Ministry of Information Technology & Telecom
Government of Pakistan

Ignite
NATIONAL TECHNOLOGY FUND

Ignite
YEAR BOOK | 2017

Surfing the 4th Industrial Wave - The Next Surge of Innovation

CONTENTS

OUR MISSION

"To fix the innovation value chain in Pakistan"

CEO MESSAGE

Innovation is the prime determinant of the rise and fall of societies. The new surge of innovation is the fourth industrial wave, where creativity and innovation are at a premium. Startups are the building blocks of the knowledge economy. Governments provide incentives to address market failures and agile regulation that balances risk with innovation.

Ignite funds startups and innovative projects that utilize 4th industrial wave tech to solve local problems and target global opportunities in health, education, energy, agriculture, telecom, finance and other verticals. Our national network of incubators across Pakistan nurtures startups and engages them with investors and corporations. We are launching a program to prepare one million people for the future of work. Through studies and stakeholder engagement, we help planning in the public and private sectors Ignite outreach activities seek to inform professionals, media, students, corporations, media and policy makers about the challenges and threats posed by the new economy and the importance of innovation and seek to increase engagement in Ignite programs.

Yusuf Hussain
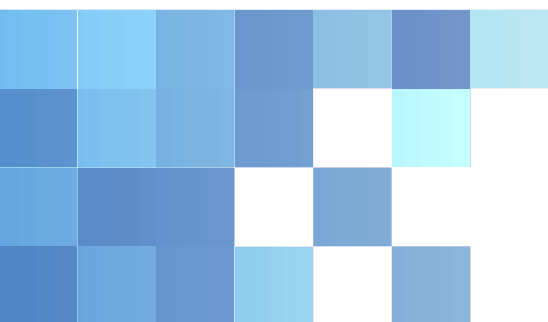
Board Members

Mrs. Anusha Rahman Khan
Minister of State for IT & Telecom

Mr. Rizwan Bashir Khan
Secretary, IT & Telecom

Mr. Mudassar Hussain
Member (Telecom)

Mr. Syed Raza Shah
Member (IT)

Mr. Zahoor Ahmad
Senior Joint Secretary
Finance Division, Ministry of Finance

Mr. Akbar Jamal Shaukat
Program Director, CNS Group of Companies

Dr. Shahid Qureshi
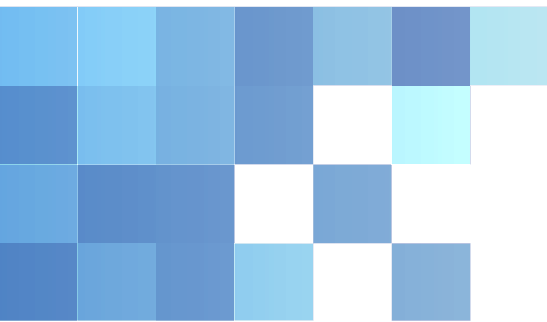Program Director, Center for Entrepreneurial
Development, IBA Karachi

Mr. Khawaja Saad Saleem
Managing Director,
Nayatel (Pvt) Ltd, Islamabad

Mr. Rao Sabir Ali Khan
Company Secretary,
Ignite - National Technology Fund

New Thematic Areas

AI & Big Data

Creating a New Intelligence with Data
– the New Oil

Cloud Infrastructure and Cyber Security

Building a Safe Virtual World

Wearables/Implantables

Extending the Human

Robotics

Perform Repetitive Tasks
Quicker, Better, Inexpensively

IoT

Taming the Physical World

Virtual/Augmented Reality

Illuminating Our World & Fashioning New Ones

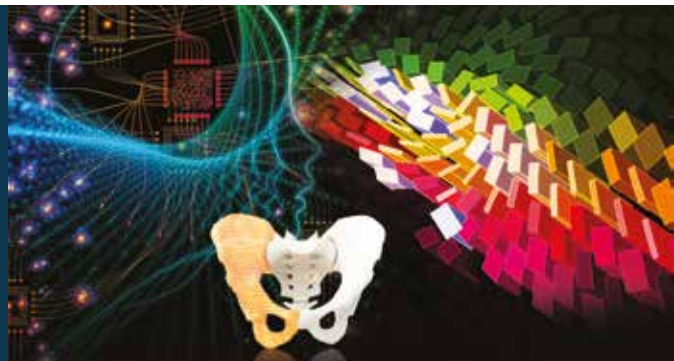## Blockchain

Building Trust and Slashing Cost
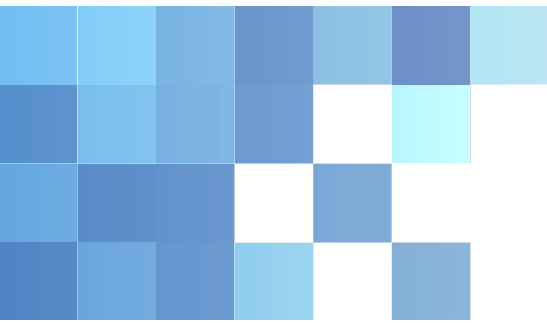
Shared Economy

Using the Under Used

3D/4D

Igniting Creativity with Makerspaces

Neurotech

Thoughts Controlling Things

Highlights

National Incubation Centers worth PKR 1.6 Billion

Successful and timely inauguration of National Incubation Centers in Islamabad, Lahore and Peshawar – projects worth more than PKR 1.6 Billion.
Issuance of mobilization advance for establishment of National Incubation Center at Karachi – project worth PKR 584 million.
Contract signing of NIC Quetta – project worth PKR 559 Million

DigiSkills Training 1 Million Individuals

Design of the world's largest Digital Skills training program to train 1 million individuals. Training component awarded whereas RFP for Outreach has been republished and M&E proposals are under review

Commercialization of Research

Review and re-alignment of Ignite's thematic research commercialization areas for the first time in 10 years. Company anchored to focus on technologies igniting the 4th Industrial Wave

Seed Funding Worth $150,000

Retail Intelligence and Analytics Startup, DealSmash secured seed funding of $15000 from an angel investment firm Al-Hilal Securities Advisor.

3 Years Tax Exemption for Startups

Lead role in introduction of 3 years tax exemption benefit for 'start-ups' that resulted in introduction of 'start-up' definition in the Income Tax Ordinance, 2001

Outreach

Unprecedented outreach of the Company through vastly visible footprints on Social Media Channels, Newsletters with wide circulation, widely applauded events by Prime Minister and Minister of IT, TV shows on state and private channels, Radio programs, and newspaper articles with widespread circulation

Re-branding

Change of Company name to "Ignite" which sounds exciting and in sync with an overall transformation of the company as market driven and customer centric

Ignite
National Technology Fund
(Formerly National ICT R&D Fund)

50% Reduction in Project Evaluation Time

Improved operational efficiencies with focus on lean and customer oriented processes. 50% reduction in project evaluation time as compared to last year.

48 Projects worth PKR 838 Million Mentored

Shift in "monitoring" paradigm to that of "mentoring" 48 projects worth PKR 838 Million to help funded tech startups, ICT companies and academia to succeed by developing commercially viable products and generate revenue

73% Increase in Funded Research Commercialization

73% increase in funded research commercialization from last year funded research commercialization projects with increased focus on startups as they serve as the building blocks of the knowledge economy

Mentorship MoUs

To promote commercialization the Company has signed MoU with IBM and Aghai to help facilitate mentorship of funded tech start-ups and projects

Audit worth PKR 1 Billion

Successful audit of two financial years and closure of all pending issues with SECP. The Company has awarded and concluded financial audit of 37 projects amounting to over PKR 1 Billion through 'A' rated audit firms Financial Audit worth PKR 1 Billion

Full Compliance to International Financial Reporting Standards (IFRS)

Full compliance to (IFRS) through comprehensive adoption of 'Accrual Basis of Accounting' for the first time since inception of the Company; and

Objective Key Results (OKR)

Implementation of Objective Key Results (OKR) methodology which is deployed by companies like FB, Google, Zynga, etc. to achieve operational excellence. Implementing a KMS/LMS named "eLoomi" to instill a culture of continual learning.
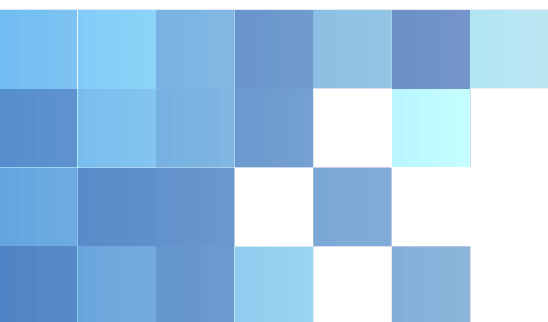
FUNDED PROJECTS

01

CRICFLEX – WORLD'S FIRST WEARABLE FOR CRICKET

CrixFlex is the first patented wearable technology for cricket. It is an arm sleeve, which can be worn by a bowler to determine whether their bowling action is correct and not illegal. It is a simple, low-cost, portable solution that will resolve the issue of illegal bowling action very quickly and easily.

The sports wearable industry is expected to increase by 23% in the next five years. Investment in cricket in Pakistan is also doubling every two years and technology growth is at 30%. These factors indicate a favorable and attractive environment for CricFlex. The financial projection indicates a net profit of $7.5 million by the year 2021, with CricFlex first being introduced in Pakistan and then expanding to other cricketing nations such as England, Australia, Sri Lanka, India, etc.

02

BIG DATA ANALYTICS & ARTIFICIAL INTELLIGENCE FOR CONSUMER PROFILING IN PAKISTAN

Pakistan has over 40 million internet users, however, there is a lack of comprehensive user profiling which would help define users' trends and habits. This Big Data analysis can then be harnessed by local businesses and corporations to be able to position their products and services more effectively.

This project aims to develop comprehensive user profiles to help businesses improve the allocation of their limited marketing budgets or other resources and enhance the overall returns on their spending or investment by building Pakistan's first cloud-based Big Data and Artificial Intelligence SaaS (software as a service).

Tens of millions of data points are generated daily across Pakistan and Techlets Islamabad aims to generate consumer profiles to create evidence-backed indicators to help businesses allocate resources effectively and deliver on new initiatives. It will also support resource plans and governance matters with topical information, by understanding citizens' concerns and will also help with crisis management strategies, etc.

03 — 3GPP-IMS COMPLIANT E2E MOBILE IPTV SOLUTION FOR 4G/LTE NETWORKS

As smartphones and fast wireless mobile networks such as 4G/LTE gain widespread use in Pakistan, the demand for personalized, context-aware and location-based multimedia services on-the-go is also growing. To cater to this need and to make way for next generation multimedia services and particularly, Internet Protocol Television (IPTV), a fitting solution is required where more data can be transferred at a faster rate. Presently, IPTV implementations are not standardized and are not specifically designed for wireless mobile networks – they are designed for DSL-based high-speed networks.

Next generation multimedia services and IPTV systems in Pakistan need to dynamically adapt to network conditions and users' location and devices by incorporating advanced features, like adaptive video delivery methods, to give the user a superior and more seamless experience. This project aims to build 3GPP/IMS compliant exchange-to-exchange IPTV solutions for wireless mobile networks that will enable service providers to launch and effectively deliver innovative revenue-generating IPTV services, in addition to the current data and voice services for mobile subscribers.

04 — DESIGN AND IMPLEMENTATION OF A FAILURE RESILIENT NETWORK LOAD BALANCER FOR CLOUD DATA CENTERS

Modern data centers host tens of thousands of servers in a single facility. These servers are often packaged into racks and allocated as clusters to different services or applications. A high bandwidth network interconnects the racks within a cluster as well as the individual clusters. A critical component in any data center is a network load balancer that aims to evenly balance traffic across the entire network so that users see high performance while avoiding congestion hotspots.

