



# Training



MAKING HEALTH COMPUTE



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# Ocean Training

*Within Ocean we believe that the only way to truly understand e-health and the systems within it is to have a substantial capability in both the clinical and engineering domains. Our training approach reflects this - most courses are delivered by a clinical and a technical professional.*

## Training Approach

Ocean Informatics is made up of a significant number of both clinical and engineering professionals, and most of Ocean's courses are delivered either by two presenters, one from each domain, or for courses that are more heavily technical or clinical, with 'guest' modules from the other domain. Experience has shown that the exposure of technical staff to the complexities and style of thinking of the clinical domain, and of clinicians to the realities of engineering and software, is of lasting benefit to the customer organisation, and can help to bridge the divide between 'the doctors' and 'the IT department'.

Bridging the Clinical /  
Technical divide

Ocean courses often use two presenters and two screens, with the presenters alternating. A workshop format is used in many situations, ensuring that participants actively engage in the subject matter.

All courses commence with introductions by the participants, and a session designed to elucidate the aims and interests of each participant. Questions and discussion from the participants is encouraged throughout.

Feedback forms provide the opportunity for participants to comment and help us improve.

## Training Material Design

Ocean's approach to training is flexible in two ways. Firstly the course content is organised into modules, each lasting a limited amount of time, from 30 minutes to 2 hours. Modules can be combined to create course days within a full course. Secondly, the order of delivery over a course, lasting for example for one, two or four days is designed to allow executives and decision-makers needing a high-level understanding of the material to gain the necessary overview in the early stages, while their clinical and/or technical staff will usually remain for the full length of the course.

Modular courses can be  
tailored to the needs of  
the customer

The content available for training purposes includes the following broad groups of material:

- **openEHR and Health Informatics:**
  - *openEHR*: a study of the design approach, specifications and use of *openEHR*;
  - *Clinical modelling*: building archetypes, templates and terminology subsets for use in systems (clinically oriented);
  - *Terminology*: including Snomed CT
- **Ocean Products:**
  - OceanEHR: Ocean's EHR product (developer oriented);
  - Ocean Terminology Service



Bringing front-line  
experience in e-health  
standards to the  
classroom

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## The Trainers

Ocean's trainers have all had long term experience in presenting at conferences, training, and have been actively involved in creating and developing the material. New trainers are accredited by and work with Ocean for an extended period before they present their first course. A roughly equal number of clinical and engineering/IT professionals are available from within the organisation for training purposes. For strategic engagements, key personnel can be made available.

## Benefits

Every organisation faces the temptation to minimise training expenditure, and to stop after a first course for an initial group of employees. However there are many benefits to a more comprehensive training approach, both economic and in terms of time. These include:

- Making personnel effective more quickly: 2-day courses for clinical and ICT professionals are designed to enable participants to start being productive on their own.
- Access to international expertise and experience: initial training and follow-up mentoring provide participants working within their own organisation with an access point to experience from around the world, including activities in standards, academia and industry.
- Cost: the typical cost of training per employee per day is similar to or less than the internalised daily cost of the employee to the customer organisation, while the learning efficiency compared to e.g. self-training by reading or no training is many times higher.



# Topics - *openEHR* and Health Informatics

## *openEHR* Modules

The training material on *openEHR* is designed to provide participants with a full knowledge of the *openEHR* standards, history and use in e-health today. It enables a clear understanding of many of the complex issues in the health ICT problem space and is a useful basis for the following kinds of participants:

- anyone working with *openEHR*-based products and systems;
- anyone in a government e-health organisation;
- anyone working with archetypes and templates;
- health/medical informatics post-graduates.

Ocean's training material covers the semantics of e-health, system development, standards, clinical content, workflow and interface design.

Overview level modules suitable for all audiences, including executives and managers, include:

- The *openEHR* Foundation
- Lay-persons Overview of *openEHR*
- Technical Overview of *openEHR*
- Challenges in e-Health
- *openEHR* and official standards, including ISO TC215, CEN TC/251, HL7, ASTM
- The 4-layer architecture of *openEHR*
- The Ontological Basis of *openEHR*

Detailed modules that provide a deep understanding of the specifications and semantics include:

- The Reference Model (RM)
  - Overview
  - Support package (identifiers, types)
  - Data Types (clinical data types)
  - Data Structures
  - Common package
  - Entries and the clinical investigation lifecycle
  - The EHR
  - Demographics
- The Archetype Model (AM)
  - The Archetype Definition Language (ADL)
  - the Archetype Object Model (AOM)
  - the *openEHR* Archetype Profile (oAP)
- Clinical / Technical comparisons
- Versioning and distribution
- Paths in archetypes and data
- The Archetype Query Language (AQL)
- Integration
  - Importing from EHR/EMR systems
  - Exporting to EHR/EMR systems
  - integration with non EHR systems, including messages
- Services Architectures and *openEHR*



