

## INFORMATION SCIENCE AND TECHNOLOGY [IST] AND ITS COMPARISON WITH INFORMATION TECHNOLOGY AND SOCIAL COMPUTING

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### **ABSTRACT**

*'IST' is an emerging name in academics. IST is a knowledge cluster having interdisciplinary aspects. IST i.e. Information Science and Technology is actually information dealing subject responsible for interaction with people or community or society powered by technology or computing mechanism. This field is actually continuous up gradation result of Information Field like Information Science, Information Studies and similar one. IST has wonderful potential in almost all aspects; whether it is research, job prospect, social and economical development. However apart from these advantages IST also help other academic subject or academic community; directly and indirectly. This paper illustrates the whole aspect of IST; including origin, uniqueness with earlier nomenclature and related nomenclature and similarities and dissimilarities with social computing or information technology.*

**Keywords :** Information, Information Science, Information Management, Information Society, Knowledge Economy, Computing Trends, Interdisciplinary Science, Information Science and Technology [IST], I Programmes, I Schools.

### **INTRODUCTION**

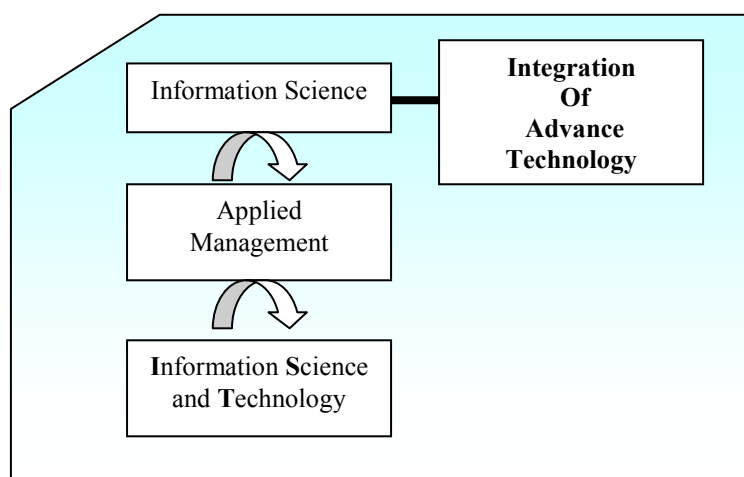
IST may be defined as a 'structured knowledge cluster responsible for information activities; ranging from collection, selection, organization, management with the help of tools, techniques and Technologies; powered by advance computing' Though, a healthy IST Practice is always required for better cooperation with Cognitive Science and Psychological Studies for actual user studies and to know user perception. 'IST' is fundamentally responsible for the interaction between community-information-technology. Some well established IST Schools IST or Programme offering schools are mention/explained Information Science and Technology [IST] as intersection between People-Information and Technology. IST is fundamentally integration of Information Sciences with Technology. As it fundamentally comes from Information Science [IS], thus it is incorporated with so many existing basic facet like- computer science, psychology, information technology, management science, information fundamentals [ some aspect of librarianship/library

science]. Though to some extent IST mistakenly also is considered as IT or IS or even Information and Communication Technology [ICT]. But practically it is a broader structured knowledge domain for theory and practice.

## OBJECTIVE

Some of the aim and objective for which this study is undertaken:-

- To know basic about IST; including nature, aim and scope;
- To learn about formation of IST as a subject and its history[evolution];
- To know the similarities and dissimilarities between IST and IT/ Computing, IST and IS;
- To learn about Information Schools and their promising carrier oriented interdisciplinary programme;
- To know the emerging sub field and facet of IST;
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- To learn the future potential of IST; including job, research and professionalism.



