



Introduction



MAKING HEALTH COMPUTE



Cofounder and major sponsor

M E M B E R



Member and official submitter for HL7/OMG HSSP RLUS, EIS

'openEHR' is a registered trademark of the *openEHR* Foundation.

'OMG' and the 'Member OMG' logo are trademarks or registered trademarks of the Object Management Group, Inc. in the United States and other countries

'SNOMED CT' is a registered trademark of IHTSDO (International Health Terminology Standards Development Organisation)

Copyright 2007 Ocean Informatics. All rights reserved.

This document is provided for information purposes only, and the contents are subject to change without notice. No fitness for a particular purpose or user is claimed or implied for the products described herein. This document is not subject to or the basis of any warranty. Ocean Informatics disclaims any liability with respect to this document.

This document may not be reproduced or distributed without prior written permission of Ocean Informatics.



Ocean - Connecting a healthy world

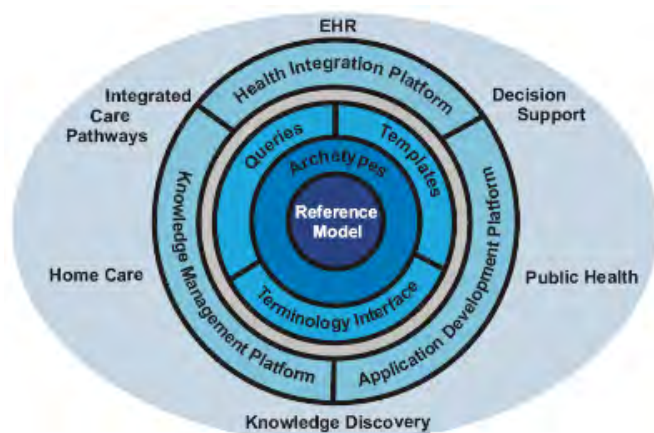
With the advent of national e-health programmes, the possibility is finally emerging for health information to escape the confines of the provider enterprise, to be shared by clinicians and citizens. Collaborative community-based care provision brings new challenges for health computing, and with them, the need for new paradigms.

Ocean Informatics is a recognised leader in e-health strategy, semantic interoperability and shared EHR solutions. Its directors include some of the most experienced clinical and technical experts in the health informatics domain, and it has a long history of involvement in e-health projects (both in Australia and Europe), standards development (through ISO, HL7, CEN, Standards Australia), as well as systems and tool implementation. Our team includes experienced practising physicians as well as world-class software engineers, ensuring that our health ICT solutions truly reflect clinical needs.

Leaders in e-health strategy, standards and solutions

Along with University College London, Ocean is one of the founding partners of the *openEHR* Foundation (<http://www.openEHR.org>), a non-profit organisation that has defined the *openEHR* health computing platform. The *openEHR* platform consists of technical specifications for health record and related information, domain semantics and services, and is implemented in a number of open source and commercial systems. It is the first health computing platform to offer *semantic integration* of the GUI, persistence and querying, and constitutes a powerful basis for *higher level health computing* including cross-enterprise workflow, decision support and medical research.

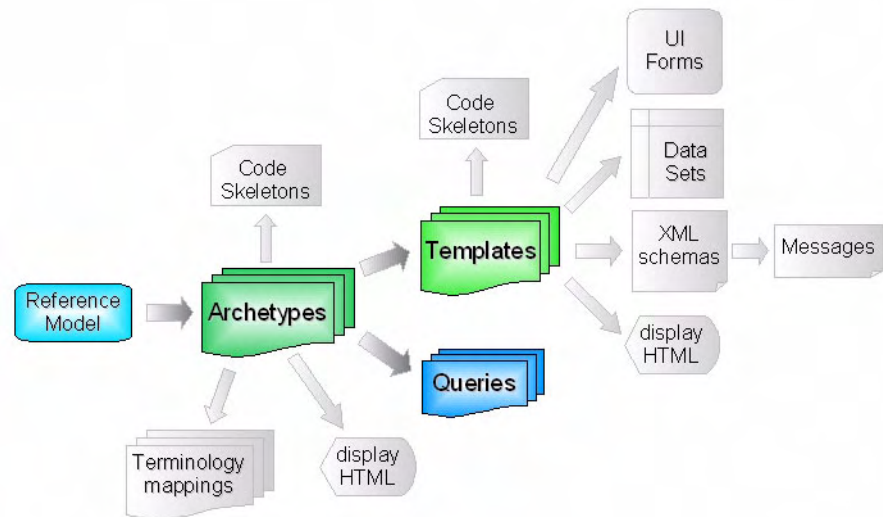
Co-founder of and major contributor to *openEHR*



