

*TDDD53 & 729A88 HT2019*

## Group work

### Purpose

The purpose of this assignment is based on the following intended learning outcomes:

Use methods and techniques for concept design and detailed design to define problems and alternative solutions for digital interactive products and services.

Give an account of system objectives, and analyse design qualities and user experience for digital interactive products and services.

Define purpose, content, and form for digital interactive products and services.

Argue for one's interaction design ideas using multimedia, visualisations, or oral and written presentation.

### Assignment

Each group creates an interactive experience in collaboration with an external client. The group assignment consists of the following steps.

#### Concept generation

Each member sketches at least five distinctly different concept ideas. Use the target experience (see Olsson et al. (2013) and Kaasinen et al. (2015)) for inspiration and as a way of assessing the value of each suggestion. The next part of concept generation is to discuss and relate the different individual suggestions in the group. Try to consider their pros and cons in relation to the context and the client's wishes. Then pick the three most promising concepts together.

Make sure you document all suggestions and describe the process of selecting the three concepts including your decisions and motivations. It is allowed to merge more than one similar or complementing concepts into one.

#### Design details

The groups develop each of the three concepts further by exploring them from different perspectives and considering details of the suggestions. Explore each concept from the perspectives of purpose, content and form, where:

**Purpose** refers to the interactive experience, and what it is supposed to for the user and what it should achieve. **Content** is about the information that is needed for the interactive experience. **Form** includes both static and dynamic form: it can be layout, temporal organization into flows, associations, behaviours, sounds etcetera. Put simply, what it looks like and how it behaves.

On this level you also need to consider the technical possibilities and probably also conduct your own research to find out what is possible and how realistic it is that the client could implement the interactive experience. In relation to this exploration of feasibility the group needs to balance different perspectives, for example: practical, communication, aesthetic, organizational, technical, and ethical, where applicable.

After the three concepts have been detailed the group returns to the client to place the concepts in context. This may include conducting low-fi prototyping: e.g. role play, magic things, variations of bodystorming or similar techniques to understand the feasibility and appropriateness of the concepts. Suggested readings for this are Iacucci et al. (2000) and Oulasvirta et al. (2003).

The group then chooses **one** of the solutions in collaboration with the client. The client can be involved in the prototyping activities but should at least be informed about what tests the group has conducted and the outcomes from the tests. Remember to document the whole process, including the purpose, content and form, and the prototyping session conducted at the client's location.

## Prototype the experience

Prototype the chosen solution. Create a representation that allows you to understand the interactive experience – i.e. a prototype that can be used to understand what it is like to be the user. Depending on what solution you have chosen, different types of representations will be more or less useful, and it is up to the group to decide how to best prototype the experience. Read e.g. Experience prototyping (Buchenau & Fulton Suri, 2000) and Staging imaginative places for participatory prototyping (Brodersen et al., 2008).

The prototype is tested and refined in three iterations. The first iteration is an internal test (meaning: a test conducted within the group) of the prototype. Based on the first internal test, the prototype is improved and further built out to increase the fidelity. The second iteration is also internal and should lead to further improvement of the concept. The third and final iteration involves testing with at least 3 representative, potential users.

In this step you should return to your target experiences as a way of evaluating how successful the design is. Make sure to document the process, your prototypes, the results of the evaluations, and your insights.

## Create final suggestion

Based on the final test iteration, refine the concept once more and document your final suggestion.

The flow of interactions is documented using a storyboard. The storyboard is the basis for a video that captures the interactions and describes the experience you have designed for.

Make your video available online (with password protection if needed).

## Oral presentations

Your presentations should focus on what you want to achieve, how the solution is thought to achieve this and what you have done to test it. During the presentations you

will also show the video to illustrate your concept. This can also include what you have learned about how to improve the results.

### Written presentation

The written presentation of your work should be documented as a process description that includes all the mandatory references. A process description is a chronological description of how the work has progressed, your reasoning, choices and other considerations of value.

Also submit:

- All sketches produced during the process (some images will probably need to be placed in the main text as support for the reader).
- A final solution.
- A plan for how the concept should be implemented including a risk analysis for the concept.
- A permalink to your video.
- All steps of the process should be documented and submitted at the latest on the 18<sup>th</sup> of October.

