WP5: IMPLEMENTATION OF TECHNOLOGY TRANSFER UNITS AS RESEARCH-TO-INDUSTRY INTERFACE

Optimizing technology transfer (TT) processes requires adequate planning, reporting and documentation, and sharing the data among the stakeholders through clear channels of effective communication. However, the technology transfer processes in developing and some developed countries, share the following concerns:

- The culture and the way the stakeholders deal with TT issues.
- Poor management of facilities and personnel.
- TT decisions are firm-level decisions.
- Inconsistent documentation between private and governmental sectors.
- Poor communication, written and verbal, most firms consider TT as secrecy along with competition among stakeholders.
- The absence of clear programs and plans to develop the personnel involved in the TT.

Thus, collecting information to define facilities and skills related to TT in each company or laboratory is not an easy task and the information provided by the stakeholders is subject to questioning. One of the most common methods used to collect such information is by conduction a comprehensive survey, that can accommodate for most/all type of industries involved. In addition, it should be in a format that does not leave any doubts in the stakeholders mind that their privacy is invaded.

For the Netkite project, JUST was the leader for WP5:

"IMPLEMENTATION OF TECHNOLOGY TRANSFER UNITS AS RESEARCH-TO-INDUSTRY INTERFACE"

Which includes the following tasks for JUST as a leader:

5.1 Definition of facilities, equipment and skills needed for optimizing technology transfer process

5.2 Commissioning procedures for upgrading equipment of research facilities identified in MPC countries.

5.3 Establishment of protocols for access to and full exploitation of research facilities

This report presents the methodology followed and main results for each task.

Task 5.1: Definition of facilities, equipment and skills needed for optimizing technology transfer process

Technology, for start-ups and entrepreneur, can be viewed as a "process" that has a "soft" as well as a "hard" component. The soft component relates to the human capability generation process linked to the absorbtion and management of the technology. The hard components focus on the essential technological processes and equipment utilized in the manufacturing process. Both components are of equal significance. They could be either transferred or generated domestically. The hard component is directly related to the availability of a research facility. A research facility may provide spectrum services for developing the technology.

In order to identify and qualify potential research labs that might be involved in the Netkite project to provide the technical support for the young researchers in their innovative ideas, a survey (Appendix A1) was prepared and distributed to most of the research labs in the partners countries (Egypt, Tunisia, Palestine, and Jordan). The survey focuses on technical resources available within the research labs, management and quality systems, and activities of the research labs related to securing external funds, collaboration with academia and industry, innovation, etc. Appendices A2-A5 list the research labs that were involved in the survey. A common problem faced all countries: lack of collaboration from the research labs. Most of these labs did not

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respond to the survey from the first or even second time. The response was only after personal communication and visit to the management of these labs.

Although we have developed comprehensive criteria that enable us to compare and thus qualify specific research labs for each sector, the number of the surveys collected was not enough to make this comparison, except for Jordan where in some sectors five surveys were collected. However, these research labs, which are related to Biotechnology sector, are very specialized and some of the facilities available in each lab are unique and can serve some important applications related to biotechnology. These labs include labs related to nanotechnology, veterinary applications, and antibodies. On the other hand, some of the research labs were reluctant to complete the survey unless we confirmed to them that the information provided will be used only by JUST and if qualified, a very detailed agreement has to be signed. We consider imposing such conditions is one reason to disqualify such research labs.

Based on these factors, the qualified research labs for each country are listed in Table 1.

Table 1. Qualified Research Labs for MPC Countries

	Biotechnology	Renewable Energy	Cultural Heritage	Agro-Food	Public Services
Egypt		Helwan University			1. BEDAYA Center for Entrepreneurship and SMEs Development 2. National Research Center
Tunisia	1. INAT 2. Institut Pasteur			INAT	
Palestine	Physiotherapy educational and research lab		Cultural heritage educational and research lab	Agro– food research lab	One Stop Shop
Jordan	1. MONOJO 2. JOVAC 3. Nanocenter-JUST	Energy Center-JUST	The Jordanian Design Center-Yarmouk University	The National Center for Agricultural Research and Extension (NCARE)	The Queen Rania Center for Entrepreneurship (QRCE)

Task 5.2: Commissioning procedures for upgrading equipment of research facilities identified in MPC countries.

Equipment at the research facility has to be upgraded to ensure its effectiveness and safety for the users. A commissioning procedure needs to be placed for upgrading of the equipment in the facility by testing, checking, inspecting, maintaining, and replacing equipment. In this report, we are proposing a procedure to upgrade and maintain equipment at the research facility.

Equipment commissioning can be defined as testing equipment which is installed, or is complete or near completion to verify if it functions according to its design objectives or specifications. Several steps need to be done to achieve proper and effective running of the equipment:

Step 1: Equipment testing at installation

All equipment after assembly should be tested to check that its operation is effective. This action is needed to evaluate the equipment to monitor the performance. All testing records had to be signed by the responsible personnel from the supplier. All records must be saved for reference purposes. Deviation from the readings should be reported.

Step 2: Equipment maintenance

Maintenance of equipment is carried out to prevent problems arising and to ensure the equipment is working effectively. There are two types of maintenance: 1) Preventive maintenance (Planned maintenance) by doing periodic check and repairs; 2) Corrective maintenance by carrying out repairs on equipment after sudden breakage or failure.

Planned maintenance can be part of planned program to make the equipment more reliable. The planned maintenance is intended to regulate the organization, scheduling, conducting, recording and analysis of maintenance tasks.

The maintenance must be successfully done to achieve the following objectives:

1) Maintaining the condition, functionality and operability of the equipment.

2) Reducing failure incidence of equipment.

3) Increasing equipment reliability and availability.

The planned maintenance consists of regularly scheduled inspections, parts replacement, adjustments, and alignments and is scheduled at pre-determined intervals based on time or operating hours. This type of maintenance can reduce unexpected failures but can be expensive as it is often carried out in regard of equipment condition. This can be done by external contractors, who may be the manufacturer himself, or maintenance companies trained and licensed by the manufacturer to conduct the required tasks. The planned maintenance has to have a procedure that allows workers to report damaged or faulty equipment.

Step 3: Training and competence of people using equipment

All people using equipment at research facility must be adequately trained to ensure health and safety in its use, supervision or management. Such competence can be developed by training along with knowledge, experience and skill of the users.

Step 4: Equipment replacement

When a piece of equipment reaches the end of its useful life or fails in service beyond economical repairs, it is then replaced with a new or reconditioned unit. Equipment may be replaced on failure or greatly diminished performance or reliability.