This project aims to build a network load balancing architecture for data centers that use recent advances in Software-Defined Networking (SDN) to achieve an efficient, failure-resilient, agile and deployable load balancing solution, titled 'SLAB' (Software-Defined Agile Load Balancing)

The design and development of SLAB will play a positive role in the development and viability of local cloud computing providers by lowering their costs. Nayatel, a leading provider for broadband, telephony and cable television services, has expressed its support for this project and will be evaluating this solution with the eventual goal of commercialization. For researchers, this project will provide novel insights, protocols and algorithms which will likely open new avenues for future research. A patent may also be filed based on this innovative load balancing solution.

05 XBITS: A DIFFERENTIATED SERVICES SDN ENABLED INTERNET EXCHANGE POINT

Local peering of internet traffic has lots of advantages for both network operators and end-users alike as it allows two internet networks to connect and exchange traffic. Presently, Pakistan lags the infrastructure for establishing local peering exchanges and faces challenges such as lack of peering agreements between operators, cost considerations as well as suitable models to offer differentiated services at Internet Exchange Points (IXPs). There is only one existing peering point in Pakistan, which is used primarily as a transit facility. Two additional peering points are also presently underway between two industry stakeholders.

Xbits is a project that aims to provide a software-defined internet exchange point (SDX) architecture with a framework to offer differentiated services at IXPs, customized specifically for the needs of the local internet community. Software-Defined Networking (SDN) holds potential in terms of lower infrastructure costs and abstraction of network functionality in separate control and data planes.

The project will focus on the following goals: developing customized architecture of SDX; implementation of the architecture; validation of SDX architecture through peering; development of a services brokerage; and offering SDX-differentiated services to local ISPs. This solution will be rolled out in collaboration with Pakistan Telecommunication Authority (PTA) for local telecoms, ISPs and data centers.

06

MONOLITHIC CMOS MICROSYSTEMS FOR STRUCTURAL, CHEMICAL AND BIO HAZARD DETECTION

This project focuses on structural, chemical and bio-hazard detection and prediction using a smart fusion of micro-sensor systems, monolithically integrated inside a CMOS microchip – suitable as an autonomous sensing-node of a wireless sensor network (WSN). The embedded sensors can be used for detection of oil/gas leakages, analyzing vibration signatures of structures such as buildings etc.

The proposed sensor-fusion includes accelerometers, IR imagers and bio-MEMS sensors along with their configurable readout microelectronics. The main aim of this project is to utilize the upcoming trend of FAB-supported monolithic microsystems manufacturing, i.e. micro-sensors and micro-electronics inside the same CMOS die. This monolithic integration is key to develop a low-cost, low-power, compact, robust and high-performance system, which can be produced in batches of millions at a time.
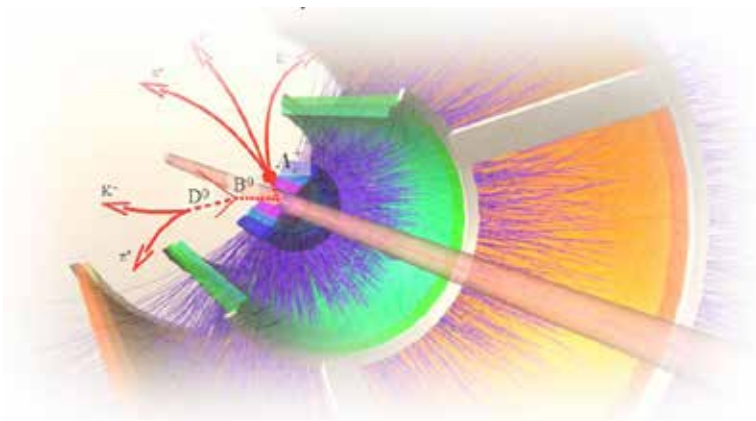
Such integrated microsystems will have applications across strategic, academic, commercial and domestic spheres – and this system can be employed for widespread monitoring of resources.

07

MANAGING ELECTRICITY LOSS WITH ELECTROCURE

ElectroCure is a governance tool for Electricity Data Management. According to official reports, Pakistan has a total annual loss of 27% when it comes to transmission and distribution of electricity. The internationally-accepted figure for electricity loss is 6% – which means that there is still 21% unaccounted electricity loss in Pakistan which equates to around PKR 350 billion annually. The various activities and factors that contribute to this loss include meter tampering, electricity theft from transmission and distribution lines, billing irregularities and unpaid bills.

ElectroCure aims to address electricity theft arising from meter tampering, theft from transmission and distribution lines, and billing irregularities – which contribute to more than 90% of the total losses. This system will also eliminate the need for meter readers, thus eradicating the practices of bribery and other unlawful actions resulting from human intervention. The potential market for this product is very promising and Military Engineer Services (MES) Pakistan Army is also supporting this project.

08 RESOLVING PAKISTAN'S ENERGY CRISIS WITH RENEWABLE ENERGY

This exciting project aims to develop a relatively cheaper solution to Pakistan's energy crisis by shifting the current electricity generation completely to renewable energy sources. Presently, the biggest challenge faced by renewable energy is due to issues like variability and intermittency. Although renewable energy sources such as solar, wind etc. are abundant in nature, they are not controllable. So, energy generation through renewable sources cannot be scheduled effectively – as they are dependent on factors such as wind speed and available sunlight. This results in a mismatch between the demand and supply of electricity.

How this project aims to resolve this issue is by matching the demand with the supply, rather than the other way around – and without requiring extra storage of electricity. To implement this innovative solution, an inter-disciplinary approach will be required where technological development is to be amalgamated with an understanding of the user perspective. To begin with, a Deeply Intelligent Distribution System (DIDS) will need to be developed. Through this system, the elasticity of demand can be matched with the available supply using intelligent forecasting and artificial intelligence-based demand side management. The simulation will take realistic electricity demand and supply scenarios into account for the coming decades, e.g. 2020, 2030, etc.

The beneficiaries for this project will include both the government and private sector e.g. the Planning Commission, Ministry of Water and Power, Power Information Technology Company (PITC), electricity distribution companies (LESCO, MEPCO, IESCO, etc.), Alternate Energy Development Board (AEDB), National Transmission and Dispatch Company (NTDC), National Electric Power Regulatory Authority (NEPRA), renewable energy generation companies and meter manufacturing companies etc.

09

OBJECT DETECTION & CATEGORIZATION FOR BLIND USING DEEP NEURAL LEARNING

This project aims to develop a portable/wearable device for the visually impaired to detect and recognize general objects close to the user in a video stream using stereo cameras and miniature computers.

The solution will improve upon image processing techniques for depth analysis in a given video stream. This will be done using a deep neural architecture for scene segmentation and finally object recognition in the image or video frame. Furthermore, it will also port deep neural networks and various image processing approaches to a portable computer like Raspberry Pi or the Odroid with a stereo camera interface.

The system will communicate with the user using speech signals for detected / recognized objects in the video that are at a certain distance from the user.

10

INNOVATIVE LEARNING SOLUTION FOR SCIENCE EDUCATION

Science will become more fun and easier to learn for Grade 6, 7 and 8 students as this project aims to build a comprehensive interactive digital curriculum for science subjects. Based on the National Science Curriculum and fully aligned with the Federal Textbook Board standards, this project is specifically designed to raise curiosity and awareness and promote conceptual understanding. It focuses on learning based on audio and visual aids; students will be able to apply contextual knowledge and take advantage of interactive learning with feedback loops.

The digital curriculum will include video content, activities and games, assessments and comprehensive digital taxonomies – and will be available in both English and Urdu.

11

EFFICIENT AND LOW-COST SOLAR INVERTER

This project aims to develop a new kind of solar inverter which can be used in commercial solar applications. This inverter will be low-weight, low-cost and very efficient – which will set it apart from its bulky and expensive counterparts presently available in the market.

As electric power from solar panels is received in direct current (DC) form, it needs to be converted to alternating current (AC) for it to be usable in domestic and industrial solar applications. Existing pure sine wave converters are big and expensive. A 5kVA inverter costs anywhere from PKR 57,000 to PKR 187,000 in the local market, however, this one will be available for approximately PKR 30,000 due to its low production cost.

12

PREDICTION OF REMAINING USEFUL LIFE (RUI) OF AERIAL BUNDLED CABLES (ABC) IN COASTAL AREAS

Wouldn't it be useful to know the lifespan of any given thing or object? This project is addressing a pain point that is known to every citizen... lifespan of ABC (Aerial Bundled Cables) that are overhead power lines using multiple insulated phase conductors bundled tightly together. The primary goal of the project is to predict the remaining useful life of ABC cable installed in Karachi in recent past.

These cables are less prone to electricity pilferage and theft. Moreover, the cables offer safety and reliability, reduce power losses and ultimate system economy through cost reduction in the installation and operations.

Karachi Electric (KE) has recently used these cables in Karachi for power transmission instead of standard copper cables to avoid electricity theft. However, the performance and life of such cables in coastal areas is not known due to less frequent usage of these cables. Karachi Electric, premier company supplying power to the metropolis is interested in finding the degradation rate of the cables with respect to environmental conditions including moisture, thermal and mechanical loading conditions to facilitate and schedule repair and replacement action well in time to avoid sudden power failures.

The scope includes gathering of non-destructive testing techniques (NDT) data from the ABC installed in different regions of Karachi at the intervals of two months for a duration of one year.

Data collection will be followed by the processing of NDT data to diagnose the existing state of the cable. A prediction system will be developed using the historical database so generated and underlying fatigue models for cables and connectors will be developed to predict the remaining useful life of cables in different regions of Karachi.

13 PORTABLE OPTICAL SENSOR FOR RAPID, NON-INVASIVE, AND ON-SITE DIAGNOSIS OF TUBERCULOSIS (TB)

Brainchild of Dr. Muhammad Imran Cheema, a portable optical sensor is being developed for on-site diagnosis of tuberculosis (TB); a disease which is known to every second household in Pakistan.

Using laser Raman spectroscopy, a simple breath test will analyze a patient for rapid, on-site diagnosis. The inner walls of the collection chamber they breathe into are chemically treated to capture the organic TB biomarkers present in the patient breath. A laser beam is then passed through the chamber, and the transmitted light is detected as a function of the raman shifts, determining the frequency.

The diagnosis of TB is then performed based on the chemically-specific spectroscopic signatures of the TB biomarkers present in the breath. This process will provide a novel TB sensor which is non-invasive, accurate, sensitive, and label free. By developing an easy to use non-invasive optical sensor, immediate TB diagnosis can be provided without the aid of specialized laboratory personnel. This is also easily portable to remote areas with lack of healthcare infrastructure.

14 FORMULATING SUSTAINABLE IRRIGATION MANAGEMENT INFORMATION SYSTEM USING REAL TIME IRRIGATION WATER DEMAND & SUPPLY FOR RURAL AREAS DEVELOPMENT

For a farmer, the most important information about watering their field would be when, where and how much to be precise.

The proposed project is developing a sustainable irrigation management information system, using microwave signals information of telecommunication networks to estimate climatic parameters, and optimizing water productivity.

Measurement of precipitation is based on the fact that the raindrops on the

microwave link path attenuate the signal. Hence, a decrease in received signal level generally indicates an increase of rainfall intensity. Underground sensors integrated with an IoT network will continuously assess ground moisture. With precise, real-time measurement of climatic data and ground water content, the proposed system will accurately estimate actual irrigation water demand in the field.

To enhance water productivity and soil management, this intelligent system will use agro-economic model for an effective reallocation strategy. Not only will this model help uplift the living standard of farmers, but also improve crop production and reduce water wastage. This system will allocate water based on both flat and variable rates for optimum water productivity.

15

DEVELOPMENT OF ICT BASED DATABASE OF ESI-MS/MS OF NATURAL PRODUCTS FOR INTEGRATED IDENTIFICATION OF DRUG-LIKE AGENTS

A comprehensive database for the identification of natural products using ESI-MS/MS is non-existent due to unavailability of purified natural products. Dr. Syed Ghulam Musharraf has taken this upon himself to develop such a spectra library of over 5,000 compounds (available at ICCBS, Molecular Bank) included within software that is equipped with a search engine.

