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Cooperation with Mediterranean Partners to build Opportunities around ICT and Societal And Industrial Challenges of Horizon 2020

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Section 1 - EXECUTIVE SUMMARY

The advent of Information and Communication Technology (ICT) age provides various excellent opportunities for countries in **Al-Mashreq** region of the Arab world (Egypt, Jordan, Lebanon, Palestine, Syria) to reverse the course of a long-standing cycle in the global business and trade arena. For more than 7 decades, the flow of manufactured products has streamed from the industrial North to the underdeveloped South of the globe. Meanwhile, wealth continues to flow towards the north and west of the globe.

For the first time in the history of manufacturing industry, the production process relies more heavily on human earned skills than on heavy machinery. The software industry and embedded system for example are far more reaching than many other industries in terms of both revenue and investment. Al-Mashreq region is proudly rich with brain power available to gain what other countries such as India have achieved in this significantly evolving industry. India, Malaysia and Korea provide success stories for the ICT industry, where they outsource various ICT related businesses for US and European companies. The outsourcing model is at once attractive and useful. Nonetheless, it is rather hard to duplicate successfully right within the framework of smaller states, particularly in the face of staunch competition. This can, however, be counteracted by resorting to more innovative approaches to product development and invention. Arab Countries (Al-Mashreq) countries had better pursue another framework, which is at once efficient and plausible within the current world conditions. This is despite the geographical advantages that the Arab World has as compared to India. For example, Arab countries share almost the same time zone with Central Europe, they are also much closer to Europe than Far East countries, and have a lot of cultural similarities with European countries. All of these facts bodes successful and fruitful cooperation between Arab Countries and EU from both side of the Mediterranean.

Our vision for the Information and Communication Technology industry model for the Al-Mashreq region relies on the following facts:

1. The industrial market continues to have many luring vacant market spots, which can be characterized as underserved spots in the ICT field. Examples of such market spots are the optimization methods for the telecomm industries, the medical occupation and services emanating thereof, biochemical micro-processes, environmental applications including water management using sensors networks, conventional and renewable energy, oil and gas industries, the diverse fields of nano-technology, global warming and early warning of natural catastrophes such as tsunami, big data related to massive security multimedia data, and many others. Information and communications technology provides a solution base for many complex issues emerging out of these fields; many of these issues constitute ongoing and futuristic research problems.
2. The service required by the underserved spots has a unique characteristic in terms of performance, reliability, speed and safety. Such requirements warrant special skills that combine interdisciplinary expertise in the fields of interest as well as ICT. Thus, the qualities of the professionals involved readily determine the success of the model, rather than leveraging quantity of skilled professionals.
3. The initial financial investment necessary for the development and production of specially customized products and solutions is far less than investment required for massive industrial projects. The cost of developing, installing and maintaining ICT related products is by and large significantly lower than those required for heavy industry.

4. The Return On Investment (ROI) of ICT related products in such markets exceeds by a great margin the ROI in more common markets. Microsoft, Apple, Google and similar industries achieve more than 20% ROI compared to oil industry for example, whereas Exxon and Shell ROI barely exceeds 3%. (http://csimarket.com/Industry/Industry_Growth.php?s=600)

The existence of such under-served areas provides a valuable niche to penetrate the ICT industry and gain significant presence in this rather huge global market. The competition in such areas is still at infant stage. Addressing the software (SW) and communications problems in these areas does not require large initial investments, the demonstration of the ability to tackle such problems requires more of a research expertise strategies. SW quality metrics such as SE standards, excellence in protocol, and standards formulation are examples of those problems. Furthermore, the ability to tackle one or more of the under-served problems provides a unique position with little or no potential competition.

