General Sessions

Governmental Implications of Automation Panel

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  Chairman, IGU Commission on Geographical
  Data Sensing and Processing

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Ziegler: Wisconsin established the position of State Cartographer to
coordinate mapping innovations. My duties are to collect and assimilate
information regarding innovations in cartographic techniques and mapping
programs, to keep abreast of the progress made by mapping agencies, and
to promote liaison among municipal, county, State, and Federal mapping
agencies. Since I was recently appointed to the position (August 1974),
I am not yet able to speak with authority on this subject, but I have
been involved to some extent with the mapping activities of the local
governments in Wisconsin.

There is very little, if any, automated cartography at the local level.
Local governments in our State depend entirely on the State government
for automation. In Wisconsin there is some automation in the universi-
ties and in some of the State agencies such as Transportation. But they
are basically modifying or adapting programs, procedures, or equipment
that someone else has researched and developed. The State and local
governments depend on the Federal Government to lead the way in automated
cartography. The local governments do not have the money nor are they
equipped to get deeply involved in the research necessary for developing
cartographic automation, even though they have a tremendous need for it.

We have regional planning commissions in Wisconsin, comprised of several
counties, whose main responsibilities are land-use and regional planning.
People on these planning commissions have limited cartographic knowledge.
For example, a regional planner would like to have a base map printed by
an automated plotter and 10 yr of land use digitized in yearly increments.
He would prefer to publish land-use data in several formats. However, he
has no equipment except access to a high-speed printer at a local univer-
sity. He has read all the literature about automated cartographic devel-
opment, but he doesn't know where to get the equipment or who can get it
for him. Plus, his budget is only about $5,000 for the whole project.

The important point is that an automated base, with land use digitized so
that he could add to it each year, would help tremendously in future

planning. Then he could make vital person-to-person decisions at the
local level. Probably his only source of funds will result from appealing
to the local governing board or qualifying for support such as the Housing
and Urban Development Act 701 fund. But if he doesn't know where to seek
assistance, he is lost and often reverts to the ordinary pen-and-ink, one-
copy, hand-colored map that hangs in the office. Thus the product of his
land-use planning program is one map that will not be distributed to those
who could use it.

In its development of automated cartography, the Federal Government
must keep in mind the needs of the local planners and aim for maximum
utilization.

Southard: It is important to note that, in an attempt to hasten and
improve the communication between mapping agencies, two States--Colorado
and Wisconsin--have set up the position of State Cartographer. I am
delighted to see this. The State Cartographer will be able to determine
the needs of State users and to make these needs known to Federal data-
collection and cartographic agencies. The Federal Government must become
more aware of the problems of all users in understanding and getting
accurate cartographic data in the desired form. The Federal Government
must also play a leading role in developing and maintaining the system to
determine current needs and respond to them. There is reason for hope.
Some evidence for my optimism is the work of the Federal Mapping Task
Force, which was convened by the Office of Management and Budget (OMB)
in April 1972. The Task Force was headed by Emory Donelson (OMB) and
included representatives from the Departments of Agriculture, Commerce,
Interior, and Defense, and the Central Intelligence Agency. In addition
about 50 other professionals· and specialists of the Federal mapping,
charting, and geodesy community were consulted.

The Task Force had four major objectives: to examine civil and military
domestic mapping, charting, and geodesy (MC&G) activities, objectives,
and supporting research and development; to determine how to better use
resources; to formulate, on the basis of findings a comprehensive national
program of MC&G that could efficiently meet the needs for maps, charts,
and data; and to structure an organization that could carry out the MC&G
programs. Of course, while the Task Force study was in progress, the need
for data at all levels in any form increased dramatically.

During the study we examined processes, products, and user satisfaction
at all levels. Our user survey was, we admit, a microcosm of what it
should have been, but it revealed what we needed to know rather quickly.
Not many users at any level were very satisfied with content, form, or
currency of product, with the speed with which they could get it, or
with their own comprehension. The Federal Government's ability to deliver
products and data had fallen far short of the growing need; nature of the
need had changed and was continuing to change.

The Task Force found that, in 1972, 39 Federal agencies of 7 Departments
and 11 independent agencies spent $305 million and expended 13,000 man-
years in MC&G activities. In addition, another $142 million was spent
on related activities in other fields--soils, oceanography, and geology.
There was no one in charge, no overall coordination, and no program
review. The proliferation of agencies' capabilities to meet their own
MC&G requirements continued because they weren't getting what they needed
from the agencies charged with meeting those requirements. There was no
central source of MC&G data and no mechanism for identifying and evaluating
requirements. Also the research and development effort was small and

fragmented, and communication both within and outside the Federal community was poor.

