EFMI
European Federation for Medical Informatics Association

IMIA VP EFMI Region Christian Lovis, 2018 – 2020

President Summary
The year 2020 was challenging for all organizations. EFMI demonstrated a strong will to overcome the challenges. We continued to grow, built a new community, keeping close the early career researchers with the yEFMI initiative, with a new officer in the Board aggregating the specific areas for this position. EFMI national members, the Institutional members and WG chairs will connect with their young career professionals and guide them to yEFMI initiative. This ensures EFMI to be a forum open to all individuals passionate for digital health. Even with last moment decisions, we covered the conferences planned for this year, publishing the papers for MIE2020, presenting 9 virtual meetings corresponding to non-published events, and organizing the STC2020 conference as a virtual event. EFMI is partner in a new EU financed project and signed agreements with important organizations in the domain extending its cooperation capacities. Lacramioara Stoicu-Tivadar, EFMI President (oct. 2018 - oct. 2020)

Introduction
The European Federation for Medical Informatics (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:

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

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.

National Members
All representative societies in countries within the European Region of the WHO are entitled to apply for EFMI membership.

Subject to the decision of the Council on 24.11.2020, 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, Netherlands, Norway, Portugal, Romania, Russia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, and United Kingdom.

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.

Professional Conference Organisation (PCO) Strategy
For many years, EFMI has pursued the idea of outsourcing the organizational tasks of planning and conducting its MIE and STC conferences more consistently to professional conference organizers (PCOs). The following objectives are pursued:

- The local organizers of the conferences, e.g. an EFMI member organisation, should be relieved of organisational and financial risks for EFMI should also be able to concentrate more on the scientific content. This should make it more attractive to host an STC or MIE conference.
- The EFMI conferences represent a large part of EFMI’s revenues. A professional conference organisation should increase the revenues of the conferences and achieve a calculable profit for EFMI. The financial risks for EFMI should also be minimized and calculable with the help of professional controlling.
- The honorary EFMI Board is to be relieved of organizational and controlling tasks in order to be able to devote itself to its core competence, the scientific development of EFMI and its conferences.

Three years ago, offers from four PCOs were obtained. Negotiations with the French company MCO were intensified and a con-
tract has just been signed. Initially for the next three years, MCO will be responsible for the organisation and financial management of the EFMI conferences. The local organizers are responsible for the scientific quality of the STC and MIE.

The contract was signed in December 2019 by our President Lacramioara Stoi-
cu-Tivadar.

**MIE2020**

The MIE2020 conference was officially canceled on March 13th, 2020 by a formal written decision of the general direction of Geneva State Departement of Health following the application of the emergency situation provoked by the SARS-CoV-2 pandemic taken by the State Councilors of Geneva State on March 11th, 2020, enforcing the decision taken by the Swiss Federal Council on February 28th, 2020 (RS 818.101.24).

The board and the council were informed on March 12th by email immediately after the information received orally. The board acknowledged the cancellation of MIE2020, together with the cancellation of the 2020 e-Health Week in the board meeting of March 21st, 2020.

All registered participants have been informed via Online-Registry system on March 13th, 2020, and by the PCO, MCO, and the cancellation was made publicly visible on the website. At that point, there were already 486 delegates registered from 42 countries. Table 1 shows the Top 15 countries with regards to number of delegates registered.

The Open Access Proceeding can be accessed through https://www.iospress.nl/book/digital-personalized-health-and-medicine/

**Table 1** Top 15 countries with regards to delegates registered for MIE 2020.

<table>
<thead>
<tr>
<th>Country</th>
<th>Number</th>
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<tbody>
<tr>
<td>Switzerland</td>
<td>77</td>
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<tr>
<td>Germany</td>
<td>73</td>
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<tr>
<td>France</td>
<td>38</td>
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<tr>
<td>United Kingdom</td>
<td>38</td>
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<tr>
<td>USA</td>
<td>26</td>
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<tr>
<td>The Netherlands</td>
<td>24</td>
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<tr>
<td>Norway</td>
<td>19</td>
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<tr>
<td>Spain</td>
<td>15</td>
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<td>Denmark</td>
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<tr>
<td>Japan</td>
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<tr>
<td>Canada</td>
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<tr>
<td>Finland</td>
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<tr>
<td>Italy</td>
<td>13</td>
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<tr>
<td>Sweden</td>
<td>9</td>
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<tr>
<td>Australia</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>397</strong></td>
</tr>
</tbody>
</table>

**STC2020**

STC2020 - Citizen centered digital and integrated health and social services - Citizens as service users and data producers

Scientific organisation of STC 2020 had been led by Alpo Varri (SPC Chair) and Kristiina Häyrynen (SPC Co-Chair) on behalf of the Finnish Social and Health Informatics Association. They have been supported by SPC members Maria Hägglund, Philip Scott, Louise Pape-Hauggaard, Parisis Gallos, Jaime Delgado, Kaija Saranto, Ulla-Mari Kinnunen, and Laura-Maria Peltonen. The conference will be online and will take place from November 26th to 27th, 2020. Keynote presentations will be given by Bernd Blobel, Jean-Pierre Hubaux, and Vesa Jormanainen. MCO has supported the practical organisation of the conference.