The success of the model relies on several factors, which require synchronization and establishing synergy amongst them. These factors include

1. Knowledge: This includes the wealth of knowledge accumulated by ICT professionals from past decades. Al-Mashreq countries have taken pride over the past decades in excellent educational systems graduating highly qualified ICT bodies. For example, there are 38 schools of ICT within Jordan Universities.
2. Research: This dictates the continuation of knowledge creation, in a highly competitive world, only through invention, innovation and creativity,
3. Regulations and Wellness: This entails current governmental policies, legislations, and regulations and the necessary metrics required to facilitate future deployment of knowledge and investment into the industry mainly in ICT Sector,
4. Investment: This refers to the sustainable supply of funds for current and future projects; something that can rely on entrepreneurs, angel investors and venture capitalists; from other side, the governments invest in building and supporting ICT schools.

Section 2 - Proposed Course of Action

It is through our set vision that the creation of a productive and profitable ICT industry in the region can be accomplished using the following guidelines:

1. Establish a Technological Platform (TP) in the field of information and communication technology to be charged and stimulated with guiding the creation of a strategic ICT Industry in Al-Mashreq region.
2. The Technology Platform shall create a steering committee whose main function is to guide the deployment of knowledge, promotion of research through innovation, adherence to regulations, and the provisioning of secure sustainable funding for key ICT disciplines.
3. To ensure sustainability and dissemination, the steering committee, thereof, shall also be responsible for creating a marketing and sales strategy the prime function of which is to explore international market statuses, via slick market intelligence, and pursue collaborative activities with similar platforms.
4. The committee shall also be responsible for creating working groups for each of the identified areas.
5. Each group shall cater for researchers, innovators, inventors, and entrepreneurs, in the respective fields of operation in addition to ICT researchers whose main task/s would be the formulation of uniquely innovative solutions for targeted problems.
6. The researchers shall be selected from various academic institutions, SMEs and the ICT industries involved.
7. Each working group under the umbrella of the Technology Platform shall work in unison with academic institutions in its locality fairly closely to help uphold the industrial/academic model shown in Figure 1 below.
8. The marketing and sales strategy shall include local companies from the private sector as well as international partners. The cooperation between the government, the academy and the private sector is essential for the successful creation of a significant ICT and ICT based industry.

The Technological Platform shall be responsible for facilitating the model suggested in Figure 1 below.

