Asia-Pacific
Economic Cooperation

APEC Capacity Building Model for Training the Trainers

APEC Telecommunications and Information Working Group

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Executive Summary

Promoting the utilization of Information and Communications Technology (ICT) for mainstream society is no longer enough as significant groups of people in our societies are being left marginalized from the information society. ICT can provide tools that help these marginalized groups to attain levels of wellbeing that are equal to others. For example, the elderly are a marginalized group that is rapidly growing in APEC economies causing an urgent need to improve the ICT literacy and ICT capabilities. Another group equally affected is those with special needs such as the disabled.

This report argues that one way to improve the ICT utilization of people with special needs and therefore contribute to wider development targets for these groups is to provide supplementary training to professionals who are in direct contact with them. The training will necessarily differ for each type of professional and for each economy and situation, but a generic training model and recommendations may be given which can help develop the training agenda and design the curriculum for these professionals. Such a model and recommendations are outlined in this report.

The report outlines nine main competency areas in which training should be provided and eight different trainer types to whom this training should be focused on. In essence, the training to be provided is "training for trainers", that is, competencies are created in groups for professionals who are in close contact with the elderly, disabled and others with special needs on a regular basis.

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1. Introduction

1.1. Background and paper outline

It is estimated that the global population of older persons is expected to grow with rapid speed to 2.4 billion by 2050. More than 22% of them will be elderly as opposed to the current 10% globally.[1] People with disabilities in Asia and the Pacific region make up approximately 60% of the world's 650 million persons with disabilities according to UN estimates. People with disabilities are the most marginalized group in society facing significant levels of poverty and unemployment and having limited access to education, housing, transportation, health services and recreation, leading to social exclusion. Due to the sheer numbers of elderly and disabled, combined with the lack of caregivers and economic wealth, serious thought is given to developing ICT applications for this group.

With this in mind the "ICT Applications for People with Special Needs" project was formed by Japan and Singapore. The main goal of this project was to create an effective platform for knowledge exchange on innovation for assistive ICT and applications for the elderly and disabled.

In order for the results to continue to build momentum within the APEC economy, it was decided that an online platform for the sharing of training materials would be created.

This report outlines a method for capacity-building in the field of training. It also subsumes recommendations on future development objectives. These conclusions have been reached by consulting various reports and experts during the course of the project.

1.2. The need to build capacities in "ICT applications for people with special needs"

The world is being transformed by ubiquitous Information and Communication Technologies (ICT). Increasingly, these technologies are being introduced to workplaces, homes and public spaces both in developed and developing economies. Since the 80's, the adoption of ICT by members of society has been rapid and the pace continues unabated. However, this adoption has always been driven by younger citizens and companies. A gap has existed where senior members of society and the disabled people – have lagged far behind the younger generations in adoption and use of ICT. Even though the disabled and elderly may benefit greatly from ICT, the development of new applications focused on these groups has been limited. Unless more concrete efforts are taken toward bridging the gap between the younger and older generations, this gap will continue to exist because younger generations will always be more attuned to technological advances than the older generations.

Presently, many senior citizens are still unwilling or unable to use computers. ICT skills are difficult to master, especially for seniors who were not exposed to such technology in their youth, and deteriorating eyesight, hand-eye coordination and poor learning capabilities exacerbate the problem. These problems are similar for people with disabilities as well. For example, blind people have extreme difficulties using ICT, because there is a strong reliance on visual information presented on screens. Those who are not able to use their hands are unable to use input methods such as the keyboard, mouse, or touch pad. Special methods to input and present information will need to be utilized to make ICT available for people with special needs, given that their movements are often highly restrictive. The "graying" trend of many developed and developing economies will continue, given the rapid increase in the population of elderly people and the decrease in the population of young people. Thus, it is imperative for governments to support the adoption of ICT by the elderly people. Economies that can best bridge the digital divide among the young and the old will have an advantage, as they can boost more informed and skillful populations, promote

[1] http://www.un.org/esa/population/publications/popfacts/popfacts_2012-2.pdf

national information exchange and trade, and build larger national markets for ICT devices. Better communication and information exchange opportunities for the elderly and disabled will result in improved health and wellbeing for these groups, which can reduce national health expenses. It can also pave the way to a reduction in government expenditure by removing obstacles to creating electronic government services for citizens.

Through this report, we hope to encourage APEC economies to consider developing more ICT capabilities for the elderly and disabled. Such an approach should be a base for all domestic initiatives and should take into account the international best practices by acknowledging that the challenges faced by vulnerable groups are shared by all economies. Thus, solutions should also be built jointly through cooperation among different economies. This capacity-building requires efforts from various participants, including the caretakers and trainers of the elderly and disabled, the national task force that support those caretakers and trainers, healthcare personnel and social workers, government employees that are planning initiatives involving these groups, and employees from APEC Headquarters. The response should necessarily involve all these people, and offer the required information, training, and resources to achieve the required objectives nationally and at the APEC-level.

