5th IS4ALL seminar

Prof. C. Stephanidis
IS4ALL Project Coordinator

Agenda

- Welcome
- Part A – The Health Telematics context
  - Invited talks by
    - Dr. J Devlies
    - Ms. S. Magrlavera
    - Mr. L. Leondaridis
    - Mr. L. Schilders
- Part B – IS4ALL methods
  - Methodology, goals & technical approach
  - IS4ALLmethods landscape
- Part C – Discussion

IS4ALL seminars

- Part of the project's outreach work plan
- In total the IS4ALL project will carry out six seminars in different European countries
- Focus and content of seminars varies
  - 1st Seminar in Rotterdam, NL (19 November 2001) focused on universal design practices
  - 2nd Seminar in Brussels, B (13 December 2001) focused on Health Telematics scenarios for universal access
  - 3rd Seminar in Budapest, H (25 August 2002) focused on code of practice
  - 4th Seminar in Paris, Fr (23 October 2003) followed by the 2nd IS4ALL Workshop
  - 5th Seminar in Heraklion, Crete, GR (26 June 2003) followed by the 3rd IS4ALL Workshop) in the context of HCII'2003

Purpose of IS4ALL seminars

- Present consolidated outcomes
- Raise awareness of a wider audience about universal access
  - The design challenge
  - The methodological basis
  - The engineering ground
- Promote proactive thinking

Universal access in the context of IS4ALL

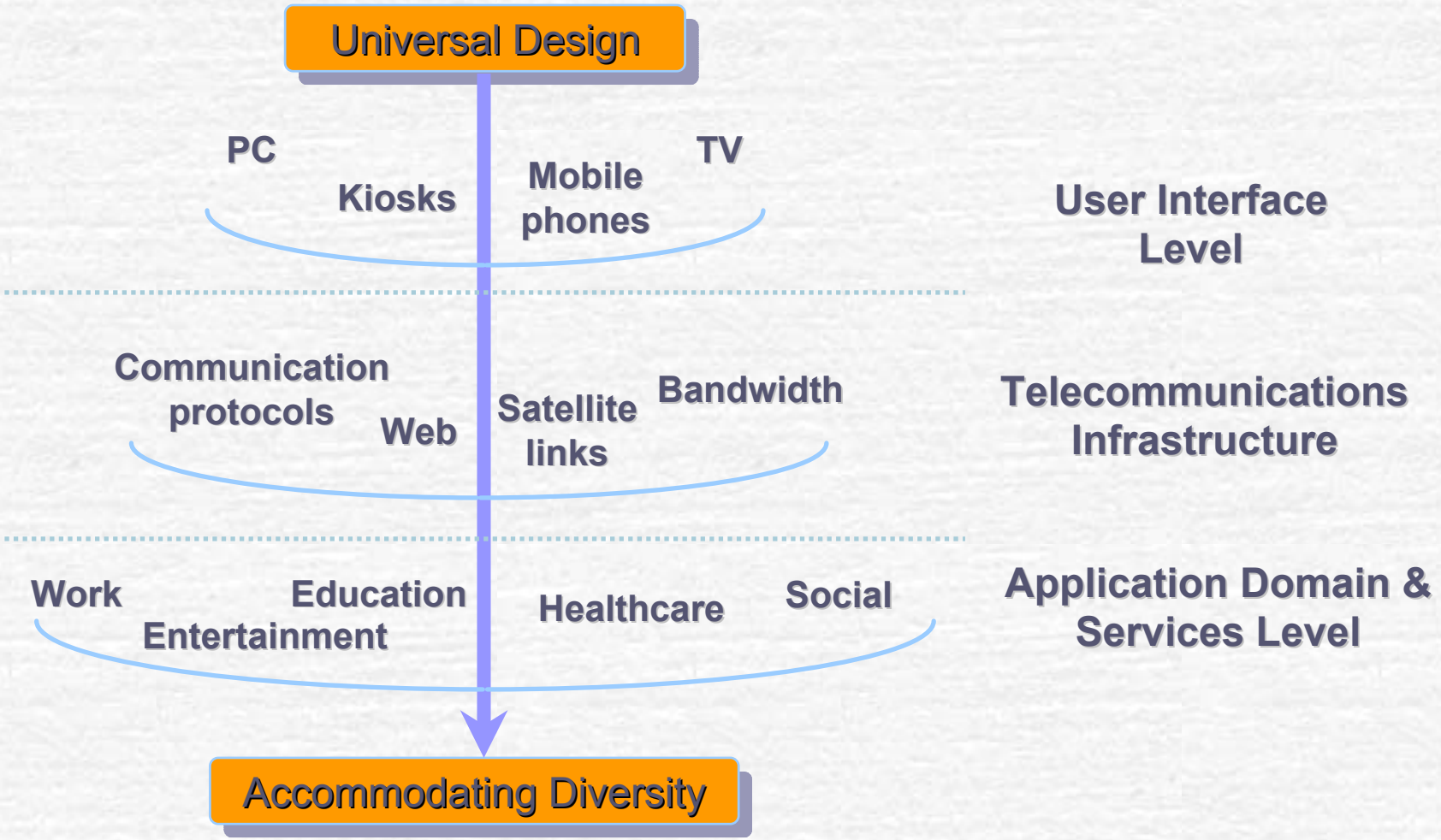
Project web site

http://is4all.ics.forth.gr

Universal Access

- Universal Access concerns the right of all citizens to obtain and maintain access to a society-wide pool of information resources and interpersonal communication facilities, given the varieties of context of use
- To this end, the field of Human-Computer Interaction (HCI) has a critical and catalytic role to play

Universal Access: levels of concern



Health Telematics requirements

- “Just-in-time” information delivery
- Seamless integration of different types of information
- Personalisation and adaptation to the context of use
- Task-based and task-aware devices towards intuitiveness

Emerging challenges in HT

- Large design space due to diversity in:
  - application areas
    - EHCR, tele-consultation, tele-care & monitoring, education & training, Hospital Information Systems, ...
  - technological platforms
    - existing and forthcoming hardware (not only computers) and software (operating systems, applications, etc.)
  - contexts of use
    - hospital, office, home, nomadic, mobile, social environment, ...
  - target user categories
    - abilities and skills to perform interactive tasks,
      preferences regarding the interaction,
      educational and cultural background,
      domain-specific knowledge, ...

International Scientific Forum (ISF)

- A network for collaboration, discussion and exchange of experience and practice on the broad range of issues related to the accessibility, usability and ultimately of the acceptability of the emerging Information Society
- The objective of the International Scientific Forum was to promote the establishment of a favorable environment for the creation of an Information Society acceptable to all citizens
- http://ui4all.ics.forth.gr/isf_is4all/index.html

ISF activity overview (1997 – 2000)

- Three meetings
  - San Francisco, USA, August 29, 1997 (1st meeting)
  - Crete, Greece, June 15-16, 1998 (2nd meeting)
  - Munich, Germany, August 22-23, 1999 (3rd meeting)
- Two white papers
  - Common vocabulary
  - Research agenda
  - Contribution to the EC IST Programme (CPAs)
- Foundation for IS4ALL

IS4ALL (IST-1999-14101)

What it is…

- A Thematic Network (Working Group) establishing a wide, interdisciplinary and closely collaborating network of experts to provide the European Health Telematics industry with a comprehensive code of practice on how to appropriate the benefits of universal access
- Not an RTD project

PART A
The Health Telematics context

Invited talks by

Dr. J Devlies, Ms. S. Magrlavera, Mr. L. Leondaridis and Mr. L. Schilders

PART B
IS4ALL goals, approach and methodology

D. Akoumianakis
ICS-FORTH

Plan of the presentation

- The Thematic Network IS4ALL
- Aims and objectives
- Participants
- Technical approach
- Expected results

The IS4ALL Thematic Network

- A Thematic Network (Working Group) establishing a wide, interdisciplinary and closely collaborating network of experts to provide the European Health Telematics industry with a comprehensive code of practice on how to appropriate the benefits of universal access
- Building on the success of the International Scientific Forum on "Towards and Information Society for ALL"
- Bringing together the Health Telematics and the Universal Access communities
- Emphasis on validating results of collaborative R&D in the context of Health Telematics

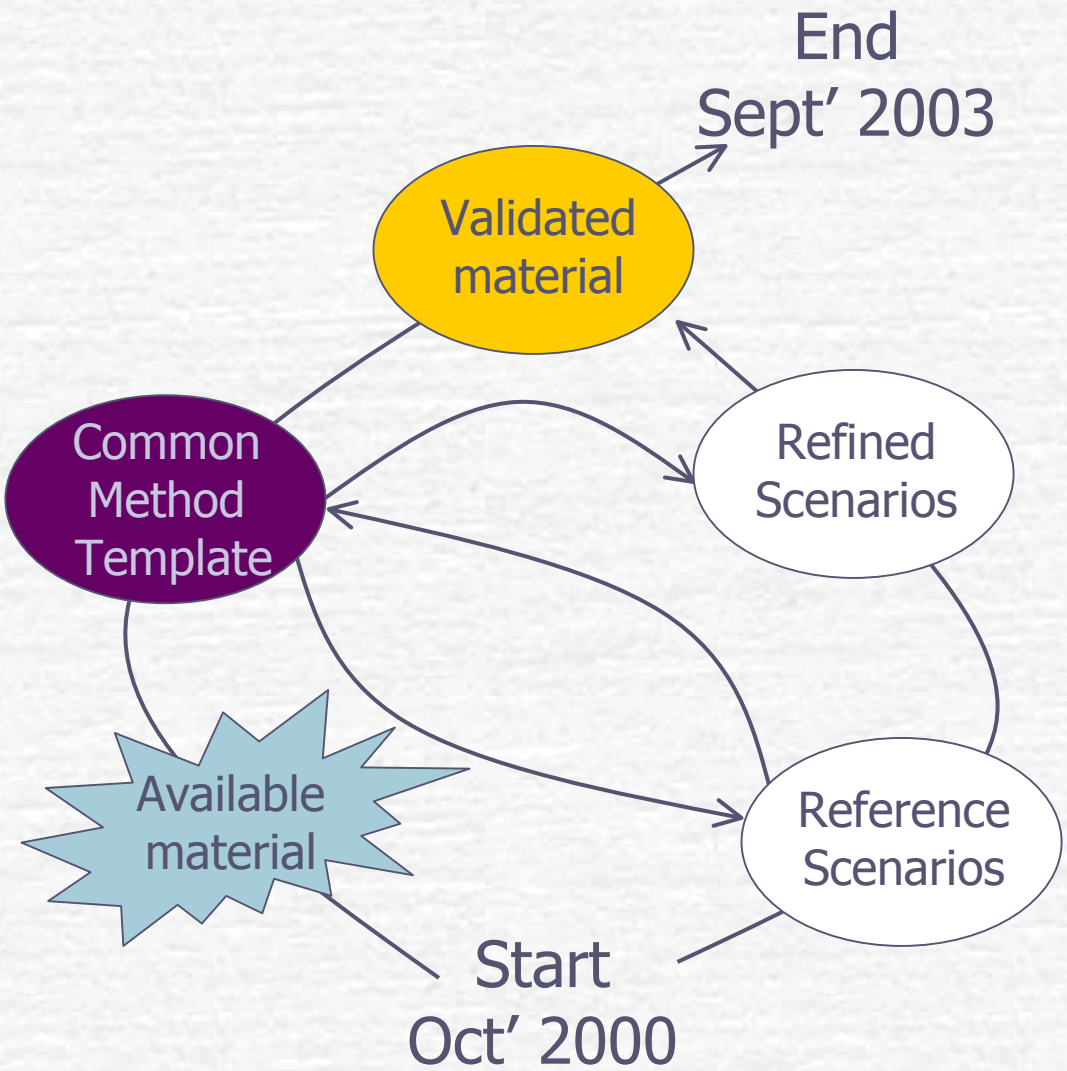
Objectives

- Four main objectives:
  - **Consolidate** existing knowledge on Universal Access in the context of IST into a comprehensive code of design practice.
  - **Translate** the consolidated wisdom to concrete recommendations for Health Telematics.
  - **Demonstrate** the validity and applicability of the recommendations (through implementation of concrete scenarios)
  - **Promote** the Universal Access principles and practice in Health Telematics

Participants

- Main contractor
  - ICS-FORTH, Greece
- Members
  - MS-HUGe, Belgium
  - EHTEL Association, Belgium
  - CNR-IFAC, Italy
  - INRIA, France
  - FhG-IAO, Germany
  - FhG-FIT (formerly GMD), Germany

Methodology



Expected results

- Universal access code of practice (CoP) to provide design support at the macro- and micro-level:
  - Macro-level: A process-oriented protocol to explain to practitioners the steps and phases involved
  - Micro-level: Definition and examples of techniques to be used to attain specific targets (i.e., requirements gathering, design, development,etc)

Universal access: Some issues

- Why is universal access a distinct feature?
- Can we not address it through conventional practices?
- Why is universal access different for accessible design?
- Is it appropriate?
- Is it feasible?
- Is it economically effective and efficient?
- …

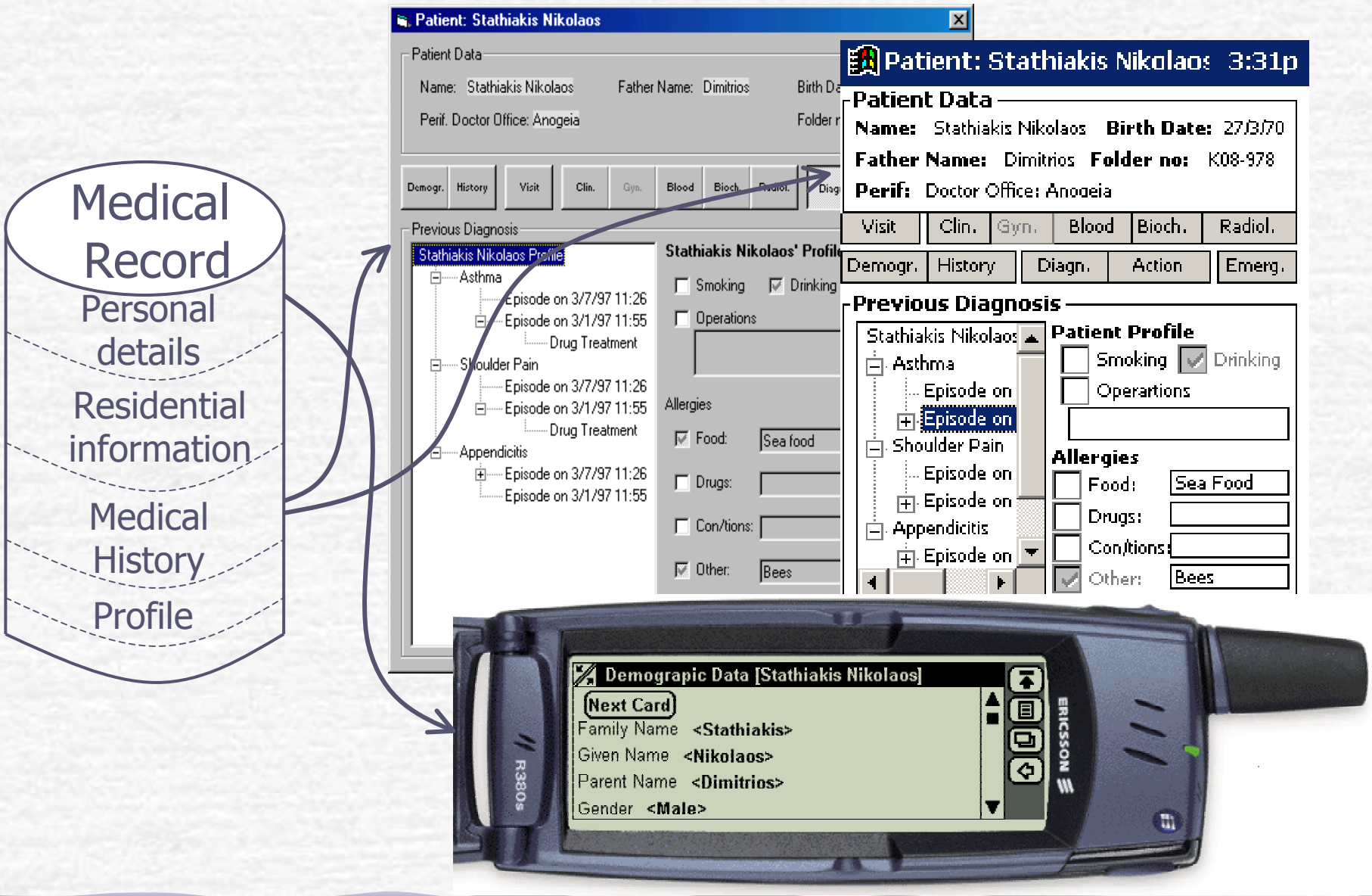
A definition

- A system is universally accessible if it can be accessed effectively, efficiently and with satisfaction by all authorized users, anytime and from anywhere, without applying other actions or means than those provided for this purpose for the software considered

Some implications

- The definition implies that
  - universal access is more than mere (low-cost) access
  - universal access assumes high *usability*
  - universal access means *adaptation* on behalf of the software
  - universal access entails *user perceived qualities* but also *features* related to the development process
  - universal access requires explicit accounts of the *global execution context* of tasks

