Fraunhofer

IESE

USER EXPERIENCE
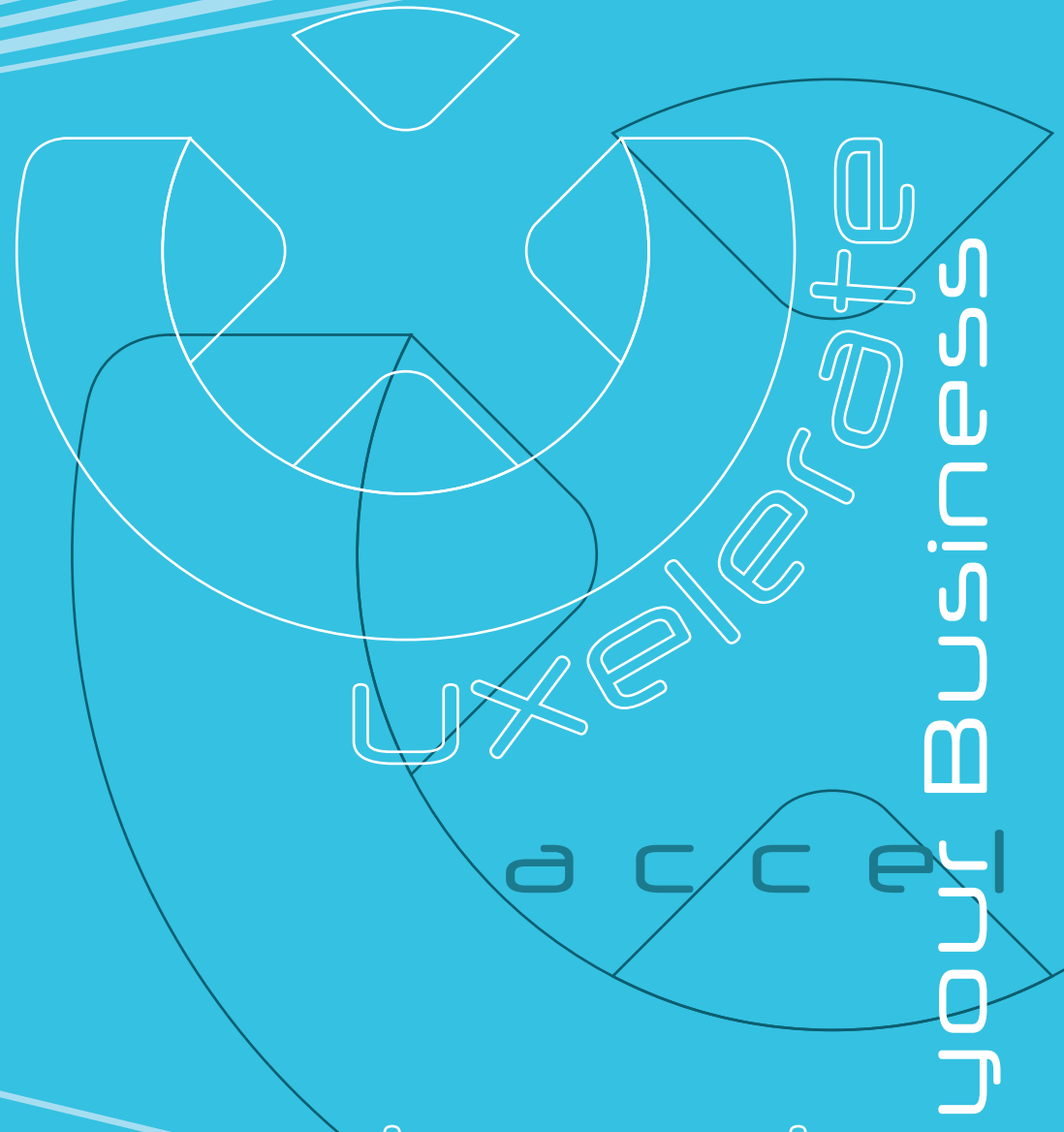# FOR BUSINESS APPLICATIONS

accelerate
Uxelerate
your Business

UXelerate your Business

**Enhance the User Experience
of your business applications**

Information systems are ubiquitous in our everyday lives today. In our private lives, we encounter information systems at the cash register when we pay for our shopping, at airports and train stations when we travel, on the PC or on mobile devices when we use the Internet. In our professional lives, information systems support us in performing our work flows. Without these information systems, modern companies would often be unable to keep their business processes up and running.

