EFMI

European Federation for Medical Informatics Association

Christian Lovis*, Anne Moen, John Mantas, Alfred Winter, Mira Hercigonja-Szekeres,
Lacramioara Stoicu-Tivadar, Patrick Weber

* Corresponding author: Christian Lovis, IMIA Regional VP, EFMI, EFMI Past President (2018 – 2020)
University hospitals of Geneva and University of Geneva, christian.lovis@hucge.ch

Introduction

The European Federation for Medical Informatics Association (EFMI) is the leading organization in medical informatics in Europe. All European countries are entitled to be represented in EFMI by a suitable Medical Informatics Society. The term medical informatics is used to include the whole spectrum of Health Informatics and all disciplines concerned with Health Informatics. EFMI is organized as a non-profit organization concerned with the theory and practice of Information Science and Technology within Health and Health Science in a European context. The objectives when founded in 1976 are still guiding

- To advance international co-operation and dissemination of information in Medical Informatics on a European basis;
- To promote high standards in the application of medical informatics;
- To promote research and development in medical informatics;
- To encourage high standards in education in medical informatics;
- To function as the autonomous European Regional Council of IMIA

All representative societies in countries within the European Region of the WHO are entitled to apply for EFMI membership. Currently members of the EFMI are from Austria, Belgium, Bosnia and Herzegovina, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Moldova, Netherlands, Norway, Portugal, Romania, Russia, Serbia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, and United Kingdom. EFMI is also open for institutional membership. Institutions, which typically become EFMI members, include non-profit organizations like universities, research organizations, and non-governmental organizations (NGO), and for-profit organizations like small and medium size enterprises (SME) and multi-national companies. Currently, 14 organizations are institutional members of EFMI.

The EFMI Council oversees all activities of EFMI and gives the EFMI Board direction, means, and resources for activities to develop health and biomedical informatics in Europe. The EFMI Council fully supports ongoing efforts to professionalize operation of the federation, increase visibility in social media, participate in European projects, and the AC2 initiative (see below) to foster cross-border mobility for health informatics students and professionals in Europe. These activities are elaborated in this report.

Further information about EFMI activities can be obtained via our website: http://www.EFMI.org and our social media outlets on Twitter, Facebook, and LinkedIn.

Congresses

EFMI organizes two main conference series: Medical Informatics Europe- MIE and the Special Topic Conferences - STC. In conjunction with or independent of the main congress series, working groups contribute to organize topic specific workshops, tutorials, and seminars in the EFMI series and elsewhere.

MIE2018 – Building Continents of Knowledge in Oceans of Data: the Future of Co-created eHealth

40-Year-Anniversary for EFMI's MIE conferences and 50-Year-Anniversary SFMI, organized by Anne Moen, Ragnar Nordberg, and Lars Lindsköld.

MIE2018 was hosted in Gothenburg, Sweden by EFMI and SFMI (Swedish Society for Medical Informatics). The conference shared resources with and was co-located with VITALIS 2018. All delegates at MIE2018 and VITALIS 2018 could go to scientific presentations, explore the extensive industrial exhibition and topical demonstrations of health informatics innovations to alleviate challenges in specialist-, primary and self-care.

Keynote Speakers

Keynotes were shared by MIE2018 and VITALIS2018. Director Dr. Patricia F. Brennan, National Library of Medicine, USA gave the opening keynote: "Big Data, analytics and potentialities for knowledge generation – challenges to make the stride", followed by Ms. Carmen LaPlaza –Santos, Dep. Head of Unit – Health, Wellbeing and Ageing, DG CNECT H3, European Commission: "The Digital Transformation in Health and Care". The Hans Åhlfeldt Lecture, a plenary talk honoring the late Prof Åhlfeldt was given by Dr. Marie-Christine Jaulent, Research Director, INSERM Paris, France, discussing "Data, knowledge, and learning", and the closing keynote was given by Robin Farmanfarmaian –author of "The Patient as CEO: How Technology Empowers the Healthcare Consumer". In addition, the 2018 EFMI Plenary panel moderated by Prof John Mantas focused on EFMI's engagement in "Accreditation and Certification of Health Informatics programs in Europe".

