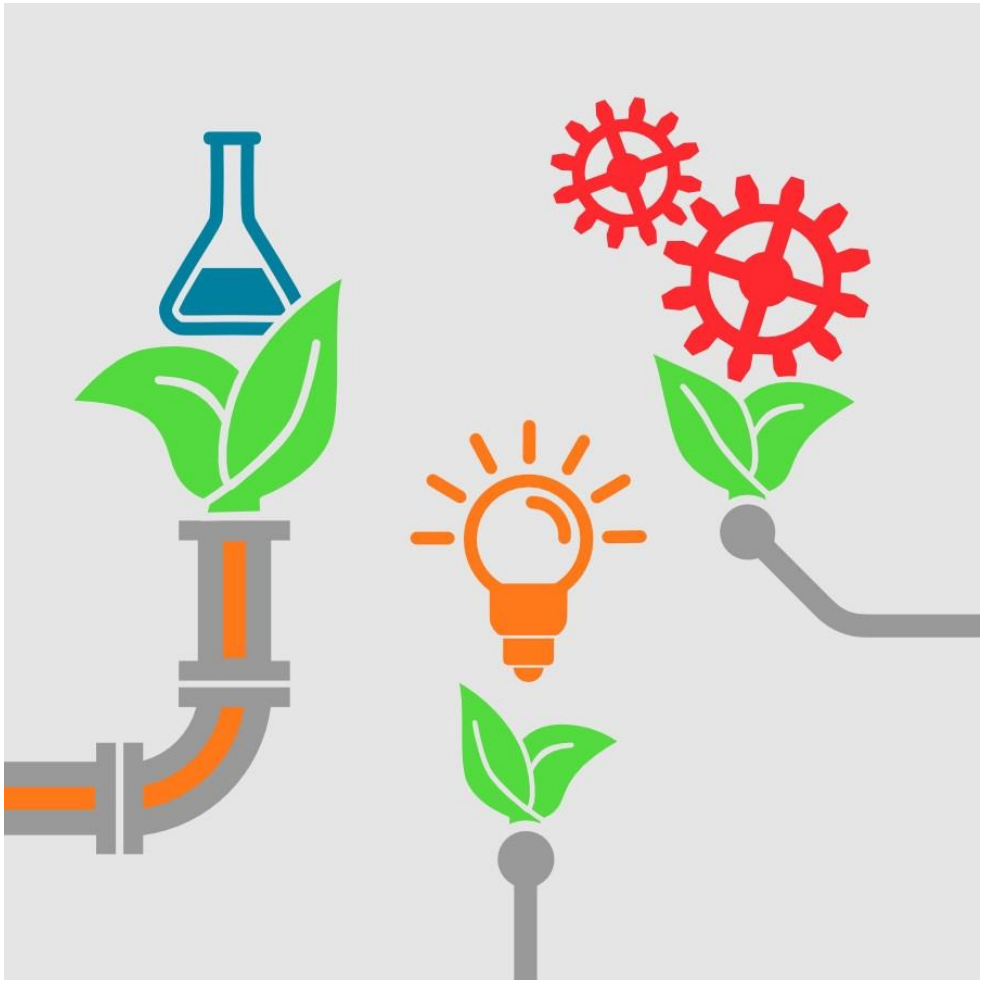
Minutes of the 1st Meeting of

Kerala University Innovation Council

held on 09.05.2017



Internal Quality Assurance Cell
University of Kerala
2017

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Kerala University Innovation Council

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Contents

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Kerala University Innovation Council

Venue: Vice-chancellor"s Chamber
Date: 9 May 2017: 10 A.M

Members Present:
1. Vice-Chancellor (Chairperson)
2. Ms. Philomina Simon, Assistant Professor, Dept. of Computer Science, UoK.
3. Dr. Subodh G., Head of the Departmen Dept. of Physics, UoK.
4. Dr. Y. Anil Kumar, Assistant Professor, Dept. of Geology, UoK.
5. Dr. Salom Gnana Thanga, Associate Professor, Dept. of Environmental Science, UoK.
6. Sri. Robin Tommy, Head, Innovation Lab, TCS, Tvpm.
7. Sri. Gokul Alex, Senior Manager, Business Operations, UST Global, UST Global, Tvpm.
8. Ms. Vineetha V., Research Scholar, Dept. of Comp Biology & Bioinformatics, UoK.
9. Sri. Prem Sankar Chakkingal, Research Scholar, Dept. of Future Studies
10. Sri. Sajan Ambadiyil, Research Scholar, Dept. of Optoelectronics
11. Dr. V. Aiith Prabhu, Joint Director, KSCSTE, Sasthra Bhavan, Tvpm.
12. Ms. Gayathri Ganesh, M.Sc. Physics, Semester 2, Dept. of Physics, UoK.
13. Director, IQAC (Convenor)

Members Absent:
1. Pro-Vice Chancellor (Vice- Chairperson)
2. Sri. Anoop P. Ambika, CEO, Cognub-Decision Solutions Technopark Tvpm
3. Ms. Amala Varghese, M.Sc. Chemistry, Semester 4, Dept. of Chemistry, UoK.

