



**National ICT
R&D Fund**

ICT SPHERE

Symposium on “Research and Development Funding Opportunities for Software Houses and other Stakeholders”

Karachi, March 30, 2009: National ICT R&D Fund organised a symposium on “Research & Development Funding Opportunities for Software Houses” at Dilkusha Hall in Pearl Continental Hotel, Karachi. The

attendees included the top brass from some of the leading software houses in Karachi and also leading academicians from some of the top universities of Sindh. The program started with recitation from the Holy Quran. Ms. Jehan Ara, President P@SHA began the proceedings with her welcome address to the attendees. She highlighted some of the achievements of the local software industry. She briefed the audience on the initiatives being taken by National ICT R&D Fund

to encourage R&D within the domain of ICTs. She also commended some of the younger CEOs on the contribution they have made in developing and strengthening the ICT structure within Pakistan.

Dr. Qasim Sheikh, CEO, National ICT R&D Fund gave the keynote address to the audience. In his address he referred to some of the achievements that National ICT R&D Fund has made in encouraging ICT centric R&D within Pakistan. He emphasized that the local software industry has to play a very important role in realizing the vision behind the creation of the Fund. He categorized “innovation” as the driving engine for wealth generation, economic growth and value creation. Moreover, he defined “innovation” as alleviating rate limiting factors from value chains. He also highlighted various

fields of ICTs where we can eliminate rate limiting factors. He emphasized that the software industry as well as learned academicians should come together and identify these rate

limiting factors and initiate projects to provide solutions to the problems. He categorized the role of National ICT R&D Fund as a key facilitator in providing the necessary funds to initiate these projects and also as a central body assisting the liaison between industry and academia.

Dr. Qasim also discussed the various facets of proposal

evaluation with the audience. He highlighted the weaknesses in some of the proposals that were being submitted. He emphasized the importance of the evaluation process and offered guidance in proposal writing and submission. Dr. Qasim also discussed the need for defining thematic initiatives for R&D in Pakistan. He sought input from the learned audience for defining some of the key thematic initiatives for R&D, which can be demarcated keeping in view the needs of the country.

The program concluded with a Q&A session. The audience responded with a lot of queries regarding funding opportunities that are available with the Fund. Dr. Qasim responded to all queries that were raised. He endorsed the commitment of National ICT R&D Fund in facilitating concrete R&D proposals by providing funding opportunities.



Dr. Qasim Sheikh, CEO, National ICT R&D Fund, delivering the keynote address

The Editorial Team:

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National ICT
Scholarship
Program 2009

Symposium on “Research and Development Funding Opportunities for ICT Industry and other Stakeholders”

Islamabad, February, 16, 2009: National ICT R&D Fund organized a symposium at Islamabad club on “Research and Development Funding Opportunities for the ICT Industry and other Stakeholders”. The symposium was organized for industry representatives and academicians, stressing the need for conceiving innovative ideas and developing R&D proposals in the field of Information and Communication Technologies. The theme of this symposium was to bring together experts from a variety of fields to promote knowledge and research in ICTs and to highlight the funding opportunities available with National ICT R&D Fund.

Dr. Qasim Sheikh, CEO, National ICT R&D Fund highlighted the need to initiate thematic initiatives for Centers of Excellence and creation of value chains through research and development with joint collaboration of academia and industry. He drew attention to the fact that innovation and problem solving through research in ICTs can lead to wealth generation.

On this occasion President of P@SHA, Ms. Jehan Ara, also addressed the audience recognizing and acknowledging the significant contributions in the domain of ICTs in Pakistan by young entrepreneurs. She emphasized that Pakistan has a great potential for growth in the domain of Information and Communication Technologies. Currently the industry stands at \$ 2 billion and has a potential to grow manifold in the future.

Mr. Hifz-ur-Rehman, Federal Secretary, Ministry of IT & Telecom was the chief guest on this occasion. In his address to the audience, he emphasized the importance of knowledge economy and its four pillars with special focus on its significance in developing countries.

The ceremony concluded by presenting souvenirs to the Federal Secretary, Ministry of IT & Telecom and also to President of Pakistan Software Houses Association for IT & ITES. The symposium offered a platform to share experiences, exchange information and open new horizons to shape the future of ICT industry in Pakistan.



Dr. Qasim Sheikh, CEO, National ICT R&D Fund presenting the souvenir to Mr. Hifz-ur-Rehman, Federal Secretary, Ministry of IT & Telecom

APT-Korea Human Resource Development Program

Mr. Azeem Sajjad, Project Manager R&D Fund, was nominated to attend a training course on Telecommunication and Broadcasting Convergence by Ministry of Information Technology & Telecom on APT full fellowship. The training course

was held from October 15-20, 2008 in Seoul, South Korea. The training course was dedicated to the sharing of different perspectives from Broadband Convergence Network, Broadcasting and Communication Convergence Service, Broadcasting and

Telecom Policy in the area of Convergence, DMB/WiBro, IPTV Standardization and related technical issues. Field trips to MegaTV, Korea Telecom (KT), Digital Pavillion, Samsung Electronics and SK Telecom were also included in the training course.



