

**2010 Mid West Science Summit  
Real Science, Real Opportunities  
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1

**MID WEST HEALTH – ICT SUPPORT FOR  
CHRONIC DISEASE MANAGEMENT**

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## WA - Lifestyle... Logistics...Longevity

2

- 2007/08 - 12.37% of hospitalisations in Western Australia involved patients with diabetes.
- Type 2 Diabetes Mellitus (T2DM) comprises 80% to 90% of all diabetes cases.
- Diabetes deaths in 2006 eight times higher in WA's Indigenous people than in non-Indigenous.
- T2DM - Communications weaknesses contribute to serious persistent growth of co-morbidities, hospitalizations for complications and premature deaths in Western Australia (WA) Aboriginal communities.
- Over 72% of Western Australia's population is in Perth, where majority of health care support facilities, medical treatment and pathology testing services are located



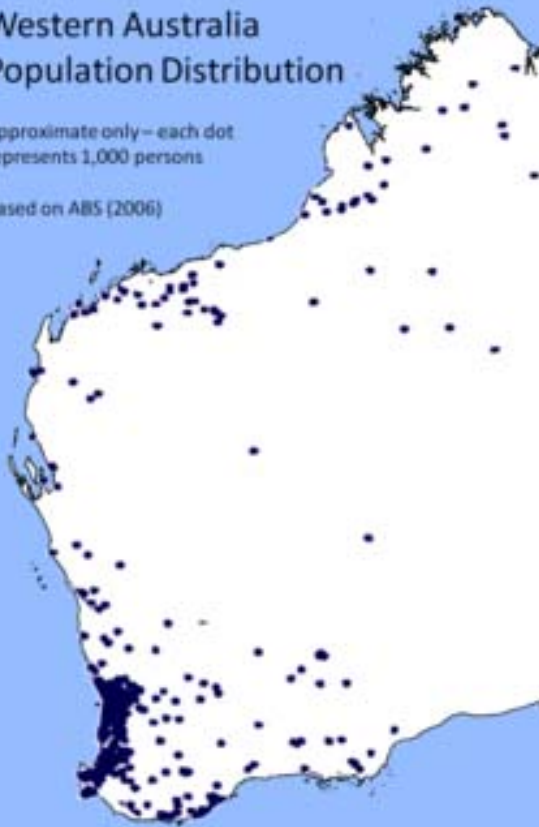
# GPs - Demographic Indicators

3

## Western Australia Population Distribution

Approximate only – each dot  
represents 1,000 persons

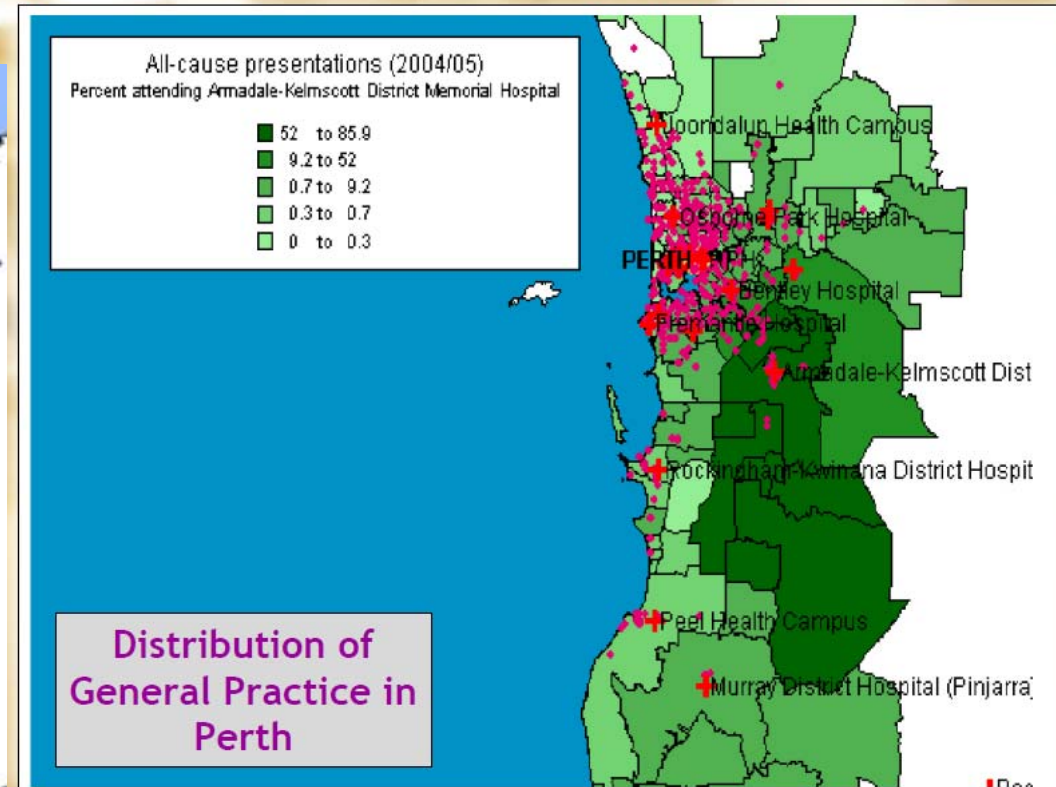
Based on ABS (2006)