1.3. The training situation in APEC economies

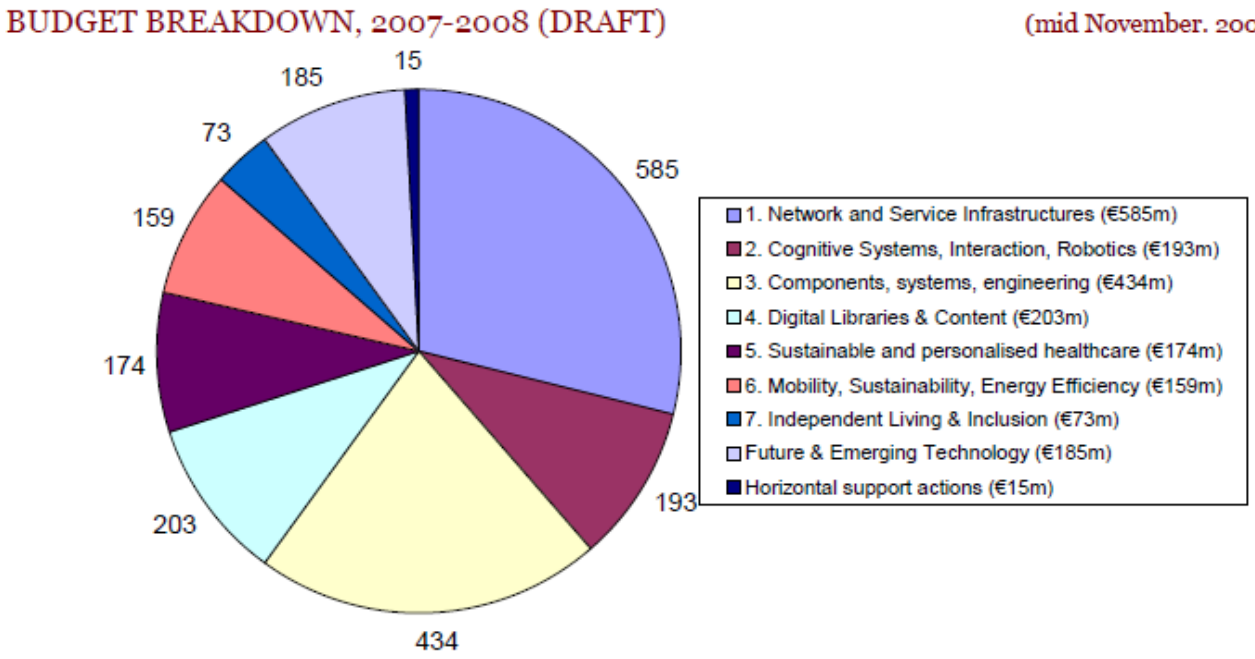
There is proportionately less attention paid towards developing ICT capacities for the aged and disabled in developed economies. While research and certain academy-business collaborated test projects do exist, these have taken place mainly in Europe, United States and Japan focusing mainly on healthcare ICT. [2]Though commendable, these attempts do not address the problem of digital exclusion of the elderly and disabled.

For developing economies, rather than building new projects and initiatives on top of existing infrastructure, the groundwork may have to be built from scratch. This involves solving the technical problems of how to use ICT in locations with poor-quality Internet connections, and also very basic challenges such as the stable provision of electricity for equipment. The best experts on this topic may be the aid workers of various NGOs, who have aligned interests and projects, and are keen on working with the governments.

In developed economies, as the basic infrastructure already exists, the main challenge lies in integrating various services to provide the necessary support for elderly and disabled citizens. For example, ICT research is one of the key themes of the EU's Seventh Framework Programme (FP7) which deliberately focused on seven key research challenges including Digital Content & Learning, a healthcare revolution and access for all. The budget is over 9bn Euro for the period from 2007 to 2013 and for the first two years is over 2bn euro. The breakdown follows:[3]

[2] *For example, Japan is experimenting with robot technology to service elderly people in nursing homes, and several projects have been conducted on telemedicine applications to provide health monitoring services for older home patients over long geographical distances.*

[3] http://www.fp7.org.tr/tubitak_content_files/308/dokuman/fp7-ict-4poverview.pdf



The ICT Theme's budget for the first two years of FP7 will be just over €2 billion.
The *e*-Infrastructures budget (not shown) is an additional ~€600m over the entire Framework Programme. All figures are draft, and are in millions of euros.

Governments from developing economies should continue to ensure that the elderly and disabled are not neglected, despite the challenge of the lack of resources that these governments face. The elderly bring with them a wealth of life experience and culture that is crucial to building a civic-minded society. For example, the Asian Media Information and Communication Centre (AMIC) created a documentary "Unsung among us", which featured cultures and philosophies of unsung communities in India. The project showcased the powerless people whose contributions and experiences were taken for granted and neglected and documented their ordinary lives. The collective approach will help us to mirror ourselves, our tradition and lost values. Once documented and digitized for various media, it will be made available to local as well as global audiences.[4] Focusing on the provision of ICT support to seniors – via information exchange – could contribute to preserving the traditional knowledge for the benefit of future generations.

1.3.1. Lack of resources for training

The emerging economies in APEC have shown their interest in the issues of ICT for development and bridging the digital divide. However, the priorities of these economies are often focused on basic infrastructure for the majority of the population, rather than supporting marginalized groups. Many developing economies also face a funding shortage when it comes to creating ICT training programs for and the elderly and disabled.