5.2.1 The state of the art of the labs which have used the funds available within the Netkite project

5.2.1.1 Research Labs at different MPCs:

Netkite MPCs partners have qualified different research centers as beneficiaries of the upgrading process implemented through the Netkite Project:

1. The Innovation Center at JUST

2. The Animal House at JUST

The Innovation Center (IC) at JUST has been equipped with the needed equipment and tools. These tools (Annex A6) are essential for the IC to function properly so that it can provide the needed services. These tools have been used in the preparation for the production of the prototype of one of the Netkite Project finalists; the Drug Dispenser Project.

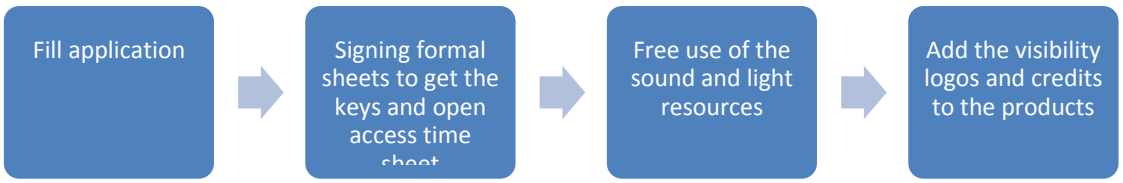
The Animal House at JUST has been qualified by providing it with the needed templates and protocols to do research on animals. The facilities at the Animal House has been used to provide a proof of concept for one of the Netkite Project finalists; SCANULA; where the prototype was tested on dogs and horses.

5.2.1.2 MONOJO and ASRF

Both MONOJO and the Applied Scientific Research Fund (ASRF) were qualified by sending their staff on training in our EU partners' institutions. The trained staff contributed to the training programs organized for JO entrepreneurs. The staff also helped in filming the proof of concept for the SCANULLA project.

5.2.1.3. Sound & Light lab (CDCEI)

The mutual research interests between the multimedia and graphics lab at the Community Development and Continuing Education Institute (CDCEI) and PAUC's newly established business incubator, made the decision clear. PAUC and within the NETKITE project has qualified the Sound & Light lab with new software packages for video editing and montage. As a result, CDCEI labs will be open for a free access to all the community entrepreneurs, especially for those who were NETKITers.



Snapshot of the protocol

5.2.1.4. One Stop Shop lab

- The One Stop Shop (OSS) lab at the ministry of labor was qualified by providing them with some IT needed infrastructure (e.g., laptops, printers, fax…etc.) so that the OSS can be a free living lab for young entrepreneurs to do their projects in line with community problems and user experience. A MoU was signed between the two parties for the mutual work.

5.2.1.5. Creativity and excellence business incubator

The Creativity and excellence business incubator at PAUC was qualified to be the hub for all the NETKITERs and other entrepreneurs to further develop their prototypes, products and services. The incubator was provided with furniture, computers, and network equipment within the NETKITE project.

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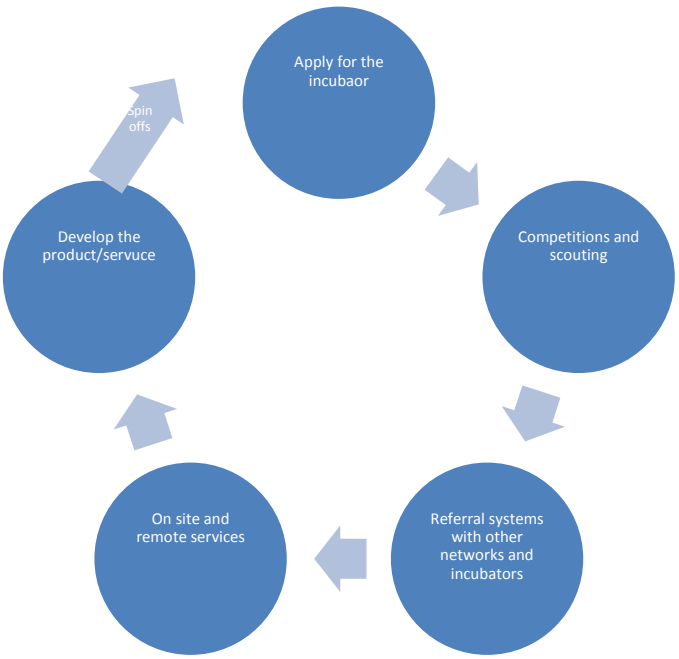

Work flow and protocol

5.2.1.6. BEDAYA for Entrepreneurs and SMEs Development in Egypt

This is a program initiated between the Ministry of Investment and the Academy of Scientific Research and Technology (Egypt) in order to support Entrepreneurs and Start-ups in Egypt. In the scope of NETKITE, ASRT initiated a new Incubation Program “Intilak Program” to support Entrepreneurs and Ideas Carriers where the successful Ideas will be incubated in BEDAYA Center. ASRT will provide this qualified Center with some IT Equipment (High quality PCs and Laptops) within NETKITE Program to be used for free to support the incubated persons (Entrepreneurs) to perform their work/projects.

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Task: 5.3 Establishment of protocols for access to and full exploitation of research facilities

A protocol to access or exploitation a research facility can be proposed in the following steps as shown in Figure (1):

Step 1: User has got a great idea for Startup and requires using a research facility or instrument.

Step 2: User requires identifying the appropriate research facility for his startup idea.

Step 3: Access to research facility generally requires submitting a short application form (1-2 pages). An example of such an application is shown (Appendix A6). In the application form, the user needs to describe his Startup idea and its significance, requested services or instruments, and the requested time. The user can discuss his idea with the experienced individual in the research facility.

Step 4: The submitted application is reviewed by the research facility to decide whether they can accomplish the requested services. Each research facility has its own procedure for evaluation. Accessing to any research facility cannot be guaranteed and is dependent upon factors:

- Sufficient spare capacity.
- Availability of staff to assist with usage.
- Compatibility of proposed idea with the technical setup of the instrument.
- Specialized training.
- Some facilities require a completion of all appropriate safety and compliance training to reduce the exposure to potentially hazardous materials, such as biological and chemical agents, toxins, and radioisotopes, and potentially hazardous equipment.

The research facility should categorize the services they offer to the users. Some of the research facility offers the following:

- Full service: Full analysis done by the staff of the research facility.
- Assistance: Assisting the user with prior training required.
- Not assistance: Minimum assistant provided with prior training required.

Step 5: After the review, the user is then informed of the approval for the requested services or allocated date and time to use the requested instruments. The cost for the requested service or the use of the instrument is also determined.