Scientific Program

We received 550 submissions; full papers, short communication, posters, panels, workshops, and demonstrations. The final

program consisted of 190 Full papers, 31 Short Communications, 150 Posters, 11 Panels, 21 Workshops and 5 Demonstrations. Full papers are available in: Ugon, A., Karlsson, D., Klein, G.O., Moen, A., (eds) (2018) Building Continents of Knowledge in Oceans of Data: the future of Co-created eHealth. Studies in Health Technology and Informatics Vol 247 IOS Press. To give the reader an "image" of what was presented, we provided a word cloud of the authors' submissions.

Fig. 2 Participants at MIE 2018

Fig. 1 Keywords frequency distribution

MIE 2018 Participants

This MIE2018 had more than 700 delegates, coming from around the world, as shown in Figure 2.

MIE2018 Awards

- The Peter Reichertz Award was given to Johan van Soest;
- The Rolf Hansen Award was given to Brigitte Seroussi;
- The Mantas Award was given to Elske Ammenwerth;
- The EFMI Best Poster Award was given to Virginia Cid de la Paz Firest.

MIE2018 Special Events

Science Slam

At MIE2018, the science slam was organized under the leadership of Drs. Gabi A. Wildenbos and Anna Beukenhorst, MIE2017 Science Slam winners. The slogan for slam was "Grab them by the impact factor!", featuring a mix of science and comedy. Early career researchers got the stage for exactly 8 minutes to entertain delegates with medical informatics, and delegates gave the Slammers their votes to decide who would go home with a prize. The winner, Richard Williams, was featured in the BMJ Christmas issue as: Williams, R. (2018). A Christmas guide to clinical coding. BMJ, 363, http://doi.org/10.1136/bmj.k5209.

MIE2018 DataThon

"MIE2018 DataThon - Welcome to the Age of FHIR®" was offered as a collaboration of HL7 Europe, HL7 Sweden, EFMI, SFMI, and Vitalis2018. The participants took part in a tutorial and worked with a synthetic dataset and FHIR resources to explore potentials for a cross-border Patient Summary. The MIE 2018 DataThon offered total FHIR immersion, connecting health data resources in FHIR to ongoing projects, and was a successful opportunity to cater to the participants' interests and skills, and to grow standards competencies effectively.

Patient Leaders

The breakfast session "Spets Patienter – Patient leaders" was hosted as in collaboration with SWElife, where patient organization members met with MIE 2018 and Vitalis 2018 delegates to share insights, encourage participation and active involvement in further developing informatics services to support self-management, everyday living, and participation.

Match Making

Scandinavian's biggest matchmaking in health was organized by the Enterprise European network with Business region Gothenburg together with MIE 2018 and Vitalis. More than 150 participants were involved in different matchmaking meetings, and we think that this type of event can be important to meet others and strengthen the value of attending a conference.

IMIA Presence

The IMIA Board held its board meeting and several board members participated actively in the conference. Furthermore, it was an honor for MIE2018 and EFMI to facilitate for the Inaugural meeting of the "Academy", the International Academy of Health Science Informatics (IAHSI). The "Academy" was established by IMIA in 2017 to recognize pioneers in Medical Informatics and contributors to IMIA, and elected its founding members the same year as IMIA 50-year-anniversary. EFMI of all IMIA regions provided the largest contingent to the inaugural class of the "Academy".

