Sub-Committee Meeting ABE60 (2)
Accessible Transportation Technology Subcommittee
85th Annual Meeting of Transportation Research Board
Tuesday, January 24, 2006
8:00 a.m. – 9:45 a.m.
Hilton Hotel, Bancroft Room
Washington DC

ATTENDANCE:

Members
Carol Schweiger, Chair ABE60 (2), TranSystems, USA
Kit Mitchell, Co-chair ABE60, Institute of Highways and Transportation, UK
David Lewis, HDR/HLB Decision Economics, Canada
Kate Hunter-Zaworski, Co-chair ABE60, NCAT/Oregon State University, USA
Bill Crandall, Smith-Kettlewell RERC, USA
Ling Suen, International Center for Accessible Transportation, Canada
Rob Barnes, Ministry of Transportation, Ontario, Canada
Lalita Sen, Texas Southern University, USA

Friends
John Schoon, University of Southampton, UK
Gavin Currie, Canadian Transportation Agency, Canada
Karen Timpone, SAIC, USA
Jim Marston, University of California at Santa Barbara, USA
Uwe Rutenberg, Rutenberg Design Inc., Canada
Daniel Blais, TRANSED 2007 Secretariat, Canada
Todd Allen, RouteMatch Software, USA
Luc Lanthier, Transport Canada, Canada
Bryna Helfer, Federal Transit Administration, USA
Santosh Mishra, TranSystems, USA
Anabela Simoes, Technical University of Lisbon, Portugal
Dave Cyra, CTAA Ambassador, Regions 9 and 10, USA
Yehuda Gross, US DOT ITS/JPO, USA
Harry Wolfe, Maricopa Association of Governments, USA
Martine Micozzi, TRB, USA

AGENDA: (See Attachment A)

1. **Call to Order:** Carol Schweiger, Co-chair called the meeting to order at 8:10 AM.
2. **Introduction of new members, current members and friends:**

   Attendees introduced themselves and gave their affiliations.

3. Review of previous meeting minutes for 2005:

Minutes of the 2005 meeting were reviewed and approved.

4. TRB Representative:

Martine Micozzi presented statistics concerning the 2006 TRB Annual Meeting and other pertinent issues. See item 9 below for details.

5. TCRP Research Problem Statements and Synthesis topics

a. Carol suggested that we not continue resubmitting projects that had been routinely turned down.
b. Bryna said that research items picked up by Project ACTION should be considered "successes."
c. Carol suggested that going to the Mobility Services for All Americans website might generate possible project ideas: http://www.its.dot.gov/msaa/index.htm
d. Bryna said that there are many funding opportunities for research. She suggested a study to determine how and where existing technologies have been deployed.
e. Kit suggested a research topic on the convergence of international public transportation technologies based upon the evidence of marked developments in Asia, South America and Europe. Low-floor buses can be used as an example of a "breakthrough design" around which many new and positive approaches have been developed. Carol thought this could be a Synthesis topic/project.
f. There was a discussion by David Lewis and Carol about international barriers to trade that create innovation implementation bottlenecks. For example, the Buy America rule means that the first choice for hardware/software in the US is domestic. Hardware/software can come from elsewhere only if the specified system cannot be purchased in the U.S. David, Kit and Carol will look into developing this into a full TCRP research project.
g. There was a discussion by Bryna, Kit and Carol about the "supply chain" and technologies in emergency and post-emergency services for vulnerable people in terms of 1) communication; 2) location; 3) egress; and 4) critical support, such as food. Related to this is the impact of technology on assisting vulnerable people in times of pandemic – especially as it relates to those persons residing in quarantine areas.
h. David Cyra mentioned the importance of non-emergency "Stretcher transport". For example, what is the best type of vehicle to use for this non-life-saving service?
i. Lalita discussed the issue of training seniors and the disabled to use wireless technologies. She will put together a Synthesis statement on this subject. Kit noted that older drivers have problems with secondary tasks, and their interface with technology is a challenge. Older drivers are more easily distracted than younger people.
j. John Schoon discussed a Synthesis topic regarding vehicular technology. Carol said that she would assist John in developing the project statement for this Synthesis.