The *openEHR* health computing platform

Using one of *openEHR*'s key innovations known as *archetypes*, Ocean has developed a *single source semantic modelling* capability from which templates, forms, queries and other artefacts can be derived, significantly reducing work effort. *openEHR* archetypes and templates provide a basis for future-proofing systems due to being independent of the software. Along with the *openEHR* reference model, they form a powerful 'DNA' of the health computing environment, without which computers cannot safely process health data. The power of the approach is recognised globally, with the CEN- and ISO-standardisation of the Archetype language and model.

At the core - single-source semantic models



A full, high-performance open EHR

Ocean Informatics has created a full implementation of the *openEHR* health computing platform in order to support development of both clinical content and secure, high-performance EHR systems. The former are applicable to government and jurisdictional e-health programmes where the goal is to standardise shared health information. The clinical models can be used by the Ocean EHR products or directly by the systems of other vendors.

Automatic standards conformance

The Ocean platform takes care of compliance to published e-health, ontology and technical standards, including those from ISO, HL7, CEN, OMG, IHE and W3C. It also offers integration with terminologies, including those from WHO (ICDx), WONCA (ICPC), and IHTSDO (SNOMED CT). Privacy and security are supported in a flexible way, allowing deployment in both open and highly secure environments.

International client base

Ocean has offices around Australia, in the United Kingdom and in the Netherlands. Ocean solutions are in use by the UK National Health Service, the Australian government, in the Netherlands, Denmark and in a number of other countries around the world. Our experience and innovation is recognised internationally, and it continues to influence thinking in e-health.



Challenges in e-Health

Ocean's approach to e-Health is founded upon years of study of the health sector, and takes account of health systems as a whole, as well as individual actors within. It recognises that the challenges require innovative, far-sighted solutions.

The Needs

The key ICT needs of the health sector can be distilled down to the following.

- The complex, dynamic nature of the healthcare system. Healthcare today involves a collaborative care team rather than just single carers; the desire of many patients to be actively involved; and the local and often regional or global mobility of patients. The base scenario is therefore team communication across enterprises and patient-centric health records. These needs lead to significant interoperability requirements, including standardised service models, cross-enterprise workflow management, and standardised information, allowing data from multiple sources to be aggregated into a shared patient-centric EHR.
Shared, patient-centric EHR
- The need for health information to be independent of technology and vendor software, ensuring it remains usable for the lifetime of the patient and beyond, regardless of changes in implementation. This requirement also points to standardised health information.
Cross-enterprise, cross-application interoperability
- Manage continual change in healthcare, arising from changing business processes, medical advances, new technology, changing social habits. This requirement points to a need for future-proof systems that can seamlessly adapt to change over time.
Technology- and vendor-independent EHRs
- Today much of the massive investment in health information is lost, because it is not easily usable after data capture. For ICT to be of any real help in healthcare, it must be used for more than just moving information around; it must be used to do computation and inferencing. Many activities in medicine are today obstructed by the inability to process health data, including recall management, decision support, guideline evaluation, patient risk analysis, individualised medicine, and medical research. For data to be computable, they need to be *semantically standardised*, i.e. structured and coded so that each item can be safely compared to other similar items, and to the terminologies used to perform inferencing.
Future-proof systems
- Support cost-effective integration with existing systems. For new solutions to be economic, they must be able to be overlaid on existing infrastructure with the least burden of imposition possible to achieve semantic standardisation. This points to specific approaches to the tagging of existing data.
Information that is computable not just shareable
- One of the widespread problems in health computing today is that the user interface, business logic and persistence are defined by independent, semantically unrelated models. This must be overcome to create systems whose persisted and querying forms of data are logically the same as their presentation on the screen at the point of capture or retrieval.
Minimal impact on existing data & systems
- One of the widespread problems in health computing today is that the user interface, business logic and persistence are defined by independent, semantically unrelated models. This must be overcome to create systems whose persisted and querying forms of data are logically the same as their presentation on the screen at the point of capture or retrieval.
Semantic coherence in the application stack