MINUTES

The Vice-Chancellor welcomed all members to the first meeting of the Innovation Council. All members introduced themselves and then the Vice-Chancellor outlined the purpose of the meeting. He opined that the area of innovation has scope for improvement in University of Kerala and whatever innovation is happening is not being recorded and highlighted. He also stressed the advantage of collaborations in research, that will help the University to overcome some of its limitations in resources. He strongly felt that a mind-set change is required to accelerate innovation. He then invited he members to participate actively in the discussions on items placed before the Council.

1.1 Working Definitions of Innovation and Mandate of KUIC.

It is proposed that a working definition of innovation be arrived at by the council. The following note is aimed at triggering a discussion.

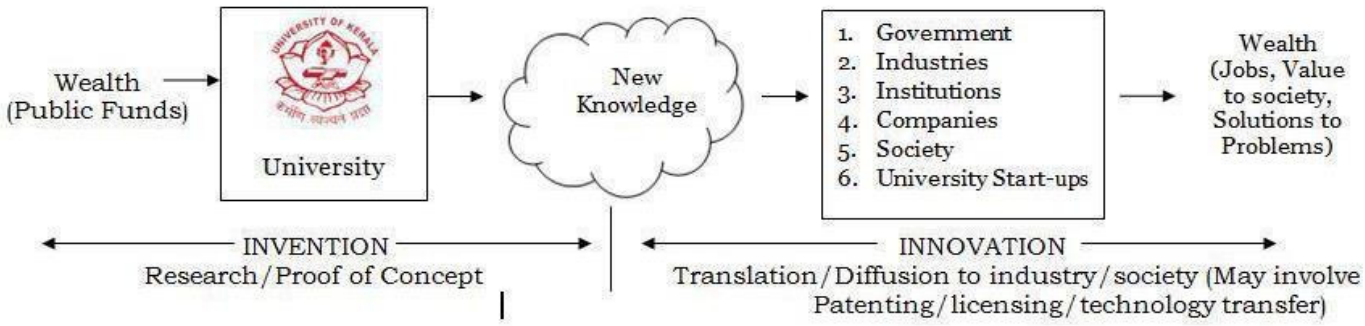
India has declared 2010-20 as the "Decade of Innovation", and established a National Innovation Council. Kerala also has established a State Innovation Council in 2013. During the last two decades, Higher Education Institutions (HEI) in Kerala has been glued to the terms „quality" and „excellence". A new choice of HEI buzzword is „innovation", but unlike the former, there is a lack of clarity in the meaning of the word in HEIs. Whereas Government and Industries seem to be comfortable with the "patenting–commercialization–economic development" interpretation. Science, Technology & Innovation Policy of Govt. of India (2013) says: Scientific research utilizes money to generate knowledge and by providing solutions, innovation converts knowledge into wealth and/ or value. Innovation thus implies S&T- based solutions that are successfully deployed in the economy or the society. Wikipedia says innovation is producing "effective products, processes, services, technologies or ideas that are readily available to markets, governments and society". An innovation ultimately creates wealth, through economic, social or environmental activity, by creating value, solving problems, creating jobs, etc. Almost everything we use or see in day-to-day life was at one time an innovation or invention that had revolutionary effect on life of the time. Clothes, wheels, toys, tools, food, building materials, construction methods, traditional home utensils, appliances etc.

Almost everything human made that we use today are evolved forms of great innovations of the past. Today, life-saving drugs, IT gadgets and services (Facebook, Google and WhatsApp), LED lights and a bunch of techy products and services have become the face of innovation. While innovations that catch attention of media are by and large high-tech, there are innovation which are triggered by common-sense and unique for their frugal nature. Examples like "miti-cool" refrigerator are today branded as "Jugad innovation". Jump-clips, stapler pins, hair pins, safety pins, ball-point pens etc also are Jugad innovations that continue to have markets. These need to be promoted along with high-tech innovations.

