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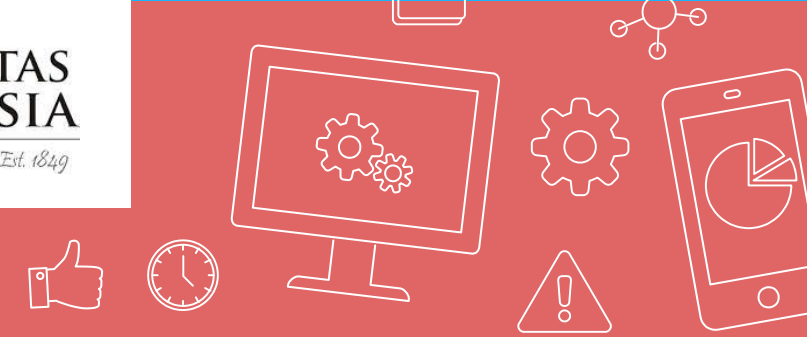

ESTABLISHING REQUIREMENTS

Sistem Interaksi Genap 2023/2024

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ACKNOWLEDGEMENT

Salindia ini disusun berdasarkan materi pada buku

INTERACTION DESIGN: beyond human-computer interaction
edisi ke-5

yang ditulis oleh Preece, J., Sharp, H., & Rogers, Y.

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HAL YANG AKAN DIPELAJARI

- ➔ Mendefinisikan kebutuhan
- ➔ Tipe-tipe *requirements*
- ➔ Pengumpulan data untuk *requirements*
- ➔ Task Description : Skenario, Use Case, dan Essential Use Case
- ➔ Task Analysis

MENDEFINISIKAN KEBUTUHAN

APA, BAGAIMANA, DAN MENGAPA ? (1)

“

Apa saja yang harus dicapai dalam UX Research ?

Memahami **pengguna**, ***task***, dan **konteks penggunaan** secara menyeluruh

Menghasilkan **sekumpulan requirements** yang pasti (*stable*)

APA, BAGAIMANA, DAN MENGAPA ? (2)

“

Bagaimana caranya ?

Melakukan
Pengumpulan Data

Melakukan
Analisis Data

Mengamati
“Ekspresi”

Dilakukan Secara **Iteratif**

CONTOH IDENTIFIKASI KEBUTUHAN PENGGUNA

> Pengembangan Desain Interaksi Alternatif Modul e-Learning Berdasarkan Gaya Belajar Felder-Silverman (Hasani, 2019)

Wawancara Eksploratif (*n* = 22)

Aspek yang ditanyakan:

- Karakteristik pengguna
- E-Learning System yang digunakan saat ini
- Motivasi penggunaan E-Learning system saat ini (as-is)
- Aktivitas penggunaan e-Learning system saat ini (as-is)
- Pain points dalam penggunaan e-Learning system saat ini (as-is)
- Saran perbaikan untuk e-Learning system saat ini (as-is)
- Preferensi desain antarmuka e-Learning system

Analisis Kualitatif (Mahpur, 2017)

Tabel 4.9 *Pain points* pengguna dengan gaya belajar AcSenVisGlo

No	Kategori	Fakta Pendukung	f	Kode Fakta
1	Masalah arsitektur informasi	Kesulitan memilih materi yang perlu diunduh	3	(1-PAI1), (4-PAI3), (8-PAI3)
		Information overload	6	(1-PAI2), (2-PAI1), (3-PAI6), (4-PAI1), (5-PAI3), (8-PAI2)
		Penyusunan informasi terlalu rapat	2	(2-PAI2), (6-PAI4)
		Masih banyak *scrolling*	2	(3-PAI7), (8-PAI5)
		Penyusunan modul *course* tidak terstandardisasi	4	(5-PAI2), (6-PAI3), (6-PAI6), (8-PAI1)
		Sulit mencari materi dari kuliah terdahulu	1	(3-PAI4)
		Kesulitan mengatur *course*	1	(3-PAI5)
		kebingungan menentukan posisi saat ini terhadap silabus pembelajaran	1	(5-PAI4)

