



DIGITAL COMPANIONSHIP

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CSIRO MANUFACTURING

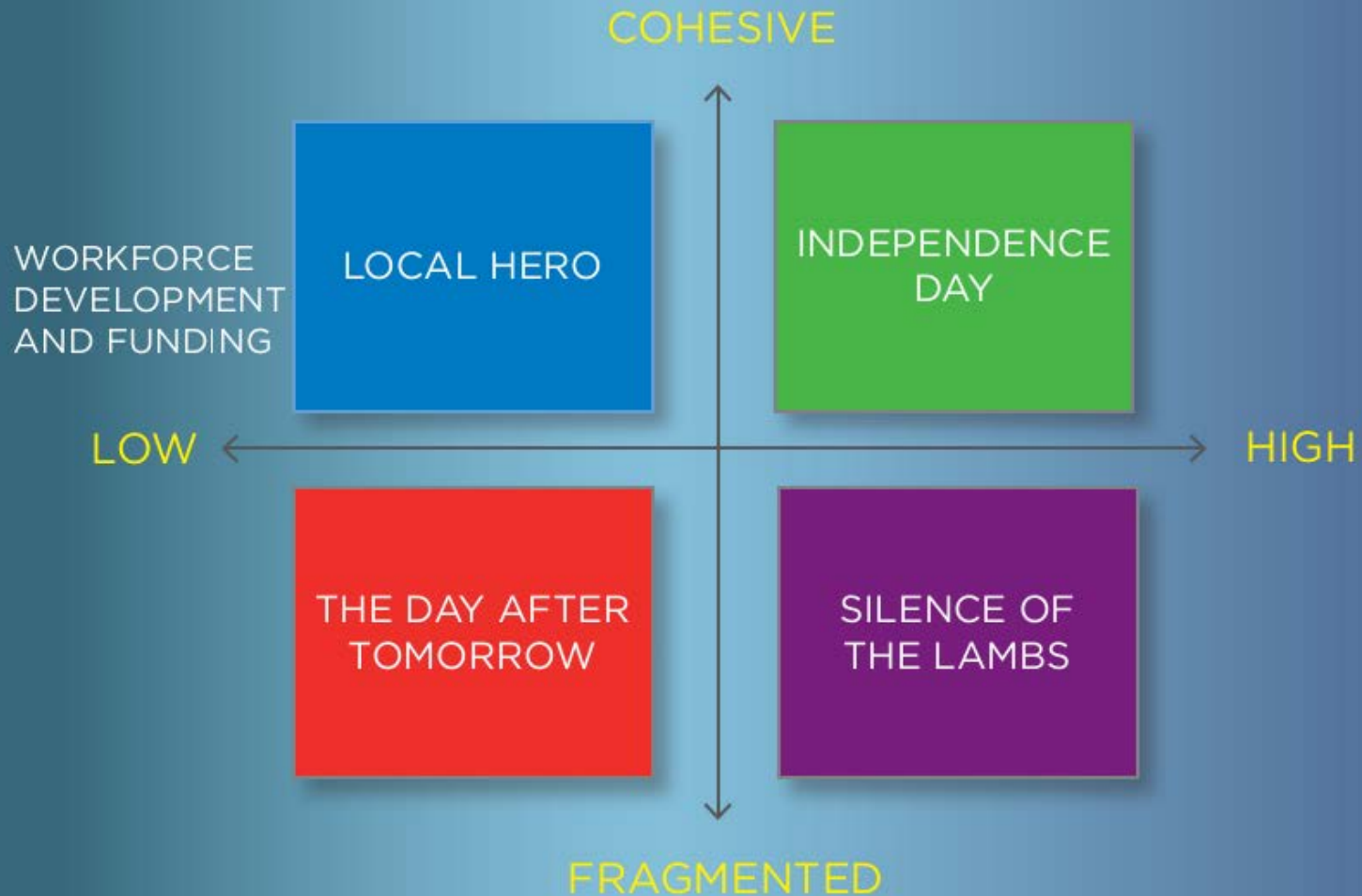
www.csiro.au



Anglicare Canberra Goulburn
Another Life Services
Australian Centre for Innovation
Australian Inst Patient & Family Centred Care
Aveo Live Well
Baker Strategic
Baptcare
Baptist Community Services
Bass Coast Regional Health
Brotherhood of St Laurence
Care Connect
Care Innovations (GE+Intel)
Centre for Health Innovation & Partnership, SWAHS
Centre for Health Service Development, Uni of Wollongong
Children's Hospital at Westmead
Community Care Northern Beaches
Community Services & Health Industry Skills Council
Community Services & Health Industry Training Advisory Board
Consult Point
Deakin University
DIISRTE
Disability Support Services at NSW Health (EnableNSW)
Flinders University
Fronitha Care
funktion
Global Community Resourcing Pty Ltd
HammondCare
Health Workforce Australia
Healthe
Healthy Ageing Research Unit at Monash University
Home Health Track
Horizon Healthcare Solutions
Independent Life
Just Better Care Australia
KinCare
KOPWA
Labyrinth Studios
McKenzie Aged Care Group
Medical Technology Association of Australia (MTAA)
Medtronic
Melbourne Citymission
National ICT Australia (NICTA)
NBN Co.
NH&MRC
Northside Community Forum
NSW Trade & Investment
Palliative Care Victoria
RDA Sydney
Regal Health
Regional Development Australia, Sydney
Royal District Nursing Service
School of Population Health, University of Queensland
Silver Chain
Simavita
Southern Health (Dandenong Hospital)
St Basils Aged Care
TAFE South Western Sydney Institute
The Royal Children's Hospital
The Salvation Army
The University of Sydney
The Whiddon Group
TLC Aged Care
University of NSW
University of Wollongong
Webstercare

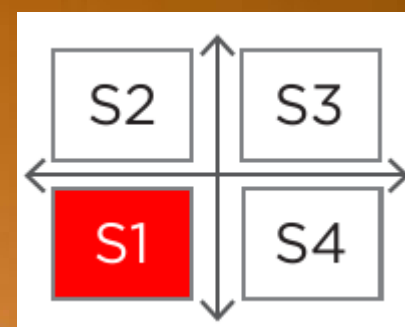
