

Project Final Report

Grant Agreement number: 266507

Project acronym: JEWEL

Project title: Jordan Europe Wide Enhanced research Links in ICT

Funding Scheme: SUPPORT ACTION

Period covered: from 1/11/2010 to 31/10/2013

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¹ Usually the contact person of the coordinator as specified in Art. 8.1. of the Grant Agreement .

² The home page of the website should contain the generic European flag and the FP7 logo which are available in electronic format at the Europa website (logo of the European flag: http://europa.eu/abc/symbols/emblem/index_en.htm logo of the 7th FP: http://ec.europa.eu/research/fp7/index_en.cfm?pg=logos). The area of activity of the project should also be mentioned.

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Final publishable summary report

1. Publishable summary

The JEWEL project lays the foundation for enhanced EU- Jordan collaboration in the field of Information and Communication Technology, ICT.

The European Union and Jordan share common concerns in Information and Communication Technology, which create a favorable environment for strategic R&D collaboration and help to respond to the broader societal challenges faced by both these continents.

The DG CONNECT Unit “ERA-WIDE” supported the JEWEL project during the period of November 2010 – October 2013 with the aim of **stimulating EU-Jordan cooperation in Information and Communication Technology.**

Over this period of Three years, the JEWEL project team – **Jordan University of Science and Technology, Aristoteli University of Thessaloniki, and inno**, supported by a **dedicated expert group drawn from leading academic and industrial experts** from European Union, and USA – developed a range of recommendations and concrete project initiatives. The project team also mobilized **50+ members of the European and Jordan R&D community** with the goal to promote, support and lay the foundations for future EU-Jordan R&D cooperation in Information and Communication Technology.

The major project achievements include:

- ✓ **Raised visibility** of EU-based activities in Jordan, including insights into European Networks and Platforms regarding key research and technological challenges toward Horizon 2020.
- ✓ **Mapping of 50+ Jordanians R&D Information and Communication Technology teams from 20+ organizations**, and preparation of a promotional guide with an overview of their core competences.
- ✓ **Overview of societal and industrial needs** in Jordan for ICT, with focus on Modeling, Simulation, Nanoscale Effect, tools for Transistor Design.
- ✓ **10 EU-Jordan collaborative events with participation of 500+ specialists:**
- ✓ **Strategy and Action Report “EU-Jordan collaboration in Information and Communication Technology: next steps”**, summarizing expectations from the EU-Jordan community.
- ✓ **Proposal for themes “Low Power Design Methodologies at Nanoscale Technology” for a Coordinated ICT Call EU-Jordan**, resulting from consultation process.
- ✓ **Initiation of concrete R&D EU-Jordan collaboration activities and projects - the technical discussions have been started and some initiatives are well advanced.**
- ✓ **Organization of training and individual support to increase the skills of the Jordanian researchers**
- ✓ **Scientific achievements research papers more than 30 publications have been published and two honors and awards have been awarded thanks of JEWEL.**

In addition, JEWEL has generated many indirect, but nevertheless, important outcomes laying the foundations for long term collaboration and enhancing the competitiveness of actors in both communities, such as **contribution to initiation and execution of Jordanian-based projects** in different ICT thematic research areas, **helping European specialists** to understand the “way R&D works in Jordan” as a basis for future R&D collaborations, and **contributing to raise awareness regarding** the topic in academic and industry organizations in Jordan due to the growth of new fields linking monitoring and control with communications and computing.

2. Project objectives

JEWEL is a **support Action project** aimed at stimulating cooperation in the Information and Communication technologies between Europe and Jordan, in order to support Europe's leading position in ICT while ensuring mutual benefits for both Europe and Jordan. Consequently, JEWEL aimed to develop cooperation in ICT and its applications that are relevant to the research priorities identified in the FP7 ICT Work Program 2009 and that ensured mutual benefits. These research priorities included the following:

- **Lower Power Design Methodologies:** to develop *novel* methods and techniques for next generation of transistor design.
- **Modeling Transistor at Nanoscale:** Create new models fit for nanoscale transistor design;
- **Modeling Carbon Nanotube Transistor:** Create Models for Carbon Nanotube recent technology as well as Graphene Transistor in order to keep Jordan on the edge of Technology.

In order to **stimulate the monitoring and control cooperation**, JEWEL's mission was threefold:

- map** Jordan organizations involved in research relevant to the EU's priorities concerning ICT application's methods and tools, assess the potential for ICT-monitoring and ICT-control collaboration between Jordan and Europe, and propose recommendations with a roadmap;
- organize** combined awareness-raising, networking & brokerage and training events in Jordan and in Europe concerning relevant monitoring and control calls under FP7 ICT, and a delegation tour of European specialists to Jordanian organizations, and reinforce the attendance of Jordanian experts at key monitoring and control events in Europe;
- provide** 'hands-on' support to Jordanian monitoring and control organizations to strengthen Jordanian participation in the European research and training: joining European consortia preparing FP ICT proposals, facilitating secondment of Jordanian researchers to European organizations.

