New Strategic Directions in the Egyptian Survey Authority and Impact on the Requirements for Capacity Building: An Example of International Cooperation for Human Resource Development

M. Hesham NASR, Azza ElSAYEGH, Soad FEKRY, Adel KASSEM, Egypt and M. Mostafa RADWAN, The Netherlands

SUMMARY

Since the beginning of the 90s, several initiatives have taken place in the Egyptian Survey Authority (ESA) to modernize its production facilities and work procedures, with an apparent role of digital technology. Several international donors contributed to such modernization program. Recently, a decision was taken by the Egyptian Government to convert ESA into an 'Economic Authority', operating on 'cost recovery' bases and partnering with private companies for the delivery of diverse, large, services that beyond its capacity. In respond to these policies, ESA is busy exploring new strategic directions, including options for self-subsidiary and revenue generation, outsourcing of basic mapping activities, business re-orientation with more focus on information management and the delivery of diverse geo-services, optimisation and downsizing, training programs for job re-orientation, Public Private Partnership PPP, etc.

Consequently, staff members, in all managerial and operational levels, require training in applying modern concepts and effective measures for the management of technical operations, quality and performance, in line with the business goals of the organization. The International Institute ITC, the Netherlands, supported ESA in designing a program for organizational and human resource development for a five years period, after which it would proceed as on-going intra-organization training program, the TMS/ESA Project. The Dutch Government, jointly with ESA, financed this program. ITC is the leading partner in this project, in association with several educational institutes in Egypt and professional organizations in the Netherlands and Germany.

The project offers an integrated set of training programs for ESA staff in all management levels; senior managerial staff, mid-managers and supervisors, technical staff as well as administrators involved in managing resources. These integrated programs include training courses, workshops and case studies, both in Egypt and the NL. The training is focusing on strategic planning and the management of technical operations, workflows, information and quality of services. Improving the performance of ESA is the ultimate aim of this project. In

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order to ensure sustainability, the project aims to strengthen ESA capabilities for training , continuous training needs assessment and impact evaluations on performance.

This paper reviews these activities and the lessons leaned for both ESA and ITC, in the framework of international cooperation.

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1. THE EGYPTIAN SURVEY AUTHORITY BACKGROUND

The Egyptian Survey Authority (ESA) is currently the only governmental organization responsible for the coverage of the entire territories in Egypt with base topographic maps and land registers, in cooperation with the Real Estate Office in the Ministry of Justice. ESA operates under the guidance of the Ministry of Water & Public Resources. ESA Offices are spreading all over Egypt; the Head Quarter Office in Cairo, 24 Provincial Offices and more than 100 District Offices in all Egyptian cities, offering topographic maps and cadastre services to citizens as well as to public and private institutions. ESA employs almost 10,000 employees from all cadres, as shown in Table (1). ESA celebrated its 100th anniversary in May 1999.

Since the beginning of the 90s, several initiatives have taken place in the Egyptian Survey Authority (ESA) to modernize its production facilities, upgrade resources and improve work procedures. The use of modern information technology is becoming apparent in the various sectors in ESA. Several international donors contributed to such modernization efforts. In the year 2001, a decision was taken by the Egyptian Government to convert ESA into an 'Economic Authority', operating on 'cost recovery' bases, aiming to be fully self-subsidized by the revenues generated from the services it offers, without violating its national mandate. Further decisions taken by the present government in the year 2004 requesting ESA for an apparent role of the private sector in its mapping activities. ESA is busy exploring new strategic directions to respond to these policies. Challenges and shortcomings are first analysed and the necessary improvement actions are set accordingly.