The Task Force concluded that the way to solve all of these problems was to organize a strong central MC&G agency, but this hasn't happened yet. Such an agency could well be placed in a proposed new Department of Energy and Natural Resources, but that hasn't happened yet either.

We also concluded that the civilian community needs to make more and better use of advanced technology in all fields. We had just barely left planetable technology and were content with the Kelsh plotter, the PG2, and the B8, but we hadn't progressed much further in any innovative way. I'm exagerating only slightly to make a point. We need to expand and coordinate civilian experimental mapping and surveying. We also need to expand uses of automation, data processing, and dissemination of data. Finally we must furnish a central source for map and survey data.

I won't give you a laundry list of all the good things that are happening as a result of the Task Force investigation. Nothing has reached fruition, but much has been started. Communication between Federal agencies has improved. The "not-invented-here" syndrome is being reduced if not eliminated. We haven't done all that we need to do in distributing products, data, advice, and knowledge, but we recognize the need. At USGS we have formed the National Cartographic Information Center to furnish a central one–stop source for all kinds of cartographic data, and we have arranged with other data holders for access to their data bases. After 6-mo work on this 10-yr job, we are finding that most agencies are eager to make their data available and assist in improving public awareness.

What does the future hold? My crystal ball is cloudy today. Yours is as good as mine, but I'll tell you how the situation looks to me. At least 12 agencies recognize that we data producers must find a way to make our products available to the public and to each other so that we can avoid duplication at great expense. Although necessary research in automation will be very costly, the payback will be immense. The major funding should be Federal, and I believe that fact is recognized. The speed with which these funds will be made available is in the lap of the gods. We will try to distribute funds according to need and to keep users abreast of research development at all government levels. Finally, we'll actively educate all in the effective use of these capabilities. For our plans to work, however, users or their spokesmen must clearly communicate their needs and problems. If we don't understand you the first time, come back, and if we don't understand you the second time, come back again. If we don't understand you the fourth time, write your congressman. Then we'll try harder. Contacts that you've made at this conference must be aggressively pursued. We recognize that interaction is often difficult, but we'll do everything that we can to facilitate it.

Tomlinson: The role of a State Cartographer, as Ziegler described it, is essentially passive. Only a minor part of his task is liaison with the Federal Government. Yet the States and particularly the local governments must tell the Federal Government their needs--whether they be products, advice, or the transfer of Federal research and methodologies. The clients of Federal research are not just the Federal Government itself, or even State governments, but local governments. I hope that the State Cartographer's tasks can include communicating local needs to the Federal Government. Although there are only two State Cartographers, more may be established if the position proves to be an effective channel of

communication.

Wickham (H. Dell Foster Co.): I would like to comment on Ziegler's state-
ments that there is no automation at the State level and that automation
is dependent on Federal assistance. Today there are automated systems
not only at the State level, but at county and city levels. I can assure
you also that there are technically capable people at all levels in some
States.

Ziegler: I agree with you. I was speaking from the standpoint of my
short term in Wisconsin. In certain areas of Wisconsin, like southeastern
Wisconsin, planning commissions are involved in advanced systems, but
generally such cases are rare. The areas that can afford automation
have it. Since southeastern Wisconsin has 40 percent of the State's
population, its tax base is higher than the northwestern section with
2 percent of the population. Yet northwestern Wisconsin probably has
more significant problems.

Finnie (Private consultant): A number of the larger municipalities are
involved in all kinds of mapping activities including acquiring automated
digital data. What is going on at the Federal level, specifically in
USGS, regarding common design criteria for special-purpose products or
data that would be available to interested local governments and private
contractors?

Southard: At USGS we are working in two areas. Since we're not very far
along in either area, however, most of what I say is a promise rather
than a statement of accomplishments. Some of you are aware of the two
large-scale city mapping projects in Fort Wayne and Charleston, with
followup projects scheduled in San Francisco and in Frederick, Md. These
projects will furnish a badly needed data base from which these cities
can properly digitize different kinds of information for solving many
city problems. So far our work is experimental and leans heavily on
studying the applications of these new products.

The other area of concern is intermediate-scale maps--1:50,000 scale and
1:100,000 scale in county format and 1:100,000 scale in quadrangle format
for a quarter of a 1:250,000 map. We're using feature coding so that we
can make digital displays at scales other than the basic data base scale
of 1:100,000. These maps are being applied to energy resource development,
in coal leasing areas under study by the Bureau of Land Management and
in geothermal areas in southern California--ambitious projects of high
interest.