### Grading

Passing grade requires participation on the oral presentation and that the written presentation:

- clearly describes the work
- includes a link to your video
- references the mandatory literature in a *meaningful* way
- illustrates skillful use of methods and techniques for sketching, prototyping and evaluation

### Resources

Teaching sessions and lectures are supported by a teacher. There are also scheduled slots for group work, and two seminars will be conducted within the groups without a teacher present.

All course literature can be found online through the university library.

You are expected to spend 16 hours per week on the course, including scheduled hours.

### References

Buchenaus, M., & Fulton Suri, J. (2000). Experience Prototyping. Proceedings of the 3rd conference on Designing interactive systems: processes, practices, methods, and techniques (ss. 424-433). New York: ACM.

- Brodersen, C., Dindler, C., & Iversen, O. S. (2008). Staging Imaginative Places for Participatory Prototyping. *CoDesign*, 4(1), 19-30.
- Iacucci, G., Kuutti, K., & Ranta, M. (2000). On the Move with a Magic Thing: Role Playing in Concept Design of Mobile Services and Devices. *Designing interactive systems: processes, practices, methods, and techniques* (pp. 193-202). New York, NY, USA: ACM.
- Kaasinen, E., Roto, V., Hakulinen, J., Heimonen, T., Jokinen, J. P., Karvonen, H., . . . Tarunen, M. (2015). Defining user experience goals to guide the design of industrial systems. *Bahviour & Information Technology*, 34(10), pp. 976-991.
- Olsson, T., Väänänen-Vainio-Mattila, K., Saari, T., Lucero, A., & Arrasvuori, J. (2013). Reflections on Experience-Driven Design: a Case Study on Designing for Playful Experiences. *Proceedings of the 6th International Conference on Designing Pleasurable Products and Interfaces* (ss. 165-174). Newcastle upon Tyne, UK: ACM.
- Oulasvirta, A., Kurvinen, E., & Kankainen, T. (2003). Understanding contexts by being there: case studies in bodystorming. *Personal and Ubiquitous Computing*, 7, 125-134.

#### Mandatory course literature

- Brodersen, C., Dindler, C., & Iversen, O. S. (2008). Staging Imaginative Places for Participatory Prototyping. *CoDesign*, 4(1), 19-30.
- Kaasinen, E., Roto, V., Hakulinen, J., Heimonen, T., Jokinen, J. P., Karvonen, H., . . . Tarunen, M. (2015). Defining user experience goals to guide the design of industrial systems. *Bahviour & Information Technology*, 34(10), pp. 976-991.
- Olsson, T., Väänänen-Vainio-Mattila, K., Saari, T., Lucero, A., & Arrasvuori, J. (2013). Reflections on Experience-Driven Design: a Case Study on Designing for Playful Experiences. *Proceedings of the 6th International Conference on Designing Pleasurable Products and Interfaces* (ss. 165-174). Newcastle upon Tyne, UK: ACM.

Full text articles from academic data bases can be accessed from the University computers (or network) or through the University library web site (<https://liu.se/biblioteket>).

## Seminar 1 & 2

### Purpose

The purpose of the seminars is based on the following intended learning outcomes:

Give an account of system objectives, and analyse design qualities and user experience for digital interactive products and services.

Summarise and analyse the meaning of concepts from interaction design and use them to analyse design work.

## Assignment

Each group member reads and summarizes, in written form, a set of articles before the seminars. During the seminars, the articles are introduced and discussed. After the seminars, each group member writes a reflection based on the intended learning outcomes.

### Procedure

All the mandatory literature should be read by the group collectively. This means that for Seminar 1: each group member reads one article from the **General** group and at least two of the **Domain specific** ones.

For Seminar 2: each group member reads one article about **Prototyping** and two about **Experiences of interaction**.

Some articles will be read by more than one group member.

*Before the seminars*, a short summary of about 200-300 words for each article should be written. See Grading (below) for instructions about what to include in the summaries.

*During the seminar*, the articles are introduced and discussed, first individually and then as a group as follows:

Discuss, for **Seminar 1 & 2**

- content and concepts,
- main points made by the author(s), and
- specific takeaways or insights from the articles.

#### **Seminar 1**

After discussing each article individually, also discuss

- similarities and dissimilarities between the articles, as well as
- how the articles relate to your project.

