Seminar und Praktikum, SoSe 2014

„Wissenschaftliches Arbeiten und Lehren”

Prof. Dr. Florian Alt

Daniel Buschek, M.Sc.

Outline for Today's Lecture

- Sources for research ideas
- Presentation of research
  - How to write a scientific paper
  - How to present a paper at a scientific conference
  - How to review a scientific paper

Sources of Research Ideas

Sources of Research Ideas

- Suggestions from staff in department
- Past research student's work
- Recent conference and journal papers
- Current events reported in the media
- Need expressed by potential clients
- People making assumptions or assertions with little supporting evidence
- Calls for conference papers

Sources of Research Ideas

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Call for Participation

The 27th ACM User Interface Software and Technology Symposium
October 5-8, 2014, Honolulu, HI, USA
http://www.acm.org/uist

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UIST (ACM Symposium on User Interface Software and Technology) is the premier forum for innovations in the software and technology of human-computer interfaces. Sponsored by ACM's special interest groups on computer-human interaction (SIGCHI) and computer graphics (SIGGRAPH), UIST brings together researchers and practitioners from diverse areas that include traditional graphical & web user interfaces, tangible & ubiquitous computing, virtual & augmented reality, multimedia, new input & output devices, and CSCW. The intimate size and comfortable surroundings make this symposium an ideal opportunity to exchange research results and implementation experiences.

This year, UIST will be held at the Waikiki Marriott Spa and Resort on Waikiki Beach in Honolulu, Hawaii from Oct. 5-8, 2014.

Appropriate topics include but are not limited to:

- Significantly novel enabling technologies such as innovative input devices, displays, new interaction techniques, or new media that extend the boundaries of traditional interaction, including:
  - natural user interfaces and interactions,
  - augmented reality,
  - mobile interaction,
  - haptics and tactile feedback interfaces,
  - ubiquitous computing,
  - wearables,
  - social software,
  - computer-supported collaborative work (CSCW)
- Innovative user interfaces for difficult interaction contexts or challenging applications:
  - managing large, complex information sets,
  - usable privacy and security,
  - multi-user interaction,
  - crowdsourcing,
  - fabrication,
  - techniques that span devices distributed in time and space
- Breakthrough user experiences leveraging techniques such as machine learning, computer vision, computer graphics, speech processing, networking, human perception and cognition
- Innovative software architectures, design tools, toolkits, programming systems, development environments, tutorial and help systems that support the development and use of the above technologies in user interfaces

CALL FOR SUBMISSIONS

AutomotiveUI'14: The 6th International Conference on Automotive User Interfaces and Interactive Vehicular Applications

September 17-19, 2014, Seattle, Washington, USA

For further Information visit: http://www.auto-ui.org

AutomotiveUI, the International Conference on Automotive User Interfaces and Interactive Vehicular Applications, is the premier forum for UI research in the automotive domain. AutomotiveUI brings researchers and practitioners interested in both the technical and the human aspects of in-vehicle user interfaces and applications. AutomotiveUI'14 will address novel in-vehicle services, models of and concepts for enhancing the driver experience, driver performance and behavior, development of (semi-) autonomous driving, and the needs of different user groups.

TOPICS

AutomotiveUI, 2014 invites you to submit original work in one or more of the following formats: full and short papers, workshops, work-in-progress posters, interactive demonstrations, and tutorials. Topics include, but are not limited to:

Devices & Interfaces
-Multi modal, speech, audio, gestural, natural I/O
-In-car gaming, entertainment and social experiences
-Interfaces for navigation
-Text input and output while driving
-Applications and user interfaces for inter-vehicle communication
-Sensors and context for interactive experiences in the car
-Biometrics and physiological sensors as a user interface component

Automation & Instrumentation
-Automated Driving and Interfaces for (semi-) autonomous driving
-Head-Up Displays (HUDs) and Augmented Reality (AR) concepts
-Co-operative Driving/Connected Vehicles
-Assistive technology in the vehicular context
-Information access (search, browsing, etc.)
-Vehicle-based apps, web/cloud enabled connectivity

Evaluation & Benchmarking
-Methods and tools for automotive user interface research, including simulation
-Automotive user interface frameworks and toolkits
-Naturalistic/field studies of automotive user interfaces
-Automotive user interface standards
-Modeling techniques for cognitive workload and visual demand estimation

Driver Performance & Behavior
-Different user groups and user group characteristics
-Subliminal cues and feedback to augment driving behavior
-Emotional state recognition while driving
-Detecting/measuring driver distraction
-Detecting and estimating user intentions

SUBMISSIONS

AutomotiveUI'14 invites submissions in the following categories:
1) Full and short papers (submission deadline: Fri, April 25 2014)
2) Workshops and Tutorials (proposal submission deadline: Fri, June 6th, 2014)
3) Work-in-progress, Interactive demos and Doctoral colloquium (submission deadline: Fri, August 8th, 2014)

Selecting a Topic

- Is the research likely to offer something new for your target users?
- Will your research still contribute something to knowledge, even if you do not complete all of the technical product in the time available?
- Is there a theory (or set of ideas) that will help you structure your approach, at least in the beginning?
- Can the research be carried out in the time available?
- Does the research topic fit in with your own motivations, strengths, and weaknesses, likes and dislikes?
- Does the research meet you own learning objectives?
- Do you have the necessary resources?
- Can you approach the topic without too much bias?
- Will the research be safe and ethical?