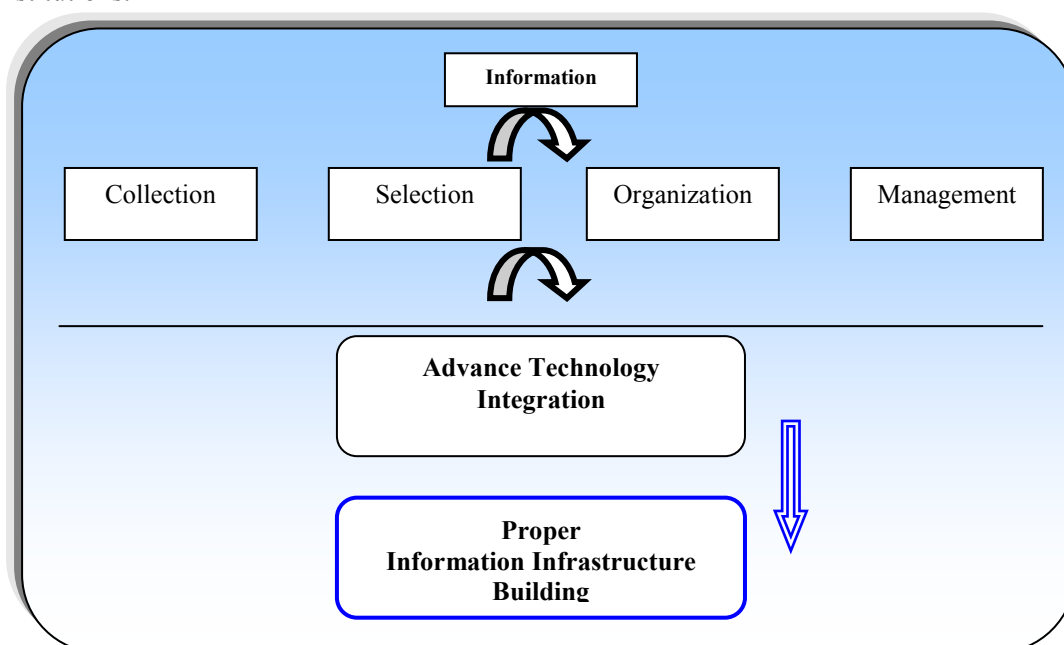
**Fig 1.** The root of Information Science and Technology

## Information Science and Technology [IST]: Basic

Information Science is actually an academic field incorporated with computer science, informatics, psychological studies, management and librarianship aspects are smaller/lesser than IS and having some other field like Business and Organization, Cognitive Studies, Electronics, and off course society and development studies. IST programmes are the best alternative of IT and IS in so many cases. Fundamentally a fresh IST graduate is able in both information job and technology management with the application of adequate studies. Thus, they do not require formal industrial training for some of the new and odd job or profession such as Chief Information Officer, Chief Technology Officer, Information Scientist, and Visualization expert, information and technology analyst and so on.

## IST And IT: Core Areas

We already mention that IST is not a combination of IS and IT. Virtually it is so much bigger than that, it is a combination of IS and technologies [which includes IT, Electronic and Communication Technology, Computer Technologies, Mechanical Engineering and robotics] and of course, cognitive science and societal aspects. Thus in direct sense this may also called as Social Engineering domain responsible for healthy information infrastructure building; whether that is whole nation or part, organization, government or educational institutions.



**Fig 2.** The way of building technology depended Information Systems and Services

Fundamentally IT is actually incorporated with Multimedia Technology, Communication Technology, Computer Technology, Networking Technology, Database Technology, Storage Technology and some other Computing Technologies; here fundamentals of information and related knowledge gradient are very limited. But as already mention that, IST deals with technology which includes IT and others and even cognitive science, psychologies, society, business and organizational behavior [even IS, is not also deal with these large areas]; thus the periphery of IST is broader than Information Science and obviously than IT. Fundamentally following areas are may be treated as knowledge gradients of IST:-

### Technologies

Technologies which are played lead role [or helps in building] in IST are--

- Information Technology;
- Communication Technology;
- Mechanical Sciences[ AI-ES-Robotics];

- Electronics and Communication Engineering [ECE]. And so on

## Management

Management principles which are prime mover for healthy Information Management practices are includes—

- Organizational Behavior;
- Operation Research;
- Decision Sciences;
- Management Fundamentals.

## Information

Information Fundamentals played lead role for sophisticated Information Transfer Cycle Chain are as follows—

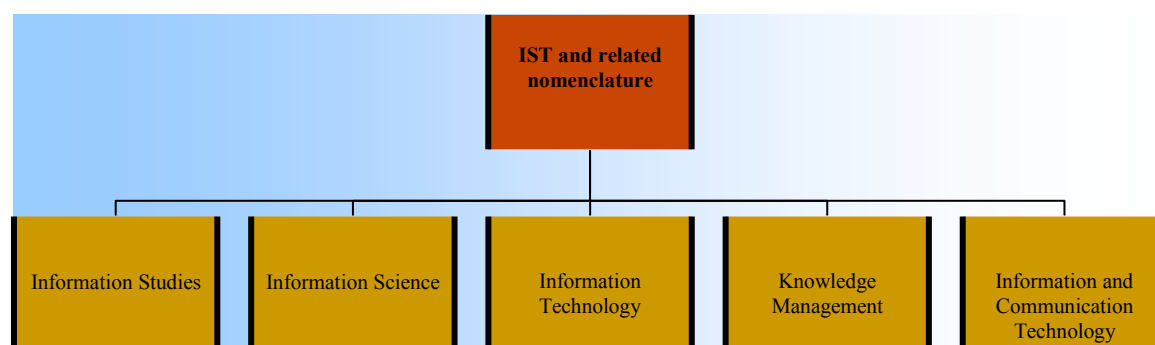
- Information Studies—Basics;
- Information Management;
- Knowledge Management;
- Information Transfer Cycle and Visualization.

