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Social Informatics Experience: Learning about people and computers

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Christa Weßel

# Social Informatics Experience

*Learning about people and computers*



Weidenborn Verlag

*a student*

*“What was extraordinary during these workshops, we were asked during our tasks to think for ourselves and not always to use the internet. Thus one should be able to gain independence of digitization, otherwise one would go daft.”*

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# Learning about people and computers

When did the digital era start? With the world wide web and the internet during the 1980ies and 1990ies? Earlier, with the astronauts and the men on the moon? Whenever it started, the COVID-19-pandemic showed from its beginning in 2020 how useful and sometimes harmful information and communication technologies can be in the mastering of such a worldwide challenge. This relates to nearly all aspects: health care systems, government, education, public services, economics and of course the private life and physical and socio-psychological well-being of people.

Social informatics (SI) is a discipline, that deals with the interrelationship of information and communication technology and social change. SI looks upon individuals, groups, (international) organizations (companies, public authorities, associations, et cetera) plus local communities, states and international communities of states ... and technology.

The task of SI is to support by research and development (R&D) the design, implementation and maintenance of information systems for the benefit of individuals, groups and society, so that those who develop, build, sell and maintain these systems tailor technology to people and not conversely. To afford this, social informatics builds upon disciplines such as sociology, psychology,

## *Learning about people and computers*

philosophy, anthropology, historical sciences, economics, law and – of course – computer sciences. To be able to play an active role in the design, creation and development of a networked society, students, scholars and practitioners need basic knowledge in social informatics.

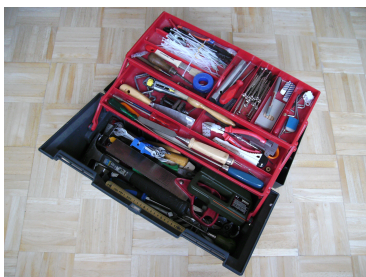
This booklet offers details on a workshop series in SI, that took place at a university of applied sciences in 2017 and 2018, and a paper, that describes the case study, which investigated the design, implementation and evaluation of the workshop series, published 2021. It is an example and intended as inspiration how to learn, teach and do social informatics at universities, in schools and in continued education.

Part (i) covers the *curriculum* of the SI workshop series. It has been available online on the teachers' website for students and the public in German since 2017 and also in English since December 2021, both until spring 2023. In April 2023 the pages were transferred to this booklet. Part (i) starts with an overview and a reflexion on the workshop series, published in my blog on June 20, 2019, with two updates concerning the references. The blog entry can also be seen as a short version of the case study in part (ii). The study was published as paper 2021 in *Acta Informatica Pragensia*. SI is performed by people from different fields and disciplines. Part (iii) introduces some actors, institutions, services and products in science, arts and education.

The booklet is for teachers, students, managers and other stakeholders in the world of *people and computers*.

Enjoy

# i Curriculum



## Overview

The modules “information technology and its social context” and “social nets” were part of the b.a. study program “IT Product Management” with the major social informatics at Hochschule Furtwangen (HFU). In summer 2017 and winter 2017/2018 the modules were embedded in the workshop series “Social Informatics”. The curriculum of the SI workshop series has been available online on the teachers’ website for students and the public in German since 2017 and in English since December 2021, both until spring 2023. In April 2023 the pages were transferred to this booklet and adapted in order to enable a comfortable reading. Thus the list below does not completely match the list, given in appendix C of the case study in part (ii), (Weßel 2021).

*Learning and teaching sociological basics in a technical context* is an overview and a reflexion on the workshop series, published in my blog on June 20, 2019, with two updates concerning the references. The blog entry can also be seen as a short version of the case study in part (ii).

*SI / Guiding questions* presents the questions that led to the identification of the workshop topics, considering and integrating the requirements and contents that the university had included in the description of the modules.

*SI / Content and learning objectives* starts with the linking of content and learning objectives based upon Bloom’s taxonomy. Then it lists the contents (topics), the learning objectives and the proofs of performance.

*SI / The workshop series* merge the two modules “information technology and its social context” and “social nets”. It introduces the students and other readers to the learning objectives, the learning and teaching methods used in the series,

and the documentation. The eight workshops are:

1. Getting started: Social net and electronic media.
2. Exploration and evaluation: What do the users need?
3. Internationalization and globalization: Life is a net.
4. Product management and ethics: The art of balance between the technically feasible and social consequences.
5. Life world and work world: In fact I live while I work.
6. Hackathon: Let's work ... and have fun.
7. Digital Dexterity and Internet of Things: About handling the new.
8. Synopsis: It's all about communication.

The description of each of the eight workshops consists of dates, topics, milestones of the proofs of performance and – where applicable – students' tasks for the following workshop.

*SI / Proofs of performance* offers links to the assessment criteria and explains the submission procedure to be followed by the students. Furthermore, it gives recommendations on how to approach the proofs of performance. For the module “information technology and its social context”, the proof of performance is a portfolio. For the module “social nets”, it is a students' research project (SRP) in small groups.

\_\_ *Portfolio* describes in detail what the purpose of a portfolio is, how the students work on it, the learning objectives, the review process and the assessment criteria.

\_\_ *Students' research project (SRP)* is analogical to “portfolio”.

*SI / Literature* listed in the online version the literature recommended by the teacher. These references and more are now to find in REFERENCES.

## Learning and teaching sociological basics in a technical context

*Blog 20 June 2019* <https://www.christa-wessel.de/2019/06/20/social-informatics-experience/>

On November 29th, 2016 I got an e-mail from a professor at Furtwangen University (of applied sciences). They were looking for a visiting lecturer in social informatics.

Social informatics started new at this university. The professor found my blog section on social informatics and decided to ask me whether I was interested in teaching the two modules “Informatik im sozialen Kontext” (information technology and its social context) und “Soziale Netze” (social nets) during the summer term 2017. Of course I was interested and during our phone conversation one day later he also asked me to take part in the staffing procedure of a professorship in social informatics in January 2017. I accepted both. Although I wanted to stay a freelance lecturer I knew that this procedure would be a good opportunity to become acquainted with the university and some colleagues, students and members of the administration two month ahead the semester.

### **Social Informatics?**

When I answer the question “what is your professional focus?” with “organization development and social informatics”, people from the United states, UK, Scandinavia, India and Slovenia just nod and start a conversation focusing on the question “How do people handle technology? And how does technology deal with people?” and “what does this mean for our societies?”

Alas, in Germany the term social informatics is not widely known. In Germany computer scientists speak about “Informatik und Ge-



sellschaft”, information technology and society. Since decades this topic is part of curricula in computer sciences. The 2000 and 2001 lecture topics of Professor Wolfgang Coy at the Humboldt University Berlin are a fine example [Coy2000]. In my view the headlines are with minor adaptations still applicable in a today seminar on social informatics.

Only a few universities in Germany offer a particular degree course in social informatics, for instance the University of Kaiserslautern. Another approach is to focus in a study path on social informatics, for instance this was the case at the University of Applied Sciences Furtwangen in the bachelor course IT product management.

Interesting education programs and materials stem from Norway, South Africa, Slovenia, the United States and Germany. The University of Ljubljana offers since 1984 a master degree on social informatics [Sm2016]. Research Institutes in Scotland, Germany, Russia, Italy and the Middle East focus on social informatics [see the references below].

## **The grounding**

Rob Kling, who founded the Center for Social Informatics at Indiana University, defined social informatics as “the body of research that examines the design, uses, and consequences of information and communication technologies in ways that take into account their interaction with institutional and cultural contexts.” [Kl2000]

Social informatics is multidisciplinary and uses theories, concepts and findings of several disciplines, for instance

- \_ sociology: social coexistence
- \_ psychology: behaviour, learning, identity
- \_ ethnology and (cultural) anthropology: networks, way of life
- \_ philosophy, especially ethics: values and norms

- \_ history: methodologically sound research of the past
- \_ economics: business administration and political economics
- \_ law: self determination, privacy, intellectual property
- \_ informatics: math, linguistics, engineering science

### **Social Informatics !**

I propose the following definition:

Social Informatics deals with the interrelationship of information- and communication technology and social change. This affects individuals, groups, (international) organizations (companies, public authorities, associations et cetera) plus local communities, states and international communities of states.

The task of social informatics is to support by research and development the design, implementation and maintenance of information systems for the benefit of individuals, groups and society, so that those, who develop, build, sell and maintain these systems, tailor technology to people and not inverse. To afford this social informatics builds upon disciplines like sociology, psychology, philosophy, anthropology, historical sciences, economics, law and – of course – computer sciences.

Especially the world wide web and the internet have a lasting effect on our daily life: Web 1.0 (static data presentation), Web 2.0 (the reader turns into player, for instance in social media), Web 3.0 (semantic) and the internet of things, internet 4.0.

To be able to play an active role in the design, creation and development of a networked society students, scholars and practitioners need basic knowledge in social informatics.

## **Two special approaches**

Since more than thirty years several research groups examine how technology and sociology stick together. Two domains in science work with a special approach on the questions of social informatics: Social Shaping of Technology (SST) and Actor Network Theory (ANT).

MacKenzie und Wajcman [MW1999] und Williams and Edge [WE1996] and their teams developed Social Shaping of Technology (SST), which represented a paradigm shift from technological determinism to technology as a social construction. [WE1996] offers a comprehensive introduction to and overview on the topic. The core statement in my view is:

*Central to SST is the concept that there are 'choices' (though not necessarily conscious choices) inherent in both the design of individual artefacts and systems, and in the direction or trajectory of innovation programmes. If technology does not emerge from the unfolding of a predetermined logic or a single determinant, then innovation is a 'garden of forking paths'.*  
[WE1996 – page 2 in the online version]

Bruno Latour, philosopher and sociologist, coined during the 1980-ies the term Actor Network Theory. He proposes to understand technical artefacts and knowledge (technology) and the social coexistence (sociology) as a net, in which people and artefacts build the knots. The relationships are represented by the edges [La1998]. Technology is an expression of human life and coexistence.

Of course also animals are technicians with a social life: beavers, spiders, ants, bees, termites . . .

## **Learn and teach the basics . . .**

As mentioned above: To be able to play an active role in the design, creation and development of a networked society students, scholars and practitioners need basic knowledge in social informatics.

To teach the two modules “Informatik im sozialen Kontext” (information technology and its social context) und “Soziale Netze” (social nets) with overall 120 teaching units (each 45 minutes) afforded to implement a setting with 8 workshops (each two days) and 2 proofs of performance at Furtwangen University. This took place for two series: summer term 2017 and winter term 2017/2018. Meanwhile HFU decided to change the modules and offer “Digitalisierung” (digitalization) and “IT-Produktdesign” (IT product design) [HFU2019]. In my view this is a step away from social informatics.

In 2017 and 2018 the objective was to empower students to use theories, concepts and methods from social informatics for their work as IT product managers. They shall be able to take social, political and technical preconditions into account and to be aware of the social and ecological responsibility of IT product managers.

As the technical aspects are objects of other modules the workshops focused on the following topics:

1. Getting started: Social networks and electronic media.
2. Exploration and evaluation: What do the users need?
3. Internationalization and globalization: Life is a net.

## *Learning and teaching sociological basics in a technical context*

4. Product management and ethics: The art of balance between the technically feasible and social consequences.
5. Life world and work world: In fact I live while I work.
6. Hackathon: Let's work ... and have fun.
7. Digital dexterity and Internet of Things: About handling the new.
8. Synopsis: It's all about communication.

Of course the students learned definitions in informatics, sociology, economy et cetera and also for instance

- \_ group dynamics and team work
- \_ network analysis, organization analysis, stakeholder analysis
- \_ innovation
- \_ digital dexterity
- \_ agile management
- \_ appreciative inquiry

The complete curriculum is available in German via [We2018]. – [17 Mai 2023: see now <https://www.christa-wessel.de/semnar/social-informatics/>]

### **... Learner-centered**

Case-based, competency-oriented learning is a profound access to accomplish a high degree of social informatics dexterity [WS2009]. Thus the students worked on two proofs of performance from the first workshop on. In “social networks” they built teams of two or three students and wrote a paper concerning a small students’ research project on topics such as smart city or digital dexterity. In “information technology and its social context” they created a portfolio that contained several reflexions on topics like “ethics and IT product management” and a description of the tasks the

students worked on during the workshops. The students presented their progress in each workshop and got feedback from their peers and from the teacher.

Overall sixteen students attended the workshop series during the summer term 2017 and the winter term 2017/2018. All but one succeeded. As the evaluation questionnaires and the reflexions of the students in their portfolios showed their satisfaction with this learning approach was high. For instance one student wrote:

*"The workshop approach introduced me to a new way of learning. So far they are well-structured and more fun than a dry lecture. Time passed remarkable faster, because we always were in motion and had a task to perform. [...] Beside this I reflected more on my study program "IT-Produktmanagement" (IT product management) and its components and segments. Furthermore I appreciated the linkup of social informatics with problems, questions and tasks stemming from other modules, the students attended during this term, as excellent." [NN17]*

### **Social Informatics is a net**

Social informatics does more than just "examine" like Rob Kling described it. Social informatics is a net built by the sciences it uses and the people who do research and development, who teach, learn and use the theories, models and methods of social informatics to foster the well-being of (digital) societies.

Why do I write this blog entry now, one and half year after I finished the second iteration of two modules "Informatik im sozialen Kontext" (information technology and its social context) und "Soziale Netze" (social nets)? Last year I sketched a research on "Education in Social Informatics" (Blog 21 May 2018). The

work on the book “Aal ... andere arbeiten lassen – Lernen und Lehren an Hochschulen” (Eel ... engage everyone in learning – Work in Progress) obtained priority. This blog entry is intended to preserve my findings so far as a starting point for future research and writing.