Daftar Requirements

1. Mengelompokkan konten berdasarkan jenis konten (slides, tautan, dsb.).

1. Meminimalkan scrolling.

1. Menyediakan konten materi berupa visualisasi, seperti slides dengan banyak ilustrasi, infografis, dan video ringkas.

1. Konten materi berupa slides diletakkan pada bagian paling atas section.
   ... dll.

TANTANGAN: KARAKTERISTIK PENGGUNA BERAGAM

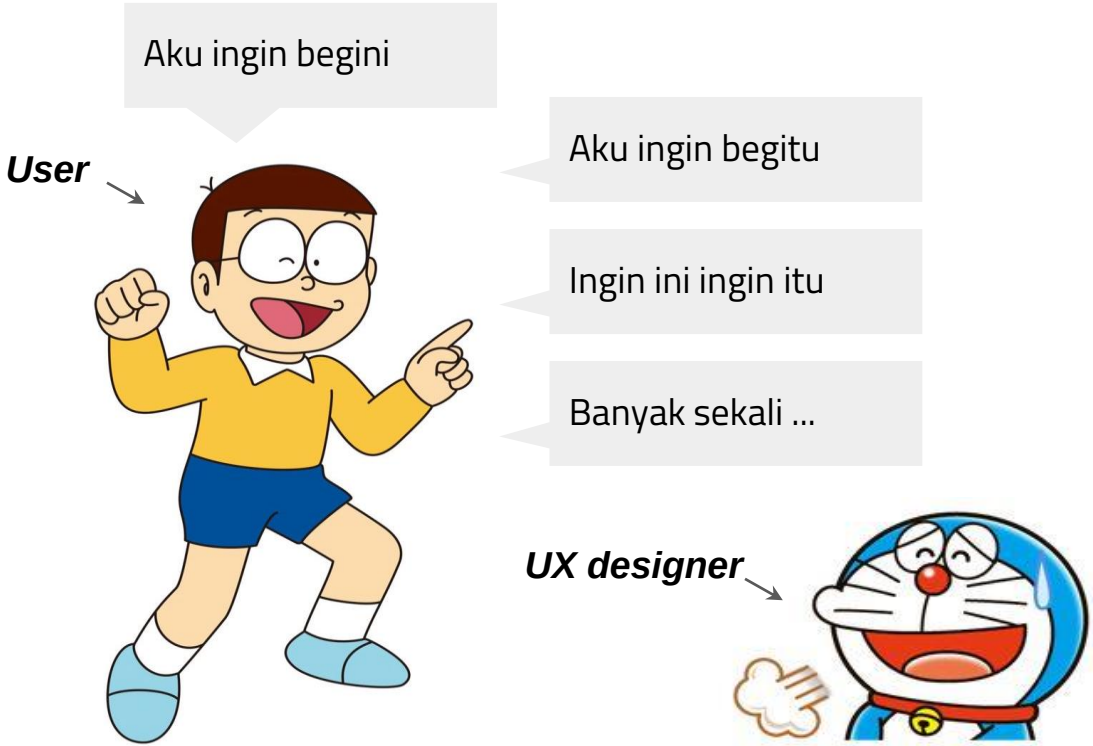
> Pengembangan Desain Interaksi Alternatif Modul e-Learning Berdasarkan Gaya Belajar Felder-Silverman (Hasani, 2019)

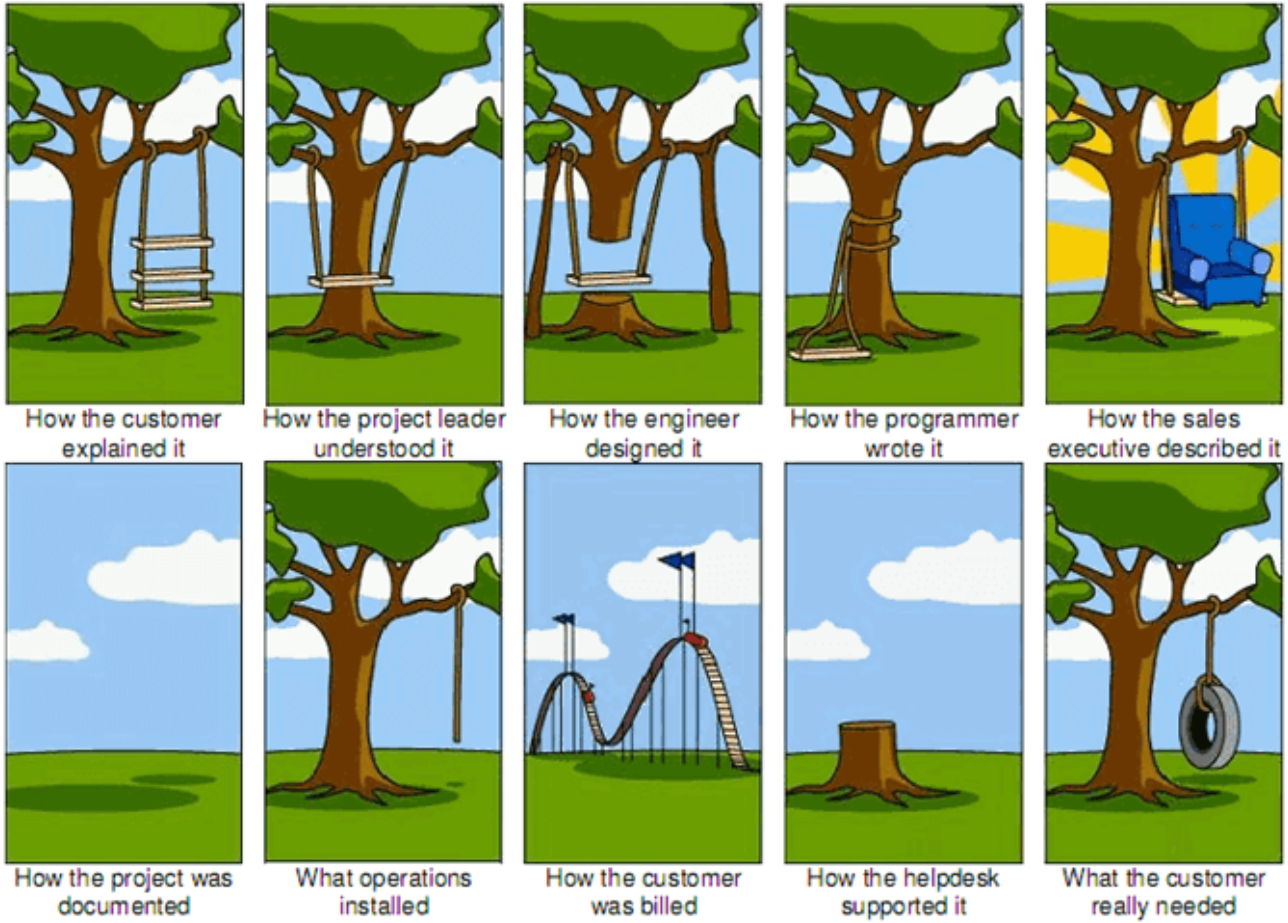
Aspects	AcSenVisGlo	AcSenVisSeq	AcInVisGlo	RefInVisGlo
Daily life	Active students	Active students	Active students, involved in final project or organization-related works	Active students, involved in final project or lecturer assistant-related works
Learning environment preference	**Active**, **conducive**, and **disciplined** learning environment	Learning environment **without online discussion**	**Active** learning environment with plenty offline discussions	Active and conducive learning environment **without online discussion**
Processing	**Active** learning style due to preference in discussion and direct experimentation. Preference in taking notes	Could learn **both independently or in group**	**Active** learning style due to preference in discussion and direct experimentation.	Could learn **both independently or in group**
Perception	**Sensing** learning style due to preference in facts or concrete examples.	**Sensing** learning style due to preference in facts or concrete examples.	**Flexible** due to preference in both concrete examples and abstract concepts.	**Flexible** due to preference in both concrete examples and abstract concepts.
Input	**Visual** learning style due to preference in pictures, graphics, or videos.	**Visual** learning style due to detestation in textual materials	**Visual** learning style due to preference in pictures and videos.	**Moderately visual** due to preference in graphics which also provide texts or audio
Understanding	**Global** learning style by starting the process of learning by realising the big picture of the whole material	**Moderately sequential** due to the facts that the majority prefer the sequential detailed explanation	**Global** learning style by starting the process of learning by realising the big picture of the whole material	**Global** learning style by starting the process of learning by realising the big picture of the whole material

