HL7® FHIR ® AND SERVICE PROVIDER DIRECTORIES

Brian Postlethwaite

April 2016

HEALTH

Brian Postlethwaite

Senior Solutions Architect

FHIR core team member
FHIR Management Group member
Co-chair HL7 International Patient Administration Workgroup
Author of ServD Standard endorsed by the Object Management Group
Providing FHIR guidance to HealthConnex and Telstra Health
Harley Rider

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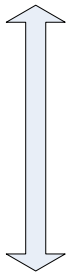
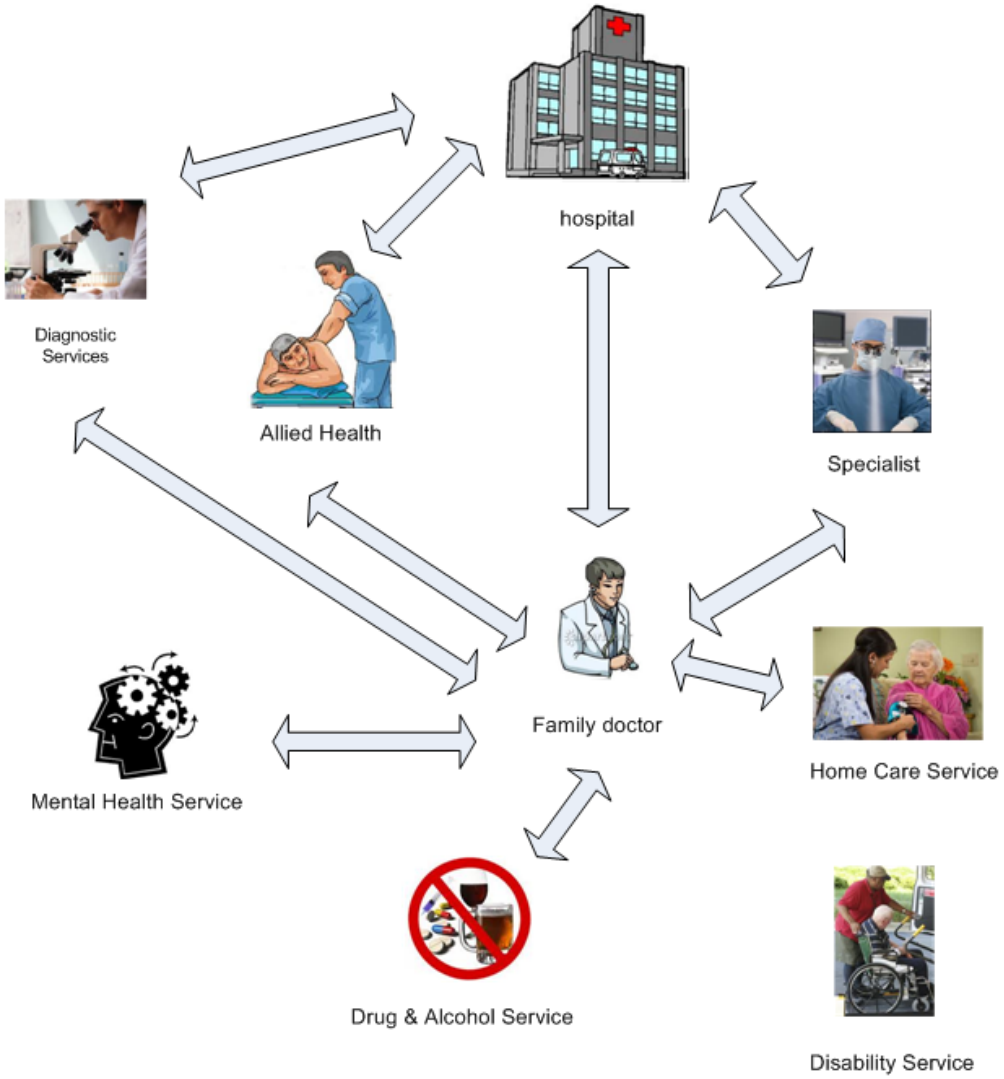
Service Co-ordination

hospital

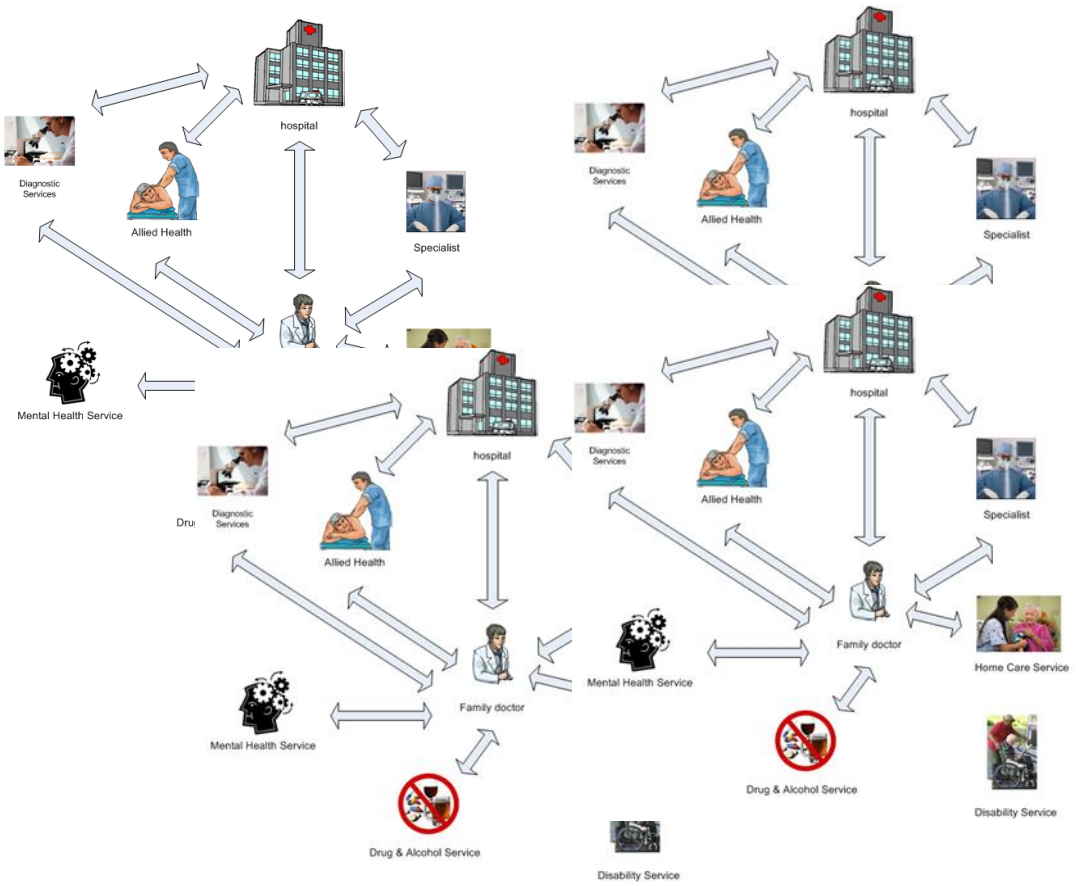


Family doctor

Service Co-ordination



Service Co-ordination



Patient

Complexity of the system is a barrier to service access

Directories are everywhere *(widely varied content/uses)*

National/Regional
- *Yellow Pages*

Organisational/Institutional
- Service provision directory structure
- Organization structure (HR/legal)