This database, which will be the first of its kind in the world, has already generated interest across the globe amidst health diagnostic companies which are eager to subscribe to it. Ingredient verification of herbal medicines and natural cosmetics should become far easier, quicker and dependable with such an online database, which will also boost research.

16

DEALSMASH RECOMMENDER SYSTEM

Everyone has experienced the frustration of not being able to avoid the spam that comes with marketing avenues of all kinds including SMS, emails and what not! For retailers and customers alike, DealSmash Recommender System, which is essentially the spam filter or modern marketer's funnel, provides contextual awareness and personalized recommendations to retail customers.

How? The central component of the system is an intelligent, adaptive software-based recommender system that can learn, both offline and online, the preferences, shopping behavior, geographic attributes and demographics of the customer base, in return providing a personalized shopping experience to each customer by suggesting only relevant offers to his or her mobile device in a context and location-aware manner.

The recommendations will be in the form of item- and/or category-specific coupons and/or reward offers from DealSmash (Pvt) Ltd. retail partners and advertisers.

Based on these recommendations, the system will choose the most relevant offers from a list of previously stored offers and suggest these to the DealSmash app user. The user data for the recommendation system will be obtained through different channels including integration with retailer POS, user scanned receipts or beacons.

Expected outcome: State-of-the-art high performance recommender system delivering contextual offers and providing intelligent brand positioning for the retailers and advertisers.

17 SMART CORONARY STENT ENDOPROSTHESIS FOR REAL-TIME CORONARY HEART DISEASE MANAGEMENT

The stage and progression of disease as well as any changing in-vivo conditions may be monitored by an external RF component, which can provide clinicians with real time patient alerts. In case of ambulatory patients who are not hospitalized, the ex-vivo (or active component) of the RF device can prompt the patient about their hospital visits, based on any changes in the internal pathology sensed by the in-vivo passive RF component.
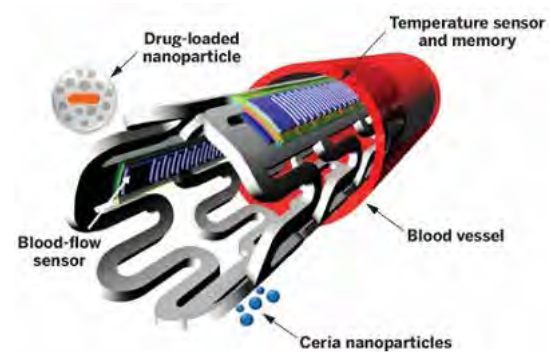
Along with the modification of the treatment plan without the need of expensive or invasive diagnostic procedures, this novel stent can act as a real-time monitoring system and help enormously in preventing problems caused by delay in diagnosis or treatment.

18 AUGMENTED REALITY LEARNING SYSTEM

'We're answering a social call.'

WonderTree, last year's champion startup from Pakistan at the Global Entrepreneurship Summit in Stanford University, is a platform that uses augmented reality gaming for development of motor, cognitive, and functional skills of people with special needs.

There are an estimated 18 million people with disabilities in Pakistan. Augmented reality learning system (ARLS) is developing a revolutionary educational tool and therapeutic platform tailored to special needs, which has already stirred interest in a handful of remedial neuro-clinics around the world.

To date, special education and therapy remains exclusive to a certain privileged strata of society. ARLS has the potential to disrupt and revolutionize the provision of special education and therapy. Using a powerful combination of augmented reality, gamification, education and therapy exercises, ARLS is creating a cost effective, efficient and accessible solution that will cater to all people with neurological disabilities in Pakistan. Better yet, this won't be limited to Pakistan alone!

19 AUTOMATED GENERATION AND CONFORMANCE TESTING OF MOBILE APPLICATION VARIANTS

As the scope for mobile apps grows, more and more companies and individuals are investing in the development of mobile apps for various uses. A key challenge faced by mobile application developers is managing the variability of the mobile platforms, their versions, and features for the mobile application. Due to this, a large number of application variants have to be built and maintained.

This project aims to develop a model-driven product line engineering methodology supported to automate generation of mobile application variants based on different features and their variations. For example, an app built for Android should automatically be supported by iOS as well as different hardware devices or user requirements.

The proposed approach will be implemented as a set of open-source tools, evaluated by local and international industry partners.

20 OCT IMAGE ANALYSIS SYSTEM FOR GRADING & DIAGNOSIS OF RETINAL DISEASES AND ITS INTEGRATION IN I-HOSPITAL

iHospital is an award-winning software-based medical diagnostic and analysis tool which integrates with existing hospital management and information systems. It won silver awards at Asian Pacific ICT Alliance Awards (APICTA) in 2012 and 2013, held in Brunei Darussalam and Hong Kong. Top research talent from CASE and EME College, NUST have joined hands with CARE (Pvt) Ltd. to make iHospital a commercial success.

Eye to I is an Ophthalmology related project under the iHospital umbrella and aims to develop a self-diagnosis system for screening and diagnosis of four retinal diseases; i.e. Retinopathy, Glaucoma, Edema and Macular Degeneration; and also provides the

facilities of retinal image acquisition, analysis, grading and a telemetric system.

One part of the proposed solution will use state-of-the-art 'Machine Learning' techniques for accurate retinal image analysis and diagnosis to prevent sudden vision loss. The system involves a high-resolution OCT camera, software for automated grading of different retinal diseases and a universal communication device to transmit the data to a remote ophthalmologist (e.g. one present in a hospital in a major city) for real-time diagnosis and treatment.

The other part of the project is building a specialized hospital information system supporting intelligent diagnosis of retinal diseases. This system will be compatible with existing healthcare infrastructure provided by the government, e.g. Basic Health Units (BHUs). The prevalence of 3G/4G services across Pakistan and the ever increasing penetration of these services in rural and remote areas will pave the way for delivering better healthcare to remote areas of Pakistan.

21 E-LEARNING SYSTEM TO ASSIST ELEMENTARY EDUCATION, RESPONSE ANALYSIS & EARLY DETECTION OF PSYCHOLOGICAL DISORDERS IN STUDENTS

Computer based learning has become a very important part of many students learning, and it has been integrated into their lives one way or the other. We aim to introduce a uniform learning ironment in Pakistan's basic education system including lectures, practice material and assessments in electronic format. This e-learning project would deliver computer based teaching material comprising the latest research and current best practices in leading private schools of the country.

Teachers would monitor the learning outcomes, delivery of instruction, and students' achievement. The purpose of developing this project is to provide unprivileged middle and lower class members of society the same standard of education in order to minimize the disparity between curricula. Within the larger context of nation building and providing support to rural areas, a mobile school would be developed which would be used to teach developed computer based trainings in remote areas where students have no access to state-of-the-art teaching methods and curriculum.

22 INTELLIGENT DISEASE DIAGNOSIS SYSTEM FOR LIVESTOCK IN RURAL PAKISTAN

Farmers and agriculturists are susceptible to suddenly losing a lot of their livestock due to contagious diseases undiagnosed in due time. Rather than waiting for the visit of a veterinary expert for the timely diagnosis and treatment of such diseases, this project seeks to provide an

alternative with its aim to study, investigate, design and implement an artificial intelligence-based disease diagnosis system for livestock owned by farmers in rural Pakistan.

The project will be confined to four types of cattle commonly owned in rural areas: cows, buffaloes, goats and sheep. The product will be capable of running as a stand-alone application on computers as well as Android-based mobile phones, where the user will enter symptoms through an easy-to-use localized interface and the system will predict the possible disease(s) with suggestions of medication. It will also provide a provision to veterinary doctors to contribute in enhancing the knowledge-base of the system, ultimately resulting in accurate diagnoses and effective treatments.
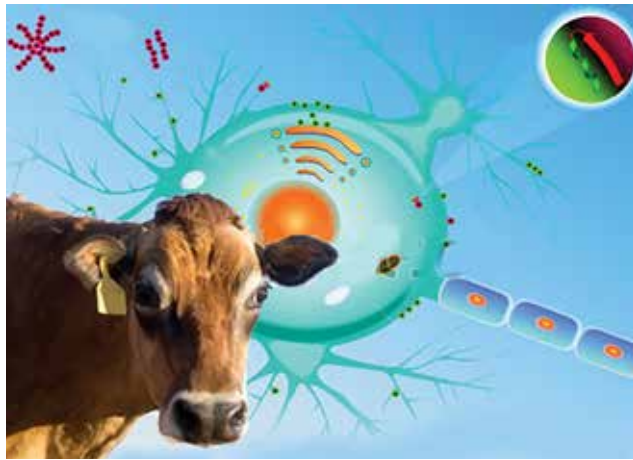
23

VIRTUAL BROADBAND REMOTE ACCESS SERVER

The rapidly-increasing need for internet bandwidth from consumers is a demand every ISP has to struggle to meet, and the challenge is only going to grow with time.

Scalability for an ISP is hindered by the fact that a key piece of equipment known as Virtual Broadband Remote Access Server, or virtual B-RAS (used to route traffic to and from broadband remote access devices on an Internet service provider's (ISP) network) is expensive and vendor-locked, leading to high operational.

Our solution, the Virtual Broadband Remote Access Server, or virtual B-RAS provides all the functionality of a traditional B-RAS, as well as policy configuration and enforcement features. However it does all that as a low-cost, virtualized software solution (virtual B-RAS) that will run on generic x86 servers instead of vendor-specific hardware.

This locally-developed technology would reduce the ISP's costs enabling them to scale more easily, and the removal of vendor lock-in issues would foster more innovation in this space and uplift this specific technological space.

This product will directly benefit and facilitate ISPs in Pakistan who contribute significantly to the Ignite (Formerly National ICT R&D Fund) and the overall GDP of Pakistan.

24

E-ASSESSMENT SYSTEM FOR C/C++ PROGRAMMING ASSIGNMENTS

A student entering the discipline of Computer Science in Pakistan is taught the basics of programming through C/C++ programming language. Manual assessment of programming exercises is quite time-consuming and this is where automated assessment tools come in.

Existing assessment tools are mostly proprietary and have been developed by various institutions for their own use. Also, current open source requires customization and lacks certain functionalities that this project aims to address. This project also aims to develop different components that are necessary in building an effective automated assessment system. All components will be developed as web services joined together using service oriented architecture (SOA).

25

A MOVING TARGET-BASED ANOMALY DETECTION SYSTEM DESIGN TO MITIGATE PARAMETER ESTIMATION ATTACKS

As providing effective security for networks becomes a matter of concern and poses a great challenge to the integrity of such networks, numerous Anomaly Detection Systems (ADS) have been proposed in the last few years to combat these rapidly-evolving attacks. Some of these systems are now experiencing widespread commercial deployment.

The main research focus so far has been on either improving constituent components of the ADS or providing detection solutions that build on top of existing ADS. While these approaches provide accuracy improvements, these approaches do not cater for the evasion susceptibility still inherent in the ADS design.

26

PROVISION OF INFLIGHT WIFI & INTERNET SERVICES USING HIGH ALTITUDE PLATFORMS

As technology spreads, most areas in Pakistan – urban and rural – have gained wide cellular coverage and have hi-speed internet. Some areas, however, remain out of reach or infeasible to provide coverage for due to the topography of the region where hills and mountains provide interruption in signals, or where the population is sparsely scattered.

This project aims to provide internet to under-served areas of Pakistan in the provinces of Balochistan, Khyber Pakhtunkhwa and outskirts of Sindh through High Altitude Platforms (HAPs). HAPs are unmanned solar-powered lightweight planes that can provide wireless coverage. These are usually deployed in the stratosphere, which provides an atmosphere free from turbulence and have fixed coverage for long periods of time which is essential for fixed mobile services.

HAPs can also be used to provide a backhaul connection to the existing terrestrial infrastructure. This project aims to provide HAPs that will be equipped with communications satellites and serve as a wireless hotspot for Internet Service Providers (ISPs). Once successfully deployed, HAP constellations will be able to provide complete area coverage.