For a multi-faculty University, the interpretation needs to be more wide and general. The term „innovation" is seen to be used inter-changeably with „applied research", „translational research", „patenting", „technology transfer", „student start-ups" and „incubation". All these are intimately related to innovation, but clarity and big picture view are required for effective planning and action. Also the "idea generation" phase of innovation is not automatic in multi–faculty Universities as may happen with Engineering colleges.

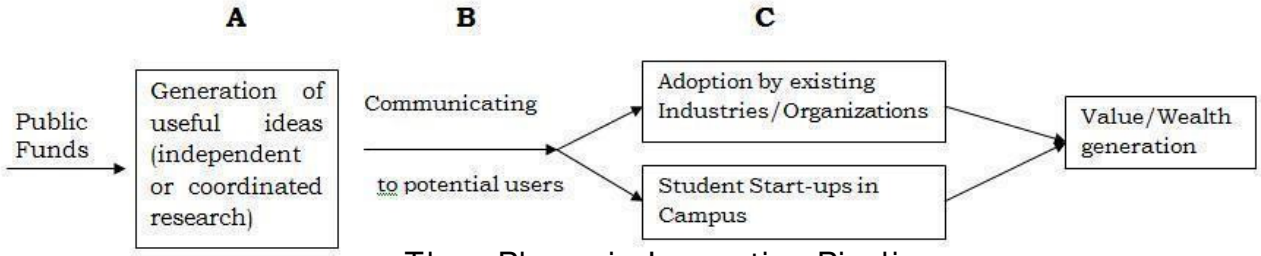
Institutions like University of Kerala generate new knowledge using public funds. Such new knowledge may involve invention of new technologies, materials, processes or ideas. The new knowledge is often reported in a thesis or a journal (very rarely, results also appear in a patent application). When the invention is put to successful use by the University or another agency (Industry, Government or the society), then it becomes an innovation. An innovation ultimately creates wealth, through economic, social or environmental activity, by creating value, solving problems, creating jobs, etc. In short, we can adopt the following definition:

INNOVATION = INVENTION + ECONOMICALLY OR SOCIALLY SUCCESSFUL USE IN PRACTICE



Invention to Innovation

As far as Universities are concerned, innovation proceeds in approximately 3 phases.



Three Phases in Innovation Pipeline

Phase A: Generation of useful ideas: This phase can be promoted by the University by having an effective policy and action plan. Research guides and students may be trained and encouraged to generate „useful" knowledge instead of generating unplanned academic new knowledge. The University should compile requirements of industries, organizations and business houses and make the same available to research community. This way, when research efforts produce solutions for real problems, its adoptions by the industries will be automatic. University must take extra care to handle innovative idea generation. Fear for bad ideas and failure, can stifle innovation. Teachers who adopt a traditional fault-finding critical attitude may switch off less confident innovative thinkers. Teachers and administrators need to be trained in this regard. Without experiments, innovation cannot evolve. In experiments, a high percentage of failure is very natural.

Phase B: Communicating ideas to potential users: Most post-graduate researchers and PhD scholars aim for research publications which communicate the knowledge they generate openly for anyone to use, without any permission or payments. They need to be given effective awarenes about patenting and the benefits it offers in transferring technology. Their academic requirement for publication is not affected by patenting, since as soon as patent is filed, they can publish also. Our University does not have an impressive record of patenting and hence effective measures are required to produce a critical mass of patent attempts. Once the research community recognizes patents as proud achievements, the culture will spread fast. In

addition to patenting, from the works of the recent past (both PG & PhD), brief summaries of findings need to be published as research bulletins and circulated to industries, organizations and potential clients so that the findings are brought to the notice of the potential users.

Phase C: Adoption by potential users: If a knowledge generated by the university is found useful by a potential user, then if patent is in place, a licensing can be negotiated. Initially, the quantum of income should not be the focus, as we have so far no technology transfer to claim. With Government industries and organizations, their standard licensing agreements should be accepted as such, or a 5-10% of the net profit may be negotiated. This policy can be reviewed in future when such licensing cases start rising.Yet another option is that the researcher and/or other students of the University should be encouraged to launch student start-ups in the campus with support from the University. For this the students who are interested in entrepreneurship must be identified in the beginning of their studies and research and they may be encouraged to orient their studies and project work accordingly. Extra-departmental electives on the topics of their interest and electives on entrepreneurship may be provided to them. The University of Kerala has a industry incubation scheme in place and has already successfully incubated one company. Therefore this scheme can be scaled up.

