

# Human Computer Interaction CS449 – CS549

Week 8

## Usability Testing/Evaluation Methods

KÜRŞAT ÇAĞILTAY

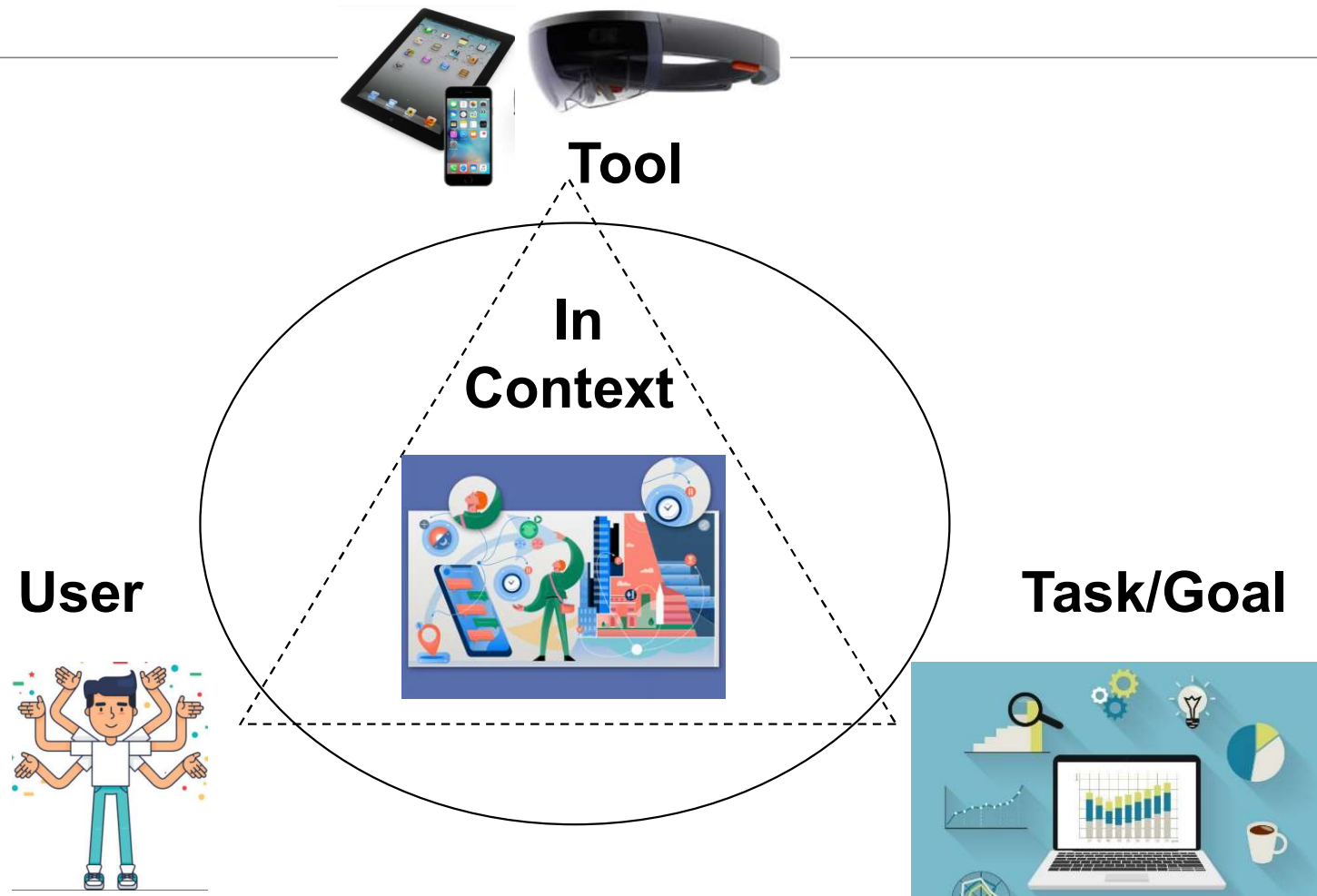
# Today

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- Introduction to Usability Testing/Evaluation Methods
- Approaches and Types
- Heuristics Based Evaluation



# Four Principle components of an HCI System




# Usability : Operational definition

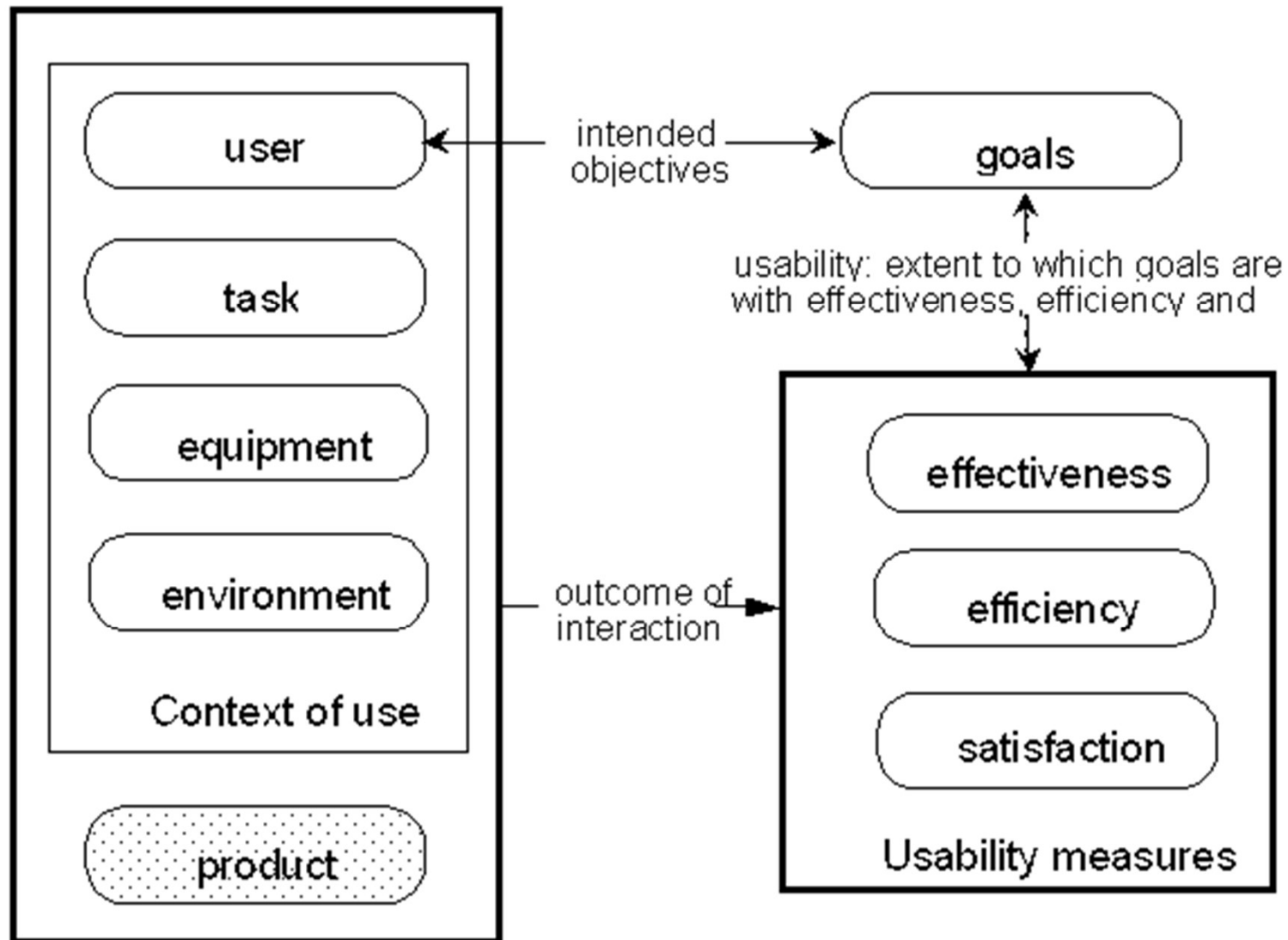
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- Usability (of an application) refers to the effectiveness, efficiency, and satisfaction with which specified users can achieve specified goals in particular environments

ISO Ergonomics requirements, ISO 9241 part 11: Guidance on usability specification and measures.

