Assisted Living Innovation Platform and the dallas programme

ALAN update. 21 November 2013

Graham Worsley - Lead Technologist Assisted Living Innovation Platform
Technology Strategy Board: The UK innovation agency: How we provide support

Range of tools with different objectives / characteristics
Government support in A/L and how it fits together........

Preventative Technology Grant (PTG)

Whole System Demonstrator (WSD)

Assisted Living Innovation Platform (ALIP)

{technology development}

{clinical evidence}

Delivering assisted living lifestyles at scale

{next stage of evidence with even more users}

2006 2007 2008 2009 2010 2011 2012

3ml

Technology Strategy Board
Driving Innovation
Challenges in Assisted Living....

- Awareness
- Evidence & Business Case
- Levers & Incentives
- Organisational Readiness
- Quality Standards & Interoperability
- Market Building
The UK population over 65 is expected to almost double to 16.8 million by 2051…

…and the number suffering from long-term conditions will rise from 18.5 million to 20.6 million by 2020

75% - 85% of worldwide healthcare spending is on chronic disease management

The global remote healthcare market is worth about £394M; predicted to grow to £4,000M by 2010
ALIP outputs:

- Home Based Systems and User Centred Design (2008-11)
  - 9 Projects totalling £14.3m
  - Our investment: £6.3m (with NIHR, EPSRC and ESRC)

- Smart Care Distributed Environment (2009-2012)
  - 7 projects totalling £16.2m
  - Our investment: £6.3m (with NIHR and EPSRC)

- Economic & Business Models + Social & Behavioural Studies (2010-2014)
  - 8 projects totalling £12.3m
  - Our investment: £8.8m (with NIHR and ESRC)

- Independence Matters - with Design Council (2011)
  - 7 projects (£2m programme)

- European programme – Ambient Assisted Living (AAL)

- Knowledge Transfer programme (2008 – 2013)

- Standards activity commenced early 2011
Telemedicine at consumer pricing

TV Based Video Telephony for Assisted Living

Benefits:
- Improved patient and carer access to clinical support
- Reduced need for travel to outpatient clinics
- Reductions in numbers of admissions to hospital and length of stay
- Earlier interventions during exacerbations of long term illness and hence reduced severity of episodes
- Reduced cost of care delivery – in both rural and urban settings
- Ability to support clinical staff in long term care settings and hence reduce avoidable hospital admissions

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In partnership with:

adi advanced digital institute
RED EMBEDDED design
Airedale NHS Trust

btl learning & assessment

Airedale NHS Foundation Trust
The AEGIS Project - Low cost Ambient Lifestyle Monitoring

System overview
Remote monitoring of activity using wireless sensors and using a rule based inference engine and pattern matching to generate exception messages. The system is intended for use in the homes of elderly people living alone where the messages generated are sent to selected family members and friends.

Sensor modules
The sensors are specially designed to be non-intrusive, easy to install and require minimal maintenance. The whole system will be very low cost and have minimal operational costs to users – it is a consumer product with no direct medical functionality.
Smart Care Distributed Environment – Cloud Based Services?

**Telehealth**
- Cholesterol monitor
- Blood-pressure cuff
- Glucose meter
- Medication tracking
- Sensor networks

**Telecare**
- Pedometer
- Lights
- Doors / Windows
- Motion / Activity
- Bed
- Kitchen
- Bathroom

**Home automation**
- Home Hub Appliance
- Service Hub

**Records**
- NHS
- Social Care
- Housing
- Personal Health Record

**Elderly living independently**

**Friends and family**

**Emergency services**

**Care professionals**

**NHS Direct**

**Tele-carer**

**Care response service**
Docobo: PEACE Assisted Living Eco-System

- Assistance Services
  - Delivered Meals
  - Other
- Environmental Controls Interface
- Location Services
- Telehealth Services
- doc@HOME
- Web Browser
- Other Health IT Systems
- 3rd Party Services
  - Community Assist
- Social Contact
- Peer to Peer groups
  - Family
    - Photos
    - Diary
- Multimedia Medical Device Platform
- Class IIa
- GPRS, 3G Broadband
- Care Portal™
- Service Provisioning
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Community groups:
- 3rd sector
- Local volunteer
- Private providers