2. CHALLENGES AND SHORTCOMINGS IN ESA

There is daily evidence that ESA, like many national mapping organizations in developing countries, is facing many challenges in the surrounding environment. The Egyptian information society now a day is characterised by a fast evolving GIS market and business practices operating on the bases of free enterprise and competition. ESA as public sector organization has many difficulties in facing such challenges:

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2.1 Challenges Concerning the Running of its Business

- ESA, as public sector organization, is still traditional in making business, mandatory services are behind schedule and the respond to requests for tailored, almost on-line, services is slow; consequently user's dissatisfaction.
- Funds necessary to execute full-scale programs, for the completion of map coverage and land registers for the entire territories of Egypt are lacking.
- No clear government regulation concerning the implementation of cost recovery policy in the public sector; as freedom for pricing its services on the bases of actual costs is restricted by existing legislations and the measures for downsizing and layout of redundant staff are not fully supported by the government. ESA is employing more than 10,000 staff, only 5% of them are university graduates as shown in table (1).
- Experience concerning collaborative work and partnership with other public and private institutions for the creation of diverse and large services is lacking. Also business rules that regulate such collaboration and protect copy rights are not well formulated in the GIS market in Egypt.
- ESA is lacking the necessary marketing skills to generate revenues and to face the threat of new competitors who are encouraged by the present of cheap technology, easy access to spatial data (generated by remote sensing and GPS technologies) and have a flexible approach to adapt to the changing requirements of GIS users.

2.2 Challenges Concerning the Management of Information

- The capacity for information management is limited due to the absent of 'well structured' Information System, based on database technology to store and archive its operational and strategic information; as the available financial and human resources are not adequate.
- The capability to deliver on-line services, which are urgently needed to increase the economic potentials of geo-information, does not exist.
- No mechanism (and associate standards and regulations) to provide direct access to geo-information available in other related organizations. The initiative to create the Egyptian Spatial Data Infrastructure NSDI is facing many institutional, financial and technical obstacles and far from being complete.

2.3 Callenges Concerning the Management of Technical oOerations and Quality of Services

- ESA, as traditional mapping organization, is lacking the flexible approach to the production and delivery of up-to-date maps, information and diverse geo-services, just-in-time, and tailored to customer needs.
- Experiences are lacking for the effective use of modern concepts and the supporting digital technologies for the management of projects, workflows and resources.
- Methodologies and decisions for the management of quality, performance and costs, are not always matching with organizational business goals.

3. HE MODERNIZATION PROGRAMS IN ESA

The Government of Egypt and a number of international donors invested more than US$ 50 million in the past 15 years for the technical modernization of ESA. Examples of such international aid projects are:

- The Finnish Projects in the 80th and the 90th, with the objective to complete the map coverage in areas outside the Nile Valley
- The German Project in the early 90th, with the objective to develop a cadastre System in the Province of Aswan.
- The USAID technical Aids Project in the early 90th, with the objective to modernize the topographic & cadastral mapping systems in ESA, including the upgrading and modernization of resources and the establishment of production procedures, conducted in several pilot projects for mapping and cadastre land registration.
- The French Project in the year 2000, with the objective to introduce remote sensing techniques for topographic mapping in desert areas.
- The Finish Project in the year 2002, with the objective to develop methodology for the establishment of cadastre information system in the Province of El-Behara.
- The Dutch Project in the years 2000 – 2004, with the objective to support capacity building in ESA. This project is the main topic of this paper.

This modernization is now entering its fifteenth year and has provided up-to-date equipment, technical training and production support in a number of pilot areas. The modernization program is supported by the development of Strategic Plan in the year 1994 for the completion of map coverage and land registers. Several projects were initiated, in the framework of the implementation of the Strategic Plan, to finalize the registration of ownership and cadastre maps in rural areas (first priority), to be followed by similar projects in urban areas in cooperation with the Local Authorities and private companies.

Since then, ESA is now focusing on key improvement actions to speed up these initiatives, converting them to full-scale national programs, in the framework of the present government policies.

4. AREAS OF FOCUS FOR IMPROVEMENT IN ESA

In the following, we mention only those improvement actions, which will have impact on the design of the capacity building program for organizational and human resource development:

- ESA is on the process of change to operate on economic bases, without violating its national commitment. ESA will continue to support map coverage and the registration of land and the provision of basic land information as required for good governance in all administrative levels in Egypt. In addition, ESA is exploring various options for revenue generation, including the delivery of diverse services, tailored to customer needs. Partnering with private and other public institutions is high in this improvement list, with the objective to deliver large geo-services that beyond the capacity of ESA.

