

TRIENNIAL REPORT



International Ergonomics Association

2015-2018

IEA Triennial Report 2015-2018

Table of Contents

1. PRESIDENT'S ADDRESS	4
2. ABOUT THE DISCIPLINE OF ERGONOMICS	5
2.1. <i>Definition of ergonomics</i>	5
2.2. <i>Domains of specialisation</i>	5
3. ABOUT IEA	6
3.1. <i>Birth and development of IEA</i>	6
3.2. <i>IEA Governance</i>	7
3.3. <i>IEA Executive Committee</i>	8
3.4. <i>IEA Standing Committees</i>	9
4. IEA MEMBERSHIP	10
4.1. <i>IEA Federated Societies</i>	10
4.2. <i>IEA Affiliated Societies</i>	11
4.3. <i>IEA Networks</i>	11
4.4. <i>IEA Sustaining Members</i>	11
4.4.1. <i>Organizational Sustaining Members</i>	12
4.4.2. <i>Individual Sustaining Members</i>	13
4.4.3. <i>Technical Committees</i>	14
5.0. EXTERNAL ORGANIZATIONS AND LIAISONS	14
5.1. <i>Non-governmental Organizations (NGO): UN, ILO, and WHO</i>	15
5.2. <i>National and international organizations for standardization and guidelines</i>	16
5.3. <i>Professional societies and scientific committees</i>	17
5.4. <i>Academia and IEA relationships</i>	17
5.5. <i>Community and IEA Network relationships promoting HFE practices</i>	17
6. IEA STRATEGIC PLAN 2015-2018	17
6.1. <i>IEA Mission Statement</i>	17
6.2. <i>IEA Goals</i>	17
6.2.1. <i>IEA Sub-goals</i>	18
6.3. <i>IEA Strategic Policies</i>	21
7. IEA ACTIVITIES AND ACHIEVEMENTS – 2015-2018	24
7.1. <i>Overview</i>	24
7.2. <i>Financial Report</i>	24
7.2.1. <i>Overview of accounts</i>	24
7.2.2. <i>Assets, Liabilities and Equity</i>	25
7.2.3. <i>Revenue and Expenditures</i>	27
7.2.4. <i>Concluding Statements</i>	30
7.3. <i>Infrastructure</i>	30
7.3.1. <i>Website</i>	30
7.3.1.1. Overview	30
7.3.1.2. Short-term Plan (2015-2018)	31
7.3.1.3. Strategic Design	32
7.3.1.4. Activities and Outcomes	32
7.3.1.5. Summary	33
7.3.2. <i>Registration</i>	33
7.3.3. <i>Accounting System and Related Matters</i>	33
7.3.4. <i>Permanent Secretariat</i>	34
7.3.5. <i>The IEA Press</i>	34
7.4. <i>Awards Standing Committee</i>	35
7.4.1. <i>Triennial Awards</i>	35
7.4.2. <i>Annual Awards</i>	36
7.5. <i>Communications and Public Relations Standing Committee</i>	38
7.5.1. <i>Long-term Plan</i>	38
7.5.2. <i>Short-term Plan (2015-2018)</i>	38
7.5.3. <i>Strategic Design</i>	38

7.5.4. Activities and Outcomes.....	38
7.5.5. Summary and Recommendations	42
7.6. <i>Development and Promotion Standing Committee</i>	42
7.8. <i>International Development Standing Committee</i>	42
7.8.1. Long-Term Plan	42
7.8.2. Short-Term Plan	43
7.8.3. Strategic Design	43
7.8.4. Activities and Outcomes:	46
7.8.5. Conclusions and recommendations	49
7.8. <i>Professional Standards and Education Standing Committee</i>	50
7.8.1. History	50
7.8.1. Short-term Plan (2015-2018)	50
7.8.2. Strategic Design	51
7.8.3. Activities and Outcomes.....	51
7.8.4. Summary and Recommendations	52
7.9. <i>Science, Technology, and Practice Standing Committee (STP)</i>	53
7.9.1. Long-term plan	53
7.9.2. Short-term plan (2015-2018)	53
7.9.3. Strategic Design	54
7.9.4. Activities and Outcomes.....	54
7.9.5. Summary and Recommendations	56
7.10. <i>Future of Human Factors and Ergonomics Ad Hoc Committee (FofHFE)</i>	56
7.10.1. Long-term Plan	56
7.10.2. Short-term Plan (2015-2018)	57
7.10.3. Strategic Plan.....	57
7.10.4. Activities and Outcomes	57
7.10.5. Summary and Recommendations	59
7.11. <i>Future of Work Ad Hoc Committee (FoW)</i>	60
7.11.1. Long-term Plan	60
7.11.2. Short-term Plan (2017-2018)	61
7.11.3. Strategic Design.....	61
7.11.4. Activities and Outcomes	61
7.11.5. Summary and Recommendations	62
7.12. <i>Historian</i>	63
7.12.1. The IEA Archives.....	63
7.12.2. New IEA History Book.....	63
7.13. <i>IEA2018: Creativity in Practice</i>	64
7.13.1. Promotion in IEA Conferences and Other International Events	64
7.13.2. Collaboration with the IEA Technical Committees (TCs)	65
7.13.3. Plenary Sessions: Keynote Speakers and Discussants	67
7.13.4. Program and Special Content.....	68
7.13.5. AWARDS Sessions.....	70
7.13.6. Publication Policy	70
7.13.7. Registration Policy and Update on Attendance	71
7.13.8. Sponsorships	73
7.13.9. Social Media (last update March).....	73
7. RECOMMENDATIONS FOR THE FUTURE	73
9. IEA REPRESENTATION AND OUTREACH TO MEMBERS AND EXTERNAL STAKEHOLDERS.....	77
10. APPENDICES	84
10.1. <i>IEA Executive Committee</i>	84
11.2. <i>Past Officers</i>	85
11.3. <i>Past IEA Triennial Conferences</i>	86
11.4. <i>Past Meetings of IEA Council</i>	87

1. President's Address

Yushi Fujita, IEA President

In my candidate statement for the election of the 19th President of the IEA, I identified seven priorities that I thought were important for an incoming Executive Committee (EC). Four of these were internal to the IEA: (1) promoting active interactions among members; (2) making the IEA bigger by welcoming new members; (3) regaining an impetus of scientific activities, which are an essential foundation of the IEA; and (4) improving the IEA infrastructure. Three other priorities were external to the IEA: (1) reinforcing relationships with long-term partners (e.g., UN, WHO, ILO, ISO, ICOH, IOHA); (2) establishing relationships with new partners especially those which are industry-oriented; and (3) promoting projects for external stakeholders in industrially developing countries. I also believed that the work done by Jan Dul and other members of the Future of Ergonomics committee ("A strategy for Human Factors/Ergonomics: Developing the discipline and profession," Jan Dul and others, 2012) would be a foundational piece to these priorities.



During this Executive term, we developed seven policies to reflect these considerations as well as the insight of EC members gained through interactions with member societies. These seven policies are as follows:

1. Engage stakeholders
2. Collaborate with IEA networks
3. Reinforce IEA networks
4. Contribute to science and technology
5. Identify the roles of IEA in promoting certification and related matters
6. Reinforce relationship with external organizations (existing and new)
7. Reinforce the infrastructure of IEA

Each EC member developed and implemented a plan consistent with these seven policies. I am grateful for EC members who made every effort to ensure that these policies would enable the IEA to open a new avenue for serving its members and other stakeholders. During this Executive we identified several cases in industrially developing countries (IDCs) that showed a new way of promoting systemic human factors and ergonomics (HFE) projects engaging a wide range of stakeholders. This demonstrated that the IEA can facilitate a multiple-win situation in which many engaged stakeholders can benefit. It is recommended that this new approach be explored further in the coming years. This will allow HFE to be more widely recognized in the global community. An ongoing effort by the Future of Work Task Force for identifying the roles of HFE in changing work environments is an ideal platform for applying this new approach. It is also worthwhile mentioning that the infrastructure of IEA has been improved significantly. In particular, a new registration in Geneva has enabled the IEA to minimize the sacrifice of individual officers. It is an important step forward for the IEA to become a full-fledged international organization. It was also a monumental achievement for IEA to establish a permanent secretariat. Together with a new financial system, we are looking forward to a more stable administration. Other achievements are summarized in subsequent chapters.

Serving as the 19th President of the IEA has been a unique and rewarding experience in three ways. Firstly, I was lucky to have such great members in the EC. I am grateful for Kathleen Mosier (VP Secretary General), Jose Orlando Gomes (VP Treasurer), Eric Min-Yang Wang (Past President and

Awards Committee), Michelle Robertson (Communications and Public Relations Committee), Andrew Todd (International Development Committee), Frederic Tey (Professional Standards and Education Committee), Thomas Alexander (Science, Technology and Practice Committee), Margaret Graf (Swiss Resident Director), Sara Albolino (IEA2018), Riccardo Tartaglia (IEA2018), Ernst Koningsveld (Historian), Takashi Kawai (ICT), Sarah Sharples (Future of HFE Task Force), Juan Carlos Hiba (Future of Work Task Force), and Lynn Strother (Administrator). All of them worked professionally and helped each other as team members. I was also grateful for Christina Jonson and Christopher Schlick. Unfortunately, Christina Jonson had to step down in the middle of her service as the chair of Development and Promotion Committee. We were also sorry for the loss of Christopher Schlick who passed away in the middle of serving his term as the chair of Science, Technology and Practice Committee. I mention their names as a tribute to their devotion to IEA. Secondly, it was such a wonderful experience to meet with individuals of our member societies. In particular, I enjoyed communicating with young researchers and students who were full of hope for the future. They are a treasure in our community. We must ensure that they are a top priority and we must think over how we should train them. Finally, our new policies brought me to meet with a lot of stakeholders in different communities in many countries. It was an exciting experience. The roles that future IEA Presidents will play must change over time. I was lucky to have experienced this important transitional period.

I hope that in the future we will be regarded as challengers who endeavored to open doors to new opportunities for IEA and for HFE.

2. About the discipline of ergonomics

2.1. Definition of ergonomics

Ergonomics (or human factors) is the scientific discipline concerned with the understanding of the interactions among humans and other elements of a system, and the profession that applies theoretical principles, data and methods to design in order to optimise human wellbeing and overall system performance. The phrases and acronyms *Human Factors and Ergonomics (HFE)* and *Ergonomics and Human Factors (EHF)* are used interchangeably in this report to designate the breadth and diversity of the discipline.

Practitioners of ergonomics and human factors contribute to the planning, design and evaluation of tasks, jobs, products, organizations, environments and systems in order to make them compatible with the needs, abilities and limitations of people.

2.2. Domains of specialisation

Derived from the Greek *ergon* (work) and *nomos* (laws) to denote the science of work, ergonomics is a systems-oriented discipline which now applies to all aspects of human activity. Practicing ergonomists must have a broad understanding of the full scope of the discipline, taking into account physical, cognitive, social, organizational, environmental and other relevant factors. Ergonomists or human factors professionals often work in particular economic sectors or application domains. These application domains, which are not mutually exclusive, evolve constantly. New ones are created and old ones take on new perspectives.

Within the discipline, domains of specialization represent deeper competencies in specific human attributes or characteristics of human interaction. In some countries, the term *ergonomics* is used to represent all of the areas of specialization; in other countries, *ergonomics* refers mainly to physical issues and *human factors* refers mainly to cognitive and organizational issues. IEA is inclusive of all areas of the discipline; in this report we use both terms - *human factors* and *ergonomics*, or *HFE* - to represent this inclusivity.

Physical ergonomics is concerned with human anatomical, anthropometric, physiological and biomechanical characteristics as they relate to physical activity. Relevant topics include working postures, materials handling, repetitive movements, work-related musculoskeletal disorders, workplace layout, safety, and health.

Cognitive ergonomics is concerned with mental processes, such as perception, memory, reasoning, and motor response, as they affect interactions among humans and other elements of a system. Relevant topics include mental workload, decision making, skilled performance, human-computer interaction, human reliability, work stress, and training as these may relate to human-system design.

Organizational ergonomics is concerned with the optimisation of socio-technical systems, including their organizational structures, policies, and processes. Relevant topics include communication, crew resource management, work design, design of work times, teamwork, participatory design, community ergonomics, cooperative work, new work paradigms, organizational culture, virtual organizations, telework, and quality management.

3. About IEA

3.1. Birth and development of IEA

The International Ergonomics Association was founded in 1959. At the time, only three ergonomics societies were operating (in the United Kingdom, the USA, and Germany). Members of the IEA were not societies, but individuals. In 1976, due to the growing number of national or regional societies on one hand and to the desire to be able to interact with world organizations like the World Health Organization (WHO) or the International Labour Organization (ILO) on another hand, the IEA decided to become a federation of societies.

Since then, the history of IEA and of ergonomics has been a story of expansion - first in terms of the number of Federated Societies (from 11 in 1976 to 51 in 2018) and of the number of individuals belonging to member societies (11,689 in 1976 to an estimated 25,000 currently).

Expansion has also occurred in terms of scope of interests. The range of topics covered by the Triennial Congresses now includes manufacturing, standards, human reliability, quality management, aging agriculture, rehabilitation, and more. Attendance has grown (120 participants in 1961, 519 in 1976, 1600 in 1997, 3100 in 2000, and 1400 in 2006). Variations in attendance at IEA Congresses are influenced by their location in the world and by global events at the time, including SARS, wars, and global financial crises.

Finally, expansion has occurred in the integration of ergonomics and human factors into society. Today ergonomics is not only an academic discipline, it is a profession. This has led to the development of professional certification systems in ergonomics and human factors and of training programs in the discipline.

The International Ergonomics Association is now a mature organization, with responsibilities at an international level. IEA is a federation of ergonomics and human factors societies around the world. The IEA was re-registered in Zurich, Switzerland in 2009 as an international not-for-profit organization. However, the requirement to register the bylaws in German created an administrative difficulty given that English is the working language of the IEA. In 2017, registration was moved to Geneva, Switzerland, and a Swiss resident maintains the ex-officio position of IEA Director. The IEA Archives are currently hosted by CNAM in Paris, France. The mission of the IEA is to elaborate and

advance ergonomics science and practice, and to improve the quality of life by expanding its scope of application and contribution to society.

IEA interacts with like-minded organizations such as WHO, ICOH, IOHA, and ILO for specific activities, such as developing and implementing ergonomics programs in small and medium-size companies in manufacturing, as well as in agriculture. Special emphasis has been given to developing countries in Africa, Asia, and South America.

3.2. IEA Governance

IEA is an international not-for-profit organization, governed by a Council of representatives from the Federated Societies. Day-to-day administration is performed by the Executive Committee, which consists of the elected IEA Officers, Chairs of the Standing Committees, and Chair(s) of the next IEA Congress.

A President, Vice President/Secretary General, and Vice President/Treasurer are elected by Council at the Triennial Congress to serve for a period of three years. Standing Committee Chairs are appointed by the IEA President. The President may also create ad hoc committees or task forces to address specific issues or problems. The Officers and members of the Executive Committee are volunteers and no monetary benefits are given to them. This means that 100% of IEA funds support the implementation of the IEA goals.

The governing body of the IEA is the Council. The Council makes all major decisions concerning the IEA, including changes to by-laws and the Operating Procedures, general policy, activities, admissions, election of officers, and budget. The Council admits all new members of the IEA in any category and may terminate membership for good cause. The Council consists of representatives of Federated Societies and elected Officers of the IEA. Only these individuals have the right to vote.

The IEA Executive Committee is led by the IEA President, Vice President/Secretary General, and Vice President/Treasurer. The Officers are responsible for the management of IEA affairs, in accordance with the IEA's mission and goals.

The main responsibilities of the Officers are:

President

- Represents the IEA;
- Chairs the Council and Executive Committee meetings;
- Forms new Committees and restructures existing ones;
- Appoints Chairs to Committees; and
- Oversees the work of Committees.

Vice President/Secretary General

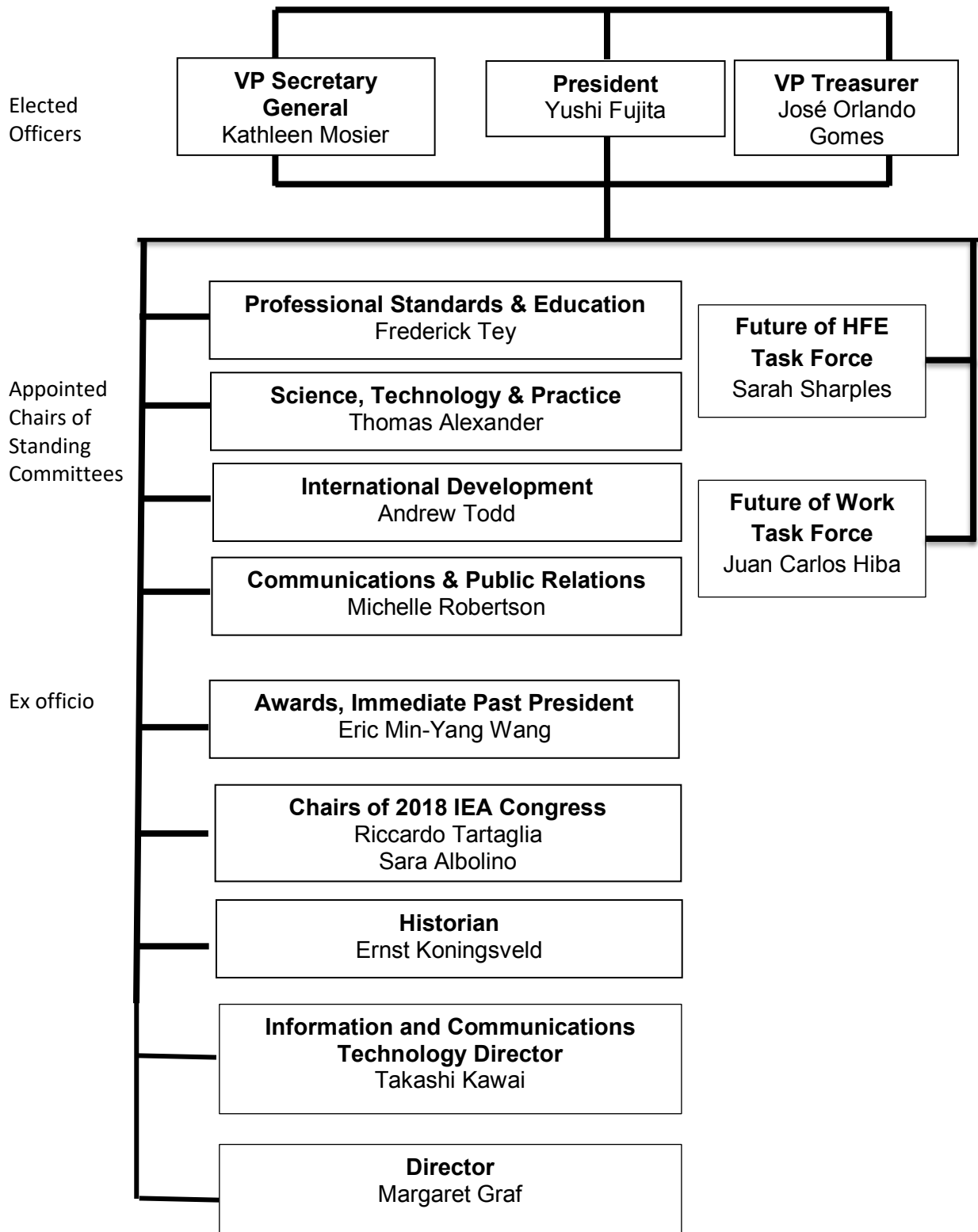
- Provides day-to-day administration of the IEA, including communication and documentation responsibilities;
- May also assist in other tasks as a Vice President at the discretion of the President; and
- Has the final responsibility for the IEA website.

Vice President/Treasurer

- Is responsible for the accounting of IEA Funds;
- Conducts budget analysis and projections;
- Provides financial management;
- Establishes new sources of revenue; and
- May also assist in other tasks as a Vice President at the discretion of the President.

3.3. IEA Executive Committee

IEA Executive Committee 2015 - 2018



3.4. IEA Standing Committees

The Standing Committees accomplish much of the work of the IEA. In turn, their subcommittees are responsible for specific functions or activities. More information is contained in the committee reports in Section 7.

Professional Standards and Education. The IEA Professional Standards and Education (PSE) Standing Committee compiles and disseminates information relevant to offerings in ergonomics at educational institutions and educational materials, including instructional methods, aids, and standards. Goals include the development of internationally accepted guidelines for endorsement of ergonomics and human factors certification programs, including guidelines for curricula to satisfy IEA Competency Standards. This committee also explores strategies to enhance support of ergonomics education programs.

Science, Technology, and Practice. The IEA Science, Technology, and Practice (STP) Standing Committee coordinates the exchange of scientific and technical information at the international level. STP undertakes its activities in cooperation with 28 Technical Committees (as of June 2018) that address specific areas of ergonomics and human factors interest. The committee supports the organization of scientific and technical events and reviews application for IEA endorsement or sponsorship of scientific events and publications. STP assists in the planning of the IEA Triennial Congress scientific program. STP may also assist industrially developing countries in the assimilation of ergonomics and human factors knowledge and practice.

International Development. The International Development (ID) Standing Committee promotes, coordinates, and implements ergonomics activities in industrially developing countries. ID supports local and regional initiatives concerning research, development, training, and conferences. The committee may implement ergonomics development programs in industrially developing countries to improve working conditions and to support, encourage, and collaborate with other IEA committees with interests in industrially developing countries.

Communications and Public Relations. The Communications and Public Relations (CPR) Standing Committee is responsible for outreach to internal and external stakeholders. It promotes MOUs and collaborations with like-minded organizations and may produce ergonomics guidelines and promotional brochures. The committee also coordinates dissemination of Proceedings from IEA-endorsed conferences and donations of educational materials to libraries in industrially developing countries.

Awards. The Awards Standing Committee manages the awards process, whereby IEA recognizes individuals for their contributions to the field. Awards for which this committee is responsible include:

- IEA Fellow Award
- IEA Distinguished Service Award
- IEA Outstanding Educators Award
- IEA Award for Promotion of Ergonomics in Industrially Developing Countries
- IEA Ergonomics Development Award
- IEA/Liberty Mutual Medal Award
- IEA/Elsevier John Wilson Award
- IEA Human Factors and Ergonomics Prize
- IEA K. U. Smith Student Award
- IEA President's Award

Development and Promotion (Inactive). The Development and Promotion Standing Committee explores and coordinates new policy options and proposals and assists in the development and implementation of new programs and initiatives relevant to the functioning and effectiveness of IEA. The committee develops and coordinates plans and proposals concerning IEA policies, operation, and structure, and assists in development of policy recommendations to better serve Federated Societies and the international ergonomics community.

4. IEA Membership

As of July 2018, the International Ergonomics Association had 51 Federated Societies, two Affiliated Societies, three IEA Networks, three Sustaining Member organizations, and one individual Sustaining Members. The map below shows areas with Federated Societies and Affiliated Societies (note that Japan has both a Federated Society and an Affiliated Society).

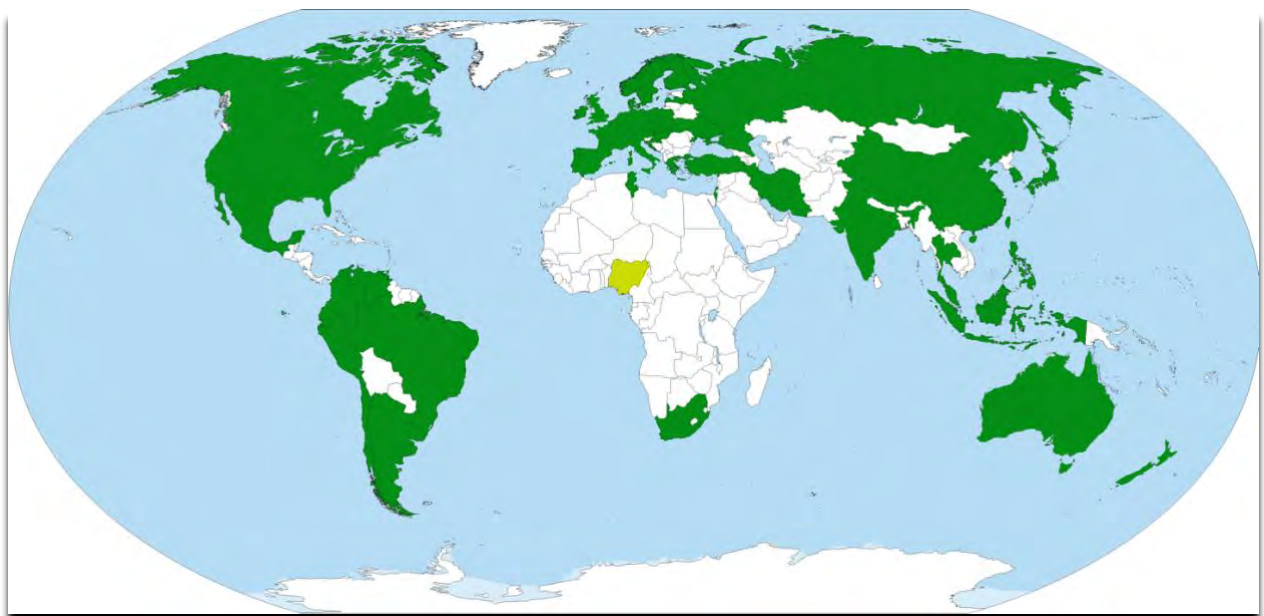


Figure 4.1. Map of the world showing IEA Federated (dark green) and Affiliated (light green) Societies.

4.1. IEA Federated Societies

Federated Societies are professional societies that have the main aim of promoting ergonomics and human factors. They have been admitted by the Council for having met and continuing to fulfil the eligibility criteria provided in the IEA By-Laws. They are bodies that elect a governing council from within their own membership and encourage the publication of research material and the development of ergonomics and human factors practice. They have voting rights and appoint representatives to Council based on the size of their membership. Peru, Venezuela, and Uruguay were approved as Federated Societies during the 2015-2018 term.

