CEIHM 2016-2017

Cours-TD

Analyse et Modélisation de la tâche – *2ème partie*

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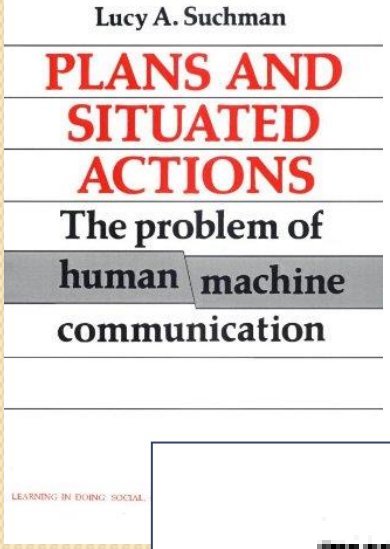
POLYTECH NICE-SOPHIA

Modèle de tâches : granularité (1)

- **Où s'arrêter dans la décomposition?**
  - Pendant l'analyse : *aux tâches élémentaires*
    - Rappel : une tâche élémentaire = une tâche décomposable en actions physiques et informatiques
- **Quand préciser l'interaction?**
  - À la frontière entre l'analyse et la conception
  - Enrichissement de l'arbre des tâches au fur et à mesure

Adapté de : cours « Modèle de tâche » de Philippe Renevier

Quand préciser l'interaction ?



Cadre d'analyse
de l'interaction entre utilisateur et photocopieuse (1)

THE USER		THE MACHINE	
I	II	III	IV
Actions not available to the machine	Actions available to the machine	Effects available to the user	Rationale

Quand préciser l'interaction ?

Lucy A. Suchman

PLANS AND SITUATED ACTIONS

The problem of human machine communication

Cadre d'analyse

de l'interaction entre utilisateur et photocopieuse (2)

	THE USER'S ACTIONS		THE MACHINE'S BEHAVIOR	
	I	II	III	IV
	Not available to the machine	Available to the machine	Available to the user	Rationale
			DISPLAY 4	
S2	There it goes.			Ready to print
S1	"Press the Start button"			
		SELECTS START		
			STARTS	
	Okay.			

Modèle de tâches : granularité (2)

UAN

- **User Action Notation** (Hartson & Hix, Hartson & Gray)
  - Notation *orientée-utilisateur-et-tâche*
  - Décrit le comportement physique (et autre) de l'utilisateur et de l'interface exécutant ensemble une tâche (↔ interaction)
  - *Abstraction principale* : une **tâche utilisateur**
- **Méthode applicable à différents niveaux**
  - Décomposition de tâches en sous-tâches et relations temporelles
  - Décomposition de tâches élémentaires

UAN Modèle de tâches : granularité (3)

Manage_calendar task description

Task: manage_calendar

(access_appointment
| add_appointment
| update_appointment
| delete_appointment
| establish_alarm)*

1

Access_appointment task description.

Task: access_appointment

(search
access_month
| access_week
| access_day)*
access_time_slot

2

Access_month task description.

Task: access_month

(select(any_month)
| move_forward_by_month
| move_backward_by_month)*

3

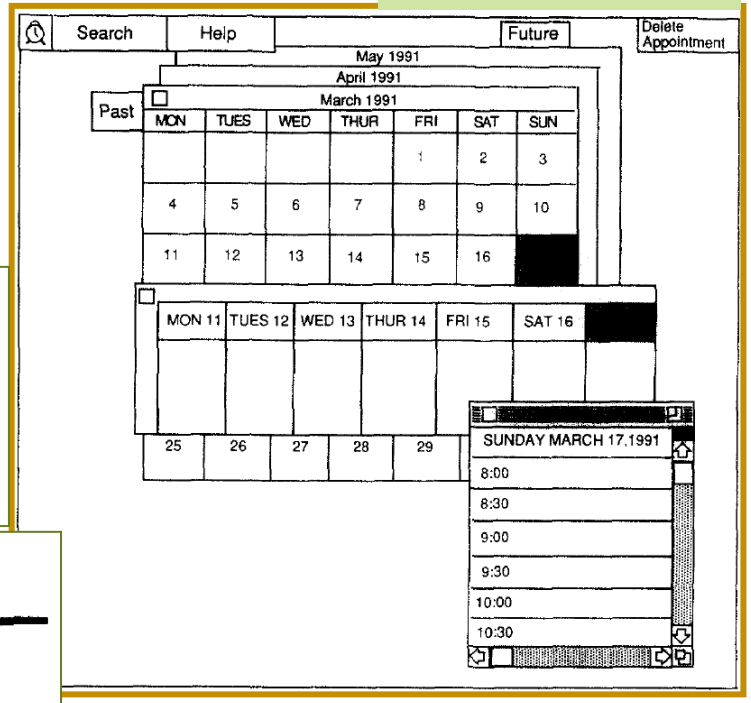
Figure 7. **Select (object)** parameterized task description.