An example


Medical Record
Personal details
Residential information
Medical History
Profile
Patient: Stathiakis Nikolaos
Patient Data
Name: Stathiakis Nikolaos
Father Name: Dimitrios
Perif. Doctor Office: Anogeia
Demogr.
History
Visit
Clin.
Gyn.
Blood
Bioch.
Radiol.
Previous Diagnosis
Stathiakis Nikolaos Profile
Asthma
Episode on 3/7/97 11:26
Episode on 3/1/97 11:55
Drug Treatment
Shoulder Pain
Episode on 3/7/97 11:26
Episode on 3/1/97 11:55
Drug Treatment
Appendicitis
Episode on 3/7/97 11:26
Episode on 3/1/97 11:55
Stathiakis Nikolaos' Profile
Smoking
Drinking
Operations
Allergies
Food:
Sea food
Drugs:
Con/tions:
Other:
Bees
Patient: Stathiakis Nikolaos 3:31p
Patient Data
Name: Stathiakis Nikolaos
Birth Date: 27/3/70
Father Name: Dimitrios
Folder no: K08-978
Perif: Doctor Office: Anogeia
Visit
Clin.
Gyn.
Blood
Bioch.
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Stathiakis Nikolaos
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Allergies
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Drugs:
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Other:
Bees
Demograpic Data [Stathiakis Nikolaos]
Next Card
Family Name <Stathiakis>
Given Name <Nikolaos>
Parent Name <Dimitrios>
Gender <Male>
R380s
ERICSSON

Universal access development practice

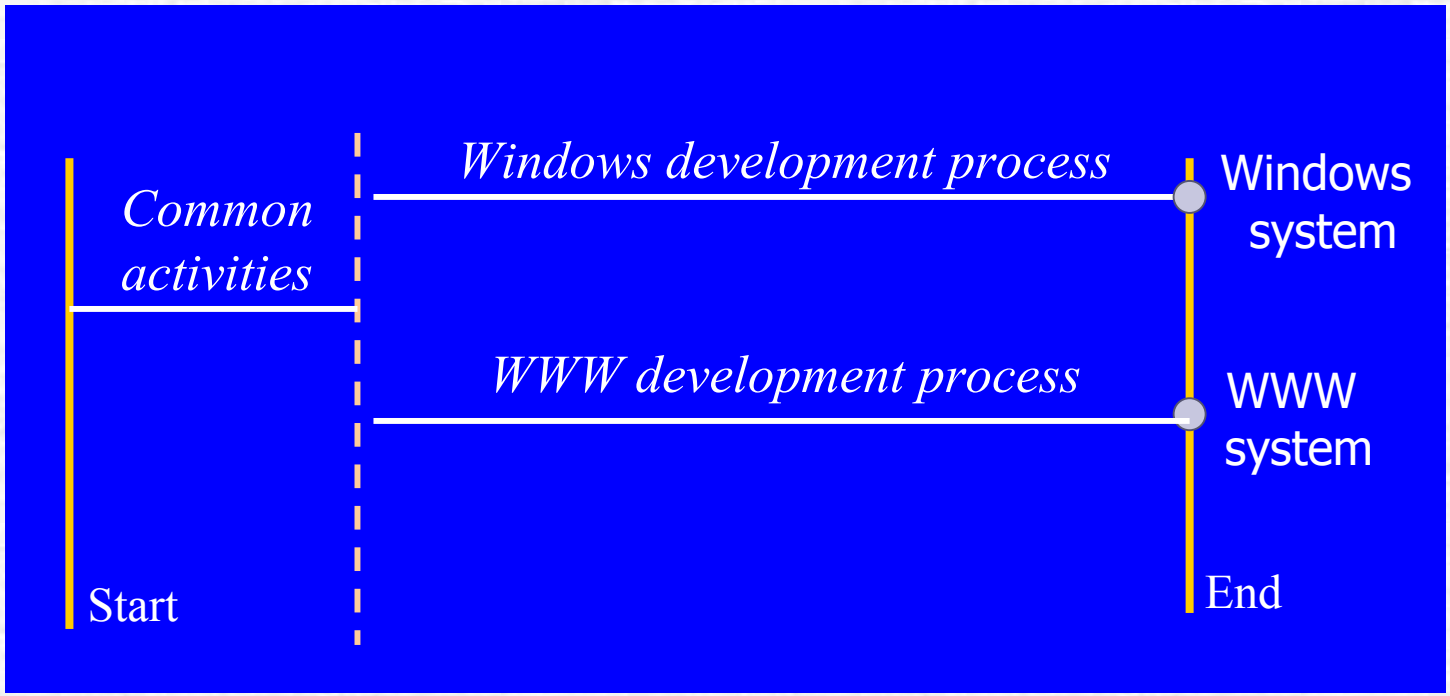
- Parallel development processes
  - Starting with a version, the development team develops an alternative system
- Concurrent development processes
  - From the start the development team sets out to build different versions of the same system making use of common architectural units (e.g. databases, search mechanisms) whenever possible
- Unified development process
  - An alternative recently proposed to cope explicitly with universally accessible interactive software
- In all cases, universal access needs to be designed into a system

As an illustration

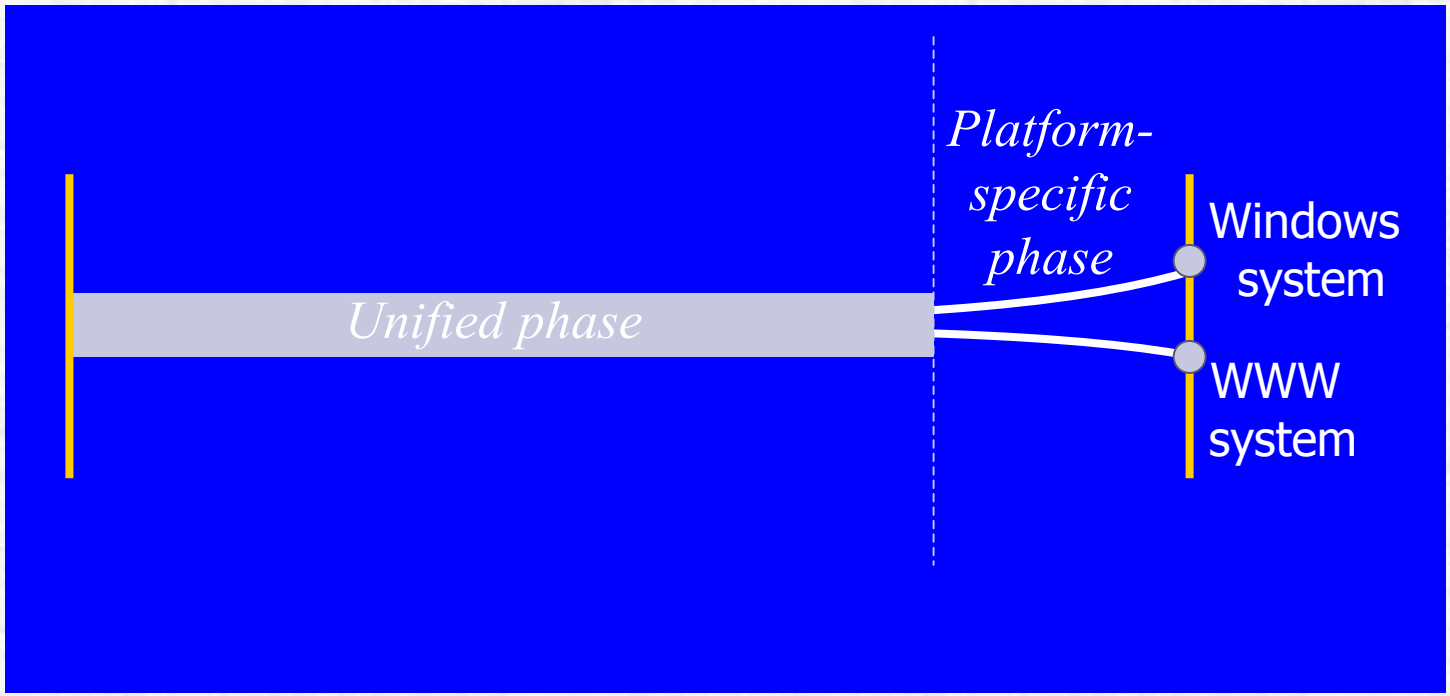
- Let us assume that an electronic medical record is available in a hospital information system under a conventional Windows environment. An alternative version can be developed for the WWW.

Parallel development

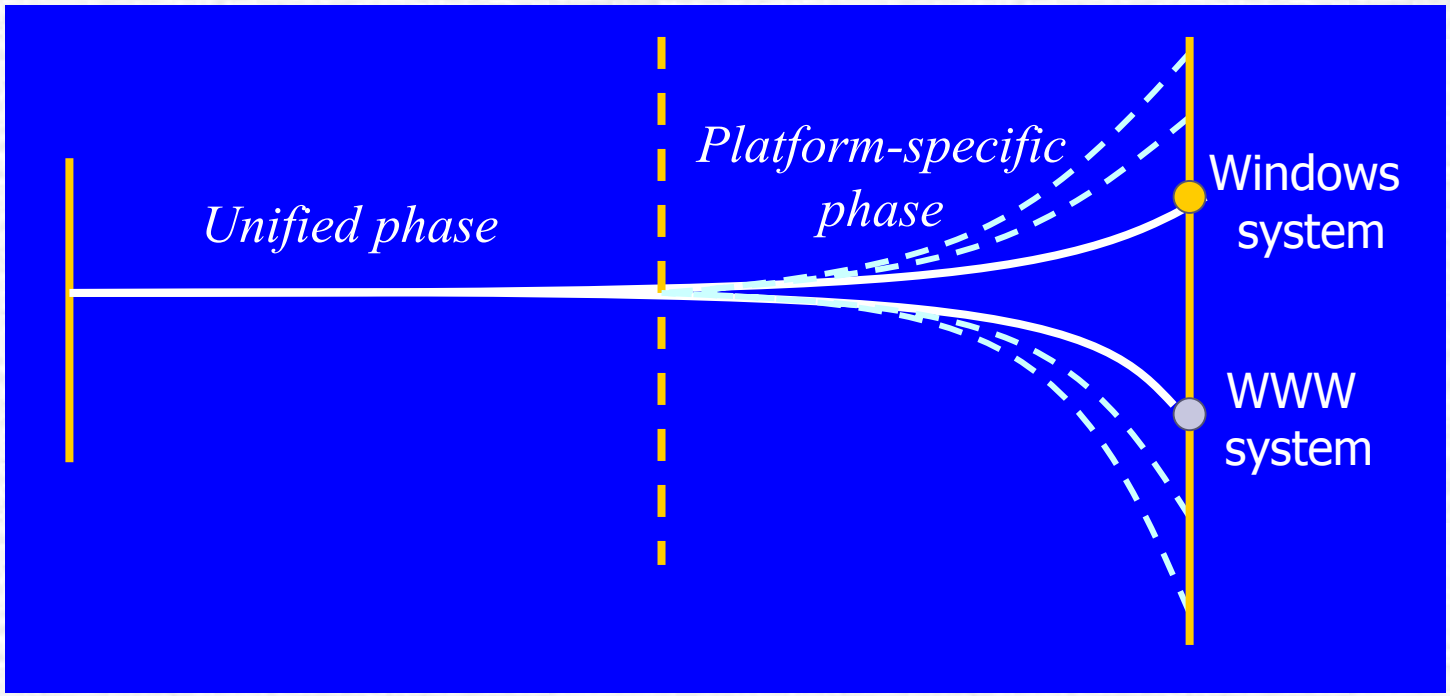
Concurrent development



Unified development process



Benefit of unified development



Concluding remarks (1/2)

- A design/development teams tasked to address universal access should pay attention to several development milestones, such as the following:
  - Focus should be not only on the target users but also on the interaction platforms and the foreseen contexts of use
  - Design should explore and the global execution context
  - Development should be based on suitable architectural abstraction and engineering tools

The focus of IS4ALL (2/2)

- IS4ALL is biased towards design
  - Macro-level or the process
    - What is to be done
    - In what sequence
    - What should be the outcomes
    - How can we verify the outcomes
  - Micro-level
    - What technique is appropriate
    - How to use the technique
    - What outcomes should be derived
    - Assumptions be preserved
  - Validation