Retain patient trust while sharing information

Integration of official standards

- Support for patient privacy and confidentiality, without compromising interoperability of information and systems. Among a patient's care team, the main need is for fast, reliable access to relevant information; on the other hand, the citizen must be able to exercise control the confidential use of her health information. Accommodating both needs in a joined-up e-health environment is mandatory for success.
- Support for official standards is required for two reasons. Firstly to ensure system builders and users can interoperate with others with whom they have no other agreement. Secondly, to guard against investing in technology that will not be supported by industry. Official standards however bring their own dangers: most are untested 'paper' specifications, and they are generally need further interpretation to be usable, and are not integrated into a usable platform. Standards are currently interpreted and integrated, usually incompatibly, in each product and system.

The Enabler - a Knowledge-based Framework

Identifying these issues has led Ocean to concentrate specifically on the semantic and future-proofing aspects of health processes, information and systems. In concert with the *openEHR* Foundation, this has resulted in a two-part design framework, consisting of:

- knowledge development tools and methodology and
- an open, adaptive, knowledge-enabled health computing platform.

The latter of these takes care of interpreting and integrating official interoperability standards into a larger framework, thus offering a unified basis for building health information systems. Its core innovation, archetypes, constitute a single-source semantic modelling capability, vastly reducing work effort required to define visual, information and software artefacts while greatly improving the quality of built solutions.

Ocean has implemented this framework in the form of a toolset, services, and methodologies that can be used to build and deploy into any setting. The knowledge development components are used to create clinical content models that can be used in any environment as a semantic standard, while the health computing platform forms the basis for building high-performance EHR solutions in which the semantics of the GUI, persisted data and queries are based on the clinical models.

Ocean's core expertise is in applying the framework to the widely differing needs of healthcare enterprises and programmes, including:

- national e-health programmes requiring standardisation of clinical content and terminology use;
- single- and multi-enterprise health data integration projects;
- regional community of care (health network) EHR;
- specialist registries, e.g. cancer and diabetes;
- summary and emergency health records;
- pathology laboratory information systems.



Ocean Solutions

In a joined-up e-health world, common standards for content and process must be independent of user applications and site-specific details. Open platforms for both knowledge development and health information are required, supporting locally specific details of workflow and process rather than changing or replacing them. Successful solutions must be able to deploy the same semantic and architectural principles in any setting, from rural clinics to nationwide health networks.

Overview

Because our offerings are based on a health computing platform rather than fixed products, we are able to provide solutions for diverse organisations and environments. The *openEHR* three-level approach to content (information models, archetypes, templates) means that common content can be used across provider systems and vendor applications while still supporting locally-specific user interfaces.

National e-Health Programmes

Most national e-health programmes have the same goal: to provide guidance, standards and incentives that enable vendors and providers to evolve toward a joined-up health information network. Key problems to be solved including defining the EHR, defining shared clinical and related content, and planning for systems integration and evolution.

Make informed choices about standards

Ocean provides a unique perspective on these issues and can help national programmes design a successful strategy. The combination of the *openEHR* architecture and Ocean's knowledge development platform offer significant and long-lasting value to such programmes. We can provide advice and technical background on EHRs, standards and deployment approaches. We also offer design expertise and technology allowing team-based building of clinical content and terminology subsets. Such work in the past has led to the substantial archetype library now available at *openEHR.org*, and provides an ever stronger base for efficient content definition in the future.

