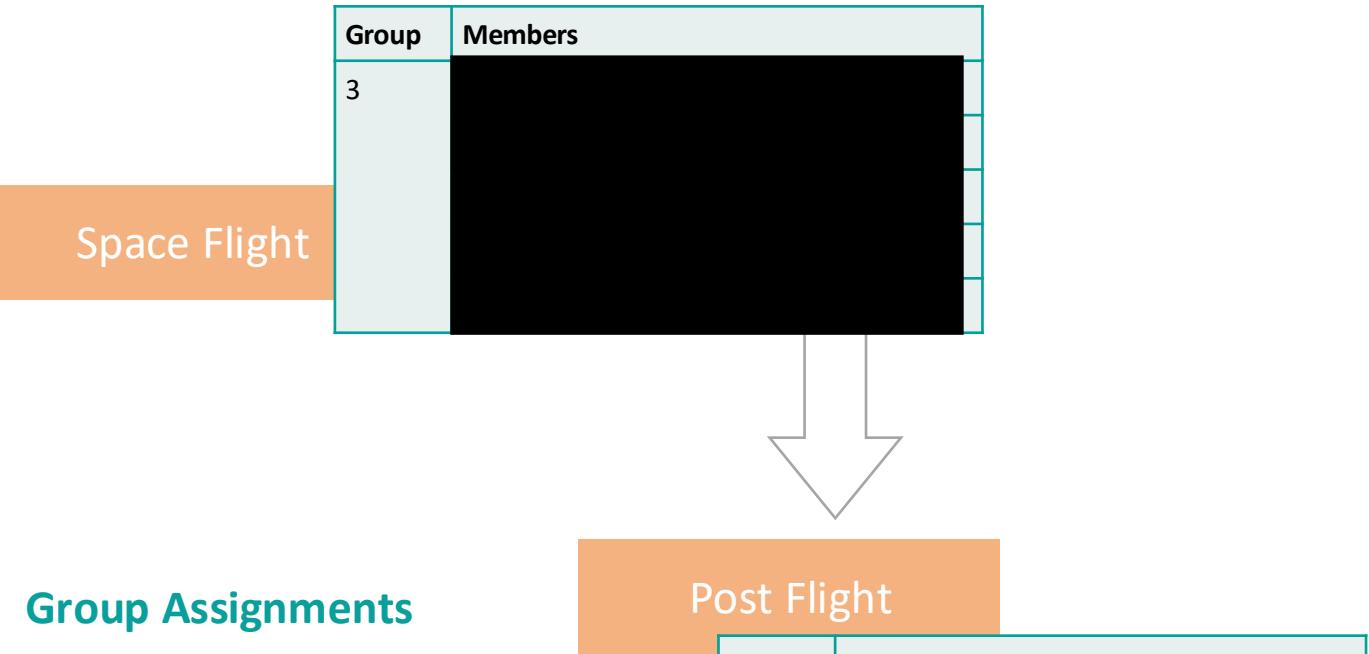
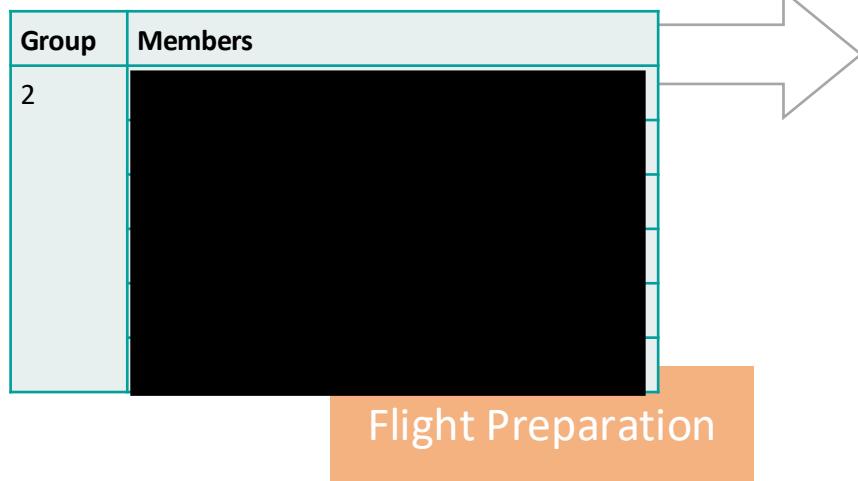
- Bilden Sie ein schlagkräftiges **Team** und planen Sie die Zusammenarbeit.
- Erstellen Sie ein **Konzept**, um mithilfe von Software kommerziell erfolgreich Weltraumtourismus zu betreiben.
- Modellieren Sie die relevanten **Geschäftsprozesse** rund um die Weltraumflüge.
- Erstellen Sie ein **Design** für die Software, die diese Prozesse unterstützt.
- Implementieren Sie einen **Proof of Concept** der sich auf einen Kernprozess fokussiert.
- Überzeugen Sie Bezos mit einer kreativen **Präsentation** in sechs Wochen dazu in die Idee Ihres Teams zu investieren.



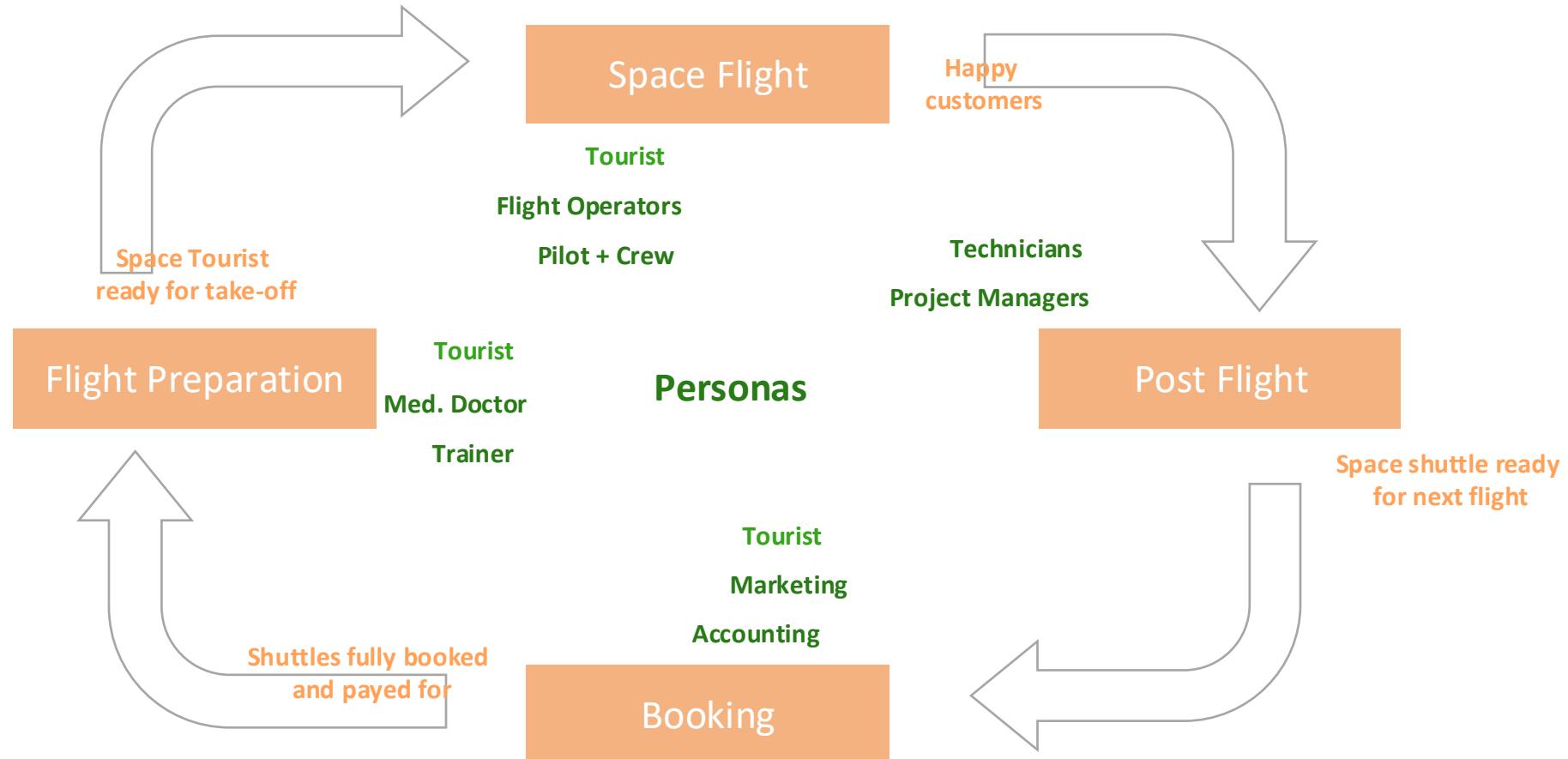
Space Tourism by Elon Bezos: As-Is Process