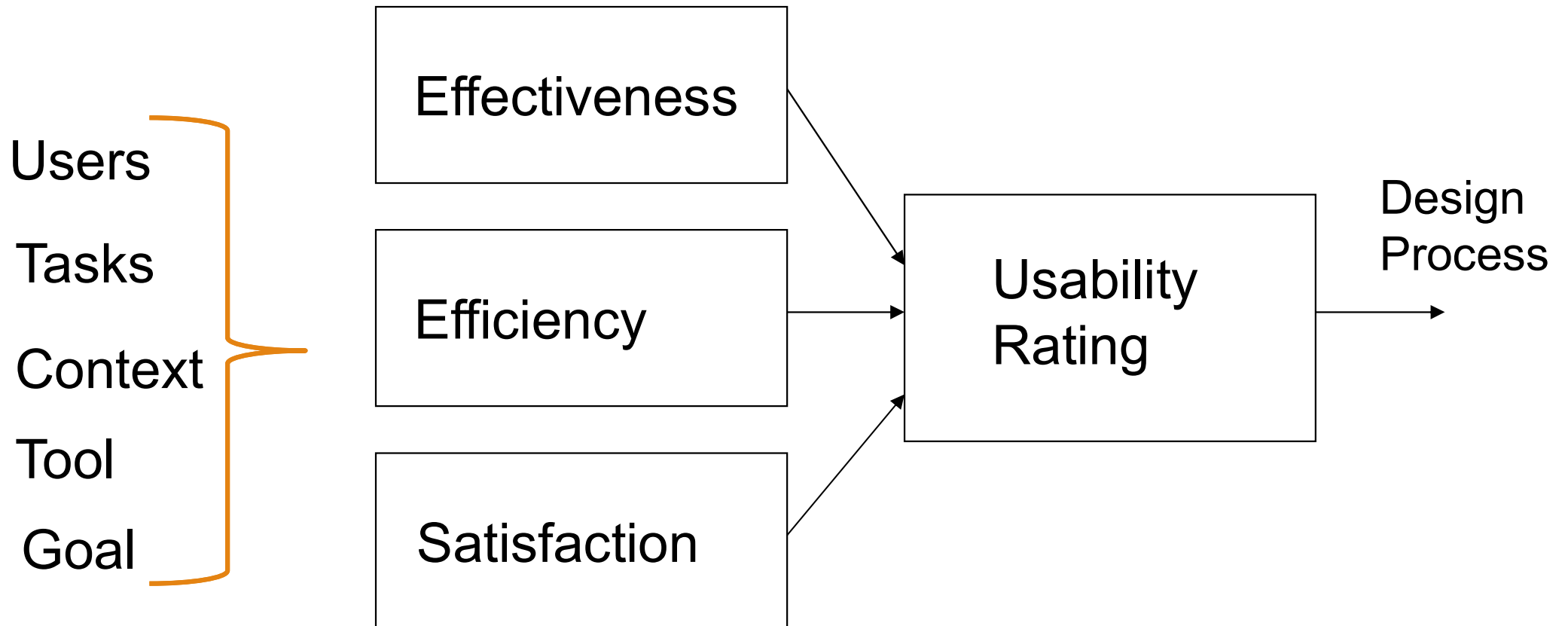


# Usability Framework (ISO 9241-11)



# Determinants of usability rating

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# Setting usability criteria

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- “Product X is usable to the extent that 70% of users, with no additional training, can perform all tasks with 95% accuracy, 25% faster than existing application use, and report at least equivalent satisfaction”

Effectiveness

Efficiency

Satisfaction



# Instead of....

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- “Product X is usable”  
(meaningless statement for HCI)
- “This new application is more usable than the old application”  
(begs the question...”More usable in what sense? And for whom? And where?”

← BACK TO LATEST ARTICLES

# UX Design Review: What Garanti BBVA Said About The UXDA



[Alex](#) & [Liene](#) & [Linda](#) • 2 min read

CATEGORY: [Experience](#)

TAGS: [UX DESIGN AGENCY](#) [USER CENTERED DESIGN](#)

<https://www.theuxda.com/blog/ux-design-review-garanti-bbva-about-uxda>

It was our pleasure to help *Garanti BBVA* to design the user experience of their innovative *eTrader* trading app. Thanks to the independent review platform *Clutch*, you have the opportunity to find out how this cooperation went on and read the interview with our client. The review collected by *Clutch* is given by Tevfik Kardelen, the Unit Manager of *Garanti BBVA Securities* responsible of Digital Channels and Marketing.

## About the project

- Client: Garanti BBVA Securities
- Case: UX Design for an eTrader trading platform
- Time: 10 months, still ongoing
- Budget: €200,000+

## Please Describe the Project Scope

The team first implemented a stakeholder meeting. Then they collected information from us and did an online search about us. They conducted the competitor analysis, persona study, red route analysis, user journey map, product value etc. We are working with the Senior UX Architect and 2 UX architects.

- competitor analysis,
- persona study,
- red route analysis,
- user journey map,
- product value

Tevfik Kardelen, the Unit Manager of *Garanti BBVA Securities* responsible of Digital Channels and Marketing.

<https://clutch.co/profile/uxda#reviews>



Welcome back, Santa!

## My Calendar

## Today

14:30 Meeting with Maria Wilson Room 2  
17:30 Department meeting Room 56

## Tomorrow

09:00 GDPR Training course Room 2  
13:00 Call to Bobby Coleman

## 11 October

11:45 Meeting with Green Grou... Room 4  
13:15 Meeting with Robert Dennis Room 4

## 12 October

12:15 Training course on Bankin... Room 5  
16:05 Meeting with James Stew... Room 1

[+ ADD NEW TASK](#)

## Alert from call center

Please, call client Carol Benson.  
Phone: +44 2345667

[✓ DONE](#)

## Client Activities

All:50

Processing 5

In review 10

Informed 5

Not Informed 5

...

| CLIENT                            | ACTIVITY                                | STATUS          |
|-----------------------------------|---|-----------------|
| Mathias Perez<br>02000241         | Incoming transfer of 2,000,000.00 USD   | Processing      |
| Mary Roseberg<br>02000253         | Requested new credit card on 09.10.2018 | Processing      |
| Green Corporation LTD<br>02000266 | Requested a loan on 01.10.2018          | In review       |
| Xavier Xantares<br>02000252       | Passport expires on 18.10.2018          | Informed        |
| Ariana Barros<br>02003257         | Payment card expires on 23.10.2018      | New card issued |
| Bernd Pfefferberg<br>02005251     | Expires Power Of Attorney on 15.10.2018 | Not Informed    |
| Mahnaz Farzin<br>02001235         | Passport expires on 11.10.2018          | Not Informed    |
| Sergio Pliego<br>02001578         | Payment card expires on 12.10.2018      | Not Informed    |
| Jenna Bruce<br>02001250           | Expires Power Of Attorney on 15.10.2018 | Not Informed    |

[LOAD +44 MORE](#)[✓ Client Verification →](#)