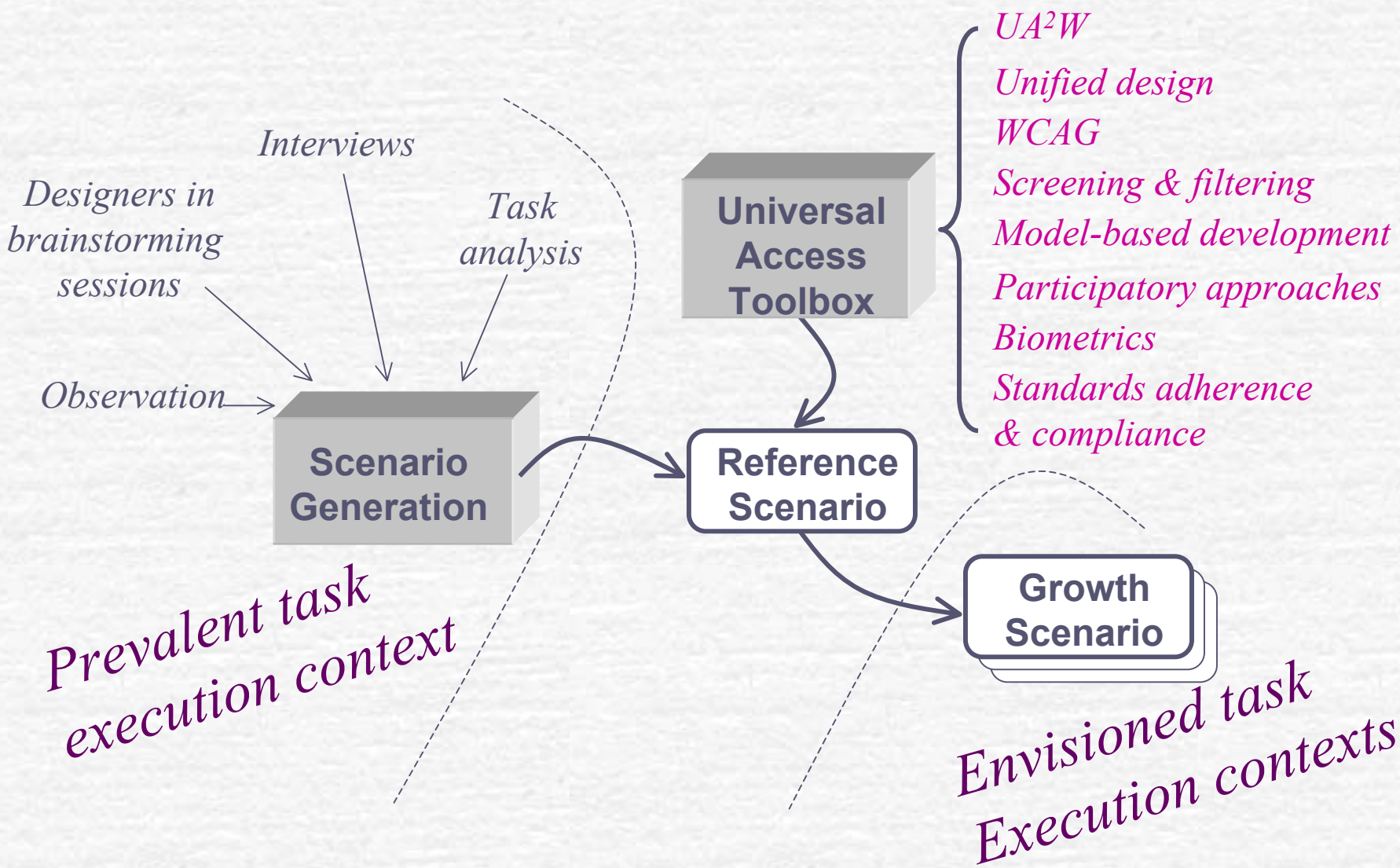
PART B – IS4ALL methods landscape

Overview, rationale and description of methods

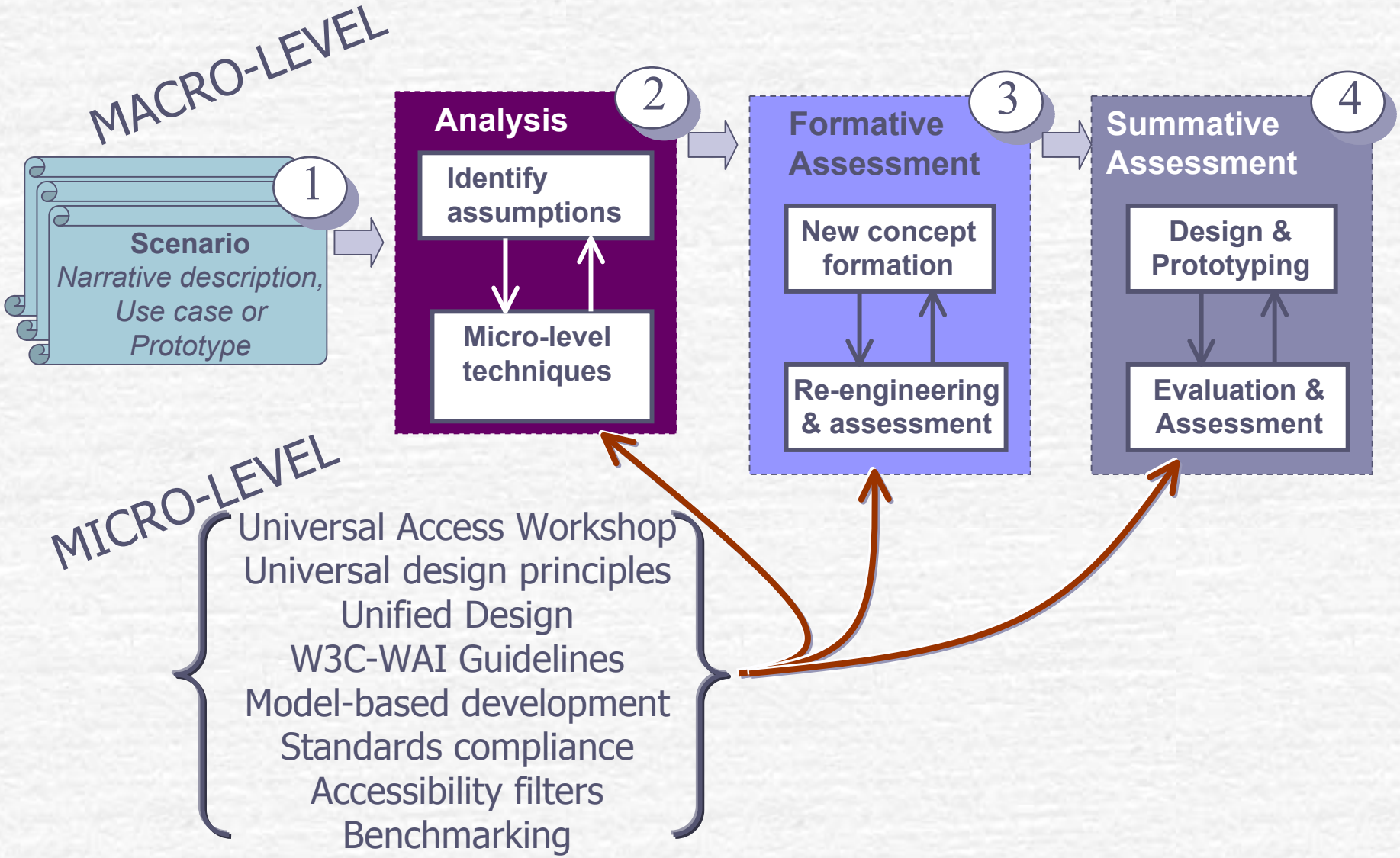
The IS4ALL technical approach

- A scenario-based approach, featuring proactive and analytical insight to universal access
- Scenarios emphasizing access to Electronic Health Records by different users in various contexts of use, making use of a range of access terminals

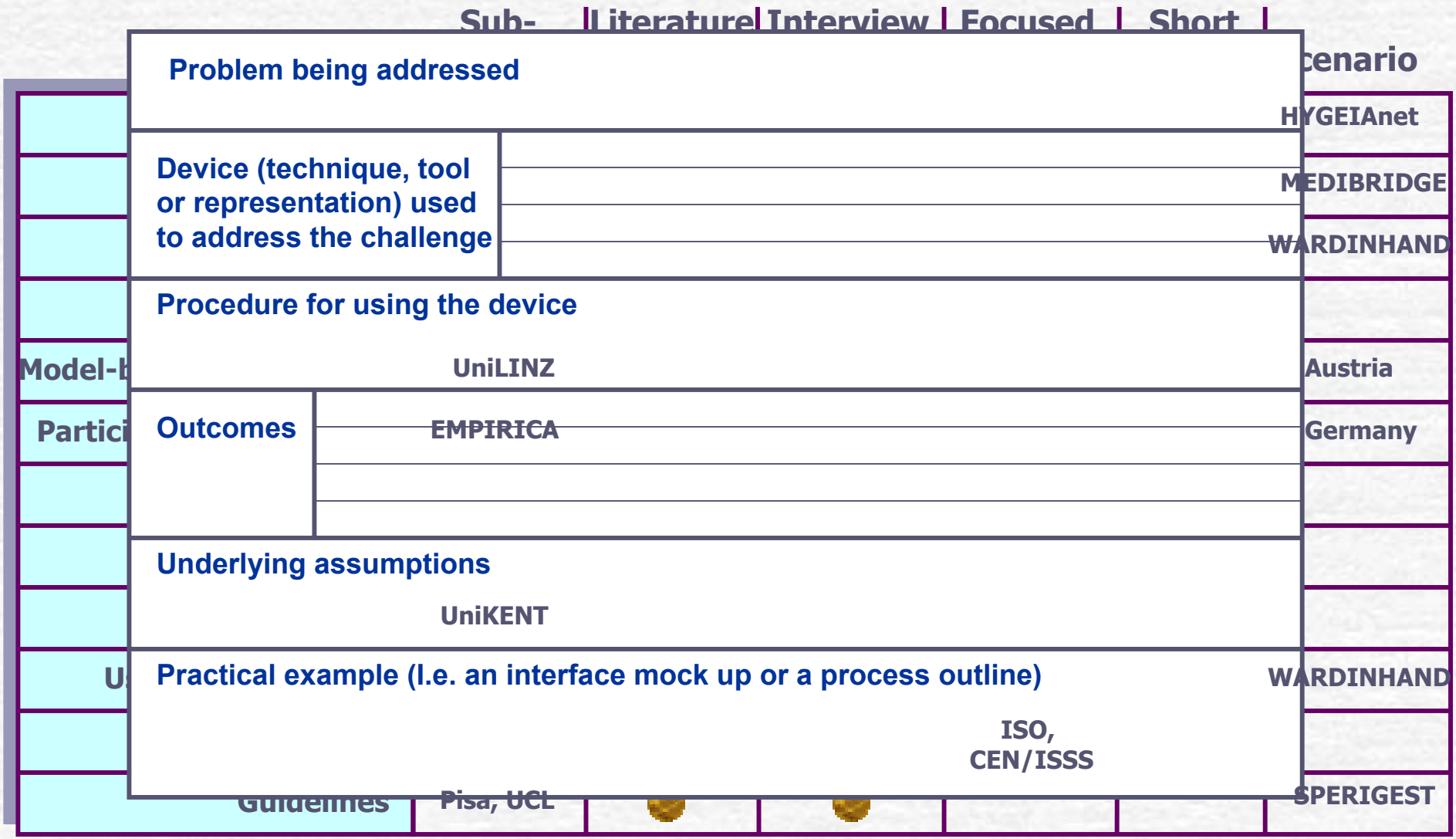
Illustration of methodology



Methodology



Micro-methods



Scenarios

- A description of a possible set of events that might reasonably take place in a Health Telematics environment
- Stimulate thinking about
  - possible occurrences of artefacts
  - assumptions relating to these artefacts
  - possible opportunities and risks
  - courses of action

Approaches to scenario generation

- Sessions with *designers*
  - Gathering designers in brainstorming sessions
  - Situated sessions e.g., interpreting the reaction of users with certain artefacts
- Sessions with *prospective users*
  - Prospective users as audience
    - e.g., designers present a concept to prospective users and stimulate discussion
  - Prospective users as active participants
    - e.g., designers ask prospective users to experience and use a tentative mock up of a system, while designers simulate the task of the device
  - Situated and participative performances
    - e.g., sessions situated in every day life of people with their participation

Scenarios in IS4ALL

- A complete scenario should:
  - aim at a purpose (e.g. describe an activity)
  - be expressed in a form e.g., narrative, visual, (semi) formal notation
  - it should provide content to describe
    - the context of use of an activity and where / how it is carried out
    - the platforms in place (or the artefact)
    - the target users

Generating meaningful scenarios

- Intention
  - Scenarios should depict how a system or an artefact is actually used and the user's experience
- Sources
  - Existing practices / systems
  - Projects (national/European)
  - Envisioned situations

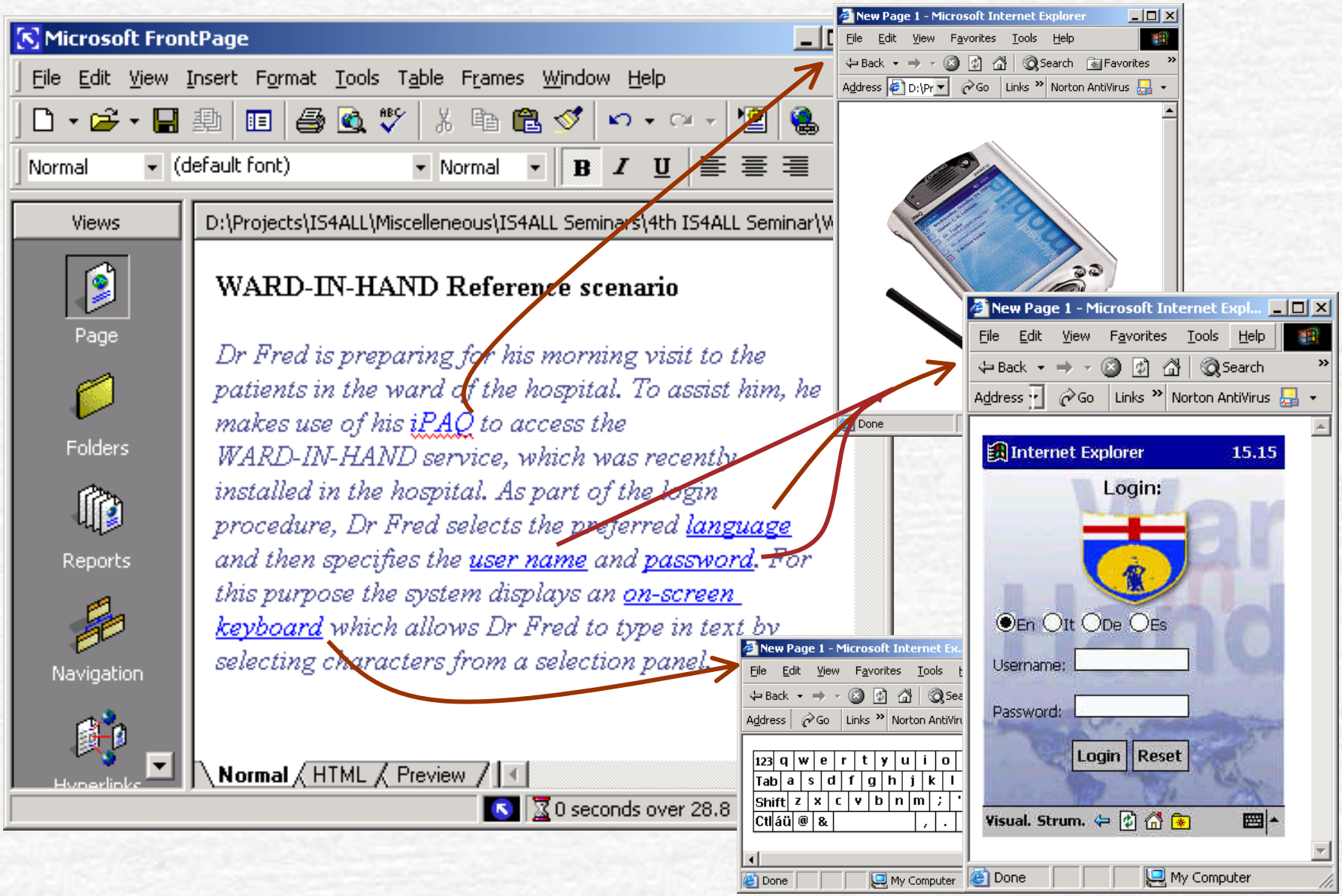
Phases in scenario generation

- Phase 1: Agreement with user community
  - Explanation of the type, nature and scope of the scenario-based inquiry
- Phase 2: Narrative description
  - Using mock-ups (paper- or computer-based prototypes), explain how the task is currently being accomplished using the existing system
- Phase 3: Revision & Confirmation
  - Narrative description revised and confirmed by real users

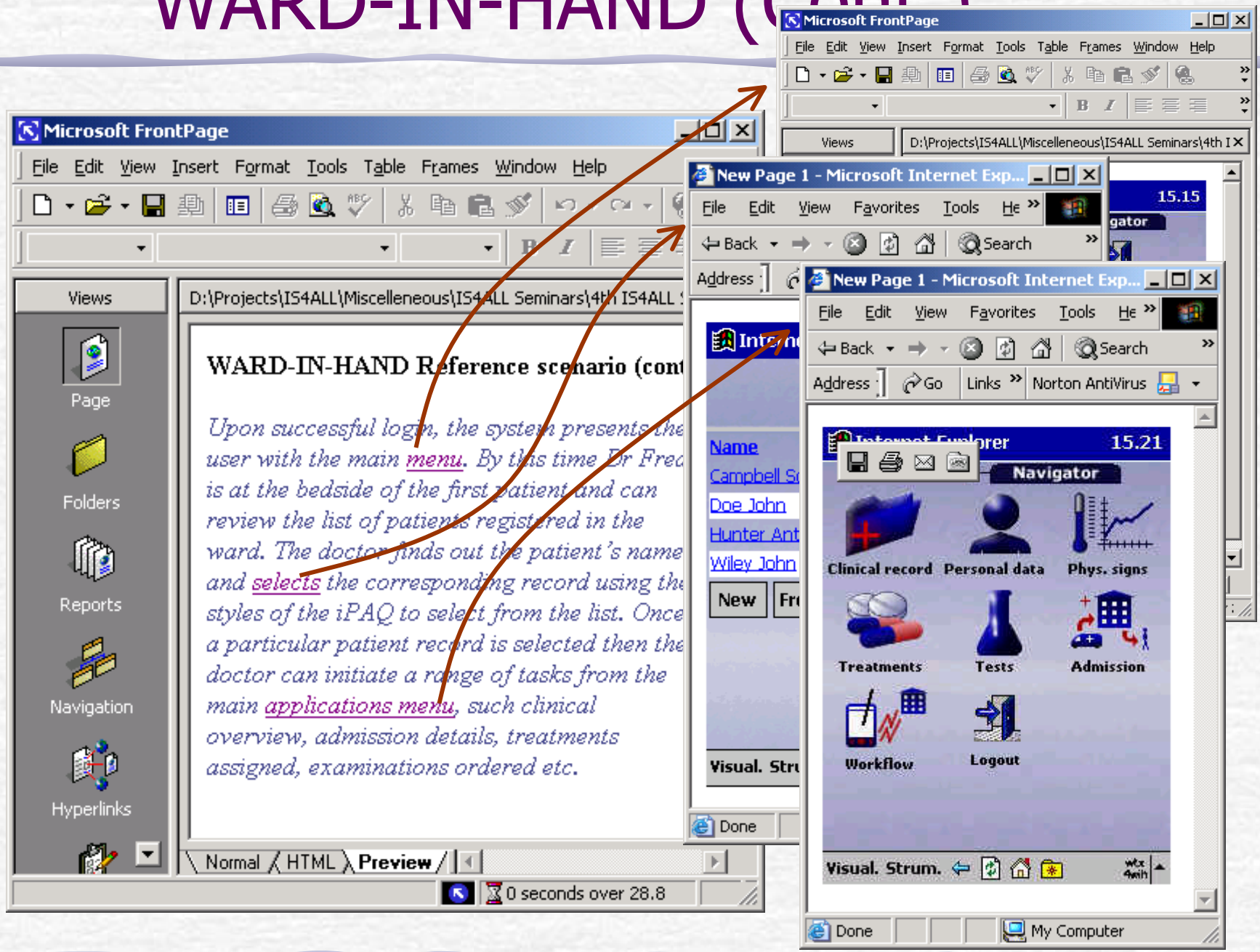
Scenarios being considered

- EC-funded projects
  - WARD-IN-HAND (IST-1999-10479)
    - http://www.wardinhand.org
  - C-CARE (IST-1999-10217)
    - Frame of reference is MediBRIDGE in Belgium
- National initiatives
  - Medical information islands (SPERIGEST)
    - The IFC Information System
  - Austrian reference scenario (University of Linz)
  - German reference scenario (Empirica)
  - HYGEIAnet
    - Regional Health Telematics Network of the Island of Crete
    - http://www.hygeianet.gr/

