

ICADI Planning Workshop Notes  
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These notes were written and organized in roughly chronological order to follow the discussion and presentations at the workshop. In many cases, they are my reaction to what was presented and not necessarily a transcript of the discussion itself.

## Needs and Interventions

### Needs Assessment

- Who are the customers?
- What do they want?
- How can you tell if they receive the benefits?
- Where are the barriers?
- What is the product?
- How much does it cost, who will pay for it, and is it worthwhile?

### International

- intergovernmental
- interinstitutional
- collaborative

### Conference value - what is it intended to produce?

- identify opportunities
- report progress of ongoing work

### Dissemination

- websites
- special magazine issue

### Constituencies

- Aged and aging  
(frail, ill, healthy)

???

- clinical trials (multicenter, randomized controlled trials)
- shared databases
- open source tools
- persistent infrastructure
- "glue" grants
- private investment (and ROI)
- DFSS

( 1500 proposals to NSF ITR under review now )

Any direct sharing of projects across UK-EU-USA?

Are needs changing?

Goals not specific to individuals and don't include dates.

What are the milestones and criteria for success?

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Entitlements - health care (with drug benefit) for over 65 Y.O. = Medicare, for example  
Mass customization

Objective driven research  
Exploratory research

Linkage with advocacy groups

Enabler

[www.cordis.lu/ist/so/inclusion](http://www.cordis.lu/ist/so/inclusion)

standards?  
intelligent devices / internet appliances  
the conventional internet is not sufficient

Necessary and sufficient

community intervention

Leveraged investments in technology  
Where is the ROI?

Faith-based initiative

Acceptance criteria  
healthy living: screening, compliance, follow-up (vs. single encounter)

Focus on economic viability; commercialization plans

Access to EQUAL  
Don't ask, "I want more Quality of Life"  
Is goal to change a rare event or

Personalize message, "Aunt Millie"

Information needs of Occupational Therapists  
CDC INPHO - Information Network for Public Health Organizations

Is it public health? Health and human services?

Proportionality: Are needs of aged and disabled more deserving of attention than other groups?  
\$/QALY

Centers for rehabilitation research in US -- Preferable to independent R01s  
Need for multidisciplinary approaches linked to users  
Critical mass of investigators

Do Centers collaborate across institutional boundaries?

Life threatening conditions; end of life care  
social rules and moral acceptance

Where is the low hanging fruit?

Lunch at Dundee University for Nobel Prize winners, none of whom had ever applied for a research grant

No knowledge of variability - will any solution be sufficiently robust to be useful in actual setting

Hawthorne effect

Unbridgeable gap between need for medical and social care and the tax yield (VAT, income tax, NHI, etc.)

How much of a "smart home" is necessarily useful for elderly?

Innovation in the 21st century will take place not in science and technology, but in the organization of society using "contemporary" technology

Use of surveys? Formal methods for customer needs assessment...

Need for exercise?? Incentives??

Stop smoking. Need for community service.

can it be subverted? is there a threat to privacy?

patient with a fall and broken hip? stroke victim? heart attack?  
other life threatening event?

Gloucester smart home "survey" == what is the N??

Sleep monitoring  
dementia

Smart sensors with stove; smoke detectors, As an alternative to assisted living.

User behaviour -- House reaction (example: night light)

Caesar project - SAE - Engineering anthropometry  
Custom orthotics and prosthetics

Prevention is much better than diagnosis and treatment  
monitor number of E.R. visits

Pervasive computing lab - smart house - UFL - Gator-Tech Smart House

Create a magic wand

Mobile computing - elder digital assistant  
open framework development

Ultrasonic location positioning / tracking system  
pilot and beacon

Connect needs with source of disability - such as stroke, dementia (Alzheimer's Disease), ...

Burden of disease; estimate of potential for gain; periodic monitoring of benefits (to give ROI)

Specify targets (Healthy People 2000)

Constituencies

Frail elderly  
Medicare recipients  
Chronically ill  
Stroke victims  
Institutionalized

(demented patients, truants, young offenders, prisoners, soldiers in barracks, ...)

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High risk  
(dementia, cancer, arthritis, heart disease/stroke, diabetes,  
depression)  
Hospice  
Rehabilitation / Recovery  
Substance abuse (behavioral intervention)  
Mental illness and neurological disorders  
(autism, substance abuse, obsessive-compulsive, schizophrenia,  
anorexia nervosa/bulimia, sleep disorders, phobias, sexual dysfunction, anxiety  
disorders)

Space travel - Space Station - Interplanetary travel  
Submariners

, ...

Convergence of technologies: telephone, digital camera, cable television,

Point of care systems

Mobile healthcare: EMT, airport, police, firemen, nurses and clinics

Assume that computers are free; sensors are omniscient, noiseless and ubiquitous;  
networks are 100% reliable and all data is immediately available everywhere. What  
needs to be done?

Match the interventions to the need  
Gain acceptance  
Prove that the intervention makes a difference  
Show a benefit that is commensurate with the cost

Is "home" enough?  
Disruptions are even more serious.  
Legacy facilities; retrofitting

Nobody owns the whole process; most is out of control of government; what do the  
elderly want? what are they willing to accept?

Visible Human Project  
Conceived in 3 phases:  
1. Collect the data  
2. Organize and markup the images  
3. Provide tools (software) to solve high level problems

Digital Human concept

Human performance labs (USAF)

Engineering anthropometry

Understand the natural history of chronic disease

Instrument - Monitor - Evaluate - Intervene

Reconcile interventions with life effects; Refine QOL measures  
Establish baseline  
perform intervention  
measure recovery  
reduce empiricism  
tailor interventions to individual needs

Interventions can be drugs, devices, procedures, ...

What's missing?

no standards for data

MIAME - Minimum information needed to define a microarray experiment

Ontology for representation of information

Information infrastructure

Cyberinfrastructure

Personal security

How can you measure a baseline? Does it vary with genetics? How does it vary with age?

Characterize human performance. Human Factors.

What is normal aging?

Information Technology in Health Care (NIST)

Modeling human behaviors; modifying human behavior

What do customers want? What do they expect? What can be done for them that they don't ask for?

EMI and EMC in FDA device regulation?

HDTV station in Texas began and closed down a wireless cardiology clinic due to RFI.

Can you model nomadic wireless computer networks and predict failures?

Passive vs. active systems

User-centered design

Engineering meets behavioral science; nursing;

Variability???

Conceptual model of human environments -- model of human in the environment -- The Sims

Reality TV

Osbornes

12 strangers in same house

Biosphere

Frontier family in Kansas

1900's home in London

We are naturally curious about how humans behave in varying scenarios.

For example, people watch reality TV to be Voyeurs and observe the actions of surrogates or counterparts.

The same is true in live theater, movies, TV sitcoms, dramas, mysteries, etc...