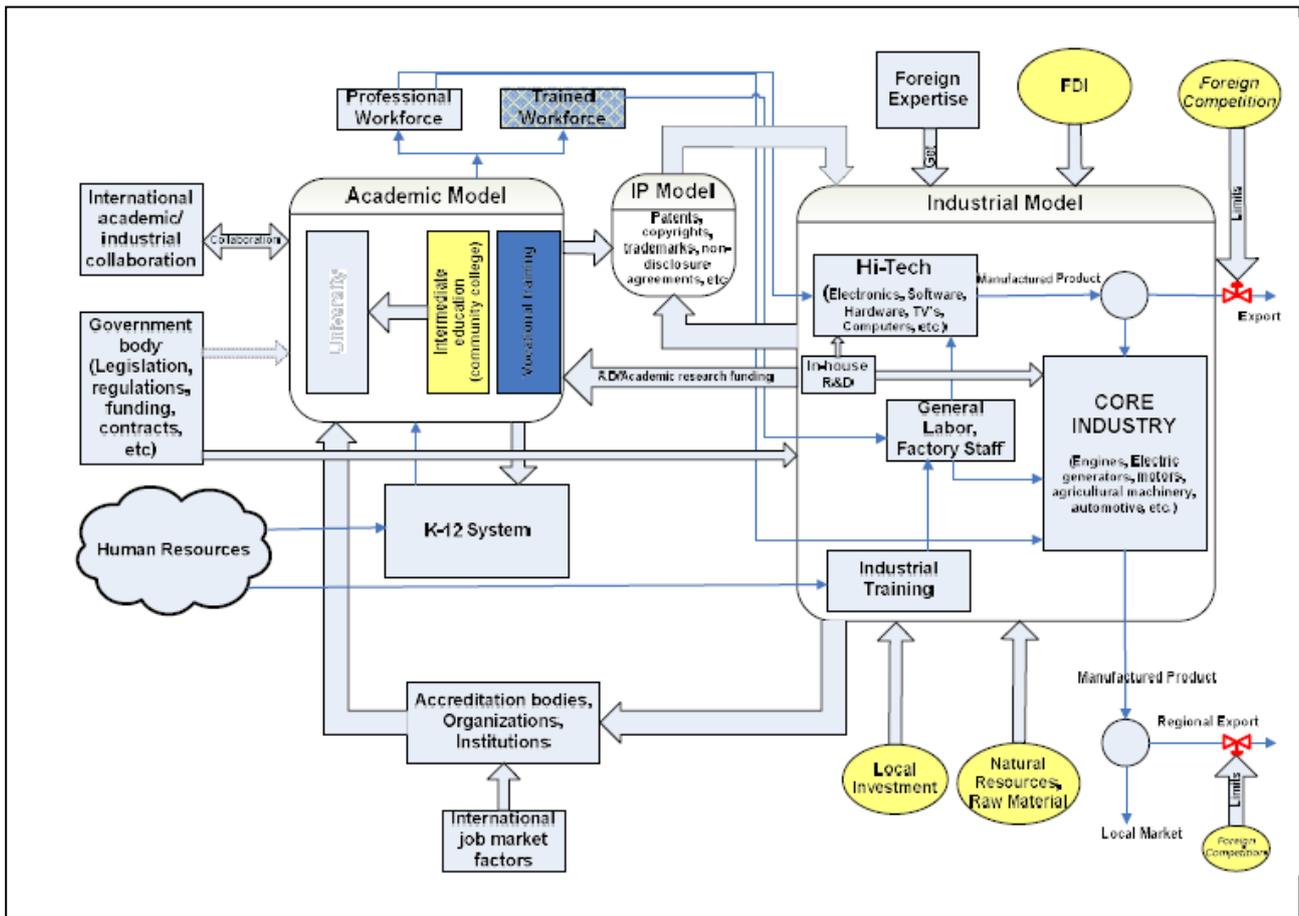


Figure 1: Technology Platform Triangle: Academy-Industry-government Interaction Protocol

Section 3 - Regional versus National Platforms

The debate has always been on the necessity of creating platforms at the national level to promote and enhance the advancement in technology and to guide efforts towards the development of a knowledge-based economy. Jordan, in particular, has several national bodies such as Int@j, Jordan Computer Society, the association of SW information technology professionals and industries, amongst a number of others. Egypt, Syria, Lebanon, and Palestine also have their own local bodies for patronizing ICT-related matters. Without going into the philosophy of debating the merits of national organizations versus regional, it is sufficient to look at the market share for each of the countries in relation to the ICT and SW industry. Statistics related to the global ICT based outsourcing industry show that Arab countries in general lag severely behind the rest of the world in this area. As of 2012, global outsourcing SW revenues tallied around \$100 Billion. Jordan's share of this revenue was less than 0.03%. Egypt holds close to 1% of the total global ICT outsourcing industry share. Lebanon, Syria, and Palestine each have less than 0.05% of the total global ICT industry. Collectively, the 5 Arab countries barely make 1.1% of the global SW and ICT based industry. See Figure 2.

