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United Nations Industrial Development Organization

Interregional Training Workshop
on Industrial Project Implementation

Amsterdam, 22 September - 3 October 1969

REPORT ON THE INTERREGIONAL TRAINING WORKSHOP ON INDUSTRIAL PROJECT IMPLEMENTATION 1/

Amsterdam, 22 September - 3 October 1969

Prepared by the secretariat of UNIDO

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INTERREGIONAL TRAINING WORKSHOP ON INDUSTRIAL PROJECT IMPLEMENTATION

AMSTERDAM, 22 SEPTEMBER - 3 OCTOBER 1969

TABLE OF CONTENTS

REPORT OF

INTERREGIONAL TRAINING WORKSHOP ON INDUSTRIAL PROJECT IMPLEMENTATION, AMSTERDAM, 22 SEPTEMBER - 3 OCTOBER 1969

1. Objective of the Workshop

The main objective of the Workshop was to train technical personnel from a number of developing countries mainly in: 1) the application of useful operational techniques in programming, scheduling and controlling of the implementation of industrial projects and, 2) designing control systems necessary for more effective project implementation.

In addition, the Workshop had the objective of bringing those technicians together, also with experts from both developed and developing countries, to enable them to exchange views and discuss problems encountered by their countries in this phase of industrial development so that new approaches for problem solving could be gained.

2. Teaching Experts in the Workshop

Mr. Mostafa H.A. Hamdy (UNIDO), Director of the Workshop.

Mr. G.G. Pilmeyer, Philips, Eindhoven.

Mr. G.M. Nijssen, The Netherlands Automatic Information Processing Research Center, Amsterdam.

Mr. J.S. Staijen, The Netherlands Automatic Information Processing Research Center, Amsterdam.

Mr. W. de Woerd, The Netherlands Automatic Information Processing Research Center, Amsterdam.

Mr. G.J. Tromp, Berenschot-Diebold, Centraal Station.

Dr. F.M. Moll, The Netherlands Automatic Information Processing Research Center, Amsterdam.

Mr. J.P.M. Oerlemans, The Netherlands Automatic Information Processing Research Center, Amsterdam.

Mr. A. Schinkel, The Netherlands Automatic Information Processing Research Center, Amsterdam.

Mr. H. Reschke, Dornier GmbH, Friedrichshafen/Bodensee, Federal Republic of Germany.

Mr. E. Unsin, Dornier GmbH, Friedrichshafen/Bodensee, Federal Republic of Germany.

3. Procedures

The Workshop was organized between 22 September and 3 October 1969 in Euromotel, Amsterdam, the Netherlands and was attended by 17 participants from 16 countries from Africa, Asia and the Far East, Europe and Latin America. A list of the participants and their countries is given in Appendix I. The Workshop had two 3½ hour sessions every day. Additional evening sessions for discussions as well as study groups also took place as were needed.

The first part of the Workshop was devoted to the analysis of problems encountered in the course of implementing industrial projects and in teaching the basic techniques of project programming and scheduling to the participants. Case studies from developed and developing countries as well as exercises were used.

The second part of the Workshop dealt with implementation control systems from the conceptual and analytical points of view. Appendix II shows the reference training material used.

4. Acknowledgement

I wish to express my appreciation to Mr. S.D. Duyverman and his Institute for the administrative help they have provided us with during the Workshop.

5. Outline of the Workshop

5.1 Opening Session

5.11 An address by Mr. S.D. Duyverman, Chairman of the Board of Directors IFIP Administrative Data Processing Group and Director of the Netherlands Automatic Information Processing Research Centre.

5.12 Message from Mr. I.H. Abdel-Rahman, the Executive Director of UNIDO read by Mr. Mostafa H.A. Hamdy.

5.13 Introduction to the Workshop and discussion of its scope by Mr. Mostafa H.A. Hamdy.

5.2 First part of the Workshop

5.21 Problems encountered in the course of implementing industrial projects In the discussion, both the problems, their causal factors and their interlinkages were identified.