#### **Seminar 2**

After discussing each article individually, also discuss

- similarities and dissimilarities between the articles, as well as
- how the articles relate to interaction design.

*After each seminar*, individually write a reflection where the student's work in the course is discussed in relation to the system objectives (what the project aims to do), the design qualities (which qualities have been considered) and user experience. Relate the discussion to the read and discussed papers.

The student's work (sketches, analyses, images, etcetera) can be included in the reflection to make it easier to relate the discussion to them. The reflection should be no more than 500 words.

### Written presentation

Submission: the summaries and the reflection is uploaded to Lisam during the day after the seminar as one document.

### Grading

Possible marks: U (fail)/G (pass), for passing grade:

The summaries should include:

- summary of content and concepts,
- main points, and
- takeaways/insights from the articles.

The reflection should include:

- examples of the student's work in relation to
- system objectives, design qualities, and user experience, as well as
- references to seminar texts.

### Resources

Four hours are reserved for each seminar. The last hour is preferably reserved for individual work on writing reflections.

### Seminar 1 literature – Mandatory\*

\*Each student will read a mandatory sub-section of the following literature.

Note that each group member reads one General and two Domain specific articles. The articles can be replaced based on discussions with the course examiner if the group finds interesting articles with relevance to the course.

#### General

Hornecker, E., & Buur, J. (2006). Getting a Grip on Tangible Interaction: A Framework on Physical Space and Social Interaction. Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 437-446). Montréal, Québec, Canada: ACM.

Manches, A., & Price, S. (2011). Designing Learning Representations around Physical Manipulation: Hands on Objects. Proceedings of the 10th International Conference on Interaction Design and Children (pp. 81-89). Ann Arbor, MI, USA: ACM.

Reeves, S., Benford, S., O'Malley, C., & Fraser, M. (2005). Designing the Spectator Experience. Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 741-750). Portland, OR, USA: ACM.

#### Domain specific: museum

Basballe, D. A., & Halskov, K. (2010). Projections on museum exhibits - engaging visitors in the museum setting. Proceedings of the 22nd Australia conference on Computer-Human Interaction (pp. 80-87). Brisbane, Australia: ACM.

Brown, B., MacColl, I., Chalmers, M., Galani, A., Randell, C., & Steed, A. (2003). Lessons from the lighthouse: collaboration in a shared mixed reality system. Conference on Human Factors in Computing Systems (pp. 577-584). Fort Lauderdale, FL, USA: ACM.

Hall, T., & Bannon, L. (2005). Designing ubiquitous computing to enhance children's interaction in museums. Proceedings of the 2005 conference on Interaction design and children (pp. 62-69). Boulder, CO, USA: ACM.

Hornecker, E., & Stifter, M. (2006). Learning from Interactive Museum Installations About Interaction Design for Public Settings. Proceedings of the 18th Australia conference on Computer-Human Interaction (pp. 135-142). Sydney, Australia: ACM.

#### Domain specific: outdoor training

Jensen, M. M., Rasmussen, M. K., & Grønbæk, K. (2014) Design Sensitivities for Interactive Sport-Training Games. In proceedings of ACM conference on Designing Interactive Systems in 2014 (pp. 685-694). New York, NY, USA: ACM.

Campbell, T., Ngo, B., & Fogarty, J. (2008) Game Design Principles in Everyday Fitness Applications. In proceedings of Conference on Computer Supported Cognitive Work (pp. 249-252) New York, NY, USA: ACM.

Fogtmann, M. H., Fritsch, J., & Kortbek, K. J., (2008) Kinesthetic interaction: revealing the bodily potential in interaction design In proceedings of the 20th Australasian Conference on Computer-Human Interaction: Designing for Habitus and Habitat (pp. 89-95). New York, NY, USA: ACM.

Consolvo, S., Everitt, K., Smith, I., & Landay, J. A. (2006) Design Requirements for Technologies that Encourage Physical Activity. In proceedings of CHI: Conference on Human Factors in Computing Systems (pp. 457-466). New York, NY, USA: ACM.

#### Seminar 2 literature – Mandatory\*

\*Each student will read a mandatory sub-section of the following literature.