Presentation of Research

Types of Publications

Types of Publications

- Bachelor / Master / Diploma / Ph.D. thesis
- Technical Reports (usually on internal web pages)
- Workshops
- Conferences (peer reviewing)
- Journals (often peer reviewing)
- Books

Relevant for scientific career:
Publications in good conferences (CS) and in good journals (in most other disciplines).

Making an Argument

- When writing up your research, ask yourself the following questions
  - What is my research question?
  - What is my conceptual framework for understanding the question and my answer to it?
  - What is the answer to the question?
  - What is the evidence to justify my answer?
  - So what?
- Avoid spelling and grammar errors; else reader may assume that your work was undertaken in an equally slipshod fashion
- Assertions and conclusions should always be supported by evidence (no over-claiming)
- Evidence can come from what other people have already done (provide appropriate references)

Conference Publications

Conferences

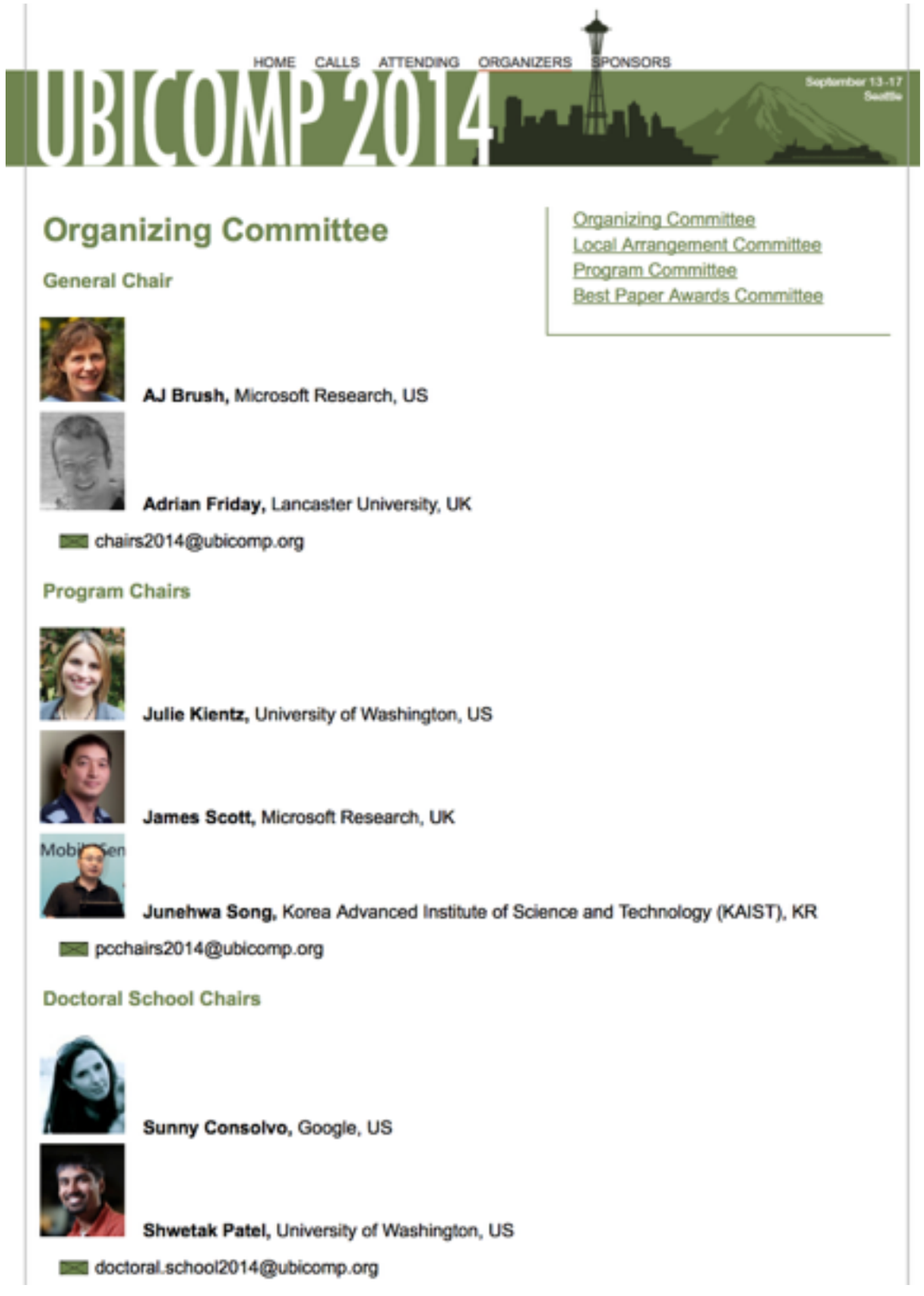
- Before the conference
  - decide on topics and themes
  - invite scientists to submit (Call for Paper)
  - submission of papers
  - reviewing process
  - decision on acceptance / rejection
  - authors receive reviews on their submissions
  - for accepted papers, authors prepare a camera-ready version

