

# Queensland Clinical Senate 2016

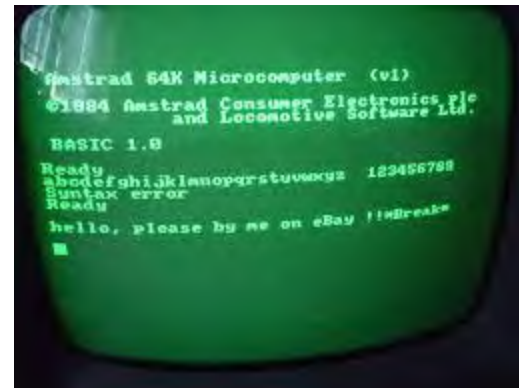
## Digital Disruption and Health Care

Dr Richard Ashby AM  
Chief Executive, Metro South Health

# Digital Disruption and Health Care

➤ First, there was.....

“The Green Screen”





# Digital Disruption and Health Care

➤ Then.....

## iEMR/Digital Hospital



# iEMR – Part of the eHealth Agenda

## What is eHealth?

*“eHealth is the combined use of electronic communication and information technology in the health sector.”*

World Health Organisation

- Electronic medical records: such as patient records, clinical administration systems, digital imaging and archiving systems, e-prescribing, e-booking etc.
- Telemedicine and telecare
- Decision support tools
- Internet-based technologies and services



# iEMR – Part of the eHealth Agenda

## The eHealth revolution.....

*"eHealth is the single-most important revolution in healthcare since the advent of modern medicine, vaccines, or even public health measures like sanitation and clean water".*

(European Institute of Public Administration, 2003)



Broad Street Pump

# iEMR – Part of the eHealth Agenda

## eHealth – a global focus.....

### ***Focus of international agendas***

*2003 – United Nations World Summit on the Information Society*

*2005 – World Health Assembly*

*2005 – WHO Global Observatory for eHealth (GOe) established*

*2005 – European Commission eEurope action plan released*

*2006 – World Summit on the Information Society*

*2009 – Obama Health Reform (ARRA)*

### ***National agendas***

*Canada Infoway*

*Scottish Care Information (SCI)*

*NHS Connecting for Health*

*Veterans Health Administration USA*



# iEMR – Queensland

## eHealth in Australia

- 2003 - Victoria invests \$232m in HealthSMART
- 2004 – eHealth WA program \$334m
- 2005 – NeHTA established
- 2005 – HealthConnect South Australia begins
- 2007 - \$243m QLD iEMR Project
- 2008 – Australian eHealth Research Centre opened in Brisbane (CSIRO/QH)
- 2009 – QLD iEMR (v2) commenced
- 2012 - \$628m PCEHR (My Health Record) launched
- 2014 – First L6 HIMSS hospital – St Stephen’s
- 2015 – First large scale digital hospital - PAH





# The Digital Hospital

- A digital hospital is a hospital service facility with highly connected, interactive digital information systems which support precise, informed treatment of individual patients/clients while enabling optimally efficient use of infrastructure.



# The Digital Hospital

**Much more than paperless medical records**



# Digital Disruption and Health Care

➤ The future is Digital



# Digital Disruption and Health Care

- DISRUPT
- DISRUPTIVE INNOVATION
- DIGITAL DISRUPTION



*Larry Downes, Paul Nunes  
HBR, March 2013*

# Digital Disruption and Health Care

## **Disrupt:**

- To throw into confusion or disorder
- To break apart or alter significantly
- To disturb or upset

# Digital Disruption and Health Care

**Disruptive Innovation:** creates a new market and value network, disrupting existing networks eventually displacing established leaders and alliances.

## Examples:

### Disruption

- Personal Computer (PC)
- Smartphone
- Ultrasound
- Amazon
- Wikipedia
- Digital photography
- UBER

### Legacy Business

- Typewriter
- PC's/Cell phones
- X Ray Imaging
- Bricks and Mortar Retail
- Encyclopedias (print)
- Photographic film
- Taxis

# Digital Disruption and Health Care

## Disruptive Innovation in Health Care

### Examples:

- Emergency Imaging (CT; Ultrasound)
- Miniaturisation (Monitoring, Ventilation)
- Point-of-Care diagnostics
- Interventional Cardiology
- Helicobacter



# Digital Disruption and Health Care

## **Digital Disruption:**

*“Refers to changes enabled by digital technologies that occur at a pace and magnitude that disrupt an established way of value creation, social interactions, doing business, and more generally our thinking”*