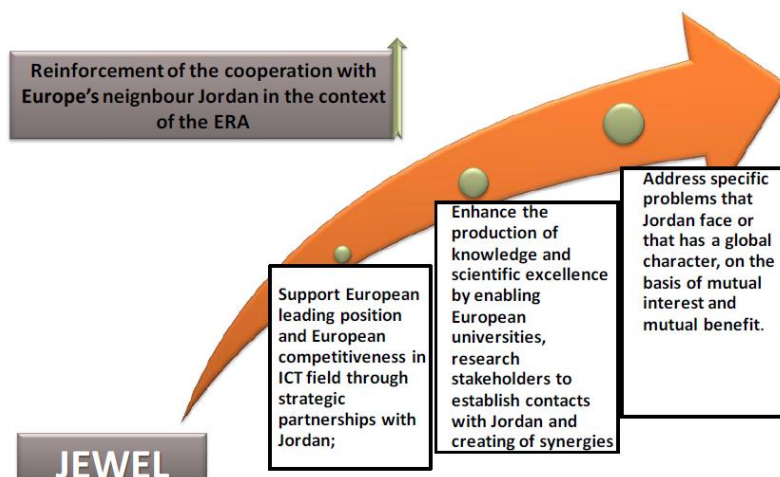


Figure 1 : JEWEL concept and Objectives

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Specific objectives for the 1st period (11/2010-05/2011)	Specific objectives for the 2nd period (06/2011 – 10/2013)
During this First period, the following objectives were pursued:	During the second project period, the following objectives were pursued:
Undertake preparatory activities, ensuring the ground for the successful project implementation;	Deepen understanding European and Indian industrial demand and perspectives for networked monitoring and control system technologies
Understand European and Jordanian industrial demand and perspectives for networked in ICT technologies;	Organize networking events to allow European and Indian specialists to meet, expose their R&D results and interact with each other
Investigate on EU-Jordanian cooperation in ICT;	Continue important awareness raising and dissemination campaign, according to the plan developed in Period 1
Present an overview on European Information and Communication Technology Research, for Jordanian specialists;	Follow up and to contribute to ICT EU-Indian policy dialogue activities
Map Jordanian organizations involved in ICT, preparing ground for assessment of collaboration potential between EU and Jordan in the field of networked monitoring and control systems technologies;	Start promoting Horizon 2020, the next Framework Program of the European Union,
Reinforce networking and create EU-Jordan Expert Group on networked monitoring and control system technologies engaged in long term EU-Jordanian collaboration;	Summarize project findings, communicate with expert group members and external stakeholders, and prepare two reports : the strategic opportunity report, on opportunities and the recommended courses of actions and proposed future strategy of EU-Indian collaboration in the field of monitoring and control, and the technical report (compendium).
Design, implement and support a project web-portal;	
Produce promotional materials to be used under the project;	
Prepare awareness raising and dissemination plan and, according to the plan, to start raising awareness about collaboration opportunities EU-Jordan in the field of networked monitoring and control systems.	
Providing practical support to strengthen the participation of Indians in European research and training and to strengthen cooperation	

3. JEWEL main results

The implementation of the JEWEL project provided a substantial added value to the activities enhancing the EU-Jordan ICT research cooperation. This includes many exploitable results, such as the knowledge that has been acquired on the collaboration schemes between Jordan and European researchers in the field of ICT. Deliverables produced during the project lifetime included recommendations, feedbacks, and summary of project meetings, events, finding and other elements prepare a good ground for further potential initiatives of EU-Jordan collaboration.

The major project achievements include:

- **Raised visibility** of EU-based activities in Jordan, including insights into European Networks and Platforms regarding key research and technological challenges for 2020.
- **Mapping of 50+ Jordanian R&D ICT teams from 20 organizations**, and preparation of a promotional guide with an overview of their core competences.
- **Overview of societal and industrial needs** in Jordan for ICT, with focus on ICT in Environment, ICT in Energy, ICT in Water, and ICT in Health.
- **6 EU-Jordan collaborative events with participation of 100+ specialists:**
 - “FP7-Info-day in ICT,” Budapest, Hungary (May 18, 2011);
 - “Info-day - FP7 Research on ICT for Sustainable Growth Brussels, March 2011;
 - “FP7-Info-day in ICT, Budapest,” Hungary (May 18, 2011)
 - Info-day in ICT, Warsaw, Poland,
 - INCO Conference, Strengthening International Cooperation in Research & Innovation, Marseille, France, 17-19 June, 2013;
 - Participation in the AENEAS/CATRENE brokerage event 2012 at Paris, France.
 - “Modern circuits and system technologies,” workshop, Thessaloniki, Greece, Feb. 2011.
 - “Modern circuits and system technologies,” workshop, Thessaloniki, Greece, Feb. 2012.
 - “Strengthening International Cooperation in Research & Innovation,” Marseille, France, 17-19 June, 2013.
- **Strategy and Action Report** “EU-Jordan collaboration in Information and Communication Technology systems technologies: next steps”, summarizing expectations from the EU-Jordanian community.
- **Proposal for a theme** “Smart components and systems for sustainable development and inclusion” for a Coordinated ICT Call EU-Jordanian, resulting from consultation process.
- **Initiation of concrete R&D EU-Jordan collaboration activities and projects** - the technical discussions have been started and some initiatives are well advanced.
- **Organisation of training and individual support** to increase the skills of the Jordanian research community in European opportunities, partner search, and FP7 project set up.

International collaboration plays an important part in driving forward research excellence and the competitiveness of industrial actors. It is also a long term process but JEWEL has already prepared the way forward and a number of important next steps have been identified. These include:

- **Launching** a joint funding scheme between EU and Jordan.
- **Creating technology** platform in ICT – Jordan, new project will run Jan. 2014 and JEWEL Coordinator will coordinate it too
- **Linking** European and Jordan R&D knowledge networks working on similar topics, and encourage local consortia with industrial participation
- **Reinforcing** two-way collaboration, young researcher mobility and co-supervision of thesis, and attract EU young specialists to Jordan
- **Making visible** the community in the EU-Jordan ICT policy dialogue
- **Building** on the work of JEWEL and continuing to jointly support EU-Jordanian initiatives encouraging EU-Jordanian R&D collaboration

1.3. The expected impact and the main dissemination activities and exploitation of results

4. Expected impact

JEWEL is support action project has significantly contributed to improving European and Jordanian research collaboration in the field of Information and Communication Technology, and the difficulties the project team encountered along the way have only increased the value of the unique experience conducted within the JEWEL framework.

