Last Name	First Name	Matriculation Number

Exam
CSCW

June 22nd, 2023

You have **90 minutes** to work on the exam. You can reach up to **90 points**. The information on the points provided with each question hints at how much time you should invest in writing an answer.

You can write the answers to the exam tasks in English or German. **All your answers must be in one and the same language throughout the whole exam.**

Do not use your own sheets of paper. Only use the ones provided during the exam.

Do not write on the back of the paper. Use an additional sheet of paper.

Do not use pencils or red colored pens.

Please, put your matriculation number on **each** sheet of paper.

If you must make assumptions, highlight and describe them accordingly.

Good luck!

Section	1	2	3	4	5		Σ
Points possible	13	16	17	26	18		**90**
Points reached							

Matriculation Number

Matriculation Number

Section 1: Dyads and the People-Artifact Framework (13 points)

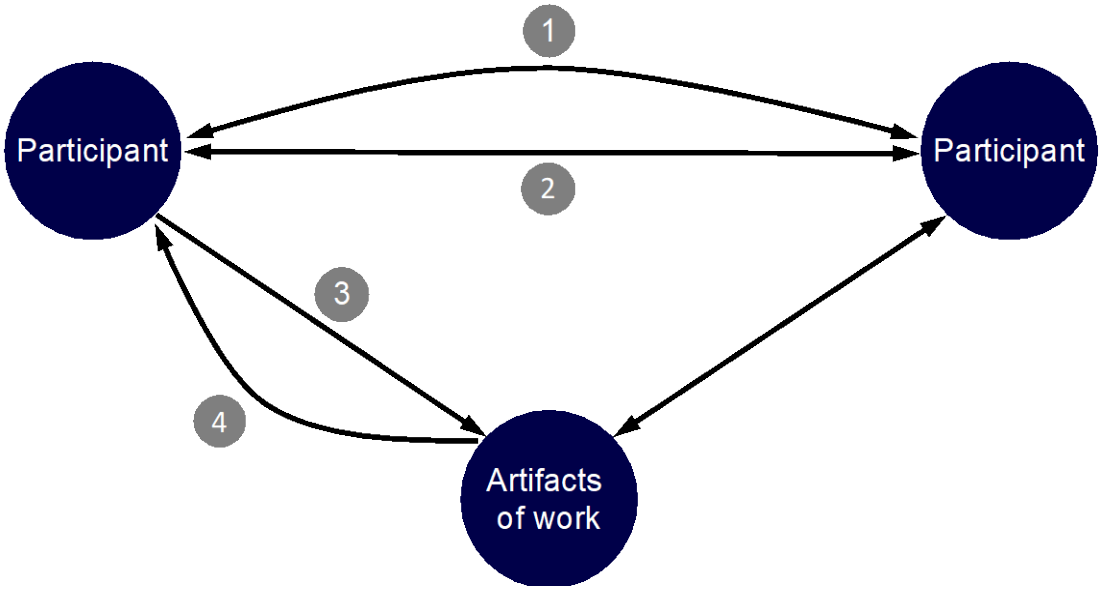
Question 1.1 (5 points)

Imagine the following situation: *You want to buy a used car from a private seller on a well-established used-car platform like Autcoscout24. As you have only limited engineering knowledge, buying a used car requires a lot of trust in the seller and the information they provide. Luckily, the platform offers a new feature called "AI-stimated Price" that calculates a price estimation for cars offered on it. For this, they use machine learning to compare each car and its history (e.g., accidents, driving behavior) with other cars. The platform also offers a chat functionality in which you can engage with potential sellers (see figures below).*

Explain the underlying conflict between the buyer and seller in the situation mentioned above through the lens of the principal-agent problem.

Question 1.1

Matriculation Number



Dix, A.: Computer Supported Cooperative Work: A Framework. In: DipCAI, D.R.B., MA and MSc, C.H. (eds.) Design Issues in CSCW. pp. 9–26 Springer London (1994).

Question 1.2 (2 points)

The “AI-stimated Price” feature can be considered as an artifact of work in Dix (1994)’s proposed framework. Label the arrows of the People-Artifact framework shown in the figure above.

1

2

3

4

Matriculation Number

Question 1.3 (6 points)

First, explain how communication in a dyad via an artifact works using the People-Artifact framework. Second, discuss how the new "AI-stimated Price" feature can help resolve the principal-agent problem. In addition to your written explanation, you can draw reference annotations that further support your answers in the figure above.

