

Federation of Digital Seismographic Networks

Minutes of Meeting in Golden, Colorado
August 1-2, 1990

The following participants were present during most or all of the sessions:

<i>Name</i>	<i>Institution - Network</i>	<i>Country</i>
Members:		
B. Romanowicz	Acting Chairman, GEOSCOPE, IPG	France
E. R. Engdahl	Officer, USGS	USA
H. P. Harjes	Officer, Ruhr University	FRG
D. Giardini	Secretary, MEDNET, ING	Italy
K. Beverley	CNSN	Canada
B. Dost	ORFEUS	The Netherlands
D. Gubbins	Leeds University	UK
W. Hanka	GRN	FRG
R. Hansen	NORSAR	Norway
B. Masse'	USNSN, MIDAS, USGS	USA
P. McFadden	BMR	Australia
B. Phinney	IRIS	USA
S. Tsuboi	POSEIDON	Japan
Observers:		
T. Ahern	IRIS	USA
R. Buland	USNSN, USGS	USA
R. Butler	IRIS	USA
S. Halbert	USGS	USA
T. Jordan	MIT	USA
B. Mitchell	St. Louis University	USA
J. P. Montagner	GEOSCOPE, IPG	France
J. O'Donnell	DOE/NV	USA
S. Sipkin	USGS	USA
J. Steim	Quanterra Inc.	USA

The following summarizes the discussions held by the Federation over two days. Many items were covered in separated sessions in both days, and a joint summary is given here, which does not attempt to be a detailed record of all of the discussions.

1. Opening remarks

B. Masse' welcomes all participants to USGS premises.

B. Romanowicz, the Acting Chairman, opens the meeting welcoming members and observers.

Prof. A. Dziewonski, FDSN Chairman, cannot attend the meeting for personal reasons and sends his best wishes for successful discussions.

2. Adoption of Agenda

The Chairman proposes to shorten the Agenda to two days of discussion, rather than the three scheduled, reserving a third day to ensuing problems. The Agenda is adopted.

3. Approval of Minutes of 1989 Istanbul Meeting

The Minutes of the FDSN 1989 Meeting held in Istanbul are approved as circulated to members following that meeting.

4. Reports of Members

Each present member of the Federation reports on the current status of his/her project and on plans for developments in the next 1-2 years. Reports forwarded by members are attached (Attachment A). China and USSR are not represented.

Significant development to be noted are:

- Canada has obtained funds for a new national BB network – called CNSN – with 5 VBB and 25 BB stations centralized via satellite to Ottawa; to be completed in '94.
- IRIS is proceeding with the installation of stations in USSR, 6 new stations have already been funded for a total of 12 planned; 10 worldwide stations will be equipped in 90-91 with new IRIS2 hardware; Gopher has been used 1500 times in the last year.
- USNSN is in the deployment stage; the satellite transmission system is in place at USGS; station deployment will start this year and last two years for continental USA.
- MIDAS has started; agreement has been reached among member countries.
- GEOSCOPE is coming to completion; all sites are decided except one; most sites are being upgraded to VBB standards with new vaults; B. Romanowicz will leave the post as Project Chairman, which will be taken by J. P. Montagner at the end of '90.
- POSEIDON has not been funded yet; a Pre-Poseidon phase is operated to manage the data from 12 VBB stations already installed in Japan.

- MEDNET is proceeding; six VBB stations are now installed; three other sites are in preparation.
- The German Network has positioned two more sites to cover the whole new German territory.

5. ISOP

The International Seismic Observation Period is presented by T. Jordan (Attachment B). With respect to the original ISOP concept, Jordan stresses that ISOP emphasis is not only in phase reporting, but in the whole new philosophy of digital seismology. On behalf of the ISOP Organizing Committee, he asks for direct FDSN involvement, and for an official statement in view of the IUGG XX Assembly in '91. On request of the assembly, B. Engdahl reviews the ISOP initiatives to date.

A broad discussion is conducted over the two days of assembly; among the points raised is the recognition that the traditional concept of seismological observatory is not being replaced by the new digital networks, none of which is presently performing routine extraction of parameters; digital seismology is a revolution restricted to FDSN members and not to the more general seismological community. Although some FDSN members are already involved in cooperative programs to help developing countries to transition to digital seismology, with training and equipment allocation, these efforts are not widespread and homogeneous.

It is recognized that, while the extraction of parametric data is not in the line of FDSN activities as such, members should promote and provide means for direct analysis of collected waveforms and parameter extraction to all countries involved; FDSN will coordinate the preparation and distribution of software packages to this purpose and will encourage the installation of digital stations to most possible countries, with a phase of training and joint research.

FDSN will participate in ISOP workshop, and produce a document for the IUGG '91 assembly. An ISOP working group is formed to this purpose, and with the task of exploring ways of improving the spreading of digital seismological capabilities. The committee is provisionally formed by E. R. Engdahl, D. Giardini, B. Romanowicz and S. Tsuboi, with R. Buland as Acting Secretary and H. P. Harjes as Chairman; a letter of intents is prepared (Attachment C).

6. Report of Working Group I: Siting plans

B. Engdahl, Chairman, reviews global and regional achievements in the last year, and present and future distributions; maps of the station distributions as of August '90 are in Attachment D. The general consensus is that the deployment of BB and VBB stations is progressing very rapidly, more than it could be expected; areas where major changes can be felt in only one year are the USA, the USSR, Japan, the Mediterranean. There are now almost one hundred digital stations operating in the world.