Conferences

- During the conference
  - presentation for each paper by one of the authors
  - in addition: keynotes, invited talks, panels
- After the conference
  - papers and presentations are published
  - proceedings (usually online, sometimes printed)

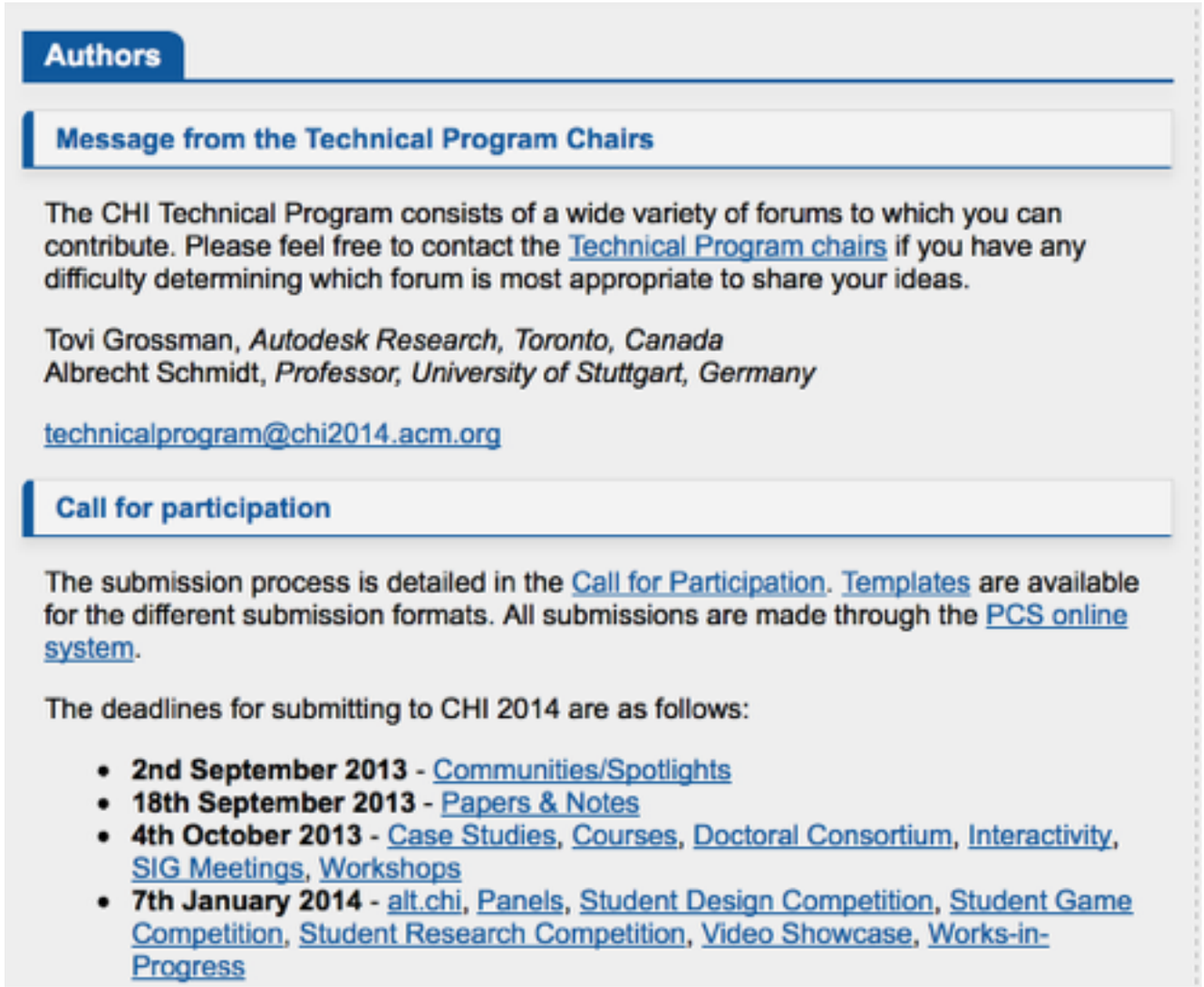
About Conference Organisation

- Organisation Committee (General Chairs, Publicity, Publications, Student Volunteers, Registration)
- Program Committee (program chair, committee members)
- Peer Reviewing:
  - submission reviewed by 2-3 referees; reviews as basis for decision on acceptance or rejection
  - in critical cases, discussion within the program committee (usually online, for large conferences co-located meetings)
  - reviewers usually anonymous
- Sometimes opportunity to write a rebuttal (reply to reviewers)