<http://www.statista.com/statistics/189788/global-outsourcing-market-size/>

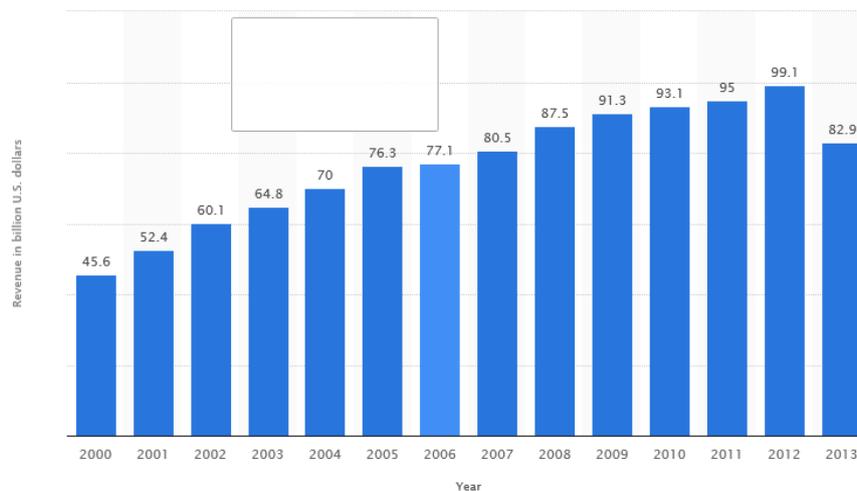


Figure 2: Global Outsourcing Revenue

Therefore, it is our vision that through much regional collaboration between these countries that we will be able to create a sturdy consortium, which should be able to compete and achieve much better success rates in a rapidly growing global ICT industry. Therefore, the creation of a regional technological platform is a warranted reality and something that cannot be evaded. This will not by any means replace other existing local/national platforms. Right to the contrary, it will, ultimately, come into play to strengthen existing instruments by enabling them expand their reach to other neighbouring countries that possess the proper infrastructure and uphold similar aspirations.

It is our belief that in a highly competitive ICT market, a collaborative approach is certainly a step forward in enhancing each country's ability to prove its strength, leverage its inherent capabilities, put its cumulative knowledge to good use, and lure in new businesses to the region by encouraging foreign direct investment. Jordan and Egypt has signed an agreement at the level of national research funding agencies to fund research conducted by partners from both countries [4]. The collaboration enablers among the Al-Mashreq countries are numerous. Besides the massive challenge (which is common) to penetrate the global market, these countries share the same language, culture, with compatibly similar educational infrastructures, and exhibit heavy dependence on human skills to grow their economies.

Section 4 - Benefits for the members of the Regional Platform

Members of the AI-Mashreq MED-TP are expected to draw on many benefits. Among the most visible benefits is the ability to exploit research opportunities created and fostered by the TP. Members will be among those who get exposed first to new and emerging areas of research and technology in ICT related fields. There is a multi-billion research grant funds, which are available only to consortiums from different parts of the world. Members of the Mashreq TP will have the opportunity and capability to participate in consortiums and create their own.

The MED-TP of Mashriq could serve to foster research and innovation collaboration with Europe on different programmes. The following programmes have been identified:

- Horizon 2020: <http://ec.europa.eu/programmes/horizon2020/>
- EUREKA (ITEA3 cluster for Software and Services): <https://itea3.org/>
- ERANET-MED: www.eranetmed.eu/

European and Mashriq researchers and innovators can collaborate on local programmes addressing major challenges such as:

- ICT based clean transportation
- ICT based clean and renewable energy
- ICT based environment including water management
- ICT based health management systems
- 5G networks
- Embedded systems
- High throughput broadband networks
- High productivity computing systems
- ICT based on Electronics and Nanoelectronics

MED-TP could be the catalysts of several European initiatives in the Mashriq region as shown in Figure 3.