Develop a sustainable health content strategy using direct clinical input

Regional / Community Shared EHR

The OceanEHR platform forms the central component in a regional or community shared health record system. With its integration capabilities (EhrAdapter, EhrExtractor) and high-performance services, OceanEHR represents a *universal health information receiver*, enabling disparate community clinics, laboratories and practitioners to work with patient-centric health records for the first time.

Integrate GP, imaging, pathology lab data using archetypes

In this area, Ocean offers clinical planning and design experience from the outset, helping to frame the system architecture, services and roll-out. We can deploy the OceanEHR platform in a pilot role in the early stages, allowing planners and users to see the advantages of an archetype-enabled health record. We can also provide training and design effort in the development of the archetypes, templates and forms which define the clinical semantics and user interface of the system. Our Integration Engineering group can create the required interfaces with existing data feeds



and messages, while ensuring that all information can be exported in the required formats.

Deployment possibilities include secure ASP web service and VPN-enabled local network services.

General Practice

Deploy OceaEHR via ASP.net on the web for secure, shared EHRs

In many countries, general practice is a key driver for the shared patient-centric health record. The most common need is to migrate GPs from a standalone office management and prescribing package to being integrated into a regional shared health information space. One strategy is for them to move to a regional ASP-based secure health record served over the web. Another is for their current software to communicate to a regional service using messaging. Ocean supports both solutions, using OceanEHR to provide the shared EHR, and either web-enabled applications or data integration to provide the connectivity.

Hospitals

Hospitals represent a microcosm of the health information problem at large. The typical environment consists of numerous non-communicating systems with a myriad of user interfaces and security mechanisms, causing repeated data input, missed key information (e.g. drug intolerances), and a general inability for clinicians to easily get to the right information at the right time.

Deploy persistent, federated EHRs

Solving these problems requires a strategic commitment to a knowledge-enabled shared health record architecture, while retaining the value of the existing investment. Ocean's *openEHR*-based technology provides the platform for sustainably and cost-effectively integrating health data, properly taking into account the semantics of content, including coding, structure and context. OceanEHR is a true persistent shared EHR rather than virtual data integration on the screen, enabling applications to write to the shared EHR space rather than just read from existing systems. Because it is open, it releases management from having to commit to a particular proprietary solution.

Personal Health Records

Build PHR applications for use with secure regional EHR solutions

With the advent of open, shared health records comes the possibility of consumers having direct access to their own health data. Building secure consumer-oriented applications for personal health information access is easy with the Ocean Template Designer, archetype-based querying language (RASQL) and application-building tools.

Academia

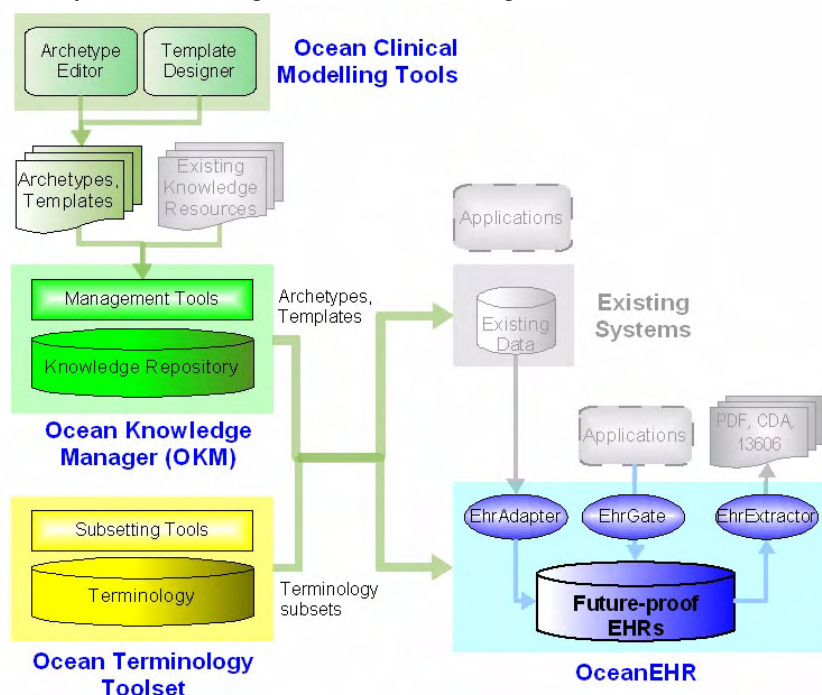
Ocean offers an academic licensing programme for university-based e-health research, including free licenses for all its tools, and access to remote testing platforms, large amounts of simulated data.