Similarly, many NGOs and schools lack resources and/or the competency to develop the necessary curriculum. In the report on "Access to Information and Communication Technologies for Persons with Disabilities with the Special Reference to the Biwako Millennium Framework"[5], even though more than 50 per cent (23 out of 43 surveyed NGOs) conducted activities to promote ICT for

[4] http://www.amic.org.sg/ict/external/awards/0302a9ppL34.htm

[5] http://www.dinf.ne.jp/doc/english/twg/ict/Report_rev.pdf

persons with disabilities, only 26 per cent set up ICT guidelines, and 35 per cent provided ICT-related training. NGOs for the disabled spend little resources on ICT training due to the lack of knowledge, funding and infrastructure.

In the findings of a study conducted to help Vietnamese children with disabilities using ICT, it was concluded that the participation of these disabled children in the design of ICT systems was crucial to the success of the program. Unless such participation is evident, the designers will have difficulties in understanding the needs of this group. In this project, the activities included utilizing screen readers for young people with vision disabilities, setting up video lectures for hearing-impaired youths, and establishing remote learning opportunities for children who were unable to attend school[6]. However, using technology alone is inadequate, and a curriculum should be devised to facilitate the training by NGOs.

1.3.2. Different levels of sophistication within APEC economies

There is a need to provide customized training and curriculum given that APEC economies are on different stages of development. It is also important to take into account the literacy level of the population.

One of the problems the APEC economies face is the lack of information on individuals adequately trained in ICT for helping the elderly and disabled. As a result, it is necessary for APEC member economies to invest in developing the training in their own language (in particular, training the government officers and training the trainers). For example, in 2011, "Telecommunication Services and Devices Showcase for Persons with Disabilities and the Elderly Project" was commissioned to NECTEC, by The Office of the National Broadcasting and Telecommunications Commission (NBTC) to provide knowledge and training on accessible telecommunication equipment and services. However, for APEC's content creation, they should conduct comprehensive surveys to understand the current training situation in its member economies. Existing programs may be applied so early experiences can be shared and economies can be assisted in their journey to dealing with this issue.

1.3.3. Assistive technology consideration

ICT innovations can help people with special needs to have a better sense of wellbeing, stay employed for longer periods and improve their productivity. It is important to note that many older persons and people with special needs require assistive technology such as magnification software, special keyboard, etc. The availability and knowledge of application of these devices varies from economy to economy.

Previous work has proposed various classifications of technology functions. For example, Cast (2003) clustered ageing–related technological innovations into four categories: Enabling Technologies, Operational Technologies, Connective Technologies, and Telemedicine. The Senior Project (2008 e) addressed the different fields of ICT for elderly as presented in the figure below (cited from 7th Framework program, 2012).

[6] http://globalaccessibilitynews.com/2012/11/26/vietnam-government-starts-ict-training-for-young-people-with-disabilities/

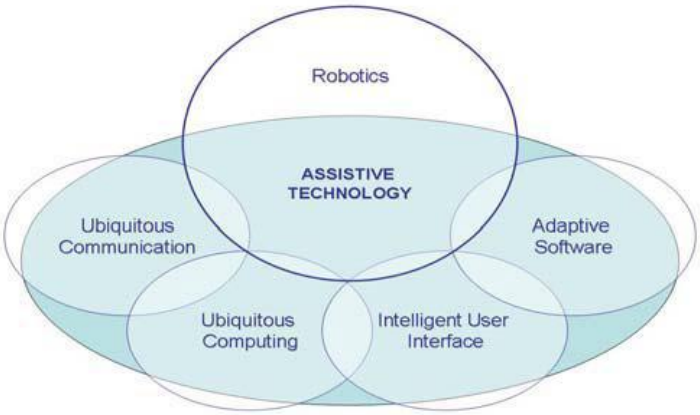


Figure 1: ICT for elderly

Source: Seventh Framework, Needs and Trends Analysis Report: Golden workers, 2012

The report of the 7th Framework Program concluded that the most relevant technologies for people with special needs could be: (1) Ambient intelligence, (2) Augmented and virtual reality, (3) Affective computing, (4) Robotics, (5) Internet, (6) Invasive technologies, (7) Quantum computing, and (8) Design approach. These categorizations can be used as references when designing the content for the training program which introduces applications of ICT to meet the needs of the elderly and disable.

Assistive technology is not limited to high technology devices - they can also be adaptive and low-tech devices like magnifying glasses. This will be a consideration in developing material and training facilities for developing economies. Hence, it is recommended that during the planning for the training of stakeholders, it is critical to include training in the use of assistive technology and consideration by the local governments for the adoption of these devices and technology.

1.3.4. Development of content

Previous approaches viewed people with special needs as patients and ICT as a means of improving their health, treat diseases, and alleviate disabilities. However, as training content is dependent on the desired outcome, this report will offer another approach, which is by treating these people as intelligent and capable citizens who have so far been ignored by ICT education agendas and commercial markets. Their health, quality of life, and productivity could be significantly improved if their access to ICT and ICT skills were supported such that they can contribute to the improved welfare of the society at large.