Task: select(object)

User Action	Interface Feedback	Interface State
~[object_icon-!] Mv	object_icon-!, ∀object_icon'!: object_icon'-!	selected = object
Mv		

4

Interface



Adapté de : Hartson & Gray

UAN Modèle de tâches : granularité (4)

Action	Meaning
-	Move the cursor
[X]	The context of object X, the "handle" by which X is manipulated
-[X]	Move cursor into context of object X
-[x,y]	Move the cursor to (arbitrary) point x,y outside any object
-[x,y in A]	Move the cursor to (arbitrary) a point within (relative to) object A
-[X in Y]	Move to object X within object Y (e.g., [OK_icon in dialogue_box])
[X]-	Move cursor out of context of object X
v	Depress
^	Release
Xv	Depress button, key, or switch called X
X^	Release button, key, or switch X
Xv^	idiom for clicking button, key, or switch X
X"abc"	Enter literal string, abc, via device X
X(xyz)	Enter value for variable xyz via device X
()	Grouping mechanism
*	Iterative closure, task is performed zero or more times
+	Task is performed one or more times
{ }	Enclosed task is optional (performed zero or one time)
OR, |	Disjunction, choice of tasks (used to show alternative ways to perform a task)
:	Separator between condition and action or feedback

Feedback	Meaning
!	Highlight object
-!	Dehighlight object
!!	Same as !, but use an alternative highlight
!-!	Blink highlight
$(!-!)^n$	Blink highlight n times
@x,y	At point x,y
@X	At object X
@x,y in X	At point x,y in (relative to) object X
Display(X)	Display object X
Erase(X)	Erase object X
X>-	Object X follows (is dragged by) cursor
X>>-	Object X is rubber banded as its follows cursor
Outline(X)	Outline of object X

Source : Hartson & Gray

COMMENT ÉLABORER UN MODÈLE DE TÂCHES ?
OUTILS (EXEMPLES)

Outils

Outils « papier-crayon »

- Post-Its

Source : Mr Warburton (speakology101.com, 2012)

TASK ANALYSIS GRID

Call History - Compiled Task Analysis

comcast

Before Scene

The spare bedroom (office) of Jenny's two bedroom townhome in suburban Indianapolis.

Jenny comes home from a weekend away and wants to see if there have been any important phone calls or messages that she missed. She sees the voicemail indicator on her phone and begins the lengthy process of calling and listening to her voicemail.

After Scene

The spare bedroom (office) of Jenny's two bedroom townhome in suburban Indianapolis.

Jenny comes home from a weekend away and wants to see if there have been any important phone calls or messages that she missed. She looks at her Comcast Message Center Dashboard she quickly sees that she has five new voicemails. Through the Comcast Message Center's dashboard, she is able to see that the third voicemail is from her mother and plays the message instantly.

Future Scene

The spare bedroom (office) of Jenny's two bedroom townhome in suburban Indianapolis.

Jenny comes home from a weekend away and wants to see if there have been any important phone calls or messages that she missed. She looks at her Comcast Message Center Dashboard she quickly sees that she has five new voicemails. Through the Comcast Message Center's dashboard, she is able to see that the third voicemail is from her mother and plays the message instantly. The Comcast Message Center's presence indicator, Jenny can see that her mother may not be home, but has her cell phone with her. Jenny calls her mother back on her cell phone.

Checking voicemail is tedious and time consuming. I want a system that is quick, convenient, and easy for once.