**ICIMTH 2020 - First EFMI Virtual Conference**

Due to the pandemic the planned 18th annual conference ICIMTH 2020 (www.icimth.com) was implemented as a Virtual Conference from 5-7 July 2020. Despite that, it attracted more participants than usual, and it is considered as a highly successful event. The proceedings titled “The importance of Health Informatics in Public during a Pandemic”, Eds. J. Mantas, et.al, published by IOS Press, emphasizes the fact that a significant percentage of submitted papers were addressing the current epidemiological situation spanning from US and South America through Europe, Asia, Oceania and Africa, as it was being handled by the Informatics experts. Keynote contributions were made by prominent colleagues Riccardo Bellazzi, Reinhold Haux, Christian Lovis, George Demiris, Helen Betts, Graham Wright, and Theo Arvanitis.

**MIE2021**

The forthcoming major EFMI event, the MIE 2021 (www.mie2021.org) was planned to be held in Athens, Greece on 29-31 May 2021. But due to the pandemic, this will be a Virtual Conference. The SPC is chaired by John Mantas and co-chaired by Lacramioara Stoi-
cu-Tivadar. The theme of the Conference is “Public Health and Informatics”. It is now open for submissions. The planned closing date for full papers is January 15, 2021.

**Intitutional Members**

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. We have had different strategies to engage new institutional members and to raise visibility for the current institutional members. We aim to strengthen cooperation among national societies, working groups and institutional members through transparency.

There is no doubt that the current COVID-19 pandemic has interfered with the normal engagement. Organizations and institutions have been overwhelmed with new tasks, assignments and challenges to solve. Recruiting new institutional members has been extra challenging this year and calls for new digital strategies to engage new institutional members. This leads to a big question: How can we make it attractive for academia, industry and NGOs to join as institutional members, when we do not have the
possibility to meet in person, to learn from each other’s research or projects or see exhibitions at our EFMI conferences?

There is not a simple answer to this question, but one thing is for sure:
• We all need to adapt to this new era by establishing networks across communities despite the fact that we have to do this virtually;
• We all need to support and participate in the digital conferences;
• We all need to co-create and co-design new digital opportunities for having and establishing networks – networks that inspire, attract and motivate our institutional members.

Organisation of the Board & Council Members as Institutional Members

It is worth noting that, despite encouragement to both Council and Board to engage their organization to become IM, there has only been a few new IM during the year. Also we have elected a new Institutional Member Officer in the Board: Lars Lindsköld a Swede working on AI Innovations in Sweden. Welcome.

IM representatives in the Council are:
• Representing academia and NON-profit organizations: Christophe Gaudet-Blavignac;
• Representing industry: Jacob Hofdijk.

Both gentlemen were elected during an online meeting late June. For 2020 we strive for a new approach in recruiting IM. The approach is to create value, based on the core EFMI values represented by the scientific work and the network of researchers, EFMI conference attendees, members of Working groups and other friends of EFMI. We are looking forward elaborating more on this work in 2020.

EFMI Working Groups

yEFMI – Young EFMI

A new working group has been instantiated, the yEFMI, led Ivana Ognjanović PhD, Associate Professor at the University of Donja Gorica, Montenegro. The main objectives of this working group are to
• support young professionals and leaders in the field of medical and health informatics (MI/HI), addressing specific issues of education, research, and professional development;
• attract young MI/HI professionals to be actively involved in EFMI working groups;
• exchange of experience in high quality research and promote potentials for gaining financial support for innovations;
• promote exchange of standards and best practices, making balance between different regions and countries from the perspective of the potentials for education, research and innovation;
• disseminate results and experiences across EFMI members.

It started in 2020 at organizing a successful workshop during the ICIMTH 2020 virtual conference.

Working Activities

EFMI activities are organized across topic activities reflected in its 15 WGs. During 2020, EFMI WGs further elaborated and executed on their business plan. At the same times, several proposals for new working groups have been considered to meet the needs of the medical informatics community at a time when we witness the rapid digitization of the health and social sector.