THE 24/7 SCENARIO MATRIX

CONSUMER CHOICE & CONTROL



SCENARIO 1

The Day After Tomorrow



OVERVIEW

MOOD: SURVIVAL

PRESENT DAY LINK: DISCONTINUOUS

IMPACT: ECLECTIVE

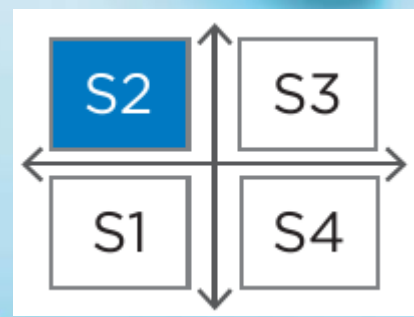
CHANGE EPICENTRE: GLOBAL

SHOCK INFLUENCES

- global economy ratshit
- high inflation/pervasively strong A\$
- impact of climate change
- low immigration, birth-rates
- low focus on innovation

CONSEQUENT SCENARIO

- polarised society
- fortress entality
- fear/gated communities
- paradox of globalisation & localisation trying to co-exist



SCENARIO 2

Local Hero

OVERVIEW

MOOD: OPTIMISTIC

PRESENT DAY LINK: EVOLUTIONARY

IMPACT: NICHE

CHANGE EPICENTRE: LOCAL

SHOCK INFLUENCES

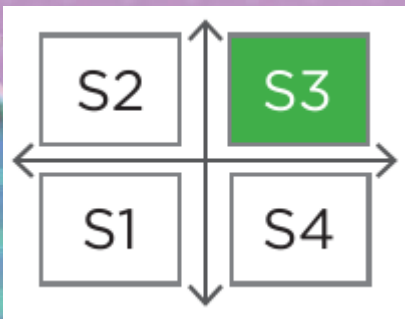
- community care workforce poorly managed, poorly supplied – low productivity
- high immigration
- private investment in the sector falters

CONSEQUENT SCENARIO

- focus on efficacy of local communities/self-help
- collaboration/decentralisation
- increased social cohesion

SCENARIO 3

Independence Day



OVERVIEW

MOOD: OPTIMISTIC

PRESENT DAY LINK: EVOLUTIONARY

IMPACT: ECLECTIC

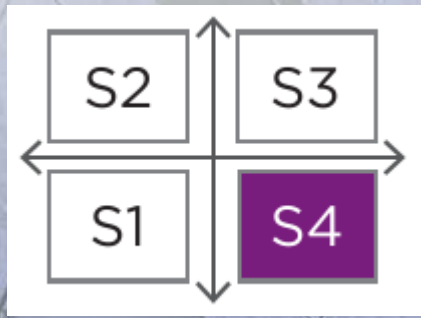
CHANGE EPICENTRE: GLOBAL

SHOCK INFLUENCES

- high economic growth
- 'Asianisation' of Australia
- urbanisation accelerates
- boomers are 'booming'!

CONSEQUENT SCENARIO

- ageing community in charge
- well-managed workforce
- smart science/smart cities
- global feeling of well-being despite social casualties



SCENARIO 4

Silence of the Lambs

OVERVIEW

MOOD: 1984 MEETS THE NEOCONS!
PRESENT DAY LINK: DISCONTINUOUS
IMPACT: POLARISING/PATRONISING
CHANGE EPICENTRE: NATIONAL

SHOCK INFLUENCES

- government/workforce are in charge 'we do it all for you'
- technology innovation focuses on costs & increasing productivity. All supply-side focus
- business rules!