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- ESA is busy exploring options for outsourcing of basic mapping activities to the private companies, while focusing on information management and the delivery of diverse geo-services. The social impact of consequences such as optimisation and downsizing, on the employees need careful consideration and effective training programs for job re-orientation.

- ESA is revising its management style and the way of conducting business. The objective is to optimise the use of resources, improve the quality of services and maximize revenue. Several options will be set up to maximize the role of information technology in improving the responsiveness of ESA to market change. This needs the diversity of products and services according to market demands, the re-engineering of its production workflow to improve operations management, the establishment of the national land information system and introduction of a quality management system in all sectors and management levels. An 'activity based costing ABC' models will be developed for the various services and products in order to help ESA to link the 'spending' with the 'achievement' of the various sectors, as well as to set its 'pricing policy' and the bases for achieving 'cost-recovery'.

- ESA will establish its land information system, to support cadastre services and topographic mapping as well as the generation of value-added products. The system is composed of several databases, distributed in the various locations in ESA, the Head Quarter, the Topographic Sector, the Provinces as well as the District Cadastre Offices. The system will be integrated, both conceptually and physically, to insure data integrity and data sharing. The various institutional aspects that are relevant to the development of such a system are under investigation, such as information policy and copy rights, standards, business domains to be supported, costs and prices, upgrading of IT resources and human skills, etc. The decision on the contents of these databases (type and size of data) will be made according to demands. The same principle will be applied on the completion of the map coverage and publication of the various map scales. As a step towards the creation of such a system, several projects are initiated in various Provincial Offices to convert existing data sources (cadastre maps and documents) into digital form, update and store them in databases; the objective is to complete 'El-Sagel El-Aeny', the national cadastre. Some of these projects will be conducted in co-operation with foreign companies, financed by international donors.

- ESA is exploring the possibilities for partnership with private IT companies to support the management of its strategic and operational information and the associate databases and ICT resources.

- ESA information system will be run in the framework of regulations and policies concerning ESA vision and role in the information society in Egypt, its respond to external pressure forces and the measures and policies for the management of quality, workflows, and resources, as shown in figure (1).

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Figure 1: ESA Information System and the supporting arrangements

- The modernization of the various supporting financial and administrative services for the management of finances, personnel, projects, stores, sales, marketing, resources, secretarial work, etc. is a complementary part to these development to support strategic planning and organizational management.

ESA is aiming to be the focal point for the development of the National Spatial Data Infrastructure, NSDI, in Egypt.

5. THE IMPACT ON THE APPROACH FOR CAPACITY BUILDING AND STAFF TRAINING

As a result of the considerable increase in production diversity and associate uses of diverse and vast technological and technical assets in ESA, the quantity of work that can be processed has increased. This increase in output needs to be met by a similar improvement in quality and output of the 'first-line' managers and supervisors. While good progress has been made in transferring knowledge on the use basic technology to improve productivity, ESA is seriously behind in the area of technical management and supervision of such modern resources. Many mid-managers, who are expected to play an important role in ESA modernization program, need an adequate training in the management and optimisation of technical operations and quality, as well as on the effective use of information technology from business perspective.

The development of the capabilities of managers and supervisors is now recognized as the most important problem in ESA, in order to achieve sustainability of the modernization program and to ensure the effective use of the investments made. The ESA Management has made its solution his first priority. The Ministry of Public Works and Water Resources, under which ESA operates, and with which a very large segment of the Netherlands' bilateral development co-operation program is being executed, has provided its full support for the

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priorities of ESA. Available funds in such co-operation programs are used to support the development of a capacity building program for organizational and human resources development.