Functionality and good usability of a software system alone are no longer enough for a company to be successful with its users. Innovative companies design their systems in a way that does not only provide users with effective and efficient support, but also generates a **positive User Experience (UX)**, since success is defined via the experience a user makes while using a product, in other words, via his or her User Experience.

The User Experience we have during **innovative interaction** can make us curious, inspire us, and motivate us. If you want your product to generate these or other positive reactions, you need to remember that ideas lead to **innovative products**. Therefore, product development should be aimed right from the start at creating the best possible positive User Experience. Existing products can also be improved in terms of their User Experience. Employees who have a positive User Experience with enterprise software will enjoy their work more and will have higher motivation. Ultimately, this will also be felt by your customers!

If it is grounded on an **empirical basis**, greater User Experience in business applications will result in a stable, positive atmosphere and a feeling of joy among your employees. This, in turn, will increase the quality and efficiency of their work and lead to higher-quality work results. The acceptance of the business applications to be used and the willingness to use these applications will also increase.

We look at companies, customers, end users, and system developers from a **holistic perspective** and combine this with our innovative, **practice-proven methods** and knowledge to provide the best possible support for your company!

Create a competitive edge for your company through positive User Experience created in collaboration with Fraunhofer IESE.

Our business is your business' advantage

We help you to:

- generate **innovations**;
- improve the positive UX of your products;
- develop products that generate positive UX;
- develop an integrated **UX strategy** for your company.

On the following pages, you will learn about the right time to deal with your products' User Experience – which is any time and all the time.

Best regards,

Dr. Marcus Trapp

DO YOU WANT
BUSINESS INNOVATIONS?

Business Success
Innovation
through

Creativity
workshop

UX4
Business
Applications

We will show you how to generate new ideas systematically. User Experience is not magic!

Fraunhofer IESE helps you to design creative product ideas or novel product features by proceeding in a structured manner. Using our frequently proven methods, we create more than just effective, efficient, and satisfying products. We go beyond mere "freedom from impairments" (ISO 9241-11). Merely ensuring usability is not enough to make the users of your product experience positive emotions. Motivation, trust, or even fun are just a few of the other qualities that have an impact on future User Experience and thus on the success of your product.

We perform our **custom-tailored, individualized creativity workshop** with you, which will bring to light customized product ideas. It does not matter whether these are for stationary or mobile applications. As soon as a product idea has been found, our special worksop **User Experience for Business Applications** - KREA-FUN will focus on resolving discrepancies between business goals and user goals. Features that have an emotional effect on the users of the product are identified and will now trigger motivation, identification, long-term conviction, and creativity among them. Your product will be an inspriation and people will like to use it.

Based upon this, we develop **prototypes** that exemplarily implement these innovations. In order to ensure that your new product will be noted and accepted by its potential users and thus will achieve the desired success, we collaborate with you in developing an adequate **product introduction strategy** tailored to you and your product.

DO YOU WANT SUPPORT IN PRODUCT DEVELOPMENT?

Business Success
through constructively developed software

UX Patterns

Prototyping

Do ensure as early as possible that the desired User Experience is achieved. We support you in this endeavor!

The user interface is the only part of an interactive software system that the user is in direct contact with. From the customer's perspective, it is even equated with the product. It thus contributes a lot to your users' User Experience. Fraunhofer IESE helps you to design interaction concepts that are suitable for your users. Using our proven prototyping methods, we optimize interaction with your product. We support you in both your interaction design and your visual design, and always check the possible use of modern natural types of interaction such as (multi-)touch-, gesture-, or language interaction as well.