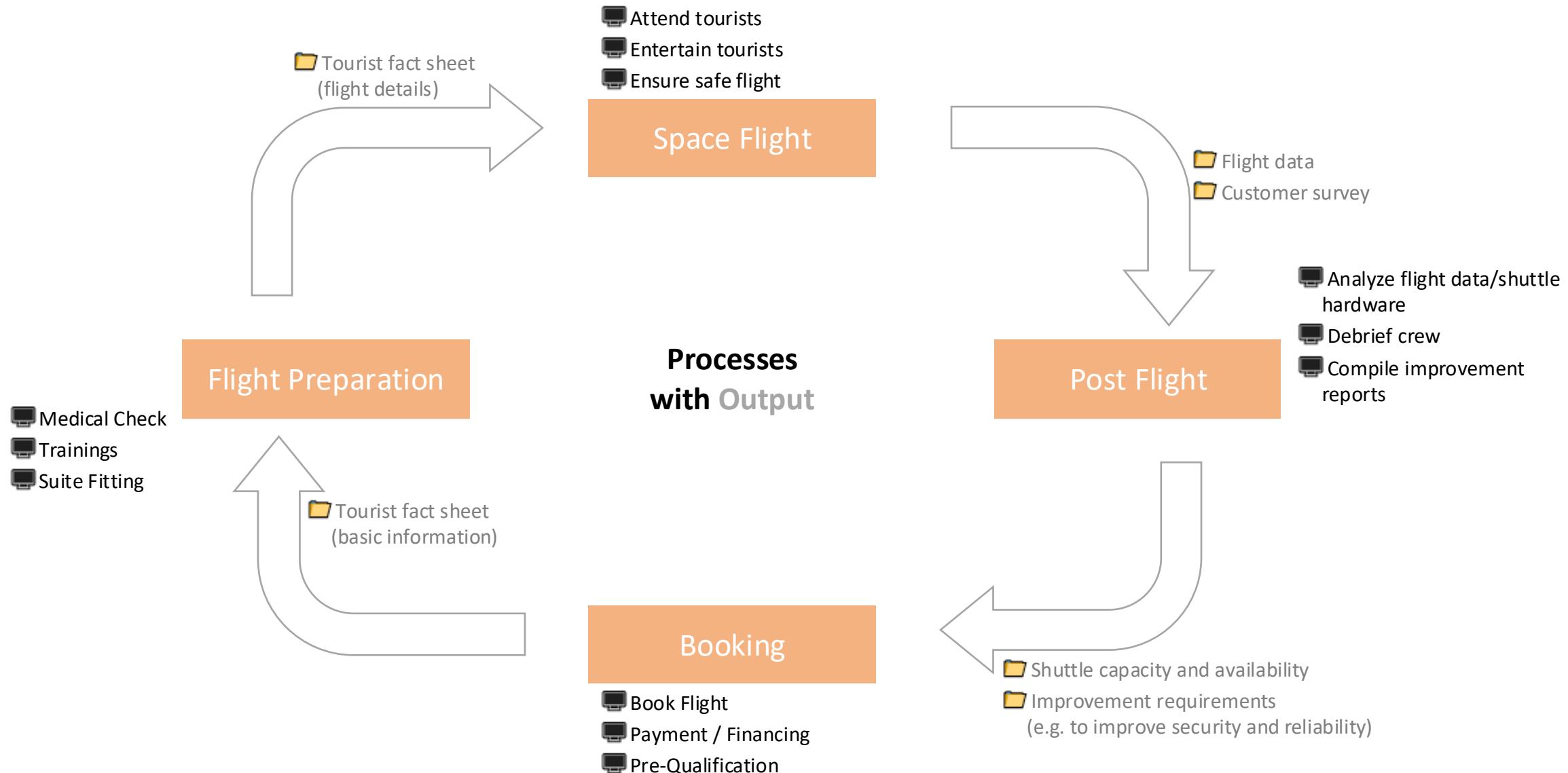
Group Assignments



Space Tourism by Elon Bezos: As-Is Process

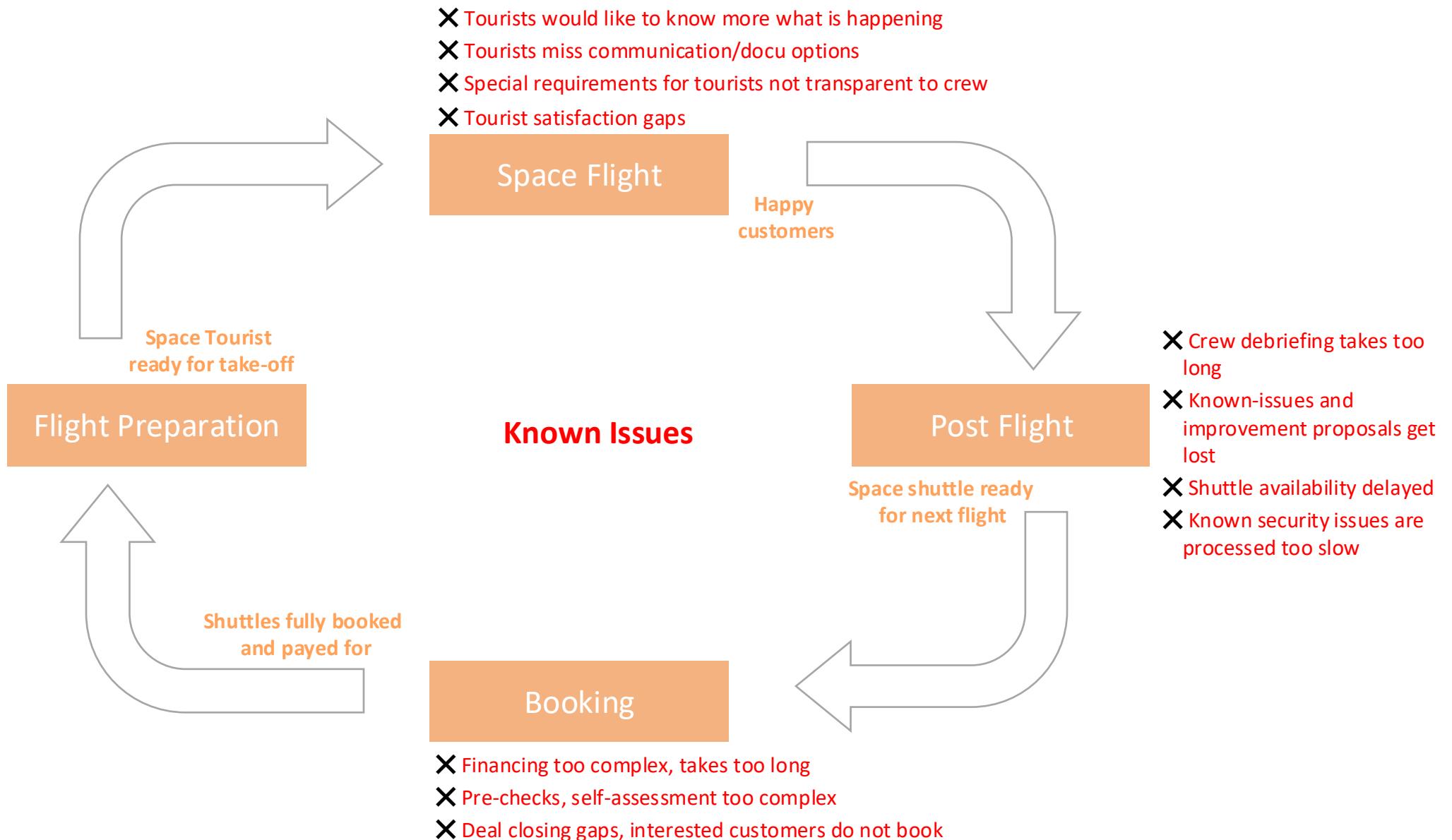


Space Tourism by Elon Bezos: As-Is Process

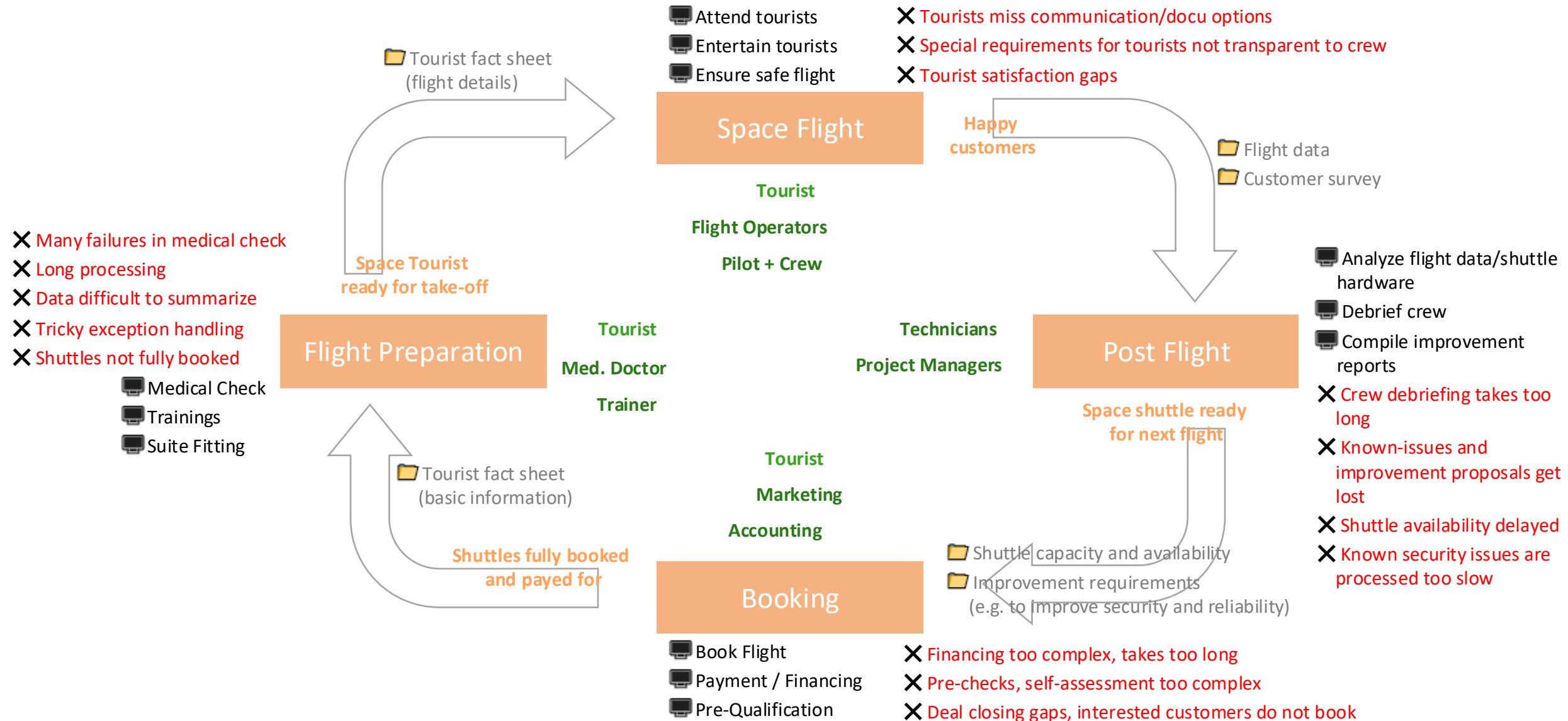


Space Tourism by Elon Bezos: As-Is Process

- ✗ Many failures in medical check
- ✗ Long processing
- ✗ Data difficult to summarize
- ✗ Tricky exception handling
- ✗ Shuttles not fully booked



Space Tourism by Elon Bezos: As-Is Process



Q&A



Agenda for Today

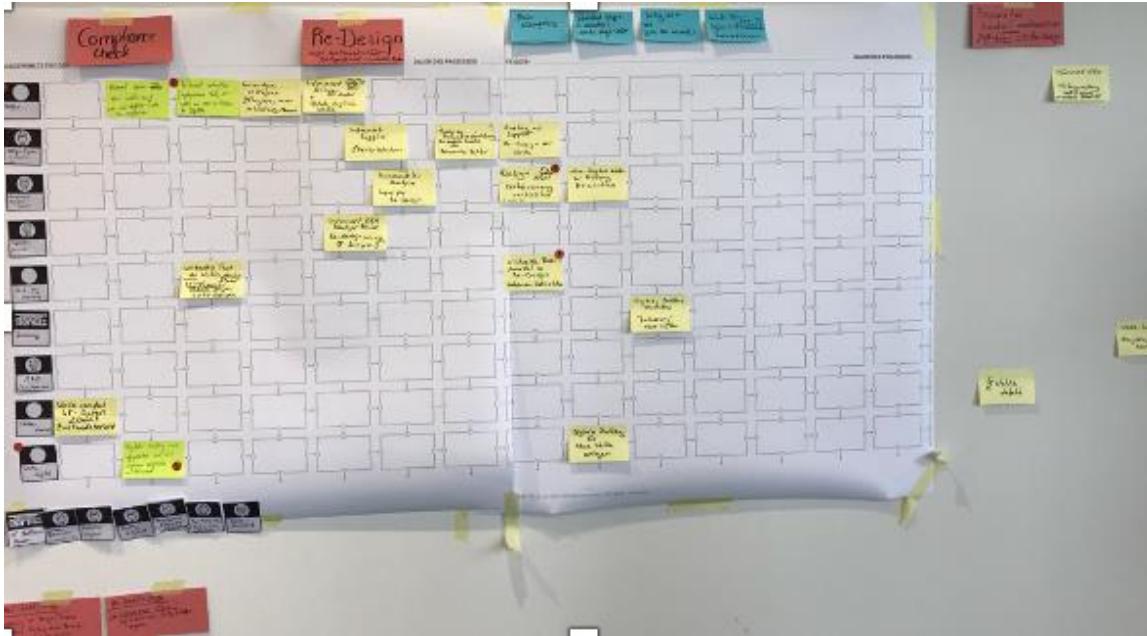
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First Process Iteration



Design Thinking Workshop

Map Your Business Process



Start with analyzing the current as-is process.
Afterwards discuss the to-be process.