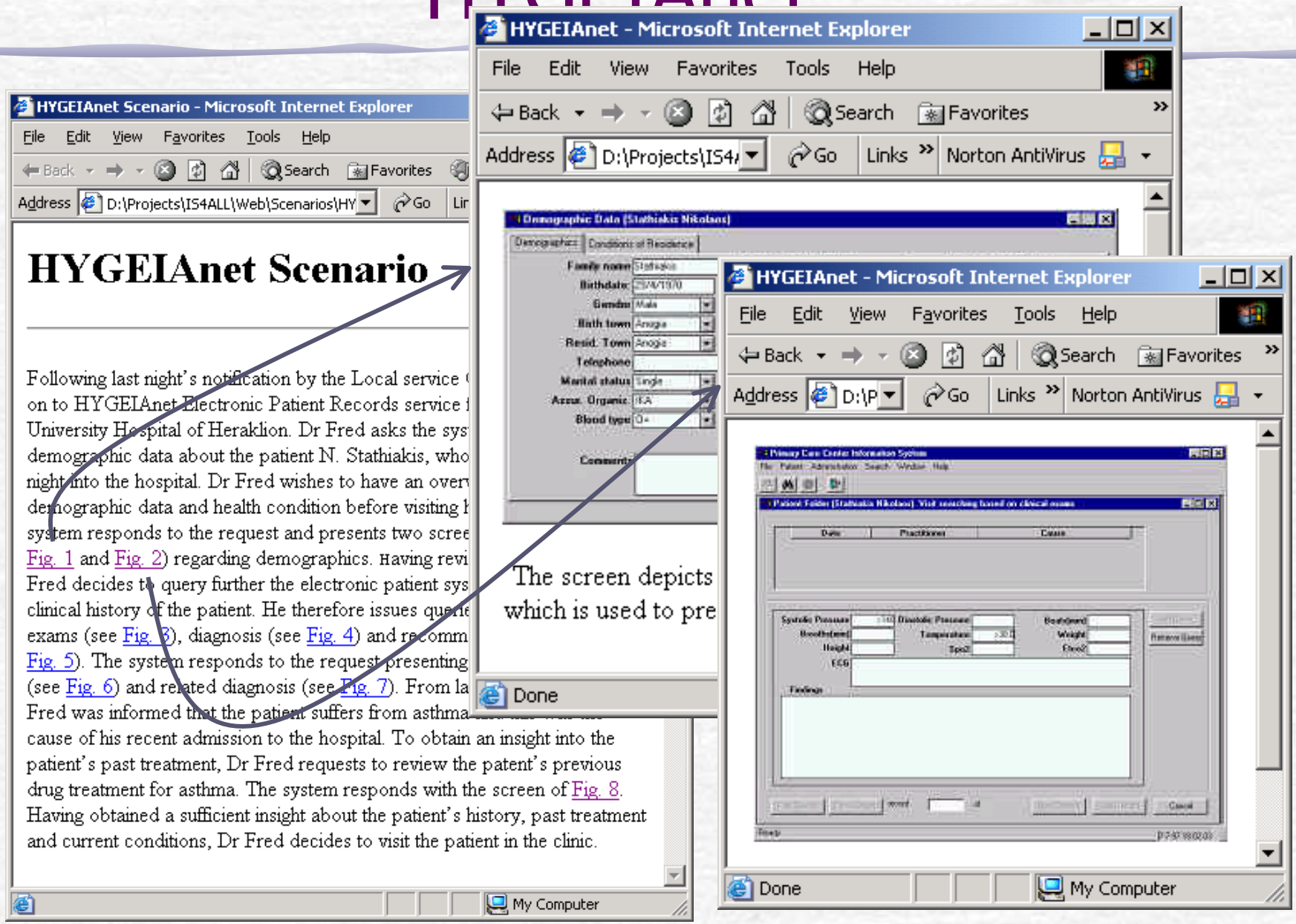
An example scenario



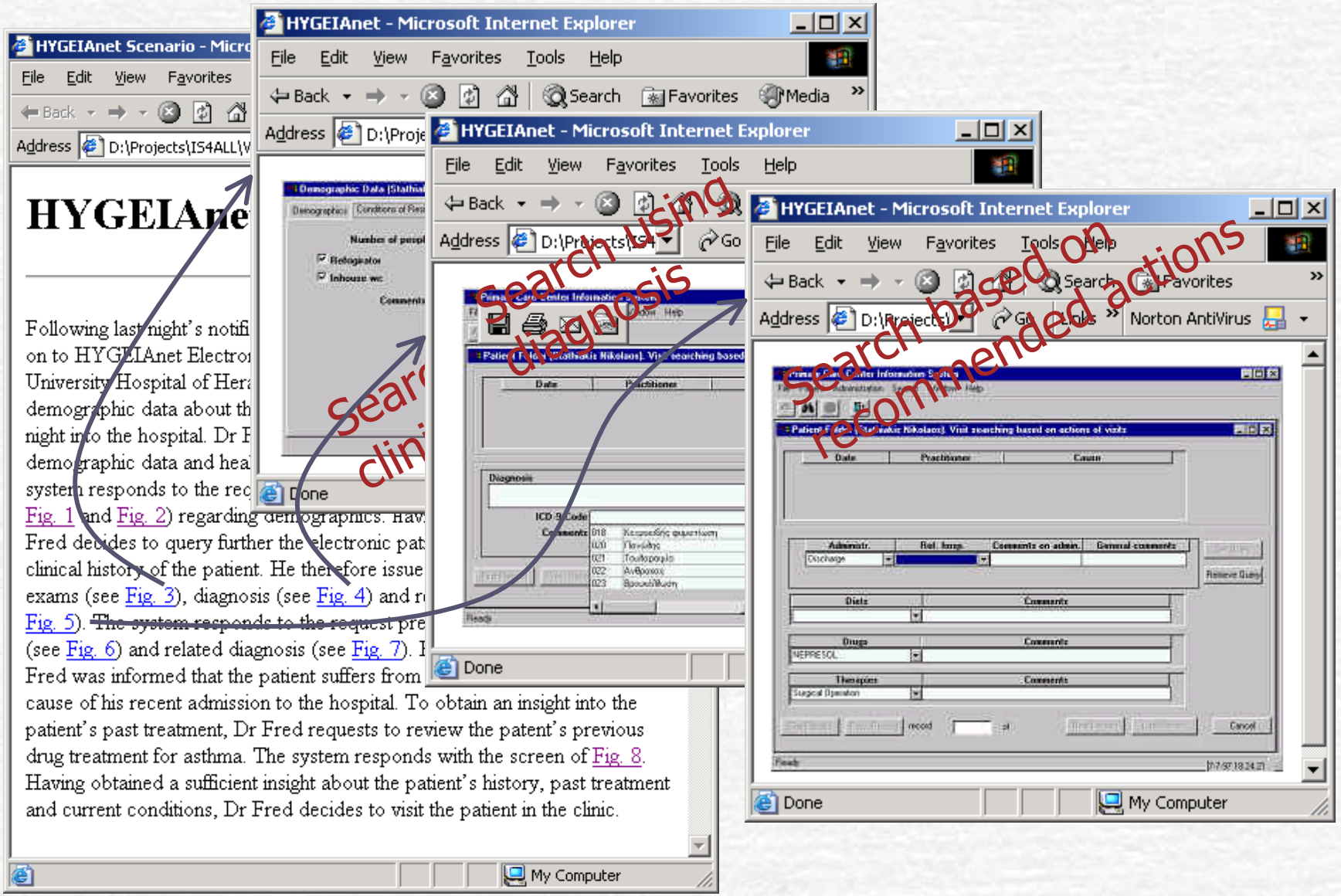
WARD-IN-HAND (Cont.)



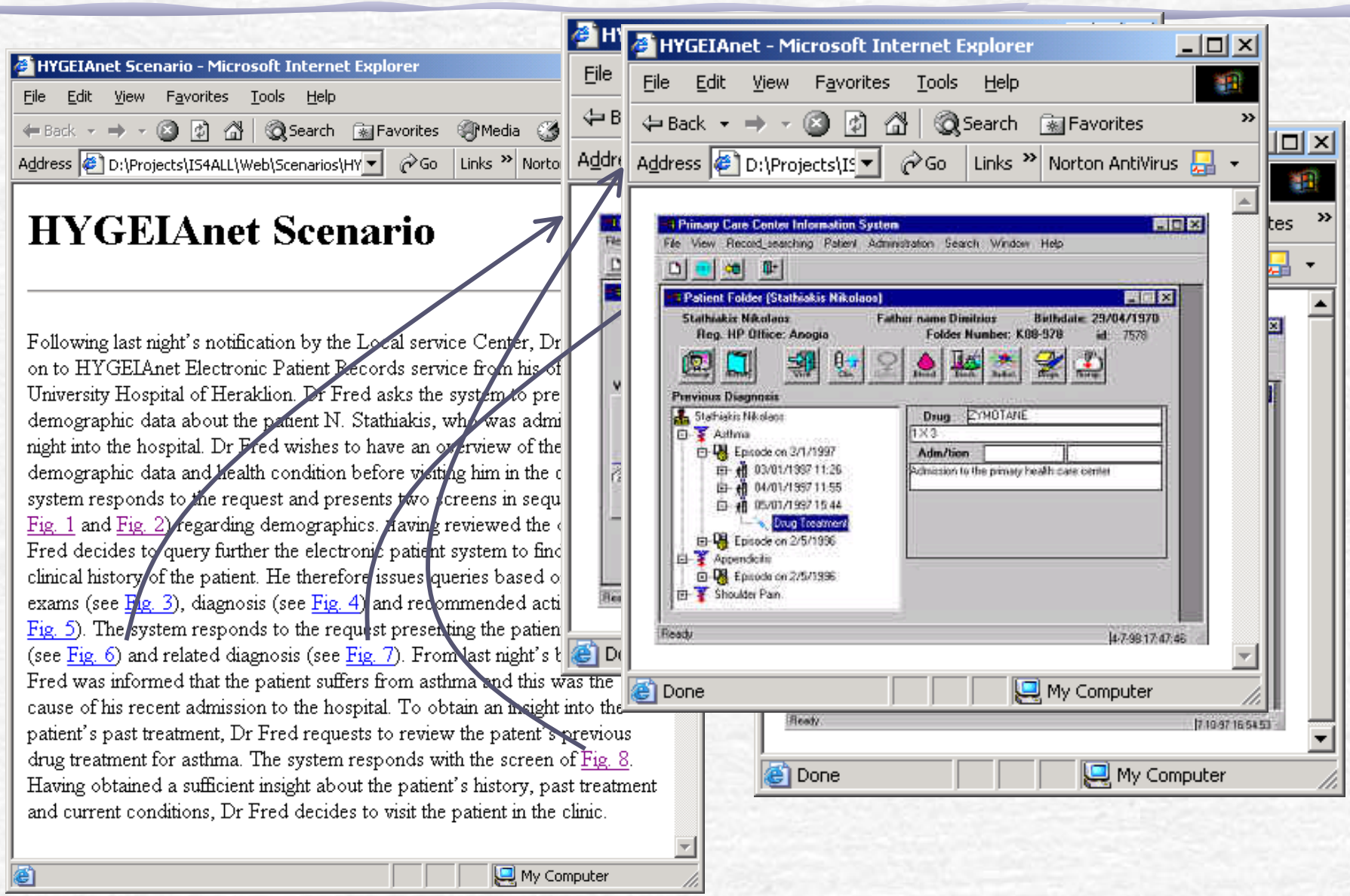
HYGEIAnet


HYGEIAnet Scenario - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address D:\Projects\IS4ALL\Web\Scenarios\HY
Go
HYGEIAnet Scenario
Following last night's notification by the Local service
on to HYGEIAnet Electronic Patient Records service
University Hospital of Heraklion. Dr Fred asks the sys
demographic data about the patient N. Stathiakis, who
night into the hospital. Dr Fred wishes to have an over
demographic data and health condition before visiting
system responds to the request and presents two scree
Fig. 1 and Fig. 2) regarding demographics. Having revi
Fred decides to query further the electronic patient sys
clinical history of the patient. He therefore issues quer
exams (see Fig. 3), diagnosis (see Fig. 4) and recomm
Fig. 5). The system responds to the request presenting
(see Fig. 6) and related diagnosis (see Fig. 7). From la
Fred was informed that the patient suffers from asthma
cause of his recent admission to the hospital. To obtain an insight into the
patient's past treatment, Dr Fred requests to review the patent's previous
drug treatment for asthma. The system responds with the screen of Fig. 8.
Having obtained a sufficient insight about the patient's history, past treatment
and current conditions, Dr Fred decides to visit the patient in the clinic.
My Computer
HYGEIAnet - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address D:\Projects\IS4
Go
Links
Norton AntiVirus
Demographic Data (Stathiakis Nikolaos)
Demographics
Conditions of Residence
Family name
Birthdate
Gender
Birth town
Resid. Town
Telephone
Marital status
Blood type
Comments
The screen depicts
which is used to pre
Done
HYGEIAnet - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address D:\P
Go
Links
Norton AntiVirus
Primary Care Center Information System
Done
My Computer

HYGEIAnet (Cont.)



HYGEIAnet (Cont.)



Conclusion-Generating scenarios

- Scenarios need to be carefully drafted so as to provide
  - Accurate descriptions of computer-mediated human activities (e.g., what users actually do, rather than what they should do)
  - Reference resource for identifying explicit, but most importantly the implicit, assumptions underpinning a system
  - A common vocabulary between end users and designers

Conclusion-Working with scenarios

- Drafting a designated set of reference scenarios is only the starting point
- What happens next?
  - What is to be done, once a scenario is agreed upon?
  - How does one inject "universal access thinking" into the scenario crafting process?
  - …

The above are a few of the process-oriented questions that IS4ALL seeks to provide guidance

Non-functional Requirements Analysis

Functional versus Non-functional requirements

Adaptability, Scalability, Individualization, Platform independence

Requirements for universal access

- Two types of requirements
  - Functional (i.e., what s system should do in terms of functions or services that support user goals, tasks or activities)
  - Non-functional (i.e. global quality constraints that must be satisfied by the software) – known as quality attributes
- Non-functional requirements (NFRs) are more complex to deal with

Examples of NFRs

- From IEEE/ANSI 830-1993
  - Portability
  - Performance
  - Scalability
  - Flexibility
  - Usability
  - Quality
  - Robustness
  - Modifiability,
  - Security and safety, etc.

Frequently classified into process & product attributes

Difficulties with NFRs

- Abstract formulation
- Typically stated informally
- Rarely supported by tools, methodologies or languages
- Verification is a non-trivial task
- Conflicting, making a step-by-step approach impossible
- Typically intended for environment builders rather than application programmers

Universal access & NFRs

- Some NFRs are critical for universal access
  - Adaptability is defined as "…attributes of software that bear on the opportunity for its adaptation to different specified environments without applying other actions or means than those provided for this purpose for the software considered

  Or

  - Adaptability refers to the capability of an interactive system to tolerate changes in its target execution context without external intervention.

Adaptability and universal access

- A system, which supports adaptability, is capable of undertaking context-sensitive processing to *recognize* the need for change, *determine* the plausible alternatives that satisfy the change and *effect* the optimal option in order to generate new behaviour
- Thus adaptability is relevant to universal access to the extent that it allows a system to cope with variation in:
  - … the target users
  - … the various interaction platforms / environments
  - … the different contexts of use

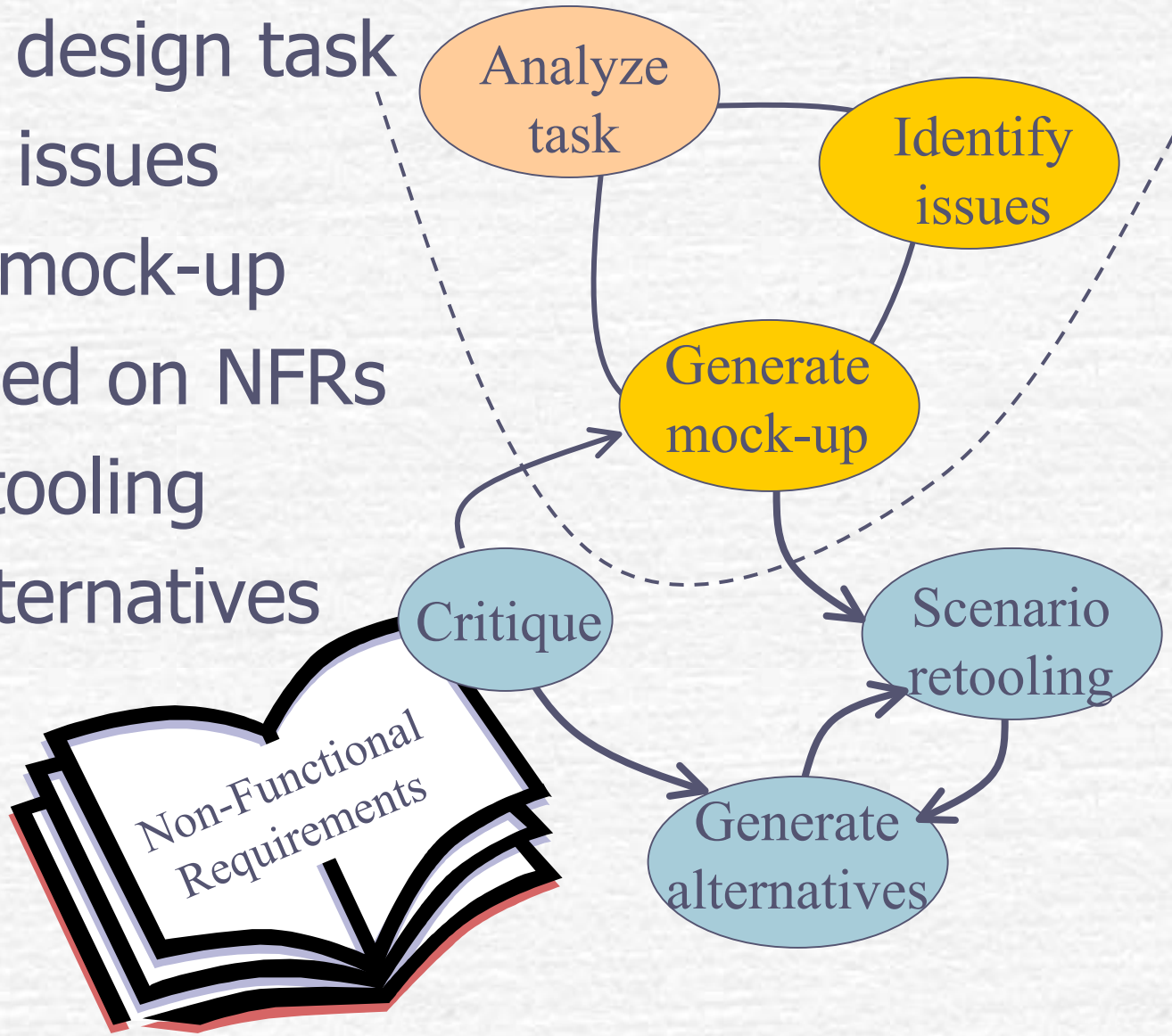
Intertwining NFRs

- "… Requests for accessing the on-line pharmacy store arrive in a rate of x number of messages per second. The on-line pharmacy store must respond to a request within a specified time interval. The system's response should be manifested on the user's interactive terminal to allow him/her to initiate an operation effectively and efficiently from the current location…"