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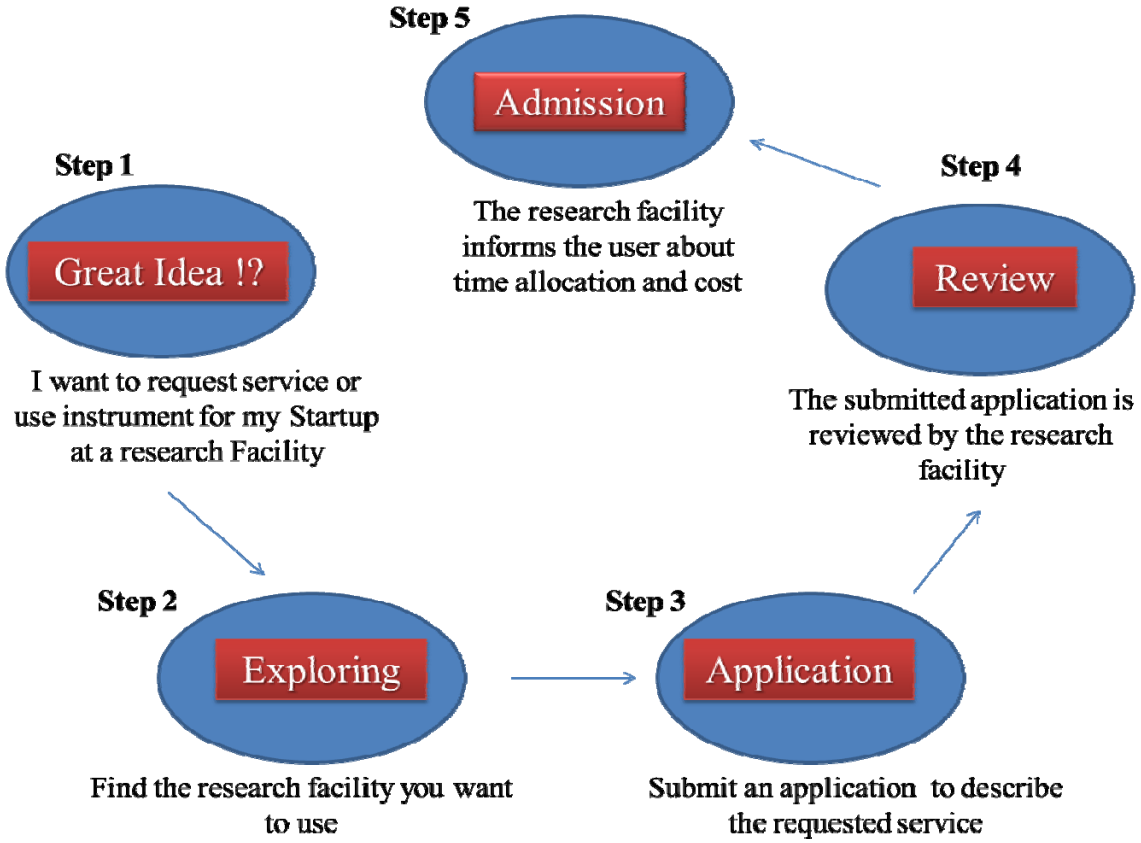

Figure 1: Proposed protocol for obtaining access to a research facility.

This access protocol requires awareness of application submission process and advance planning. The research facilities require identifying the date for application and the deadline in their website. The confidentiality of the submitted idea by the research facility is very important aspect of this protocol.

Empowerment of research facilities as service centers for SMEs

To empower a research facility as service center for SMEs, the following aspects should be considered:

1) Research facilities should provide equipment, tools and services for all users.
2) Research facilities should be integrated into the market system and proactive in partnering with private sector.
3) The policies should support the research facility in their effort to nurture SMEs more effectively.
4) Creating the incentives and organizational capacity within research facility to support the entrepreneurial efforts.
5) Research facilities should leverage their limited resources to attract more resources from private and public sources and pool them to help viable SMEs grow to be established and successful business.
6) Establish small business innovation research program and small business technology transfer program and to be funded from the government and research funding agencies to support early stage small business.
7) Establish a partnership with public and private sectors.

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8) SMEs should be given special consideration accessing government; public and private sectors support as loan guarantee program; and provide additional resources to strengthen proof of concept centers at research facility.

9) Establish incubators, not necessarily within industrial parks but in the geographical centers of capital investment networks.

10) Industry associations and chambers of commerce must effectively pool resources to sponsor partnership between research facilities and local incubators for the explicit purpose of supporting SMEs.

11) Research facilities should have market incentives to remain in their place of origin. This invites for a tripartite conversations between research facilities, industry, and government to further technological developments.

12) Research facilities should afford license to patents that are the key in developing SMEs marketable products.

13) Research facilities should be capable to convert intellectual value into economic value

14) Research facilities should have good annual operating revenues to be as a service center for SMEs.

15) The director for the specific research facility or department in the research facility must designate appropriate funds to pay for annual operating losses and unallowable cost.

16) Research facilities should provide users information such as access to finance, human resource, marketing and intellectual property right.

17) Research facilities should provide financial management, funding opportunities and consultation for the research process and accreditation.

18) Research labs units have to demonstrate compliance with institute requirement.

19) Research facilities should be able to provide a broad range of services including those typically associated with business incubators in addition to the traditional legal counsel in patent application.

20) Research facilities should provide legal assistance in building and managing the company IP portfolios including license from owners of prior patented art.

21) Research facilities have to advice in the legal consultation of the firm, particularly regarding the terms of use of research facilities and the terms of employment for inventors.

22) Research facilities should be able to involve start-ups into their networks of donors, private investors, and institutional investor.

23) Research facilities should have incubation services with a good number of offices and a good number of person's offices.

24) Research facilities should provide logistical services, creating the right kind of user's friendly environment to enable startup companies to accelerate their development.

25) Research facilities should provide strategic support services that include:

- Management team support, development, mentoring, and guidance.
- Strategy planning and market positioning.
- Business planning and feasibility assessment.
- Organizational structure development.

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26) Research facilities should provide patenting services, which cover the following services: Search and evaluation; local and global legal representation; patent drafting; illustration; translation services.

5.4 MoUs with Research Labs:

EU and MPC have signed many MoUs with research labs and institutions. These MoUs aimed at fostering collaboration within the Netkite partners as well as the participated Netkite projects. Below are some examples of the research labs and intuitions that signed MoUs with Netkite partners.