Note that each group member reads one Prototyping article and two about the Experience of interaction. The articles can be replaced based on discussions with the course examiner if the group finds interesting articles with relevance to the course.

## Prototypes

Buchenu, M., & Fulton Suri, J. (2000). Experience Prototyping. Proceedings of the 3rd conference on Designing interactive systems: processes, practices, methods, and techniques (ss. 424-433). New York: ACM.

Houde, S., & Hill, C. (1997). What do Prototypes Prototype? In M. Helander, T. Landauer, & P. Prabhu (Eds.), Handbook of Human-Computer Interaction (2nd Edition ed.). Amsterdam: Elsevier Science B. V.

Lim, Y.-K., Stolterman, E., & Tenenberg, J. (2008). The Anatomy of Prototypes: Prototypes as Filters, Prototypes as Manifestations of Design Ideas. ACM Trans. Comput.-Hum. Interact, 15(2).

## Experiences of interaction

Benford, S., Giannachi, G., Koleva, B., & Rodden, T. (2009). From Interaction to Trajectories: Designing Coherent Journeys Through User Experiences. Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 709-718). Boston, MA, USA: ACM.

Forlizzi, J., & Battarbee, K. (2004). Understanding Experience in Interactive Systems. Proceedings of the 5th conference on Designing interactive systems (pp. 261-268). Pittsburgh, PA, USA: ACM.

Laschke, M., Diefenbach, S., & Hassenzahl, M. (2015). "Annoying, but in a Nice Way": An Inquiry into the Experience of Frictional Feedback. International Journal of Design, 9(2), 129-140.

Lim, Y.-k., Stolterman, E., Jung, H., & Donaldson, J. (2007). Interaction Gestalt and the Design of Aesthetic Interactions. Proceedings of the 2007 conference on Designing pleasurable products and interfaces (pp. 239-254). Helsinki, Finland: ACM.

Ståhl, A., Löwgren, J., & Höök, K. (2014). Evocative Balance: Designing for Interactional Empowerment. International Journal of Design, 8(1), 43-57.

Full text articles from academic data bases can be accessed from the University computers (or network) or through the University library web site (<https://liu.se/biblioteket>).

## Individual reflection

### Purpose

The purpose of the assignment is based on the following intended learning outcomes:

Give an account of system objectives, and analyse design qualities and user experience for digital interactive products and services.

Define purpose, content, and form for digital interactive products and services.

Argue for one's interaction design ideas using multimedia, visualisations, or oral and written presentation.

Summarise and analyse the meaning of concepts from interaction design and use them to analyse design work.

## Assignment

Write a critical reflection that analyses the group's work and relates to the mandatory literature.

## Procedure

Read the mandatory literature (potentially including the literature for higher grades). The aim is to write a critical reflection based on the group's work.

### For grade 3 (G):

Relate concepts from the literature to aspects of the group's work (at least 600 words).

Discuss important moments, activities, alternatives and decisions in the group's work. (at least 500 words). Feel free to include images from the process that clarifies the discussion.

Describe in at least 600 words:

- *the prototypes and the most important insights you got from them,*
- *the purpose of the final suggestion (who the user is, what the use situation looks like, and what the concept does for the user), content and form, and finally*

expand the reflection by answering the following questions (at least 400 words):

- *what would you change in the process to reach a better result?*
- *what has been your most important contribution to the group's work?*

### For grade 4 (G) also (in addition to the criteria for grade 3):

Relate the following to the literature (at least 400 words):

- *discuss your solution in relation to at least two of the following perspectives (practical, communicative, aesthetic, organization, technical, ethical), and*
- *analyse how the solution relates to the interactive experience you are aiming for.*

Additionally, answer the question (in at least 300 words):

- *can you design an experience and how can you understand that experience during design (as opposed to after it has been implemented)?*

This text is placed under a separate headline with the name **Expanded discussion for grade 4.**

### For grade 5 (VG) also (in addition to the criteria for grade 4) complete the following:

Write additionally 600-800 words where at least three of the Additional articles (see the list of references below) are included in a meaningful way.

This text is placed under a separate headline with the name **Expanded discussion for grade 5.**

#### Deadline

Submit the reflection to Lisam by 27/10, kl 17:00.

#### References

Full text articles from academic data bases can be accessed from the University computers (or network) or through the University library web site (<https://liu.se/biblioteket>). Löwgren's article can be found on the Interaction design foundations web site.