Countries with IEA Federated Societies are:

- | | |
|-----------|--------|
| Argentina | Brazil |
| Australia | Canada |
| Austria | Chile |
| Belgium | China |

Colombia	Peru
Croatia	Philippines
Czech Republic	Poland
Ecuador	Portugal
French Language Ergonomics Society	Republic of Korea
Germany	Russia
Greece	Serbia
Hong Kong	Singapore
Hungary	Slovakia
India	South Africa
Indonesia	Spain
Iran	Switzerland
Ireland	Taiwan
Israel	Thailand
Italy	Tunisia
Japan	Turkey
Latvia	Ukraine
Malaysia	United Kingdom
Mexico	Uruguay
Netherlands	United States of America
New Zealand	Venezuela
Nordic Countries	

4.2. IEA Affiliated Societies

Affiliated Societies are other national or international professional societies that are ineligible for federated member status or have an interest in ergonomics but have their main aim in an associated area. Countries with IEA Affiliated Societies are:

- Japan (Human Ergology Society)
- Nigeria

4.3. IEA Networks

IEA's growing size has led to a revision of its membership structure, through the creation of IEA Networks. IEA Federated Societies may work together in networks when a need is felt to do so. Examples of such needs can be geographical proximity, sharing of a common language, or promotion of common interests. The IEA Council gives its agreement to the creation of a network on the basis of a proposal from networked societies stating membership and goals. These networked societies are granted the status of IEA Network and report on their activities to IEA.

Four IEA Networks exist currently in Africa, Europe, Latin America, and Southeast Asia:

- ErgoAfrica – added in 2016
- Federation of European Ergonomics Societies – FEES
- La Unión Latinoamericana de Ergonomía – ULAERGO
- South East Asian Network of Ergonomics Societies – SEANES

4.4. IEA Sustaining Members

Academics and practitioners accomplish the work of the IEA; however, many initiatives vital for the development of ergonomics and human factors as a unique science and profession cannot be funded with existing resources. Funds are thus needed to support the development of ergonomics and human factors worldwide, including in industrially developing countries. Funds are also required to disseminate ergonomics knowledge to the industry and to society at large, to promote

ergonomics education and competency standards, and to support the work of our Technical Committees

The IEA Sustaining Membership program supports the science and application of ergonomics and human factors worldwide. The program provides exposure and enhances the image of institutional members.

4.4.1. Organizational Sustaining Members

There are four levels of support for Organizational Sustaining Membership, and each level offers specific benefits. Sustaining Membership is typically granted on a three-year basis. The granting of IEA Sustaining Membership does not imply IEA endorsement or approval of company products or services.

Diamond Level - US \$10,000 per year

- **Liberty Mutual Insurance**
John Rabovsky and George Brogmus, Representatives
USA
- **Elsevier**
Timo Bazuin, Representative
United Kingdom

Platinum Level- US \$5,000 per year

Gold Level - US \$1,000 per year

- **Korea Occupational Safety & Health Agency (KOSHA)**
Doo Yong Park, President
Republic of Korea

Organizational Sustaining Membership Benefits

Gold level **US \$1,000/year**

Individual members **US \$200/year**

- Listings on the IEA website
- Complimentary copy of quarterly updates from the IEA President to the Federated Societies.
- Sustaining Member Plaque with company name inscribed

Platinum level **US \$5,000/year**

- All benefits at the Gold level
- Official listings in the programs of IEA conferences and congresses
- Two complimentary registrations for the forthcoming IEA Congress
- Company logo on IEA website home page with active links

Diamond level **US \$10,000/year**

- All benefits at the Platinum level
- Complimentary space at exhibitions organized at IEA Congresses, subject to approval by Congress organizer
- Exposure of company logo at IEA conferences and Congresses
- Direct links between new company products with relevant sections of the IEA website
- Other benefits, such as a speech by an IEA Officer, can be negotiated

Star level **US \$25,000/year**

- All benefits at the Diamond level
- Additional three complimentary registration for the next IEA Congress
- Acknowledgments on the first page (covers) of the Congress proceedings
- Free distribution of promotional materials at IEA Congress
- Additional benefits can be negotiated

4.4.2 Individual Sustaining Members

Individual Sustaining Members are individuals who voluntarily support IEA through annual contributions, which can be allocated to specific activities or uses as determined by the Executive Committee.

There are three levels of membership for Individual Sustaining Members:

- Contributor (annual contribution of US \$200)
 - Supporter (annual contribution of US \$500)
 - Benefactor (annual contribution of US \$1,000 and above)
-
- **Kazutaka Kogi**
Institute for Science and Labor
Japan

4.4.3. Technical Committees

Technical Committees (TCs) are ad-hoc groups that are formed as a platform to discuss and exchange up-to-date information on a particular ergonomics and human factors field. As of July 2018, IEA has 28 TCs:

1. Activity Theories for Work Analysis and Design
2. Aerospace HFE
3. Affective Product Design
4. Aging
5. Agriculture
6. Anthropometry
7. Auditory Ergonomics
8. Building and Construction
9. Digital Human Modeling and Simulation
10. Ergonomics for Children and Educational Environments
11. Ergonomics in Advanced Imaging
12. Ergonomics in Design
13. Ergonomics in Design for All (EinDfA)
14. Ergonomics in Manufacturing
15. Gender and Work
16. Healthcare Ergonomics
17. Human Factors and Sustainable Development
18. Mining
19. Musculoskeletal Disorders
20. Organizational Design and Management
21. Process Control
22. Psychophysiology in Ergonomics
23. Robotics
24. Safety & Health
25. Slips, Trips and Falls
26. Transport Ergonomics and Human Factors (TEHF)
27. Visual Ergonomics
28. Work with Computing Systems - WWCS

5.0. External Organizations and Liaisons

Michelle Robertson, Chair, Communications and Public Relations Committee

Interacting with prominent international and national organizations is one way to promote the awareness of IEA and the science of ergonomics/human factors on a global basis. IEA has several well-established formal relationships with leading international non-governmental organizations (NGOs), as well as with the International Standardization Organization (ISO). New collaborations with related scientific professional societies are emerging and becoming established formally through the exchange of Memoranda of Understanding (MOU). Overall, the goals of these relationships are to encourage and support the participation in each other's conferences, to collaborate on joint projects, to stimulate communication among the organizations through respective websites, seminars, and workshops, and to consider establishing either a formal liaison position or an MOU for collaboration. The following is an overview of IEA external organizational relationships and descriptions of joint activities and future directions.

5.1. Non-Governmental Organizations (NGOs): UN, ILO, and WHO

IEA is formally registered by the United Nations (UN), World Health Organization (WHO) and the International Labour Organization (ILO) as a Non-Governmental Organization (NGO). There is a close liaison among these world bodies, and specific activities are being undertaken and established. WHO formally recognizes a Non-State Actor representative from the IEA and invites representatives to attend both the WHO Executive Director Board meeting and the World Health Assembly, held in the World Health Headquarters and the Palais des Nations (United Nations), respectively, in Geneva, Switzerland. The 2016-2017 official WHO/IEA collaboration plan included: (1) develop and implement healthy workplace training modules and guidance materials; (2) provide website information on validated tools for assessing risk of work-related musculoskeletal injuries and disorders (WMSDs); and (3) contribute to a WHO Working Group developing WHO Guidelines on Minimum Standards for Workplace Health Protection.

Collaborative Activities

Activities to address the first objective included the translation and implementation of Ergonomic Checkpoints documents in collaboration with ILO. Historically, the major collaborative relationship with ILO has been the joint publication of the *Ergonomic Checkpoints (2nd edition)*, and *Ergonomic Checkpoints for Agriculture*, which are posted on both the IEA and ILO websites. The *Ergonomics Checkpoints (v1 and v2)* have been translated into more than 16 languages, including recent translation into Chinese. In addition, the promotion and implementation of these checkpoints occurred through various training programs targeting high-risk industry sectors in China. IEA and the Human Ergology Society will continue to collaborate in translating these Ergonomic Checkpoints and to coordinate with ILO to post them on their website. Additionally, a new Ergonomic Checkpoints document for service workers is being explored as a collaboration between IEA and ILO.

The second WHO objective was completed by collecting, reviewing, and sharing with ergonomists and OSH practitioners throughout the world the methods, “best” practices and “best experiences” for risk assessment and management of work-related musculoskeletal injuries and disorders (WMSDs), including aspects related to job/task design and to workplace/work tools design. The IEA Musculoskeletal Disorder (MSD) Technical Committee has developed a list of tools published in peer-reviewed scientific journals including (1) reliability and (2) predictive value. Published on the IEA MSD TC website is the information on validated tools for assessing risk of WMSDs. Lastly, the IEA representative participated in a special WHO working group related to workplace health protection. This will be an on-going effort in which the IEA representative will attend and participate in targeted WHO working groups that support the goals of the ILO, WHO, and IEA.

Three-Year Plan

As part of IEA official relations with WHO, a three-year plan (2016-2019) was established. The agreed-upon activities are intended to contribute to the outcome targets in the WHO General Programme of Work for 2014-19. Specifically, to contribute to the *WHO Global Master Plan Priority 7, Global Product 7.1: Guidance and policy options for action by the health sector to improve health and safety of poor informal sector workers*, three activities are being implemented: (1) provide case studies on effective interventions for improving workers’ health in typical informal sector work settings; (2) provide case studies of effective interventions by health service providers regarding the informal workforce – access to health services, equity, and health education; and (3) develop an initiative for a regional product protecting the health of healthcare workers in the Americas.

Collaborating with the IEA Future of HFE Task Force and the Chartered Institute of Ergonomics and Human Factors (CIEHF) in the United Kingdom, case studies are being solicited at the 2018 IEA Congress. An additional activity addressing Objective (2) is *Ergonomic Checkpoints in Health Care Work*, developed by the Human Ergology Society and collaboratively evaluated with the IEA

Healthcare Ergonomics Technical Committee. This document is now published and accessible on both IEA and ILO websites. Promotion and dissemination of these guidelines was launched at the 1st ErgoAfrica Conference, hosted by the Ergonomics Society of South Africa (ESSA). A workshop on workers and patient safety was given by the Centre for Clinical Risk Management and Patient Safety of the Tuscany Region, WHO Collaborating Centre. Additionally, an MOU was developed between the WHO collaborating Centre for Patient Safety and Clinical Risk Management and ErgoAfrica (WHO-Regional Branch Office) focusing on the development of ergonomics in healthcare in Africa. Additionally, a triparty MOU was developed among IEA, the WHO collaborating Centre for Patient Safety and Clinical Risk Management, and the International Society for Quality in Health Care (ISQua). Their mutual goal is to promote and exchange information on projects and activities through various communication modes (e.g., conferences, newsletters, and webinars) to further their joint and individual aims.

Additional joint efforts concern the International Commission on Occupational Health (ICOH), and the International Occupational Hygiene Association (IOHA). Non-State Actors (NSAs) from IEA, ICOH, and IOHA attended the 71st World Health Assembly (WHA). This promoted the acceptance of extending the WHO Global Action Plan on Workers' Health to include healthcare work. ICOH, IOHA and IEA have a triparty MOU based on their similar and complementary organizational missions and goals. The three NSAs prepared for WHO Committee discussions under the General Program of Work (GPW) a joint statement on the need for continuation of the Global Action Plan on Workers' Health (or respective WHO occupational health programme). The joint statement proposed the inclusion of occupational health into the content of the 13th GPW requesting: (1) specialised or basic occupational health services (including occupational hygiene and human factors/ergonomic design services) to cover all working people; (2) that self-employed and informal workers be in line with the WHO strategy on universal health coverage (UHC), and the UN Sustainable Development Goal Number 3. This joint statement was delivered at the World Health Assembly (WHA) Committee A assembly floor and was officially recorded in the minutes of the WHA meeting. Several interventions were proposed for future joint actions lending our joint support of the planning, design, maintenance, and construction of safe and effective facilities using evidence-based principles of occupational health, occupational hygiene, and ergonomics/human factors user-centred design. IEA is developing a Joint Statement on Ergonomics with WHO, ILO, ICOH, and IOHA to continue the collaborative work from the 71st WHA meeting as well as planning the co-sponsorship (ICOH and IEA) of the International Prevention of Work-Related Musculoskeletal Disorders Conference in 2019, where these activities support the agreed-upon goals and activities stated in the MOU.

One IEA initiative for a regional product is to promote *Ergonomic Checkpoints in Health Care Work* through a collaborative activity with the World Organization of Family Doctors (WOMA), a WHO non-state actor NGO. They are currently using the Checkpoints document in Latin America and will provide feedback on its applicability and use in the field. Translation of this checklist into Spanish is also being considered, and some local efforts are currently being undertaken.

A new IEA/ILO effort is being fostered by the IEA Task Force on the Future of Work (see section 7.11) in engaging with ILO concerning its "Future of Work That We Want" initiative. ILO and WHO also are creating road maps to address this area. This new IEA Task Force is identifying opportunities to create and disseminate white papers that address the importance of ergonomics/human factors in the ILO global initiative.

5.2. National and International Organizations for Standardization and Guidelines

IEA has formal liaisons to TC159 of International Organization for Standardization (ISO). Several experts are involved in both ISO and IEA activities and are serving as liaisons between these

organizations, which allows for the exchange of ideas and proposals for new activities for mutual benefit (See Section 7.9). Through representation by the Human Factors and Ergonomics Society of a U.S. representative, or liaison, we also participate in ISO 27501, focusing on the Human-Centred Organization—guidance for managers. The IEA Liaisons for ISO are:

- ISO/TC159 Yushi Fujita
- ISO/TC159/SC Thomas Alexander
- ISO/TC159/SC1/WG5 Ralph Bruder

5.3. Professional Societies and Scientific Committees

In addition to the MOUs mentioned previously, an MOU was initiated between the IEA Healthcare Ergonomics Technical Committee and the ICOH Scientific Committee on Occupational Health for Health Care Workers (OH-HCW). Formal and new relations with international professional organizations and scientific bodies, such as the Asian Council on Ergonomics and Design, the Advanced Imaging Society, the World Design Organization, and the Institute of Industrial and Systems Engineers (Applied Ergonomics Branch), are being fostered. Other formal relationships being established through the IEA Industrial Development Standing Committee include the WHO ErgoAfrica Regional office, and the BRICS_{plus} (Brazil, Russia, India, China, and South Africa) network (See Section 7.7). Additionally, more than five international conferences for scientists and practitioners were endorsed by IEA, promoting the visibility of IEA and the interdisciplinary field of ergonomics/human factors (see Section 7.8). Dissemination of these conferences proceedings will support IDC university libraries (see Section 7.5).

5.4. Academia and IEA Relationships

IEA is building relationships with several universities through the IEA Networks (see section 4.3) to support educational programs and professional seminars to develop competencies in the interdisciplinary field of ergonomics and human factors. One new notable academic relationship is with the University of Panama (UDELAS) who is establishing a master level program (see section 7.7).

5.5. Community and IEA Network Relationships Promoting HFE practices

Several international connections between IEA networks and affiliates promote and develop ergonomics/human factors practices. Recently, MOUs were signed with the Federation of European Ergonomics Societies (FEES), the La Unión Latinoamericana de Ergonomía (ULAERGO), and ErgoAfrica. These MOUs facilitate and coordinate the promotion of ergonomics/ human factors in specific regions within the IEA networks (see Section 7.7). A worldwide initiative involving several IEA Federated Societies, Networks, and Affiliates, has designated October as the Global Ergonomics Month. Local and national events to promote the science and profession of ergonomics and human factors occur around the world during the month of October. FEES designates October as World Wide Month for ergonomics/human factors and joins the EU-OSHA organization to launch various activities and events during this time (see Section 7.5).

6. IEA Strategic Plan 2015-2018

6.1. IEA Mission Statement

The mission of the IEA is to elaborate and advance ergonomics science and practice, and to expand its scope of application and contribution to society to improve the quality of life, working closely with its constituent societies and related international organizations.

6.2. IEA Goals

The main goals of the IEA are defined as follows (cf. The IEA By-laws):

- To develop more effective communication and collaboration with Federated Societies.
- To advance the science and practice of ergonomics at an international level.
- To enhance the contribution of the ergonomics discipline to global society

IEA contributes to these goals by the following:

- Setting up working groups and technical committees of volunteers on ergonomics topics.
- Establishing memoranda of understanding with external organizations such as non-governmental organizations and professional associations.
- Collaborating with other international associations such as ILO, WHO, and ISO.
- Promoting the dissemination of knowledge through educational programs and journals, supporting conferences, and stimulating local initiatives.

6.2.1. IEA Sub-goals

The main goals are decomposed into more detailed sub-goals as shown in Table 6.1. They were first approved at a Council Meeting held in Korea in 2003. Since then, they have been referred to as important guidelines for the administration of IEA.

Table 6.1 The IEA Sub-goals (2003)

Goal	Sub-goals	
A: Contribute to the development of Federated Societies	A1: Develop more effective communication and collaboration between and with Federated Societies.	<ol style="list-style-type: none"> 1. Facilitate visibility of each member society through the IEA home page and other means of communication 2. Facilitate joint events between member societies when this will not conflict with the operations of these societies 3. Facilitate the creation of networks of societies 4. Support member societies in taking proactive and reactive positions on major public issues and in their use of the media 5. Support member societies to disseminate ergonomics knowledge at various levels 6. Support participation of the industrially developing countries in IEA activities (e.g., support for travel to conferences)
	A2: Develop ergonomics societies through the world	<ol style="list-style-type: none"> 1. Support the continuing growth of ergonomics in industrially developing countries by training and education 2. Provide industrially developing countries with ergonomics knowledge by stimulating the existing IEA mechanisms
	A3: Improve IEA operational effectiveness	<ol style="list-style-type: none"> 1. Develop mechanisms for effectively involving member societies in IEA activities 2. Improve communication with member societies 3. Facilitate the exchange of views and experiences among the leaders of member societies 4. Initiate campaign to increase the numbers of sustaining IEA 5. Increase revenues from donations, endowments, and funds when this will not conflict with the operations of member societies (e.g., from international bodies)
B: Advance the Science and Practice of Ergonomics at an International Level	B1: Stimulate development of the ergonomics discipline	<ol style="list-style-type: none"> 1. Define and clarify the field of ergonomics 2. Identify and elaborate cultural and economic differences affecting ergonomics science and practice 3. Identify future needs for development of ergonomics 4. Support and promote specialized conferences and workshops in collaboration with member societies 5. Promote IEA publications suited to knowledge dissemination by IEA
	B2: Enhance the quality of professional practice and education in ergonomics	<ol style="list-style-type: none"> 1. Continue to promote a broad view of ergonomics and its aims 2. Consider development of procedures for the IEA endorsements of various activities; in particular, journals and books 3. Develop international professional standards and guidelines and promote best practices in ergonomics (code of ethics, code of professional practice, etc.) 4. Encourage educational institutions to offer ergonomics programs consistent with "IEA Core

Goal	Sub-goals	
		<p>Competencies for Practitioners in Ergonomics" criteria</p> <ol style="list-style-type: none"> 5. Promote sharing of quality ergonomics education programs available on the Internet through the IEA home page 6. Develop IEA guidelines for accreditation of ergonomics educational programs 7. Maintain the IEA Criteria for Endorsement of Certifying Bodies and implement a system for such endorsement 8. Maintain the IEA Core Competencies for Practitioners in Ergonomics 9. Maintain and disseminate IEA minimum criteria for the process of certification of an ergonomist 10. Show best practices in order to stimulate the growth of ergonomics
<p>C: Enhance the Contribution of the Ergonomics Discipline to Global Society</p>	<p>C1: Promote recognition of the ergonomics discipline</p>	<ol style="list-style-type: none"> 1. Identify specific areas where greater international exchange of information is needed and develop appropriate means for dialogue 2. Increase public awareness of the benefits of ergonomics through mass media communications 3. Provide information about ergonomics/IEA for listing in international directories and reference publications 4. Expand and strengthen links with other international bodies 5. Expand and strengthen links with societies working in related fields 6. Expand IEA prizes to reward and publicize ergonomics innovations 7. Develop more-effective use of IEA conferences to promote added value of ergonomics to society 8. Elaborate and promote the benefits of ergonomics to improve the quality of life for individuals, organizations, and society
	<p>C2: Promote applications of ergonomics in all aspects of life</p>	<ol style="list-style-type: none"> 1. Promote ergonomics as a means to improve the quality of human life, work effectiveness, and economic benefits 2. Mobilize the ergonomics profession to address major global challenges 3. Promote collaboration in ergonomics projects among government and international bodies 4. Stimulate the involvement of ergonomics in emerging fields of application (e.g., management sciences and mass communication) 5. Support member societies in taking positions on major public issues and in their use of the media 6. Promote ergonomics in geographical regions where particular support is needed 7. Develop program of certification of ergonomic quality in design

6.3. IEA Strategic Policies

Based on the understanding of (1) the present situation of the IEA, (2) the general guidelines recommended in the Future of Ergonomics report (FoE)^{1, 2}, and (3) the IEA goals and sub-goals mentioned in above clauses, seven strategic policies were specified for the administration of this term. Officers and standing committee chairs were requested to coordinate their action plans in line with the policies.

(1) Engage Stakeholders

The FoE report identifies HFE (human factors and ergonomics) as a unique discipline that (1) features a systems approach, (2) is design driven, and (3) focuses on two closely related outcomes, which are performance and well-being. HFE has great potential to optimize performance and well-being through design-driven and systems approaches. However, the report recognizes that the potential of HFE remains under-exploited and points out that this can lead to sub-optimal systems with a number of deficiencies such as quality deficits, reduced efficiency, illness, and dissatisfaction. Among four major reasons for this situation identified in the report, the following are considered particularly important:

- Various stakeholders are not aware of the value of HFE.
- There is not enough high-quality HFE because of the absence of HFE or limited scope of HFE application.

The 2012 FoE report concludes the following as basic strategies for improving the situation:

- Strengthening the demand for and the application of high-quality HFE by (1) enhancing the awareness of stakeholders' need for high-quality HFE by communicating with specific stakeholders about the value of high-quality HFE in their own language, (2) building partnership with these stakeholders and their representing organizations, and (3) educating stakeholders to create awareness of high-quality HFE and its contributions to system design.
- Strengthening the application of high-quality HFE by (1) promoting the education of HFE specialists to apply high-quality HFE, (2) ensuring high quality standards off HFE applications and HFE specialists, and (3) promoting HFE research excellence at universities and other organizations.

The FoE report contends that international development of HFE is dependent on gaining a better relationship with various groups of stakeholders. More specifically, it promotes the use of the following development strategy based on the need to facilitate the two important goals identified above:

- Promote the desire for high-quality HFE specialists to important stakeholders by increasing their awareness through (1) improved communication with stakeholders, (2) education of stakeholders, and (3) development of stakeholder partnerships.
- Education of HFE specialists to ensure (1) high-quality standards of HFE applications and specialists, and (2) promotion of HFE research excellence.

In short, engaging and educating various stakeholders is a key. Thus, the first policy was specified as "Engage Stakeholders." To effectively implement this policy on a global scale, it was considered

¹ : Under the auspice of the Development and Promotion Standing Committee, an ad hoc committee was assembled to examine the field and future directions of human factors and ergonomics. The final committee report was submitted in 2012: Jan Dul and others, "A strategy for Human Factors/Ergonomics: Developing the discipline and profession. The report is downloadable from: https://www.iea.cc/project/FINAL_REPORT_Future_of_Ergonomics_Committee_A_Strategy_for_Human_Factors_Ergonomics_22_January_2012.pdf.

² : Jan Dul and others (2012) "A strategy for human factors/ergonomics: developing the discipline and profession," Ergonomics, Volume 55, 2012 - Issue 4: <https://www.tandfonline.com/doi/abs/10.1080/00140139.2012.661087>.

necessary for IEA to reach out to various stakeholders and present some good cases of HFE effectiveness. These cases have to be designed to show that implementing high standards for HFE contributes to a positive social reputation through accomplishment of high-quality systemic projects.

(2) Collaborate with Networks

The IEA Networks are groupings of Federated Societies or their affiliates that are formed to address specific needs. The Council approves the formation of an IEA Network based on a formal proposal that is endorsed by participating societies and which states the purpose, organizational structure, and mode of operation of the proposed IEA Network (cf. The IEA By-laws). As of July 2018, there are four IEA Networks, which include Federation of European Ergonomics Societies (FEES), La Unión Latinoamericana de Ergonomía (ULAERGO), The South East Asian Network of Ergonomics Societies (SEANES), and ErgoAfrica. In addition to the IEA Networks, there are two international networks whose members are IEA member societies. They are BRICS-*Plus* Network and Asian Council on Ergonomics Design (ACED).

Some topics that are potentially relevant to a region are also common to the individual societies in the region. To handle these topics, it is desirable to engage as many as possible regional stakeholders so that regional needs are better understood and actions better implemented. Networks are considered to serve this role of representing regional needs. It is further considered that networks could work together to handle global topics.

Thus, the second policy was specified as “Collaborate with Networks.”

(3) Reinforce IEA Networks

To implement the second policy, it is necessary to reinforce the IEA networks. There are several benefits of reinforcing the IEA networks. First, IEA coverage needs to be widened in all regions. There are countries where ergonomists and human factors practitioners exist, but their numbers are too small for IEA membership as Federated Societies. Second, networks enable the technical distribution of members to be broadened and removes limitations to certain HFE disciplines. This is important in order for HFE to play bigger and more important roles in society. Third, it is desirable for the HFE community to work more closely with relevant communities. IEA can establish formal relations with international organizations for this purpose. In addition to this international effort, it is desirable for member societies to establish formal relations with external organizations, such as societies and industrial communities of non-HFE disciplines. This could be done effectively by the IEA Networks.

Thus, the third policy was specified as “Reinforce IEA Networks.”