<https://byresearch.wordpress.com>



# Digital Disruption and Health Care

## Future of Healthcare:

Break/Fix  Predict/Prevent



# Digital Disruption and Health Care

## Future of Healthcare:

- Personalised Medicine
- Precision Medicine



# Digital Disruption and Health Care

## Future of Healthcare:

Precision Medicine is a healthcare model that proposes significant personalisation of decisions with preventive strategies, diagnosis and treatment tailored around the:

- genetics
- biology
- environment, and
- lifestyle

of the individual patient, enabled by eHealth and the digital world.

e.g. Obama: “Precision Medicine Initiative, 2015”

# Digital Disruption and Health Care

The new healthcare ecosystem will fundamentally change the way technology is used for care delivery.

## **EXAMPLE TRENDS**

- “Internet of Things” (Ubiquitous sensing, monitoring and connection)
- “Internet of Me”
- Wearable Technology
- “Apps”
- Telehealth
- Cybersecurity

# Digital Disruption and Health Care

## Internet of Things (IoT, IoMT, HClOT etc)

*“The Internet of Things is the network of physical objects or “things” embedded with electronics, software, sensors and network connectivity, which enables those objects to collect and exchange data,*

*without human interaction.”*



# Digital Disruption and Health Care

## Wearable Health Technology

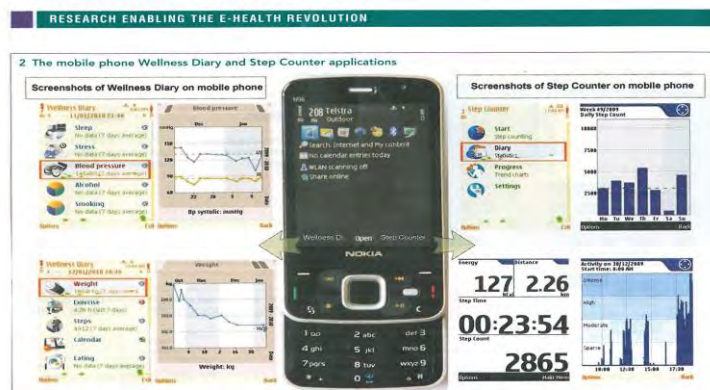
- Monitor HR, BP, SpO2, RR, Activity, Sleep Temp, BSL, ECG etc
- Personal Emergency Response Systems (GPS, 2 way communication, fall detection etc)
- 100 million devices annually (2016)



# Digital Disruption and Health Care

## “Apps”

- Over 100,000 health apps e.g.
  - Cardiac Rehabilitation
  - Renal Dialysis
  - Suicide Prevention



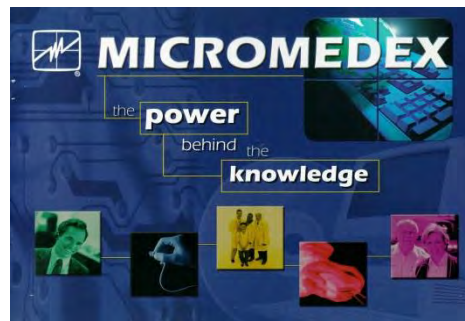
MJA Vol 194 No 4 21/02/2011



# Digital Disruption and Health Care

## TELEHEALTH

- Since 1985 to remote communities
- Since 1991 in Qld ED's.
- Increasing at 20% p.a
- Increasing commercial interest in e Consultations (e.g. Telstra Health)





# Digital Disruption and Health Care

## CYBER SECURITY

- Biometrics
- Block Chain

### Security Breach Missteps

What are you doing to make sure you aren't making the same \$171 million mistakes?

**April 20, 2011**  
PlayStation Network experiences beginning of network outage.

**April 26, 2011 - 9:30 AM PT**  
PlayStation Network outage for 6 days and still no answers available for its customers.

**April 26, 2011 - 1:00 PM PT**  
Later that same day, Sony says billing addresses, user names, passwords and possibly credit card info belonging to its PlayStation Network customers have been stolen.

**April 27, 2011**  
News about how unhappy users are with the lack of information from Sony continues to run rampant and Sony is sued.

**April 28, 2011**  
A database of 2.2 million Sony customer credit cards is offered for sale on an underground Internet forum.

**April 29, 2011**  
Government officials question what Sony is doing and how they will make things right with customers.

**April 30, 2011**  
PlayStation Network services announced they will be up and running later in the week and customers will get a free 30-day service and theft protection monitoring service.