Christa Weßel – Thursday, 20 June 2019

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[CW 25 Jan 2022: article is published, for the writing and publishing process see tag #SIE – <https://www.christa-wessel.de/blog/?tag=%23SIE>]

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## *Learning and teaching sociological basics in a technical context*

On <https://www.christa-wessel.de/resources/for-social-informatics/> these and other references are collected and sorted by the following sections :

- \_ Basics
- \_ SI case study 2021
- \_ IT and Buen vivir
- \_ Education
- \_ Research Institutes
- \_ Associations
- \_ Conferences and Workshops
- \_ People
- \_ Network Analysis
- \_ Inspirations (films et cetera)

## SI | Guiding questions

[formerly – until April 2023:

<https://www.tosaam.de/seminar/social-informatics/si-questions/>  
translated from the book *Sozioinformatik*, 2021, pp 14-16]

Questions are the strongest tools in research, development and learning ... have a look on toddlers. To answer the question “What is Social Informatics?” answers to further question can be helpful, to draft and perform R&D and learning & teaching, for instance the SI workshop series, described on these pages.

Starting questions in social informatics are:

How does technology affect people?

What do people do with technology?

Additional questions can be:

What is informatics?

What is sociology?

What are social sciences?

What does individual, group, organization, society mean?

Which roles, tasks and responsibilities does informatics have towards these four?

What is a system?

What is a social system?

What is a technical system?

What is a socio-technical system?

How does reality arise?

How do we learn?

How do we develop technology?

How are we affected by systems?

How do we affect systems?

What is the internet?

What is the world wide web?

What are web 1.0, 2.0, 3.0 and internet 4.0, the internet of things?

What are social nets?

What are digital social nets?

How do we deal with information and communication technology?

o in work environment?

o in private sphere?

o in social environment?

What is a product?

What is an application?

What is an information and communication system?

For what have we to watch out in the development of applications?

What is usability?

What are data privacy & protection and data security?

How can we steady them?

Which goals do individuals, groups, organisations and society pursue?

What do you understand by product, people, planet?

What do you understand by responsibility, self-realization, fairness and sustainability?

What for can we use socio-technical information and communication systems?

How did we work in the past, do we work in the present, and will we work in future?

What do internationalization and globalization mean?

How do individuals and groups change by social nets and digital social nets?

Which roles and tasks does informatics have in this?

How do you develop services and products in the era of web 2.0, 3.0 and internet 4.0?

## SI | Content and learning objectives

Note: The “Social Informatics” workshop series’ content incorporate the HFU’s two module descriptions “information technology and its social context” and “social nets”. The descriptions are not available anymore, because the HFU changed the contents of the study program *IT Product Management*. For details see the case study in part (ii) and a comprehensive list of references, including material for the case study, on <https://www.christa-wessel.de/resources/for-social-informatics/si-case-study-2021/>

### Learning objectives and their realization

*Blog 28 July 2018*

<https://www.christa-wessel.de/2018/07/28/learning-objectives-and-their-realization/>

#### in higher education

A teacher is a facilitator, mentor, guide (Wefel & Spreckelsen 2009). The design and the moderation of the learning process are her and his most important tasks. Students are enabled to learn competency-based (Jones et al. 2002). Bloom’s revised taxonomy of learning, teaching and assessing is a useful tool for the alignment of the learning objectives with the seminar contents and the course assessment.

During the 1950ies Benjamin Bloom started to develop a “Taxonomy of Educational Objectives” that contained six levels of learning objectives and an alignment to students’ tasks and assessment approaches. 2001 Lorin Anderson und David Krathwohl edited

a revision, that put emphasis on the process and results of creation as the highest level of learning objectives. These levels I use to design seminars and workshop at institutions of higher education (universities and universities of applied sciences) and in open seminars of continued education.

In the following I add to the levels' description (Anderson / Krathwohl 2001) the tasks and exercises the students perform in relation to the levels, first in English and as I teach also in German a translation.

### **Learning levels and their realization**

*remember*: recall facts and basic concepts – define, duplicate, list, memorize, repeat, state : quiz, dialogue, tests, written exams.

*understand*: explain ideas or concepts – classify, describe, explain, identify, locate, recognize, report, select, translate : talk, presentation, seminar paper.

*apply*: use information in new situations – execute, implement, solve, use, demonstrate, interpret, operate, schedule, sketch : practice.

*analyse*: draw connections among ideas – differentiate, organize, relate, compare, contrast, distinguish, examine experiment, question, test : case example.

*evaluate*: justify a stand or decision – appraise, argue, defend, judge, select, support, value, critique, weigh : case-based and problem-based learning with analysis, conclusion and reasoned decision.

*create*: produce new or original work – design, assemble, construct, conjecture, develop, formulate, author, investigate :

## *i Curriculum*

software, art work, project reports, portfolio, seminar paper, thesis.

Of course the teacher has to give some input, for instance in dialogues and in short talks and lectures, that introduce the students to the topic.

### **German Translation**

Lernziele in der revidierten Fassung von Bloom's Taxonomy und ihre Umsetzung

*Erinnern* (Remember): abrufen von Fakten und Basiskonzepten  
– Quiz, Dialog, Testate, Klausuren.

*Verstehen* (Understand): Ideen und Konzepte erklären – Vortrag, Präsentation, schriftliche Arbeiten.

*Anwenden* (Apply): Informationen in neuen Situationen anwenden – Übung.

*Analysieren* (Analyse): Verbindungen zwischen Ideen herstellen  
– Fallbeispiel.

*Bewerten* (Evaluate): einen Standpunkt oder eine Entscheidung begründen – einen eigenen oder anderen Fall reflektieren und begründete Schlüsse ziehen (Fall- und Problem-basiertes Lernen).

*Erzeugen* (Create): einen neues Produkt oder ein Originalwerk herstellen – Software, Kunstwerk, Projektberichte, Portfolio, Seminar- und Abschlussarbeiten.

Natürlich muss der Lehrende auch selbst "Input" geben, beispielweise durch die Beantwortung von Fragen und in Impulsvorträgen, die in ein Thema einführen.

Thanks to Kevin who draw my attention to the revised taxonomy.

Christa Weßel – Saturday, 28 Jul 2018

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## **Module “Information technology and its social context”**

[formerly in – until April 2023:

<https://www.tosaam.de/seminar/social-informatics/si-content/>]

### **# Topics**

(from the module description of HFU – PDF, in German) – [online no more available; as part of the case study data available from the author, see part (ii)]

- o from industrial society to globally networked information society
- o information systems in social contexts
- o computer science and society as sociotechnical system
- o technology development as social creative process: technology genesis and impact assessment
- o ethics and social responsibility of computer scientists
- o sustainable development and social responsibility, corporate social responsibility
- o gender awareness in computer science
- o risk communication
- o computer science and work world, new forms of work in globalized economy
- o computer science and networked media

### **# Learning objectives [CW 2017]**

- o terms: computer science, society, social context, change, system, sociotechnical system – understand
- o coherence and interaction of computer science and society – understand
- o role of computer science on social change – understand
- o interaction of computer science, organization and social context – analyse



- o beneficial and adverse effects of internationalization and globalization: socially, economically, politically, ecologically, ethically, didactically, technically – analyse
- o ethics and computer science – evaluate
- o responsibility, equity, sustainable development and professional behaviour – evaluate

# proof of performance [CW 2017]: Portfolio – create

## **Module “Social nets”**

[formerly in – until April 2023:

<https://www.tosaam.de/seminar/social-informatics/si-content/>]

# Topics

(from the module description of HFU – PDF, in German) – [online no more available; as part of the case study data available from the author, see part (ii)]

- o structure and development of the internet and the world wide web
- o formation, establishment and perspectives of social nets
- o social nets and globalization
- o functions, structures, dynamics and target audiences of social nets
- o impact of the structure of social networks for effectivity and efficiency of work processes, economical versus social product
- o social and entrepreneurial opportunities and effects of new communication technologies
- o product networks in the internet
- o models and methods of social network analysis
- o possible applications of network analysis for instance during the development of new products and services

## *i Curriculum*

### # Learning objectives [CW 2017]

- o terms: social net, mobile net, digital net – understand
  - o terms: individual, group, organization, transorganizational, society – understand
  - o development of social nets – understand
  - o historical, political, cultural, economical, media conditions – understand
  - o affectation and forming of society by digital networked systems – understand
  - o collective identity created by social nets – analyse
  - o social change in large user groups caused by social nets, for instance mobilization processes – analyse
  - o developing strategies for social networks of corporations – create, for instance: designing a case
  - o developing new products and services using social nets – create, for instance: designing a case
- # proof of performance [CW 2017]: students' research project in small groups (SRP) – create

## SI | **The workshop series**

[formerly – until April 2023:

<https://www.tosaam.de/seminar/social-informatics/si-workshopseries/>]

Note: The modules “information technology and its social context” and “social nets” were part of the b.a. study program “IT Product Management” with the major social informatics at Hochschule Furtwangen (HFU). In summer 2027 and winter 2017/2018 the modules were embedded in the workkshop series “Social Informatics”.

Learning objective is to introduce the students to the first steps in the conception of software systems for large user groups – taking into account social, political and technical requirements and developments. In doing so it is necessary to balance responsibility, sustainability and economical targets.

Methods: The approach is learner-centered. Based on realistic cases the students learn theories, concepts and methods of social informatics. They face up to ethical standards and use empirical methods of sociology and software engineering including network analysis. IT product managers are always working on information and communication technologies with people for people. Thus the students train on realistic scenarios basics of communication, group dynamics and conflict management und use methods of marketing, contract acquisition, proposal preparation and performance including the completion of a project.

The two modules “information technology and its social context” (ISC) and “social nets” (SN) are embedded in a workshop series of eight workshop, each lasting one and a half day. Both modules are that inter-meshed that only students, who enrol for both modules can participate. Furthermore skills in empirical research and basic

knowledge in social sciences are mandatory. The first workshop covers both modules to get started. The last workshop builds the completion of both modules.

The documentation consists of material produced by the teacher and the students. The teacher describes the workshop series on <https://www.tosaam.de/seminar/social-informatics/> and reports on the respective workshops in her blog. The students store the photographic documentation of their work during the in-person sessions and their proofs of performance on dropbox. The teacher stores her feedback to the students' work likewise on dropbox.

The workshops start with the topics “team” and “contract and performance”. Why? IT product managers work mostly in teams. IT projects are also change processes and projects, which are usually embedded in a contract. IT product managers have to master the steps contract acquisition, proposal preparation respective assignment of a mission, performance and completion.

## **The Workshops**

1. Getting started: Social networks and electronic media.
2. Exploration and evaluation: What do the users need?
3. Internationalization and globalization: Life is a net.
4. Product management and ethics: The art of balance between the technically feasible and social consequences.
5. Life world and work world: In fact I live while I work.
6. Hackathon: Let's work ... and have fun.
7. Digital dexterity and Internet of Things: About

handling the new.

8. Synopsis: It's all about communication.

Note: The following workshop descriptions mark cinema movies with an asterix [\*]. They are listed in the section MOVIES of part (iii). The students had to watch the movies and then the group worked on several questions related to the movie. The movies – most of them science fiction – dealt with topics of the particular workshop. The documentation in the teacher's blog includes the questions for the movie. The link to the blog entry is given at the end of the particular workshop description.

## **WS 1 | Getting started**

### **Social net and electronic media**

30 / 31 March 2017 [& 02 / 03 November 2017]

- \_ organizational matters: schedules, methods, proofs of performance – analyse
- \_ learning objectives – evaluate
- \_ scientific thinking and work – create
- \_ tool: 8+1 W – apply
- \_ terms: system(s), web & internet, agile, nets, service & product, software-engineering (SWE) methods – understand terms: SWE and ADIE [analysis, development, implementation, evaluation], qualitative research, network analysis – understand
- \_ team work: competencies, tasks, responsibilities – analyse

Movie:

Bring him home[\*] | How do distributed teams work at high pressure?

Milestones proofs of performance:

“information technology and its social context”: portfolio – finding buddies

“social nets”: SRP [students’ research project] – finding group and topic

Documentation in the blog:

01 April 2017 Social net and electronic Media | Was war im Startworkshop Sozioinformatik?

(<https://www.christa-wessel.de/2017/04/01/social-net/>)

## WS 2 | Exploration and evaluation

### What do the users need?

06 / 07 April 2017 [& 09 / 10 November 2017]

- \_ history of informatics – analyse
- \_ terms (ISC): society, social context, responsibility, profit, PPP [product, people, planet] – understand
- \_ terms (SN): social net, mobile net, digital net – understand
- \_ exploration & evaluation: organization analysis, stakeholder analysis, observations, interviews, walk & talk, largegroup events (open space & Co), network analysis, Delphi technique – apply
- \_ measurability: RUMBA, monitoring, controlling, BSC, CSF, KPI, benchmarking – apply

Movie:

Time machine[\*] | From the industrial revolution via the global net back into the jungle?

Network analysis: relations in the group [students and teacher]

Milestone proofs of performance:

“social nets”: SRP – scenario and project draft (ADIE)

Documentation in the blog:

08 April 2017 Das Leben ein Netz | Workshop 2 Sozioinformatik (<https://www.christa-wessel.de/2017/04/08/das-leben-ein-netz/>)

Task:

Wed, 19 April 2017 08:00 a.m. [& Tue, 07 Nov 2017 by noon]

Portfolio: upload on dropbox: milestone 1 – introducing reflection

## **WS 3 | Internationalization and globalization**

### **Life is a net**

20 / 21 April 2017 [& 16 / 17 November 2017]

\_\_ terms: self-determination, data privacy & protection, data security – understand

\_\_ change: learning organizations, appreciative inquiry, organizations as learning organism, architecture of a change process – apply

Movie:

Measuring the World[\*] | What is possible in IT product management without PC and internet?

Network analysis: relations in the group

starting question “What fosters learning in our group?” and finding further questions

Milestones proofs of performance:

”information technology and its social context”: portfolio - reflection 1

”social nets”: SRP – stage of work: literature research

Documentation in the blog:

22 April 2017 Think globally act locally | Workshop 3 Sozioinformatik

(<https://www.christa-wessel.de/2017/04/21/think-globally/>)



## WS 4 | Product management and ethics

### The art of balance between the technically feasible and social consequences

27 / 28 April 2017 [& 20 Nov / 01 Dec 2017]

\_ terms: product, service, usability, risk-, opportunity- and quality-management, test first [principle] – understand

\_ paradigm shift: services and products in the era of web 2.0, 3.0 and internet 4.0 / internet of things – apply

\_ identity: individual, group, company, groups in society – apply

\_ values & norms, visions & goals: development, limits, opportunities – evaluate

Movie:

In Time[\*] | What is life's worth?

