

Enabling community-led innovation: a user centred design approach

Dr Paula Alexandra Silva
University of Aveiro, Portugal
DigiMedia Research Centre
palex@gmail.com; pags@ua.pt
<https://virtualpalex.wordpress.com>

Professional experience:

Summary of (relevant) experience

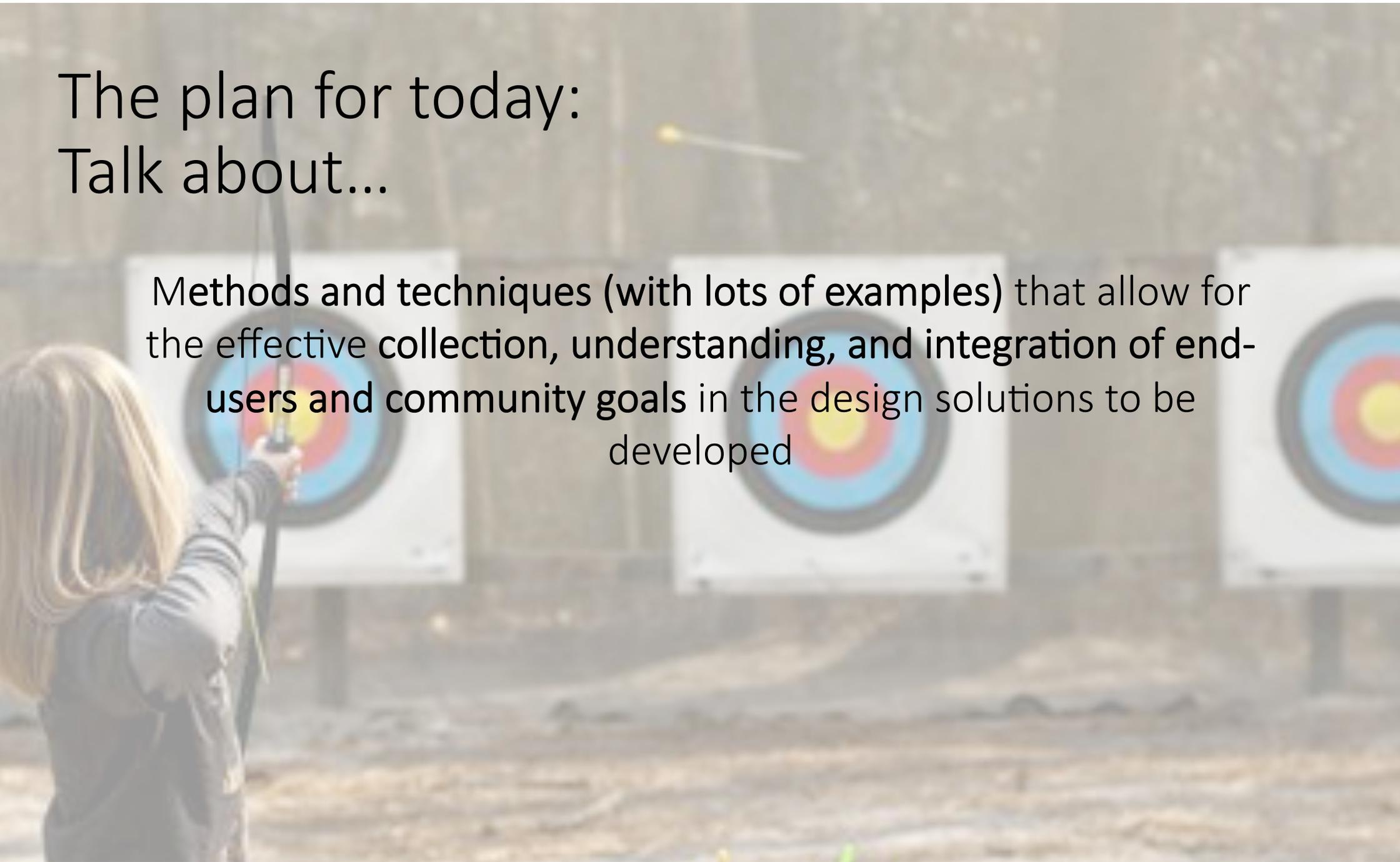
- Lecturer at a number of universities on Human-Computer Interaction, User Experience Research and Design, Multimodal Interaction, Universal Design, Creativity, Design Thinking, ...
- Researcher for several projects in the United States and in Portugal (this is what I do now...)
- Senior Scientist and Leader of the Human-Computer Interaction Group at Fraunhofer Portugal
- (Expert evaluator for the AAL program, a former participant in projects)



