



EFOMP

Medical Physicists
Improving treatments, saving lives

EFOMP presentation to the HERCA multi-stakeholder meeting.

Dr Penelope Allisy-Roberts OBE FInstP FIPEM FSRP

on behalf of

the EFOMP President, Professor John (Ioannis) Damilakis

1 April 2015



EFOMP

European Federation of Organisations for Medical Physics

Mission

- to harmonize and advance medical physics throughout Europe,
- to strengthen the activities of the National Member Organisations (NMO)
 - bringing about and maintaining systematic exchange of professional and scientific information,
 - the formulation of common policies, and
 - **promoting education and training programmes.**



Objectives

- coordination activities with NMOs
- collaborating with other international organisations, particularly the IOMP
- disseminating information through publications and meetings
- **encouraging scholarship and the exchange of Medical Physicists between countries**
- **guidelines for education, training and accreditation programmes**
- recommendations on the appropriate responsibilities, organisational relationships and roles of workers in Medical Physics
- encouraging the formation of Organisations for Medical Physics where such organisations do not exist.



Treatment planning audit; comparison of calculated and measured doses

Membership (NMOs)

Austria (AT): Belgium (BE): Bulgaria (BG):
Croatia (HR): Cyprus (CY):
Republic Czech (CZ): Denmark (DK):
Estonia (EE): Finland (FI): France (FR):
Germany (DE): Greece (EL): Hungary (HU):
Ireland (IE): Italy (IT): Latvia (LV):
Lithuania (LT): Macedonia (MK):
Malta (MT): Moldova (MD):
The Netherlands (NL): Norway (NO):
Poland (PL): Portugal (PT): Romania (RO):
Russian Federation (RU): Serbia (RS):
Slovakia (SK): Slovenia (SI): Spain (ES):
Sweden (SE): Switzerland (CH):
Turkey (TR): Ukraine (UA):
United Kingdom (UK)

Company Members

[PTW Freiburg](#)

[Standard Imaging](#)

[IBA Dosimetry](#)

[Varian Medical Systems](#)

[Elekta](#)

**> 7000 physicists and engineers
working in
European medical physics**

Feedback on HERCA position paper



The process of CT dose
optimisation through
education and training and
role of CT Manufacturers

October 2014

Positive response 1

Stakeholders

CT Manufacturers

Radiologists and other imaging specialists

CT Technologists

Medical Physicists

Medical administration

Legislators

Multi-disciplinary team



Comment 1

Legislative improvements

Assuring the implementation of the COUNCIL DIRECTIVE 2013/59/EURATOM

- incorporating E&T requirements for all disciplines
- requiring medical administrators to provide support for this – time and finance

Multi-disciplinary team



Positive response 2

The CT manufacturers

- implementation of dose reduction measures in CT
- implementation of dose management and reporting tools
- provision of specific training curricula



Comment 2

The CT manufacturers

“standardised benchmarking
of CT systems” -

characterising the dose
efficiency related to image
quality

? progress and retrospective
application



Positive response 3

The clinical team

The radiologists and other imaging specialists need to work together as a team in the process of optimisation with the **medical physicists** and the CT technologists as they need to define the diagnostic quality of the CT images that they require, in order to carry out their diagnosis.



Comment 3

The clinical team

Regular review of protocols by the team and the audit process

- raising awareness
- constant improvement
- patient dose reduction



Positive response 4

Team approach

Medical Physicists together with the CT technologists are responsible for the:

- Quality assurance of the CT scanners
- Dose optimisation of the CT protocols
- Patient dose measurements
- Establishment of Diagnostic Reference Levels (DRLs)
- Investigation of events where a patient receives a dose which is higher than a defined level



Comment 4

Team approach

Radiation Safety Culture

Investigation of “events”

- Recording/analysis
 - Blame-free situation
 - Open discussion
 - National databases
 - OTHEA/RELIR
- <http://reliir.cepn.asso.fr>





EFOMP

Previous actions of the EFOMP

2012

Presentation to MEPs included highlighting responsibilities in radiology safety



EFOMP

Medical physicists working for diagnostic radiology

Les physiciens médicaux en imagerie par rayons-x

12 June 2012



EFOMP

Previous actions of the EFOMP

2013 -

EFOMP CT working group set up in December 2013

Unification of quality controls in CBCT and CT

- to develop a practical, unifying protocol for image quality control (and dose) of both CBCT and conventional CT
- using contrast: noise ratio and Fourier measures