Regardless of whether your product development follows an agile or waterfall approach, we will accompany it from planning via characterization of the current product status or iterative product improvement to product introduction. Our **model-based process for interaction design** ensures the best possible interaction concept during every development phase and creates a uniform communication basis for the seamless cooperation between all project stakeholders. If appropriate and so desired, we will also discuss with you the use of special **patterns for natural interaction** that have been developed by us. Natural interaction evokes enhanced UX in the user and enables intuitive usage.

The jointly developed interaction design is then **implemented as a prototype**. Whether this implementation will be done as a paper prototype or as a functional prototype is a decision we will make depending on the situation and the type of product. At any rate will we use suitable **UX patterns** already for the prototype and will thus create value-adding prototypes. **Visual design** is another aspect that will be considered. Through the use of proven **design patterns** your visual design will achieve significantly better User Experience - it will be attractive, user-friendly, and sexy! Together with you we will develop **individual styleguides and guidelines** to ensure that your future products will have high brand recognition value.

DO YOU WANT AN EVALUATION OF YOUR PRODUCT?

Business Success through the **Improvement** of existing **Products**

Expert **Evaluation**

Analysis **UX Potential**

Have you already concluded your product development, or are you selling a product and want to maximize its success? We provide you with constructive information on how to improve your product's User Experience.

An objective and independent usability and User Experience assessment performed by Fraunhofer IESE helps to discover the strengths and weaknesses of a user interface. If improvement potential is identified during this process, we recommend constructive measures aimed at exploiting this potential to the fullest extent. You will always get an evaluation that is customized to your particular situation.

Our UX experts will evaluate your product either by themselves or together with your developers and users. This **expert evaluation** will provide you with a detailed listing of the strengths and weaknesses of your product in terms of UX together with suggestions for improvement.
In addition, we will check which **user tests and studies** can be adequately applied to your situation and to your product. Mouse and eye tracking help us to obtain very accurate information about how exactly a product is explored by its user; field tests clarify whether your product is used as expected in the intended environment; special questionnaires for measuring the hedonic and pragmatic qualitites of your product give us an idea of whether your product triggers the desired effects on its users.

An **analysis of the User Experience potential** of your existing product will show which product extensions offer maximal benefit for User Experience and which new products would optimally complement your product portfolio.
In the course of product improvement, we will perform a **standards & guidelines review** tailored to UX and to your particular product in your domain. You can decide whether you will ensure standard compliance yourself, based upon our detailed overview of where standards were violated during product development, or whether you want to leave this to us.

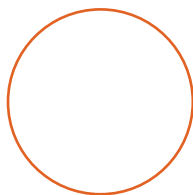# DO YOU WANT AN INTEGRATED USER EXPERIENCE STRATEGY?

Business Success
through **Strategy**

User
Centered
Design

Usability
Process
Introduction

Your objective is not only to improve individual products using UX methods, but you want your company to pursue an integrated approach to developing products that generate positive UX? We will support you in achieving this goal!

We will support you in **adapting your software development process**. Ultimately, you, too, will be able to say: "We generate **UX by Construction**!"
Regardless of whether you use an agile or waterfall approach to your development, we will analyze your existing development processes regarding their potential for generating positive User Experience during the use of your products. To do so, we will employ our frequently proven **user-centered design** approach.

Following that, we will help you to integrate a **usability process** into your company. Our goal in doing this is not to establish a new development process for your products, but rather we make sure that new principles, techniques, methods, or tools are integrated into your already established development process. This integration will support high usability of your products and create the prerequisites for positive User Experience. We will adapt your company architecture in terms of UX and will teach you the necessary skills for maintaining it. Now, nothing will be stop you anymore from focusing on positive User Experience!

On the basis of the newly introduced **UX process** we will perform a joint exemplary project with you. This will combine theory and practice in the best possible way and answer open questions directly in an everyday environment.