… x number of messages per second…	10 messages /second	100 messages / second	*System throughput*	Scalability
… manifested on the user's interactive terminal…	Desktop PC	iPAQ	*Interaction platform*	Platform independence
… to initiate an operation effectively and efficiently…	General practitioner	Patient at home	*System's target user*	Individualization
… from current location…	Office environment	Residential environment	*System's context of use*	Ubiquity

Phases in NFRs analysis

- Analyze the design task
- Identify the issues
- Generate a mock-up
- Critique based on NFRs
- Scenario retooling
- Generate alternatives



An example scenario

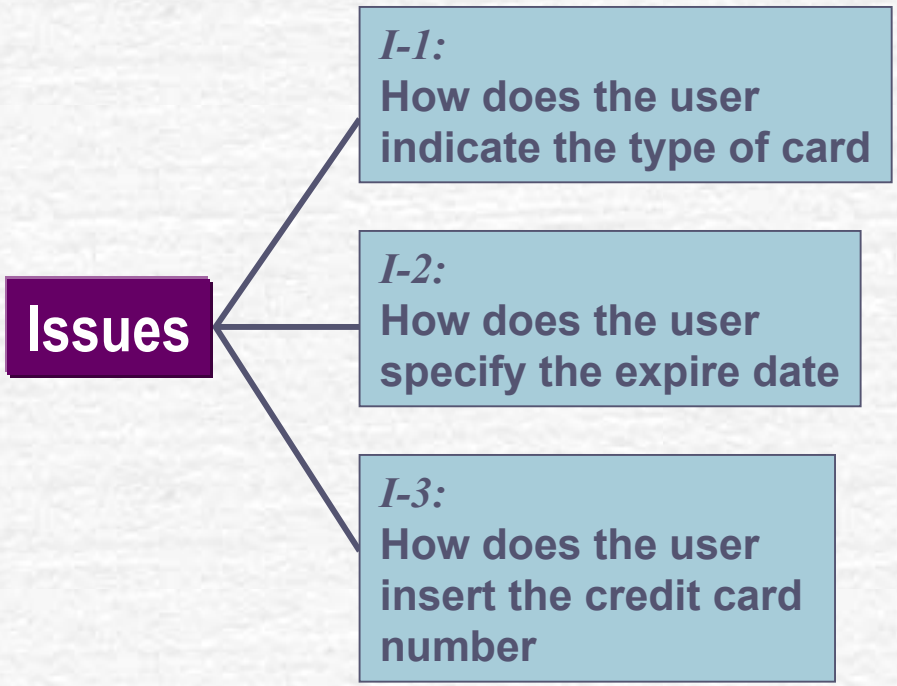
- A user has just completed an order for several pharmaceuticals items. The on-line pharmacy store requests the user to specify payment details to process the transaction.
- No available system
- Commitment to universal access

The design task

- Design the dialogue through which a user can enter information about his/her credit card
- Information to be entered includes:
  - Type of card
  - Card number
  - Expire data
  - User's name as printed on the card
  - Billing address information
  - etc

Identifying the issues

- Issues raised:
  - How does the user indicate the type of card?
  - How does the user specific the expire data?
  - How does the user insert his/her credit card number?



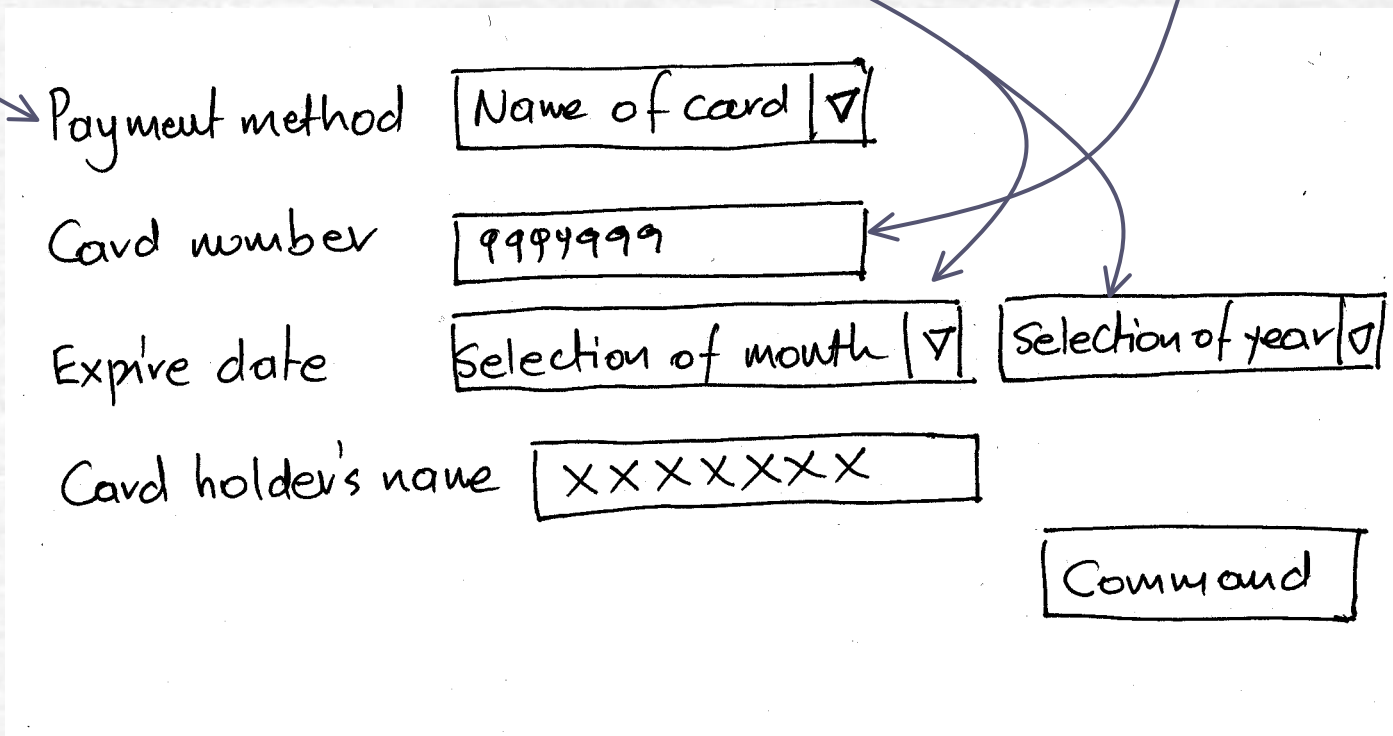
Generating a paper mock-up

Issues

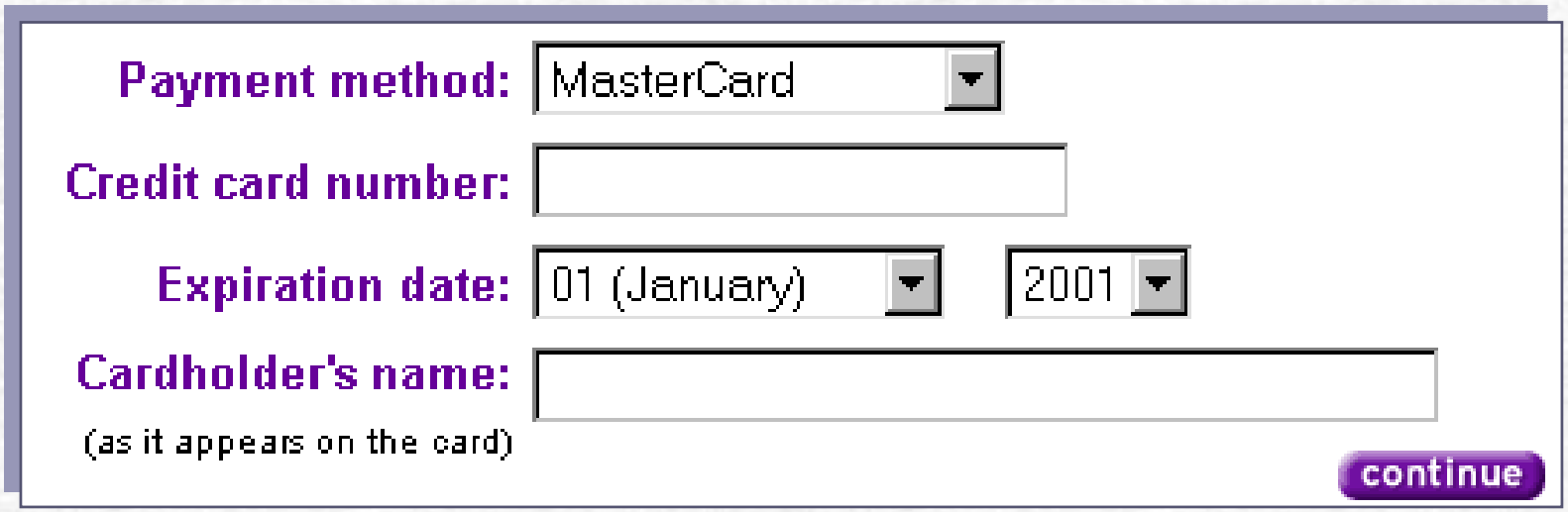
I-1:
How does the user indicate the type of card

I-2:
How does the user specify the expire date

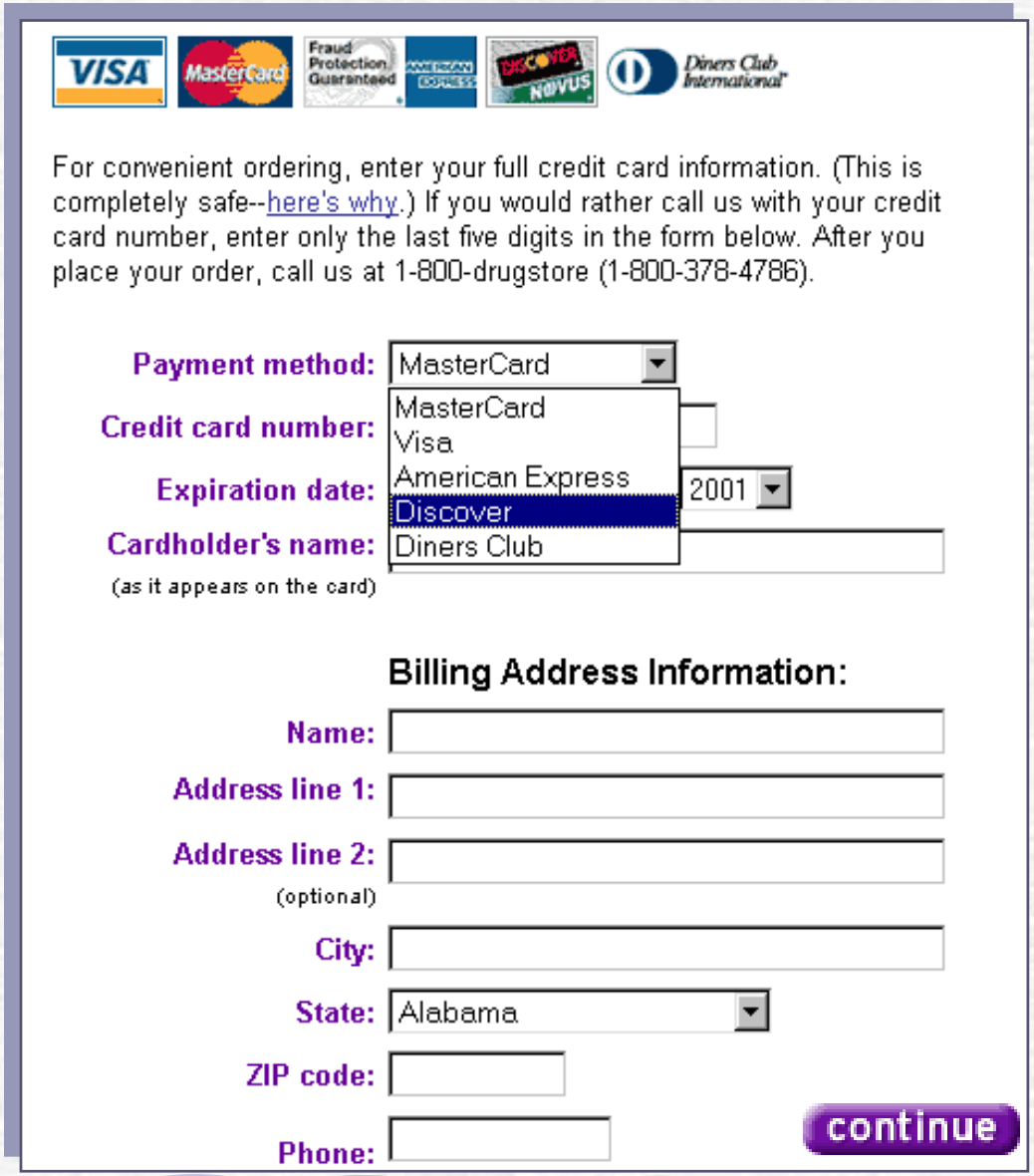
I-3:
How does the user insert the credit card number



Example of the artefact



Tentative design

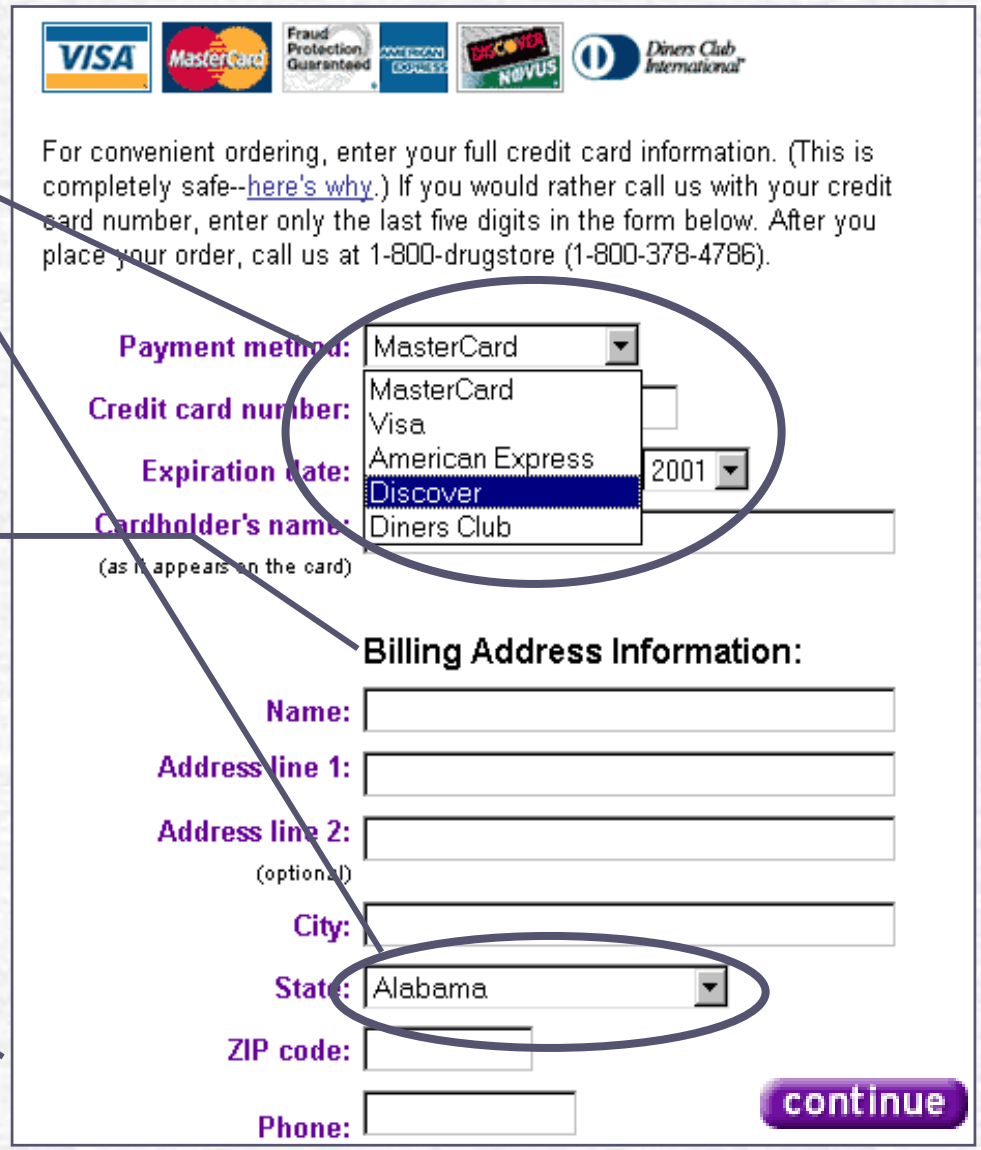


Critique based on NFRs

- ✓Ability to initiate movement on demand
- ✓Ability to pull target
- ✓Fine spatial control
- ✓Eye-hand coordination