The key project outcomes – compendium, recommendations, support to research centers interested in EU-Jordanian cooperation, training activities and defining Strategy and Action Report.

“EU-Jordan collaboration in Information and Communication Technologies: next steps ” - reaffirmed the interest to explore new collaboration opportunities in order to create a new dynamic for the EU-Jordanian ICT policies rapprochement. The openness principle that has been pushed forward by JEWEL will ensure for European research organizations the access to Jordanian sources and, per consequences, will increase international collaboration projects rate.

In addition, JEWEL has generated many indirect, but nevertheless, important outcomes laying the foundations for long term collaboration and enhancing the competitiveness of actors in both communities.

Firstly, the project contributed to initiation and execution of Jordanian-based projects in ICT.

Secondly, JEWEL helped European specialists to understand the “way R&D works in Jordan” as a basis for future R&D collaborations and created an atmosphere of trust between future collaboration partners. The project also highlighted the strong match of R&D interests in Europe and Jordan in monitoring and control of complex systems.

Thirdly, the project contributed to raise awareness regarding the topic in academic and industry organizations in Jordan due to the growth of new fields linking monitoring and control with communications and computing.

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And last but not least, the project created an atmosphere of trust between future collaboration partners themselves.

1. JEWEL CONTRIBUTED TO ICT POLICY DIALOGUE BETWEEN EU AND JORDAN

The project team proposed a topic on Information and Communication Technology for an EU -Jordan ICT coordinated call: ICT for Environment including water, and suggested that projects may address topics such as clean water, health care, transportation system, protection of the environment, efficient and sustainable food production, sustainable energy etc..

2. JEWEL INVOLVED EUROPEAN AND JORDANIAN INDUSTRIALS TO EXPLORE COLLABORATION OPPORTUNITIES

R&D industrial specialists from Int@j-Jordan as well as from Jordan-Telecom took part in the project events. Follow up activities include, for example, a visit of a representative of an Int@j and representative of Orange from Jordan welcomed more than two times people from France Telecom and inno to continue collaboration discussions with different research groups.

3. JEWEL SUPPORTED DEVELOPMENT OF NEW JOINT EU-JORDANIAN INITIATIVES

Following the EU-Jordanian collaboration meeting organized by JEWEL, an initiative has been started between Jordan (JUST) and Greece (AUTH University) towards the creation of an International Research Team "ICT - Nanoelectronics". After the first meeting, the idea was brought up, and in October 2013, after consultation with the funding institutions, detailed technical discussions will be taken place.

4. JEWEL HELPED INITIATION OF COLLABORATIVE R&D PROJECTS

During the delegation tour in Jordan, the idea of a joint R&D project on decision support for faculty members in Jordan that are willing to participate in future cooperation and communication with EU people. The project is planned to create teams from Jordan and Greece to face the next calls and prepare for it in the area of Medical Health.

5. JEWEL ENCOURAGED SET UP OF EXPERIMENTAL TEST BED IN JORDAN

There are on-going efforts in developing large scale networks to function as experimental test beds in two broad market areas: ICT-Health, ICT-Environment and ICT-Energy. It is expected that these test beds can serve to validate current theoretical concepts in monitoring and control using ICT tools, as well as provide a platform for developing new products.

6. JEWEL HELPES TO RAISE AWARENESS OF JORDANIAN RESEARCH POTENTIAL

"I regret I did not come to Jordan ten years ago. It's a great group here, we could have done good work together earlier" (EU Professor).

7. JEWEL PROMOTED TWO WAYS COLLABORATION BETWEEN JORDAN AND EUROPE

"Major source of cooperation are graduate students: Jordan needs to gain from the process. The only option is joint co-supervision of thesis. It should be an exchange in both directions; it should be two-ways collaboration" (Jordanian Professor). Two ways collaboration was promoted throughout all JEWEL project activities.

8. JEWEL NOTICED GROWING INTEREST FROM JORDANIAN STUDENTS IN EUROPEAN MASTERS AND CONTRIBUTES TO THE PROMOTION OF EUROPEAN MASTERS AND GRADUATE SCHOOL IN THE TOPIC

During the European visits to Jordan, the most master students who attended the event asked the Europeans keynote speakers their business cards and asked them questions regarding the requirements of the admission in the master and Ph. D. studies in Europe. Opportunities and facilities in the graduate studies were offered from the EU visitors.

5. Main dissemination activities and exploitation of results

JEWEL dissemination activities concerned the following subjects:

- Dissemination of information about project activities, via various channels, and involvement of R&D community in the project work;
- Awareness raising about EU-Jordan collaboration opportunities in the ICT fields (e.g. FP7 calls for proposals, or bilateral calls, especially relevant for Greece and Spain);
- Provision of information about knowledge networks in Europe – covering Networked Monitoring and Control systems topic (e.g., European Technology Platforms Information);
- Competence mapping of Jordanian organizations and dissemination of this information to the EU specialists;
- Interactions with other relevant projects, funded by EC and targeting Jordan in specific and MEAN in general;

The dissemination tools included partners' meetings, web portal, communication events, delegation meetings, newsletters, training, round table, workshop and other relevant events, as hardcopy folders include all materials related to the JEWEL project.