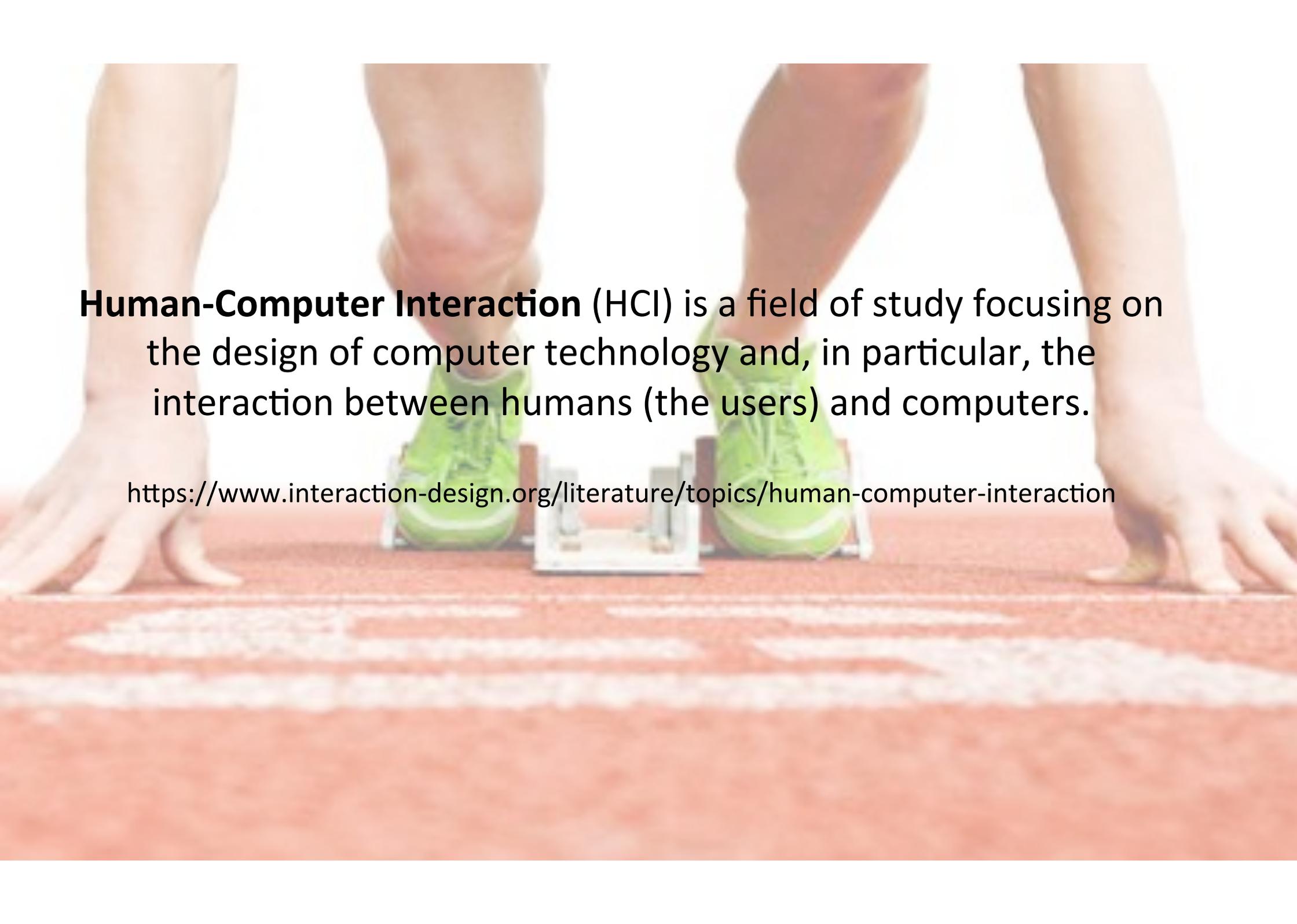
Design of applications for **older adults** to improve their overall **health and wellbeing** and to enable their **continued active participation** in society, by **leveraging on** the potential of **information and communication technologies**.

The plan for today: Talk about...

Methods and techniques (with lots of examples) that allow for the effective collection, understanding, and integration of end-users and community goals in the design solutions to be developed