6. THE TMS/ESA PROJECT FOR CAPACITY BUILDING IN ESA

6.1 Project Overview:

The TMS/ESA Project is a 'Training Program for the Development of Managers and Supervisors for the National Cadastre and Topographic Mapping' in ESA. The TMS/ESA Project aims to institutional support and capacity building to improve performance and the quality of services in the various sectors in ESA, particularly in relation to implementing an 'economic-oriented' policy. Several training programmes in strategic planning and the managing of technical operations, quality and resources, are provided by the project in Egypt and the Netherlands, for the staff members of ESA from all management levels. Case studies and pilot projects are included to apply the taught concepts in the various sectors in ESA. The project will also provide institutional and technical supports to the training facilities in ESA in order to insure the sustainability of the training programs, which are introduced by the project.

The strategic Plan, set in the mid 90th, estimated that approximately 850 managers and supervisors, out of the present ESA staff capacity shown in table (1), require training.
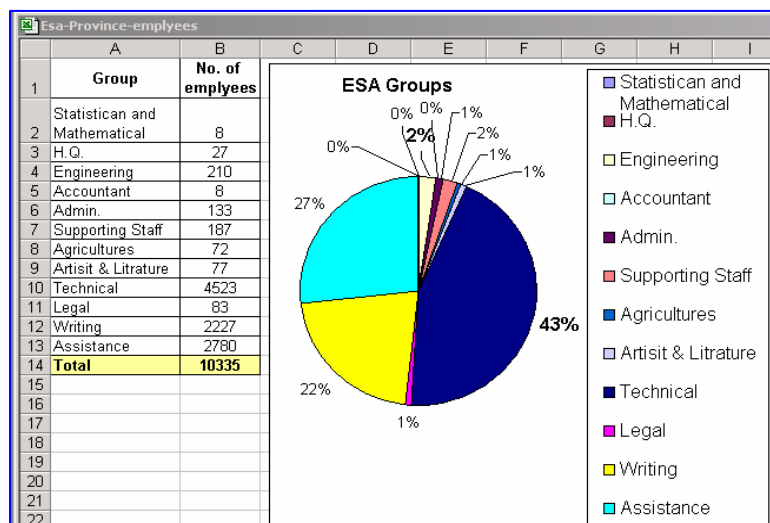

Table 1: Staff classification in all ESA Sectors

By training this number of staff, the sustainability of the designed training program for capacity building is assured by building a strong team that will be able to pass on their skills and knowledge to a much wider group of managers within ESA.
Over the total five-year project's period, the general management training would have been provided in Egypt for 200 managers and supervisors; the MSM Institute in the Netherlands

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and local Management Institutes in Egypt will participate in conducting this management training. Technical operations management training will be conducted for up to 120 first- and second-level managers and supervisors (30 of them will be trained in the NL), and 200 senior technicians involved in supervising junior technical staff in day-to-day activities; such training will be provided by a series of specially developed technical management training modules both in Egypt and the ITC Institute in the Netherlands. This technical training will be provided in form of workshops, courses, case studies and visits to some professional organizations in Europe.

Further, ESA's Training Program Development Office (TPDO) and the attached 4 Training Centres in the various regions in Egypt, will be strengthened. By the end of the project, several training managers and trainers will be developed and courses and teach material designed, implemented and refined before being handed over in the year 2005. Training facilities will be refurbished and improved, and training equipment provided. On-the-job support from experienced Dutch and Egyptian trainers will be initially provided during the project. This support program to TPDO is specially designed to ensure that ESA is able to continue and sustain the training program in the future.

An Association consisting of ITC (International Institute for Geo-information Science and Earth Observations leading partner) and MSM (Maastricht School of Management) will implement the proposed project. These two academic institutes are supported by two European professional organizations, the Dutch Cadastre and the German Survey and Mapping Agency, Nordrhein-Westfalen, NRW. Further, local teaching staff from the Egyptian institutes RITI (Regional Information Technology Institute), CACE-AUC (American University of Cairo), Egyptian universities and local consulting companies, will participate in the project.

