

**Convention on
City Development: Sustainability & Legal Interface**
July 24 – 25, 2009
New Delhi

**TECHNOLOGY FOR SAFETY AND SECURITY
OF SENIOR CITIZENS**

Dr V C Goyal

vikasc.goyal@nic.in

Director

Department of Science & Technology

Technology Bhawan, New Mehrauli Road

New Delhi-110 016

and

Dr Sughan Bhatia

scbhatia_delhi@hotmail.com

THEME

Enabling a better environment for senior citizens where their experience & wisdom is gainfully utilized, thereby giving them a respectful position in the society.

They are able to live quality life by developing an effective interface with younger sections of society, who need and cherish their caregiving.

How Can City Planning Ignore Elderly?

~80 million people with 60+ age
~23 million poor older persons

Projected:

113 million (2016), 179 million (2026), and 218 million (2030)

TECHNOLOGY INTERVENTIONS FOR ELDERLY (TIE)

- Health/Medical Care
- Nutritious Food

1

- Home Designs
- Domestic Appliances
- Furniture Designs
- Garment Designs
- Footwear Designs
- Transport Designs
- Assistive Devices

2

- Recreation & Entertainment

3

- Networking

4

Salient Projects under TIE Programme

1. Development of devices:
 - b. Gait assessment system for fall prediction
 - c. Fall alarm sensor with wireless communication
 - d. Sensor for urinary incontinence in aged people
 - e. Improved walker
2. Development of audio-visual infotainment package
3. Guidebook on nutritious recipes for healthy eating in old age
9. Development of guidelines on residential standards for elderly
10. Assessment of technology status of elder helplines in Mumbai, Bangalore, Chennai and Pune
11. Assessment of technology status of Old Age Homes in Metro and Tier-II cities
13. Mobile multipurpose elderly care unit (pilot testing by HelpAge India)
14. Fellowships at master's level to work on special designs for elderly (IIT Delhi, IIT Bombay, SPA, AIIPMR, etc.)
15. Dedicated web portal capturing technologies for elders and related matters (AIIMS)
16. Sensitization of stakeholders on Assistive & Enabling Technologies

TECHNOLOGY SUPPORT

Elderly may be vulnerable when they:

- Live alone
- Walk alone
- Go out for shopping
- Do their banking
- Travel alone

Need of AET

- To provide needed safety and security
- To restore and maintain possible level of functional independence
- Two groups of users
 - ✓ require some support and assistance in everyday life- frail & ailing elderly
 - ✓ older people with disabilities

Precautions and simple measures

- Going out in groups
- Avoiding contacts (dealings) with strangers
- Safeguarding personal information (e.g. bank account number, ATM/credit card details)
- Installing home security systems, locks, alarms, chains, making use of elder helplines, etc.
- Making sure someone always knows about your location and about your activity
- Learning useful tips from the experts
- Attend seminars or workshops on home security, self-defense, or lessons on possible abuses

Assistive/Enabling Devices (AEDs)

- To provide needed safety and security
- To restore and maintain possible level of functional independence
- ✓ elderly-friendly mobile phone & telephone instrument with enlarged buttons/numbers, speaker phone and cordless facility
- ✓ walking stick
- ✓ GPS-enabled walking stick with alarm
- ✓ pendant-type surveillance devices for dementia patients
- ✓ wearable devices to monitor inconsistencies in pulse, etc

Home Monitoring Systems

- “Smart Home” - residence with technologies that enhances safety of elders at home and monitors their daily activities
- Devices and sensors control lighting, smoke detectors, door entry systems, locks, water outlets, as well as visual and tactile signaling devices
 - Sensors to watch for abnormal behavior, sleeping patterns, use of toilet, kitchen, etc
 - Devices for daily health checks, e.g. to measure heart rate, temperature, nutrition, etc