5.22 Basic Techniques for Project Programming and Scheduling:

5 221 Network development

5 2211 Lecture Production planning versus project planning use of bar (Gantt) charts principles of network analysis relationship of bar charts to network diagrams

5.2212 First exercise (performed by all participants on an individual basis followed by class discussion) Prepare bar chart and activity-on-arrow diagram (arrow diagramming) and calculate shortest possible completion time for an eight-activity exercise with required time for each activity as indicated by Instructor

5 2213 Second exercise (individual basis followed by class discussion) Prepare activity-on-arrow diagram and calculate shortest possible completion time for 15-activity exercise with required time for each activity as indicated by Instructor

5.2214 Third exercise (individual basis followed by class discussion) Prepare activity-on-arrow diagram and calculate shortest possible completion time for 31-activity exercise made up by Instructor

5.222 Activity-on-arrow versus activity-on-node (precedence diagramming)

Lecture Principles of activity-on-node and discussion of activity-on-node versus activity-on-arrows

5.223 Use of activity-on-node

5 2231 Exercise (individual basis followed by class discussion) The first and second exercises listed above

5.2232 Case (performed by participants on individual basis followed by discussions in 4 or 5-man groups followed by class discussion) "Arrow Diagramming Exercise"

5.224 Computations of basic scheduling data

5 2241 Lecture Forward pass backward pass earliest finish (EF) latest finish (LF) earliest start (ES) latest start (LS) total float (TF) free float (FF) and significance of floats

5.2242 Exercise (individual basis followed by class discussion) Calculation of EF LF ES LS TF and FF for first and second exercises listed above and discussion of significance and use

5.2243 Case study (individual basis followed by group discussions followed by class discussions) Network calculations for a case study including discussion of the significance and use of each time parameter in project implementation scheduling and control

5.2244 Handling of uncertainty in activity time estimates

5.225 Implementation of industrial project

Case study (group basis followed by class discussion) A 21-activity industrial project was given Preparation of complete network including computations

5.3 Second Part of the Workshop

(Advanced Techniques for Project Implementation)

5.31 Time/cost analysis

Lecture General discussion of time/cost analysis (PERT cost) with specific reference to understanding of concepts and limitations in use

5.32 Resource allocation

5.321 Lecture Concepts and techniques of resource allocation with discussion of single versus multi-project scheduling and use of project activity floats

5.322 Exercise (individual basis followed by class discussion) Problem with 8 activities and 3 resources made up by Instructor

5.4 Project Implementation Systems

5.41 Organizational systems

This covered the organization structure for industrial implementation at both the sectoral and project levels; the various hierarchical levels involved their functions interrelationships and the communication channels between them Project organization for implementation has been given more emphasis Here the organizational system outlined the functions interlinkages between and operation of the industrial development agency if there is any management project office contractors and outside technical assistance such as bilateral multilateral and international assistance before and after sitework (project execution) starts

5.42 Information systems

Information flows necessary for project planning monitoring and control Information flows and their direct correspondence to the organizational structure set up to implement the project Information flows take place upwards downwards and sideways in the organizational hierarchy In addition they also take place between one system and another Interaction between the system and its environment Basic components of information systems. Data collection at operative levels Data and information aggregation as information goes upwards from one level to the next higher level Control of project implementation. Use of bar charts and networks in project and financial control. Control models based on combined utilization of bar charts and networks for the various levels of the project organizational hierarchy Financial control Techniques for reprogramming and rescheduling of project implementation and updating of project implementation schedule and financial plan Moreover due to the masses of data to be processed and the numerous follow-up reports to be prepared during project implementation the Workshop has also dealt with the electronic data processing systems (computers) and their value in coping with data processing needs Here the essential computer elements as well as basic concepts and programming techniques have been included

6. Conclusions and Recommendations

The last session of the Workshop was devoted to evaluating the programme

6.1 It was the unanimous feeling of the participants that the Workshop met the objectives for which it was organized The participants emphasized the value of the training they had received for their work back home

6.2 Although project implementation is the backbone for industrial development where scarce capital human and material resources are committed and immobilized over a long period of time developing countries lack the necessary skills and expertise required for coping with the ever-increasing demand of this phase of development The participants have therefore expressed the pressing need for training in this field in their individual countries and that they will orient the authorities in their respective countries about the Workshop and potential assistance that could be requested from the United Nations in this particular and relevant fields in the future