Fig. 3 (left to right) Inge Madsen, John Mantas, Andrej Orel, Simon de Lusignan, Michael Shifrin, Alexander Hoerbst, Ragnar Nordberg, Christian Lovis, Anne Moen, Brigitte Seroussi, Alfred Winter, Silje Ljosland Bakke, Lăcrămioara Stoicu-Tivadar, Mira Hercigonja-Szekeres, Arriel Benis, Catherine Chronaki, Kaija Saranto, Philip Scott, Carlos Parra Calderon, Luise Pape-Hougaard, Zdenko Sonicki

STC2018 "Decision Support Systems and Education – Help and Support in Healthcare"

STC 2018 was held in Zagreb, Croatia on October 15-16 as the 2018 annual EFMI Special Topic Conference (STC). Main theme of the STC was: „Decision support system and education - help and support in healthcare". This was the theme which unified cooperation between the two EFMI Working Groups (WG) in professional and scientific organization of the STC: WG Education (EDU) and WG Information and Decision Support in Biomedicine and Health Care (IDeS). The Conference was an opportunity to meet researchers, data scientists, practitioners, decision makers, entrepreneurs from different domains of application of medical information technology to exchange their experiences specifically in areas of support for decision-making and education. It should be emphasized that a larger number of young scientists participated, who were able to present their work and to learn about the work of their colleagues in Europe and the world. The Co-chairs of Special Program Committee were professors John Mantas, Health Informatics Laboratory, National and Kapodistrian University of Athens, Athens, Greece, and WG EDU Chair, and Zdenko Sonicki, Department of Medical Statistics, Epidemiology and Medical Informatics, University of Zagreb, School of Medicine, Andrija Štampar School of Public Health, Zagreb, Croatia, and WG IDeS Chair. Professors Kaija Saranto, PhD, RN, FACMI, FAAN, FIAHSI full Professor in Health and Human Services Informatics (HHSI) at the University of Eastern Finland, Department of Health and Social Management, and Mark Ebell, family physician and Professor of Epidemiology and Biostatistics at the University of Georgia, US, were invited speakers. In their lectures, they brought particularly interesting contents in the fields of education and decision support. All accepted submissions were published: the 5-pages papers (52) in Conference Proceedings published by IOS Press [1] and all others in e-Book of Abstracts [2] published by Croatian Society for Medical Informatics (CroSMI).

Head of local organizers was Marijan Erceg, PhD, MD, lecturer at University of Applied Health Sciences, head of Department in Croatian Institute for Public Health and CroSMI president. Venue of STC 2018 was in the heart of Zagreb, the city where professor Andrija Štampar did his great work. Prof. Andrija Štampar (1888-1958) is founder of the School of Public Health in Zagreb, he is one of the leading persons in founding the World Health Organization (WHO) and he was chairman of the first WHO Assembly in 1948.

The comments of the participants have been very positive, and EFMI STC 2018 can be considered as an interesting scientific and well-organized meeting in the series of EFMI conferences.

[1] Mantas J, Sonicki Z, Crişan – Vida M, Fišter K, Hägglund M, Kolokathi A, Hercigonja-Szekeres M. Decision Support Systems and Education. Stud Health Technol Inform 2018;255.

[2] Ilakovac V, Somek M. Decision Support Systems and Education. Book of Abstracts; 2018. https://www.hdmi.hr/images/doc/stc2018/mali%20zbornik%20mi2018_efmi%20stc%202018.pdf (13 1 2018)."

This conference was a special event because it was the last conference as Board members of our dear friends and colleagues Anne Moen and Ragnar Nordberg.

Fig. 4 (left to right) Ragnar Nordberg, Christian Lovis, Anne Moen

Upcoming Congresses

MIE'2018: "Building Continents of knowledge in Oceans of Data" in Gothenburg, Sweden 24-26 April 2018.

STC'2018: "Decision support systems and Education – prerequisites for the improvement of health care quality" in Zagreb, Croatia October 16-17,

STC'2019: ICT for Health Sciences Research, in Hannover at the Peter L. Reichertz Institut, Germany, April 8-10

EFMI Working Groups

EFMI is actively engaged in specific topic activities through 14 Working Groups (WG). Current WG activities are listed for each WG at https://www.efmi.org/ under the tab Working Groups.