All-cause presentations (2004/05)  
Percent attending Armadale-Kelmscott District Memorial Hospital

- 52 to 85.9
- 9.2 to 52
- 0.7 to 9.2
- 0.3 to 0.7
- 0 to 0.3

Distribution of  
General Practice in  
Perth



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## Contributory Reasons for High T2DM Co-Morbidity and Mortality

4

- **Rural and remote communities – Primary care resources:**
  - Thinly-spread
  - Mobility-dependent
  - Over-stretched (and motivationally challenged) staff
  - Ill-equipped
  - Sometimes inaccessible
  - Weak communications infrastructure
  - Sporadic development of telehealth services



## Communications - the Key to Rural & Remote Healthcare

5

- **Self-management not yet viable for Indigenous Australians. Inflexible westernized forms of communication contribute to poor cross-cultural communications and inadequate clinical interactions**
- **Patient-practitioner miscommunication is pervasive; trained interpreters provide only a partial solution**
- **Concept: Patient Practitioner Interview Encounter (PPIE) support system based on Aboriginal English computer ontology mapping to clinical guidelines for diagnosis, treatment and care**



## ICT Significance - Major goals are achievable:

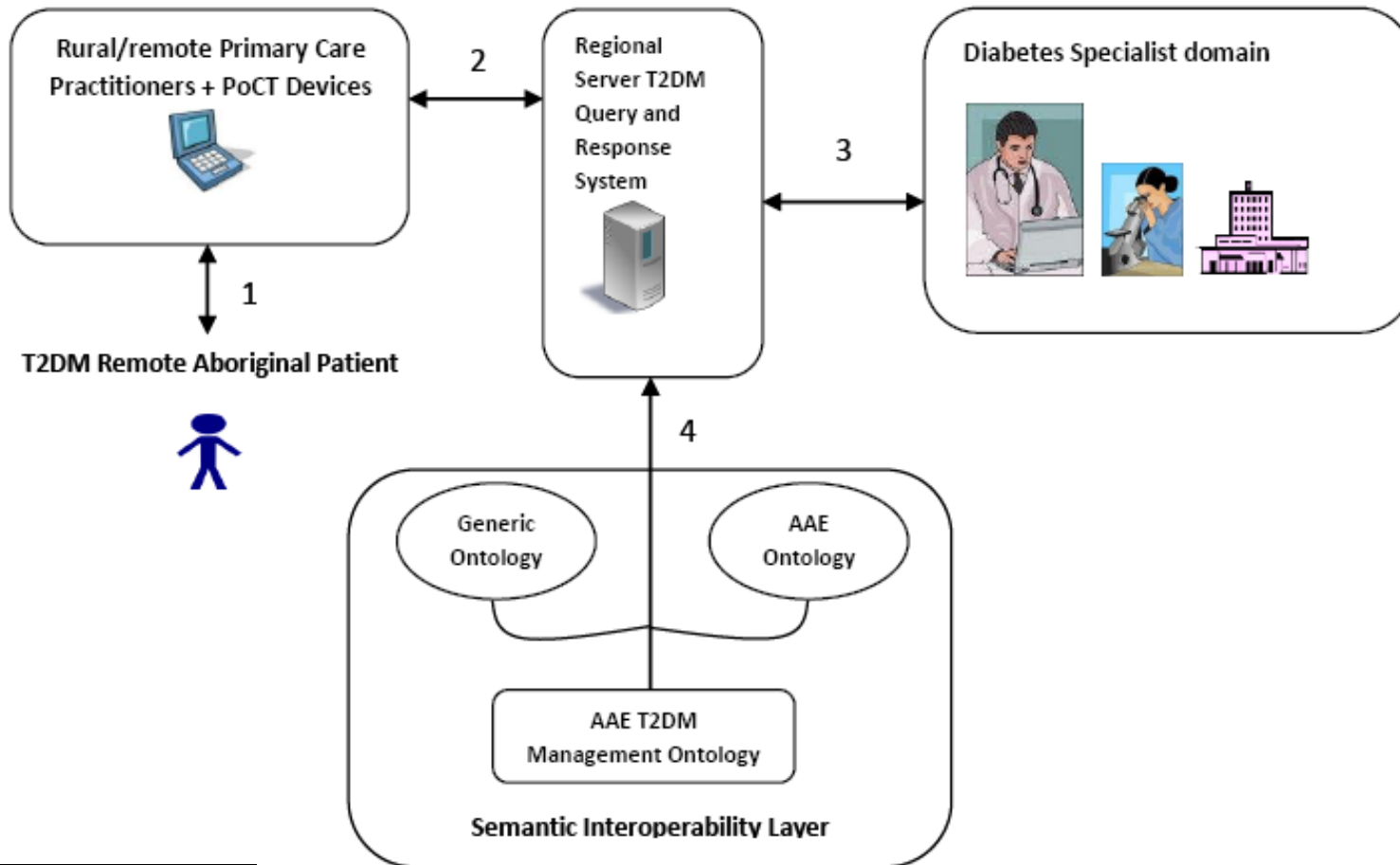
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- Education of both patients and health care professionals
- Facilitation of more effective practitioner-patient dialogue
- Reduction of healthcare service viability vulnerabilities
- Improved health and connectivity with disadvantaged Indigenous communities
- Applications and capability growth via enhanced content and device scalability
- Potential for shared ICT access to system logs - State and Federal Health productivity evaluations