UX SUCCESS STORY
Customer Satisfaction through User Experience

Achieve Business through User Experience

+8 %
Customer Satisfaction

achieve User Goals

How positive User Experience can directly support the achievement of **business goals** can be seen in the following project report illustrating the example of a call center system. By making minor changes to the software system, we managed to not only improve the call agents' User Experience in a verifiable manner, but also to increase **customer satisfaction** (callers) by 8%.

The project was performed in cooperation with the operator of a call center of a large German telecommunications company. In the call center domain, a positive **User Experience is crucial for the achievement of business goals**. With the help of a knowledge management system, call agents deal with customer problems and engage with them. In doing so, the call agents establish relationships with the callers. The tiresome work in a call center can trigger various emotions in the call agents, such as irritation or frustration, but also joy and satisfaction. In our case, a handful of interaction concepts were used to change the knowledge management system in such a way that the call agents experienced more joy during their work, which was also reflected in a significant improvement in the satisfaction of the call center customers. This was proven empirically over a long period of time (www.fun-of-use.org).

In this project, we used our special workshop "**User Experience for Business Applications** - KREA-FUN", which enabled us to identify innovative features that triggered a positive emotional effect on the call agents on the one hand and contributed to the achievement of the business goals by increasing customer satisfaction on the other hand.

This process was also successfully applied in other projects, where **both business goals and user goals** were achieved. This demonstrates that UX can serve as a bridge between business goals and satisfied, motivated employees.

Op 3.3467 Hi 3.3987 Lo 3.3356

INDEX   Hide

nge   01/15/09 - 19:11:   Upper
iod   Daily   Lower

on 06/11/09   3.3931
rage on 04/15/09   4.0038
on Close(200)   3.7479
MAVG on Close(100) 3.1940
MAVG on Close(50)   3.5223
MAVG on Close(50)   3.4288

UX SUCCESS STORY
Work More Efficiently thanks to Usability

empirically sound **results**

Usability Test

How can different pieces of information be presented and combined in a suitable manner? This question arises, on the one hand, when it comes to developing systems with **different options for presenting** content, and, on the other hand, both during the course of migration and during development of an integrated overall solution consisting of various systems. Considering usability and the speed of cognitive processing, an important issue is, for instance, whether to **present information in one or two columns**. This is a challenge faced not only by web designers, but also by large IT service companies such as Finanz Informatik, the IT provider of the Sparkassen-Finanzgruppe, whose overall banking solution OSPlus is already being used Germany-wide by more than 185,000 employees.

Fraunhofer IESE has designed a **usability test** whose **empirical and statistically verifiable results** serve to clarify usability and User Experience issues – in this particular case regarding the optimal arrangement of information within OSPlus. In the study, observers were replaced by an objective **eye-tracking** process that tracks and records a user's eye movements across the monitor. This makes it possible to **accurately detect weaknesses** in the design and in the interaction.

50 test persons took part in the study. 40 participants formed a neutral group, which allowed obtaining results that are independent of both prior experience of a general kind and of specific systems used by Finanz Informatik. Subjective data as well as objective eye-tracker data were collected and evaluated. The analysis of the empirically gathered data showed an **unambiguous result**. This enabled us to issue a clear **recommendation for structuring** the information, which also became part of the company-internal styleguide.

"The eye tracking study proves that the styleguide of Finanz Informatik is future-oriented and allows the effective and efficient implementation of new functional and non-functional requirements. It supports the consistent evolution of the styleguide with scientific methods and increases the performance of more than 185,000 employees every day."
Dipl.-Ök. Matthias Knobel,
responsible for the OSPlus Portal Styleguide,
Finanz Informatik

Flexible Routine

We always adapt our procedure to your particular situation. Every company operates differently, values different aspects, and thus deserves flexible adaptation of our services. Our goal is always to provide you with a positive customer experience!