A request is accepted that future station listings will indicate also the Data Centres responsible for data collection and distribution for each station.

The proposal is accepted to prepare a station inventory volume, describing hardware, site and noise characteristics; specifications will be along WWSSN or GSE or other existing format, and will be prepared and distributed by December '90 by B. Hutt and J. Hoffman of USGS; the volume should be ready and circulate at the IUGG XX General Assembly in Vienna, August '91.

7. Federation Network

The concept of Federation Network – a subset of about one hundred stations chosen on the basis of hardware standards, noise characteristics and geographical location – is reaffirmed. It is agreed that this is the network to be distributed on the FDSN Volume, and that the list of stations will be reviewed by the Working Group I each year in occasion of the Federation Meeting. A first selection was performed in Istanbul and is confirmed (Attachment E).

8. SEED

The general consensus is that this Meeting is the last one in which final decisions on all aspects of SEED implementation should be discussed and agreed upon, and that from '91 FDSN data should be distributed in the standard SEED format.

R. Buland, head of the working group on SEED, relates on the status of the SEED experiment launched at the Istanbul Meeting. Results are very positive; the experiment is almost completed and compatibility has been verified for all participants; SEED turns out to be very flexible.

Based on present experience, R. Buland illustrates some points of confusion in the SEED header, mainly in the blockettes of the instrument response and the time correction. The SEED Commission meets separately and prepares a final report detailing the changes (Attachment F).

Following a lengthy discussion, agreement is reached on the following rules for SEED implementation:

- A SEED *verifier* will be implemented at USGS to test the compatibility of data written at different institutions
- A generic writer will be supported to all FDSN users by IRIS on UNIX, MS-DOS and VMS; it will be upgraded to future changes
- FDSN members may use their own writer, as long as it is compatible with the FDSN Verifier
- Users may use their own reader

9. FDSN Volume

It is agreed that the first FDSN Volume will be issued and distributed in occasion of the XX General Assembly of the IUGG in Vienna, August 1991. The support will be CD-ROM in ISO standard. The format will be SEED in its latest version approved at this meeting. The covered period will be October-December 1989; subsequent emissions will continue with 1990. The Volume will contain, where available, continuous VLP and

LP channels, and event-selected BB; criteria for event selection are based on magnitude determinations by the USGS and on durations presently used by the USGS (Attachment G); the USGS will issue lists of the requested events and lists of starting and stopping times for all stations. The USGS will assemble the data and produce the Volumes, which will take the place of present GSN releases, at its expense; the Federation expresses its gratitude to the USGS for its efforts. The Volume will bear the FDSN name.

10. Open Stations

The discussion points out that the evolution of data retrieval for single users is toward accessing regional and global Data Centres rather than single stations.

11. Regional Data Centres

Duties and rules of regional Data Centres are reviewed. It is agreed that it is necessary to standardize DRMs, leaving to Data Centres the responsibility to access their stations. The SEED group is asked to meet during the assembly and examine the present status of DRMs and propose a line of action for DRM unification; as a result of this meeting (Attachment H), a new DRM working group is formed, chaired by B. Dost, in charge of verifying the consistency of existing DRM (CDSN, ORFEUS, Caltech, Gopher, Grafenberg, ..) and propose one as the standard at the Vienna assembly. The DRM group will coordinate its activities with the joint FDSN-GSE group in charge of standardizing access to open stations, chaired by S. Ingate.

A request is made by B. Romanowicz that each Data Centre contributes detailed indications on how to access and retrieve data from the Centre (Attachment I).

The issue of isolated stations which are not part of larger networks and are not in the geographical coverage of existing regional Data Centres is discussed. The recommendation is made that remains responsibility of the isolated stations to obtain cooperation from a global or regional Data Centre for the collection and distribution of all data.

12. Federation Archive

IRIS asks for a response to its proposal, made in Istanbul, of being named the official FDSN Archive, in charge of collecting continuous digital data recorded by members.

After discussion, the following statement is approved: *The IRIS Data Centre is designated as the first FDSN Data Centre.*

The FDSN also endorses other Centres to do the same. IRIS DC offers its software for implementation at other DCs.

13. OSN

The initiative by Purdy and Dziewonski for the deployment of a network of OBS is presented (Attachment J). The experiments in the deployment of OBS conducted in Hawaii by OSN, in the Eastern Pacific by GEOSCOPE and in Japan by POSEIDON are described.

Following a request by A. Dziewonski, a statement of support for OSN activities is prepared by B. Engdahl and sent to G. Purdy of OSN after discussion and approval by FDSN members (Attachment K).

14. Closing remarks

The next Federation Meeting will take place in Vienna at the IUGG XX General Assembly, on August 15 and 19, 1991.

Barbara Romanowicz
Acting Chairman

Domenico Giardini
Secretary

List of Attachments

- A) Member Reports: GEOSCOPE, Australia, MEDNET, NORSAR, IRIS
- B) ISOP description document
- C) Letter of intents of the ISOP Committee
- D) Global and regional distribution of digital stations
- E) Present distribution of the Federation Network
- F) Report of SEED commission
- G) USGS criteria for event selection
- H) Report of SEED commission on DRM
- I) DRM description for: GRM, IRIS
- J) OSN Newsletter, March 1990
- K) Statement of support for OSN