Registration/Certification Bodies
- *White Pages*

Enterprise
- *Localised content*

Terminology Services

Solution/Application Directories
- Internal information
- *Black book*
- External information

Supporting other activities
- Referrals
- Appointments/Rostering/Scheduling
- Departments, Practitioners, Locations, Services, …
- Care Planning/Shared care
- Care Teams
- Service costs/availability

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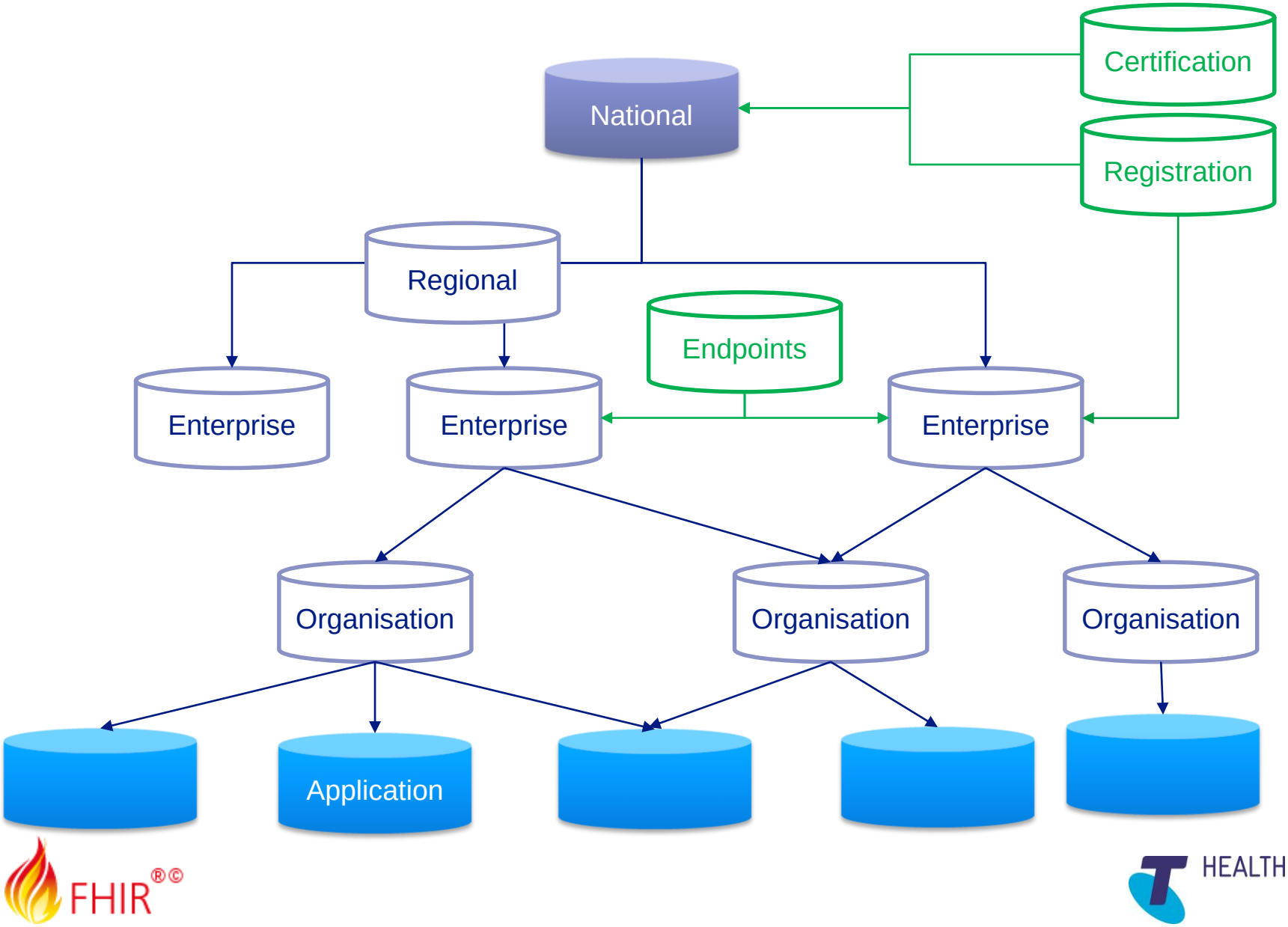
Certification
National
Registration
Regional
Endpoints
Enterprise
Enterprise
Enterprise
Organisation
Organisation
Organisation
Application
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Use Cases

Practitioner **looking up** a known practitioner's details (internal or external)

System **looking up** a practitioner's endpoint details

Practitioner **searching** for a practitioner that provides a specific service or specialty

Practitioner **searching** for a service with specific properties (practitioner not relevant)

Consumer **searching** for a service with specific properties (covered by my insurance, open now, near-by)

Consumer **searching** for availability of a practitioner at a specific location

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Enabling Integration of Care

Health Consumer

Locate a service

Website/Apps
Telephone triage
Symptom checkers

Primary Health Care

Referral options

Clinical pathways
Practice management
Systems
e-referral

Hospital

Discharge process

e-PAS systems
e-discharge

Integrated/Distributed Services Directories

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Fundamentals for Success

- Accurate
- Current
- Breadth of content
- Relevant terminology
- Accessible
- Minimal technical barriers
- Securely partitioned data

How is this done today?

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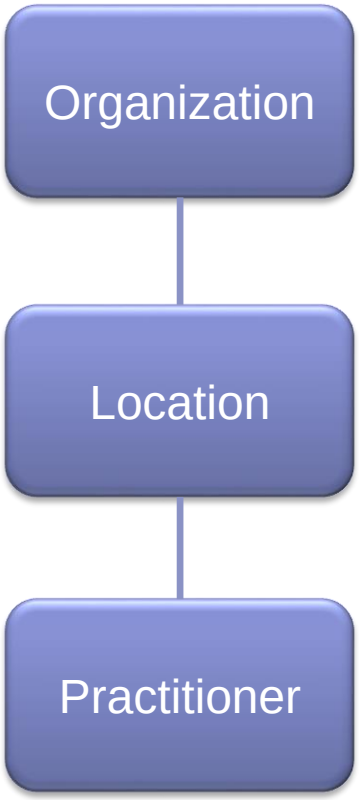
Healthcare Provider Directory



Typically Standard Hierarchy (Org chart)

Specialties/Services properties of locations/practitioners

Duplicate details rather than share

How to deal with non hierarchical data?

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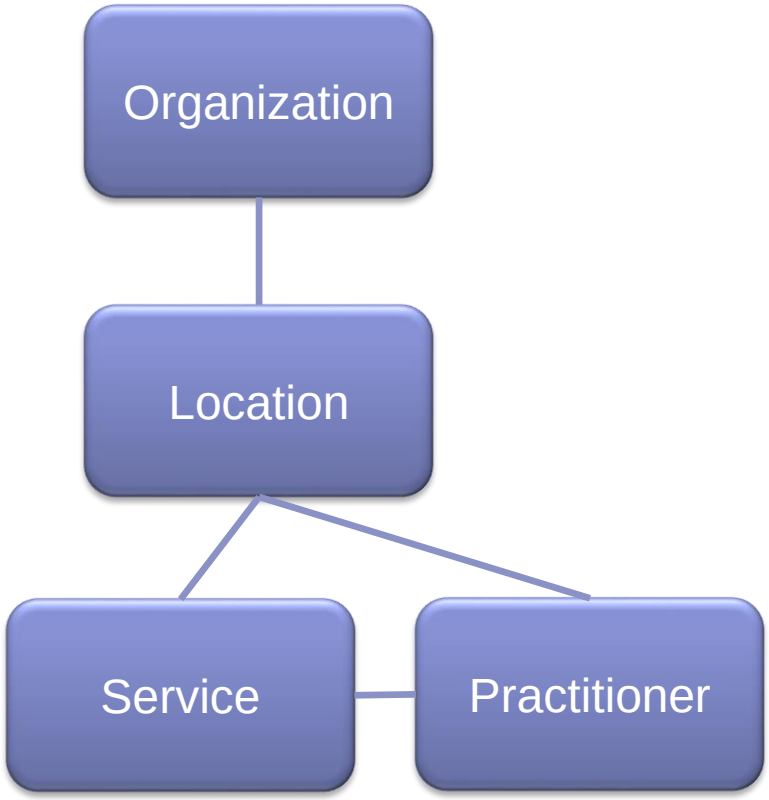
Services Directory