The dissemination process was declined into two distinctive parts which were closely interlinked at the same time, according to Awareness Raising and Dissemination Strategy developed by the consortium:

- **Dissemination campaign** aimed at disseminating of information on project progress regarding to the project's activities, results and lessons learned during implementation and on the ICT Work Program of FP7 in ICT in Health, ICT-Environment, ICT-in Energy. An important aspect was to build a positive image for the project in order to federate a significant synergy and mobilization among the EU-Jordan ICT community. Development of a project website, including Jordan ICT organizations database – all these tools worked to achieve this objective.
- ☐ **Awareness raising campaign** was focused on the mobilization of the R&D units in Europe and Jordan as well as the governmental organizations responsible for international cooperation in the ICT domain. This campaign targeted specific audience such as relevant research centers, ICT National contact points and coordinators of technology based projects running under FP7. Continuous dissemination activities focusing on ICT community have been implemented by all partners. The activities included networking events, training sessions, round tables and project presentations at the other events, such as water management day, ICT-2010 or EU-Jordan S&T Cooperation Day.

6. Networking events

JEWEL organized more than 5 Networking events totally during the 36 months: 1. Network session in Tunisia, 2. Network event in Seville, Three Network events in Jordan aimed at offering to attendees valuable insights into the trends and visions of the evolving ICT technologies in Europe and in Jordan. The researchers and business representatives have been invited ante-or post-event to submit the project fact sheets that has been matched by JEWEL in order to identify potential partners. To match the requirements of the large scale events (e.g. JIEEEEC), JEWEL organized, as an entry point, panel discussions on the specific topics (e.g. ICT in Health), and the networking dimension has been enlarged during the social events. The events included presentations of the Jordanian competences and successful cooperation in the ICT area between EU and Jordan. Also, debates have been held on how to overcome the barriers for the cooperation between Europe and Jordan. JEWEL questionnaire has been distributed to attendants in order to help them identify partners or to assist them for other cooperation activities. The networking events included:

⇒ **1st Networking and Training Event in Jordan (October 2011)**

Under the lead of inno, the consortium organized a first networking event in October 25th, 2011 at Jordan University of Science and Technology, Jordan. The event brought together over 50 Jordanian specialists in the fields Information and Communication Technology as well as European participants who joined the workshop (Sweden, Greece, and France). The network session discussed the information about project activities and the FP7 calls, including ICT priorities, was disseminated. Project findings, namely related Industrial needs were discussed during the event and the feedback provided by the participants clearly showed the interest to have place for an open exchange of information, and discussion on the collaborative research opportunities between Jordan and EU. Training part has highlighted some key aspects of FP7 and collaboration opportunities.

In this network it also discussed the facilities and the benefits of FP7 call to the consortiums, inno discussed the preparatory work that should pre-prepared to the next call, event design, organization of the call for application and preparation of relevant materials, such as application form, selection criteria etc, provision of "hot line" for the applicants, selection of European participants on the transparent basis, jointly with the Jordanian partners, individual work with participants, for example development of the questionnaire to meet their needs, arrangement of the logistics from the European side, such as air tickets, etc

⇒ **2nd Networking and Training Event in Tunisia (April 2012)**

The Second networking and training event has been combined with the IEEE International Conference of MELECON 2012 in Hammamat-Tunisia. Under the lead of JUST and inno, more than 30 European Researchers from academia and Industry joint together with coordinating of JEWEL partners to discuss partnerships opportunities for the future FP7 calls. In this network event, the consortium of JEWEL had the opportunities to meet decision makers from EU and MENA region, they discussed the possibilities of Jordan to hold Nano-scale clean room, define the competences of Jordan in the research areas, the network was also opportunity to hear from the expert team (Prof. Kaushik Roy and Bashir Hashimi) who attended this network session and gave their advices in helping Jordan to enter the European Research Area (ERA)..

⇒ **3th Networking & Dissemination event at Seville, Spain, December 2012**

In this event, the JEWEL consortium met specialists in the area of ICT in Europe and discussed with them the competences of JEWEL in the area of ICT and their potential in this field. The face2face meetings during the ICECS conference were very fruitful because on that period it was an open call for ICT. The consortium included (JUST and AUTH) discussed the cooperation with other EU partners ideas regarding FINFET Transistor proposal, this proposal later on disseminated by several media to match other SME partners.

⇒ **Networking & Dissemination event at Jordanian International Conference on Electrical and Electronics Engineering 2012, Amman – Jordan.**

JEWEL has organized one-day workshop “Get Ready for Horizon 2020” as a pre-conference event. The goal of the workshop was to remind foundations and Jordanian contributions about next calls of Horizon 2020 in Energy, Environment, Water, Health, Education and embedded system thematic areas. JEWEL partners highlighted the cooperation experience with Jordan in ICT and to present collaboration opportunities and to discuss cooperation prospects EU-Jordan. Within the workshop, a round table dedicated to EU-Jordan cooperation issues created a positive awareness effect and mutual understanding among EU-Jordanian community. Also, a booth of the project has been set up, where coaching in FP7 was delivered by JUST together with information on cooperation opportunities with Jordan.

⇒ **Networking & Dissemination event at Applied Conference on Electrical Engineering and Computing 2011, Amman – Jordan.**

The JEWEL consortium organized the EU-Jordan collaboration and network event “EU-Jordan Network in ICT”. As part of the collaboration event in Jordan, a technical full day workshop “EU-Jordan Network in ICT “ was held on December 2011 in association with IEEE ACEET Conference held in Amman-Jordan. This workshop was followed by a round table meeting, the goal of which was to identify the benefits that may lead to added value to both the EU and Jordan, to discuss elements of the cooperation strategy EU-Jordan in complex systems engineering and also efforts needed to launch the next EU-Jordan coordinated ICT call. The representative of other relevant FP7 projects (EU-Jordan net, and IJERA) participated in the event. Additionally to the JEWEL event program, European participants took part in the collaborative meetings with Jordanian colleagues.