## My Clients

Mathias Perez  
02000241

Jonas Eisenhardt  
02022250

Ulrich Schnauss  
02003250

Xavier Xantares  
02000252

Jeff Cliff  
02011250

Arty Mcfly  
02000250

Mary Rosenberg  
02000253

Shea Defoe  
02000250

David Duchovny  
02000250

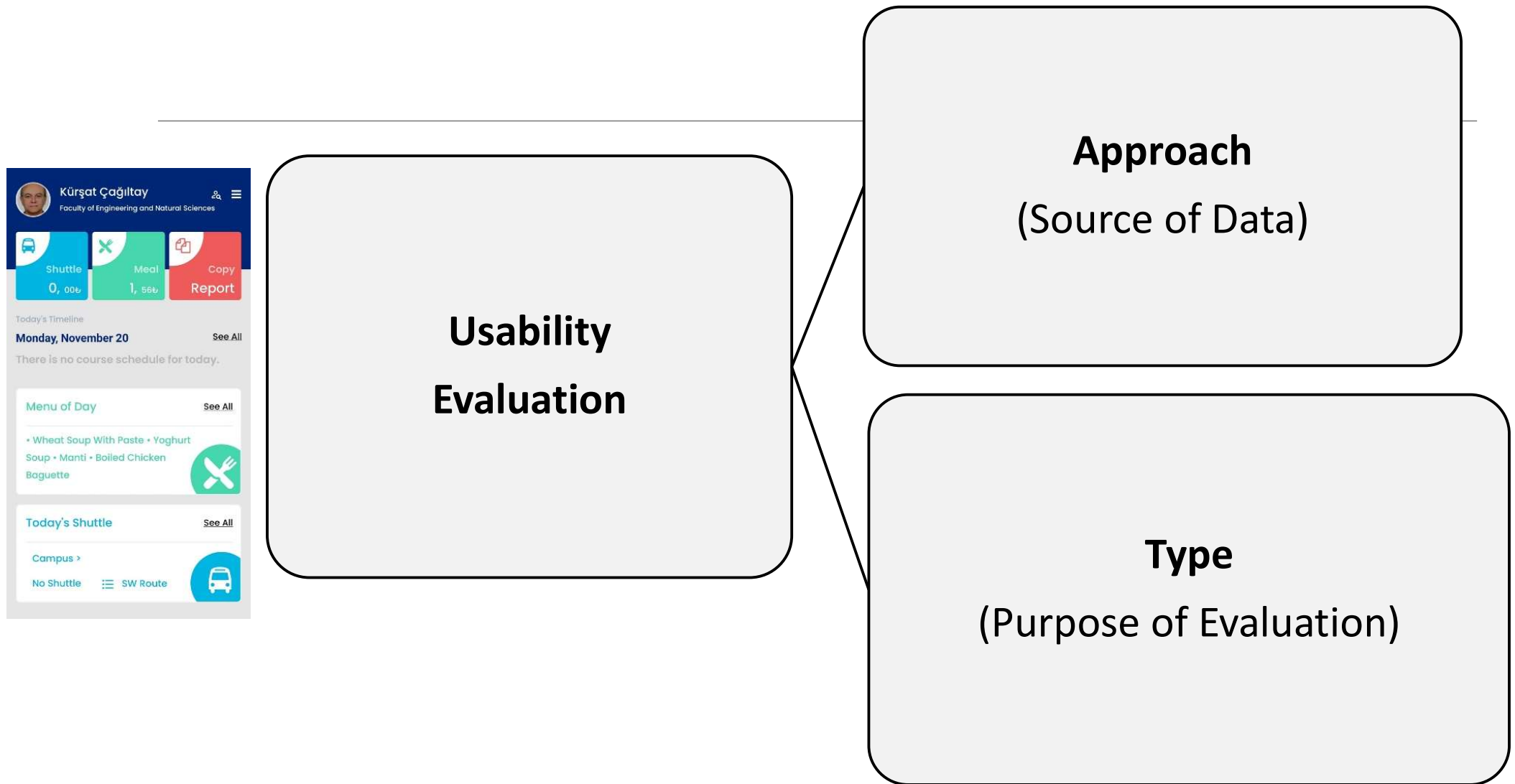
[+ ADD NEW CLIENT](#)

# Framework for Usability Evaluation

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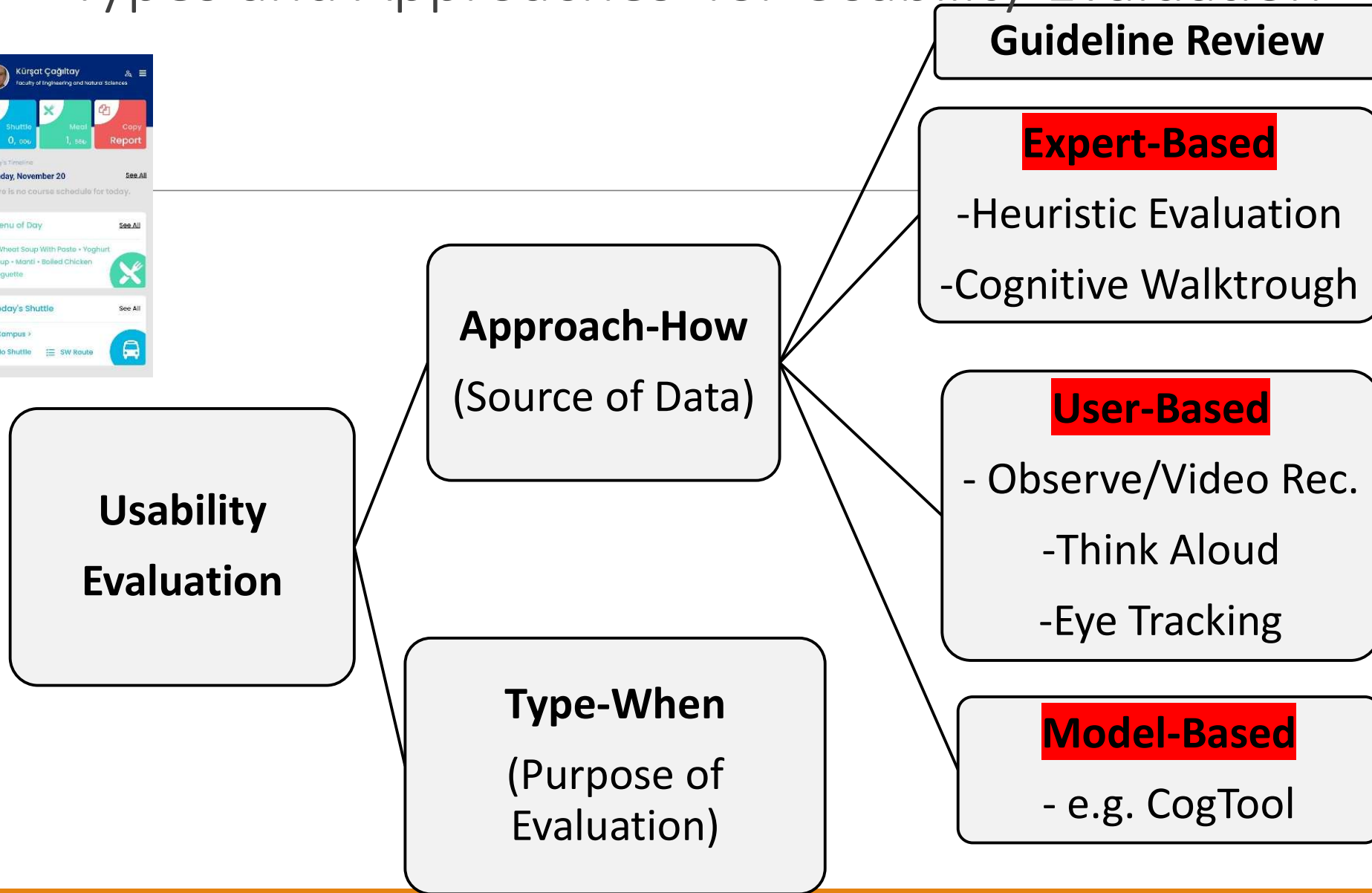
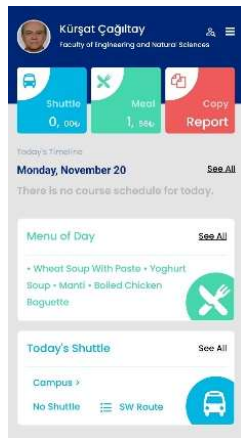
- Approach and Type
  - Approach refers to source of data
    - User, Expert, or Model
  - Type refers to purpose of evaluation
    - Diagnostic (Formative) or Metrication (Summative)
- Any evaluation method is a combination of *approach* and *type*