This has been especially stressed by the participants from Malaysia Iran Tunisia Tanzania Ethiopia Mexico Venezuela Brazil and Turkey Inquiries to this effect are being made by the Governments of Mexico Venezuela and El Salvador

6.3 In addition the participants expressed great enthusiasm concerning the value of Interregional Training Workshops in this field as a forum for exchanging experience and becoming acquainted with implementation problems in other countries the various approaches used to alleviate them and their degree of effectiveness The participants recommended that future Workshops be of three weeks duration instead of two weeks

It is the feeling of UNIDO that the great enthusiasm of the participants was a major factor in making the Workshop a success

7. Participation in the Second International Congress on Project Planning by Network Analysis (INTERNET)

After completion of the Training Workshop the participants attended the second Internet Congress which also took place in Amsterdam the Netherlands from 6 - 10 October 1969 The Internet Congress included subjects and discussions related to the contents of the Workshop

It is worth mentioning that Mr [illegible] Yusuff (Malaysia) delivered a speech in one of the INTERNET sessions and Mr M D Karadimov (Bulgaria) was a chairman of another session

APPENDIX I

LIST OF PARTICIPANTS

Participant	Profession
M.J.P. de Barros Sobrhino Brazil	Coordinator - State Government of Bahia Salvador Bahia
M.D. Karadimov Bulgaria	Expert in implementation of mathematical methods - State Committee of Planning Bulgaria Sofia
M.E.A. Woodcock Colombia	Head of Project Evaluation Group Instituto de Fomento Industrial Bogota
A Makonnen Ethiopia	Mechanical Engineer - Imperial Ethiopian Governmental Technical Agency Addis Ababa
S.K Kanda Ghana	Senior Projects Officer - Ministry of Industries Accra
T. Nemeth Hungary	Chief of Technological Department Planning Bureau of the Ministry for Metallurgical and Machine Industry Budapest
B Azami Iran	In charge of technical division in the Government organization for small-scale industries and industrial estates Tehran
K Varza Iran	Systems Engineer - Industrial Management Institute Tehran.
M. Yusuff Malaysia	Head of Division Technical Services Prime Minister's Department Kuala Lumpur
G. Daumen Venezuela	Commercial Manager of Epsilon S A Caracas
J.W Berrios Chile	Second Chief of the Technical Dept of INACAP Santiago