6. Discussion of Federal Initiatives:

a. United We Ride Program. Bryna discussed this program and reviewed the five elements of the program: (1) a Framework for Action self-assessment tool, (2)

State Leadership Awards, (3) National Leadership Forum on Human Service Transportation Coordination, (4) state coordination grants, and (5) a technical assistance program known as "Help Along the Way." UWR workshops have been held in all 10 FTA regions. In these workshops, states work together to develop Action Plans for coordination. Some of these workshops were held after the Presidential Executive **Order for Human Service Transportation Coordination was issued. The Executive Order is meant to** enhance access to transportation to improve mobility, employment opportunities, and access to community services for persons who are transportation-disadvantaged. Information on the United We Ride initiative may be found at http://www.unitedweride.gov/.

b. Mobility Services for All Americans. Yehuda Gross described the "One Stop Shop" concept for users and agencies. Through such an initiative, users should easily be able to locate appropriate services and agencies should be able to more easily set resources. An RFP for model deployment by agencies will be released shortly. The thrust of this RFP will be agencies designing the "one stop shop." Yehuda further described this initiative. Information about it can be found at http://www.its.dot.gov/msaa/index.htm. The foundation research was recently completed by SAIC and TranSystems. An RFP will be released shortly for the Demonstration of Enhanced Human Service Transportation Models: Phase 1--System Development and Design. (It was released in the April 14 Federal Register: http://a257.g.akamaitech.net/7/257/2422/01jan20061800/edocket.access.gpo.gov/2006/E6-5588.htm) Up to 10 groups will be selected, and are divided into either urban/suburban or rural/remote areas. Also, there is a closed RFP that will be released shortly to choose the contractors who will provide technical assistance to the selected agencies.

c. Karen Timpone, SAIC, discussed the results of the "Foundational Research," including the final report. It includes what the "One Stop Shop" center would look like to a user?

7. Status of Ambient Intelligence System of Agents for Knowledge-based and Integrated Services for Mobility Impaired Users (ASK-IT) Project, Anabela Simoes, Portugal. Anabela made a presentation about the ASK-IT project. The slides are show in Attachment B. ASK-IT is a powerful information system based upon the Semantic Web and XML internet protocol designed to present "just in time, just in place" information to people with disabilities. Task complexity for users is minimized by having the system match appropriate activity related information based upon an analysis of enquirer attributes with task attributes.

8. Participation in 2006 ITS World Congress to be held in London October 8-12, 2006

Carol Schweiger described the upcoming ITS World Congress to be held in London. She is serving on the Congress Program Planning Committee to include sessions regarding accessibility and technology.

9. TRB Representative:

TRB Representative Martine Micozzi reported that there are 10,000 delegates from 70 countries at the 2006 TRB Annual Meeting, and 3,000 papers were submitted for the meeting.

- Martine Invited our subcommittee to meet at other times (perhaps annually since TRANSED is a 4 year event); and
- She discussed the "Unmet Transportation Information Needs" request for information. Division A will take information from TRB committees to Congress.
- She recommended liaison with international groups. Kit suggested this might be an interest of Tom Rickart.
- Martine mentioned that our subcommittee should consider participating in the mid-year meeting, being held July 9-11, 2006.

10. Report on the 2005 ITS World Congress and APTA International Workshop on Bringing ITS Research to Market, both held in November 2005, and 2005 ITS America Annual Meeting held in May 2005

Carol reported on the 2005 ITS World Congress and joint APTA/ITS workshop on bringing ITS Research to Market held in San Francisco in November 2005. Carol distributed a list of presentations relevant to our work and also reviewed the workshop in which case histories of the process from R&D to product were presented. She cited a presentation about Talking Signs® as being one such example. Carol also mentioned the General Managers' summit held at the 2005 ITS America Annual Meeting held in Phoenix, AZ.

11. 2007 Call for Papers and Session themes for TRB

The theme for the 2007 TRB Annual Meeting is "Changing Transportation: Finance, Institutions and Workforce Needs." The Call for Papers will be posted in May 2006.

12. Liaison with TRB ITS Committee (AHB15)

Carol Schweiger reported on the TRB ITS Committee meeting that was held on Monday, Jan. 10, 2005.

13. Other subcommittee business

The 2007 International Conference on Mobility and Transport for Elderly and Disabled People (TRANSED) will be held in Montreal, Canada. The Call for Papers is still open.

The meeting was adjourned at 10:05am.

