



Medical-Objects and Web Services

Glenn Stephens

CEO, Medical-Objects

www.medical-objects.com.au
glenn@medical-objects.com.au

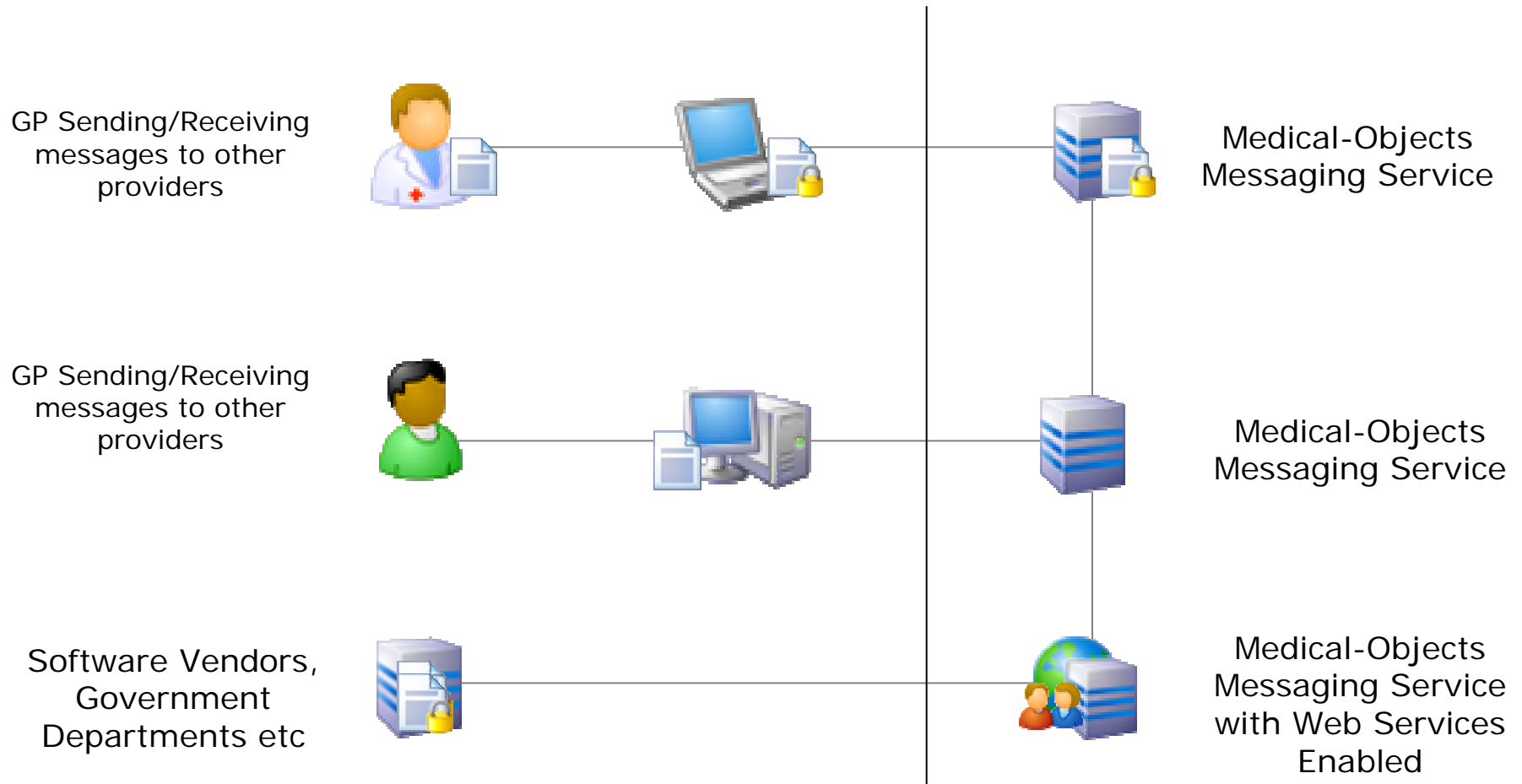


Medical-Objects

- Who are Medical-Objects?
 - Primarily a secure messaging service provider
 - GP referral, non-repudiation, end-to-end security, specialists reporting
- How does Medical-Objects fit with Web Services
 - We have Web Services enabled technologies now
 - Web Service enabled Applications include
 - Medical-Objects Messaging Framework
 - **Medical-Objects Server**
 - **Medical-Objects RealTime**
 - **Medical-Objects Terminology Services**
 - SNOMED CT implementation



Medical-Objects Messaging with Web Services





Service Orientated Architecture

- Medical-Objects has always had an SOA-like implementation
 - Scalable, Distributed System, using HTTP
- Have many SOA Services
 - Message Gateway Services, terminology, routing, provider directory services, message distribution
- Once we added Web Services as a transport, our entire system became Web Services compliant



Terminology Services

- Our primary communication system is HL7 master files
- Existing SOAP Terminology Standards
 - A CTS common terminology Services already exists and we are working towards a compliant solution
 - Also working on a SNOMED specific interface which is higher level is easier to use which facilitates integration



Medical-Objects Terminology Services

Medical-Objects Terminology Web Services - Mozilla Firefox

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m Medical-Objects Terminology Web Services

This application demonstrates a subset of the Medical-Objects Terminology Services and is demonstrating various aspects of the solution such as Terminology Search and more.