- ✓Availability of fingertips as reliable contact site
- ✓Competence in using keyboard

- Size of VDU



Scenario retooling

- Reformulate implicit assumptions
  - How can the task be carried out with an alternative pointing device (e.g. a stylus of a palmtop computer) ?
  - How can the task be performed in a public kiosk?
  - How can the task be performed by a user with gross-temporal control familiar with switch-based interaction ?
- Retool scenario to suit NFRs
  - Scenario addressing one or more NFRs

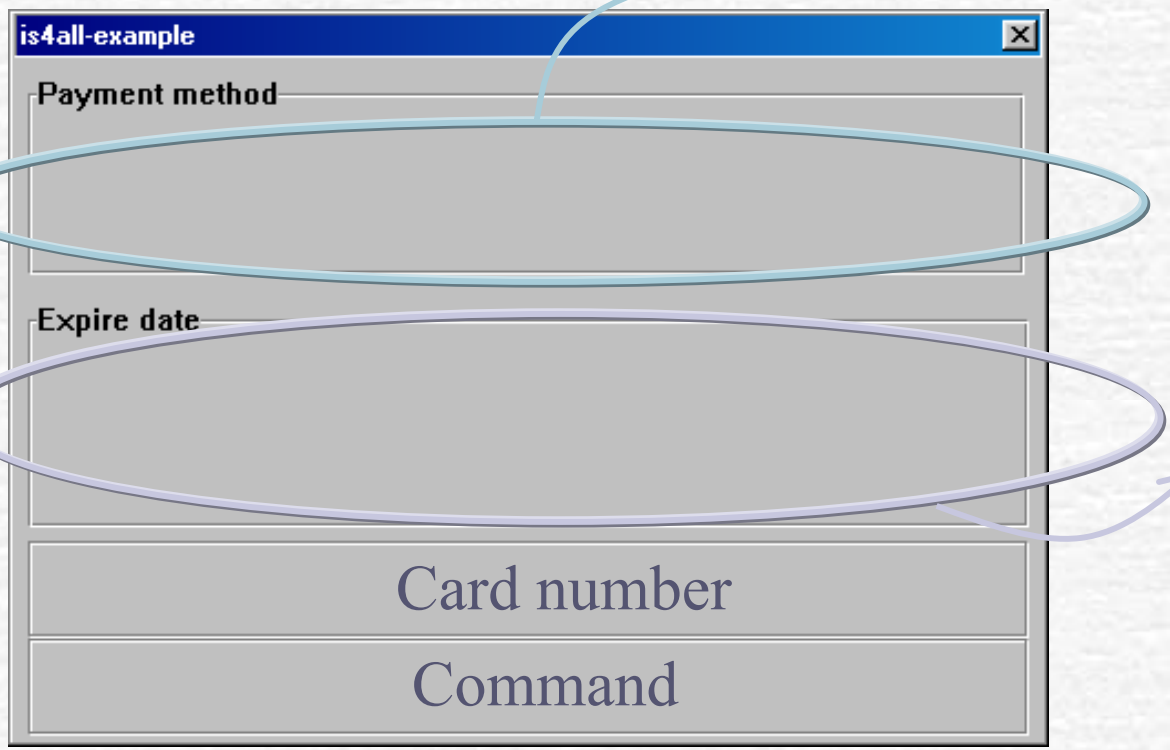
Scenario Retooling Matrix

- The system tasks should satisfy the following global constraints

Constraint	State		System Quality	Non-functional Requirement
	Initial	Desired		
… number of transactions per second…	10 tran/tions /second	10^4 tran/tions / second	*System throughput*	Scalability
… manifested on the user's interactive terminal…	Desktop PC	iPAQ	*Interaction platform*	Platform independence
… to initiate an operation effectively and efficiently…	General practitioner	Patient at home	*System's target user*	Individualization
… from current location…	Office environment	Residential environment	*System's context of use*	Ubiquity

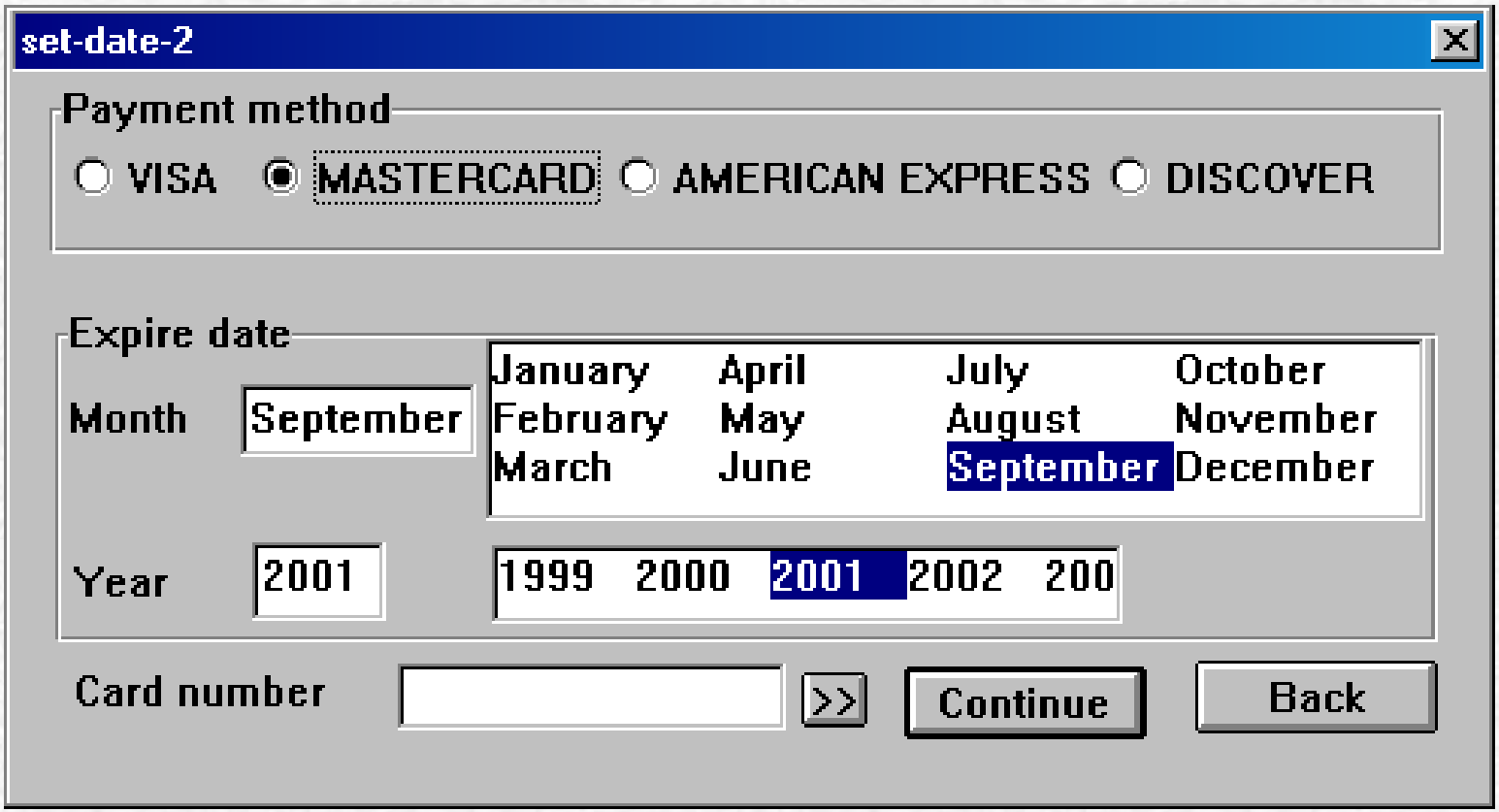
Generate alternatives

- Four logical groups
- Smaller display requirements
- …



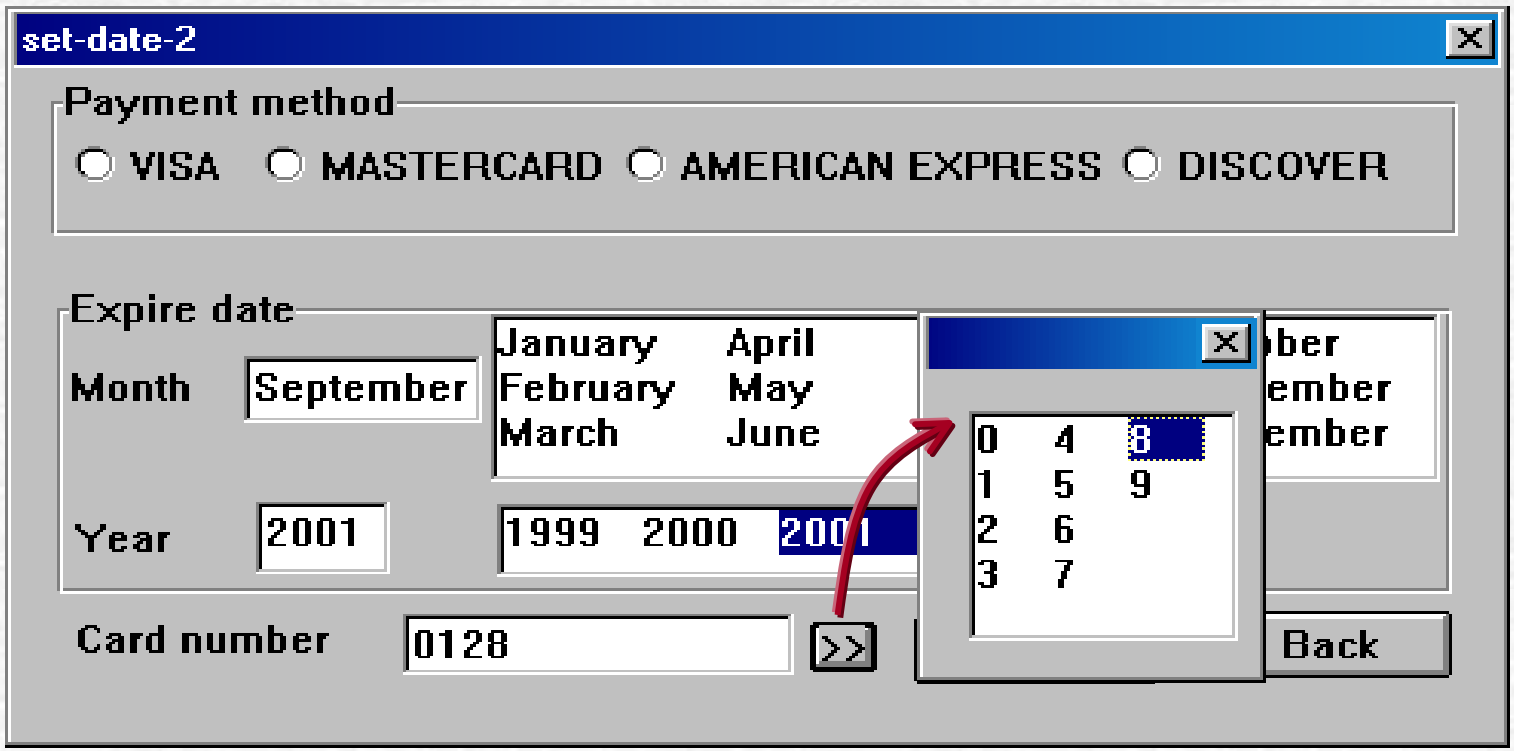
Option 1

- Selection by pointing



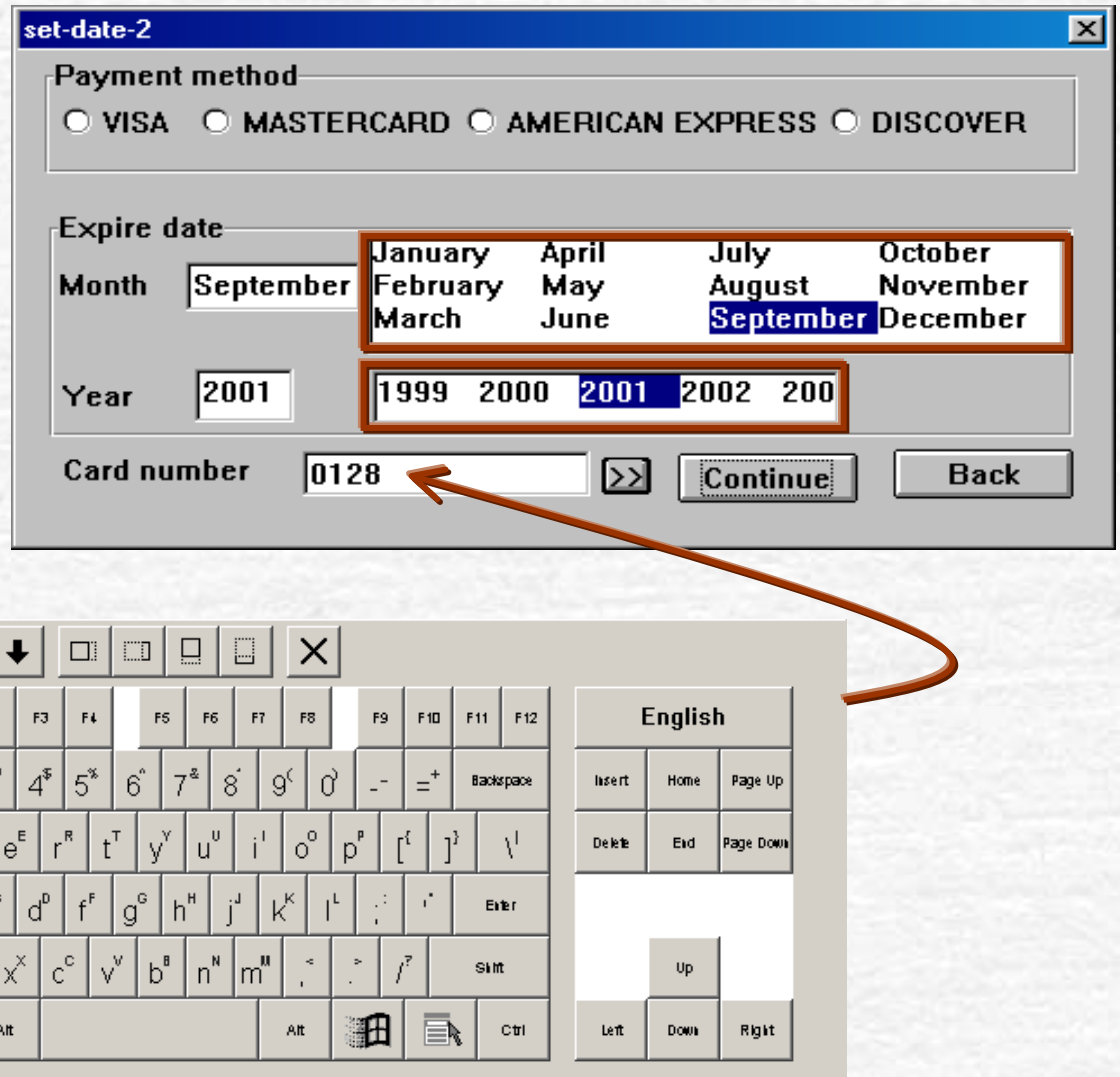
Option 1 (Cont.)