Prefer active learning environment | **Dislike online discussion** | **Prefer both learning individually and in group** | **Prefer both concrete and abstract concepts** | **Prefer visualization**

Tantangan: Bagaimana memfasilitasi kelompok pengguna dengan karakteristik berbeda?

SEBUAH REALITA




How the customer explained it
How the project leader understood it
How the engineer designed it
How the programmer wrote it
How the sales executive described it
How the project was documented
What operations installed
How the customer was billed
How the helpdesk supported it
What the customer really needed

MENDEFINISIKAN KEBUTUHAN

➔ Apa yang **diperlukan** pengguna ? Apa yang **diinginkan** pengguna ?

Perlu dilakukan **klarifikasi**, **perbaikan**, **penyelesaian**, dan **re-scoping**

Input : Dokumen *requirements*

Output : Kebutuhan pengguna yang stabil

➔ Mengapa kita **perlu mendefinisikan** kebutuhan?

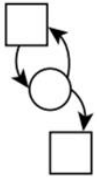
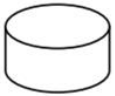
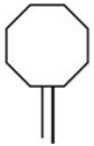
Requirements dihasilkan dari **pemahaman akan kebutuhan** pengguna

Requirements dipertanggungjawabkan **berdasarkan data** yang diperoleh

TIPE-TIPE *REQUIREMENTS*

7 PRODUCT DIMENSIONS

(GOTTESDIENER & GORMAN, 2012)

						
User	Interface	Action	Data	Control	Environment	Quality Attribute
Users interact with the product	The product connects to users, systems, and devices	The product provides capabilities for users	The product includes a repository of data and useful information	The product enforces constraints	The product conforms to physical properties and technology platforms	The product has certain properties that qualify its operation and development

TIPE-TIPE *REQUIREMENTS*

6 Tipe Requirements (Preece et al., 2019)

Functional
Apa yang bisa dilakukan sistem

Environmental
Konteks penggunaan: Fisik, Sosial, & Organisasional

Data
Apa jenisnya?
bagaimana disimpannya?

Non functional Requirements

User Characteristics
Siapa pengguna sistem?

Usability Goal
Seberapa efektif?
Mudah dipelajari? dll.

User Experience Goal
Seberapa WOW?
Seberapa addicting? dll.

4 ASPEK *ENVIRONMENTAL REQUIREMENTS*

“

Preece et al. (2019)

Physical Aspects

Misalnya Ukuran, Pencahayaan, Bentuk Fisik, dsb.

Organisational Aspects

Hierarki, struktur komunikasi, dukungan pengguna, pelatihan/sosialisasi, dsb.

Social Aspects

Misalnya mendukung *file sharing*, komunikasi *synchronous*, privasi pengguna, dsb.

Technical Aspects

Kompatibilitas dengan teknologi tertentu, *running environment*, dll.

CONTOH DEFINISI REQUIREMENTS (1)

Interactive product for navigating around a shopping center.

“

Menggunakan 6 tipe/kategori requirements (Preece et al. 2019)

Functional: The product will locate places in the shopping center and provide routes for the user to reach their destination.

Data: The product needs access to GPS location data for the user, maps of the shopping center, and locations of all the places in the center. It also requires knowledge about the terrain and pathways for people with different needs.

Environmental: The product design needs to take into account several environmental aspects. Users may be in a rush, or they may be more relaxed and wandering about. The physical environment will be noisy and busy, and users may be talking with friends and colleagues while using the product. Support or help with using the product may not be readily available, but the user can probably ask a passerby for directions if the app fails to work.

User Characteristics: Potential users are members of the population who have their own mobile device and for whom the center is accessible. This suggests quite a wide variety of users with different abilities and skills, a range of educational backgrounds and personal preferences, and different age groups.

Usability Goals: The product needs to be easy to learn so that new users can use it immediately, and it should be memorable for more frequent users. Users won’t want to wait around for the product to display fancy maps or provide unnecessary detail, so it needs to be efficient and safe to use; that is, it needs to be able to deal easily with user errors.