It is important to determine the outcomes of the training content. For example, if the intended outcome is for older persons to use telemedicine, then the content should focus on using the Internet to connect to medical professionals. However, if the focus is on contributing to society, learning to use Microsoft Word or to be able to send emails would be more useful to the trainee.

2. The APEC capacity building model

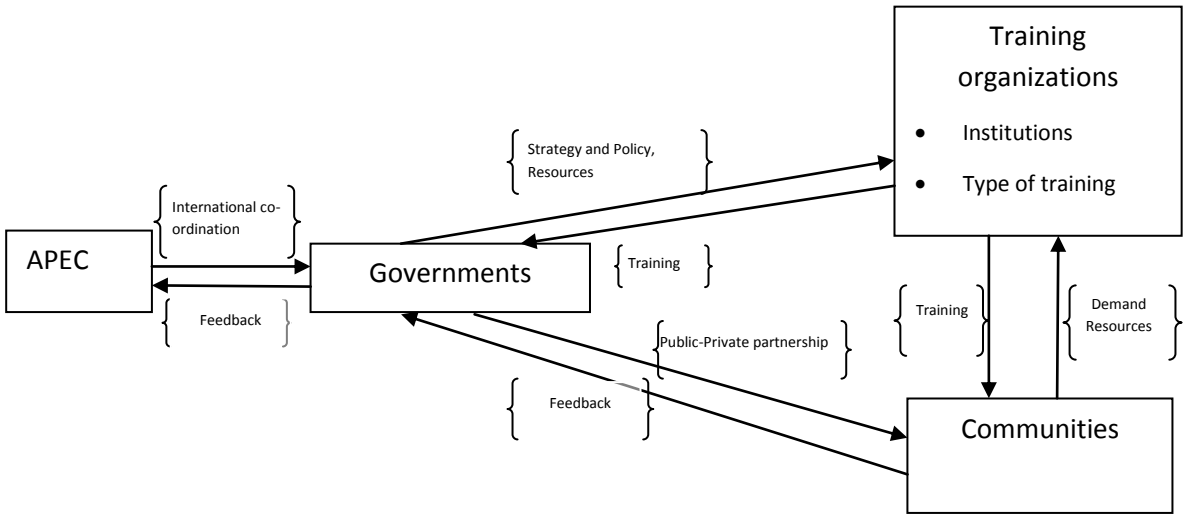


Figure 2: The APEC capacity building model

2.1. The objectives of the APEC capacity building model

This report presents a model for APEC economies' capacity-building in terms of the ICT abilities of the elderly and disabled. This model can be used by national authorities to plan for setting up the task force that takes operational responsibility for the capacity building. The model is independent of the changing policy and training environment and may be utilized by any APEC economy. The key objectives of the capacity-building model can be defined as follows:

To examine the level of awareness of trainers and government staff on the training of elderly and disabled people on the use of ICT. The degree to which various interest groups are aware that elderly and disabled people need special attention in ICT training is unclear. There should be a effort to map this understanding in every APEC economy before capacity-building activities are taken. Resources may then be focused preferentially on the interest groups with most impact and least awareness on the importance of ICT training to elderly and disabled people.

To provide the foundation for APEC economies to enhance their training competencies in the field of "ICT applications and elderly/disabled people". The capacity model will guide trainers, healthcare employees and government staff on competencies needed to provide ICT training for elderly and disabled people. These competencies can range from the development of practical training courses to provision of accessibility equipment and enforcing of guidelines and regulatory frameworks to support activities.

To coordinate the focusing of resources to training competencies in the field of "ICT applications and elderly/disabled people". One objective of the model is to assist trainers to mutually coordinate their training programs. Thus, the creation of overlapping initiatives in various levels of activity is prevented and resources are channeled effectively.

To enable the exchange of information and best practices among the elderly and disabled people ICT training task forces as well as the trainers and government staff that are the interest groups of training. While training should be based upon local standards and adapted according to domestic conditions, it is expected that the challenges faced by APEC economies are similar. If the

organization is built on the APEC level, crucial information on the success and failure of individual efforts may be exchanged, and facilitate future initiatives in each APEC economy.

Ultimately, to "train the trainers" such that the graduates of this programme will be able to lead in projects that facilitate the use of ICT to meet the needs of people with special needs.

2.2. APEC

In light of the varied needs that have been highlighted, governments should start initiatives on developing training programs in this area. However, some economies have no resources for complex and comprehensive training of government officials or member of communities even at different levels. In such a situation the international organizations could play a key role in training the trainers. It is recommended that through collaboration among APEC economies, a strategy to promote such efforts should be included in the TEL Ministers Declaration and the existing initiatives should be developed further. For example, the APEC initiative "ICT application for people with disabilities" could to be developed further. This initiative could be developed at multilateral or bilateral cooperation level, accordingly to domestic demands, taking into account the differences in demography, culture, society and legislative regulations etc. Prior initiatives and best practices from APEC, EU and OECD will serve as lessons on how to further improve future project implementation.