Ideas for Proposals

National ICT R&D Fund remains committed in its endeavor to enhance national productivity and ICT product and market development. Some of the R&D initiatives taken within the domain of ICTs elsewhere around the world have also being placed on our website for the prospective researchers to come and further develop these and similar ideas. Furthermore we welcome information about other funded projects with the intent to apprise our audience of the international trends in ICT-centric R&D. Please send this information to researchideas@ictrdf.org.pk

Proposal Status 2007-2009

(in numbers)

Category	Received	Revision by PI After Initial Evaluation	Under Internal Evaluation	Under External Evaluation	Revision by PI	Under PAC Review	Approved/ Under Execution	Rejected	Postponed/ Called Off by PI
Technical R&D	124	36	6	1	34	0	31	8	8
Human Resource Development	8	2	2	0	1	0	1	2	2
Industry Apprenticeship Program	8	0	0	0	1	0	7	0	0
ICT Centric University Excellence Program	1	0	0	0	0	0	1	0	0
Social Networks	3	0	0	0	0	0	0	3	0
Scientific Events	26	2	2	0	3	0	4	12	5
(in millions) Total:	170	40	6	1	39	0	44	25	15

Category	Received	Revision by PI After Initial Evaluation	Under Internal Evaluation	Under External Evaluation	Revision by PI	Under PAC Review	Approved/ Under Execution	Rejected	Postponed/ Called Off by PI
Technical R&D	2,372.46	768.26	147.23	7.40	757.31	0.00	471.27	116.80	94.67
Human Resource Development	291.45	12.23	0.00	0.00	3.99	0.00	5.80	261.89	7.55
Industry Apprenticeship Program	150.84	0.00	0.00	0.00	18.00	0.00	132.84	0.00	0.00
ICT Centric University Excellence Program	15.61	0.00	0.00	0.00	0.00	0.00	15.61	0.00	0.00
Social Networks	92.53	0.00	0.00	0.00	0.00	0.00	0.00	92.53	0.00
Scientific Events	47.71	14.93	0.00	0.00	4.30	0.00	1.71	15.34	11.43
Total:	2,970.00	795.42	147.23	7.40	783.60	0.00	627.22	486.56	113.64

Last Updated: June 30, 2009

Category-wise-Summary

#	Category	No. of Proposals	Amount (PKR)
1	VLSI Design	6	104,360,651
2	4G Wireless Development	2	29,550,925
3	E-Health	3	43,999,607
4	E-Education	2	27,180,485
5	Social Networks	2	20,679,878
6	Mobile Device Software Systems	7	86,257,185
7	Network Security/Multimedia and P2P Systems	11	137,097,372
8	Open Source Development	7	135,465,252
9	National ICT Scholarship Program	22	1,376,594,500
10	University Excellence Program	1	15,608,000
11	Human Resource Development	14	120,635,473
12	Conferences	4	1,708,450

Summary of Technical R&D Projects (January - June 2009)

Mobile Data Communication Device

Principal Investigator: Palmchip Pakistan (Pvt) Ltd.	Start Date: January, 2009	Project Cost: PKR 11.2 million
Project Directors: Mr. Arshad Riazuddin & Wg.Cdr. (Rtd) Iftekhhar Mahmood	Duration: 9 months	Project Funding: PKR 9.3 million

Executive Summary

Today mobile phones are being used for voice communication services, and its usage is fast spreading into data services and machine to machine communication, with the technological advancement in both the infrastructure and handset devices. The aim of this proposal is to use the data services provided by the mobile networks for reading utility meters (such as electric, water, and gas), provide Internet Access for computer in remote areas and internet or text messaging interface for commercial and military application. The mobile network could also be used to monitor assets' location. These services highlighted above might be available today through a lot of different interfaces and networks; however this proposal aims to move all these functionalities to one network. This convergence to one network will help reduce the support costs, and thus spread these services to all users instead of just a few. By "one network", here it means one type of network connectivity which

can work from short distances to long distances. This device could be connected to any laptop or computer through a USB interface and this laptop/computer can be brought online through the GPRS modem. Thus providing instant internet access where internet service providers (ISPs) might not be available. It can also function as a standalone device through the on board processor. This GSM based mobile device is designed to be used in embedded applications where a separate host computer is not required but can be used if needed. It will be able to provide both GPRS and EDGE connections depending on the capabilities of the GSM network provider. Palmchip will develop a mobile data communication device, and will demonstrate the technology that it develops on an FPGA board. Palmchip will develop a complete hardware, software solution for this mobile communication device, and place this complete solution at the disposal of the open source community.

The key benefits of this project are given below:

- An architecture for implementing a System on Chip (SoC) will be developed which will allow future SoC designs to be implemented easily by any designer.
- Verilog code, FPGA board design, and firmware will be placed in the open source community in the form of a working package. Any company, institution or entrepreneur will be able to use it for industrial applications.
- This project will be used in the future as a base for developing the GSM phone functionality.
- The outcome of the project will be finished goods including various intellectual property (IP) designed, verified and implemented in an FPGA; Schematics, Gerber files and BOM of the FPGA board; and Firmware running on the board.

Design and Verification of Low-Power, High-Speed IP Suite for Universal Serial Bus (USB 3.0)

Principal Investigator: School of Electrical Engineering and Computer Science (SEECs) National University of Sciences & Technology (NUST)	Start Date: March, 2009	Project Cost: PKR 35.48 million
Project Directors: Dr. Nazar Abbas Saqib & Mr. Jahangir Hashmi	Duration: 24 months	Project Funding: PKR 35.48 million

Executive Summary

Universal Serial Bus (USB) is used to connect all sorts of devices and is the most successful computer standard in history with billions of units shipped. Current solutions based on USB 2.0, support transfer rates up to 480 Mb/s but that rate will soon increase tenfold to 4.8Gb/s with the introduction of USB 3.0 enabled products.