## Society and Social Sciences

Gradients which are lies on Information and Technology like—

- Psychology;
- Cognitive Science;
- Sociology;
- Information Psychology and similar facet.

Though apart from these areas, IST may also involve in other field subject to its nature or application field. Like IST and Medical Sciences is the result of Medical IST. Still the Medical IST is known as Medical Informatics.



**Fig 3.** The related/ available Degree programme of IST

Where as IT only deals with multimedia Technology, Communication Technology, Computer Technology, Database Technology, RFID Technology and so on. Practically the end point of Information Technology is starting point of Information Science. And the beginning of IST is Information Science.

## **Information Science and Technology [IST]**

As it is most interdisciplinary in nature combing Pure Science, Technologies, Engineering Fundamentals, information fundamentals, thus comes with so many existing and new research area like—

- Quantum Information Science or Quantum IST;
- Geo Information Science or Geo IST;
- Green Information Science or Green IST;
- Medical Information Science or Medical IST;
- Management Information Systems;
- Cloud Computing;
- Information Visualization and structuring;
- Business Informatics;
- Social Computing;
- Digitalization;
- Knowledge Engineering;
- Human Computer Interaction;
- Web Engineering;
- Usability Engineering;
- Social Informatics;
- Community Informatics;
- Metric Science and so on

Though, due to its wonderful broader and interconnected curriculum and scope, so many existing and emerging job possibilities may avail by IST graduates; these are-

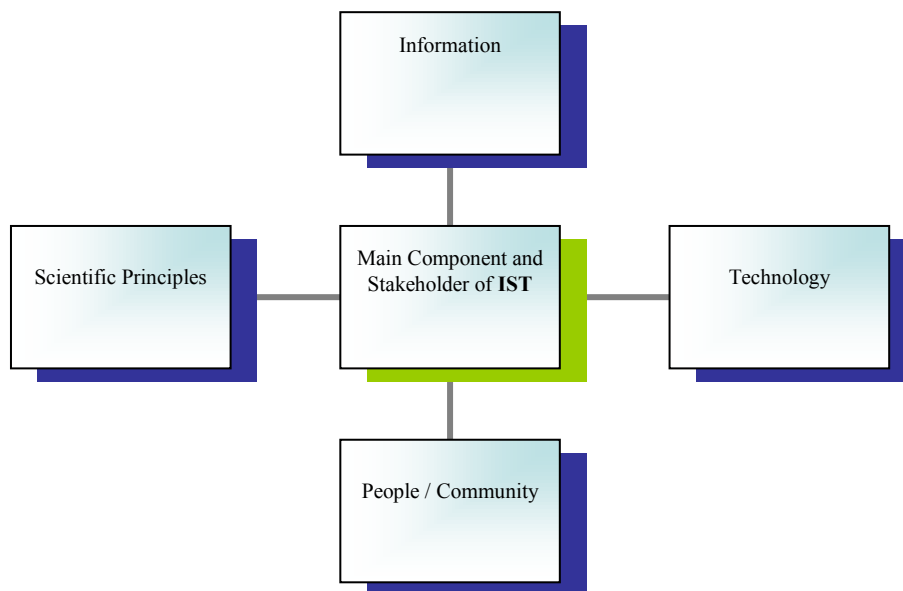
- Chief Information Officer;
- Chief Technology Officer;
- Network Administrator;
- Search Engine Optimization;
- Usability Engineer;

- HCI Expert;
- Data Storage Expert;
- Information Architecture. And so on.

## Information Science and Technology [IST] and It and Social Computing: Relation And Dissimilarity

About IST, IT we already mention we understand the basic nature and knowledge gradients of each domain. We examine that IT is smaller than IS and IS ultimately increased and formed as IST. We find out that IT mainly deals with the technologies which help in better information collection, selection, organization, management and of course dissemination. Virtually IT does not have direct connection with information gradients and societal gradients in its curriculum. However Information Science deals with IT and also information, psychology and society.