Multi-Hierarchy

Specialties/Services properties of locations/practitioners

Practitioners have different details at different locations

Recognition of real world

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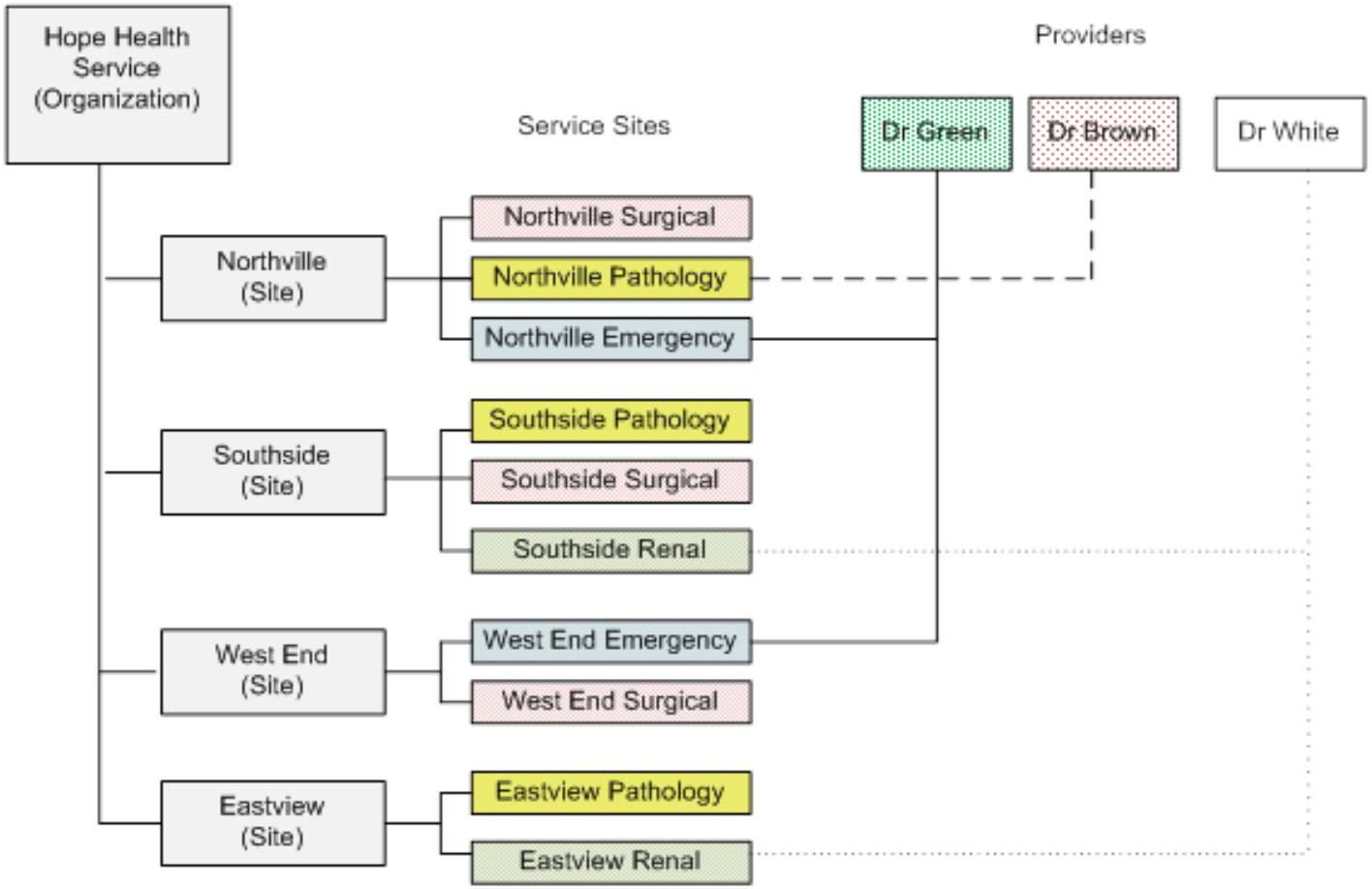
Practitioner Roles



Services Directories Live in Australia (since 2003)

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Australian National Services Directory

Single source
Maintained/curated content
Consumer friendly vocabulary
Practitioner vocabulary included
Geo-Location data included
Exposed via APIs
Electronic Endpoint information included
Supports electronic referrals/discharge summaries

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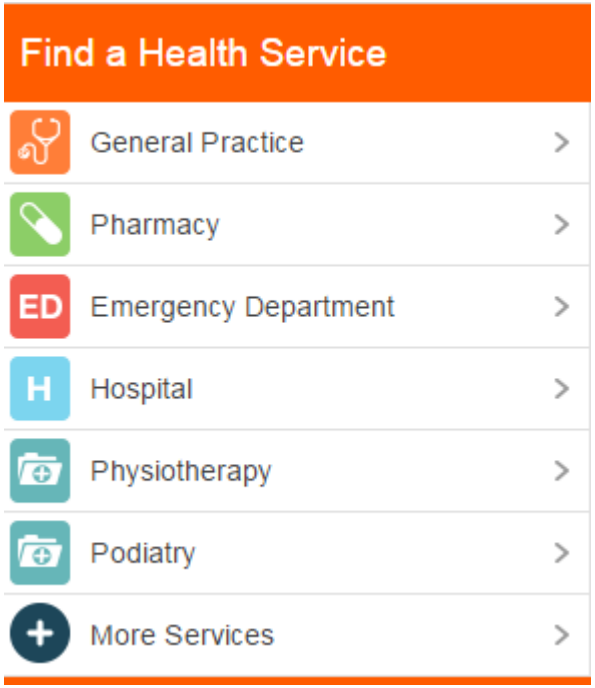
National Health
SERVICES DIRECTORY