Innovation Council may discuss the above and advice.

DECISION:
The council discussed the above note in great detail and the summary of the discussion points are as follows:

Mr. Robin Tomy shared his views as follows:

- Digital innovation in the area of Block Chains, Deep learning, Advanced Analytics, Internet of Things, Quantum Computing, Computational Neuro Science etc. are the present trend.
- In industry, a revenue model is attached to innovation. But in academia, this may not have such a stress. TCS innovations Lab produces around 20 patents/year.
- Gartner Hype Cycle is a good source to choose cutting edge innovation areas.
- Innovation can be classified into disruptive innovation, frugal innovation, social innovation, environmental innovation and efficiency innovation.
- Collaboration is already initiated with University of Kerala by TCS Innovations Lab.

Mr Gokul Alex shared his views as follows

- Innovation cannot happen in isolation. It is accelerated by cross-domain convergence of ideas. Innovation is co-creation.

- Frequent talks on innovation could be arranged. Showcasing of successful startups will be useful.
- Datathons, Ideathons, Techathons and Hackathons can be held by University. To cover innovation in all sectors, University processes can be brought under themes of ideations (Eg: “How can exams be improved”).
- Internship is a simple and effective means of University-Industry collaboration.
- Academic innovation can lead to industry innovation
- MIT Technology Reviews are good examples of academics innovation leading industry needs.
- University of Kerala needs a Digital Transformation (The University library should develop a Mobile App enhancing its service to members, an e-Governance App for employees may also be thought of).
- Innovation can be classified as Technology innovation, Process innovation and Knowledge innovation.

Dr. Subodh G shared his views as follows

- Research must be connected to industrial needs.
- Industries may be invited to make presentation in Depts. and interact with faculty and researchers. Dept"s work can be showcased before industries on these occasions.

Ms. Philomina Simon shared her views as follows

- International Collaborations to be encouraged
- Innovative thinking must be encouraged in class room itself.
- Dept. and School Level innovation groups are to be formed.
- Design thinking may be introduced to students
- Innovation culture must embrace all aspects of University.

Dr. Salom Gnana Thanga shared her views as follows

She shared here patenting experience and expressed satisfaction at the University"s support for painting. She described her innovative research and highlighted how they address serious environmental issues of local relevance. The dye waste in Balaramapuram is being addressed by her now. CET has collaborated with her recently.

Dr. Y. Anil Kumar shared his views as follows

- Awareness about innovation is to be enhanced
- Innovation success stories are to be made visible.
- A separate section in the University is required to handle innovation.

Sri Sajan Ambady shared his views as follows

He shared his experience of speedy patent processing in University of Kerala. He explained his work in the area of security system in costal sector and also in banking. He pointed at that his research in University of Kerala and C-DIT resulted in a technology being transferred to Govt. of Kerala, thereby finally serving the society. He suggested holding of R&D /Innovation exhibition.

Ms Vineetha V. shared her views as follows

- Research should be carried forward even after award of degree. Schemes for this needs to be evolved.
- Research results from PhD should be showcased before start-ups, for possible adoption.
- Infosys may be requested to help with conduct of Ideathons

Mr Prem Sankar C. shared his views as follows:

- M.Tech.(Technology Management) programme of University of Kerala teaches innovation management.
- Dept. of Future Studies has held Hackathons, an idea for energy audit using machine learning has been proposed
- Innovative projects have risk of failure. Unless University supports them with care, student might shy away from innovative projects.
- Innovation fellows can be nominated in each Dept.
- Research can be based on industry challenges
- Internship in industries to be promoted.
- Alumni should be recognized as an important resource to seek feedback and guidance in innovation.
- Monthly Hackathons in association KSUM
- Start a KSUM IEDC chapter in University
  Mini FabLab with 3D printing facility in SICC
  Open online portal for interdisciplinary research problems
- Facebook Page to promote academic achievements - Research Projects, High impacted Papers etc. (MIT Technology Review model)
- Monthly Meetup session - Interactive sessions with existing patent holders, patent experts and mentors to share their experience.
- Open ideation room or space in campus - which is open to students for discussion and interactions

Ms. Gayathri Ganesh shared her views as follows

- Masters students do not have sufficient exposure to research or innovation. This needs action.
- Summer internship for Master"s students" needs to be implemented.
- A one-minute flash presentation was a good initiative.
- Information about Innovation contest has not reached all students.
- Student exchange progrmmes to be designed
- Depts. need to diversity research areas.