1. Deanship of Research-JUST
2. Animal House and Faculty of Veterinary Medicine-JUST
3. Nanotechnology Center-JUST
4. Pharmaceutical Research Center
5. MONOJO
6. Applied Scientific Research Fund (ASRF)
7. The Creativity and excellence business incubator at PAUC
8. The One Stop Shop (OSS) lab at the ministry of labor-Palestine
9. Community Development and Continuing Education Institute (CDCEI)-Palestine
10. Mon Amour Film-Italy
11. Layer Electronics s.r.l -Italy
12. University of Palermo-Italy
13. BEDAYA Center for Entrepreneurs and SMEs Development – Egypt
14. Misr El Keir Foundation - Egypt

D5.5 - A short description of technology transfer frameworks activated

JUST:

The Innovation Center at JUST was established with the following aims:

1. Developing and strengthening JUST reputation for developing creative entrepreneurial thinking and activity
2. Promoting continuous learning as a way of life
3. Developing a one-stop entrepreneurial resource hub for students at all Jordanian Universities and Increase student business formations based on non-traditional technology from faculties such as Fine Arts, Humanities, Social Sciences, Business, and Education.

To achieve these objectives, the center started to establish technology incubators that help new and startup companies to develop by providing services such as management training or office space. Business incubators differ from research and technology in their dedication to star-up and early-stage companies. Research and technology parks, on the other hand, tend to be large-scale projects that house everything from corporate, university labs to very small companies.

The objectives of the incubators at IC in JUST are:

1. Benefit the Jordanian industry through product design and development.

2. Train the highly needed product/system designers.

3. Spin-of start-up companies, hence act as an incubator.

4. Create a positive atmosphere to exchange idea and offer assistance between academia and industry.

5. Provide training workshops on entrepreneurship, marketing, finance, and management.

6. Provide business counseling, feasibility studies, and business plan writing assistance.

Figure 2. shows an examples of the incubators at the IC-JUST

Figure 2: Incubators of the Innovation Center at JUST

The figures below represent some of the projects that are incubated in the Innovation Center at JUST.

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Solar Water Desalination by Evaporative Cooling

Design and Building of an Unmanned Autonomous submarine

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Startup System Tunisia

Laboratory Ambassador Strategy

SUST organized three webinars for scientific research in Tunisia where researchers had to explain their researches in 3 minutes.

SUST collected data bases of researchers in Tunisia and collected more than 5000 researchers with their emails and location. Even with their topic of researches; SUST read 3000 topics and selected from these 3000 the best 400 that would be invited in future webinars. In the 400 projects SUST selected, SUST identified 20 categories including Biotechnology, metal industry, agriculture, audio analysis, video analysis, Bio sensors, new electronic sensors, innovative textile using vegetal, medical researches, augmented reality, solar energy, submarine technologies, medicinal plants, anti-pollution plants, phosphate analysis, Civil works, Agues, RFID, hydroponic technologies and even business researches about individual investors, technology transfer and familial companies.

SUST used Laboratory budget of Netkite to empower laboratories and the research field in Tunisia by proposed a reality augmented application in the City of Science of Tunis. SUST proposed a budget of Equipment to laboratory of INSAT that were working on a technology that help transfer energy from a phone to another. The same laboratory was also working on detection of data from motors. (Collecting information without opening the electrical motor) SUST gave a budget of equipment to a project working on smart agriculture. (Sensors that tell you when a tree needs water). SUST gave a budget of Equipment to a laboratory of electronics that works on agricultural robots and on black box for cars (the same black box for planes).

In parallel, SUST worked on a contact point for every laboratory. SUST called them Laboratory ambassadors. Since SUST did 12 Netkite events dispatched in the country, SUST shared that vision everywhere SUST went. All those strategic moves will help the Netkite consortium in future projects. The Main Stakeholders for the Laboratory Ambassadors are Netlinks and Junior Enterprise. They are willing to help us to reach their laboratories because SUST sponsored them in events and co-organized events with them. SUST also equipped their connected research facilities.

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1) Laboratory of Borj Cedreia

This expense helps participant Rabeb Fersi to produce a prototype with the Laboratory of Borj Cedreia.

• High scientific quality related to Pilot Tunisian Themes
• High nr. of patents issued or pending
• High international networking

Related to Agro-Food with is Tunisian Pilot Theme chosen by Netkite
Related to partnerships with Stakeholder Borj Cedreia
Increase the Minimum number of female entrepreneurs and researchers
Borj Cedreia was first partner in Research and laboratory part in the time of Nejib Bejar training

Description	Quantity	PU	PT
Fourniture d'une caméra, loupe de terrain mode IPM SCOPE CAM2 agrandissement de 10 à40x avec logiciel.	1	**1270.76**	**1270.76**
Total			

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2) Collaboration between Esprit & Anouar Guettiti

Anouar Guettiti will provide an incomplete prototype to the electronic Laboratory of Esprit and Esprit will add the wireless activation part. In exchange, SUST will provide the laboratory of Esprit with Equipment that serve the laboratory objectives.

Description	Quantity	PU	PT
Carte Arduino UNO R3	1	68	
Carte Arduino Nano	5	150	
Convertisseur Buck abaisseur/élévateur	2	23	
Convertisseur Buck 7-20V > 5V 3A (sortie USB)	4	34	
Electrovanne 220V	2	36	
Capteur d'huidité du sol	6	75	
Module Radiofréquence NRF24L01+ (antenne)	4	120	
Module Radiofréquence NRF24L01+	2	22	
Module Wifi ESP8266	6	66	
Module Relais 5V ~ 220V	10	65	
Camera logitech C170	1	45	
Convertisseur USB-TTL	1	10	
Servo moteur (faible puissance)	1	20	
Panneau solaire 5V 50mA	1	20	
Total	**754 DT**		

3) Mokdad Marine Worms Startup

Mokdad is affiliated with the laboratory of the University of Science of Bizerte. He is a Netkite participant. He will add a scientific part to his project in exchange of our collaboration. Agro food research about the interaction of worms with the sand.

Indirectly Related Pilot Theme Suggested by Stefania Lab equipment that help Prototyping for business community7th place in the business plan competition related with geoblog (incentive to complete Geoblog) waiting for his equipment since 2014Very lucrative project including Research Upgrading research facilities Equipment purchased functional to the technology challenges outlined by the local business communities Equipment purchased functional to requests from stakeholders.

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4) INSAT

INSAT is a huge University with hundreds of associations and laboratories. One of the most impressive association is Netlinks which assemble more than 3000 participants in their annual meeting.

Netlinks encourages laboratory activities and especially open research activities.

They present new inventions every year and organize conferences on innovation and IT.