Network analysis: relations in the group  
revision of the questionnaire, data collection

Milestone proofs of performance:  
"social nets": SRP – stage of work

Documentation in the blog:

29 April 2017 Wer bin ich? Die Kunst der Balance zwischen technisch Machbarem und sozialen Konsequenzen - Workshop 4 Sozioinformatik – (<https://www.christa-wessel.de/2017/04/29/wer-bin-ich/>)

Task:

Tue, 02 May 2017 08:00 a.m. [& Tue, 05 December 2017 by noon]  
Portfolio: upload on dropbox: milestone 2 – Ethics & Society

## **WS 5 | Life world and work world**

### **In fact I live while I work**

04 / 05 May 2017 [& 07 / 08 December 2017]

- \_ terms: balance, “work-life-balance”, ... – understand
- \_ life world and work world 4.0 – apply
- \_ digital dexterity – analyse
- \_ cultural analysis – apply

Movie:

Wall-e[\*] | Only hanging around?

Network analysis: relations in the group

stage of data collection, next steps for the analysis

Milestones proofs of performance:

”information technology and its social context”: portfolio - reflection 2 ”social nets”: SRP – stage of work

Documentation in the blog:

08 May 2017 Ich lebe auch wenn ich arbeite | Sozioinformatik

Workshop 5: Lebens- und Arbeitswelten

(<https://www.christa-wessel.de/2017/05/08/ich-lebe-auch/>)

## WS 6 | Hackathon

### Let's work . . . and have fun

18 / 19 May 2017 [& 14 / 15 December 2017]

Cross-group work on the topics of the students research projects,  
SRP:

- \_ “Smart Cities”
- \_ “Product marketing supported by social media”

Including milestone proof of performance:

”social nets”: SRP - stage of work

Documentation in the blog:

21 May 2017 Let's work | Der Hackathon in der Sozioinformatik -  
Workshop 6 (<https://www.christa-wessel.de/2017/05/21/let-s-work/>)

Task:

Tue, 31 May 2017 08:00 a.m.

Portfolio: upload on dropbox: milestone 3 – Synopsis

[& WS winter term 2017/2018]

Task:

Submission Portfolio

- \_ upload on dropbox: Tue, 19 December 2017 by noon
- \_ print in spiral binding with signature for the examination office:  
to bring along on workshop 8

Submission SRP

- \_ upload on dropbox: Thu, 2. December 2017 by noon
- \_ print in spiral binding with signatures for the examination office:  
to bring along on workshop 8

## **WS 7 | Digital dexterity and internet of things**

### **About handling the new**

01 / 02 June 2017 [& 11 / 12 January 2018]

- \_ Digital dexterity – evaluate
- \_ Diffusion of Innovations – apply

Movie:

Terminator 1[\*] | What is ahead of us? And how can we have an effect on it?

Network analysis: relations in the group

Finish: synopsis

Milestones proofs of performance:

“information technology and its social context”: portfolio - reflection 3 “social nets”: SRP – conclusion and final questions

Documentation in the blog:

03 June 2017 Vom Umgang mit Neuem | Sozioinformatik Workshop 7: Digitale Geschicklichkeit, Internet of Things und die Rolle des IT-Produktmanagements – (<https://www.christa-wessel.de/2017/06/03/vom-umgang-mit-neuem/>)

Task:

Submission Portfolio

- \_ upload on dropbox: Tue, 06 June 2017 by noon
- \_ print in spiral binding with signature for the examination office: to bring along on workshop 8

Submission SRP

- \_ upload on dropbox: Thu, 08 June 2017 by noon
- \_ print in spiral binding with signatures for the examination office: to bring along on workshop 8

## WS 8 | Synopsis

### It's all about communication

22 / 23 June 2017 [& 18 / 19 January 2018]

The starting questions of social informatics:

What do people do with technology?

How does technology affect people?

Milestones proofs of performance: Reviews

and

- \_ Transmedia Story Telling & Story Selling – analyse
- \_ Research methods: triangulation – evaluate
- \_ It's all about communication: distributed teams – evaluate
- \_ Embrace technology: Rogers and Davies – understand
- \_ Create change: Lewin and Kotter – understand
- \_ Discover the best: appreciative inquiry – apply

Movie:

Avatar[\*] | Sustainability: Product, People, Planet

Seminar completion:

reflection, evaluation and outlook

Documentation in the blog:

25 June 2017 Den Bogen spannen | Sozioinformatik Workshop 8:

Abschluss und Ausblick

(<https://www.christa-wessel.de/2017/06/25/den-bogen-spannen/>)

## SI | Proofs of performance

[formerly – until April 2023:

<https://www.tosaam.de/seminar/social-informatics/si-proofs/>]

*Module “information technology and its social context”*: portfolio

*Module “social nets”*: students’ research project in small groups

*Assessment criteria*: following the study and examination regulations of HFU; using CMPBL Frame and Assessment Criteria (Weßel 2008)

*Submission* = upload in the virtual class room on dropbox: 14 to 16 days in advance of the final workshop (summerterm) or before Christmas break (winter term); review of the proofs of performance during the final workshop.

Recommendations how to approach the

### **portfolio – in short**

Work during the term on a portfolio:

- a) write a reflection on a number of topics due to targeted days,
- b) assemble your work done during the workshops (visualisations and others),
- c) introduce your students’ research project in the module “social nets”: (co-)authors, title and abstract,

and find a peer with whom you cooperate as a buddy team: you will present your buddy’s reflections [in (a)] to the course and enter a dialogue. ... more ... [section PORTFOLIO]

**students' research project (SRP) - in short**

In information technology and other areas you develop products and services following the steps analysis, design, implementation and evaluation (ADIE). Design a draft for the development and implementation of a digital social network of a company. Or: Design a draft for the marketing of a product or a service. Use the 8+1 W. Include in the design a network analysis. Use methods of qualitative field research and software-engineering including agile methods. Take into account social conditions, that have an impact, for instance historical, political, cultural, economical and media driven aspects. ... more ... [section STUDENTS' RESEARCH PROJECT]

## Portfolio

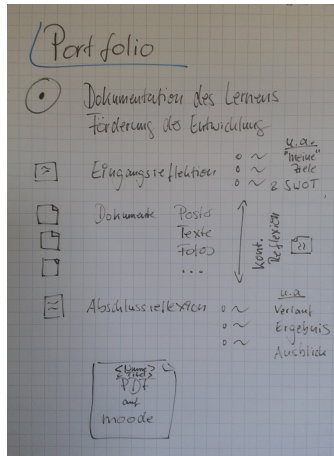
[formerly – until April 2023:

<https://www.tosaam.de/seminar/social-informatics/si-portfolio/>]

Proof of performance in the module “information technology and its social context”.

*Assessment criteria:* following the study and examination regulations of HFU; using CMPBL Frame and Assessment Criteria (Weßel 2008)

*Submission* = upload in the virtual class room on dropbox: 14 to 16 days in advance of the final workshop (summer term) or before Christmas break (winter term); review of the proofs of performance during the final workshop



*Portfolio structure*



Portfolio (lat.: portare - to carry; folium - leaf) meant originally pocket book or wallet. A portfolio is a collection of objects of a certain type. Portfolios are in use in art and design, in economics, in product and service management and in learning and teaching. During education a portfolio serves the development of personal, methodological and subject-specific skills of the learners plus as a proof of performance. Typical of a portfolio is the continued work on it, reflection of the author and feedback from teachers, mentors and co-learners. Thus a portfolio is a good tool in competency-based learning [Weßel & Spreckelsen 2009].

### Who how what ...

The 8+1 W (blog 29 Mar 2012; blog 29 Jul 2019; (Weßel 2017)) can serve to describe a portfolio:

- *Why?* student-centered learning and teaching
- *What for?* fostering the learning process
- *Who?* learner (single person working)
- *how?*
  - \_ development of a personal learning strategy
  - \_ documentation of the learning process paper-based in a folder or a e-portfolio (on a learning managementsystem, LMS)
  - \_ reflection on and assessment of the portfolio together with co-learners and teachers
- *What?* datasets
  - \_ reflections: start, milestones, finish
  - \_ presentations
  - \_ posters, films, ...
  - \_ texts

## *i Curriculum*

- *When?* for one course or a set of courses or a study program overall
- *Where?* during the in-person sessions, at home, on the road, on learning management systems
- *for Whom?* the author, this is the learner, the teacher, ...
- *and Where from?* drafting reports, see literature [section REFERENCES]

Portfolios in education are used for one course, a study program or as a personal continued education portfolio. If the portfolio serves as proof of performance the teacher has to formulate learning objectives and assessment criteria in advance and to come to an agreement with the students (blog 11 Feb 2012).

### **Learning objectives**

- \_ To understand basics of Social Informatics, to apply them and in some areas to analyse and evaluate them.
- \_ To be able to perform reflections alone, with a second person and in groups (Bloom's taxonomy: create).
- \_ To be able to accomplish self-appraisal and external assessment and to give and receive feedback.
- \_ To be able to define and apply autonomously personal learning objectives.

### **Purpose**

A portfolio contains completed tasks, reflections and undertakings. The author can and should use it not only as proof of performance during her or his education or an (admission) exam. She or he should use it also to look upon certain topics a few years

later, to see what the author did, thought and had in mind so far. Thus it is first and foremost a portfolio for yourself, the author.

### **Procedure and material**

Each student produces a portfolio and places the results of the continued work in his or her area in the virtual classroom in drop-box. The material includes also reflections due to three milestones during the term, each one to two pages long:

Milestone 1: starting reflection (after workshop 2)

I as IT product manager in the world of web 1.0, 2.0, 3.0 and internet 4.0 (internet of things):  
What do I understand by social informatics?  
What are my tasks?  
Which values and norms do I take as basis?  
What do I want to learn in “social informatics”? Describe your learning objectives for each: “information technology and its social context” and “social nets”.

Milestone 2: ethics and society (after workshop 3)

Which ethical principles are relevant for information and communication technology in my view?  
Look also on norms, values, objectives of individuals, groups and companies.  
Take into consideration the aspects product, people, planet - economics, society, environment - also from the perspective sustainability.

Milestone 3: synopsis (is directly incorporated in the portfolio)

I as IT product manager in the world of web 1.0, 2.0, 3.0 and internet 4.0 (internet of things):

## *i Curriculum*

What did I learn during the last weeks?

What do I want, what do I want to learn, what do I want to do ... in a year's time ... in five years' time?

Reflections during a study program, in science and in professional life include to grapple with other people's statements and insights. You enter dialogues with other authors by citing their publications, list them in a bibliography, recapture and comment them: Where do you consent? Where not? And why? What induced further insights and attitudes?

Documents, which the students produced during the exercises of the in-person sessions, are:

- \_ photos of posters and other visualizations
- \_ texts

### **Structure and content**

The following sections are to be included

- \_ introduction, which explains the background and is also an abstract
- \_ reflections at the milestones 1, 2 and 3
- \_ for each workshop (1 to 7) one for the author remarkable and self performed task (hint: use your visualizations)
- \_ short description of your students' research project in the module "social nets": title, co-authors and abstract plus a reflection on your experiences during the working process and how you would perform such a work next time: what will you do in the same way, what will you do differently and both why?
- \_ reflection on the cooperation with your buddy and on the work in the workshops series overall

- \_ bibliography
- \_ statement of autonomous authorship

For the submission the author merges the materials in one PDF. A table of contents, an abstract and a bibliography are mandatory. The co-learners and the teacher offer feedback during the term at the milestones. This is realised in buddy teams of two, respective three students (if the group number is uneven). The buddies acquaint themselves with the work of their partner and present the work of the partner to the group at the milestones. This procedure shall enable the students

- \_ to learn to present own work to a colleague and to reflect on it;
- \_ to be able to get fast an overview of another's work;
- \_ and to present it to a group

This working process is inspired by software development: pair programming shows how the cooperation of buddies can enhance the quality of their work.

### **Review and assessment criteria**

The teacher follows in the review the study and examination regulations of HFU; she uses CM-PBL Frame and Assessment Criteria (Weßel 2008), which contains also some assesement criteria according to Deininger (2002):

- \_ knowledge and competency
- \_ methodical and scientific work
- \_ determination, commitment and autonomy
- \_ quality of performance
- \_ quality of presentation

## *i Curriculum*

The assessment of the portfolios includes also criteria referring to form and content.

Form (grade 1 very good to grade 4 acceptable, grade 5 insufficient, grade 6 missing)

- \_ file name
- \_ header and footer
- \_ structure (including linked table of contents)
- \_ layout (for instance line spacing, page breaks, type size, justification)
- \_ remark on the printed and the digital version
- \_ restriction note: yes/no
- \_ contact: e-mail address present/not present
- \_ language

Content (assessment criteria according to Deininger, see above)

- \_ abstract
- \_ reflection 1 to 3
- \_ students' research project: naming, abstract, reflection
- \_ the tasks: stories, visualizations
- \_ teaching and learning reflection
- \_ buddy reflection
- \_ reflection overall
- \_ bibliography

During the term the students get a feedback to their reflections 1, 2 and 3 from the teacher as comments in their PDF. The teacher sends the overall review of the portfolio via e-mail including the assessment and grade. Furthermore an edited PDF of the particular portfolios contains teacher's comments, stored in the access controlled virtual classroom on dropbox.

## Students' research project (SRP)

[formerly – until April 2023:

<https://www.tosaam.de/seminar/social-informatics/si-srp/>]

Proof of performance in the module “social nets”.

*Assessment criteria:* following the study and examination regulations of HFU; using CMPBL Frame and Assessment Criteria (Weßel 2008)

*Submission* = upload in the virtual class room on dropbox: 14 to 16 days in advance of the final workshop (summer term) or before Christmas break (winter term); review of the proofs of performance during the final workshop

### Learning objectives

To describe a case; explain, apply, analyse; generalise, transfer; evaluate; (solutions and new approaches) create.

The complexity of the case (students/authors) and the assessment of the work (teacher/reviewer) are to be adapted according to the study program: bachelor, master, PhD.

To use skilfully scientific methods, especially literature research, reception and use, for instance to cite sources according to good scientific practice and copyright.