	Jenny returns home from a weekend away.	Jenny checks to see if anyone called while she was away.	Jenny checks to see if anyone left a voicemail message.	Jenny listens to her voicemail.	Jenny checks for missed calls she needs to return.	Jenny adds the caller to her address book.	Jenny reviews her list of calls to return.	Jenny returns her phone calls.
Sub Tasks								
Scenario	Jenny returns home from a weekend away. She walks in the door, puts down her bags and takes a look around. Everything appears to be right where she left it.	Jenny walks into the office to check the caller id light on her phone to see if anyone called while she was away.	Jenny checks the voicemail indicator and see's the number six. She knows she had saved some messages, but doesn't know how many.	Jenny sees there are four new voicemail messages. The second new message is from her mother. She would like to listen to it first.	Jenny sees that her grandmother called, but didn't leave a voicemail; she typically doesn't leave messages.	One of Jenny's friends called from her new mobile phone. Jenny wants to add the number to her address book.	Jenny has a list of calls to return. Each item has the name, number, and a few brief notes about the call.	Jenny reviews the order of calls she needs to make and returns the phone calls she can now, saving the others for later.
Considerations/Influencers	Can I be notified that I missed calls while I was away? Is it quick? Is it easy? Do I need any special equipment? How much does it cost?	Can I be notified quickly that someone important called while I was away?	Can I check quickly to see if I have any messages waiting?	Can I listen to a specific message? Can I listen to the message quickly? Can I save or delete the message before it is completed playing?	Can I check my missed calls quickly and conveniently? Can I quickly determine which calls I need to return that don't have voicemails?	Can I add the new number to my address book quickly and easily? If an entry already exists, can I update it easily? Can I sync the address book with my mobile?	Do I have enough time to return all these calls now? Which calls should I return first?	Do I have enough time to return these calls now?
Pain-Points	Checking for missed calls and voicemail is laborious and inconvenient.	I have to go to my office to see if anyone called. Checking from the road is even more laborious and inconvenient.	How many of the messages are new? Which ones are important? Can I pick a specific message to listen to? Which messages need immediate attention?	Listening to voicemail is time inconvenient and time consuming. Why can't I listen to a specific message without listening to the ones before it? Do I have time to listen to the messages now?	Checking for missed calls is inconvenient and time consuming. Can the system help me determine which calls need to be returned?	Keeping all my devices in sync is difficult. How can I keep my mobile phone and email address books in sync?	How do I know what each call is about? How will I know that I've returned a call, or marked it for "call back later?"	How do I keep track of which calls I've returned? Do I have to use something else to return the calls?
Functionality		**C 2.1** View call history status. (1) The customer can view the status of whether or not (s)he has any new missed calls. **C 2.2** View new missed calls history. (1) The customer can view the call history for new missed calls. **C 2.3** View full missed call history. (2) The customer can view the entire call history, including new and past missed calls. **C 2.4** View full incoming call history. (3) The customer can view the entire incoming call history, including all missed, answered, and forwarded calls. **C 2.5** View similar or duplicate calls. (4) The customer can view if anyone placed a duplicate call to more than one phone.	**C 3.1** View voicemail status. (1) The customer can view the status of whether or not (s)he has any new voicemail. **C 3.2** View new voicemail list. (1) The customer can view a list of new voicemail messages with the name (number) and date/time of each voicemail. **C 3.3** View full voicemail history. (2) The customer can view the entire voicemail history, including new and past voicemails. **C 3.4** View similar or duplicate messages. (4) The customer can view if anyone who left a duplicate voicemail on multiple phones, or email for a similar message.	**C 4.1** Access the voicemail system. (1) The customer accesses the voicemail system to listen to new messages. **C 4.2** Select a voicemail for playback. (1) The customer reviews the list of messages and related info and selects a message to play. **C 4.3** Play message. (1) Upon selection, the message automatically begins playback. **C 4.4** Message notes. (4) The customer can place notes and/or a description next to the voicemail - useful when returning or saving the call. **C 4.5** Set message priority and/or (4) reminder. The customer can set a priority level, due date, and/or reminder for the message. Over time, the system learns and sets these automatically. **C 4.6** Save message. (1) The message is automatically saved if the customer doesn't delete it. **C 4.7** Delete. (1) The customer deletes the message. They should be able to perform this action at any time during the message playback. **C 4.8** Rewind and fast forward. (2) The customer can rewind and fast forward through the message during playback. **C 4.9** Forward message. (4) The customer can forward the message to another number or email address.	**C 5.1** View new missed call history. (1) The customer can view the new missed calls history. **C 5.2** View call priority status. (4) The customer can view the priority/importance of a call to help them determine which calls need to be returned. **C 5.3** Delete. (1) The customer can delete missed calls from the missed call history.	**C 6.1** Add to address book (update in (1) address book). The customer can add (update) a name and number in the address book. **C 6.2** Sync address book. (4) The customer can sync the address book across home phone, mobile phone, email, etc.	**C 7.1** Review call back list. (1) The customer can review a call back list, ordered by priority, and with notes for each call.	**C 8.1** Return calls. (1) The customer can return calls from within the message center. **C 8.2** Mark call as returned. (2) Once a call has been returned, the message is automatically marked as returned.