Several other ideas came up during the discussion

- Academic/Knowledge Innovation is prime kind of innovation in University academic community. By tying up with start-ups and industries, it can transform to industry innovation.
- All facets of University, academics, administration, examinations, public relations etc. can take up innovation. The non-academic innovation can be related to improving processes to serve clients
- Frugal innovation needs to be promoted.
- University should seek PhD Fellowships from industries to work on industry-needs (TCS, Infosys, and Google may be contacted).
- Inter disciplinary S&T innovation can bring arts, management and social sciences under innovation umbrella.
- University"s presence in research Gate, Academic edu, Linked Inn and Instagram may be ensured.
- Innovation kits for teachers and students may be produced by the University.
- One minute videos on innovation may be produced.

The council recommended that detailed action plan may be derived out of the points that came up in the above discussion.

1.2 Innovation by all

It is proposed that the University need not limit innovation to academic context. The council may decide on ways of promoting innovations in:

(i) Governance
(ii) Human Resource Management
(iii) Event Management
(iv) Service to Students
(v) Cost Reduction

DECISION: The council noted that this aspect was covered in the discussions under item 1.1. Any routine activity done in a different manner to improve efficiency, speed, effectiveness or reduce cost or environmental damages could be considered innovation. This means that all sectors of the University's activity can come under innovation possibility and "innovation by all" should be promoted

1.3 Observing Innovation Day

The council may advice on holding of an innovation day in the University.

DECISION: It was recommended that an innovation exhibition be conducted by the University in addition to Innovation contest/ Ideathon.

1.4 Promoting Innovation – Present Scheme and Status.

1.4.1 Innovation Contest

An innovation contest is currently being conducted, after successful pilot testing. This is an activity aimed at promoting activity among the whole University. Teachers, Students.

DECISION: The council welcomed the idea. It was noted that the event is similar to Ideathon practiced by the IT Industries.

1.4.2 Kerala University Grand Challenge

The Vice-Chancellor has written to a number of industries, organizations and academies and sought their opinions and suggestions on research to be prioritized by the University. A committee which considered this has designed the "Kerala University Grand Challenge # 1". This is ready for announcement.

DECISION: The council welcomed the idea. Members from industry observed that the University research is picking up in terms of patents is a good sign of innovation. Sri Gokul Alex expressed interest in joint patenting with University through internees from the University who are already working in UST Global.

1.4.3 Patenting Activity

Patenting Activity has been on the rise in recent times. From 1937 to 2014, there have been 13 patent filings with approximately 0.16 filing per year. From 2015 onwards till date, 8 filings have been done/is under processing, registering an impressive growth. Summary is noted below.

Sl No.	Patenting Activity	Granted	Filed
1	1937 to 2000	1	6
2	2000 to 2010 (In collaboration with RGCB)	2	3
3	2011 to 2014 (In collaboration with RGCB)	1	4
4	2015 (i) Dr. S.M.A Shibli, et.al "System and Method to Facilitate the Retrieval of Separated Endodontic Files from Human Root Canals" (ii) Dr. Achuthsankar S. Nair et.al "Ayurvedic Wound Healing Formulation for Diabetic Non Healing Ulcer and a Process for Preparation of the Same"		2
5	2016 (i) Dr Sankar Raman, et.al "A novel method of synthesizing stabilized silver nano particles" (ii) Dr Sankar Raman, et.al "Synthesis of Metal Nano Particles using Continuous Wave Low Power Laser in Liquid Medium" (ii) Dr. Salom Gnana Thanga "Biodegradation of Chlorpyrifos an organophosphorus pesticide by Ochrobactrum thiophenivorans isolated from tropical agricultural soil of South Kerala, India"		3
5	2017 (i) Dr. V.P Mahadevan Pillai "Method and Apparatus for Authenticating Security Holograms" (ii) Dr. V.P Mahadevan Pillai : Under Process (iii) Dr S.M.A Shibli "Composite Incorporated Highly Efficient and Bio fouling Resistive Sacrificial Anode"		3

Kerala University Ordinances, 1978, Section XIV provided for patents as follows:

1. Patents:- It shall be competent for the Syndicate to take out patents in respect of any discovery or invention made by the teachers or research students working in the University.
2. Right to be in joint name: - The patent shall be taken in the joint names of the University and the person responsible for the discovery or invention.
3. Expenses of registration: - The expenses in connection with the registration of patents shall be borne by the University.
4. Sharing of profits:-Any profit accruing from the patent shall be shared equally between the University and the person responsible for the invention or discovery.
5. Exploitation of patents: - The person responsible for the invention or discovery shall render free service to the University in connection with the exploitation of the patent. The terms on which patents may be offered for exploitation shall be determined solely by the Syndicate.