# Types and Approaches for Usability Evaluation



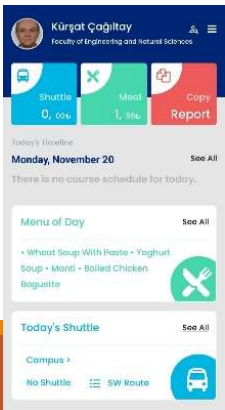
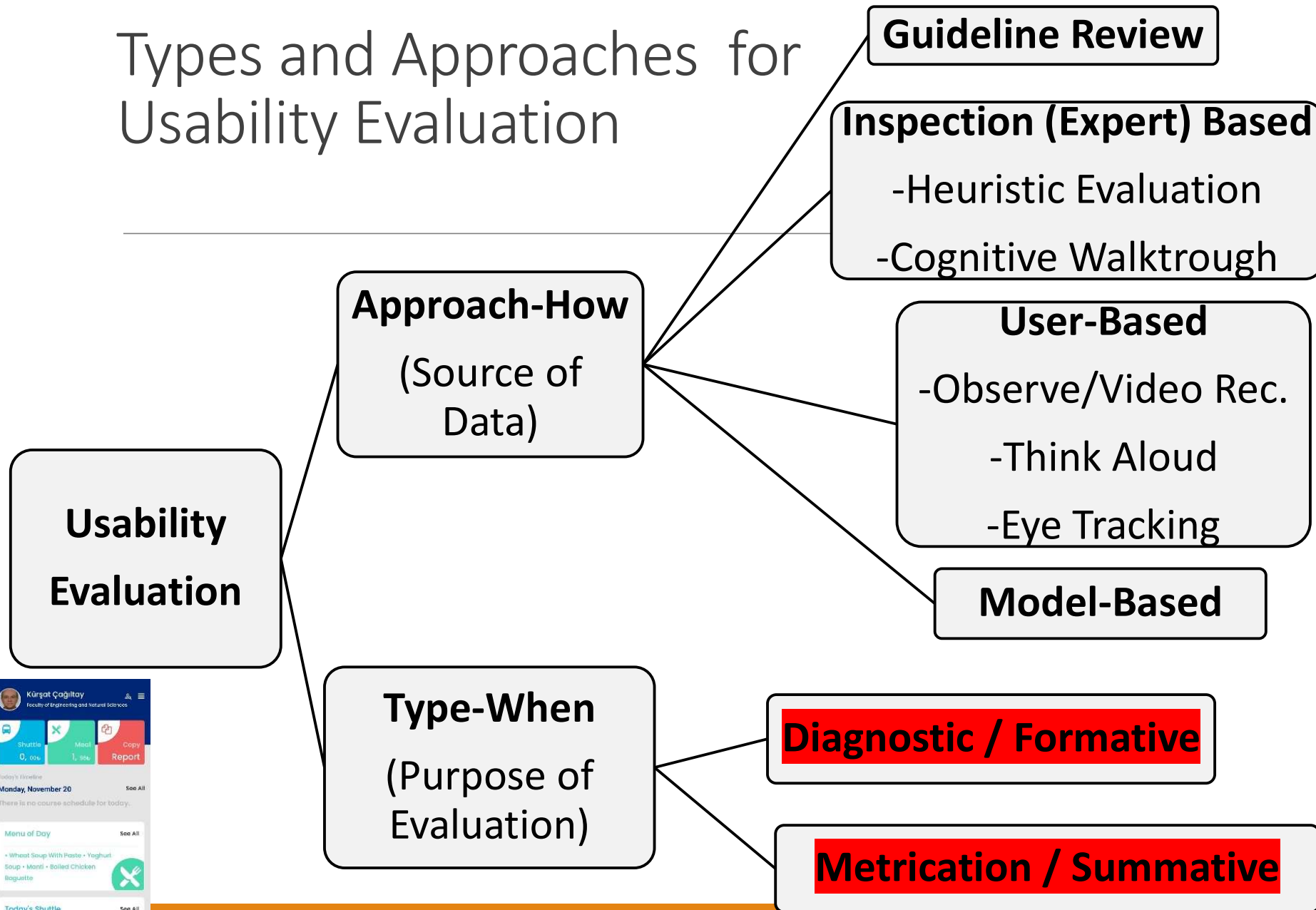


# Types and Approaches for Usability Evaluation





# Types and Approaches for Usability Evaluation



| 23/03/2018   |             | Poliklinik : 527 |                                | M.ÇOCUK POLİKLİNİĞİ 1 |        | Muayeneler : 1        |        | Olmayan : 8               |                    | Hepsi : 9   |  | e-nabız     |  |
|--|-------------|------------------|--------------------------------|-----------------------|--------|-----------------------|--------|---------------------------|--------------------|-------------|--|-------------|--|
| Hastalar   |             | Anamnez          |                                | Tetkikleri            |        | İlaç Kullanım         |        | Malzeme Kullanım          |                    | Laboratuvar |  | Görüntüleme |  |
| Hizmet Dr. : 1252  |             | Uzm.Dr. ÖZLEM    |                                | Yapan Birim : 527     |        | M.ÇOCUK POLİKLİNİĞİ 1 |        | Yardımcı İşlemler         |                    | --HEPSİ--   |  | Tetkik Ara  |  |
| İşlem Tarihi   | Ana-Alt Kod | Resmi Kod        | Tetkik Adı                     | Adeti                 | K.O. % | Katı Tutarı           | Tutarı | Yapan Birim               | İsteyen Doktor     |             |  |             |  |
| 1 23/03/2018 09:15   | 2 102       | 000000           | HASTA MÜRACAAT ETTİ            | 1                     |        | .00                   | 0,00   | 527 M.ÇOCUK POLİKLİNİĞİ 1 | 1252 Uzm.Dr. ÖZLEM |             |  |             |  |
| 2 23/03/2018 09:22   | 2 1         | 520030           | NORMAL POLİKLİNİK MUAYENE      | 1                     |        | .00                   | 15,50  | 527 M.ÇOCUK POLİKLİNİĞİ 1 | 1252 Uzm.Dr. ÖZLEM |             |  |             |  |
| 3 23/03/2018 09:23   | 7 168       | 901620           | HEMOGRAM                       | 1                     |        | .00                   | 3,00   | 305 LABORATUVAR           | 1252 Uzm.Dr. ÖZLEM |             |  |             |  |
| 4 23/03/2018 09:24   | 7 107       | 901040           | Demir Bağlama Kapasitesi       | 1                     |        | .00                   | 1,10   | 305 LABORATUVAR           | 1252 Uzm.Dr. ÖZLEM |             |  |             |  |
| 5 23/03/2018 09:24   | 7 9637      | 901040.1         | Total Demir Bağlama Kapasitesi | 1                     |        | .00                   | 1,10   | 305 LABORATUVAR           | 1252 Uzm.Dr. ÖZLEM |             |  |             |  |
| 6 23/03/2018 09:24   | 7 105       | 901020           | Demir                          | 1                     |        | .00                   | 1,10   | 305 LABORATUVAR           | 1252 Uzm.Dr. ÖZLEM |             |  |             |  |
| 7 23/03/2018 09:24   | 7 127       | 901220           | Ferritin                       | 1                     |        | .00                   | 5,00   | 305 LABORATUVAR           | 1252 Uzm.Dr. ÖZLEM |             |  |             |  |
| 8 23/03/2018 09:24   | 7 547       | 905350           | RETİKÜLOSİT SAYIMI             | 1                     |        | .00                   | 3,40   | 305 LABORATUVAR           | 1252 Uzm.Dr. ÖZLEM |             |  |             |  |
| İsteyen Dr. : Uzm.Dr. ÖZLEM<br>Yapan Asistan :<br>Tetkik : RETİKÜLOSİT SAYIMI<br>Yapım Tarihi :<br>Açıklama : RETİKÜLOSİT SAYIMI |             |                  |                                |                       |        |                       |        |                           |                    |             |  |             |  |
| Birim : LABORATUVAR<br>Toplam : 8 30,20<br>Ek10C Toplamı : 0,00<br>Fark : 30,20<br>Oluşturan : 1252                              |             |                  |                                |                       |        |                       |        |                           |                    |             |  |             |  |
| İlaççı/Brans Nöb. yapıldı mı? Hayır<br>Acil Durum veya Komplikasyon mu? Hayır  |             |                  |                                |                       |        |                       |        |                           |                    |             |  |             |  |