Glossary

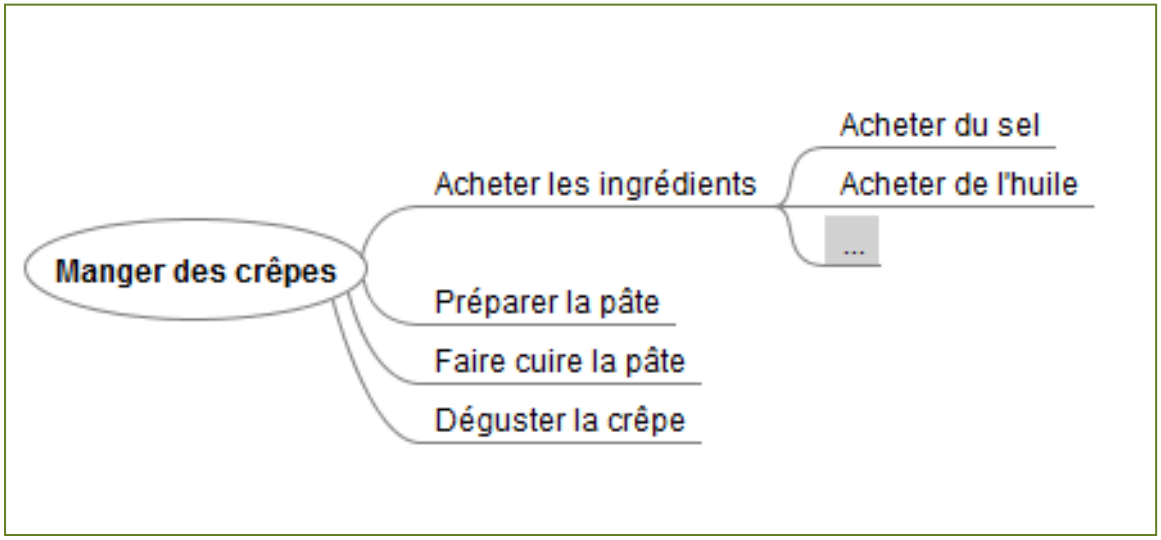
Ratings
- (1) High - address as soon as possible
- (2) Medium - address after priority 1
- (3) Low - after priority 2 and if there is time in development cycle
- (4) Future - consider for a future version of the product

Source : servicedesigntools.org

Outils

Outils de « cartographie conceptuelle » (« mindmaps »)

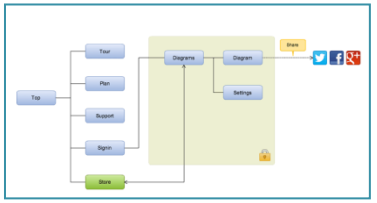
- Freemind: http://freemind.sourceforge.net/wiki/index.php/Main_Page
- Cmap Tools: http://cmap.ihmc.us/
- …

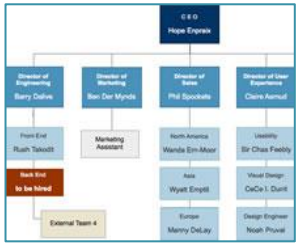


Outils

Outils de création de schémas

- Cacoo: https://cacoo.com/lang/fr/
- Gliffy: http://www.gliffy.com/
- …





Outils

Outils dédiés

- KMADe: http://kmade.sourceforge.net/

  https://cacoo.com/lang/fr/

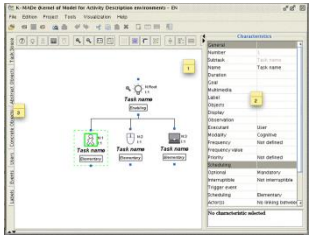
- TAMOT (*Task and Domain Modelling tool*):

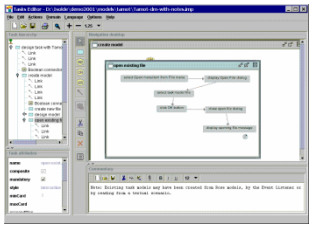
  http://www.ict.csiro.au/staff/cecile.paris/IIT-Track-Record-Past-Projects/Projects/Isolde/Tamot/download2/DownloadTamot.htm

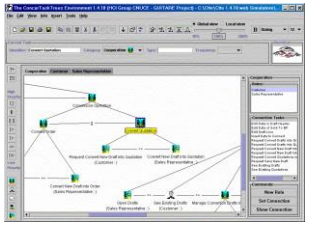
- ConcurTaskTrees Environment:

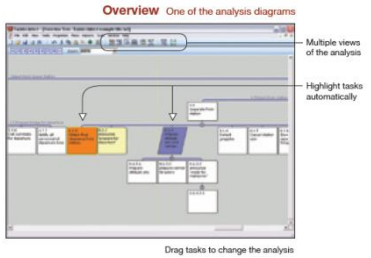
  http://giove.cnuce.cnr.it/ctte.html

- Task Architect: http://www.taskarchitect.com/









LE MODÈLE DE TÂCHES ET APRÈS ?