User Experience Goals: Satisfying, helpful, and enhancing sociability. While some of the other goals may be appropriate, it is not essential for this product to, for example, be cognitively stimulating.

CONTOH DEFINISI REQUIREMENTS (2)

“

Menggunakan 6 tipe/kategori requirements (Preece et al. 2019)

A wearable interactive product to measure glucose levels for an individual with diabetes.

Functional: The product will be able to take small blood samples and measure glucose readings from them.

Data: The product will need to measure and display the glucose reading—but possibly not store it permanently—and it may not need other data about the individual. These questions would be explored during the requirements activity.

Environmental: The physical environment could be anywhere the individual may be—at home, in hospital, visiting the park, and so on. The product needs to be able to cope with a wide range of conditions and situations and to be suitable for wearing

User Characteristics: Users could be of any age, nationality, ability, and so forth, and may be novice or expert, depending on how long they have had diabetes. Most users will move rapidly from being a novice to becoming a regular user.

Usability Goals: The product needs to exhibit all of the usability goals. You wouldn’t want a medical product being anything other than effective, efficient, safe, easy to learn and remember how to use, and with good utility. For example, outputs from the product, especially any warning signals and displays, must be clear and unambiguous.

User Experience Goals: Comfortable, while being aesthetically pleasing or enjoyable may help encourage continued use of the product. Making the product surprising, provocative, or challenging is to be avoided, however

Foto: Farmaku.com, Case: Preece et al. (2019)

SIAPAKAH PENGGUNA APLIKASI KITA ? (1)

Karakteristik Pengguna

Kebangsaan, latar belakang pendidikan, dan persepsi terhadap TI

Penggunaan Sistem

Novice atau Expert? Sering atau Jarang?

SIAPAKAH PENGGUNA APLIKASI KITA ? (2)

Setiap orang berbeda dengan yang lainnya ...

Ukuran telapak tangan dapat **membedakan lokasi *button*** pada mobile gadget

Kemampuan mendengar/melihat dapat **membedakan *input-output means***

Kemampuan memahami banyak tulisan dapat membedakan **cara penyajian data**

PERSONA (1)

Memuat **profil pengguna aplikasi** beserta karakteristiknya

Bukan orang sebenarnya tapi informasinya dihasilkan dari pengguna sebenarnya

Tidak dapat dibuat dengan **dikira-kira** (dibayangkan saja karakteristiknya)

Dibuat **sehidup mungkin** dengan nama, umur, latar belakang personal hingga motto

Nerdy Nina

"The book is way better than the movie!"

#booklover
#bookaddict
#booknerdproblems

DEMOGRAPHICS

Age:	25
Location:	Sao Paulo, Brazil
Education:	Software Engineer
Job:	Q/A at Indie Game Company
Family:	Lives with her boyfriend

TECH

Internet	●●●●●
Social Networks	●●○○○
Messaging	●●●○○
Games	●●●●●
Online Shopping	●●●●○

GOALS

- Discovering new books / authors to read
- Finding unique stories
- Cataloging book collection

FRUSTRATIONS

- Keeping track of different series
- Forgetting a book launch date
- Finding space for more books

READING HABITS

- Fast pace reader
- Never lends books
- Likes hardcovers and boxed collections
- Pre-order books to get them first
- Reads eBooks, but prefer physical copies
- Always finishes a book
- Loves binge reading and re-reading

FAVORITE BOOKS


American Gods
Neil Gaiman

Harry Potter
J.K. Rowling

Ready Player One

"

Contoh persona untuk sebuah **aplikasi *e-book***

https://venngage.com/blog/user-persona-examples/

PENGUMPULAN DATA

PENGUMPULAN DATA UNTUK *REQUIREMENTS*

Wawancara

- ➔ Dapat menggunakan properti berupa contoh skenario dan *prototype*
- ➔ Bagus untuk mengeksplorasi isu
- ➔ Tim pengembang dapat berdiskusi dengan pengguna

Focus Groups

- ➔ Dapat berupa wawancara kelompok
- ➔ Bagus untuk mencapai kesepakatan mengenai requirements
- ➔ Ada resiko dominasi individu tertentu

PENGUMPULAN DATA UNTUK *REQUIREMENTS*

Kuesioner

- ➔ Umumnya digunakan bersama teknik pengumpulan data lainnya
- ➔ Dapat memberikan data kuantitatif dan kualitatif
- ➔ Bagus untuk menjawab pertanyaan yang spesifik dari banyak responden

Meneliti Produk Serupa

- ➔ Bagus untuk mendorong pendefinisian requirements

PENGUMPULAN DATA UNTUK *REQUIREMENTS*

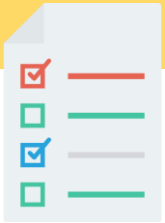
Observasi Langsung

- ➔ Memperoleh gambaran lengkap mengenai *task* yang dilakukan
- ➔ Bagus untuk mengeksplorasi isu
- ➔ Tim pengembang dapat berdiskusi dengan pengguna

Observasi Tidak Langsung

- ➔ Jarang digunakan dalam aktivitas pendefinisian kebutuhan
- ➔ Bagus untuk *logging task* yang sudah dilakukan

PENGUMPULAN DATA UNTUK *REQUIREMENTS*



Mempelajari Dokumentasi

- ➔ Prosedur dan aturan seringkali dituliskan dalam dokumentasi
- ➔ Digunakan apabila *stakeholder* tidak memiliki waktu yang cukup
- ➔ Sumber data yang bagus untuk memahami tahapan dalam *task* tertentu