- EFMI WGs IdeS and EDU were supporting a successful conference EFMI STC 2018 in Zagreb, Croatia, https://www.efmistc2018.org/
- EFMI WG EDU organized ICIMTH 2018, Athens, Greece, http://www.icimth.com/ icimth2018
- EFMI WGs MIP, THI, Nursing Informatics, and HIME organize the EFMI STC 2019 Conference in Hanover, 7-9 April 2019, https://stc2019.plri.de/

The 78th EFMI Council

- endorsed the following new working group chairs, which have been elected previously:
- Kaija Saranto, EDU
- Philip Scott, EVAL
- Arriel Benis, HIIC
- Tom Kane, LIFOSS

- endorsed the renaming of WG NURSIE (Nursing Informatics in Europe) to NI (Nursing Informatics)

- closed the following WGs:
- MCRO/MBDS - Casemix, Resources Management, and Outcomes of Care. MCRO/MBDS had been founded 30 years ago as first EFMI working group. As this was a very important working group for EFMI, the Council appreciates its members' work and thanks the chairs for their commitment.
- NLU - Natural Language Understanding

The 14 EFMI active working groups are:
- EDU – Education
- EHR - Electronic Health Records
- EVAL - Assessment of Health Information Systems
- HIIC - Health Informatics for Interregional Cooperation
- HIME - Health Information Management Europe
- HOFMI - Human and Organizational Factors of Medical Informatics
- IDeS - Information and Decision Support in Biomedicine and Health Care
- LIFOSS - Libre/Free and Open Source Software
- NI - Nursing Informatics
- PCI - Primary Health Care Informatics
- PPD - Personal Portable Devices
- SSE - Security, Safety and Ethics
- MIP - Medical Image Processing
- THI - Translational Health Informatics

EFMI Communication and Dissemination

Books and Proceedings

All EFMI conferences are published in the IOS Press Studies in Health Technology and Informatics (HTI) series, which was started in 1990 in collaboration with EU Research Framework programs, to promote biomedical and health informatics research. The series contains more than 250 volumes of high-quality works from all over the world.

The HTI series is indexed by MEDLINE/PubMed; Web of Science: Conference Proceedings Citation Index - Science (CPCI-S) and Book Citation Index - Science (BK-CI-S); Google Scholar; Scopus; EMCare.

Social Networks

In the past 3 years, EFMI has constantly consolidated and re-enforced its presence on social networks, building on aggregation platforms that allow leveraging the activities of our different social network presence. A new entirely dynamic website is currently tested that will connect social networks feeds and communities' feeds in a unique entry point for the field.

EFMI AC2 – Accreditation and Certification Committee

The AC2 Accreditation and Certification initiative was launched by EFMI to explore, develop, and implement the Accreditation and Certification in biomedical and health informatics education in Europe. The membership of the AC2 Committee includes:

John Mantas (as Chair), Catherine Chronaki, Arie Hasman, Anne Moen, Inge Madsen, and Rebecca Randell.

The AC2 Committee was funded by EFMI in order to develop an updated database of educational programs across Europe since study programs in the vast field of Biomedical and Health Informatics, Medical Informatics and Health Technology is continuously growing.

At the present time, the updated database includes a variety of specializations at European Universities, Colleges, and Institutions. A detailed recording of the educational programs in the specializations of Health Informatics, Medical Informatics, Biomedical Informatics, Bioinformatics, Nursing Informatics, Dental Informatics, Health Technology, Healthcare Technology, Medical Technology, Biomedical Technology, Dental Technology, Health Engineering, Healthcare Technology, Medical Engineering, and Biomedical Engineering are included in the database. Furthermore, the database comprises additional educational programs in specific areas such as Nanomedicine, Medical Electronics, Clinical Informatics, Clinical Technology, Clinical Engineering, Computational Biology, Life Science Informatics, Clinical Data Management, Big Data in Healthcare, Data Mining in Healthcare and Medicine, Digital Health Systems, E-Health, Telemedicine, Healthcare Analytics, Wireless Networks in Healthcare, and Internet of Things in Healthcare.