(4) Contribute to Science and Technology

HFE is an applicational discipline that rests on sound science. It has always been IEA’s fundamental role to promote good science. Considering the ever-changing, rapid advancement of technologies that potentially affect people’s lives, IEA must continue promoting HFE research, both science and practice, that is relevant to cutting-edge technologies. To serve this important role proactively, IEA has to be a center of cutting-edge information on HFE science. This may take various forms, such as the publication of guidelines, the promotion of state-of-the-art technologies by Technical Committees, and the discussion of roles that HFE should play in relation with emerging technologies.

Thus, the fourth policy was specified as “Contribute to Science and Technology.”

(5) Identify roles of IEA in promoting certification and related matters

Almost 20 years ago, IEA introduced guidelines for the certification of professional ergonomics and human factors practitioners (typically called *ergonomists*) and began to endorse certification systems that were in line with these guidelines. However, only a few certification systems have been endorsed by IEA, and feedback from societies that had developed certification systems, as well as those currently developing them, indicated that IEA documents were too complex and not well understood. Essentially, the purpose of the endorsement mechanism is to ensure a high standard of HFE science and practice. The guidelines include a list of “core competencies” that describe the required knowledge and skills of a professional ergonomist, as well as other recommendations that must also be followed, such as non-commercially oriented approaches, independence, possibility of independent review, and non-discrimination. To standardize and promote certification, IEA reviewed and updated the certification guidelines and is currently reviewing the core competencies. As it is now almost twenty years since the first certification programs were endorsed by IEA, it has been suggested that we introduce a system of regular reviews, to ensure that the practices of the certifying bodies remains in line with IEA guidelines.

Encouraging mutual recognition of certification among countries is recognized as an important topic for giving value to IEA-endorsed certifying systems. Mutual recognition is being practiced at an unofficial level between most IEA-endorsed systems, although very few ergonomists change their country of work. Some certifying bodies are limited in granting recognition to others because of their accreditation standards; however, IEA can play the role of publishing on the IEA website which qualifications from which IEA endorsed systems are deemed to be equivalent. This is an important means of giving value to IEA endorsement and also of improving the maintenance of high standards for professional ergonomists globally.

As a consequence of local needs, several existing certifying bodies are adopting a multi-layered certification system. Certifying bodies that wish to obtain IEA endorsement must have at least one level of certification that meets the level of the core competencies; however, IEA may need to introduce more levels in the endorsement system in the future. IEA should keep up to date with these developments and, if necessary, produce further guidelines, so that the level of qualification of all certified ergonomists remains clear.

Thus, the fifth policy was specified as “Identify roles of IEA in promoting certification and related matters.”

(6) Reinforce relationships with external organizations (existing and new)

IEA has long and formal relationships with leading international agencies and organizations. IEA is formally registered by United Nations (UN), World Health Organization (WHO), and International Labour Organization (ILO) as a Non-Governmental Organization (NGO). IEA has maintained a triparty MOU with the International Commission on Occupational Health (ICOH) and the International Occupational Hygiene Association (IOHA). IEA has formal liaisons to Technical Committee 159 of the International Organization for Standardization (ISO). These existing relationships require continued effort to maintain their mutual benefit.

When the interdisciplinary nature of HFE is considered, it is evident that IEA should establish new relationships with more international organizations both inside and outside of the HFE community. This is a way to enable IEA to promote HFE tightly coupled with related disciplines.

Thus, the sixth policy was specified as “Reinforce relationship with external organizations (existing and new).”

(7) Reinforce the infrastructure of IEA

In order for IEA to fully function as an international organization that can exert substantial influence over people recognizing that HFE is an indispensable discipline for our life, IEA must own a sound infrastructure. As a voluntary organization with limited resources, it has been not easy to develop a good infrastructure. It is one of the most critical problems that IEA is facing. In a previous term, the rule systems (i.e., by-laws and operating procedures) were improved considerably. But, there still remains much room for improvement in almost all aspects, from the legal status through the financial system to the administrative system. To make the IEA more financially and administratively sustainable, the infrastructure must be reinforced.

Thus, the last and not least policy was specified as “Reinforce the infrastructure of IEA.”

7. IEA Activities and Achievements – 2015-2018

7.1. Overview

Kathleen Mosier, Vice President and Secretary General

The remaining sections of this report describe the activities and achievements of the 2015-2018 Executive Committee. In keeping with the seven strategic policies presented above, this EC has striven to be highly proactive and involved with IEA members and the global community. We made positive changes to our infrastructure – including improvements to our financial accounting systems, the IEA.cc website, and our day-to-day administration. We selected outstanding HFE professionals for recognition via IEA annual and triennial awards. Reports from each of the IEA Standing Committees and from two Ad Hoc Committees describe their excellent work and progress over the past three years. The IEA Historian presents activities related to the creation of the IEA digital archive and a new IEA History Book. Details of the extraordinary and successful IEA2018 are described by the IEA2018 organizers. In final summary, IEA President Yushi Fujita discusses where we are as an international association and how we can progress and contribute in the future.

7.2. Financial Report

José Orlando Gomes, Vice President and Treasurer

7.2.1. Overview of accounts

There are five (5) active accounts, two of which are at UBS in Switzerland, two at Scotiabank in Canada, and one at PayPal:

- At UBS:
 - US\$ cash account opened in October 2018 – basic account
 - CHF (Swiss Francs) account opened in October 2018 – basic account
- At ScotiaBank:
 - US\$ cash account opened in June 1998 – basic account
 - Investment account including two Guaranteed Investment Certificates (GICs), one in CD\$ and one in US\$
- At PayPal Switzerland:
 - For Federated Societies (FS) and Affiliated Societies (AS) to transfer small amounts to IEA avoiding high clearing fees.

Accounting rules are essentially the same as those adopted in previous years. The following summarizes the important rules:

- All final financial numbers are presented in U.S. Dollars (US\$). Most financial operations are done in U.S. Dollars (US\$). The occasional operations in CD\$ or CHF are booked in their corresponding ledgers. All transactions are consolidated in US\$.
- The IEA fiscal year coincides with the calendar year, January 1 through December 31.
- Revenues are noted and recorded when received, and expenses are noted and recorded when paid.
- Membership dues of previous years paid during a year are allocated to the Revenues of that year.
- Membership dues paid for coming years are allocated to the Liabilities.
- The interest of GIC was added to the principal. It is not explicitly allocated to “Revenues.”
- The followings accounting titles are used. The “Website” is newly added after the renewal of the IEA website.

Revenues

- Membership dues (FS and AS combined)
- Sustaining member contributions
- Funds
- Capitation fees
- Miscellaneous

Expenditures

- Meetings
- Travel executives (officers and standing committee chairs)
- Office
- Standing Committees
 - Awards Standing Committee
 - Communications and Public Relations Standing Committee
 - Development and Promotion Standing Committee
 - International Development Standing Committee
 - Professional Standards and Education Standing Committee
 - Science, Technology and Practice Standing Committee
- Grants
- Seed money
- Bank charges
- Website – new title
- Miscellaneous

The use of PayPal has been taken up again due to the excessive weight (close to 30% for small member associations) of the international clearing fees charged by banks relative to the amounts transferred to IEA.

7.2.2. Assets, Liabilities and Equity

Tables 7.1-7.3 present the Assets, Liabilities and Equity between 2015 and 2017. The total cash assets as of December 31, 2017, were US\$342,965, of which US\$213,089 denominated in US\$ (including US\$30,000 in Seed Fund receivable) and US\$129,973 denominated in Canadian Dollars, minus a negative balance of US\$97.43 denominated in Swiss Francs--summary in Table 7.1). Of the

cash assets 32% percent are in the cash account, 9% in seed money, and 59% in the GICs. The website is a non-cash asset and represents 1.3% of total IEA assets.

Figure 7.1 (the trend of Assets for four three-year periods between 2003-2005 and 2012-14) shows that the assets have been increasing steadily. Due to the increasing difficulty of international remittance of small moneys, more member societies pay membership fees in cash (Table 7.1), sometimes for multiple years (Table 7.2). The IDC funds have been increasing (Table 7.3). This is because the Nicaragua coffee beans project has ended and new projects have not yet been launched.

Table 7.1. Assets of 2015–17

Assets (US\$)	Y2015	Y2016	Y2017
Savings Account	122,944	72,363	109,685
Term Deposit (GIC)	187,138	191,821	203,280
Seed Money Receivable	19,988	49,988	30,000
Website	2,935	6,119	4,664
TOTAL ASSETS	333,005	320,291	347,628

Table 7.2. Liabilities of 2015–17

Liabilities (US\$)	Y2015	Y2016	Y2017
Dues Advanced Received	50	431	1,363
Accounts Payable	0	0	12,186
TOTAL LIABILITIES	50	431	13,549

Note: Dues advances received from ChES (China), HKES (Hong Kong), EST (Thailand), SIE (Italy), and PEI (Indonesia) Y2018; at year end there was an invoice outstanding for website maintenance.

Table 7.3. Equity of 2015–17

Equity (US\$)	Y2015	Y2016	Y2017
Equity (Unencumbered)	294,572	280,603	308,725
Funds	38,383	39,258	25,355
TOTAL EQUITY	332,955	319,861	334,080

Note: Unencumbered equity includes bank saving and investment accounts, seed moneys outstanding, and the as yet undepreciated part of the IEA website.

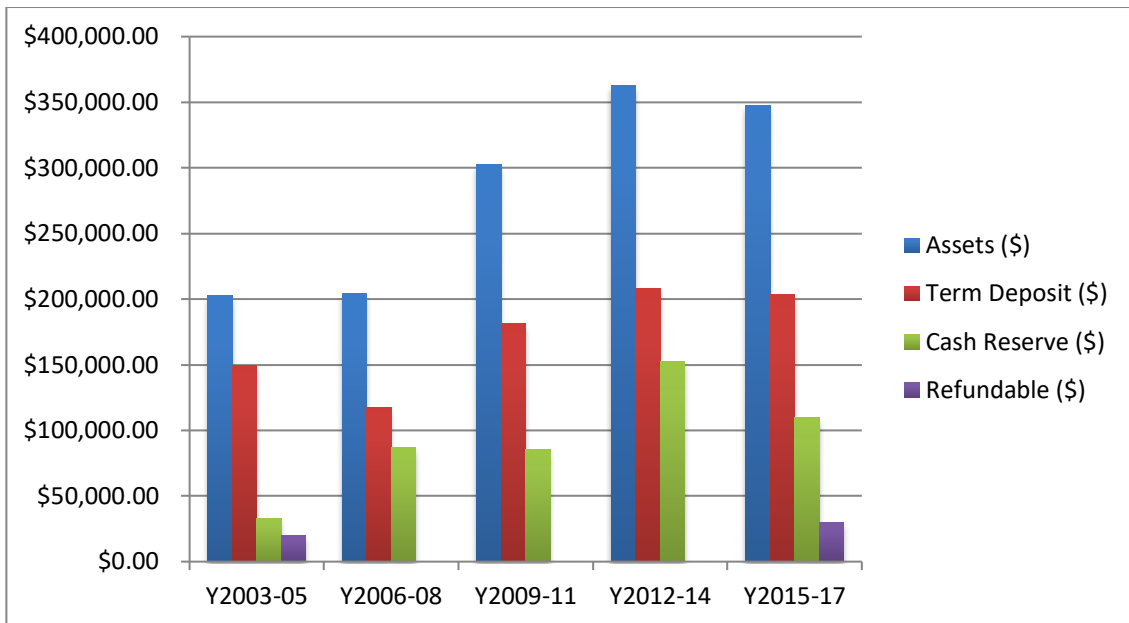


Figure 7.1. Trend of Assets for the periods from 2003-05 to 2015-17 (US\$)

7.2.3. Revenue and Expenditures

Tables 6-8 present the Revenues, Expenditures, and Net Operating Results for the 2015-2017 period. The Revenues of 2016 (US\$47,353) appear to be significantly smaller than those of the previous year: \$77,973 (2015). This is due to the delay in receiving membership dues. Expenditures that year were \$65,115 lower than those of the previous year, but significantly higher than the average expenditure of \$41,904 for the previous period (2012-2014).

Figure 7.2 shows the trend of total revenues, total expenditures, total balance, and total dues for the three-year periods between 2003-2005 and 2015-17. The Total Revenues (blue line) of the period of 2015-17 were 10% smaller than the average of previous periods. This is due to the outcome of the last IEA Triennial Congress, which did not generate capitation fees or a contribution toward an IDC Fund. The decrease in revenues was caused by circumstantial rather than systematic reasons and is not expected to repeat. The Total Expenditures (red line) shows a sharp increase during the 2015-2017 period (18% over the average expense of previous periods from 2003 on, and 89% over the unusually low 2012-2014 period), which, together with the reduced revenues, resulted in an operating deficit of \$17K over the three-year period. This corresponds to a yearly deficit of \$5K on average for the three years and caused a corresponding decrease in the Total Balance. The increased expenses were due mainly to three planned actions undertaken during the period: increasing administrative support (avg \$8K/yr), picking up the tab for website development and maintenance (avg \$11K/yr, previously handled by JES), and more emphatic efforts to expand IEA's effectiveness through the development of thematic networks (e.g., BRICS network, Asia network), national ergonomics associations, and joint projects with universities, governments, and Federated Societies. Although the financial outcome for the period was negative, the actions undertaken are deemed sustainable as the expense level is compatible with historic Triennial Congress performance. The Dues (gold line) looks steady overall.

Figure 7.3 shows the breakdowns of the Revenues for the period of 2015-17. Of the total revenues, 90% were obtained from membership dues and Sustaining Members' contributions. The share of revenues obtained from membership dues and Sustaining Members' contributions is up from its 72% level during the two previous triennial periods due to the absence of capitation fees during this last period. It is expected that the Revenues structure will revert towards its previous configuration, with about 25% of revenues derived from capitation fees and Congress-related IDC Funds (although

the budget for 2018 estimates a more conservative 17.5%). Previous Triennial Reports have made similar observations about the capitation fee share (at 28%) in the revenue structure.

Table 7.4 shows the breakdowns of the Expenditures for the period of 2015-17. The fraction of the Office, Meeting, and Bank Charge are 10 %, 2%, and 2%, respectively. The fractions of the same titles for 2012-14 are 12%, 12%, and 2%, respectively. A total of the Representation & Outreach (previously Travel Executives) and the Standing Committees is 70%, whereas the sum of the same categories for 2012-14 was 67%. The increased allocation of IEA resources to fund its website (13% of Expenditures) has altered the Expenditures structure going forward, although in this report this is partially hidden by the atypically low allocation to Meeting during this last period.

Table 7.4. Revenues for 2012–14

Revenues				Sum	Average
Sources	2015	2016	2017	2015-2017	2015-2017
Membership dues	38,607	19,870	68,925	127,402	42,467
Sustaining Member contrib	36,200	26,000	26,200	88,400	29,467
Capitation fees	0	608	575	1,183	394
Funds contribution	3,019	875	0	3,894	1,298
Miscellaneous	147	0	18	165	55
Total Revenues	77,973	47,353	95,718	221,044	73,681

Table 7.5. Expenditures for 2015–17

Expenditures				Sum	Average
Uses	2015	2016	2017	2015-2017	2015-2017
Meeting	4,005	0	1,560	5,565	1,855
Representation & Outreach	42,987	21,223	26,647	90,857	30,286
Office	2,399	2,870	19,056	24,325	8,108
Awards Committee	10,000	10,000	10,000	30,000	10,000
ID Committee	12,000	7,668	9,192	28,861	9,620
PSE Committee	0	1,494	2,890	4,384	1,461
STP Committee	0	0	0	0	0
Historian	1,369	3,655	3,149	8,173	2,724
DP Committee	0	578	0	578	193
CPR Committee	0	0	4,884	4,884	1,628
Grants	0	0	0	0	0
Bank charges	1,104	1,359	1,837	4,300	1,433
Website	2,225	16,267	13,641	32,133	10,711
Exchg var & clearing fees	6,305	-175	-601	5,529	1,843
Miscellaneous	3,920	0	69	3,990	1,330
Total Expenditures	86,313	64,940	92,325	243,578	81,193

Note: "Travel Executives" has been renamed to "Representation & Outreach" to better reflect the objective of the expenses.

Table 7.6. Net Operational Results for 2015–17

Net Operational Results				Sum	Average
	2015	2016	2017	2015-2017	2015-2017
Surplus or Loss	-8,340	-17,587	3,392	-22,535	-7,512

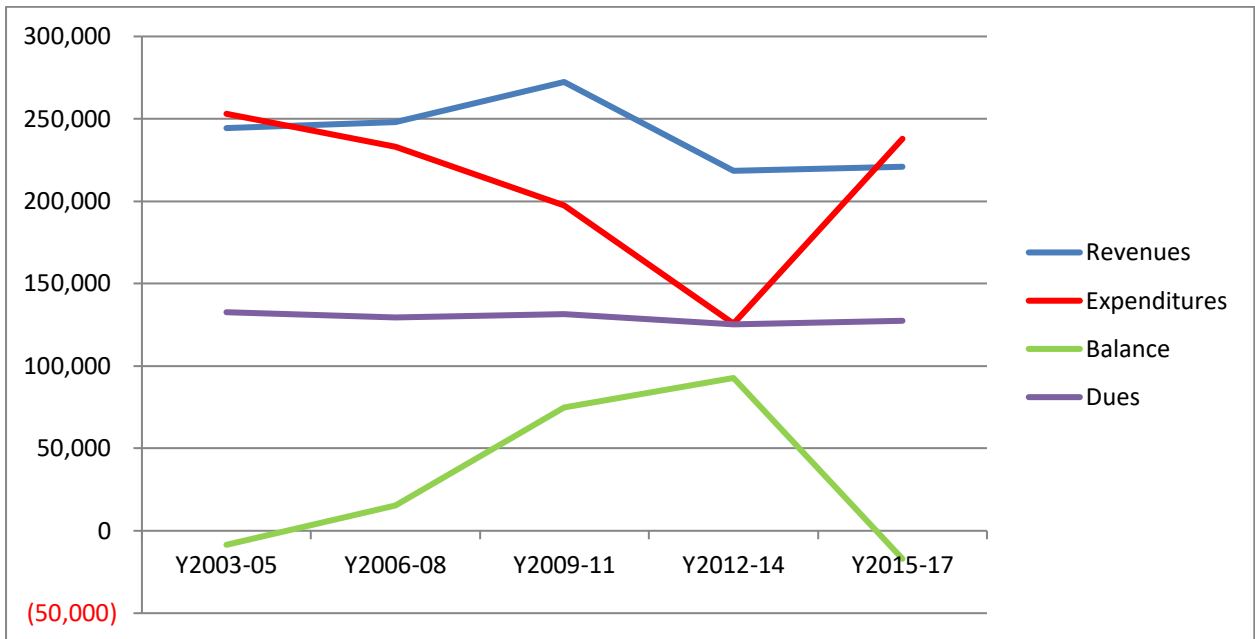


Figure 7.2. Trends of the total Revenues, total Expenditures, total Balance, and total Dues for the periods from 2003-05 to 2015-17 (US\$)

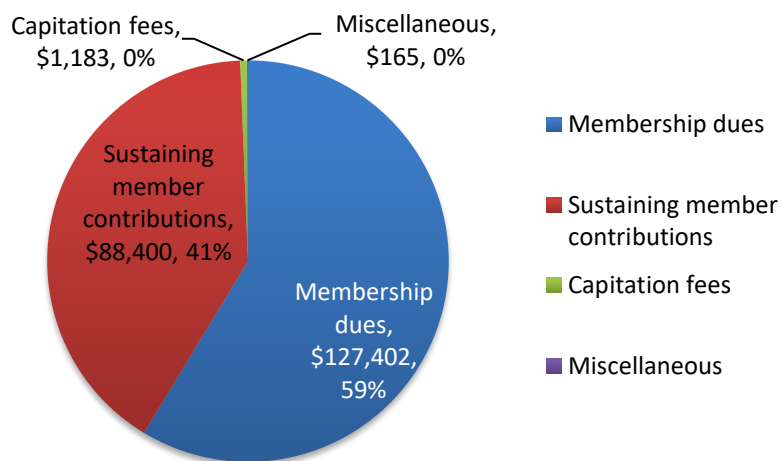


Figure 7.3. Breakdown of the total Revenues for the period of 2015-17

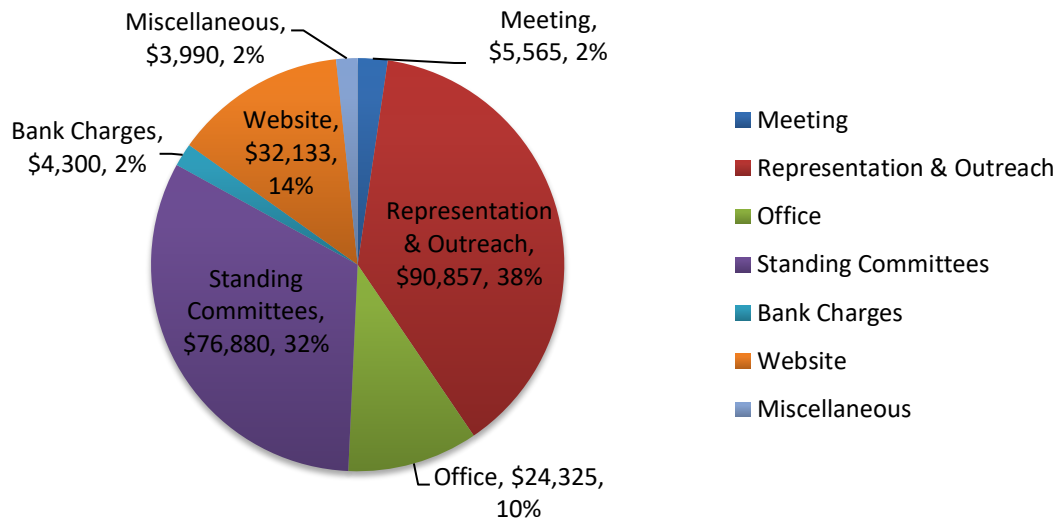


Figure 7.4. Breakdown of the total Expenditures for the period of 2015-17

7.2.4. Concluding Statements

Although year-to-year fluctuation is significant, IEA's financial performance seems steady in terms of the three-year period governed by Triennial Congresses. This appears to be true generally, despite the poor performance relative to capitation fees during 2015-17.

Even though IEA's financial performance is steady, there are a few issues identified in the period of 2015-17. These include the following:

- The introduction of the online system (Scotia Connect) did not significantly improve the bank operation unreliability and inefficiency issues. It is hoped that IEA's move to Switzerland and Swiss banking, coupled with the now operational PayPal facility for dues collections, will resolve those issues.
- Assets decreased slightly during the last period, due, on the expense side, to increasing activity level of IEA, a good sign, and, on the revenue side, to a shortfall on expected capitation income.
- There are a number of initiatives undertaken, but it is strongly recommended to work out more good project plans and implement them, along with additional efforts to explore external resources more systematically.

7.3. Infrastructure

7.3.1. Website

Takashi Kawai, Information and Communication Technology, IEA Infrastructure Committee

7.3.1.1. Overview

The IEA.cc website is a primary means of communication. The mission of this committee is to provide a portal service for information transmission and communication among IEA members and with the external community. Tasks include:

- Maintenance of web pages
- Improvement of management tools
- Enhancement of communication
- Preparation for transition in 2021



Figure 7.5. IEA.cc home page

The Japan Ergonomics Society (JES) has generously provided programming assistance and hosting of the IEA website since late 2012. In 2021, we will transition from the JES-hosted site to a new server and an updated format.

7.3.1.2. Short-term Plan (2015-2018)

Figure 7.5 is a screenshot of the iea.cc home page. During this term, the ICT committee focused on keeping the latest information on the website, managing the server system, improving the content management system (CMS), utilizing the broadcasting and internal-access functions, and optimizing /preserving archived data. We made extensive use of the Broadcast Email function to send updates and information about deadlines and awards to our members and supporters. We posted Messages from the Executive Committee on the home page, as well as announcements of MOUs, awards, research solicitations, and IEA Endorsed Events.

The major improvement plans for each year were:

- In 2015, to build the prototype of the archive function in the internal access area
- In 2016, to improve the user manager and broadcasting function in CMS
- In 2017, to improve the CMS enabling modification of the Federated Societies' pages, and to complete the archive function.
- In 2018, to adopt the Secure Sockets Layer (SSL) security protocol, and to make a plan for transition in 2021

Website enhancements during this Term include the following:

- ~ A new link along the right side of the home page (Reports from Federated Societies) provides space for Federated Societies to report on their conferences and other activities.
- ~ Professional Standards and Education Standing Committee documents (2017) related to Core Competencies in Ergonomics and Certification have been consolidated and links are provided under the Resources tab.

~ With recent changes in the user CMS interface, we are able to update Federated Society as well as Technical Committee information and some of the website content.

~ The website database includes user lists of IEA Representatives, Federated Society officers, Fellows, Officers, and external organization contacts.

~ IEA forms and applications can be downloaded from the password-protected Internal Access area of the website. The By-Laws, Operating Procedures, Endorsement Application forms, IEA Code of Conduct, and Dues Calculation Sheet are available for download using the designated logon ID and password.

~ We are making an extensive effort to digitize and store all relevant IEA documents in the web archives. This will be our primary storage facility, backed up where possible by paper copies at CNAM.