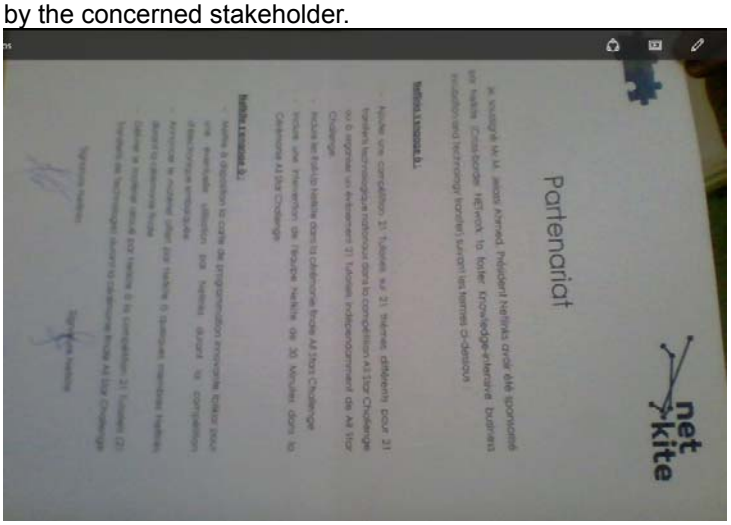
The Winners of the research webinar competition SUST did in Tunisia under the flag of Netkite were from INSAT. The researchers were working on how to transfer wireless energy from one phone to another. The second one was working on how to get data from a motor without opening it.

The president of the association Netlinks also needed 5 Arduino + captors to organize open research programs. SUST proposed that Green TIC would provide that laboratory with the equipment and he even thought to buy Netkite Arduino from Netkite winner instead of buying normal Arduino from USA...

- Lab equipment that help Prototyping for business community Related to partnerships with Stakeholder
- Related with Open Innovation Platform (Incentive to complete it)
- Related with international Technology transfer objective
- Related to research dissemination
- Related to request equipment request from stakeholders
- Related to Public private partnership

Netlinks are part of the strategy of **Laboratory Ambassadors** and also part of the strategy of **21 Tutorials as Technology Transfer**.

Here is the kind of partnerships we signed with them (written in French local language as required by the concerned stakeholder.



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- Related to Laboratory Ambassadors related with Open Innovation Platform (Incentive to complete it)
- Related with international Technology transfer objective
- Related to request equipment request from stakeholders Involved in Commissioning procedures Upgrading research facilities shared use to advanced equipment favored shared access to advanced equipment favored

Webinars

Some equipment are bought to laboratories with relation to Webinar best participants.

Most webinars attendees including researchers and entrepreneurs recognized the importance of building project ideas upon structured basics. However, some applicants displayed a low level of awareness of the Net kite project. Many of the applicants were unfamiliar with the program and the impact it holds nationally and internationally. Other participants indicated that the webinars were conveniently beneficial. The results of this study show that more effort is needed to increase support in the scientific research industry.

The recommendation for support of science and technology is fascinating. Those of us engaged in doing research in all the many fields of science and technology have a strong obligation to share our achievements, aspirations and even, occasionally, our failures with the our fellow citizens who support us, and continually to look for better ways to bring the true benefits of science and technology to all. The Net kite program targeted capable people. Such people may sometimes be dreamers, but they are also driven to find practical, technical means to investigate the objects of their fascination.

4 Webinars were required and 5 Webinars were organized. For more information, please see full webinar Report.

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ESIAT

Description	Quantity	PU	PT
Electrophorese Horizontal Mini plus 10	1	1019.000	
PEIGNE 16D 1.5MM KUROGEL MINI PLUS 10	1	121.000	
PH METRE DE PILLASSE	1	1200.00	
REFRACTOMETRE A MAIN 0-80%	1	200.000	
Total		**2540.000DT**	

- Related Pilot Theme Lab equipment that help Prototyping for business community Related to Agro-Food with is Tunisian Pilot Theme chosen by Netkite
- Related to partnerships with Stakeholder Borj Cedreia
- Related with geology (incentive to complete geology)
- Related with Open Innovation Platform (Incentive to complete it)
- Related to request equipment request from stakeholders Involved in Commissioning procedures Upgrading research facilities shared use to advanced equipment favored shared access to advanced equipment favoured equipement purshased functionnal to the technology challenges outlined by the local business communities equipement purshased functionnal to requests from stakholders

Collaboration between Taieb ATA – Green TIC and Ibtaker

Taieb ATA will provide INSAT with Equipment that will help them organize Open innovation events on electronics. Netlinks, the organizers of these open innovation events, have access to INSAT equipment but they need Arduinos to present during the competition. Taieb ATA had two choices, or he would use Netkite winner equipment or normal arduin equipment. 3 Advantages for normal equipment: it is available in Tunisia, it is produced in Italy, Netkite partner country, and it is cheaper. But Sysco lab equipment have 3 other advantages: they will help Iman, Netkite winner to open a franchise of his company in Tunisia, this would increase the number of successful technology transfers and new businesses generated. He accepted to sign an agreement either to sell his products and use this money to create a child company in Tunisia or to sell his product and have Taieb ATA as a sales representative of his products. The Netlinks event will help a lot to make Syscolab product famous because of the medialization part of the Netlinks open innovation event. The bad sides of it is that the delay for bringing the material from Palestine is long and may come after most important open innovation events realized by Netlinks in INSAT Laboratories. Green Tic had time thinking about the best possibilities for future collaboration between SUST , Netkite and Ibtaker. What is sure is that Laboratory of INSAT is very glad to have Equipment for the Open Innovation challenge, either it comes from Italian Arduino or if it comes from Palestinian company willing to open a branch in Tunisia. This potential collaboration is also an open door to a private public partnership between ministry of education and the future Tunisian Ibtaker, encouraged by Netkite ecosystem.

City Of Science of Tunisia

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Description	Quantity	PU	PT
Aloe Vera Barbadensis	1	5.000	5.000
Pointetia (étoile de Noel)	1	15.000	15.000
Philomousteva Sur Tuterv	1	85.000	85.000
Chlorophytum	1	3.500	3.500
Papyrus	1	25.000	25.000
Fougère de Boston	1	15.000	15.000
Ficus Benjamina	1	25.000	25.000
Dracanea Marginate	1	85.000	85.000
Sanse Veviauain	1	15.000	15.000
Pothos Suv Tuteuv	1	85.000	85.000
Ceveus	1	35.000	35.000
Ficus Elastica	1	25.000	25.000
Beaucavinea Nolina	1	190.000	190.000
Schefleva	1	25.000	25.000
Liéve Hedeva Helix	1	3.000	3.000
Total	**641.5 DT**		**641.5 DT**

At first SUST entered city of Science of Tunis from a Cultural Heritage research point of view. SUST tried to endow them with SM-R321 Gear VR S6 which is an Augmented Reality Equipment.

Augmented Reality with City of Science is one of the three projects proposed to the City Of Science. Astronomy and Plant 3 Dimensional Visit. Even more that Cultural Heritage Dissemination it is also about Scientific Dissemination. Unfortunately, it is on compatible with Samsung equipment. And Payment procedure with their sellers was not matching our accounting habits.