Submission Formats

- Short papers (usually 4 pages)
- Full papers (usually 8-15 pages)
- Systems papers (2-3 pages)
- Work-in-progress, posters, demos, videos (abstracts)
- Position papers
- Invited talks



Authors

Message from the Technical Program Chairs

The CHI Technical Program consists of a wide variety of forums to which you can contribute. Please feel free to contact the Technical Program chairs if you have any difficulty determining which forum is most appropriate to share your ideas.

Tovi Grossman, *Autodesk Research, Toronto, Canada*
Albrecht Schmidt, *Professor, University of Stuttgart, Germany*

technicalprogram@chi2014.acm.org

Call for participation

The submission process is detailed in the Call for Participation. Templates are available for the different submission formats. All submissions are made through the PCS online system.

The deadlines for submitting to CHI 2014 are as follows:

- **2nd September 2013** - Communities/Spotlights
- **18th September 2013** - Papers & Notes
- **4th October 2013** - Case Studies, Courses, Doctoral Consortium, Interactivity, SIG Meetings, Workshops
- **7th January 2014** - alt.chi, Panels, Student Design Competition, Student Game Competition, Student Research Competition, Video Showcase, Works-in-Progress

Important HCI Conferences

Important HCI Conferences

Web Images More...

Google Scholar

Search Scholar

- English
  - Business, Economics & Management
  - Chemical & Material Sciences
  - Engineering & Computer Science
    - Human Computer Interaction
  - Health & Medical Sciences
  - Humanities, Literature & Arts
  - Life Sciences & Earth Sciences
  - Physics & Mathematics
  - Social Sciences
- Chinese
- Portuguese
- German
- Spanish
- French
- Italian
- Japanese
- Dutch

Top publications - Human Computer Interaction Learn more

	Publication	h5-index	h5-median
1.	Computer Human Interaction (CHI)	78	114
2.	Conference on Computer Supported Cooperative Work (CSCW)	38	53
3.	International Journal of Human-Computer Studies	37	50
4.	ACM Symposium on User Interface Software and Technology	36	66
5.	UbiComp	34	53
6.	Interacting with Computers	32	41
7.	ACM/IEEE International Conference on Human Robot Interaction	30	41
8.	Pervasive Computing	28	38
9.	Symposium On Usable Privacy and Security	28	37
10.	International Journal of Computer-Supported Collaborative Learning	26	48
11.	International Conference on Intelligent User Interfaces (IUI)	26	41
12.	ACM Transactions on Computer-Human Interaction (TOCHI)	26	40
13.	Mobile HCI	26	36
14.	Symposium on Interactive 3D Graphics (SI3D)	26	35
15.	IEEE International Symposium on Mixed and Augmented Reality	24	40
16.	ACM International Conference on Interactive Tabletops and Surfaces (ITS)	24	35
17.	International Journal of Human-Computer Interaction	24	29
18.	Intelligent Virtual Agents	23	26
19.	Tangible and Embedded Interaction	22	28
20.	Behaviour & Information Technology	21	35

Dates and citation counts are estimated and are determined automatically by a computer program.

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Important HCI Conferences

- CHI (SIGCHI conference on Human factors in computing systems) - April, Deadline in September
- UIST (User Interface Software and Technologies) - November, deadline in April
- CSCW (Computer-Supported Cooperative Work)
- IUI (Intelligent User Interfaces)
- MobileHCI
- TEI (Tangible and Embedded Interaction)
- ITS (Interactive Tabletops and Surfaces)

In any case it is advisable to consult your supervisor / professor before submitting.

Journal Submissions

- Different publishers (Springer, Elsevier, Oxford University Press, MIT Press, IEEE, …)
- Responsibility:
  - Editor
  - Editorial Board
- Submissions to editor or the editorial board
- Reviews by experts from the field (usually not on the editorial board)
- Papers sometimes anonymised (usually not helpful)
- Oftentimes, revisions are possible

How to Write a Scientific Paper

Motivation

Gerard Piel

"Without publication, science is dead." [Day u. Gastel, 2006]

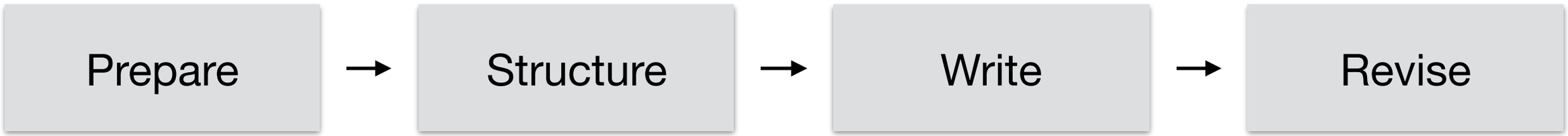
Simon Peyton Jones

"We write papers mainly to impress others, gain recognition, and get promoted." [Jones, 2004b]

