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Title
Introduction to the symposium

Permalink
https://escholarship.org/uc/item/59k5r8v5

Journal
Computers Environment and Urban Systems, 7(1-2)

ISSN
0198-9715

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Publication Date
1982

DOI
10.1016/0198-9715(82)90063-1

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Peer reviewed

INTRODUCTION TO THE SYMPOSIUM

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INTRODUCTION

IT IS widely believed by experts in local government that effective introduction of computing technology can bring substantial improvements to the management, organization and operation of local governments, and hence to the productivity of these governments [1–17]. This belief is summarized well in one well-known report by the Committee on Economic Development:

> Two major factors in raising the productivity of the private sector have been technological advances ... and increases in the ratio of capital to labor. Technology has had less impact in the public sector.
> A notable exception has been the attention given to computers ... Because they are standard products with a wide variety of applications in both the public and private sectors, computers could be immediately adapted to government operations. They are also aggressively marketed.
> Nevertheless many jurisdictions still lag behind in even the more common uses of computers, especially data handling, which constitutes a large proportion of routine government operations. Governments that are too small to operate a computer economically could explore the use of time-sharing arrangements with other governments or computer firms. Numerous opportunities remain for improving efficiency through computer operations, for example, in health services and welfare administration. (Committee on Economic Development, p. 53 [18]).

This interest in computing's potential contribution to local governments has been international as well as national, and in the past five years a number of major international conferences and symposia have been convened to compare, and share, experiences with computing and information systems at the local government level.† This symposium presents selected papers from a recent international research seminar entitled "Municipal Information Systems: U.S./Japan Interchange (MISUJI)". The seminar took place at the East–West Center in Honolulu, Hawaii in December of 1980. The seminar was organized by the Public Policy Research Organization (PPRO) of the University of California, Irvine, and the Local Authorities Systems Development Center (LASDEC) of Japan. Support for the seminar was provided by the U.S.–Japan Cooperative Science Program, which is jointly administered by the U.S. National Science Foundation, and the Japanese Society for the Promotion of Science. Additional support was provided by LASDEC, PPRO, and the East–West Center.

GENESIS OF THE SEMINAR

The seminar grew out of a well-established recognition of the importance of continued improvement in local government use of information system and management science techniques in the U.S. and Japan, and the need for an exchange of viewpoints and experiences of researchers and practitioners from both countries. Both of the organizing institutes have been major centers of study of local government information system activities. PPRO is a national and international center of research on information systems in local government which has been conducting continuous research in the field

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† Among the major international convocations in the past few years have been the UNESCO-IBI (Intergovernmental Bureau for Informatics) international conference on "Strategy and Policy for Informatics" in 1978, the Joint Urban and Regional Information Systems Association (URISA)/German Marshall Fund panel on information system resource centers for local government in 1978, the Data for Development conference on information systems and developing countries in 1978, the UN Conference on Science and Technology for Development in 1979, the IULA Conference on Microprocessors in Local Government, Nice, France, November 5–7, 1980; and the joint URISA/Kommunedata Denmark seminar on "Policy Issues in the Management of Urban Information Systems" in 1980.

since 1970†. LASDEC, similarly, has been since 1970 the major center of research on local government information systems in Japan, as well as a center for development and provision of information systems and computing services for local government‡. PPRO and LASDEC have been in frequent communication since 1975, and researchers from both organizations have visited each other periodically to review each other's work. This cooperative relationship proved so successful and helpful that a more active effort toward exchange was developed, culminating in the MISUJI seminar.

A total of 26 people attended the seminar; 10 Americans and 9 Japanese presented papers and an additional 7 people participated as observers§.

The purpose of the seminar was to exchange information on the status of local government information systems with respect to research, teaching, and practice in both countries, and to develop future joint activities. The seminar succeeded on both grounds. Not only were the papers and presentations highly informative, but the discussions were penetrating and extremely useful toward developing future activities. It is planned that this first seminar will be followed by further opportunities for U.S. and Japanese researchers and practitioners to gather and exchange knowledge.

OVERVIEW OF THE SYMPOSIUM ARTICLES

The symposium contains 14 articles. These articles were commissioned by the seminar organizers according to a framework that would highlight the knowledge of participants both in general terms, and in terms of specific instances of information systems application in the two countries. Several authors also comment on the use of management science techniques as well. Some articles cover several different topics; in others the focus is more directly on a given issue or case experience. We have organized the papers conceptually into six general topics to help direct the reader to articles of interest. Each topic is discussed below, with the relevant articles noted.