To summarise a case and solutions in an way, that readers can recognise content and quality of the work and draw consequences. This skill is relevant in professional life for instance for drafting executive summaries. These are short descriptions for managers of the own company or prospects and customers.

## **Topics**

In computer science and other fields you develop products and services using the steps analysis, design, implementation and evaluation (ADIE).

Conceptualize this for the development and implementation of a digital social network of a corporation.

*Or:*

Conceptualise this for the dissemination and selling of a product or service.

Use the 8+1 W (blog 29 Mar 2012 [and in English 29 Jul 2019])

- \_ Along with it conceptualise a network analysis.
- \_ Use methods of qualitative field research and software engineering, including agile approaches.
- \_ Take into account social conditions, which affect this. Among these, for instance historical, political, cultural, economical and media aspects.

Examples:

- \_ Smart city Furtwangen.
- \_ Information system intended for citizens about health services.
- \_ Customer acquisition and retention of a corporation in a “traditional” field - products or services (machine engineering, student dorm, publishing house, supermarket, café, civic center, sports club, ...)

## **Finding the topic and working on it**

For instance ask yourself: During the previous year, what annoyed me | touched me | discouraged me | encouraged me?



Hint: consider aspect like culture, values, ethics, benefit, PPP (product, people, planet).

### **Scope**

A report on the students' research project in small groups of two or three students.

No naming of an author related to a segment, instead joint authorship.

Scope: 10 pages per person, this is 20 to 30 pages +/- 10 percent plus cover, statement of autonomous authorship and directories (content, bibliography, ...).

### **Procedure of scientific work ... some steps**

- \_ topic – here: case
- \_ roadmap: sketch of the work
- \_ title
- \_ table of contents
- \_ short description of the sketched chapters
- \_ literature research
- \_ questions
- \_ key words
- \_ reading & adopting
- \_ performing
- \_ report – here: report on the SRP

### **Literature and material**

Literature recommendations are here ... [section REFERENCES].

Further material stored on the e-learning-platform on dropbox

- \_ template for the report: soznetz\_semarb\_template\_CW.rtf
- \_ literature as far as not available as book or online

## *i Curriculum*

- \_ visualizations of your contributions
- \_ and: your SRP reports

Some reflection on the topic scientific work you can find on my “desk” [teachers’ website]. Contact via mail[at]christa-wessel[dot]de

### **Recommendations for the structure**

- \_ cover
- \_ abstract
- \_ table of content
- \_ introduction
- \_ scenario of the case: project | organization | person(s)
- \_ description
- \_ relevant aspects of the case
- \_ referring to literature
- \_ solution: how would you realise it?
- \_ discussion: reflection and conclusion
- \_ bibliography
- \_ statement of autonomous authorship

### **Abstract**

Ask yourself: who is the audience?

You write abstracts for reports.

These can be analyses and expertise for: contractees, management boards, marketing.

And scientific work for: colleagues, students, general public.

Content:

- \_ background
- \_ purpose
- \_ approach and method

- \_ result
- \_ conclusion

Each 1 to 2 sentences. Length overall about one page (about 1800 characters including blanks).

### **Review and assessment criteria**

The teacher follows in the review the study and examination regulations of HFU; she uses CM-PBL Frame and Assessment Criteria (Weßel 2008), which contains also some assessment criteria according to Deininger (2002). For more details see the respective paragraph in section PORTFOLIO. The teacher sends the overall review of the portfolio via e-mail including the assessment and-grade. Furthermore an edited PDF of the particular portfolios contains teacher's comments, stored in the access controlled virtual classroom on dropbox.



## ii The Case Study



## **Social Informatics Experience**

Weßel C. Social Informatics Experience: A Case Study on Learning and Teaching Sociological Basics in a Technical Context. *Acta Informatica Pragensia* 2021; 10(3): 211–235. <https://doi.org/10.18267/j.aip.170>

### **\_ Abstract**

To be able to play an active role in the design, creation and development of a networked society, students, scholars and practitioners need basic knowledge in social informatics. Students at a university of applied sciences attended a one-term seminar that consisted of eight two-day workshops. The students learned and used theories, concepts and methods of social informatics (SI), focusing on the sociological part of SI. The learning and teaching approach is grounded in competency-based learning. It enables students to explore a certain field. This is implemented by means of organization development, project-based learning, agile learning and teaching plus blended learning. It empowers teachers and students to work together efficiently, effectively and with joy. To learn how and why this approach worked, an embedded case study investigated the design, implementation and evaluation of the workshop series. Finally, the paper describes impediments to the communication and understanding of the term and the field of social informatics and sketches ideas how to deal with it concerning study programmes and the value social informatics can contribute to challenges like a pandemic.

### **\_ Keywords**

Social informatics; Socioinformatics; Project-based learning; Continued multidisciplinary project-based learning; CM-PBL; Competency-based learning; CBL; Agile learning; Blended learning; Organization development.

# 1 Education in Social Informatics

When did the digital era start? Was it with the World Wide Web and the Internet during the 1980s and 1990s? Or earlier, with the astronauts and the men on the moon? Whenever it started, the COVID-19 pandemic showed from its beginning in 2020 how useful and sometimes harmful information and communication technologies can be in the mastering of such a worldwide challenge. This relates to nearly all aspects: health care systems, government, education, public services, economics and of course the private life and physical and socio-psychological well-being of people. Communication in social media is of special relevance (Darius and Stephany, 2020).

Both are important: technology and social aspects. Social informatics (SI) strives to cover both.

*SI can be broadly defined as a research field that focuses on the research of sociotechnical interactions at different levels in connection with the development of the information society, including the social aspects of computerization and informatization, which can be structured into three main areas: interactions between ICT and humans, ICT applications in the social sciences, and ICT applications as a social sciences research tool. (Smutny and Vehovar, 2020, p. 537)*

In a broader context for the daily life of social informatics, I propose the following definition of SI, translated from Wekel (2021a, pp. 20-21):

*Social informatics deals with the interrelationship of information and communication technology and social change. This affects individuals, groups, (inter-*

## ii The Case Study

*national) organizations (companies, public authorities, associations, etc.) plus local communities, states and international communities of states.*

*The task of social informatics is to support by research and development the design, implementation and maintenance of information systems for the benefit of individuals, groups and society, so that those who develop, build, sell and maintain these systems tailor technology to people and not conversely. To afford this, social informatics builds upon disciplines such as sociology, psychology, philosophy, anthropology, historical sciences, economics, law and – of course – computer sciences.*

*Especially the World Wide Web and the Internet have a lasting effect on our daily life: Web 1.0 (static data presentation), Web 2.0 (the reader turns into a player, for instance in social media), Web 3.0 (semantic) and the Internet of Things, Internet 4.0.*

*To be able to play an active role in the design, creation and development of a networked society, students, scholars and practitioners need basic knowledge in social informatics.*

Interesting education programmes and materials stem from the United Kingdom, Russia, South Africa, Slovenia, the United States and Germany. Research institutes in Scotland, Germany, Russia, Italy and the Middle East focus on social informatics. Smutny and Vehovar (2020) identify five to seven schools of social informatics distributed worldwide. The particular scientific scope affects the design of study programmes and the diversity of contents. One of the early study programmes in social informatics was implemented in Slovenia. The Faculty of Social Sciences at the University of Ljubljana (2021) has offered a study programme in social informatics since 1984 (Smutny, 2016).



## 1 *Education in Social Informatics*

In Germany, the term social informatics is not widely known. Computer scientists speak about “Informatik und Gesellschaft”, information technology and society. This topic has been part of curricula in computer sciences for decades. The 2000 and 2001 lecture topics of Professor Wolfgang Coy at the Humboldt University Berlin are a fine example (Coy, 2000). In my view, the headlines are still applicable with minor adaptations in today’s seminar on social informatics. Only a few universities in Germany offer a particular degree programme in social informatics, for instance the University of Kaiserslautern. The university calls the bachelor and master programmes “Socioinformatics“ (TU Kaiserslautern, 2021).

Another approach is to focus in a study path on social informatics (HFU, 2021). From 2015 at the Hochschule Furtwangen (HFU), a university of applied sciences, offered a SI branch of study in the bachelor programme “IT Product Management”. The study programme included two modules on social informatics during the fourth term, “Information Technology and Its Social Context” and “Social Nets”. The modules combined lectures and seminars. During the summer term 2017 and the winter term 2017/2018, a visiting lecturer was hired to perform these modules. With the consent of the university, she merged them in the workshop series “Social Informatics”. This was her answer to the question, “How can students learn about SI?” To provide high quality, she performed an attending study as a participating observer: as a teacher and a researcher, performing the study “Social Informatics Experience: Learning and Teaching Sociological Basics in a Technical Context” (short: Social Informatics Experience). From here on, I report and reflect in the first person. The paper is written in a personal style as Stake advocates it (Stake, 1995, p. 135).

Based on the finding that competency-based learning enriches students’ learning success and satisfaction (Jones et al., 2002) and

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on the development of continued multidisciplinary project-based learning (Weßel and Spreckelsen, 2009) plus former experience with the transfer of CM-PBL to seminar settings (Weßel, 2010 and 2015), I assumed that the CM-PBL approach can be transferred to a workshop series setting, that learning and teaching support this, and that students' commitment, success and satisfaction is high in this setting.

The aim of this paper is to answer the research questions, “How can the concepts of continued multidisciplinary project-based learning (CM-PBL) and agile learning and teaching (ALT) be transferred to a one-term seminar setting in social informatics?” – “Does it work?” – “How does it work?” – “Why does it work?” – “What is necessary to make it happen?” The study should answer especially the “how” questions to offer interested colleagues, students and other stakeholders in learning and teaching, such as university managers, an example and perhaps inspiration for their own work. The learning and teaching approach described here is not restricted to SI. It can be used for other topics and fields. The design of the seminar as a workshop series, the data and the conclusion are intended to be used and perhaps useful in further research, decision making and application especially in the multi- and trans-disciplinary field of social informatics.

The paper is organized as follows. After a short description of some didactic basics in “Learning and Teaching”, which are elaborated in Appendix A, the method of case study considering action research and triangulation is outlined with immediate references to the application in the study “Social Informatics Experience”. The section “SI Workshop Series” presents the results of the study. The final subsection of the results contains a students' design for a study programme for social informatics. This builds the transition to the discussion and the conclusion.

## 2 Learning and Teaching

Students need a comprehensive education in subject-specific, methodological and social competencies and skills. Learning in realistic scenarios is based on the theory of cognitive learning: learning by insights and on a model empowers the learner to explore a topic autonomously, to use scientific methods and to develop solutions. This enhances the learner's motivation and improves the learning outcome in the short, medium and long term (Felder et al., 2000; Slavin, 1996). Teachers envision themselves as facilitators, mentors and guides (Weßel and Spreckelsen, 2009). The purpose of competency-based learning (CBL) is to empower students to develop these skills (Jones et al., 2002). Several studies and experience during the last decades show that CBL and its realization via approaches such as project-based learning (PBL) and continued multidisciplinary project-based learning (CM-PBL) empower students to learn efficiently, effectively, with joy and holistically (e.g., Felder et al., 2000; Weßel and Spreckelsen, 2009). This is enriched by the application of agile learning and teaching (ALT) and blended learning (BL). Appendix A describes these theories, concepts and approaches in some detail.

As I am an organization developer, I use theories, concepts and methods of organization development (OD). The goal and purpose of OD is to pilot change for the well-being of both the organization and the people inside and beyond (Argyris and Schön, 1978; Cooperrider et al., 2008; Cummings, 2008; DeMarco and Lister, 1999; Laloux, 2014; Senge, 2006; Sennett, 2012; Wieggers, 1996). OD can be applied transorganizationally, organizationally, in a department, in projects and other settings, wherever people interact. Transferred to the implementation of a seminar, this means that a teacher as the OD manager in charge adopts this attitude and integrates students – the OD staff – and the university admin-

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istration and colleagues – OD staff and management – into the design, planning, management and implementation process of a particular seminar. The students' salary is their learning, success and certificate. Appendix B describes some basics of OD.

## **3 Case Study Considering Action Research and Triangulation**

The study “Social Informatics Experience” was performed as a case study because there were two workshop series and, most importantly, because case studies strive to understand, to get new insights. and to answer how and why something happens as it happens and how and why something works (Stake, 1995, p. 1; Yin, 2018, p. 2). The case study approach uses especially qualitative research methods and, in certain designs, also quantitative methods (Scholz and Tietje, 2002, p. 14). It strives to take into account triangulation. The researcher can either be only an observer or both a researcher and a participant. In the study, I acted as a researcher and a participant, the teacher. The students are also researchers in so far as this study follows Lewin’s action research (Lewin, 1946). The following sub-sections describe the methods and their application in the study.

### **3.1 Case study**

A case study takes place in the field. “In the field” means to perform a study not in a laboratory but in the “real” world. A case is a defined unit that can be explored and analysed. Case studies are used in education and research. In research, the purpose of case studies is to gain insights, to understand, to develop theories, models, concepts and hypotheses and – depending on the design – to test a hypothesis. The dimension and classification of case studies can be described by the aspects of design, motivation, epistemological status, purpose, data, format and synthesis (Scholz and Tietje, 2002, p. 10). There are four basic case study designs, which can be sketched in a 2x2 table (Yin, 2018, p. 48). One dimension is the number of cases: single or multiple. The

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other dimension is the number of analysed units. A holistic case study has one unit. If more than one unit is analysed in a case, it is an embedded case study. The steps of a case study are: definition of research questions and case(s), sketching of the research process, performance of data collection, analysis and conclusion.

The study “Social Informatics Experience” is designed as an embedded two-case study. The units of the cases are “students (socio-demographic attributes)”, “commitment”, “success” and “satisfaction”. The two editions of the workshop series build the two cases: case 1 in the summer term 2017; case 2 in the winter term 2017/2018. The motivation is both intrinsic and extrinsic. It is intrinsic in that the researcher is simultaneously the teacher and is interested in the well-being of the students and success of their learning. It is extrinsic in that the design of the seminar as a workshop series, the data and the conclusion can be used and perhaps useful in further research, decision making and application. The epistemological status is explorative, descriptive and explanatory. Explorative means learning whether such an approach is possible in such a setting. It is descriptive by the use of the concepts of PBL and agile learning and teaching. Explanatory means formulating the hypothesis that students will learn more efficiently, effectively and with more joy than in other, conventional settings. The purpose of this study was action/application. The data were both qualitative and quantitative. It should be noted here that the quantitative data are to be seen as part of the description without any statistical tests. The study’s format is structured with three phases of data collection and by the design of the seminar as a workshop series. The synthesis, that is the knowledge integration, is based on the analysis and the interpretation of the collected data with awareness of conventional learning settings. The synthesis is elaborated in the discussion and in the conclusion and outlook sections.