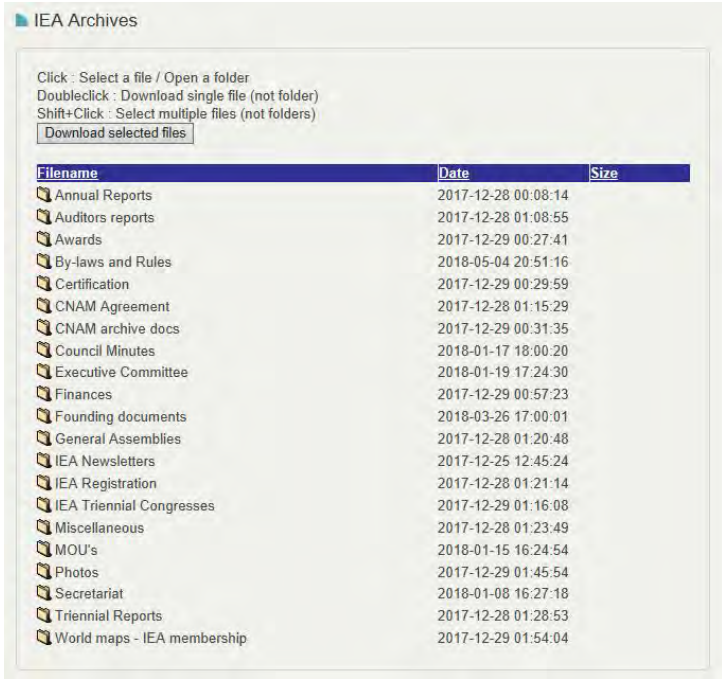
7.3.1.3. Strategic Design

The goals for website plans include timely information update, and content management with better usability. Our intent is also to increase the cost-effectiveness of system management and improve website security. Storing and maintaining the IEA Digital Archives will be a critical function of the IEA website. In addition to being a primary communication tool, the website enables the functional preservation of IEA's information assets.

7.3.1.4. Activities and Outcomes

Examples of the activities and outcomes from the short-term plan include:

- Improvement of the broadcasting function (2016)
- Addition of the CMS function for the Federated Societies (2017)
- Development and completion of the archive function (2015-2017, Figure 7.6)



Click : Select a file / Open a folder
DoubleClick : Download single file (not folder)
Shift+Click : Select multiple files (not folders)
Download selected files

Filename	Date	Size
Annual Reports	2017-12-28 00:08:14	
Auditors reports	2017-12-28 01:08:55	
Awards	2017-12-29 00:27:41	
By-laws and Rules	2018-05-04 20:51:16	
Certification	2017-12-29 00:29:59	
CNAM Agreement	2017-12-28 01:15:29	
CNAM archive docs	2017-12-29 00:31:35	
Council Minutes	2018-01-17 18:00:20	
Executive Committee	2018-01-19 17:24:30	
Finances	2017-12-29 00:57:23	
Founding documents	2018-03-26 17:00:01	
General Assemblies	2017-12-28 01:20:48	
IEA Newsletters	2017-12-25 12:45:24	
IEA Registration	2017-12-28 01:21:14	
IEA Triennial Congresses	2017-12-29 01:16:08	
Miscellaneous	2017-12-28 01:23:49	
MOU's	2018-01-15 16:24:54	
Photos	2017-12-29 01:45:54	
Secretariat	2018-01-08 16:27:18	
Triennial Reports	2017-12-28 01:28:53	
World maps - IEA membership	2017-12-29 01:54:04	

Figure 7.6. Completed archive function

7.3.1.5. Summary

The activities of the committee were carried out according to the plan as far as possible. At this moment, the most important task is to make plans for the transition in 2021. To handle this task, we will form a working group for the “IEA website recreate project.”

7.3.2. Registration

In 2011, IEA became an international not-for-profit organization in Zürich, Switzerland, pursuant to article 60 et seq of the Swiss Civil Code under the official name “The International Ergonomics Association.” The IEA was registered as a “Not For Profit Association” at the commercial register in the Canton of Zürich, Switzerland, under the number CH-020.6.001.285-4.

In 2017, IEA moved its registration from Zurich to Geneva. Now, IEA is registered as an international not-for-profit organization in the municipality of Thônex, Canton of Geneva, pursuant to article 60 et seq of the Swiss Civil Code.

The new registration in Geneva has brought us a lot of practical benefits. Now, all formal administrative operations can be made in English. It has also enabled us to strengthen the financial infrastructure, such as possession of corporate bank account at Union Bank of Swiss (UBS), corporate credit card, debit card, and PayPal account. The PayPal account is expected to facilitate international small-amount remittances. These are believed to have significantly strengthened the administrative infrastructure of IEA.

These accomplishments were facilitated by CONSAVO Legal Ltd. (formerly Araki Legal), Tödistrasse 27, CH - 8002 Zürich, Switzerland. Our responsible contact is Mr. Olivier J. Araki, Managing Partner. We are expecting CONSAVO Legal to continue supporting us in filing formal actions such as the application for tax exemption to the government of the Canton of Geneva.

7.3.3. Accounting System and Related Matters

The tools to keep IEA’s accounts have been gradually implemented in Excel. Adoption of accounting software such as QuickBooks was briefly considered and is a subject that may warrant revisiting. The quick first impression was that this is probably the way to go, but the need to keep track of accounts in several currencies may be an impediment. The Excel workbook currently employed for IEA’s accounting has become quite systematized, staging the accounting across ‘layers’ of worksheets, with interspersed checks to prevent certain types of booking errors:

- transactions are booked (journalized and ledgered) in yearly worksheets per current account, with built-in logic to flag inconsistent transaction booking between the journal and the ledger
- with all ledgers consolidated in yearly movement worksheets,
- yearly P&L Statements and Balance Sheets assembled on single summary worksheets, two for each currency:
 - one with amounts stated in that currency,
 - the other with those same amounts stated in US\$,
- consolidated yearly P&L Statements and Balance Sheets assembled on a single summary worksheet
- analogous treatment for Cash Flow with some logic to flag inconsistencies in the year-to-year progression of Balance Sheets, P&L, and Cash Flow Statements
- and various other worksheets to track things such as Funds’ transactions and balances, dues payments, and exchange rates.

The IEA's accounting system has evolved over time, both structurally and operationally. There were a small number of changes to accounting headings, and also some changes to expense allocation. These changes included the allocation of travel expenditures, previously all grouped in the "Travel Executives" heading, to their respective Committee Accounts, and, in a related move, renaming the "Travel Executives" account as "Representation & Outreach." The handling of the funds administered by the IEA was also the focus of several adjustments, including the definition of what moneys are or are not "Funds," how they are booked, and what expenses are charged to them. In a similar vein, a critical look at website expenditures led to breaking them out into website maintenance and operation and website development.

7.3.4. Permanent Secretariat

In 2016, the IEA Council approved the establishment of a permanent IEA Secretariat office to support the Council members and the IEA Executive Committee. The establishment of this office provides a significant improvement to the IEA infrastructure. IEA engaged Lynn Strother Consulting to provide the Administrator role for the IEA Secretariat on a contractual basis. Lynn has had extensive experience in the management and administration of HFES, an organization with approximately 4500 members in the U.S.A. and other countries. She is also very familiar with IEA and its structure and has attended IEA Council meetings as an ex-officio member of the HFES delegation. Lynn worked on the IEA 2000 Congress hosted by HFES in San Diego and created/ monitored the budget and oversaw meeting logistics. Because of her expertise, Lynn is able to provide services at a very high level and is an excellent asset to IEA. During the first year of her engagement, VPSG Kathleen Mosier and Lynn developed the specific parameters of the position, and it has evolved continuously since then. Lynn has taken on many of the administrative tasks for IEA and provides continuity and institutional memory as members of the Executive Committee change. She is and will continue to be an excellent asset to IEA.

7.3.5. The IEA Press

During this term we resurrected the IEA Press, along with ISBNs to be issued for IEA publications. The IEA Press serves as the virtual publishing house of the IEA. We issued ISBNs to two publications:

978-0-9976041-0-8

Assigned February, 2017

EQUID Design Process Guidelines

Requirements for ergonomic quality management in the design process for products and services.

International Ergonomics Association

EQUID (Ergonomic Quality in Design) Technical Committee

Nael M., Bobjer O., McLoone H., Kwahk J.K., Friesdorf W., Glende S. and Bruder R.

All rights reserved. Copyright 2008 by IEA

978-0-9976041-1-5

Assigned June, 2017.

Ergonomic Checkpoints in Health Care Work. Human Ergology Society and International Ergonomics Association.

These documents are available for download from the IEA.cc home page.

7.4. Awards Standing Committee

An important function of the International Ergonomics Association is to award formal recognition to members of Federated Societies who have made outstanding contributions to the field of ergonomics on an international level. All awards are presented during the IEA Triennial Congress.

7.4.1. Triennial Awards

The **IEA/Elsevier John Wilson Award** is presented in honor of John Wilson (1951-2013), Professor of Human Factors at the University of Nottingham, where he was Director of the Institute of Occupational Ergonomics until his departure and Head of the Human Factors Group (until 2006). Professor Wilson was the co-Editor-in-Chief of *Applied Ergonomics*, former president of the IEHF, and long-term affiliate of the IEA (IEA Council member, member of the IEA Executive Committee in 2000-2003). The IEA/Elsevier John Wilson Award recognizes major contributions in the field of applied ergonomics. As editor of the journal, Professor Wilson demonstrated tremendous leadership and transformed the journal into one of the best human factors and ergonomics journals. This triennial award will be presented to an individual or team with a monetary prize of US \$5,000, which is sponsored by Elsevier.

The recipient of the 2018 IEA/Elsevier John Wilson Award is Pascale Carayon

The **IEA/KU Smith Award** encourages research and presentation by students at the Triennial IEA Congress. Due to the generosity of the Smith family and the transfer of funds through HFES, the IEA is able to provide four awards for US\$3,000 each in 2018. The winners of the KU Smith Award for 2018 were:

- **Yaar Harari**
Yaar Harari, Raziell Riemer, and Avital Bechar, "Methodology for Optimal Workplace Design Using Digital Human Modeling and Considering Ergonomics and Productivity"
- **Husam Muslim Hantoosh Alzamili**
Husam Muslim Hantoosh Alzamili, "Design and Evaluation of Automotive Shared Control in Safety-Critical Situations for Safe Lane Change"
- **Esdras Paravizo**
Esdras Paravizo and Daniel Braatz, "Employing a Game Engine as a Simulation Tool for Ergonomics Analysis, Design, and Education: An Exploratory Study"
- **Adam Schwartz**
Adam Schwartz and Thomas J. Albin, "Intra-Rater and Inter-Rater Reliability of the Rapid Entire Body assessment (REBA) Tool"

The IEA Executive Committee, based upon nominations from Federated Societies, selects recipients for the four awards listed below. The IEA President, who may receive nominations from the Council and Executive Committee, selects the IEA President's Award.

IEA Triennial Distinguished Service Award is presented to individuals for outstanding contributions to the promotion, development and advancement of the IEA.

- **2018 Awardee: Roger A. Haslam**

IEA Triennial Outstanding Educator Award is presented to persons in recognition of outstanding contributions in the area of ergonomics education for having: developed ergonomics education programs; produced new methodology and/or materials for teaching ergonomics; and graduated persons who have become outstanding ergonomists.

- **2018 Awardee: Peter A. Hancock**

IEA Triennial Award for Promotion of Ergonomics in Industrially Developing Countries is given to a person(s) who has made significant and outstanding contributions to the development of infrastructure of ergonomics in an industrially developing country. This may be manifested through development of teaching/training programs, implementation of ergonomics design in industry, development of R&D programs, organization of ergonomics professionals, and extensive collaboration with international bodies such as the United Nations.

- **2018 Awardee: Gaur Ray**

IEA Triennial Ergonomics Development Award is presented to persons who have had an international impact on ergonomics in terms of making a contribution or development which: significantly advances the state of the art of existing ergonomics sub-specialty; opens up a new area of ergonomics research and/or application.

[Not awarded in 2018]

IEA Triennial President's Award is presented to persons who have made outstanding contributions to ergonomics or the furthering of ergonomics, and whose contribution does not clearly fall into one of the other award categories. Persons qualifying for this award do not necessarily have to be ergonomists. Nominations may come from the IEA Council or the IEA Executive Committee. Final approval of this award rests with the IEA President.

- **2018 Awardee: Klaus J. Zink**

IEA Human Factors and Ergonomics Prize is presented to a group, institution, or organization that has made significant contributions to research and development, and/or application of knowledge generally, in the field of human factors and ergonomics. This award is made triennially in conjunction with the IEA Congress. Nominations must come from Federated Societies and/or the IEA Executive Committee and are submitted to the Chair of the Awards Committee.

- **2018 Awardee: Ohara Memorial Institute for Science of Labour, Japan**

7.4.2. Annual Awards

The **IEA/Liberty Mutual Medal** in Occupational Safety and Ergonomics recognizes outstanding original research leading to the reduction or mitigation of work-related injuries and/or to the advancement of theory, understanding, and development of occupational safety research. The award consists of a cash amount of US\$10,000 and a medal.

The winners of his prestigious award during this triennial period were:

2016

- Pieter Coenen, Idsart Kingma, Cécile R. L. Boot, Paulien M. Bongers, and Jaap H. Van Dieën. Cumulative mechanical low-back load at work is a determinant of low-back pain. *Occup Environ Med* 71, no. 5 (2014): 332-337.

2017

- Stephen S. Bao, Jay M. Kapellusch, Andrew S. Merryweather, Mathew S. Thiese, Arun Garg, Kurt T. Hegmann, and Barbara A. Silverstein. Relationships between job organizational factors, biomechanical and psychosocial exposures. *Ergonomics* 59, no. 2 (2016): 179-194.

2018

- Patrick G. Dempsey, Jonisha Pollard, William L. Porter, Alan Mayton, John R. Heberger, Sean Gallagher, Leanna Reardon, & Colin G. Drury (2017). Development of ergonomics audits for bagging, haul truck and maintenance and repair operations in mining. *Ergonomics*, 60(12), 1739-1753.

The **IEA Fellow Award** is given to recognize extraordinary or sustained, superior accomplishments of an individual. To be considered for a fellow award, two eligibility criteria must be satisfied. The candidate must have been a Full Member in good standing of a Federated or Affiliated Ergonomics Society for at least the preceding 10 years, and the candidate must have served the ergonomics community at an international level. In addition, the candidate's distinction as an ergonomics professional must be demonstrated.

New IEA Fellows – 2016 – 2018

2016

Ole Broberg, Denmark
Alan Chan, Hong Kong
Wen-Ruey Chang, United Kingdom
Henk F. van der Molen, Netherlands
Johan Molenbroek, Netherlands

2017

Kazuo Aoki, Japan
Nancy J. Cooke, USA
Knut Inge Fostervold, Norway
Martti Launis, Finland
Veikko Louhevaara, Finland
David Rempel, USA
Richard Wells, Canada

2018

Ravindra S. Goonetilleke
Margaret Graf, Switzerland
Sung Han, Republic of Korea
Barbara McPhee, Australia
Kageyu Noro, Japan
Daniel Ramaciotti, Switzerland
Riccardo Tartaglia, Italy

7.5. Communications and Public Relations Standing Committee

Michelle M. Robertson, Chair

Enhancing the visibility of the discipline of ergonomics and human factors in the design of devices and systems is essential. This committee creates and develops various pathways to address the challenges of determining the best avenues to engage with related international organizations and societies inside and outside of the human factors and ergonomics scientific community. Defining strategies to effectively communicate and diffuse human factors and ergonomics knowledge to various stakeholders at the global and local level is an additional responsibility of this committee.

7.5.1. Long-term Plan

The long-range plan of the CPR Committee is to promote awareness of IEA and human factors/ergonomics globally by interacting and engaging with Federated Societies, external national and international organizations, and professional scientific associations through effective communication and collaboration mechanisms. Additionally, coordination of the dissemination of IEA-related information and the donation of educational HFE-related publications is another on-going CPR effort. Accomplishing this plan will allow IEA to better leverage and utilize international organizational-relationship opportunities to expand our public relations and outreach efforts as well as to enhance the visibility of the ergonomics and human factors field.

7.5.2. Short-term Plan (2015-2018)

Three general goals for the three-year plan were identified by the CPR Committee:

- Promote awareness of IEA activities and initiatives through external outreach communication efforts to support, enhance, and extend IEA collaborations with other international and national organizations and related societies.
- Enhance internal communication among IEA Federated Societies, Networks, and Affiliates to better understand the activities of IEA and how they can support IEA members' initiatives and programs.
- Engage with IEA Standing Committee Chairs and Committee members to actively encourage dissemination of the committee's work to raise the awareness of IEA and HFE among various stakeholders.

To address these goals, several tasks and activities were planned and coordinated with other IEA ad hoc committees and Standing Committee Chairs. Over the three years, various opportunities arose allowing for specific engagements to occur and foster as well as enrich existing external organizational relationships.

7.5.3. Strategic Design

The CPR strategic design of developing engagements and relationships linking internal IEA operations and activities as well as promoting external collaborations and joint activities is shown in Figure 7.7. These communication and outreach efforts have been supported through a variety of activities and subcommittees formed to address the committee's major goals.

7.5.4. Activities and Outcomes

CPR identified several activities during this three-year period that revolved around the goals of the committee. Outcomes of each activity are described leading to future recommendations for sustaining the activity and promoting its value to IEA members.

External Organizations and Liaisons

As described in Section 5 of this report, promoting awareness of IEA and the science of ergonomics/human factors on a global basis by interacting with prominent international and national organizations occurred by engaging with existing external organizations. IEA has several well-established formal relationships with leading international non-governmental organizations (NGOs), as well as the International Organizations for Standardization (ISO). New collaborations with related scientific professional societies are emerging and becoming established. Through the process and exchange of Memoranda of Understanding (MOUs) with organizations, a more formal recognition of these partnerships and subsequent joint activities is taking place.

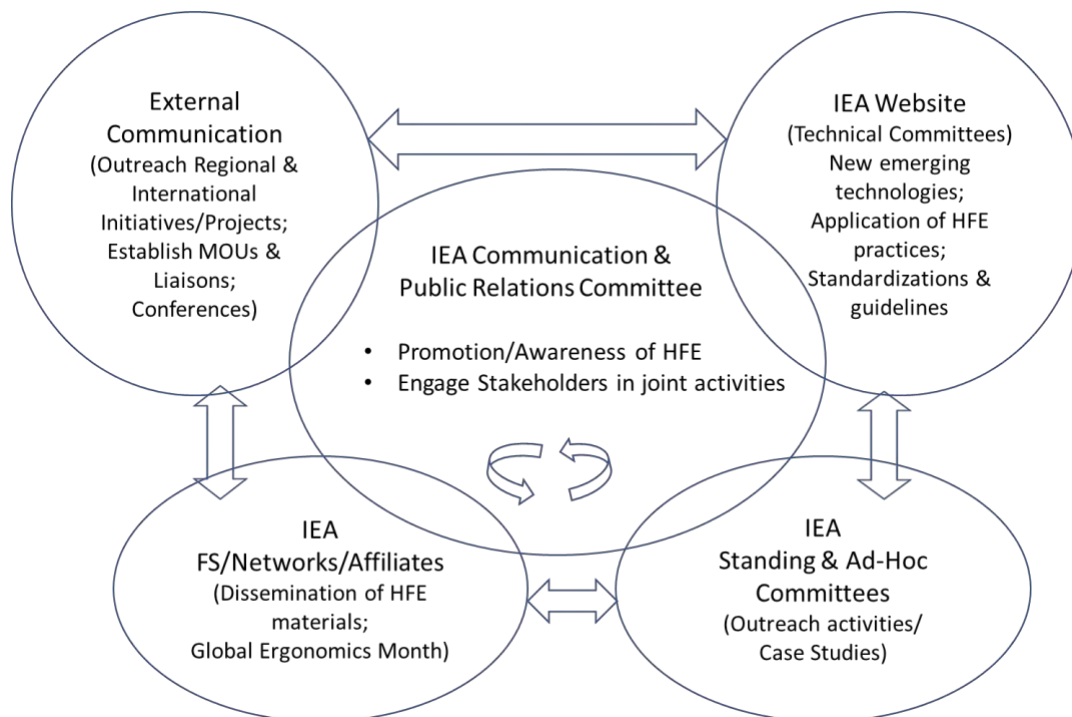


Figure 7.7. Conceptual framework and strategic design of the CPR Committee activities

Given that IEA is formally registered by the United Nations (UN), World Health Organization (WHO) and the International Labour Organization (ILO) as an NGO, a close liaison exists among these world bodies. WHO formally recognizes a Non-State Actor representative from the IEA and invites them to attend both the WHO Executive Director Board meeting and the World Health Assembly (WHA). Several notable activities were undertaken with these organizations, and formal plans were developed and executed. At the 71st WHA meetings, collaboration with two IEA formal liaison organizations, the International Commission on Occupational Health (ICOH), and the International Occupational Hygiene Association (IOHA), occurred. Non-State Actors representing each organization collaborated on delivering a prepared statement for WHO Committee A's discussions under the General Program of Work (GPW). The joint statement proposed the inclusion of occupational health into the content of the 13th GPW (See Section 5 for detail).

Official WHO and IEA collaboration plans for 2016-2017 and 2017-2019 were developed during this term. The 2016-2017 planned activities included: (1) develop and implement healthy-workplace training modules and guidance materials; (2) provide website information on validated tools for assessing risk of work-related musculoskeletal injuries and disorders (WMSDs); and (3) contribute to a WHO Working Group developing WHO Guidelines on Minimum Standards for Workplace Health Protection.

During this term, the Human Ergology Society (HES, an IEA Affiliated Society), ILO, and IEA collaborated on the joint publication of *Ergonomic Checkpoints in Health Care Work*, which is now available on the ILO and the IEA websites. As part of the collaboration, the IEA Healthcare Ergonomics Technical Committee collaboratively evaluated the document with HES. Promotion and dissemination of these guidelines was launched at the 1st ErgoAfrica Conference, hosted by the Ergonomics Society of South Africa (ESSA) (see Section 7.7).

Several MOUs with international bodies were formalized during this term, encouraging and supporting ongoing cooperation and joint initiatives, as noted previously. These are described in detail in Section 5. Other related organizations with which IEA is engaging and developing new relationships and collaborations are the Asian Council on Ergonomics and Design and the Advanced Imaging Society. Initial discussions are occurring with the World Design Organization and the Institute of Industrial and Systems Engineers (Applied Ergonomics Branch) about the exchange of conference support. Formal liaisons also are being established in collaborations with the IEA Industrial Development Committee, and include the WHO ErgoAfrica Regional office, and the BRICSPlus (Brazil, Russia, India, China, and South Africa) network (See Section 7.7). Overall, the goals of these relationships are to encourage and support the participation in each other's conferences, to collaborate on joint projects, to stimulate communication among the organizations through respective websites, seminars, and workshops, and to consider establishing either a formal appointed liaison position or a MOU.

Enhance communication among IEA Federated Societies and external organizations

October is designated as Global Ergonomics Month (GEM) and is recognized as the Worldwide Month of Ergonomics and Human Factors by the Federated European Ergonomics Societies (FEES). Several IEA Federated Societies and Networks (e.g., FEES) are actively involved in promoting ergonomics and human factors awareness during October. Typically, these planned events and activities are grassroots, community-based activities that target key stakeholders at various levels, such as industries, schools, government agencies, and society at large, and include:

- providing information and materials
- distributing case studies
- highlighting methods and discussions of experiences
- providing community services

One of the Communication and Public Relations Committee's initiatives is to actively support and encourage involvement of IEA Federated Societies and Networks and other relevant global organizations in promoting the science, application, and profession of ergonomics and human factors and to share these event experiences during the month of October.

Informative and educational HFE materials and other related planned activities (e.g., design competitions) used for these GEM efforts are highlighted on the IEA website - for example, ergonomics and human factors case studies developed by the CIEHF of the UK. Exchanging these EHF materials and related stories about local initiatives may stimulate further opportunities for other IEA Federated Societies, Networks and affiliated professional/scientific organizations to coordinate and utilize these available materials in planning their own grassroots GEM activities. IEA acknowledges these admirable efforts and strongly supports such local and national initiatives.

For the IEA 2018 Congress, invited IEA Federated Society and Network Presidents will participate in a symposium and present their respective Global Ergonomics Month (GEM) activities, initiatives, and awareness efforts. The audience will discuss what GEM activities could be further promoted, along

with possible joint worldwide activities and initiatives in celebration of the upcoming IEA 60th Anniversary (See Section 7.12).

To better understand the needs of IEA Federated Societies, Networks and Affiliates regarding communication channels and frequency of communication among these bodies, a CPR sub-committee designed and disseminated a survey, and the results will be presented at the IEA2018 Congress. It is noted that keeping open communication channels is the cornerstone of an effective organization. Thus, IEA is striving to always improve and explore new options in its communication efforts, both internally (e.g., IEA Federated Societies, Networks, and Affiliated Societies) and externally with its stakeholders. This is especially true when there is a surge in the variety of communication technologies.

To enhance the IEA social media presence, an action plan was developed by a CPR subcommittee. Based on current trends of streamlining information, their recommendation was to start with something easy to build up the IEA following and get interconnected with other societies and people without incurring significant start-up costs, upkeep, or high maintenance. The first step is to have the subcommittee coordinate with the IEA 2018 Congress media group to consider establishing a continued social media presence through Twitter @IEA2018florence. IEA EC supports this initiative. The subcommittee will coordinate efforts to get news updates for posting news from the iea.cc website or other sources, and will monitor and track the postings. This action will provide growth patterns and an overall impact on outreach, public relations, and communications.

As part of IEA communication efforts, a revamped IEA logo was designed and for a new IEA Power Point template. The motivation for this to modernize the look of presentations through different, crisp fonts but with a similar representation to the current IEA logo. Customized taglines can be used to promote IEA and the related organization. For instance, endorsed IEA conferences can include their conference theme tagline under the IEA logo. These new templates will be provided to IEA members and coordinated through the IEA Vice President and Secretary General.

Dissemination of HFE knowledge

Providing and disseminating EHF scientific materials and other publications promotes the awareness of EHF as well as provides the foundation for influencing design criteria. Recently, IEA endorsed five international conferences for scientists and practitioners (see section 7.9). Dissemination of these conferences' proceedings is being coordinated with the International Development Standing Committee to support IDC university libraries. Updated guidelines for the event endorsement process are located on IEA website. In addition, Panama University is coordinating with Liberty Mutual to transfer the Research Institute for Safety library consisting of more than 50 HFE and related journals to them. This body of HFE literature will support Panama University's Masters Programs in ergonomics and safety.