We will put together a suitable procedure for you by selecting from among the following services:

Analysis of the User Experience Potential
We identify which product extensions offer great benefit for User Experience and which products will optimally complement your product portfolio - regardless of whether you want to develop a new product or extend an existing one.

Expert Evaluation
We evaluate your product by ourselves or together with your developers and users. You get a detailed listing of your product's strengths and weaknesses in terms of UX that is based on expert assessment, as well as individual improvement suggestions.

Feature Selection Support
With our proven method AMUSE we support you in finding out which features your product should have in order to generate a specific User Experience.

Customized Creativity Workshop
With our individualized creativity workshop, we help you to generate product ideaas or product improvement ideas, regardless of whether you are developing stationary or mobile applications.

Model-based Interaction Design
With our model-based approach to interaction design, we make sure that you get a suitable interaction concept for your product, ranging from planning via characterization of the current product status to iterative product improvement. The uniform communication basis ensures seamless cooperation between all project stakeholders.

Natural User Interface
By employing special patterns for natural interaction developed by us, we help you to ensure that your product will trigger increased UX among users and that intuitive usage will be possible.

Prototyping
We know when and how which kind of prototyping will lead you to maximum success and we support you in selecting and performing suitable prototyping – from paper prototypes to functional prototypes.

Standards & Guidelines Review
We know the most important standards and guidelines in the area of UX. We support you in offering standard-compliant products and in preparing them for the respective certification. We provide you with a detailed overview of places where standards were violated during product development.

Usability Process Introduction
We help you to integrate a usability process into your company and into your software development process. We adapt your enterprise architecture in terms of UX and teach you the knowledge you need to maintain it.

User-centered Design
Regardless of whether you use an agile or a waterfall approach to development, we analyze your existing development processes regarding their potential of generating positive User Experience when your products are used. To do so, we use the well proven user-centered design approach.

UX for Business Applications
With our special workshop "User Experience for Business Applications - KREA-FUN", we support your company in identifying features that have an emotional effect on the product user, such as motivation, creativity, or long-term satisfaction. This will enable your company to develop products that generate enthusiasm and that people will love to use.

UX Testing
We can perform user tests and user studies of any size and with all available methods. We do, for example, elicit, analyze, and evaluate all important data with the help of eye trackers, field tests, or special questionnaires for measuring the hedonic and pragmatic quality of your product, and will provide you with a structured overview and an action plan for improving your product.

Visual Design Pattern-based Approach
We support you in selecting suitable design patterns as well as in designing and developing your product's visual design. This will significantly increase the User Experience of your visual design - it will be attractive, user-friendly, and sexy!

THE FRAUNHOFER INSTITUTE FOR EXPERIMENTAL SOFTWARE ENGINEERING IESE

Fraunhofer Institute for Experimental Software Engineering IESE
Fraunhofer-Platz 1
67663 Kaiserslautern
Germany

Leadership

Prof. Dr. Dr. h. c.
Dieter Rombach
Executive Director

Prof. Dr.-Ing.
Peter Liggesmeyer
Scientific Director

Software is a part of our lives. Embedded into everyday equipment, into living and working environments or modern means of transportation, countless processors and controllers make our lives simpler, safer, and more pleasant. We help organizations to develop software systems that are reliable in every aspect, and provide empirical proof of the necessary processes, methods, and techniques, emphasizing engineering-style principles such as measurability and transparency.

Fraunhofer IESE is one of the worldwide leading research institutes in the area of software and systems development. A major portion of the products offered by our collaboration partners is defined by software. These products range from automotive and transportation systems via automation and plant engineering, information systems, health care and medical systems to software systems for the public sector. Our solutions allow flexible scaling. This makes us a competent technology partner for organizations of any size – from small companies to major corporations.

Under the leadership of Prof. Dr. Dieter Rombach and Prof. Dr.-Ing. Peter Liggesmeyer, the past decade has seen us making major contributions to strengthening the emerging IT location Kaiserslautern. In the Fraunhofer Information and Communication Technology Group, we are cooperating with other Fraunhofer institutes on developing trend-setting key technologies for the future.