Furthermore, Three scientific workshops were organized in Jordan, and two scientific workshops organized in AUTH-Greece. Network of Excellence team organized special sessions during these events in Jordan and Greece.

In addition to these networking events, JEWEL was represented during various conferences and workshops, for example :

- JEWEL Participates in International Workshop on Power and Timing Modeling, Optimization and Simulation (PATMOS), pp. 53-62, Madrid, Spain, Sept. 2011;
- JEWEL Participates in the EU Events: 37th Solid-State Circuits Conference (ESSCIRC) Venue: Helsinki, Finland, 12-16 Sept.2011;
- JEWEL Participates in International Conference on Circuits and Systems (ICECS 2012), Seville, Spain;
- FP7-Info-day in ICT, Budapest, Hungary (May 18, 2011);
- Info-day - FP7 Research on ICT for Sustainable Growth Brussels;
- FP7-Info-day in ICT, Budapest, Hungary (May 18, 2011);
- Info-day in ICT, Warsaw, Poland;
- 6th INCO Conference, Strengthening International Cooperation in Research & Innovation, Marseille, France, 17-19 June, 2013;
- Participation in the AENEAS/CATRENE brokerage event 2012 at Paris;
- JUST Participation in JEWEL Workshops in EU;
- Modern circuits and system technologies;
- Two workshops organized in JUST in the area of “Trends of Nanoelectronics”.

7. Training sessions

Training sessions have been delivered by the project at all its networking events. They concerned explanation about FP7, call explanations, issues relevant to the integration to the consortiums, questions-answer sessions.

The consortium used any opportunity to widely speak about the project, to create a positive awareness effect, to put in relation EU and Jordan potential partners, to contribute to mutual understanding among ICT actors on the Jordan and European side. For example JUST participated in the Good morning program (National TV) and gave an interview about EU-Jordan cooperation in ICT Opportunities for Jordan within FP7 EU projects.

Feedback obtained during the events has been included in the project's final recommendations.

Important remark

JEWEL team synchronized its dissemination efforts with other projects/events in Jordan under the other thematic areas in the www.ict-jewel.eu website, and also cooperated with a number of the relevant projects, by contributing to the overall process of reinforcement of EU-Jordanian collaboration (participation in EU-Jordanian S&T Cooperation Day).

Major indicators for evaluation of the awareness raising and dissemination plan

In order to evaluate the effectiveness of project awareness raising and dissemination plan, the project used the following indicators:

Website performance monitoring and update	Regular
Number of participants in the JEWEL events	JEWEL team counted 500+ active participants, but the number of overall participants was much larger (for example, at the PATMOS, ICECS, MELECON, there were many participants from the conference, but it was not possible to register them, due to the fact that the JEWEL session was part of the these conferences and workshops.
Number of project presentations at the events in EU and Jordan	30+ (this includes ICT-2010 day in Brussels)
Number of networking, brokerage, training events	8Times: Jordan Oct 2011, Brussels 2011, 2012 & 2012, Budapest March 2011, Warsaw April 2012, MELECON 2012, Morocco December 2012, Paris December 2012,
Number of round tables (at the events above)	5 Times: Amman 2 Times, JUST 3 Times

8. Exploitation of main JEWEL results

- The Socio-Economic Analysis prepared by JEWEL in the area of Information and Communication Technology showing huge cooperation opportunities, with matrix showing the spread of the research interests according to application domains of ICT in Energy, in Health and Environment, ICT in water management, and ICT in transportation. with further sub-topics classification, is available for consultation and will be used by the partners in their further activities.
- A promotional guide of European relevant organizations, and sectoral reports in the field of energy, smart city, transportation, water, will be used in the similar way.
- An opportunity report and the strategy proposal on the EU-Jordan Information and Communication Technology Collaboration, and compendium “The present and future of ICT with potential for international (EU-Jordan) collaborations”, suggesting next steps and opportunities, will guide the next steps towards close JEWEL relevant collaboration.
- It is expected that the JEWEL proposal for the coordinated ICT EU-Jordan coordinated call will be taken by the policy makers and integrated in further discussions.
- The created network of organizations interested in EU-Jordanian ICT collaboration, will remain, and link from the cordis web site to JEWEL community will remain active.
- The website of the project www.ict-jewel.eu will remain open till at least 2015.

9. JEWEL Project website

- The JEWEL website was opened on M5. It is available at the following URL: <http://www.ict-jewel.eu>, the website has been designed and structured to promote the project. It was also used for the collection, cross-mapping, and dissemination of information on opportunities for collaboration between monitoring and control specialists in EU and Jordan. The website advanced through the feedback of the awareness campaign.
- The project web site relies on a classical CMS (Content Management System), which provides the web presence: news, documents classification and management etc. A contact form ensures the reverse connection for visitors with the project team.
- The content of the JEWEL website is regularly and continuously updated. The application is hosted on a dedicated server that can support high audience.
- Technically speaking, the website is served by a JUST Computer Center installed on an Apache HTTPd web server. Godadi is an open source content management system, which is supported by a large community of developers. The installation relies on a MySQL database.
- The usage of a content management system helps in making a clear distinction between the content and the layout. Thus, once the layout is created (as it has been done when the project started), any website administrator can add content without having to update the layout: the focus is the content.
- Finally, visitors were able to subscribe to the JEWEL newsletter providing their name and e-mail address. In this way, they followed the project activities and progress. For the team, this tool has detected some interested profiles.

