An Open Source Health Information System for the 21st century

WorldVistA
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An Open Source Health Information System for the 21st century

- **Why healthcare needs Open Source**

- **WorldVistA**

- *WorldVistA EHR™*

- **Open Source development: barriers to sustainability**

Why healthcare needs Open Source

The UK NHS

The US Veteran's Administration

Development of IT in the UK NHS

1970's and mid 80's

- Experimental development programme
- In house development in 12 regional centres
- Regional strategy and procurement
- Code sharing

Achievements:

- Hospital administration and departmental systems
- GP systems
- National systems for screening etc.
- National register for all GP Patients linked to GP systems
- Regional data networks
- (Oxfordshire) Integration of hospital systems with primary care across the county

But:

few examples of computerised clinical records or computers routinely as part of the care process in hospitals

Development of IT in the UK NHS

Mid 1980's and 90's

- Re-organisation of Service
- Outsourcing – privatisation of regional centres and software assets
- Liberalisation of procurement
- Implementation of commercial (closed source systems)
- National regulation by means of standards in an attempt to raise quality and achieve interoperability

Achievements:

- Good coverage of primary care
- Some examples of integrated EPR based systems in hospitals
- Culture change – greater acceptance of IT by clinicians
- Advances in UK, European and global health IT standards

But:

- Total lack of integration/interoperability – failure of standards
- Greatly increased IT expenditure
- General stagnation – still little use of IT to support care in hospitals

Development of IT in the UK NHS

1998 onwards:

- Increased NHS expenditure generally
- Government pressure for increased use of IT to bring about healthcare improvement and efficiency
- 1998-2005 strategy:
    - lifelong electronic health records for every person in the country
    - round-the-clock on-line access to patient records and information about best clinical practice, for all NHS clinician
    - genuinely seamless care for patients through GPs, hospitals and community
    - services sharing information across the NHS information highway
    - fast and convenient public access to information and care through on-line information services and telemedicine
    - the effective use of NHS resources by providing health planners and managers with the information they need.
- Return to central procurement strategy

Achievements

- ?

The Veteran's Administration

- **The largest single healthcare provider in the US**

- **Provides comprehensive health care to 25 million US military veterans**

- **1300 Sites-of-Care, including:**

  - 173 hospitals
  - 850 clinics
  - 135 nursing homes
  - 203 counselling centres,73 home-care programs

- **Employs**

  - 15,000 MD
  - 50,000 Nurses
  - 33,000 Allied Health Professionals

- **Recently evaluated as the best healthcare provider in the US in terms of both quality and efficiency**

VistA: Veteran's Health Information Systems & Technology Architecture

- **US Veteran's Administration (VA) Health System**

- **Totally integrated, comprehensive, secondary & primary care healthcare support system**

- **Based around an EHR for each patient**

- **Over 100 separate applications:**

  - 55 Clinical applications

  - 16 Infrastructure applications

  - 28 Financial and administrative applications

- **In daily use in all sites by all staff**

- **Considered to be a key reason for the VA's success**

VistA: Veteran's Health Information Systems & Technology Architecture

- **Institute of Medicine (IOM):**

    'VHA's integrated health information system, including its framework for using performance measures to improve quality, is considered one of the best in the nation.'

- **Comments attributed to VistA by physicians include:**

    'If you fully involve yourself in the VHA computerised record system, you would never go back to any other way of caring for patients.'

    'The VA is at the leading edge of technology and health care. Patient information follows the veteran around the system ... The use of view alerts, patient centric longitudinal data, and performance measures ensure the right information about the right patient to the right provider at the right time.'

