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# The role of national, regional and international professional ICT bodies

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**Abstract.** National, regional and international professional ICT societies, associations and federations have played important roles in the past in advancing the computing field. The ways these roles can be fulfilled and the ways these bodies are organized depend on the state of technology and of society in general. Technological and societal developments make it necessary for these bodies to evolve, both in their roles and in their structure. This chapter is addressing challenges facing ICT societies and opportunities for change.

**Keywords:** ICT societies, professional ICT bodies, IFIP, regional associations, global associations, federations

## 1 Introduction

In his chapter in this book, David Alan Grier describes how Isaac Auerbach fulfilled his vision for an international body built on national representative computer bodies with a mission to promote the use of what today we would refer to as Information and Communication Technology (ICT) through the advancement of the technology and the dissemination of knowledge about it.

The purpose of this chapter is to look at some aspects of what has happened since those early years. It will focus primarily on the role of the national, regional and global bodies with which IFIP interacts either as its members or as external agencies. It does not look in detail at the contribution to IFIP of the individual computer scientists and other ICT professionals. Our approach will be essentially thematic rather than chronological since the development of professional ICT bodies has been influenced by changes to many different factors in a rapidly changing world.

For example, many of the professional ICT bodies which are the focus of this chapter were only being founded around 1960 and exist today in a world where communication has been transformed by, for example, high bandwidth digital links, cheap air travel and the elimination of many earlier political barriers enabling researchers and practitioners to travel and communicate freely across the globe. Again, since the 1960s, there have been dramatic changes in the power of computer processor technology, latterly

combined with high bandwidth digital communications, to create application systems with capabilities that were at best science fiction in the 1960s if envisaged at all.

Looking back over 60 years it is clear that the decision to finally adopt the name International Federation for Information Processing (IFIP) rather than the earlier International Federation of Information Processing Societies (IFIPS), was well judged in that it focused on the motivation for IFIP's endeavor, promoting the effective processing of information worldwide, rather than either the nature of IFIP's membership or the technologies employed to undertake information processing.

## 2 Ambitions and goals

When a professional society is founded, it has to decide on what role it wants to play. It has to define ambitions and translate these into goals, strategies and activities. During its lifetime each society has to regularly evaluate this and decide how it wants and needs to evolve. In this section we describe such an evolution with IFIP as an example but similar evolutions have taken place in other societies, including IFIP's members.

### 2.1 Initial Ambitions

The founding President, Isaac Auerbach, records that the initial idea for IFIP occurred to him during a break at a conference late in 1955 [2]. From then it took nearly four years of determined negotiating to reach the point on January 1<sup>st</sup> 1960 when thirteen national technical bodies came together to form IFIP. The founding statutes of the International Federation of Information Processing Societies, dated 6 July 1959 state:

*Name and Aims, article 1.*

*An International Federation of Information Processing Societies shall be constituted in order to achieve the following basic aims:*

- a) Sponsor international conferences and symposia on information processing, including mathematical and engineering aspects.*
- b) Establish international committees to undertake special tasks falling within the spheres of action of the member societies.*
- c) Advance the interests of member societies in international cooperation in the field of information processing.*

Given the focus in this chapter on the role of IFIP and IFIP's membership, it is worth spending a moment examining each of these aims in turn from a member body's perspective.

The first aim, the sponsoring of international events about information processing, is an obvious aim for a global organization such as IFIP although the concerns of some early groups about the scope of "information processing" can be detected by the inclusion of the words "including mathematical and engineering aspects". IFIP conferences were not to be focused only on practitioner events such as the large trade fairs which were popular at the time but also to include events addressing the needs of researchers

and academics as well. Since the 1960s trade shows in ICT have diminished in importance and IFIP's remaining conferences and congresses are mostly conventional academic events aimed primarily at individual researchers rather than the broader membership of national ICT bodies.