History and current overview of use

To provide a background and a benchmark for further discussion, several articles present historical accounts of the development and use of information systems in local government, culminating in a profile of current uses. Data are provided in several articles to indicate the extent and kinds of information system uses being applied in local governments in the two countries. A general overview of information system use in the United States is provided by Kraemer and King. Their article gives an historical interpretation of the genesis and growth of information system and management science use, noting the impacts that these technologies have had on local government operations, planning, and management. A more detailed quantitative assessment is provided by Dutton, who

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† PPRO has completed a number of research projects in the field of local government information systems use and impact. These include a major evaluation and synthesis of research literature on municipal information systems [19]; a very large empirical study of the use and impact of computing in cities and counties [20, 21, 22, 23]; an international comparative study of computing in cities in 10 countries [24]; a study of information and reporting activity in local government [25]; and a study of the use of computerized fiscal impact models in local governments [26].

‡ For further information on LASDEC and its operations, the reader is referred to the article by Ryoji Kawabata that appears in this symposium.

§ Those who attended the seminar were: Professor Takehiko Matsuda (Japanese Co-ordinator) of the Tokyo Institute of Technology; Professor Masakuzu Uzawa of Aoyamagakuin University; Professor Hiroshi Akiba of the Kobe University of Commerce; Mr Yasuo Kuchiba, Mr Yoshikazu Sekiguchi and Mr Ryoji Kawabata all of LASDEC; Mr Tatsuo Chaya of the Tokyo Metropolitan Government; Mr Kenji Ogino of the Hyogo Prefecture Government; Mr Hiroshige Ono of the Nishinomiya City Government; Professors John King and Kenneth Kraemer (American Co-ordinator) of the University of California, Irvine; Professor Jay Nunamaker of the University of Arizona; Professor Ken Kucker of Portland State University; Mr Norman Okamura of the University of Hawaii; Mr Tug Tamaru of Computer Resource Management; Professor Steve Savas of Columbia University; Mr Frank Bayer of the City of Milwaukee; Professor William Dutton of the University of Southern California; Dr Wilbur Steger of Consad Research Corporation; Drs Vaughn Blankenship and Frank Scioli of the National Science Foundation; Mr Hiroshi Katayama of the Japan-American Institute of Management Sciences; Mr Robert Randolph of the East–West Resource Systems Institute; and Mr Glenn Ifuku of the City of Honolulu Government.

further elaborates the major factors behind the developmental trends exhibited by U.S. local governments. Japanese experience with information systems is assessed in the general overview paper by Kuchiba, focusing particularly on the diffusion of computer use among local governments. The more detailed article by Akiba investigates the current state of the art in use of hardware, software, and modeling systems.

Trends in use

The universal question of what will happen in the future is addressed in the Kraemer and King article for the United States and in the Akiba article for Japan. The provocative article by Matsuda on management science and information system use provides background on important factors underlying the "Japanese way of management" in local governments, and notes several discontinuities that have arisen in management styles in recent years which proper application of computing and management science technologies can affect and possibly help resolve.

Planning-oriented systems

The papers overviewing the historical and current status of computing and management science technologies indicate that one of the long-standing (and apparently most difficult) areas of computing application is for local government planning needs. Several articles focus specifically on planning-oriented systems, which it seems represent an area of great potential growth in the next decade. The article by Dueker gives an overview of the potentials and problems of applying computing systems to urban planning tasks, especially in the area of spatial data handling. The article by Steger gives a detailed account of accumulated knowledge about what makes efforts to build planning models and data bases successful or unsuccessful. Two case studies of computing application to planning are included. One by Bayer reviews the city of Milwaukee's experience in implementing a data-based geographical information system, including an assessment of the major problems faced and how they have been overcome. The second by Ogino gives an overview of two systems for planning in the Hyogo Prefecture: "Hyogo Dynamics", a system dynamics model for modeling possible outcomes of current and alternative planning policies; and the Planning Information Analysis System that facilitates management and utilization of geographic and other data for planning analysis.