- Related Pilot Theme
- Related to Cultural Heritage which is Tunisian Pilot Theme chosen by Netkite
- Related to the objective of closing the gap between Research and industry
- Related with international Technology transfer objective
- Related to research dissemination
- Related to Public private partnership

Appendix A1: Research Labs Survey

Survey objectives:

1. Define facilities and list of equipment available.
2. Identify technical skills available and additional skills needed.
3. Clarify the existing collaboration and interdisciplinary aspects.
4. Find the quality management system used for optimizing technology transfer process.

This survey is part of a study that has been supported by NETKITE EU funded project. "**NETKITE** - Cross-border **NET**work to foster **K**nowledge-intensive business **I**ncubation and **TE**chnology transfer is an ENPI project with ARCA - Italy as a coordinator, and JUST-Jordan, CEEI-France, DIOGENES-Cyprus, ARST-Egypt, PAUC-Palestine, and SUST-Tunisia as partners".

You are free to complete this survey or not. If you have any concerns or questions about your rights as a participant on this survey or about the way the study is being conducted, please contact Prof. Fahmi Abu-Alrub:

Tel: +962 2 7201000 ext. 22360
Mobile: +962 7 962 75161
Fax: +962 2 7201073
e-mail: abualrub@just.edu.jo

Thank you for devoting your time and providing candid input.

Research Lab Name:

.....

Address:.....
.....

Contact Information:

Phone: (.....).....

Fax: (.....).....

E-mail: .....

Facilities

1. **List of Equipment available for testing***

Equipment	Function	Accuracy	Date of Purchase	Usage (h/week)

*Own verification testing and for testing services to outside researchers.

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Facilities

2. List of Equipment available for characterization*

Equipment	Function	Accuracy	Date of Purchase	Usage (h/week)

*Testing that provides more detailed information about performance of tested samples or equipment, could have results printout.

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Facilities

3. **List of Equipment available for manufacturing***

Equipment	Function	Date of Purchase	Usage (h/week)

*Any size of manufacturing products for own use and commercial purposes.

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Facilities

4. List of Equipment available for synthesis*

Equipment	Function	Date of Purchase	Usage (h/week)

*Equipment used for chemical and biological purposes.

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Quality Management System

Documentation of

- Quality Goals
- Quality Objectives
- Management Plan that describes how the laboratory conducts its day-to-day routine operations
- Performance Measures
- Quality Improvement Process

Management Plan

Kindly insert [√]

Does the lab have a plan that:	Yes	No
Describes the laboratory organization and line of authority		
Identifies a Laboratory Quality Assurance Manager and describes the Manager's responsibilities and authority		
Describes minimal requirements for facilities		
Describes minimal requirements for sampling and sample handling procedures		
Describes minimal requirements for equipment maintenance and quality checks laboratory supplies		
Describes minimal requirements for procedures for maintaining laboratory		
Identifies and describes the analytical procedures and reference appropriate standard operating procedures		
Describes how the accuracy of raw data is maintained, how raw data is converted to final data and how records are maintained and stored		
Identifies the laboratory's response and corrective actions to quality		

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Outputs

Research Outcomes	#
Number of Patents	
Number of Spin-off Companies	
Number of publications	
Number of Collaborated Projects	
Number of Publications	
Number of fellowships for exploitation of TT activity	
International networking (Specify)	

Human Resources

Personal	#
Number of PhD/MSc holders	
Number of BSc holders	
Number of technicians	
Number of supporting staff	
Others (Please Specify)	

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Interdisciplinary Aspects

Kindly insert [√]

Research Involvement	Level of Involvement		
	High	**Moderate**	**Low**
Biotechnology			
Energy			
Food			
ICT			
Chemical			
Nanotechnology			
Environmental			
Nuclear			
Medical			
Pharmaceuticals			
Engineering Fabrication			
Cultural Heritage			
Others (Please Specify)			

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Collaboration

Collaboration	Number of collaborations	Type and extent of collaboration
Industrial collaboration		
Collaboration with TTO		
Collaboration with research institutions		
Collaboration with universities		
Collaboration with NGOs		
Collaboration with local societies		
Others (Please Specify)		

On behalf of NETKITE (Jordanian team-PP2), thank you again for devoting your valuable time and providing candid input.

Project Manager, Fahmi Abu Al-rub

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Appendix A2: Research Labs in Jordan Invited to Participate in Netkite Project

No.	Name	Specialty	Location
1	Princess Haya Biotechnology Center	All fields of molecular biology and its applications in biotechnology.	Jordan University of Science and Technology (JUST) P. O. Box (3030) Irbid 22110, Jordan
2	Pharmaceutical Research Center	Support needs of pharmaceutical manufacturing companies and their wide expansion in drug discovery, development and evaluation.	Jordan University of Science and Technology P.O. Box 3030, Irbid 22110 Jordan
3	Energy Centre	Achieving sustainable development by contributing to the national, regional and global effort to conserve energy in terms of the exploitation of resources, diversification of their alternatives, application of conservation measures, and efficient use of energy.	Jordan University of Science and Technology (JUST) P. O. Box (3030) Irbid 22110, Jordan
4	Water , Energy , Environment Center	Producing scientific pre-reviewed researches dealing with key water subjects, enhancing the understanding and recognition and helping decision-makers to adopt policies concerning the water and environment resources.	Water ,Energy and Environment Center (WEEC), University of Jordan, Amman-Jordan
5	Hamdi Mango Center for Scientific Research	Multidisciplinary Research Center in the fields of Applied Science and Technology.	The University of Jordan Amman 11942 Jordan
6	The Jordanian Design Center	All art, graphic and design work.	Yurmok University, Irbid Jordan
7	Monojo Biotech	Applied research in biotechnology to serve the world with unique medical products that have a major impact on people's lives, worldwide environment, and economic well-being.	P.O.Box: 675 Al-Jubaiha 11941, Amman Jordan
8	Jordan Industrial Biological Center JOVAC	Manufacturing veterinary vaccines are implemented according to International Standards of OIE, FAO and WHO agencies to assure high quality vaccines and biological products.	Yajouz St 475 Amman, 11941 Jordan

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9	Department of Antiquities of Jordan (DoA)	Interpreted, conserved, preserved and presented in a sustainable manner in accordance with best practice international standards to provide a unique visitor experience and to achieve national tourism goals	Department of Antiquities, Jebel Amman Street, Sultan al-Atrash. PO. Box: 88
10	The Royal Scientific Society (RSS)	RSS provides expert testing services via over 25 specialised locally & internationally accredited laboratories and prides itself on offering both the public and private sectors a unique scientific resource and a wide range of project expertise.	Royal Scientific Society. P.O.Box 1438, Amman 11941, The Hashemite Kingdom of Jordan
11	Hikma Pharmaceuticals	Hikma develops, manufactures and markets a broad range of both branded and non-branded generic and in-licensed products	Hikma Pharmaceuticals P.O. Box 182400, Amman 11118, Jordan
12	Jordan River Foundation	The Jordan River Foundation (JRF) is a Jordanian non-profit, non-governmental organization (NGO) established in 1995 and Chaired by **Her Majesty Queen Rania Al Abdullah.** To engage Jordanians to realize their full economic potential and overcome social challenges.	P.O. Box 2943 Amman 11181 Jordan
13	The Queen Rania Center for Entrepreneurship (QRCE)	Non-Profit organization established in 2004 to help develop Technology Entrepreneurship in Jordan.	Queen Rania Center for Entrepreneurship (QRCE), Royal Scientific Society (RSS) P.O. Box 1438 Jubiha, Amman 11941 Jordan.