The second aim is less clear-cut because it depends on the "spheres of actions" of the member societies. It is on the one hand easy on the other hand more difficult to crystalize. If we take the ACM as an example of such a member society we can read on the history pages of the ACM website that: "*The original notice for the September 15, 1947 organization meeting stated in part: The purpose of this organization would be to advance the science, development, construction, and application of the new machinery for computing, reasoning, and other handling of information.*" [1]. Conferences and symposia are one way to achieve such advances, so the easy part of achieving IFIP's second aim was the creation of Technical Committees and Working Groups, doing (scientific) research and organizing events (and is thus linked to the first aim). The clause enabled IFIP's member societies to set up committees to carry out joint endeavours although the historic record shows that these have been few in number.

Looking at the early history of IFIP it is clear that the volunteer leadership in the 1960s were very close to their member societies, as Presidents or holders of other senior leadership roles in their home countries and that as a result there was a close alignment of the objectives of the member societies and the activities undertaken under the IFIP umbrella. For example, the United States were represented by Isaac Auerbach, the nominee of the American Federation of Information Processing Societies (AFIPS) while the UK was represented by the founding President of the British Computer Society, Maurice Wilkes. The Soviet Union was represented by a leading Russian academician Anatoli Dorodnicyn from the Soviet Academy of Sciences. NB: it should be noted that throughout the history of IFIP many officers and GA representatives were presidents or officers in their societies.

## 2.2 IFIP's Evolving Mission

Since the first version of the statutes and set of goals and ambitions, IFIP has regularly updated them following developments in technology and society but also as a consequence of the growth of the federation. The mission statement, although sometimes rephrased, has in essence remained the same: "The International Federation for Information Processing (IFIP) is a global non-profit federation of societies of ICT professionals. It aims to achieve the worldwide professional and socially responsible development and application of information and communication technologies" [7]. In 2013 IFIP, after lengthy discussion, adopted a set of Strategic Aims which state that IFIP provides a global platform to:

1. **Advance information and communication technologies (ICT)** by supporting the advancement of knowledge, fostering excellence in research and development, organizing international events, disseminating high quality ICT related information through a variety of appropriate means, promoting the adoption of global standards, supporting policies that stimulate research.

2. **Advance the responsible application of ICT**, by promoting responsible use of ICT, awareness of ethical issues, robust international legal frameworks, public understanding of ICT, providing policy statements on socially relevant topics and developments.
3. **Advance the role, position and effectiveness of professional ICT societies**, by sharing knowledge, experiences and good practices, advocating the role of its member societies, providing opinions on important developments, cooperating in activities, acting as the representative global body for societies of individual ICT professionals.
4. **Advance professionalism in ICT**, by appropriate bodies of knowledge for ICT practitioners, common skills and competencies frameworks, accreditation and certification, high quality ICT education, life long learning.
5. **Advance digital equity**, by promoting accessibility of ICT, promoting good practices, promoting and enhancing appropriate access to knowledge and experiences, organizing and contributing to activities aimed at achieving the UN Millennium Development Goals (MDGs) and the goals of the World Summit on the Information Society (WSIS).

The 2013 list appears challenging given IFIP's three members of staff and a large body of volunteers just a small proportion of whom ever meet other than to discuss issues related directly to their area of technical expertise.

This paper will argue that a close alignment of IFIP's activities with the objectives of the member societies has a track record of success at delivering successful outcomes. But there are also challenges and while these have been there from the start and will probably always be there, in the following sections we will reflect on some challenges that need to be addressed faster and perhaps in a more fundamental way due to the speed of changes and the impact of some changes.

There is little doubt that, with maybe a few exceptions, other societies face similar challenges. We will also make some suggestions to address the challenges and increase the capacity and impact of professional societies.

## 3 Challenges

### 3.1 Resources

One of the ironies of the position in which IFIP finds itself today is a direct consequence of the revolutionary changes brought about by the information processing technology which IFIP has been promoting. Even in 1965 when 5,000 delegates from 35 countries attended the best ever attended IFIP World Computer Congress in New York or in 1974 in Stockholm when 4,300 delegates from 55 countries attended, the global reach implicit in the agenda set out in 2013 would have seemed an impossible dream.

However, the development of ICT in the intervening years and especially the coming of the internet, which facilitated the creation of social media, has resulted in even individual bloggers aspiring to influence agendas worldwide. Nonetheless undertaking significant work programs depends on the generation of resources to match the ambition.