Credits : medium.springboard.com

CONTEXTUAL INQUIRY

Wawancara yang memposisikan **user sebagai expert** dan **researcher sebagai apprentice**

Dilakukan **di tempat user bekerja** (workstation) selama **2 - 3 jam**

4 PRINSIP *CONTEXTUAL INQUIRY*

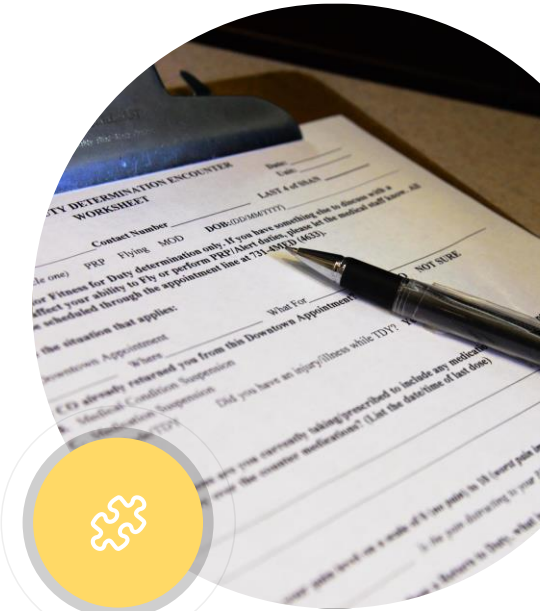
1	**Konteks** : Amati tempat kerja user dan apa yang terjadi di sana
2	**Kerjasama** : User dan researcher berkolaborasi
3	**Interpretasi** : Interpretasi dilakukan bersama-sama oleh user dan researcher
4	**Fokus** : Fokus pada proyek untuk memahami apa yang perlu diperhatikan

ISU DALAM PENGUMPULAN DATA (1)

“

Beberapa hal yang perlu diperhatikan...

- **Mengidentifikasi** dan **melibatkan** responden
- Memastikan responden merupakan **user yang sebenarnya**
- **Dampak perubahan** bisnis dan lingkungan yang ada
- Menyeimbangkan **usability** dengan **fungsionalitas**
- **Dominasi** stakeholder tertentu yang mungkin terjadi



ISU DALAM PENGUMPULAN DATA (2)

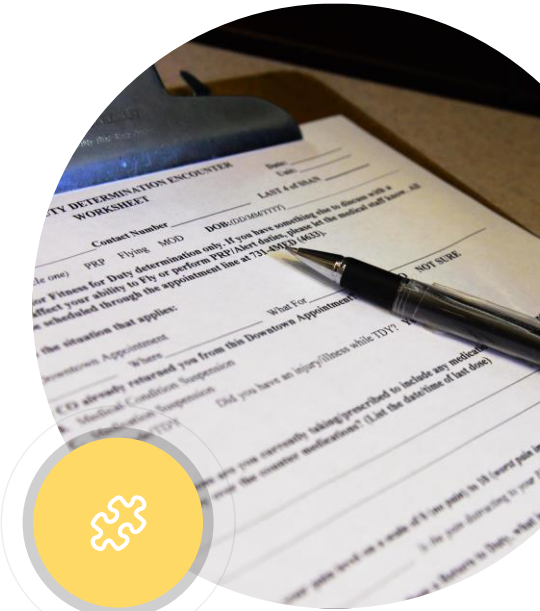
“

Beberapa hal yang perlu diperhatikan...

Komunikasi antar pihak : dengan user, tim pengembang, dsb.

Domain knowledge yang bersifat terdistribusi dan implisit

Ketersediaan partisipan utama



PANDUAN PENGUMPULAN DATA

“

Beberapa hal yang perlu diperhatikan...

- **Fokus** pada pendefinisian kebutuhan stakeholder
- Libatkan **semua stakeholder** dalam penelitian
- Libatkan **lebih dari seorang perwakilan** dari stakeholder group
- Gunakan **berbagai teknik** pengumpulan data
- Gunakan **task descriptions dan prototype**

TASK DESCRIPTION

TASK DESCRIPTION

Skenario
Sebuah cerita naratif informal

Use Cases
Menggambarkan interaksi dalam sistem

Essential Use Case
Menggambarkan interaksi secara garis besar

CONTOH SKENARIO

“

Contoh skenario sebuah **Travel Organizer** ….

“The Thomson family enjoy outdoor activities and want to try their hand at sailing this year. There are four family members: Sky (10 years old), Eamonn (15 years old), Claire (35), and Will (40). One evening after dinner they decide to start exploring the possibilities. They all gather around the travel organizer and enter their initial set of requirements – a sailing trip for four novices in the Mediterranean. The console is designed so that all members of the family can interact easily and comfortably with it. The system’s initial suggestion is a flotilla, where several crews (with various levels of experience) sail together on separate boats. Sky and Eamonn aren’t very happy at the idea of going on vacation with a group of other people, even though the Thomsons would have their own boat. The travel organizer shows them descriptions of flotillas from other children their ages and they are all very positive, so eventually, everyone agrees to explore flotilla opportunities. Will confirms this recommendation and asks for detailed options. As it’s getting late, he asks for the details to be saved so everyone can consider them tomorrow. The travel organizer emails them a summary of the different options available.”