Fraunhofer IESE is one of 60 institutes of the Fraunhofer-Gesellschaft. Together we have a major impact on shaping applied research in Europe and contribute to Germany's competitivenessin international markets.

CUSTOMERS OF FRAUNHOFER IESE

Adam Opel GmbH
Airbus Deutschland
Alcatel SEL AG
Audi Electronics
BMW Group Forschung und
Technik GmbH
BASF SE
BearingPoint GmbH
B.Braun
CAS Software AG
Continental Teves
Deutsche Bahn AG
Deutsche Lufthansa AG
EADS Deutschland GmbH
Fiducia IT AG
Finanzinformatik
Ford Forschungszentrum
Fujitsu
HegerFerrit GmbH

Hella KGaA Hueck & Co
Hyperware
IDS Scheer
IHK Darmstadt Service GmbH
Infinion Technologies
INSPIRE AG
John Deere
KEIPER GmbH &Co. KG
KOBIL Systems GmbH
KBS AG
Lufthansa Systems
Microsoft Deutschland
Mitsubishi Research Institute
Motorola
Nokia Networks
OrgaTech Unternehmensberatung
Philips Electronics
Porsche engineering Group
Porsche Informatik

Ricoh
Robert-Bosch GmbH
Roche Diagnostics
Rolls-Royce
SAP AG
Siemens AG
Software AG
Sopera GmbH
Süddeutsche Klassenlotterie
Terex Demag GmbH
Testo AG
T-Mobile International
TÜV-SÜD
Tekla Oy
TXT e-solutions
Wikon GmbH
Volkswagen AG
XING AG

INFORMATION SYSTEMS DEVELOPMENT (ISD)

Department Head
Dr. Marcus Trapp
+49 631 6800-2186
marcus.trapp@iese.fraunhofer.de

The division Information Systems Development develops innovative methods and solutions for the development of complex information systems and interactive systems. In order to offer an immediate added value, we apply our methods directly during our customers' product development and/or transfer our methods and solutions to our customers. These include organizations that use software solutions for their business processes, e.g., from the banking and insurance sector or from the domain of medical IT systems, organizations from such areas as public administration and defense, as well as software developing companies (both large corporations and SMEs).

We address challenges arising during development early and continuously with the help of constructive, innovative development approaches and methods, from requirements elicitation via architecture to design. Our strength lies in examining the non-functional (quality) requirements, which are hard to capture and often affect the entire system. Clearly defined software development artifacts with clearly defined levels of abstraction allow focusing on what is really important and interlink with both traditional and agile process models.n.

Requirements Engineering
We support you with our renowned requirements approach Satisfy, which is tailored to your needs and goals and ensures traceability, integrated usability, and minimal documentation of the necessary requirements decisions.

User Experience for Business Applications
With our proven methods we support you in developing systems that not only support their users, but also allow having a positive User Experience. This has been proven to contribute to the achievement of your business goals.

Architecture-Centric Engineering
With our successful Fraunhofer ACES approach, we support you in defining and evaluating architectures for complex information systems. The iterative, scenario-based process allows you to master the complexity of architecture definition and migration and to make reliable predictions regarding critical features of the system early on.

Variation Management
We support you in establishing, developing, and managing software product lines as well as in analyzing and improving your already existing configuration infrastructure for variation-rich information systems. Our services build upon our successful product line engineering approach PuLSE™ and extends it to support several other variation management approaches.

Business goes Mobile
With our product GoMobile we help you to exactly identify those areas where a mobile app makes sense as support for your business processes. We can also develop a prototype that can be executed on various mobile devices to help you make your decisions.

Dr. Marcus Trapp
+49 631 6800-2186
marcus.trapp@iese.fraunhofer.de

Fraunhofer Institute for
Experimental Software Engineering IESE
Fraunhofer-Platz 1
67663 Kaiserslautern
Germany

ux.iese.fraunhofer.de