ATTACHMENT A

Committee Meeting ABE60 (2)
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AGENDA:

1. Call to Order, Carol Schweiger, Chair
2. Introduction of new members, current members and friends
3. Review of previous meeting minutes for 2005
4. TRB Representative - Martine Micozzi
5. TCRP Research Problem Statements and Synthesis topics
6. Discussion of progress on USDOT Federal Initiatives:
   a. United We Ride Program
   b. Mobility Services for All Americans
7. Status of Ambient Intelligence System of Agents for Knowledge-based and Integrated Services for Mobility Impaired Users (ASK-IT) Project, Anabela Simoes, Portugal
8. Participation in 2006 ITS World Congress to be held in London October 8-12, 2006
9. Report on the 2005 ITS World Congress and APTA International Workshop on Bringing ITS Research to Market, both held in November 2005, and 2005 ITS America Annual Meeting held in May 2005
10. 2007 Call for Papers and Session themes for TRB
11. Liaison with TRB ITS Committee (AHB15)
12. Other subcommittee business

ATTACHMENT B

Ambient Intelligence System of Agents for Knowledge-based and Integrated Services for Mobility Impaired users

ASK-IT Integrated Project

Anabela Simões

IST-2003-511298

ASK-IT overview

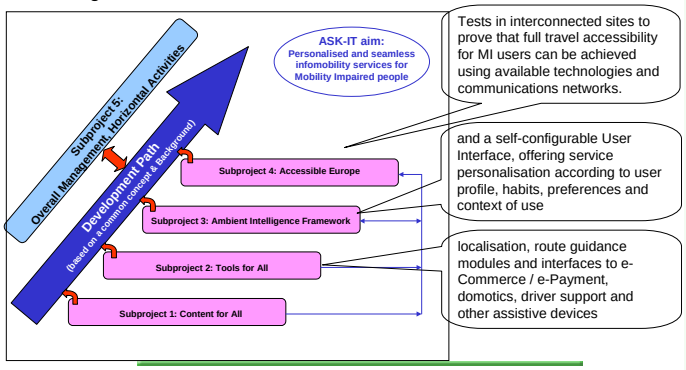
Ambient Intelligence System of Agents for Knowledge-based and Integrated Services for Mobility Impaired users

The ASK-IT integrated project aims to establish **Ambient Intelligence (AmI)** in semantic web enabled services, to support and promote the mobility of Mobility Impaired people, enabling the provision of personalised, self-configurable, intuitive and context-related applications and services and facilitating knowledge and content organisation and processing.

Accessible Transportation Subcommittee Meeting – 85th TRB Annual Meeting, 24/01/06 2

ASK-IT overview

ASK-IT is organised along 5 closely related subprojects (SPs), as shown in the figure bellow:



Accessible Transportation Subcommittee Meeting – 85th TRB Annual Meeting, 24/01/06 3

SP1: MI infomobility needs and wants. User modelling and use cases.

- Within **"Content for All"** subproject (SP1) there are several work packages.
- As leaders of one of these work packages (named: **MI infomobility needs and wants. User modelling and use cases**.), two main tasks will be presented:
  1. User Groups definitions
  2. Use Cases

1. User Groups definitions

- In the ASK-IT context, the Mobility Impaired concept extends beyond the traditional definitions of elderly and disabled (E&D). It refers to any **activity limitation** that prohibits the free movement of a person.
- Objective: to define different User Groups, taking into consideration the MI concept and also that a significant part of MI are older. So, we had to find a consistent way to integrate this part of the population in the User Groups for ASK-IT.
- It was decided to classify the MI population according to both the criteria:
  - **Age**
  - **Functional limitations**
- Having a user profile, the system can offer more personalized services to each user.

1. User Groups definitions

- **Age**

The following age categories were defined:

- **Under 16 years**
- **16-34 years**
- **35-54 years**
- **55-64 years (young old)**
- **65-74 years (middle old)**
- **75-84 years (old old)**
- **85 and older (very old)**

1. User Groups definitions

- **Functional Limitations**

Users are classified according to their functional limitations (ICF codes), through the selection of the user groups categories that fit their problems. The main User Groups defined are:

1. **Lower limb impairment**
2. **Wheelchair users**
3. **Upper limb impairment**
4. **Upper body impairment**
5. **Physiological impairment**
6. **Psychological impairment**
7. **Cognitive impairment**
8. **Vision impairment**
9. **Hearing impairment**
10. **Communication producing and receiving difficulties**