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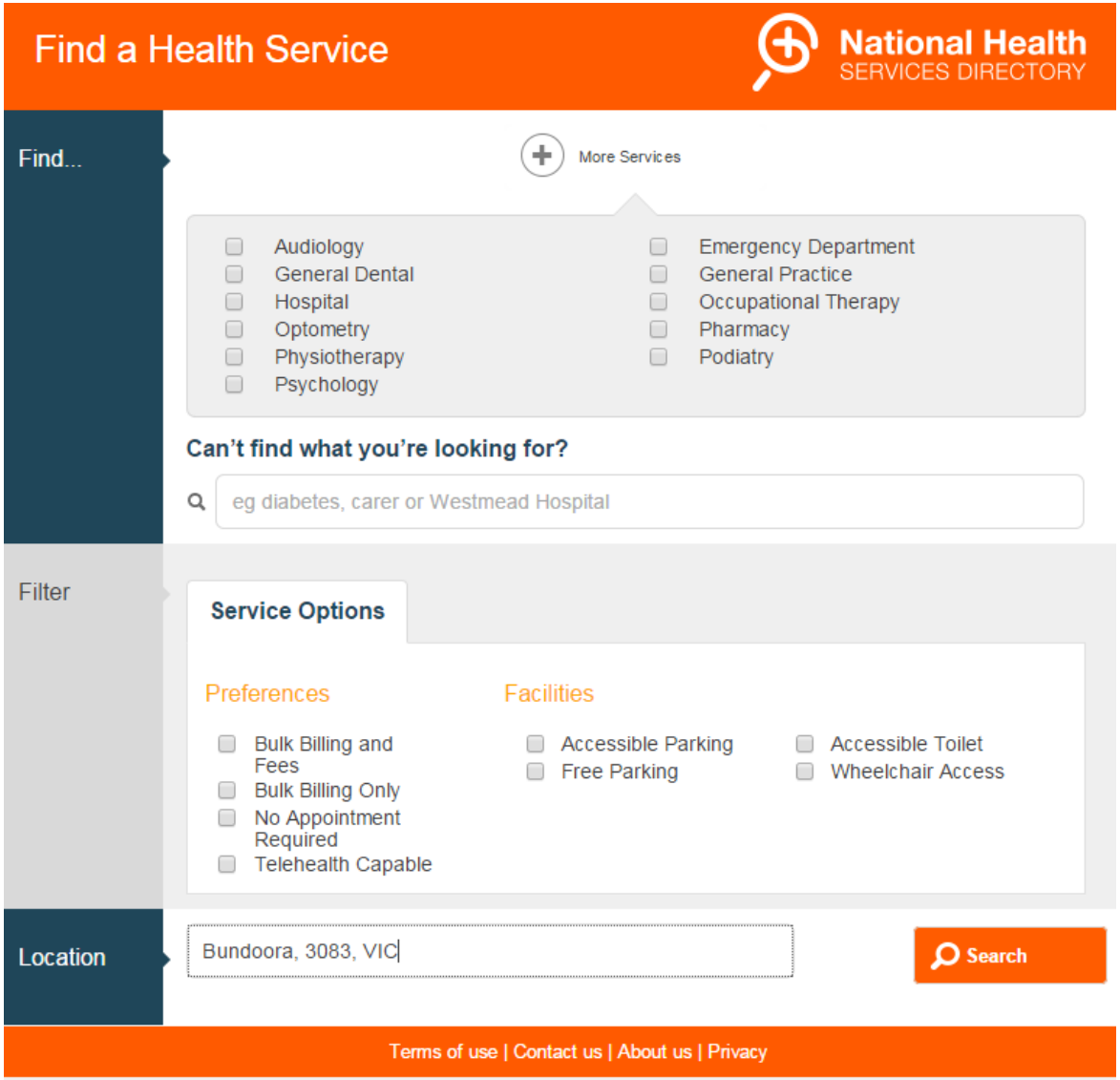
Find a Health Service
National Health
SERVICES DIRECTORY
Find...
More Services
Audiology
General Dental
Hospital
Optometry
Physiotherapy
Psychology
Emergency Department
General Practice
Occupational Therapy
Pharmacy
Podiatry
Can't find what you're looking for?
eg diabetes, carer or Westmead Hospital
Filter
Service Options
Preferences
Bulk Billing and Fees
Bulk Billing Only
No Appointment Required
Telehealth Capable
Facilities
Accessible Parking
Free Parking
Accessible Toilet
Wheelchair Access
Location
Bundoora, 3083, VIC
Search
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Find a Health Service

National Health SERVICES DIRECTORY

Over 50 results found for **Emergency Department** near **Bundoora, 3083, VIC**

Search Again

Refine Search

Services Nearby (50) | Home Visit (0) | Online & Phone (0)

All Services | Open Now | Map | List

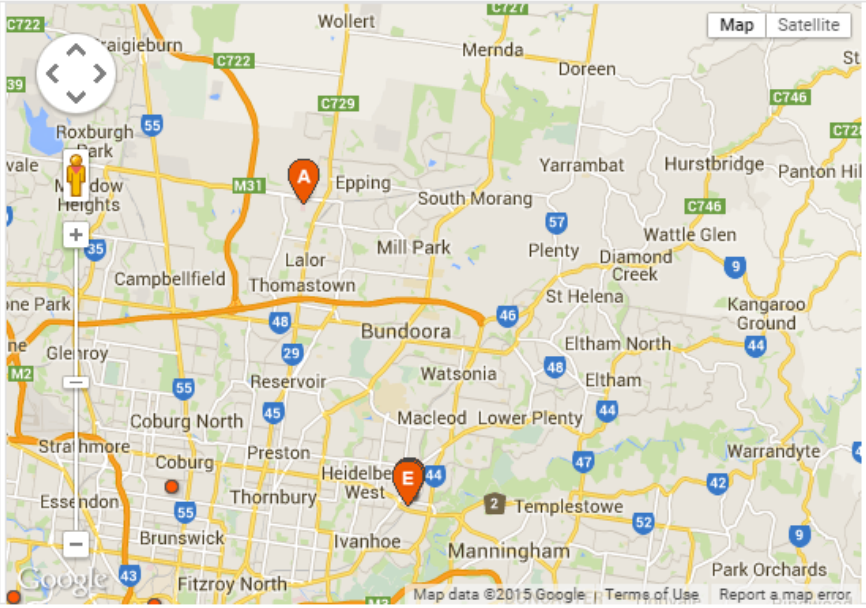
Showing **1** to **5** of **50 results**

A Open Now
Northern Hospital
Epping
Ph (03) 84058000
6.3km

B Open Now
Austin Hospital
Heidelberg
Ph (03) 94965000
6.6km

C Open Now
Austin Hospital
Heidelberg
Ph (03) 94965000
6.6km

D Open Now
Mercy Hospital For Women - Heidelberg
Heidelberg
Ph (03) 84584444
6.6km



