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MAKE IN INDIA: STARTUPS AND INCUBATORS SOFTWARE STARTUPS AT SGI INCUBATOR FOR OPEN SOURCE SOFTWARE SYSTEM DESGIN, DEVELOPMENT, DEPLOYMENT SERVICES AND TRAINING

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ABSTRACT

In the Make in India Era where rather than Inventions the focus shifted to Innovations; the Technological Institutions like SGI are going to play key role by initiating Startups at in-house Incubators to provide services or to launch the products [4]. The Talent Bank of the Students and Academicians will be utilized to educate, to identify, to train, and to provide the support for the same by understanding the startup ecosystem in India and addresses the challenges faced by Startup in the Incubators at Educational Institutions[2,8]. Software startups are newly created companies with no operating history and oriented towards producing cutting-edge products and services in the recent trends. However, despite the increasing importance of startups in the economy, few scientific studies attempt to address software engineering issues, especially for early-stage startups. If anything, startups need engineering practices of the same level or better than those of larger companies, as their time and resources are scarcer, and one failed project can put them out of business. This paper is based on the analysis of the various case studies in India as well as worldwide and the proposal of Open Source Hybrid Operating System and other software startups for development to deployment followed by training. The study focuses on the Startups and incubators current status in India, Scope in Make in India and role of an Educational Institutions. We need to understand that the entrepreneurship at student level will be difficult because of the hurdles of finance, network, marketing, infrastructure etc. One has to focus on the startups at armatures level by establishing the Incubators at the Educational Institutions. At SGI several such ventures initiated and one of them is to design and development of the Open Source Hybrid Operating System is proposed here with customized version for students and professionals. Many such software product startups fail to achieve a worthwhile return on the investments of their financiers, founders and employees. Failures of execution in sales, marketing and delivery are commonly recognized, but failures in product development are less obvious [6, 14]. This paper explores such critical issues at all front and discuss about the possible platforms to such startups and incubators from funding agencies, Govt. Agencies, Corporate CSR additional to the host Institution and continuous support by Mentor which will lead such startups to the success story like Flipkart [9].

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Keywords: Cognitive mapping, University startup, Entrepreneurship, Incubators, Open Source, Hybrid Operating System, Innovation potential,; Tacit knowledge, startup screening, startup potential.

I. INTRODUCTION

Make in India has the major objective behind the initiative is to focus on job creation and skill enhancement in 25 sectors of the economy [5]. The initiative also aims at high quality standards andminimizing the impact on the environment. The initiative hopes to attract capital and technological investment in India [11].

Pre-incubation stage mainly focuses on ideation stage, where technologist having a potential innovative idea can be provided with a co-working space. During this period, the entrepreneur takes up the role of a „techno-evangelist" who develops the idea to into a proof of concept and prepares him for understanding the technical feasibility of the idea proposed. Sometimes, a number of potential innovations or startup teams may come out of this co-working eco system. Recent writers on innovation diffusion and adoption describe why some technologies are successful while others fail. The successful technologies have been unique, exclusive and compatible with the values of the users. Users also seem to find these technologies beneficial. Furthermore, the key to successful adoption has also been the development of „rational relationships" between the technology introducers and users of these technologies [1, 3].

The discussion about spin-offs from the public research sector is generally limited to the case where findings of a research project are brought to market by scientists within the scope of a company start-up. This perception does not do justice to the start-up scene or the start-up potential of public research. The majority of scientific start-ups use knowledge beyond research findings, starting companies in the shadow of publications by academic institutions and drawing from the realm of tacit knowledge at universities. The method of cognitive mapping allows us to systematically access the tacit exploitation potentials of research institutions, which is the prerequisite for potential exploitation.

Small scale industry (SSI) growth has been considered vital for employment generation, industrial production and export promotion in Indian economy since independence in 1947. Accordingly, India adopted a dual-pronged strategy for SSI promotion characterized by institutions and policies. Institutional finance has been the major source of capital for SSI including start-ups and even entrepreneurship is promoted with the support of institutions and policies. Because of the institutional financial support, start-ups have grown steadily and consistently though at a moderate rate in Indian economy. But growth of start-ups did not have an impact on either SSI employment growth or SSI production growth but start-up growth positively influenced SSI export growth [18].