- Editing by selecting from a panel



Alternative for motor-impaired

- Scanning is an option
- Group elements can be selected via manual or auto scanning



NFRs implications

- NFRs imply design of alternative styles
- Styles should be implemented and made available to the run-time system to facilitate the designated NFRs
  - For each style develop suitable argumentation
    - Why does it exist ?
    - What issue does it support ?
    - When should it be initiated ?
    - Where is it implemented ?
    - How does it compare against competing styles ?
  - The above will determine
    - the conditions for initiating a style
    - the relationship between styles

Universal Access Assessment Workshop (UA^{2}W)

Overview

Description of technique

Example on the WWW

Overview

- It is a process-oriented technique
- It assumes the availability of a tentative scenario such as those formulated in IS4ALL
- It combines several instruments for documenting design deliberations and outcomes

Problem being addressed

- The technique seeks to bring together early in the design phase as many stakeholders as possible to identify the type and scope of universal access requirements for a particular product or service

Device / technique used

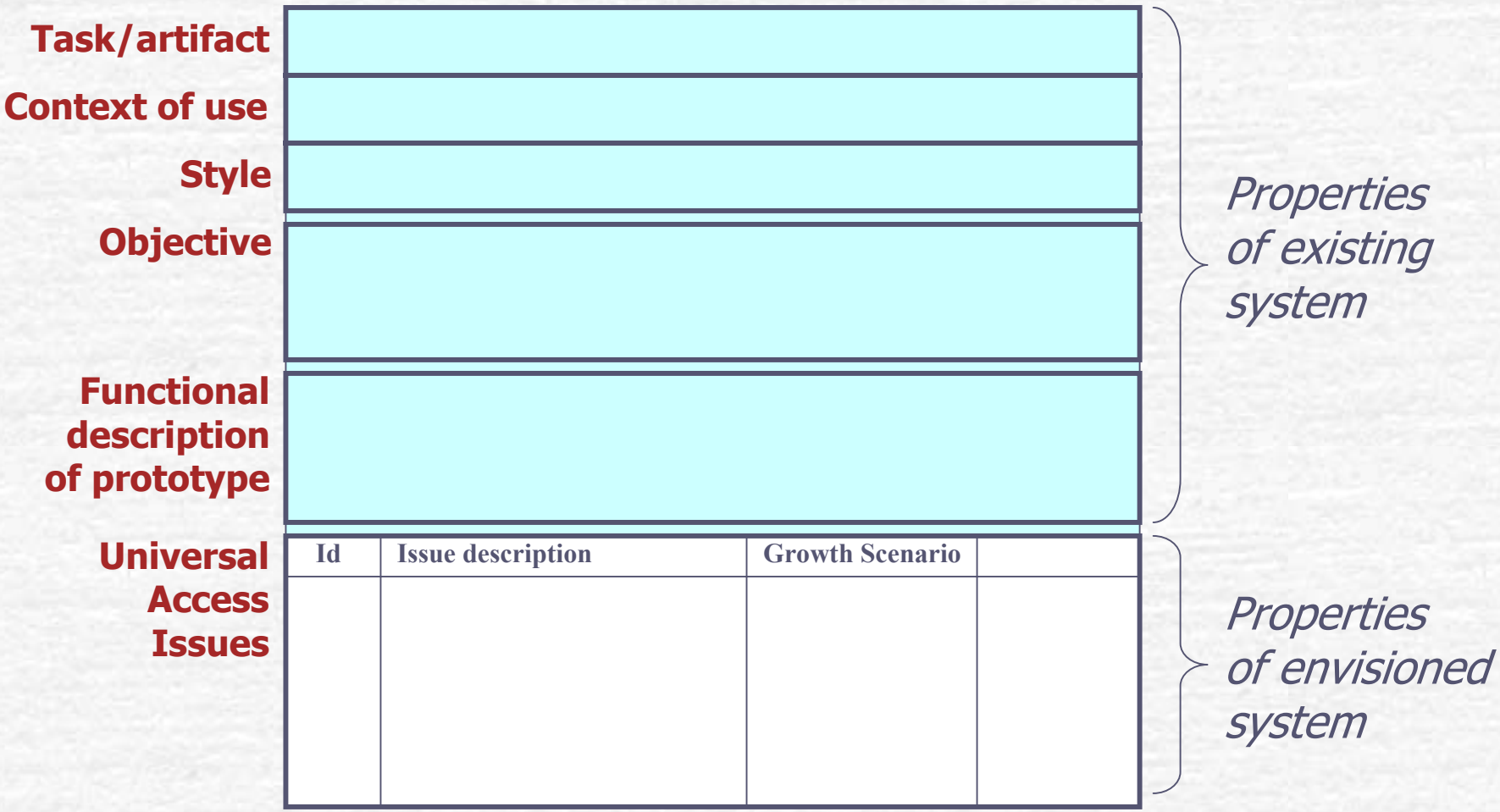
- Two techniques used in combination or in sequence
  - Scenario screening
  - Growth scenarios

Outcomes

- Prime outcomes include
  - Universal access filters
  - The Universal Access Assessment Form (UA^2F)
  - A designated set of growth scenarios
    - For each entry in the UA^2F, the design team develop a corresponding "growth" scenario
  - The Universal Access Quality Matrix (UAQM)
    - All growth scenarios are finally consolidated and documented in a more abstract template referred to as the Universal Access Quality Matrix (UAQM).

Outcomes - The UA²F

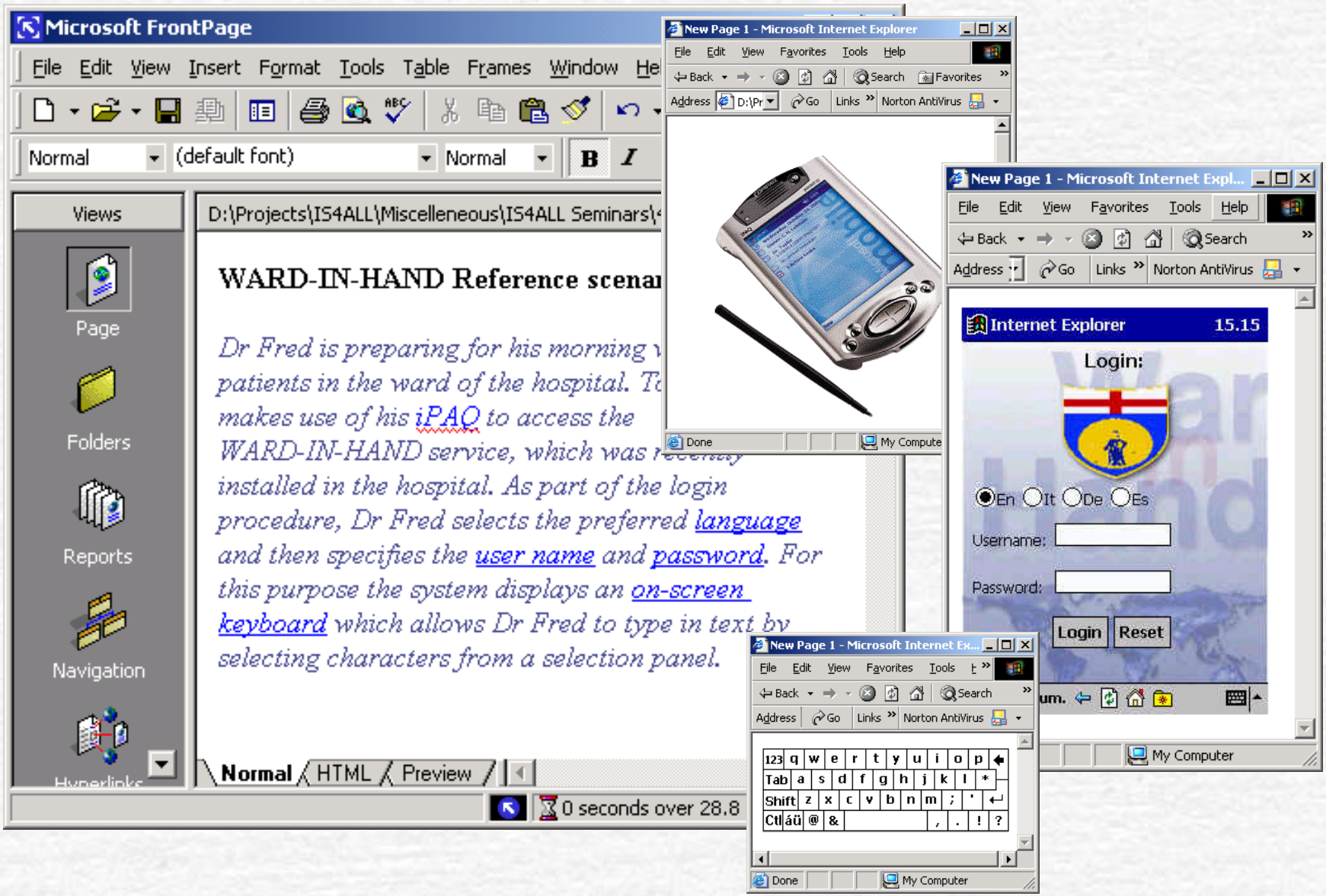
- The form comprises two main parts



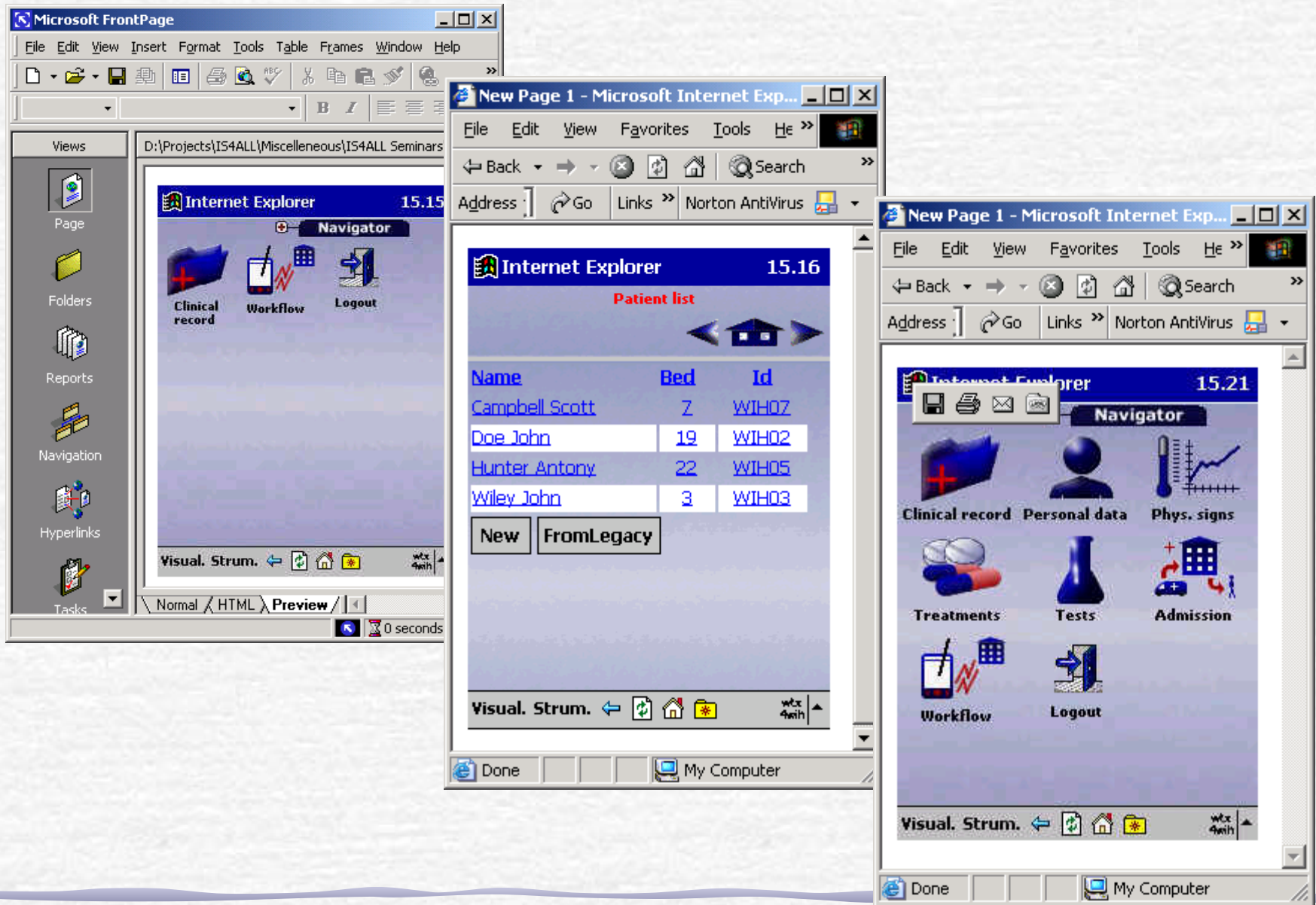
Outcomes - The UAQM

Design Target	Quality attribute	Parameter	Argumentation
Filter 1	Attribute 1.1	Parameter 1.1.1	Narrative
		Parameter 1.1.2	
	Attribute 1.2		
	Attribute 1.n		
Filter n	Attribute n.1	Parameter n.1.1	
		Parameter n.1.j	
	Attribute n.i		

An example scenario



WARD-IN-HAND (Cont.)

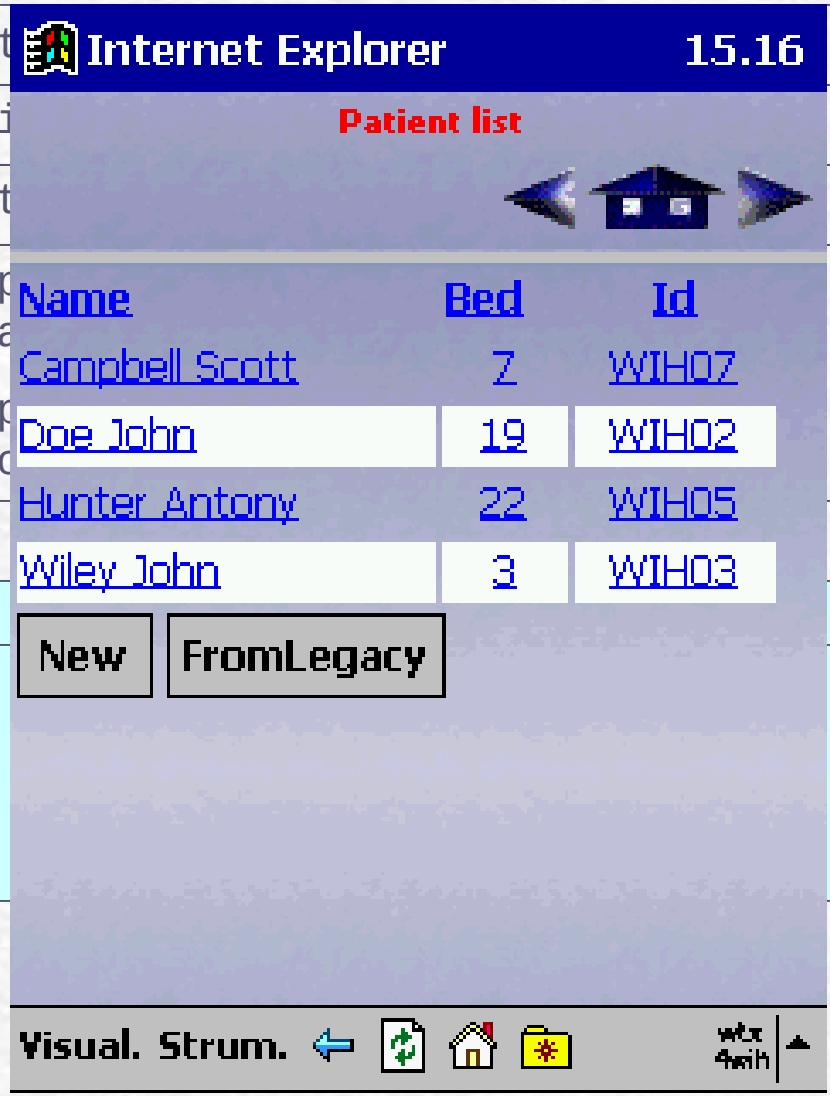


Scenario screening

- Participants were asked to screen through the prototype to address the following questions (filters)
  - How can (relevant parts of) the system be accessed from outside the ward?
  - How can (relevant parts of) the system be refined to offer the service over another platform?
  - How can (relevant parts of) the system be accessed by a motor-impaired patient from his/her residence environment?