The Kerala University IP Policy adopted in 2014 sets the tone for IP Management in the University as follows:

The University of Kerala recognizes the importance of generation of intellectual property by teachers and students and it shall do all that is within its powers and obligations to encourage increased creativity and innovation which will lead to generation of IP. As a public institution funded by the public money, the University of Kerala attaches prime

importance to disseminate the knowledge it generates to the people, both locally and internationally.

- In case of a decision to patent an invention, the University of Kerala does not consider it as going against the principle of free knowledge dissemination, as the University would be able to, under social control; reinvest any share of returns from the licensing of the patent to further the case of IP generation and knowledge dissemination.
- The University of Kerala would encourage its teachers and students to take considered decision on a case by case basis to decide upon the use of the intellectual properties generated by the university. In case of inventions, this will involve a major discussion by the student and/ or the teacher – "to publish or patent". In the case of publication, every effort should be made by the student and the teacher to consider an open access publication, provided other scholarly considerations are not compromised. This will ensure that results of public funded research are freely accessible to the public, without any barriers.
- The University of Kerala recognizes the need to educate and empower its teachers and students to encourage them to generate and manage IP as per the policies of the University.

As a means of encouraging generation of intellectual property, in addition to the share of profits due to the inventor (as provided in Kerala University Ordinances, 1978, Section XIV), the University has committed to consider using its own share to extend better facilities for the inventor in the department where inventors work. The University has also committed to consider appropriately rewarding persons who receive patents, to promote innovations.

Action plan associated with the policy advocates promoting constant awareness about IP through: Conduct of IP Clinics; Free single window processing service to inventors in the University (this is now achieved with IQAC playing the role).; Training on IP management; Initiating innovative measures to encourage and promote generation of IP.

Innovation Council may advice on further steps for promotion of patents.

DECISION: The council welcomed the idea. Members from industry observed that the University research is picking up in terms of patents is a good sign of innovation. Sri Gokul Alex expressed interest in joint patenting with University through internees from the University who are already working in UST Global.

1.5 Student Start-up Scheme of University of Kerala

The age of start-ups have arrived, the 'Start-up village" in Kerala and "Start-up India, Stand-up India" initiative of Central government reconfirm this. In Kerala, there seems to be a concentration of the idea around technological instituitions. The University of Kerala, a multi-disciplinary University with 42 departments ranging from Sanskrit, Arabic, Sociology and Psychology to Optoelectronics, Bio-technology and Computer Science, presents a very unique eco-system for campus start-ups. A campus which can boast of cutting edge data servers, scanning electron microscopes and drug docking softwares is also known for centuries old sanskrit palm leaves, garden of medicinal plants and clinical psychology laboratories. The diversity and synergy of this diversity presents different and unique possibilities.

The University of Kerala started its experiments with start-ups, as early as in 2006, when it established an Industry Incubation Centre (IIC) and successfully incubated a student start-up – Soorya Kiran Bioinformatics Pvt. Ltd. The University has recently re-established the IIC as "KU-TBSC" (Kerala University Technology and Business Start-up Centre). The KU-TBSC scheme mainly provides space and facilities for the start-up to function at a very nominal rate compared to other established incubation centres. Space will be provided, if possible, within the student's respective departments. All facilities and faculty of the department can be advertised by the student start-up as available to them (on a consultancy basis). Our University start-up scheme, unlike most engineering college incubation centres, is not just focusing on technology based start-ups, alone but wants to encourage the very big diversity that exists in the university and wants students from every department to enthusiastically think about providing products/ services from their field. KU-TBSC is working towards a dedicated building, with a corporate front office, complete with a receptionist, seminar/meeting room, waiting area, etc. Start-up offices will be raw work cubicles with all facilities like wi-fi, unfinished, to keep the cost low. Currently one company, MAD Analytics is operating under the start-up scheme.

Innovation Council may advice on further steps

DECISION: Sri Gokul Alex pointed out that in top world Universities, incubation centers have proved to be successful than those set up outside the Universities. He cited example of Stanford University which incubated Google, Facebook etc. The meeting noted the emergence of one company in KUTBSC in Data analysis field, which is an emerging area.