- Tetkik Ara
- Tıbbi Genetik
- PREOP
- Hematoloji
- Hormon
- Biyokimya
- Yükleme Testleri
- Kültür
- GENEL PAKETLER
- Fizyoterapi
- Patoloji İstem
- Acil Uygulamalar
- Kan Gazı
- İdrar & Gaita
- Elisa
- Makro Elisa
- Moleküler Enfeksiyon (BOS)
- Torch
- Moleküler Enfeksiyon (KAN)
- Moleküler-PCR
- Moleküler Enfeksiyon (KAN DI)
- Mikobakteri Kültür
- Mikoloji Kültür
- Kan Merkezi
- PET (Diyaliz)
- Seroloji
- Koagülasyon
- Bos & Mayı
- Profillerim

# Evaluation Approach

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- The approach defines the *source* of the data  
i.e., where does the evaluator gain the data about usability?
  - from real users? (**User-based**)
  - from usability experts or self evaluation? (**Expert-based**)
  - from the application of a formal theory or model? (**Model-based-**  
**e.g. CogTool**)

# 1-User-based approach

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- Involves some number of users
- Who complete one or more tasks
- In an appropriate environment

In formal usability tests, the user, task, and environmental characteristics (*contextual variables*) must match those in which the product will be used.

# Low Fidelity Interface Testing



# High Fidelity Interface Testing

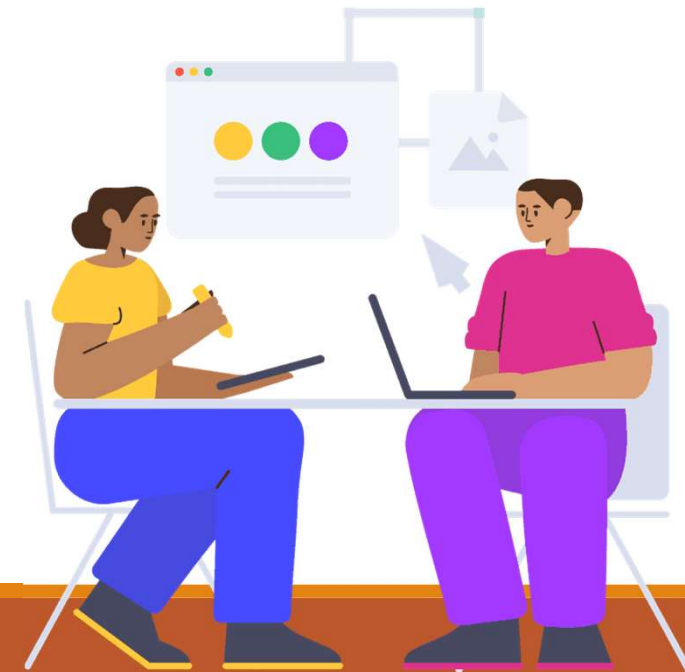




# 2-Inspection/Expert-based Approaches

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- Nielsen's 10 Heuristics
- Involves 1 or 2 evaluator (usability expert) using the system
- Expert tries to see the interface from the point of view of the user
- Use can be structured or casual
- Expert notes potential problems
- May employ pre-determined criteria



# 10 Usability Heuristics (Nielsen's)

<https://www.nngroup.com/articles/ten-usability-heuristics/>

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1. Visibility of system status
2. Match between system and the real world. ...
3. User control and freedom. ...
4. Consistency and standards. ...
5. Error prevention. ...
6. Recognition rather than recall. ...
7. Flexibility and efficiency of use. ...
8. Aesthetic and minimalist design.
9. Help users recognize, diagnose, and recover from errors
10. Help and documentation



# Typical Inspection/Expert -based Scenario

- Take guidelines and check interface against them
- Make min 2 passes through,
  - First for a screen-by-screen check of principles, to get a “feel” for the system, that is, both the general scope of the system and the flow of interaction.
  - Second for inter-screen flow, focus on specific elements of the user interface
- For best results involve multiple evaluators.



[NN/g](#) [useit.com](#) [jnd.org](#) [AskTog](#)  
Nielsen Norman Group

Strategies to enhance the user experience

[Home](#) [People](#) [Services](#) [Publications](#) [Events](#) [About NN/g](#)

[NN/g Home](#) > [Services](#) > Design Reviews

## Design Reviews (Usability Inspections)

Price:

**\$38,000** for a review of a website or intranet.

**\$73,000** for a competitive review of your website + 3 competitors.

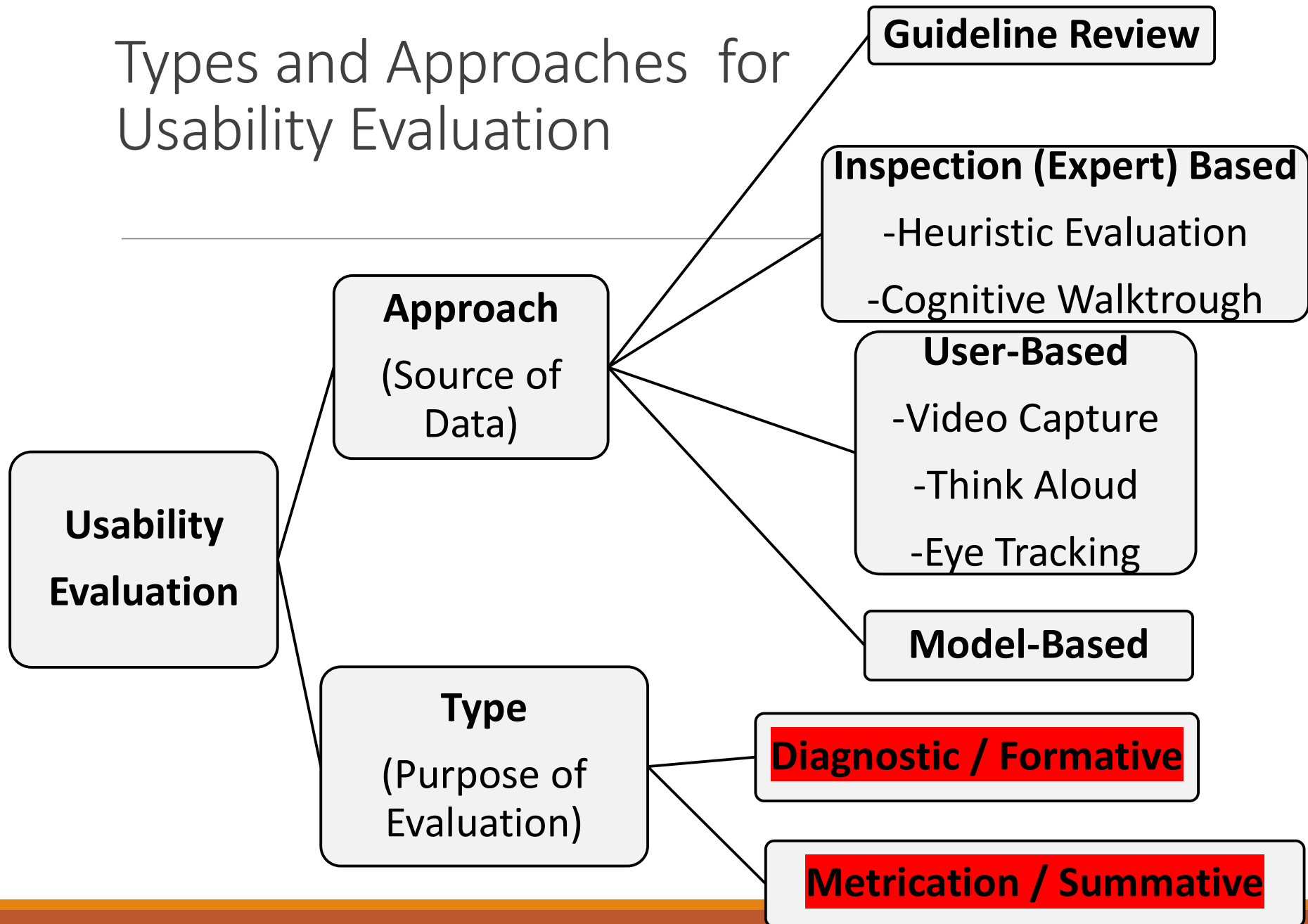
### Method

Nielsen Norman Group provides an **independent expert** assessment of your user experience. Getting an independent review is important, because research shows that different people tend to identify different problems. The outside view is not just more objective; it's free of the

### ► How to Order

Please contact Nielsen Norman Group at [info@nngroup.com](mailto:info@nngroup.com) if you would like more information or are interested in this service.