If IFIP and ICT societies in general are to continue to “make a difference” then they need skills at capacity building. Over the years the authors have witnessed good ideas not taken up because of their feasibility being unfavorable given the available resources in terms of time and money. Perhaps not surprisingly, these resources, especially busy volunteers, can only provide very limited capacity for innovation. To achieve common goals, partnering with other organizations of all types has become more and more essential.

Financial resources for an ICT society typically come from membership fees, publications, events and sponsorships. Many societies and federations struggle to increase or even retain membership. It is harder nowadays to convince individuals and societies that membership of a professional body pays off. Employers are less willing to pay membership fees for their employees or allow them to spend time on activities. Publications are also moving in the direction of open access. Pressure from national and international funding agencies for scientific research is showing results. If publications are free to read, the business model for publishers must change which has an effect on their income. Events have grown in number, making it difficult to financially break-even or make a profit. Concerning sponsorship we face the fact that organizations that have sponsored activities financially and in kind in the past have changed over time. These changes include financial means and priorities. For instance UN agencies in the past could fund activities but that has become more and more problematic because these agencies depend in turn on financing by member countries and in some cases UN agencies now depend on sponsorship for their own activities.

This also applies to governmental support. The series of World IT Forum (WITFOR) conferences have been major successes which has done much to advance the understanding of the practical contribution of ICT in developing regions with an array of national leaders and government ministers from around the globe. An essential component in the success of each WITFOR conference has been that each host was the national government. They have provided substantial human and material resources – not least world class conference facilities. However, in the latest editions this support had decreased compared with the earlier events, due to changes in the economic situation and hence the priorities of the governments involved. The organizational burden imposed on a tiny number of IFIP shoulders has proved to be difficult to sustain. Perhaps as a result, the objective of leaving legacy projects in the host countries and their neighbors has proven to be very difficult.

The IFIP Digital Library (DL) project has been a technical success insofar as having a working digital library providing leading edge technical material on a free to read basis [6]. Today all IFIP books published by Springer between 2010 and 2017 are available free to download from the IFIP DL. This is a major achievement and provides a valuable resource to researchers as well as adding significantly to IFIP’s visibility and reputation. This is the result of a collaboration between IFIP, its publisher Springer and the French national scientific research institute, INRIA. While IFIP has funded on a project basis the setting up of the DL and the creation of the initial content, maintaining the DL on a free to read (and upload) basis requires a new business model.

The IFIP International Professional Practice Partnership (IP3) was founded in 2007 as a partnership of a number of IFIP Full Members: ACS (Australian Computer Society), BCS (British Computer Society), CIPS (Canadian Information Processing Society) and the IEEE Computer Society joined in 2009 by three further societies, Information Processing Society of Japan (IPSJ), and what are today called the Institute of Information Technology Professionals South Africa (IITPSA) and Institute of Information Processing New Zealand (IITPNZ). Together they set as their goal the creation of a global ICT profession held in the same respect as the older professions, such as accountants or the medical profession. As a global profession this included the ultimate goal of providing mobility of professionals guaranteed by WTO agreement. Johnson gives an account of the early years of IP3 [8]. This project continues to grow slowly by attracting new member societies. Of particular interest for this section of the chapter is to note, in looking at IP3's progress, the substantial initial investment made by the founding member societies and IFIP and also the substantial support in kind from the member societies and from corporates in pursuit of a shared ambition. Preserving the achievements of IP3 and taking them to the next level requires an improved business model.

The lesson which we take away from these examples is the vital importance of effective and timely capacity building to support projects. This is a challenge not only for IFIP but for many of its member societies. Membership based ICT societies need to build consortia to resource and, moreover, sustain major activities. Corporate bodies can provide very substantial support when a project aligns with their corporate objectives. For other projects, national governments and inter-governmental and non-governmental organizations can all make substantial resources available. Last but not least, teaming-up with each other can help societies reach their goals. Experience has demonstrated that IFIP's member societies will deploy significant resources including finance and skilled staff members if a project is seen to be of sufficient importance to them. To be a major player on the ICT policy world stage resources need to be leveraged, while guarding independence. Partners are needed as well as models for sharing management responsibilities for the activities with partners.