27

CONTENT BASED INDEXING AND RETRIEVAL OF VIDEOS

There has been a tremendous increase in the generation and exchange of multimedia data in general and video databases in particular, resulting in an increased need for effective indexing and retrieval mechanisms.

Traditionally, video retrieval has been based on user-assigned tags and not on the actual content of the video. This project aims to develop a content-based video indexing and retrieval system.

Any caption text appearing in videos will be used as the primary index, while the audio content in these videos will serve as the secondary index. Indexing can be implemented either through recognition of text or using a word spotting-based technique. Either of these solutions could be developed to target a defined vocabulary of keywords.

Once the videos are indexed, the user may then retrieve all the frames of all the videos containing the text or/and spoken occurrences of the keyword by searching on a query keyword.

28 A RE-CONFIGURABLE SYSTEM-ON-MODULE FOR INDUSTRIAL CONTROLS WITH IEEE 1588 IP CORE DEMONSTRATOR

This project aims to design a sophisticated electronic system as new standard for clock synchronization across the internet.

The system is comprised of the development of reconfigurable hardware as well as development of software to make use of the indigenous hardware to carry out its operations.

The hardware board will be developed using the Xilinx Virtex chip and software will follow the IP Core for IEEE 1588 standard.
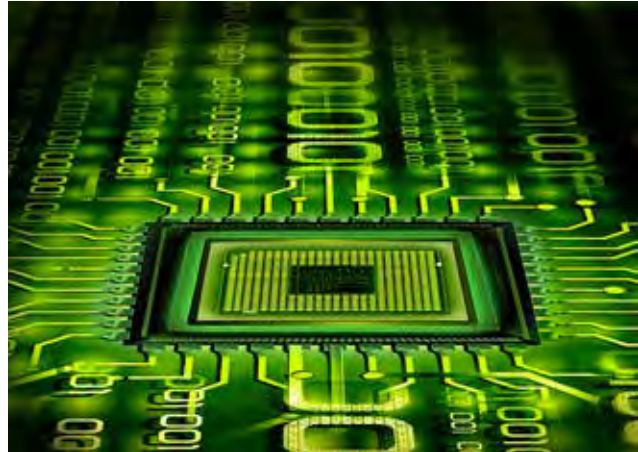
29 RE-INTERMEDIATION IN TELECOMMUNICATIONS

Global adoption of VoIP based technologies and services is significant and growing rapidly, in large part due to the deregulation of telecommunication markets. Using this technology operators and resellers of all sizes are able to leverage the infrastructure of the internet to deliver communication services, without high upfront investment in proprietary infrastructure.

Moreover, integration protocols between operators have also been standardized to a large extent (e.g.h323, SIP) and operators can now switch between suppliers and customers in a highly competitive market, and they can interconnect with each other in a matter of hours, as opposed to months as was previously the case.

Such advancements in this telecommunication niche have ballooned the VoIP market to a value of over $40 billion. This deregulation and standardization are enabling markets to transform from centralized to free markets, thereby presenting significant opportunities for innovative niche players.

Despite such advancements, there is still a problem of inefficient access to information within the industry, and discovery of the most profitable partners and best rates is still a challenge for operators, meaning that a lot of potential value is left "on the table" for operators.

What the industry needs to scale to the next level is a credible and efficient discovery platform to do so, and this is exactly what this project has undertaken to create.

30 SCALABLE TRANSMISSION OF ADAPTIVE MULTIMEDIA BASED ON P2P

The convergence of the communication and computing industries has resulted in an explosion of powerful media consuming electronic devices such as smart phones, smart TVs, gaming consoles and tablets. Services requiring high bandwidth such as video conferencing, video gaming, social networking and video content distribution has resulted in the creation of a heterogeneous networking environment - with support for live video streaming being a key element of this environment.

The video streaming architectures currently employed in the developed countries are not suitable for developing countries, not least because the networking conditions of developed and developing countries are quite different (bandwidth available to end users is much lower and communication links are often more unreliable), not to mention the problems related to acute power shortages and breakdowns.

These architectures are not robust enough to cope with the highly unreliable and fragile nature of Pakistani internet connections – results in a very high user churn rate.

To make matters worse, these network architectures are mostly proprietary in nature and hence cannot be customized to better fit the networking conditions of Pakistan. This prevents both academia and industry professionals from making research contributions and rapid prototyping to improve the architectures.

STAMP is an indigious network architecture designed from the ground up to handle the challenging infrastructure requirements of developing countries. It will boast enhanced robustness to peer churning, efficient peer selection and content distribution strategies, scalability and heterogeneity.

31

DESIGN & DEVELOPMENT OF CONFORMAL BEAMFORMING ARRAY (CBA) FOR AERIAL PLATFORM

Conformal antennas also known as wrap around antennas have utility in many applications where linear/planar antennas cannot be put to use or definitely have drawbacks. This includes the structural embedded antenna on a skin of vehicle, RADAR, aeroplane, wearable electronics, smart textiles and wearable health-monitoring systems. Most of these applications require placement of antenna arrays on a non-planar surface with controlled gain, higher efficiency, higher angular coverage, compact size, robust beam formation capabilities, and cost-effective solution.
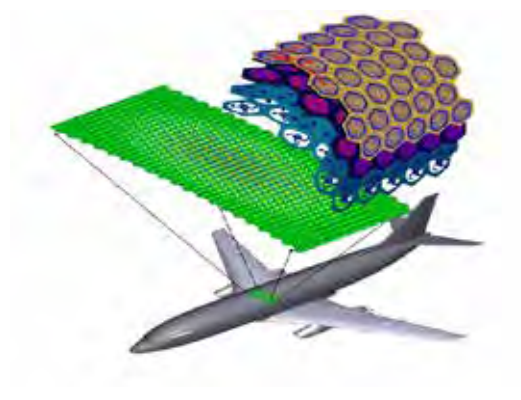
In this project, the proposition is to work on the research and development of conformal beamforming array (CBA) that will be tested on a fuselage/wing portion of a small surveillance unmanned aerial vehicle (UAV) or a commercial UAV model. The proposed CBA can also be used in passive radar for the detection of low flying objects by increasing the angular coverage beyond that is offered by conventional planar antenna arrays. The proposed array will be able to perform beam-steering and null-steering simultaneously. This feature of CBA to orient its main beam towards the desired user and nulls towards the unintended users makes it an excellent candidate for 4th and 5th generation telecom networks. For example, 3G and 4G telecommunications infrastructure involve multiple transmit receive antennas where the use of conformal smart antennas can increase the network capacity considerably. The proposed CBA system will be scalable both in terms of frequency, and size of the conformal array, having adaptive beamforming capabilities without human intervention, efficient and will be designed specifically for aerial platform structures.

Moreover, the CBA developed can be used in many commercial/defense applications, for example, 1) On the skin of an automobile for safe driving through alert messages/automatic brakes control using its beamforming capability, 2) On a cellular base station to increase the network coverage/ capacity, 3) Access points in a broadband networks to achieve higher date rates, 4) Body area networks, and 5) Data transmission clothing.

32

INTELLIGENT SYSTEM DESIGN/IMPLEMENTATION OF REAL TIME FRAMEWORK FOR DETECTION OF GAS/OIL LEAKAGE AND THEFT USING WIRELESS SENSOR NETWORKS

This project is for developing a sensor based network for real time monitoring and data acquisition of Gas Distribution network, for possible malicious activities and theft detection.

According to the Organization for Economic Cooperation and Development (OECD), Unaccounted-for-Gas (UFG) averages at 1-2% globally. However, in Pakistan UFG is at an alarming 13% for both SNGPL and SSGC!

Every percent of gas loss amounts to a loss of $28 Million (PKR 2.5 billion) accumulating to an annual loss of over $334 Million to the nat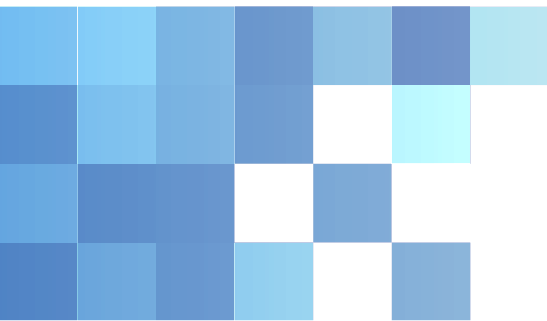ional exchequer (PKR 3 billion or Rs 300 crores). Major contributing anomalies towards UFG are **Theft, Meter tampering, False billing** and **Illegal** connections.

Through this project we are targeting to address each one of these anomalies, with an aim to reduce UFG down to 1-2%, in line with the global average, and to save billions of rupees for the national exchequer
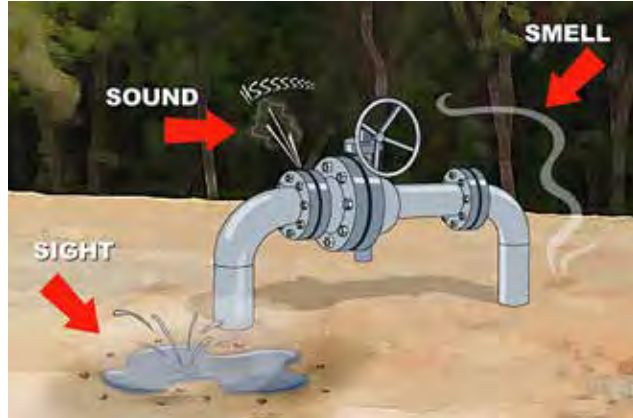
Human Resource Development
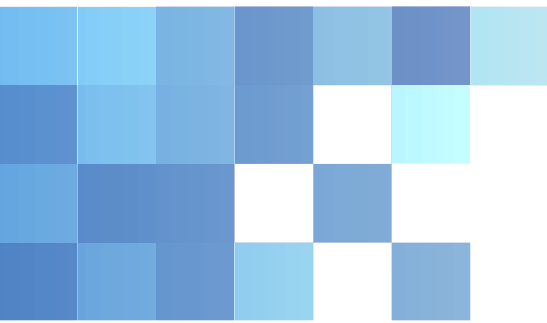
DigiSkills

PM LAUNCHES DIGISKILLS PROGRAM TO TRAIN ONE MILLION YOUTH ONLINE SOFTWARE

Prime Minister Shahid Khaqan Abassi launched the DigiSkills program aimed at imparting IT skills to one million youth through online modules and assured that his government would fully facilitate the private sector in this initiative.

Addressing the event at the Prime Minister Secretariat, the Prime Minister said his government was committed to support the private sector in its ventures of introducing cutting edge technology and taking the country forward.

The DigiSkills program has been launched jointly by the Virtual University and Ignite – National Technology Fund.

Prime Minister Abbasi said the government would ensure availability of the broadband across the country and facilitate e-commerce. He stressed the need to further work on it and said the entrepreneurship was a unique skill and only the private sector has the ability to take it forward. He said the world was changing rapidly owing to progress in the information technology and said while the governments were very slow to change, the private sector was at the forefront in adopting cutting edge technology.

He said the government has delivered in many fields; built motorways, sea ports, airports besides building new power plants. However the success in information technology can be rightly termed an important contribution over the past five years, he added.


The Prime Minister said the DigiSkills program would equip the youth to get online jobs and earn money in a non-traditional way. He said he has great faith in the youth of the country and expressed confidence that the women would lead in these areas.

Minister of State for Information Technology and Telecom Anusha Rahman described the DigiSkills program as an important part of Information Technology initiative of the government. She said the program would create online employment opportunities to enable youth to earn 200 to 300 dollars per month. She said with the help of this program, youth from across the country will provide services across the globe.

Anusha Rahman said Pakistan Muslim League-Nawaz (PML-N) had a manifesto to bring technology into use for creating employment opportunities in the country and said the dream was now getting materialized. She said Pakistan was emerging as an IT-leader in the world and the PML-N government was committed to brighten the future of its young generation. The young children were also being imparted skills in various areas and would encourage them to do online courses, she added.