# Types and Approaches for Usability Evaluation



# Formative - Summative



Poliklinik Defteri - Vers: 1.0.1 - Kullanıcı : ÖZLEM Stok : M.ÇOCUK POLIKLINİĞİ 1

23/03/2018 Poliklinik: 527 M.ÇOCUK POLIKLINİĞİ 1

Hastalar Anamnez Tetkikleri İlaç Kullanım Malzeme Kullanım Laboratuvar Görüntüleme Patoloji Konsültasyonlar Acil Gözlem

Hizmet Dr.: 1252 Uzm.Dr. ÖZLEM Yapan Birim: 527 M.ÇOCUK POLIKLINİĞİ 1

| İşlem Tarihi       | Ana-Alt Kod | Resmi Kod     | Tetkik Adı                     | Adeti | K.O. % | Katki Tutarı | Tutarı | Yapan Birim          | İsteyen Doktor     |
|--------------------|-------------|---------------|--------------------------------|-------|--------|--------------|--------|----------------------|--------------------|
| 1 23/03/2018 09:15 | 2           | 102 000000    | HASTA MÜRACAAT ETTİ            | 1     |        | .00          | 0.00   | 527 M.ÇOCUK POLIKLIN | 1252 Uzm.Dr. ÖZLEM |
| 2 23/03/2018 09:22 | 2           | 1 520030      | NORMAL POLIKLINİK MUAYE        | 1     |        | .00          | 15.50  | 527 M.ÇOCUK POLIKLIN | 1252 Uzm.Dr. ÖZLEM |
| 3 23/03/2018 09:23 | 7           | 168 901620    | HEMOGRAM                       | 1     |        | .00          | 3.00   | 305 LABORATUVAR      | 1252 Uzm.Dr. ÖZLEM |
| 4 23/03/2018 09:24 | 7           | 107 901040    | Demir Bağlama Kapasitesi       | 1     |        | .00          | 1.10   | 305 LABORATUVAR      | 1252 Uzm.Dr. ÖZLEM |
| 5 23/03/2018 09:24 | 7           | 9637 901040.1 | Total Demir Bağlama Kapasitesi | 1     |        | .00          | 1.10   | 305 LABORATUVAR      | 1252 Uzm.Dr. ÖZLEM |
| 6 23/03/2018 09:24 | 7           | 105 901020    | Demir                          | 1     |        | .00          | 1.10   | 305 LABORATUVAR      | 1252 Uzm.Dr. ÖZLEM |
| 7 23/03/2018 09:24 | 7           | 127 901220    | Femin                          | 1     |        | .00          | 5.00   | 305 LABORATUVAR      | 1252 Uzm.Dr. ÖZLEM |
| 8 23/03/2018 09:24 | 7           | 547 303320    | RETİKÜLOSİT SAYIMI             | 1     |        | .00          | 3.40   | 305 LABORATUVAR      | 1252 Uzm.Dr. ÖZLEM |

İsteyen Dr.: Uzm.Dr. ÖZLEM Birim: LABORATUVAR İcbari/Brans Nob. yapıldı mı? Hayır

Yapan Asistan: Tetkik: RETİKÜLOSİT SAYIMI Toplam: 8 30.20 Acil Durum veya

Yapan Tarihi: Ek10C Toplamı: 0.00 Kompleksiyon mu? Hayır

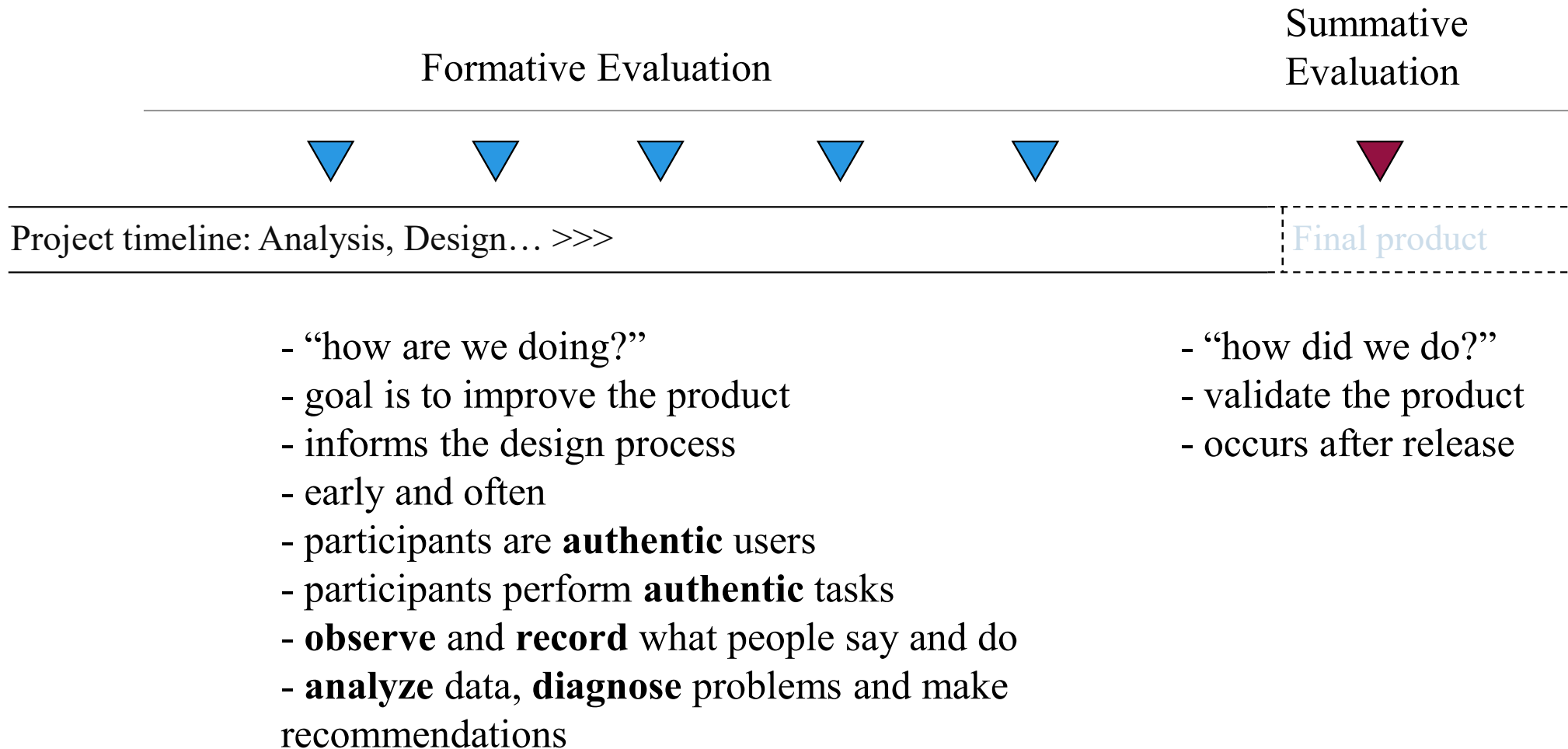
Açıklama: RETİKÜLOSİT SAYIMI G. Puan: Makbuz: Fark: 30.20