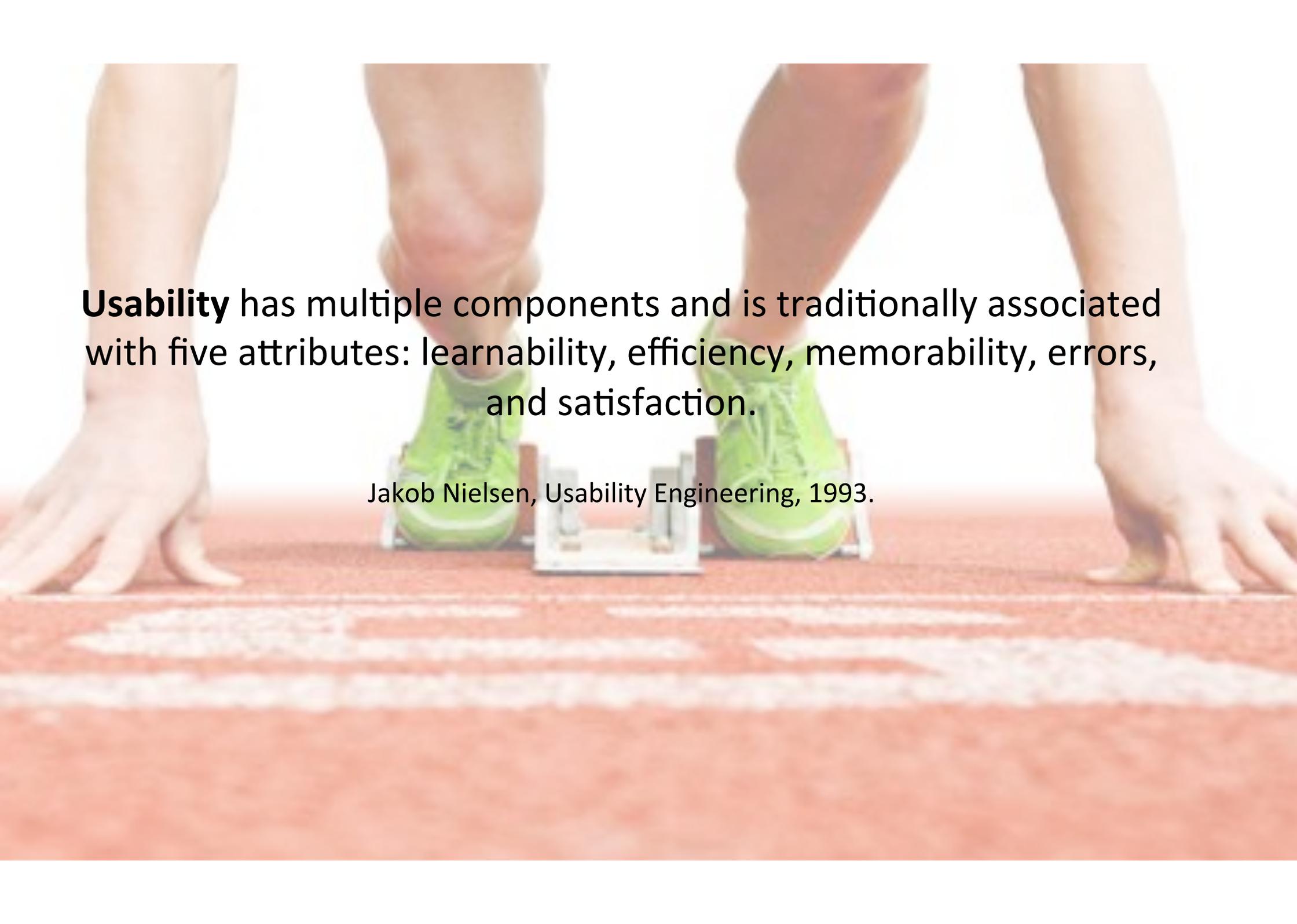


But, before we start...

A close-up photograph of a person's legs and feet in bright green sneakers, positioned on a starting block on a red running track. The person's hands are visible on the ground, ready to start a race. The background is a plain, light-colored wall.

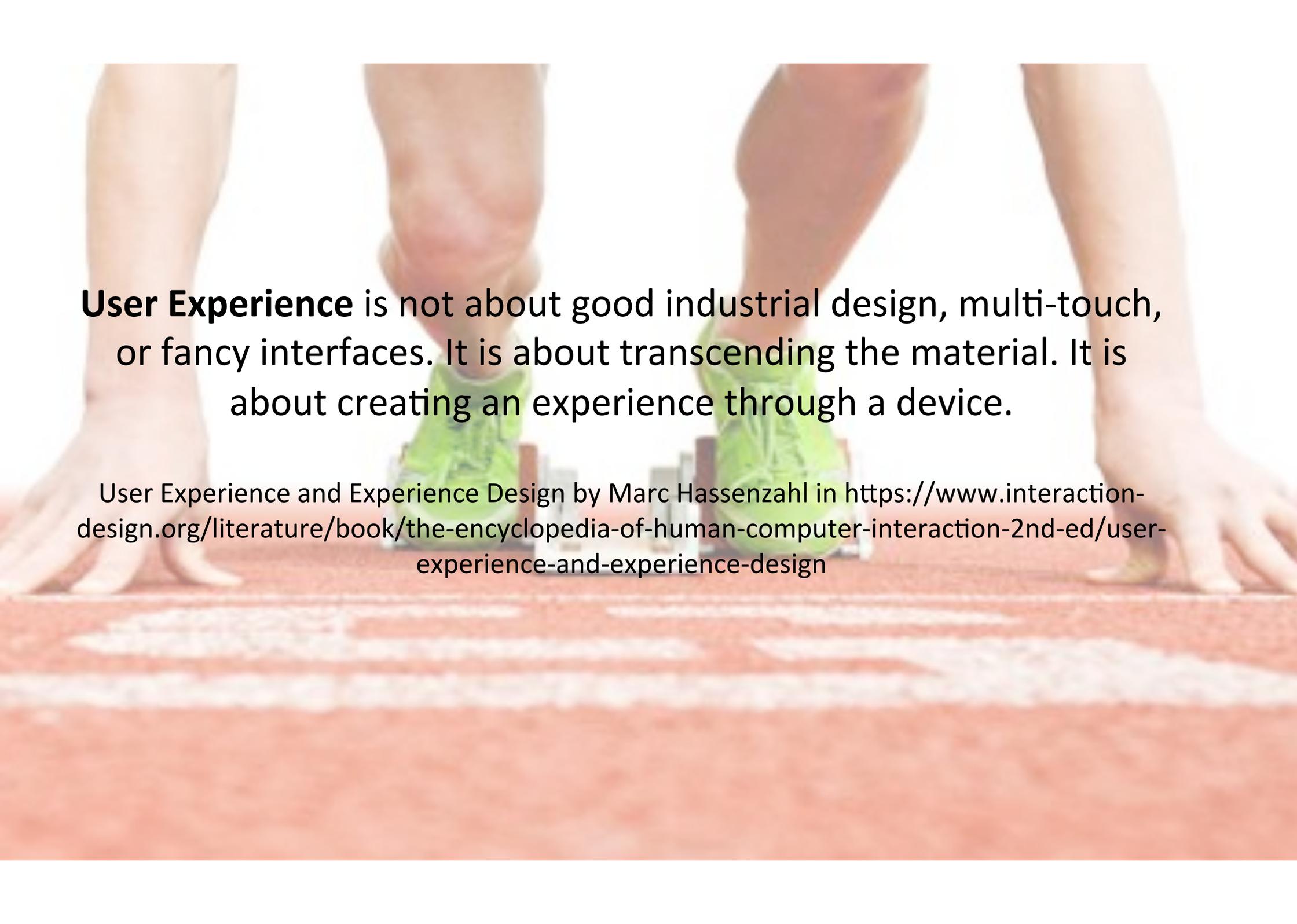
Human-Computer Interaction (HCI) is a field of study focusing on the design of computer technology and, in particular, the interaction between humans (the users) and computers.

<https://www.interaction-design.org/literature/topics/human-computer-interaction>

A close-up photograph of a person's legs and feet in bright green sneakers, positioned on a red running track. The person is in a starting crouch, with their hands on the ground. The background is a plain white wall.