Over the past several years, there has been a shift in how consumers access and use audio/video media content. Wide use of HD Camcorders, HDTVs, Blue-Ray Disks, and other devices has elevated the need for high-speed data transfer. The early Super Speed products will be based on discrete USB 3.0 transceivers/controllers, and its broad deployment will likely take place by 2010. To bring a cost-effective solution to market, the USB 3.0 functionality would have to be integrated

into the devices. This provides new opportunities for producing world-class USB 3.0 IP for SoC/ASIC integration. Most ASICs / SoCs rely on third party IPs for large parts of the total chip functionality. The availability of proven IPs has been pivotal in helping companies keep up with the new standards.

This project plans to develop a suite of low power, configurable and high speed USB 3.0 IP cores including IPs for USB 3.0 host controller, USB 3.0 device controller and USB 3.0 support functions to meet the needs of this "poised-to-explode" market. The project will research design and verification techniques for developing high speed IP cores for speed critical devices and low power optimization techniques to look for their applicability to the proposed design. It will develop architecture and the micro-architectures for the

host and device controllers and test plan for verification of controllers.

The key benefits of this project are:

- USB is the most popular standard in the computing world. The Super Speed USB is expected to be the interface choice for most high-speed data transfer needs. Most of the semiconductor and systems companies world-wide will transition their products to Super Speed USB and could use the proposed IP.
- The project will produce algorithms/architecture for the USB 3.0 controllers.
- The architecture and the micro-architecture developed for this project will result in development of commercial IP. It will serve as a basis for creating several other products.

Power Aware Video Coding For Extending Battery Life in Portable and Mobile Devices

Principal Investigator: Lahore University of Management Sciences (LUMS)	Start Date: May, 2009	Project Cost: PKR 13.03 million
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Project Directors: Dr. Nadeem Khan & Dr. Jahangir Ikram	Duration: 27 months	Project Funding: PKR 13.03 million
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Executive Summary

Mobile phones are taking up add-on Multimedia functionalities requiring long operation time. This includes watching TV (mobile TV), video recording and playing, video streaming and videophony. Uses of other portable multimedia devices are also becoming more and more common. Wireless video sensors and networks are still another emerging application of power aware coding. Broadband wireless networks are being considered for deployment in the field of defense, security and 3-D video reconstruction. Video coding has to be done on the video sensor nodes which are battery operated and are meant for long term field deployment. Low power and power aware video coding can provide extended operational duration to get the best services out of these applications. This calls upon investigating and developing low power and power-adaptive computational schemes for video coding which

are less power hungry. Developing Video codec software architectures that are power-adaptive is an emerging research area. This research will focus on this task and the specific objectives of the project are:

- To benchmark the shortcomings of existing video codec's in meeting customers' expectations due to limited energy resources of the portable and mobile devices
- To research on and develop (a proof-of concept) low power and power-aware video codec for battery operated mobile and portable devices which can yield a longer battery life and is adaptive to the varying battery power levels. It should be implement able on low power DSPs (cores) as generally used in mobile devices.
- To demonstrate its superiority in meeting users' expectations.

Benefits of the project shall be seen in many fields including:

- Wireless video sensor networks with battery powered sensor node and mobile video surveillance applications will facilitate the defense and security sector.
- Telemedicine and NGOs can have longer availability of mobile multimedia services in remote areas.

The project will yield Video codec with power-aware features for multimedia applications with capability of handling real-time videos of sizes like CIF or QVGA and frame rates up to 30 frames. The project will bring forth a prototype multimedia application (like streaming/playback) on portable/mobile platform with integrated designed video codec.

Information System for Early Fault Warning in Automotives

Principal Investigator: Muhammad Ali Jinnah University , Islamabad	Start Date: June, 2009	Project Cost: PKR 14.34 million
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Project Directors: Dr. Muhammad Aamer Iqbal Bhatti & Dr. Amir Qayyum	Duration: 24 months	Project Funding: PKR 14.34 million
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Executive Summary

In the last decade the country has seen rapid expansion of IT infrastructure. To a broader extent masses are absorbing the general know-how of the technology. However the use of IT tools in the industrial sector, especially at the low skilled labour level and public in general is yet to be seen. Automobile industry is a particular example.

The standard documents of Toyota indicate the installation of many sensors in the vehicle. These include engine air flow sensor, manifold absolute pressure sensor (MAP sensor), engine speed and crank angle measuring sensor, water temperature sensor, air temperature sensor, throttle angle and closed throttle sensing, exhaust oxygen sensor, knock sensor etc. The mentioned list mainly addresses the sensors meant for engine control only. The research group at Jinnah University has acquired the real time data of engine sensors by coupling the ECU with a laptop computer using OBD-II ScanTool. The data is later used to verify

the sliding mode observer model developed by the Ph.D. students of Dr. Aamer Iqbal Bhatti. The acquired ScanTool is not suitable for early fault detection as the accompanying drivers are not available. The research team is going to develop its own interface with a DSP or FPGA based processing card (for dashboard mountable version).

Survey of available existing solutions, indicates that Engine Management Software are available that utilize data for monitoring the health of vehicles. Using data from the ECU, this software detects faults and suggests remedies. These tools are developed to prevent the failure of automotives and excessive exhaust emissions that cause environmental pollution. This also ensures fuel economy. These tools are not being used commonly in Pakistan. The lack of utility of these modern tools in automotive industry is due to lack of proper awareness of tools available for fault diagnosis among the general community

and next-street mechanics engaged in repair and maintenance of automotives. Following are the weaknesses of available tools.