## **3.2 Action research**

The student knows the answer. The preceding sentence is inspired by the approach “the client knows the answer”, attributed to organization developers such as Kurt Lewin, Chris Argyris and Donald Schön. Kurt Lewin (1890–1947) coined the term “action research” in the 1940s. His research and work as a consultant for companies and the government and work with the people in these organizations focused on group dynamics and change. Lewin became aware that only cooperation of scientists and practitioners offers relevant progress and new insights: “Socially, it does not suffice that university organizations produce new scientific insights. It will be necessary to install fact-finding procedures, social eyes and ears, right into social action bodies.” (Lewin, 1946, p. 38)

He defined three steps: “planning, executing, and reconnaissance or fact-finding” (ibidem, p. 38). Scientists and practitioners perform these steps together. This approach answers four purposes: evaluation, to check whether the intended goals are achieved; learning, to gain insights on the strengths and weaknesses of an action or method; gaining material for both the planning of next steps and for revision or redesign. In the study “Social Informatics Experience” the practitioners were the teacher, the university administration and the students. The teacher designed the workshop series, all the practitioners were involved in the planning and the evaluation, the students and the teacher performed (“executed”) the workshop series. The approach was formative. During the preparation and execution of the workshop series, the teacher and the students evaluated and adapted the workshop sub-topics to the needs, questions and suggestions of both the students and the teacher.

### **3.3 Triangulation**

Qualitative research is characterised by openness, explication, subjectivity, reflection and interpretation (Strauss and Corbin, 1998, p. 7). It is an iterative process, maintained until saturation is reached. Qualitative studies are performed incrementally. The researcher goes into the field to learn about people, their life, their work, their needs and their ideas. The data collection is performed, for example, as observation or interviews and relies on textual formats. The high quality of the research is assured by triangulation (Ammenwerth et al., 2003; Stake, 1995, pp. 107-120; Yin, 2018, pp. 127-129). This means working with different sources of data, methods, observers and/or theories. The study “Social Informatics Experience” meets three of these.

The methods are both qualitative and quantitative. The qualitative research methods used here include observation, interviews and analysis of text documents (students’ portfolios, teacher’s blog, university website). Descriptive quantitative data and figures stem from the university website, the cases and the evaluation questionnaire in case 2. There are several data sources gained by the exploration of different units in the university context and the two cases. There was only one observer (researcher); thus, this triangulation criterion is not fulfilled. The study uses several theories and suppositions. These are competency-based learning, action research and organization development. Competency-based learning fosters students’ short-term, medium-term and long-term learning success in professional and social skills. Action research is characterized by close cooperation between the researcher and the actors in the research object. Organization development is in turn based on theories, insights and methods from sociology, psychology, economics and didactics.



## 4 SI Workshop Series

This section reports on the results. It starts with the research questions, the data and the setting. The workshop series follows with “Topics and contents” and cases 1 and 2. The workload is described for both cases together, as there are strong similarities. A students’ design of a study programme for social informatics builds the transition to the following Discussion section.

### 4.1 Research questions

The study spans two workshop series. This should afford to reach a high quality in the development, performing and evaluation processes. Based on the finding that competency-based learning enriches students’ learning success and satisfaction (Jones et al., 2002) and on the development of continued multidisciplinary project-based learning (Wefel and Spreckelsen, 2009) plus former experience with the transfer of CM-PBL to seminar settings (Wefel, 2010 and 2015), I assumed that the CM-PBL approach can be transferred to a workshop series setting, that agile learning and teaching supports this, and that students’ commitment, success and satisfaction is high in this setting. This led to the following research questions:

“How can the concepts of continued multidisciplinary project-based learning (CM-PBL) and agile learning and teaching (ALT) be transferred to a one-term seminar setting in social informatics?” – “Does it work?” – “How does it work?” – “Why does it work?” – “What is necessary to make it happen?”

## **4.2 Data**

Data were collected from November 2016 to January 2018 in three phases: context (the university), workshop series/cases 1 and 2. Qualitative data stem from observation, short group interviews (check-in/check-out on every workshop day), focus group interviews (workshops 5 and 8 in case 1) and texts (students' portfolios and own blog entries). Quantitative data include the description of the university on its website, the number of workshops and teaching units, numbers of students, participation and success rates in the proofs of performance and also the workload for both students and the teacher. The quantitative data are descriptive without further statistical testing.

## **4.3 Setting**

The Hochschule Furtwangen University (HFU) is located in the southwest of Germany (HFU, 2021a). About five thousand students are enrolled in bachelor and master programmes. One of the bachelor programmes is "IT Product Management" with the major fields in either software processes or social informatics (HFU, 2021b). It started in the winter term 2015/2016 and, during the fourth term in 2017 and 2017/2018, it included two modules on social informatics, "Information Technology and Its Social Context" and "Social Nets".

It should be noted that the contents of the study programme has changed in the meantime. Thus, the reader will not find the description of the 2017 modules on the current HFU website, but they are online available via Weßel (2018). The first run had to take place during the summer term 2017. At that time, 121

students were enrolled in the study programme “IT Product Management”. Twelve of them, four women and eight men, completed the fourth term. They were the first students enrolled in 2015.

On 29 November 2016, I got an e-mail from a professor at the HFU. They were looking for a visiting lecturer in social informatics. He found my blog section on social informatics and decided to ask me whether I was interested in teaching the SI modules during the summer term 2017. During our phone conversation one day later, he also asked me to take part in the staffing procedure of a professorship in social informatics in January 2017. I accepted both. Although I wanted to stay a freelance lecturer, I knew that this procedure would be a good opportunity to become acquainted with the university and some colleagues, students and members of the administration, especially the office assistants at the Department of Computer Science, two month ahead of the semester.

The two modules covered overall 120 teaching units (each 45 minutes). The university accepted my proposal to merge them and to design and implement a setting with eight workshops (two days each) and two proofs of performance. The design started with questions on “What is social informatics?” I published the questions and a sketch of the proofs of performance in my blog on 24 February 2017 and discussed them with colleagues and former students (Appendix C). This led to the identification of the workshop topics, considering and integrating the requirements and contents that the university had included in the description of the modules.

The continued support of the two office assistants at the Department of Computer Science from the beginning in January 2017 until the end in January 2018 was crucial for the success. Furthermore, the students were involved. I sketched the structure and together we decided during the first workshop on aspects such

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as timetables for the proofs of performance plus the organization of the e-learning part of our work, using platforms for documentation and files and e-mail communication. During the terms, we adapted the topics and the timetable if the students or I asked for changes.

The workshops took place on Thursdays and Fridays every two or three weeks, starting at noon on Thursday and finishing on Friday afternoon. The breaks during the workshop days did not follow a strict timetable, only lunch was fixed: one hour, starting mostly at 12:30. For the shorter breaks everyone was in charge. I had to keep in mind the need for breaks. The students were required to announce the need for a break if I forgot it. The seminar room of the Department of Computer Science was large, about 15 m long by 12 m wide, overall about 180 square meters. Thus, we could put some tables aside to gain space for work in the room, for instance for the check-in/check-out.

We evaluated the satisfaction of both students and the teacher, formatively during the workshops in the check-in/check-out and in dialogues. This afforded to adapt the learning and teaching process and procedures in the course of the workshop series. On the whole, the students described their experience with the workshops, new insights and degree of satisfaction in their portfolios. I reported about my reflections and degree of satisfaction as the teacher in my blog on social informatics (Weßel, 2021b) and in a book on learning and teaching (Weßel, 2019, pp. 261-264).

### **4.4 Workshop topics and contents**

The objective was to empower students to use theories, concepts and methods from social informatics for their work as IT product

managers. They shall be able to take social, political and technical preconditions into account and to be aware of the social and ecological responsibility of IT product managers. As the technical aspects were objects of other modules, the workshops focused on the following topics:

1. Getting started: Social networks and electronic media.
2. Exploration and evaluation: What do the users need?
3. Internationalization and globalization: Life is a net.
4. Product management and ethics: The art of balance between the technically feasible and social consequences.
5. Life world and work world: In fact I live while I work.
6. Hackathon: Let's work ... and have fun.
7. Digital dexterity and Internet of Things: About handling the new.
8. Synopsis: It's all about communication.

Further topics were definitions in informatics, sociology, economics plus group dynamics and team work, network, organization and stakeholder analysis, innovation, digital dexterity, agile management and appreciative inquiry.

The complete curriculum has been available for students and the public in German since 2017 and also in English since December 2021 (Weßel, 2018). Appendix C gives an overview on the online curriculum with its topics such as introduction, contents and learning objectives, workshop series, proofs of performance and literature recommendation.

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The students worked on proofs of performance in teams of two or three. The proofs were related to the two original modules that were merged in the workshop series. For “Social Nets”, the students wrote a paper concerning a small students’ research project on topics such as the smart city or digital dexterity. The proof of performance for “Information Technology and Its Social Context” was the creation of a portfolio. It had to contain several reflections on topics such as ethics and a description of the tasks on which the students worked during the workshops. The students presented their progress in each workshop and got feedback from their peers and from me, the teacher. The milestones for the proofs of performance are: building a small team, finding and describing a topic, literature, development, final questions (for the peers and the teacher), delivery and review. Appendix D offers some details on the scope and procedure.

The students and the teacher worked together using the agile learning and teaching approach (see Appendix A.3 for more details).

### **4.5 Case 1: Summer term 2017**

The workshop series started on 30 and 31 March 2017 and concluded with the eighth workshop on 22 and 23 June 2017.

#### **4.5.1 Students**

Five students enrolled, four men and one woman. Four of them were in their early twenties, one man about ten years older. All of them were born in Germany, two had an international background, their families coming from South-east Europe and the Middle East. Four of them had a job to make a living, at least

partly. Other financial resources were provided by parents. During the first workshop they described their motivation to enrol in the social informatics study path for instance as “less technical stuff than in the other study path” and their interest in the social aspects of computer technology, information systems and digitization.

### **4.5.2 Commitment**

All five students took regular and active part in the workshops. They communicated to their peers and to me (the teacher) the reasons if they could not show up. The reasons were job obligations, illness or family matters. The students worked actively and reliably together on their proofs of performance. One student engaged himself thoroughly to manage the participation in the workshop series. Due to relays in former terms he had a big workload of more classes than usual. At first it seemed that he would not be able to take part, but as he told us during the third workshop: “I really want to take part, because this workshop series is special and I do not want to postpone this for another term.” Later we learned that, if this student had left, we would have had to cancel the whole workshop series, as the university requested at least five participants. All of us, his peers and the teacher, were grateful that he sorted out his schedule to take part.

### **4.5.3 Success**

The students worked on proofs of performance in teams of two and three students respectively. The students’ research topics were “How can we convert Furtwangen to a smart city?” and “How can marketing for a print medium take place in the digital era?” All five students succeeded and got good grades in both the students’

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research projects (one A, one B) and the portfolios (three A's, one B, one C).

### 4.5.4 Satisfaction

The students' answers during the check-in on the first day of the fifth workshop induced a dialogue on the unfamiliar learning and teaching approach.

Workshop 5:

*Now at half-time of the workshop series – five out of eight are done – we draw up an interim balance. The learning setting is new in that CM-PBL requires and fosters cooperation in between the face-to-face learning days. One principle is: “Do not muse on a problem for more than two hours (for instance in Software Development). Then you ask in the forum or your buddy or an expert in our team or outside who can help you.”*

*We use the buddy system in the portfolio and in the students' research projects. Still it is unfamiliar for the students, not just to do their task for the next face-to-face learning, but to confer with their buddies, for instance on reflections in their portfolios, to ask for and to give feedback and to discuss questions.*

(...)

*The students are pleased with our learning approach with dialogues, group exercises, visualizations and the analysis of movies with reference to IT Product Management and social informatics. Unaccustomed and*



*thus – still – requiring some effort is the project setting. This requires that the students do not perform a final sprint during the second half or later up to the end of their term, but to work from the beginning on – continuously – on their proofs of performance, the portfolio and the students' research project.*

(translated from the blog of 8 May 2017 – <https://www.christa-wessel.de/2017/05/08/ich-lebe-auch/>)

In summary, the students offered feedback on their experience with the workshops, new insights and degree of satisfaction in their portfolios.

Bachelor student of IT Product Management, early twenties:

*Now we look at the closing words of the portfolio. They show my personal conclusion, describing my reflection on the semester overall, during which I attended the workshops in the modules “Social Nets” and “Informatics and Society”. I liked the workshops overall although I'm not a person who likes to interact and to occupy centre stage. Unfortunately, I could not avoid this as our group consisted of just five students and the teacher. On the whole, this turned out to be positive, because the workshops were anything but boring lessons and indeed I had fun. The continued repetition of the subject matter lingered in the memory. Beside this I reflected intensely on my studies in IT Product Management and its parts. The flexible working style, for instance the organization of breaks and lessons, was relaxing and precious. My own learning targets were indifferent and not well defined in the beginning. I was able to shape and*

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*reach them during the semester. Besides, the inclusion of and work on topics apart from social informatics stemming from other modules were excellent. For instance we looked at quality management, feedback and presentations techniques. To sum up, I can say with good conscience that I have performed the modules “Social Nets” and “Informatics and Society” successfully.*

(author’s translation of the student’s portfolio written in German)

During the final workshop we, the students and the teacher, performed a summative qualitative evaluation. We used questions otherwise in use for the evaluation of a consulting project with two perspectives (Weßel, 2017, pp. 247-248): (a) the client and customer, in our case the students; and (b) the service provider, that is the consultant or IT product manager, in our case the teacher, for instance:

- \_ Objective achieved; assessment based upon in advance defined criteria.
- \_ Balanced budget (here: time, effort).
- \_ Learned something new.
- \_ Satisfaction, assessment based on predefined criteria.
- \_ What was good? And why?
- \_ What was not good? And why? And how to improve?
- \_ Client: can we proceed alone? Without the service provider?