The TMS/ESA Project will be executed in 5 years (1999 – 2004), and funded mainly by the Netherlands Government in the framework of the cooperation protocol between Egypt and the Netherlands; the allocated budget is 2.5 million Euros. The ITC and ESA also offer a considerable financial contribution to the various activities in the project; ITC offers an amount of 200,000 Euro (in form of training fellowships in ITC courses and teaching material) and ESA contributed by an amount of 600,000 Euro (in the form of training resources). The total project budget is about 3.3 million Euros. More details are provided in (3).

6.2 General Objectives of the Project

- To provide institutional support and a sustainable training program to upgrade operations- and general management skills of ESA first-line managers and supervisors, as well as to upgrade the knowledge of top management staff who are involved in managing the organization;
- Improve and strengthen the training department (TPDO) at ESA and create a pool of capable trainers to sustain courses developed under the project;

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- Create and run specialized training programs in Egypt in general management as well as in technical operations management;
- Provide courses in technical management training in the Netherlands for a selected number of middle managers, including visits and association with professional organizations;
- Run seminars for senior management staff in Egypt and in the Netherlands, including visits to professional organizations, to address strategic issues that relevant to the performance of ESA;
- Develop de-centralized regional facilities in Egypt for the training of staff from countries in the Arab region.

6.3 Training Activities in the Project

The project offers an integrated package of training programmes, to be executed in Egypt and the Netherlands. The objective is to satisfy the overall requirement of the various key target groups in the various sectors in ESA, as shown in figure (2). The goals and the teaching activities within each of these programs are described in details in the TMS/ESA Project document and the Course Calendars, [4]. In the following, they are reviewed in brief.

Figure 2: TMS/ESA Training programs covering all ESA levels
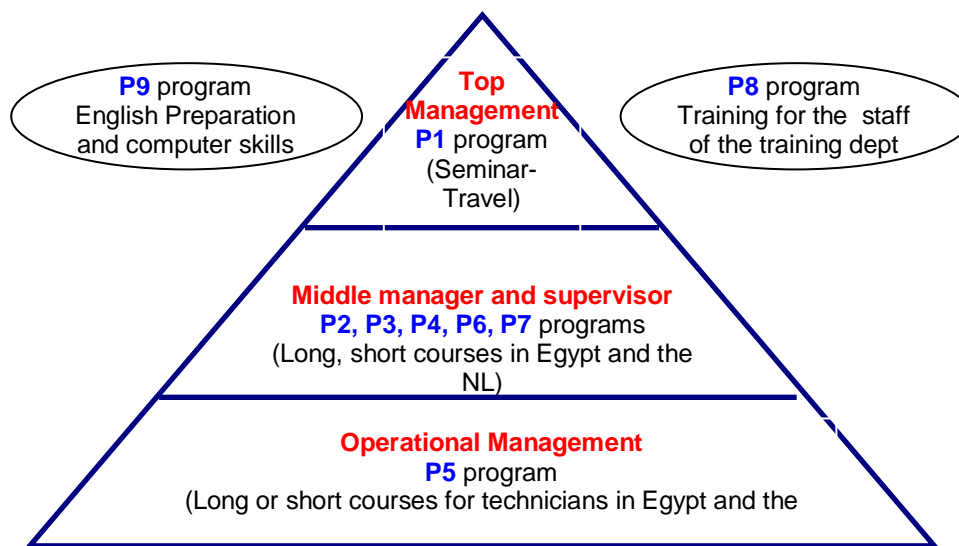
Program 'P1': Training courses for ESA Senior Staff and Top Managers, in the handling of strategic issues and managing the performance of ESA. This training is conducted in the form of workshops and seminars in Egypt. Some of these workshops were dedicated to bridge the gap between staff from the top- and mid-management levels. A selected number of the senior staff (8 staff members per year) visits professional organizations in the NL and Germany, to learn from their experience.