CONSEQUENT SCENARIO

- 'top-down' and benevolently despotic
- user pays (and prays!)
- growing pessimism

The Community Care 24/7 Scenarios

Alternative futures for community care in Australia to the year 2030



24/7 Scenarios



TECHNOLOGY AND THE FUTURE OF COMMUNITY CARE

PROJECT REPORT 2012

The Community Care 24/7 Scenarios

Alternative futures for community care in Australia to the year 2030

FRAMING QUESTION

What care-enhancing practices will the community care profession in Australia need and how might these be fulfilled by the potential of existing and new technologies?



Sponsored by Regional Development Australia - Sydney (through funding from the Department of Regional Australia, Local Government, Arts and Sports) and NSW Trade and Investment with CSIRO

Project Leader *Oliver Freeman* Managing Director, The Neville Freeman Agency with *Allan Ryan* Executive Director, Managed Innovation and *Scott Martin* Leader Medical Devices Stream, CSIRO

Download at: www.futureshouse.com



OBSERVATIONS

- ❖ All four are at odds with the preferred future (first task)
- ❖ All except Local Hero result in more social division
- ❖ The Day After Tomorrow – dystopian extension of today
- ❖ Helps us understand the consequences of our choices
- ❖ Identifies early warning signs
- ❖ Technology was an enabler across the board (a surprise)

Digital Companionship*:

Changing our relationship with computers



*CAUTION: significant speculation
and personal opinion ahead!

Features of Companionship

- ❖ Company (reduces loneliness)
- ❖ Conversation (mental/social stimulation)
- ❖ Belonging (tribe)
- ❖ Feeling cared for
- ❖ Challenging/validating our opinions, perceptions & ideas
- ❖ Physical contact – visual & tactile
- ❖ Larking around – fun & humour
- ❖ Shared experience

SCIENCE

FICTION

- Technology now
 - Under development
 - Likely in the future
 - Challenges/barriers
- MOVIES & sci-fi
 - Human factors
 - Emotional response
 - Stories & scenarios

The World as we know it... (what is available right now)

1. Robots

Toshiba AIKO – sign language robot receptionist

Softbank PEPPER – beginning to read and exhibit emotion

PARO – seal “companion”

2. Exoskeletons: rehabilitation, disablement & armed forces

3. Smart Phones: Cortana/Siri/Google Now

4. Amazon Echo: Alexa, info, news, far-field mics

5. IBM Watson:

Jeopardy – famously beat all humans in quiz show

Chef Watson – creating new dishes & recipes

Dr Watson – Oncology Treatment Advisor

6. Crystal Knows: personality profiles from online info

7. Google DeepMind & DeepDream

Amazon Echo



Rewalk.com



SCIENCE

Examples of technology under Development:

1. Computational brains – *mimics spatial specialisation for learning*
2. Reading user emotion and embodying emotion in AI interaction
Cynthia Breazeal at MIT – gestures, eye contact, trust
Understanding humour (e.g. AI generated puns)
3. Computing architectures – IBM's SyNAPSE
Neuron inspired design – very low power consumption
Bee brain sized.
4. IBM Watson – *beyond Oncology Treatment Advisor*
DEBATER – in seconds, uses online databases (google, Wikipedia)
*to identify Pros & Cons or any debate topic. **Conversation?!***

FICTION

“I’d never relate to an artificial intelligence” or would you?

1. **Robot & Frank** (2012): Frank befriends his elder-care robot
2. **Chappie** (2014): law enforcement robot becomes self-aware
3. **I-Robot** (2004): robot (Sonny) becomes self aware
4. **Ex Machina** (2015): reclusive billionaire creates an AI
5. **HER** (2013) (drama, romance, sci-fi): *“A lonely writer develops an unlikely relationship with his newly purchased operating system that's designed to meet his every need.”*

See “HER” before coming to a judgement about AI!

Opportunities for Artificial Intelligence in palliative care

1. Guidance (Sean Morrison MD (2010) on palliative care)

- Patients & families do not have enough contact with MD (1MD/1300cases)
- Patients & families do not receive enough information – what to expect
- Patients & families do not receive enough emotional support

2. Companionship

- Nostalgia, immersive memories, digital inheritance, bereavement plans
- CALD (translation – e.g. Android Wear smartwatch)
- Gauges discomfort, anxiety, pain, distress, cognition, delirium
- Patient listener, reminder, coach, always there, fun, games, humour!
- Reduce feelings of being a burden to others

3. Complex care & navigation through the healthcare system

- Cases too complex, too multi-disciplinary, too time consuming to plan
- ACD's?
- Too off-line!

CURE

CARE

Two thoughts to consider

1. Palliative Care: Fit for **WHICH** Futures?
2. **WHEN** will people start conversing with digital companions?

“Prediction is very difficult,
especially about the future”

Niels Bohr

Danish physicist (1885- 1962)

Thank you

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www.futureshouse.com (scenarios)