Example of screenshots are provided below.

Jordan Europe Wide Enhanced research Links

Home Project Our Team Activities Documents Gallery Links Contact

Jordan Europe Wide Enhanced research Links in ICT
 JIICO, ERA-WIDE
 2010-2013
 Call for Workshop
ICT in Horizon 2020
 October 28th, 2013, Jordan University of Science and Technology

تحت رعاية الاستاذ الدكتور عبداللهم ملكاوي
 رئيس جامعة العلوم والتكنولوجيا الاردنية
 تنطلق فعاليات ورشة العمل

ICT IN HORIZON2020

وذلك ضمن المشروع الاورو- أردني المشترك "جويل" في تمام الساعة العاشرة من صباح يوم
 الاثنين الموافق 2013/10/28، في مدرج صلاح الدين.

لمزيد من المعلومات يرجى الاتصال على الرقم 0776546989

The 36-month JEWEL project gives Jordan the possibility to improve the research activities of their highest quality in the FP7 thematic priority "Information and Communication Technologies"(ICT),through twinning activities between one of the leading Jordan scientific and educational organisations Jordan University of Science and Technology (JUST), with their long term partner the Aristotle University of Thessaloniki, Greece(AUTH).A coherent development strategy for JUST (ICT sector) will be prepared, based on SWOT analysis and on the socio-economic analysis on Jordan, regional(Mediterranean) and European level. A twinning and joint research plan will be then agreed by the twinned partners and implemented. Project includes several main types of activities, eg. twinning activities between JUST and AUTH, large-scale networking & brokerage activities, exchange of researchers and young specialists and organisation of joint events such as summer school and an international conference in Jordan; training and coaching activities, integration into the European networks and enhancing Jordan participation in FP7.

JEWEL News

- OpenChina-ICT Final Conference - Strengthening Cooperation in ICT Research between Europe and China
- Promote your conference exhibit

ICT IN HORIZON2020
 CURRENT TREND IN NANO TECHNOLOGY
 28/10/2013 @ JUST - JORDAN

SUBSCRIBE TO JEWEL
 JEWEL PROJECT GIVES YOU THE OPPORTUNITY TO IMPROVE YOUR RESEARCH ACTIVITIES OF THEIR HIGHEST QUALITY IN "INFORMATION AND COMMUNICATION TECHNOLOGIES"(ICT).
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Announcements

IEEE - Jordan Section Elections 2014/2015
 Apply for Scholarships in High Graduations.
 Register to Horizon 2020.
 JEWEL Looking for Keynote Speakers in "Social Challenges, need in MENA Region".

Last EU News

- Lunchtime conference: All about changes in EU grants and procurement contracts

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10. Use and dissemination of foreground

10.1. Section A - public

10.2. section B – patents, Awards, Honors

1. Most downloaded paper award, paper, Journal of Circuits and Systems, Sept. 2013.
2. 4th Place in the contest of “Static Timing Analysis,” PATMOS 2011.

10.3. List of all scientific (peer reviewed) publications related to the foreground of the project - Temp

1. Atheer Shaqah, Abdoul Rjoub, Mohammed Khasawneh, Carbon Nanotube Field Effect Transistor Models, Accepted for publishing in 2013 IEEE Jordan Conference on Applied Electrical Engineering and Computing Technologies, Amman, Jordan.
2. Nedal R. Al-Taradeh, Mamoun F. Al-Mistarihi, Abdoul Rjoub, “Accurate Subthreshold Leakage Model for Nanoscale MOSFET Transistor,” Accepted for publishing in IEEE International Conference on Circuits and Systems, Abu-Dabhi, United Arab Emirates.
3. Mamoun F. Al-Mistarihi, Nedal R. Al-Taradeh, and Abdoul Rjoub, “Gate Leakage Current Accurate Models for Nanoscale MOSFET Transistors, Under Revision, IEEE International Conference on Circuits and Systems, Abu-Dabhi, United Arab Emirates.
4. Abdoul Rjoub, Nedal Al-Taradeh, “Accurate Modeling for CMOS Inverter Overshooting time in Nanoscale Paradigm,” Accepted for publishing in the 25th International Conference on Microelectronics (ICM 2013): Micro/Nanoelectronics, Lebanon.
5. Abdoul Rjoub, Mamoun F. Al-Mistarihi, Nedal Rasmi Al-Taradeh, “Drain Induced Barrier Lowering (DIBL) Accurate Model for Nanoscale Si-MOSFET Transistor,” Accepted for publishing in the 25th International Conference on Microelectronics (ICM 2013): Micro/Nanoelectronics, Lebanon.
6. Abdoul Rjoub, Mamoun Mistarihi, Nedal Taradeh, “Bascattering Coefficient Accurate Model for Nanoscale Si-MOSFET Transistor,” IEEE Faible Tension Faible Consommation, June 20-21, 2013, Paris-France.
7. Abdoul Rjoub, Mamoun Al-Mistarihi, Nedal Al-Taradeh, “Transport Mobility and Injection Velocity Model for Nanoscale MOSFET Transistor,” The 8th Jordanian International Electrical and Electronics Engineering Conference, Amman-Jordan, 16 – 18 April, 2013.
8. Abdoul Rjoub, Mamoun Al-Mistarihi, Nedal Al-Taradeh, “Recent Transport Models in Nanoscale MOSFET Transistor – Study and Analysis,” The 8th Jordanian International Electrical and Electronics Engineering Conference, Amman-Jordan, 16 – 18 April, 2013.
9. Abdoul Rjoub*i, Hassan Almanasrah, “Low Leakage Power Sequential Circuits Using Multi-V_{th} at Nano-Scale Transistor,” Journal of Energy and Power Engineering 7 (2013).
10. Abdoul Rjoub, Hassan Manasrah, Mutasem Ajlouni, “A Fast Input Vector Control Approach for Sub-threshold Leakage Power Reduction,” International Conference of MELECON, 2012, Tunisia. Tunis.
11. Abdoul Rjoub, Almanasrah Hassan, Shihab Kattab, "An efficient DELOTS Algorithm for low leakage current at nano-scale transistor", IEEE Jordan Conference on Applied Electrical Engineering and Computing Technologies (AEECT), December, 6-8 2011
12. Abdoul Rjoub, Nedal Al-Taradeh, Mamoun F. Al-Mistarihi, “ Modeling in Nanoscale CMOS technology: Challenges and Design Requirements,” *Proceedings of the “International Conference on Solar energy for MENA region (INCOSOL)”*. Amman, Jordan, 22-23October 2012