Other Health IT Systems

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Location Services
EBM Projects: Understand current and future markets for assisted living technologies. Propose new business models to address the market dis-functions.
The 5 EBM projects

Projects differ in their emphasis on telecare and/or telehealth and whether the business model is primarily b2b or b2c. SALT is diffuse.
MALT: Achievements to date

• Completion of phase 1 – development of case studies on use of telehealth in 4 sites in Yorkshire and Humber;

• Completion of 170 qualitative interviews with telehealth stakeholders (clinical and managerial staff, commissioners, industry representatives, patients and carers);

• Development of financial model for telehealth for patients with COPD and CHF

• Presented at Workshop in Sheffield 30 September, TSA Conference 12 November
Challenges and next steps...dallas

- UK T/C, T/H market flat lining because of fragmentary statutory care market. b2c market needs digital telecare, and interoperability.
- Academics study problems; Industry propose solutions, EBM challenge to focus academic activity away from studying current markets/ environments/ perceptions (even though they may be of only tangential relevance) to using this learning to envisage likely sustainable, diverse future AL markets and to find tools that will support the transition.
- A number of the EBM partners are proposing consultancy and business support services (SALT, Dap, CoModal). Many of the services and tools focus on complementary areas of the business canvas or on supporting organisations to work through the business canvas. It is likely that support for such a collaborative consultancy based on an integrated approach could maximise the value of the programme.
So lets introduce ......
dallas Community scope (vision 2011)
Dallas “infinity” diagram – people’s journeys in and out of statutory care
Interoperability and Standards: Enabling end-to-end networks and information flows

- Cross boundary challenges
- Value of data, implementation of dynamic SLA’s
- Avoid fragmentation - drive economies of scale
- Class of service (CoS) / security, QoS and identity assurance
- Safe open data with usage controls – Class of Data (CoD)
Assisted Living Innovation Platform

£37.3m investment in four communities to improve the lives of 169,000 people by summer 2015

Evaluation: Benefits for the Individual, System, UK Business & Economy

Join : Share : Inspire @ https://connect.innovateuk.org/web/dallas/overview
i-Focus

• i-focus is working within dallas to **remove barriers to interoperability**, whether these barriers are technical, organisational, or just created by a lack of understanding.

• **Guidance has been published** and a **reference architecture developed**, which has proved useful in facilitating discussions and comparing different solutions.

• It is important that **requirements for technical interoperability are driven by real business need**.

• We are now in the process of establishing a **sector-wide organisation** to facilitate collaboration between all stakeholders in the assisted living/health/care/wellbeing sector to collaborate to agree common business models and technical solutions to allow these to work.
Dallas as a Launchpad for Interoperability

UK dallas programme – linkages

four communities
(169,000 people by summer 2015)

- Living It Up (Scotland)
- Feel Good Factory (Liverpool)
- Year Zero (Liverpool, Moray, Rotherham & Rugby)
- i-Focus (Warm Neighbourhoods)

Links between projects are a fertile proving ground for Interoperability Concepts
Diversity of: service propositions, providers (state & commercial) sectors (Energy, healthcare, social care, multimedia, TV), consumer devices and hubs, technology companies)
e.g. PHR connectivity to statutory systems

Key topics:
- Value of connecting PHR to statutory services
- Impact on Workflows (+ve and –ve)
- Information Governance
100 years ago I could have checked on my elderly mum as I walked to work.

Today I live 100 miles away, how do I do know mum’s OK?
Warm Neighbourhoods®
‘Around Me’ Service

Use of connected home sensor technology to provide support and reassurance to an older adult and their informal care network

Proposition centred on:

- Ambient temperature
- Activity patterns
- ‘I’m OK’ reassurance

Messages:

- Reassurance messages for normal activity
- Reminders for exceptions
Freedom

Wellbeing
- Physical
- Emotional

Personal security

"Making life easier."

"If your mind isn’t focussed your body isn’t going to be focussed…everything is a knock on effect."

"It’s important to have more say in who comes into the home."