Another IEA effort was promoting field use of *Ergonomic Checkpoints in Health Care Work* through a collaborative activity with the World Organization of Family Doctors (WOMA), a WHO Non-State Actor NGO. WOMA is currently using the *Checkpoints* document in Latin America and is planning to provide feedback on its applicability and use in the field. Translation of this checklist into Spanish is being considered, and some local efforts are currently being undertaken.

Additionally, in a collaboration with the IEA Task Force on the Future of Human Factors and Ergonomics and the IEA Federated Society, Chartered Institute for Ergonomics and Human Factors (CIEHF of the UK), case studies will be solicited at IEA2018 with the goal of producing various examples of EHF design and its impact on people and systems. Case studies could be considered in the future as a means of demonstrating the usefulness and effectiveness of the *Checkpoints*

document for improving healthcare workers' well-being and promoting their safety and health. The process will be similar to what CIEHF undertook for their publication of *The Human Connection*, which is posted on the IEA website under Ergonomics in Practice.

7.5.5. Summary and Recommendations

Several key activities were undertaken to promote and enhance external relationships of related organizations with IEA, such as actively working with key NGO leaders to present a joint statement to the World Health Assembly. The Global Ergonomics Month initiative continues to foster engagement among IEA Federated Societies and Networks to foster awareness of HFE with various stakeholders at the local, governmental, and international levels. Disseminating HFE educational materials through local seminars and regional conferences was another major activity of the CPR Committee. Proceedings of IEA-endorsed conferences are being distributed to university libraries in industrially developing countries. The design of updated communication modes, specifically a modernized IEA logo for presentation templates, was accomplished. New external relations are emerging, and these need to be nurtured to achieve the goal of promoting awareness of the value of ergonomics and human factors. Collectively, these CPR activities were initiated to illuminate IEA's mission and value and to demonstrate the impact that the field of HFE can have on the well-being of workers and on system design. Several of these initiatives are new, and support of these continuing efforts and activities is greatly encouraged.

7.6. Development and Promotion Standing Committee

The Development and Promotion (DP) Standing Committee explores and coordinates new policy options and proposals, and assists in development and implementation of new programs and initiatives relevant to the function and effectiveness of IEA. The DP committee develops and coordinates plans and proposals concerning IEA policies, operation, and structure, and assists in development of policy recommendations to better serve the Federated Societies and the international ergonomics community.

The DP chair initiated a discussion on the branding of the IEA in a previous term at the Taipei Council Meeting in 2014. (cf. The Meeting Minutes of the IEA Council, June 22-23, 2014, Taipei, Taiwan). Following this initiative, a budget was approved for contracting a marketing company to develop a marketing plan for IEA. (cf. The Meeting of Minutes of the IEA Council, August 8-9, 2015, Melbourne, Australia). The original idea of this term was to conduct a project for developing a marketing plan for the IEA; however, it was decided to suspend the project until we become able to provide a contractor with clearer ideas about ourselves.

7.8. International Development Standing Committee

Andrew Todd, Chair

7.8.1. Long-Term Plan

The Future of Ergonomics report (Dul et al., 2012) identified several key areas of concern for the profession of human factors and ergonomics. In particular, two important factors are deemed relevant to the development of an international development plan:

1. People are not aware of the value HFE can add. (No demand)
2. When there is demand, there is not enough high-quality HFE.

The lack of knowledge about what human factors and ergonomics can add and the lack of high-quality educational programs were therefore the basis for the International Development Standing Committee's long-term plan for 2015-2018. The strategy placed an emphasis on supporting the development of strong education programs that produce high-quality HFE professionals who

can advocate for themselves through demonstration of financial benefits as key to creating this demand.

The purpose of the long-term plan was the development of a strategic framework and protocol for international development that is flexible and adaptable to diverse contexts, and provides

- Support for growing educational programs and standards in Affiliated and Federated Societies
- Support for growing educational programs in potential societies

A second part of the long-term plan was to run some test cases of the framework and to continually update and adapt the model as needed.

7.8.2. Short-Term Plan

In order to facilitate the long-term plan of supporting the development of strong educational Programs, the following activities were adopted:

1. Understand the global reach of IEA
2. Development of the General Framework Model for implementation of a long-term strategy
3. Engage with stakeholders (with an emphasis on IEA Federated, Affiliated and potential societies)

7.8.3. Strategic Design

There are several key philosophical tenants that underpin the approach to the strategic design of the International Development Standing Committee activities. These are outlined in the pages that follow.

1. Focus on building local capacity through improved/new educational programs

A key shift in the focus of the International Development Standing Committee was to move from specialized projects to supporting the development of educational programs that reflect adequate levels of the core competencies of HFE (see Figure 7.8 and Professional Standards and Education Standing Committee reports by Tey and Graf). The rationale behind this strategy shift is that training of the trainers allows for sustainable growth of local societies. The focus of these educational programs must also be linked with Strategy 4 below. A particularly important part of this approach is placing an emphasis on supporting societies to introduce a more systemic approach to human factors and ergonomics in response to the fact that many smaller developing countries have historically had a limited focus.

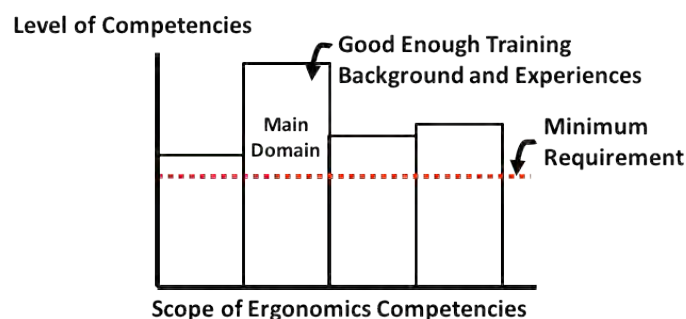


Figure 7.8. Emphasis on broad, balanced competencies for professional HFE education and certification requirements.

2. Incorporating how technology/knowledge is effectively diffused literature into the approach adopted

A second important consideration of the long-term strategy for supporting knowledge of HFE and growth in quality educational programs was acknowledging how to effectively promote the diffusion of innovation. The work of Greenhalgh (2004) shown in Figure 7.9 is of particular important in framing the participatory approach undertaken by the standing committee.

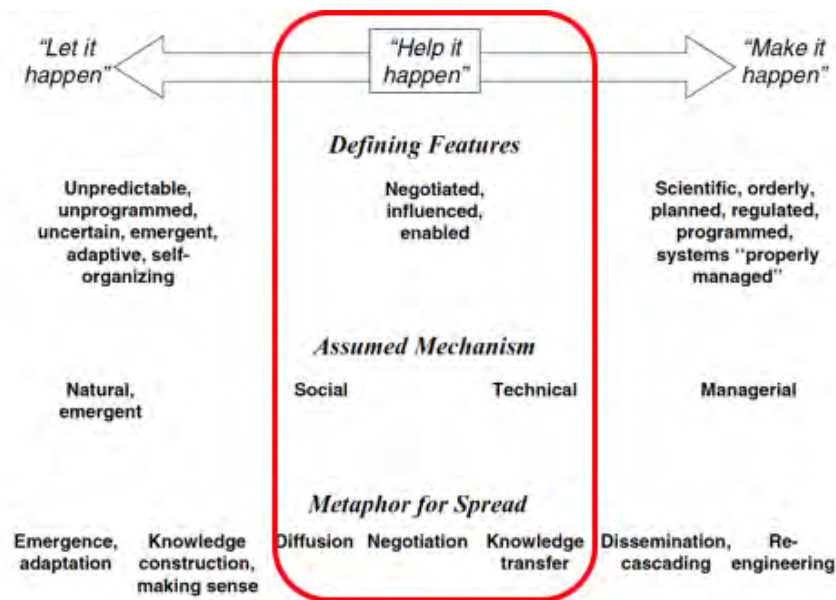


Figure 7.9. Greenhalgh (2004) model for supporting the spread of innovation.

In other words, a key component of the approach adopted by the International Development Committee was to ensure that relevant stakeholders are involved in building capacity with a focus on the negotiated diffusion and transfer (bidirectional) of knowledge. This allows IEA to develop a better understanding of the contextual constraints on societies, and for societies to gain insights into potential areas and mechanisms of growth. This is obviously a long-term plan as "helping it happen" takes time, but it supports sustainable development through both social and technical mechanisms (i.e., takes a socio-technical systems approach to HFE growth).

3. Stakeholders, emergence and networks

HFE has long advocated for acknowledging the importance of emergence. Furthermore, the Dul et al. (2012) paper promoted the building of closer relationships with stakeholders. The concept of emergence is particularly important from a stakeholder perspective, as it is through stakeholders that change (i.e., development) can occur. This is best reflected in the work of Wheatley and Frieze (2006):

Change begins as local actions spring up simultaneously in many different areas. If these changes remain disconnected, nothing happens beyond each locale. However, when they become connected, local actions can emerge as a powerful system with influence at a more global or comprehensive level.

Therefore, it is through emergence that local changes can materialize as global systems of influence. This is of obvious relevance to growth in HFE at local, regional, and global levels.

Building networks among stakeholders at the various levels (see General Framework Model for details) was therefore a key strategic aspect of the design of the development activities.

There are typically three stages recognized within such an approach:

Stage 1: Networks – Discovering shared purpose

Stage 2: Communities of practice – Developing new practices

Stage 3: Systems of influence – New practices become the norm

To achieve these within a 3-year period is obviously difficult and ambitious, and as such are part of the long-term approach adopted by the IEA Development Standing Committee for sustainable growth rather than short-term success. The international development plan was therefore aligned with that of IEA (see Figure 7.10).



Figure 7.10. IEA policy as developed and reported by the IEA President. International development strategy incorporated this approach to build networks.

The focus of this approach was an emphasis on what Wheatley and Frieze refer to as “learn globally, connect regionally, act locally.” This allows for a contextually specific and adaptable approach to HFE development to be facilitated.

4. Alignment of human factors and ergonomics science and practice

It is clear that sound HFE cannot be achieved through either science or practice on their own but rather through a symbiotic relationship between the two. This is particularly relevant when coupled with the need for growing the demand for HFE practitioners and researchers. Because HFE is an applied science we have placed an emphasis on ensuring that there is alignment between science and practice (see Figure 7.11).

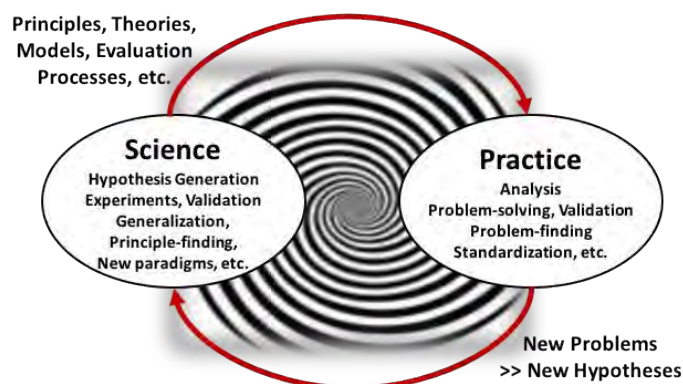


Figure 7.11. Illustrative example that neither science nor practice alone can make sound HFE (figure from Fujita and Todd presentations during 2015-2018 term).

7.8.4. Activities and Outcomes

The activities for the International Development Standing Committee are presented to match the short-term plans outlined previously.

Activity 1: Developing an understanding of the current situation

In order to understand global development needs for IEA, the global and then more specifically the regional development of the human factors and ergonomics profession was investigated. In particular, it was important to understand regional distribution of IEA Federated/Affiliated Societies. This allowed the International Development Committee to target key areas for development, while simultaneously gaining a better understanding of who in these development areas would be able to provide important support.

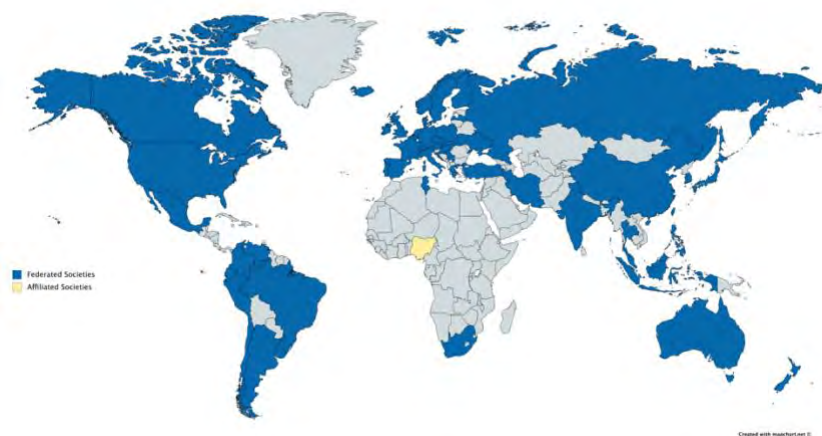


Figure 7.12. An indication of the current reach (blue countries) of the IEA and areas requiring further development (in grey)

Key Outcomes:

- A report on the current situation of the IEA was submitted as Appendix B at the IEA Council meeting in 2016 in Medellin, Colombia.
- Better understanding of the needs of Federated Societies. This is reflected in the long-term plans of the International Development Committee.
- Encouragement of Federated Societies to develop their own strategic plan and to share at the IEA 2018 Congress in Florence.

Activity 2: Development of General Framework Model (GFM)

An important part of being able to implement the long-term strategy and to develop high-quality educational programs was to provide a General Framework Model that could be used to promote such activities. Key elements of the framework consider the following:

- Translation of the Dul et al. recommendations into a tangible action plan for identifying value-added topics, stakeholders, and their relationships. Then to provide specifications for project development with the identified stakeholders.
- Promotion of a simple stepwise approach to project specification and development of HFE (see Figure 7.13).
- Flexibility and adaptability: The model should be able to be promoted simply with a focus on identifying purpose and consequent stakeholders using simple tools such as work domain analysis;

or with added complexity including an interdisciplinary design advocated by the systems approach (e.g., stakeholder analysis through social network analysis and network weaving, social innovation research, and cognitive work analysis) and the later steps of cognitive work analysis.



Figure 7.13. Stepwise approach promoted by the General Framework Model developed by IEA

Key Outcomes:

- Proposed GFM for implementation by IEA (See *Proceedings of the 7th International Ergonomics Conference ERGONOMICS 2018 – Emphasis on Wellbeing* (ISSN 2584-5012))
- Promotion of the General Framework Model with numerous stakeholders (see Activity 3 for details)
- Ongoing case studies in Algeria, Peru, and Panama
- Workshop on the GFM with the Centre for Registration of European Ergonomists (CREE) in Buxton, UK
- Integration of the IEA General Framework Model into the World Health Organization framework for HFE healthcare promotion (draft paper complete)
- Full-day collaborative workshop on “An Approach to Growing Ergonomics in Europe” coordinated by CREE, FEES, and IEA in collaboration with the Croatian Ergonomics Society in Zadar, Croatia with delegates from Eastern Europe. A preliminary plan for growth in the region formulated during the workshop is building towards outcomes in 2020.
- Translation of the General Framework Model into Spanish (with thanks to Marian Salvatierra)

Activity 3: Engage with stakeholders

An important part of the IEA international development strategy was to build a closer working relationship with the IEA Networks and Affiliated and Federated Societies and to foster the development of new networks. Therefore, a variety of stakeholders was engaged by the Standing Committee and the Executive Committee of the IEA during the 2015-2018 term of office. It is difficult in a report like this to illustrate all of these activities in a coherent manner as there is often overlap between the work of various committees and stakeholders. As such, for the purposes of this report, only those relevant to international development (and not covered in other Executive Committee and Standing Committee reports) are included here; they do not reflect the bigger picture within which they fit. (See IEA President’s Address for details.)

A variety of tools and methods were utilized to interact with stakeholders by the IEA International Development Standing Committee, a representative sample of which are illustrated below:

- Roundtable discussions
- Conference attendance and promotion of development strategies
- Workshops

- External stakeholder meetings with Federated or potential societies (including WHO, ILO, universities, governments, etc.)
- Support for development of training and education material
- Meeting facilitation - Network and society meetings, workshops and/or conferences attended (by the International Development Standing Committee specifically, this does not reflect IEA as a whole):
- 2016: India, Croatia (FEES), Poland, South Africa, Colombia (ULAERGO), Peru, Morocco (ErgoAfrica) and China
- 2017: Uruguay (ULAERGO), Singapore, Brazil (ULAERGO, BRICS*Plus*), Peru, Panama, Italy, Japan (ACED – Vietnam), South Africa (ErgoAfrica – Bostwana, Namibia, Morocco, Algeria), Centre for Registration of European Ergonomists
- 2018: Croatia (CREE, FEES – Slovenia), Panama, Costa Rica, Russia (BRICS*Plus*)

Note: The countries indicated in the parentheses after the network name indicate countries that were in attendance that are not yet affiliated or federated to the IEA.

Another important component of the work in engaging with stakeholders was building closer working relationships among the IEA Standing Committees to build a system for introducing new societies to the IEA. A draft proposal is highlighted in Figure 7.14.

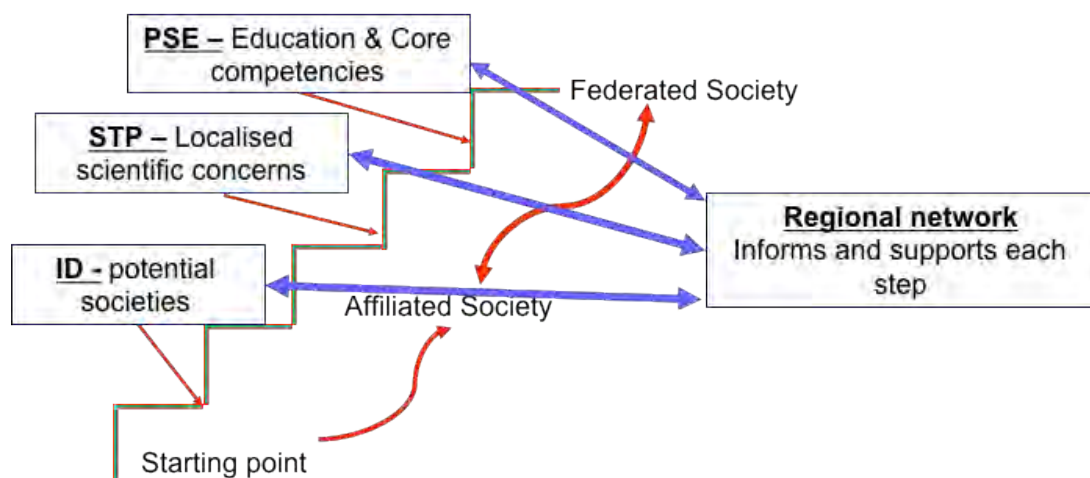


Figure 7.14. A draft proposal for providing greater support for new societies interesting in becoming Federated Societies of the IEA.

The emphasis of this proposal is on ensuring that societies are appropriately networked with their local stakeholders to provide high-quality HFE scientific work that speaks to localized concerns through the introduction of educational programs that address core competencies of HFE in their courses. In order to achieve this, it is important that the Professional Standards and Education (PSE), Science, Technology and Practice (STP) and International Development (ID) Standing Committees work together to build local-society capacity. This is further reflected and articulated in the policies introduced and promoted by the IEA president (see President’s Address).

Key Outcomes:

- MOUs with ErgoAfrica, FEES, and ULAERGO for closer working relationships
- Growth in Asian Council for Ergonomics in Design (ACED) – working towards recognition as an IEA Network (IEA Congress Florence 2018)
- Formation of BRICS*Plus* network including new educational programs (Tsinghua University, Beijing, China), joint research funding applications, and university network.
- New policy for engaging with networks and potential societies (see IEA President’s Address).

- ErgoAfrica and ULAERGO committee structure to mirror IEA structures for easy dissemination of information and collaboration.
- New proposed policy for supporting new societies to reach Federated Society status with IEA.
- New academic postgraduate programs initiated in Panama, Peru, and Colombia with potential in Costa Rica.
- Uruguay welcomed as an IEA Federated Society
- Funding support for representatives from 18 Federated Societies to attend the IEA Council meeting and Triennial Congress in Florence, Italy.
- Growth of HFE initiatives in Africa including:
 - o ErgoAfrica formally recognized as an IEA Network
 - o Collaborative projects between IEA Healthcare Technical Committee and ErgoAfrica (see Section 5). Projects initiated in South Africa, Tunisia, and Morocco with focus on integration of universities into programs for capacity building.
 - o Development of educational framework of human factors and ergonomics in Africa under the guidance of Professor Hakim Benchekroun.
 - o ErgoAfrica symposium at IEA Congress in Florence (first collaborative effort from Africa).
 - o Support for growth in Algeria and Morocco (with further developments in Botswana and Kenya).
 - o African HFE participation in the World Health Organization Global Knowledge Sharing Platform for Patient Safety hosted in Florence, Italy.

7.8.5. Conclusions and recommendations

Conclusions

The International Development Standing Committee has been very active during the 2015-2018 term with a number of activities that have led to some excellent outcomes as the report reflects. The emphasis of these activities has been on long-term development of a strong educational base for HFE through the development of stakeholder awareness and new high-quality educational programs. There are few quick fixes within this approach, and it requires persistent attention to overcome the multitude of challenges that emerge along the way. I am confident that through the lessons learned we are translating activities into progress. This is reflected in the particularly pleasing progress made in Africa and Latin America in terms of the educational programs supported and/or initiated. It is also evident in the approach undertaken through joint efforts of CREE, FEES, and IEA in Europe, which have tremendous potential.

Another important achievement is the stronger relationship between IEA and our regional networks with a clearly defined purpose in our shared activities, allowing the motto of “learning globally, connecting regionally, acting locally” to be put into action. I am confident that we have put a good foundation in place to ensure continued development and support in the next term of office for IEA.

There is still much work to do; many regions of the world are still inadequately represented in IEA including Africa, Central Asia, Central America, and Eastern Europe. Furthermore, many societies’ numbers remain small. It is therefore important to continue the concerted efforts to understand the local needs for growing an understanding of the value of human factors and ergonomics as well as how best to introduce these key factors into educational programs. I believe that the GFM is a good starting point for achieving this but requires action from various stakeholders including the IEA, Federated Societies, IEA Networks, and research groups. HFE promotes a systems approach to optimization of productivity and human well-being, and it is the contention of the ID Standing Committee that it is necessary for us to apply this same approach to our own structures and activities. In other words, the application of the systems approach to ergonomics in the “wild” should form the basis of optimizing the development and growth of the profession.

Recommendations

There are several recommendations for consideration going forward:

- A sustainable approach that continues to support the current structures put in place will help to foster continuity in international development and ensure that some of the long-term plans put in place come to fruition. In particular, the initiatives related to growing educational programs should continue to receive support.
- Formalization of support for bringing new societies into the IEA focused on collaboration between various IEA Standing Committees to ensure that Federated Societies are self-sustainable.
- Funding of international development is an important consideration going forward. There is a need to provide the IDC fund with a more clearly articulated purpose and to communicate to funding societies to promote further funding. Active search for external funding using the GFM is also needed.
- Collaborative workshops with Affiliated, Federated, and potential IEA societies is an important activity. The workshop run by CREE, FEES, and IEA has potential to be a very useful mechanism for networking people, building local capacity, and growing knowledge of HFE amongst stakeholders.³

7.8. Professional Standards and Education Standing Committee

Frederick Tey, Chair

Maggie Graf, Certification Subcommittee Chair

7.8.1. History

One of the main aims of the IEA is to promote high-quality education for and certification of HFE professionals. At the beginning of the century, the IEA produced recommendations for core competencies of professional ergonomists. These included competency units, elements, and performance criteria. The aim was to assist educators in designing courses for ergonomics and human factors practitioners and certification boards to assess candidates for professional registration. The long-term plan was to enhance the professional identity of HFE practitioners. The IEA intended that the certification bodies would use the IEA core competencies as the standard for setting the levels for professional certification, and thus mutual recognition among the certifying bodies could be promoted. A system was set up to grant IEA endorsement to certification bodies that met IEA requirements. It was intended that the criteria for education and certification would be kept in line with developments in the profession.

7.8.1. Short-term Plan (2015-2018)

Certification

After a special session for experience exchange between the certification bodies at the IEA Congress in Melbourne in 2015, the Certification Subcommittee was re-established to encourage ongoing

³ Thanks: The ID activities and successes requires collaborative efforts from a variety of people and I would like to thank everyone that has worked with the committee for their contributions and support. In particular, I would like to recognize Paulo Antonio Baros Oliveira and Gaur Ray for their assistance as co-chairs of the standing committee. Furthermore, to the network presidents Sylvain Leduc (FEES), Taoufik Khalfallah (ErgoAfrica), Paulina Hernandez (ULAERGO), Kentaro Kotani and Rosemary Seva (ACED) for their collaborative efforts and support in the developing the IEA approach growth. While Maggie Graf (CREE) and Gyula Szabo (FEES) also deserve a special mention for the support and efforts in developing the joint CREE, FEES, and IEA workshop, a model that we are sure to use and grow substantially going forward. The organizers of the IEA Triennial Congress in Florence, Italy (Riccardo Tartaglia, Sara Albolino, and their wonderful team) for the generous support for developing countries and the work of the International Development Standing Committee throughout the last three years.

Lastly to the IEA Executive, Standing Committee, and Technical Committee Chairs who have actively supported and promoted the International development initiatives, it has been an honor to work with you. IEA President, Yushi Fujita, I cannot express how much I have learnt from you as a leader, academic, and friend. You inspire me!

experience exchange and promote unified standards and the establishment of certification systems in regions where none exists. The first task of the Certification Subcommittee was to create an overview of the certification systems that were endorsed by the IEA and the existing systems amongst the member societies that are not yet IEA endorsed. It was also decided to explore further the possibilities for mutual recognition.