Ocean Products

Only with a comprehensive approach to health information semantics can we hope to build systems that ‘know what the data mean’ across enterprises, applications and users. Ocean’s standards-based knowledge modelling environment provides the semantic framework, while OceanEHR, the world’s first open, archetype-based EHR platform provides the delivery mechanism.

Ocean Informatics offers four product groups. The first three – the Ocean Clinical Modelling Tools, Ocean Knowledge Manager (OKM), and Ocean Terminology Toolset - provide an extensive knowledge authoring, management and terminology environment, allowing organisations to define healthcare content standards for a jurisdiction. The fourth is OceanEHR, Ocean’s EHR platform, a secure, future-proof, high-performance health record system for both greenfield and existing environments.



All products are based on Release 1.0.1 of the *openEHR* specifications¹, are designed for deployment within traditional and service-oriented architectures, and support major published and emerging standards, including CEN EN13606, HL7 CDA, and HL7/OMG HSSP.

SOA and standards-enabled

The knowledge tools enable the development of clinical and domain content and terminology subsets. These definitions are used in all levels of the EHR technology, including GUI, business logic, persistence, queries, messaging and documents. This leads to a significant reduction in work effort, and for the first time, queries that can be used longitudinally over health data, regardless of the original source system or format.

Significant cost-savings from single-source content models

1. <http://svn.openehr.org/specification/TAGS/Release-1.0.1/publishing/roadmap.html>



Governance of
knowledge artefacts
made easy

The tools enable the construction, review and quality assurance of *openEHR* archetypes, templates and terminology subsets, while the Ocean Knowledge Manager provides a sophisticated environment in which versioning, life-cycle, dependencies, meta-data and existing enterprise knowledge resources (e.g. data sets) can be managed coherently. Design-time access to terminologies such as SNOMED CT, ICDx and local terminologies is provided via the Ocean Terminology Service (OTS).

Integrate with existing
security, MPI,
terminology

OceanEHR is a service-oriented platform for deploying or integrating Electronic Health Records (EHRs) and EHR applications locally, regionally or nationally. Implemented using Microsoft .Net and SQL Server 2005, it consists of EHR runtime services and client-side components that enable any application to have distributed access to EHRs, demographics, archetypes, templates, terminology and security services. The platform integrates with existing infrastructure, including Master Patient Index (MPI) where it exists, terminologies, security and existing data sources, such as messages, documents and databases.

Enable true decision
support

All information processing and querying is enabled by the use of the *openEHR* Reference Model, the archetype and template formalisms (ADL, AOM, TOM), and the archetype-based query language (AQL). Together these technologies make true decision support and medication management possible.

Virtual EHR API makes
application development
easy

Functionality is exposed via service interfaces to each back-end information source; applications connect to these services via the EhrGate middleware component, which provides a semantically integrated, virtual view of the patient EHR and related information. The OceanEHR EHR server is capable of processing millions of EHRs with flat sub-second performance (typical queries) within the customer enterprise, and can be integrated cross-enterprise using commercial enterprise service bus (ESB) technology.

