

Tampere University of Technology, Finland

BME, Telemedicine laboratory, Seinäjoki

“Method for Choosing Wellbeing Technology for Elderly.”

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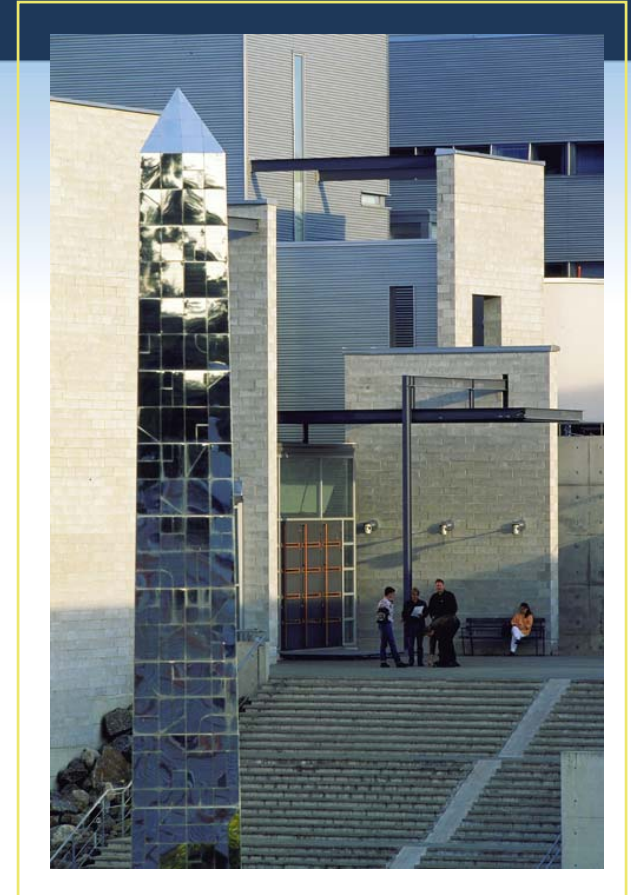
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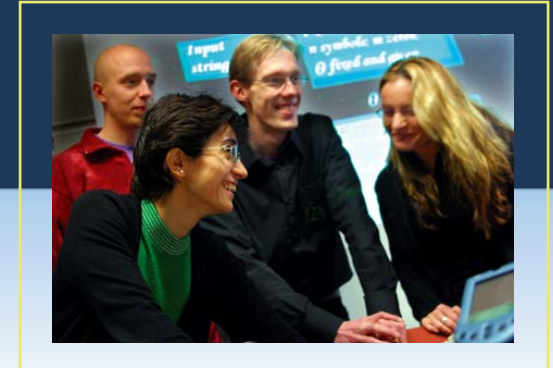
TUT – Tampere University of Technology

At the leading edge

- Established in 1965
- 12,200 students (2007)
- Cooperation with 250 universities worldwide



Finland's most international university

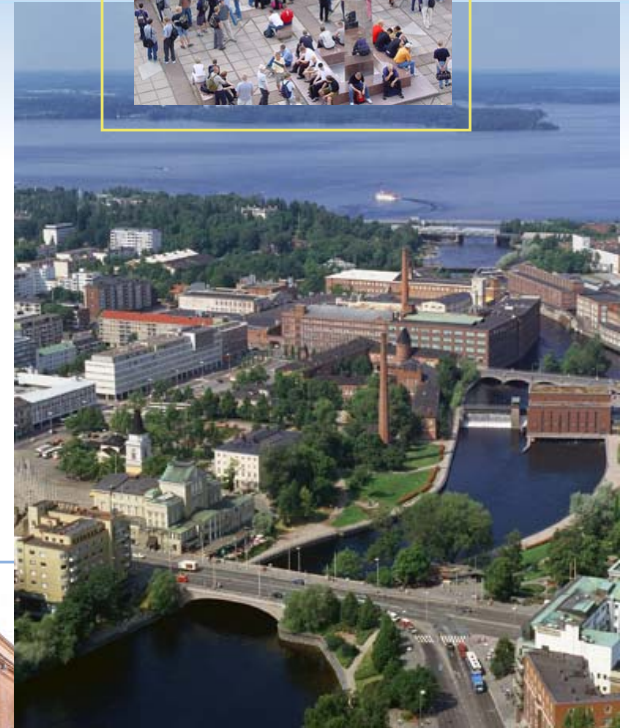


- 790 exchange or visiting students from 40 countries (2007)
- Over 200 foreign students per year recruited onto international master's programmes
- About 270 visiting researchers or professors, 50 different nationalities (2007). TUT receives more researchers and professors on international exchange than any other university in Finland.
- About 240 non-nationals as faculty, nine of whom professors (2007)
- Cooperation with 250 universities worldwide



Tampere

- Finland's third largest city, more than 200,000 inhabitants
- Located in southern Finland
- Two universities: Tampere University of Technology and The University of Tampere



Introduction: Key points

- The **proportion of elderly persons** in Finland is one of the highest in the world.
- Demented elderly persons have a **greater risk** than others to end up in long term **institutional** care.
- One way to **support** home care is to obtain the maximum benefits of various home care support technologies and alarm systems.
- At the moment, there are a number of devices and technologies commercially available, but so far no widely accepted, specific **rules** for **choosing** the most appropriate **technologies** based on individual needs of the elderly.
- We have developed a **consultation tool** for social welfare and health care professionals for defining and **choosing** the most **appropriate devices** for **elderly** people.