Prev | 1 | 2 | 3 | 4 | 5 | Next

Report an error

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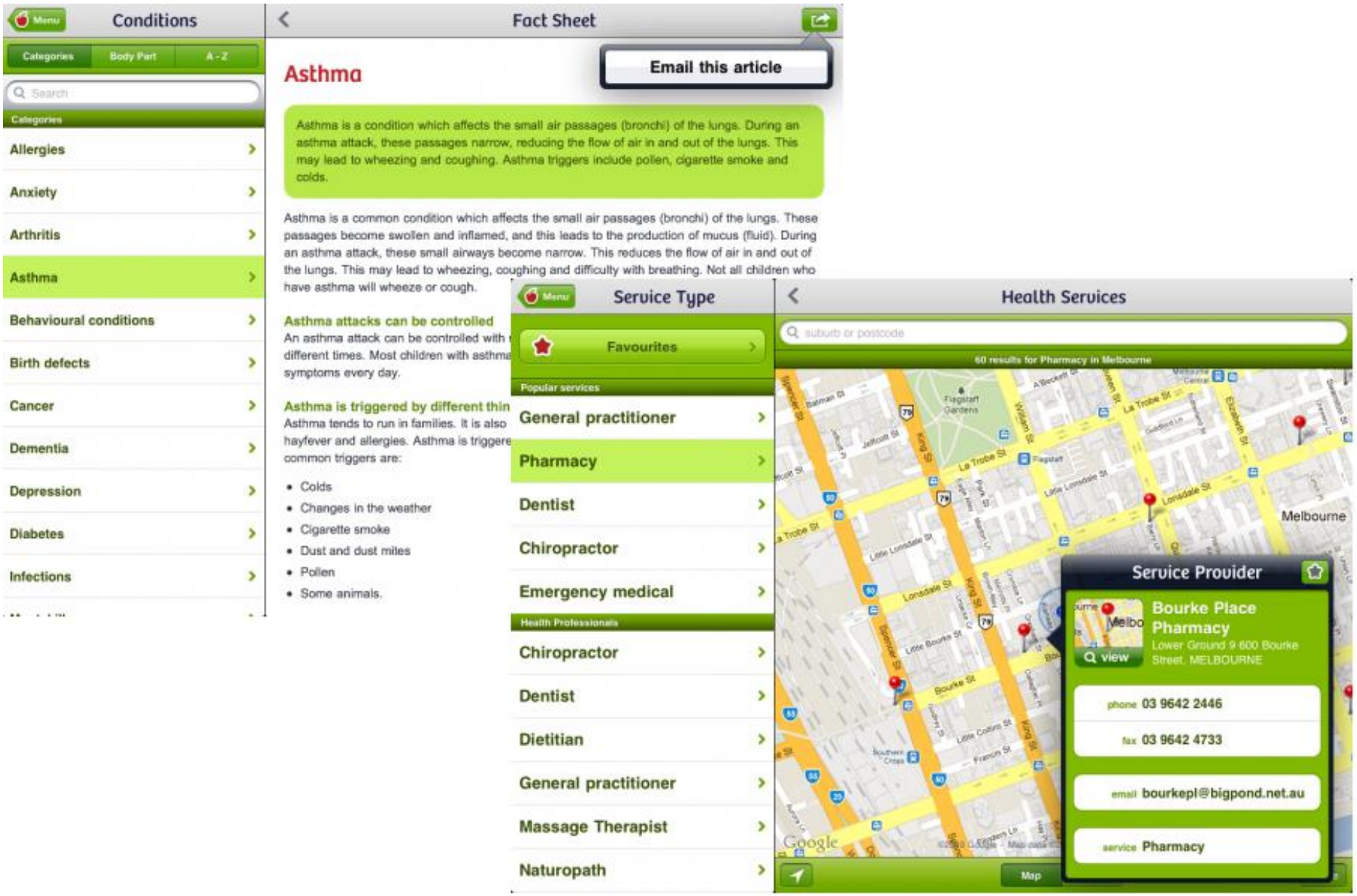
Better Health iPad App



GP After Hours - Windows Internet Explorer
http://gpah.data.com.au/Results.aspx?Service=Medical&Lat=-33.838345&Long=151.16528&Radius=10000&Addr=18+Vernon+Street&Locality=HUNTERS+HILL%2c+NSW
Favorites
http--localhost-tcm7mob...
Suggested Sites
Upgrade Your Browser
GP After Hours

NATIONAL.HEALTH.CALL.CENTRE.NETWORK LIMITED

healthdirect AUSTRALIA
1800 022 222

 Showing Results for Medical Services near 18 Vernon Street, HUNTERS HILL, NSW

1. DMC MEDICAL CENTRE, DRUMMOYNE
Medical
Distance: 1.8km
159-167 VICTORIA Road, DRUMMOYNE, 2047, NSW
Ph: 02 98196666
Available Hours:

Monday	07:30 AM - 08:00 PM
Tuesday	07:30 AM - 08:00 PM
Wednesday	07:30 AM - 08:00 PM
Thursday	07:30 AM - 08:00 PM
Friday	07:30 AM - 08:00 PM
Saturday	09:00 AM - 04:00 PM
Sunday	09:00 AM - 04:00 PM

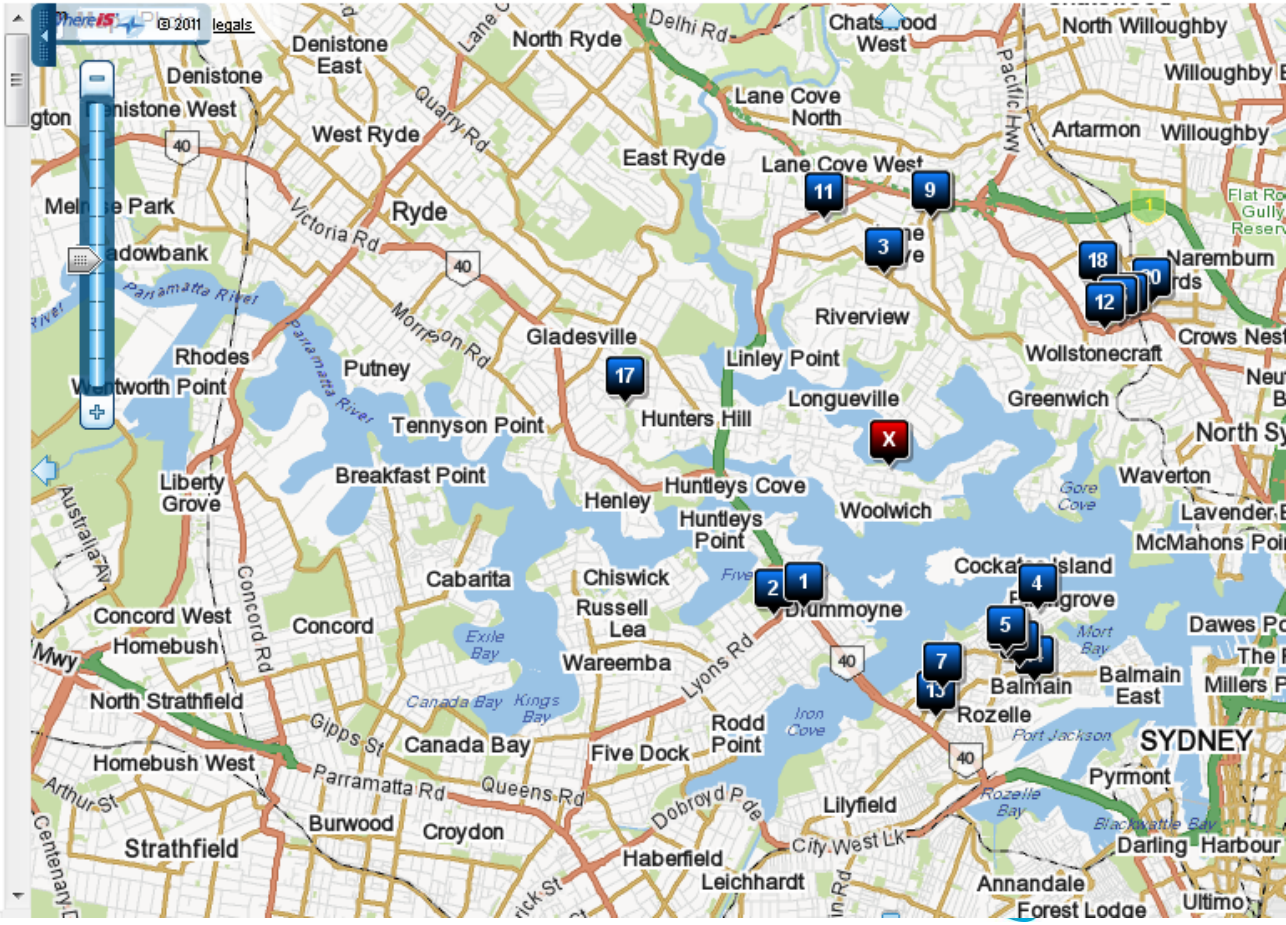
Open

2. ENHANCE ORTHODONICS DRUMMOYNE
Medical
Distance: 2.04km
Suite 19, Level 1, 38-50 LYONS Road, DRUMMOYNE, 2047, NSW
Ph: 02 97198820
Available Hours:

Monday	08:30 AM - 05:00 PM
Tuesday	08:30 AM - 05:00 PM
Wednesday	08:30 AM - 05:00 PM
Thursday	08:30 AM - 05:00 PM
Friday	08:30 AM - 05:00 PM

Open

3. LANE COVE FAMILY MEDICAL PRACTICE
Medical



Directories already exist

https://healthy.kaiserpermanente.org/care/doctors-locations/#/searchresults

Find Doctors and Locations

Doctors | Facilities

Filters: Bakersfield x Pharmacy x

Department Type

6 results found

Chester Avenue Medical Offices

2531 Chester Avenue
Bakersfield, CA 93301
Directions

1-877-524-7373 (toll free)

View this facility

Services
- No emergency care
- Pharmacy
- No after hours
- No urgent care

Coffee Road Medical Offices

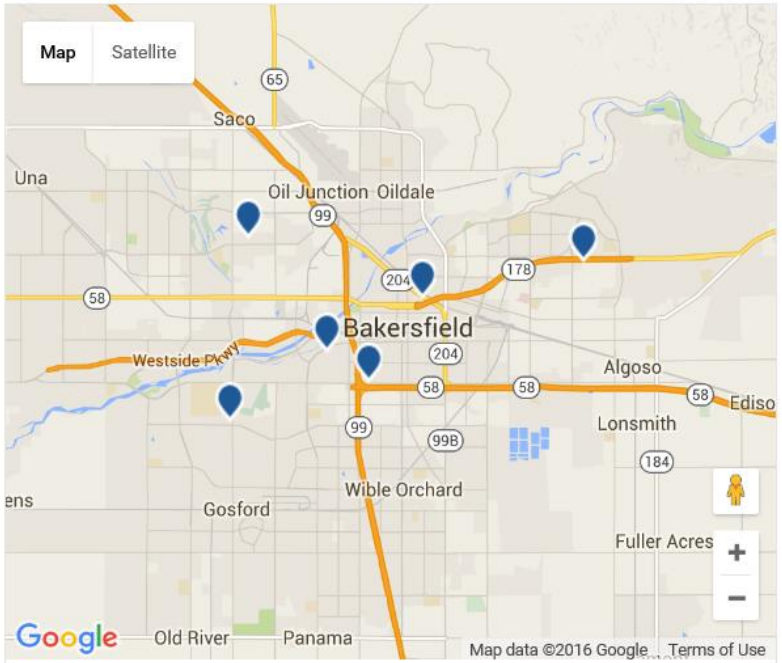
4801 Coffee Road
Bakersfield, CA 93308
Directions

1-877-524-7373 (toll free)

View this facility

Services
- No emergency care
- Pharmacy

Facilities near you



History of Directory Standards

LDAP

HPD (IHE)

HCSPDir (HL7)

CSD (IHE)

ServD (OMG/HL7)

FHIR (HL7)

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2 Second “Flash” FHIR - Technology

Based on Modern WEB technologies

Core Resource Model

Defined Wire Format (XML/json)

CRUD

Searching

Extensible

Profilable/Conformance

Natively Supports Distributed data

Supports REST, Messaging, Services, Documents

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The FHIR Community

Standards development (HL7)

Software Vendors

Healthcare Providers

Profiling Organizations (IHE)

Open Source Projects/Products

Reference Implementations

(java/c#/Delphi/js/…)

Open Test Servers (24x7)

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FHIR Connectathons

Sample Patient resource

```
<Patient xmlns="http://hl7.org/fhir">
    <id value="glossy"/>
    <meta>
        <lastUpdated value="2014-11-13T11:41:00+11:00"/>
    </meta>

    <text>
        <status value="generated"/>
        <div xmlns="http://www.w3.org/1999/xhtml">
            <p>Henry Levin the 7th</p>
            <p>MRN: 123456</p>
        </div>
    </text>

    <extension url="http://example.org/consent#trials">
        <valueCode value="renal"/>
    </extension>

    <identifier>
        <use value="usual"/>
        <label value="MRN"/>
        <system value="http://www.goodhealth.org/identifiers/mrn"/>
        <value value="123456"/>
    </identifier>
    <name>
        <family value="Levin"/>
        <given value="Henry"/>
        <suffix value="The 7th"/>
    </name>
    <gender value="male"/>
    <birthDate value="1932-09-24"/>
    <careProvider>
        <reference value="Organization/2"/>
        <display value="Good Health Clinic"/>
    </careProvider>
    <active value="true"/>
</Patient>
```

Identity & Metadata

Human Readable Summary

Extension with reference to its definition

Standard Data Content:

- MRN
- Name
- Gender
- Date of Birth
- Provider

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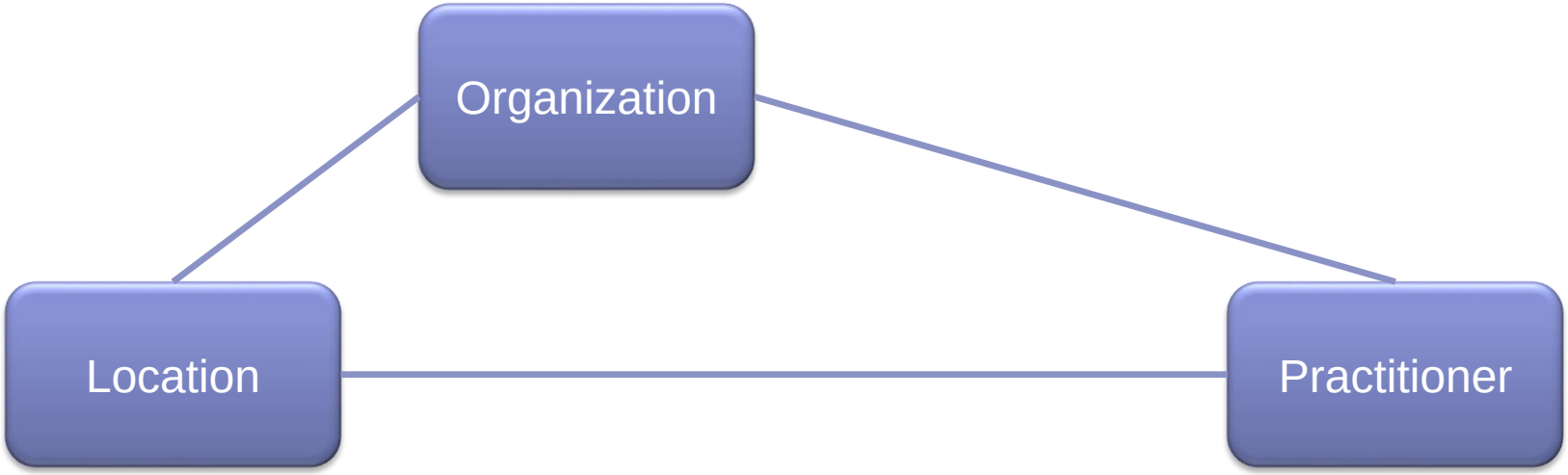
DSTU1