**May 2, 2011**  
PlayStation Network breach extends to Sony Online Entertainment.

**May 4, 2011**  
Reports surface about Anonymous' potential involvement in the hack, but they deny it.

**May 5, 2011**  
NY Attorney General subpoenas Sony and the same day the CEO offers the first apology and explanation for what may have happened.

**May 6, 2011**  
According to reports, a security expert testifies to a House subcommittee that Sony knew it was in possession of outdated security software.

**May 7, 2011**  
Sony says the PlayStation network might not be up and running as quickly as they thought due to more testing needed.

**May 12, 2011**  
Sony announces "perks" post-breach.

**May 14, 2011**  
Sony begins relaunch of PlayStation Network in stages.

**May 18, 2011**  
PlayStation Network experiences a vulnerability in its password reset interface and takes the site down "for maintenance."

**May 17, 2011**  
Sony CEO Howard Stringer announces security has been restored and Sony is safe.

**May 16, 2011**  
Japan's government announces they are waiting for better security measures from Sony.

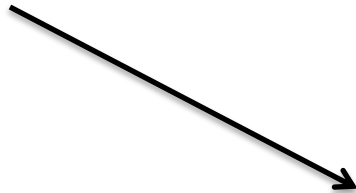
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"Sony" is a registered trademark of Sony Corporation, "PlayStation" is a registered trademark of Sony Computer Entertainment America LLC, and "Sony Online Entertainment" is the trade name of Sony Online Entertainment LLC. Information presented here was derived from news and industry articles published in CNET.

# Digital Disruption and Health Care

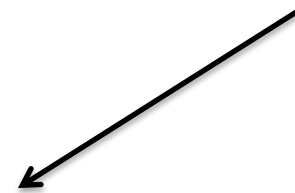
## COMBINATORIAL INNOVATION

Consumer Solutions  
with  
Clinical Capability



- Mobility
- Sensing
- Cloud
- Social

Clinical Solutions  
with  
Consumer Features



# Digital Disruption and Health Care

**Problem:** 50% of patients with chronic disease do not take drugs as prescribed:

**Solution:** Digital Medication



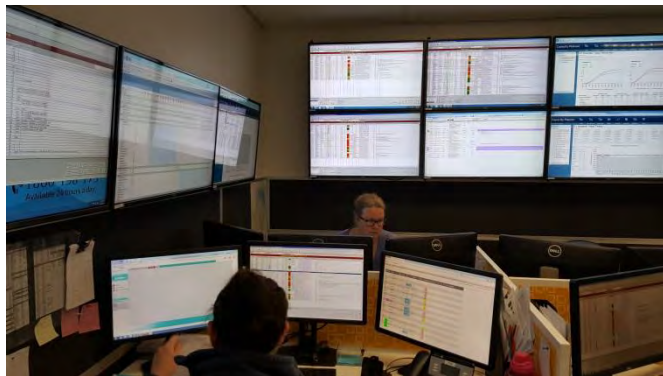
**“Adherence Transparency”**



# Digital Disruption and Health Care

## “THE INTELLIGENT ENTERPRISE”

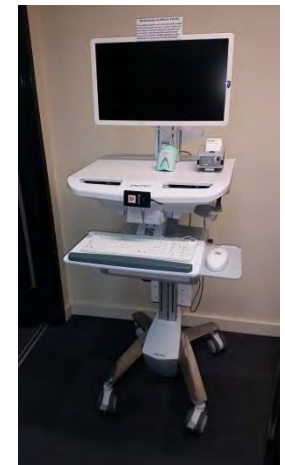
- Predictive Modelling/Streaming Analytics
- Cognitive Computing /Machine Learning/NSP/AI
- Big Data/Small Data –e.g. Digital Hospital