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*Program 'P2'***:** Training courses and advanced studies for ESA staff members who will be responsible for the development of ESA information and production systems and the introduction of modern concepts in managing technical operations, quality, performance and resources. Some of these graduates will be the 'first line' trainer in ESA in various training programs in the project. The training in this Program takes place in ITC, MSM and professional organizations in the NL and Germany.

Program 'P3': Training courses for supervisors and mid managers in the ITC standard courses, with supplementary attachment to professional organizations, to be trained in the management of technical operations and quality of services. The training in the program takes place in ITC and professional organizations in the NL and Germany.

*Program 'P4'***:** Training course for supervisors and mid managers in the management of technical operations and quality of services. This training is provided in Egypt by staff members from ITC, MSM and professional organizations from the NL and Germany, supported by several teaching staff from local universities in Egypt. ESA's trainers (the graduates of the 'P2' and 'P3' Programs) take an increasing teaching role in this training.

*Program 'P5'***:** Training senior technicians in the requirements for the optimum use of technology and the execution of workflow in digital environment. This group will supervise junior technologists in the day-to-day activities in the various sectors in ESA. ESA trainers, supervised by ITC staff, provide this training.

*Program 'P6'***:** General Management Courses for all senior and mid-managers in ESA. This training is provided by specialized management institutes in Egypt and supervised by MSM staff.

*Program 'P7'***:** Development of case studies and pilot projects to apply the taught subjects in the various sectors in ESA. The graduates of the 'P2', 'P3', 'P4' and 'P5' Programs contribute in these activities. Examples of these case studies are the development of information system and associate databases, quality management system, design of urban cadastre, cost models, modernization and automation of processes in the various sectors in ESA, etc. These case studies are conducted in some sectors in ESA and supervised by staff members from ITC and the Dutch Cadastre. These case studies provide the possibility to evaluate the impact of training on the performance of ESA.

*Program 'P8'***:** Provision of teaching skills for ESA's first-line trainers (some of the graduates of the 'P2' and 'P3' Programs). The staff members in the Training Program Development Office TDPO and attached Training Centres in ESA are also trained in developing and managing and evaluating of training Programs. This training is provided by specialized institutes in Egypt, and supervised by ITC Education Specialists.

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Program 'P9': Training in English language, computer skills and digital mapping techniques. This training is provided by specialized institutes in Egypt to prepare candidates for the various training programs in the Project.

6.4 Training Target

Table (2) shows the number of ESA staff; senior and top managers, mid-managers and supervisors, senior technicians and training supervisors, to be trained by the end of the Project 5-years duration.

Program / Year	P1	P2	P3	P4	P5	P6	P7	P8	P9
96-99			10						16
2000	30	8	6	16		60			16
2001	30	8	6	16		60			16
2002	30	8	6	16		20	16		16
2003	30	8	6	16	60	20	16	10	16
2004	30	8	6	16	120	20	16	10	
2005	30		3	16	120		16	10	

Table 2: Trainees in TMS/ESA Project in Egypt and the NL

Due to the present workloads and emerging needs in ESA, the contents and duration of the training programs are continuously adjusted and the number of trainees sometimes deviated from the set target. The result however is satisfactory and the impact of training is apparent, as many of the staff members previously trained in the TMS/ESA Project are taking lead in most of the on-going projects and playing key roles in improving performance in the various sectors in ESA, as detailed in (5).

7. IMPACT EVALUATIONS OF THE TRAINING PROGRAMS

The ultimate goal of the TMS/ESA project is to create a critical mass that is capable of managing technical operations, quality and resources at a satisfactory level as well as to upgrade the training capabilities in ESA. These are essential requirements organizational and human resource development of ESA. The training process in large organization like ESA, however, is a costly one, including the costs of resources involved in the process to identify training needs in the organization, the costs of preparing, conducting and managing the training, the cost to cover travel and lodging of trainees, the cost of staff being away from the workplace, etc. To justify these costs, the organization needs to feel confident that the provided training will have impact on the staff performance and consequently on organization improvement. The organization needs to know not only what a staff member has acquired from such training in terms of new knowledge, attitudes and skills, but also what he can do and willing to contribute in applying the taught subjects back in office.

