

## Cross Border E-Science and Research Partnership: Bridging the Gap Between Science and Media

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### Abstract

E-Science is a tool that helps scientists to store, interpret, analyze and make a network of their data, and it can play a critical role in different aspects of the scientific goals and research. This commentary, under the topic of *Cross Border E-Science and Research Partnership: Bridging the Gap between Science and Media*<sup>1</sup>, attempts to shed light on E-Science with emphasis on three important points illustrated by the UNESCO and World Summit on the Information Society (WSIS). Hence, science and e-science in the WSIS documents are examined, and the UNESCO Action Line C9 on the media is reviewed. In addition, the Harold Lasswell's model of communication is studied and applied to the case of Iran to show Iran's stance in this regard.

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<sup>1</sup> For further information refer to *E-science and Research in the Information Society: Key Factors for Sustainable Development*. (2015, May). Paper presented at WSIS Forum, Geneva, Switzerland.

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## Introduction

E-Science is a tool that helps scientists to store, interpret, analyze and make a network of their data. It can play a critical role in different aspects of the scientific goals and research.

The UNESCO has had an important role in different development phases of all issues about e-Science discussed to date. This role is very meaningful when the concept of “Knowledge Society” is concerned.

Societies in which people have the capabilities not just to acquire information, but also to transform it into knowledge and understanding, which empowers them to enhance their livelihoods and contribute to the social and economic development of their societies. The concept of Knowledge Societies was developed throughout the World Summit on the Information Society (WSIS) process. Whereas Information Society is linked to the idea of “technological innovations (UNESCO, 2015).

The UNESCO’s position was that

The growth of networks and ICT applications would not capture the full potential of ICTs for development. It is rooted in the framework of human rights established by the Universal Declaration of 1948 and its implementing covenants, and in the need for all to have the opportunity to access information and to express ideas and interests in an open and inclusive environment that fosters and benefits from diversity of opinion (UNESCO & WSIS, 2018).

The Four Pillars of Knowledge Societies will be considered, and the tips provided by UNESCO for working together to develop media will be discussed. Further, the study moves towards critical points worthy of consideration in the equation of the Science–Media Interface (see UNESCO, n.d.). The last part of this study focuses on the paradigm shifts in the media as an answer to the question of “what will happen in the future?”

The necessity of having a cross-disciplinary E-Science and research partnership is not an easy task. It can be argued that three components can play a critical role in this regard: academia, non-governmental organizations, and the media. The focus of this commentary is on the third component, the media.

### **E-Science: Three points**

E-Science is simply the concept of using and processing information in different digital formats to gain new achievements and new scientific insights. There is no doubt that a pervasive digital infrastructure is involved in redefining science as we knew and to know it as an entirely new data-driven form of Science that is based on new research directions.

E-Science is in a transition phase of going towards the different disciplinary domains to find new ways to share this radical revolution.

### **Science and E-Science in WSIS Documents**

One of the main themes of the WSIS Geneva Declaration of Principles is the development of Information Societies with the focus on the role of science in this development (WSIS, 2003a).

The Geneva Plan of Action (Action Line 7) discusses necessary infrastructures for academic and research institutions, including the high-speed Internet connections. These infrastructures will provide a medium for the production of information, knowledge, education, and training. This enhances the opportunities for collaboration among these institutions (WSIS, 2003b).

The Tunis Agenda for the Information Society aims to improve collaboration in science, technology and higher education. It promotes the development of advanced research networks, at national, regional and international levels (WSIS, 2005).

The vision document of WSIS+10 discusses the important role of e-science and scientific cooperation, and the use of scientific data, in the future of the knowledge societies (WSIS, UN & ITU, 2014).