Handle formats like
EN13606, HL7 CDA,
HL7 and Edifact
messages

Official health data standards including HL7 and Edifact message types, HL7 CDA and CEN EN13606 are handled by EhrAdapter, built on top of Microsoft BizTalk, on both input and output. Non-standardised formats including various database, XML, PDF and HTML can be incorporated into the EHR and generated on output as required. Emerging SOA standards including HL7/OMG HSSP RLUS and EIS, for which Ocean Informatics is an official submitter, will be implemented as they emerge. Existing applications can be integrated either via specialist domain services layer (designed to be close to their original back-end interfaces), or directly via EhrGate.



Product Feature Summary

Knowledge Tools and Services

- Based on the *openEHR* Archetype Model, a **CEN- and ISO-standardised generic formalism** for clinical modelling.
- Large **library of re-usable Archetypes** designed by the global e-Health community form the basis for local health content models.
- **Templates** built from Archetypes enable flexible modelling of context-specific data-sets for point of care applications and reporting, without losing underlying semantics.
- The use of automatically **generated template message schemas** enables easy interfacing with messaging sources without losing content semantics.
- Semi-automated screen **form construction** based on templates.
- Complete artefact **lifecycle and version management** repository.
- Integrated **management of existing enterprise knowledge** resources including data-sets, documents and external links.
- Lightning-fast, caching **terminology server**, supporting structured dynamic subsets of any terminology including SNOMED CT, ICDx, LOINC, ICPC.

Supported standards:
ADL (CEN EN13606-2)

Supported Terminologies:
SNOMED CT
LOINC
ICDx

EHR Platform

- **Universal EHR repository** implementing *openEHR* Release 1.0.1, accepting and exporting major health data formats including CEN EN13606, HL7 CDA, Edifact, HL7 v2.x messages.
- **High-performance**, high-volume EHR server, scalable both within and across enterprises.
- Uses *openEHR*/CEN/ISO **standard Archetypes** and *openEHR* Templates as basis of clinical information.
- **Archetype-based querying**, enabling true longitudinal processing of health data, regardless of originating system or application.
- Distributed **version and change-set management** of updates to the EHR, supporting medico-legal and business process investigations.
- **No software changes or redeployment** required for new or changed clinical information models.
- Supports **configurable security**, anonymous EHRs, fine-grained standards-based privacy, digital signing, and access auditing.
- **Service-Oriented Architecture** design, conforming to emerging HL7/OMG HSSP EIS and RLU standards, allowing secure deployment over the web.
- **Integrates** with existing security components and client/patient identity systems.
- **Flexible deployment** options, secure web service or thick client
- **Multiple usage scenarios**: private or shared records, full or summary records, archetype-driven data transformation gateways.
- Fully documented toolset and APIs for application developers.

Supported standards:
CEN EN13606-1,4
HL7 CDAR2
Edifact
HL7 v2.x
HL7 v3
HL7 CTS
HL7/OMG HSSP (future)

WSDL, SOAP
XML-schema
XPath
ISO 8601 (date/time)

Technologies:
Microsoft .Net 2.0
SQL Server 2005
Oracle
MediaFlux



Ocean Services

The decisions made early on in an e-health project or programme heavily affect the outcome. In e-health, understanding the problem domain, and a holistic approach to content definition and terminology use are crucial to success.

Overview

Ocean's services are designed to provide organisations with key knowledge during the initiation, establishment and execution phases of major projects. In the exploratory phase, we provide basic knowledge of the problem domain, standards and major trends, as well as strategic advice. During the establishment phase, we can help frame the project, capture requirements and design appropriate prototyping and deployment strategies. In the implementation, delivery and post-deployment phases, we provide training, support and development services around our products.

Consulting

Recognised experts in e-health since 1990

Ocean Informatics has been working in e-Health since 1990, and its directors can attest to the complexity of the problem space and the challenges in understanding it. The EHR, clinical content, terminology and other aspects of e-health stretch the boundaries of ICT today and demand a deep understanding of clinical care delivery, software and systems engineering, standards, knowledge engineering and healthcare economics. Ocean has been involved in international e-health standardisation and advising governments.