The plan during this term was to revise and update the documents relating to IEA endorsement of certification systems, including the IEA criteria for endorsement, the application forms, and the endorsement process. These were twenty years old and no longer in line with current practice. This was also the case for the IEA-recommended core competencies of professional ergonomists. It was noted that the IEA-endorsed certification bodies had adapted their minimum educational requirements to current practice, and that they were all somewhat different from the core competencies required by IEA, allowing more specialization in the profession. Additionally, recommendations from the Dul et al. (2012) future of HFE report had implications for training that needed to be taken into account.

Education

The PSE Education Subcommittee took on the task of understanding the education systems of all Federated Societies by establishing a systematic way for societies to provide this information on their websites. One goal of this task was to help practitioners who wanted to achieve a professional standard of higher education when it was not available in their own region. The Education Subcommittee intended to propose a network for mutual recognition of educational programs among societies, in view of the lack of HFE expertise in different regions of the world.

7.8.2. Strategic Design

Certification

Both the revision of the IEA core competencies and the promotion of certification have strategic value, as these activities develop the profession, support the establishment of a professional identity, and equip practitioners for future needs. Certification enables the HFE profession to maintain quality standards and protects clients from poorly qualified practitioners. Additionally, the core competencies can be used to present the profession to stakeholders and to assist in harmonizing training programs across the world.

Education

The Education Subcommittee proposed the promotion of tiered membership levels within societies that reflect an individual's level of interest, knowledge, skills, and experience. For example, an individual may start out as a student member and move to associate, professional, or expert levels within the society. It is assumed that HFE practitioners would be encouraged to use higher-education components to move upward within the membership pathways (similar to CIEHF and HFESS membership pathways).

7.8.3. Activities and Outcomes

Certification

As of January 2018, according to IEA records, three certification systems have been formally reviewed and endorsed by IEA (BCPE in the USA, the Japanese Ergonomics Society, and the New Zealand Ergonomics Society). A flow-chart for the IEA endorsement procedure was developed and the review checklist modified to reflect the new criteria changes. Following a consultation with interested stakeholders, the revised documents were published on the IEA website at the end of 2017. The certification board for Europe, CREE, was approved for IEA endorsement according to the revised procedures in February 2018. The certification board of the Brazilian Ergonomics Society was also approved in July 2018.

Additionally, a draft revision of the Core Competencies was presented to the IEA Executive in March 2018. After receiving feedback from executive members, a second version of the draft was sent to the members of the Certification Subcommittee and a selection of leading educators from across the world. It is deemed particularly important that feedback from countries with more recently developed ergonomics programs is obtained along with feedback from the very established educational units and certification bodies. The outcome of the consultation process will be presented in a symposium at IEA2018 in Florence.

At the IEA2018 Congress there will also be a special session on certification. Representatives of the leading systems will present how they have dealt with various issues that are common to many. The aim of this session is to assist countries that are setting up certification systems. A number of societies have indicated interest, and several are in the process of establishing systems; for example, Malaysia and Argentina. A meeting of the Certification Subcommittee will also be held. This gives an opportunity to encourage the established certification bodies to apply for IEA endorsement.

A major obstacle for mutual recognition relates to systems such as CIEHF and BCPE, which have been accredited by third-party organizations that do not permit mutual recognition of certification by other systems. Some certification boards (e.g., CREE) have adopted the practice of easing the certification of ergonomists from other systems, in that they are not required to prove educational competence when this has been assessed and accepted by another IEA-endorsed certification system. Such candidates must submit an application as a renewal of certification, showing ongoing professional education and professional practice examples to demonstrate work over the last five years. This type of policy offers one solution to the issue of mutual recognition.

Education

Initial outreach emails were sent to all the Federated Societies in regard to ergonomics-related educational programs (in English) in their area; nine societies responded informing IEA of plans to conduct some courses in the coming year. PS&E realized that restricting the list to courses in English severely restricts the information value to all of our clients, and may give a rather one-sided view of ergonomics in the world. One key result of this task was the knowledge that keeping an up-to-date list of HFE educational programs and courses is a daunting task.

7.8.4. Summary and Recommendations

IEA documents and procedures relating to certification and education were revised and up-dated before the Congress in Florence.

The following recommendations are with regard to ongoing work:

- IEA should continue to encourage societies and regions (e.g., South America, Asia) or groups (e.g., BRICS Network) to establish certification systems.
- Societies that have established systems should be encouraged to apply for IEA endorsement.
- The revision of the core competencies should be given a high priority, if broad agreement is not reached by the end of the current term of office of the IEA Executive.
- In the characterization of educational programs, we suggest that IEA restrict the search to diplomas and degrees at university level. If universities that offer high-level ergonomics training are all listed and links are offered, then people can quickly check what courses are offered on the society websites. It will not be a complete list, but it will have some quality control. The involvement of regional networks would be very valuable in compiling such lists and publishing them on network websites. FEES and CREE have already done this together for courses in Europe, and the BCPE does it for courses in the USA.

- There is a lack of consistency in the way HFE training possibilities and courses are featured on society websites. Some societies present short courses, whereas other societies present courses that are modular. PS&E recommends alignment of the way that all educational information from providers (academic institutions, private academies, etc.) is presented, so that IEA can provide a consistent information set for knowledge seekers (i.e., Education Program Template).

7.9. Science, Technology, and Practice Standing Committee (STP)

Thomas Alexander, Chair

Key characteristics of human factors and ergonomics are a continuous emergence of new research topics and of innovative systems for advanced human-technology interaction, and an overall transition from scientific topics into industrial practice and applications. The related issues and challenges are addressed by the Science, Technology and Practice (STP) Standing Committee.

7.9.1. Long-term Plan

The long-term goal of the STP Committee is to promote and coordinate the exchange of scientific information at the international level. Science, Technology and Practice are also three topics of high importance for the discipline of human factors and ergonomics. This is because our discipline is application-oriented, interdisciplinary, and characterized by a close interaction among scientists, developers, and practitioners. The IEA Technical Committees (TCs) provide a forum for this in their thematic areas. The STP Committee maintains oversight and promotes the activities of the IEA Technical Committees. The TCs also support the planning of activities for the IEA Triennial Congresses (e.g., by inviting contributions, providing expertise to the review of contributions, and moderating sessions in the specific track), the organization of international conferences, and the management of additional seminars and/or expert meetings for a larger audience.

Another task of STP is a systematic advance of scientific knowledge and its transfer into innovative products, processes, and services. This requires the application of specific ergonomic methods, means, and technologies. Consequently, a major objective of the STP Chair has been to make the IEA community a global network for fruitful and open-minded discussions among HFE experts, developers, and practitioners – including experts and novices from academics, research institutions, federal offices, and industry. In close cooperation with the Executive Committee and other Standing Committees of IEA, STP has built a platform for the development and dissemination of objective, valid, reliable, and applicable knowledge coming from the diverse areas of HFE. Topics extend from “traditional” ergonomics topics—for example anthropometry, workload, or technical designs—to innovative topics related to, for example, aerospace, healthcare, or digitalization. The topics are not all-encompassing but highlight most relevant topics and applications.

During its time of operation, the work of the STP Committee also considered the main characteristics of HFE: interdisciplinarity and a system-oriented approach. Today, many members of IEA TCs have diverse backgrounds in natural science, social science, engineering, computer science, and psychology (to name just a few). The interdisciplinarity is also considered in multiple connections to other communities that will be extended in future.

7.9.2. Short-term Plan (2015-2018)

The work of STP has been characterized by organizing and managing the collection and dissemination of information and knowledge, and by supporting and fostering existing and new activities in this field. STP has not only allowed maximum degrees of freedom for innovation and creativity, but has also provided guidelines for good scientific work of excellent quality.

The three-year plan included five major items:

- Make the IEA Triennial Congress the highest-ranking event in the area of HFE
- Expand IEA’s interdisciplinarity

- Foster IEA's reputation with respect to the highest standards of science and technology
- Make the IEA community a global forum for fruitful and open-minded discussions
- Work on the new "IEA Handbook of Ergonomics"

These items were addressed together with other members of the Executive Committee, with the IEA Triennial Congress organizers and, of course, with the chairpersons of the IEA TCs. The focus of activities has changed during the three years of operations: In the first years it was on expanding IEA's reputation as the highest standard of science and technology, and the focus of the last year was clearly on the support of the Triennial World Congress. This is addressed in greater detail in the following section on strategic design.

7.9.3. Strategic Design

Involvement in the Triennial World Congress and close collaboration with the Congress organizers has been a continuous activity throughout this term, but particularly in the last year.

In 2016, the Executive Committee decided to postpone the work on the new "IEA Handbook of Ergonomics" and initiate a general preparation of the handbook only. Instead, STP focused on the cooperation and communication with other communities in order to connect HFE more tightly to new, emerging, and emerged disruptive technologies. This was also stressed by a closer interaction between IEA and ISO. Many members of IEA TCs are also members of ISO groups in the same domain. A closer exchange of ideas and information between the two organizations was achieved so that the IEA President and STP Chair communicated closely with ISO secretary and ISO groups.

STP performed a lot of ongoing activities during this term. One activity involved continuous communication with the IEA TCs concerning updates. Others include communication within the EC about relevant topics. During this term a growing demand for operational procedures and guidelines for TC chairpersons became clear. Therefore, a handbook for TC chairs which specified guidelines was drafted (see below).

7.9.4. Activities and Outcomes

Support of IEA Triennial Congress

A major activity of STP has been the support of the Triennial IEA World Congress. This required a close collaboration with the Congress organizers and other bodies of IEA. During two face-to-face meetings (Naples 15-16 Nov, Florence 29-31 Mar) and multiple subsequent teleconferences the requirements and structure for the scientific program of the Congress were discussed and developed. This required a close involvement of the IEA TCs through continuous and close communication with TC members. Since December 2017, STP has established a bimonthly newsletter for this, which will be continued biannually in future. TC members have been involved in Congress preparation in different ways. For example, based on their interests they organized thematic tracks, workshops, sessions, and panels. In parallel, there were invited sessions and panels by other experts from the domain of HFE, and beyond. Also, TC members were heavily involved in the review of proposals for the Congress. The large number of contributions and registered participants proved that our review approach was appropriate and was accepted widely.

IEA interdisciplinarity

HFE is an interdisciplinary topic, so interdisciplinarity is inherently considered. TC members have different personal backgrounds, which might be in psychology, engineering, computer science, medicine, etc., to name just a few. Consequently, TCs and their members presented results from their work at different topical national and international conferences. These conferences were a focal point of experts in their domain and provided an excellent forum for learning about future developments, ongoing research, and actual results. They were also a basis for successful and interdisciplinary networking.

Another major item was the establishment of a new ad-hoc committee on cutting-edge or disruptive technologies. The idea was to identify new trends and specify the relevance of HFE at a very early phase of development. The general motivation was that there is an increasing push of new technologies leading to new opportunities and challenges. This trend is primarily technology- and not application-driven. However, it is widely accepted that humans or human users are crucial parts of the development: they are involved as developers, users, or customers of the new technologies, they work and interact with the new technologies. But today, HFE experts and relevant topics are often addressed too late or not adequately during the evolution of new technologies. This ad-hoc committee will try to change this.

The list of disruptive technologies currently includes technologies such as:

- Artificial (and ambient) intelligence
- Digitalization
- Autonomous driving
- Adaptive manufacturing and future production systems
- Human performance enhancement

It is intended that this group will have members with an HFE background as well as members from other disciplines (computer graphics, movie or game industry, engineers). The recruiting has started and will continue in future. There is an obvious link to existing TCs, so experts from there will be asked to participate as well.

Another STP task was to communicate and coordinate with ISO/TC159 about ongoing activities. A meeting with the secretary of ISO/TC159 took place in August 2016 and ideas about ongoing activities and future needs were discussed. It was found that many experts are involved in both ISO and IEA activities. Information was exchanged and the idea was that these experts could serve as “ambassadors” in both groups. It was discussed to have a parallel session of ISO during IEA2018 as an opportunity to support a possible cooperation. A first starting point was a presentation and discussion of ISO/TC159 by Masaaki Mochimaru during a symposium and a subsequent meeting of the Digital Human Modelling and Simulation TC in June 2017.

IEA Reputation

This activity is closely linked to supporting IEA’s interdisciplinarity. It also involves enhancing IEA’s visibility in the scientific, technological, and practice community. IEA provides the method of endorsement for advertising and supporting special events. STP reviews and approves applications for IEA endorsement of events.

During this term, the following events applied for and received IEA endorsement:

- 30th International Seminar of Ergonomics, 9-11 May, 2017, Tarnow, Poland
- XVIII Research-Technical International Conference: Ergonomics for People with Disabilities (MKEN), "Social and Occupational Activation", 21-22 November, 2017, Lodz, Poland
- Annual conference of SwissErgo, Bern, 09.03.2018.
- ErgoX 2017, HFES Practitioner Conference, June 19-21, 2018, Marriott Tampa Waterside Hotel, Tampa, FL, USA
- Ergonomics 2018 – Emphasis on Well-Being Conference, 7th International Conference sponsored by the Croatian Ergonomics Society, June 13-16, 2018, Zadar, Croatia

The STP Chair also delivered a keynote to the Conference in Lodz, Poland, on behalf of the IEA president.

In addition to endorsement of events, STP cooperates with the IEA EC in order to update the endorsement criteria and process for HFE-related journals.

IEA Community

The 28 Technical Committees represent a major part of the IEA community and address a broad spectrum of HFE topics. As discussed, the level of TC activity varies from participation in the triennial meetings during IEA World Congress to annual independent conferences organized and managed by the TC. During this term new TCs were proposed and approved around the following topics:

- Ergonomics in Design for All (EinDfA)
- Ergonomics in Advanced Imaging
- Human Factors in Robotics
- Ergonomics for Informal Economies

Another action item in this category was the preparation of a Handbook for IEA TC Chairpersons, based on handbook for Technical Groups of the U.S. Human Factors and Ergonomics Society. The preparation of the handbook followed two main objectives: (1) to provide guidelines and answer questions; and (2) to provide a lot of degrees of freedom for independence and creativity. The handbook addresses aspects such as the roles of TC officers, membership in TCs, the description of TC events, and reporting and newsletters. The handbook will be presented to the IEA Council for approval at the August, 2018 meeting.

IEA Handbook of Ergonomics

A general process for the preparation of the *Handbook of Ergonomics*, including the definition of the general structure for the handbook, has been drafted; however, the preparation of the handbook is still at an initial phase. In the following term, chapter organizers, managers, and authors will be identified and recruited. The expected, many and good-quality contributions to IEA2018 will be considered as a good basis for selecting contributions and authors. Contributions will be selected and extended in a broader way so that they become chapters of the handbook. In addition, the idea was discussed to add a very pragmatic volume addressing specifically everyday problems, and providing data and information for daily practice at work or system design. This would be of great benefit for many users, who are more interested in solutions than in scientific background.

7.9.5. Summary and Recommendations

The major activities of the STP Committee supported the Triennial IEA World Congress, fostered the internal collaboration between the different TCs, and reached out for collaborations in science, technology, and practice with other domains and communities. During this term, the STP Chair's ambition was not only to advance the topic of human factors and ergonomics, but also to focus on the core element of our domain: The human factor, the experts and HFE enthusiasts who pursue human well-being and performance in our world. All activities resulted from the goal to foster IEA's reputation in science and technology and to make the IEA community a global forum for fruitful and open-minded discussions. It is recommended that activities such as the ad-hoc committee on disruptive technologies, the handbook for TC chairs, and the *IEA Handbook of Ergonomics*, be continued in the next term.

7.10. Ad Hoc Committee: Future of Human Factors and Ergonomics Task Force (FofHFE)

Sarah Sharples, Chair

7.10.1. Long-term Plan

In early 2016 the Future of Human Factors and Ergonomics (HFE) Task Force was established to provide a strategic direction for the future priorities and activities of IEA and its community.

The long-term aims of the task force have been:

- To establish a series of priorities, drawn from the Dul et al. paper in 2012 but also reflecting the current external context in which HFE is practiced and taught

- To suggest some specific activities, in alignment with other IEA working groups, and support them through recommendation of leadership from IEA

The initial work of the task force involved identification of key strategic priorities, based on an analysis of the work done by the group led by Jan Dul, and published in *Ergonomics* in 2012.

7.10.2. Short-term Plan (2015-2018)

After the initiation of the Future of HFE Task Force, the first action that took place was a structured review of the themes proposed within the Dul et al. (2012) paper.

The following themes were highlighted:

- HFE takes a systems approach
- HFE is design driven
- HFE focusses on two related outcomes: performance and well being
- Key stakeholders are:
 - System actors (employees, product/service users)
 - System experts (HFE specialist, engineers, psychologists, etc.)
 - System decision makers (purchasers, managers)
 - System influencers (media, govt, regulators, funders)

Table 7.7 summarises some of the key themes identified, and highlights proposed long-term outcomes.

7.10.3. Strategic Plan

Membership of the task force has been proposed, but time restrictions have meant that it has not been possible to have face-to-face meetings. Proposed membership: Sarah Sharples, Paulo Antonio Barros Oliveira, Maggie Graf, Andrew Thatcher, Andrew Todd, Mica Endsley, Waldemar Karwowski, Kentaro Kotani, Kathleen Mosier (link to and support from IEA Executive Committee).

7.10.4. Activities and Outcomes

- A paper has been produced by Andrew Todd and Yushi Fujita, which has provided more detail on the different types of stakeholders with whom IEA should build partnerships
- Waldemar Karwowski agreed to initiate stakeholder mapping
- Work has been proposed to understand how the activities of the IEA educational committee align with the identified goals from the Dul et al. paper relating to HFE education
- During IEA2018, the Congress will close with a dedicated session on the Future of HFE
- Throughout IEA2018 a small team will work to identify papers presented that can form the basis of case studies to be delivered via the IEA website. These will go alongside those already in existence as a result of the CIEHF-led and FEES-led case study collation.

The immediate focus of the Future of HFE Task Force will be to collate and distribute a series of case studies, based on the approach led by the CIEHF and FEES (led by Maggie Graf). For more details, see www.ergonomics.org.uk – Human Connection I and II edited by Sarah Sharples (I) and Claire Dickinson (II).

Table 7.7. Key themes and proposed long-term outcomes for the future of HFE

Goal to support future of HFE	Potential ‘what’ would need to be done to deliver this
Communicating with dominant stakeholders to increase awareness of high-quality HFE	Develop series of case studies written in an accessible form to be used as basis for discussion ⁴
	Recognition, awards and prizes for high-quality HFE
Building strategic partnerships with stakeholders to deliver sustained improvements in performance and well-being	Identify current state of play and key individuals involved
	Target individuals in different countries to lead discussions to build partnerships with key stakeholders
Showing the value of HFE at all educational levels and settings	Establish current level of inclusion of HFE in educational programmes
	Produce materials to be used within teaching programmes in universities and schools (could draw on case studies action)
Formulating and ensuring the implementation of standards for high-quality HFE	Ensure that all qualified HFE specialists have expertise of appropriate standard and breadth
	Participating in development of standards (e.g., ISO, BSI) to ensure HFE aspects are included
Ensuring HFE programmes adhere to three key characteristics of systems approach, design driven, performance and well being	Review of current educational programmes to discover how well current curricula map onto the three key characteristics
Lifelong education of HFE specialists	Review of current expectations for Continual Professional Development (CPD) for IEA Affiliated Societies and registration programmes.
	Consider provision of guidance and materials to support CPD via IEA website
Promoting HFE research excellence at universities and other organisations by promoting research and publications on high-quality HFE	Draw on case studies action and work with HFE journals to highlight particularly impactful or high-quality HFE studies.

⁴ It is proposed that the activity that has been led by SS in the UK (<http://www.ergonomics.org.uk/the-human-connection/>) is used as the model for this activity, as well as the activity within FEES coordinated by Maggie Graf

A second focus should be the identification of key global trends toward which the IEA should extend thought leadership and policy input. An initial proposal regarding these notions is presented here:

- **Automation and autonomy:** Automation has been a key issue of concern since the 1970s, but more recently two key trends have emerged. Firstly, the advent of Industry 4.0 has been accompanied by a step change in the reduction of the number of people who are expected to be in 'shop floor' roles in manufacturing and production settings. This is most clearly demonstrated by companies such as Amazon, where the use of automated pickers and sorters has now ensured that the role of oversight of autonomous robots within an industrial setting is now a reality. In addition, the replacement of manual tasks with high-precision robotics continues, and other non-manufacturing contexts, such as automotive driving, are increasingly seeing the introduction of autonomous control technologies, with associated impacts on physical and cognitive tasks. A number of theoretical perspectives from HFE are critical to ensuring that this rapid change in workplace and personal technologies takes place with due consideration of its impact on the humans in the system
- **Data and AI:** The rapid increased development of AI in decision making is affecting the way in which information is used in contexts ranging from safety-critical control, to medical diagnostics, to production planning. Considerations of how people interact with and understand systems that incorporate AI requires understanding of systems ergonomics as well as key concepts such as mental models and situation awareness.
- **Ageing population:** Multiple factors, from improved healthcare to changes in retirement age, are resulting in an increasingly ageing global population. The physical impacts of ageing, and the changes to workplaces needed to enable older adult workers to perform in a range of workplace settings requires both application of existing HFE insights and development of new understandings.
- **Future of work:** As a result of all of the above factors, as well as external economic drivers, work is changing. Whilst physical and manual labour tasks may still dominate in some parts of the world, in others, there is a dearth of these tasks, leading to them being replaced by office-based, service-driven activities. The key consideration of operator well-being and safety persists, whether in a physical work context or not, and the need to ensure a move from a safety I, analytical and root cause analysis approach, to a systems-based, resilience-focussed, Safety II approach, is key. In addition, the boundaries between work and life are becoming increasingly blurred, due to changes in working patterns and the prevalence of personal technologies in both work and home settings. HFE topics relating to organisational design, HCI, and teamwork are some which have key relevance to ensuring that the challenges resulting from the blurring of the home-work boundary are met.

7.10.5. Summary and Recommendations

The work of the Future of HFE Task Force over the past 3 years has been slow. This is primarily due to challenges related to time availability of those who are actively working in leadership roles within HFE, and the need to engage both through meetings and face-to-face communication. To ensure that the activity is truly representative of the current external climate and the future population and leaders of the IEA, a new approach is recommended to take this activity forward.

- First, it is recommended that this activity is prominently represented on the IEA website, and that social media are used to engage participants from all around the globe.
- Second, it is recommended that rather than having a task force, a set of Future of HFE champions are identified. They can be identified by asking for volunteer applications from contributing societies, with a goal of having at least one champion per continent. It is recommended that these champions are coordinated by a member of IEA Executive Committee, and that they act as a bridge between activities happening in local societies, other IEA working groups, and the Future of HFE dedicated goals. Champions for the Future of HFE from each

continent can be asked to ensure that the issues relating to their current and future work are clearly represented.

- Third, it is recommended that the case studies that emerge from the activity at IEA2018 continue as a living document, curated from the IEA website, but linking to resources held on local sites.
- Fourth, it is recommended that all existing IEA working groups have a clear remit to consider the future of HFE in their ongoing activities. This will avoid duplication of activities which has been a risk using the dedicated task force approach so far.
- Finally, it is recommended that a group of senior leaders who are actively working within HFE and influencing policy and leadership in their own domains, are supported in attending a two-day retreat, where the current and future priorities of HFE are confirmed. This should be clearly a future-facing activity, moving beyond the Dul et al. recommendations, and ensuring that IEA and its members are well placed to address the challenges presented by our rapidly evolving work and life context.

7.11. Ad Hoc Committee: Future of Work Task Force (FoW)

Juan Carlos Hiba, Chair

The future of human factors/ergonomics and the future of work are interdependent. The systemic evolution and dynamic linkages of these two concepts and awareness of how these processes of change occur is essential for the HFE community. The main aim of this Ad Hoc Committee (Task Force, or TF) is inspired by the two directives recommended by the document “*A strategy for human factors/ergonomics: Developing the discipline and Profession.*” Ergonomics, 2012:

First directive: “Strengthen the demand for high-quality ergonomics by raising awareness among stakeholders about the value of high-quality ergonomics by better communication with stakeholders; building partnerships with them; and educating them.”

Second directive: “Reinforce the application and use of high-quality ergonomics through promoting the (continuing) education of specialists in ergonomics; ensuring that ergonomists provide the highest-quality services (methods, standards and procedures) and that in universities and other institutions (HFE associations?) to promote the development of research excellence in ergonomics.”

7.11.1. Long-term Plan

Focusing on the interdependence between HFE and the future of work and therefore on the opportunities that can be derived from this interaction, the general purpose of this Ad Hoc Committee is to design, implement, and monitor different initiatives contributing to fulfil those two directives. Designing initiatives and implementing action will require coordination with other IEA Task Forces and Technical Committees in order to share information and exchange advice among us.

In line with the first directive, members of this TF are responsible for establishing, maintaining, and enhancing relationships with the main institutional actors of the world of work, namely, ILO at the international level, governmental agencies (i.e., Ministries/Secretaries of Labor or similar state/provincial units responsible for work regulation), and employers and workers' organizations at national, state (provincial), and local levels.

In line with the second directive, this TF will design a proposal to promote the implementation of geographically dispersed HFE observatories focusing their activity in a systematic search to detect, observe, identify, monitor, capture, report, and disseminate data, facts, and figures of situations, trends, news, and cases in the world of work in different world regions, that are specifically of HFE interest and that, in general, are either enriching, modifying, or degrading quality of working life and/or socio-technical systems performance.

7.11.2. Short-term Plan (2017-2018)

The short-term plan of this task force focuses on fostering an improved synergy between HFE and the International Labour Organization (ILO) and on establishing closer relationships and cooperation with the three main institutional actors of the world of work mentioned above.

7.11.3. Strategic Design

The strategic design of the TF is based upon building up and operating a small international team of volunteer HFE specialists who belong to associations or societies that are members of IEA and, preferably have HFE academic activities, and who are operating proactively to exchange ideas and mutual advice to identify, implement, and monitor various initiatives that contribute to the compliance of the two directives.