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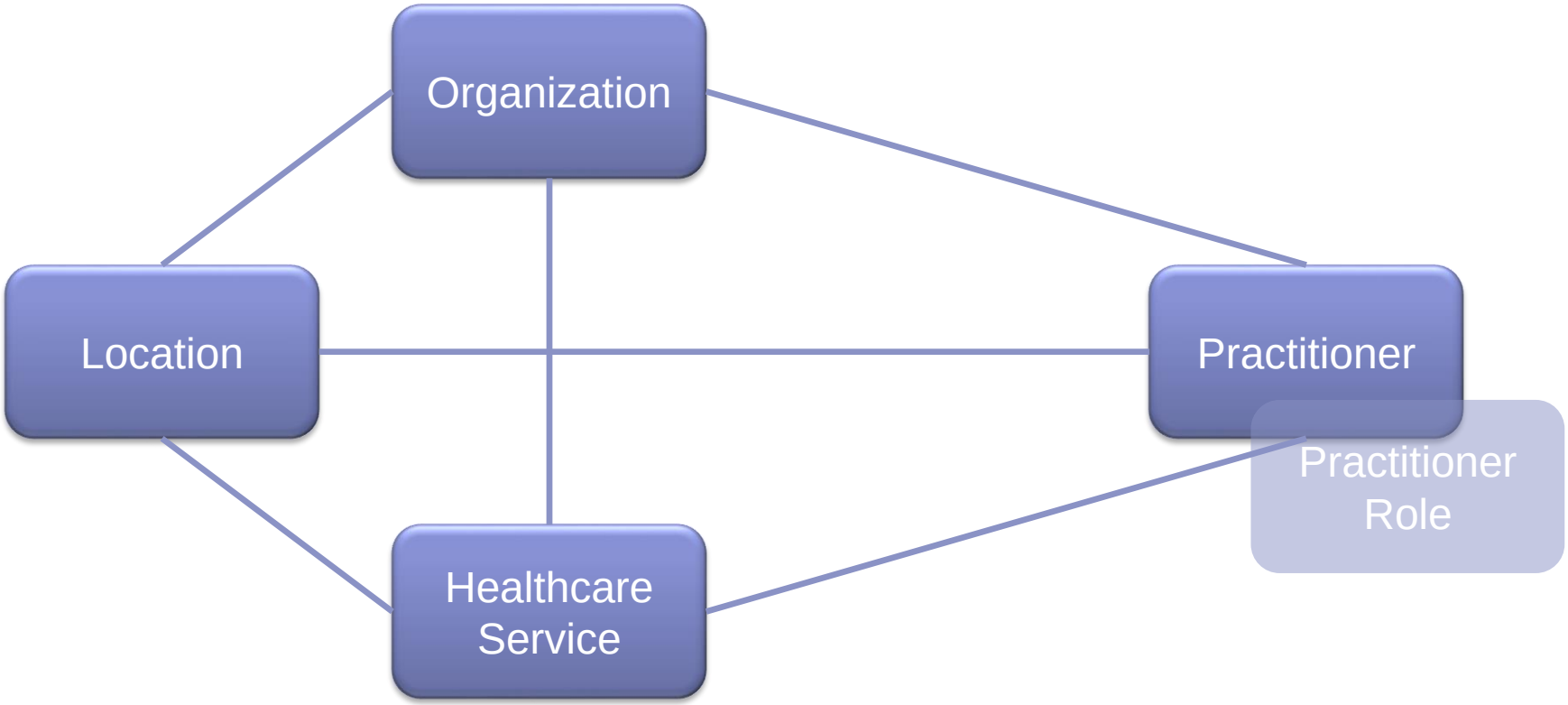
DSTU2



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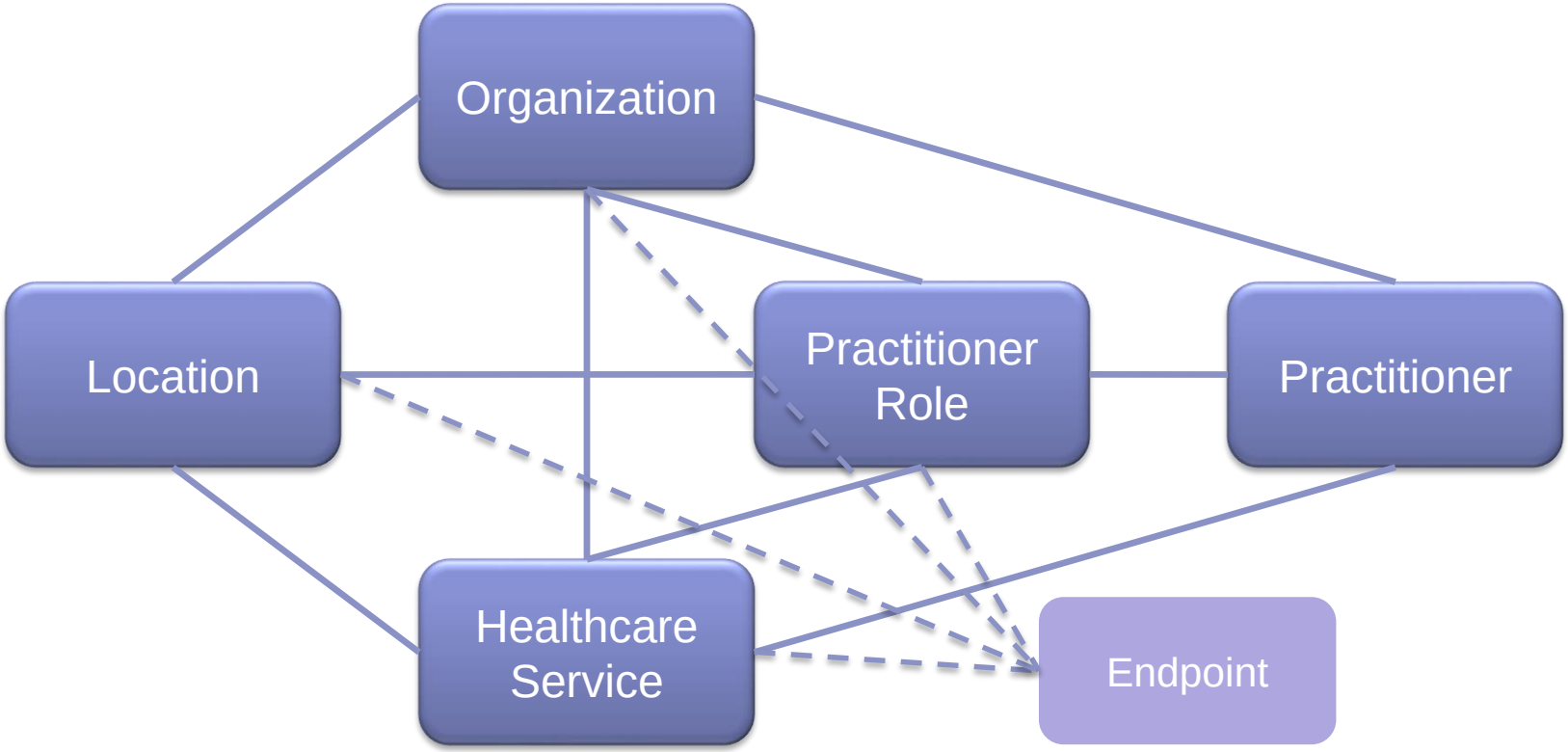
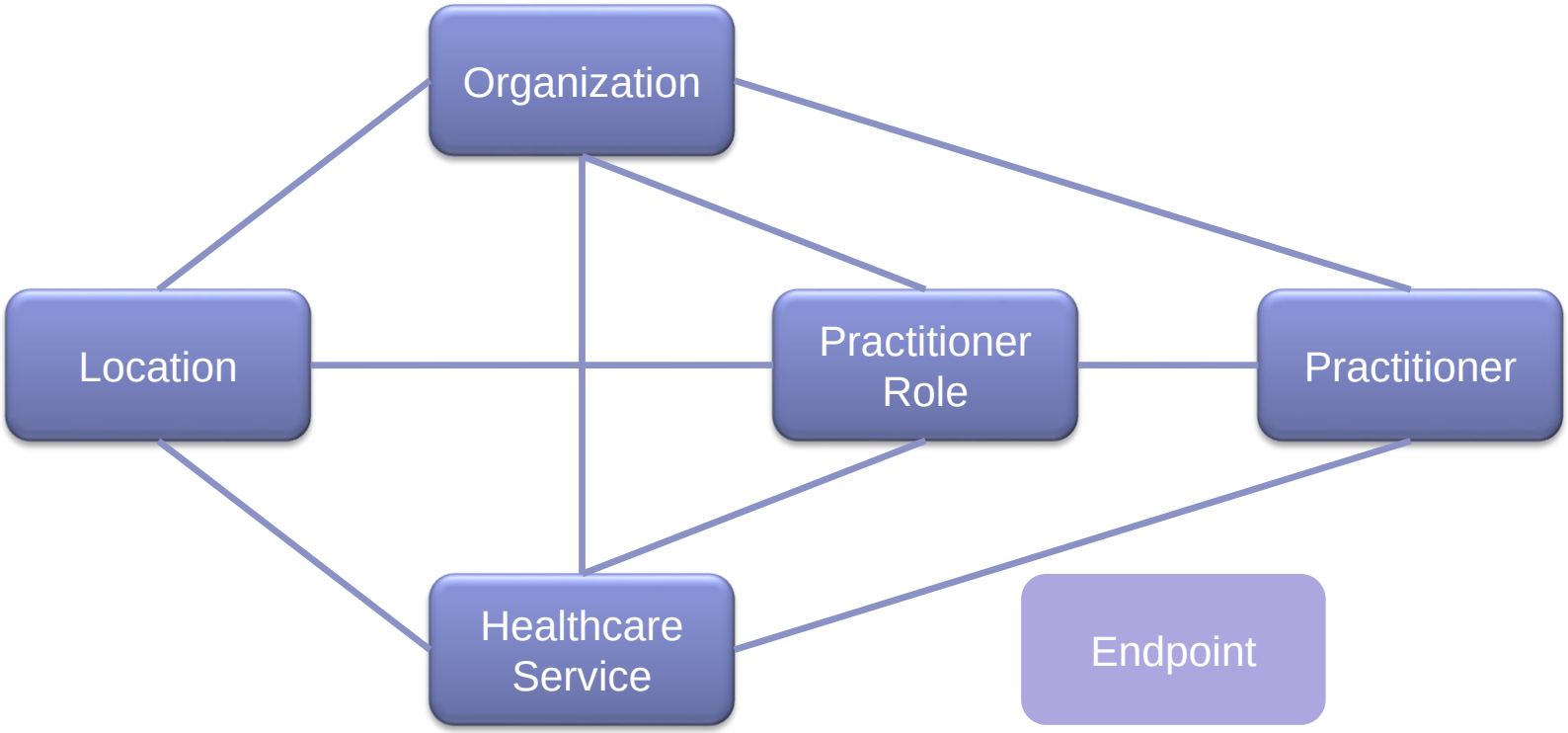
STU3 (May Connectathon)