### **3.2 The Challenges to Membership Based Societies**

In the past sixty years both the world of information processing and the world in which that processing is undertaken have been radically changed in ways that would have been unimaginable for the founders.

Information processing is the construction and operation of application software which run on the computers which result from the work of the material scientists and electronic engineers. Many of today's ICT industrial giants began, actually or metaphorically, in garages and attics. Certainly most have grown from tiny start-ups to global giants in much less than a human lifetime and that of IFIP.

Looking at the organizations which form the membership of IFIP, they can almost all be characterized as having one of two primary focuses. Some see their major role as fulfilling the global need of researchers and academics to present papers at conferences and to publish papers in journals. Others have focused on supporting largescale users

of traditional ICT such as finance, commerce and government where the development of innovative products delivered by new software applications remains paramount. Member societies have often developed packages to support career development and the certifications of specific skills achieved by individual practitioners. User skills certification and supporting and sustaining the ICT skills of school teachers have also proved commercially valuable for some IFIP members. Programs of this type have generated substantial income for their societies as well as providing useful help to the industry.

Member societies need to sustain their membership numbers to survive. This provides a rather blunt but easily understood measure of success. In order to do so they have turned to professional managers to run the society on behalf of the membership. Those societies who derive their membership by providing services to the research and academic communities have generally had an easier time in managing their membership as the longstanding pattern of conferences and scientific publications survives. However, as already pointed out under the challenges of resources, events and publications are also facing changes that might have a big impact on the resources, activities and attractiveness of professional societies. The numbers of events and publications keep increasing partly because of the way academic performance is measured, namely by counting publications in conference proceedings and journals. It is widely acknowledged that this endangers the quality and hence attractiveness of events and publications. Another consequence of the growing number of events is the difficulty of attracting sufficient participants who are neither authors nor presenters and the efforts to have a financially viable event. This has been exacerbated for many young academics by decreasing support from their institutions due to pressure on many higher education budgets globally.

Societies devoted primarily to the promotion of the concept of professionalism and a long-term objective of giving information processing professionals the same status as older professions are having a much harder time. In a world in which in most countries there is no control on the use of any computer related job title and no limitation on who can undertake various specified ICT jobs, unlike in engineering, medicine or accountancy, professional membership is a "hard sell". Organizations when recruiting staff largely rely on an individual ICT practitioner's proven track record rather than an individual's membership of a professional body in the absence of any statutory requirements.

IFIP was founded by a group of ICT societies and today many membership bodies of all types are facing big challenges, in some cases existential ones, and it is clearly in the interests of everyone interested in promoting ICT in society that we all work together to overcome the challenges and take advantage of the new opportunities opening up for us.



### 3.3 Regional associations

A reaction to the growth in the numbers working in ICT as well as to the simultaneous emergence of regional political bodies has been the creation of three regional ICT bodies linking a variety of societies and other stakeholders in the field of information processing [3, 4, 5].

The earliest of these was the South East Asian Regional Computer Confederation (SEARCC), held its first regional conference in Singapore in 1976 with sponsorship from IFIP. They have continued to hold major regional conferences ever since. For the participants these conferences offer the benefit of being comparatively close and can be focused on regional issues with top regional keynote speakers. IFIP assisted SEARCC in obtaining UNESCO support for its early conferences and the good relations engendered led to SEARCC membership within IFIP.

The next regional body that became member of IFIP was the Centro Latinoamericano de Estudios en Informatica (CLEI) which had been founded in 1974. CLEI joined in 1984. It has held a major annual regional conference since 1986.

The final regional body that joined until now is the Council of European Professional Informatics Societies (CEPIS) founded in 1989 by 9 European informatics societies. The original motivation for the foundation of CEPIS was to create a pan-European organization who could address the European Commission on matters of interest to the CEPIS membership. CEPIS has always emphasized the raising of the competence and integrity of ICT professionals and users of ICT.

Regional associations have faced and are facing the challenges with respect to membership, resources and activities. A specific challenge for regional associations is to formulate and advocate in a timely way policy statements on topical developments and plans, both legislative and funding programs, of political bodies such as the European Commission or APAC. If the ICT professionals want to be heard by politicians, this is an important challenge to address.