13. P. Chaourani, I. Pappas, S. Nikolaidis, A. Rjoub, "Pass transistor operation modeling for nanoscale technologies," International Workshop on Power and Timing Modeling, Optimization and Simulation (PATMOS), pp. 53-62, Madrid, Spain, Sept. 2011.
14. P. Chaourani, I. Pappas, S. Nikolaidis, A. Rjoub, "Pass transistor operation for rising ramps in both terminal inputs," 26th Conference on Design of Circuits and Integrated Systems (DCIS), Portugal, Nov. 2011
15. Calliope-Louisa Sotiropoulou, Christos Gentsos, Spiridon Nikolaidis and Abdoul Rjoub, "FPGA-based Canny Edge Detection for Real-Time Applications," 26th Conference on Design of Circuits and Integrated Systems (DCIS), Albufeira, Portugal, Nov. 2011
16. D Tzagkas, C. Varnavidou, I. Pappas, L. Voudouris, A. Rjoub, S. Nikolaidis, "Pass transistor driving RC loads in nanoscale technologies," IEEE Mediterranean Electrotechnical Conference (MELECON), Tunisia, March 26-28, 2012.
17. L. Voudouris, A. Rjoub, S. Nikolaidis, "High speed FPGA implementation of Hough transform for real-time applications", IEEE Symposium on Design and Diagnostics of Electronic Circuits and Systems (DDECS), Tallinn, Esthonia, April 18-20, 2012.
18. Pappas, L. Voudouris, S. Nikolaidis, A. Rjoub, "A new current - programmed pixel design for AMOLED displays implemented with organic thin film transistors," International Conference on Microelectronics, MIEL 2012 Conference, Nis, Serbia, May 13-16, 2012.
19. Dimitrios Tzagkas, Spyridon Nikolaidis, Abdoul Rjoub "Estimating the Starting Point of Conduction in Nanoscale CMOS Gates," International Conference on Electronics, Circuits and Systems (ICECS), Seville, Spain, 9-12 Dec. 2012.
20. Panagiotis Chaourani, Spyridon Nikolaidis, Abdoul Rjoub, "Subthreshold influence on Pass Transistor Operation Modeling for Nano-Scale Technologies," The 8th Jordanian International Electrical and Electronics Engineering Conference, Amman-Jordan, 16 - 18 April, 2013.

10.4. List of all dissemination activities – Template A2

No.	Type of Activities	Main Leader	Event	Date/Period	Place	Type
1	Presentation and dispatching of information	JUST	PATMOS	Sept. 2011	Madrid, Spain	Large, public Science
2	Poster, Roll up, Interview	JUST	ICT, Info-Day	March 2012	Budapest	comm
3	Poster, Roll up, Interview	JUST, AUTH	ICT, Info-Day	April 2013	Warsaw	other
4	Booth, Folder, Face2Face		ESSCIRC	Sept.2011	Finland	project
5	National TV	JUST	Summer School	June 2012	Jordan	Interview
6	Networking and Training in Tunisa	JUST, AUTH, inno	MELECON	March 2012	Tunisia	
7	Networking and Training	JUST	Training Program	October 2011	Amman	Folder, Panel Session
8	Poster at the Conference	JUST	Conference	December 2012	Seville	Folder, face2face meetings
9	Presentation	JUST	Info-Day	March 2012	Brussels	Face2Face, Presentation
10	Round Table	Jordan	Workshop	October 2012	JUST	
11	Presentation	Jordan	Workshop	April 2013	Amman	Project
12	Networking	Lebanon	Info-day	April 2013	Beirut	
13	National TV	Jordan	Industry-Academia	June 2012	Amman	Interview

³ A drop down list allows choosing the dissemination activity: publications, conferences, workshops, web, press releases, flyers, article briefings, presentations, exhibitions, thesis, interviews, films, TV clips, posters, Other.

⁴ A drop down list allows choosing the type of public: Scientific Community (higher education, Research), Industry, Civil Society, Poli possible).