STU3 (May Connectathon)



Document Reference | Schedule | Referral Request | Care Plan | Questionnaire | …

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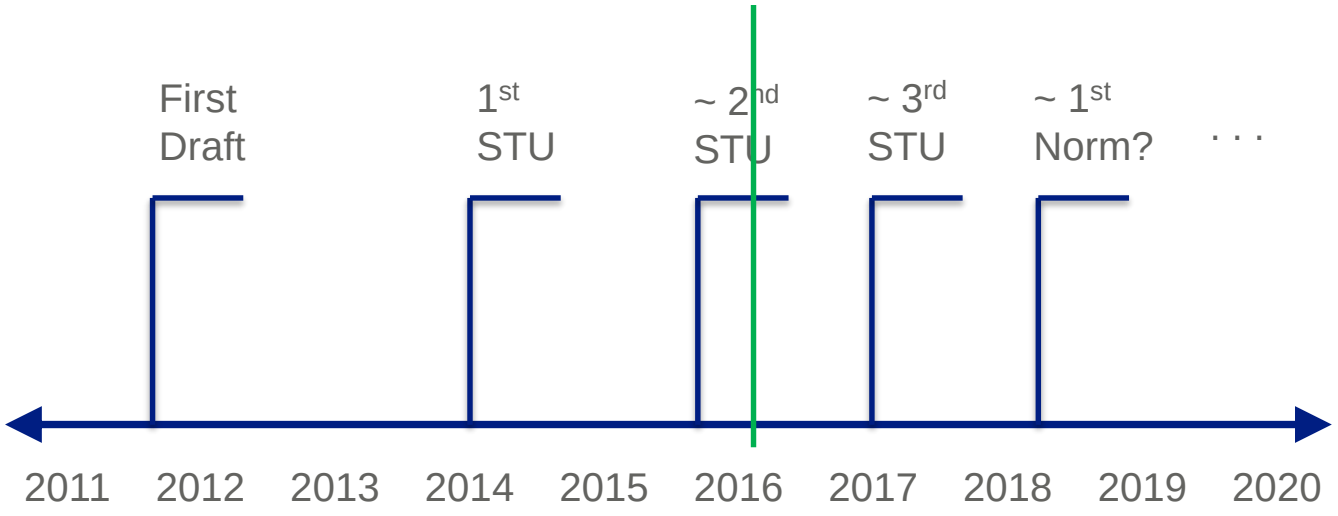
FHIR Timeline (planned)



Using FHIR today

Private sector initiative advancing interoperability

The purpose of the Argonaut Project is to rapidly develop a first-generation FHIR-based API and Core Data Services specification to enable expanded information sharing for electronic health records and other health information technology based on Internet standards and architectural patterns and styles.

Michigan State-wide Health Provider and Consumer Directory

Are using the FHIR standard (DSTU2) to create a Provider and Consumer directory. Including the active relationships between patients and the providers that are servicing them.

They have extended it to support many of the features that are being incorporated into STU3, including the service endpoints.

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Using FHIR today

Enterprise Services Directory

An enterprise grade services directory caching service that is able to consume data from multiple sources, match, merge and remove duplicates.

Extend directory with local content

Then distribute to down-stream applications using v2 master-file update messages.

Internally is a pure FHIR server.

Connecting Care

Provides Referral capabilities based on a services directory model to send FHIR Questionnaires between providers electronically.

This approach being considered for the Australian national e-referral architecture.

Further Developing FHIR

Moving extensions from learnings into core

Endpoints

Scheduling / Referrals

Workflow / Messaging

Federation and content distribution

Attribution of content source

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FHIR and Directories - Take aways

1. FHIR is a continuation of learnings elsewhere
2. Already in use in production
3. Inclusive of service directory data
4. Service Endpoints being added now
    - Current system extensions
    - Desire to test this at May HL7 Connectathon
5. FHIR seeks to address future needs
6. Is being supported and used by many vendors today
7. Large and Growing community of developers

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THANK YOU

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