Progress

8th draft protocol for CBCT
- in discussion

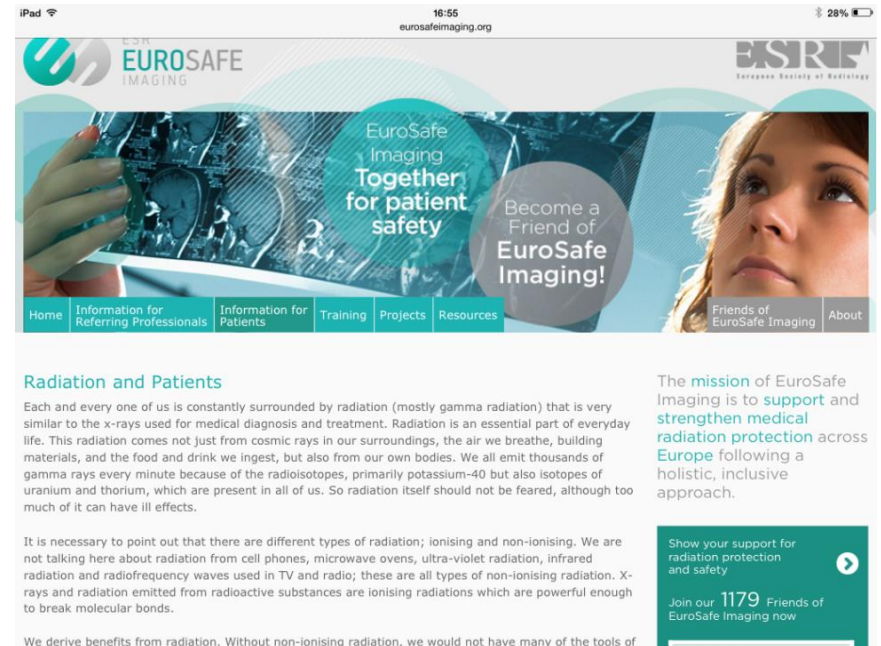
- Image quality factors
- Phantoms
- Software
- Dosimetry



Previous actions of the EFOMP

2014 -

- Support for ESR's EuroSafe Imaging (ESI) campaign
<http://www.eurosafeimaging.org/>
- President of EFOMP on the Steering Committee



iPad 16:55 eurosafeimaging.org 28%

EUROSAFE IMAGING **ESR** European Society of Radiology

EuroSafe Imaging
Together for patient safety
Become a Friend of EuroSafe Imaging!

Home Information for Referring Professionals Information for Patients Training Projects Resources Friends of EuroSafe Imaging About

Radiation and Patients

Each and every one of us is constantly surrounded by radiation (mostly gamma radiation) that is very similar to the x-rays used for medical diagnosis and treatment. Radiation is an essential part of everyday life. This radiation comes not just from cosmic rays in our surroundings, the air we breathe, building materials, and the food and drink we ingest, but also from our own bodies. We all emit thousands of gamma rays every minute because of the radioisotopes, primarily potassium-40 but also isotopes of uranium and thorium, which are present in all of us. So radiation itself should not be feared, although too much of it can have ill effects.

It is necessary to point out that there are different types of radiation; ionising and non-ionising. We are not talking here about radiation from cell phones, microwave ovens, ultra-violet radiation, infrared radiation and radiofrequency waves used in TV and radio; these are all types of non-ionising radiation. X-rays and radiation emitted from radioactive substances are ionising radiations which are powerful enough to break molecular bonds.

We derive benefits from radiation. Without non-ionising radiation, we would not have many of the tools of

The mission of EuroSafe Imaging is to support and strengthen medical radiation protection across Europe following a holistic, inclusive approach.