2.3. Governments

2.3.1. Strategy and Policy

Governments need to recognize that with proper strategies and policies on "ICT applications for people with special needs", they can gain a lot of benefits. In an environment where resources are committed to "ICT applications for people with special needs", economic benefits can be realized. The commercial sector can receive a boost from these untapped markets.

ICT development strategies should not leave out "people with special needs" (i.e. seniors, out-of-school youth, persons with disabilities, as well as other marginalized groups). Moreover, ICT strategies should be designed to empower and motivate these people to assume greater social and economic responsibilities.

It is necessary to define drivers for the project and recommend Governments and Institutions to work together to develop programs for this initiative.

2.3.2. Resources

Because of large resource differences between the APEC economies, it may be desirable to agree on the establishment of certain types of resource-intensive pilots in certain economy instead of duplicating the effort when the effect of the program is not yet known. It is also useful for international agencies such as APEC and its regional partners to allocate support, provide advice and aid.

Financial Resources

The importance of this "core" resource component is irrefutable. The existence and sufficiency of a training budget is the foundation of any training capacity. The lack of financing is often mentioned as a barrier for elderly and disabled people in using ICT applications. Many older people have small pensions and cannot afford to pay for ICT products, training courses or learning resources and tools. Financial support from governments is also scarce.

Physical Resources such as classroom, materials, supplies and equipment

Training courses require accessible and available venues with the necessary equipment (i.e. power, lighting, acoustics, seating capacity, and equipment). There should be sufficient materials for participants, as well as a maintenance system to replace and upgrade them.

Human Resources

Trainers and preceptors need to have updated and standardized technical and presentation knowledge and skills. However, in the case of training for elderly and disabled people, the skills of staff should be upgraded to accommodate the needs of these special groups. For example, how to teach using special accessibility equipment, and how to utilize suitable teaching methods for elderly people requires completely new set of training methodology for these trainers

Curricula and Training Plans

These are crucial resources which will be discussed in more detail below. Training institutions should regularly standardize and update the official curricula, and periodically review all training plans. Best practices from other initiatives should be used whenever possible to design the curricula.

2.4. Training Organizations

2.4.1. Institutions

Generally, it is possible to realize various types of training. This can take the form of e.g. awareness promotion among the trainers, specialized on-the-job training programs, local seminars and get-togethers for practitioners to exchange information and comprehensive courses. However, it is unlikely that all of these training events will be realized in every economy. Thus, different approaches should be applied to provide the training courses for government officials or communities of people with special needs. For example, in some APEC member economies, programs can be provided by education centers and institutes, while in others the local governments can take responsibility for teaching their officials. Some APEC economies may choose to arrange the training through outsource contract with private companies and non-profit organizations.

The Public Private Partnership (PPP) model can improve the quality of training and evaluation activities. In addition, the PPP model can provide resources and education to help communities identify and gain access to certain services and programs that meet their needs. Through this model, Community Information Centers can be created to help achieve the aforementioned objectives of the training programs. For example in Singapore, the Infocomm Accessibility Center (IAC) is a "People, Public and Private" collaboration, funded by the Infocomm Development Authority of Singapore (IDA) and Microsoft Singapore, and managed by the Society for the Physically Disabled (SPD).

Since July 2008, the IAC has been providing customized training to people with disabilities in order to bridge the digital divide and enhance their employment opportunities. Trainees can pick up a variety of skills through structured computer training courses across disability types, on-the-job training for suitable candidates, and training on the use of assistive technology, among others. Microsoft has also which provided grants for the disabled to undergo certification on professional IT work, with three levels of capabilities: associate, expert and master. With these skills, they are able to obtain IT jobs in administration and graphic design like any other able bodied persons thus empowering them to acquire further skills, live a fuller life and integrate better into society.

Another example of the PPP model can be found in Sweden, where adult learning centres are created for the training of older people. These learning centres link local communities and different stakeholders to collaborate on projects. They serve as an arena for local development and growth

(business, support of NGOs, community work, participation of older people, etc.) and a space for all kinds of formal and informal learning (tutoring, guidance, stimulating learning environments, e-learning, technology support etc.) (Ala-Mutka et al., 2008).

In short, depending on the circumstances of the economy, the training organizations can be located within government organizations, international organizations, training centers or universities. The PPP model should be developed to create an advantage for different actors, with mutual networking playing a very central role in involving all stakeholders in not only carrying out activities but also defining content.

2.4.2. Types of training

Similarly, the types of training can vary; e.g. seminars, symposiums, conferences, trainings and study visits are all possible means of training. Based on the experiences of previous training projects, lecture based instruction is the least labor intensive. However short-term courses and seminars are preferred methods for government officials in both theoretical and practical areas. Special programs for government officials should be developed in conjunction with short-term (e.g. 2-3 days) seminars which can be conducted systematically. Longer, 1-3 week courses with guiding experts on practical issues would encourage trainees to discuss and research for solutions in detail. One important facet of this hands-on training could be having international visiting trainers who could share best practices from other initiatives. In addition, distance learning methods could be developed. Due to limitations in finance and other resources, long-term courses may not be feasible for a large number of officials. However, distance learning courses might fill this gap as it is more cost effective.