We saw the goals of the workshop series met and were satisfied. We rated the quality of our work together in the small teams and

in the large group of students and teacher between 7 and 8.5 on a scale from 1 to 10.

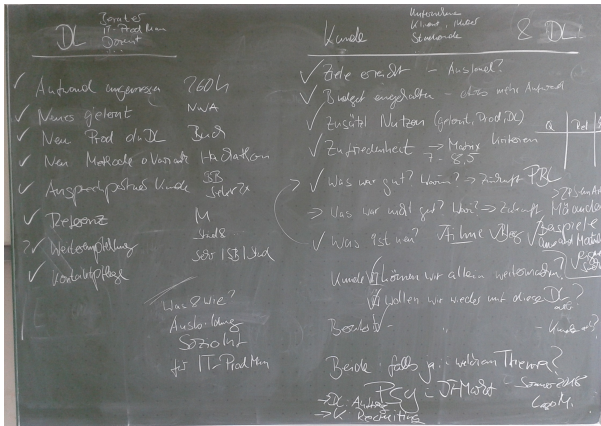


Figure 1. Summative, qualitative evaluation, Workshop 8, 23 Jun 2017.

## 4.6 Case 2: Winter term 2017/2018

The workshop series started on 2 and 3 November 2017, and concluded with the eighth workshop on 18 and 19 January 2018.

### 4.6.1 Students

Eleven students enrolled, all male, aged between early twenties and early thirties. The cultural background was mixed. Some were born in Germany with their families coming from Germany

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(about half of the participants), some were born abroad and they and their families had migrated to Germany and some were born in Germany and their parents or grandparents had come to Germany. The countries were located in South-east Europe and the Middle East. Several students had a job to make a living, at least partly. Other financial resources were provided by parents. Similar to the students in case 1, the students described during the first workshop their motivation to enrol in the social informatics study path, for instance as “less technical stuff than in the other study path” and their interest in the social aspects of computer technology, information systems and digitization.

### **4.6.2 Commitment**

The attendance rate was as follows. Ten students missed three to six of the sixteen workshop days. They communicated to their peers and to me (the teacher) the reasons if they could not show up on a day or during a whole workshop. The reasons were job obligations, illness or family matters. One student missed seven of the sixteen workshop days. In the beginning he offered no reasons to his peers or to me. I intervened in a one-to-one conversation during the third workshop and reminded the student that his participation in the workshops was crucial not only for him, but also for his peers to succeed at the proofs of performance. The other ten students worked actively and reliably during the workshops and at their proofs of performance.

### **4.6.3 Success**

In the students’ research project three of the four teams succeeded with a B. One group failed and got an F. The students’ research topics were “Digital dexterity”; “Marketing for a musician and his

media in the digital era”; “Social nets as marketing media for the selling of mobile phones” and “Gaming”. One student failed with an F in his portfolio. The others succeeded: three A’s, six B’s and one D. The student, who failed in both the portfolio and the students’ research project, was the student who had missed seven days of the workshops. This student’s peers in the students’ research project could not compensate for his low commitment. On the final day of the last workshop, they expressed their understanding of my obligation to assess the group’s work. In advance, before I graded this students’ research project with an F, I consulted with the head of teaching at the Department of Computer Science. He confirmed that I had to take this route.

#### 4.6.4 Satisfaction

After the eight workshops, the eleven students filled in an evaluation questionnaire provided by the university. In both the descriptive statistical part and in the qualitative part, the students described their satisfaction with the quality of the teaching and their own contributions as high and their workload as appropriate. Furthermore, the students described their experience in the portfolios.

Bachelor student of IT Product Management, early twenties:

*What was extraordinary during these workshops, we were asked during our tasks to think for ourselves and not always to use the internet. Thus one should be able to gain independence of digitization, otherwise one would go daft.*

(author’s translation of the student’s portfolio written in German)

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Bachelor student of IT Product Management, early twenties:

*The overall reflection becomes my final words in this portfolio, to be read as conclusion. Here I go into the workshops and not into the contents of the portfolio so far. Through these workshops I became acquainted with a new way of learning. The workshops so far are very well structured and have brought more fun than any dry lecture or seminar. Thus, time passed remarkably faster, because we moved a lot and one had always something to do. Beside this, I like a lot that movies can bring us important insights, because this brought modern methods to the fore. I see the peer reflection [\*] during the first part of a particular workshop on the topics of the previous workshop as a useful method, because more than expected is kept in memory.*

*In addition I gave thoughts to my study programme "IT Product Management" and I faced intensely up to its components. Furthermore, I appreciated the conjunction of social informatics with problems, questions or tasks from other modules of this term, for instance certain components like leadership and team building [...]. In conclusion, I can say I have gained a new repertoire of knowledge and I discern in my case a constant learning process.*

(author's translation of the student's portfolio written in German)

Peer reflection [\*] : Two students discuss with the others the topics of the previous workshop, using anything but a presentation. Often they developed and used special quizzes and other games. This takes about twenty to thirty minutes and follows the learning by teaching approach.

## 4.7 Cases 1 and 2: Workload

The Bologna Process expects 25 to 30 hours per credit (European Commission/EACEA/Eurydice, 2020, p. 10). 60 credits correspond to a full-time equivalent academic year, 1500–1800 hours. The workshop series covered two modules with 90 hours of face-to-face learning (contact hours) and expected 270 hours of self-study, resulting in 12 credits. This corresponds to 30 hours per credit.

The students in case 1 and case 2 described their overall workload including the proofs of performance as slightly higher than in other seminar settings, but adequate. In contrast to traditional approaches, the students reported a different distribution of their workload during the term (see paragraph 4.5.4 “Satisfaction”).

The teacher’s workload as a visiting lecturer comprised preparation, execution and post-processing of the teaching and also reviews of the proofs of performance and communication with the university administration. During my projects, I keep a logbook with the dates, events, work done and the hours spent. There were 120 teaching units in each term, 45 minutes each. This sums up to 90 hours. In case 1, my workload was 238 hours; this corresponds to 2 hours per teaching unit. In case 2, it was 129 hours, which means 1.1 hour per unit. The larger amount of workload during case 1 is related to the design of the seminar with its workshops and to the detailed documentation of the workshops in the blog, publicly accessible for the students and other interested people. During case 2, I did without a detailed documentation in the blog and referred the students to the blog entries of the previous term, as the content of the workshops were similar. The overall workload was 367 hours for 240 teaching units. The rate of 1.5 hours working load per teaching unit corresponds to former experience in the first and second runs of a seminar. Other freelance lecturers (visiting lecturers) told me that their workload was similar,

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sometimes higher for the first and second runs of a seminar.

What is not included, but of course done and thus needs to be added, is the time to keep up with the social informatics discipline. I tried in vain to find recent surveys and studies on teachers' workload and faculty's workload. Perhaps I failed in my research or the topic is not of peculiar interest. Nevertheless, I would like to recommend the University of Dayton's "University Faculty Workload Guidelines" (2011). It is a holistic overview and also puts an emphasis on the need for teachers' continuous learning: "A faculty member who is teaching twelve semester hours per semester can be expected to spend at least an additional twenty-four clock hours in teaching-related activities, including keeping up with her/his discipline." (University of Dayton, 2011, p. 6; p. 2 in the PDF).

### **4.8 Study programme for SI: students' design**

On 23 June 2017, during the final workshop of case 1, the students developed a study programme for social informatics. The leading question was: "What should students learn and how would you implement it?" The students used the 8+1 W questions and sketched a mind map. The 8+1 W questions comprise (Weßel, 2017, pp. 33-40): What for? objective; Why? motivation and cause; What? contents and tasks; Who? roles and functions; Whom for? target group, client, customer; hoW? methods; When? timescale and appointments; Where? places; and Where from? data, information, theories, models, concepts, publications, reports, documentations, contact persons.

Students, future students and other stakeholders, such as university administration staff, teachers, education authorities and companies build the target audience. The students put an emphasis





## **5 Discussion**

Social informatics is an emerging and important field in the digital era (Smutny, 2016; Smutny and Vehovar, 2020). Thus, students need training in the topics, in scientific and other professional methods and the opportunity to consolidate and expand their social skills (Smutny, 2016; Wekel and Spreckelsen, 2009).

The topics of SI can be differentiated into technical and sociological parts (Smutny, 2016; Smutny and Vehovar, 2020). The workshop series presented in this paper covers two modules for students in the bachelor programme “IT Product Management” at the HFU. It focuses on the sociological aspects of social informatics. The learning and teaching approach is based upon the theories and concepts of competency-based learning (CBL) and uses concepts, methods and tools of continued multidisciplinary project-based learning (CM-PBL), agile learning and teaching (ALT) and blended learning (BL). Agile working methods such as Scrum were adapted to the needs of students and the teacher during a workshop series with two proofs of performance. (For references on CBL, CM-PBL, ALT and BL see “Learning and Teaching” above, and Appendix A “Learning concepts”.)

The questions that occurred were “How can the concepts of CM-PBL and agile learning and teaching be transferred to a one-term seminar setting in social informatics?”, “Does it work?”, “Why does it work?”, “What is necessary to make it happen?” Case studies can answer questions how and why, striving for a deep understanding, using qualitative and quantitative methods and considering the four principles of triangulation in methods, data sources, a researcher and also theories and suppositions (Ammenwerth et al., 2003; Stake, 1995, pp. 107-120; Yin, 2018, pp. 127-129). The study “Social Informatics Experience”, performed by one re-

searcher, triangulates in methods, data sources, theories and suppositions.

The study showed a high student commitment, success and satisfaction and an appropriate workload for both students and the teacher. Three conditions built the basis for the success, each one mandatory: the context at the university, the participating students and the teacher's background.

The university staff was open-minded towards the introduction of a new learning and teaching approach. The head of the Department of Computer Science, the head of teaching, other professors and the office assistants at the Department of Computer Science aided the teacher, herself a visiting lecturer. The fact that the modules "Information Technology and Its Social Context" and "Social Nets" had their first run in the new study programme "IT Product Management" may have fostered this.

A further component of the context is the learning environment. The layout of rooms and buildings is very important for human well-being and thus their work (Hall and Hall, 1975; Hundertwasser, 1985/1991). The university provided for the workshop series a large and well-lit room with windows on both sides, which could be opened and allowed thorough airing. The large room of about 180 square meters afforded us to work not in the conventional desk row using the chalk and talk technique but to adapt the positioning to a large refectory-style table where all could be seated plus further tables for group work and to gain space for work in the room, for instance standing in a circle during the check-in and check-out. Furthermore, large blackboards for the visualisations also helped avoid paper and pencil waste. As virus concentration, and thus risk of infection, is higher indoors (Buonanno et al., 2020), one of the preventive measures during the COVID-19 pandemic is airing the rooms. The WHO offers a roadmap with an extended glossary and scientific references on

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what can be done and how (WHO, 2021a). The large room, the small number of students and observing the preventive measures on hygiene, distance and wearing of face masks would have allowed to perform face-to-face learning and teaching even during many weeks of the COVID-19 pandemic in 2020/2021. Perhaps this encourages architects, administrations, teachers and students to vote for such places and to use them also during a pandemic that requires keeping distance. The “e”-part of blended learning, e-learning, is a wonderful tool, but it cannot replace the experience and benefits of face-to-face learning and teaching. Together, in blended learning, they are strong (Bleimann, 2004; Paul and Jefferson, 2019; Todd et al., 2017).

The students – five in case 1 and eleven in case 2 – showed high commitment, except one. The other fifteen were open for new learning approaches and showed willingness to participate and contribute. They were reliable, full of ideas and suggestions and showed a delightful sense of humour. The formative and summative evaluation showed that the small number of students, the learning and teaching approach and the teacher’s experience in the fields of social informatics and organization development, plus the students’ willingness, were crucial for the students’ satisfaction. In their portfolios students described their satisfaction and learning success as higher than in conventional settings. An example of a conventional setting is a seminar of two units per week combined with a weekly lecture series and a proof of performance at the end of a term (seminar paper, written or oral exam). One of the characteristics of the “Social Informatics” workshop series is the use of realistic scenarios. Learning in realistic scenarios is based on the theory of cognitive learning: learning by insights and on a model empowers the learner to explore a topic autonomously, to use scientific methods and to develop solutions. This enhances the learner’s motivation and improves the learning outcome in the short, medium and long term (Felder et al., 2000; Slavin, 1996).

The teacher, that is me, is a physician with a master degree in public health. I work as an organization developer with companies and single clients. This facilitated use of theories, concepts and methods of organization development (OD) for the design, implementation and evaluation of the workshop series. OD is based on humanistic values, such as the well-being of the individual, education and social responsibility (Argyris and Schön, 1978; Cooperrider et al., 2008; Cummings, 2008; DeMarco and Lister, 1999; Laloux, 2014; Senge, 2006; Sennett, 2012; Wieggers, 1996). This opens a door for respectful and, due to the use of OD methods, effective and efficient teacher-student cooperation at eye level. The workload of 1.5 hours per unit, including the face-to-face time, may seem low. This was possible because of my experience (more than fifteen years as a teacher, researcher, OD consultant and business coach) and a structured and well-defined process plus – and especially important – the students’ commitment and cooperation. In my early teaching years the workload was higher. I am also a scientist. My research and development topics include web-based systems in health care, sociology and informatics, quality management in health care and also didactic and higher education. Thus, I could perform a case study as a participating observer on the implementation of social informatics teaching. Other teachers surely will have different backgrounds. Subject-specific, methodological and social skills are mandatory. The willingness to see oneself as a facilitator, mentor, guide and to appreciate the students is useful (Cooperrider et al., 2008; Laloux, 2014; Senge, 2006; Sennett, 2012; Weßel and Spreckelsen, 2009; Wieggers, 1996).

Both the students and the teacher can be seen as “mirrors” of social informatics and its diversity. The reflections include different countries, educations, professions (including the students), age, gender, cultures, interests, characters and attitudes to life in general, work and learning. The setting as a series of eight

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two-day workshops with breaks of several weeks in between in a comfortable seminar room offered time and space to develop and appreciate a productive learning and teaching experience.