Some selected activities are described:
• The EDU WG on Education has been collaborating across working groups to improve training in biomedical health informatics. In the continuing cooperation of EFMI with the European Federation for Emergency Medicine (EUSEM), joint educational activities continued in 2020, to address the needs of the members and to inform the roadmap of joint educational activities to support the digitization of emergency departments. the 2nd educational webinar on “Artificial Intelligence and Big Data to support Management of Emergency Departments Confirmation?” was organized. The EFMI HIIC WG has also been active in the EUSEM-EFMI cooperation contributing towards a shared dictionary of terms for the disciplines of medical informatics and emergency medicine. The resulting work is available in HeTop platform. Although MIE2020 was cancelled, the EFMI-EUSEM panel submitted entitled “Advancing the digital transformation of European emergency departments” was organized as a webinar in July. The recordings are available in the EUSEM Academy site. A third webinar was organized in cooperation with EUSEM and ECHAlliance in November 2020 on the topic of “Interprofessional Education for Capacity Building in Digital Health”;
• In the EFMI STC2020 “Integrated Citizen centered digital health and social care – Citizens as data producers and service co-creators” organized online with support from several EFMI WGs, the paper “Interdisciplinary Webinars for Emergency Medicine and Biomedical Informatics - Health Informatics” presents key messages from the EFMI-EUSEM educational seminars;
• Several EFMI WGs are engaged in the FAIR4Health project led by Carlos Parra Calderon cochair of the THI WG. FAIR4Health was funded by the European Commission to support the development of guidelines for a FAIR data policy implementation in Health research (www.FAIR4Health.eu). Building on these activities, EFMI is engaged in the European Open Science Cloud Association as observer.
• With significant support from SFMI, the Swedish national member of EFMI and participation from several working groups, we had the 2nd EU-CHINA health summit, with the special theme “Building a healthier global community with AI and MI3 (Medical Innovation, Medical Imaging, and Medical Technology Transfer).

The 2nd EU-China summit was dedicated to Ragnar Nordberg who passed away in the beginning of October having served on the EFMI Board as a treasurer. The summit offered 3 tutorials, 2 preconference workshops, 7 Keynotes, 33 long presentations, 17 ePosters. 3 student posters awards were bestowed. The material of the summit will be soon available online in the EUSEM digital academy site and EFMI.org. Publication of the abstract book is under discussion.
EFMI Communication and Dissemination

The EFMI Website

The website is the asset for EFMI’s presence on internet media. The website is using Web 2.0 technologies in order to cover all the needs on information and collaboration between the stakeholders of medical informatics in Europe. The front page of the website works like a timeline giving up-to-date information to the visitors. In addition, the website is offering a direct access to all information regarding EFMI (Members, History, Working Groups etc.) and EFMI’s actions (Accreditation and Certification, Conferences and Meetings, Research Projects), as well as, a link to EFMI’s social media accounts.

On the website, every person who is interested in medical informatics can create an account and gain access on specific content and to publish his/her ideas or opinions about a subject. The idea is to build an active on-line community for medical informatics in Europe where scientists will exchange knowledge, trends, discuss about challenges, and forming the future of medical informatics. All the content will be reviewed by the website content editors in order to keep a high quality content on EFMI’s new website. The content of the new website can easily published to the social media in order to gain more visibility and “reads” to achieve any dissemination requirements.

Social Networks

At the same time EFMI re-enforces its presence on social networks, having an active Twitter, Facebook, LinkedIn and Instagram accounts. Social networks are valuable tools for networking, and stakeholders’ connection and collaboration. Currently EFMI’s account on Twitter (www.twitter.com/efmi) has more than 900 followers.

EFMI’s Page on Facebook (www.facebook.com/EFMIEuropeanFederationMedicalInformatics/) has over 1000 followers who are having access and get informed about the EFMI news and actions.

LinkedIn account (https://www.linkedin.com/company/efmi.org) has 232 connections from all over the world.

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 270 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 (BKCI-S); Google Scholar; Scopus; EMCare.

EFMI AC2 — Accreditation and Certification Committee

A great variety of recent literature describes curricula in Biomedical and Health Informatics (BMHI), Medical Informatics, Medical Engineering, and Biomedical Engineering at European Universities, which are offered at all academic levels. For this reason, EFMI established the Accreditation and Certification (AC2) initiative to find and present all necessary elements in an appropriate way to implement the Accreditation and Certification process in education in biomedical and health informatics in Europe. The AC2 Committee members are: John Mantas (as Chair), Catherine Chronaki, Arie Hasman, Anne Moen, Inge Madsen, and Rebecca Randell.