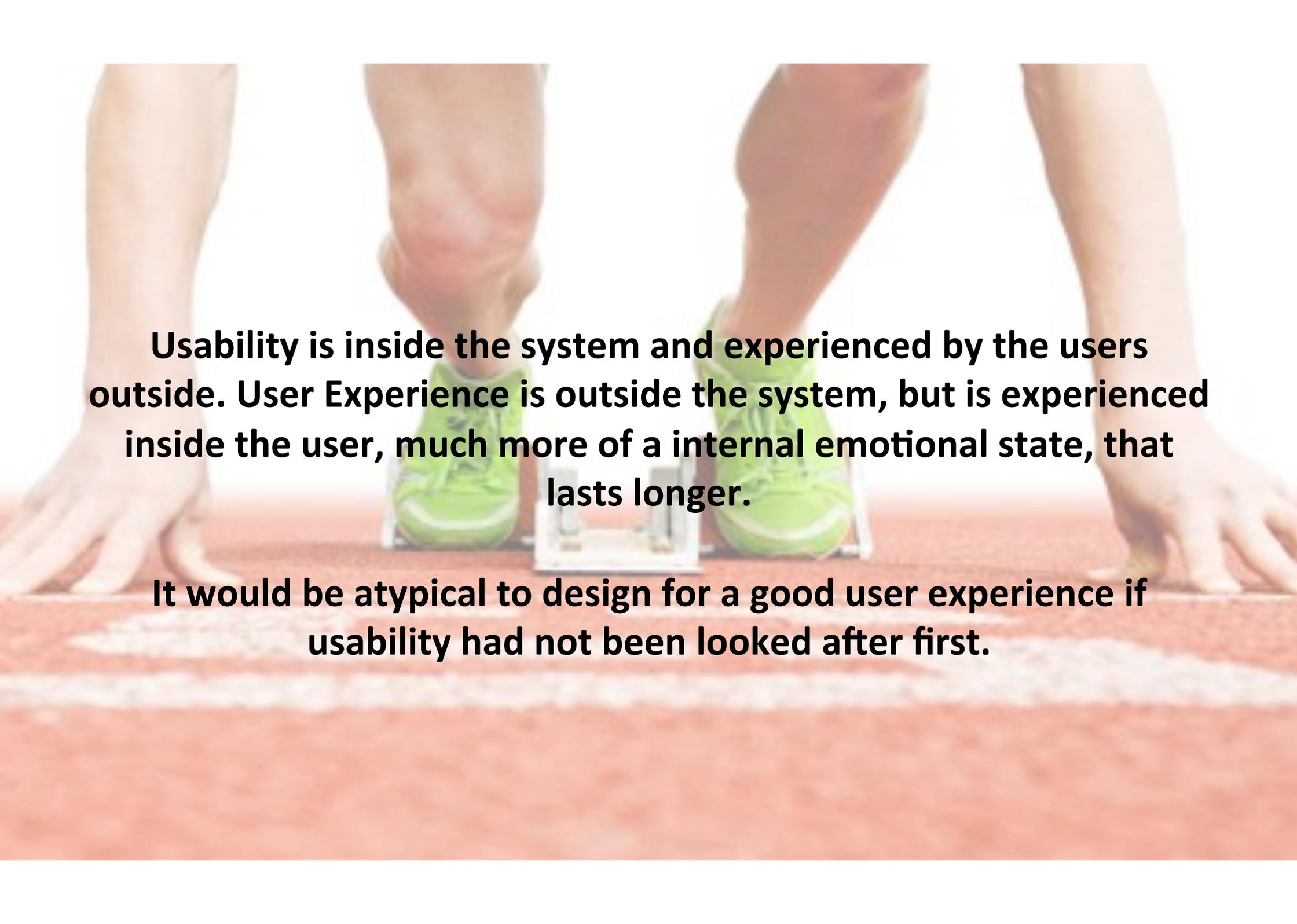
Usability has multiple components and is traditionally associated with five attributes: learnability, efficiency, memorability, errors, and satisfaction.

Jakob Nielsen, Usability Engineering, 1993.

A photograph of a runner's legs and feet in green sneakers on a red track, with text overlaid. The runner is in a starting crouch on a red running track. The text is centered over the image.

User Experience is not about good industrial design, multi-touch, or fancy interfaces. It is about transcending the material. It is about creating an experience through a device.

User Experience and Experience Design by Marc Hassenzahl in <https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/user-experience-and-experience-design>



Usability is inside the system and experienced by the users outside. User Experience is outside the system, but is experienced inside the user, much more of a internal emotional state, that lasts longer.

It would be atypical to design for a good user experience if usability had not been looked after first.

Personal view and approach

Key ingredients and stages: (In-line with the principles of user centred design)

- Key ingredients
 - Capacity for developing deep empathy with the community of users; they are the experts!
 - Ability to set out a good methodology to collect data and derive insights from *
 - Thorough knowledge and understanding of user interface design principles and guidelines
 - Knowledge of the design domain, design space, and technology in use
 - A hint of creativity, perseverance, and madness
 - Working as a team within the consortium, within each of its sub-teams, and with the users
- Stages in a process of analysis, design, and development of a solution
 - User research
 - Conceptualisation and Prototyping
 - Prototyping and Evaluation
 - (Across all, iteration... Iterate until you get it right and start prototyping early)

Collecting, understanding, and
integrating end-users and
community goals in design