Ocean's experience in clinical modelling is gained from working in major national e-health programmes

## Clinical Modelling Modules

This subject area is oriented toward clinical professionals with interests or responsibilities in content standardisation and knowledge management. The modules are longer than the technical modules and are workshop-oriented, with participants being invited to work with the tools on their own laptop computers. The modules include:

- Overview of *openEHR* Archetypes and Templates
- Getting to know the Archetype Editor
- Getting to know the Template Designer
- Understanding the *openEHR* Entry types
- Designing archetypes
- Designing templates
- Forms and the User Interface
- The development and review lifecycle
- Various case studies in archotyping, including:
  - Problems and diagnoses
  - Adverse reaction
  - Physical and other examinations
  - Laboratory results
  - Modelling checklists and assessments
- Various case studies in templates, including:
  - Diabetes
  - Emergency Department
  - General Practice
  - Maternity
  - Paediatrics
  - other major health areas
- Building Terminology Subsets for use in Templates

## Terminology Modules

Understand why the proper integration of terminology and the EHR is so important

The *openEHR* architecture and all systems built with it, including Ocean's EHR system, are designed for use with terminologies such as Snomed CT, ICDx, LOINC, ICPC and others. These modules are designed for the following kinds of participants:

- personnel involved in managing terminology in their organisation
- personnel integrating terminology into content models and vendor specifications
- designers of tools using terminology
- clinical personnel involved in building archetypes and templates.

Modules include:

- The Ocean Terminology Service
- Terminology deployment strategies and architectures
- Creating, Managing and Sharing Subsets
- Integrating Terminology and the EHR



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# Topics - Ocean Products

*Ocean's flagship products, OceanEHR and the Ocean Terminology Service provide the basis for establishing an open, standards-ready enterprise or regional health computing platform.*

## OceanEHR Modules

OceanEHR is a faithful implementation of the *openEHR* EHR standards, designed for regional health services, hospitals, research establishments and government use. Training modules are aimed at developers who will use OceanEHR in their organisation, and are of a technical nature. They include:

In 2 days, developers will have built their first OceanEHR application

- Overview of OceanEHR Architecture
- EhrGate - the application interface
- EhrBank - the EHR back-end
- EhrView - a toolkit for viewing EHRs
- System Integration
  - Interfacing/implementing Demographics/PMI
  - EhrAdapter: an integration engine for interfacing with messages, databases and documents
  - The Template Data Schema approach
  - Importing HL7 and EDIFACT messages
  - Import and export of CDA, EN13606 Extracts
  - Integrating with existing user applications
- Deployment approaches: ASP/Web, LAN, VPN
- Security
- Performance
- Exercises, including:
  - Logging in, session establishment
  - Creating a new EHR
  - Creating and modifying content
  - Querying and handling results
- Understanding the *openEHR* XML-schemas

## Ocean Terminology Service (OTS) Modules

The Ocean Terminology Service allows terminologies like Snomed CT, LOINC and ICDx to be managed and deployed in a distributed environment. Subsets can be defined and managed, for use at runtime. The OTS training modules allow developers to understand deployment issues, subsetting and version management. Modules include:

Understand how to bring terminology to the user, safely and efficiently

- Overview of OTS Architecture
- OTS Deployment Options
- Caching and Off-line Use
- Version Management
- Subset Creation and Management



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# Courses

*Ocean courses are designed to give participants an active understanding of a set of topics or issues and to be immediately able to apply what they have learned within their organisation.*

The following courses can be delivered 'standalone' or as part of a larger training programme for an organisation needing a strategic level of engagement with the topics.

## **1/2-day Health Informatics Introduction**

An overview of the domain of e-health and health informatics, designed for strategic decision makers as well as technical and clinical personnel. Covers topics such as:

- Standards
- Patient safety
- Privacy and confidentiality
- The market and status quo of health information systems
- Current government e-health initiatives
- Directions in e-health, including Service-oriented architectures, the Personal Health Record, wellness records, community-of-care approaches
- What *openEHR* offers

## **2-day *openEHR***

This course is designed to give participants a good understanding of many of the difficult topics in the e-health problem space and the solutions provided by *openEHR*. It is organised into two days:

- day 1: overview, suitable for decision-makers
- day 2: the technical details, archetypes, templates, querying, terminology

At the end of this course, participants will have a good understanding of all the *openEHR* specifications, as well as access to all online resources.

## **1-day *openEHR***

A shorter form of the 2-day course, suitable for providing initial exposure to *openEHR* for an organisation.

## **2-day Clinical Modelling**

A course to get new clinical modellers working with archetypes and templates with a reasonable exposure to tools and more complex case studies in clinical content.

At the end of this course, participants will be able to do basic analysis and design required for creating new archetypes and templates, and will be comfortable using the tools.