Security/safety Devices

Device	Function
Kitchen finger protector	Protects fingers from sharp knives and blades
Stair glide, handrails	Facilitates climbing stairs
Bed rail	Facilitates getting in/out of bed
Raised seat, grab bars	Facilitates getting on/off toilet
Smoke detector	Detects smoke and alerts an alarm
Position activated alarms	Activates if user is prone or supine for > a specified time period
Video intercom	Gives details of visitors on the door
Distress alarm	Enables cellular calls to pre-defined numbers (relatives/family doctor)
Secufone with GPS and personal alarm system	Mobile phone with a provision of one touch' call to family members, friends, care associations, doctors, security staff, suppliers
Electronic Travel Aids	Detects objects in the walking path and produces a sound or vibration warning signal

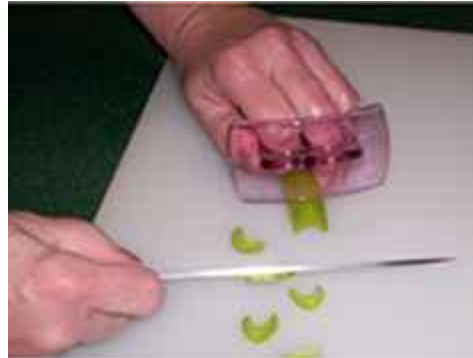
ASSISTIVE DEVICES



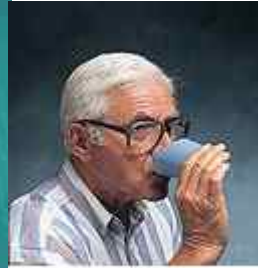
Pot and Pan Holder



Jar Opener & Closer



Kitchen Finger Protector



BedCane™
Easily Get In and Out of Bed

FREE
BedCane
Organizer
Included!
\$19.95 value

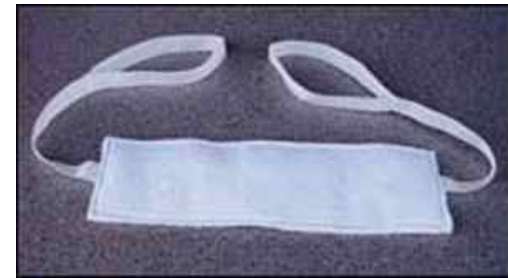


Insoles Reflexology

Bunion Protector



Wide Closing Slippers



Talking Alarm Clock

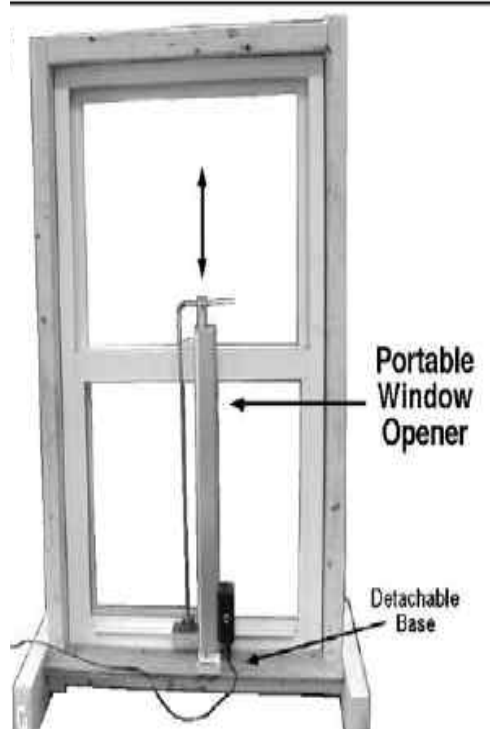
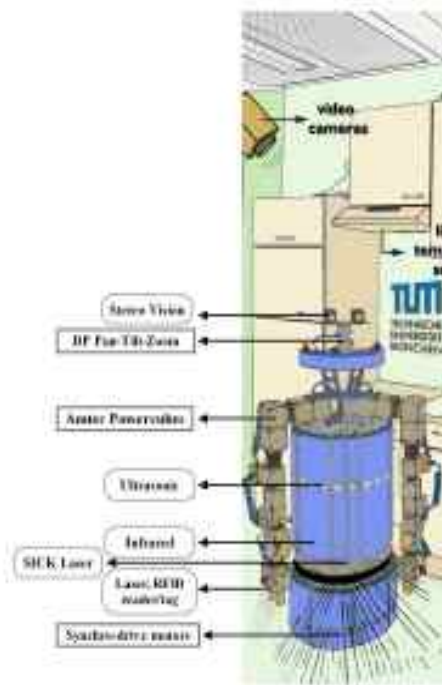
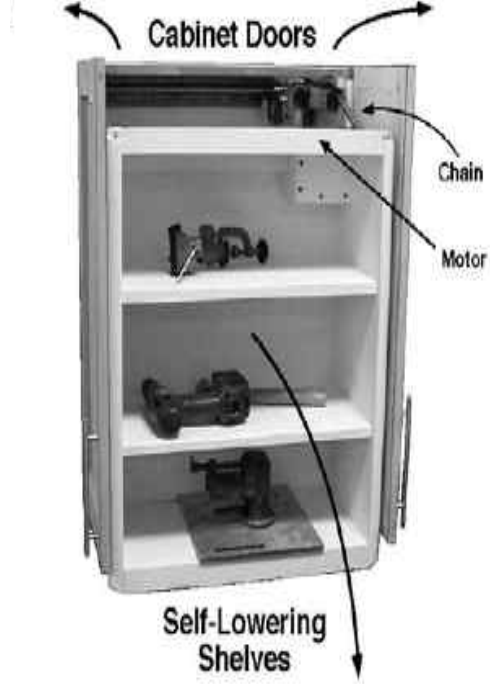