The study includes 1,800 Universities, which were accessed to locate approximately 1,000 academic programs in the domains related to Biomedical and Health Informatics, including Bioinformatics and Biomedical Engineering. More than 320 were undergraduate, 670 postgraduate, and 240 PhD and postdoctoral programs. Even though a majority of the study programs were in Biomedical Engineering and Bioinformatics, a significant number of programs belongs in the Medical Engineering, Medical Informatics, Health and Medical Technology specialties. This research is an on-going project and the final compilation results will be presented within 2019.

In more detail, specific information was collected for each educational program. All these elements are included in the

educational database. The information that is being collected for each study program includes: university/ies, department/faculty, study program name, academic level (e.g. undergraduate / postgraduate / doctoral / postdoctoral Studies), type of education (full time – part time – combined), mode (on campus – e-learning / distance learning), specializations, director of the education program, details about contact person of the program, curriculum, time table, learning outcomes, competences and program's language (English – local – bilingual), ECTS credits, and academic staff details.

All these data are necessary to explore and to understand the current educational status of European countries. The detailed records of the related educational programs will support the short- and long-term needs in order to develop and implement the Accreditation and the Certification initiative in Europe.

The Committee organized sessions to promote and provide awareness of the Accreditation and the Certification initiative to the wider biomedical and health informatics community in Europe in Gothenburg at MIE2018 and in Zagreb at EFMI STC 2018. Further informational events and presentations are scheduled for EFMI STC 2019 in Hannover and during Medinfo 2019 in Lyon, France.

EFMI Participation in European H2020 Projects

The CrowdHEALTH Project – an EU Horizon 2020 project (2017 – 2020)

The CrowdHEALTH project, a Horizon 2020 project with EFMI as a partner, intends to integrate high volumes of health-related heterogeneous data from multiple sources with the aim of supporting policy making decisions. CrowdHEALTH is delivering a secure ICT platform that seamlessly integrates Big Data technologies, providing Data as a Service (DaaS) and a Data Analysis Toolkit. The transition from patient health records towards the Holistic Health Records (HHRs) and Social HHR is also proposed The European Federation of Medical Informatics (EFMI) supports the development of an effective Communication and Colla-

boration Plan identifying the messages and the tools and channels in disseminating the project and its outcomes to the target audience based on the McGuire approach. The main objective of the strategy envisioned is to engage and inform the target audience about the CrowdHEALTH project and its outcomes. It is important that a large number of audiences are addressed through appropriate means in order to be engaged with the progress of the project and raise their awareness about the project and its deliverable outcomes. Each applied tool has different strengths and weaknesses in reaching audiences and therefore by using more than one, the tools complement one another to produce a strong dissemination plan. Social media can play a significant role in all phases of the research lifecycle, from identifying research opportunities to disseminating findings. Scientific journals, conferences, and edited books remain the core traditional means of disseminating research, but social media has become an important channel for disseminating research.

In CrowdHEALTH project, a cyclical process was developed. In the cyclical models, Individual components are linked and the process is depicted as interactive and ongoing. This is the case with Graham et al.'s knowledge to action model where aspects of the research, context, knowledge transfer, intervention, and evaluation lead to the identification of new opportunities. Researchers need to adopt a theoretically-informed approach to their research dissemination.