Completing the UA²F

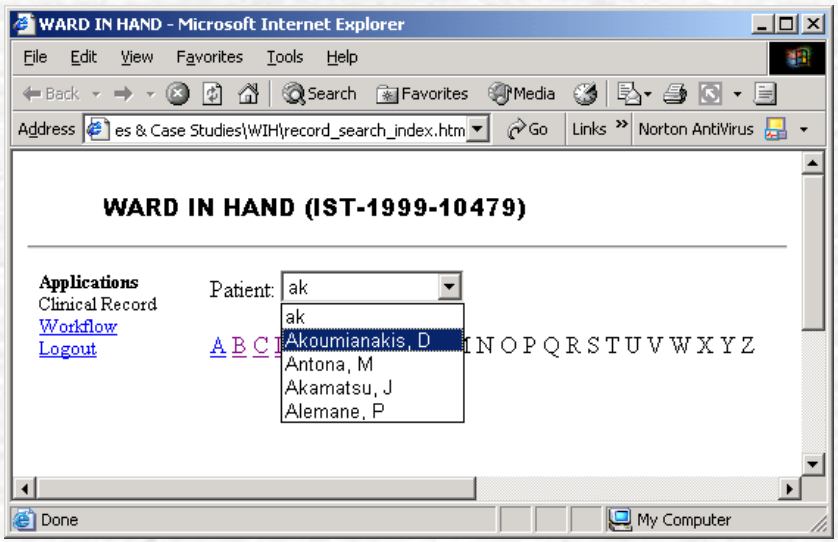
Task/artifact	Mock-up of search t
Context of use	The ward of a clini
Style	Current implementat
Objective	How can (relevant p from outside the wa How can (relevant p to offer the servic

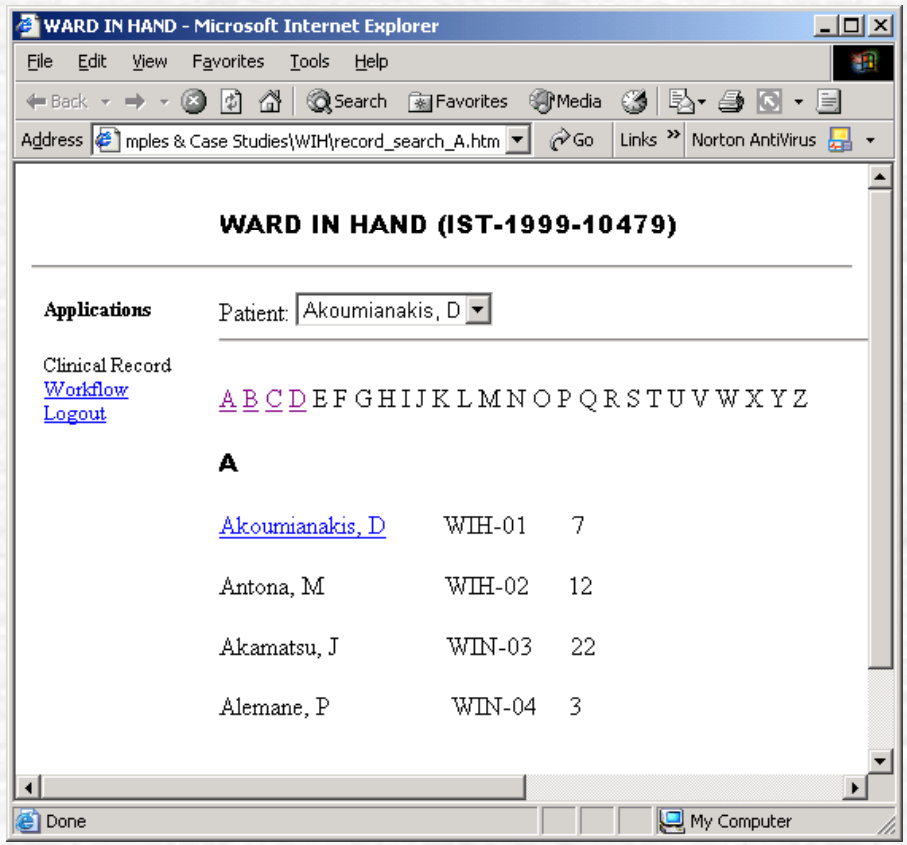


Universal Access Issues

Id	Issue description
1	Scalability to different platforms **(GS 1)**

GS 1 – HTML style





Screening

Task/artifact	Mock-up of entering medical data
Context of use	The patient's home
Style	Current implementation not available

Objective

How can (relevant parts of) the system be accessed from outside the ward?

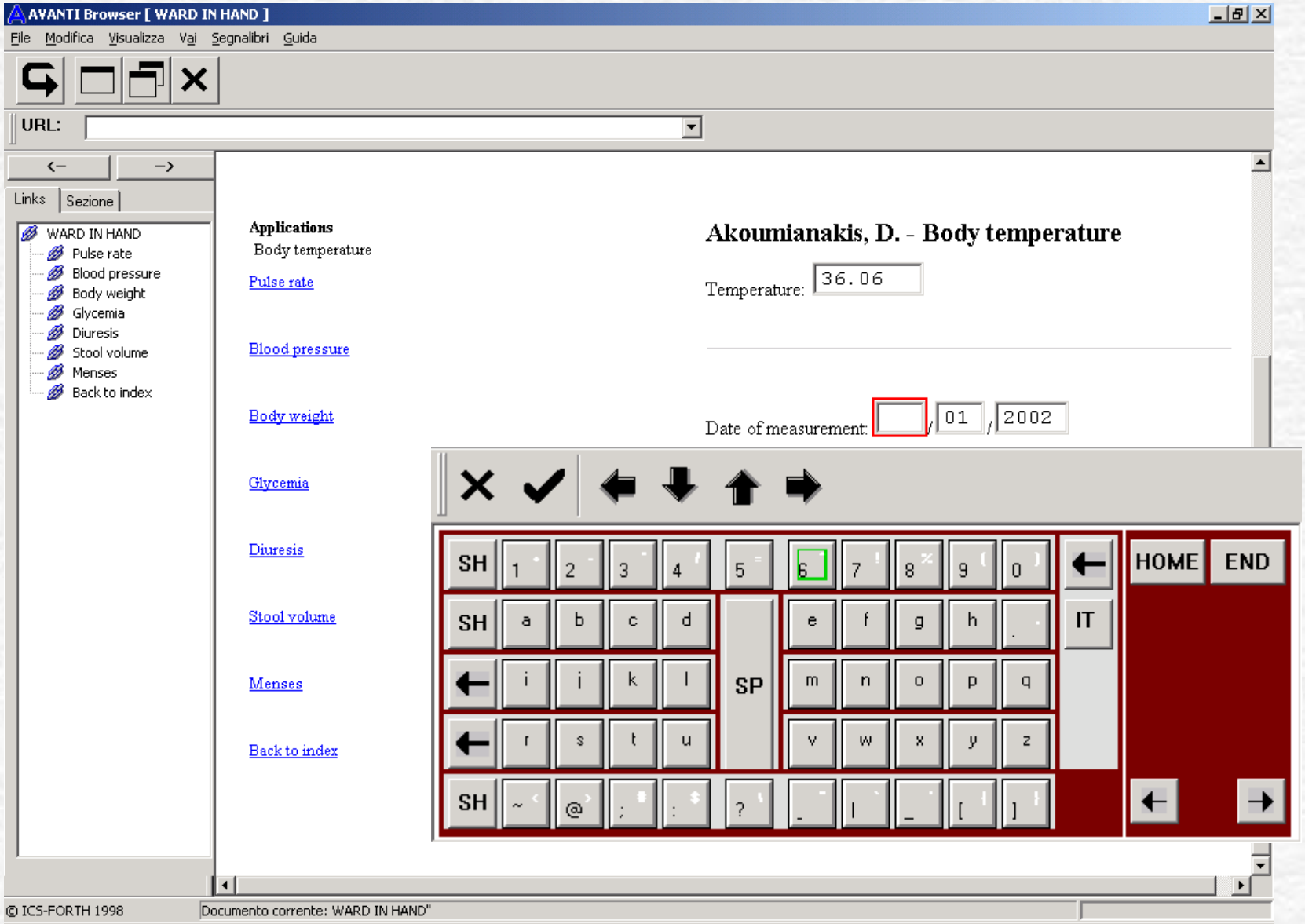
How can (relevant parts of) the system be refined to offer the service over another platform?

How can (relevant parts of) the system be accessed by a motor-impaired patient from his/her residence environment?

Universal Access Issues

Id	Issue description	Priority	Constraint
1	Scalability to different platforms **(GS 1)**	High	WWW
2	Adaptability to different user groups **(GS 2)**	High	Motor-impaired
3	Context-sensitive **(GS 2)**	High	Ubiquitous access

GS 2 – Scanning HTML



The UA²F - WIH prototype

Artefact:	Mock-up listing all the tests ordered for the patient
Functional Unit:	Ward of the clinic
Style: Currently the system runs on an iPAQ	
The style is depicted in the mock up shown in the following figure	

Objectives:

We would like to make the service accessible over the Web for authorised users.

Functional Description Overview:

No change

Universal Access Issues:

Issue Id.	Issue Description	Priority (H/M/L)	Constraint
1	Adaptability to different user groups	H	Blind, motor impaired and able-bodied users
2	Scalability to different platforms	H	Desktop, PDAs and Kiosks
3	Context-sensitive	H	Ubiquitous

Claims:

Growth scenario 1	How can the task be performed over the Web
Growth scenario 2	How can the task be performed using an alternative interaction technique such as scanning, suitable for users with motor impairments
Growth scenario 3	How can the task be performed through an auditory input modality

Constraints / Dependencies:

Not known yet

Functional / Operational Assessment: Not yet available

The UAQM

Design Target	Quality attribute	Parameter	Argumentation
Adaptation	… to users (individualization)	Doctors	
		Paramedics	
		Patients (with disabilities)	How can (relevant parts of) the system be accessed by a motor-impaired patient from his/her residence environment?
	… to platforms (platform independence)	… desktop	How can (relevant parts of) the system be accessed from outside the ward?
		… palm top	How can (relevant parts of) the system be refined to offer the service over another platform?

Lessons learnt

- The UA^{2}W requires planning and commitment
  - One UA^{2}W is typically devoted to screening
  - One UA^{2}W is devoted to compiling growth scenarios
- Success is subject to
  - Organizer's preparation
  - Choice of reference scenario
  - Participants familiarization with the instruments
- Tangible benefits

WCAG Audit: The case of D4ALLnet

Application of the method during the development process

WCAG By Example

- W3C-WAI Compliance: The problem to be addressed
- Development considerations
- Web development process
- Overview
- Accessibility features into the D4ALLnet portal

W3C-WAI Compliance

- 2 sets of standards for accessibility compliance:
  - Web Content Accessibility Guidelines 1.0 from the Web Accessibility Initiative (WAI) of the World Wide Web Consortium (W3C)
  - Section 508
  - De facto standards are compatible but not identical
- Increased number of portals claiming compliance with W3C – WAI Level A
  - Do not meet many priority 2 & 3 checkpoints

Development Considerations

- Time and cost considerations
  - compliance to WAI-AAA should not add significantly to development cost
  - accessibility depends on a variety of factors
    - complexity of design
    - use of tables
    - separation of content from presentation
  - Proper use of templates, and cascading style sheets
- Implications on the web development process
  - limitations of authoring tools, conflicts between usability and accessibility, training of developers and funding
  - proper and accessible HTML is not always developed
- Different "interpretations" of WAI guidelines
  - "Translation" of WAI general guidelines into web development teams

Web development process

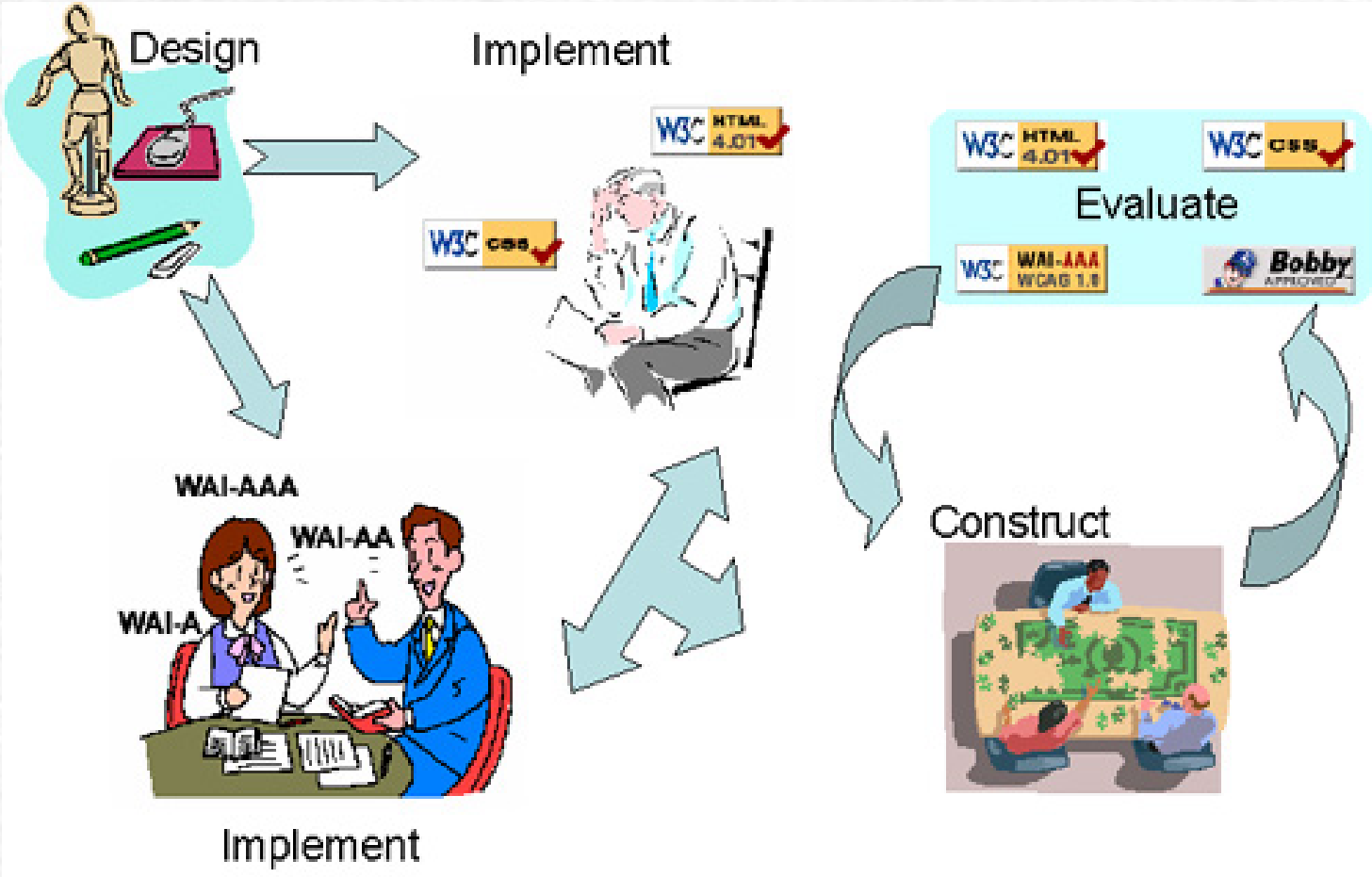
- Portal design
- Template development with respect to accessibility
- Navigation Issues
- Separate content from presentation
- Check the template's accessibility

Overview

- Through the D4ALLnet portal, the knowledge resources are available to all actors involved
- Interaction through a common platform
  - provision of fully integrated applications
  - customizable Web-based interface
  - role-based access to information
- Implementation
  - Special Interest Groups (SIGs)
  - accessible to disabled users, following the principles of Design for All (DfA)
- Personalization features

Accessibility in D4ALLnet (1/4)

- The process that matters!

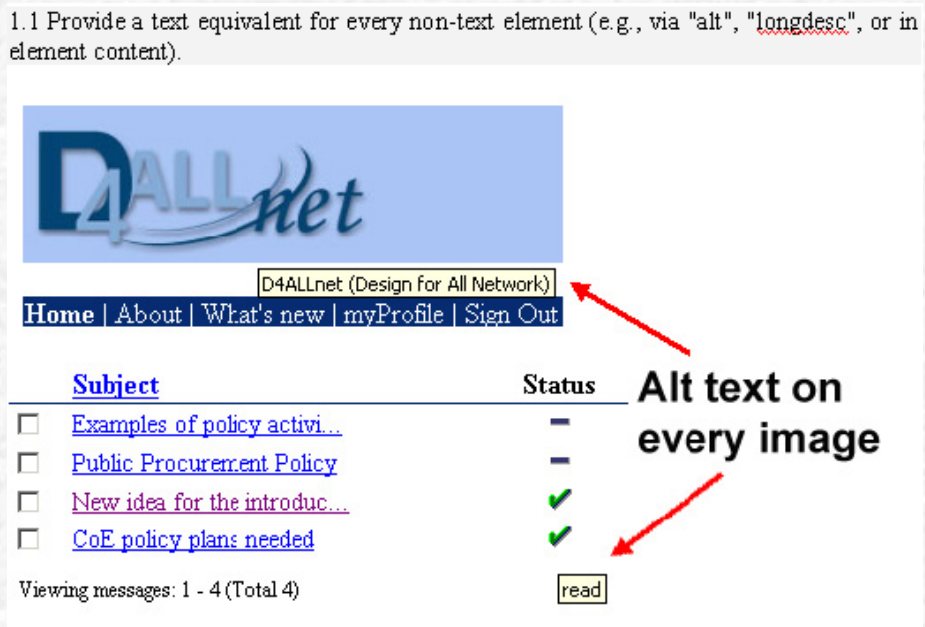


Accessibility in D4ALLnet (2/4)

- Compliance
  - Standard version: W3C – WAI, Support Level: A
  - "More accessible version": W3C – WAI, Support Level: AAA
- Supported features
  - Quick access links
  - Tab navigation
  - Manual update of chat window
  - Printer friendly version where necessary

Accessibility in D4ALLnet (3/4)

- Seeking to achieve WAI-AAA compliance?
- Provide a reflection on how the guidelines can be realised within a web development process through suitable constructs and specification facilities



Accessibility in D4ALLnet (4/4)

- Templates evaluation in every step
  - **Evaluation Tools**
    www.w3.org/WAI/ER/existingtools.html#Evaluation
    - Can spot a large number of errors at early stages of development
    - Provide accessibility report
  - Combination of manual and automatic checks

    http://validator.w3.org/