Fig. 1. The Assistive Kitchen containing a robot and a variety of sensors.

Mobile Phone



Talking Book



Talking alarm



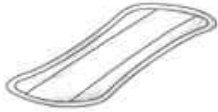
Shower chair



Toilet Accessories

Absorbent products

Light to Moderate Urine Loss



Pantliners

Very thin, discreet. Designed for light urine loss.



Pads

Designed for urine loss with super absorbent materials. Available in several absorbency levels.



Guards for Men

Contoured design to fit a man's anatomy. Can be comfortably worn inside close-fitting underwear.

Moderate to Heavy Urine Loss



Undergarment

Open-sided design and stretchy straps for comfort. Gentle leg gathers help prevent leakage.



Protective Underwear

Slim-fitting, comfortable and discreet. Designed to slip on like regular underwear.



Refastenable Underwear

Slip on like regular underwear or open the perforations on the sides and attach the fasteners. Adjusts for superior fit.



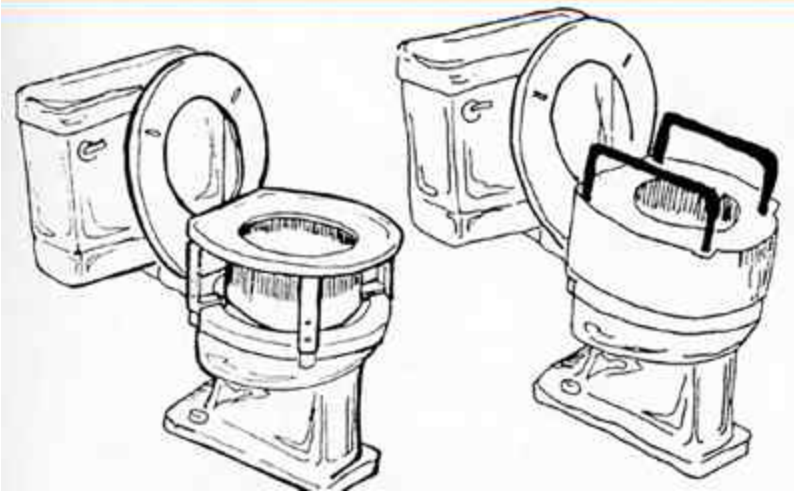
Fitted Briefs

Elastic at the waist and legs for a close fit. Adhesive tapes for fastening.



Source: Urol Nurs © 2004 Society of Urologic Nurses and Associates

Source: Urol Nurs © 2004 Society of Urologic Nurses and Associates



Source: Urol Nurs © 2004 Society of Urologic Nurses and Associates

SKeeper™ - Cellular Distress Alarm

- Wrist-wearable personal locator and cellular communicator with distress alarm
- Enables users to place cellular calls to pre-defined numbers (such as to relatives or family doctor), location finding via a Web interface or another mobile phone, and a distress alarm in case of need.
- It can be used for example to assist people with Alzheimer.