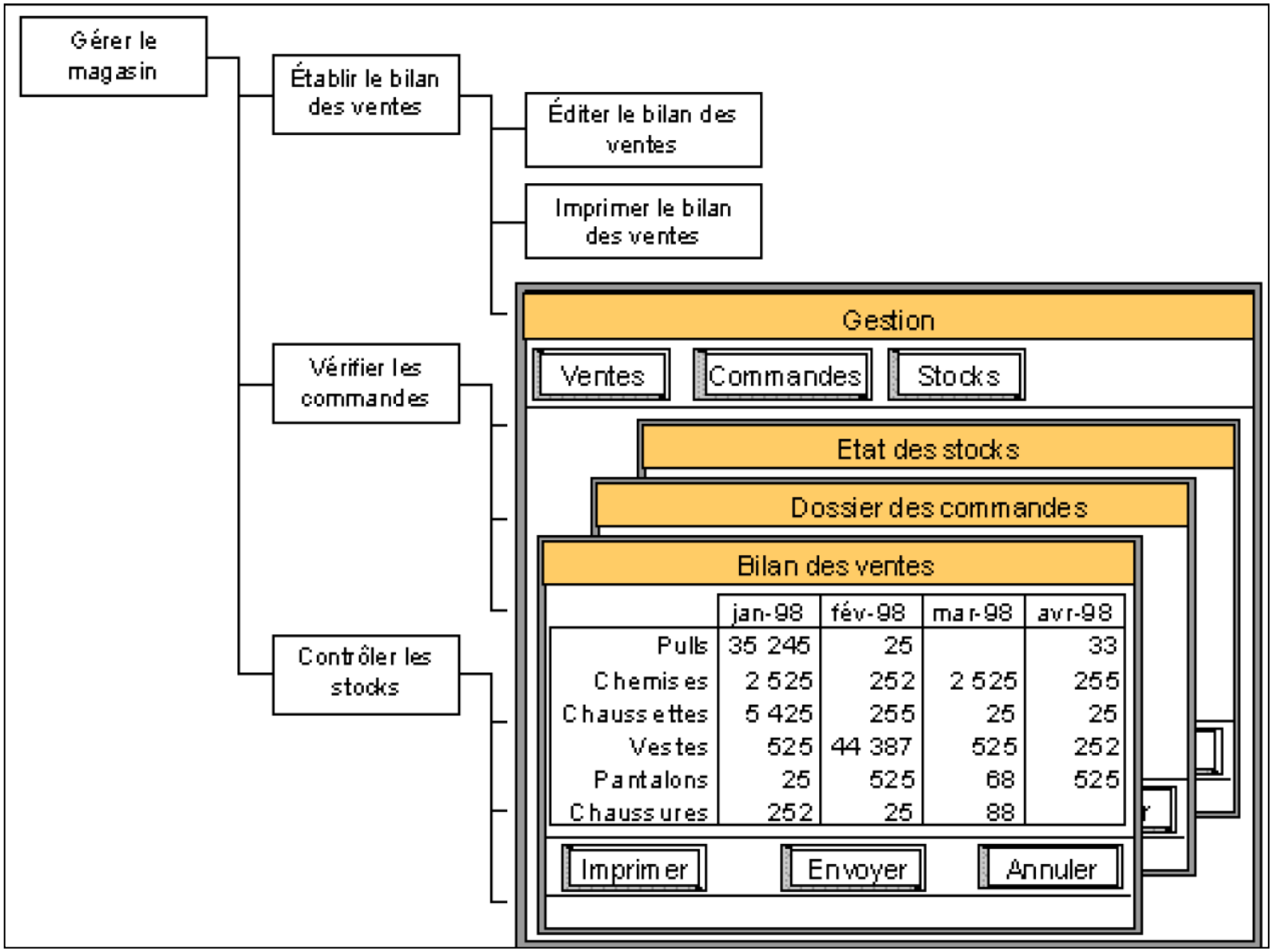
I/ SPÉCIFICATION DE L'INTERFACE

Du modèle de tâches à l'interface

Relations entre :

- **modèle de tâches et interface**
- **scénarios projetés et interface**

Relation entre modèle de tâches et interface



Source : Cours CEIHM de Teresa Colombi (« Ergonomie et Modélisation des utilisateurs des IHM »)