Search for SNOMED CT Term
HIV Search...

Selected Concept

Search for a Snomed Code

gastric ulcer Structured

- Curling's ulcers
- Cushing's ulcers
- Familial duodenal ulcer associated with rapid gastric emptying
- Gastric ulcer
- Abomasal ulcer
- Acute gastric ulcer
- Acute ulcerative gastroenteritis complicating pneumonia
- Chronic erosive gastritis
- Chronic gastric ulcer
- Combined gastric AND duodenal ulcer
- Erosion of gizzard
- Esophagogastric ulcer
- Gastric erosion
- Gastric ulcer with hemorrhage
- Gastric ulcer with perforation
- Gastric ulcer without haemorrhage AND without perforation
- Gastrocolic ulcer
- Gastro-oesophageal reflux disease with ulceration
- Gastrojejunal ulcer
- Healed gastric ulcer
- Idiopathic erosive/haemorrhagic gastritis
- Multiple gastric ulcers
- Peptic ulcer of stomach
- Peptic ulcer without haemorrhage AND without perforation but with obstruction
- Peptic ulcer without hemorrhage, without perforation AND without obstruction
- Pyloric ulcer

Windows Compatible
Web Services Client

Done

OK Cancel



Communication is done via
Web Services as well as HL7


Communication to Medical-
Objects Terminology Services
is done via HL7



Terminology Services

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Medical-Objects Terminology Web Services

This application demonstrates a subset of the Medical-Objects Terminology Services and is demonstrating various aspects of the solution such as Terminology Search and more.

Search for SNOMED CT Term

HIV

- [-] SNOMED CT Search for: **gastric ulcer**
 - [-] Curling's ulcers (disorder)
 - [-] Cushing's ulcers (disorder)
 - [-] Familial duodenal ulcer associated with rapid gastric emptying (disorder)
 - [-] Gastric ulcer (disorder)
- [-] SNOMED CT Search for: **HIV**
 - [-] Fear of contracting HIV infection (finding)
 - [-] Finding of HIV status (finding)
 - [-] HIV CDC category finding (finding)
 - [-] HIV contact (finding)
 - [-] HIV risk lifestyle (finding)
 - [-] HIV test offered (finding)
 - [-] HIV WHO class finding (finding)
 - [-] Human immunodeficiency virus infection (disorder)
 - [-] Acquired immune deficiency syndrome-related complex (disorder)
 - [-] Acquired immune deficiency syndrome-related nephropathy (disorder)
 - [-] Acute HIV infection (disorder)
 - [-] AIDS (disorder)
 - [-] AIDS with abnormal weight loss (disorder)
 - [-] AIDS with acute endocarditis (disorder)
 - [-] AIDS with acute myocarditis (disorder)
 - [-] AIDS with agranulocytosis (disorder)
 - [-] AIDS with anemia (disorder)
 - [-] AIDS with background retinopathy (disorder)

Done

System.Web.Services.Protocols.SoapHttpClientProtocol SnomedWebServicesClient.CTSService

```
+ BeginCanonicalForm: System.IAsyncResult
+ BeginChildrenOfConcept: System.IAsyncResult
+ BeginDescriptions: System.IAsyncResult
+ BeginGetServerTime: System.IAsyncResult
+ BeginIsParentOf: System.IAsyncResult
+ BeginIsValidConcept: System.IAsyncResult
+ BeginParentsOfConcept: System.IAsyncResult
+ BeginRetrieveConcept: System.IAsyncResult
+ BeginSearchForConcept: System.IAsyncResult
+ BeginSnomedVersion: System.IAsyncResult
+ CanonicalForm: string[]
+ ChildrenOfConcept: OSnomedCT[]
+ CTSService
+ Descriptions: string[]
+ EndCanonicalForm: string[]
+ EndChildrenOfConcept: OSnomedCT[]
+ EndDescriptions: string[]
+ EndGetServerTime: System.DateTime
+ EndIsParentOf: bool
+ EndIsValidConcept: bool
+ EndParentsOfConcept: OSnomedCT[]
+ EndRetrieveConcept: OSnomedCT
+ EndSearchForConcept: OSnomedCT[]
+ EndSnomedVersion: string
+ GetServerTime: System.DateTime
+ IsParentOf: bool
+ IsValidConcept: bool
+ ParentsOfConcept: OSnomedCT[]
+ RetrieveConcept: OSnomedCT
+ SearchForConcept: OSnomedCT[]
+ SnomedVersion: string
```

SnomedWebServicesClient.OSnomedCT

```
+ ConceptID: string
+ CTV3ID: string
+ FullySpecifiedName: string
+ IsLeaf: bool
+ IsPrimitive: bool
```

<<enum>>

SnomedWebServicesClient.ETopLevelConcept

```
Null
Attribute
BodyStructure
ContextDependant
Environment
Event
ClinicalFinding
ObservableEntity
Organism
PhamProduct
PhysicalForce
PhysicalObject
AProcedure
Qualifiervalue
SocialConcept
Specimen
Staging
Substance
Special
Namespace
Navigational
Inactive
```



Future Direction for Web Services in Health

- Things to think about...
 - WSDL for common activities
 - Secure messaging providers
 - UDDI Directory for the Australian Health Web Services