Technology Strategy Board
Driving Innovation
makes life easier

lets.Connect@riverside.org.uk
0808 100 1929
Mi community

1200 health checks

2 memory cafes

testing technology

http://www.neighbourscanhelp.org.uk

3000+ staff, volunteers & informal carers /family members trained
Mi reference architecture

Partner applications / services

User Portal

Professional Portal

Mi APIs

Identity / Directory Services

User Consent Services

PHR access + synchronisation

Business Intelligence

Enterprise Service Bus

Data Access Auditing

Personally Held Records (PHR)

Data Warehouse
The Year Zero project aims to use personal health records to transform the health sector in much the same way as has already been done in retail, travel and finance.

Through the creation of a suite of digital planning and care products and by putting the individual at the centre of the conversation, we aim to empower people to take more control of their life, health and wellbeing.
Year Zero

Products currently in development/deployment include:

• A Better Plan: a personal online care plan
• Good Neighbours: an online personal support network
• eRedbook: a digital version of paper ‘red book’
• uMotif: a goal-tracking app for diabetes
A Better Plan

• A personal care planning app that is owned and managed by the individual and can be shared with family, friends, carers and the statutory services

• Primarily aimed at those with long-term conditions but can be used as a general health and life planning tool

• Allows citizens to reflect on their health and current situation; record directly from a variety of devices; monitor medicines compliance and benefits measurements; monitor health and well-being over time and create and review action plans
Welcome

A Better Plan is an online tool to help you take more control of your life. It enables you to improve your health and wellbeing by identifying what matters, setting goals, and sharing your plans with people you choose.

You can create A Better Plan for yourself or on behalf of someone you care for.

What is A Better Plan? |
How you can use A Better Plan |

Actions coming up

02/10/2013: Eat Zelda's healthy packed lunch instead of pasties etc
02/10/2013: Exercise with Jon
02/10/2013: Mention A Better Plan at my next appointment

Welcome Ron Swinney
Age: 58
Weight: 93.00 kilogram(s)

My Measurements

Blood Glucose Measurements
Weight and BMI

Understanding my health
94% complete

Health Tracking
100% complete

My Plans
57% complete

Medicine Schedule

<table>
<thead>
<tr>
<th>Medication</th>
<th>When To Take</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspirin</td>
<td>After Breakfast</td>
</tr>
</tbody>
</table>

See all

Appointments

<table>
<thead>
<tr>
<th>Date</th>
<th>Clinic</th>
</tr>
</thead>
<tbody>
<tr>
<td>20/11/2013</td>
<td>Celsius Design</td>
</tr>
</tbody>
</table>

Got any thoughts on A Better Plan?
Sam wants to know
If you want to give us some feedback or need some guidance, email Sam.
Send him an email at abp@illumina.co.uk

What's new in A Better Plan

Weight and BMI

Good Neighbours
Good Neighbours

• A personal support network that can be used as a circle of care to support an individual in a time of need. It is a web app that can be launched from A Better Plan or used on its own

• It can be owned by a carer on behalf of an individual and individuals in the group can be given permission to co-run the circle of support for an individual

• It allows the group to share a calendar, create and allocate tasks, share contacts and message everyone or specific individuals in the group
The UK’s first digital Personal Child Health Record, providing parents and clinicians with the tools they need to effectively manage a child’s healthcare from day one.

The eRedbook is an online version of the existing paper ‘Redbook’, created, updated and maintained by either the eRedbook custodian – typically a parent – or by the relevant health professional.

Deployed by Year Zero NHS partners in Liverpool and South Warwickshire
The uMotif diabetes mobile and web app will support self-management, engagement, empowerment and goal setting for patients with Type 1 and 2 Diabetes.