2.4.3. Training Content

The training programs to be developed as a result of this initiative should be as comprehensive and effective as permitted by resource commitments to support "ICT applications for people with special needs", but conform to specific domestic needs. Where possible, the implemented curricula should be based on the results of scientific research conducted by academic institutions. Practice-based examples, case-studies and recommendations can be used for training programs. Furthermore, it is necessary to systematize the training programs and establish the relationship of these courses to existing training programs.

The curriculum should include but not be limited to the following topics: the use of special assistive ICT for elderly and disabled people, special teaching methods for elderly and disabled people, review of legal guidelines and frameworks for practitioners on ICT and elderly and disabled people, the examination of the guidelines available for policy makers, the discussion of best practices or good examples, and the introduction of the ICT products and services which are available and affordable. The detailed discussion will be dealt with in Section 3.1.

2.4. Training Material

It is necessary to increase scientific research on "ICT applications for people with special needs" in order to have recommendations for trainers to provide training to government employees and the communities. The training process should actively use different types of related educational materials such as those devised for rehabilitation of elderly people, adult/lifelong education and people with disabilities. While such materials do not directly address the ICT training need, they can impact the education process to a great extent.

Another important material source for training programs which should be developed is web sites. The web site stands as a knowledge base which consists of reports, articles, documents, best

practices compilations and other literature relating to “ICT applications for people with special needs” as well as links to all initiatives as well as supporting organizations within APEC. The website can also be a vehicle through which interest groups may continue online dialogues and on various issues arising from the use of ICT in building the capacities for people with special needs.

2.5. Communities

The elderly and disabled people are the beneficiaries of these initiatives. Therefore, before any action is taken, it would be best to investigate the actual needs of these groups in more detail. If implemented correctly, it is these people who will drive the initiatives. They might be seen as beneficiaries of governments and international resources but they are also providing some of those resources by acting as important market participants. This aspect should not be ignored by training programs.

3. APEC Training model

3.1. Training program for the trainers

There are various capabilities that should be built to support elderly and disabled people in the use of ICT. Basic courses such as the use of word processing, spreadsheet and presentation tools, and the Web browser should be considered common skills for every citizen. However, the ability to access ICT as a basic need should be supported in order for elderly and disabled people to have a chance to learn ICT skills. One possibility can be to facilitate the introduction of ICT to elderly people by setting up special classes in community education centers which are equipped with the necessary accessibility tools for these groups. Another possibility is to introduce ICT into the lives of especially vulnerable groups by integrating ICT tools into healthcare equipment that is utilized by these people on a daily basis as part of their healthcare plan.

However, as stated above, there is a shortage of the trainers (or educators) who can teach ICT for elderly people. Thus, it is necessary to provide training courses for trainers from different backgrounds as e.g. educators, social workers, government officers, ICT experts and volunteers.

3.1.1. Competencies

As explained in the earlier sections, the trainers come from different organizations and have different knowledge backgrounds. Economies also have different needs depending on whether they are advanced and already have numerous initiatives to advance ICT for people with special needs, or whether they are developing economies with limited experience and limited resources to devote to this topic. Therefore, the training programs should be designed to fulfill the specific needs of trainers in different economies and with different backgrounds. For example, professional trainers would need training to address technical issues and, if these trainers have not previously taught to old people, they would also need to understand the requirements of elderly people. IT specialists would need to focus on the teaching and training issues as well as how to assist old people in their teaching. Care workers would need supplementary technical and teaching competencies. Government officials are assumed to act as facilitators and would need to only understand the outline of the training provided to old people.

A peer teaching model has been proved as an effective method in training elderly people. Seniors who already have some experience in ICT use (from their work or other training courses) are trained to work as tutors who help their peers in learning ICT skills. Volunteers and peer tutors would need training for technical issues as well as training on teaching/coaching and tutoring. In addition, they would need to understand the specific requirements of old people for teaching these issues.

In addition, as also stated above, ICT training for elderly people requires project managers to lead the associations where the trainers work, people in the administration to coordinate government responses and government-NPO links, and APEC coordinators/facilitators to coordinate learning and the exchange of information between APEC economies. These groups also need to have their own training courses.

Figure 3 describes the example competency areas that should be taught to would-be trainers. The boxes on the first row denote these competency areas with acronyms are explained in the diagram. There are a number of courses attached to each competency area, and these may be combined in various ways to provide suitable packages to each trainer group (triangles on the lowest row). Figure 3 also includes the competency areas that can be useful for facilitators. Some of the competencies which are identified are the following:

- Tech (Technical training). Basics into the uses of Assistive Technology for trainers who wish to have an understanding on the use of technologies to assist the elderly and people with disabilities. While many people in advanced economies and the urban regions of developing economies have basic ICT skills, certain assistive technology require specialized training. In addition, basic ICT skills may need to be taught to trainers who do not utilize ICT on a daily basis as part of their work. This is particularly true for trainers in certain rural areas in developing economies.

- Peda (Pedagogical training). Useful for curriculum development or modification. Trainers, depending on their background, may or may not possess the ability to develop a training course structure and schedule. Moreover, not all trainers may need this ability to teach ICT to people with special needs. Only trainers who are in the position to decide the exact training course structure will need it. This need should be investigated on a case-by-case basis and trainers accommodating to the focus group should be invited to attend the training.