- The available tools are not friendly enough for workshop mechanics that are computer illiterate and cannot understand English.
- These devices are costly for a workshop mechanic.
- The faults addressed by these devices do not correspond to the faults occurring commonly in Pakistan. The disagreement of faults occurring in Pakistan and advanced countries is due to difference in environmental conditions, quality assurance mechanism and road behaviours.

This is a research and development project which aims at the development of a computer based gadget and an engine management software that would not only address the mentioned weaknesses of the available tools but would also

introduce a novelty by giving the early warning of the faults likely to be occurring in the near future. Internet connectivity and on-line monitoring of vehicle health from a centralized location would also be studied in this project. Following objectives would be addressed in this project:

- Development of algorithms for fault diagnosis and early alarm generation in the field of automotives. The devised strategy will be

generic and will be based on universally accepted protocol (OBDII).

- Development of a device to capture data from automotive sensors and process the data for fault detection.
- The developed portable device will be usable by mechanics as well as car drivers as the device will have complete visual interface (a small screen). The device will be connected

to a jack above the driver paddles and give complete fault information to the driver.

- Research leading to Ph.D. degrees in automotive field.
- Design of training course for automotive mechanics and common public to familiarize them with the emerging methods of fault location. The course will help in transferring the technology.

Constrained Intents: Extending Android Security for Intent Policies (EASIP)

Principal Investigator: Institute of Management Sciences, Peshawar	Start Date: January, 2009	Project Cost: PKR 14.84 million
Project Directors: Dr. Massom Alam & Dr. Xinwen Zhang	Duration: 24 months	Project Funding: PKR 14.84 million

Executive Summary

Recent years have seen a significant increase of computing power, ubiquitous connectivity, connection bandwidth, and data storage on mobile devices such as smart phones and PDAs. The enormous growth in these capabilities of mobile platforms has made it possible to deploy value-added services such as mobile payment, e-ticketing and social applications on these platforms.

As a result, more applications and services have been deployed on these devices which bring new business processes, pervasive information and content creation and sharing (audio, video, and text), and mobile medical systems (e.g., e-prescribing). Also, more and more enterprise applications and services are being deployed on mobile devices. With these trends, mobile devices are becoming more open and general-purpose, even in those environments which were traditionally considered closed. With the increase in use of open mobile architecture, security risks and attacks are also increasing on these devices. Moreover, due to mobility features and personal nature of mobile devices, privacy concerns are more threatening on mobile platforms than on PC. Thus, any enterprise acting as a service provider requires high assurance that its services or data will be used according to its organizational security policy.

In the current scenario of mobile platforms, Android is one of the most anticipated smart phone operating systems, introduced by Google as an open source operating system

that provides a complete software stack. Our long term vision for Android is to build a security framework for Android to cater to the different security requirements described above. Such a security framework will make Android more secure, scalable and interoperable with other open source mobile technologies while still being developer friendly. The framework requires realization of several components, such as a flexible policy framework, that is built on top of highly expressive policy model. It also requires the ability to express the policies in a high level human understandable language, which can later be transformed into low level executable policies through automated transformation tools. This is a basic requirement for the usability of the approach and will need to be addressed initially.

To achieve this long term vision, several short term goals have to be realized. In this project the team intends to break down the vision into a few concrete objectives, which can be realized within two years. Specifically, there are two aspects of this project: Creation of a Policy Enforcement Framework (PEF) to enforce generic and specific security requirements on the Android platform. The Android platform utilizes the concept of Intents for the purpose of inter-activity communication. Whenever an activity wishes to communicate with another activity, it creates an intent that signifies the inter-activity call and encapsulates the data that the first

activity wishes to communicate to the second. Intents do not enforce security policy themselves, but are usually the conduit on which system security relies on. In order to create a PEF, the team has identified Android's intents as the simplest units of the framework which can benefit from a policy framework. Android's intents are, as yet, simple features used for inter-activity calls. There is no way of ensuring that intents calling conform to the user's policies. In this architecture, the team plans on extending the Android architecture of Intents to first evaluate the user's policy and only if the policy of the calling application and that of the called application allow it, the Intent will be allowed to be executed by the Android framework.

The team also intends to create a policy writing tool and libraries to facilitate the policy writing for the application owners and developers. The policy language designed for the purpose of specifications of security policies will be based on a standard policy language. Based on the use cases, these policies may tend to get complicated. In order to facilitate the policy writers in creation of these policies, the team will provide a simple policy writing tool. The tool will be created using the Java language. Since the Android software development kit itself is based on the Java programming language, it will be more acceptable for the existing Android developer community. The tool shall be realized under an open source license.

Inside the Publication Department

Publication department is responsible for all internal and external publications of the company. The department is also responsible for the smooth flow of information to all the internal and external stakeholders. Publication department is effectively engaged in the creation of an informative link between various departments, stakeholders and the principal investigators, through making appropriate publications available to all of them. The department is also responsible to publish periodic reports of the company and the results of individual projects.

Mr. Khurram Saleem is working in the Publication department of National ICT R&D Fund as Deputy Manager. He has an MBA in Information Technology Management, from International Islamic University, Islamabad. Mr. Saleem brings with him over 6 years of experience at various managerial positions. He has worked with Ovex Technologies for almost two years. Later he joined Pakistan International Airlines as an Assistant Manager. He was part of the team that successfully implemented the IOSA and ISO quality standards at the Technical Ground Support Division. He later served at Jinnah International Airport as Deputy Manager Foreign Handling. He successfully lead the team responsible for the implementation of the ISO 9001:2000 quality standards at the Jinnah International Airport. He was later posted to the Benazir International Airport where he served at various operational portfolios. Mr. Saleem has been involved in drafting operational manuals and has documented controls and procedures throughout his career. He has also been involved in execution and implementation of documented procedures at the operational level. It is his professional experience coupled with a profound interest in reading and writing that brings him to his current position.