- It will interface with the HealthVault Personal Health Record and integrate with the A Better Plan.
- The app will be available on web, iOS and Android smart phones and tablet devices.
- It will enable citizens to track a variety of measurements such as blood glucose, insulin and carbs; self track aspects of daily life and track goals from their personal care plan.
living it up /embedded image
feeling happy, healthy and safe

Western Isles
Highlands & Islands
Forth Valley
Lothian
Grampian
Living it Up Scottish model

LIU Community

User Interfaces

Everyday user interfaces

LiU Services

LiU programming and media content

Information about local services

All About Me Personal Record

Reminders / Prompts

Messaging

LIU Marketplace

LiU Technical Platform

Open standard allowing access to any web-enabled LIU platform

Plug-ins for delivery to TV, mobile phones and tablet

Self Management Education and Videos

Telehomemonitoring - Weight Blood Pressure Oximeter Blood Glucose

Web services

Service Systems

Interface to Voluntary Sector Systems

Interface to Health & Social Care Sector Systems

Telehomemonitoring (Back End)

Medical Records

Atos
Service expansion

- Dementia
- Regulation
- Social inclusion
- Games/apps
- PHR
- Activity monitoring
- Fitness & wellbeing
- T/care
- T/hlth
- Interoperability and managing complexity
- b2c market growth
- Awareness
- Telecare and telehealth services (not integrated)
- Learning disability
- Stratified medicine
- Dallas expanding the market
- What we do next
Conclusions

• Technology is moving on, as are plans for large scale deployment e.g. dallas and (maybe) 3millionlives. Jigsaw challenges still extant.
• Standards and regulation and business models are still adrift of deployment at scale. Where is the pathway to scalability? What business models are going to work? Need new models for consumer market (dallas??).
• Significant progress in interoperability
• Wealth creation benefits unproven so far, but main investment in a wider market is stacked up at the end of the Platform.
Assisted Living is Changing

Martin Sotheran
Markets

- Worried Well
- Wellbeing
- Assisted Living
- Telecare

- Telehealth/medicine
- Medical

“Softer”
In the Home
Higher Volume

More regulated
Higher Margin
Look out for AHSNs
Assisted Living is Changing

• Why?
  – We can’t afford to carry on as we are
    ➢ More “care” from family, friends, community
  – Technology

• What’s changing?
  1. The Customers: there’s a large Consumer Market
  2. Technology
     • The Internet of Things
     • Sensors
Assisted Living – A Consumer Market

1. Aesthetics
   – Looks the part
   – Non-stigmatising

2. New terminology
   – Avoid: monitoring, sensors, WiFi, Bluetooth, “the internet”, outcomes, dementia, problems...
3. Ease of Use
   – Self Install (carer, professional, even user)
   – Support
   – The User Interfaces
     • User, carer and professionals

4. Marketing
   – Desirable, fashionable, reliable
   – Glasses and walking sticks did it!

5. Pricing
   – Suitable for family and friends
Technology Marches On

• The Internet of Things
  – Allows all sorts of things to be connected
  – Allows data from the home to be visible “anywhere”
    ➢ Major security and privacy issues

• Connected Assisted Living systems
  – Can increase loneliness and social isolation
  – Can enable communications and inclusion
Sensors – a revolution

1. Bluetooth LE, includes 6 sensors
   – 1-2 years on a button cell
   – Development kit/Reference design for $25

2. Plessey EPIC sensor: non-contact ECG
   – Can be woven into bed/chair material
Cheap, Clever Sensors

• What to do with them?

• Use your imagination!
  – **Accelerometer**: Front door, fridge door, coffee cupboard, movement (worn), coat, cloakroom door, bed occupancy, chair occupancy, fall detector
  – **Temperature (ambient)**: hypothermia risk, heat loss (rooms & buildings)
  – **Temperature (IR)**: movement, room occupancy, bed occupancy, time to climb stairs, boiler on, TV on
  – **Humidity/Water**: flood, steam
  – **Connection**: key ring, coat pocket
  – **Module**: smoke detector, automatic lighting
  – **EPIC**: detect a living person in a chair or bed, stress, early warnings

• Software: remember, all provide context for the others
ContinuumBridge

Sensors + Bridge to Aggregation Service

• Multi-standard, non-proprietary
  – No lock-in, an open, competitive market
  – Open APIs
• Highly secure, privacy maintained
• Absolute ease of use for all parties
• Consumer pricing
Join Bath ENTREPRENEURSHIP programme in 2014

- March 24-26
- June 3-5
- September 22-26
- November 17-19