Comparative analysis

The symposium commissioned no papers specifically on the subject of comparative analysis; in a sense, the symposium itself was intended to provide that. However, three articles provide useful insights from which comparative profiles can be built. The article by Tamaru reviews the use of computing in the city of Los Angeles, one of the largest U.S. cities and a major user of computerized information systems. The article by Chaya gives an overview of the use of computing in the Tokyo Metropolitan Government, which represents one of the most advanced sites of local government computing practice in Japan. By way of contrast, the article by Savas on the use of computers in the management of Moscow indicates the extent and quality of local government computing in one of the most advanced sites in the U.S.S.R., with commentary on the state of development in other Soviet cities. Taken together these articles offer insight to the comparative foci of computing development found in large local governments in three countries.

The role of central government

In nearly all countries the role of the central government in development of local government computing has been a major factor governing the outcome of that development. The article by Kraemer and King provides an analysis of the role of the U.S. federal government in local government computing over the past two decades, with particular attention paid to the fact that in the United States there has been no effort to centralize development or support activity. Kawabata's article on the role of the

Japanese central government in local computing provides a different picture, focusing on the creation and maintenance of a major center for assisting local governments—LASDEC (Local Authorities Systems Development Center). These two approaches constitute an interesting study in contrasts, and help to explain the differences in the extent and character of computing use in local governments illustrated in the papers reviewing the state of the art.

Education of information systems professionals for public service

A final article by Nunamaker and Konsynski reviews the experiences of information system educators oriented toward the private sector, and relates these experiences to the needs of public sector organizations such as local governments. The sobering conclusions of the article indicate that the subject of information systems must be given more attention in the education of public service professionals or the potential of the technology will not be realized.

SUGGESTIONS FOR FUTURE ACTIVITY

Near the end of the seminar, three different groups of participants independently developed suggestions for future activity. One group consisted totally of Japanese participants; another of Americans; and a third was mixed. Yet, the agreement among these three groups was remarkable. Some of the suggested activities are summarized below:

1. *Joint case studies of specific applications.* These would be team projects, conducted by Japanese and American colleagues, and focused on specific areas of application, such as: geographic information systems; decision support systems; small-area urban models (e.g. activity allocation models and facility location models); computer graphics; office automation; and advanced technology applications such as video conferencing, electronic mail, and executive information systems.

2. *Joint seminars* on the following topics

(a) Impacts (e.g. privacy, productivity, work environment, decision making, transborder data flows) of information and communication technologies in organizations, in society, and in international relations.

(b) Areas of computer application, such as urban and regional planning models, decision support systems, data-based decision aids.

(c) Education and training in information systems, including: graduate and undergraduate education in business and public management; continuing education for practicing managers; education of information systems analysts and designers; and training for functional users of information systems. Also included here is examination of newer approaches to education and training such as the Laboratory Concept and use of organizational simulations.

(d) Evaluation of information systems and of information processing services.

(e) Standardization and transfer of computer applications.

3. *Joint experiments and demonstrations.* These would be joint projects aimed at the transfer of developed technologies and applications from one country to the other. Examples of such projects would be the transfer of activity allocation models for use in small-area planning, the transfer of the data lab/business simulation for management education, and the transfer of computerized tools for information systems analysis and design.

4. *Network building.* There was general agreement about the need to have a continuing exchange of information, to monitor specific research projects and application development projects, and to expand the community of scholars and practitioners interested in U.S.–Japan information systems developments. No specific mechanisms for doing so were identified beyond exchange of papers, future seminars, and personal communication among the seminar participants.

CONCLUSION

The period of the 1960s and 1970s was a time of great excitement, experimentation and development in the application of computing to local government. It appears from the number of international gatherings on the subject that the present period, extending perhaps until 1985, will be one of reassessment and reorientation. Many of the great dreams of the past two decades have proven elusive or expensive beyond reason, yet computing use has grown and become more essential than ever to the successful management of the also growing complexity of local governments. The combined pressures of continued urbanization, industrial and commercial dislocation, housing shortages, pollution, transportation needs, and an increasing demand by citizens for improved services will accelerate efforts to gain the productivity potential offered by computing. Perhaps the most penetrating conclusion from the MISUJI seminar is that the experiences of the past two decades have taught us to abandon the quest for grandiose "universal computing solutions" to urban problems, and to focus on development of efficient and effective systems to assist in routine operations and certain well defined decision and planning problems.

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