Motivation

- Here is a problem
- It is an interesting problem
- It is an unsolved problem
- Here is my idea
- My idea works (details, data)
- Here is how my idea compares to other people's approaches

Phases of Writing a Paper



Phases of Writing a Paper

Prepare → Structure → Write → Revise

- How long can the paper be?
- How does it need to be formatted (IEEE, ACM, Springer, Elsevier)?
- How are figures, tables, and references presented?
- In which language to write the paper?
- What are appropriate topics?
- When is the deadline for submission (see Call-for-Papers)?

Phases of Writing a Paper

Prepare → **Structure** → Write → Revise

- Come up with a meaningful title
- Decide on the author order
- Abstract (150 words) and keywords
- Introduction
- Related work
- Methodology: the problem, the idea, details
- Results / Discussion / Future work
- Acknowledgements
- References
- (Appendix)

Requirements and Design Space for Interactive Public Displays

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ABSTRACT
Digital immersion is moving into public space. Interactive screens and public displays are deployed in urban environments, malls, and shop windows. Inner city areas, airports, train stations and stadiums are experiencing a transformation from traditional to digital displays enabling new forms of multimedia presentation and new user experiences. Imagine a walkway with digital displays that allows a user to immerse herself in her favorite content while moving through public space. In this paper we discuss the fundamentals for creating exciting public displays and multimedia experiences enabling new forms of engagement with digital content. Interaction in public space and with public displays can be categorized in phases, each having specific requirements. Attracting, engaging and motivating the user are central design issues that are addressed in this paper. We provide a comprehensive analysis of the design space explaining mental models and interaction modalities and we conclude a taxonomy for interactive public display from this analysis. Our analysis and the taxonomy are grounded in a large number of research projects, art installations and experience. With our contribution we aim at providing a comprehensive guide for designers and developers of interactive multimedia on public displays.

Categories and Subject Descriptors
H.5.1 [**Multimedia Information Systems**]: Information Interfaces and Presentation

General Terms
Design, Human Factors.

Keywords
Public Displays, Interaction, Requirements, Design Space.

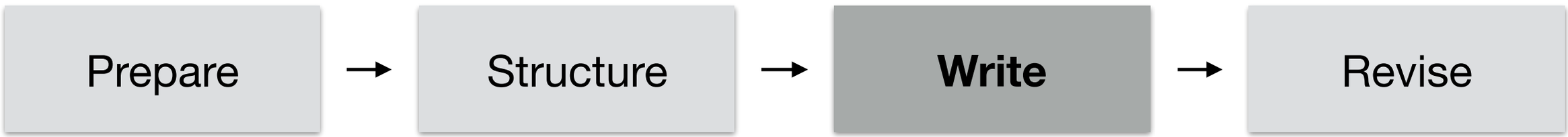
1. INTRODUCTION
Traditionally, most multimedia applications can be found on personal devices, such as PCs or mobile phones. However, electronic displays are also rapidly permeating public spaces, increasingly augmenting and replacing traditional, static signs. This broadens the domain of multimedia beyond the personal space to also include the public, urban space. Although the vast majority of these displays are still not interactive, there seems to be a clear trend towards networked and interactive displays. While interactive networked displays are promising for deploying multimedia applications and content, many deployments seem to be plagued with much lower usage than expected by their designers [20]. It seems that although designers implement existing knowledge from HCI, like usability and affordances, there are additional issues unique to public displays that hamper their acceptance. The vast majority of interactive public displays proposes a "poster" mental model to their audience, and allow for interaction via touch and / or keys only. This is despite several other mental models and interaction modalities have been proposed. In addition, many displays seem to fail to attract enough attention of passers-by, simply vanishing in the clutter of things in public space that compete for attention. If they capture attention, many displays seem to fail to motivate passers-by to interact, who have other goals in mind. If, finally, the audience has noticed the display and is motivated to interact, interactive displays seem to fail to deal appropriately with the public nature of interaction, where people may avoid interaction in order to maintain their social role and, e.g., not look silly. These requirements can be addressed by displays utilizing broader metaphors than just that of a poster, for example windows, mirrors, or overlays over the physical world.

MM'10, October 25–29, 2010, Firenze, Italy.

2. REQUIREMENTS ANALYSIS
While many findings from HCI also apply to public displays, simply guaranteeing utility, usability, and likability may not be enough to design public displays. In particular, public displays need to grab the attention of passers-by, motivate passers-by to interact with them, and deal with the issues of interaction in the public. Since most multimedia systems have been designed as personal devices or for use in home environments, these issues have not yet received sufficient attention. For public multimedia systems however, how the audience approaches them is crucial.