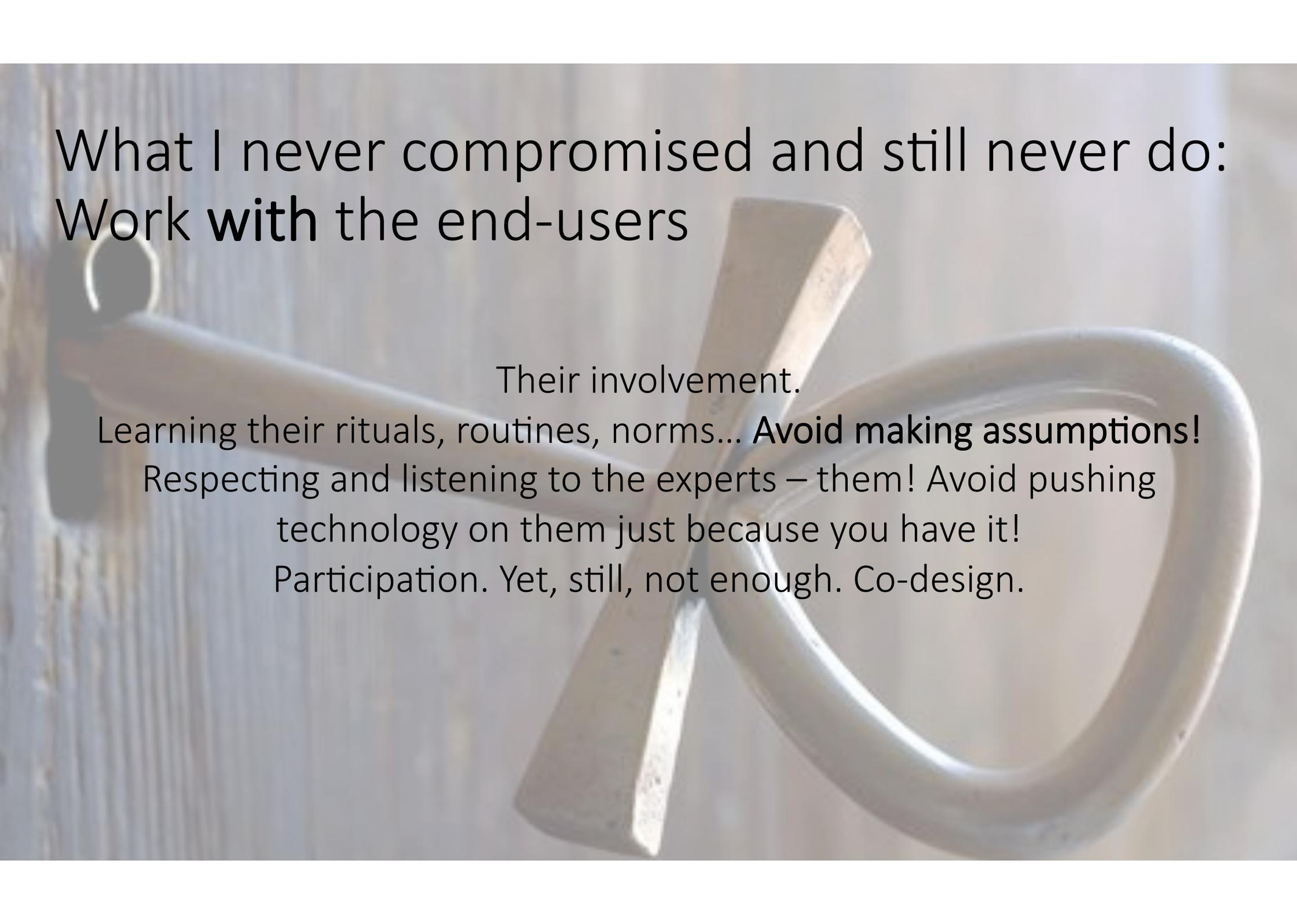
What I never compromised and still never do: Work **with** the end-users

You want to work with the experts, with the best; those are
your end-users!
Nothing about them, without them!



COLABORAR

<http://colaborar.fraunhofer.pt>

A wooden handle with a metal ring and a wooden peg, set against a blurred background.

What I never compromised and still never do: Work **with** the end-users

Their involvement.

Learning their rituals, routines, norms... **Avoid making assumptions!**

Respecting and listening to the experts – them! Avoid pushing technology on them just because you have it!

Participation. Yet, still, not enough. Co-design.

What I never compromised and still never do: Work **with** the end-users

Q: I recently bought a new washer and dryer and was thrown a curve when my salesman said, "There's an online rebate for this water-saving washer. Can you get someone to help you with that?" Apparently, the fact that I stopped coloring my hair and it's now more white than gray plus a few other clues — I'm 77 — indicated to him I was unable to use a computer. I email, use Google, buy from Amazon and have done online rebates with Staples a number of times. What's happening and what should I have said?

— M.S.

<https://www.stitch.net/blog/2014/12/older-adults-can-technically-savvy/>

Some examples from my
previous work

A bit of a disclaimer:

There is no such thing as a perfect method

Constraints: time, money, expertise...

Different levels of interpretation, by the user and by the researcher

Direct vs. Indirect

More or less natural and comfortable from the start

Closer, or not, to the end solution, tangible...

...

User research: Methods I used to uncover needs, goals, desires

Photovoice

The screenshot shows a web browser displaying a SAGE Journals article. The URL is journals.sagepub.com/doi/abs/10.1177/1049732317693221. The article title is "Use of Photovoice to Understand the Experience of Taking Psychotropic Medications" by Amy Weremeyer, Elizabeth Skoy, and Gina Aalgaard Kelly. It was first published on March 1, 2017. The abstract begins with: "Previous work has reported that medication experience may affect medication-related problems, adherence, and quality of life. The purpose of this study was to explore medication experience of individuals taking psychotropic medication from the patient perspective using photovoice methodology. Nineteen participants were given a camera and were asked to photograph their medication experience. Individual and focus group sessions were held for photo reflection and discussion. Transcript data were analyzed to arrive at a model of medication experience. Specific medication experiences,". The page includes a "Download PDF" button, "Article information" dropdown, and "SAGE Recommends" and "FEEDBACK" buttons on the right side.