Map Your Business Process

<https://apphaus.sap.com/resource/map-your-business-process>

MURAL Template

Map Your Business Process

PROCESS STEPS
Describe a process step by step, across roles and systems.

INSTRUCTIONS
The first step in this template helps you to define a process (role, trigger, duration) and to map the interactions between different stakeholders within the process.

SETUP
Process Name:
[insert process name]

PREREQUISITES
Process Trigger:
[insert process trigger]

TIME FOR THIS INSTRUCTION
Process Duration:
[insert process duration]

1. Set the Frame (5 Min)
Give the process a name, define what action triggers the process and how long your process takes.

2. Define Stakeholders (15 Min)
Collect all roles involved in the process with their respective needs and goals.

3. Define Involved Systems (5 Min)
Describe which systems are involved in the process and what role those systems have.

4. Map out the Activities (60 Min)
Transfer the stakeholders and systems to the chart below. Insert activities and add arrow connections if they are dependent on each other.

Activity 1	Activity 2	Activity 3	Activity 4	Activity 5	Activity 6	Activity 7	Activity 8	Activity 9	Activity 10
Activity 11	Activity 12	Activity 13	Activity 14	Activity 15	Activity 16	Activity 17	Activity 18	Activity 19	Activity 20

Access the MURAL template*: <https://app.mural.co/template/c5262537-951a-42a3-b5a8-d60d1b42be13/d2eeb596-a1ee-427a-8adb-b0a07ed735fe>

*Registration required

Step-by-Step

Overall process phases for space tourism is known

Each group knows your process expertise (focus phase)

1. **Identify the improvement potential** in your focus which you want to cover with software
2. **Identify the main actors** for your focus and create simple personas for the main user
3. **Design your target (to-be) process** in your group by creating a User Journey Map

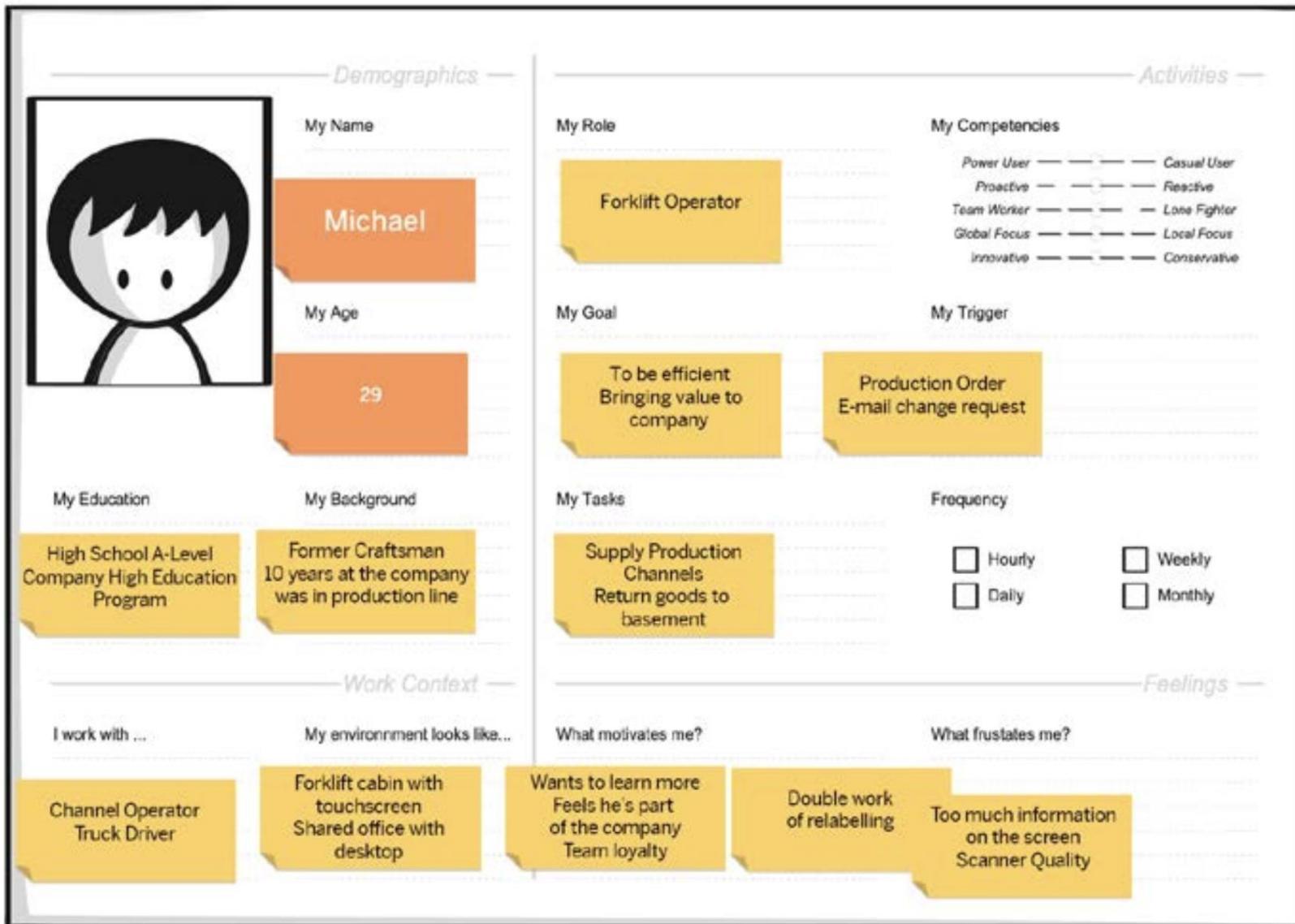


Persona

Get to know the user, who we are working for

Example

Persona: Michael,
29-year-old forklift operator.



User Experience Journey

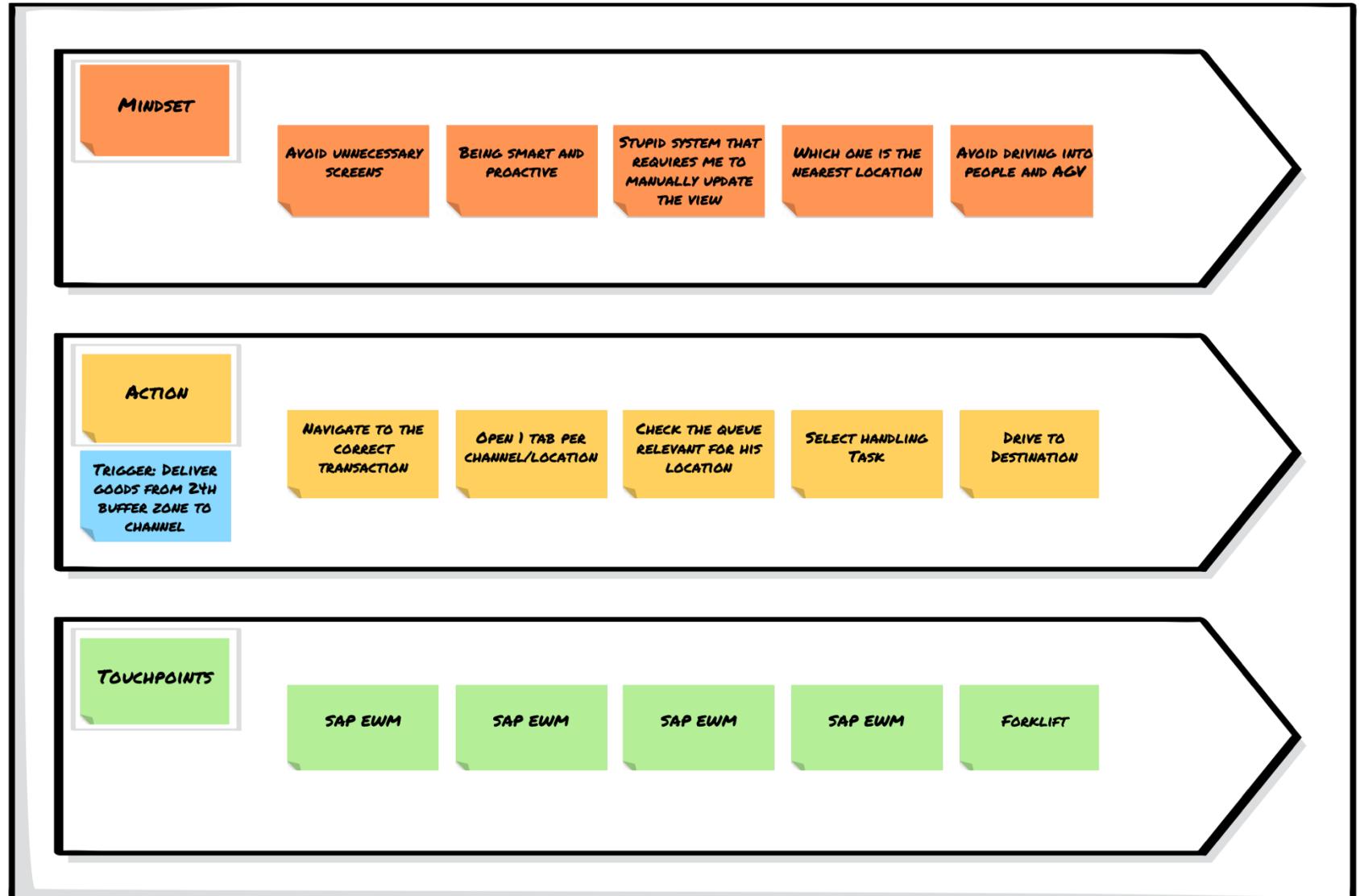
What is the Persona doing and where are improvement potentials?

Example

Persona: Michael,

Forklift Driver

Trigger: deliver goods from
24h buffer zone to channel



First Process Iteration – Group Work

5min	Brainstorming	Für wen wollen wir welches Problem lösen / welchen Mehrwert schaffen?
10min	Persona	Nicht viel diskutieren, einfach mal eine erste Version einer konkreten Person mit Aufgaben, Motivation und Problemen
15min	User Journey Map	Welche Actions (Schritte) macht unsere Persona für ihre Aufgabe/Ziel? Welche Software (Touchpoints) setzt sie dabei ein? Was empfindet sie dabei (Mindset)? → Wo gibt es Probleme ? → Wo wird unsere Software Mehrwert liefern?