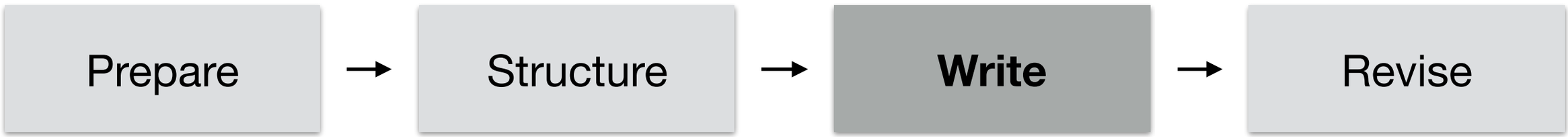
2.1 Interaction Phases
In contrast to many other computing technologies, interaction with public displays does not start with the interaction itself. Instead, the audience is initially simply passing by, without any intention for interaction. A model of the different phases of interaction has been presented in [39] (Figure 1). This model builds on the model presented in [9], but instead focuses on audience behav-

Phases of Writing a Paper



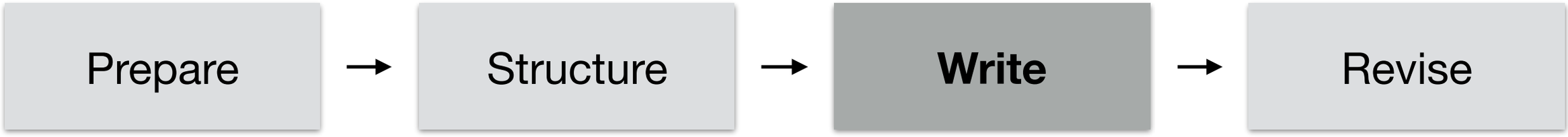
- Writing up helps to clarify ideas
- Start writing during the research project
  - if leaving writing up until the last minute, you may not have enough time to produce a good paper
  - amount of writing, mass of data, and papers to be organised and brought into order is often underestimated
  - writing is based on experience

Phases of Writing a Paper



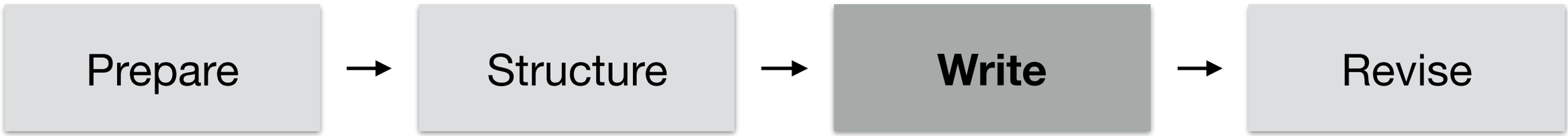
- Make a time plan (deadlines!)
- Read related work, take notes
- Think about definitions
- For each sentence, think about what information you want to convey to the reader or what the effect on the user should be.
- Oftentimes, sentences do not really have a purpose or are not really related to the topic. In these cases, omit the sentence.
- Sentences that are meant to convince the reader of the author's smartness but are hardly related to the topic, should be avoided.
- Avoid jokes.

Phases of Writing a Paper



- Acknowledge those who have assisted in your research (supervisor, colleagues, research participants, spouse, friends, funding body)
- Report quantitative data in a separate section from discussion and interpretation of those results
- Qualitative findings and interpretation of the data often weaved into one section
- Design and creation research often also describes the development
- Following the conventional structure helps readers to easily find their way around
- Provide signposts (“The last chapter explained that… “; “The structure of this paper is as follows…”)
- Use the “editorial we”; e.g., “We designed an experiment …”
  (reports written in the third person passive is considered old-fashioned; e.g., “An experiment was designed to …”)

Phases of Writing a Paper



Develop a Writing Routine

- People have very individual writing routines (e.g., setting yourself a target of 1500 words a day)
- Write in the way that suits you best (e.g., with background music or in total silence)
- Write at the time of day when you are at your best
- Use the time when you function less well to do the more mechanical parts (spelling corrections, checking reference details, creating and fixing figures / tables)
- The first draft does not have to be perfect!
- Go for a walk if you are stuck

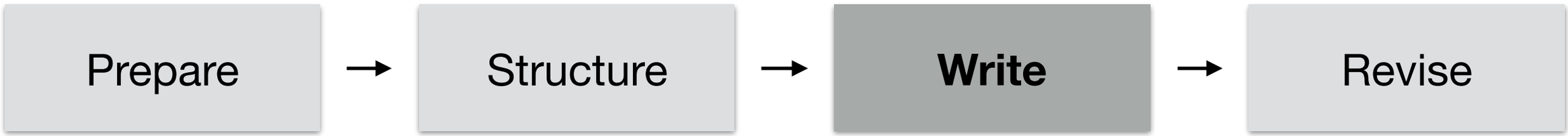
Phases of Writing a Paper

Prepare → Structure → **Write** → Revise

Presentation of Data

- Provide tables and figures of interesting data
- For qualitative data it is usually good to provide quotes from the interviewees
- Clearly label tables and figures (explain to the reader what they show)

Phases of Writing a Paper



Readers

There are very different types of readers. Your text should cater to the needs of all of them!