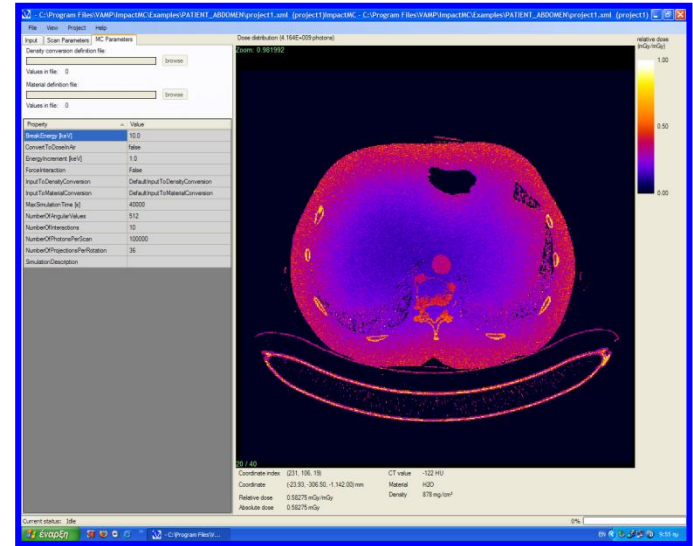
Show your support for radiation protection and safety

Join our 1179 Friends of EuroSafe Imaging now

Previous actions of the EFOMP

2014

- Poster on ‘current safety practices in paediatric CT and radiation protection initiatives’ (John Damilakis) under ESI during ECR 2014



[Details](#)

Study date
08/01/2014 07:22:28

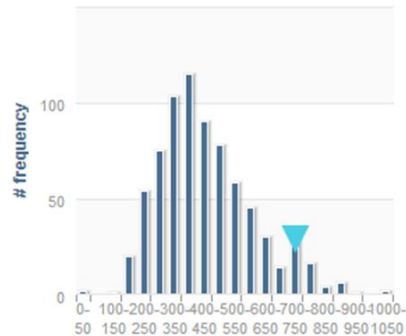
Accession Number
[REDACTED]

Study ID
[REDACTED]

Patient Info
[REDACTED] - M 47 Y

Study Description
RAD ct thorax 33,[10-11-2-146]

Total dose
746.07 DLP mGy.cm



Facts	Statistics	Series table
9.43 % of all studies of the same device and with the same study description indicate a higher dose	22.49 % of all studies of the same device and with the same body part examined indicate a higher dose	
4.58 % of all studies of the same modality and with the same study description indicate a higher dose	14.06 % of all studies of the same modality and with the same body part examined indicate a higher dose	



EFOMP

Previous actions of the EFOMP

2010 to 2014

Partner in the MEDRAPET Project

- Medical Radiation Protection Education and Training
A study on the implementation of the Medical Exposure Directive's requirements within the European Union
- Publication of RADIATION PROTECTION NO 175 (2014)



GUIDELINES ON RADIATION
PROTECTION EDUCATION AND
TRAINING OF MEDICAL
PROFESSIONALS IN THE EUROPEAN
UNION



EFOMP

Previous actions of the EFOMP

2010 to 2014

Partner in the MPE Project

- Medical Physics Expert Education and Training
- Guidelines on the appointment of the MPE within the European Union
- Publication of RADIATION PROTECTION NO 174 (2014)

EUROPEAN GUIDELINES ON
MEDICAL PHYSICS EXPERT

MPE guidelines

- requirements in terms of **radiation protection** knowledge, skills and competences
- for the medical physicist working with ionizing radiation