Background article

The screenshot shows a web browser displaying a blog post on the ARCH website. The URL is www.arch.ie/blog-post/user-research-in-practice/. The page features the ARCH logo (Applied Research for Connected Health) and the TECHNOLOGY CENTRE logo (ENTERPRISE IRELAND IDA IRELAND SUPPORTED). The navigation menu includes Home, About us, Research, Industry, News, Events, Blog, Media, Contact, and Q. The main content area is titled "User Research in Practice" and includes a sub-header "User Research in Practice" by Oisín Kearns, ARCH Research Assistant. The text begins with a quote: "How can I use an affinity diagram to create personas?" followed by "AAA... 'we're going to need a bigger wall!'". The article discusses the challenges of using User-Centred Design (UCD) techniques like affinity diagrams and personas in a practical setting, noting that they can be time-consuming and difficult to transition from one technique to another. The page also includes "Previous" and "Next" navigation links and a "Download PDF" button at the bottom.

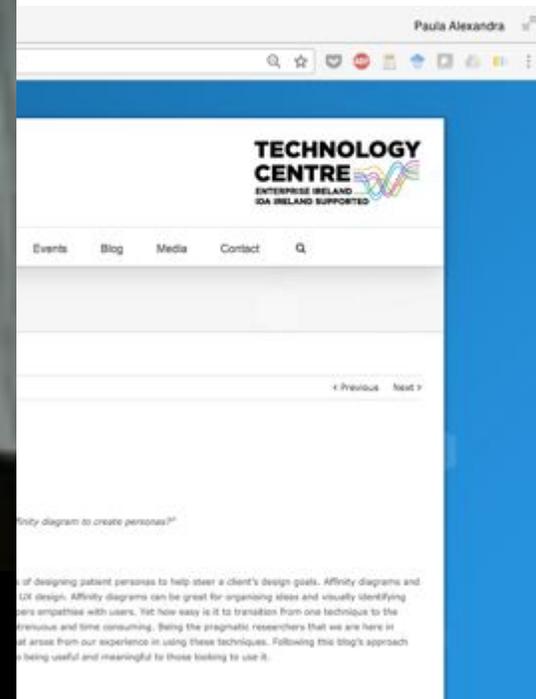
A blog post about the workshop

User research: Methods I used to uncover needs, goals, desires

Photovoice



"I often stare at [my dream decoration] when I'm depressed and sick and it helps me to relax and take a breath and think of my future dreams and aspirations"



Design and prototyping: Methods I used to design and prototype



Let's try Air Hockey...



Evaluation: Methods I used to assess usability and UX

3 x 7 Usability Testing Guidelines for Older Adults

Paula Alexandra Silva
Fraunhofer AICOS
Rua do Campo Alegre 1021
4169-007 Porto, Portugal
paula.silva@fraunhofer.pt

Francisco Nunes
Fraunhofer AICOS
Rua do Campo Alegre 1021
4169-007 Porto, Portugal
francisco.nunes@fraunhofer.pt

ABSTRACT
There is a large amount of literature on usability tests and guidelines, giving advice on how to plan, conduct, and analyze usability tests to maximize outcomes. However, when it comes to usability for elderly people, little is known on how to properly conduct usability tests. This paper presents a set of guidelines for usability testing with older adults, based on a review of the literature and on the authors' own experience. The guidelines are organized into three main areas: preparation, execution, and analysis. The preparation phase includes defining the goals, selecting the participants, and preparing the test environment. The execution phase includes conducting the test, observing the user's behavior, and collecting feedback. The analysis phase includes analyzing the data, identifying usability issues, and reporting the results. The guidelines are intended to help researchers and practitioners to conduct usability tests with older adults more effectively and efficiently.

1. INTRODUCTION
Human-Computer Interaction (HCI) is the discipline that studies the interaction between humans and technology [1]. In that context, the main goal of HCI practitioners is to create products that are useful, usable and enjoyable for users. Usability is a key factor in the success of a product. It refers to the ease with which a user can interact with a product to achieve their goals. Usability testing is a method used to evaluate the usability of a product. It involves observing users as they interact with a product and identifying any usability issues. Usability testing can be conducted in a variety of ways, including paper prototyping, usability labs, and remote usability testing. Usability testing is an important part of the product development process, as it helps to identify usability issues before the product is released to the market. This can help to reduce the cost of development and improve the user experience. Usability testing can also help to identify usability issues that are not obvious to the designers. Usability testing is a valuable tool for improving the usability of a product and ensuring that it is usable and enjoyable for all users.

User drive and control
Test settings and preparation
Care, communication and listening



Fostering Wellness of Older Adults while Performing Usability Testing

Francisco Nunes
Fraunhofer AICOS, Rua do Campo Alegre 1021
4169-007 Porto, Portugal
francisco.nunes@fraunhofer.pt

Paula Alexandra Silva
Fraunhofer AICOS, Rua do Campo Alegre 1021
4169-007 Porto, Portugal
paula.silva@fraunhofer.pt

ABSTRACT
This paper presents part of the research results from the project eCARELYS - Enhanced Cognitive Ambient Assisted Living Experiment in which the authors were responsible for the design and evaluation of a TV-based user interface for older adults with chronic conditions. The objective was to enhance the impact of performing usability testing on older adults by the authors to evaluate the feelings of happiness and fatigue before and after usability testing. This evaluation was conducted five times in a set of eight usability tests performed over 10-minute sessions. Results show that they use feelings improved at the usability tests. In this paper, the authors develop an understanding of what may justify this improved well-being of happiness and fatigue, following principles that favor older adults' well-being during usability testing may be the main reason for these results.