Question 1.3

Matriculation Number

Matriculation Number

Matriculation Number

Section 2: Small Groups (16 points)

Read the following description of a small group work experience, which encountered several problems:

In an era defined by remote work, digital tools have become the lifeline for teams striving to collaborate effectively. Among these tools, Microsoft Teams and Google Docs have emerged as game-changers, enabling seamless online communication and collaboration. Like many others, Alex, Ben, Chris, and Dana used these tools in their remote collaborative work to formulate the design requirements for a new health-tracking app. Soon after starting their Teams Call and brainstorming in Google Docs, they faced the first hurdle. While Alex and Ben were fully committed and dedicated to their work, Chris and Dana's contributions fell short. Alex and Ben noticed an imbalance in the effort, with Chris and Dana seemingly taking advantage of the rest of the group's efforts. This created a sense of resentment and hindered progress. Additionally, Alex encountered a series of setbacks that led to decreased motivation and productivity. Initially, Alex was enthusiastic and driven, eager to contribute to the group's success. However, when faced with unforeseen challenges and obstacles, such as a sudden increase in workload or technical difficulties, Alex felt overwhelmed and disheartened. The group generally followed their desire for conformity and an aversion to dissenting opinions. Instead of fostering independent thought and encouraging constructive criticism and exploration of alternative solutions, the group commonly and quickly decided on the least controversial design requirements for the app. Ultimately, the group members followed an imbalanced and less informed decision-making process and tended to lean towards more daring choices.

Question 2.1 (6 points)

What are the problems that the group faced in their collaborative work? How did the technologies (i.e., Teams and Google Docs) contribute to these problems? Name and describe these problems based on what you learned in the lecture on Small Groups.

Matriculation Number

Question 2.1

Matriculation Number

Question 2.2 (10 points)

In today's digital age, small group work is increasingly being augmented by integrating digital agents, creating new possibilities for collaboration and making it less vulnerable to typical small group problems. Using the different modes of the TIP theory, describe how digital agents can be used to address typical small group problems (1 idea for each mode). In your descriptions, provide examples by referring to the previous small-group experience.

Question 2.2

Matriculation Number

Matriculation Number

Matriculation Number

Section 3: Engineering Collaboration in Large Groups (17 points)

Consider the following: We introduced the Collaboration Engineering approach during the lecture and the third homework. In the lecture, we extensively discussed the underlying concepts (six-layer model of collaboration, ThinkLets, facilitator), and you had an opportunity to apply your knowledge in Homework 3. You also participated in a xLeap session.

Question 3.1 (12 points)

Background story:

Switzerland's Ministry of Health (MoH) hires you to organize a workshop with around 15 decision-makers. The reason for the workshop is a recent evaluation of Switzerland's Digital Health roadmap by a large consulting firm. The consultants identified 12 ongoing digital transformation initiatives in the MoH (e.g., electronic medical records, digital therapeutics, etc.). The goal of the workshop is to have a list of solutions for the most important initiatives. In the end, you are asked to provide the MoH with a list of the 2 most important initiatives with 5 solution ideas per initiative. The participants select the ideas out of the ideas generated during the workshop.

Define group activities, group procedures, collaboration tools, and collaborative behaviors. Use the table below for this. Please note the following restrictions:

- Not all tables have to be filled out. Only define as many activities as necessary
- Note that the tables below are numbered. Indicate any adjustments to the order you make
- Group procedures: 1 per activity
- Collaboration tools: only analog tools, no technology such as computers
- Collaborative behaviors: name the TYPE of thinkLet you would apply and explain shortly why this type is suitable. DO NOT name specific thinkLets.

Matriculation Number

Activity 1:
Procedure:
Tools:
Behaviors:

Matriculation Number

Activity 2:
Procedure:
Tools:
Behaviors:

Matriculation Number

Activity 3:
Procedure:
Tools:
Behaviors:

Matriculation Number

Activity 4:
Procedure:
Tools:
Behaviors:

Matriculation Number

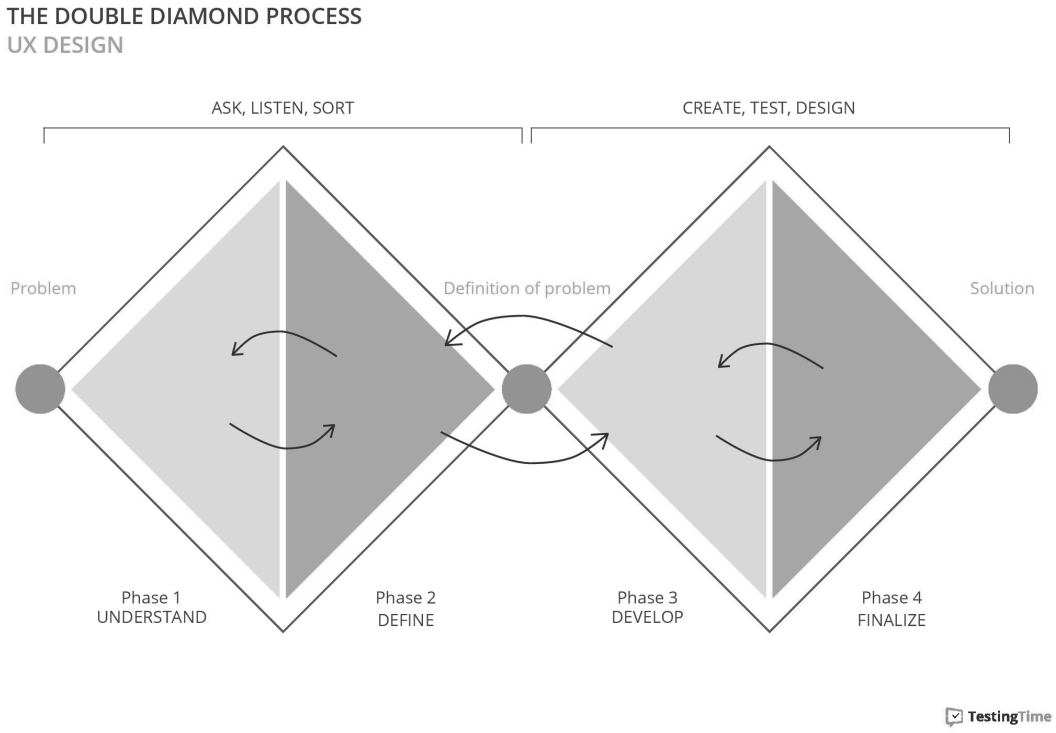
Activity 5:
Procedure:
Tools:
Behaviors:

Question 3.2 (5 points)

In the lecture on large groups, we talked about the Theory of Media Synchronicity. During the closure exercise for the collaboration engineering homework, we discussed the double diamond process applied in UX design (see figure below). Please name the desired level of media synchronicity for divergent and convergent communication processes and explain why this level is ideal.

Note: This question is not limited to the context described in Question 3.1

Matriculation Number



Divergent Communication Processes:

Level of Media Synchronicity:

Explanation:

Convergent Communication Processes:

Matriculation Number

Level of Media Synchronicity:

Explanation:

Matriculation Number

Section 4: Communities and Social Networks (26 points)

In October 2021, Facebook changed its name to Meta and announced a new era of social interaction. The tone was clear: the metaverse would be the next big thing and is poised to become the future center of gravity for online social interactions. Since then, metaverse technology has attracted massive investments and spurred the emergence of many companies. Additionally, various non-IT businesses, including the sports brand Nike, started exploring new business models and distribution channels for their products.

A friend of yours, who works as a business development manager for a retail chain in Zurich, asks for your advice on this trending technology and wants to know what must be considered when integrating the metaverse into their business. Remember what you learned about the metaverse, general behavioral problems, and theories on Communities and Social Networks, and advise him on the following questions.

Question 4.1 (8 points)

As your friend is unfamiliar with the general concept of the metaverse and its underlying components, you start by explaining the basic building blocks of the metaverse. For this, describe the basic architecture of the metaverse using the following diagram. As you can see, one layer of the architecture is already given. Therefore, name and describe the remaining four layers and describe them as presented in class.

Matriculation Number

name	description
Infrastructure Layer	Distributed ledger technologies blockchain; High-bandwidth connections: 5G/ 6G, WIFI, glass fiber; Cloud storage and cloud computing; Haptic sensors, VR headsets, smartglasses; <14 nm graphics and central processing units; Big data and artificial intelligence

Matriculation Number

Question 4.2 (12 points)

In LE05 "Communities and Social Networks", you learned about general behavioral problems and theories that must be considered when designing and using such technologies. Based on your knowledge from the lecture, name and describe two problematic behaviors and two hygiene factors that are **amplified** (positively or negatively) by the metaverse. Therein, apply your knowledge from the lecture to the specific application of the metaverse and provide one example for each.

Question 4.2

Matriculation Number

Matriculation Number

Question 4.3 (6 points)

Despite the mentioned behavioral problems and hygiene factors, your friend is still amazed about the opportunities of the metaverse for the retail chain. As he wants to propose a specific plan for the next meeting with his CEO, he asks you for concrete design principles that must be considered when developing a metaverse application. Therefore, propose and describe two concrete design principles for a metaverse environment derived from the generic requirements for social networks.