The event was attended among others by CEO Ignite Yusuf Hussain and Rector Virtual University Naveed Malik and representatives of different IT companies. Are you interested to join? Signup at www.digiskills.pk and you will get an email/sms before the portal launch.
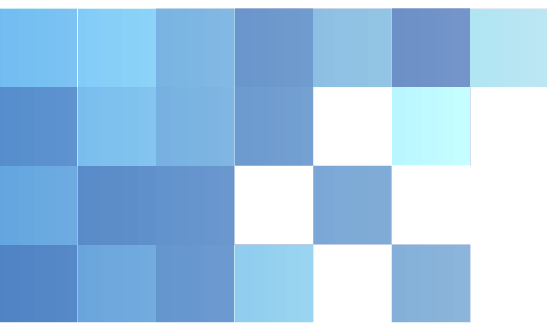
National Incubation Centres

CONTRACT SIGNING OF NATIONAL INCUBATION CENTRE QUETTA

As another step forward in developing innovation and entrepreneurship value chain across the country a contract was awarded by the Ignite - National Technology Fund under the Ministry of Information Technology & Telecom, to a Joint venture of LUMS and Balochistan University of Information Technology, Engineering and Management Sciences (BUITEMS) Quetta for the launch of National Incubation centre in Quetta. This come on the heels of successful Launch of NICs in Islamabad, Lahore and Peshawar. Minister of state for IT and Telecom Mrs. Anusha Rahman witnessed the contract signing ceremony.

Mr. Sohail Naqvi VC LUMS Lahore while appreciating the initiative of Ignite and especially Ministry of IT said that " it's our privilege to be partnering in this tried and test model of entrepreneurial development. VC BUITEMS Mr. Ahmad Farooq Bazai thanked Anusha Rahman for providing this unique platform in the shape of National Incubation Centre to the youth of Balochistan.

Khawaja Saad Saleem, chief operating officer Nayatel while speaking at the occasion commended the role of the Ministry of IT & Telecom in recognizing information technology as a significant

contributor towards the economy of Pakistan through multifarious programs in concert with the industry as well academia. He applauded the transparent process through which these contracts were awarded. All credit goes to the honest and vibrant minister of IT Ms. Anusha Rahman who ensured efficacy and transparency in all IT related initiatives. He added.

Yusuf Hussain, CEO Ignite said that we have successfully launched NIC Islamabad, Lahore, Peshawar Karachi and now Quetta under the ablest leadership of Minister Anusha Rahman within stipulated time frame. He said that NIC Quetta will be a game challenger for the youth of Balochistan and will produce competitive tech startups of all types.

Minister IT Mrs. Anusha Rahman while speaking at the ceremony stated that it was our vision to provide broadband and IT facilities to the nook and corner of the country especially to the people of unserved and undeserved areas. We have rolled out different projects worth tens of Billions of rupees in last four years to provide broadband connectivity and optical fiber network in far-flung areas of the country including Balochistan and KPK and most of the projects are near completion. She said that NIC Islamabad, Lahore and Peshawar are working successfully and expressed her desire to see NIC Quetta and Karachi, functioning by the month of April this year and be a part of this massively important network of Incubators. She also appreciated the best efforts of Ignite in carrying out these key initiatives. She said that "Todays launch event was an important milestone in the journey towards the realization of a Digital Pakistan and showcased the continued efforts of public and private sectors in establishing Pakistan as a flagbearer of technology innovation".

The signing ceremony was attended by numerous dignitaries and high-level officials from both the government and the corporate sector.

NATIONAL INCUBATION CENTRE KARACHI

After the successful execution of NIC Islamabad, NIC Lahore and NIC Peshawar, the contract to setup National Incubation Center (NIC) in Karachi has been awarded to LMKT.

Prime Minister of Pakistan, Mr. Shahid Khaqan Abbasi, was the Chief Guest of the contract signing ceremony, which was held at the Prime Minister's Secretariat and was also attended by the Guest of Honor Minister of State for Information Technology and Telecommunication, Ms. Anusha Rahman.

Shabana Khan, President LMKT, and Yusuf Hussain, CEO Ignite (formerly National ICT R&D Fund), signed the contract in the presence of renowned dignitaries from the public and private sectors.

The contract signing was part of the launch of the Government's DigiSkills Program, under which one million of the country's youth will receive digital skills development training.

LMKT, along with its partners, including NED University, was selected for this landmark project by Ignite through a transparent bidding process in which LMKT competed with five other bidders, comprising leading multinationals and technology companies. Ministry of IT & Telecom's program to create incubation centers across Pakistan is aimed at promoting youth-led entrepreneurship in the country.

LMKT will setup the center in Karachi to empower aspiring Sindh-based entrepreneurs. After the successful launch of NIC Peshawar, NIC Karachi will be LMKT's second venture into the national incubation space.

Being at the heart of the country's business hub, the Karachi center is expected to be Pakistan's premier incubation facility. The Karachi incubation centre is projected to start operations in the second quarter of 2018.

Along with other facilities, incubatees at NIC Karachi will have access to a design studio, NED University's Makers' Lab and a fintech centers, a result of HBL's collaboration on the project.

"Being the great equalizer, technology counters the injustices that stem from the stratification of our society," said Shabana Khan, President LMKT. She added that "establishing avenues of development and wealth creation, like NIC Karachi, lifts the bottom 100 million of our nation and brightens the future of the whole of our youth. "

On the occasion, Shahjahan Chaudhry, Director NIC Karachi, said, "We are committed to developing Pakistan's startup sector. Our youth has the ability to produce transformational solutions when provided with resources and an environment that is conducive to creative thought." He continued, "Karachi has always attracted the nation's best and the brightest and we are really looking forward to working with these rising stars and developing their revolutionary ideas."

Yusuf Hussain, CEO Ignite, said:

Innovation is the need of the hour, and by empowering our youth with the necessary digital skills and entrepreneurial acumen we can enable them to tackle society's most challenging problems.
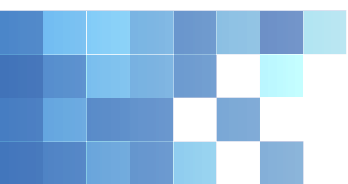
NATIONAL INCUBATION CENTRE PESHAWAR

Addressing the inauguration ceremony of National Incubation Centre (NIC) Peshawar, Prime Minister Shahid Khaqan Abbasi said the centre would definitely cater the needs of young generation to get global access through Internet. He said the incubation centre would eventually

explore the capabilities of young generation and serve as a bridge, giving them access to opportunities for national and international markets.

The Prime Minister said the provision of broadband facility is also among requirements of youth, like basic education, adding it would help & bring youth of far-flung and tribal areas into national mainstream. He said facilitation of young generation would eliminate extremism and curb Kalashankov culture, thus opening new vistas of growth and prosperity. Young generation, who seek work after completing education, would be able to support themselves, he said and added it will also create employment for many more through such facility. He said that government has completed projects worth billions of rupees including electricity generation, Sui gas provision and establishing industrial zones.

The Prime Minister said NIC is a pilot project that would prove to be a milestone in utilizing energies of youth for the country's overall progress and development. He said that establishment of incubation center would also bring investment by harnessing ideas of people and transforming these into opportunity. This is the first government that has focused on this important sector and issued new Internet licenses, thus paving the way for technology development, and improving business and trade activities across the country, he added.

Minister of State for Information Technology and Telecommunication, Ms. Anusha Rahman, while expressing her satisfaction with the launch proceedings, stated, "National Incubation Centre, Peshawar will usher a vibrant new era of entrepreneurship and innovation in Khyber Pakhtunkhwa, enabling many aspiring tech entrepreneurs and startups in creating game-changing solutions." She added, "Ministry of IT&T is constantly striving towards transforming Pakistan into a knowledge-based economy through various sustainable ICT initiatives."

Yusuf Hussain CEO Ignite said "A singular opportunity for Startups that seek to solve meaningful problems with the help of Academia and for Corporates that seek to transform and thrive in this age of global competition and pervasive change by partnering with and investing in Startups.

Atif Khan, CEO LMKT said, "Khyber Pakhtunkhwa has enormous untapped talent and potential that

can become a major driver in boosting Pakistan's economy. I'm really excited about the prospect of working with inventive local entrepreneurs and startups in our pursuit for creating success stories bigger than ours."

President & CEO PTCL, Dr. Daniel Ritz, on the occasion, stated, "The National Incubation Centre, Peshawar is an important milestone in the burgeoning innovation climate of Khyber Pakhtunkhwa. This center is a testimony to PTCL's promise to empower the people of Pakistan through its ICT and Digital services."

A generous 12,000 sq. ft. facility in the heart of Peshawar at PTCL Training Center has been earmarked and repurposed to incubate more than 25 handpicked startups each year. NIC Peshawar will be equipped with the latest ICT infrastructure offering high-speed connectivity, seamless audio and video conferencing facilities, fully-managed IT and telecom services, among others. Incubatees will have access to comprehensive mentoring services allowing them to seek guidance and support on design thinking, business planning, financial and operational aspects related to their startups such as marketing and communication, legal services, etc. NIC Peshawar will provide the access to investors to support technology driven disruptive startups.

The ceremony was also addressed by KP Governor Iqbal Zafar Jhagra, and PM Advisor Ameer Muqam. Minister for Information, Minister of State for Information and Broadcasting Marriyum Aurangzeb was also present on the occasion

NATIONAL INCUBATION CENTRE LAHORE

Minister for Information Technology and Telecommunications Anusha Rahman Khan on Saturday inaugurated the National Incubation Center (NIC) at Lahore University of Management Sciences (LUMS).

Vice-Chancellor Prof Dr S. Sohail H. Naqvi, Ignite CEO Yusuf Hussain, NIC Lahore Director Faisal Jalil Sher Jan, renowned entrepreneur and LUMS Pro-Chancellor Syed Babar Ali, Fatima Ventures CEO Ali Mukhtar and 47 Ventures Investment Country Director Khurram Zafar attended the ceremony.

Addressing the ceremony, the minister said the launch of another National Incubation Centre after Islamabad was a testament to the government's resolve to bring a digital revolution in Pakistan.

This launch provides young entrepreneurs an opportunity to excel their business ambitions that are ready to make their mark on the world economy, Minister said, and added that the IT Ministry along with Ignite, LUMS and other consortium partners will make the dream of youth a reality.

She said the IT Ministry would make five incubation centers across the country and of those, two have been established. She said since 2013, IT Ministry has done a lot in the IT sector such as launch of 3G and 4G.

"During the last four years, we have spent around $400 million on connecting people living in far flung areas of the country. By December 2018, all the areas would have 3G which don't have at the moment", the minister said.

She shared that IT Ministry was ready to promote public-private partnership for better opportunities. Through the advancement of IT, e-medicine, e-learning and e-commerce were being promoted to improve learning for creating better earning opportunities. She announced to launch one million digital skills programmes from the Ignite Fund by January. By training one million youth online, we want to bridge the gap between academia and industry to make the degrees of youth dollar worthy, she added.

"I want to see Steve Jobs and Mark Zuckerberg coming out from Pakistan after the 4th industrial revolution," the minister said, adding, technology will be at the forefront of Pakistan's economy in the coming years.

She said in Islamabad only, IT Ministry was providing computer training to over 100,000 school girls whereas such training was also being imparted to all the girls housing with Pakistan Bait-ul-Maal across the country.

Prof Dr Sohail said he was delighted at the launch of this state-of-the-art facility. "The establishment of NIC at LUMS is a tremendous milestone on a journey we at LUMS embarked on when the LUMS Centre of Entrepreneurship (LCE) was established in 2014," he said adding that it was LUMS that dared to set a vision to become the largest breeding ground of sustainable, high-growth commercial and high-impact social ventures in Pakistan.

Yusuf talked about the role of NICs in the knowledge economy of Pakistan and how these would become breeding grounds for sustainable growth and drive Pakistan's economy forward with 4th Industrial wave technologies.

Sharing his thoughts, he said, "For corporations, this is a singular opportunity to transform and thrive in this age of global competition and change by partnering with and invest in start-ups that solve meaningful problems."