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7.1 Guiding Principles for Impact Evaluation

In principle, impact evaluations of training programs are necessary for the organization to evaluate:
–   Individual job performance
–   Organization performance
–   Production Program performance
–   Healthy demographic environment

Reference to the training programs, the evaluation process is necessary to:
–   To maintain the relevance of a given course
–   To justify the choice of topics and methodologies when presenting the course to potential clients with confidence
–   To strengthen the competence of trainers, stimulate experienced trainers with new knowledge and teaching material and offer new trainers with a carefully designed guides to their work

Organizations, however, are often reluctant in evaluating the impact of training on job performance due to many reasons such as:
–   The costs of conducting such an evaluation are rarely covered by donor-supported projects.
–   Managers and staff of training in service delivery organizations like ESA often do not have the skills to undertake this type of evaluation. Acquiring the support from specialized institutes on the other hand is a costly task.
–   The difficulty in identifying indicators for the required skills and performance, which obstacles the precise assessment of training needs and even more difficult to evaluate its impact.
–   Many organizations are unwilling to uncover organizational deficiencies.
–   Managers are often intimidated by the time and money required to remedy these deficiencies.

Table 3: shows the kind of evaluations that involved in developing and managing a high-quality training program, which will ensure the results that organization needs.

Type of Evaluation	Purpose
Needs assessment	To identify the skills, knowledge and attitudes (SKA) needed for acceptable job performance
Baseline evaluation	To determine the trainees' levels of SKA before training
Input evaluation	To assess the elements associated with the training: costs, selection of trainers and trainees, curriculum plans, venue, materials
Process evaluation	To conduct assessments periodically during the training, and adapt the schedule, content, or approach accordingly
Outcome evaluation	To assess new or improved SKA after training
Impact evaluation	To determine the effect of the training on:

Type of Evaluation	Purpose
	▪ Individual job performance (on-the-job application of new skills, knowledge and attitudes; work that meets or surpasses professional or organizational requirements, etc.) ▪ Organizational performance (quality of services, client satisfaction, strengthening the competitive power of the organization, matching with development in the GIS market, improve business practices, etc.) ▪ Production Program performance (introduction of more effective tools for production and the management of operations, workflows and resources, the upgrading staff capability in handling modern concepts and equipment, and the production of diverse services, etc.) ▪ Healthy demographic environment (motivation, team-work spirit, career satisfaction, attraction of young employees, bridging technological gaps, etc.)

Table 3: Types of Training Evaluations

It is common practice in most of training programs within a larger organization to limit the evaluation process to: 'Baseline Evaluation', 'Input Evaluation', 'Process Evaluation', and 'Outcome Evaluation', as they are directly related to the contents and the process of conducting the training programs to enhance 'SKA' of the trainees. The 'Needs Assessments' are not done frequently; only conducted for the purpose of designing a new course or for a large-scale, ongoing course. Often, years after an initial needs assessment, the same course is still given, although changes emerge in the working environment that would suggest new 'Needs Assessments' have to take place in order to change or revise such course.

From organization perspective, the desired long-term impact of training is to improve the performance and the competitive power of the organization as well as the training process and, ultimately, to contribute to the strengthening of the national economy. It is, however, difficult to demonstrate a direct link between training and these long-term goals because of the many factors other than training that are involved. Therefore, the impact on performance will be focused on evaluating job performance of trainees, with the assumption that good individual performance will lead to strong organization and optimum production program and better client services, and eventually make a significant contribution to the achievement of desired demographic goals. More details can be found in [7], [8], [9].