Gruppenarbeit

Raumaufteilung:

- Gruppe 1 →
- Gruppe 2 →
- Gruppe 3 →
- Gruppe 4 →

Equipment

- DINA4 Templates für Persona and Journey Map
- Haftklebezettel
- Stifte
- Kreppband

Group	Members
1	
2	
3	
4	

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Programming

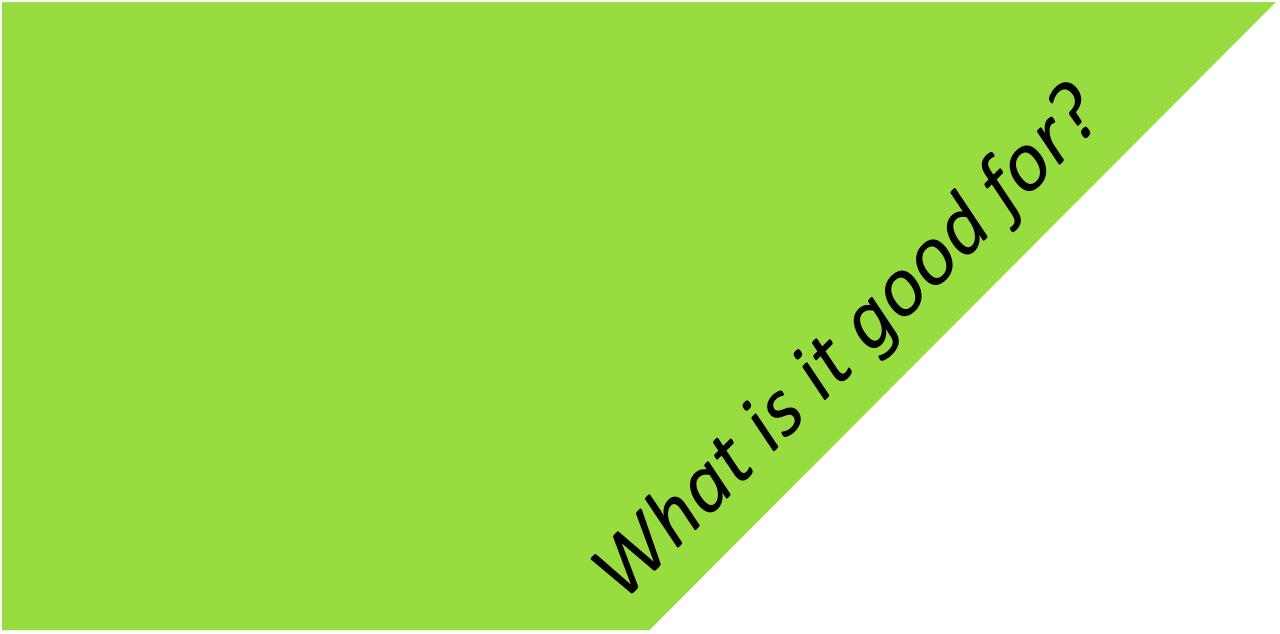


Programming Exercise

Agenda for Today

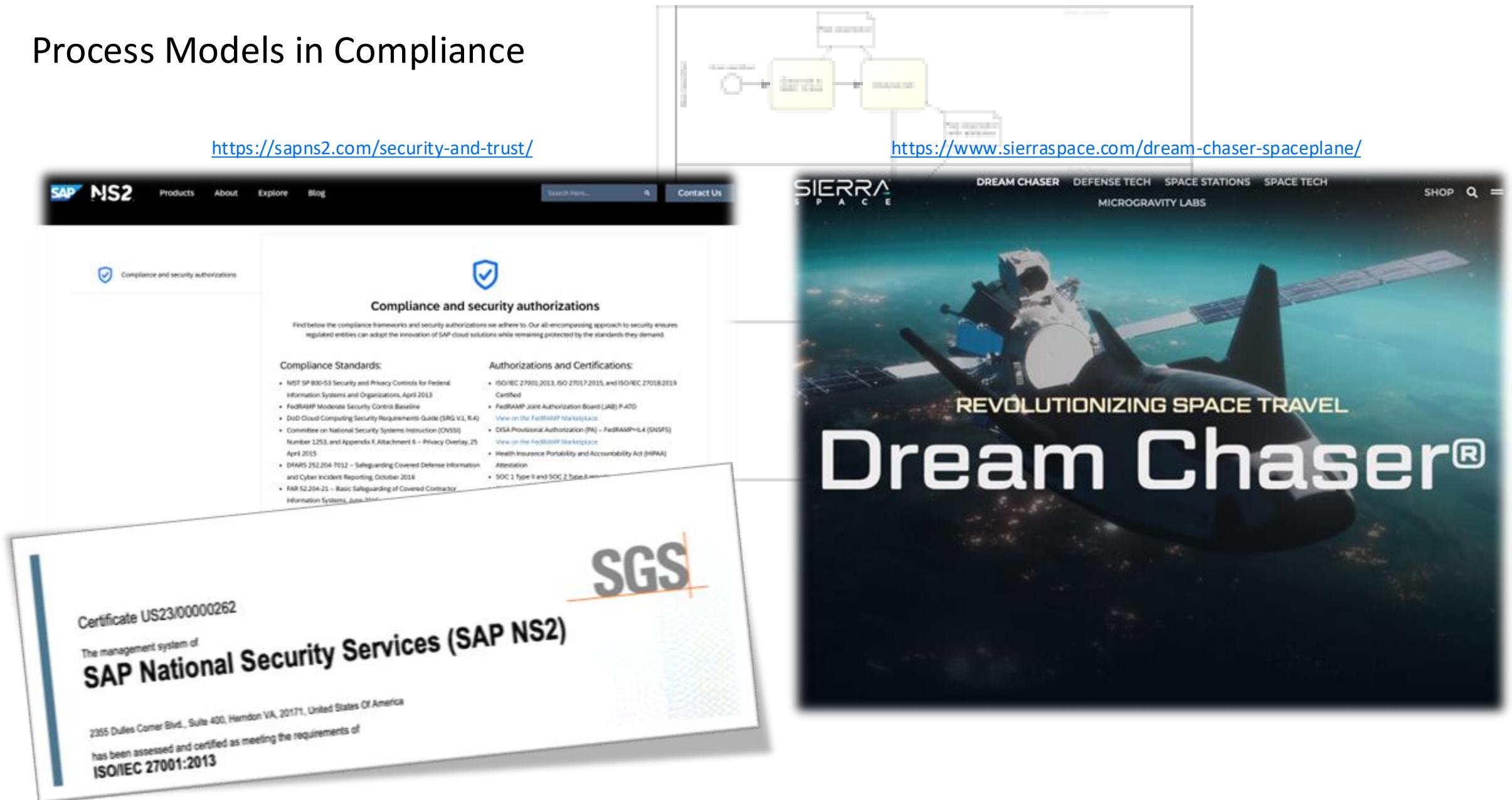
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Process Modelling



What is it good for?

Process Models in Compliance



Motivation for Business Process Modeling (BPM)



Start Simple = No Software

ess of a process mapping session depends on usir
With process mapping, start simple. Until you've do
paper, don't try using computer software.

You can avoid getting bogged down in technical issues

colors

sticky notes for each participant
a large table for the sticky notes

Process-Mapping-Basics.pdf sent via mail

Source requires registration:

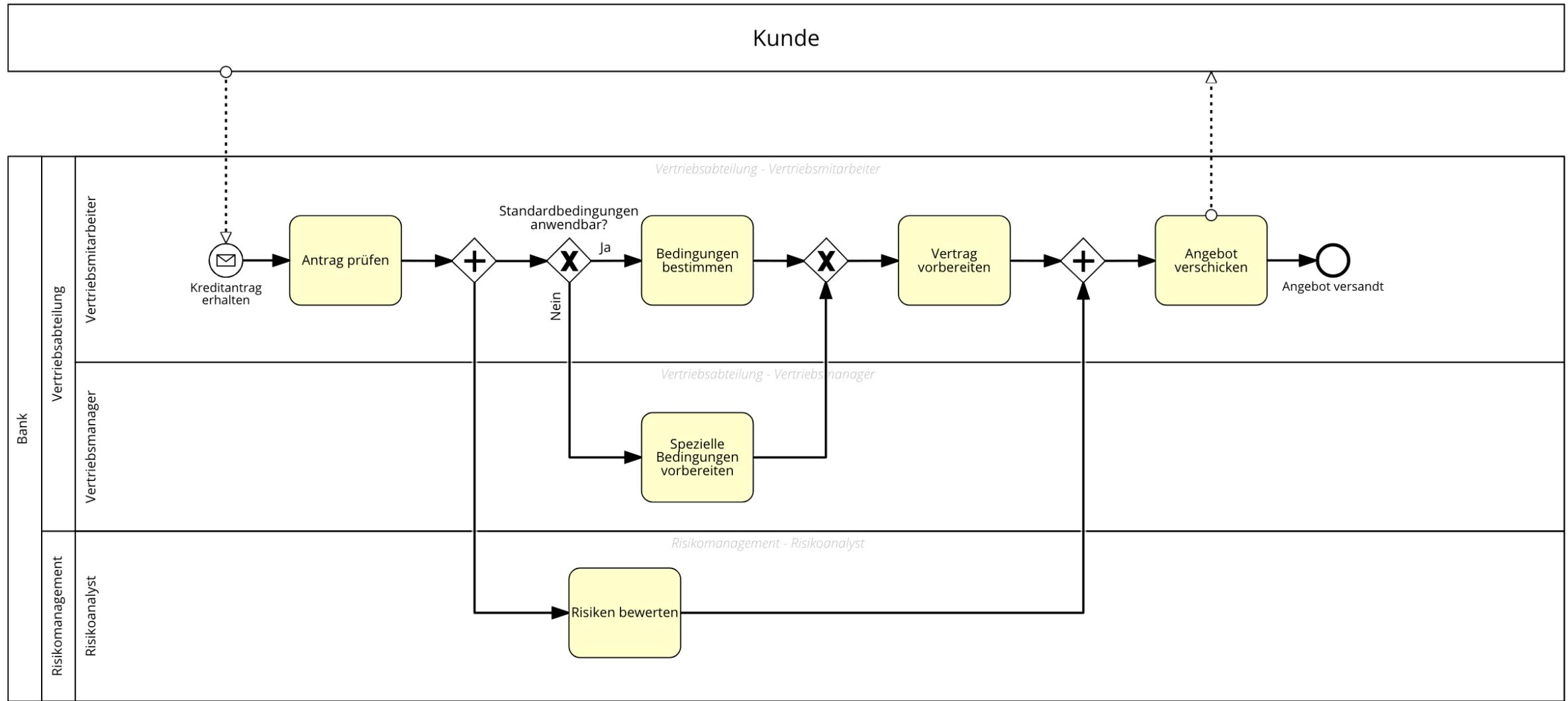
<https://www.signavio.com/downloads/white-papers/process-mapping-basics/>



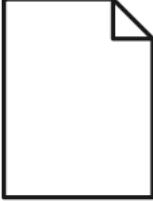
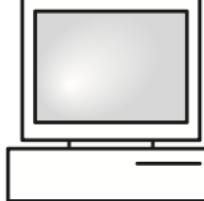
One option:

- Tasks + Results
- along a timeline

Beispielprozess → Elemente Kreditangeboterstellung



BPBMN Elements

Activities	Artifacts
 Tasks are activities that represent individual steps within a process.  Subprocesses represent collapsed details for one task within multiple steps.	 Data objects represent files or documents, which are used to complete activities.  IT Systems represent certain systems, which are utilized to execute activities.