- E.A (Elderly people awareness). Gerontological training to instruct people who have limited contact with the elderly. This training is meant for those trainers who are working with elderly people but have little knowledge of the issues which elderly people face. For instance, public servants and social workers might be included into this group. Many developing economies also have very small elderly populations and thus public servants are mostly engaged with other matters such as solving problems related to young people and children. Some of these economies are, however, facing a rapid growth of the elderly population in the near future, and it is crucial that competencies are built in advance to deal with this issue.

- PM (Project management). Like pedagogical training, project management is a specialized training area which is not needed by all trainers. Those people who are in the position to lead projects related to teaching ICT to people with special needs should be identified and this training implemented for them.

- FM (Field research methods). Sometimes it can be important to obtain very specific data such as how many people with a given disability lack ICT ability of a certain kind. Such data is typically not available, and trainers can find that there is no one else except themselves to gather this data. Therefore, this ability can be necessary for some trainers who are members of a project team.

- FA (Funding acquisition). Funding is typically related to projects, and because not all funding can come from the government, it is pertinent that the competency to find funding sources and apply to them is available to the potential project leaders.

- Law (Public legal framework for elderly people). People with special needs often are privileged by the public legal apparatus to receive certain benefits. Thus, this competency is

appropriate for most trainers. They should be familiar with the benefits available, and how to utilize the system to obtain these benefits to their clients, the people with special needs. Often, the beneficiaries themselves are not sufficiently aware of their rights, and trainers should be obliged to advice and assist these people to obtain maximum benefit allowed by law. As some benefits may be tied to purchases of ICT, such advice and assistance can directly further the objectives of this initiative, but it can also establish rapport between the trainers and trainees, and thereby indirectly promote the goals of the ICT training. Furthermore, the training supports policy makers to make long term policy changes to benefit people with special needs

- Com (Competency identification and transfer). Certain trainers, particularly those who are charged with training other trainers, should be able to identify whether these other trainers possess the capabilities they should. It can also be the case that an entire organization is the focus of training, and the knowledge and competencies shared between several people. In this case, the trainer providing the training should be able to understand what factors are important to check in order to determine whether the individuals concerned and the organization as a whole is capable of performing the tasks expected of him/her or it.

- Coll (Collaboration with other organizations and associations). Successful collaboration mechanisms will allow organizations and associations to form effective partnerships. It can be said that anybody can collaborate but consideration of mutual interest, preparation of collaboration proposals, and making formal agreements can be tasks that not all trainers are capable of without help. In particular, project managers are expected to benefit from this ability.

- Roadmap (The ICT applications from people with special needs roadmap). It is very important for policymakers to learn how to build the ICT roadmap to advance training for elderly and disabled people. There are existing models available (e.g. AALiANCE, ePAL, BRAID). In their road-map strategy, ePAL (2010) identified four fundamental ICT-related areas (i.e. Collaborative Networks, Affective Computing, Soft Computing, and Machine Learning) in need of further research and development for support of the specific requirements and characteristics of elderly people. The knowledge from this review can assist government officers in building the ICT roadmap for their own economies and developing the training strategy and policy.

Social-Tech (The social-technical challenges). New ICT technology may provide ways to support "people with special needs" in all aspects of their life but technology may also introduce challenges. For example, new ICT solutions can be especially challenging to ageing employees because they may require changes in work routines and practices, and they may require learning new things (7^{th} Program Framework, 2012). Technology and societal changes go hand in hand and it should not be assumed that the introduction of technology alone will make things right. Therefore, it is necessary to assist the recipients of the training and the community to prepare for the future changes which might affect their life. Perhaps in this aspect, research may benefit policymakers and trainers. All changes cannot be foreseen but pilots can provide a launching pad for changes that can be applied on a wider-scale.