Impact de l'agencement entre tâches sur l'interface

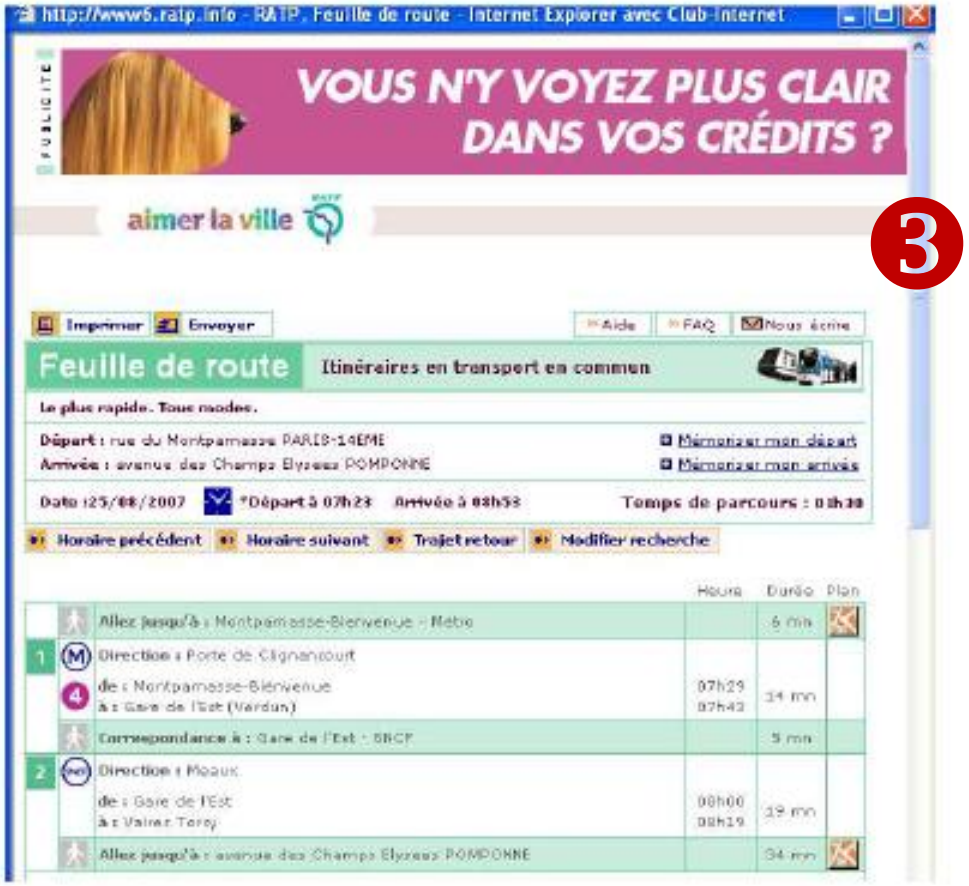
Nature de l'agencement entre les tâches	Impact sur l'interface
Séquentielle	Les champs ou les écrans seront présentés les uns à la suite des autres. Le second ne pourra être utilisé tant que la première tâche n'est pas close
Alternative	Les champs alternatifs seront présentés en même temps. Dès qu'un choix est effectué l'opérateur ne peut plus travailler sur les champs précédents
Parallèle	Tous les possibles sont présentés en même temps. L'utilisateur remplira tout ou partie [de ces possibles]
Simultanée	Tous les possibles sont présentés mais plusieurs opérateurs peuvent y travailler en même temps
Itérative	L'écran se représente tant que l'objectif [lié à l']Itérative n'est pas atteint

Source : Bertrand Evain (« Transformer un besoin utilisateur en interface ergonomique avec MAD »)

Impact de l'agencement entre tâches sur l'interface :

Exemple d'interface « séquentielle »

Les champs ou les écrans sont présentés les uns à la suite des autres.
Le suivant ne peut être utilisé tant que la tâche précédente n'est pas close



Source : Bertrand Evain (« Transformer un besoin utilisateur en interface ergonomique avec MAD »)

Impact de l'agencement entre tâches sur l'interface :

Exemple d'interface « itérative »

L'écran se représente tant que l'objectif [lié à l']Itérative n'est pas atteint

Source : Bertrand Evain (« Transformer un besoin utilisateur en interface ergonomique avec MAD »)

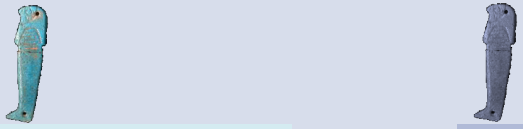
Relation entre scénarios projetés et interface

- **Scénarios projetés abstraits**
  - Fonctions de la future interface sans détail
  - Support à l'élaboration des spécifications externes
- **Scénarios projetés concrets**
  - Interactions futures
  - Résultat de la phase des spécifications externes

Exemple de scénario projeté : les archéologues (1)
(application : « terrain augmenté »)

SCENARIO

- L'archéologue **Yves C.** opère sur un site
- Il trouve un objet matériel
- L'objet découvert est retiré du site
- L'objet est sauvegardé dans une base de données
- L'archéologue **Didier B.** approche de l'endroit où se trouvait l'objet matériel
- Il peut accéder à l'objet virtuel



Adapté de : cours « Modèle de tâche » de Philippe Renevier

Exemple de scénario projeté : les archéologues (2)
(application : « terrain augmenté »)