1.6 Innovation Portfolio of University

It is proposed that an innovation portfolio of research and projects going in the University be compiled. (IQAC has already agreed to the proposed). Recent innovative research from Kerala University Departments include Safe and natural food colourant, Improved dye-sensitised solar cells, Sensor to detect pesticide presence, Ceria incorporated composite Hot Dip Galvanic

Zinc coating, New scientific performance measure („M"-score), Enhanced production of solasodine, a New species of mushroom (O.nidiformis), Improved gene finding and sub-cellular localization algorithms, Novel high-k dielectrics, Development of substrates for surface enhanced Raman spectroscopy, Isolation of new lead molecules from marine organisms, Models of tectono-thermal evolution of shear zones in south India and a synthetic biology scripting language named „Kera".

Innovation Council may advice on compilation of an innovation portfolio and also an innovation newsletter.

DECISION: Council recommended that the Innovation Portfolio of the University be compiled and also an Innovation Newsletter may be brought out.

1.7 Module on innovation in PG, M.Phil & Ph.D Course work

It is proposed to recommend that innovation and related knowledge be included in the syllabus of research methodology course work and also in suitable program in PG and M.Phil programmes.

DECISION: The council recommended that the relevant academic bodies may be requested to consider including "Innovation" and related knowledge in syllabus.

1.8 Coordinating with IQAC, RC, UCC, Patent Cell etc

IQAC, Research Council, UCC, Patent cell etc all address different facets of innovation. Hence the council may consider how coordination can be achieved with them.

DECISION: The council recommended that the Director of IQAC, Research Council, UCC and Patent Cell be permanent invitees to Innovation Council. The council also authorized the Vice-chancellor to nominate a standing subcommittee of the Innovation Council, for holding regular meetings which are to be reported to the Council

1.9 Co-ordinated Research: The Research Council of the University in its last meeting has noted that co-ordinated research is so far not attempted in the University of Kerala. It recommended that multi-Department projects with a common objective may be conceived, to which departments can volunteer to take part. One proposal was specifically noted: Drug Design & Development

(i) Oriental Research Institute to study traditional knowledge on selected medicinal plants
(ii) Botany Dept to do phytochemical studies on the above plants.
(iii) Chemistry Dept to analyse the molecules.
(iv) Bio-informatics Dept to do computational docking studies with the molecules.
(v) Biochemistry, Biotechnology & Zoology Depts to do animal studies on the molecules.

Innovation council may offer its advice on the above proposal.

DECISION: The Council welcomed the idea.

1.10 Schemes of Govt of India

Appendix 2 lists some schemes to promote innovation. The council may advice on taking up projects under some of these.

DECISION: It was resolved to circulate the same for all faculty members and also the council members may encourage faculty members to take up projects under some of these schemes.

Appendix

A1: Innovation Council U.O

UNIVERSITY OF KERALA
(Abstract)
Constitution of Kerala University Innovation Council – Sanctioned - Orders issued

INTERNAL QUALITY ASSURANCE CELL

No. IQAC/1/10/2017 **Thiruvananthapuram dt: 28.03.2017**

Read: 1. Minutes of the meeting of IQAC held on 03.02.2017 (Item No.3.14.08)

ORDER

The IQAC met on 03.02.2017 resolved to constitute an Innovation Council to lead initiatives to promote innovation and authorized the Vice-Chancellor to constitute the Council.

The Vice- Chancellor after considering all aspects of the matter, has accorded sanction to constitute the Innovation Council, with the following members.

1. Vice-Chancellor (Chairperson)
2. Pro-Vice Chancellor (Vice- Chairperson)
3. Ms. Philomina Simon, Assistant Professor, Department of Computer Science
4. Dr. Subodh G., Head of the Department, Department of Physics
5. Dr. Y. Anil Kumar, Assistant Professor, Department of Geology
6. Dr. Salom Gnana Thanga, Associate Professor, Department of Environmental Science
7. Sri. Robin Tommy, Head, Innovation Lab, TCS, Trivandrum
8. Sri. Gokul Alex, Senior Manager, Business Operations, UST Global
9. Sri. Anoop P. Ambika, CEO & Managing Director, Cognub-Decision Solutions Pvt. Ltd, T4, 7th Floor, Thejaswini Building, Technopark, TVPM
10. Ms. Vineetha V., Research Scholar, Department of Computational Biology and Bioinformatics
11. Sri. Prem Sankar Chakkingal, Research Scholar, Department of Future Studies
12. Sri. Sajan Ambadiyil, Research Scholar, Department of Optoelectronics
13. Dr. V. Ajith Prabhu, Joint Director, KSCSTE, Sasthra Bhavan, Pattom, TVPM
14. Ms. Gayathri Ganesh, M.Sc. Physics, Semester 2, Department of Physics, University of Kerala
15. Ms. Amala Varghese, M.Sc. Chemistry, Semester 4, Department of Chemistry, University of Kerala
16. Director, IQAC (Convenor)

The Council will be known as **"Kerala University Innovation Council"** and the Council may advice IQAC on the steps to be taken to promote innovation.