SKENARIO DAN PERSONA

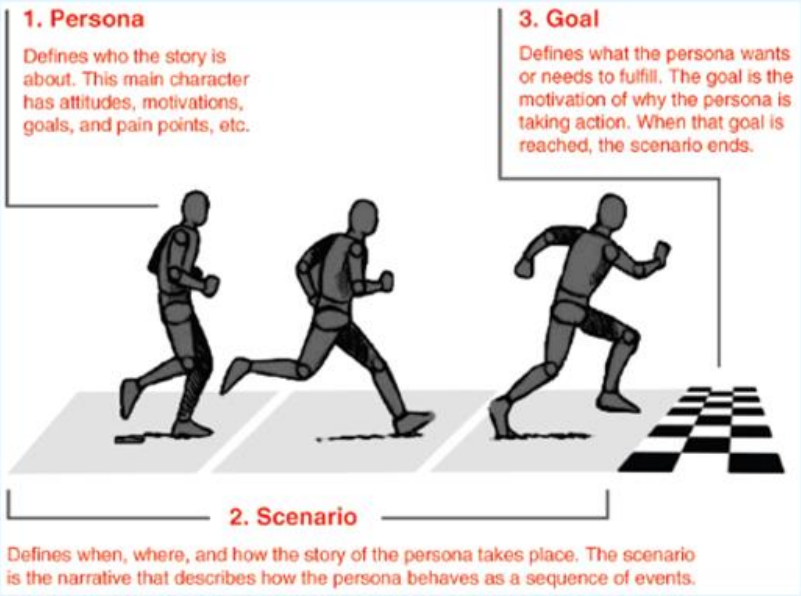
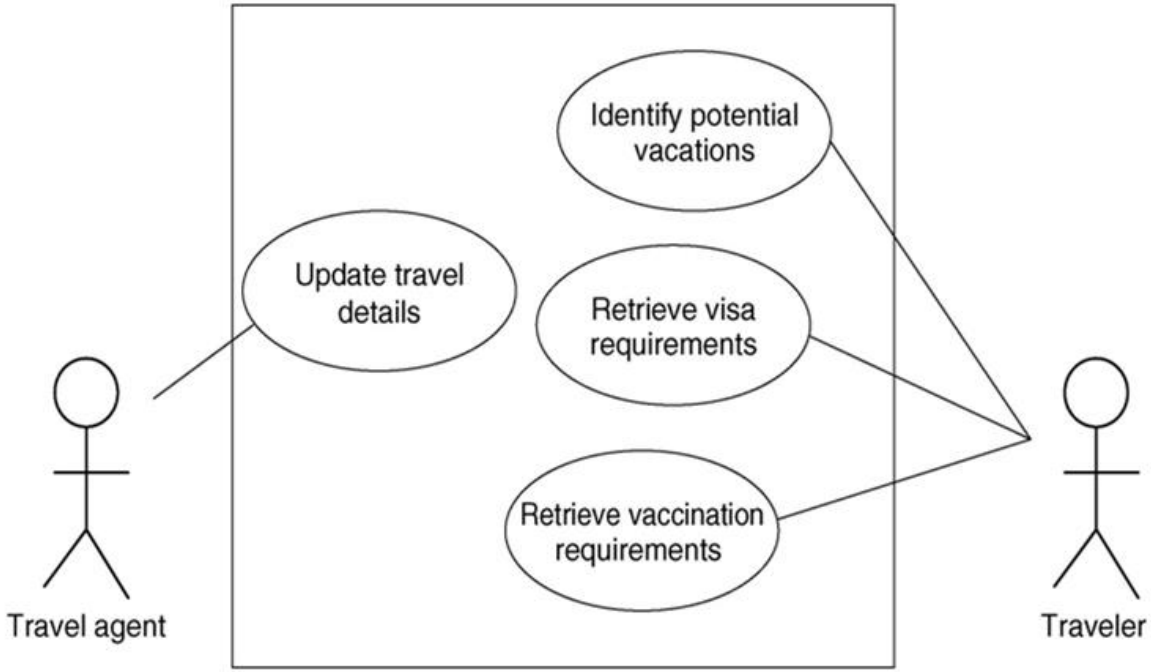


Figure 10.10 The relationship between a scenario and its associated persona

Source: http://www.smashingmagazine.com/2014/08/06/a-closer-look-at-personas-part-1/

USE CASE DIAGRAM



DUA CARA MENDEFINISIKAN *USE CASE*

Cara 1: **Essential Use Case**

Example essential use case for travel organizer

retrieve Visa

USER INTENTION	SYSTEM RESPONSIBILITY
find visa requirements	request destination and nationality
supply required information	
	obtain appropriate visa info
obtain copy of visa info	
	offer info in different formats
choose suitable format	
	provide info in chosen format

Cara 2: **Detailed Use Case**

Use case for travel organizer

1. The system displays options for investigating visa and vaccination requirements.
2. The user chooses the option to find out about visa requirements.
3. The system prompts user for the name of the destination country.
4. The user enters the country's name.
5. The system checks that the country is valid.
6. The system prompts the user for her nationality.
7. The user enters her nationality.
8. The system checks the visa requirements of the entered country for a passport holder of her nationality.
9. The system displays the visa requirements.
10. The system displays the option to print out the visa requirements.
11. The user chooses to print the requirements.

Alternative courses for travel organizer

Some alternative courses:

6. If the country name is invalid:
   - 6.1 The system displays an error message.
   - 6.2 The system returns to step 3.
8. If the nationality is invalid:
   - 8.1 The system displays an error message.
   - 8.2 The system returns to step 6.
9. If no information about visa requirements is found:
   - 9.1 The system displays a suitable message.
   - 9.2 The system returns to step 1.