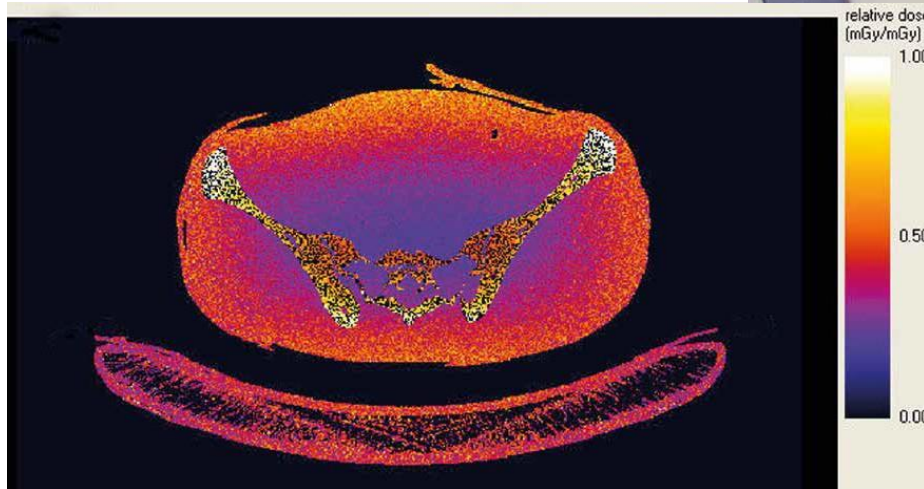


EFOMP

Previous actions of the EFOMP

2015

- Poster on 'how to measure CT dose' (John Damilakis) for ESI during ECR 2015



Previous actions of the EFOMP

Annual seminars & conferences

- On-line availability of invited lectures
- European schools for MPE training programmes
- e.g. in Diagnostic and Interventional Radiology



EFOMP School for Medical Physics Experts (2013)
Clinical Medical Device Management : Specification,
acceptance testing, commissioning, QC and advanced
applications in whole-body PET/CT

Current actions of the EFOMP

Partners in other European Projects - 1

'European Diagnostic Reference Levels for Paediatric Imaging'

- to provide European DRLs for children
- to promote the use of these DRLs to advance optimization of radiation protection of paediatric patients
- **focus on CT**, interventional procedures using fluoroscopy and digital radiographic imaging.

PiDRL - ESR is the coordinator

- The duration of the project is 27 months and the kick off meeting January 2014.
- Prof. John Damilakis took over as the Scientific coordinator in March 2014



Current actions of the EFOMP

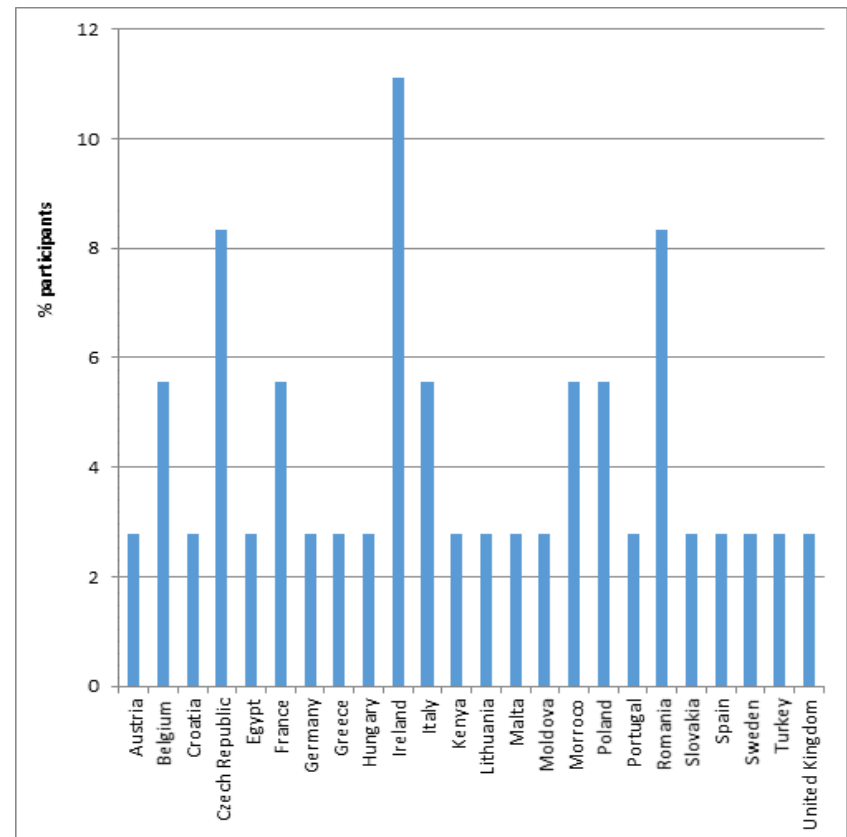
Partners in other European Projects - 2

'European Training and Education for Medical Physics Experts in Radiology'

- network of excellent teaching centres
- the best possible training opportunities for European medical physicists to become MPEs working in diagnostic and interventional radiology
- twelve modules have been selected, each addressing one specific theme
- Module 1: 33 whole-time participants from 24 countries