Providing the valuable background to decision-making

Ocean's core team can give the customer the necessary background for making effective decisions on future projects and expenditure. Particular areas of expertise include:

- health and medical informatics;
- standards comparison and adoption;
- developing policies for content development;
- terminology and decision support;
- designing pilot projects.

Discover the importance of semantics

A key area where we can provide value to the customer is in the review of large e-health project data standards and terminology policies. Many programmes suffer from the beginning from weak or no policy on content or user interface, causing significant downstream economic losses and delays.

Guided requirements capture

Ocean's unique combination of clinical, engineering and project professionals also enables us to frame and perform strategic requirements capture as a prelude to the design and implementation of large health informatics projects.

E-health Knowledge Engineering

Leverage international resources in local projects

Ocean specialises in the crucial activity of planning for and developing definitions of clinical content (archetypes), user interface and reports (templates) and terminology subsets in an e-health programme context. Work is performed by clinical specialists whose long experience in this area



will enable the customer organisation to become productive in a matter of weeks. The growing *openEHR* archetype repository is heavily used as a source of quality material. Tooling includes archetype and template building tools and the Ocean Knowledge Manager, a knowledge asset platform that implements versioning, release management, artefact lifecycles and meta-data.

Software Engineering

Our Applications Engineering group is able to help specify and build or re-engineer specific customer applications to be integrated with OceanEHR. All service interfaces, APIs and data formats are publicly available in the *openEHR.org* space, ensuring that the investment is into an open platform rather than a proprietary, vendor-specific environment.

Applications re-engineering and data integration

Integration with existing messages, databases and document formats can be carried out by our Integration Engineering group. For many standard message and document types, transformations can be developed quickly for the powerful EhrAdapter product.

Training

Training is a crucial but often neglected part of enabling an organisation to become effective and sustainable in its e-health agenda. There is no substitute for structured, interactive teaching of key customer personnel, enabling them to teach others in the organisation.

We offer a standard 2-day training course on *openEHR*, with an executive-oriented first day. This course provides attendees with a deep understanding of the issues of health information, semantics, EHRs, and terminology. It examines in detail the elegant solutions defined by *openEHR* as well as official standards including the CEN EN13606, EN13940, HISA, HL7v3, CDA, along with terminologies including SNOMED CT, ICDx, LOINC and others.

Understand the problem space

For organisations wishing to perform their own clinical modelling and/or terminology development, we offer a workshop-oriented course giving attendees experience with building archetypes, templates, and terminology subsets. This course is usually a prelude to establishing a clinical modelling capability within the organisation, during which Ocean offers support, review and workshops as required.

Clinical modelling and terminology design

For organisations intending to develop applications and systems interfacing with OceanEHR or the Ocean Terminology Service, we provide an in-depth training course led by senior engineers, typically lasting up to a week. This course is designed to get customer developers to the point of being able to build functional *openEHR* applications quickly. Ongoing technical support and consulting is supplied as required.

Learn to build *openEHR* applications

Support

During and after delivery of training and systems, technical support is available in a variety of ways, including online issue tracking systems as well as specialised consulting. We provide web-based issue tracking and resolution facility for all our tools and systems, enabling users to see previous problem reports as well as progress on resolution and future releases.



Benefits

Ocean's openEHR-based solutions can significantly improve the economics of e-health programmes and of EHR system deployment. They also help realise the value in existing health data and systems, while offering improvements in the quality of healthcare processes and outcomes.

The Economics of Archetypes

Reduce work effort in modelling and terminology

As a semantic basis for e-health information management, archetypes offer much higher information quality across the healthcare enterprise than existing methods, for significantly lower cost. In health content modelling, they greatly reduce duplication of effort while allowing terminology bindings to be developed gradually. They also offer a means of directly implementing existing data-sets. The ability to directly generate artefacts into the deployment environment greatly reduces integration costs.

Re-use the effort of an international community

The growing size and quality of the *openEHR* repository of archetypes means that individual organisations using the technology have to do less work to be interoperable, while gaining access to the content models created and used by some of the largest health organisations in the world, including the Australian government and the UK NHS.