Okutulan: 1252

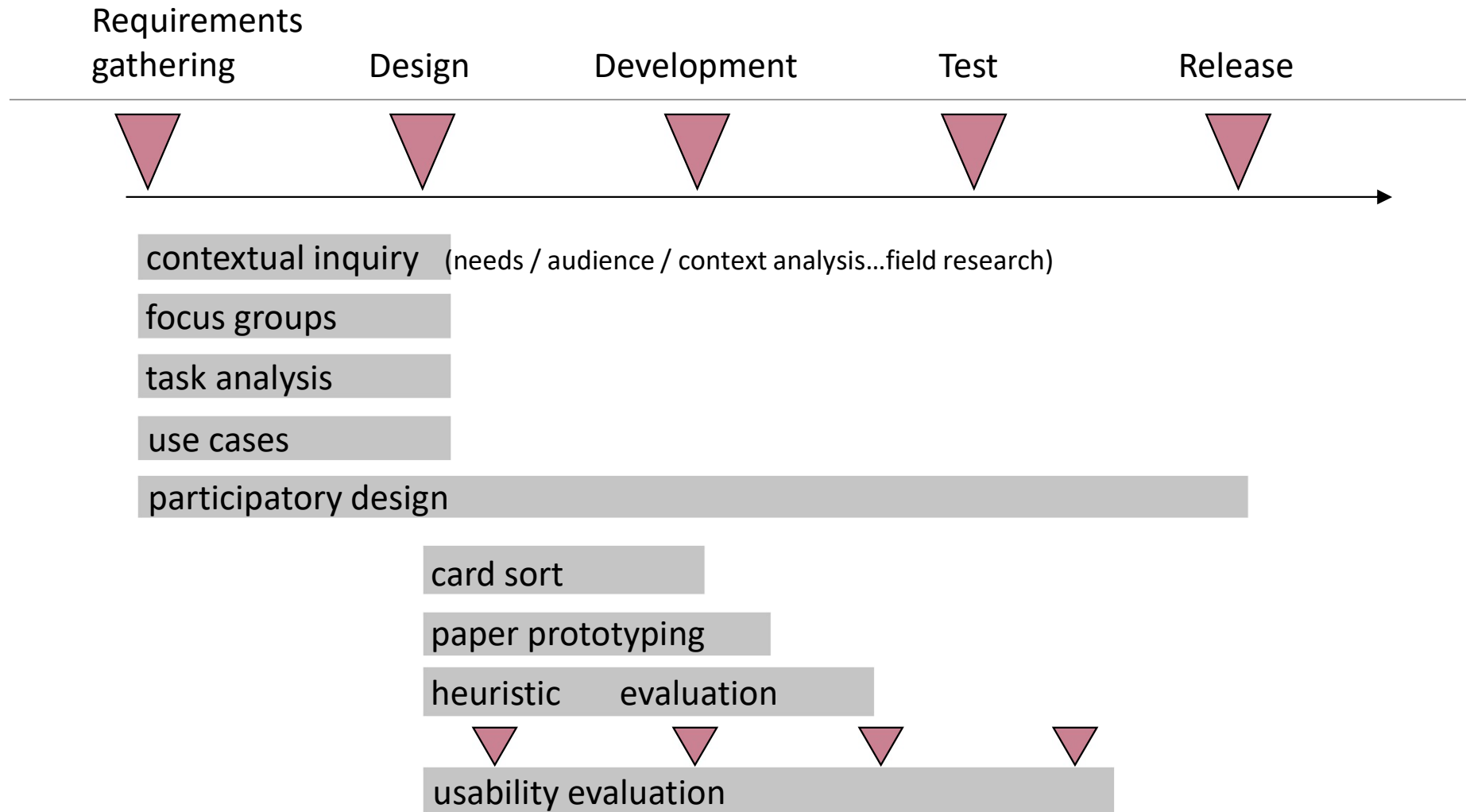
Protokol No: 545610056 Ad: ZEYNEP Normal-2IR14XB 18 YAŞ ALTI

Tetkik Ara: Tıbbi Genetik, PREOP, Hematoloji, Hormon, Biyokimya, Yükleme Testleri, Kültür, GENEL PAKETLER, Fizyoterapi, Patoloji İstem, Acil Uygulamalar, Kan Gazı, İdrar & Gaita, Elisa, Makro Elisa, Moleküler Enfeksiyon (BOS), Torch, Moleküler Enfeksiyon (KAN), Moleküler PCR, Moleküler Enfeksiyon (KAN DI), Mikobakteri Kültür, Kan Merkezi, PET (Diyaliz), Seroloji, Koagülasyon, Bos & Mayı, Profilirim

# Software Project Evaluation Type



# Evaluation Approach



# Promoting a “usability culture”

## *Old Way*

Usability testing occurs at the end of cycle —*validates* design

Large scale and attempts to cover entire application

Consultants learn from and own the test

Results from test are numerous and don't always get implemented because of looming deadlines

## *New Way*



More frequent testing throughout the development—*drives* design



Smaller scale testing throughout its development



Project Teams learn from and own the process



Realistic, immediate fixes

# Plan a usability evaluation

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- Describe:
  - What data will you collect?
  - What will these data tell you?
  - What data collection methods will you employ?
  - How long will it take to produce the test results?
  - What form of feedback will you provide?
- List advantages/disadvantages of this plan





# Thought activity

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- VESTEL is designing an interface for their new wearable technology for Turkish market which aims to be the 'most usable' on the market - how would you test this claim?
- Sabancı University wishes to test its current Web site for usability. You are charged with designing the test.
- Municipality of İstanbul is producing an information booth for use in visitors centers offering info and advice to visitors. They ask for a usability test. (Zero learning time)

# How are criteria derived?

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- User analysis
- Task analysis
- Situation analysis

UXDA  
UX DIGITAL ADVANTAGE

## *Please Describe the Project Scope*

The team first implemented a stakeholder meeting. Then they collected information from us and did an online search about us. They conducted the competitor analysis, persona study, red route analysis, user journey map, product value etc. We are working with the Senior UX Architect and 2 UX architects.

# User analysis

- Determine key variables:
  - work and task skills
  - computing experience
  - training
  - support
  - working practices

Who?

The screenshot displays a medical software interface with a patient's lab results and a list of tests. The patient's name is M. ÇOCUK POLİKLİNİĞİ 1. The interface includes a table of lab results and a list of tests on the right side.

| İşlem Tarihi     | Ana-Alt Kod | Resmi Kod | Tetkik Adı         | Adeti                          | K.O. % | Katı Tutan | Tutan | Yapan Birim | İsteyen Doktor        |                    |
|------------------|-------------|-----------|--------------------|--------------------------------|--------|------------|-------|-------------|-----------------------|--------------------|
| 23/03/2018 09:15 | 2           | 102       | 000000             | HASTA MURACAAT ETTİ            | 1      | ,00        | 0,00  | 527         | M.ÇOCUK POLİKLİNİĞİ 1 | 1252 Uzm.Dr. ÖZLEM |
| 23/03/2018 09:22 | 2           | 1         | 520030             | NORMAL POLİKLİNİK MUAYE        | 1      | ,00        | 15,50 | 527         | M.ÇOCUK POLİKLİNİĞİ 1 | 1252 Uzm.Dr. ÖZLEM |
| 23/03/2018 09:23 | 7           | 168       | 901620             | HEMOGRAM                       | 1      | ,00        | 3,00  | 305         | LABORATUVAR           | 1252 Uzm.Dr. ÖZLEM |
| 23/03/2018 09:24 | 7           | 107       | 901040             | Demir Bağlama Kapasitesi       | 1      | ,00        | 1,10  | 305         | LABORATUVAR           | 1252 Uzm.Dr. ÖZLEM |
| 23/03/2018 09:24 | 7           | 9637      | 901040.1           | Total Demir Bağlama Kapasitesi | 1      | ,00        | 1,10  | 305         | LABORATUVAR           | 1252 Uzm.Dr. ÖZLEM |
| 23/03/2018 09:24 | 7           | 105       | 901020             | Demir                          | 1      | ,00        | 1,10  | 305         | LABORATUVAR           | 1252 Uzm.Dr. ÖZLEM |
| 23/03/2018 09:24 | 7           | 127       | 901220             | Ferritin                       | 1      | ,00        | 5,00  | 305         | LABORATUVAR           | 1252 Uzm.Dr. ÖZLEM |
| 23/03/2018 09:24 | 7           | 547       | RETİKÜLOSİT SAYIMI | 1                              | ,00    | 3,40       | 305   | LABORATUVAR | 1252 Uzm.Dr. ÖZLEM    |                    |