Ms. Suman Hammad is working with National ICT R&D Fund as Assistant Manager-Publication since April 2008. She has an M.Phil in Mass Communication with Development Support Communication as her field of interest. Ms. Hammad had been previously working as a Lecturer at Allama Iqbal Open University for two years and developed course for Media Ethics. She had been a visiting lecturer at AIR University for Advertising & Sales and Business Communication. She has been a freelance English documentary script writer as well with three documentaries having gone on air till now, with one documentary winning the first prize in Italy on the theme of women progression in Pakistan presented by ISPR. She had also been writing for newspapers previously. She feels proud to be part of the team here at National ICT R&D Fund, and believes that her previous experience in the field of Mass Communication is being further groomed and enhanced by being amongst a talented group of people.



Exceptional Honor for Pakistan at Bio-inspired Computing Forum of GECCO 2009

Islamabad: Two Pakistani papers won the Silver medal in "Humies Competition" at "Genetic and Evolutionary Computation Conference 2009" (GECCO 2009), Quebec, Canada, at its 6th Annual Conference for the concept of User Identification on Smart phones. GECCO is the world's best forum for Bio-inspired computing and is one of the largest in Genetic and Evolutionary Computation.

The team of researchers at Next Generation Intelligent Networks Research Center (nexGin RC) at FAST-NU under the guidance of Dr. Muddassar Farooq had submitted two entries and both were short-listed for the "Humies Award". The Silver medal worth \$3,000 was won based on the papers "A Hybrid GA-PSO Fuzzy System for User Identification on Smart Phones" and "Keystroke-based User Identification on

Smart Phones" and was co-authored by Muhammad Shahzad, Saira Zahid, Muddassar Farooq and Syed Ali Khayam. Both these papers were an outcome of their project titled "Intelligent Secure Kernel for Next Generation Mobile Computing Devices" and deal with the concept of User Identification on Smart Phones. Dr. Muddassar Farooq attended this conference in Montreal, Canada.

It is a remarkable achievement as 200 papers were accepted for the conference and submission criteria at Humies is so tough that generally only 9-10 papers become eligible for the competition. This is for the first time in the history of this conference that a team from Asia has been among the top three.

This project worth Rs.14.99 million has been funded by National ICT R&D Fund. National

ICT R&D Fund congratulates the team at nexGIN RC for this exceptional research work which will provide Mobile Operating System developing companies to invest in startups and use the product as an important framework for further development. This project holds promising future for industrial applications. It is important to mention that this team outclassed the Israeli team which was the Bronze medalist in the above-mentioned competition.

This is an international recognition for the team at nexGin RC, FAST-NU, National ICT R&D Fund and most importantly for Pakistan. National ICT R&D Fund remains committed to facilitate high-quality ICT initiatives by providing funding opportunities to concrete ICT centric R&D projects.

NICTRDF funded project receives "Best Paper Award" in India

Islamabad: National ICT R&D Fund is pleased to announce that a research paper from one of its funded projects, 'A Bio-inspired Self Defending Security framework for IP Multimedia subsystem (IMS)', has received the Best Paper Award at the 2nd International Conference on Internet Multimedia Services and Applications held in Bangalore, India.

The research paper titled "A Comparative Study of Anomaly Detection Algorithms for Detection

of SIP Flooding in IMS" was co-authored by M. Ali Akbar, Zeeshan Tariq and Muddassar Farooq of nexGIN RC, FAST-NU. The authors were unable to attend the conference, however, the research paper has been selected to appear in IEEE explorer.

This fully funded project by National ICT R&D Fund aims to develop an Intelligent Bio-inspired Self-defending/Self-healing Security Framework for IP Multimedia System (IMS) and Next Generation All-IP Networks and will provide real time security

open source solution for IMS that can not only detect unique vulnerabilities identified in IMS but also counter them in real time for IMS architecture and Next Generation All-IP networks.

National ICT R&D Fund congratulates the team on receiving the Best Paper Award at the said conference.

For executive summary of the project please visit www.ictrdf.org.pk/fp-bssf.htm

Deadly Conficker Detected by a Pakistani "zero-day" Anti-malware Product

Islamabad: A computer malware, named as Kido, Conficker or Downadup has penetrated into more than 3.9 million computer systems worldwide running Microsoft Windows. The number also includes a major proportion of machines deployed at the Ministry of Defence (MoD), UK. It first takes control of an infected system by utilizing vulnerability in Microsoft Windows and then speedily replicates itself through the network or flash drives.

A team of security researchers headed by Dr. Muddassar Farooq at Next Generation Intelligent Networks Research Center (nexGIN RC), FAST National University, Islamabad, Pakistan have been working on a next-generation anti-malware solution that has the ability to detect a given malware without any prior information about it. Consequently, it successfully detects a "zero-day

malware". The product prototype of the solution is expected to be rolled out in the near future. Researchers have collected samples of Conficker from a well-known malware consultancy firm OffensiveComputing.Org (based in the US) and scanned it using the developed prototype. Their solution not only detects Conficker and its variants but also provides useful forensic information about its functionality. Researchers believe that this groundbreaking achievement is made possible by a novel approach that in contrast to the existing antivirus products does not require any signature updates. They envision that the product, once fully developed, can realize "once-deployed-forever-protected" dream.