BPMN Elements

Gateways				Connecting Objects		
Exclusive Gateways (XOR) are used when several conditions are mutually exclusive and only one selection is possible e.g. "yes" or "no".	Inclusive Gateways (OR) are used if one or more conditions are possible. Depending on the number of conditions, the merging gateway waits for all possible incoming branches.	Parallel Gateways (AND) activate all outgoing branches simultaneously. They wait for all incoming branches to be completed before continuing the sequence flow.	Event-based Gateways are used if the ongoing process flow depends on the occurrence of an event. The process will continue with the first occurring event.	Associations combine data objects and artifacts with other elements.	Sequence flows connect events, gateways, tasks, and subtasks.	Message flows represent communication and interactions between pools.

BPMN Elements

Lane = Persona

Pool = Organisation

Collapsed Pool = External

Swimlanes

Pools and lanes

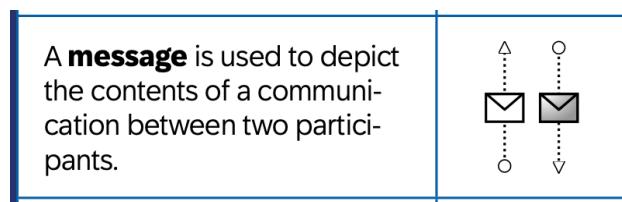
represent responsibilities for activities in a process. Pools represent whole organizational units, and lanes subdivide pools or other lanes hierarchically.

A **collapsed pool** represents an external organization.

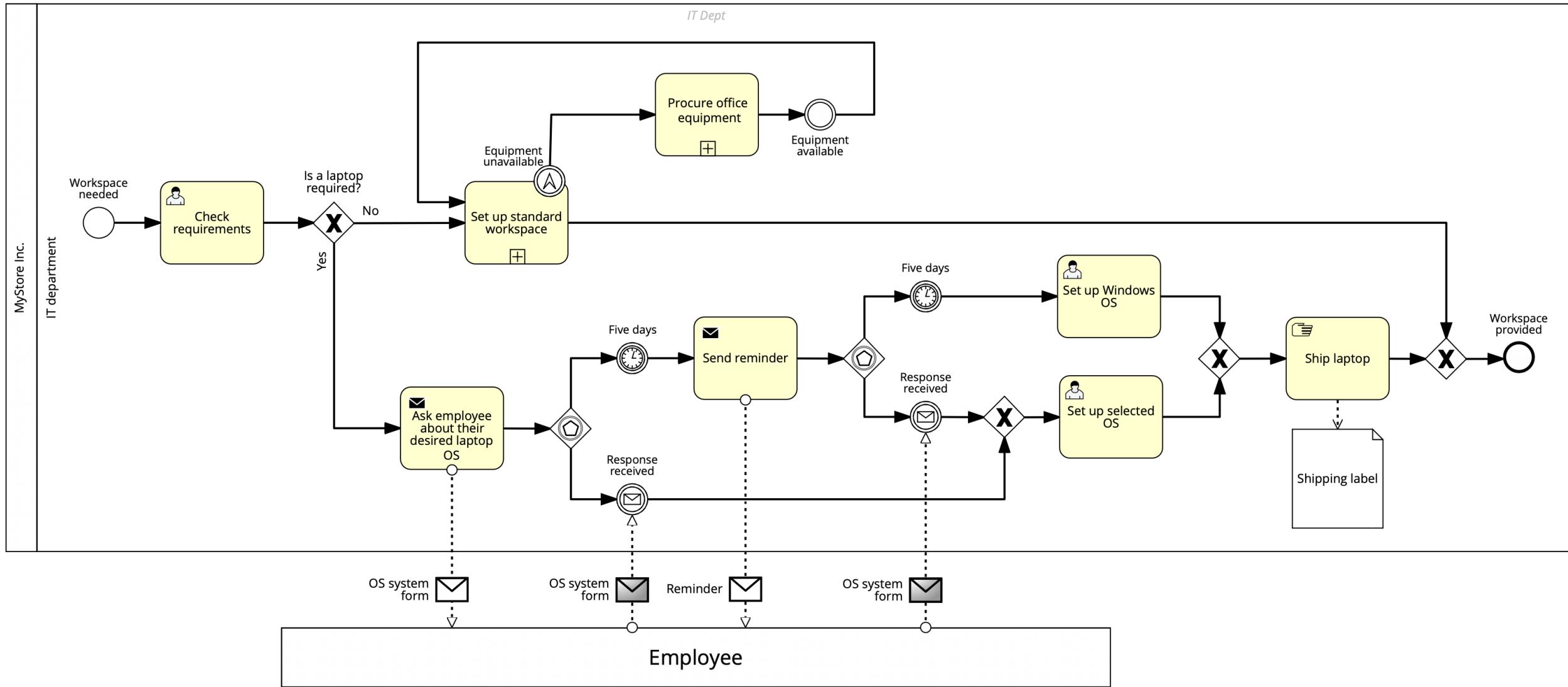


BPMN Elements

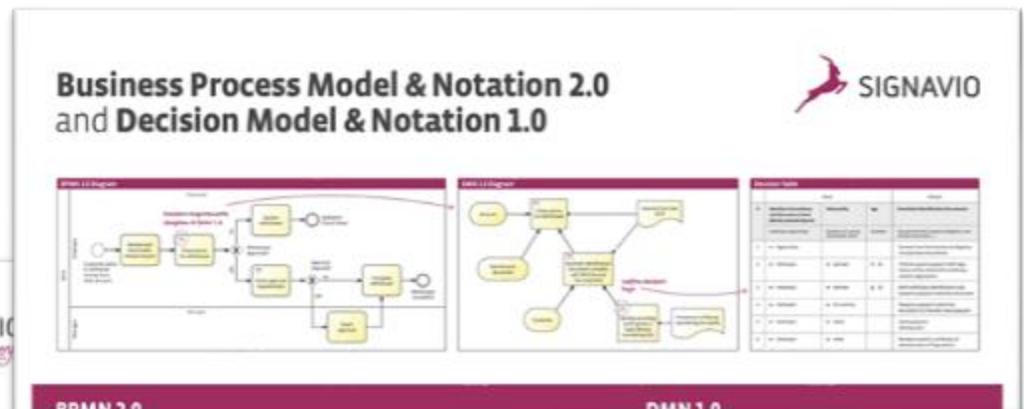
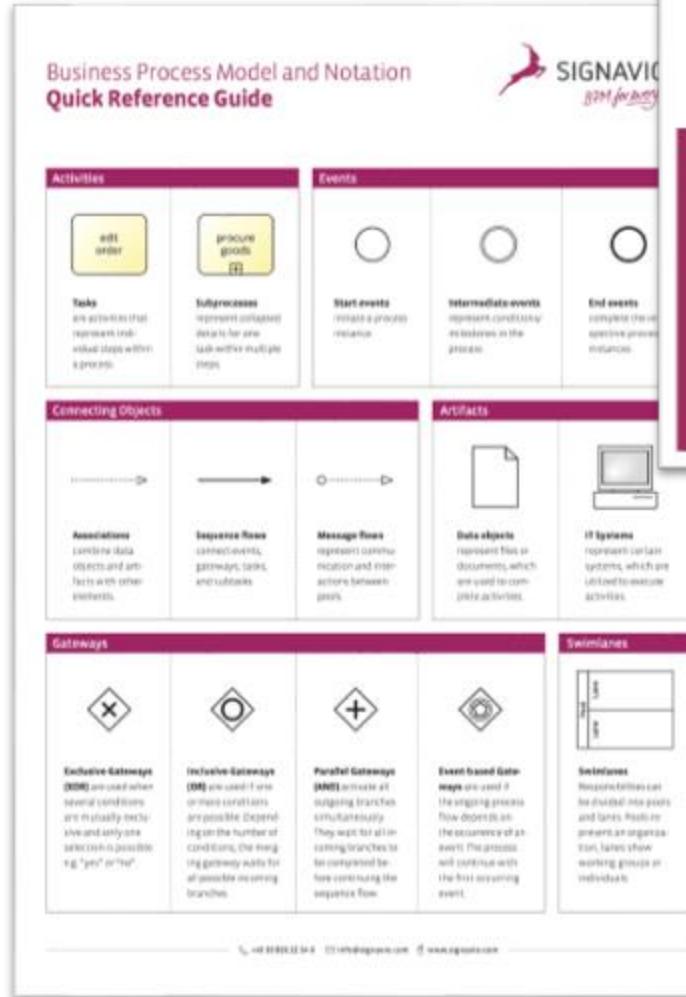
Events								
	Start			Intermediate				End
	Starting the process	Subprocess interrupting	Subprocess non-interrupting	Catching	Attached interrupting	Attached non-interrupting	Throwing	Ending the process
Plain: Can be used for every type of start, end event, or milestones, but don't inherit any form of visualization.								
Message: Symbolizes interactions with external entities – black represents outgoing, white represents incoming								
Timer: Shows either a specific moment in time or the passing of a defined duration								



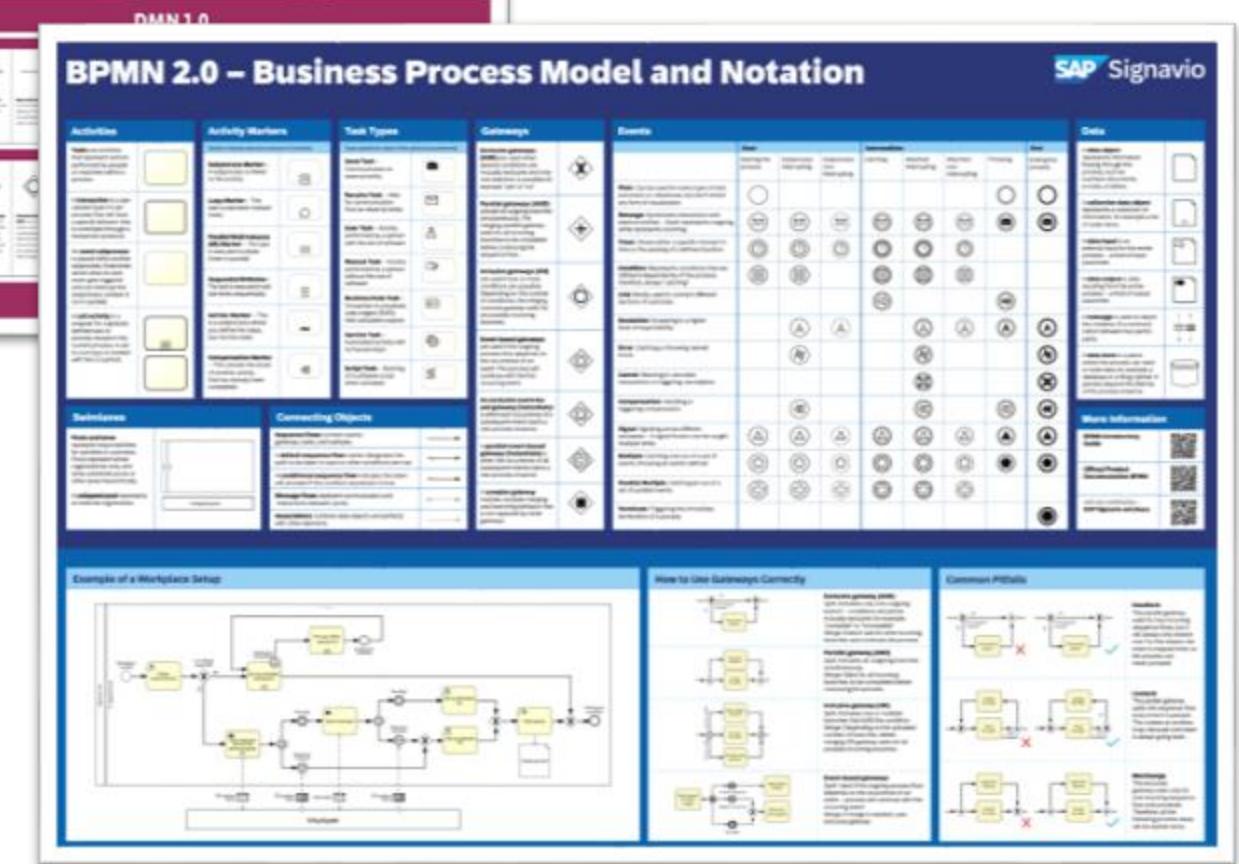
Example of a Workplace Setup



BPMN Elements



[Link zu Share](#)



Signavio Demo



DISCLAIMER

Signavio is a product by SAP.

