Slide 1

[4005] A System for Tele Service Delivery in Rehabilitation dedicated for Disabled Users and their Carers Using DE-4208 RESORT Interface

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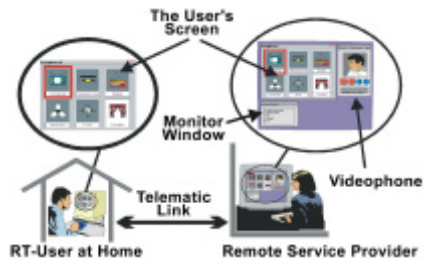
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EMBEC 2002, 2nd European Medical & Biological Engineering Conference, Vienna, Dec 6th, 2002

Slide 2

This presentation contains …

- **Introduction to RESORT Tele-Service System**
  Reason, Concept, Architecture, User Interface

- **Field Trials**
  Trials in The Netherlands and in Austria
  Long term Tests in Daily Usage in Rehabilitation

- **Results and Outlook**
  Observations
  Evaluation Kit

Slide 3

The reason for developing RESORT

- **Lesson learned in providing Assistive Technology to severely disabled persons**
  - ❖ Starting point of a long-time tailoring-process
  - ❖ Carers (professionals and family members) are the key agents for this tailoring
  - ❖ Carers often lack technical experience
  - ❖ Professional engineering assistance is expensive (distance between customer and expert, travel costs)

Slide 4

RESORT
Remote Service of Rehabilitation Technology

Slide 5

Objectives

- Development of an innovative tool which is able to provide tele-services
  - ❖ Dedicated for users of **PC-based RT systems**
  - ❖ Including **care persons** and **disabled persons**
- Goals
  - ❖ Reducing existing barriers when using RT devices
  - ❖ Improving the overall benefits of applying RT in daily life
- Development of an open RESORT protocol

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R&D Project RESORT (1998-2001)

- RESORT was funded in part by:
  - ❖ CEC (Telematic Application Program (DE-4208)
  - ❖ Austrian Ministry for Education, Science and Culture

- Partner countries in the EU Project:
  - ❖ Austria
  - ❖ The Netherlands
  - ❖ United Kingdom
  - ❖ Germany

Key Facts and Issues

- Target group are disabled users and their care persons
- Combined technical and therapeutic support
- Low cost system
- Works also over low bandwidth channels ($\pounds$ 64 kbps ISDN)
- Support also for profoundly disabled single switch users
- Using the RESORT API enables other RT systems to integrate the Tele-Help functionality
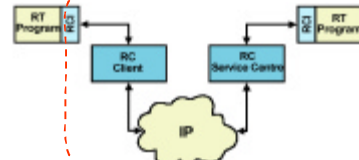
- **Easy to use**

RESORT Prototype System

- Using existing protocols: IP, H.323, T.120
- Providing multimodality: video / audio / chat
- Application sharing
- Synchronisation of local and remote RT devices and programs in real time
  (student / teacher mode for single switch users)
- Service and maintenance: File transfer, remote launch & stop, version information, security, ...

Modes of Operation

- Telephone Mode
  - ❖ Hands-free conversation
  - ❖ Videoconferencing where bandwidth permits
- Student / Teacher Mode
  - ❖ Training of users and local care persons
- Tele-Maintenance Mode
  - ❖ Troubleshooting
  - ❖ Upgrading of software and configuration

RESORT API: Remote Control Interface
(RCI) Specification v3.21

- ◆ RC = RESORT Controller connected via IP (Internet Protocol)
- ◆ RT program = Rehabilitation Technology program
- ◆ Dashed line contains RESORT tele-help system seen as black-box providing RCI API on Service Centre side and on Client side

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Screen Shots from Prototype

- Client Side User Interface
  - ❖ Very easy to be used
  - ❖ Scaleable (according user expertise and demand)
  - ❖ Resort API allows integration into existing RT devices
- Service Centre Side User Interface
- Pilot installation using "AUTONOMY"
  AAC and ECS System by fortec

Client Side Control Panel

Desktop at RESORT Client

Control Panel

Application Program

Videophone

Disabled user calls from inside his/her PC-based RT device

Focus → | Icon

Icon for calling Service Centre | Icon for terminating call

Carer calls from inside his/her RT device

Autonomy Application Manager

Start call to Service Centre

End call to Service Centre

Desktop at Service Centre (1)

Desktop at Service Centre (2)

User Trials - Client (1)

Fransiscusoord, Valkenburg a/d Geul, NL

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User Trials - Client (2)

Fransiscusoord, Valkenburg a/d Geul, NL

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User Trials - Service Centre

Fransiscusoord, Valkenburg a/d Geul, NL

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Tele-Help real life trials with an AAC/ECS user living independently at home in Vienna.

Input device: Head stick and/or Single Switch
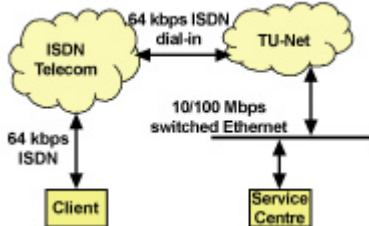

private home, Vienna

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Service Centre @ fortec, IP: 128.130.197.168

Operator at Resort Service Centre v3.13

during Real Life Test with head stick using Subject MH
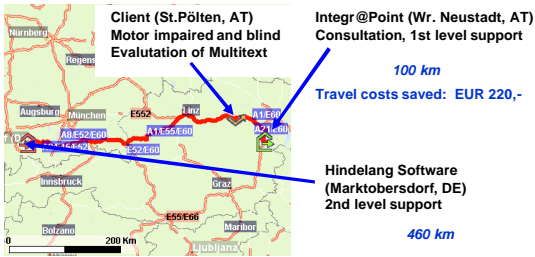

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Long-term trial Vienna

ISDN Telecom — 64 kbps ISDN dial-in — TU-Net

10/100 Mbps switched Ethernet

64 kbps ISDN

Client

Service Centre

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Findings

#	Date	Duration [Minutes]	Successful Completion	Problems	System Version
1	24.10.01	48	yes	none	0.5.1.2
2	12.12.01	9	yes	none	0.5.1.2
3	12.12.01	11	yes	none	0.5.1.2
4	18.03.02	5	yes	none	0.5.3.10
5	03.05.02	13	yes	none	0.5.4.15

Integr@Point Activities and RESORT

Client (St.Pölten, AT)
Motor impaired and blind
Evalutation of Multitext

Integr@Point (Wr. Neustadt, AT)
Consultation, 1st level support

100 km

Travel costs saved: EUR 220,-

Hindelang Software
(Marktobersdorf, DE)
2nd level support

460 km

Findings

- Works fine over 64 kbps ISDN dial-up
- Video important, even when poor quality
- Provides new ways of working together
  - Telecommunication mode
  - Student-teacher mode
  - Tele-service mode
- Networking of users (primary and secondary)
- Direct Exchange of knowledge between those persons who need it

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Results & Outcome

- Stable Software Prototype of RESORT Tele-Help System
- Public Evaluation Kit downloadable
- RESORT API and SDK for making 3rd party RT systems "RESORTable"
- RIG – Resort Interest Group
- First part time service centre in Austria

R&D Project RESORT (1998-2001)

Partners:
AT: fortec – TU Wien, ARC – Austrian Research Centres, Elisabethinum Axams;
NL: iRv, Franciscusoord;
UK: Univ. of Dundee, Tayside Orth. a. Rehab. Centre, Capability Scotland;
DE: RehaKomm

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Contact
&
Evaluation Kit

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