Question 4.3

Matriculation Number

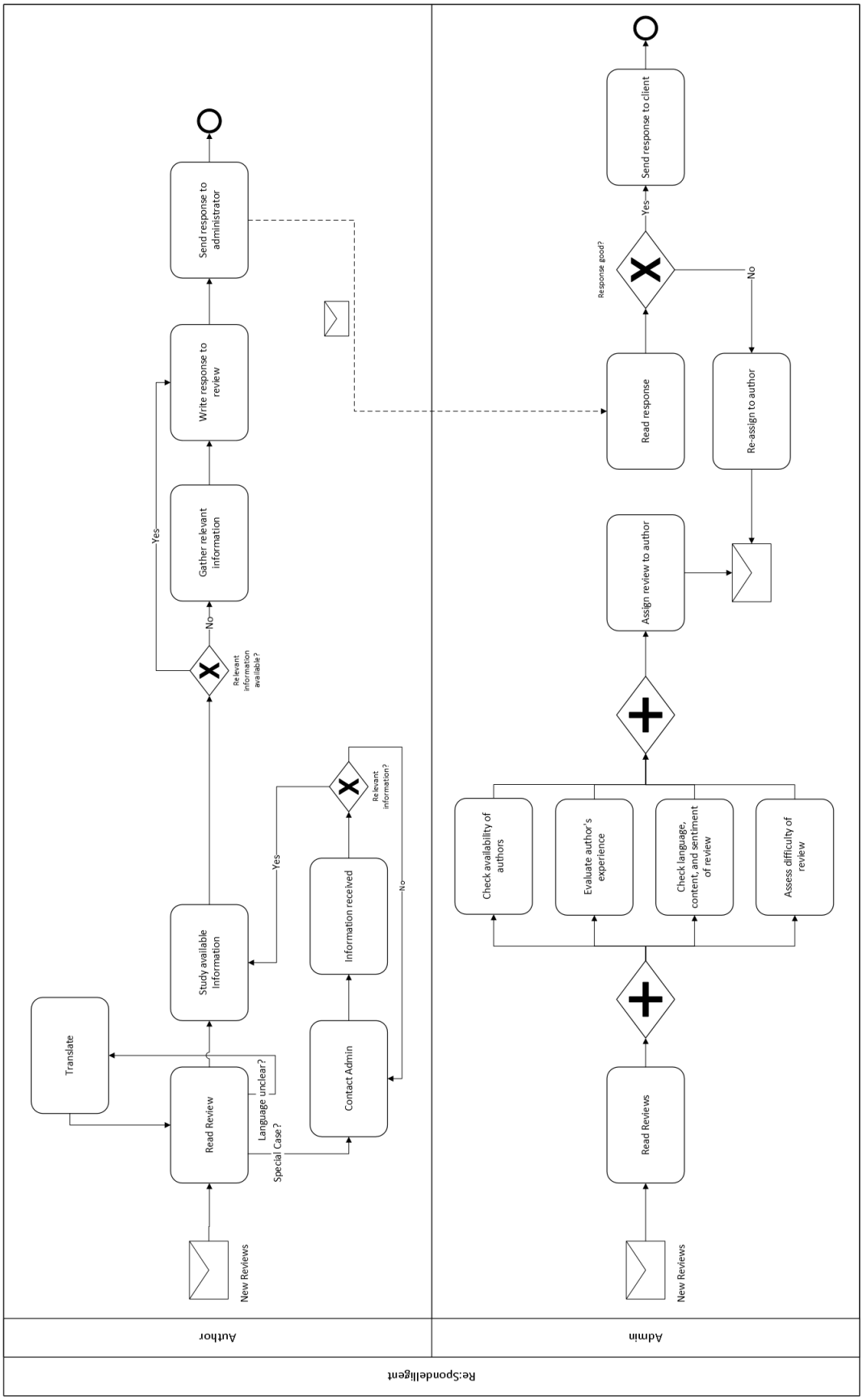
Matriculation Number

Section 5: Engineering collaboration in organizations (18 points)

In the lecture, we talked about online customer feedback management and how re:spondelligent aims to leverage the potential of digital agents to improve their product (i.e., support their customers, such as hotels, in writing responses to reviews).

On the next page, you can find a part of the work process at re:spondelligent showing the workflow of an author and admin. Identify three areas in the workflow, where digital agents could be introduced. Explain how you would structure the task delegation between human and digital agents using the delegation framework proposed by Aaron Baird and Likoebe Maruping.

Matriculation Number



Matriculation Number

Question 5