EUTEMPE-RX www.eutempe-rx.eu (2013)

- EFOMP is the main contributor



Current actions of the EFOMP

Partners in other European Projects - 2

'European Training and Education for Medical Physics Experts in Radiology'

- network of excellent teaching centres
- the best possible training opportunities for European medical physicists to become MPEs working in diagnostic and interventional radiology
- twelve modules have been selected, each addressing one specific theme
- Module 1: 33 whole-time participants from 24 countries

EUTEMPE-RX www.eutempe-rx.eu (2013)

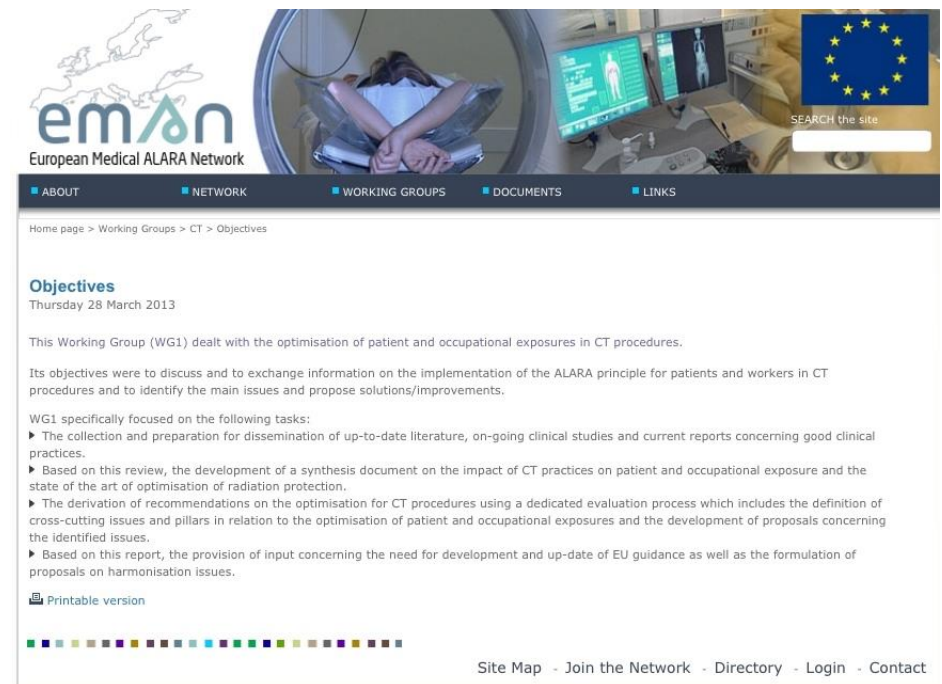
- EFOMP is the main contributor
- **Module 08: Role of the medical physicist in CT imaging and patient dose optimization: CT imaging and patient dose optimized with objective means**
- March 2016 in Italy – Professor Francis Verdun (Switzerland)
 - (Lectures), demonstrations, exercises, discussions, hands-on workshops, practical sessions, etc.
 - Evaluation
 - Review of the course
 - \cong 40 hours of active participation over 5 days on location

Continuing actions of the EFOMP

The European Medical ALARA Network (2010-2012) – to continue

- EMAN focused on justification and optimization of pediatric examinations
- Practical approaches to pediatric CT are discussed in the 'WG 1: Optimisation of Patient Exposure in CT Procedures – Synthesis Document' on the EMAN website
- To maintain the network, the societies involved signed a letter of intent to continue collaboration after 2012

eman-network.eu



The screenshot displays the website for the European Medical ALARA Network (EMAN). The header includes the EMAN logo, a search bar, and the European Union flag. The main navigation menu contains links for ABOUT, NETWORK, WORKING GROUPS, DOCUMENTS, and LINKS. The current page is titled 'Objectives' and is dated Thursday 28 March 2013. The content describes the objectives of the Working Group 1 (WG1), which focuses on the optimization of patient and occupational exposures in CT procedures. The objectives include discussing and exchanging information on the implementation of the ALARA principle, identifying main issues, and proposing solutions/improvements. The WG1 specifically focused on the following tasks:

- ▶ The collection and preparation for dissemination of up-to-date literature, on-going clinical studies and current reports concerning good clinical practices.
- ▶ Based on this review, the development of a synthesis document on the impact of CT practices on patient and occupational exposure and the state of the art of optimisation of radiation protection.
- ▶ The derivation of recommendations on the optimisation for CT procedures using a dedicated evaluation process which includes the definition of cross-cutting issues and pillars in relation to the optimisation of patient and occupational exposures and the development of proposals concerning the identified issues.
- ▶ Based on this report, the provision of input concerning the need for development and up-date of EU guidance as well as the formulation of proposals on harmonisation issues.

A 'Printable version' link is provided below the text. At the bottom of the page, there is a site map with links for 'Join the Network', 'Directory', 'Login', and 'Contact'.



EFOMP

Continuing actions of the EFOMP

MEDRAPET – to continue



- a permanent multi-disciplinary working party created to maintain these European guidelines on education and training in RP for medical exposures

MEDRAPET outcome (2012)

- basis for the revision of the EC Radiation Protection 116 Guidelines
- learning objectives specified in the MEDRAPET guidelines include the necessary KSC for pediatric examinations





EFOMP

Continuing actions of the EFOMP

With other European Societies

Memoranda of Agreement
with subject specific societies

- ESTRO
- EANM
- ESR

to work together in a spirit of
mutual cooperation



Future actions of the EFOMP

EFOMP could

- provide a course on ‘CT dose optimization’ through the ‘EFOMP School for Medical Physics Experts’
- consider the continuation of EUTEMPE.RX through self-funding to expand the number of trained MPEs for radiology in Europe



Czech Association
of
Medical Physicists



EFOMP



EFOMP School for Medical Physics Experts – Prague 2015

Digital mammography and quality controls

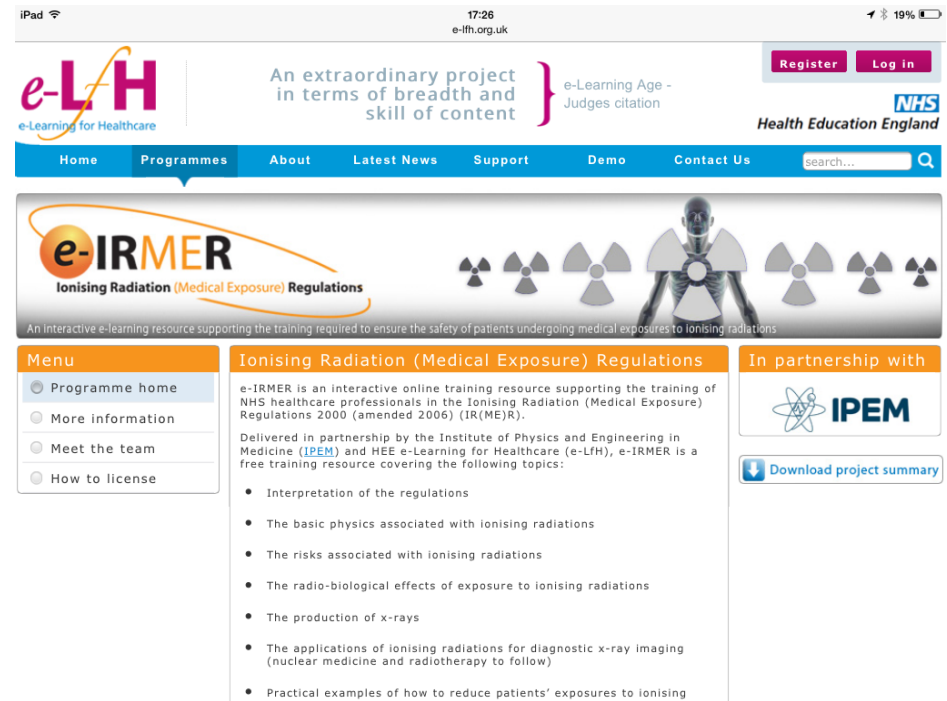
January 29 – 31, 2015
Prague, Czech Republic