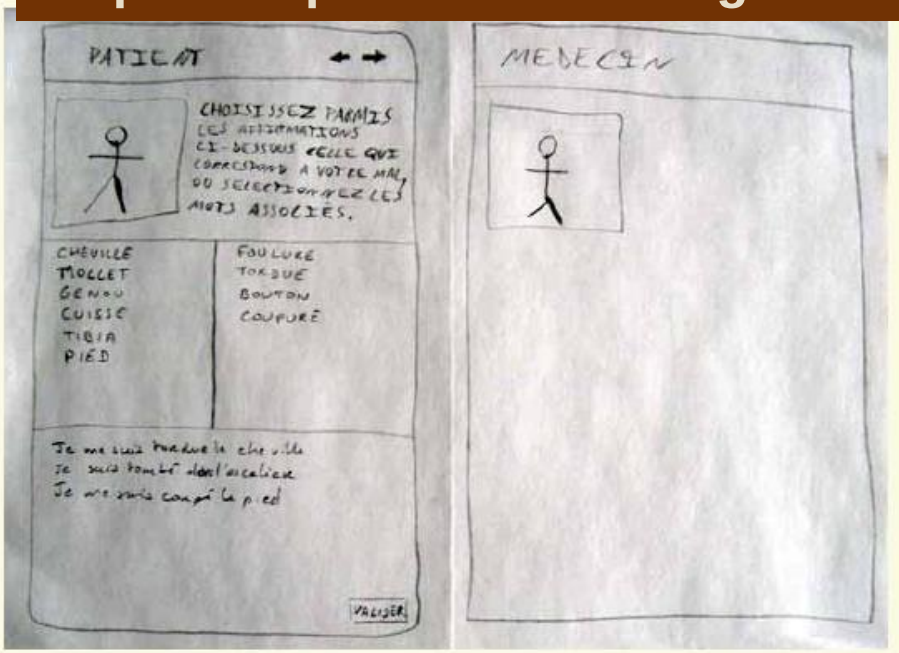
SCENARIO

- L'archéologue Yves G[illegible]vient sur le site disc[illegible]et avec son collèg[illegible]P

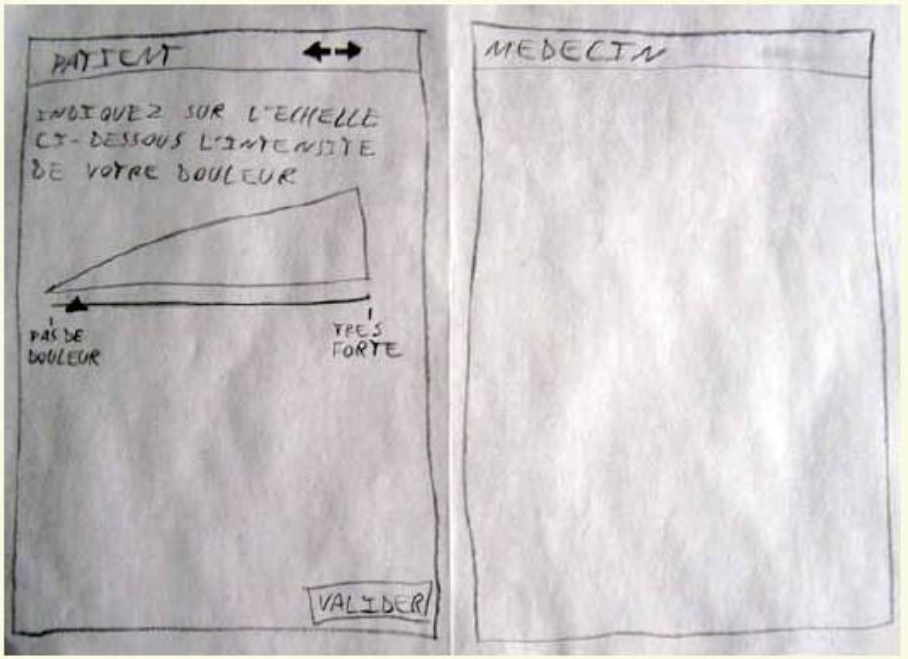
Adapté de : cours « Modèle de tâche » de Philippe Renevier