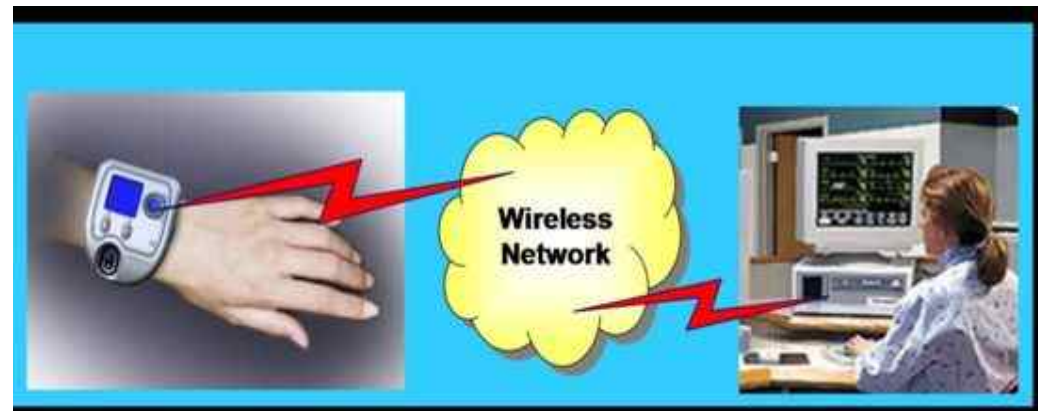


MDKeeper™ - "Mini Hospital" on the Wrist

- Worn like a wrist watch
- Enables continuous monitoring of patients' vital signs (pulse rate, ECG and blood oxygen saturation level)
- Constant monitoring to patients at risk with cardiac or circulatory diseases
- Information stored, analyzed and transmitted in real time to a remote medical center, where it is received and further analyzed

RemoteKeeper™

- Enables medical professionals to view, analyze and react on the information or alerts received from patients at remote locations
- Sends emergency calls to predefined people
- Can be integrated with other hospital information systems, allowing exchange of data for informed medical decision-making
- Can provide value added services, such as reminding the user when to take his/her medication or go to his/her doctor's appointment