Future actions of the EFOMP

EFOMP could

- consider developing an e-learning platform to provide on-line material that meets different levels of professional knowledge and interests, with flexibility to join discussion fora
- CT dose optimization should be part of the educational material

Example of an e-learning platform :



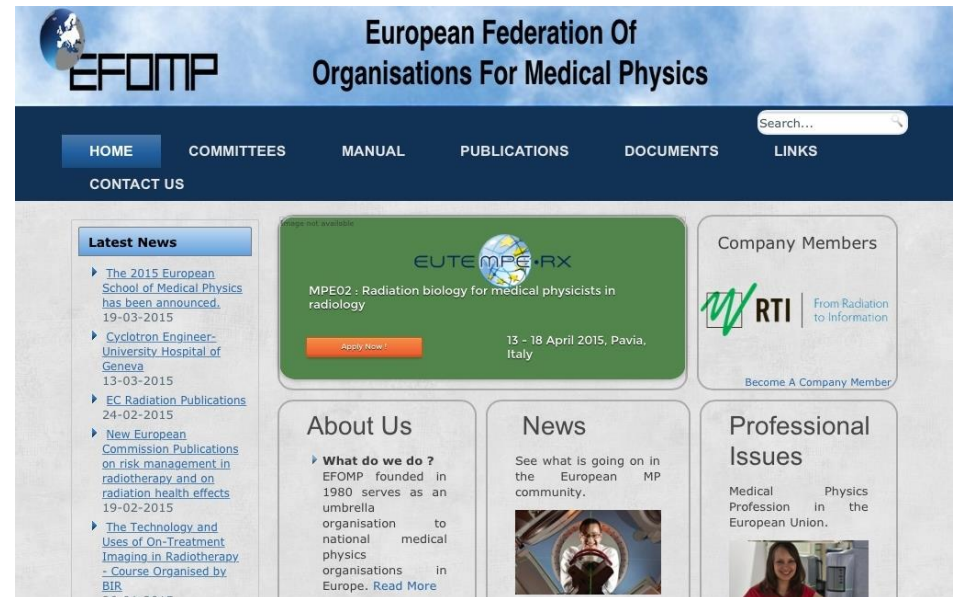
The screenshot displays the e-LfH website interface on an iPad. The top navigation bar includes 'Home', 'Programmes', 'About', 'Latest News', 'Support', 'Demo', and 'Contact Us'. The main content area features the 'e-IRMER' logo and the text 'Ionising Radiation (Medical Exposure) Regulations'. A sidebar menu on the left lists 'Programme home', 'More information', 'Meet the team', and 'How to license'. The main content area provides a detailed description of the e-IRMER resource, including its purpose and a list of topics covered, such as 'Interpretation of the regulations', 'The basic physics associated with ionising radiations', and 'The risks associated with ionising radiations'. A 'Download project summary' button is visible in the bottom right corner.

Future actions of the EFOMP

EFOMP could

- enrich the content and expand the EFOMP website
- provide a public-only section with material for patients
- create a leaflet for patients and their relatives on 'doses and risks from CT'
- create a leaflet on the role of MPs on CT dose optimization to raise awareness of professional involvement

EFOMP.EU



The screenshot shows the EFOMP.EU website homepage. At the top, there is a blue header with the EFOMP logo and the text "European Federation Of Organisations For Medical Physics". Below the header is a dark blue navigation bar with links for HOME, COMMITTEES, MANUAL, PUBLICATIONS, DOCUMENTS, LINKS, and CONTACT US. A search bar is located on the right side of the navigation bar. The main content area is divided into several sections: "Latest News" with a list of recent announcements, a green banner for "EUTEMPE-RX MPE02 - Radiation biology for medical physicists in radiology" with an "Apply now" button, "Company Members" featuring the RTI logo and a "Become A Company Member" link, "About Us" with a brief history of EFOMP, "News" with a sub-header "See what is going on in the European MP community" and a small image, and "Professional Issues" with a sub-header "Medical Physics Profession in the European Union" and a small image of a woman.



EFOMP

Future actions of the EFOMP

In summary EFOMP will

- ensure that NMOs are made aware of the existence of the tools for CT dose reduction, management and reporting
- ensure that training for medical physicists on the use of these tools is available
- encourage use of these tools in daily practice