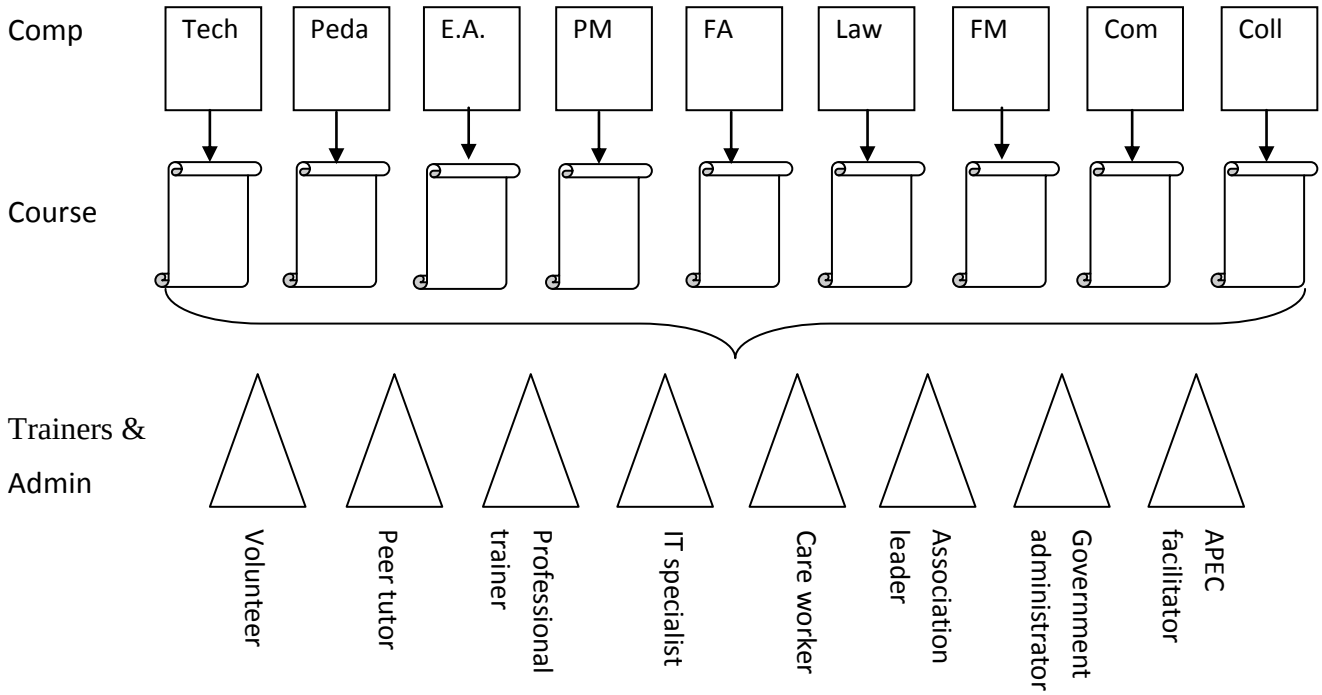


Figure 3: Training model for trainers and administrators

3.1.2. Developing curriculum

Next, we show how the competency areas listed above could be divided between the trainers and facilitators. These examples (Figure 4) can be used as the foundation to build specific curricula for each group. When drivers for the project are defined, they will be able to come up with content for relevant core content. The assumption is that each group shall be trained to be equally capable of conducting training for elderly people on ICT, thus, the competency requirements from each group when they have finished training will be the same. However, it may be desirable to implement special roles for each group depending on their background knowledge. In that case, specific curricula may be modified.

3.2. Training methods

The universities of the Third Age, which are popular in Europe, Australia and United States are active in providing ICT training courses for elderly people. Thus, the training for both trainers and elderly people can be carried out in these universities. It is recommended that the members of APEC should research the model of the University of the Third Age and consider the possibilities of implementing this model in their respective economies.

Alternatively for short term plans, it can be suggested that curriculum be developed such that on the ground trainers and workers can immediately adopt and implement into their curriculum. In this way, although the recipients of the training do not receive formal training, they come away with useful skills that be applied to daily living.

4. Recommendations

It is imperative the governments should recognize the importance of the training the trainers for "ICT applications for people with special needs" programs, give it appropriate weight, plan policies around it, and disburse funds to achieve the education goals. Governments need to make a conscious effort to work through the education system in order to impart an understanding of, for

example, the need of ICT applications for elderly and disable people. In short, the responsibility for the management of "ICT applications for people with special needs" ultimately resides with governments. Each economy has its unique needs and milieu, however, according to which the administration must find solutions.

This report emphasizes that training can overcome the digital divide between the young and the old, and should be the aim of interventions. By merely providing new healthcare-related technology for elderly and disabled, that does not give access to the information society, and is insufficient to bridge this divide. However it must be noted that there must be preparation for retraining of trainers so that they are able to use new technology. Secondly, this framework may not be suitable for economies that have lacks basic infrastructure, and there will be a need to achieve a certain level of progress before the technological advantages can be realized.

5. Conclusion

As theoretical lessons are insufficient for actual situations on the ground, it is highly recommended for trainees to experience practical hands on sessions in order for them to internalize, and have a working knowledge of the topic from firsthand experience.

The establishment of ICT Associations for seniors can be supported by the governments in training the elderly people. These associations can provide activities such as technical help, club activity, e.g. photo editing club, study tours and visits to organizations, and link other associations to provide assistance and library courses. The training can be delivered at home, care-centers or library and through e-learning platform.

Whatever the approach, it is recommended that a public organization could lead in planning and implementing these solutions and report the results. Funding could be channeled through this organization to support initiatives throughout the economy. These public organizations should share methods, results and best practices through the Ministries at APEC level in a dedicated APEC forum.

Figure 4: Example of modules taken by various personnel

	Peer tutor/ Volunteer	Professor/ Trainer	IT specialist	Care worker	Association leader	Government Administrator	APEC facilitator
CORE MODULES							
Technical training	✓	✓	✓	✓			
Pedagogical training	✓			✓			
Elderly people awareness	✓	✓	✓				
Project management					✓		✓
Funding acquisition					✓		
Collaboration					✓	✓	
Public legal framework on elderly people					✓	✓	
Competency identification/transfer							✓
Field research methods							✓
The ICT applications for people with special needs roadmap					✓	✓	✓
The social-technical challenges		✓			✓	✓	✓

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