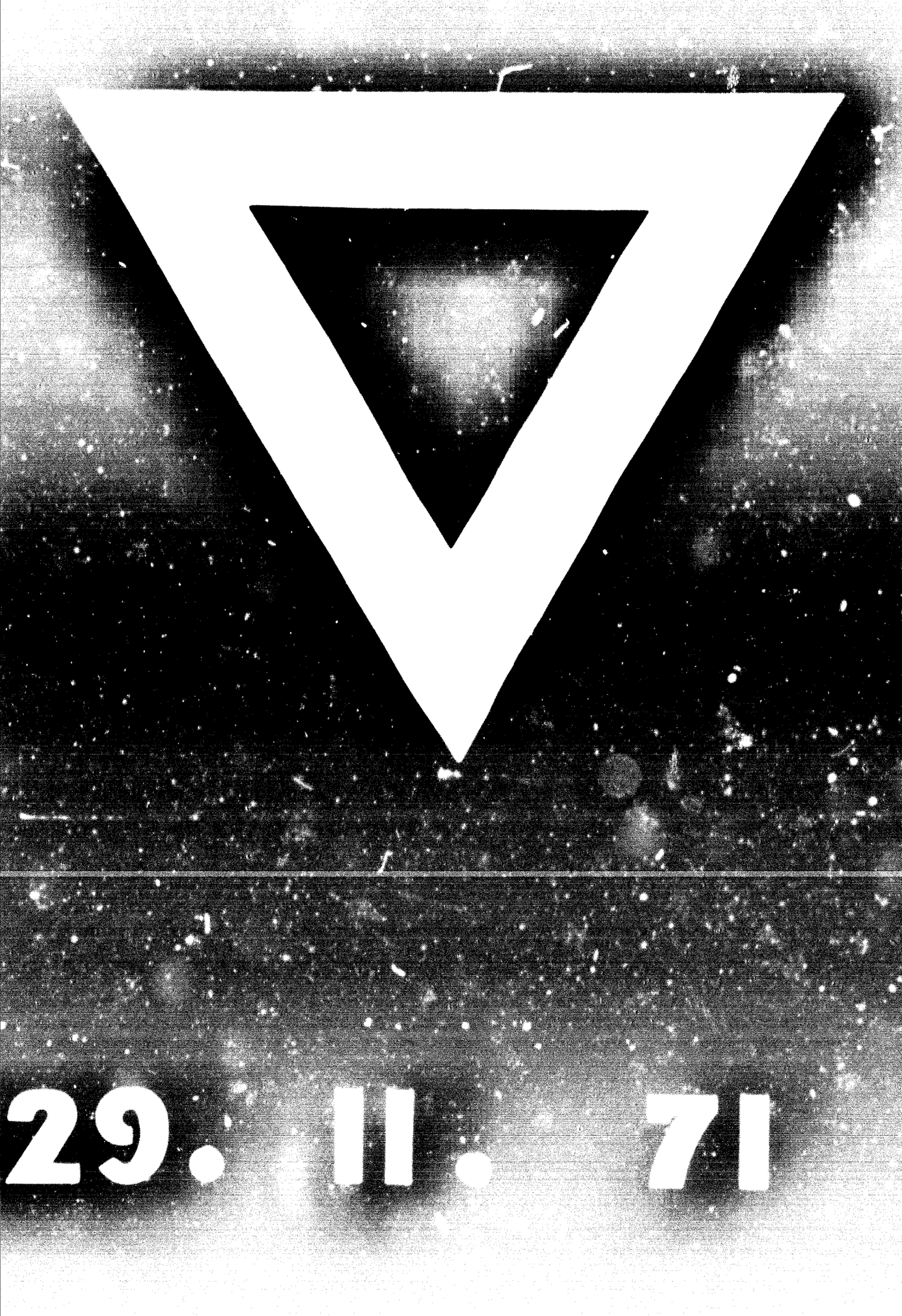
Participant	Profession
G. Mavrommatis Greece	Head of Technical Aid Dept. EVBA Athens
A. M. Hassen Somalia	Head of Industrial Section Ministry of Industry and Commerce Mogadiscio
A. Jabi Tunisia	Industrial Economist - Centre National d'Etudes Industrielles Tunis
M. Kantel Turkey	Manager of Planning Department Petkim Petrokimya A.S. Izmit
A. M. el Tahir Sudan	Inspector in the Ministry of Industry and Mineral Resources Khartoum
A. R. Swai Tanzania	Assistant Personnel Officer Ministry of Commerce and Industries Dar-es-Salaam

APPENDIX II

LIST OF REFERENCE MATERIAL

Item No	Title
1	John Tondahl and Mostafa M A Hamdy "Procedures for Programming and Control of Implementation of Industrial Projects in Developing Countries" UNIDO/IPPD/3 16 February 1968
2	"General Procedure Followed in Network Scheduling"
3	Simple Exercises
4	Exercise
5	"Activity-on-Arrow vs Activity-on-Node"
6	Exercises on project scheduling
7	J G. Tromp "Brief Note on Cost Control"
8	Exercise on Time-Cost Trade-off
9	Case Study (PPS) Dornier GmbH
10	Case Study "Textile Mill Project"
11	"A Brief Primer on Project Network Scheduling under Resource Constraints" TM 3 69
12	Mostafa M A Hamdy "Network Techniques for Project Implementation in Developing Countries"
13	Exercise on Resource Allocation
14	J Staijen "History of digital computers" and "The essential elements of a computer"
15	F M Moll "The Impact of Computers on the Society and Developi g Countries and E D P Automation"
16	Mostafa M A Hamdy "Computers and Network Techniques for Project Implementation"

Item No.	Title
17	G.M. Nijssen "Network Planning: Criteria for Computer use and Programme Specifications"
18	A Schenkel "Systems and Systems Design" Systematic Approach to the Development of Business Information Systems"
19	Supplement of above
20	Appendices of above
21	Mostafa M A Hamdy "Problems encountered in the Application of Network Analysis Techniques in Project Implementation in Developing Countries and Pertinent Recommendations" UNIDO/IPPD/20(


29. II. 71