He claimed that with the track record of its management team, makerspace, design lab, deep R&D resources, and organic VC linkages, NIC Lahore is poised to graduate true 10x start ups and become one of the best incubators in Asia.

Faisal shared the vision and mission of NIC Lahore. He said NIC Lahore will house the first ever Makers Lab in Pakistan, a modern facility equipped with the latest technologies and smart equipment to bring ideas to life.
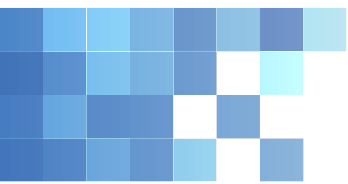
NATIONAL INCUBATION CENTRE ISLAMABAD

Pakistan's first largest National Incubation Centre was launched under the public-private partnership of Ministry of Information Technology & Telecom, Ignite (Formerly National ICT R&D Fund) and Teamup. The NIC provide startups with a free of cost workspace, incubation, acceleration – Jazz xlr8 program – seed funds, and access to 50 million plus mobile customer.

Commenting on the launch, Anusha Rahman, Minister of State for IT & Telecom – Pakistan, said, "The launch of the National Incubation Center is an important milestone in the Government of Pakistan's digital agenda. I would like to appreciate the efforts of all our partners who have made this possible. I wish all the startups joining the National Innovation Center the very best in achieving their dreams, they are our future."

Augie K. Fabela II, Co-Founder VimpelCom and Chairman Emeritus added, "VimpelCom and Jazz will lead the Digital revolution in Pakistan, this launch provides young Pakistani entrepreneurs an opportunity to further their business ambitions. Pakistanis are ready to make their mark on the world economy and Jazz will make it a reality"

Mr. Yusuf Hussain, CEO Ignite (Formerly National ICT R&D Fund) said "This National Incubation Center is the vision and accomplishment of Ms. Anusha Rahman – Minister of State for IT & Telecom, Dr.Syed Ismail Shah – Chairman PTA and Ignite (Formerly National ICT R&D Fund) board. So I would like to congratulate them for this accomplishment. I would also like to thank Executive Director NITB for making the space available. Going forward we are expanding this program by setting up similar NICs in four provincial capitals; Karachi, Lahore, Peshawar, Quetta and its really heartwarming to see the response of prospective bidders.
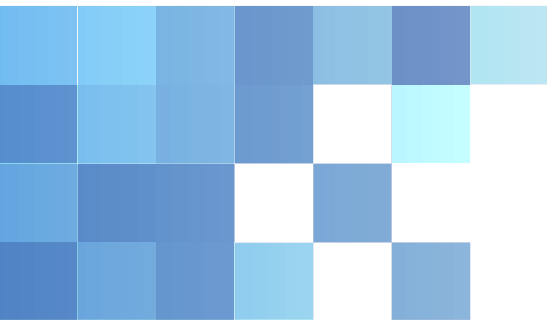
National Grassroots ICT Research Initiative (NGIRI)

National ICT R&D Fund Company has been running the National Grassroots ICT Research Initiative (NGIRI) program since 2011-2012. The initiative is aimed to provide funding to Final Year Projects (FYPs) for assisting those undergraduate students of public and private sector universities who are enrolled in ICT related degree programs. The financial assistance under the program is aimed to enable students undertaking FYPs for building prototypes and working models in order to increase their creativity, innovation and hands-on engineering and development skills. So far five (05) phases of the program have been rolled-out.

Summary of the same has been provided below:

Year	Participating Universities / DAI's	No of FYPs evaluated	No of FYPs approved
NGIRI 2011-12	68	785	272
NGIRI 2012-13	78	1,016	418
NGIRI 2013-14	72	1,247	430
NGIRI 2014-15	75	1,324	436
NGIRI 2015-16	72	1,166	511
Total:		**5,538**	**2,067**

The program for 2015-16 was expanded to include a National Competition which was successfully held on 19th May, 2017 and 33 projects nominated by Universities/Institutions from all around the country participated in the competition. Winners included:

National Champions, with prize money of Rs 400,000, are Zain Qasir and Hamza from PNEC NUST for "Power Watch Dog," which detects electricity theft through an IoT based sensor network. K Electric signed up

The First Runner Up, with a kitty of Rs 300,000, is Ali Gul from Balochistan University of Information Technology. Following a serious injury sustained by his brother in a mining accident, Ali turned to engineering with a resolve to make mining safer for often-illiterate miners. His Smart Helmet detects and monitors poisonous gases, temperature, humidity, location, and miner health profile -- issuing warnings and alarms, and helping rescue and retrieval. While international smart miner helmets are designed for the educated, Ali helmet even caters to the illiterate. He has already sold 20

The Second Runners Up, winning Rs 200,000, are Owais Ahmed and Hassan Cheema from the University of Faisalabad for their project that monitors and regulates industry boilers, by detecting variances in temperature, fluid levels and other parameters -- generating alarms and taking automated remedial measures. Their innovation will save lives by reducing occurrences of one of the most common accidents on factory floors -- boilers that blow up. First unit sold to a textile mill.

Prime Minister's ICT Internship Program

Prime Minister's ICT Internship Program is offering 3000 Internships to ICT graduates who aim to develop a career in ICT Industry. Selected interns will be placed in ICT Industry & IT departments of public and private sector organizations for a period of six months. This project is funded by Ignite – National Technology Fund and is being executed by Pakistan Software Export Board.

Objectives:

● Meet industry needs for fresh graduates with relevant and latest training in most demanded areas as determined by the industry.

● To give an opportunity to the graduates of the country and make them contributing members of the ICT industry & IT department of the public sector organizations. This will be accomplished through a 6 month internship at ICT companies & IT department of the public sector organizations.

Project Duration:	**17 months**
Total Cost:	**Rs. 284.36 Million**
Project Start Date:	**January 2017**
Stipend Amount:	**PKR 15,000/- per month**
Women Quota:	**30%**
Disabled Quota:	**2%**
Project website:	**http://internships.pseb.org.pk/internship/index.php/**

Till date 2,422 interns have been placed at 350+ ICT Industry & IT departments of public and private sector organizations for a period of six months. The geographical distribution of all interns and their placement status (All Pakistan) till date is as follows.

Area	Allocation	Interns Placed		Total
		Male	Female	
Punjab	1,406	936	290	1,226
Sindh	566	187	49	236
K.P.K	464	498	52	550
Balochistan	264	45	11	56
Capital Territory	95	91	53	144
Gilgit Baltistan	67	46	6	52
AJ & K	71	71	20	91
FATA	67	67	0	67
Total	**3,000**	**1,941**	**481**	**2,422**

The detailed criterion for selection of interns is as follows:

- Candidate having minimum 16 years of education (Graduation) from the recognized universities/institutions.

- Must be the permanent resident of Pakistan as per NADRA record

- Must have graduated or passed out in 2013 or later

- Should not have a current job

- Candidates having degrees in the following fields shall be enrolled for the internship program; BCS, BE (Computer Information System), BS(Computer System Engineering), BS(Data processing), BS(Graphics), BS(IT), BS(Multimedia), BS(Networking and Information System), BS(Software Engineering), MBA(IT), BBA-IT (Hons.), B-Tech, PGD, BE Electrical Engineering, BS Electrical Engineering, MBA(MIS), MCS, MIT, MS(Computer Engineering), MS(Computer Science), MS(Information Security), MS(IT), MS(Software Engineering), Telecom Engineering, Electronics Engineering or equivalent

- Initial screening of the applications shall be carried out by PSEB, thereafter database of qualified internees will be shared with the ICT Industry for further interviews and selections as per their requirement.

- Each organization shall follow its own SOPs w.r.t the interview & selection of candidate from PSEB's database.

- 30% quota shall be reserved for girls

- 2% quota for disabled candidates is reserved.
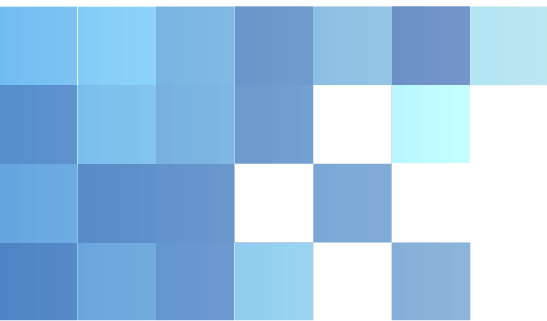
Outreach

Disseminating information about our programs nationwide so that people and entities participate in our programs from all over the country. For example, SG PASHA has said that for start ups in Karachi, Ignite may as well be on Mars.

Engaging in debate with stakeholders and experts nationwide when designing our programs. For example, for DigiSkills a lot of experts and employers have sought to be engaged and have appreciated our outreach.

Engaging corporates, investors and industry with our programs, particularly unsolicited funded projects and incubatees to increase their chances of commercialization and success.

Educate stakeholders, like media and policy-makers, and also students, professionals and businesses and to spread awareness about pillars of the knowledge economy like innovation, technology, entrepreneurship, work of the future, and future trends.

MOMENTUM TECH CONFERENCE 2018

Momentum is a global startup community designed to educate, inspire and connect Pakistani entrepreneurs who work on innovative and disruptive technologies to create the knowledge economy to drive Pakistan's growth over the coming decade.

- This two-day event include several workshops, one-on-one sessions of successful ventures officials with startups, a great lineup of national and international speakers from industries.

- The representatives of Facebook, Amazon, IBM, and Microsoft came with the plans for the Pakistani ventures.

- Momentum Tech Conference 2018, was a high energy tech conference that brought Startups, Industry leaders, VCs, Government and the people together.

- Provided startups with a significant opportunity to showcase their products at the big stage.

- A number of new and upcoming technology ventures were there to attend the conference to try their luck and attract much-warranted attention from both attendees and investors.

The main highlights of the events were: incubators, accelerators, investors, startups, featured startups, global cloud companies, top tech companies, top fintech (payment enabler) companies, speakers, pitches, and signing of the memorandum of understanding between investors and startups

- Ignite team had an opportunity to interact with international VCs, young tech entrepreneurs, industry moguls, incubator management, national and international tech companies,

and technology enthusiasts at large. It provided an excellent platform to showcase the achievements and also respond to a number of queries from participants. A number of meetings were scheduled with startups which were seeking next round of funding. Some key projects were pitched to the SEED team and may result in filing of grant application under the "innovative product/service" category.

The theme surrounding Momentum 2018 edition was 'How to boost your startup'. Starting a business without money has long been a big problem for entrepreneurs in this part of the world, whereas in other countries companies help innovative startups with resources and tools.

SUSTAINABLE DEVELOPMENT GOALS WEEKEND 2017

The first Sustainable Development Goals (SDG) Weekend 2017 was held in Islamabad on 19-20 August, 2017 comprising two major events; the SDG Hackathon and the SDG Challenge Cup. The SDG Weekend 2017 took place at the National Incubation Center (NIC) in Islamabad and was

organized by Ignite – National Technology Fund (formerly known as National ICT R&D Fund), Code for Pakistan (CfP) and Pakistan Telecommunication Authority (PTA) with global partners International Telecommunications Union (ITU) and Internet Society (ISOC).

The Sustainable Development Goals, also known as Global Goals for Sustainable Development, are a universal call-to-action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. Ignite partnered with CfP to co-organize Pakistan's first-ever hackathon focused on SDGs. CfP has conducted numerous civic hackathons in major cities in Pakistan.

Mr. Yusuf Hussain, CEO Ignite, said, "During this hackathon, participants developed innovative solutions and presented ideas to address social and civic problems, and achieve selected SDGs. These are problems that the global market economy has not been able to address at scale, but which are very important for the human race and the planet. Ignite will endeavor to support winning teams in their onward journey through networking and access to resources."

Mr. Asim Ghaffar, President Code for Pakistan, said, "Our hackathons spark civic engagement, bring together software designers, developers, and community organizers to solve their communities' needs, and show what's possible using technology. Some ideas later get pre-accelerated by our civic innovation labs so they can be incubated elsewhere. As a takeaway, participants generally become more civic-minded and continue to engage in various projects which are civic in nature."