The FAIR4Health Project – an EU Funded Project Horizon 2020 (2019- 2021)

The overall objective of FAIR4Health is to facilitate and encourage the European Union Health Research community to FAIRify, share, and reuse their datasets derived from publicly funded research initiatives through the demonstration of the potential impact that such a strategy will have on health outcomes and health and social care research. FAIR4Health vision for year 2020 is a vast, open community of EU health research institutions fully engaged to the Horizon 2020 ORD Mandate of enhancing their knowledge-based economy and their research excellence due to the application of the

FAIR data guiding principles. High quality health research and routine care data will be shared and reused in a secure, controlled, and legally compliant environment in order to accelerate knowledge discovery while reducing the bias and enhancing the strength and quality of the scientific evidence raised by the FAIR4Health community members. Furthermore, a community of data scientists from both public research institutions and private companies will be attracted to develop advanced analytical solutions able to communicate with the FAIR4Health platform to provide data-driven innovative services that will enable a seamlessly application of the new evidence raised into the clinical practice.

FAIR4Health has four specific objectives and will aim to deliver an effective outreach strategy at EU level, a FAIR data certification roadmap, and an intuitive user-centered FAIR4Health platform. Fair4Health will demonstrate the potential impact that the implementation of such FAIR data strategy will have in terms of health outcomes and health research.

This project is well represented in eleven countries by seventeen partners. The Kickoff meeting was in January 2019.

EFMI is responsible for the dissemination and promotion activities. EFMI will organize workshops and tutorials to raise awareness and perform demonstrations of the FAIR4Health platform, in parallel to the International Digital Curation Conference (IDCC) organized by the University of Edinburgh and EFMI associated events at EU level (such as MIE and STC), and events supported by EFMI institutional and associated members at national level. The results will contribute to deliverable. FAIRification workshops and tutorials series.

The first task is participating in performing an analysis and identification of potential technical barriers for the generation of FAIR datasets, including a review of current relevant stakeholders and updated bibliography.

EFMI together with five partners is involved in MOOC-like materials creation. Production of audiovisual content to explain the use and uptake of FAIR4Health platform and agents for research data sharing and re-use is planned.

People
EFMI Honorary Fellow

No new Honorary Fellow in 2018

Members of the EFMI Executive Board, 2018
President:

until October 16, 2018
Christian Lovis
University Hospitals of Geneva
and University of Geneva
Division of Medical Information Sciences
Geneva, Switzerland

from October 17, 2018
Lacramioara Stoicu-Tivadar
University Politehnica Timisoara
Department of Automation and Applied Informatics
Timisoara, Romania

Vice President:

until October 16, 2018
Lacramioara Stoicu-Tivadar
University Politehnica Timisoara
Department of Automation and Applied Informatics
Timisoara, Romania

From October 17, 2018
Catherine Chronaki
HL7 International
Brussels, Belgium

Past President:

until October 16, 2018
Anne Moen
University of Oslo
Institute of Health and Society
Oslo, Norway

from October 17, 2018
Christian Lovis
University Hospitals of Geneva
and University of Geneva
Division of Medical Information Sciences
Geneva, Switzerland

Secretary:

Alfred Winter
Leipzig University
Institute for Medical Informatics, Statistics
and Epidemiology
Leipzig, Germany

Treasurer:

until October 16, 2018
Ragnar Nordberg
Nordangsgatan 18
431 69 Molndal
Sweden

from October 17, 2018
Andrej Orel
Marand d.o.o.
Ljubljana, Slovenia

Officer for Institutional Members:

until October 16, 2018
Catherine Chronaki
HL7 International
Brussels, Belgium

from October 17, 2018
Louise Pape-Haugaard
Aalborg University
Department of Health Science and Technology
Aalborg, Denmark

Press and Information Officer:

Alexander Hörbst
UMIT - Private University for Health Sciences, Medical
Informatics and Technology
Research Division for eHealth and Telemedicine
Hall in Tirol, Austria

Publication Officer:

Simon de Luisgnan
University of Surrey
Department of Health Care Management and Policy
Surrey, UK

Executive Officer:

Mira Hercigonja-Szekeres
Department of Informatics in Health
University of Applied Health Sciences
Zagreb, Croatia
and Hrvatsko Zagorje Polytechnic Krapina
Krapina, Croatia

Assistant to the EFMI Board

Patrick Weber
Nice Computing
Le Mont-sur-Lausanne, Switzerland