### **C9: Media**

The Action Line C9 is concerned with both traditional and new media, and focuses on the following themes: freedom of expression, press freedom, and legislation to guarantee the independence and plurality of the media; media development and capacity building for media professionals; media and information literacy; fostering access to information through community media; promoting gender-sensitive reporting and gender equality in the media professions: It has indicated in Action Line C9 that expanding ICTs' role has advantages for media if these expansions improve media's ability to fulfill the post-2015 Sustainable Development Agenda (see WSIS, 2015). Further, the right of freedom of expression (described in Article 19 of the Universal Declaration of Human Rights, and Article 19 of the International Covenant on Civil and Political Rights) has considered a necessity for the role of media in information and knowledge societies:

- a. Recall the Geneva Declaration of Principles, Para 55, which describes the role of media in the Information Society;
- b. Affirm that the same rights that people have offline must also be protected online, and that this is applicable to media on all platforms;
- c. Encourage equal opportunities for men and women in [the] media;
- d. Promote a safe and enabling environment for journalists and media workers, and facilitate the implementation of the UN Plan of action on the safety of journalists and the issue of impunity (WSIS, UN & ITU, 2014).

As it can be seen, this action line is mainly based on “How” and not “why”.

### **Harold Lasswell model of communication**

Harold Lasswell (1936) tried to answer five important questions to ensure a smooth communication process:

Who (Communicator/ Source), says what (Message), in which channel (Medium), to whom (Audience), with what effect (Effect / Feedback)?

As an illustration, to identify “who” you must take the following concerns into account:

- Awareness, understanding or partnership?
- Scientific journalist or scholar journalists?
- Functionalism or being a part of the scientific movement?

Concerning “what” the following must be examined:

- Event oriented or issue oriented? pseudo news?
- Not just news discourses, but follow-ups or chunks?
- Metadata (the turning point for e-science): In situations like Terms and Conditions, Administrative Metadata (Governmental documents), Provenance (cultural heritage), Linkage or Relationship Metadata (one content in different documents: translations), Structural Metadata (Microsoft suit) and Content Ratings Metadata (social media);

And pertaining to “Whom” the following must be considered:

- Passive and active audience
- Passive: lack of knowledge about science and technology by a high proportion of the general public.

The cases of non-literates and the great thinkers and changing readers from news readers to news-makers.

## The UNESCO and the Four Pillars of Knowledge Societies

The following infographic, shown in Figure 1, depicts the approach of the UNESCO, and the questions that may arise about them.

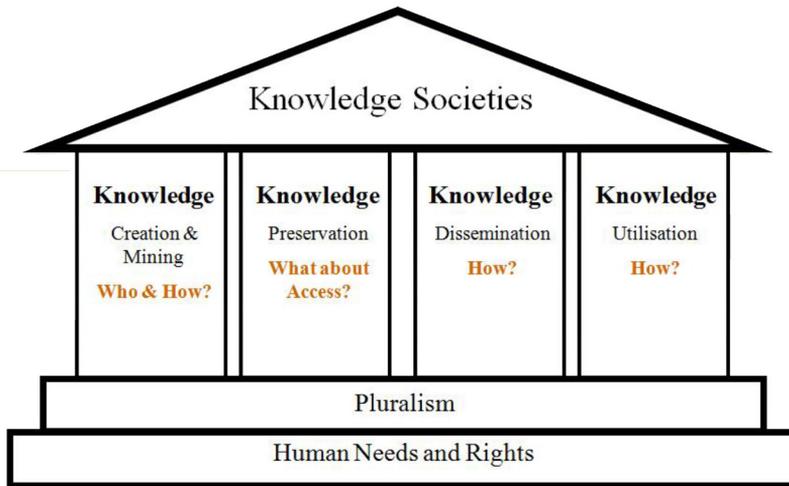


Figure 1. UNESCO's four pillars of knowledge societies

### UNESCO: Working together to develop media

The UNESCO sees the media scene in this way:

- Journalistic capacity building:
  1. Organizing training programs about journalism for print and broadcast media
  2. Providing instruction in media management and training of media technicians and engineers
  3. Developing a journalism curriculum as a model for developing countries and emerging democracies
- Fostering the role of traditional media:
  1. Developing free and pluralistic media with a global approach to democratic development
  2. Empowering people to gain equitable access to knowledge and to express themselves through free and pluralistic media.

Nevertheless, these recommendations are not the remedy and clearer answers must be found for the following cases in the arena of science–media interface.