The on-going project titled "An Artificial Immune System General Purpose Intrusion Detection System" is a fully funded project by National ICT R&D Fund.

NICTRDF Funded Project Wins at World Summit Youth Award

Islamabad: National ICT R&D Fund is pleased to announce that one of its funded projects "Remote Patient Monitoring System with focus on Antenatal care for rural Population" is among the three winners at the World Summit Youth Award (WSYA) from a total of 612 projects submitted from 102 countries.

This funded project by National ICT R&D Fund, worth PKR14.66 million, is being executed by a team of researchers of "nexGIN RC, FAST-NU" headed by Dr. Muddassar Farooq. The primary objective of this project is to develop a reliable, efficient and easily deployable remote patient monitoring system that can play a vital role in providing basic health services to the remote village population of Pakistan at their door step through Information and Communications Technology. The proposed system will record the patient's data and forward it to a PDA through a wired channel and consequently provide

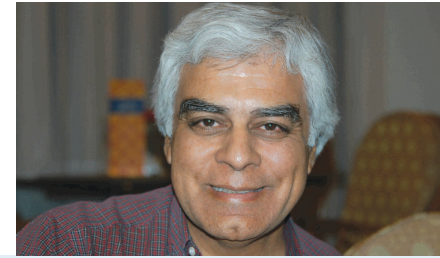
feedback through the PDA notifying decision given by the Clinical Decision support system. The World Summit Youth Award (WSYA) is the global initiative to select and promote the world's best e-content and innovative ICT applications. WSYA supports the UN Millennium Development Goals of ending poverty, hunger and disease, saving the environment and giving a fair share to women. The World Summit Youth Award (WSYA) is the global contest for online or mobile initiatives to raise awareness and help resolve the most pressing global issues. WSYA showcases young developers' projects and serves as a platform for people from all UN member states to work together on the efforts of reaching the Millennium Goals.

Amongst the five categories "Remote Patient Monitoring System" was selected in the "Category 1: Fight Hunger, Poverty & Disease". The 612 submitted projects were evaluated in a three-round judging process by an international WSYA Jury 2009 consisting of 20 experts.

Ajay Kumar Tanwani, a young brain of nexGIN RC, has won this World Summit Youth Award for the project and will receive it before the center stage of the world at Monterrey, Mexico during the United Nations Global Forum on ICT and Development and WSYA Winner celebrations in late 2009. They will showcase their projects to government and business leaders, representatives of civil society and the international community. The official public announcement and celebration of the WSYA winners took place at the WSYA 2009 Winners Gala on June 12th, 2009 in Monterrey.

This is a global recognition for Pakistan and specifically for nexGIN RC, FAST-NU. National ICT R&D Fund congratulates the team on this achievement and recognition for its funded project. It remains committed to facilitate high-quality ICT initiatives by providing funding opportunities for concrete ICT related R&D proposals.

Rendezvous with Shahid Hamid Mir



Shahid Hamid Mir was the first Chief Executive of Pakistan Software Export Board (PSEB). He played a formative role in this all important body, especially during its incubation period. Mr. Mir has had a long association with the software industry and over the years has played a significant role in not just structuring the industry, but also as a participative member in software design and application.

Mr. Mir has also been a Member of Prime Minister's Economic Reforms Committee and National Agenda Board. Mr. Mir is also the founding chairman and chief executive of Systems Research Private Limited, a leading brand of independent computing and management consulting organization. The company has been in operation for 22 years and exports software to Europe and the USA. The company also carries out computerization projects in the public and private sector organizations in Pakistan. About his company he explained that it also provides end-to-end business solutions to Telecom Operators and is officially appointed GSM Consultant for prospective GSM Operators in the private sector in Pakistan.

Mr. Mir also has vast experience as a consultant and lead trainer for large public and private sector organizations and has been contributing to the field of Information and Communications

Technology and its development in Pakistan.

Systems Research has been funded in one of its quests by National ICT R&D Fund. The project titled "Conversion of NGOSS Compliant, Web 2.0 Enabled Mediator, Rater and Biller Applications" was initiated in August 2008 and in Mr. Mir's words is a "revolutionary project" which will provide open source billing and customer support suite of applications that will fulfill all basic requirements of back office billing and customer care of any Wireless or Wire-line Service Provider. He elaborated further on this project and explained that Wireless and Wire-line Telco's, VOIP service providers and related industry can cut their billing, customer care and Open Source Software cost drastically by using this application with small customization according to their own business processes. He opined that the development process of this project is planned in a way that can help new developers gain experience in the back office application development for Telecom service providers.

Talking on the role of National ICT R&D Fund, Mr. Mir said that the Fund is offering excellent opportunities for research and development in the fields of Information and Communications Technology. He expressed his satisfaction and pleasure with the procedures that were being

followed for R&D projects solicitation and evaluation. He commended the efforts being made by the S&E department for assistance in improving the proposals and also on the efficient and timely financial disbursements which help researchers maintain their focus on their work.

Mr. Mir also maintained that National ICT R&D Fund utilizes various filters prior to sanctioning approval to technical R&D proposal and the subsequent disbursement of funds; however it is still able to do it at an appreciable pace.

He opined that none of the financial institutions have been able to do anything concrete for the development of this dynamic field of ICTs except for National ICT R&D Fund which has established a platform for encouraging ICT-centric R&D activities in Pakistan.