Method 1(2)

- The consultation tool has been developed for evaluating the needs of **elderly persons suffering from dementia**, but the tool can be expanded for more general evaluation of elderly needs.
- The tool includes a database of commercially available home care aids and devices in Finland. Each device is given a 'Principal **aid** function' and 'Device **user** requirement' profile that describe the technology in question.
- The device data base is then **matched** with an **individual patient profile**, generated by evaluating each person by using a set of questions.
- These consist of **15 questions** chosen by combining various clinically approved evaluation tools that are used for evaluating the physical, psychological and social capabilities of the elderly, such as CDR, the Clinical Dementia Rating and MMSE.
- Once each person is evaluated, the device database is searched for a **best "Device profile"** fit to this personal profile. In this way, a list of recommended devices is generated that best match the individual needs of the elderly person in question.

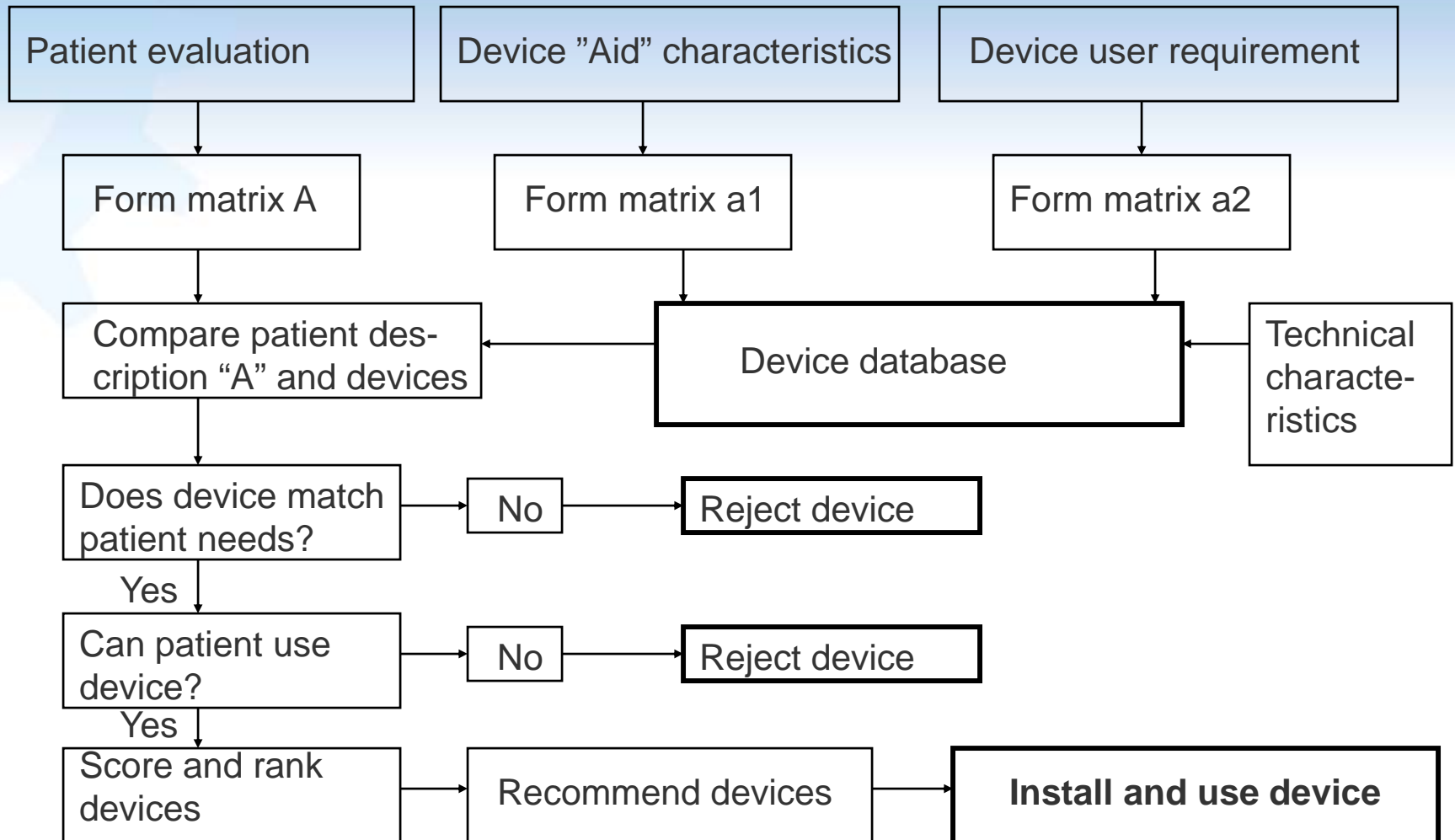


Method 2(2)

- For **supporting** the final technology selection, a **list** of technical and functional characteristics, as well as possible support technology required for each device is **displayed**.
- Although the tool will list a set of recommended devices, the home care **professional** consulting the tool will make the actual final **decision** on which devices to install.
- **Financial** restrictions naturally will also **affect** the final decision.