1. INTRODUCTION: THE IMPORTANCE OF PERSONAL CONTACT TO THE OLDER ADULT
The opportunity to establish personal contact is very important to a person, mostly because the type of contact given them the chance to express ideas, feelings and concerns [1]. Due to the loss of loved one reduction in communication, a feeling grows because they feel isolated [2]. The lack of well-being is the quality of the feeling alone condition and other levels, a person will be.

2. PERF WITH OO
Usability test

How do you evaluate your happiness?



Are you tired or energetic?



Figure 1 - Image scales used to evaluate happiness [6] and fatigue.

Nunes, Francisco, and Paula Alexandra Silva. 2010. "Fostering Wellness of Older Adults While Performing Usability Testing." <https://tinyurl.com/yaxtsrst>

User Access Int. Soc.
DOI: 10.1007/s10209-015-0440-1



LONG PAPER

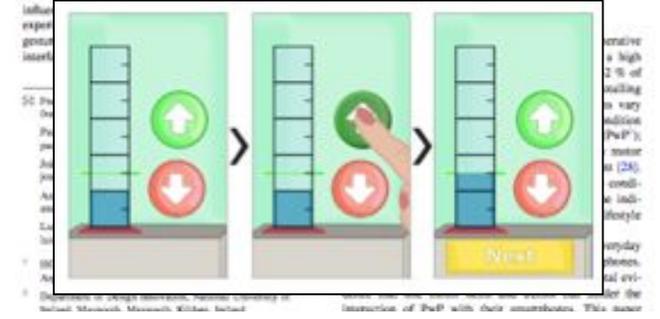
User interface design guidelines for smartphone applications for people with Parkinson's disease

Francisco Nunes¹, Paula Alexandra Silva¹, João Cevada¹, Ana Correia Barros¹, Luís Teixeira¹

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Abstract Parkinson's disease (PD) is often responsible for difficulties in interacting with smartphones; however, research has not yet addressed these issues and how these challenge people with Parkinson's (PwP). This paper specifically investigates the symptoms and characteristics of PD that may influence the interaction with smartphones to then contribute in this direction. The research was based on a literature review of PD symptoms, eight semi-structured interviews with healthcare professionals and observations of PwP, and usability experiments with 39 PwP. Contributions include a list of PD symptoms that may influence the interaction with smartphones, a list of usability guidelines for PwP, and a list of design guidelines for PwP. Findings contribute to the work of researchers and practitioners alike engaged in designing user interfaces for PwP or the broader area of inclusive design.

Keywords Touchscreen accessibility · User interface design · Usability guidelines · Designing for people with special needs · Mobile · Smartphone · Touch gestures · Motor impairments · Parkinson's disease



Francisco Nunes, Paula Alexandra Silva, João Cevada, Ana Correia Barros, Luís Teixeira. 2016. User interface design guidelines for smartphone applications for people with Parkinson's disease <https://link.springer.com/article/10.1007/s10209-015-0440-1>

Silva, Paula Alexandra, and Francisco Nunes. 2010. "3 X 7 Usability Testing Guidelines for Older Adults." <http://eprints.maynoothuniversity.ie/6030/>.

My approach evolved

Little nuances that changed as I learned...

From needs, requirements and characteristics, to goals and desires.

From user (otherness), to peers, **active collaborators and partnership.**

From me being the expert, to the **community being the expert.**

From small fixes, to **integrated solutions.**

From technology as the solution, to technology as a means to an end, another **tool, hopefully a tool that empowers.**

“We are still learning how to approach design in the area of aging”. Read also Subasi, Ö. et al. (2014). Reframing design culture and aging. interactions, 21(2), 70-73.

Some examples and inspiration
from other researchers

Güldenpfennig
Research through
Design, Technology
Probes

Making Space to Engage

https://dl.acm.org/citation.cfm?id=2938712

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Universidade

Making Space to Engage: An Open-Ended Exploration of Adults

Authors: [Florian Güldenpfennig](#) Vienna University of Technology
[Eva Ganglbauer](#) Vienna University of Technology
[Geraldine Fitzpatrick](#) Vienna University of Technology
[Francisco Nunes](#) Vienna University of Technology