Orders are issued accordingly

Sd/-
Dr. M. Jayaprakas
DCDC in charge of Registrar

To:

1. All Members
2. PSs to VC/PVC
3. PAs to Registrar/FO/CE/DP & D
4. PRO to hoist in the University Website
5. All Deputy Registrars concerned
6. Ad. Misc Section
7. All Audit section in Senate House Campus and Kariavattom
8. File/Stock file

Forwarded/By Order

SECTION OFFICER

A2: Extracts from "Invention Intelligence" Newsletter

Schemes and Programmes to promote innovation.

- Innovation Protection Unit, Council of Scientific and Industrial Research (CSIR), Government of India.
- Council of Scientific and Industrial Research (CSIR), Innovation Complexes.
- Small Business Innovation Research Initiatives (SBIRI) of the Department of Bio-technology (DBT), Government of India.
- Patent Assistance Programmes of the Technology Information, Forecasting and Assessment Council (TIFAC), Department of science and Technology and the National Research Development Corporation (NRDC), Development of Scientific and Industrial Research.
- Technology Business Incubators operated by the Department of Science and Technology (DST), Government of India.
- Knowledge-based Resources Information Systems Hub for Innovation (KRISH) of the Indian Council of Agricultural Research (ICAR), Government of India.
- Make in India Initiative, Launched by the Prime Minister of India in September 2014 'As a part of a wider set of Nation building Initiatives. It intends to transform India in to a global design and manufacturing hub.
- Start-up India Initiative. It aims 'To create a culture on innovation and encourage industry& academic collaboration through joint R&D projects.' The initiative was first announced by the Prime minister of India on 15 August2015.
- Stand-up India initiative, launched by the Prime Minister of India On 5thApril 2016.It aims to encourage Greenfield enterprises by SC/ST enterprises. The Stand -up initiative is the rural version of Start- up India Initiative and it has been named Deen Dayal Upadhyay Swaniyojan Yojana
- National Initiative for Developing and Harnessing Innovation (NIDHI), National Science & Technology Entrepreneurship Development Board (NSTEDB), Department of Science and Technology, Government of India.
- Entrepreneurship Development Institute of India, Ahmedabad. The institute was set-up in 1983 and sponsored by the apex financial institutions namely IDBI Bank Ltd, IFCI Ltd, ICICI Ltd, and State Bank of India.
- India Innovation Initiative-2016,a joint initiative of All India Council for Technical Education(AICT),Department of Science and Technology(DST),Government of India and Confederation of Indian Industries(CII) 'To promote entrepreneurship in the country by sensitizing encouraging and fecilitating innovations for commercialization of their innovation.'
- The Indian Innovation Growth programme, a joint Initiative of the DST, Government of India; Lockhead Martin Corporation ;Indo-US Science and Technology Forum; Federation of Indian Chambers of Commerce and Industry ; Sanford Graduate school of business and IC2 Institute at the University of Texas.

- Innovation Scholars In-Residence programme at Rashtrapathi Bhavan 'To promote the spirit of innovation and give further impetus to the grassroots innovation activities'.
- PRISM (Promoting Innovations in Individuals, Start-ups and MSMEs) Scheme of the Department of Scientific and Industrial Research (DSIR), Government of India.
- PACE (Patent Acquisition and Collaborative Research and Technology Development) Scheme of the Department of Scientific and Industrial Research (DSIR), Government of India.
- Technology Development and Demonstration Programme (TDDP) of the Department of Scientific and Industrial Research (DSIR), Government of India 'For development and demonstration of innovative product and process technologies.'
- National Agricultural Innovation Project (NAIP) of the Indian Council of Agricultural Research (ICAR), Government if India.
- Centres of Excellence and Innovation in Biotechnology (CEIB) of the Department of Biotechnology, Government of India.
- National Initiative for Setting-up of Design Innovation Centres, Open Design schools &National Design Innovation Network, Ministry of Human Resource and Development(MHRD), Government if India.
- Innovation Hubs created by the National Council of Science Museum (NCSM), Ministry of Culture, Government of India in association with National Innovation council to engage youth in Innovation and creative activities.