About National ICT R&D Fund he said "I can foresee that with the same diligence National ICT R&D Fund's portfolio and its potential market can go up to Rs.7-8 billion per annum in a matter of a few years".

National ICT R&D Fund wishes its Mr. Shahid Hamid Mir the best of luck with his research project and hopes that his unflinching vigor and remarkable zeal for this industry remains intact and he continues his work as an important contributor to this sector.

GUNI recognizes Pakistani IT Education Project

Lahore: Global University Network for Innovation (GUNI) recently acknowledged a Pakistani project titled "Integration of Open Source Software Projects in IT Education" as an innovative integration of open source projects in software engineering, and it was also highlighted in their newsletter. This project is funded by National ICT R&D Fund, Ministry of IT & Telecom and is executed by a team of researchers at the Software Engineering Research Centre at the National University of Computer and Emerging Sciences (FAST-NU) Lahore, Pakistan. GUNI is composed of UNESCO Chairs in Higher Education, research centers, universities, networks and other institutions highly committed to innovation in higher education. More than 100 institutions from around the world are GUNI members with the goal to contribute to the reinforcement of higher education by the application of the decisions of the World Conference on Higher Education. GUNI supports several activities such as Higher Education in the World, International Barcelona Conference on Higher Education and Universities and Social Commitment Observatory.

The Software Engineering Research Center (SERC) at the National University of Computer and Emerging Sciences (FAST-NU), Lahore, has implemented an innovative strategy to enhance the student's participation and learning in developing open source software. This funded project by National ICT R&D Fund worth PKR 37.6 million aims to provide education in Software Engineering by preparing students for their effective participation in the software industry. This could ideally be achieved by involving students in realistic projects. This project aims for a new method of teaching software engineering to undergraduate students based on open source software. SERC has turned to open source software to allow students, in collaboration with companies such as Openbravo ERP and OrangeHRM, to get hands-on experience on projects used in the industry.

This project is gradually achieving its objectives by training and allowing students to learn good programming practices by

reading professionally written high-quality code and by getting feedback from professionals through open source communities while sequentially helping software industry by providing them with the workforce that has worked on industrial strength projects.

Global University Network for Innovation states in its newsletter: "If successful, this model has the potential to revolutionize the software engineering education by addressing the fundamental issue of exposing the students to real-life projects and help the software industry without adding any extra overhead on the faculty."

This is an international acknowledgment for SERC, FAST-NU. National ICT R&D Fund congratulates the team on this recognition for its funded project.

More information about the project is available at www.ictrdf.org.pk/fp-iOSSp.htm and GUNI's website.

Pakistani Students accepted at Google Summer of Code Global Program

Lahore: A team of students at Software Engineering Research Centre (SERC) at FAST-NU, Lahore submitted a proposal in the domain of MySQL which was accepted at Google Summer of Code to incorporate "Change Tracking/Synchronization" functionality for phpMyAdmin.

Young Pakistani students are reaching out for new opportunities highlighting the fact that youth of Pakistan is talented and is in pursuit of achieving excellence in the knowledge based economy.

Google Summer of Code (GSoC) is a global program that offers student developers stipends to write code for various open source software projects. They work with several open source, free software, and technology-related groups to identify and fund several projects over a three month period. Since its inception in 2005, the program has brought together nearly 2,500 successful student participants and 2,500 mentors from 98 countries worldwide. Through GSoC, accepted student applicants are paired with a mentor or mentors from the participating projects, thus gaining exposure to real-world software development scenarios and the opportunity for employment in areas related to their academic pursuits.

SERC, FAST-NU is executing the project titled "Integration of Open Source Software Projects in IT Education" fully funded by National ICT R&D Fund worth PKR 37.6 million which aims to provide education in Software Engineering by preparing the students for their utilization in the software industry. This requires equipping them with skills and knowledge necessary for developing industrial strength software. This could ideally be achieved by involving the students in realistic projects and aims for a new method of teaching software engineering to undergraduate students based on open source software.

Participating in GSoC is a practical step towards this objective and gives students hands on experience by their particular mentoring organization's project. Students working on "Integration of Open Source Software Projects in IT Education" project at SERC were filtered through a selection process for GSoC program. The project has been registered in Zahra Naeem's name however two students, Zahra Naeem and Sehrish Abdul Malik, are working on it together. Usman Aftab and Muhammad Adeel Khan – Research Officers at SERC, are acting as mentors to the students and will guide the students according to their needs.

National ICT R&D Fund congratulates the team at SERC, FAST-NU for its international recognition at one of the best platforms in the world, and for providing students good programming practices and opening new horizons for the talented students pursuing their careers in Computer Software and Software Engineering studies. National ICT R&D Fund remains committed to facilitate high-quality ICT initiatives by providing funding opportunities to concrete ICT related R&D proposals. For available funding opportunities and details on these and other funded projects please visit www.ictrdf.org.pk



The team with Project Director, Dr. Fakhar Lodhi at FAST-NU, Lahore

National ICT Scholarship Program 2009

National ICT Scholarship Program for the year 2009 was launched by first advertisement appearing in national newspapers on December 23, 2009. This year's program has been designed in a manner to provide maximum impetus to all the participants. This has been achieved by bifurcating the first phase into three components; each component out-sourced to experts in that specific domain. The first phase of the National ICT Scholarship Program 2009 has the following three components:

1. Student Registration and Conduction of ICT Scholarship Award Test
2. Training of Teachers (ToT)
3. Foundation Training Program (FTP)

Executive Summary

This year's program has been designed to ensure maximum outreach and to encourage the talented students from marginalized areas of the country to participate and compete for undergraduate scholarships in ICT centric fields as offered by National ICT R&D Fund. This year National ICT R&D Fund proceeded by inviting all government schools/colleges from the demarcated marginalized areas to confirm their registration and accuracy of the registered data by visiting their website, where details of all registered government schools/colleges was made available. The data of registered government schools/ colleges was updated prior to the initiation of student registration.