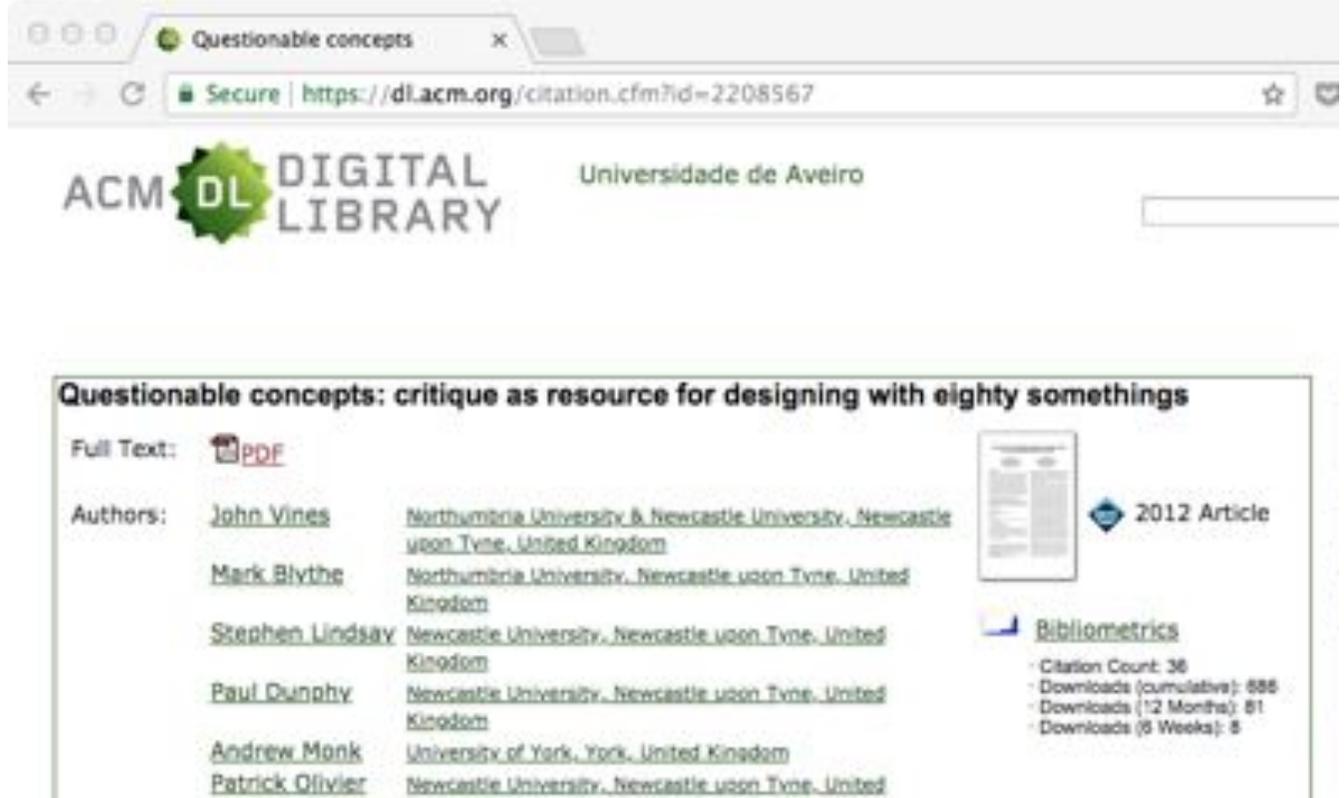
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[table of contents](#) [doi>10.40185/IJHCI.2016040101](#)



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Vines et al. 2012

Concept cards



Questionable concepts

Secure | <https://dl.acm.org/citation.cfm?id=2208567>

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Questionable concepts: critique as resource for designing with eighty somethings

Full Text:  PDF

Authors: [John Vines](#) [Northumbria University & Newcastle University, Newcastle upon Tyne, United Kingdom](#)
[Mark Blythe](#) [Northumbria University, Newcastle upon Tyne, United Kingdom](#)
[Stephen Lindsay](#) [Newcastle University, Newcastle upon Tyne, United Kingdom](#)
[Paul Dunphy](#) [Newcastle University, Newcastle upon Tyne, United Kingdom](#)
[Andrew Monk](#) [University of York, York, United Kingdom](#)
[Patrick Olivier](#) [Newcastle University, Newcastle upon Tyne, United Kingdom](#)

 2012 Article

 Bibliometrics

- Citation Count: 36
- Downloads (cumulative): 686
- Downloads (12 Months): 81
- Downloads (6 Weeks): 8

Mobile Bank



Pay bills, make deposits and withdraw cash at your front door.



Vetere et al. 2009
Technology Probes
Magic Box and
Collage

The screenshot shows a web browser window with the URL <https://www.sciencedirect.com/science/article/pii/S1071581908001237#>. The page features the ScienceDirect logo and navigation links for Journals, Books, and Register. Below the journal title, 'International Journal of Human-Computer Studies', it specifies 'Volume 67, Issue 2, February 2009, Pages 165-178'. The article title is 'The Magic Box and Collage: Responding to the challenge of distributed intergenerational play' by Frank Vetere, Hilary Davis, Martin Gibbs, and Steve Howard. A 'Download full text' button is visible. At the bottom, there is a collage of three images: an elderly man and a woman looking at a computer monitor, a hand holding a mobile phone, and a person interacting with a large screen displaying a collage of photos.

Waycott et al. 2013

Tools for creative activities

Older adults as digital content producers

Full Text: PDF

Authors: [Jenny Waycott](#) [The University of Melbourne, Melbourne, Australia](#)
[Frank Vetere](#) [The University of Melbourne, Melbourne, Australia](#)
[Sonja Pedell](#) [Swinburne University of Technology, Melbourne, Australia](#)
[Lars Kulik](#) [The University of Melbourne, Melbourne, Australia](#)
[Elizabeth Ozanne](#) [The University of Melbourne, Melbourne, Australia](#)
[Alan Gruner](#) [Benetas Aged Care Services, Melbourne, Australia](#)
[John Downs](#) [The University of Melbourne, Melbourne, Australia](#)

2013 Article

Bibliometrics

- Citation Count: 37
- Downloads (cumulative): 1,011
- Downloads (12 Months): 147
- Downloads (6 Weeks): 13

Published in:

Similar

ting Systems

Final thoughts

- Technology and design can play a crucial role in enabling people... this is complex and designers need to be proactive in developing inclusive, empowering, dynamic, and responsive systems that are meant for humans
- It is the role of researchers and practitioners, specially in design, to make a positive intervention that ensures technology is effectively an enabler
- Design technology, which is:
 - Fit for **purpose**, not just for economic interests or quick fixes
 - Fit for **life** (everyday spaces, routines, relationships, etc.), not just the engineered system 'purpose'
 - Fit **for play, fun, self-expression, identity**, not just for mundane tasks
 - Fit for **agency, self determination, participation**, not just prescription and surveillance
 - Fit for **everyone** who is actually involved, not just for the designer, director, policy, governments

More than ever designers as reflective practitioners

Read also Geraldine Fitzpatrick (TUWien), an important reference when it comes to design solutions which are fit for life

Thank you!
Now let's talk about it...

Dr Paula Alexandra Silva
University of Aveiro, Portugal
DigiMedia Research Centre
palex@gmail.com; pags@ua.pt
<https://virtualpalex.wordpress.com>