With respect to the first directive above, the progressive synergy process as led by the international team will focus on better communication and relationship between IEA and its member societies with ILO, creating opportunities to provide to ILO staff around the world with a better and broader understanding of values, principles, approaches, tools, and scope of HFE, and later organizing joint activities and programs.

Concerning the second directive, the responsibilities of each member of the TF would be to promote through HFE "observatories" to seek, detect, and disseminate data and information gathered from different sources related to trends, changes, and innovations occurring in the world of work and of HFE interest affecting, influencing, or benefitting workers. These data and information will be distributed through the most efficient ways for reaching our members of the HFE community worldwide. The intent of the HFE Observatories is to systematically improve knowledge, capacity and skills in research, academic, and/or professional HFE activities.

7.11.4. Activities and Outcomes

In line with the purposes above, many main initiatives, activities, and papers were undertaken during this term. These can be broadly categorized into: (1) establishing contacts and relationship building; (2) participation and presentations at related events; and (3) papers – including a White Paper to be sent to the ILO during 2019, its centenary year (see Section 5).

Establishing contacts and relationship building.

1. With the intent of building on the existing relationship with ILO, contacts were established with Ms. Mariluz Vega, Head, ILO's Future of Work Team. We planned and co-organized the meeting of IEA delegation in Geneva for establishing closer contacts with ILO representatives in ILO's Geneva Headquarters in February-March 2017. We participated in a joint interview with two ILO officials of the ILO's Future of Work Team. In Geneva, the TF participated in the ILO "Future of Work that We

Want” global dialogue, and made informal contact with ILO’s Director General with the intent of inviting him to address IEA2018. Other ILO contacts established include Ms. Carmen Moreno, Head, ILO Representative for Workers Activities based in Lima, and Mr. Philip Van Huynegem, Director ILO Office in Lima for the Andean Countries. The TF requested ILO’s cooperation for the Special Cuatripartite Session on “Ergonomics and the Future of Work” to be held at the 23th Semana de la Salud Ocupacional and Medellín, Colombia, September-October 2017. The TF also contacted the ILO Office in Buenos Aires, requesting their cooperation in the Special Cuatripartite Session on “*Ergonomics and the Future of Work*” in the Argentine National Congress of Ergonomics, February-March 2018, coordinated activities with Ms. Marta Luengo, local contact in Neuquén city, and organized a special session on *Ergonomics and the Future of Work*.

Participation and presentations at related events

The TF Chair participated in special sessions focusing on the Future of Work in several international conferences and meetings, including: the Brazilian Association of Ergonomics Congress in Porto Alegre, September 2017; the special meeting of representatives of ergonomics societies belonging to BRICS countries, September 2017; the Special Cuatripartite Session on “Ergonomics and the Future of Work,” Colombia. 1-4 November 2017, co-organized with ILO’s official Mr. Italo Cardona; and the Asociación Uruguaya de Ergonomía - AUDEERGO –(Uruguayan Association of Ergonomics), Uruguay, December 2017.

Papers

The TC Chair completed several papers discussing the relationship between HFE and ILO, the impact of HFE on the future of work, and potential activities to be considered. Titles include *Exploring potential synergies between IEA and ILO based on their similarities, Lista de posibles temas y modos de interacción entre IEA y OIT en América Latina y el Caribe*” (A list of topics and possible ways of interactions between IEA and ILO in Latin America and the Caribbean, *Designing an ad hoc IEA Task Force on the Future of Work, Ergonomics Observatories - First ideas about their raison d’être, operation and results, and A White Paper on Ergonomics and the Future of Work - First proposals about it “raison d’être,” structure, and usefulness.*

The most important written product of the TF will be a White Paper to raise and enhance the interest of the ILO in HFE through learning its definition, apprehending its meaning both as science and as technology, understanding its principles and values, and appreciating its scope of action and wide fields of interest. The intent is that ILO will be more prone to include HFE approaches and tools in future ILO activities.

This White Paper will give, in this case, evidence of our strong intention to open the HFE doors, sharing our knowledge with ILO and contributing to ILO stakeholders through the ILO Future of Work initiative and later through other joint initiatives. Expert contributors from more than 20 countries have been identified, and a draft of the White Paper will be presented at the 2018 IEA Council meeting.

7.11.5. Summary and Recommendations

This new TF on the Future of Work is under construction. We have proposed two new initiatives for broadening the ways through which our HFE community might expand our scientific and professional contribution to the global/local societies, as well as increase our own knowledge of what is happening in the working world and, consequently, how to react proactively to those job changes and work practices and innovations.

The future role of this Task Force will depend, in part, of the success of the coming White Paper project. Both the White Paper and the initiative for creating HFE Observatories are singular proposals that, if they bloom, would certainly give life to the TF. Its continuity, however, partially

depends on how these two first proposals are received and accepted by our HFE community and, if they are accepted, to what extent the HFE community understands their benefits, and whether the HFE community is proactive and persists in their implementation and sustainability.

7.12. Historian

Ernst Koningsveld, Historian

In 2014 the position of IEA Historian was revived by then IEA President Eric Min-yang Wang. The Historian has two main tasks: to update the IEA Archives and to compose and edit a new book on the history of IEA.

7.12.1. The IEA Archives

Over the past three years the challenges for the IEA Archives were to ensure that the paper archive is preserved and that relevant parts of the archives are transferred into a digital structure. Major steps forward have been taken.

Since 2002 the IEA paper archive has been generously hosted by CNAM in Paris, France. In 2016 the agreement between IEA and CNAM was renewed, to ensure that CNAM will continue to be the host. CNAM and the IEA mutually agreed to respect the new agreement for a period of 5 years, with tacit renewal at the end of the term (2021) unless one of the parties wishes to modify or terminate it. In case that CNAM would terminate the agreement, CNAM will allow a 3-month period for the IEA to transfer the archives.

During this term, it became clear that the oldest documents in the paper archive began to degenerate. This alone created the need to make digital copies of the most relevant documents. This major task was done with the help of CNAM staff. It was discovered that several essential documents were missing in the paper archives. The Historian and the IEA EC have been working to restore those, and successfully restored all Council minutes since the founding of IEA, and most of the annual reports and triennial reports.

In 2016 the digital IEA archive was created to hold digital copies of all major documents of the history of IEA. The digital archive is accessible as an Intranet in a cloud, connected to the IEA website. At least two digital copies are saved by the Historian on hard discs, separate from the cloud, so as to make sure that nothing gets lost. All newly created documents on the operational activities of the IEA are being stored in this archive.

Examples of documents in the digital archive are: Council Minutes, Executive Committee minutes, and Annual and Triennial reports, Memoranda of Understanding, reports of the Triennial Congresses, and the proceedings of recent IEA Congresses. Some 350 photos are stored, while in a special document is explained who the people on each photo are, as far as traceable.

The digital archive is accessible for IEA Executive Committee members, and for others on a specified request basis to the Vice President and Secretary General.

7.12.2. New IEA History Book

Keeping an eye on its own history is a wise thing for any organization. Up till now, the written history of the Association covered only the years from the foundation of IEA up to 1985. Since the new Historian was installed, plans for a new publication covering the years 1985-2018 have been developed. The new publication is scheduled to be published in 2019, at the celebration of IEA's 60th anniversary. Like the previous one, published in 2000, most of the content is written by guest authors. In the new book all past presidents of the period 1985-2018 reflect on their terms and on the development of the IEA and its tasks. The growth of the Association, the new structure of IEA Networks and the evolving focus on the discipline merit attention. Other chapters deal with certification systems, IEA Awards, EQUID, IEA Triennial Congresses, and the future of Ergonomics

and Human Factors. An introductory chapter illustrates what happened in the world over the decades since 1985 that affected ergonomics and human factors and IEA.

7.13. IEA2018: Creativity in Practice

20th CONGRESS OF THE INTERNATIONAL ERGONOMICS ASSOCIATION

FLORENCE, August 26th – August 30th 2018

Riccardo Tartaglia and Sara Albolino, Chairs

7.13.1. Promotion in IEA Conferences and Other International Events

During the last several years we participated in many IEA and other international events in order to promote the IEA2018 conference globally, also in external communities interested in the topics of creativity, ergonomics, and human factors. We present here the list of those main events. It is important to specify that where a member of the IEA2018 Organizing Committee is not there in person, we assure the promotion of the event through the specific event local organizing committee and the diffusion of IEA2018 promotional material among participants.

2013-2016

- 2013 – 3 Workshops organized by AEE (Aviles), by CREE (Pisa) and by SIE (Torino)
- 2014 – Workshop organized by AEE/ SIE in ORP2014 (Zaragoza)
- 2015 – 2 Workshops organized by APERGO (Lisbon) and by SELF (upcoming in September in Paris)
- 2015 – Symposium in IEA 2015 Melbourne
- 2016 – Workshops organized in Latin America by ULAERGO and SCE, by SELF, by European Trade Union Institute
- 2016 – National Italian Congress on Creativity in Practice

2017

- ISQua's 34th International Conference – 1-5 October 2017, London
- Human Factors and Ergonomics Society 2017 Annual Meeting (USA), Austin
- Human Factors & Ergonomics Society of Australia conference. Sustainable Ergonomics
- 49° CONGRESS SIBioC - Laboratory Medicine and clinical practice: from present to the future
- 52° Congrès de la SELF. Présent et futur de l'Ergonomie
- 7° Congreso Internacional de Ergonomía y Psicología Aplicada
- 7° Congreso Internacional de Ergonomía “Encuentro Iberoamericano de Ergonomía” and seminars in Latin America
- 13° Ergonomics Society of South Africa Conference (ESSA2017) and ErgoAfrica Conference
- HFESS Seminar in Singapore and ULAERGO seminar in Chile and in Argentina
- Brussels FEES ETUI Joint meeting
- 5° Jornada Internacional ABERGO de Ergonomia in Brazil
- GfA Annual Congress in Germany
- ACED Conference in Japan
- AHFE Conference in USA, LA
- Forum Risk Management in Healthcare in Italy, Florence

2018

- “SwissErgo 220 years” day in Switzerland
- Human Factors and Ergonomics in Health Care (HFES, USA)

7.13.2. Collaboration with the IEA Technical Committees (TCs)

The active and tight collaboration with Technical Committees (TCs) is one of the key aspects for the success of the Triennial IEA Conference. We tried to build this alliance with TCs from the very beginning of setting up the event, also thanks to the strong collaboration with the STP Chair. The main role of the IEA TCs for the success of IEA2018 can be described in some key activities they carry out in collaboration with the IEA2018 Organizing Committee and the IEA2018 Scientific Committee:

- ✓ propose and choose the panel of keynote speakers
- ✓ contribute to the definition of the scientific program
- ✓ review abstracts of their specific scientific domain
- ✓ participate in the assignment of IEA 2018 awards

Where the support was not guaranteed by a TC Chair we defined strategies for compensation in accordance with the STP Chair. Tight coordination with the STP Chair is a key factor in involving the TC network. His/her job in promoting an active collaboration and in identifying critical situations is strategic for the scientific organization of the IEA Triennial Conference. The contribution in terms of abstracts was very high, thanks to international promotion and organized collaboration.

In the general concept of IEA2018 we also tried to introduce the organization of topics together with the organization of productive sectors (see the list below) in order to create a bridge between the scientific domains and the real world of production. This concept is present also in the definition of the plenary sessions (see 7.13.3) and it is consistent with the main topic of the event, "Creativity in Practice," as well as with the effort of IEA to connect with working communities globally.

Topics

- Activity Theories for Work Analysis and Design
- Aerospace Human Factors and Ergonomics
- Affective Design
- Aging
- Agriculture
- Anthropometry
- Auditory and Vocal Ergonomics
- Building and Construction
- Ergonomics for Children and Educational Environments
- Ergonomics in Advanced Imaging
- Ergonomics in Design
- Safety & Health
- Slips, Trips and Falls
- Transport Ergonomics and Human Factors (TEHF)
- Visual Ergonomics
- Work with Computing Systems – WWCS
- Ergonomics in Design for All
- Ergonomics in Manufacturing
- Gender and Work
- Healthcare Ergonomics
- Human Factors and Sustainable Development
- Human Simulation and Virtual Environments
- Mining
- Musculoskeletal Disorders
- Organizational Design and Management
- Process Control
- Psychophysiology in Ergonomics

Productive Sectors

- Manufacturing
- ICT
- Robotics
- Aerospace
- Agriculture
- Healthcare
- Building and Construction
- Mining
- Transport
- Automotive
- Military and Security
- Architecture
- Banking and Insurance
- Advanced Imaging
- Sports Entertainment and Leisure
- Fashion
- Education and Training
- Cultural Heritage and Tourism
- Urban and Rural Planning

7.13.3. Plenary Sessions: Keynote Speakers and Discussants

In this 20th edition of the World Congress, the organizing and scientific committee introduced a new concept for the plenary sessions: making explicit the synergistic relationships between the productive sectors and HFE. The themes addressed by the TCs will be offered to the participants under a twofold perspective – one being the expert practitioners coming from the productive sectors and the other being HFE expert members of the IEA. The expert practitioners are the keynote speakers in the plenary and the HFE experts are discussants. The intention is to strengthen the connection between HFE and the productive sectors and to communicate effectively the role of HFE as driver for innovation, creativity, and well-being. Below is an outline of the draft program for plenary sessions; we are now receiving final confirmations for the schedule from keynote speakers who already agreed to participate.

PROSPECTUS OF THE KEYNOTE SPEAKERS

DAY 1

26 August 2018

Afternoon

CARAYON PASCALE

Human Factors and Ergonomics in Patient Safety

BRAITHWAITE JEFFREY

Walking the tightrope between creativity and productivity: Culture, resilience and complexity science

DAY 2

27 August 2018

Morning

ABRAHAO ROBERTO FUNES

Agricultural work in the 21st century: New trends and challenges

THATCHER ANDREW

Ergonomics tools for addressing global problems of the twenty-first century

Afternoon

KIRSH DAVID

The importance of chance and experimentation in creativity

OCCHIPINTI ENRICO

Biomechanical overload and prevention of WMSDs: Actual and future challenges

DAY 3

28 August 2018

Morning

KOHLI SAMIR

Managing humans: Understanding the man – man Interface

HOLLNAGEL ERIK

Creativity in thinking about work: Can we imagine how work is done?

Afternoon

JENKINS DANIEL

Evidence-based design: The role of human factors in inspiring and informing the design process

BONAPACE LINA

The More Things Change, The More They Stay the Same – Evolutions in Design Practice

DAY4

29 August 2018

Morning

Aerospace/aviation – TBA

MAJUMDAR DHURJATI

Ergonomics in defence: World trends with reference to the emerging countries

Afternoon

MANUFACTURING – TBA

AUTOMOTIVE – TBA

DAY 5

30 August 2018

Morning

BERGAMASCO MASSIMO

Virtual environments and robotics technologies for the study of human performance

KARWOWSKI WALDEMAR

The human use of artificial intelligence

7.13.4. Program and Special Content

The program is organized in:

- Special sessions (47 accepted with 255 scientific contributions related)
- Symposia (47 accepted)
- Parallel sessions and poster sessions (1320 accepted)

There is also space for TC meetings and meetings of the special-interest groups such as the one on certification and educational programs. The parallel sessions will be organized according to the TC scientific domains and will constitute tracks inside the program. Below we describe the general characteristics of the special content.

Special sessions

Through the special session call, the conference organizers gave to expert HFE practitioners the possibility to co-create a part of the program. This was meant to trigger interest in the conference themes to elicit engagement and enhance participation. This allowed the conference to go beyond the parallel session theme usually tailored to TC themes and extend the scope of the HFE debate. Moreover, the flexibility of the conference ICT system allowed for the inclusion of the Special Session theme in the call for oral contributions.

Symposia

With a similar intention, the space for symposia is dedicated to proposals by expert ergonomists on specific topics and hot issues inside a scientific domain. The symposia are built around contributions of experts who are invited and are coordinated by the chair. This is a very effective way to propose to participants a high-quality session with the updated and most recent contributions related to a specific theme of interest.

Histories and stories of human factors

This is a new idea added to the traditional structure of the IEA Triennial Congress program. The concept underpinning histories and stories of human factors is making explicit the heritage of HFE disciplines. Our history involves people who worked to ameliorate adverse conditions, and their stories make up the history of human factors and ergonomics. The stories of these researchers and practitioners should be acknowledged and shared among the human factors community. The stories of human factors people will be presented during informal and social gatherings.

Ergonomics in the Future World

These sessions, to be run in parallel during the program with groups working at the same time in different rooms, represent a new way of conceptualizing the final session of IEA2018 on the future of ergonomics. In fact, we would like to collect during this session a global overview of ergonomics in the future from the various geographical and cultural contexts that populate IEA community. IEA is a federation of ergonomics societies, which embodies the principle of representativeness. Different ergonomics societies represent their views and activities within the IEA organizational body. In this regard, IEA is unique with respect to other scientific associations. In order to make these features more visible within the International Congress the IEA2018 organizing committee is organizing a special track within the parallel sessions schedule called “ERGONOMICS IN THE FUTURE WORLD: Challenges and Opportunities for the HFE Practitioner & Researcher in Cultural Contexts Worldwide.”

This track is meant to be used by the federation of national societies and regional networks (FEES – ULAERGO – ERGOAFRICA – SEANES – BRICS - ACED, etc.) to embrace a common cultural ground in order to elicit the state of the art of ergonomics and to inform the closing session “Future of Human Factors and Ergonomics.” Each cluster of societies will be asked to address specific themes and questions during a discussion session. The societies in each discussion section will then have the role of translating the product of each cluster into English in order to make it sharable during the closing session on ergonomics in the future. We hope to have full participation from the IEA Federated Societies and Networks so that all voices and perspectives will be represented. Each one of the defined clusters will have a liaison appointed by the national societies composing the cluster or directly proposed by the IEA Executive Committee. The cluster liaison will be the journalist of the session and will inform the future of ergonomics closing session.

<p>The Themes</p>	<p>Each cluster of national societies is asked to discuss and to answer the following questions</p> <ol style="list-style-type: none"> 1. What are the most promising opportunities for RESEARCH & DEVELOPMENT in HFE? 2. What is needed to make HFE PRACTICE more actionable/operational on the field level? 3. What are the needs (issues, topics?) to be included in HFE initial and professional TRAINING curricula? 4. The future of HFE and the future of work are interlinked. Given that, what do you recommend for IEA, its member societies, and networks for working more closely than now with the main actors of the world of work; namely, workers and unions, employers’ organizations, governments, and the International Labour Organization?
<p>The Schedule</p>	<ol style="list-style-type: none"> 1. The Ergonomics in Practice IEA track will be kicked off during the morning plenary session of Day 2 from 10:00 to 10:10. 2. The cluster of national societies will meet in a slot time of 90 mins (TBD lunch or end of the day) during Day 2 3. Managing delegates summarize the results in a slot time of 60 minutes (lunch time) during Day 3 4. Presentation during the closing session of the Congress

Discussion Sessions	First 60 minutes for discussion and answer to the questions, 30 minutes for wrap-up
Participants	Members of the national societies

Patient Safety for New Medical Generations International meeting

As a side event of the IEA2018 Congress, realized in collaboration with WHO, we will have a global meeting for medical residents on patient safety, one of the most important themes inside the Healthcare Ergonomics scientific domain. Residents from all over Italy, and also a delegation from other countries, will meet and discuss in a 2-day event the development of a new culture for promoting patient safety. Ergonomics and human factors will be the main paradigm underpinning the discussion, with the aim of creating bridges between the patient safety community and the ergonomics and human factors experts.

7.13.5. Awards Sessions

During IEA2018 there will be several sessions dedicated to awards. Some of the awards will be presented in a plenary or keynote session after a presentation, so that people will be in the session already. Not all the awards will be presented in the same session. The Triennial Awards are presented together in a session after a plenary or keynote, along with the Fellow Awards. IEA/Liberty Mutual Medal awardees will present their papers and receive their medals in a special session. The recipients of the KU Smith Awards will also present their papers and receive their plaques in a special session.

7.13.6. Publication Policy

As the IEA2018 Organizing Committee we are aware that publication policy is one of the key points of a conference for attracting the participation of researchers and people from the academic world. Our publication policy is based on this assumption and articulated as follows:

- Publication of all papers related to oral presentations and posters in a *Proceedings* book edited by Springer. The proceedings are organized into 10 volumes: Healthcare Ergonomics, Safety and Health and Slips, Trips, and Falls, Musculoskeletal Disorders (MSD), Organizational Design and Management (ODAM), Professional Affairs, Forensic, Human Simulation and Virtual Environments, Work With Computing Systems (WWCS), Process Control, Transport Ergonomics and Human Factors (TEHF), Aerospace Human Factors and Ergonomics, Ergonomics in Design, Design for All, Activity Theories for Work Analysis and Design, Affective Design, Ergonomics and Human Factors in Manufacturing, Agriculture, Building and Construction, Sustainable Development and Mining, Aging, Gender and Work, Anthropometry, Ergonomics for Children and Educational Environments, Auditory and Vocal Ergonomics, Visual Ergonomics, Psychophysiology in Ergonomics, Ergonomics in Advanced Imaging.
- Publication of selected papers in special issues already agreed upon with the editors and issued with the IEA2018 logo for: *Applied Ergonomics; Ergonomics, Human Factors, Journal of Internal and Emergency Medicine, and Work.*

The dates for key milestones for sending scientific contributions were established as follows:

Opening the call for papers and emails for notification	Closing call for workshop and short courses, special session	Closing call for papers abstract, symposia, and start of review process	Closing call for HFE Stories	Review deadline and following review of the IEA2018 Central Committee for Evaluation	Notification for acceptance to authors	Receipt of accepted papers starting from
10 July 2017	16 Oct 2017	30 Nov 2017	30 Dec 2017	15 Jan 2018	12 Feb 2018	30 Apr 2018

We accepted 1720 abstracts (oral+poster+video); 5% of the submitted abstracts were rejected. We received 1030 extended papers (826 for oral presentation, 204 for poster presentation), and 380 posters (of which 47 are video posters). The acceptance breakdown 47 Special Sessions, 47 Symposia, 38 Workshops, including the participation of WHO, ISQUA, and ICOH.

7.13.7. Registration Policy and Update on Attendance

The list of Congress attendees showcases the diversity of IEA membership. As of June 2018, we have 1335 registered people coming from 85 different countries, and a total of 2085 people are registered at the website. So we hope to increase the number of attendance before August.

We also have the participation of 123 students from high-income countries and 190 students from low- and medium-income countries; 76 of the students are fully supported by the conference (free registration and free accommodation).

We tried to be as inclusive as possible in our policy for registration, trying to keep the fee low but competitive, and differentiating the cost according to the different needs and characteristics of our IEA global network. In particular we defined:

- A special offer for the Federated Societies in order to involve the global geographical network of IEA federated countries into the promotion of the event: for every 10 members registered from one Federated Society, an additional one registration is free.
- Free accommodation for all students.
- Free registration and accommodation for 80 students from low- and medium-income countries who submit an abstract.
- Special fees for participants from low- and medium-income countries.

Partial list of participants by Country:

Algeria	3
American Samoa (USA)	2
Argentina	12
Armenia	1
Argentina	49
Austria	12
Bangladesh	2
Belgium	26
Bosnia-Herzegovina	2

Brazil	83	
British Indian Ocean Territory (UK)		1
Bulgaria	2	
Canada	39	
Chile	19	
China	38	
Colombia	20	
Croatia	1	
Czech Rep.	3	
Denmark	21	
Ecuador	4	
Estonia	2	
Finland	15	
France	100	
Germany	95	
Greece	6	
Hong Kong (China)		3
Hungary	2	
India	23	
Indonesia	2	
Iran	15	
Iraq	1	
Ireland	3	
Israel	11	
Italy	106	
Jamaica	1	
Japan	93	
Korea South	34	
Latvia	3	
Lebanon	1	
Malaysia	7	
Malta	1	
Mexico	23	
Mongolia	1	
Netherlands	42	
New Zealand	12	
Nigeria	1	
Norway	13	
Peru	3	
Philippines	4	
Poland	9	
Portugal	16	
Russian Federation		5
Saudi Arabia	1	
Serbia	1	
Singapore	8	
Slovenia	4	
South Africa	11	
Spain	9	
Sweden	70	
Switzerland	18	

Taiwan	45	
Thailand	5	
Turkey	7	
United Kingdom	37	
United States Minor Outlying Islands (USA)	1	
USA	105	
Not indicated	20	

7.13.8. Sponsorships

We were highly successful in gathering sponsorships for the Congress. The list of confirmed sponsors includes:

BANCA INTESA - bank

COMAU (FCA) – automotive

FIAT (FCA) – automotive

INAIL – workplace risk prevention and insurance

LUXOTTICA – glasses industry

GRUPPO ASA – commercial aviation

TUSCANY REGION – public institution, health sector

SIRM – Italian Society of Medical Radiology

IOS PRESS – press company

3dMD

MYONTEC

PARK

University of Michigan - education

TEAN

Volentieri Pellenc - agriculture

XSENS – innovation technology

7.13.9. Social Media (last update March)

The promotion through the social media has been constant. We have a presence on three social media:

1) Facebook. The interactions with the IEA2018 Facebook page increased following the notifications of acceptance at beginning of February. The most followed post about number of abstracts and registered people scored 512 views. The post regarding the preliminary program had 50 interaction with the main page in 1 hour! (2) The LinkedIn account has now 244 members, including + 50 members in the last 3 months. (3) Twitter was activated in April.

In conclusion, we look forward to a highly productive and successful IEA2018!