#### Mandatory course literature

Buchenaus, M., & Fulton Suri, J. (2000). Experience Prototyping. Proceedings of the 3rd conference on Designing interactive systems: processes, practices, methods, and techniques (ss. 424-433). New York: ACM.

Forlizzi, J., & Battarbee, K. (2004). Understanding Experience in Interactive Systems. Proceedings of the 5th conference on Designing interactive systems (pp. 261-268). Pittsburgh, PA, USA: ACM.

Houde, S., & Hill, C. (1997). What do Prototypes Prototype? In M. Helander, T. Landauer, & P. Prabhu (Eds.), Handbook of Human-Computer Interaction (2nd Edition ed.). Amsterdam: Elsevier Science B. V.

Löwgren, J. (n.d.) Interaction Design – A brief intro. The Encyclopedia of Human-Computer Interaction, 2nd Ed. The interaction design foundation - <https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/interaction-design-brief-intro>

Olsson, T., Väänänen-Vainio-Mattila, K., Saari, T., Lucero, A., & Arrasvuori, J. (2013). Reflections on Experience-Driven Design: a Case Study on Designing for Playful Experiences. Proceedings of the 6th International Conference on Designing Pleasurable Products and Interfaces (ss. 165-174). Newcastle upon Tyne, UK: ACM.

#### Additional literature (for grade 5/VG)

Hassenzahl, M. (2011). User Experience and Experience Design. The Encyclopedia of Human-Computer Interaction, 2nd Ed. The interaction design foundation - [http://www.interaction-design.org/encyclopedia/user\\_experience\\_and\\_experience\\_design.html](http://www.interaction-design.org/encyclopedia/user_experience_and_experience_design.html)

Iacucci, G., Iacucci, C., & Kuutti, K. (2002). Imagining and experiencing in design, the role of performances. NordiCHI (pp. 167-176). Århus, Denmark: ACM.

McCarthy, J., & Wright, P. (2005). Putting 'Felt-Life' at the Centre of Human-Computer Interaction (HCI). Cogn Tech Work, 7, 262-271.

Steve Benford, Gabriella Giannachi, Boriana Koleva, and Tom Rodden. 2009. From interaction to trajectories: designing coherent journeys through user experiences. In Proceedings of the 27th international conference on Human factors in computing

systems (CHI '09). ACM, New York, NY, USA, 709-718.  
DOI=10.1145/1518701.1518812 <http://doi.acm.org/10.1145/1518701.1518812>

Verbeek, P.-P. (2008). Design Ethics and the Morality of Technological Artifacts. In P. Kroes, P. E. Vermaas, A. Light, & S. A. Moore (Eds.), *Morality in Design* (pp. 91-103). Berlin: Springer.

#### Further reading for the interested

Jonsson, S., Montola, M., Waern, A., & Ericsson, M. (2006). Prosopopeia: Experiences from a Pervasive Larp. Proceedings of the 2006 ACM SIGCHI international conference on Advances in computer entertainment technology (p. Article no. 23). Hollywood, CA, USA: ACM.

Cheok, A. D., Goh, K. H., Liu, W., Farbiz, F., Fong, S. W., Teo, S. L., . . . Yang, X. (2004). Human Pacman: a mobile, wide-area entertainment system based on physical, social and ubiquitous computing. *Personal and Ubiquitous Computing*, 8(2), 71-81.

#### Recommendations for a foundational grasp of Interaction design

Bill Buxton. 2007. *Sketching User Experiences: Getting the Design Right and the Right Design*. Morgan Kaufmann.

Jonas Löwgren, and Erik Stolterman. 2004. *Design av informationsteknik. 2:a upplagan*. Studentlitteratur.

Kim Goodwin. 2009. *Designing for the Digital Age: How to Create Human-Centered Products and Services*. Wiley Publishing.

Alan Cooper. 2007. *About Face 3.0: The Essentials of Interaction Design*. John Wiley & Sons.

Dan Saffer. 2009. *Designing for Interaction: Creating Innovative Applications and Devices* (2nd ed.). New Riders Publishing.

Terry Winograd, (Ed.). 1996. *Bringing Design to Software*. Addison-Wesley.