Social computing is a kind of field that has wonderful social engineering aspects like computing, information technology, and cognitive science, and psychology, society. Thus it is much broader than IT or computer Science but smaller than IST only in terms of information. More clearly social computing is not so much focused with information or information retrieval systems [IRS], Information Gradients like Information Architecture or its management.



**Fig 4.** The stakeholder of Information Science and Technology

And also academically, social computing is less popular academic programme or nomenclature. Professionals of this field mainly come form computing and IT and in very rare cases from Sociology or social work field [as most of the social scientist are not able in higher computing skills]. Further, IST offers in I Schools or Information Schools department

and in very rare cases at computing department. Where as social computing is mainly offered in computing or IT department/ schools.

The hottest research areas of social computing is social informatics, community informatics, digital dive, technology transfer; where as IST's recent trend is in Information visualization, cloud informatics, green information systems, information architecture, information technology-people interaction.

Regarding similarities, both the domain focus on people or community or society. Both have an aim for better Human Computer Interaction and Technology Transfer. Both having interdisciplinary knowledge gradients like pure science, bio science, social and engineering or technological fundamentals. Apart from these, removing disparities between 'have and have not' in terms of information, digital accessories and technologies are also the key objective of both these field. Further both are academic and practicing field.

### Schematic View of IST/IT/Social Computing

The following schematic view is prepared based on academic curriculum of IST, IT and Social Computing. Where it shows that IST is the larger knowledge gradients where as Social Computing is smaller than that, interestingly study shows that technology is also smaller than IST. People, society, cognitive approach, engineering fundamentals, organizational behavior, business informatics are the unique area of IST that differentiate this area from IS and others though the trends of IST as an engineering field is also emerging; due to its wonderful job, research and obviously societal potential. Academician of all these fields is working each other department for further development of the subject.

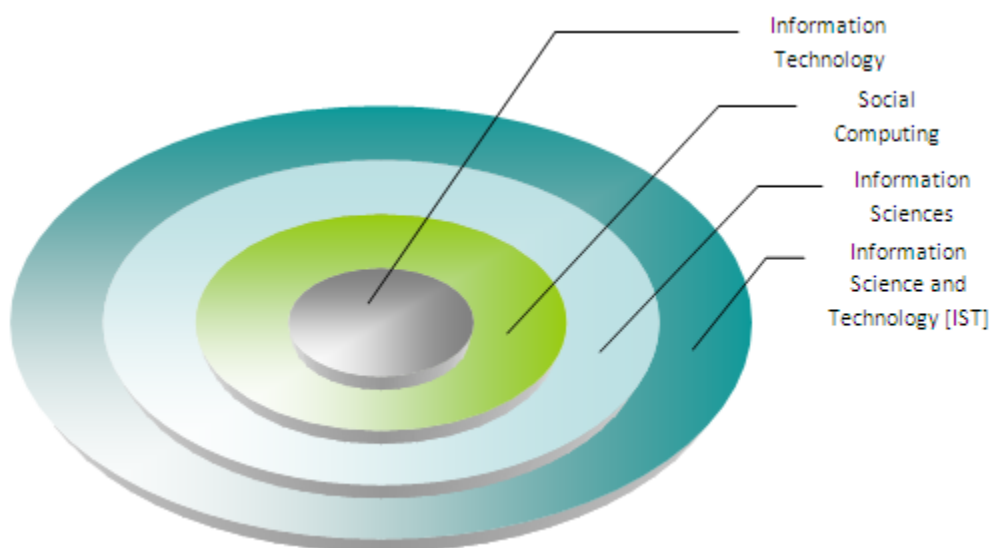


Fig 5. The smaller and broader area of IST at a glance

### FINDING

- 'IST' may be confused with IT or IS or ICT, but it is larger field than these;

- ‘IST’ is most emerging ‘information centered but techno focused academic and practicing field;
- IST Professionals come from cross dimensional areas/fields like- IT, Computing, Library Science, Media Studies, Communication Engineering and even sociology;
- In India, still not at all any big initiative notice for IST except the planning of IST as an academic programme [Bachelor /Master];
- IST provides several existing and new job opportunities and in many cases the industrial organization doesn’t require fresher/initial training as they hold interdisciplinary knowledge.

## CONCLUSION

Development, integrity, democracy and so many expectations are fulfilled by IST programmes sophisticated way. Virtually each and every country need to move on for IST education and training programme. Academic players, policy makers, universities need to start related nomenclature of IST for further and all round development and for removing information divide and digital divide. Thus, a better IST practicing may helpful for sophisticated information transfer cycle and healthy information infrastructure building. We need to welcome IST academic programme, research and academics for better and complete sustainable development through better interaction of information, technology and with community or society or people.

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