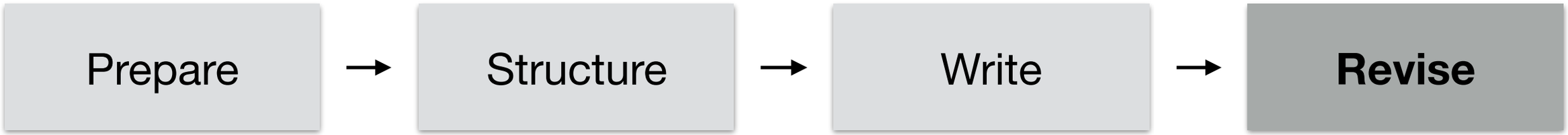
- *Search Engines*: choose title and keywords leading to a high search rank. Use Google Scholar for testing!
- Readers who want to find out whether the article is interesting or *relevant* to them. Usually only read the title and maybe the abstract
- Readers who are *interested in the results* and want to use them themselves. Should already get the most important information on the first pages. If an interesting idea isn't presented but on the last page, it is likely that they miss it.
- Readers who want to *work on the topic*. Probably need all the details.

Phases of Writing a Paper

Prepare → Structure → Write → **Revise**

- Are all necessary information included in the paper?
- Check for consistency?
- Is the text understandable?
- Is the methodology sound?
- Are there typos or grammar errors?
- Are figure and tables easily readable (font size, colors) and referenced in the text?
- Do you provide meaningful captions?
- Does the format meet the specifications of the conference?

Phases of Writing a Paper



- When you have completed a chapter or paper, leave it for a few days
- Have a friend read your text
- Give a polished draft to your supervisor
- A good peer-review will point out both strengths and weaknesses
- If rejected, good reviews will make suggestions how to improve the paper in a way such that it is publishable in the future