A1.1.1 User Group Definitions (1)

Definition and classification of User Groups and subgroups for ASK-IT:

- Lower limb impairment
  - *Light or moderate limitations (no walking aids)*
  - *Light or moderate limitations (walking aids user: wheels, stick or other aid)*
- Wheelchair users
  - *Light or moderate limitations (wheelchair users)*
  - *Severe limitations (wheelchair users)*
- Upper limb impairment
  - *Light or Moderate limitations*
  - *Severe limitations*
  - *Touch limitations*

A1.1.1 User Group Definitions (2)

- Upper body impairment
  - *Light or moderate limitations*
  - *Severe limitations*
- Physiological impairment
  - *Limitations in physiological state*
  - *Limitations in psycho physiological state*
- Psychological impairment
  - *Psychological problems*
  - *Psychomotor problems*

A1.1.1 User Group Definitions (3)

Definition and classification of User Groups and subgroups for ASK-IT (cont.):

- Cognitive impairment
  - *Limitations in information processing (complex tasks or also simple tasks)*
  - *Attention problems (switching attention or sharing attention)*
  - *Limitations in short-term-memory (STM)*
  - *Limitations in long-term-memory (LTM)*
  - *Limitations in spatial abilities (orientation)*
- Vision impairment
  - *Light or moderate limitations (visual acuity, slow accommodation, etc)*
  - *Reduced field of vision*
  - *Limited night and color vision*
  - *Severe limitations, blindness*

A1.1.1 User Group Definitions (4)

- Hearing impairment
  - *Light or moderate limitation*
  - *Severe limitation or total deafness*
- Communication producing and receiving difficulties
  - *No speech or very limited speech*
  - *No speaking or very limited speaking local language*
  - *No writing or very limited writing*
  - *No reading or very limited reading*
  - *No or very limited understanding local language (written or spoken)*
  - *Learning difficulties*
  - *Low volume of speech*
  - *Other communication limitations*

A1.1.1 User Group Definitions- Example

User Groups	Limitations	Sub-groups	Effects on activity
1. Lower limb impairment	Limitations in motion or strength or coordination or anthropometric limitations of lower limbs	1a. Light or moderate limitations (no walking aids)	Difficulties in standing and walking and getting in and out of vehicles, reaching transport networks, crossing streets
		1b. Light or moderate limitations (walking aids user: wheels, stick or other aid)	Difficulties in standing and walking and getting in and out of vehicles, reaching transport networks, crossing streets

User Group	Limitation	Sub-groups	Effects on activity
7. Cognitive impairment	Cognitive limitations in operating and performing tasks	7a. Limitations in information processing (complex tasks or also simple tasks)	Difficulties in operating new technologies
		7b. Attention problems (switching attention or sharing attention)	Difficulties in concentrating, etc
		7c. Limitations in short-term-memory (STM)	Reduced ability in retaining recent info like remembering travel plan
		7d. Limitations in long-term-memory (LTM)	Reduced ability in retrieving and recalling information or knowledge
		7e. Limitations in spatial abilities (orientation)	Difficulties moving on complex environments

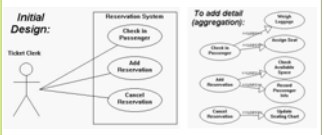
2. Use Cases

- Objective: to **extract detailed Use Cases for ASK-IT**, with reference to different environments and contexts, in order to establish examples of good practice and priorities for application and test scenarios for the system.
- For this purpose, a methodology was developed, resulting in a **Use Case Model**, i.e., a structure to present scenarios in a systematic manner. The **Use Case Model** is comprised of two distinct formats: **description** and **diagram**.

Use Case name

Context of use <a longer statement of the goal, its normal occurrence conditions>
Scope <design scope, what system is being considered black box under design>
Level <one of: summary, user goal, subfunction>
Primary actor <a role name for the primary actor or description>
Stakeholders and Interests <list of stakeholders and key interests in the UC>
Precondition <what we expect is already the state of the world>
Minimal guarantees <how the interests are protected under all exits>
Success guarantees <the state of the world if goal succeeds>
Trigger <what starts the UC, may be time event>
Main success scenario <put here the steps of the scenario from trigger to goal delivery and any cleanup after>
<step #><action description>
<step #><action description>
Extensions <put here there extensions, one at a time, each referring to the step of the main scenario>

Use Case diagram



2. Use Cases

- A **Use Cases Index** was created, comprising a list of "Use Cases names", each one corresponding to a user goal, that can be reach through ASK-IT system**.**
- Use Cases were clustered into different **categories**, due to the expected large number of UC for ASK-IT.
- The categories can be distinguished by colours, depending on their relation to trip, services or administration issues.
- By now 13 categories were defined and a total of 48 Use Cases, which are being gradually described.