Appendix A3: Research Labs in Tunisia Invited to Participate in Netkite Project

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No.	Name	Specialty	Location
1	ESPRIT	Information Technology	Adresse : Z.I. Chotrana II - B.P. 160 - 2083 Pôle Technologique - El Ghazala
2	POLYTECHNIQUE International	Engineering	RUE DU LAC D'ANNECY Berge Du Lac, Tunis, Tunisie
3	Institut Pasteur	Biology and Biotechnology	13, place Pasteur, B.P. 74 1002 Tunis, Belvédère Tunisie
4	INAT	Biology, Biotechnology, Food industry, Marine industry	43, R Charles NICOLE 1082 C. MAHRAJÈNE TUNIS
5	ENSIT	Engineering	5 Avenue Taha Hussein, Tunis B.P 56 Bab Menara 1008 - TUNISIE
6	ENIT Laboratoire d'électronique	Electronic Engineering	Adresse : BP 37, LE BELVEDERE 1002 TUNIS
7	ENIT Laboratoire de Génie civil	Civil works engineering	Adresse : BP 37, LE BELVEDERE 1002 TUNIS
8	ENIT Laboratoire d'Automatismes	Automation engineering	Adresse : BP 37, LE BELVEDERE 1002 TUNIS
9	Phoenix Entrerpise	Electronic Engineering	Lotissement 48 , jardin d'el Menzah 1, Rez-de Chaussez 2092 Tunis

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Appendix A4: Research Labs in Palestine Invited to Participate in Netkite Project

No.	Name	Specialty	Location
1	Sound and light LAB	Media Technology and documentation	CDCE-I Bethlehem Palestine Tel:- 2751566-188
2	One Stop Shop	Public services	Office of local employment and training Palestine – Bethlehem 0097022748104
3	Agro – food research lab	Agro – food	Al Quds University Al Quds – Abu Dees 00972_ 2742276)
4	Cultural heritage educational and research lab	(Heritage cooking, cultural and heritage documentation	AL Kalimeh for culture and arts Palestine – Bethlehem (0097022757028)
5	Physiotherapy Educational and Research Lab	Medical	Palestine Al Ahliya University College Palestine – Bethlehem 00972_2751566
6	Al Nayzak Innovation Lab	Supportive Education & Scientific innovation	Jerusalem Office: Ali ben Abi Taleb St.-First Floor (+972 (0) 2 6285387)

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Appendix A5: Research Labs in Egypt invited to participate in NETKITE Project :

No.	Name	Specialty	Location
1	Helwan University – Lab at the Faculty of Engineering	Mechanical, Electreical Engineering and ICT	Address: Ain Helwan, Helwan Tel: +20 (2) 2556 9061 / 62
2	Assiut University	Biotechnology and Agriculture	Assiut University, Assiut, Postal Code No. 71515 Tel: +20 (88) 235 7007
3	Alexandria University	Technology Transfer Activities in the area of AgroFood Industries	Address: Gamal Abdel Nasser St., Alexandria Tel: +20 (3) 591 1152, 591 0096
4	National Research Center	Technology Transfer Activities and using labs in the fields of industry and mechanical automation	Address: 33 Elbhos St., Dokki, Giza Tel: +20 (2) 3337 1010
5	Central Laboratory for Date Palm Research & Development	Agriculture and AgroFood	Address: 9 Cairo University St., Giza Tel: +20 (2) 3774 4998
6	Alex University	ICT	Address: Gamal Abdel Nasser St., Alexandria Tel: +20 (3) 591 1152, 591 0096
7	El Azhar University	Biotechnology and Public Services	Address: El Nasr St., Nasr City, Cairo Tel: +20 (2) 2262 3278 / 9
8	Tebbin Institute for Metallurgical Studies	ICT and Engineering materials	Address: El Tebbin., Cairo, Egypt Tel: +20 (2) 2 25010170

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Appendix A6: Application form for accessing a biomedical research facility

Application Form for Accessing
A Biomedical Research Facility

Section No. 1: Administrative section

Project Title:

Contact Details of project coordinator:

Name:

Address:

Phone No.:

E-mail:

Proposed start date:

Proposed duration:

Short summary of the idea:

Description of intended investigation or requested services:

Section No. 2: Access Requirements
No. of samples: Where are the samples collected from?

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What type of tissue are you providing?

Which procedure do you require?

Additional information:

Section No. 3: IRB Approval

Section No. 4: Approval

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I agree to work according to the operating procedures of the research facility, understanding that if a member of my team breaches the operating procedures, permission to use this facility will be withdrawn.

IP name:

Signature:

Manager comments:

Signature:

Date:

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Annex A6: IMPLEMENTATION OF TECHNOLOGY TRANSFER UNITS AS RESEARCH-TO-INDUSTRY INTERFACE: TOOLS NEEDED FOR INNOVATION CENTER-JUST

no	Item	Quantity
1	Remote control (8-channel 2.4GHz computer Radio System) Transmitter with receiver. Battery operated LCD display for settings.	2
2	snap shoot camera	1
3	Video transmitter and receiver	1
4	Arduino Mega	10
5	Arduino Uno with LCD display 2 line	10
6	Arduino Nono	10
7	Bluetooth shield for Arduino	2
8	Digital campus shield for Arduino	3
9	3 Axes-Gyro with accelerometer for Arduino	3
10	Li-PO battery 11.1 V 2200 mA	4
11	dual DC Power Supply 20 A approx.. AC operated 220V/50 Hz MK plug Dual channel support up to 20A DC DC range up to 36VDC approx. Current protection circuit. Equipped with all the necessary connections. User & service manual to be submitted	2
12	Digital oscilloscope. Portable Digital storage oscilloscope (DSO) equipped with: Dual channels. Bandwidth at least 200MHz. Real time sampling rate at least 500 Msa/s high precision DMM Large 6 inch approx.. TFT Color LCD Display, Led backlight, Display clearly. USB Host/Device 2.0 full-speed interface, support removable disk, RS-232/LAN Optional At least 1000 waveforms save and record.	1