İsteyen Dr. : Uzm.Dr. ÖZLEM  
Yapan Asistan :  
Tetkik : RETİKÜLOSİT SAYIMI  
Yapım Tarihi :  
Açıklama : RETİKÜLOSİT SAYIMI

Brm : LABORATUVAR  
Toplam : 8  
Ek10C Toplam : 0,00  
Fark : 30,20  
Okutulan : 1252

İcabcu/Brang Nob. yapıldı mı? : Hayır  
Acil Durum veya Komplikasyon mu? : Hayır

Protokol No : 545610056 Ad : ZEYNEP Normal-21R14XB 18 YAŞ ALTI

Testler Arası

- Tıbbi Genetik
- PREOP
- Hematoloji
- Hormon
- Biyo kimya
- Yükleme Testleri
- Kültür
- GENEL PAKETLER
- Fizyoterapi
- Patoloji İstem
- Acil Uygulamalar
- Kan Gazi
- İdrar & Gaita
- Elisa
- Makro Elisa
- Moleküler Enfeksiyon (BOS)
- Torch
- Moleküler Enfeksiyon (KAN)
- Moleküler PCR
- Moleküler Enfeksiyon (KAN DI)
- Mikobakteri Kültür
- Mikoloji Kültür
- Kan Merkezi
- PET (Diyaliz)
- Seroloji
- Koagülasyon
- Bos & Mayi
- Profilirim

# Task analysis

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- The process of observing, describing, and decomposing tasks into their constituent components and analyzing the human, technological and environmental resources required for the completion of each component.

# Task analysis questions

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- What does the user see?
- What decisions does a user make?
- What must a user know?
- How does a user get help?
- How does a user recover from errors?
- What physical acts must be accomplished?

# Situation analysis

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- Outlines the physical and social context of use:
  - Location
    - Home, office, shop, car, street etc.
  - Relationship to other users
    - Collaboration, recipient, passive/active
  - Socio-technical environment

# Output

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- Scenarios of use
  - “Stories” of interaction in which users, tasks and contexts are described
- Scenarios form basis of decisions on
  - Effectiveness
  - Efficiency
  - Satisfaction

# Next Mini Assignment <https://iechci.info>

---

- No f2f class on Friday
- You have to attend HCI conference sessions
- November 23 Thursday and 24 Friday
- Attend Minimum 2 Sessions
  - At least 1 Plenary session(s)
  - Paper presentation session(s)
- Write a reflection paper on 2 sessions
- 3 points – Due November 27, Monday



<https://iechci.info>



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IECH

PHO

PROCE

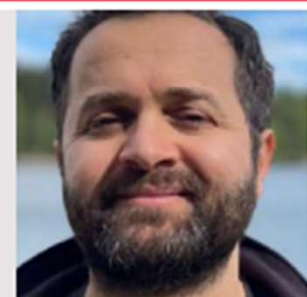
# INTERNATIONAL EASTERN CONFERENCE ON *HUMAN-COMPUTER INTERACTION*

IECHCI2023 Conference will be held in a Hybrid mode

23-25 November 2023, **Atatürk University, Erzurum, TÜRKİYE**

🖱️ CONFERENCE PROGRAM IS ANNOUNCED

## PLENARY SESSIONS



**Assoc. Prof. Yavuz Inal**

*Norwegian University of Science and Technology (NTNU), Norway*

**Title:** Web for everyone: It was a dream, it remained a dream!

**23 November  
13:45-14:30**



**Assoc. Prof. Çağlar Yıldırım**

*Northeastern University and Massachusetts Institute of Technology, Boston USA*

**Title:** From Immersion to Inclusion: The New Frontier of Accessible Human-VR Interaction

**23 November  
16:30-17:15**



**Marcin Kasica**

*Director of Global Education and Training, Customer Success Department for EMEA at EON Reality*

*Founder and owner of AVR EDU consulting.*

**Title:** The Future of Learning: AI-Enhanced Human-Computer Interactions

**24  
12**



**Prof. Dr. Arzu Çöltekin**

*FHNW Institute for Interactive Technologies, Switzerland*

**Title:** Eye movements , visual-spatial cognition and display complexity: Implacitons for human-computer interaction

**24  
13**



**Assoc. Prof. Dr. Colin M. Gray**

*Luddy School of Informatics, Computing, and Engineering at Indiana University Bloomington, USA*

**Title:** Developing and Sustaining Competence in HCI Education

**24  
16**



| Place        | Room   | Date       | Hour                 | Moderator                    |
|--------------|--------|------------|----------------------|------------------------------|
| Zoom Meeting | Room 1 | 24-11-2023 | GMT+3<br>14:25-15:55 | Assoc. Prof. Dr. Nuray Gedik |

| # | Paper Title  |
|---|--|
| 1 | Gökçen Tonbul, Damla Topallı, Nergiz Ercil Çağıltay<br><b>A Feature Engineering Approach Based on the Data Gathered from a VR Environment Using Haptic Interface to Increase the Applicability of ML Methods</b> |
| 2 | Gulsah Atas, Damla Topallı, Nergiz Ercil Çağıltay<br><b>Enhancing Education Through Virtual Reality: A Focus on User Experience</b>  |
| 3 | Cem Kaya, Baha Mert Ersoy, Murat Karaca<br><b>MagniVR: Design &amp; Analysis of Low Vision Accessibility Tool For Virtual Reality</b>  |
| 4 | Burak Kızılkaya, Mehmet A. Kılıçaslan, Salih Pamuk, Damla Topallı, Fulya Basmacı, Nergiz Ercil Çağıltay<br><b>A Temporomandibular joint course with Metaverse</b>  |

## ONLINE GROUP 1 (EN)

| Place        | Room   | Date       | Hour                 | Moderator                  |
|--------------|--------|------------|----------------------|----------------------------|
| Zoom Meeting | Room 1 | 24-11-2023 | GMT+3<br>09:00-10:20 | Asst. Prof. Arif Cem Topuz |

| # | Paper Title  |
|---|--|
| 1 | Erdoğan Okulmuş, Arif Cem Topuz<br><b>Examining the Impact of a Mobile Augmented Reality-based Robotic Learning Application on K12 Students' Academic Achievement</b>  |
| 2 | Bilgehan Çağıltay, Berfin Sürücü, Kaan Atmaca, Nida Kayaduman, Kürşat Çağıltay<br><b>Typing in the Matrix: An Augmented Reality vs. Physical Keyboard Showdown</b>     |
| 3 | Mustafa Coşkun, Ayşe Gül Kara Aydemir<br><b>Exploring the Ethics of Emotion Computing in K-12 Education: Understanding Adolescents' Interaction with Generative AI</b> |
| 4 | Nuray Gedik, Nilgün Özdamar<br><b>A Preliminary Study on Student and Faculty Perspectives on Climate Crisis and AI in Higher Education</b>                             |

# Next Week We will continue with Heuristics

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- Your next assignment will be applying Heuristics to test an application