These, then, are some answers to the questions “How can the concepts of CM-PBL and agile learning and teaching be transferred to a one-term seminar setting in social informatics?”, “Does it work?”, “How does it work?” and “Why does it work?” The conditions and context at the HFU in 2017 and early 2018 were well suited for the implementation of such a workshop series. Open-minded professors and members of the university administration supported the work of the visiting lecturer. Students are interested in such settings in any case (Donnelly and Fitzmaurice, 2005; Felder et al., 2000; Merseth, 1991; Pape et al., 2002; Slavin, 1996; Weßel and Spreckelsen, 2009). This leads to the research question “What is necessary to make it happen?” What can teachers and other stakeholders in learning and teaching at universities do to make such settings happen beyond conventional weekly flows? My answer as an organization developer is not strictly in scientific language: find stakeholders who will support you, win students as allies and just go for it.

As I mentioned earlier: The purpose of the study “Social Informatics Experience” is to offer the reader an example and thus inspiration for how students can learn social informatics holistically. The learning and teaching approach is not restricted to SI. It can be used for other topics and fields. The design of the seminar as a workshop series, the data and the conclusion are intended to be used and perhaps useful in further research, decision making and application especially in the multi- and trans-disciplinary field of social informatics.

## 6 Conclusion and Outlook

The students' design of a study programme in social informatics in case 1 (section 4.8) shows that these – and I suppose, other – students are aware of the multi-disciplinarity of social informatics and the needs to train in fields such as informatics, economics, sociology and elective subjects.

Nowadays the term social informatics is not widely known and sometimes misunderstood in science, in education and in society (Smutny 2016; Smutny and Vehovar, 2020). The misunderstanding refers to the field of the development of information technology in the area of welfare and social service work, similar to health informatics and its applications. The low degree of familiarity may be caused by the fact that many scientists, practitioners and teachers work in one of the many fields of social informatics and name just their particular field such as knowledge management, social media and World Wide Web or digitization and other perspectives such as ethics, law, economics and e-government. Smutny and Vehovar (2020, p. 529) describe the situation as follows:

*The problems with a common SI research denominator are all the more troublesome because SI addresses a broad area related to the interaction between society and information and communication technology (ICT), where many established disciplines already exist. On the other hand, there also appears to be a certain lack of conceptual grounding in some SI research, meaning it does not belong to any school of SI.*

Furthermore, SI is communicated nowadays using several terms, such as “social informatics”, “socio-informatics” (Stellenbosch University, 2021a and b) and “socioinformatics” (TU Kaiserslautern,

2021). There is a need to communicate social informatics and the variations of the term in science, in education, in the workplace and wherever it seems appropriate. Scientists, teachers and practitioners can draw the attention of stakeholders in social informatics – university administrations, policymakers in government, economics and elsewhere plus the public, represented for instance by journalists and media – to both the benefits of information technology and the hazards, for instance the misuse of social media (Darius and Stephany, 2020). The experience with the COVID-19 pandemic shows how information technology, sociology, psychology, philosophy (ethics) and social informatics can contribute to the mastering of a pandemic and other challenges.

## **Additional Information and Declarations**

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**Data Availability:** The data that support the findings of this study are available from the corresponding author.



## **Appendix A: Learning Concepts**

### **A.1 Competency-based learning**

Learning with hand, heart and mind – stimuli and use of the haptic sense – is a well-tried and science-based approach. More than two hundred years ago, the pedagogue and educational reformer Heinrich Pestalozzi (1746–1827) developed substantial fundamentals in learning and education. The association “Pestalozzi im Internet” (2021) offers a comprehensive documentation and introduction to his work and life. Methods used in competency-based learning (CBL) build upon this approach.

Students need a comprehensive education in subject-specific, methodological and social competencies and skills. The purpose of CBL is to empower students to develop these skills (Jones et al., 2002). Dewey (1997 and 2008), Schön (1983), Argyris and Schön (1978 and 1995) and Biggs (2011) provided the basis for CBL: Dewey with experiential learning, Schön with the reflective practitioner, Argyris and Schön with theory in use and theory of action plus double-loop learning, and Biggs with constructive alignment. Case-based and project-based learning (PBL) use the theories and concepts of CBL (Donnelly and Fitzmaurice, 2005; Felder et al., 2000; Merseth, 1991; Pape et al., 2002). The approach is to learn in realistic scenarios.

Learning in realistic scenarios is based on the theory of cognitive learning: learning by insights and on a model empowers the learner to explore a topic autonomously, to use scientific methods and to develop solutions. This enhances the learner’s motivation and improves the learning outcome in the short, medium and long term (Felder et al., 2000; Slavin, 1996). Teachers envision themselves as facilitators, mentors and guides (Weßel and Spreckelsen,

2009). Braband and Andersen expressed this in their film “Teaching Teaching & Understanding Understanding” (2006).

## **A.2 Continued multidisciplinary project-based learning**

Problem-based learning was developed for law classes at the Harvard University in the nineteenth century (Merseth, 1991). Realistic cases introduced the students to the topic and trained them in juristic thinking and decision making. Medical schools adapted this approach as problem-based learning, which was widely used from the 1970s on (Neufeld and Barrows, 1974; Van der Vleuten et al., 2004). Other fields, such as computer science and economics, broadened the perspective and introduced project-based learning (Bleimann, 2004; Felder et al., 2000; Haux et al., 2004; Pape et al., 2002).

During a research and development project that lasted from 2002 to 2007, focused on web-based information and mobile systems in health care, Weßel and Spreckelsen (2009) introduced continued multidisciplinary project-based learning (CM-PBL). Students entered the research group to work on their thesis: student’s research projects (similar to a bachelor thesis), diploma (similar to a master degree) and doctoral theses. Two scientists were co-teachers and supervisors. One of them performed the project management. The students developed in their theses parts of a web-based and several mobile systems or performed evaluations. The teachers did research and development too, and thus, both teachers and students proceeded with their scientific work. The project environment strengthened team identity and team work and improved students’ performance and research results. Furthermore,

the teachers' benefit was to train alternative teaching. The attitude of being a facilitator, mentor and guide for the students was fostered by the project setting and the structured cooperation of the two teachers in the formative assessment and support of the students. Based on this experience, I have used the CM-PBL approach in several one-term and two-term seminars since 2009. The necessary adaptation is facilitated by the use of agile learning and teaching methods.

## **A.3 Agile learning and teaching**

Focus on the customer and the development of a working product, appreciate staff and colleagues, work cooperatively, flexibly and swiftly. The Agile Software Development concept offers values and principles to work in this way (Beck et al., 2001). Several agile methods have been developed (Cohen et al., 2005). They could build upon previous developments (Larman and Basili, 2003). One of these is the holistic approach, which emerged in product development during the 1980s, for which Takeuchi and Nonaka (1986) used the rugby metaphor and introduced Scrum with it: the teams work as a whole to get the ball up the field or to develop a product (scrum is a move in rugby to restart the game).

Meanwhile, agile approaches are also used as managerial tools (Denning, 2018) and in education (Babb and Norbjerg, 2010; Layman et al., 2006). An “agile” seminar based on the Scrum framework offers the students the opportunity to use the agile approach and to learn how to use it in their professional life. Weßel (2019, pp. 141-146) describes the application.

Adapting Scrum has to consider five aspects:

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- \_ Teamwork: the teacher as a team developer and formative evaluation;
- \_ Setting: workshops instead of 90-minute events;
- \_ Scrum translated: products, roles, artefacts and meetings;
- \_ Working products from the beginning on: proofs of performance;
- \_ Final evaluation and acceptance.

The students and the teacher build a group. Group dynamics (Tuckmann, 1965; Tuckman and Jentsen, 1977) shows that considering the steps of forming, storming, norming, performing and adjourning helps build a group and a team and work efficiently, effectively and satisfyingly together. For the distinction between a group and a team, see Levi (2007, pp. 4-6).

Such an approach is time-consuming. Workshops that last for an afternoon, a day or two days and intervals of one, two or three weeks afford to perform the five steps of group dynamics during each workshop and the whole term. During the workshops, students can work on tasks in small groups and present and discuss the results with their peers. During the intervals, students can work on their proofs of performance and other tasks.

The formative evaluation can take place as warming-up at the beginning and wrap-up at the end of each day as check-in/check-out (Weßel, 2019, p. 226). Questions in Scrum are for instance: “What have I done since yesterday?”, “What will I do today?”, “What inhibits me?” Check-in/check-out serve to evaluate formatively the quality of the teacher’s and students’ work. This enables them to improve their work. Furthermore, check-in/check-out can demonstrate the students’ and teacher’s shape (fitness, workload beside this seminar, etc.). For instance, the teacher can ask “How did the last week go?” on the first day of a workshop in the morning. In the evening, she can start the sentence: “Come to think

### *A.3 Agile learning and teaching*

of it...” The students and the teacher stand in a circle (work in the room) and each student and then the teacher answer the question. This takes about five minutes with five to fifteen students and one teacher. The findings of the check-in/check-out enable both teacher and students to adapt their work accordingly.

The first sentence of this section can be adapted to agile learning: as the teacher focus on the students, as a student focus on learning; as the teacher produce high-end teaching, as a student produce high-end proofs of performance; all: appreciate each other, work cooperatively, flexibly and swiftly.

The students work on proofs of performance in teams of two or three. They write a paper concerning a small student research project (in SI on topics such as smart city or digital dexterity). Another proof of performance is the creation of a portfolio that contains several reflections on topics such as ethics and a description of the tasks the students work on during the workshops. The students present their progress in each workshop and get feedback from their peers and from the teacher. The milestones of the proofs of performance are: building a small team, finding and describing a topic, literature, development, final questions (for the peers and the teacher), delivery, review. Products, roles, artefacts and meetings in Scrum can be translated to agile learning.

- \_ Products: proofs of performance and exercises during and between the workshops.
- \_ Roles: teacher: scrum master (team developer) and product owner (reader of proofs of performance); students: developers (writing proofs of performance) and product owners (reading others' proofs of performance).
- \_ Artefacts
  - o Vision: description of the proofs of performance

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- o Product backlog (requirements): learning objectives
- o Sprint backlog (tasks): milestones; students' oral reports on their progresses
- o Burndown chart (done): documentation
- o Impediment backlog (impediments): students' oral reports on questions and impediments
- o Product increment (software): proceeding proofs of performance

Scrum-inspired meetings during the term are

- \_ Day 1: release planning: working approach, proofs of performance: groups and topics.
- \_ Each following workshop: sprint (iteration) planning and sprint review: see above, the milestones.
- \_ Daily stand-up meeting: check-in/check-out on each workshop day.
- \_ Last day: sprint retrospective: final reflection and evaluation.

The students deliver their proofs of performance two weeks ahead of the last workshop via the e-learning platform. The teacher annotates the students' files and delivers a review for each a few days ahead of the final workshop. Thus, the group can perform a summary reflection and evaluation on the last day of the seminar. Three questions build the basis:

- \_ What is your proof of performance about?
- \_ What were your experiences during your work on it, as a group and personally?
- \_ The teacher's reviews: Where do you agree and where not? Why? Do you have further questions?

Finally the teacher sums up the learning and teaching and the work together and gives an outlook on future seminars. Then it is time for the social part of the adjourning period in the process of group dynamics: coffee and cake. The students' joint work on research projects and other tasks fosters the learning effects. The tools of blended learning support the work between the face-to-face units.

## **A.4 Blended learning**

Blended learning consists of three parts, each of it with its significant meaning (Kerres, 2003; Weßel, 2019). Classroom learning (face-to-face learning) means that students and the teacher work together in one room. Methods include dialogue, group exercises and presentations, learning by teaching (a student becomes a teacher for a certain topic) and scenario developments (students develop stories, games and movies). During self-study students explore a topic and engage themselves with it, alone and with peers. E-learning allows students' and teachers' use of platforms, clouds and communication tools for cooperation: communication, data and file storage, use of libraries, for instance books, papers, films, et cetera. The COVID-19 pandemic, which started in January 2020, required restriction of classroom learning as one means of the preventive measure "keeping physical distance" (WHO, 2021b). Nevertheless, nothing can replace personal contact in learning, working and other social encounters (Bleimann, 2004; Paul and Jefferson, 2019; Todd et al., 2017).

## **App. B: Organization Development in Learning and Teaching**

Organization development (OD) deals with the cooperation of people in companies, administrations, universities, schools, hospitals, associations, unions, political and other organizations. OD is based on theories, insights and methods from sociology, psychology, economics and didactics. The goal and purpose of OD is to pilot change for the well-being of both the organization and the people inside and beyond it (Argyris and Schön, 1978; Cooperrider et al., 2008; Cummings, 2008; DeMarco and Lister, 1999; Laloux, 2014; Senge, 2006; Sennett, 2012; Wieggers, 1996).

OD can be applied transorganizationally, organizationally, in a department, in projects and other settings, wherever people interact. OD came into being during the 1940s and 1950s. It is based on humanistic values, such as the well-being of the individual, education and social responsibility. The approach is systemic. This means to see the environment and parts of it as complex constructs, which are in turn parts of other complex constructs. Broadly speaking, OD assumes that an organization prospers if the people in it prosper. The top management and consecutively the management and the staff are in charge together to make it happen. This is a perpetual endeavour. For the organization, “prosperity” includes economic, social and ecological success, regardless whether it is a production or service company, a profit-oriented company or a non-profit institution, an administration body or anything else. For people, “prosperity” means health, appreciation, comfort, satisfying and demanding but not overwhelming work, the opportunity to develop personally and one’s career plus a proper salary. Transferred to the implementation of a seminar, this means that a teacher as the OD manager in charge adopts this attitude and integrates students – the OD staff – and the university admin-



*App. B: Organization Development in Learning and Teaching*

istration and colleagues – OD staff and management – into the design, planning, management and implementation process of a particular seminar. The students' salary is their learning, success and certificate.

## Appendix C: Social Informatics Curriculum

The curriculum for the Social Informatics workshop series has been available for students and the public in German since 2017 and also in English since December 2021 (Weßel, 2018). The following lists the pages and their URL and gives a short introduction for each.