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	Save waveform in the following: jpg/bmp graphic file, MS excel/word file. Battery operated with charger MK plug. With all necessary accessories User & service manual to be submitted	
13	Advanced Soldering station with heat gun Power consumption: 700W approx. Digital LED displays for both rework and soldering station. Gun temperature range: 100-450oC approx. Applicable to most of branded nozzles and tips, Interchangeable hot air nozzles design for different type of surface mount components. 3 nozzles included with the rework station Air flow: 28L/MIN approx. Complete with soldering iron 60W. Gun heater material: Nickel alloy 220V 50Hz MK plug User & service manual to be submitted	2
14	Taco Meter Dual IR technology & mechanical attachments to measure RPM. Hand held with case Battery operated	1
15	Electronics Kit (resistors, Capacitor, Relay, diodes, etc…….) different values Suppliers to submit the available kits	1 set
16	Raspberry Pi Module B+	2
17	Robotics' Vehicles kits	2
18	Generator (Low Torque)	1
19	Camera Digital 20 megapixel	1
20	PLC	2
21	data acquisition Card with converter	3
22	Function generator • 0.5 Hz to 5 MHz • Sine, Square, Triangle, Pulse, & Ramp output	2

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	• Coarse and Fine tuning • 4 digit LED display • Variable duty cycle • Variable DC offset • Variable amplitude output plus 20dB attenuator • 20Vpp output into open circuit (10Vpp into 50 Ωs) • 220v 50 Hz MK plug With User & Service manual	
23	Lux meter Hand held battery operated. Display: LCD auto zero adjustment With data-hold and peak-hold buttons With 2 units: LUX and FC (1FC = 10.76 LUX) Range: 0.1-200, 000Lux/0.01- 20, 000FC Accuracy LUX: +/- 3% 200 ~ 0 LUX: +/- 3% 2,000 ~ 201 LUX: +/- 4% 20,000 ~ 2,001 LUX: +/- 4% 200,000 ~20,001 Sampling Time: 0.5 second approx.	1
24	digital millimeter 175 – Accuracy ± (0.15%+2) 177 – Accuracy ± (0.09%+2) 179 – Accuracy ± (0.09%+2) Voltage DC: Max. Resolution 0.1 mV; Maximum 1000 V Voltage AC: Accuracy ± (1.0%+3); Max. Resolution 0.1 mV; Maximum 1000 V Current DC: Accuracy ± (1.0%+3); Max. Resolution 0.01 mA; Maximum 10 A	3

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	Current AC: Accuracy ± (1.5%+3); Max. Resolution 0.01 mA; Maximum 10 A Resistance: Accuracy ± (0.9%+1); Max. Resolution 0.1 Ω; Maximum 50 MΩ Capacitance: Accuracy ± (1.2%+2); Max. Resolution 1 nF; Maximum 10,000 µF Frequency: Accuracy ± (0.1%+1); Max. Resolution 0.01 Hz; Maximum 100 kHz Temperature: 179 - Accuracy* ± (1.0%+10); Max. Resolution 0.1°C; Range -40°C/400	
25	Clamp meter True-rms Clamp Meter can read up to 600 V and 600 A in both ac and dc modes.	1
26	digital thermometer two channels Data Hold function mode Maximum (MAX), Minimum (MIN) and Average Temperature Measurement (AVG) 2 channels temperature measurement (T1 & T2) Differential Temperature Measurement (T1 - T2) Extra 2 pieces of Metal Temperature Probes Switchable between °C, °F & K Temperature range: -50 - 1300 °C (-58 - 2372 °F) Accuracy: ±0.1 °C ± 0.4 Operating Temperature: 0 - 40 °C (32 - 104 °F) Operating Humidity: 0 - 70 % (R.H.) Celsius and Fahrenheit selectable Input protection: 60V DC or 24V AC maximum input voltage on any combination input pins Reading rate: about 2.5 times per second	1

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	Input connector: accept standard miniature thermocouple connectors Battery: standard 9V battery	
27	Air flow meter measures wind speed and air temperature - calculate and shows air flow stores up to 2000 readings approx.. comes with an RS-232 interface has software to transfer data shows distinct units of measurement has a dual display Max/Min/Hold functions	1
28	Soil humidity measurement tool Large digital display Battery operated Data storage capability Soil temperature range 0 – 65 degree C approx..	1
29	Solar Analyzer: Solar Module Analyzer I-V Curve Test for Solar Cell. Maximum Solar Power (Pmax) Search by Auto-scan Calculation of Efficiency (%) Data logging memory up to 100 records approx. Battery operated Rechargeable with charger	1

30	working bench for electronics applications (يمكن تصنيعه في المشاغل الهندسية)	2
31	rechargeable electric drill • 2 speeds (0-600 and 0-2000 RPMs) • Heavy duty 1/2" ratcheting chuck • 15 clutch settings approx. • 1/2" chuck • fast charger • Belt hook • On-board bit holder • No load speed 0-600 and 0-2000 RPM • Kit box • Replacement battery	2
32	Rechargeable/electric screw driver set 3 position handle lets you work in tight space 2 speeds for drilling and driving get the best results for each job Quick connect system to easily switch from drilling to driving Rechargeable battery drill/driver	2
33	Electric V-22 Osprey aircraft model with RC	1
34	Apprentice S 15 e RTF	1
35	Quad rotor (fully Automated) 2.4GHz 4 CH 6 Axis Gyro RC Quadcopter with Camera RTF Mode 2	1
36	3D Stereo Lithography printer (SLA) printer ▪ Printer Technology: SLA ▪ Print Resolution: at least 0.12mm ▪ Printing Speed: 10-20 seconds/layer approx ▪ Minimum Layer Thickness: 20 microns approx..	1
37	3D laser type printer Dual Nozzle Adjustable layer thickness 0.1 – 0.5 mm 3D printer build size 40*15*15 cm	1

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	Windows compatibility software SD card/USB link.	
38	Breadboard 10x15 cm	20
39	Zing 24 Rotary attachment for laser cutter Epilog	1
40	A high performance, 320 x 240 infrared camera. High-end features including wireless & Laser Sharp auto focus.	1
41	Data Show (two units) one for meeting room and one for seminar room	2
42	White board with stand	1
43	3KW off-grid Photovoltaic solar system includes: - PV panels - Inverter up to 3 kW. - Charge controller - Battery bank (at least 4 batteries 100Ah 12V deep cycle for solar system)	1

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