- *pre-requisite*: 1- or 2-day *openEHR* course



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## 1-day Clinical Modelling

A shorter form of the 2-day course, designed to give new personnel basic skills in the archetype- and template-building tools and an initial exposure to clinical content modelling via a case study.

- *pre-requisite*: 1- or 2-day *openEHR* course

## 1-day Standards

A course drawing on diverse material and the long-term involvement of Ocean Informatics principals in international standards, designed to provide participants with a solid understanding of what is happening in health standards today. Covers:

- ISO standards for health
- CEN EN13606 and HISA
- HL7v2, HL7v3, CDA, HSSP
- ASTM CCR
- IHTSDO - Snomed CT
- WHO, WONCA and other terminologies
- *openEHR*
- Using/Choosing standards
- Integration and legacy issues

## 1-day Terminology

A day long course covering all the important aspects of using large terminologies like ICD10, Snomed CT and LOINC, including tool demonstration and subset workshop

## OceanEHR 2-day Developer's Introduction

An initial technical course to get developers working with the *openEHR*-based OceanEHR environment. Participants receive an initial technical overview and then spend most of their time learning by programming, using the large number of examples straight from Ocean's test libraries and production software.

At the end of this course, developers will be able to write basic applications that create, modify, and query EHRs, as well as understand sessions, security and issues to do with integration and deployment options.

- *pre-requisite*: 1- or 2-day *openEHR* course

## OceanEHR 4-day Developer's Workshop

An in-depth hands-on training experience for organisations implementing *openEHR* with OceanEHR. Recommended for organisations with an active development project.

- *pre-requisite*: 1- or 2-day *openEHR* course

## Materials for Participants

A variety of printed material, including slides, electronic format (slide PDFs), software and online resources is provided to participants.



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# Customised Training and Workshops

*For health organisations looking for flexibility or strategic engagement with the topics covered in Ocean training, customised courses and programmes can be cost-effectively created, based on the existing course modules.*

## Training Programmes

A common need for organisations is to have training delivered to three types of people: executive/managerial, clinical and technical/IT. Doing this properly usually entails the delivery of material from more than one of the courses above, typically including at least the *openEHR* 2-day course as well and then a mixture of clinical modelling, terminology units. For organisations using OceanEHR, this training would also be required.

More finely-grained customisation is also possible, typically for organisations that already have an understanding of the main topic areas, and know which areas of weakness need to be addressed with further training.

Customised training programmes can be designed in consultation with Ocean Informatics, and will generally cost no more than the standard courses.

## Workshops

For organisations that have already had initial training for various personnel, there is often a need for further workshop oriented training, with an emphasis on use cases, implementation challenges specific to the customer organisation, problem-solving, and a mentoring approach.

Workshops are typically designed to run from 2-4 days.

## Virtual Mentoring

Follow-up mentoring is particularly important for clinical modelling and design groups, because of the diverse issues involved in the clinical content space. In particular, further mentoring provides participants from one organisation access to expertise and experiences gained by Ocean when working with other groups internationally.

Ocean offers web-based mentoring, including live tool demonstrations and teaching, as a way of following up training course attendees. This is done on an hourly-rate basis and is ideal for obtaining help on specific problems or jobs.

## Public Courses

From time to time, Ocean Informatics provides public courses based on the training material above, typically attached to a conference.



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# Management and Organisation

*Ocean delivers courses anywhere in the world, and works flexibly with local organisations in order to ensure the smooth running of courses.*

## Organisation

Course organisation is usually managed either by an external training organisation, with Ocean presenters working within the provided environment, or by the customer organisation itself. Where an external provider is used, the customer will generally communicate with this organisation rather than directly with Ocean Informatics.

## Class size and Delivery Format

For the 1/2 day courses, larger groups can be accommodated, as the format is generally more presentation-oriented. Classes of over 30 can usually be accommodated if required.

- *format*: one or two speakers, one screen

For day-long and 2-day general courses such as on *openEHR* and standards, classes of around 20-25 are ideal.

- *format*: two speakers and two screens are usually used.

For the specialised courses on Clinical Modelling, Terminology and OceanEHR, class sizes of about 15 or less are encouraged, to enable the best possible interaction with presenters and software.

- *format*: one main speaker, optional guest speaker(s), ideally two screens, one for presentation, one for tool display.

## Audiovisual Requirements

Depending on the training course, one or two projector/screen combinations is needed, ideally placed on either side at the front of the classroom.

Larger rooms normally require audio amplification.

Ocean uses its own computers for all presentations unless otherwise agreed. Whiteboard / paper chart recommended.

## Session Structure

The usual structure of course days is as follows:

- session 0 - Introductions / participant aims - 30 minutes
- session 1 - 90 minutes
- --- morning coffee break ---
- session 2 - 2 hours
- === lunch - 1 hour ===
- session 3 - 90 minutes
- --- afternoon coffee break ---
- session 4 - 90 minutes

Sessions are usually broken into two to three separate presentations.

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