OceanEHR – Integrating the Health Environment

A cost-effective means of data integration

Through the use of archetypes and templates to enable existing information to be safely imported, semantically marked and exported, OceanEHR relieves the enterprise of the cost and problems of *ad hoc* data integration and standards compliance. Integration within and across enterprises allows the economic and health benefits of true patient-centric EHRs to be realised, including integrated care pathway (ICP) management and decision support.

No back-end software or database changes

The use of the generic *openEHR* reference model schema as the basis for back-end software and databases means that changes are extremely rare, reducing redeployment and testing costs.

Regain control over purchasing

OceanEHR provides a truly vendor-independent common back-end for healthcare delivery organisations, allowing them greater control over the introduction of applications and specialist systems. It can be used by vendors via the published interfaces, relieving them of the need to develop their own health record persistence solutions.

Realise the Value of e-Health Investment

Building a cost-effective health information economy

With common semantics throughout the application stack and across systems, health content can be standardised across settings, applications and provider sites. This vastly increases the value of captured information, enabling it to be continually re-used in long-term shared care, by decision support and for medical research.

The potential outcomes include improved chronic disease management; better cost control due to personalised health care; detection of patient risks leading to prevention, and greatly improved evidence-based medicine.



The Management Team

Sam Heard

MBBS, FRACGP, MRCGP, DRCOG, FACHI

Chief Executive Officer

Sam has been a practising clinician, teacher and medical academic researching the EHR for more than 20 years. He is a leader in matching technology with clinical needs and has chaired national and international committees developing standards to enable sharing of electronic health records. He has provided much of the clinical vision for *openEHR*.

Thomas Beale

BEng (Elec), BSc(Comp)

Chief Technical Officer

Tom is a master systems engineer held in high regard by all involved in the development of EHR systems. He has 20 years' experience in software, including in SCADA control, finance, requirements and e-health. He is the key technical designer of the *openEHR* architecture.

Peter Schloeffel

MBBS, BSc, FACHI

Director Standards and Business Development

Peter is a visionary clinician with a background in computer science. He has made a major long term contribution to standards in Australia, Europe and in the International Standards Organisation (ISO).

David Rowed

MBBS, BEng, FRACGP

Director and Senior Clinical Consultant

David is a practising clinician with a background in engineering. He has a long history of involvement in standards development in Australia and at HL7. He has long experience in the development and support of commercial GP practice management systems.

Ognian Pishev

PhD (Int. Business), MCompSc

Director and Senior Business Consultant

Ogi's background is in economics and international diplomacy. He is an experienced industry analyst and financial expert who is driving the adoption of the Ocean two level modelling approach in other domains.

George Hayworth

BEng

Director and Senior Technical Consultant

George is a software engineering professional with 20 years' experience leading software teams in the delivery and maintenance of SCADA and other mission-critical software systems. Since 2001 he has worked in the health environment, validating and deploying health applications, including those based upon *openEHR*.

Heather Leslie

MBBS, FRACGP, Dip Obs RANZCOG, FACHI

Director and Senior Clinical Consultant

Heather has participated in high-level health IT strategy development, as well as taking a hands-on role in specifying software applications for use by primary care clinicians and consumers. She is a well-known proponent of a more active role for consumers in their own health care.

Hugh Leslie

MBBS, FRACGP, Dip Obs RANZCOG, FACHI

Director and Senior Clinical Consultant

Hugh is a practising clinician and IT professional, enabling him to bridge the gap between clinicians and technicians in application design. He has designed and built innovative clinical software applications for both primary care and hospitals and led large software application implementations linking multiple hospitals with primary care clinicians.

Ocean Informatics Pty Ltd

214 Victoria Avenue, Chatswood,
New South Wales,
Australia 2067
tel +61 (0)2 9415 4994

Ocean Informatics UK

21 Chester Crescent
London E8 2PH
United Kingdom
tel +44 (0)207 193 7174

contact@OceanInformatics.com

www.OceanInformatics.com



MAKING HEALTH COMPUTE