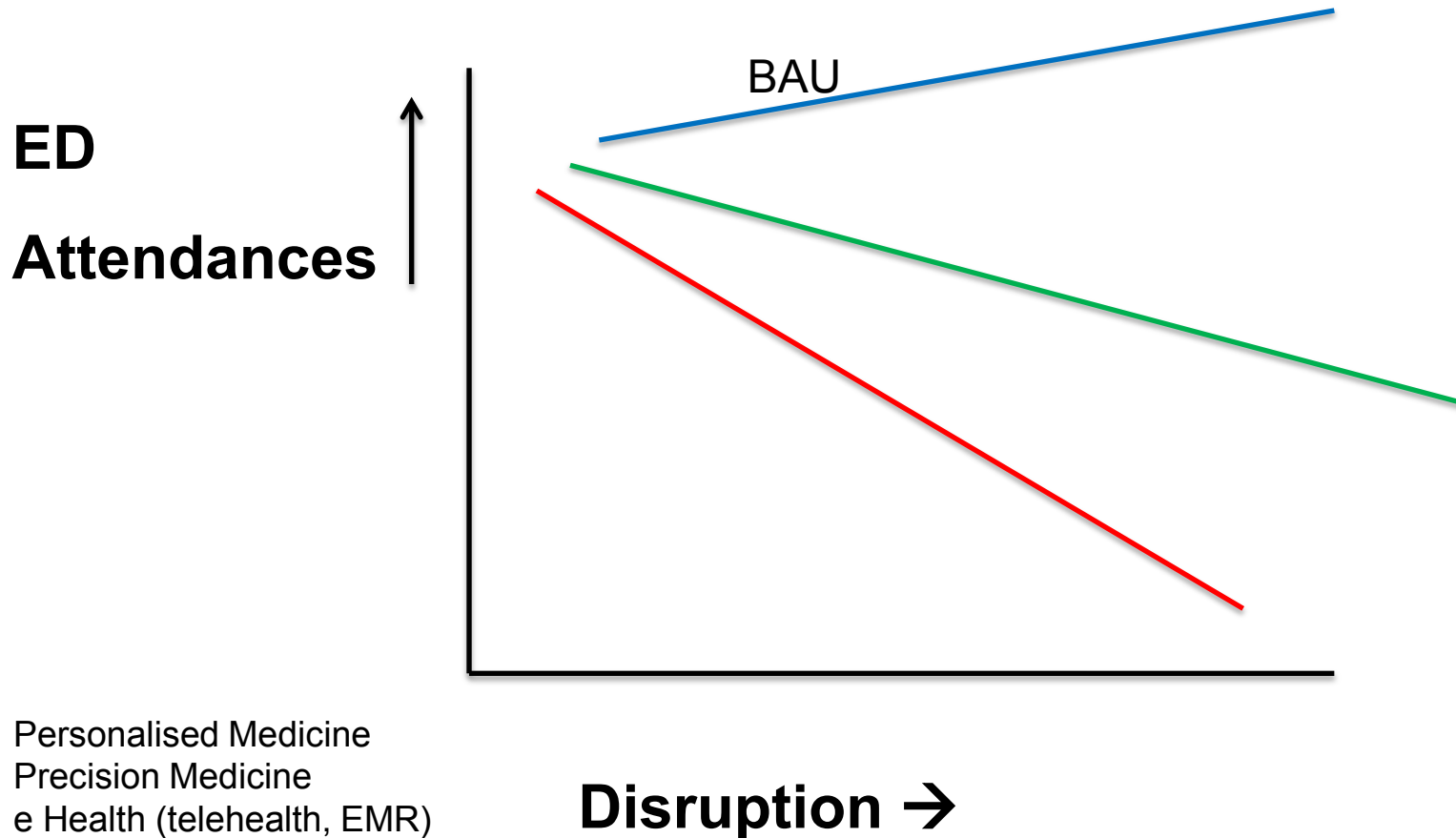
# Digital Disruption and Health Care

## The Digital Hospital

- Health record always available
- Evidence based care pathways
- Structured documents with Voice Analysis
- Active and passive decision support
- Monitoring device, and ECG integration
- Early warning systems
- Electronic order entry and results
- RFID Tracking – patients, staff, equipment
- P2P communication/location
- Business Intelligence and analytics



# Digital Disruption and Health Care



- Personalised Medicine
- Precision Medicine
- e Health (telehealth, EMR)
- Integrated Care
- End of Life etc

# Digital Disruption and Health Care

“Not all disruptive missiles are destined to hit you directly, or right away. Disruptions that will not greatly affect you for years only require you to consider the best path forward”.

Clayton Christenson  
Harvard Business Review, 2012

# Digital Disruption and Health Care

## **Digital Disruption is:**

- INEVITABLE and INEXORABLE
- AN ENDLESS OPPORTUNITY
- NOT A TECHNOLOGICAL ISSUE
- A LEADERSHIP AND COMPLEX CHANGE ISSUE

So.....



# Digital Disruption and Health Care

**Health Care** may be changing we have adaptability in our genome, and have nothing to fear from disruption, digital or otherwise.



# Digital Disruption and Health Care

**Thank You.**