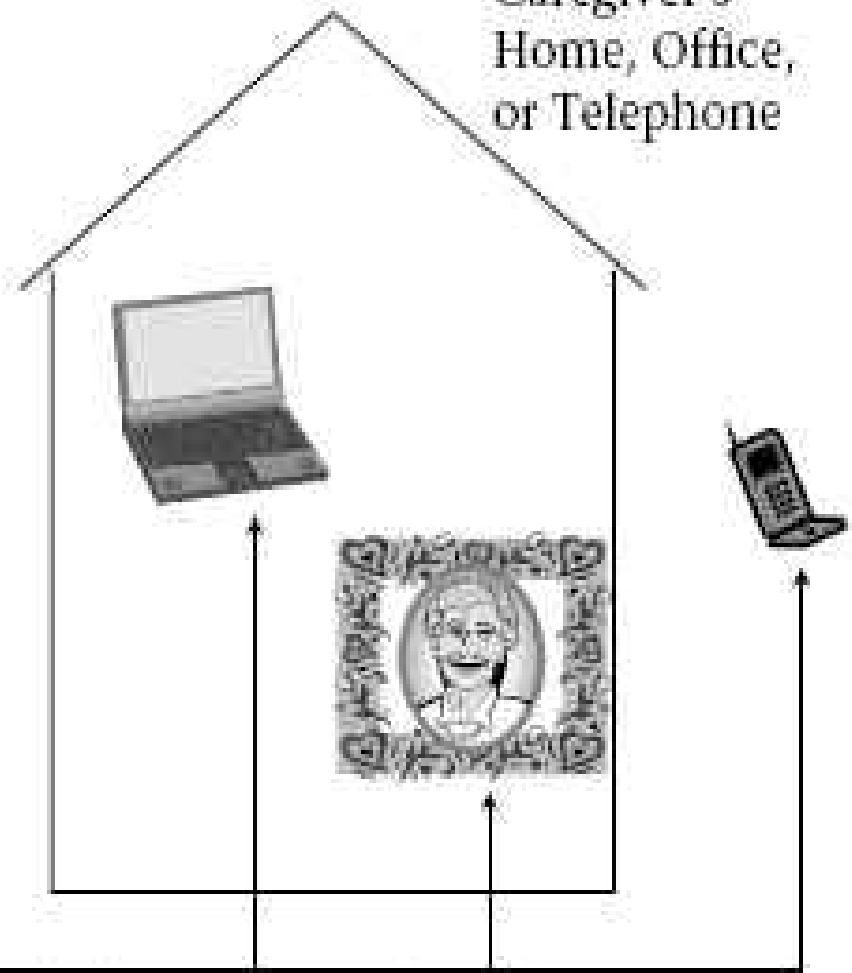
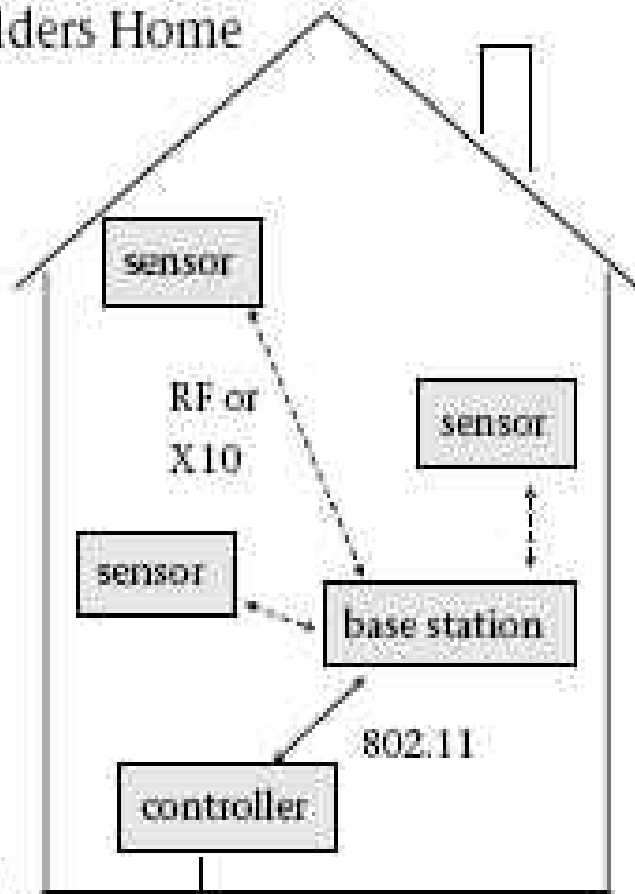


Home Monitoring Systems

- “Smart Home” - residence with technologies that enhances safety of elders at home and monitors their daily activities
- Devices and sensors control lighting, smoke detectors, door entry systems, locks, water outlets, as well as visual and tactile signaling devices
 - Sensors to watch for abnormal behavior, sleeping patterns, use of toilet, kitchen, etc
 - Devices for daily health checks, e.g. to measure heart rate, temperature, nutrition, etc

Elders Home

Caregiver's Home, Office, or Telephone



Broadband or Telephone Service (POTS)



Monitoring Station

Legislative Provisions

- Coverage of frail and ailing elderly in the definition of “disabled”
- Inclusion of “Activities of Daily Living”
- Modified procedure for prescription of AEDs
- Mechanism for development, field trials & distribution
- Tax incentives, etc. for production, import and sale/distribution of AEDs
- Funding of AEDs thru insurance, banks, etc.

City Development Plan

Should include providing necessary facilities for senior citizens

- Enabling environment
- Safety and security
- Aids & appliances for activities of daily living
- Gainful utilization of their skills & knowledge
- Recreation & entertainment

Thanks

Please visit the portal
www.oldagesolutions.org

To know more about
technology- based solutions for elderly