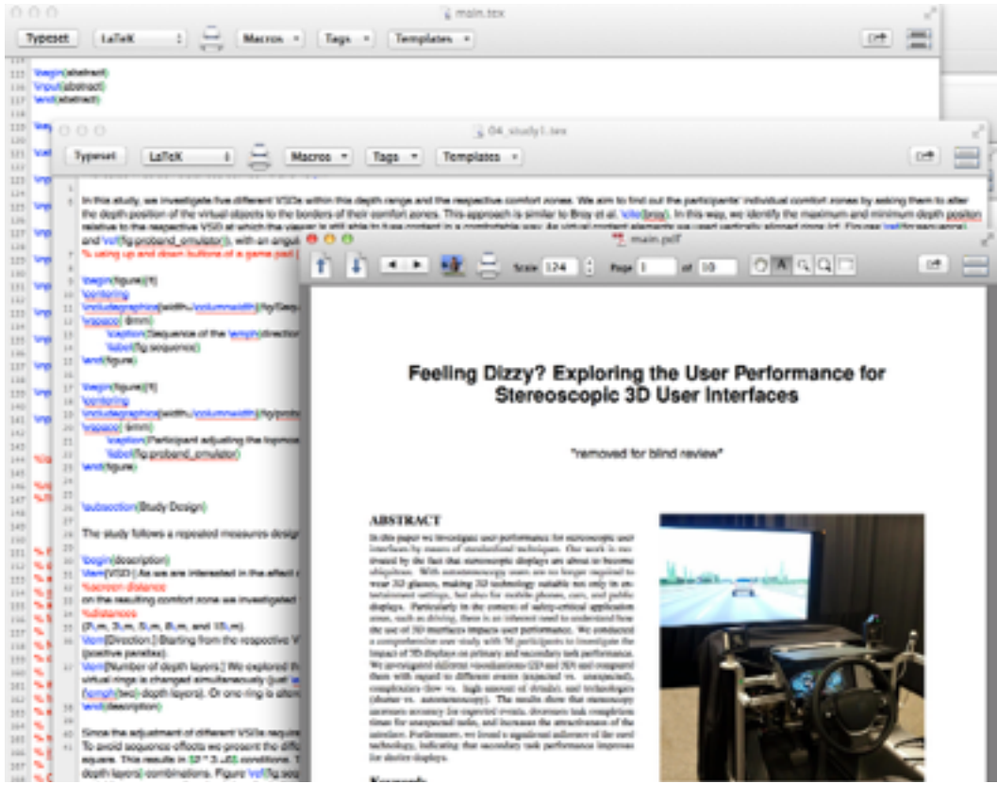
Tools

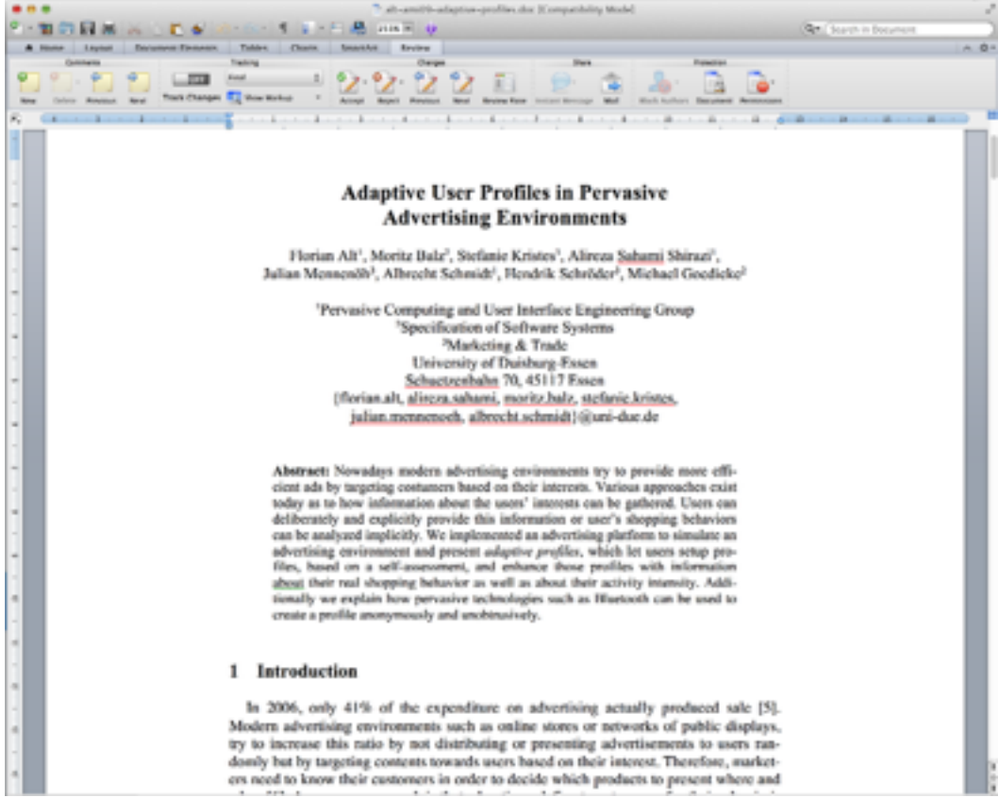
- Tools for text editing
- Tools for literature research
- Tools for creating figures
- Tools for creative work
- Tools to support the process

Text Editing

- Simple text editors
- OpenOffice
- MS-Word
- LaTeX / Lynx
- GoogleDocs
- many more

Most conferences require Latex or Word!





Tools for Literature Research

- Google und Google Scholar
- Bing, Yahoo, Baidu, Vandex
- ACM Digital Library (http://www.acm.org/dl)
- CiteSeerX (http://citeseer.ist.psu.edu/index)
- DBLP Computer Science Bibliography (http://www.informatik.uni-trier.de/~ley/db/)
- many more

Don’t forget libraries

- OPACplus der LMU-UB (https://opacplus.ub.uni-muenchen.de)
- DBIS der LMU-UB (http://rzblx10.uni-regensburg.de/dbinfo/fachliste.php?bib_id=ub_m&lett=l&colors=&ocolors=)

Tools for Graphics

- MS Office / MS Visio
- Xfig (http://www.xfig.org/)
- Adobe Creative Suite
- Gimp
- and many more (ideas?)

Reference Tools

- Citavi: http://www.citavi.com/
  (LMU Campuslizenz verfügbar)
- EndNote: http://www.endnote.com/
  (LMU Campuslizenz verfügbar - (http://www.ub.uni-muenchen.de/elektronische-medien/literaturverwaltungsprogramme/endnote/)
- Zotero (https://www.zotero.org)
- LATEX und BibTeX (http://www.bibtex.org/), also see http://samy.informatik.hu-berlin.de/~piefel/LaTeX-PS/V04-literatur.pdf
- JabRef als Beispiel eines BibTeX Editors (http://jabref.sourceforge.net/)

Hints for Citations

- DIN 1505-2 [Lorenzen, 1997]
- Collection of links from the FU Berlin (http://www.ub.fu-berlin.de/service_neu/einfuehrung/bookmarks/zitieren.html)
- Hints from the LMU (http://www.edu.lmu.de/spe/downloads/StuBer_WissenschaftlichesArbeiten.pdf)
- Guidelines from the group for media informatics (http://www.medien.ifi.lmu.de/studierende/abschlussarbeiten/master/richtlinien.xhtml)