### Social informatics

<https://www.tosaam.de/seminar/social-informatics/>

This is an introduction to the field, the target audience and purpose of education in social informatics (SI), an overview on contents and learning objectives and a definition of SI.

### SI | Questions

<https://www.tosaam.de/seminar/social-informatics/si-questions/>

This contains the questions that led to the identification of the workshop topics, considering and integrating the requirements and contents that the university had included in the description of the modules. The page starts with:

*Questions are the strongest tools in research, development and learning. To answer the question “What is Social Informatics?” answers to further question can be helpful, to draft and perform R&D and learning & teaching, for instance the SI workshop series, described on these pages.*

The page continues with the questions, forty-one in total.

## **SI | Workshop Series**

<https://www.tosaam.de/seminar/social-informatics/si-workshopseries/>

This describes in short the field of SI applied in the field of IT Product Management, because the workshops series was part of the study path on SI in the bachelor programme “IT Product Management” at the HFU. It continues with an introduction to the learning objective and the learning and teaching methods.

## **SI | content and learning objectives**

<https://www.tosaam.de/seminar/social-informatics/si-content/>

The workshop series merge the two modules “Information Technology and Its Social Context” and “Social Nets”. This page lists the contents (topics), the learning objectives and the proofs of performance.

## **SI | sequence – summer term 2017**

<https://www.tosaam.de/seminar/social-informatics/si-summer2017/>

This gives an overview on the workshop series, the documentation, and how content and learning objectives are connected. The description of each of the eight workshops is followed by dates, topics, milestones of the proofs of performance and – where applicable – students’ tasks for the following workshop.

The eight workshops are:

1. Getting started: Social net and electronic media.
2. Exploration and evaluation: What do the users need?
3. Internationalization and globalization: Life is a net.

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4. Product management and ethics: The art of balance between the technically feasible and social consequences.
5. Life world and work world: In fact I live while I work.
6. Hackathon: Let's work . . . and have fun.
7. Digital Dexterity and Internet of Things: About handling the new.
8. Synopsis: It's all about communication.

### **SI | sequence – winter term 2017/2018**

<https://www.tosaam.de/seminar/social-informatics/si-winter2017/>

This is analogical to “summer term 2017”.

### **SI | proofs of performance**

<https://www.tosaam.de/seminar/social-informatics/si-proofs/>

For the module “Information Technology and Its Social Context”, the proof of performance is a portfolio. For the module “Social Nets”, it is a students’ research project in small groups. This page offers links to the assessment criteria and explains the submission procedure to be followed by the students. Furthermore, it gives recommendations on how to approach the proofs of performance.

### **SI | portfolio**

<https://www.tosaam.de/seminar/social-informatics/si-portfolio/>

This page describes in detail what the purpose of a portfolio is, how the students work on it, the learning objectives, the review process and the assessment criteria.

## *Appendix C: Social Informatics Curriculum*

### **SI | students' research project (SRP)**

<https://www.tosaam.de/seminar/social-informatics/si-srp/>

This is analogical to “portfolio”.

### **SI | Literature**

<https://www.tosaam.de/seminar/social-informatics/si-literature/>

This lists the literature recommended by the teacher.

## Appendix D: Proofs of Performance

The students worked on proofs of performance in teams of two or three. The proofs are related to the two original modules that were merged in the workshop series. For “Social Nets”, the students wrote a paper concerning a small students’ research project on topics such as the smart city or digital dexterity. The paper comprised about ten pages per person (this is twenty to thirty pages +/- ten percent) plus cover, table of contents, abbreviations, figures, references and – if the authors decide to include them – glossary or alphabetical index. One page covers about 1500 characters including blanks. The proof of performance for “Information Technology and Its Social Context” was the creation of a portfolio. It had to contain several reflections on topics such as ethics and a description of the tasks the students worked on during the workshops. The portfolio comprised at least twenty pages plus cover etc. (see above). For the students and other interested readers, I described the SRP and the portfolio in the blog entry of 24 February 2017, and in the online curriculum on sub-page “proofs” (Wefel, 2018):

Students’ research project (SRP):

*In information technology and other areas you develop products and services following the steps of analysis, design, implementation and evaluation. Design a draft for the development and implementation of a digital social network of a company. Or: Design a draft for the marketing of a product or a service. Use the 8+1 W. Include network analysis in the design. Use methods of qualitative field research and software engineering, including agile methods. Take into account social conditions that have an impact, for*

## Appendix D: Proofs of Performance

*instance historical, political, cultural, economic and media-driven aspects.*

Work during the term on a portfolio:

- (a) write a reflection on a number of topics due to targeted days,*
- b) assemble your work done during the workshops (visualisations and others),*
- c) introduce your students' research project in the module "Social Nets": (co-)authors, title and abstract, and find a peer with whom you cooperate as a buddy team: you will present your buddy's reflections [in (a)] to the course and enter a dialogue.*

The students presented their progress in each workshop and got feedback from their peers and from me, the teacher. The milestones of the proofs of performance are: building a small team, finding and describing a topic, literature, development, final questions (for the peers and the teacher), delivery and review. The students and the teacher worked together using the agile learning and teaching approach (see Appendix A.3 for more details).

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### iii Actors



## **Acknowledgements**

My first contact with social informatics took place in Berlin on a conference some fifteen years ago. A colleague after my talk: “Christa, do you know what you are doing in your research and in the way you teach and manage your research group?” – “I hope so. What do you mean?” – “It is social informatics. I think the work of Rob Kling could be useful for you. I will send you some references.” He did and he was right. Our work in the area of health informatics and the relationships and interactions of people and technology at Aachen University between 2002 and 2007 was social informatics.

So my Thank You goes to this and many other colleagues, their inspiration, their encouragement and their cooperation and support. To name just a few, these are Oliver Linssen, the colleague who raised my awareness for social informatics; Cord Spreckelsen, co-teacher and a wonderful scientist; Alexander Volland, networker par excellence; and Zdenek Smutny: social informatics in R&D at its best. Of prime importance are the students. Thank you for being such rigorous critics – always with a good sense of humour, offering so many ideas and insights and working so hard (mostly, off course). And thank you, G & M: you taught me how to learn.

Christa Weßel – May 2023 on board of SYC  
(see the book REFUGIUM)

## Movies

The workshop descriptions WS 1 ... WS 8 mark cinema movies with an asterix [\*]. The students had to watch the movies and then the group worked on several questions related to the movie. The movie dealt with topics of the particular workshop. The documentation in the teacher's blog includes the questions for the movie. The link to the blog entry is given at the end of the particular workshop description.

*title (director): workshop*

The Martian (Scott 2015): WS 1 GETTING STARTED

The Time Machine (Wells 2002): WS 2 EXPLORATION AND EVALUATION

Measuring the world (Buck 2012): WS 3 INTERNATIONALIZATION AND GLOBALIZATION

In Time (Nicol 2001): WS 4 PRODUCT MANAGEMENT AND ETHICS

Wall-e (Stanton 2008): WS 5 LIFE WORD AND WORK WORLD

no movie in WS 6 HACKATHON

Terminator (Cameron 1984): WS 7 DIGITAL DEXTERITY AND INTERNET OF THINGS

Avatar (Cameron 2009): WS 8 SYNOPSIS

## **Study programs and courses**

The students' design of a study program in social informatics in case 1 of the case study in part (ii) shows that these – and I suppose, other – students are aware of the multi-disciplinarity of social informatics and the needs to train in fields such as informatics, economics, sociology and elective subjects.

So there is a need to publish study programs in SI, for instance on web-platforms like <https://www.bachelorsportal.com/> and <https://www.mastersportal.com/>. Currently a retrieve with the term “social informatics” also shows programs like “informatics” or “digital media informatics”, “global business informatics”, “informatics-psychology”, “health informatics” and many others (checked on Oct 7, 2020; on July 23, 2021; an on March 12, 2023). The first study program social informatics was implemented in Slovenia. The Faculty of Social Sciences at University of Ljubljana (2021) offers since 1984 a master program in social informatics (Smutny, 2016).

The use of these platform showed different results during the last four years (see some of my former publications on this topic). Currently the bachelor study program of TU Kaiserslautern, Germany, is not shown with the term “socioinformatics” and not with the term “social informatics”, just the master, and only with “socioinformatics” and if you look in Germany or directly for TUK, not if you look in Europe. The study programs bachelor and master of Stellenbosch University, South Africa, are now offered via the term “social informatics”, no more with the term “socioinformatics”.

These four examples, two from TU Kaiserslautern and two from Stellenbosch University, may serve as indication of the need to

## *Study programs and courses*

communicate social informatics in as much variations as possible. Furthermore the search and find facilities of platforms like the two described here should be improved. Then stakeholders in social informatics can gain a better access to education in “social informatics” / “socio-informatics” / “socioinformatics”: students, teachers, researchers, university administrations, policy-makers in government, economics and elsewhere plus the public, represented for instance by journalists and media. The following shows some examples of study programs: bachelor, master, minor, modules/single courses and PhD. URLs last checked on 17 May 2023.

### Bachelor

National Research University. Higher School of Economics (HSE). Sociology and Social Informatics, Bachelor. St Peterburg, RU – <https://www.studyathse.com/programmes/st-petersburg-campus/b-a-sociology-and-social-informatics/> (07 Oct 2020)

Stellenbosch University. Arts and Social Science. BA (Humanities) with Socio-Informatics. Stellenbosch, ZA. – ... [ba-humanities-with-socio-informatics-as-major/](#) (07 Oct 2020) – [changed to] <https://suinformatics.com/undergraduate/ba> (12 Mar 2023)

Technische Universität Kaiserslautern (TUK). Sozioinformatik (B.Sc. / M.Sc.) – <https://www.informatik.uni-kl.de/studium/studiengaenge/bm-si/> (12 Mar 2023)

### Master

Stellenbosch University. Information Science. MA Socio-Informatics. Stellenbosch, ZA. – .../[ma-socio-informatics/](#) (07 Oct 2020) – [changed to] <https://suinformatics.com/postgraduate/ma> (12 Mar 2023)

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Technische Universität Kaiserslautern (TUK). Sozioinformatik (B.Sc. / M.Sc.) – <https://www.informatik.uni-kl.de/studium/studiengaenge/bm-si/> (12 Mar 2023)

University of Ljubljana. Faculty of Social Sciences. Master of Social Informatics. Ljubljana, SL. – .../master-of-social-informatics-2nd-cycle (07 Oct 2020) – [changed to] <https://www.fdv.uni-lj.si/en/study/study-at-the-FDV/masters-programmes/study-programmes/master-of-social-informatics-new> (12 Mar 2023)

### Minor

Eastern Connecticut State University. Department of Accounting and Business Information Systems. Minor Social Informatics. Willimantic, Connecticut, USA. (in addition to one of the majors Accounting, Business Informatics Systems, Data Science). – <https://www.easternct.edu/accounting-business-information-systems/programs-of-study/minors/social-informatics-minor.html> (07 Oct 2020)

Hochschule Furtwangen. IT-Produktmanagement – Vertiefung Sozioinformatik. Furtwangen, DE. – <https://www.hs-furtwangen.de/studiengaenge/it-produktmanagement-bachelor/vertiefung-sozioinformatik/> (07 Oct 2020)

### Modules / single courses

Hochschule Darmstadt. Fachbereich Informatik. Modulbeschreibung Informatik und Gesellschaft. – <https://obs.fbi.h-da.de/mhb/modul.php?nr=30.7500&sem=20142> (07 Oct 2020)

Hochschule Darmstadt. Fachbereich Informatik. Module Information Technology and Society. – <https://obs.fbi.h-da.de/mhb/modul.php?id=-1496877132> (07 Oct 2020)

## *Study programs and courses*

Open Polytechnic NZ. Social Informatics Online Course. Lower Hutt, NZ. – <https://www.openpolytechnic.ac.nz/qualifications-and-courses/72374-social-informatics/> (07 Oct 2020)

### PhD

Università di Trento. Dipartimento di Ingegneria e Scienza dell'Informazione. ICT Doctoral School. Trento, IT. – <https://ict.unitn.it/> (07 Oct 2020); Research Topics Social Informatics – <https://ict.unitn.it/research/research-topics/social-informatics> (07 Oct 2020)

Stellenbosch University. Information Science.PhD (Socio-Informatics). Stellenbosch, ZA. – <https://suinformatics.com/postgraduate/phd> (12 Mar 2023)

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Other sections with references are

- LEARNING AND TEACHING SOCIOLOGICAL BASICS  
IN A TECHNICAL CONTEXT in part (i)
- SI | CONTENT AND LEARNING OBJECTIVES in part  
(i)
- The Case Study in part (ii)

A comprehensive list of references, including material for the case study is available on <https://www.christa-wessel.de/resources/for-social-informatics/si-case-study-2021/>

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## **Index: Keywords, abbreviations, persons**

The following index includes keywords (tags), abbreviations with the written-out term and persons.

To produce a convenient index for this booklet I decided to mark each term just with one connection, the main entry. Potential further places of a certain term in the text of this e-book are easy to find with the search function.

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## back cover text

Christa Weßel

### **Social Informatics Experience: Learning about people and computers**

When did the digital era start? With the world wide web and the internet during the 1980ies and 1990ies? Earlier, with the astronauts and the men on the moon? Social Informatics (SI) has some answers and continues to explore, to develop and to evaluate. People who do social informatics come from disciplines such as sociology, psychology, philosophy, anthropology, historical sciences, economics, law and – of course – computer sciences. How can students learn about SI? ... and what?

In 2017 and 2018 two groups of students and a teacher performed eight workshops:

1. Getting started: Social net and electronic media.
2. Exploration and evaluation: What do the users need?
3. Internationalization and globalization: Life is a net.
4. Product management and ethics: The art of balance between the technically feasible and social consequences.
5. Life world and work world: In fact I live while I work.
6. Hackathon: Let's work ... and have fun.
7. Digital Dexterity and Internet of Things: About handling the new.
8. Synopsis: It's all about communication.

This booklet contains some details and a case study, that investigated the design, implementation and evaluation of the workshop series. Written for teachers, students, managers and other stakeholders in the world of *people and computers*, it is intended as an example and inspiration how to learn, teach and do social informatics at universities, in schools and in continued education.



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