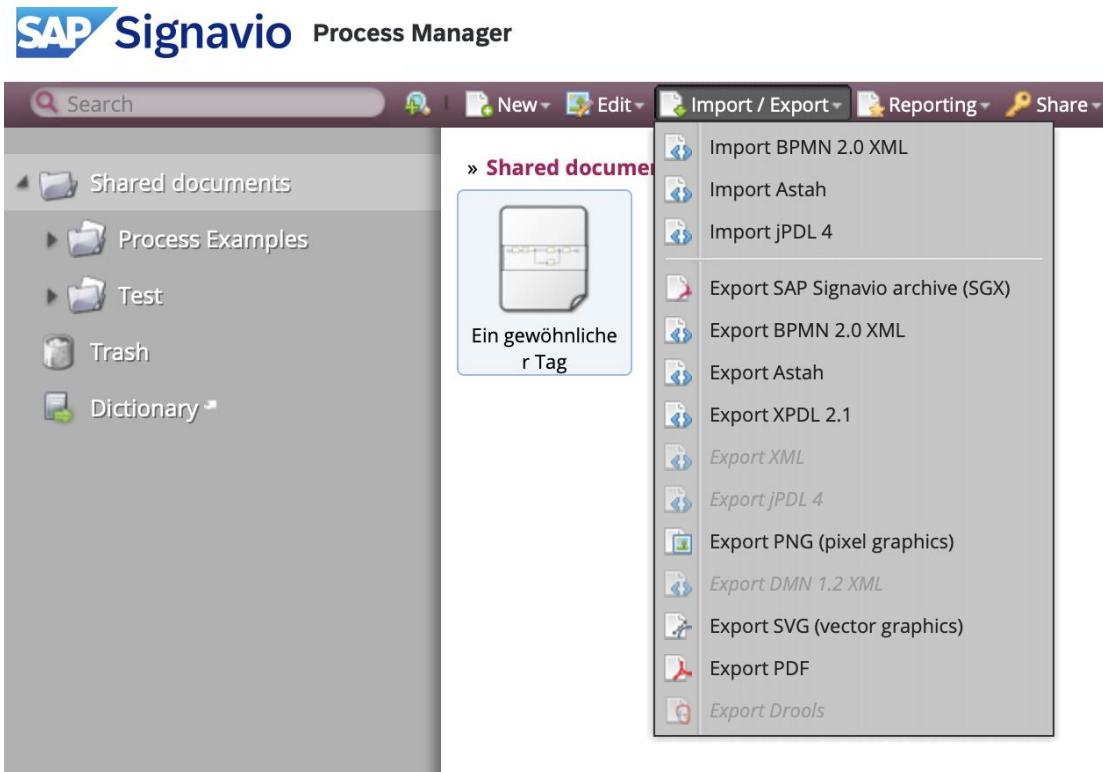
Using any Signavio's features like collaboration, or special presentation formats is

NOT relevant for your grades and evaluation.

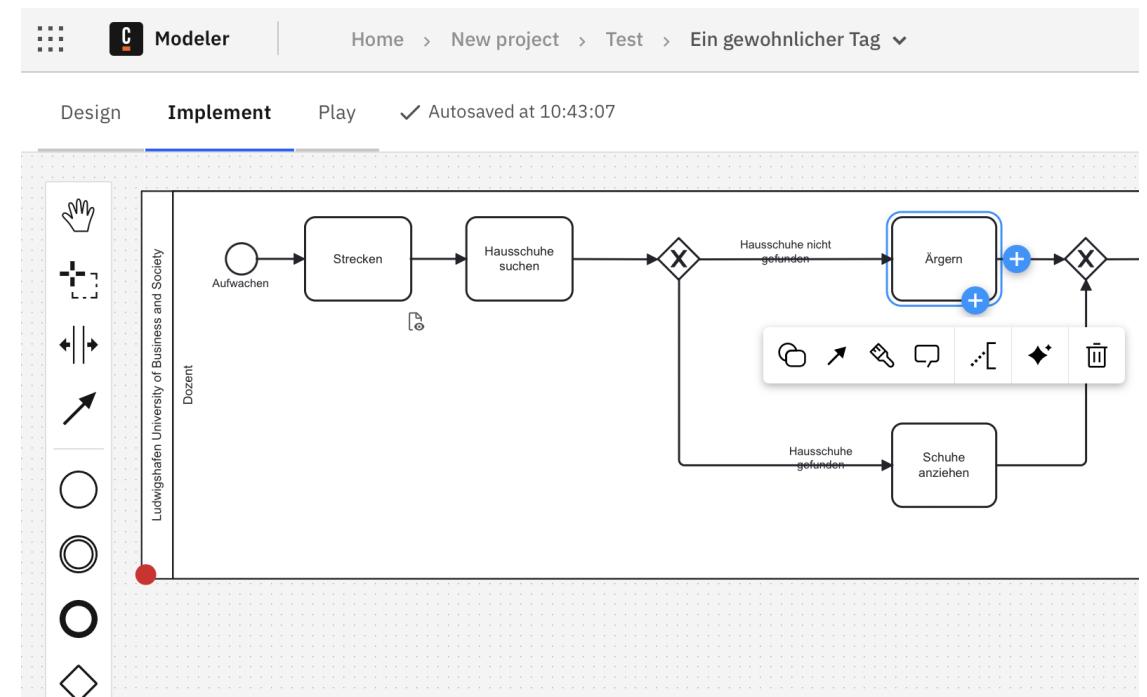
You are free to use any other editor to produce process diagrams in valid BPMN syntax for your project work.

Export and Import Models

You can export models created/owned by you:



Import into any other tool supporting the BPMN 2.0 standard:



Just an example: Camunda Modeler, free version



Personal

First Name

Last Name

University email

Password

Use a unique password with at least 15 characters.

Password

Confirm Password

Language

Country/Region

Language

English

Note that you must not enter personally identifiable information (PII) into model content such as process models or dictionary entries.

SAP will use the data provided hereunder in accordance with the [Privacy Statement](#).

- I have read the [SAP Signavio Cloud Academic License Agreement](#) and hereby confirm that it will govern my use of this SAP Signavio software.

Submit

Academic workspace for
Ludwigshafen University of Business and Society -
Andreas Heck

Registration for the SAP Signavio BPM Academic Initiative

Please confirm the invitation to the Ludwigshafen University of Business and Society workspace from Andreas Heck by filling in the form.

Right after that you can start modeling collaboratively with your colleagues in the secure workspace.

Are you already registered? Then please go to the login form directly.

Das Kleingedruckte

SAP Signavio Cloud Academic License Agreement

you must not enter personally identifiable information (PII) into model content such as process models or dictionary entries.

This is a free cloud service:

- ❖ No service level agreement and no support. → Evaluate alternative BPMN editor as backup.
- ❖ Eventually, your data will be deleted. → Make regularly use of export functionality.