10.5. List of Deliverables and their Status: Submitted or Not Submitted:

Deliverable Number	Deliverable Title	WP number	Lead beneficiary number	Est. Indicative person/months	Nature	Dissemination level	Delivery date	Status
D1.1	Management & Quality Plan	1	1	4.00	R	RE	2	Submitted
D2.1	Report on kick-off meeting and methodology refining	2	1	.40	R	RE	3	
D3.1	Joint research plan and Twinning plan	3	1	2.00	R	PU	4	
D4.1	Strategic visibility raising and dissemination plan	4	3	1.00	R	PU	4	
D4.2	JUST ICT's website upgraded	4	1	1.00	O	PU	5	
D2.2	Report on SWOT analysis of JUST	2	3	2.00	R	PU	6	
D2.5	Report on selection of Scientific Reference Team	2	1	1.00	R	PU	7	
D2.3	Socio-economic analysis report	2	3	3.80	R	PU	9	
D3.2	Twinning agreement between JUST and AUTH	3	1	5.00	R	PU	10	
D2.4	Strategic Development Plan of JUST (ICT field) and peer review	2	1	4.00	R	PU	12	
D5.1	Report on joint training : concept, Modules	5	1	1.00	R	PU	12	
D5.2	Report on the Summer School	5	1	1.00	R	PU	26	
D4.7	Report on Organization of large-scale conference on ICT thematic in Jordan	4	1	.50	R	PU	30	
D4.8	Report on JUST FP7 training, training events (incl. FP7) and brokerage sessions	4	1	.50	R	PU	30	
D4.9	Report on JUST participation in the international events in EU	4	1	.50	R	PU	34	
D4.6	Report on Organization of relevant networking & information presentations and sessions	4	1	.50	R	PU	35	
D3.3	Report on twinning activities implementation	3	1	1.00	R	PU	36	
D3.4	Cooperation Sustainability Plan	3	1	2.00	R	PU	36	
D3.5	Peer reviews Reports	3	1	2.00	R	PU	36	
D4.3	Project Publications	4	1	2.00	R	PU	36	
D4.4	Integration in European Technology Platforms, FP7 consortia and international teams/networks report	4	1	2.00	R	PU	36	
D4.5	Expansion of activities on Mediterranean level 'report	4	1	1.50	R	PU	36	

N° 266507	JEWEL	Reporting Period M19- M36
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A General Information (Completed Automatically when Grant Agreement Number is entered)

Grant Agreement Number:	
Title of Project:	Jordan Europe Wide Enhanced research Links in ICT
Name and Title of Coordinator	Abdoul Rjoub/Associate Prof.

Ethics

<p>1. Did your project undergo an Ethics Review (and/or Screening)? If Yes: have you described the progress of compliance with the relevant Ethics No Review/Screening Requirements in the frame of the periodic/final project reports?</p> <p>Special Reminder: the progress of compliance with the Ethics Review/Screening Requirements should be described in the Period/Final Project Reports under the Section 3.2.2 'Work Progress and Achievements'</p>	
<p>2. Please indicate whether your project involved any of the following issues (tick box) :</p>	NO
RESEARCH ON HUMANS	
<ul style="list-style-type: none"> • Did the project involve children? • Did the project involve patients? • Did the project involve persons not able to give consent? • Did the project involve adult healthy volunteers? • Did the project involve Human genetic material? • Did the project involve Human biological samples? • Did the project involve Human data collection? 	
RESEARCH ON HUMAN EMBRYO/FOETUS	
<ul style="list-style-type: none"> • Did the project involve Human Embryos? • Did the project involve Human Foetal Tissue / Cells? • Did the project involve Human Embryonic Stem Cells (hESCs)? • Did the project on human Embryonic Stem Cells involve cells in culture? • Did the project on human Embryonic Stem Cells involve the derivation of cells from Embryos? 	
PRIVACY	
<ul style="list-style-type: none"> • Did the project involve processing of genetic information or personal data (eg. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)? • Did the project involve tracking the location or observation of people? 	
RESEARCH ON ANIMALS	
<ul style="list-style-type: none"> • Did the project involve research on animals? • Were those animals transgenic small laboratory animals? • Were those animals transgenic farm animals? • Were those animals cloned farm animals? • Were those animals non-human primates? 	
RESEARCH INVOLVING DEVELOPING COUNTRIES	
<ul style="list-style-type: none"> • Did the project involve the use of local resources (genetic, animal, plant etc)? • Was the project of benefit to local community (capacity building, access to healthcare, education etc)? 	
DUAL USE	
<ul style="list-style-type: none"> • Research having direct military use • Research having the potential for terrorist abuse 	

C Workforce Statistics		
3. Workforce statistics for the project: Please indicate in the table below the number of people who worked on the project (on a headcount basis).		
Type of Position	Number of Women	Number of Men
Coordinator	2	2
Work package leaders	2	6
Experienced researchers (i.e. PhD holders)	8	43
Master Students	18	39
Ph. D. Students	1	3
Others		
Travels within MENA Region	10	32
Travels in EU	10	32
4. How many additional researchers (in companies and universities) were recruited 2 specifically for this project? Of which, indicate the number of men: 35		

Milestone #	Milestone name	WP #	Lead beneficiary #	Delivery date from Annex I	Comments
MS1	Project 1st internal review and 1st report submission	WP1	1	18	
MS2	Project 2nd internal review and 2 nd report submission	WP1	1	36	
MS3	Completion of SWOT analysis of JUST	WP2	3	7	
MS4	Completion of Socio-economic analysis	WP2	3	12	
MS5	Achieving a Consensus on Strategic Development plan of JUST and completion final version of the pla	WP2	1	16	
MS6	Scientific Reference Team selection	WP2	1	6	
MS7	Signature of formal twinning agreement	WP3	1	9	
MS8	Elaboration of Cooperation Sustainability Plan	WP3	1	30	
MS9	Preparation of Strategic visibility, ERA integration and dissemination plan	WP4	3	3	
MS10	Intermediate satisfactory results on Integration in European Technology Platforms, FP7 consortia and	WP4	1	24	
MS11	Organization of Summer School Jordan	WP5	1	25	