7. Recommendations for the future

The policy of engaging stakeholders is well accepted, especially in IDCs (i.e., Latin America, Eastern Europe, and Africa). Several cases were successfully promoted in which influential stakeholders such as local governments and universities were involved and played critical roles in promoting high-quality HFE projects. These projects were unprecedented, at least in the regions. For IEA, they exemplified the unique approach in which the IEA helped local societies as a facilitator. This new approach is expected to reinforce local societies in their power to promote stakeholder-engaged

systemic projects. The IEA Networks (i.e., ULAERGO, FEES, and ErgoAfrica) also played important roles in realizing the cases. Through these concrete examples, it was exemplified that the policy would be implementable in the future by member societies in collaboration with IEA Networks and IEA. A simple analytical tool named General Framework Model (GFM) developed by IEA executives, has appeared to be useful for designing and implementing stakeholder-engaged systemic projects. The GFM simplifies the potentially complicated stakeholder engagement process by breaking the process into manageable steps. It naturally helps developing systemic projects systematically. There is potential for further growth of GFM, such as integrating some HFE techniques (e.g., cognitive work analysis) into the GFM.

Recommendation: The IEA member societies are recommended to promote systemic stakeholder-engaged HFE approaches in collaboration with IEA Networks and IEA. The GFM should help creating a balanced platform.

The policies of collaborating with and reinforcing IEA Networks appear to be well implemented. The BRICS-Plus Network and ACED are expected to join the IEA Network status anytime soon. Once they become IEA Networks, there will be six IEA Networks (i.e., FEES, ULAERGO, ErgoAfrica, SEANES, BRICS-Plus, and ACED). They will create good coverage across the globe. There are some preliminary ideas of affiliating small non-IEA societies and academic/industrial groups of relevant disciplines. It is fair to say that the policies have initiated a good movement with which IEA and member societies work together to promote HFE on a global scale. It is also hoped that this movement will enable HFE to acquire an ability to play more roles in systemic projects, thereby improving the recognition of HFE in the society.

Recommendation: The IEA Networks and IEA are recommended to work together to promote HFE on a regional and global scale. The IEA Networks are recommended to reinforce themselves by affiliating non-IEA HFE societies and other organizations of related disciplines. The GFM will provide an excellent platform for these efforts. The IEA should help the development of their member societies by providing their knowhow through workshops, etc., on the GFM.

Four new technical committees have been established in this term. It is hoped that together with existing technical committees, they will promote state-of-the-art HFE technologies and produce guidance, guidelines, recommendations for standards, or any other concrete outputs that can benefit themselves, IEA, and external professional communities. It is also hoped that more new technical committees will be established. Even though a priority was given to establish an ad hoc committee on disruptive technologies, it has not been realized in this term. The reason why the ad hoc committee has not been realized has to do with how HFE is recognized (or not) by non-HFE specialists who were requested to join the committee. We need to face this reality and explore different approaches to understand how HFE can play more roles in the future. This will contribute to promoting HFE. Technologies will advance without interruption. Emerging technologies will continue to change people's lives significantly. There will be some other fundamental changes stemming from such critical trends as globalization. Traditional value systems have changed significantly over the decades. They will continue to change in the future. It is essential that HFE evolves to meet new challenges. One challenge (it is the one we have always had) is to get stakeholders to recognize the critical role of HFE. The socio-technical approach gives us guidance for moving ahead (e.g., Davis M.C. and others, "Advancing socio-technical systems thinking: a call for bravery," *Applied Ergonomics*, 45(2):171-80, 2014).

Recommendation: The IEA should continue to reinforce existing platforms (e.g., Technical Committees), establish new platforms for grasping emerging changes, and discuss how HFE can meet challenges associated with these changes. The findings should be translated into substantial outputs that would benefit the HFE community, other related communities, and ultimately the society.

The IEA endorsement system for certifying professional ergonomists has been improved significantly. To encourage more certifying bodies to apply for IEA endorsement, the system needs to be improved further, especially taking care of certifying bodies focusing on particular HFE disciplines and also those having (or wishing to have) a multi-layered certification system. It is also hoped that HFE education will be better addressed in coming years.

Recommendation: IEA should further improve the certification endorsement system so that it becomes useful for certifying bodies that are not yet endorsed by IEA. Member societies are recommended to communicate closely with IEA so that the IEA can better help certification mechanisms in their countries. In addition, the IEA should initiate projects addressing issues of HFE education. The relationship between education and certification should be discussed in greater detail. The Professional Standards and Education Standing Committee and the International Development Standing Committee need to work in a collaborative manner. The involvement of IEA Networks is also important. Here, the GFM can provide a good platform.

The relationships with long-time partners (i.e., UN, WHO, ILO, ICOH, IOHA, and ISO) have been further reinforced. ISQUA was welcomed as a new partner. ErgoAfrica is now working with ISQUA for their conference to be hosted in Cape Town next year. These kinds of substantial collaborations are important for maintaining and developing relationships with external organizations. It is hoped that new relationships will be established especially with external organizations of relevant disciplines such as industrial engineering. It will enable HFE to find new roles.

Recommendation: It is recommended to establish more relationships with external organizations and promote collaborative projects. This can be done in collaboration with IEA Networks. The IEA can affiliate with international organizations, whereas the IEA Networks can affiliate with regional organizations. This kind of concerted approach can create globally coordinated, tight collaborations because some international organizations have regional branches (e.g., WHO, ILO).

The new registration in Geneva has brought us a lot of benefits in reinforcing the financial and accounting infrastructure. The permanent secretariat is expected to make the administration of IEA more resilient in coming years. The IEA website has been improved significantly, and now it greatly facilitates communications between IEA and its members. The digital archive fulfils one of important conditions for the IEA to become a full-fledged international organization. The second history book of IEA has been nearly completed for publication in 2019. It will help us in considering how the IEA should fulfil its missions in the future. Together with other efforts made to improve the infrastructure of IEA, these accomplishments will contribute to a more stable and sustainable operation of IEA.

Recommendation: No doubt, efforts of improving the infrastructure will continue as indispensable background activities. Among many other things to be addressed, how to stabilize the financial basis of IEA will need to be understood better, and specific measures should be devised as soon as possible. How to better ensure administrative continuity will also be an urgent topic.

The FoHFE Task Force and the FoW Task Force were highlights of this term. The FoHFE Task Force has identified issues, priorities, and activities for the future of HFE that can be tackled by the next EC. The FoW Task Force has made steady progress. It is expected that a draft white paper will be submitted to the council during this term. It is hoped that the white paper will be finalized soon and used as our guidelines as well as a promotion tool for ILO.

Recommendation: The FoHFE Task Force needs to be continued. Based on the outcomes from this term, detailed plans for the next term should be worked out. It is expected that HFE education will be highlighted. It is also important to discuss the future of IEA. The FoW Task Force will be requested to continue its missions. Once a preliminary white paper is completed, the IEA should approach ILO and begin to discuss what contributions the IEA can make to ILO within the context of ILO Future of Work initiative. There should be much we could propose to ILO.

9. IEA Representation and Outreach to Members and External Stakeholders.

Location	IEA Representative(s)	Dates	Purpose
Montevideo, Uruguay	Jose Orlando Gomes		Attend the II Iberoamerican Ergonomics Congress organized by Uruguayan Ergonomics Association. Give a keynote speech.
Algiers, Algeria	Yushi Fujita	October 26-27, 2015	Attend the Applications of Ergonomics in Developing Countries: Reality and Perspectives, organized by the Algerian Ergonomics Society. Give a keynote speech.
Concepcion, Chile	Yushi Fujita Jose Orlando Gomes	November 25-27, 2015	Attend the X Congreso Ergonomia Sochergo
Bangkok, Thailand	Jose Orlando Gomes	December 5, 2015	Working meeting with Thai Ergonomics Society's Board.
Mumbai, India	Yushi Fujita Jose Orlando Gomes	December 6-9, 2015	Attend the 13th HWWE 2015 International Ergonomics Conference organized by the Indian Society of Ergonomics. Give a keynote speech.
Paris, France	Ernst Koningsveld	January 12-13, 2016	Work on IEA Archives. Meet with IEA Past President Pierre Falzon
San Francisco, CA, USA	The IEA Executive Committee	February 19-20, 2016	Executive Committee meeting
Tijuana, Mexico	Kathleen Mosier	April 21-23, 2016	Presentation on cognitive engineering at SEMAC XVIII International Congress on Ergonomics
Belo Horizonte, Brazil	Yushi Fujita Jose Orlando Gomes	May 23-25, 2016	Attend the 18th Brazilian Congress of Ergonomics. Give presentations on nuclear power plant control room and resilience engineering.
Jeju, Korea	Yushi Fujita	June 2-3, 2016	Attend the national conference of Ergonomics Society of Korea. Give a keynote speech.
Paris, France	Ernst Koningsveld	June 13-15, 2016	Work on IEA Archives
Zadar, Croatia	Yushi Fujita Andrew Todd	June 15-18, 2016	Attend the Croatian Ergonomics Society international conference.

Location	IEA Representative(s)	Dates	Purpose
			Run a round table discussion on current situation in Croatia and discussions on way forward.
Poznan, Poland	Yushi Fujita Andrew Todd	June 20-21, 2016	Attend the Polish Ergonomics Society conference. Run a round table discussion on current situation in Poland and discussions on way forward.
Tsu, Japan	Yushi Fujita	June 25, 2015	Attend the 57th conference of Japan Ergonomics Society. Give an introductory presentation on IEA.
Lima, Peru	Jose Orlando Gomes Paulina Hernandez	July 1-3, 2016	To support SOPERGO Board to organize contents and logistics of the V Latin American Congress.
Lima, Peru	Yushi Fujita Andrew Todd Jose Orlando Gomes	September 14-16, 2016	Attend and present at the ULAERGO congress. Meet with and support development with ULAERGO office bearers. Meet with and support development with SOPERGO office bearers. Meet with universities and department of labour to promote development of education programs.
Panama City, Panama	Jose Orlando Gomes	September 26, 2016	To visit University de las Americas to develop masters program in ergonomics. Meet with university authorities.
Washington, DC, USA	Kathleen Mosier	Sept. 19-22, 2016	HFES Annual Meeting
London, UK	Kathleen Mosier	Sept. 28, 2016	Meet with Sarah Sharples, Chair of FofHFE Task Force
Paris, France	Kathleen Mosier	October 3, 2016	Visit IEA archives at CNAM
Delft, Netherlands	Ernst Koningsveld	October 10, 2016	Present IEA Fellow Award to Johan Molenbroek
Medellin, Colombia	IEA EC and Council Members	November 2-4, 2016	IEA Council and Executive Committee meetings Presentation at the SCE congress after the IEA Council meeting on "A shift in perspective: A preliminary model for development of the HF&E profession"
Naples, Italy	Yushi Fujita Kathleen Mosier Jose Orlando Gomes Thomas Alexander	November 16-17, 2016	Attend and give keynote and other presentations at XI Congresso SIE, Società Italiana di Ergonomia (SIE), November 16-18, 2016. Working meeting of IEA board and IEA2018 Congress Organizers.

Location	IEA Representative(s)	Dates	Purpose
	Riccardo Tartaglia Sara Albolino		
Amsterdam, Netherlands	Ernst Koningsveld	November 22, 2016	Present IEA Fellow Award to Henk F. van der Molen
Amersfoort, Netherlands	Ernst Koningsveld	November 24-25, 2016	Congress Human Factors NL, in collaboration with CREE and FEES
Bandung, Indonesia	Yushi Fujita	November 28- December 1, 2016	Attend 4th SEANES International Conference on Human Factors and Ergonomics in South-East Asia Give presentations on IEA and others
Rabat, Morocco	Jose Orlando Gomes Andrew Todd	December 2-4, 2016	Attend the Moroccan Ergonomics Society conference and promote using GFM model for development in Africa. Meet with ErgoAfrica committee members.
Jalandhar, India	Yushi Fujita Jose Orlando Gomes Andrew Todd	December 9-11, 2016	Keynote addresses at the ISE congress and to promote support for surrounding countries (Bangladesh and Sri Lanka) with Indian society Meet with ISE board members to promote development
Beijing, China	Yushi Fujita Jose Orlando Gomes Andrew Todd	December 14-15, 2016	Attend the BRICS _{plus} foundation meeting and support development of network bylaws.
Panama City, Panama	Jose Orlando Gomes	January, 31, 2017	Working meeting with Udelas authorities for the development of Master Program in Ergonomics
WHO Headquarters Geneva, Switzerland	Michelle Robertson	23 January – 1 February 2017	Attend the 140th session of the WHO Executive Board as a Non-State Actor representing IEA, an official Non-Governmental Organization (NGO) of WHO.
Lima, Peru	Jose Orlando Gomes	February, 1-2, 2017	Implementation IEA GFM with SOPERGO and visit Universities research groups
Florence, Italy	IEA EC for EC meeting	March 29-30, 2017	Attend and convene the EC meeting
Geneva and Zurich, Switzerland	Yushi Fujita Kathleen Mosier Jose Orlando Gomes	April 1-7, 2017	Attend ILO Conference Future of Work We Want: A Global Dialogue. Meeting with Swiss Ergo, and meeting with Dr. Olivier Araki, Consavo Legal in Zurich
Daventry, UK	Kathleen Mosier	April 23-27, 2017	Attend CIEHF Annual Congress. Meet with Sarah Sharples, Chair of the FofHFE Task Force

Location	IEA Representative(s)	Dates	Purpose
Tarnow, Poland	Yushi Fujita	May 9-11, 2017	Attend the 30th International Seminar of Ergonomics and give a technical presentation.
Lima, Peru	Jose Orlando Gomes	May 9-10,2017	Implementation IEA GFM with SOPEGO. Seminar in Ergonomics to Industry Visit to Universities and ILO Latin America
Panama City, Panama	Jose Orlando Gomes	May 11, 2017	Working meeting with Udelas authorities for the development of Master Program in Ergonomics
Paris, France	Kathleen Mosier	May 31, 2017	Visit IEA archives at CNAM Facilitate completion of MOU with CNAM for continued storage of IEA materials
Tokyo, Japan	Yushi Fujita Jose Orlando Gomes Andrew Todd	June 1-4, 2017	Attend and present at the ACED conference to promote ACED as a network
Buxton, UK	Yushi Fujita	June 9, 2017	Attend 51st CREE Council Meeting Workshop Give an introductory presentation on General Framework Model
Brussels, Belgium	Yushi Fujita Jose Orlando Gomes	June 26-27, 2017	Attend the FEES council meeting and the FEBC conference Give an introductory presentation on human factors and ergonomics
Montevideo, Uruguay	Yushi Fujita Jose Orlando Gomes Andrew Todd	June 21-24, 2017	Attend and present at the Uruguay Ergonomics Society conference Meet and support development with the society board members
Lima, Peru	Jose Orlando Gomes Paulina Hernandez	August, 15-18, 2017	Implementation IEA GFM with SOPERGO, ULAERGO Seminar in Ergonomics for Industry Visit to National University in Engineering authorities to develop Master Program in Ergonomics Visit to ILO Latin America
Singapore, Singapore	IEA Executive Committee and Council	August 29 – September 3, 2017	EC members - Present at the 30 th Anniversary of HFESS Congress IEA Executive Committee and Council meetings

Location	IEA Representative(s)	Dates	Purpose
Johannesburg, South Africa	Andrew Todd	September 13-15, 2017	Attend the ESSA conference Attend first ErgoAfrica conference and collaborate on ErgoAfrica development for HFE in Africa
Porto Alegre, Brazil	Andrew Todd Yushi Fujita	September 27-29, 2017	Attend the ABERGO 5 th international conference Presentation on the implementation of the IEA GFM to the delegates Attend the BRICS _{plus} meeting and support development with GFM model
Lima, Peru	Yushi Fujita Jose Orlando Gomes Andrew Todd	October 1-2, 2017	Meet with ILO Latin American and Caribbean head office Meet with the SOPERGO board Meet with National University of Engineering (UNI) to support development of new masters program
Panama City, Panama	Yushi Fujita Jose Orlando Gomes Andrew Todd	October 3, 2017	Meet with Universidad Especializada de las Américas (UDELAS) to support development of new masters program in ergonomics.
Austin, TX, USA	Kathleen Mosier	October, 2017	Panel discussion at HFES Annual Meeting on current status of IEA and opportunities for engagement by HFES members
Lodz, Poland	Thomas Alexander	November 21-22, 2017	Represent IEA President, presentation of cutting-edge technologies and their opportunities for people with special needs at XVIII Research-Technical International Conference: Ergonomics for People with Disabilities
Florence, Italy	Andrew Todd	November 26-28, 2017	Present the IEA GFM at the WHO Global Knowledge-Sharing Platform for Patient Safety expert meeting.
Tokyo, Japan	Yushi Fujita	December 14 – 15, 2017	Attend the ISO/TC159 Plenary Meeting. Report IEA activities as liaison to ISO/TC159.
Florence, Italy	Kathleen Mosier	December, 2017	Meet with IEA2018 Organizing Committee and with FEES representatives to discuss IEA2018 proposals, speakers, and the special sessions Present paper at the Conference of the Italian Society for Safety and Quality in Transplantation (SISQT)

Location	IEA Representative(s)	Dates	Purpose
Geneva, Switzerland	Michelle Robertson	20-25 January 2018	Attend the 71 st session of the World Health Assembly (WHA/WHO) a Non-State Actor representing IEA, an official Non-Governmental Organization (NGO), of WHO
Bangkok, Thailand	Yushi Fujita	January 27-28, 2018	Meet with representatives of ACED/SEANES Discuss the future development of ACED
Panama City, Panama	Jose Orlando Gomes	February, 26, 2018	Working meeting with Udelas authorities for the development of Master Program in Ergonomics
Cali, Colombia	Yushi Fujita Jose Orlando Gomes	February 27 – March 2, 2018	Meet with stakeholders in Cali (e.g., the Universidad del Valle) Discuss supporting local universities
Bern, Switzerland	Thomas Alexander	March 9, 2018	Attend SwissErgo Annual Conference Presentation of HFE perspective on information access, anytime and anywhere.
Boston, USA	IEA Executive Committee	March 25 – 26, 2018	Attend the EC meeting in conjunction with the HFES Symposium on Human Factors/Ergonomics in Health Care
Birmingham, UK	Yushi Fujita	April 24 – 25, 2018	Attend the Ergonomics & Human Factors 2018 organized by CIEHF Give an introductory presentation on IEA policies
Dublin, Ireland	Yushi Fujita	April 29 – March 1, 2018	Attend ICOH2018 Give a presentation on ergonomics contribution to MSD
Jeju, Korea	Yushi Fujita	May 17, 2018	Attend the Spring Conference of Ergonomics Society of Korea and give a presentation
San Jose, Costa Rica	Jose Orlando Gomes	May 29, 2018	Meet with Technologic Institute of Costa Rica's professors for developing Master Program in Ergonomics
Panama, Panama	Jose Orlando Gomes	May 30, 2018	Working meeting with Udelas authorities for the development of Master Program in Ergonomics Donation of Liberty Mutual Library to UDELAS.
Lima, Peru	Jose Orlando Gomes	June 1-2, 2018	Implementation of IEA GFM with SOPERGO Visit to UNI, to ILO, and Peruvian Ministry of Health authorities

Location	IEA Representative(s)	Dates	Purpose
Pohang, Korea	Yushi Fujita	July 10-11, 2018	Attend a meeting with representatives of ACED Discuss the future development of ACED
Cali and Bogota, Columbia	Yushi Fujita Jose Orlando Gomes	July 19-30, 2018	Attend workshops organized by the Colombian Ministry of Labor and a meeting with university Give presentations on IEA strategies and some HFE technologies for promoting HFE
Zadar, Croatia	Jose Orlando Gomes Andrew Todd	June 11-15, 2018	Attend and present at Croatian Ergonomics Society international conference Run workshop with FEES and CREE for development on HFE in Eastern Europe
Saint Petersburg, Russia	Jose Orlando Gomes Andrew Todd	July 4-7, 2018	Attend and present at the Inter-regional Russian Ergonomics Association conference
Florence, Italy	IEA Executive Committee	August 22 – 23, 2018	Attend Executive Committee meeting
Florence, Italy	IEA Executive Committee and Council	August 24 – 25, 2018	Attend Council meeting
Florence, Italy	The IEA Executive Committee	August 26 – 30, 2018	Attend IEA2018

10. Appendices

10.1. IEA Executive Committee

President

Dr. Yushi Fujita, CPE, CPE-J
Japan
Email: President@iea.cc

Vice President and Secretary General

Emeritus Prof. Kathleen Mosier, PhD
USA
Email: VP_SG@iea.cc

Vice President and Treasurer

Prof. Jose Orlando Gomes, PhD., CPE
Brazil
VPTreas@iea.cc

Standing Committee Chairs

Communications and Public Relations

Michelle Robertson, Ph.D., CPE
USA
Email: CPRChair@iea.cc

International Development

Andrew Todd
South Africa
Email: IDChair@iea.cc

Professional Standards and Education

Frederick Tey
Singapore
E-mail: PSEC@iea.cc

Science, Technology and Practice

Dr. Thomas Alexander
Germany
Email: STPChair@iea.cc

Non-Voting Members of the IEA Executive Committee

Past President, Awards Chair

Prof. Dr. Eric Min-yang Wang
Taiwan
Email: PastPres@iea.cc

IEA2018 Congress Chairs

Riccardo Tartaglia, M.D.
Sara Albolino, Ph.D., CRM

Italy
Email: IEA2018@iea.cc
Website: www.iea2018.org

IEA Historian

Ernst Koningsveld, Eur.Erg.
Netherlands
historian@iea.cc

ICT Director

Prof. Takashi Kawai, Ph.D., CPE
Japan
ICTdirector@iea.cc

Director

Switzerland
Dr. Margaret Graf, Eur.Erg.
dir@iea.cc

11.2. Past Officers

1961-1964:	President Secretary-Treasurer	S. Forssman E. Grandjean
1964-1967:	President Secretary-Treasurer	G. Lehman E. Grandjean
1967-1970:	President Secretary-Treasurer	P. Ruffell-Smith E. Grandjean
1970-1973:	President Secretary General Treasurer	B. Metz F. Bonjer J. de Jong
1973-1976:	President Secretary General Treasurer	F. Bonjer R. Sell J. de Jong
1976-1979:	President Secretary General Treasurer	A. Chapanis R. Sell H. Scholz
1979-1982:	President Secretary General Treasurer	J. Rosner H. Davis H. Scholz
1982-1985:	President Secretary General Treasurer	S. Sugiyama H. Davis J. Rutenfranz/B. Shackel

1985-1988:	President Secretary General Treasurer	H. Davis I. Kuorinka B. Shackel
1988-1991:	President Secretary General Treasurer	I. Kuorinka H. Hendrick B. Shackel
1991-1994:	President Secretary General Treasurer	H. Hendrick P. Rookmaaker I. Noy
1994-1997:	President Secretary General Treasurer	M. Helander P. Rookmaaker I. Noy
1997-2000:	President Secretary General Treasurer	I. Noy W. Karwowski K. Kogi
2000-2003:	President Secretary General Treasurer	W. Karwowski P. Falzon K. Kogi
2003-2006:	President Secretary General Treasurer	P. Falzon S. Bagnara K. Laughery
2006-2009:	President Secretary General Treasurer	D. Caple P. Carayon M. Chung
2009-2012	President VP Secretary General VP Treasurer	A. Imada E. Wang K. Zink
2012-2015	President VP Secretary General VP Treasurer	E. Wang M. Fraser Y. Fujita
2015-2018	President VP Secretary General VP Treasurer	Y. Fujita K. Mosier J.O. Gomes

11.3. Past IEA Triennial Congresses

1961	Stockholm, Sweden
1964	Dortmund, Germany
1967	Birmingham, United Kingdom
1970	Strasbourg, France

1973 Amsterdam, The Netherlands
1976 College Park, Maryland, USA
1979 Warsaw, Poland
1982 Tokyo, Japan
1985 Bournemouth, United Kingdom
1988 Sydney, Australia
1991 Paris, France
1994 Toronto, Canada
1997 Tampere, Finland
2000 San Diego, California, USA
2003 Seoul, Republic of Korea
2006 Maastricht, Netherlands
2009 Beijing, China
2012 Recife, Brazil
2015 Melbourne, Australia
2018 Florence, Italy

11.4. Past Meetings of IEA Council

1964 Dortmund, Germany
1965 Paris, France
1967 Birmingham, United Kingdom
1967 Brighton, United Kingdom
1969 Noordwijk, The Netherlands
1970 Strasbourg, France
1971 Brussels, Belgium
1972 Schipol, The Netherlands
1973 Amsterdam, The Netherlands
1974 Amsterdam, The Netherlands
1975 Dortmund, Germany
1976 College Park, Maryland, USA
1977 Hayes, USA
1978 Luxembourg and Munich, Germany
1979 Warsaw, Poland
1980 Bournemouth, United Kingdom
1981 Rochester, New York, USA
1982 Tokyo, Japan
1983 Turin, Italy
1984 Toronto, Canada
1985 Bournemouth, United Kingdom
1986 Vancouver, Canada
1987 Stuttgart, Germany
1988 Sydney, Australia
1989 Noordwijk, The Netherlands
1990 Kyoto, Japan
1991 Paris, France
1992 Berlin, Germany
1993 Warsaw, Poland
1994 Toronto, Canada
1995 Rio de Janeiro, Brazil
1996 Breckenridge, Colorado, USA

- 1997 Tampere, Finland
- 1998 Cape Town, South Africa
- 1999 Santorini, Greece
- 2000 San Diego, California, USA
- 2001 Florence, Italy
- 2002 Santiago, Chile
- 2003 Seoul, Republic of Korea
- 2005 Funchal, Madeira
- 2005 San Diego, California, USA
- 2006 Maastricht, Netherlands
- 2007 Boston, Massachusetts, USA
- 2008 Reykjavik, Iceland
- 2009 Beijing, China
- 2010 Brugge, Belgium
- 2011 Grahamstown, South Africa
- 2012 Recife, Brazil
- 2013 Paris, France
- 2014 Taipei, Taiwan
- 2015 Melbourne, Australia
- 2016 Medellín, Colombia
- 2017 Singapore
- 2018 Florence, Italy



IEA Council meeting in Singapore
September 2017