The two-day SDG Hackathon focused on eight SDGs: No Poverty; Zero Hunger; Good Health and Well Being; Quality Education; Decent Work and Economic Growth; Industry, Innovation and Infrastructure; Sustainable Cities and Communities; and Responsible Consumption and Production. The hackathon brought together programmers, designers, urban mappers, data analysts, community organizers, researchers, lawyers, journalists and government information to develop innovative digital and tech solutions that have a social impact.

The winner of SDG Hackathon was 25A; a platform to match underprivileged children with private schools, in accordance with Article 25A. Second prize went to SHELTIC, which uses recycled plastic waste to build shelters and the third prize went to LEXY, which is a platform to help identify dyslexia using audio-visual aids.

The second event was the SDG Challenge Cup, which was held on Sunday, 20 August, 2017. In this event, the startups which were already working on ideas in line with four selected SDGs were invited to pitch to the judges. The selected SDGs for the Challenge Cup were Good Health and Well Being; Quality Education; Gender Equality; and Decent Work and Economic Growth. The first prize of the SDG Challenge Cup went to Orbit, SkillsForce won the second prize and Exam Bites won the third prize. In addition to the prizes, the winning teams will be eligible to represent Pakistan at international-level ITU events, including ITU Telecom World 2017 and the Young ICT Leaders' Forum at ITU Telecom World.

Sponsors and partners for the SDG Weekend 2017 included Zong Pakistan, Jazz, Nayatel, Bentley Systems, International Telecommunications Union (ITU), Internet Society (ISOC) and UNDP Pakistan, as well as TiE, Sustainable Development Policy Institute (SDPI), Media Clicks, IDG Pakistan and Global Shapers Islamabad.

IGNITE HOSTS CONSULTATIVE EVENT FOR DIGITAL SKILLS TRAINING PROGRAM FOR 1 MILLION PAKISTANI YOUTH

Ignite – National Technology Fund (formerly known as National ICT R&D Fund) hosted the event 'DigiSkills Consultative Conclave' in Islamabad on 27 July, 2017. Representatives from the government and private sector were invited to participate in formulating a strategy for

implementing Ignite's forthcoming project, the DigiSkills Training Program. The Minister of State for Information Technology & Telecom Ms. Anusha Rahman was the Chief Guest at this event.

Members of the Higher Education Commission (HEC) and its National Curriculum Review Committee (NCRC), Provincial Secretariat for Education and other education experts came together with representatives from the ICT industry and its associated entities (e.g. P@SHA, TiE, OPEN, etc.), 4th Industrial Wave thinktanks, private schools and colleges, vocational training institutes, and freelancers to exchange ideas regarding this project.

The DigiSkills initiative has been conceived by Ignite to educate and train over 1 million Pakistani youth in digital skills to "promote excellence in technology, innovation and work ethic; building a workforce for a future driven by the 4th Industrial Wave". As small and large businesses across all sectors in Pakistan look towards adopting digital trends and technologies, there is a growing need

for trained personnel. Engaging students in this program will increase their chances to get hired, make them an asset to the organization that hires them and also open up avenues for freelancing.

While speaking at the event, Ms. Anusha Rahman said that even though Pakistan produces around 20,000 IT graduates each year, there aren't enough jobs to accommodate all of them. She went on to say that freelancing has opened up new avenues of employment for these young graduates, which makes it even more important for them to be equipped with the necessary digital skills. She said, "The preference to outsource operational activities by organizations has generated new avenues and already, a large workforce around the globe has adopted freelancing as their source of earning. In the freelancing market, freelancers from Pakistan have made their mark, being 4th on the list, with an estimated number of 0.4 million, which is quite considerable. However, there is still huge potential which should be exploited."

AMAZING ENERGY AT THE NATIONAL CHAMPIONSHIP OF FINAL YEAR PROJECTS

Edifying to see tech developed from locations as remote as Jamshoro, Quetta, Sahiwal, Mansehra, and Gilgit under innovative projects funded by Ignite (Formerly National ICT R&D Fund (Ministry Of Information Technology),a Venture Capital Fund focused on 4th Industrial Wave tech, which also addresses gaps in the tech entrepreneurship and research commercialization eco-system through different initiatives.

4th Industrial Wave projects included an Augmented Reality based virtual dressing room, Artificial Intelligence based attendance system, a mine-dispensing robot, a locally manufactured four blade security surveillance drone, an IoT based traffic management system, and a neurotech driven wheel chair.

Ms. Anusha Rahman Minister of State for Information Technology and Telecom, who graced the award ceremony of National Competition, congratulated all the participants. She said, 3G/4G has brought the revolution in Pakistan. People with no connectivity will get 3G by the end of 2018

everyone will be connected. She said, "I personally believe that coding is the future; we need to train our children on computer skills. We are even training the 5 years old. The Digital Skills Training Initiative aims to produce entrepreneurs 1 million freelancers in 2 years is the target. I want to see 50 % of the population of my country to contribute in the economy."

National Champions, with prize money of Rs 400,000, are Zain Qasir and Hamza from PNEC NUST for "Power Watch Dog," which detects electricity theft through an IoT based sensor network. K Electric signed up

The First Runner Up, with a kitty of Rs 300,000, is Ali Gul from Balochistan University of Information Technology. Following a serious injury sustained by his brother in a mining accident, Ali turned to engineering with a resolve to make mining safer for often-illiterate miners. His Smart Helmet detects and monitors poisonous gases, temperature, humidity, location, and miner health profile -- issuing warnings and alarms, and helping rescue and retrieval. While international smart miner helmets are designed for the educated, Ali helmet even caters to the illiterate. He has already sold 20

The Second Runners Up, winning Rs 200,000, are Owais Ahmed and Hassan Cheema from the University of Faisalabad for their project that monitors and regulates industry boilers, by detecting variances in temperature, fluid levels and other parameters -- generating alarms and taking automated remedial measures. Their innovation will save lives by reducing occurrences of one of the most common accidents on factory floors -- boilers that blow up. First unit sold to a textile mill.

Earlier speaking on the occasion, Mr. Yusuf Hussain CEO Ignite (Formerly National ICT R&D Fund) said that universities from across Pakistan participated, not just Lahore, Karachi and Islamabad elite universities. He thanked the students, supervisors and judges. Such competitions bring innovation alongside the culture of fun. We are becoming venture capital fund, we will give grants along with mentorship. We fill gaps in the eco system by our initiatives such as digital skills training program, incubators, specialty incubators, startups incentive package etc. Ignite team is very excited and working to achieve aggressive targets set by the Minister.

IBM and Ignite also announced a collaboration, which will see the provision of the Bluemix development environment, IBM prodigious online learning system, and its Global Entrepreneur Program to Ignite funded startups, projects, incubatees, and trainees. Look forward to working with Rana Ghazanfar Ali and Nadeem A. Malik

Exhibitors and attendees, particularly girls, flocked around Minister Anusha Rahman Khan, delaying her departure by almost half an hour, after she delivered a high energy, interactive talk.

Its theme: The surge in mobile broadband connections to over 41 million, provision of broadband to all villages in the country with a population of over a 100 by 2018, a cybercrime framework, ICT4Girls program, incubators, specialty incubators, million strong digital skills training, cottage industry eCommerce, telco and bank agnostic mobile payments, and a startup incentives package -- all current or imminent Ministry initiatives -- have now positioned Pakistani youth to distinguish themselves globally as standard bearers of tech and innovation

Really appreciate the judges: Parvez Abbasi, Faisal S Khan, Samina Seth, Asim Ghaffar and the othePKR

ACCORD SIGNED TO CULTIVATE DYNAMICS AROUND FOURTH INDUSTRIAL REVOLUTION

AGAHI, a not-for-profit organization and Country Partner of the Millennium Project (a Global Futures Studies & Research participatory think-tank), signed a Memorandum of Understanding with Ignite - National Technology Fund (formerly National ICT R&D Fund) to spadework Pakistan's future to lead the Fourth Industrial Revolution, focusing on technologies and the ecosystem of development initiatives to foster a knowledge economy in Pakistan. The MoU signing ceremony convened at the premises of Ignite in Islamabad.

This strategic link between the two organizations will provide opportunities to shape institutional transformation and thought leaders to complement the traditional department-based structures with trans-disciplinary knowledge capital, focused on identifying societal challenges and their long-term solutions.

The Fourth Industrial Revolution can be described as a range of new technologies that are fusing the physical, digital and biological worlds and have an impact on all disciplines, economies and

industries.

Speaking on the occasion, Ms. Anusha Rahman Khan, Minister of State for Information Technology & Telecom said, "This is a critical partnership which will position Pakistan globally in terms of research and development of the information communication technology sector in the country."

Mr. Yusuf Hussain, CEO Ignite said, "AGAHI will facilitate the team by identifying emerging trends and opportunities in developing skills and curriculum. This strategic partnership will not only strengthen the existing programs but will also work towards increasing awareness on the Fourth Industrial Revolution in Pakistan; firstly, by creating a taskforce on this significant transition and secondly, by developing a National Strategy paper on the Future of Work."

Ms. Puruesh Chaudhary, Founder and President of AGAHI said, "The partnership with Ignite reinforces our belief in a much-promising future of the country, where we'll be encouraging not only our collaborative network but also the global community to harness a future that ensures the happiness of humanity."

Dr. Shahid Mahmud, Co-Founder Foresight Lab and Chairman/CEO Interactive Group of Companies stressed, "In the age of consciousness, there is a dire need to develop a deeper sense of how the non-state actors – in an environment where the fourth wave is imminent – will be shaping the digital, biological and physical dimensions of futures research."

The Foresight Lab is a facilitative platform engaging 20 Pakistani universities and thinktanks on developing Pakistan State of Future Index 'Anticipating 2027', with an aim to improve the well-being of the people of Pakistan. Pakistan Foresight Initiative is designed to enable decision-makers to opt for a data-driven foresight approach in the policy domain.

AGAHI, with its local partners Interactive Group of Companies and Eikon7, along with other leading academic institutions are creating a model that will have the ability to track the expected state of futures over time at the national, provincial and district levels – which will enable decision-makers to opt for the most informed policy choice.

CONTRACT SIGNING OF NATIONAL INCUBATION CENTRES

The contract signing ceremony for establishment of NICs (National Incubation Centers) in Karachi, Lahore and Peshawar was held on June 15, 2017 at Marriot Hotel Islamabad. The contracts were signed between Ignite (Formerly National ICT R&D Fund) and Lahore University of Management Sciences LUMS for NIC Lahore and LMKT for NIC Peshawar, respectively. Minister of State for IT & Telecom, Ms. Anusha Rahman Khan, Secretary IT & Telecom, Mr. Rizwan Bashir Khan, senior officials of Ministry of IT & Telecom, diplomats and senior executives for IT & Telecom companies were also present on the occasion.

Speaking on the occasion, the Finance Minister said that the development and promotion of Pakistan's IT sector is an area of priority for the present government. He congratulated the Ministry of IT & Telecom, Ignite (Formerly National ICT R&D Fund), and all stakeholders involved in the aforementioned contract signings. He stated that the establishment of the National Incubation Centres would assist in channeling the entrepreneurial drive amongst young graduates of the nation.

The Finance Minister said that government has announced special incentives for the IT sector in the budget for FY 2017-18. He highlighted that the government is setting up an IT Park in Islamabad with the assistance of Korean EXIM Bank. He also said that IT export houses/companies shall be allowed to open Foreign Exchange Accounts in Pakistan going forward. He informed the audience about various measures to promote usage of smartphones in the country. He highlighted that start-up software houses shall be exempted from Income Tax for the first 3 years, and that exports of IT services from Islamabad and other Federal territories shall be exempted from Sales Tax. He said that, in addition to IT companies, these incentives will also be available for IT-enabled services.