TASK ANALYSIS

Digunakan untuk **menggambarkan penggunaan** sistem baru

Digunakan untuk **menginvestigasi** situasi penggunaan saat ini

Ada beberapa hal yang perlu diperhatikan antara lain :

- ➔ Apa yang ingin dicapai pengguna ?
- ➔ Bagaimana cara mencapainya ?
- ➔ Bagaimana mereka melakukannya ?

HIERARCHICAL TASK ANALYSIS

Example Hierarchical Task Analysis

0. In order to buy a DVD
1. locate DVD
2. add DVD to shopping basket
3. enter payment details
4. complete address
5. confirm order

plan 0: If regular user do 1-2-5.
If new user do 1-2-3-4-5.

CONTOH *HIERARCHICAL TASK ANALYSIS*

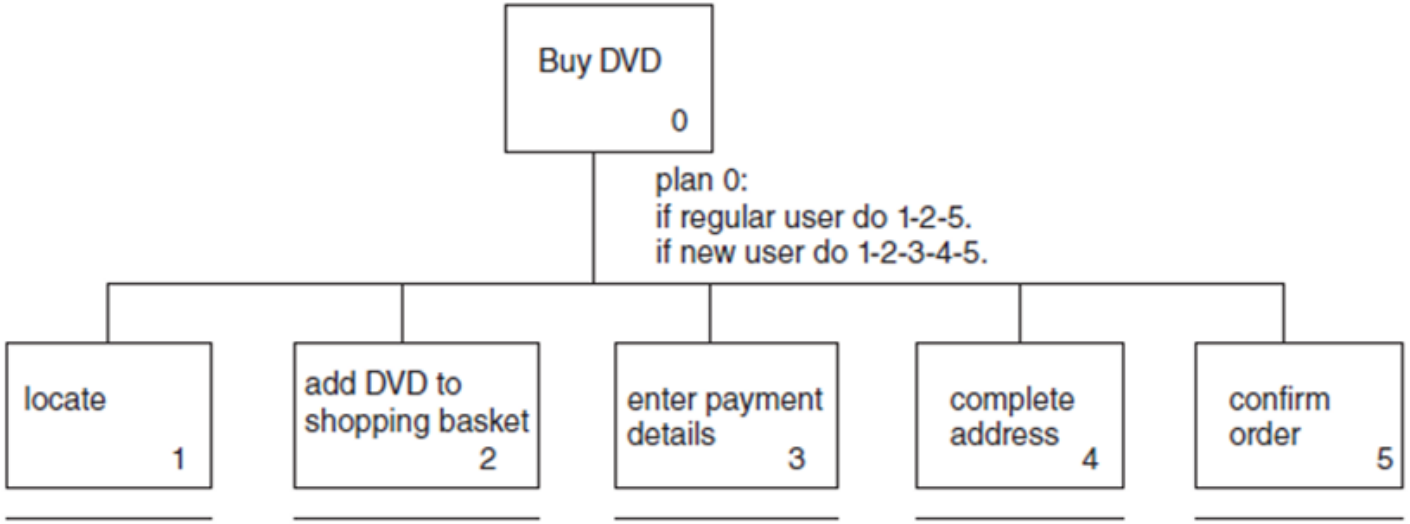


Figure 10.15 A graphical representation of the task analysis for buying a DVD

UJI PEMAHAMAN (1)

1. Jelaskan yang dimaksud dengan *requirements*.

2. Jelaskan enam tipe/kategori *requirements*. Sebutkan contohnya.

3. Apakah keinginan pengguna selalu sama dengan kebutuhan pengguna? Bagaimana cara mencari "keseimbangan" antara memenuhi kebutuhan dan preferensi pengguna?

4. Jelaskan dua cara mendefinisikan *use case*.

5. Mengapa desainer interaksi perlu melakukan *task analysis*?

UJI PEMAHAMAN (2)

6. Anda ditugaskan untuk membuat sebuah ***online multiplayer game***. Anda bebas menentukan genre *game* dan bebas berdiskusi dengan siapapun untuk menentukan tema dan elemen *game* yang hendak dibuat.

1. Semisal Anda menggunakan metode *user-centered design*, apa yang akan Anda lakukan untuk menentukan *requirements* game tersebut?

1. Coba identifikasi *key requirements* untuk *game* tersebut menggunakan enam tipe requirements Preece et al. (2019) ***(Contoh dapat dilihat pada slides ini di halaman 16-17)***

Foto: Steam, Droila.com

LATIHAN (DISKUSI 30 MENIT, 1 KELOMPOK: 5-6 MHS)

Misalnya kita ingin meredesain antarmuka forum diskusi daring (FDD) di Scele yang ditujukan untuk aktivitas mendiskusikan topik yang telah dipelajari di kelas. Telah dilakukan wawancara terhadap 15 pengguna forum yang terdiri dari mahasiswa, asisten dosen, dan dosen. Poin-poin temuan wawancara ditampilkan pada kolom-kolom berikut ini.