Representatives of the designated student registration agency went through approximately all the government schools/ colleges registered with the Fund and ensured registration of the students for the National ICT Scholarship Program 2009. In addition to facilitating the student registration process, the designated agency also collected vital information from these colleges, such as their correct addresses and the names and contact numbers of the principals.

National ICT R&D Fund has also extended "Training of Teachers program" (ToT). This year the ToT component has been outsourced to an agency which specializes in imparting training on the skills and knowledge needed to successfully attempt MCQ based university entrance exams.

National ICT Scholarship Program 2009 includes the "Foundation Training Program" (FTP), through which the teachers of approximately 200 government schools/colleges, demarcated as "Training Centers" shall be extending training to all registered students in their respective "Training Centers" on the skills needed to effectively solve MCQ based university entrance exams at F. Sc. level. The training shall be extended in English, Mathematics and Physics only.

After a four week "Foundation Training Program" for the students, ICT-Scholarship Award Test shall be conducted. This will be followed by award of scholarships to the students based upon their scores in the ICT-Scholarship Award Test and their preference of university and discipline selected by them in their respective registration forms.



CONNECT – 2009 4th Information & Communications Technology Exhibition & Conference (May 5-7, 2009)

Conference Overview

Karachi: There has been an unprecedented growth within the domain of Information and Communications Technology (ICT) in the last few years. This global phenomenon has made a significant impact on businesses, education and everyday life, in our part of the world as well. This year, the CONNECT Conference program was designed to discuss future trends in the emerging technologies while addressing the challenges that the local industry has to face in this dynamic environment. The conference was a quality platform for the companies to share their technology and take a holistic view of the technological evolution.

CONNECT Conference provided an ideal opportunity for professionals to network, collaborate and explore the possibilities of forging new business relationships in the converging market of IT and Telecom, in the region.

National ICT R&D Fund also participated in this year's conference. The conference was a good platform to share information on the Technical R&D projects that have been funded and also to highlight some of the significant achievements of the Fund.



Project Team Visits Japan to Attend the 10th HL7 IHIC Conference

A team of engineers from NUST School of Electrical Engineering and Computer Science (SECS) participated in the 10th International HL7 IHIC Conference in Japan and presented five research papers contributed by SECS HLH Team Members. Chair of session announced a special appreciation for an outstanding contribution from Pakistan.

The team also participated in a five-day HL7 Working Group meeting. The meeting included discussion on several important tutorials and was bifurcated into sub-committee meetings. Most important among these was "Affiliate Council Meeting", in which HL7 Inc. agreed for Pakistan to become an affiliate of HL7.

The CEO and Chairman of HL7 praised the efforts of the team and offered Free of Charge registration for upcoming HL7 Working Group Meeting being held at Atlanta USA, in September, 2009.

It is a remarkable achievement for the young team of engineers from Pakistan to mark a significant presence in the HL7 community.

National ICT R&D Fund has funded the project titled, "Health Life Horizon: Design and Implementation of Health Life 7 (HL7) Open Source Application for E-Health Services". The aim of this project is to carry out research in healthcare by developing Health Level 7-based software framework in order to provide health services for diverse communities of the world. Executive Summary and other details on the project are available at www.ictrdf.org.pk/fp-hl7osa.htm

A Team of Pakistani Researchers Brings Laurels to the Country

A dedicated team of researchers at Next Generation Intelligent Networks Research Center (nexGin RC) at FAST-NU has brought a unique laurel to the country by having two research papers accepted at the 12th International Symposium on Recent Advances in Intrusion Detection (RAID 2009) which will be held at the Palais du Grand Large at Saint-Malo, Brittany, France (September 23-25, 2009). This symposium brings together leading researchers and practitioners from academia, government, and industry to discuss issues and technologies related to intrusion detection and defence. The two papers accepted are:

1. "Keystroke-based User Identification on Smart Phones" by Saira Zahid, Muhammad Shahzad, Dr. Syed Ali Khayam and Dr. Muddassar Farooq.
2. "Realtime Mining of Structural Information to Detect Zero-Day Malicious Portable Executables" by M. Zubair Shafiq, S. Momina Tabish and Dr. Muddassar Farooq.

It is interesting to note that research within the domains of "Network Security" has been overshadowed by the US and Europe and there is very little credible research that is being done elsewhere within this sphere. It is a matter of great prestige that only two research papers have been accepted from Asia this year at this august conference and both are from Pakistan. The team of nexGin RC deserves all credits for representing Pakistan and bringing recognition to the country.

Both research papers are a result of projects that have been totally or partially funded by National ICT R&D Fund. National ICT R&D Fund operates under the purview of the Federal Ministry of Information Technology and Telecom and is mandated to transform Pakistan's economy into a knowledge based economy by promoting efficient, sustainable and effective ICT initiatives through synergic development of industrial and academic resources. To-date the Fund has approved funding of 31 Technical R&D projects worth about Rs. 470 million. For available funding opportunities and details on these and other funded projects please visit www.ictrdf.org.pk