Ubiquitous Computing and Internet-2 Technologies as Support for Hospitals

Tecnologías de Computo Ubicuo e Internet-2 como Apoyo a Hospitales

Project background

- CUDI-supported project
  - january-december, 2004
- Inter-institutional collaboration
  - Ensenada: CICESE, IMSS (HGZ IV, no. 8)
  - Colima: U. Colima, University Hospital
- Previous efforts
  - Excellent relations: CICESE – U. Colima
  - On-going work: CICESE - IMSS
  - Strong commitment: U. Colima - Hospital

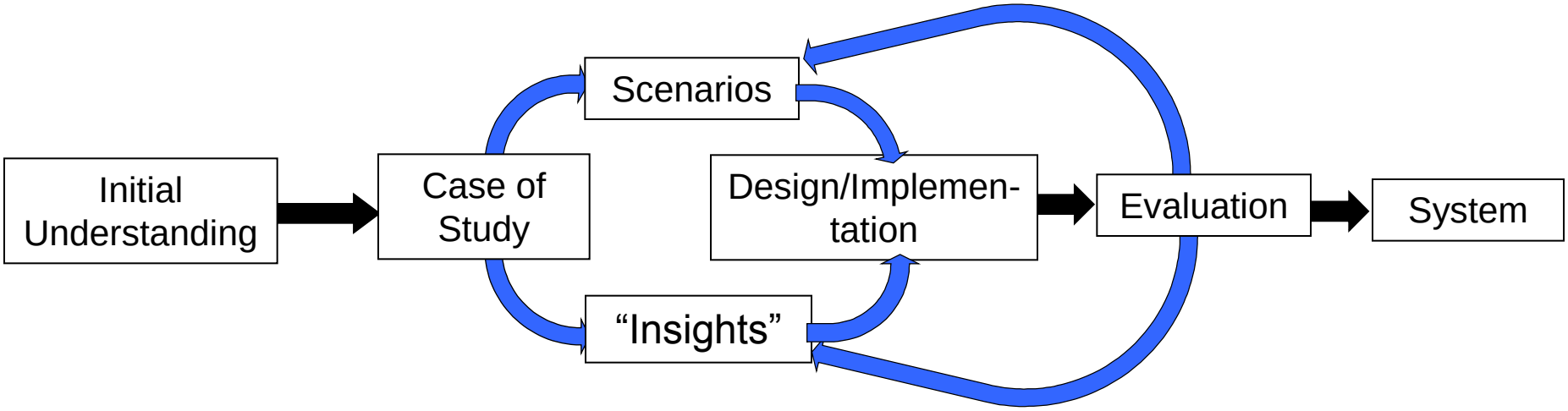
Project participants

- **Dr. Juan José Contreras Castillo**
- **Dr. J. Antonio García Macías**
- Dr. Ana Isabel Martínez García
- Dr. Jesús Favela Vara
- M.Sc. Marcela Rodríguez Urrea
- Many students, university and hospital staff, interviewers, …

Hospitals + Ubicom tech.

- Pervasive computing environments full of information resources and appliances
- Handhelds as bridges from the personal to the public ubiquitous infrastructure
- Mobility is significant and connectivity intermittent
- How can users remain part of an ubicomp environment, interact with theirs peers or services, and access relevant information?

Methodology



Workplace Study (1)

- Location of people and devices
- Timing for the delivery of information
- Role-oriented nature of work
- Artifact oriented nature of information gathering

Role: Doctor

Identity: Any

Location= Room 222

Date: Today

Time: 2:00 to 8:00 pm

The patient is not responding well to her medication…

27.43mts.

Location-estimation agent

Dr. Moreno

doctores

Cualquier

Todos

Lugar 222

Fecha hoy >>

Hora 2:00 PM >> 8:00 PM

Mensaje

Mensaje:

Theresa no respondio al medicamento que se le suministro esta mañana, y los ultimos resultados de sus analisis no son favorables, incremente la dosis, verifique si hubo cambios.