7.2 Evaluation Methodology in the TMS/ESA Project

Individual training programs in the project includes a form of evaluation to assess the success of the intended objective of the program. Such evaluation includes evaluation of course relevancy, course design, method and quality of teaching, teaching material, program organization, satisfaction of course participants. The evaluation results of the course will be reviewed and lessons learned are identified. Previously trained staff is also consulted on the

relevancy of the course to their post-trained performance. Negotiation takes place frequently with the management of ESA and the managers of the various sectors to identify emerging needs and new business directions in ESA, and consequently the relevancy of the training to ESA to the functioning of ESA. The trainers, and experts in the field from Egypt and the Netherlands contribute to this discussion. Course objectives are then revised accordingly and the contents of the various components of the course are checked for their consistency with the objectives and the logical flow of ideas throughout the course. Specify, the learning outcomes and what the trainees are expected to do by the end of the learning sessions (modules), are carefully identified. Review the activities that will take place during these sessions and the supporting teaching material, with more examples from the working environment in ESA are used. The trainers and trainees guides are revised to reflect the changes in the course.

In order to evaluate the post-training performance of the trainees, they are given specific assignments to implement the taught subjects in their jobs. Graduates of the training programs 'P2' and 'P3' in the NL, for instance, will be evaluated on the success of preparing and executing the various courses in the training programs 'P4', 'P5' and 'P6' in ESA. The graduates of the training Program 'P8', training supervisors, will be evaluated on their capability in managing the various training activities in ESA, in a way similar to the TMS/ESA Project. Furthermore graduates of Training programmes 'P4'and 'P5' will be evaluated on their ability to improve performance in day-to-day activities after completing the training. The successful implementation of the outcome of the case studies, included in the training program 'P7', in the various sectors in ESA is also a measure for the relevancy of these training programs for the good functioning of ESA.

Criteria will be set to evaluate the success of each individual staff in performing such an assignment. This task requires the collection of data on performance over a long period of time. The Program 'P8' is focusing on collecting such data, in order to monitor and evaluate the total impact of the project. Several workshops in Program 'P1' for senior staff are dedicated to discuss these issues and to agree on the criteria to evaluate the impact of the TMS/ESA Project on the performance of ESA. A special 'evaluation' team is formulated for this task, composed of representatives from ESA managers, the training department TPDO staff, trainers, the staff members of the Local Office in the TMS/ESA Project and some experts from local universities. Some of the previously trained staff will be also included. A special questionnaire is designed for this purpose to collect information periodically from previously trained staff and their managers. This process is still in progress, with the support of local consultants and the Education Specialists of ITC.

8. CONCLUDING REMARKS AND LESSONS LEARNED IN ESA AND ITC

Many national mapping agencies, like ESA, are busy assessing their capabilities from a business perspective, including the identification of performance problems and improvement goals. In this pursuit they can benefit from modern concepts applied in other industries such as Public private Partnership PPP to produce diverse geo-services that beyond the capacity of

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individual organizations and thus create the environment for full economic potentials in the mapping industry, Business Process Redesign (BPR), Workflow Management (WFM), Total Quality Management (TQM), performance Control, etc. the objective is to achieve dramatic improvements in critical contemporary measures of performance, such as quality, service diversity and speed, as detailed in [6]. Such development must be complemented with an effective capacity building program and the associate training.

The main emphasis for training in these organizations for long time was focusing on the use of digital mapping technology. In most of cases, however, such type of training makes no specific reference to issues related to the management and optimisation of technical mapping and cadastre operations and quality of services, the management and dissemination of geo-information and the optimum use of technology from business perspective.

The development of the capabilities of managers and supervisors is now recognized as the most important problem, in order to achieve sustainability of the modernization program and to ensure the effective use of the investments made. The required training in most cases, however, is beyond the scope and the capacity of the standard training and education programs in developing countries; consequently, international cooperation is required to develop and support the execution of such specialized training.

The approach followed and the training programs provided by the TMS/ESA Project present an appropriate example of international cooperation for institutional support and capacity building to improve performance and the quality of services in mapping organizations.

The TMS/ESA Project has also several consequences at ITC, as many changes had been introduced in several education and research programs at ITC to introduce concepts of information management, the management of technical operations and workflows, quality of services and the control of performance, [6].

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