Mahasiswa (*n* = 10)	Asisten Dosen (*n* = 4)	Dosen (*n* = 1)
"Ingin tampilan forum lebih kekinian" "Ingin ada fitur retweet dan love seperti di Twitter" "Ingin bisa menggunakan stiker seperti di Line" "Ingin anonim kek di 4chan gituu. Saya kadang takut salah ngomong klo posting" "Ingin yang santai aja diskusinya, nggak tegang gitu bahasanya" "Kadang bingung harus ngapain" "Ingin ada label biar tau yang respon itu dosen/asdos/sesama mhs" "Jangan banyak-banyak diskusinya. Pusiiing :("	"Ingin ada fitur auto scoring/auto rekap gitu siapa aja yang posting. Capek scrolling satu-satu buat rekap nilai keaktifan" "Ingin bisa langsung ada template respon biar ga mikirin kata-katanya pas ngasi feedback" "Rekap manual keaktifan forum membuat saya bekerja 40 jam sehari :("	"Bagusnya ya mhs ngga formalitas ngisi. Diskusi harus ramai dan hidup gitu. Saling nanggepin tanpa harus saya ingetin." "Saya penasaran siapa yang lagi online, siapa yang ga pernah ngisi, siapa yang rajin. Kalo bisa ada kerekap gitu siap-siapa yang aktif di thread." "Kadang saya mau ngecairin suasana tapi takut garing juga yach" "Mhs perlu diingetin terus, kadang saya sekip juga. Perlu ada reminder dari sistem sepertinya untuk deadline diskusi"

Coba **identifikasi requirements untuk meredesain FDD** tersebut berdasarkan informasi di atas. Silakan membuat asumsi jika diperlukan. Gunakan 7 product dimensions atau 6 kategori requirements untuk mempermudah identifikasi requirements.

Opsional: Buatlah rough sketch (boleh di kertas dan lalu difoto) dari desain alternatif FDD sesuai requirements tersebut bila waktu mencukupi

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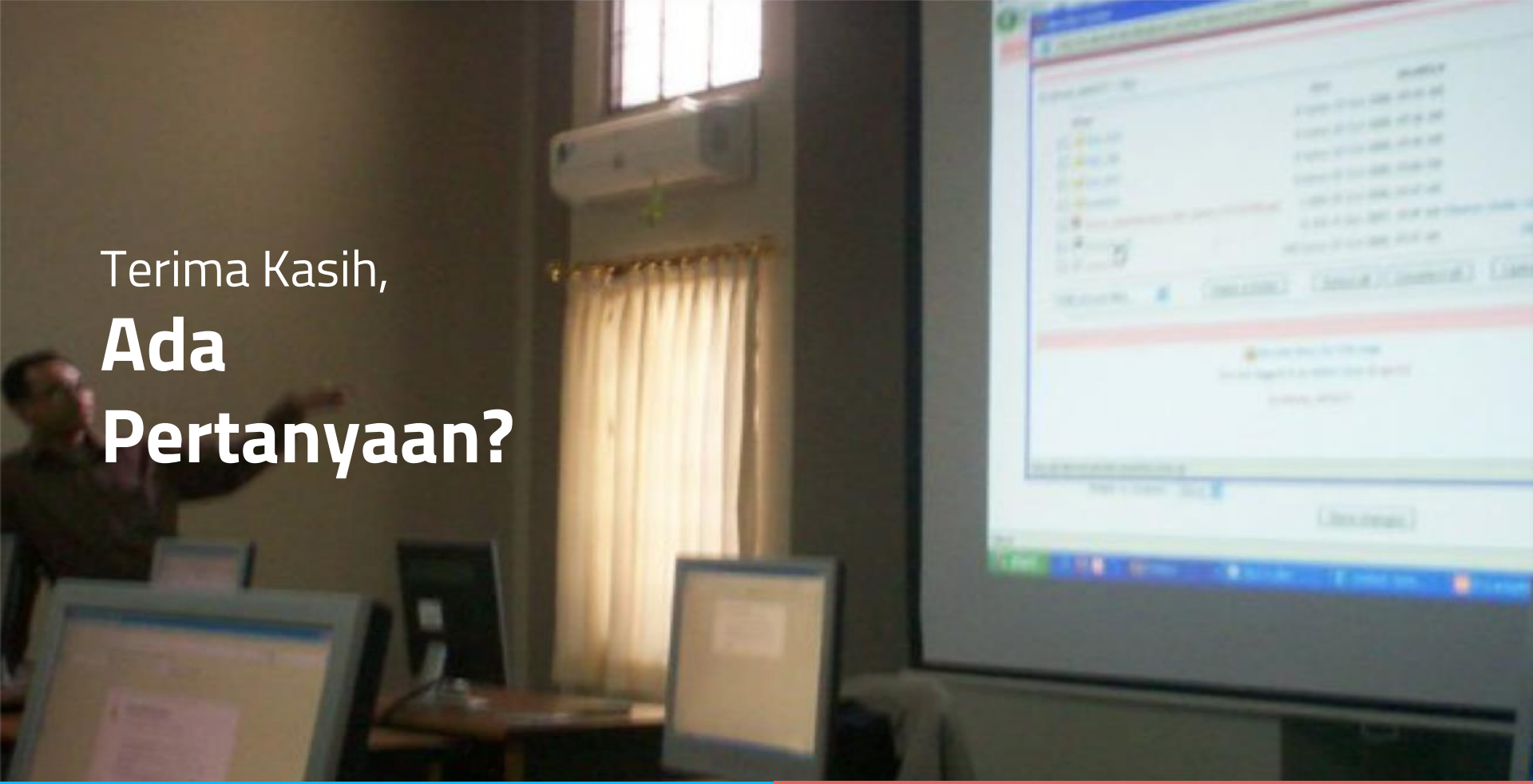
Terima Kasih,
Ada
Pertanyaan?