Taking the science out of the labs, bring it to the everyday life of people, and making an electronic forum out of that is, in fact, a Herculean task.

There are many implications in this regard that must be addressed:

- The role of journalism standards
- The relationship between scholars (prejudices and negative

- perceptions), journalists (we did not change our communication system, the internet did that.) and people
- Public awareness of science (not just empirical data from surveys), public understanding of science, public involvement in science
  - Lack of dialogue between the scholars and people
  - Scientific knowledge and ways of sharing
  - Depicting e-science impacts.

### **Media Focusing on the Paradigm Shifts**

Superficial news on the launch of a given updated version of some hot or new technology or gadget is not the whole case, the media should follow in-depth, analytical, critical and thought-provoking items on the deep impact of ICTs on the development of societies (see Sparks, 2007). To do this, the following agenda is provided:

- Changing of journalism standards into easy and usable forms. Difficult terms should be transformed into easy and understandable ones for the general audience
- Fostering the relationship between scholars, journalists (strangers to each other) and people (that need different agendas)
- Filling the gap of dialogue between the scholars and people
- Building awareness, understanding and partnership
- Adoption of a participatory role instead of the current functional role
- Knowledge should be considered as a common public good and having access to scientific knowledge should be considered as a right. Knowledge Society is not a source for commercialism, but for ethics.
- What are the consequences of conflicts between national interests and the international flow of devices?

After all, the following fields need more attention by the media:

- Globalization of knowledge and the local content conflicts
- The pressing need for a new type of Multistakeholderism: real cooperation of three sources of producing new ideas including academia, civil society and the media
- Analyzing new national e-strategies that are needed to find proper models for supplementing and substituting the traditional modes of content providing and distribution (new knowledge corpus)
- Concerning the audiences, the media have to change the existing process: from news readers to news-makers
- The media should help universities and scholars to act like news

agencies. Media should help them to an emphasis on mutual learning. The process of teaching out-of-context that universities still have on there is outdated and having local theories of people is a necessity.

- The media should shed light on the access and communication differences and focus on the downloading syndrome.
- Having a global approach towards an Information Society and a local viewpoint towards a Knowledge Society is necessary.
- Challenges that are globally similar: lack of modern literacy and expertise, digitizing printed assets into digital, online and even cyber assets, accessing large data resources, the ability to work with and manage large the big data both in storage and retrieval phases.
- Recognition of new algorithms and workflows both for computation and large-scale data analysis; educating and recruiting highly skilled computational staff. The current situation requires standard solutions both in terms of hardware and software.
- Multidisciplinary collaboration programs
- Developing multidisciplinary partnership programs in strategic areas
- Introducing international success stories
- Facilitation of transference of knowledge about using methods and tools concerning data-driven e-Science
- Enabling new investments for collaboration in e-infrastructure; particularly for universities as a good starting point.
- Defining new research fields to make e-Science a paradigm for research areas
- Providing interaction between tool makers and tool users and reflecting recommendations
- Covering the new emerging technologies in an easy way, especially the big-data technologies to make participation in shaping the future of e-Science
- Data-driven science as a quite new form of e-Science is transforming scientific research directions, so there is a pressing need for skills in this field including new methods for data management. Media can do a lot in this regard.

### **What will happen in future?**

Media should consider that Information Societies and Knowledge Societies are somehow complementary not contradictory. This approach can lead to a public science communication arena.

The media should remember that:

The Information Society, and information and knowledge systems do not select choices and ways of living for people. This is the role of the media to use two wings of academia and civil societies. The distance between scientific-academic knowledge and everyday knowledge can be reduced, particularly with the role that science communicators and science journalists can play.

It is worth nothing that the new generation of scientists and journalists grown up with access to interactive online cyberspace. It is an embracing opportunity for both sides.

Concerning the future of the science journalism, and the relationship between science and media, the new media have provided new opportunities for science communications. Yet, there is a “gap” between scientific communication structures, media, and public science communications. What will happen in the future? Investigating these questions is certainly a priority for science communication researches.

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