Lifeline

Overview: Lifeline provides distributed task support for people with cognitive disabilities. People with disabilities can use assistive technology devices to achieve greater autonomy and experience new levels of freedom. However, with this freedom comes increased vulnerability. Lifeline provides a vital tether between clients and caregivers. With Lifeline, caregivers have the ability to monitor and assist their clients who are using wireless task prompting systems in remote locations.

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Lifeline: Amy Martin

Script Name: "MANTIS"
Started: Thu Aug 28 08:48:00 GMT-0600 2003
ERROR: Time Limit Exceeded!

Step Name	Started	Time
"Mantis guide from engineering to L3D"	Thu Aug 28 08:48:04	20
"Turn around and walk to end of hall"	Thu Aug 28 08:48:10	16
"Turn right here"	Thu Aug 28 08:48:15	17
"Proceed to the sign"	Thu Aug 28 08:48:19	18
"Turn left here"	Thu Aug 28 08:48:25	12
"Go down the hall to the ITL"	Thu Aug 28 08:48:30	20
"Walk down ITL hall to end"	Thu Aug 28 08:48:37	25
"Turn left here"	Thu Aug 28 08:48:42	22
"Go down ITL to end of hall"	Thu Aug 28 08:48:52	16
"You are in the DLC"	—	—
"Make immediate right and immediate left"	—	—
"You have arrived at the L3D lab"	—	—

1. Task status is continuously sent to the console
2. Caregiver alerted via SMS notification
3. Caregiver checks console for details

Mobile Client

Caregiver

4. Client or caregiver can initiate communcation

Issues: Computer-based handheld devices have been developed to provide task support for people who have limited memory or problem solving skills.

Current support is based on the following assumptions: 1) actions required to complete tasks can be pre-planned 2) tasks can be completed by following the plan

In reality this approach has the following limitations: 1) plans need to be adapted as contingencies arise 2) ad hoc adaptation is often beyond a client's capabilities
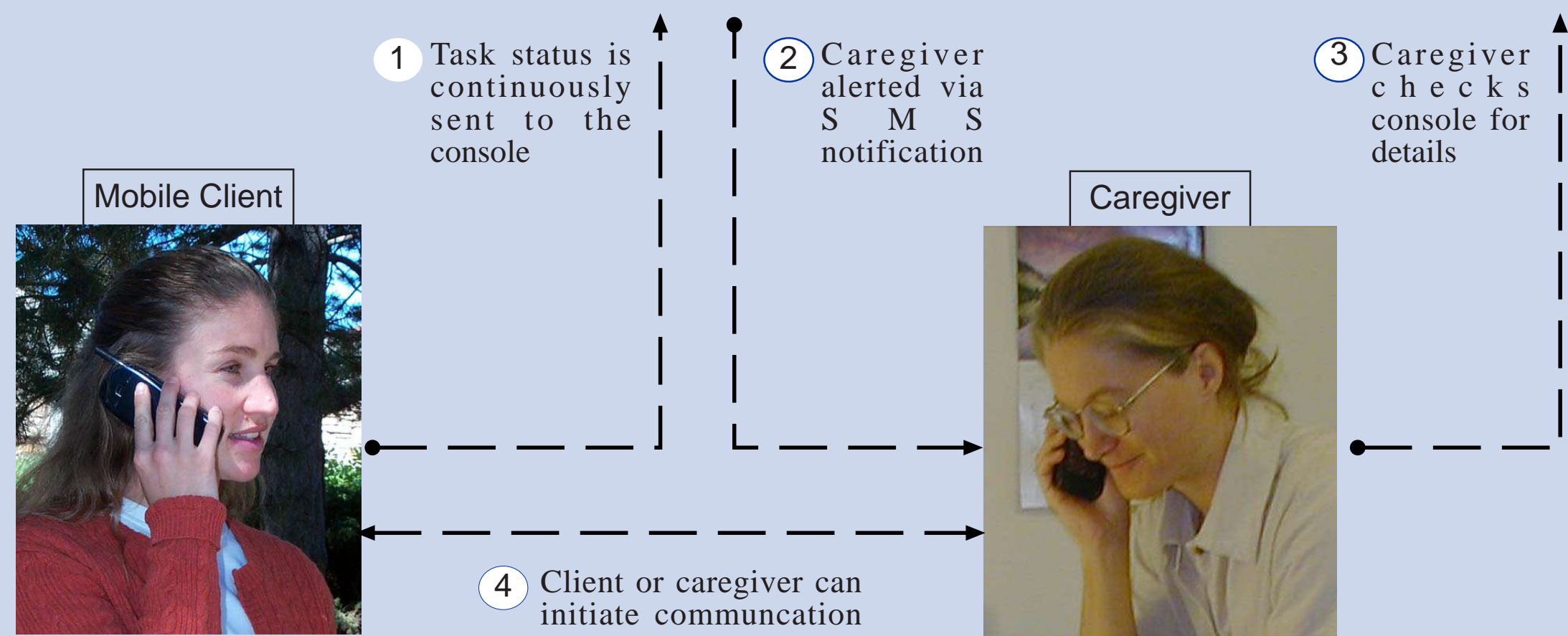
Goal: Lifeline seeks to give clients greater autonomy in home, work, and travel activities and to give caregivers the tools they need to assist their clients. The aim is provide clients with opportunities they might not otherwise have because of limited caregiver resources. The emphases is to harnessing caregiver support instead of replacing it with technology.

Approach: The design of Lifeline was informed by a series of group home site visits, collaborations with domain experts, and surveys of existing approaches. Guided by theories of distributed cognition and situated action, we identified virtues in human support structures and exposed shortcomings in existing technological approaches. Conversely, we identified limitations of human support and explored ways to mitigate these limitations through the design of a sociotechnical solution.

Current Implementation: Lifeline supports synchronous collaboration between geographically distributed clients and caregivers. Through this approach the power of distributed cognition can be leveraged in context-aware sociotechnical systems that integrate ubiquitous computational and human support for guided situated action.

Lifeline consists of two programs: (1) a conduit that runs on the Pocket PC and (2) a caregiver interface that can be run in any web browser. The conduit is responsible for collecting user activity information via sensors and user input. It makes this information available to caregivers via a web-based console. The Lifeline server interprets client data and identifies potential problems. Caregivers are notified with SMS messages sent to their cell phone or email address.

Web Browser
Lifeline Consoles

Handheld
Application

Real-Time Messaging using TCP/IP over wire or Wi-Fi or PPP over Celluar Dialup

Lifeline Server

Socket

Lifeline Conduit

Real-Time Messaging using TCP/IP over Wi-Fi or PPP over Celluar Dialup

Wireless TCP/IP

Radio Frequency

OnStar
MAPS Script dB
Mobility For All
Amber Alert
Internet
National Weather Service
National Emergency Number Association

GPS
MANTIS
Sensors

Cognitive Levers
Helping people help themselves

Center for LifeLong Learning & Design
University of Colorado at Boulder

coleman institute
for Cognitive Disabilities
University of Colorado System