Cancelar

Enviar

down Escaleras up

Elevador

Aseo

Dialisis

Banos Hombres

246 247

Jefe de Cirujia

Cirujia

Aseo

Social

pedro 45

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rita Central de Enfermeras

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Medicina Interna

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Vestidores

oscar 234 235

227 228 229

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Vestidores

Banos Mujeres

Contagiosa

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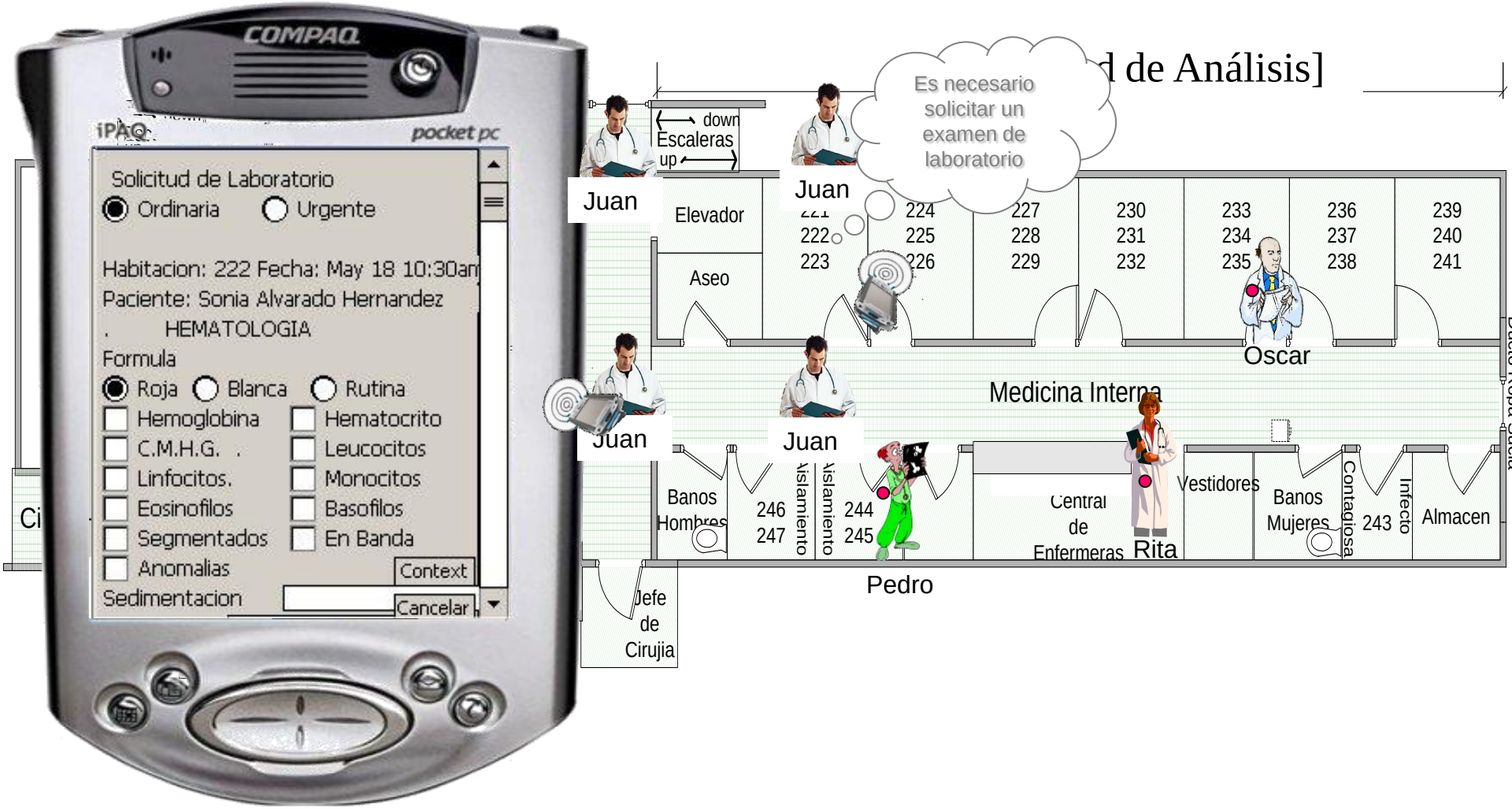
Infecto

Almacen

Yo:

Scenario


COMPAQ
iPAQ
pocket pc
Solicitud de Laboratorio
Ordinaria
Urgente
Habitacion: 222 Fecha: May 18 10:30am
Paciente: Sonia Alvarado Hernandez
. HEMATOLOGIA
Formula
Roja
Blanca
Rutina
Hemoglobina
Hematocrito
C.M.H.G. .
Leucocitos
Linfocitos.
Monocitos
Eosinofilos
Basofilos
Segmentados
En Banda
Anomalias
Context
Sedimentacion
Cancelar
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Es necesario solicitar un examen de laboratorio
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Central de Enfermeras
Rita
Vestidores
Banos Mujeres
Contagiosa
243
Infecto
Almacen
Pedro
Jefe de Cirujia

Scenario


COMPAQ
iPAQ
pocket pc
Solicitud de Laboratorio
Ordinaria
Urgente
Habitacion: 222 Fecha: May 17 1:31pm
Paciente: Sonia Alvarado Hernandez
. HEMATOLOGIA
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Roja
Blanca
Rutina
Hemoglobina
Hematocrito
C.M.H.G. .
Leucocitos
Linfocitos.
Monocitos
Eosinofilos
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Segmentados
En Banda
Anomalias
Context
Sedimentacion
Cancelar