While online webinars have attracted global audiences they have also highlighted the problem arising from the clock of trying to run global organizations. As many businesses have recognized the eight hour working day suggests at least three natural groupings based on time zones. While individuals may be willing to get up early or go to bed late, practical experience suggests even online events should probably be provided on a regional basis offering opportunities for IFIP's regional partners and others to offer activities widely within their time zones.

IFIP has from time to time held regional events, usually in conjunction with local IFIP members. We believe now is the time to develop a coherent strategy to work regionally. The authors have experience of very small societies whose total annual income may not cover a return flight and hotel room to attend a General Assembly. Regional partnerships may have the potential to bridge the gulf that sometimes exists.

While global events may be successful in attracting leading academics for specialist events, it can be observed that attracting practitioners on a global scale has become more difficult. Events aiming to address issues of relevance to information processing practitioners need to be held close to their potential audience.

### 3.4 Communications, Control and Accountability

Societies and federations that have a realistic ambition to contribute to the development of information processing and to make IT good for society need an organizational structure which is agile and inclusive of the views of their members. The technology that societies and federations like IFIP exist to promote can do much to facilitate the communication needed to gain engagement from the membership.

While a meeting every Spring of the Executive Committee and Board and each autumn of the Executive Committee and General Assembly, may be adequate to manage the affairs of an organization running 30-40 events each year delivered by semi-autonomous technical committees and working groups, it is not effective in the 21<sup>st</sup> century at managing a program involving multiple stakeholders.

During the recent COVID-19 pandemic, ICT has been put at the center not just of the working lives of healthcare workers but of millions of ordinary people restricted to their own homes who have become regular users of the various video communication packages to maintain contact with family and friends as well as work. This abrupt introduction is likely to continue once the pandemic passes. Organizations of every conceivable sort have arranged online “meetings”. In addition, the technology abolishes distance as an inhibitor to communication. Hence many groups have found their virtual talks, tours and religious services “attended” by participants from around the globe. The next big challenge will be whether there is some sort of business model to provide the modest income streams needed to provide what until now have been free offerings.

Organizational structures determine the speed of decision making within the organization. When meetings that make key decisions happen infrequently it is very hard to build up momentum to move projects forward at speed.

The challenge to IFIP is to communicate its program to the leadership within IFIP’s member societies much faster and more frequently. When groups of society Presidents or CEOs attend IFIP World Computer Congresses they often immediately recognize how much they have in common with each other. The challenge for IFIP is to maintain and develop the relationships. Presidents often change annually while CEOs can be extremely busy and not necessarily involved in setting the strategy for their own societies. Consequently the relationship with member societies falls back on the General Assembly representatives whose access to the leadership of their societies in many cases may be less frequent than would be desirable.

## 4 The way forward

With all the challenges mentioned one might wonder whether there is a future role for volunteer societies. And by volunteer societies we also mean societies with substantial staff but still to a large extent depending on the activities of volunteers. We believe there is definitely a future and a role and we give some suggestions for the first three strategic aims mentioned in section 2.2. Although these aims are derived from the IFIP documentation, most professional bodies, including the IFIP member societies, will have a similar set. For the last two strategic aims, advance professionalism in ICT and advance digital equity, we refer to the separate chapters in this book.

#### **4.1 Advance information and communication technologies (ICT)**

Scientific conferences and publications are a solid base for many professional societies and we believe these activities contribute significantly to the advancement of ICT. Researchers and professionals participate in working groups, technical committees and other types of communities for sharing their work and thoughts. As pointed out in section 3, the numbers of events and publications keep increasing and that is causing concerns with respect to attractiveness, reputation and financial viability.

We see two ways to address this. Firstly, increase cooperation with other societies and for regional and global associations or federations to engage more with member societies. It will be beneficial to work more closely together in starting and organizing activities. Secondly, ICT societies could engage in discussions about potentially other or additional ways to measure academic performance.

Given the huge number of conferences and journals, it is important to decide what is going to be achieved with each event or activity. Clarity and consistency are crucial for the reputation and attractiveness of events. Organizers need to clearly describe and advertise what it is that they want to achieve (goal / objective; type of activity; type of audience / participants; ambition level; potential partners). It should be clear whether an event or group is aiming at top level scientific contributions, or a meeting to engage students and younger professionals in for instance summer (or winter) school type of gatherings, whether a group is a more closed community or fully open, etc.