Minister of State for IT & Telecom Ms. Anusha Rahman said that the launch of the National Incubation Centres in Karachi, Lahore and Peshawar is yet another important milestone in the Government of Pakistan's digital agenda. She highlighted that a National Incubation Centre has already been established in Islamabad. She further said that a comprehensive national level technical training program for freelancers is also being launched this year which will train approximately 1 million freelancers within the span of 2 years. She highlighted that a nation-wide "ICT for Women Entrepreneurship Development Program" has already been launched to tap the entrepreneurial potential of Pakistani women. She said that the program will train a total of 500 women from across the country.

Mr. Yusuf Hussain, CEO Ignite (Formerly National ICT R&D Fund) said that the National Incubation Centers is the vision of Minister of State for IT & Telecom Ms. Anusha Rahman and we are honored to execute it. We are also launching specialty incubators of IoT (Internet of Things), FinTech and Robotics. He further stated that Ignite (Formerly National ICT R&D Fund) will be soon renamed as Ignite with a focus on fourth industrial wave technologies.

RETAIL INTELLIGENCE AND ANALYTICS STARTUP DEALSMASH RAISED $150,000

Retail intelligence startup, DealSmash secured seed funding of $150,000 from an Angel investment firm Al Hilal Securities Advisors to fund its project of providing retail brands and retailers with valuable insights on consumer behavior.

DealSmash is a retail intelligence tech start-up in Pakistan. At the heart of the company is its namesake mobile app, DealSmash. Using Artificial Intelligence, the app aims to provide users with targeted offers on products based on their

interests and buying patterns. Users earn free shopping vouchers and cashback by scanning valid shopping receipts via the app. DealSmash collects and analyses the shopping data from the shopping receipts to provide brands with valuable consumer insights.

The startup was founded in 2016 and has already won a grant of USD 88k from Ignite - National Technology Fund to develop its recommendation system.

The central component of the DealSmash recommendations is an intelligent, adaptive software-based system that can learn – both offline and online – the preferences, shopping behavior, geographic attributes and demographics of the customer base. In return providing a personalized shopping experience to each customer by suggesting only relevant offers to his or her mobile device in a context and location-aware manner.

Speaking at the occasion, Ali Hasnain Shah, CEO of DealSmash said,

We enable consumers as well as retail brands to make better and informed decisions. This funding will enable us to scale as well as strengthen our product and technology. It will also enable us to upgrade our data analytics platform for sharing consumer insights with brands.

Speaking at the occasion, Faraz Younus Bandukda, CFA the Group Chief Executive at Al-Hilal stated:

We're really excited about DealSmash product, its team and the opportunity in Retail market in Pakistan; which is one of the fastest growing market in the region.

Zaheeruddin Khalid, CFA one of the sponsors of Al Hilal (who is also Chief Investment Officer at Jadwa Investment, a leading Saudi Arabian investment management firm) added,

DealSmash is an exciting breakthrough for retail brands as well as customer- conscious retailers who, by using the power of Artificial Intelligence and Data Analytics, can connect directly with their customers and give them what they need, when they need it.

"Its really heartening to know that our funded startup DealSmash has closed a deal for next round of funding. This validated our process of evaluation and diligence in choosing technology startups at seed stage that have potential to commercialize and scale," said Asfand Yar Khan, Manager Commercialization, Ignite – National Technology Fund.

TV Talk Shows

DIGISKILLS PROGRAM TO TRAIN 1 MILLION YOUTH ONLINE

#DigiSkills Program to train 1 Million youth online, featured on PTV Program "CafeNews" with anchor Sharmeen Ali . Minister of IT & Telecom Ms. Anusha Rahman and CEO Ignite - National Technology Fund Yusuf Hussain discussing about DigiSkills Training Program.

HOW NATIONAL INCUBATION CENTRE ISLAMABAD IS FACILITATING TECH START UPS

How National Incubation Center Islamabad is facilitating tech startups to promote entrepreneurship in Pakistan - Cafe News PTV.

ROLE OF INNOVATION IN ADVANCEMENT OF SOCIETIES

Role of Innovation in Advancement of Societies. Yusuf Hussain on Business Plus - Livewire Program

4TH INDUSTRIAL WAVE TECH AND DIGISKILLS TRAINING PROGRAM

Yusuf Hussain discussing 4th Industrial Wave Tech and DigiSkills Training Program—promoting excellence in technology, innovation and work ethic, building a workforce for the future of work.

4TH INDUSTRIAL WAVE TECH AND STARTUP ECO-SYSTEM IN PAKISTAN

CEO Ignite, Yusuf Hussain and Khurram Zafar Director LCE LUMS discussing 4th Industrial Wave Tech & Startup Eco-system in Pakistan.
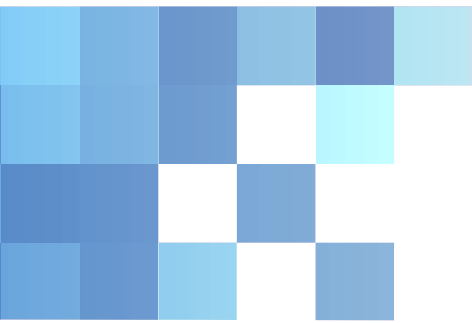
Financial Statements

KPMG

KPMG Taseer Hadi & Co.
Chartered Accountants
Sixth Floor, State Life Building, Blue Area
Islamabad, Pakistan
Telephone 92 (51) 282 3558, Fax 92 (51) 282 2671

AUDITORS' REPORT TO THE MEMBERS

We have audited the annexed balance sheet of IGNITE (formerly National ICT R&D Fund) ("the Company") as at 30 June 2017 and the related statement of comprehensive income, cash flow statement and statement of changes in funds together with the notes forming part thereof, for the year then ended and we state that we have obtained all the information and explanations which, to the best of our knowledge and belief, were necessary for the purposes of our audit.

It is the responsibility of the Company's management to establish and maintain a system of internal control, and prepare and present the above said statements in conformity with the approved accounting standards and the requirements of the Companies Ordinance, 1984. Our responsibility is to express an opinion on these statements based on our audit.

We conducted our audit in accordance with the auditing standards as applicable in Pakistan. These standards require that we plan and perform the audit to obtain reasonable assurance about whether the above said statements are free of any material misstatement. An audit includes examining on a test basis, evidence supporting the amounts and disclosures in the above said statements. An audit also includes assessing the accounting policies and significant estimates made by management, as well as, evaluating the overall presentation of the financial statements. We believe that our audit provides a reasonable basis for our opinion and, after due verification, we report that:

(a)   during the year ended 30 June 2016, the Company changed its accounting policy for recognition of expenditure on project / program activities from cash to accrual basis of accounting. This change was applied to the financial statements prospectively from 1 July 2015. Comparative figures of statement of comprehensive income include cumulative impact of change in accounting policy attributable to preceding periods;

(b)   in our opinion, except for the possible effects of matter referred to in paragraph (a) above, proper books of account have been kept by the Company as required by the Companies Ordinance, 1984;

(c)   in our opinion, except for the possible effects of matter referred to in paragraph (a) above:

    (i)   the balance sheet and statement of comprehensive income together with the notes thereon have been drawn up in conformity with the Companies Ordinance, 1984, and are in agreement with the books of account and are further in accordance with accounting polices consistently applied except for the changes as stated in Note 2, with which we concur;

    (ii)   the expenditure incurred during the year was for the purpose of the Company's business; and

    (iii)   the business conducted, investments made and the expenditure incurred during the year were in accordance with the objects of the Company;

(d)   in our opinion and to the best of our information and according to the explanations given to us, except for the possible effects of matter referred to in paragraph (a) above, the balance sheet, statement of comprehensive income, cash flow statement and statement of changes in funds together with the notes forming part thereof conform with approved accounting standards as applicable in Pakistan, and give the information required by the Companies Ordinance, 1984, in the manner so required and respectively give a true and fair view of the state of the Company's affairs as at 30 June 2017 and of the surplus, its cash flows and changes in funds for the year then ended; and

(e)   in our opinion, no Zakat was deductible at source under the Zakat and Ushr Ordinance, 1980 (XVIII of 1980).

The financial statements of the Company for the year ended 30 June 2016 were audited by another auditor whose report dated 14 November 2017 expressed a qualified opinion, based on the matter detailed in paragraph (a) above, on those financial statements.

Islamabad
10 May 2018

KPMG Taseer Hadi & Co.
Chartered Accountants
Engagement Partner:
Riaz Pesnani

IGNITE
(Formerly NATIONAL ICT R&D FUND)
Balance Sheet
As at 30 June 2017

	Note	2017 (Rupees)	2016 (Rupees)
ASSETS			
NON-CURRENT ASSETS			
Property and equipment	6	9,831,063	12,524,114
Intangible	7	2,022,818	3,184,648
		11,853,881	15,708,762
CURRENT ASSETS			
Advances - considered good	8	82,245,778	13,194,410
Short term prepayments		-	14,365,016
Accrued interest on bank balance		7,309,136	10,184,480
Other receivables		8,740	98,740
Bank balance	9	538,343,501	607,462,524
		627,907,155	645,305,170
TOTAL ASSETS		639,761,036	661,013,932
FUNDS AND LIABILITIES			
FUNDS			
Unrestricted funds		6,709,285	6,709,285
NON-CURRENT LIABILITIES			
Restricted funds	10	305,889,986	339,847,847
Deferred capital grant	11	11,853,881	15,708,762
		317,743,867	355,556,609
CURRENT LIABILITIES			
Trade and other payables	12	315,307,884	298,748,038
TOTAL FUNDS AND LIABILITIES		639,761,036	661,013,932
CONTINGENCIES AND COMMITMENTS	13		

The annexed notes 1 to 21 form an integral part of these financial statements.

_____
CHIEF EXECUTIVE

_____
DIRECTOR

IGNITE
(Formerly NATIONAL ICT R&D FUND)
Statement of Comprehensive Income
For the year ended 30 June 2017

	Note	2017 (Rupees)	2016 (Rupees)
INCOME			
Grant income recognized	*14*	**771,755,828**	1,313,110,790
EXPENDITURE			
Project / program activities	*15*	(570,738,757)	(1,131,622,436)
Operating costs	*16*	(184,956,934)	(176,812,462)
		(755,695,691)	(1,308,434,898)
SURPLUS FOR THE YEAR		16,060,137	4,675,892
OTHER COMPREHENSIVE INCOME			
Other comprehensive loss not to be reclassified to statement of comprehensive income in subsequent periods:			
Remeasurement loss on defined benefit scheme	*12.2.4*	(16,060,137)	(4,675,892)
TOTAL COMPREHENSIVE INCOME FOR THE YEAR		-	-

The annexed notes 1 to 21 form an integral part of these financial statements.

_____
CHIEF EXECUTIVE

_____
DIRECTOR

AI & Big Data
Creating a New Intelligence with Data – the New Oil

DealSmash — Surge customer satisfaction & retail profitability through deep learning of buying pattern. Raised $150,000 from an angel Investment firm, Hilal Securities Advisors

Increasing dairy production through AI diagnostics of bovine disease.

Cloud Infrastructure & Cyber Security
Building a Safe Virtual World

Better load balancing, fault tolerance & configurability of data centers through software defined networks.

Low cost internet service provision to under-served areas in Balochistan, Interior Sindh and FATA through drones.

Wearables/Implantables
Extending the Human

Improving bowling actions in real time & avoiding disqualification through wearable elbow sleeves.

Saving lives and avoiding trauma with smart stent implantables that detect clotting, slippage and narrowing of blood vessels.

Robotics
Perform Repetitive Tasks Quicker, Better, Inexpensively

Safe and accurate firefighting with high resilience robots.

IoT
Taming the Physical World

Improve crop production and save water using IoT.

Virtual/Augmented Reality
Illuminating Our World and Fashioning New Ones

Signus, an AR based education startup, won Ignite SDG Hackathon and ITU award.

Improving cognitive, motor and functional skills of special children with AR based therapeutic platform.

Shared Economy
Using the Under Used

Secure low cost financial services through blockchain.