Method: flow chart



Method: Patient evaluation, sample of evaluation categories, matrix A

| Score/ Category | 1 | 2 | 3 | 4 | 5 |
|--------------------|---|---|---|---|---|
| Memory (CDR) | No memory impairment | Mild memory impairment | Moderate memory impairment, affects everyday living | Only formerly well learned talents or memories retained | Cannot cope alone with tasks requiring memory |
| Mobility (15D) | Can walk without problems inside, outside and on stairs | Can walk inside without problems, minor problems on stairs/ outside | Can walk inside without helper, major problems on stairs or outside | Can walk inside only with help | Completely immobile, bed-ridden |
| Manual dexterity | Can manipulate small objects without trouble | Minor problems with small objects | Significant problems with small objects | Handling of small objects only with help | Cannot handle small objects even with help |



Method: Device AID classification (matrix a1) and restrictions (matrix a2). Example Benefon security phone with alarm button and GPS & GSM tracking.

Matrix a1: device classification (will **help** with ...)

| category | "Device Aid score" (higher is better) |
|----------|---------------------------------------|
| Memory | 3 |
| Mobility | 3 |

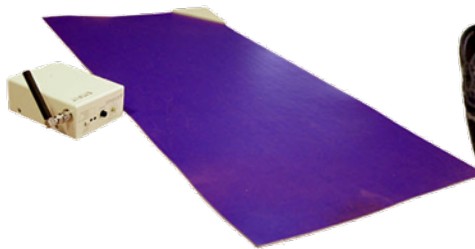
Matrix a2: device restrictions (**needs** minimum abilities in ...)

| Category | "Device restriction score" |
|-----------|-------------------------------------|
| Memory | Memory score 3 minimum |
| Mobility | Mobility requirement 5 (no minimum) |
| Dexterity | Dexterity classification 3 minimum. |



Results

- The tool has been **tested** by evaluating some **30 elderly** persons suffering from mild to severe stages of dementia who are living at home.
- The **recommendations** made by the consultation tool were **in line** with the **actual choice** of devices made by home care professionals for these 30 elderly persons.
- At the moment the database includes a relatively **limited number** of different devices, 35 in total.
- This database will be **increased** in the future.



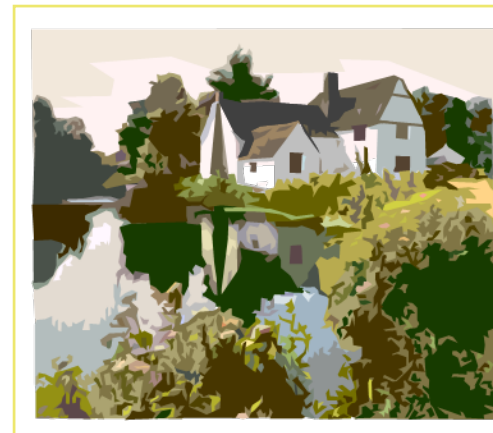
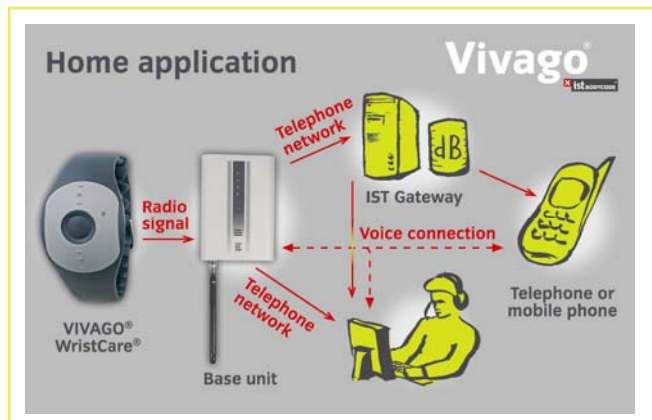
Discussion

- Health care and home care **professionals** are **not always aware** of the latest **technical devices** available for home care. The choice of technology to be used in individual cases is not simple.
- The **consultation tool** that we have developed is clearly **limited** as the database is relatively small. Also the evaluation **rules** used may be too **simplistic** and probably need expanding.
- We feel that this sort of consultation **tool is needed**, and even with its clear limitations it **can help** health care professionals to choose the correct devices for the patients.
- This **increases** the potential **positive impact** of home care **technologies**. This in turn can decrease the number of house calls done by experts only to special occasions.



Concluding remarks

- An **internet** based version of the evaluation tool is under development, this will be available to all home care professionals in Finland. Large scale trials of the tool will commence once an internet version of the tool is completed.
- **Cultural** aspects will have to be included in selection rules of tool.
- We want to expand this tool, and develop it further. We propose **collaboration** in this project with interested **Japanese** partners.



Thank you!

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²EPTEK Reg. Association

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