[Solicitud de Análisis]
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Central
de
Enfermeras
Vestidores
Banos
Mujeres
Contagiosa
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Almacen
Pedro
Jefe
de
Cirujia

Scenario


COMPAQ
iPAQ
pocket pc
Resultados de Laboratorio
Habitacion: 222
Paciente: Sonia Alvarado Hernandez
T.de Muestra: Suero
Fecha: Abr 8 03 10:44
Quim Pos Res Rango/Refer
GLU (1) 99 70-105
BUN (2) 9.8 7.0-18.0
CREA (3) 0.92 0.70-1.60
URIC (4) 3.5 2.6-7.2
CA (20) 7.7 8.5-12.0
Context
Cancelar

de Análisis]
Es necesario que este paciente sea preparado para una intervención quirúrgica
down
Escaleras
up
Elevador
Aseo
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Central de Enfermeras
Vestidores
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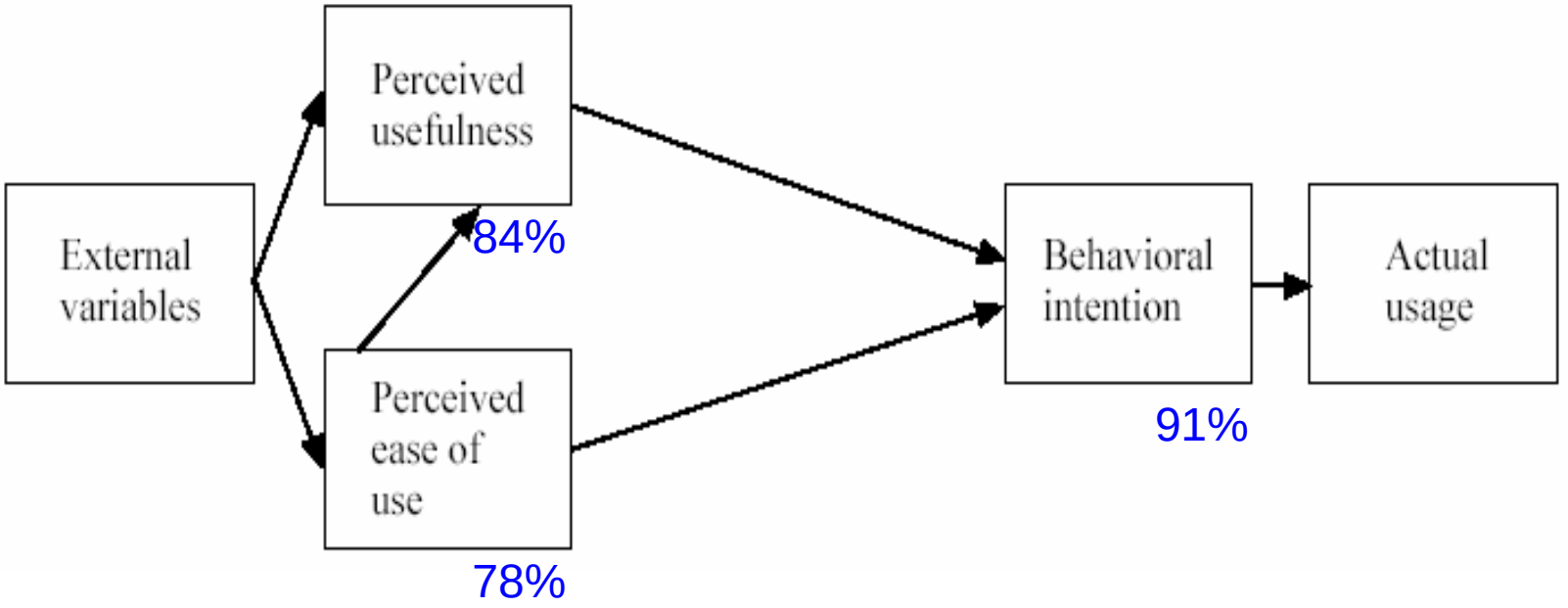
Evaluation

Technology Acceptance Model (TAM)



Conclusions

- Many applications of ubicomp present unrealistic scenarios
- Design metodologies and evaluation of applications are inmature
- There is a need of tools (frameworks, middlewares, toolkits, etc.) for developing ubicomp environments
- Hospitals are information-rich environments

Current and future work

- setup (jan-apr)
  - Continue previous research, assignment of roles, logistic aspects
- 1st phase (may)
  - Project rollout, train interviewers
- 2nd phase (jun-jul)
  - Introduction to handheld devices, simple applications

Current and future work

- 3rd phase (aug-sep)
  - Wireless phase, collaborative applications
- 4th phase (oct-nov)
  - Electronic patient record
- 5th phase (dec)
  - Context-aware applications, post-CUDI development

* I-2 videoconferencing in different phases, supporting collaboration and training

Thank you…..

Questions?