Firstly, the AC2 Committee decided to map the educational status of BMHI in Europe by creating a database of educational programs across Europe since study programs in the entire spectrum of the field of Biomedical and Health Informatics, Medical Informatics and Health Technology is continuously growing during the recent years. This work was focused on European Universities, Colleges, and Institutions. The official website of each university or institution was carefully checked to locate educational programs in: Biomedical Informatics, Health Informatics, Medical Informatics, Medical Technology, Bioinformatics, Nursing Informatics, etc.

At the present time, the educational database includes a variety of specializations at undergraduate and postgraduate level. In particular, 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 detailed registration of the European educational programs will help to the qualitative comparison of the study programs for accreditation purposes according to international standards.

In more detail, specific information was collected for each educational program. The information that is being collected for each study program includes: university, 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, timetable, learning outcomes, competences and program’s language (English, local, bilingual), ECTS credits, and academic staff details.

This study has covered 30 EFMI Countries-Members. The study includes 1,900 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 at all academic levels.

The corresponding data of each study program was sent to the EFMI Representative Members to validate the existing information of each educational program in...
their corresponding countries. The verified data are uploaded to the website and they are published (http://efmi-ac2.bmhi-edu.org/). Until receiving the feedback from all the countries, we should consider this information as a draft.

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 and worldwide. More specific, members of the Committee participated in Hannover at EFMI STC 2019 and in Lyon (France) at Medinfo 2019 to present the current progress of the AC2 Accreditation and the Certification initiative. Presentations were made at ICIMTH 2020 and are planned at MIE 2021.

In conclusion, all these data are necessary to explore and to understand the present 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, and for EFMI participation in European Erasmus+ and research projects.

One of the recent of these activities was the focus on establishing new programs at Montenegro through Erasmus+ and cooperation of EFMI countries. For that the EU project PHELIM was implemented and a new MS program was established in ‘Health Information Management’. A supportive outcome of the project was the publication of a book titled “Health Information Management – Empowering Public Health” by J. Mantas et.al., IOS Press, 2020.

**EFMI in EU H2020 Projects**

**The CrowdHEALTH Project – an EU Funded Project Horizon 2020 (2017 – 2020)**

The CrowdHEALTH is a three year (2017-2020) European Commission funded project under the Horizon framework that supports the transition from patient health records towards the Holistic Health Records (HHRs) and Social HHR. Furthermore, CrowdHEALTH aims at integrating high volumes of health-related data collected from various sources applying health analytics tools to support policy making decisions. The European Federation of Medical Informatics (EFMI) as partner within the project supports the development of an effective Communication and Collaboration Plan identifying the messages and the tools and channels in disseminating the project and its outcomes to the target audience. The main objective of the envisioned strategy is to engage and inform the target audience about the CrowdHEALTH project and its outcomes. The Dissemination strategy is created through a cyclic process consisting of five components linked together.

CrowdHEALTH has been presented at Medinfo 2019 in Lyon, MIE 2018 in Gothenburg, and ICIMTH 2019 in Athens. The final report was accepted by the EU in spring 2020. This paper summarizes the project (https://www.ejmanager.com/mnstemps/6/6-1579458477.pdf?1=1605104745).


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

FAIR4Health project will finish November 2021. The FAIR Data Principles were first published in 2016. FAIR seeks the reuse of data and other digital research output and objects (algorithms, tools and workflows that led to that data) making them Findable, Accessible, Interoperable, and Reusable. The principles consider applications and computational agents as stakeholders with the capacity to find, access, interoperate and reuse data with none or minimal human intervention and recognize the importance of automated process to do that because humans increasingly rely on computational support to deal with intensive data processes.

**Findable:** data are assigned a globally unique and permanent identifier; data are described with rich metadata; metadata clearly and explicitly include the identifier of data they describe; data are registered or indexed in a searchable resource.

**Accessible:** data are retrievable by their identifier using a standardized communications protocol; the protocol is open, free, and universally implementable; the protocol allows for an authentication and authorization procedure; metadata are accessible even when the data are no longer available.

**Interoperable:** data use a formal, accessible, shared, and broadly applicable language for knowledge representation; data use vocabularies that follow FAIR principles; data include qualified references to other data.

**Reusable:** data are richly described with a plurality of accurate and relevant attributes; data are released with a clear and accessible data usage license; data are associated with detailed provenance; data meet domain-relevant community standards.
EFMI is responsible for dissemination and promotion activities. EFMI organizes with their members, workshops and tutorials to raise awareness and perform demonstrations of the FAIR4Health platform, associated events at the EU level (such as MIE and STC), and events supported by EFMI institutional and associated members at a national level. The results will contribute to deliverables. FAIRification workshops and tutorials series.
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.

**EFMI Honorary Fellows**
No new Honorary Fellows in 2020

**Members of the EFMI Executive Board**

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HL7 International
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