- **Professor Denis J Protti:**

    The Benefits of a Single 'National' Health Record Have Been Demonstrated (........*by the VA)*

VistA development

- **In-house development**

- **Applications developed at distributed centres by small teams of software experts and healthcare professionals**

- **Central team responsible for the overall architecture, programming standards, the Kernel and common infrastructure**

- **Tight QA procedures**

- **Subject to continuous extension and refinement since the early 1980's – no total system releases**

- **Source code distribution allows for local modifications**

- **Still being developed**

Open Source development within the organization

Why healthcare needs Open Source

Closed source is failing the healthcare community

Commercial "closed source" systems:

- **High cost**
  - Licence fees
  - Support and maintenance fees – supplier "lock-in"
  - Unaffordable by developing countries – benefits are denied to the World's poorest

- **Lack functionality: poor physician acceptance**
  - Specification based "waterfall" development not appropriate
  - Inhibit local modifications
  - Inhibit innovation
  - Slow implementation of standards and provide a barrier to information exchange and interoperability

- **Quality assurance?**

Why healthcare needs Open Source

Open source systems:

- **Lower cost**
  - No license fee
  - Source available - many suppliers for support and maintenance

- **Greater functionality**
  - Can be enhanced to meet local requirements
  - Innovative applications can be incorporated
  - Provide interoperability - standards compliant

- **High quality**
  - Quality assured as code is subject to inspection

The Open Source process can transform the way that healthcare information systems are developed improving the technology and making it available for all

VistA outside the VA

Source code available licence-free under the FOIA

- **US DoD and US Indian Health Service**

- **International Implementations:**

  - The German Heart Institute

  - Government hospitals in Bogata, Columbia

  - Helsinki University Hospital

  - Cancer Hospital Cairo, Egypt

  - University of Wurzburg, Germany

  - University Hospital of Kuopio, Finland

  - Mexico IMSS Government Agency

- **To date all implementations have proceeded independently**

- **VistA Office, 2005: Primary care version funded by Medicare and code free to all**

WorldVistA

Incorporated in 2002, as a non-profit corporation in California - a charitable organization under Section 501(c)(3) of the Federal Tax Code.

Mission:

" to make healthcare information technology better and universally affordable by establishing a global sustainable collaborative open source development of VistA"

WorldVistA

- **Voluntary unpaid board of Directors**

- **A rapidly growing community**
  - 100+ members - 20% increase per meeting for last three years
  - Daily electronic discussions / weekly conference calls
  - International participation: UK, Malaysia, India, Mexico, etc.
  - Doctors, vendors, coders, organizations large and small

- **Revenue stream from sponsors, donations & contracts**

- **Contract to provide training for VistA Office vendors**
  - 500 + registered participants
  - Fundamentally a technology transfer, business incubation effort
  - A catalyst for a VistA "economy"

WorldVistA EHR™

- **Port of FOIA VistA to run on GNU/Linux and GT.M™**

- **Released by WorldVistA under GPL**

- **Current Developments (Source Forge):**
  - Internationalization,
  - Paediatrics,
  - Simplification of deployment

- **Maintains compatible with VA FOIA VistA releases**

Barriers to Open Source in Healthcare

- **Most OS healthcare developments are:**
  - Limited in scope
  - Can't integrate with existing (closed source) systems
  - Under funded
  - Lack on-going support

- **Users:**
  - Need an integrated total solution
  - Users buy a product – OS is a product development process
  - Bias against "libre" software

- **Suppliers**
  - Government lobbying
  - Mis-information - FUD
  - Blurring of open source branding.... embrace and restrict

Potential for *WorldVistA EHR*™

WorldVistA EHR™ A total solution now AND the basis for future development

Could provide the starting point for a new way of developing healthcare information systems by being the focus of a coordinated international development effort of a healthcare system that would:

- Provide a vehicle for implementation of innovative applications and so bring better functionality
- Be a proving ground for International EHR standardisation
- Integrate across primary and secondary care
- Stimulate the market
- Lower costs - affordable in developing countries

AND *ultimately improve healthcare worldwide*

WorldVistA keys to sustainability

- Making the case for collaboration – avoiding code forking/balkanisation

- Coordination of a large scale international OS development – standardization v localization

- Achieving a technology transfer capability

- Establishing "seed" reference implementations

- Breaking into mature markets in Europe and US

- Overcoming the perception of "legacy" technology

- US origins of VistA/WorldVistA – "not invented here"

- Getting predictable continuous funding

- Ultimately shifting focus from software development to healthcare improvement using information technology: knowledge exchange & management to establish evidence based feedback loops to drive innovation at all levels: software, clinical practice, research etc.

WorldVistA EHR™:

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