Terms and Conditions

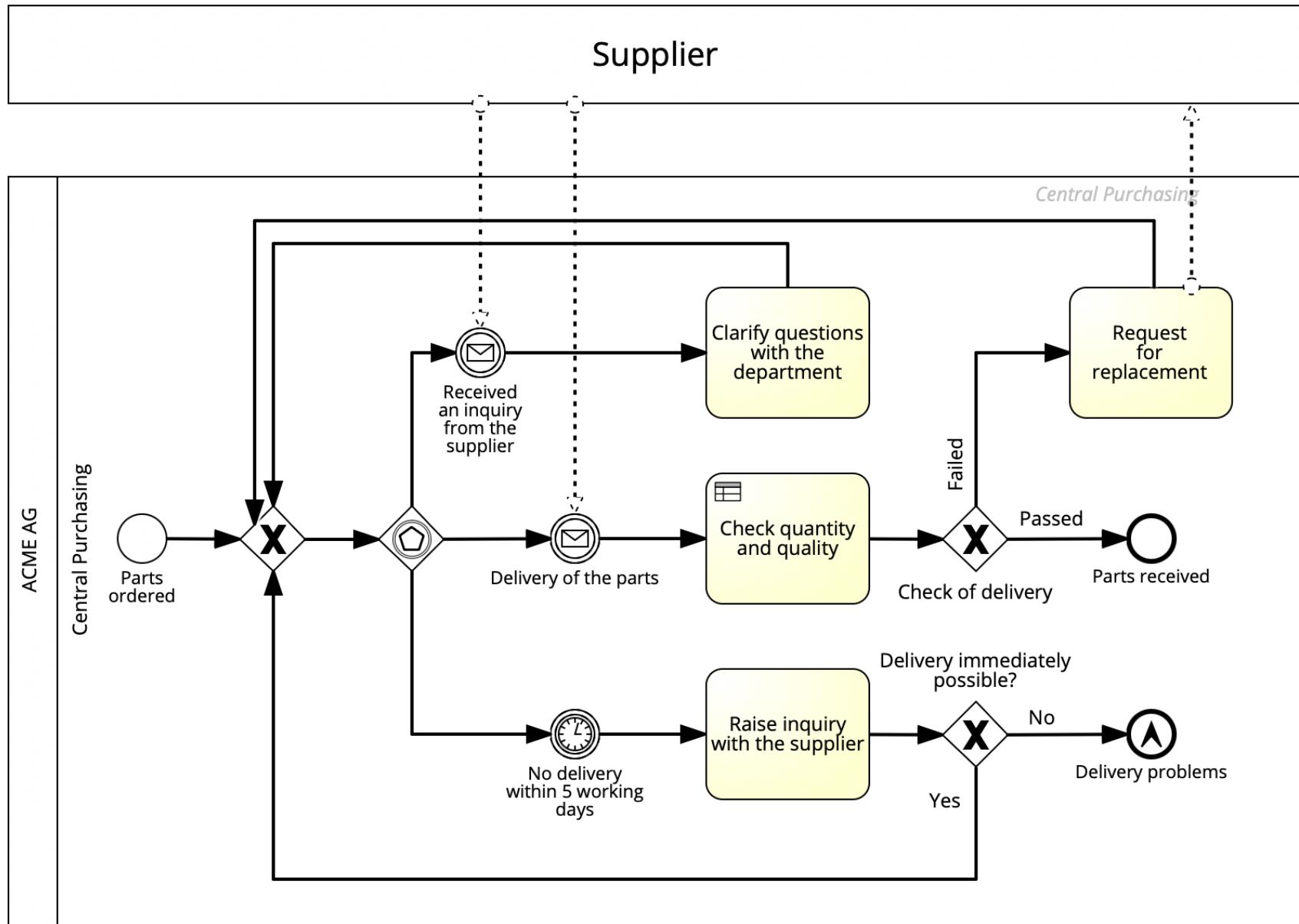
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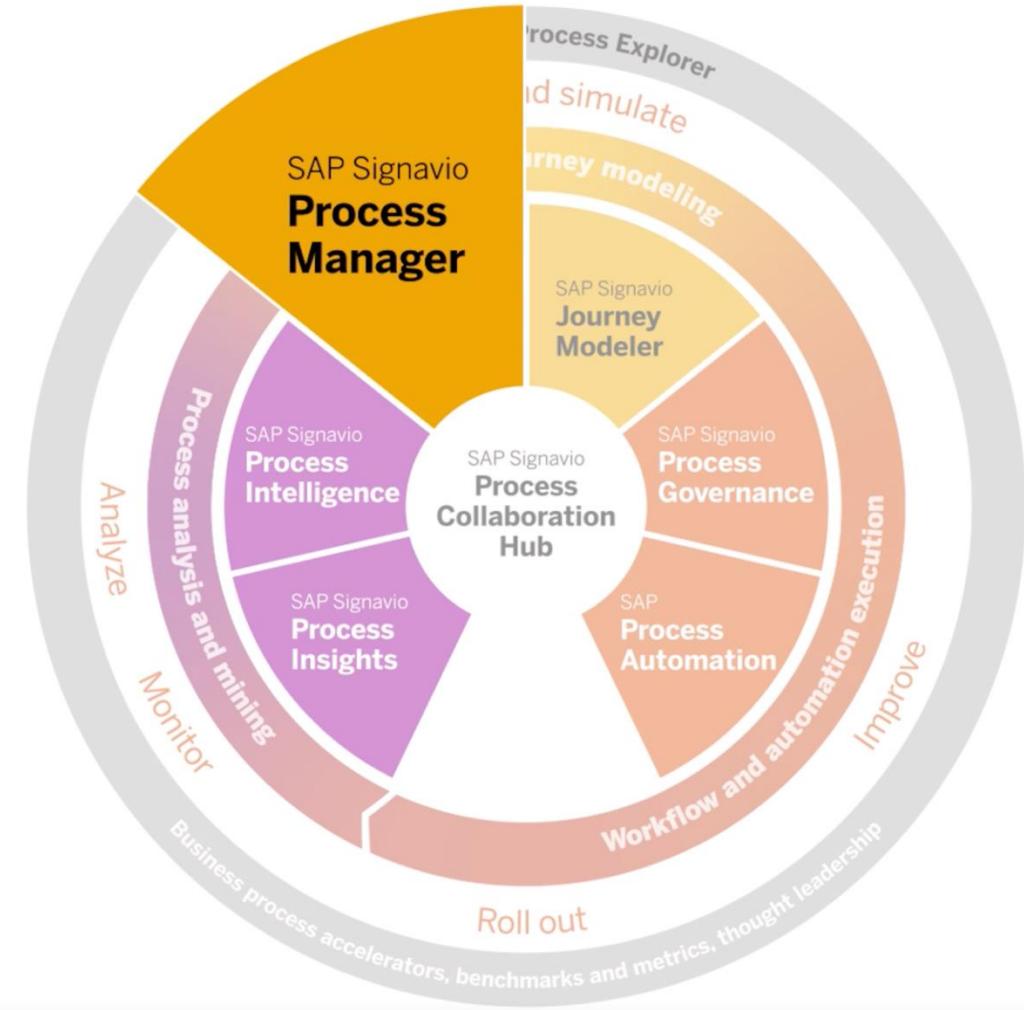
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Excercise: Create BPMN Model for *Receipt of Goods* Process



Signavio has many options
In this course only use a subset of the functionality

**Enables you to design,
model and analyze your
current and future state
operational processes**



Signavio Help Content



We are using Signavio **Process Manager** incl. the **QuickModel** option.

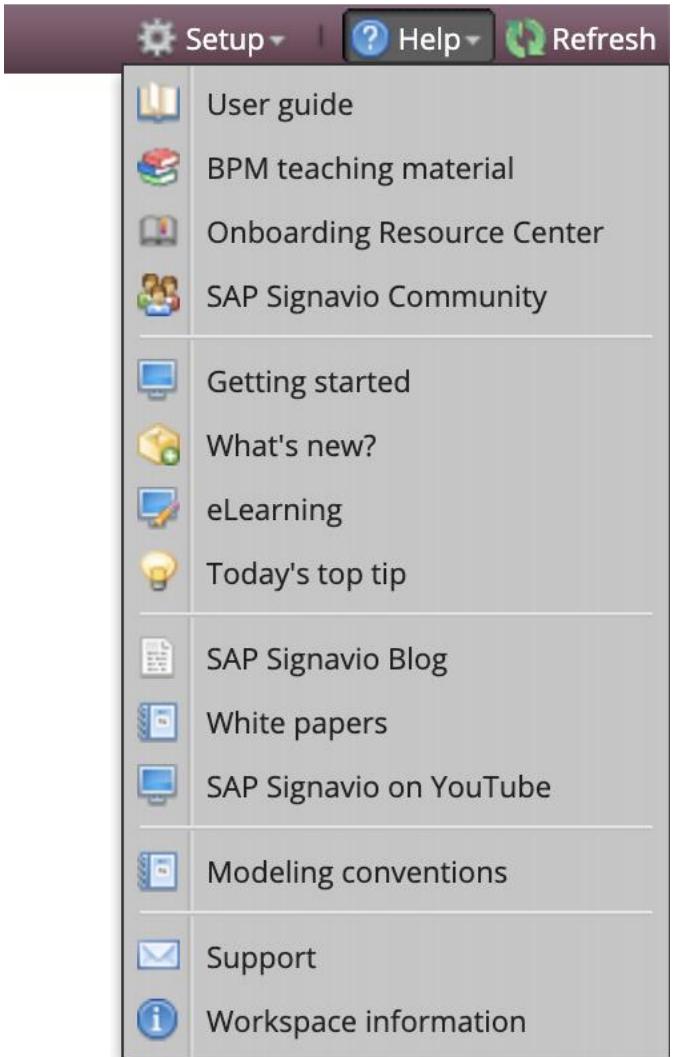
Short tutorial videos: <https://www.signavio.com/video/signavio-tutorial-videos/>

End-user docu online: <https://help.sap.com/docs/signavio-process-manager/user-guide/intro>

(Offline PDF:

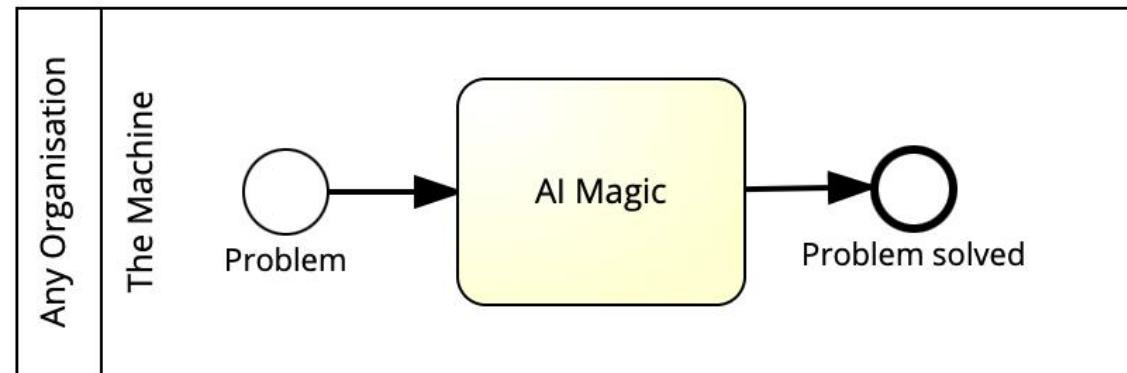
<https://help.sap.com/doc/10ae12665b494798a8a332bcc195689d/SHIP/de-DE/sap-signavio-process-manager-user-guide-en.pdf>)

- QuickModel <https://help.sap.com/docs/signavio-process-manager/user-guide/quickmodel>
- Modeling <https://help.sap.com/docs/signavio-process-manager/user-guide/modeling>
- Collaboration / Commenting <https://help.sap.com/docs/signavio-process-manager/user-guide/comments>
- Explorer View <https://help.sap.com/docs/signavio-process-manager/user-guide/explorer-overview>



Use of AI in your processes

Bad example:

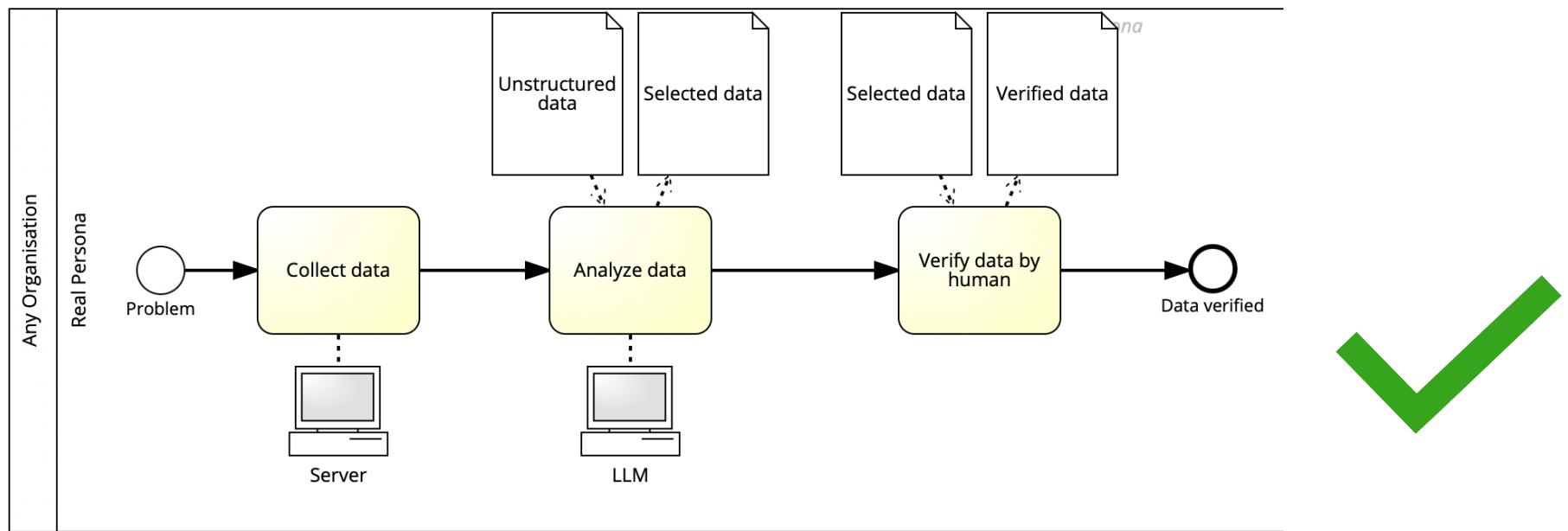


Instead:

1. Create you detailed process without AI
2. Afterwards select tasks for AI support / enhancement

Use of AI in your processes

Better example:



Additional project documentation for AI services:

- Input for the AI – Where does it come from?
- Output of the AI – How is it used and how to verify reliability?
- Training the AI service
 - Where to get enough and quality data?
 - Training process (e.g. reinforcement, human-in-the-loop)
 - Type of suitable AI (e.g. generative, predictive)
 - Preferred AI currently on the market

Agenda for Today

<i>Start</i>	<i>Time [min]</i>	<i>Topic</i>	<i>Presenter</i>
10:00	15	Overview + Working Group Assignment	Andreas
10:15	30	Introducing the Challenge	Patrick + Andreas
10:45	45	First Iteration of Business Process + Group Work	Andreas
11:30	15	Break	
11:45	60	Programming + Excercise	Patrick
12:45	45	Mittagspause	
13:30	60	Programming + Excercise	Patrick
10min break?			
14:30	60	Process Modelling + Excercise	Andreas
15:30	15	Break	
15:45	30	Deliverables + Team Roles + GitHub Basics	Patrick + Andreas
16:15	45	Group Work: Iterate your Process + Plan your Project	
17:00	30	Verify Results of Group Work → Exit Gate	
17:30		End	

**Deliverables + Team Roles
+ GitHub Basics**

Deliverables / Liefergegenstände

GitHub Wiki-Page

- Design des Start-up Angebots = “Marketing”
- Verlinkt alle Dokumente *mit Zugriff für Dozenten!*

Prozessmodellierung

- BPMN-Diagramme (Exporte in PDF, PNG)
- Personas der Kernprozesse (z.B. Kunde, Pilot, Technikerin...)
- UI-Mockups der Software

Implementierung (GitHub /src Folder)

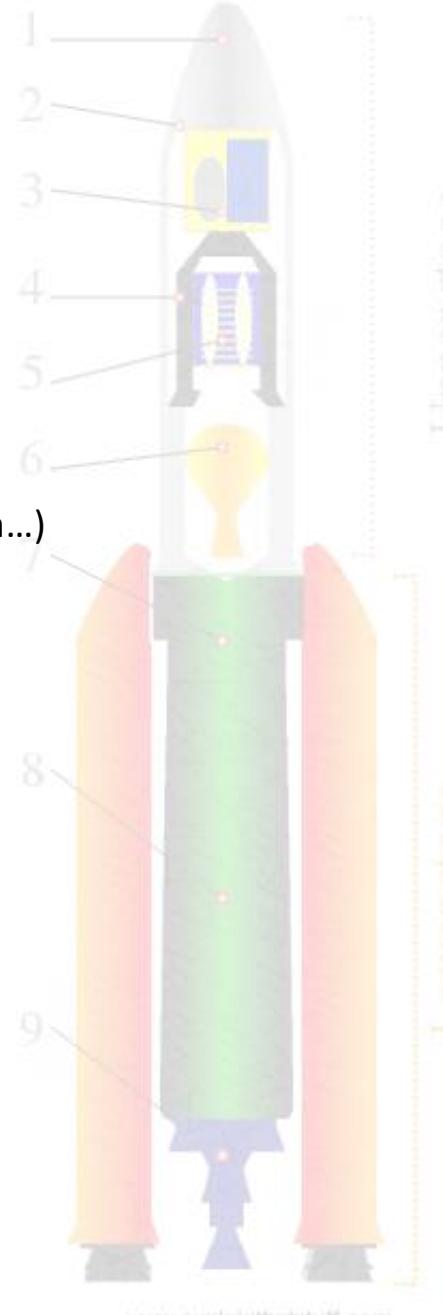
- Technische Docu mit Beschreibung der Architektur
- Programmaufbau/-abläufe
- *Diagramme, nicht aus dem Code generiert!*

End-user Docu

- Anleitung zur Implementierung
- Bedienungsanleitung

Abschlusspräsentation

- Moderation
- Demos



→ Team Aufgaben / Rollen

- Product Owner
 - Produkt/Service Design und Marketing
 - Prozessdefinition und Modellierung
- UI-Design
- Developer / Architect
 - Programmierung
 - Technische Docu
- Dokumentation
 - Enduser-Dokumentation
 - Abschlusspräsentation erstellen/koordinieren

Benotung

Die Dozenten entscheiden über die Bewertung pro Gruppe entlang des Beurteilungsbogens <Link wird nachgereicht>

Erreichbare Gesamt-Punktzahl: **100 => Note: 1,0**

Zusammenfassung aus Beurteilungsbogen = Vier Bereiche mit jeweils maximal erreichbarer Punktzahl:

DEVELOPMENT – 30P

- Programmierergebnis
- Technische Dokumentation
- Architektur/Design
- Wartbarkeit
- Clean Code
- Unit Tests

DESIGN – 30P

- Klare Beschreibung des Projekt-Umfangs
- Personas mit Mehrwert
- Prozessdiagramme
- UI-Designs
- Endbenutzer-Dokumentation

PRÄSENTATION – 25P

- Abschlusspräsentation (25min pro Gruppe)
- Mehrwert vermitteln
- Klare Struktur
- Relevante Inhalte
- Antworten auf Fragen
- **Das ganze Team ist aktiv!**

KREATIVITÄT – 15P

- Überrascht uns!

GitHub



GitHub Demo

register user

create repository

add collaborators

create main folders /doc + /src (generated by Maven)

create wiki page

create project with KANBAN board

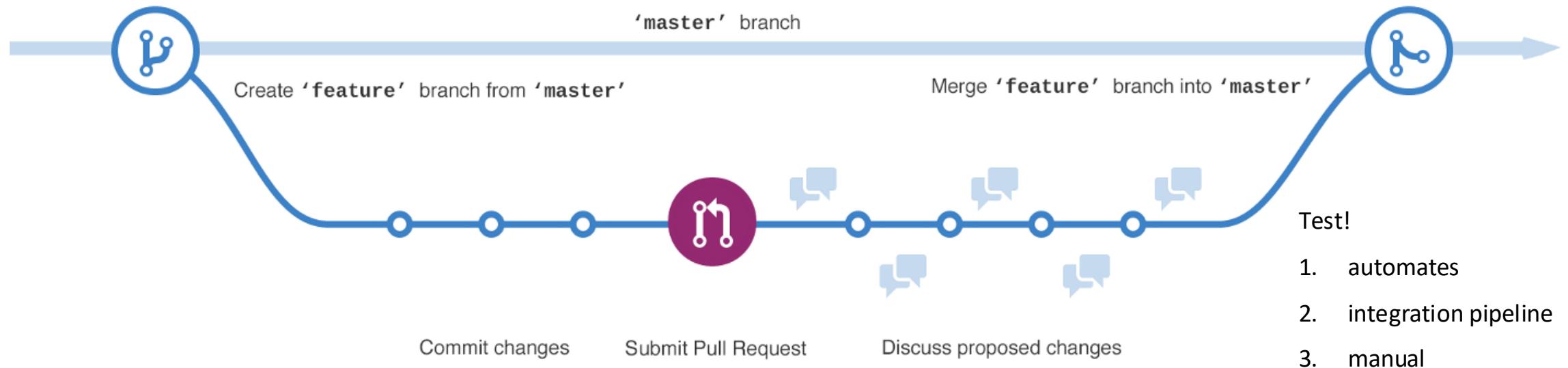
<https://github.com/andreasheck/ATdIT-2025-sample>



Prepare

Universal Resolver — Branching Strategy

<https://github.com/decentralized-identity/universal-resolver/blob/main/docs/branching-strategy.md>



<https://github.com/copilot>

Extended Pro version is free for students and teachers (requires credit card)

Plugin for IntelliJ



Welcome to GitHub Copilot.
Here's how to get started.

You now have access to GitHub Copilot in VS Code and github.com for free as part of your GitHub user account—and that includes support for models from OpenAI and Anthropic.

[Ask Copilot how to get started](#)

What's included:

- **2,000 intelligent code completions a month:** Get context-aware code suggestions that draw context from your GitHub projects and VS Code workspace.
- **50 Copilot Chat messages a month:** Ask Copilot for help understanding code, refactoring something, or debugging an issue.

More instructions e.g.:

<https://www.youtube.com/watch?v=3w2df18ns-8>

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Group Work:
Iterate your Process + Plan your Project

Verify Results of Group Work → Exit Gate



- High-level processes sketched
- Implementation focus defined
- Team roles assigned

Patrick + Andreas walk around and are available for questions and presenting your plan.

- ➔ When P+A are happy, you can go home.
- ➔ See you next Friday!

Gruppenarbeit

Raumaufteilung:

- Gruppe 1 →
- Gruppe 2 →
- Gruppe 3 →
- Gruppe 4 →

Equipment

- Haftklebezettel
- Stifte
- Kreppband
- + Laptops

Group	Members
1	Fuchs, Marco
	Fuhrmann, Helena
	Herrscher, Elena
	Raffel, Felix Emil Wilhelm
	Schmitt, Tim Joerg
	Wagner, Thies Johannes
2	Blazquez Perez, Daniel Justo
	Hampele, Luc Alex
	Hartmann, Konstantin
	Rohr, Philipp Lennard
	Schmidt, Lisa
	Zeidler, Joline
3	Bretschner, Leonie
	Juston, Jonas Maximilian Wilhelm
	Mountassir, Inas
	Simon, Oliver Michele
	Weber, Vanessa
4	Cornacchione, Marco Antonio
	Domnick, Jonas Fynn
	Knorr, Hannah Alina Zoe
	Ott, Roman
	Vu, Thu Giang

Schedule

Datum	Uhrzeit	Veranstaltung	Kommentar	Ort
FR 21.3.	10:00-17:30	Kick-off	Aufgabenstellung, Einführung in Programmierumgebung mit Beispielen, Prozessmodellierung und Arbeitstechniken → Arbeitsgruppen sind Startklar	HWG Raum: A202
<i>Erste Woche</i>				
FR 28.3.	10:00-13:00	Reviews (Pflichttermin)	Review der Designs aller Gruppen, um Abhängigkeiten/Überschneidungen abzustimmen	Online Teams
<i>13:00-15:45 Freie Gruppenarbeit</i>				
FR 4.4.	10:00-13:00	Reviews (Pflichttermin)	Pflicht für ausgewählte Gruppen mit Lücken in den Designs	Online Teams
<i>13:00-15:45 Freie Gruppenarbeit</i>				
FR 11.4.	10:00-13:00	Reviews (optional)	Auf Einladung oder Wunsch	Online Teams
<i>13:00-15:45 Freie Gruppenarbeit</i>				
<i>3 Wochen</i>			<i>Dozenten sind erreichbar bei Bedarf</i>	Online Teams
MO 5.5.	10:00-13:00	Reviews (optional)	Auf Einladung oder Wunsch	Online Teams
<i>Letzte Woche</i>				
MO 12.5.	10:15-12:45	Abschlusspräsentation	Präsentation der Gruppen, mit Gästen aus den Unternehmen	HWG + Online Raum: C2.015

Thank you.

patrick.gutgesell@sap.com
andreas.heck@sap.com