Another pitfall for ICT societies with respect to events can be bureaucratic processes to get ideas accepted for new activities. It is all too easy to surrender the initial advantage by discussions about the boundaries between existing groups. As mentioned earlier in this chapter, structure and organization should follow the goals and facilitate fast and easy decision making. While 60 years ago it was possible to take one or even two years to decide on new activities, this is no longer an option. A body that doesn't respond speedily to new developments risks becoming obsolete. A society is no different from a commercial company in this respect. With the new communication facilities faster decision making should be no problem. COVID-19 has demonstrated that this can work. And it is not only about starting new activities, the same applies to ending unsuccessful activities and groups much faster and re-engaging volunteers on other activities.

#### **4.2 Advance the responsible application of ICT**

This strategic aim has great potential for major wins in terms of added value, visibility and reputation. However it depends on societies being able to build a reputation for producing timely and well informed commentary on global hot topics.

As IFIP's strategic aims recognize, in an era of ubiquitous ICT, there is potential for both great benefits and great harm from technologies and their application. As a result there is great public interest in many aspects of ICT. In order to be successful in advancing the responsible application of ICT, societies' organizational structures, governance and mandates need to be in place to entrust small groups of experts on various

current and emerging topics to decide on a response and rapidly distribute public statements.

It is important to identify key concerns on which to develop policy statements which can be approved and placed prominently on the IFIP website and published elsewhere. This has to be accompanied by a thorough marketing and media plan. Many of IFIP's member societies spend significant resources on public relations but raising the profile of an organization such as IFIP requires a substantial sustained effort. At the outset IFIP will need to decide why it wishes to raise its profile and who it wishes to influence.

### **4.3 Advance the role, position and effectiveness of ICT societies**

A major added value of associations and federations of professional societies is learning from each other and sharing experiences. While not everything can be copied one-on-one because of national specificities, both failures and successes are often applicable to more than one society. It is also potentially informative for IFIP to broker international studies of topics which are of interest around the world such as the proportion of women working in ICT. Some member societies publish studies within their own country and many of these are not seen beyond their borders. IFIP could facilitate the sharing of important national studies around the world.

Firsthand experience of the authors assures them that when brought together the leadership of member societies find they share many of the same dilemmas and can learn much from each other. Efforts in the past to get members and member societies engaged in sharing experiences were sometimes successful but not on a continuing basis. Making more use of communication technologies that have proven their value in the recent COVID-19 circumstances is the way forward. Video conferencing could enable meetings with Member Society Presidents and CEOs online and to use the meetings to exchange ideas and to find projects which would attract support from member societies and which are perhaps too big to be done by any one society on its own. In this way IFIP could add value to its members own activities. IP3 showed that member societies are willing to commit substantial resources to projects which match their own work and ambitions.

But that will not be enough. Organizational structures and conditions for cooperation and representation should be evaluated and adapted to this new means. A more direct involvement of the boards of member societies has to overcome the sometimes isolated position of representatives.

Sixty years ago the global approach was obvious and beneficial in advancing ICT. Nowadays a regional approach to sharing experiences can provide additional benefits because of the greater homogeneity within that region in comparison to the wider world. IFIP could increase the cooperation with its regional members, liaise with associations that are not yet linked to IFIP and could add value by taking initiatives to create regional societies where these do not exist yet.

## 5 Closing remarks

IFIP was founded 60 years ago as an international federation of information processing societies. Without doubt the role of IFIP in providing an apolitical meeting place for the world's academics and researchers has made and continues to make a major contribution to the development of ICT. IFIP's heavy dependence on volunteers to take the lead in organizing major events, even when supported by professional congress organizers and publishers is a weakness. IFIP's apolitical status in a world of changing alliances remains a core, if understated, strength.

It is imperative that IFIP maintains a close link to the information processing societies around the world. Many of these have influence with their national governments. They share many of the same challenges in their own countries and benefit by meeting together regionally and globally to share their experiences.

A key role for IFIP has been and must continue to be to promote awareness of the transformative power of ICT to facilitate a better quality of life for all of humanity.

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