2. Use Cases

Use Cases categories:

- **Category 0: System Administration**
- **Category 1: Trip Planning**
- **Category 2: On trip guidance**
- **Category 3: Stored info / Bookmarks management**
- **Category 4: Transportation services**
- **Category 5: Accessibility services**
- **Category 6: Personal support services**
- **Category 7: Environmental control**
- **Category 8: E-Services**
- **Category 9: Travel and Leisure services**
- **Category 10: Booking and Payment**
- **Category 11: Social contacts and communities services**
- **Category 12: Emergencies**

2. Use Cases

Use Cases Index (part I)

Category 0: System administration
- ❑UC# Register
- ❑UC# Login
- ❑UC# Manage user's profile
- ❑UC# Change account details
- ❑UC# Log out
- ❑UC# Unregister
- ❑UC# Download application
- ❑UC# Administration of ASK-IT system
- ❑UC# User feedback exploitation

Category 1: Trip planning
- ❑UC# Plan a route
- ❑UC# Plan a trip (route + services)

Category 2: On trip guidance
- ❑UC# Be guided on route/trip (previously planned)
- ❑UC# Follow and assist my displacements (not previously planned)
- ❑UC# Find current localization

2. Use Cases

Use Cases Index (part II)

Category 3: Stored info / Bookmarks management
- ❑UC# Check and use stored trip/route
- ❑UC# Check and use stored guidance
- ❑UC# Check stored services
- ❑UC# Manage stored info (trip/route/guidance/service)
- ❑UC# Find and bookmark a POI
- ❑UC# Manage bookmarked POIs

Category 4: Transportation services
- ❑UC# Get information on public transports (train/metro, bus, ship, and airplane)
- ❑UC# Get in vehicle information (as vehicle driver or passenger)
- ❑UC# Get information as pedestrian
- ❑UC# Get information on use of special equipments/vehicles for MI
- ❑UC# Disruption of service notification and replanning

Category 5: Accessibility services
- ❑UC# Get info on accessibility of a physical site (part of the city, building, infrastructure, etc)
- ❑UC# Get info on accessibility of an electronic site (website, telecommunications system, other electronic information system)

2. Use Cases

Use Cases Index (part III)

Category 6: Personal assistance services
- ❑UC# Find/use available assistance services
- ❑UC# Find/use assistance services (based on human involvement)
- ❑UC# Get an information-provisioning service
- ❑UC# Management of personal belongings while on the move

Category 7: Environmental services
- ❑UC# Check the domotic status
- ❑UC# Control domotic functionalities
- ❑UC# Home access to external terminals while on the move
- ❑UC# Elevator control
- ❑UC# Assistive devices control

Category 8: E-Services
- ❑UC# Check for available e-Services
- ❑UC# Perform e-Learning
- ❑UC# Perform e-Working
- ❑UC# Perform other e-Services (e-Commerce, e-Government, e-Banking, Teleshopping, etc.)

2. Use Cases

Use Cases Index (part IV)

Category 9: Travel and Leisure services
- UC# Find country/region information
- UC# Get country/region POIs
- UC# Find places and facilities
- UC# Find events or leisure activities
- UC# Pushed tourist /personal info

Category 10: Booking and Payment
- UC# Booking
- UC# Ticketing

Category 11: Social contacts and communities services
- UC# Establish contacts through virtual communities
- UC# Recognize/contact community members on the road (Bluetooth)
- UC# Establish direct community meetings
- UC# Establish personal meeting (F2F)
- UC# Pushed events

Category 12: Emergencies
- UC# User triggered medical emergency
- UC# Automatically triggered medical emergency
- UC# User requesting help

ASK-IT Integrated Project

Thank you for your attention!

We would like to have your inputs

contact: asimoes@fmh.utl.pt