- FI-WARE
- Living Labs

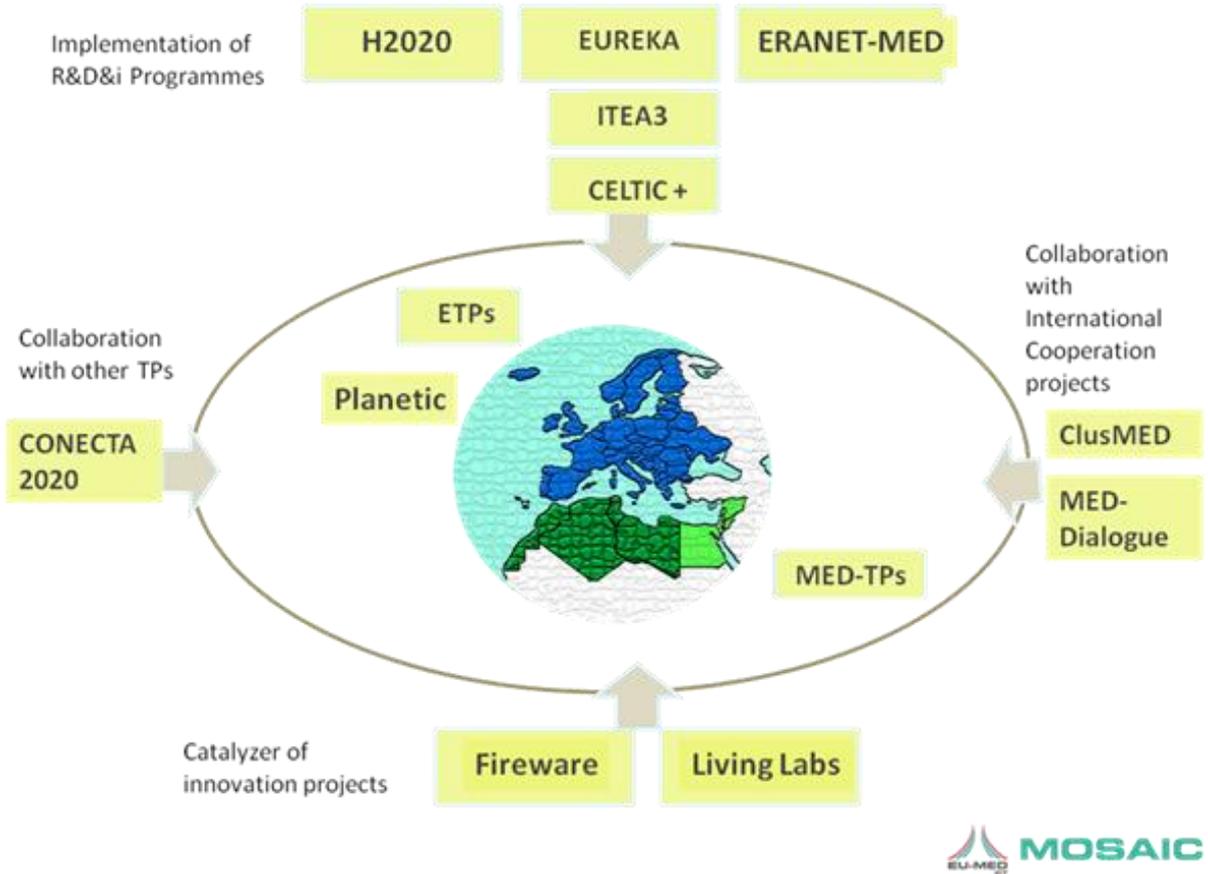


Figure 3: Catalyzer of Innovation Projects

Section 5 - Recommendations and Conclusion

The creation of an ICT technology platform in developing countries, in general, and in the Arab region, in particular, is rather essential for overall economic growth and wellbeing of the nations involved. The Indian brand of a ICT industry is fairly too appealing but rather difficult to mimic at this stage. There is a dire need for another model and a more appropriate branding for ICT industry in the Arab world. Our vision and focus it to create a model that depends heavily on well researched problems and concentrates on key scientific and societal sectors in the regional and international ICT markets. We vehemently recommend the creation of a Technology Platform for the objective of creating a successful, profitable and research based ICT industry. The investment in this area is relatively low compared to any potential revenues. The proposed model suggests a tighter well designed coupling between the government sector, the academic sector, and the private corporate sector (Refer to Figure 1). The recommended areas to be targeted would readily include:

- The telecommunication industry and market
- Biochemical processes
- Health and Biomedical processes such as DNA and genome sequencing
- Image processing and geographic systems
- Environment including water management
- Energy including Oil and gas industries
- Software/Hardware Co-Design and Embedded System
- Optimization methods and processes
- Behavioural sciences
- Nano-Technology sciences and applications

Annex I - Acronyms

Term / expression	Description
ETP	European Technology Platform
ICT	Information and Communication Technology
LatAm	Latin America
LATP	Latin America Technology Platform
SRIA	Strategic Research and Innovation Agenda
TP	Technology Platform
Al-Mashreq	Jordan, Egypt, Palestine, Syria, and Lebanon

Annex II – References

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