LE MODÈLE DE TÂCHES ET APRÈS ?
2/ ÉVALUATION DE L'INTERFACE

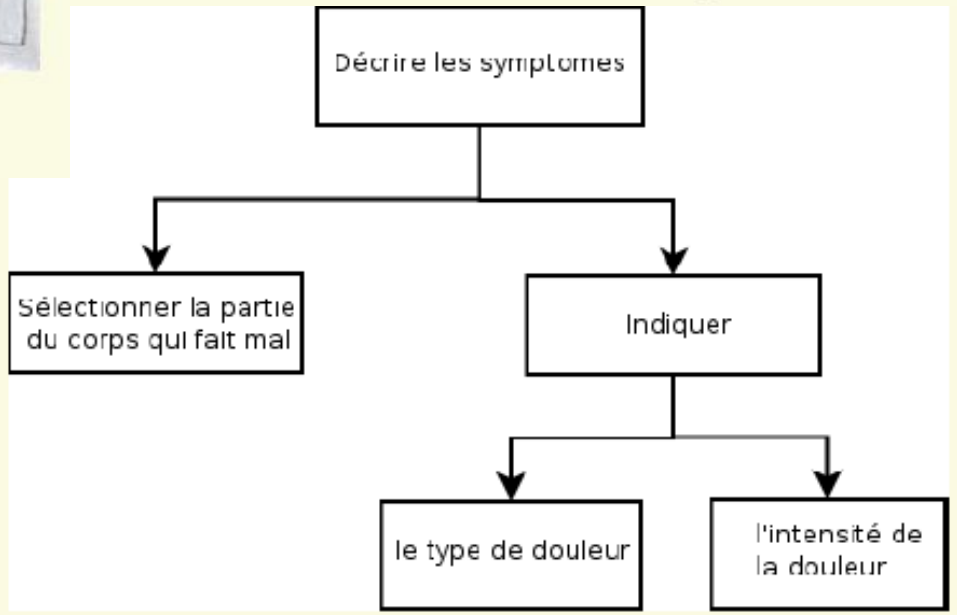
Mini-projet IHM
Communication Médecin-Touriste ne parlant pas la même langue



Description des symptômes



Evaluation de la gêne



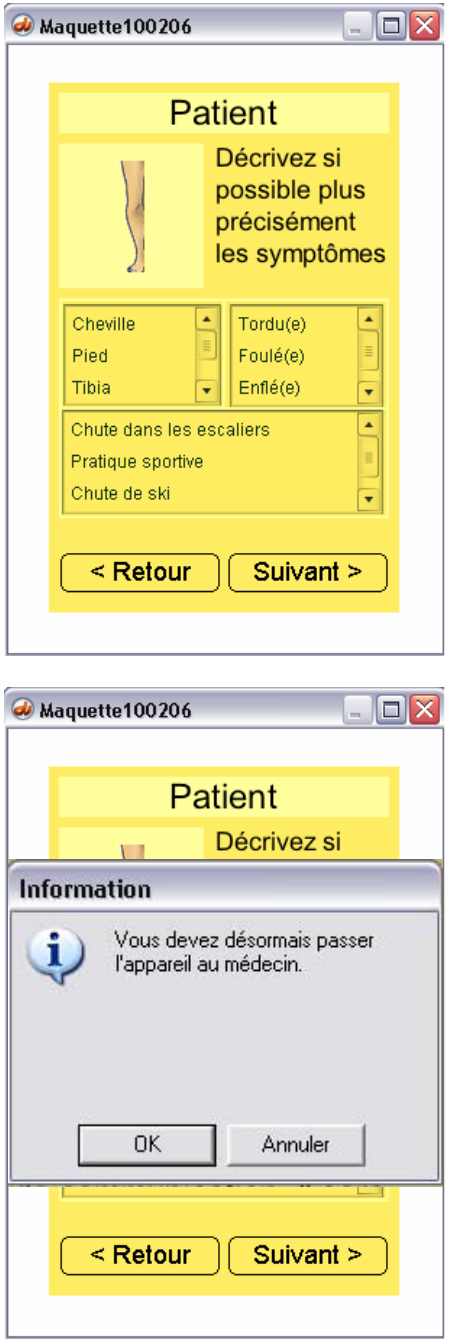
(Sébastien Gachet, Nicolas Goyer, Ketty Nguyen, Julie-Anne Panont)

Mini-projet IHM
Communication Médecin-Touriste ne parlant pas la même langue

Exemple de résultat d'évaluation :

- Problème : **Utilisateurs non informés que l'outil permet une interaction entre le patient et le médecin** et qu'il doit donc être utilisé à la fois par l'un et par l'autre
  - Les utilisateurs (patients) n'ont pas compris l'utilité des écrans destinés au médecin
  - Ils ont eu tendance à toucher aussi les écrans du médecin

- Solution : **Ajout de pop-ups indiquant au patient qu'il faut passer l'appareil au médecin ou inversement**
  - Ainsi, les écrans sont bien séparés et seul l'utilisateur concerné (patient ou médecin) pourra interagir
  - Les textes de ces pop-ups sont écrits à la fois dans la langue du patient et dans celle du médecin



(Sébastien Gachet, Nicolas Goyer, Ketty Nguyen, Julie-Anne Panont)

RÉCAPITULATIF

Pour obtenir le modèle de tâches :

- Recueillir/rassembler les données pertinentes
  - Scénarios initiaux / Personas
  - Transcription des entretiens
- Organiser les données → modèle de tâches non formel
- Formaliser → modèle de tâches formel (arbre de tâches)

Utiliser le modèle de tâches pour (entre autres) :

- spécifier l'interface
- élaborer des scénarios d'évaluation

Questions ?