# Proposed ICT Framework

7



# Methodology

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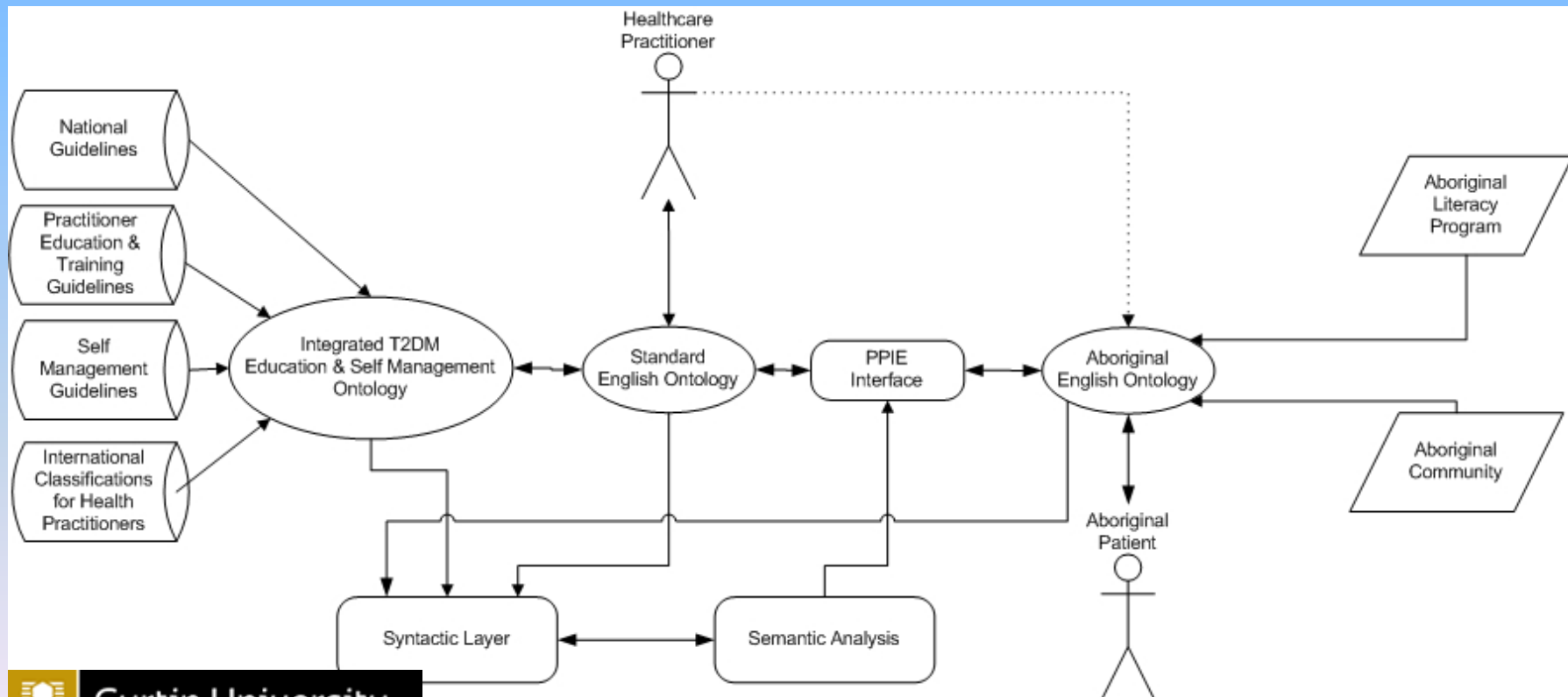
- "Diabetes Management in General Practice - Guidelines for Type 2 Diabetes": Diabetes Australia & The Royal Australian College of General Practitioners
- Collaborating with diabetes educators, chronic disease program advisors, Aboriginal education health and nurse training groups, and Aboriginal literacy experts.
- Merging guidelines with several complementary accredited paper and multimedia education and training products-contemporary communications tools from dedicated Aboriginal diabetes management programs.
- Aboriginal nurse training package provided by Certified Diabetes Educator (CDE)
- Aboriginal focus groups as PPIE dialogue design consultants



# Methodology – Continued

## PPIE ontology application framework

9



# About Curtin Business School DEBI Institute

10

- University Tier 1 Research Institute of Excellence
- DEBII's research is focused on the intersection of emerging IT and different Application Domains, producing advanced groundbreaking problem solutions
- Web semantics, service oriented architectures, data mining of semi-structured and unstructured information
- Engaged in Institute- Industry linkage projects
- Currently 60 Higher Degree by Research (HDR) students, mostly PhD
- Seventeen PhD Research Staff, and two leading research Professors
- Research domains - IT Business: 55%, IT Transport and Resources: 15%, 10% IT Health; and 20% IT Education
- High performance, major contributor to Curtin University grants and academic reputation, with top scoring researchers, authors and publications volume
- Delivered 18 invited keynote speakers worldwide. Highest number of scientific keynotes in Curtin University



# Future work

11

- T2DM system prevention/management role, emphasizing nutrition and exercise, lifestyle knowledge/habits/practices
- New challenges, confronting complex dietary considerations and chronic disease management across and within a growing range of disadvantaged cultures
- Application of ICT education, health literacy and self management tools merged with PPIE ontology driven models
- Cross disciplinary collaboration with research and field healthcare organizations serving rural and remote regions, e.g. CUCRH Geraldton
- Cloud/web based patient-centric healthcare support development

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