II. LITERATURE SURVEY

While many researches have argued that founders should apply a continuous planning and learning approach, no one has examined the consequences of pre-startup planning on the dynamic capabilities to do so. In this study, we analyzed if pre-startup planning has a negative impact on the cognitive dynamic capabilities of the

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founder. The results show that pre-startup planning progress correlates with both accessibility and knowledge of planning assumptions, which in turn increases the certainty by which founders hold their planning assumptions. Findings further indicate that higher certainty and knowledge of planning assumptions foster the achievement of the sufficiency threshold, indicating that founders maintain their planning assumptions with enough confidence to guide heuristic decision–making during the founding stage. These results imply that pre-startup planning affects the cognitive dynamic capabilities of the founder because strong planning assumptions influence their perceptions and prevent them from systematic information-processing and unbiased decision–making.

Small and medium enterprises (SMEs) are known to be vulnerable due to liabilities of 'newness' as well as 'smallness'. Naturally, there is a strong conviction among policy-makers, researchers, trainers and consultants that SMEs need support for their survival and growth, particularly the education and training support for building their internal capabilities. Paradoxically, however, there is no such felt need for education and training among the SMEs, as was revealed in a survey in India. It explores the reasons for such apathy to education and training among SMEs, discusses the international best practices in the fieldand proposes a model for entrepreneurship education, which should not only focus on facilitating the task environment but also the general environment – latter for the development of innovative individuals and the former for channeling their innovativeness into business start-ups. Thus, education has a dual role in promoting entrepreneurship. We compare the success of startup entrepreneurs and innovators with their social networking behavior. Business incubators have a 25-year history in the US. Today, they number more than 800, for India its beginning. Most are non-profit entities, many associated with universities. The business incubators must accomplish five tasks well in order to succeed: establish clear metrics for success; provide entrepreneurial leadership; develop and deliver value-added services to member companies; develop a rational new-company selection process; and ensure that member companies gain access to necessary human and financial resources.

III. PROPOSED STARTUP: OPEN SOURCE HYBRID OPERATING SYSTEM

Nowadays the mobile device and wireless communication develops rapidly. Hand-held mobile devices with access to the Internet and other network applications are exploding. The business importance of web-enabled phones and PDAs become higher and higher. Moreover, new hardware products such as the Tablet PC and PDA/phone combinations start to push out to the market. Wireless LANs, Bluetooth,
802.11 and other wireless technologies are rapidly evolving
[19].

Operating System (OS) manages all of the software and hardware on the computer. Most of the time, there are many different computer programs running at the same time, and they all need to access your computer's central processing unit (CPU), memory, and storage. In the 1950s, programmers wrote their own input/output routines to read and write magnetic tape. When magnetic disks came on the scene several years later, it became essential to have a separate program to manage them. In addition, running more than one application at a time (time sharing and multitasking) required a control program to keep track of everything. Today, all computing devices use an operating system [20].

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Open source software is software in which the source code used to create the program is freely available for the public to view, edit, and redistribute. Any type of software program can be open source, including operating systems (e.g., Linux), databases (e.g., PostgreSQL), applications (e.g., Open Office.org), games, and even programming languages (e.g., Python).

Now we are building such an operating system, which is more efficient and friendly for user. Anyone can handle it very nearly. We are implementing such a way that, it became a more powerful operating system than which are in existence. We are giving extra touch to existing Operating system from all circumstances. It will be more interactive with a user. We kept it open Source because; anyone can build their own applications as per their ideas. Build location based services, compass sensors, and create rich map based applications. Utilize the power of background services and notifications. It supports telephony, network management and internet resources. It works on Security, Affordability, Transparency, Perpetuity, Interoperability, and Flexibility. We want create a smart GUI as creative as convenient. We can manage some things by applying new strategies for memory management, scheduling, security. We design such way that, the system should speedup own execution time. It will be more interactive within less time.

We design Smart GUI for the operating system which is more powerful and convenient to user. Some extra features are added to GUI. We can implement this with combination of all types of operating system. For e.g. multitasking, distributed, time sharing etc. We use a feature as we required. We are design with compatibility also. With the help of this user can use it on any type of machine.

User Interface-

All graphics based today, the user interface includes the windows, menus and method of interaction between the user and the computer. Prior to graphical user interfaces (GUI s), all operations were performed by typing in commands. Not extinct today, a command-line interface is included in allmajor operating systems, and technical operations are commonly executed from the command line by programmers and administrators.

Operating systems may support optional interfaces. Although the overwhelming majority of people work with the default interface, different "shells" offer variations of functionality, and "skins" provide different appearances. See GUI, shell and skin.

We are implementing a smart GUI for operating system. GUI is most important part of operating system. From GUI only user can connect with operating system.

Task Management-

Multitasking, which is the ability to simultaneously execute multiple programs, is available in all operating systems today. Critical in the mainframe and server environment, applications can be prioritized to run faster or slower depending on their purpose. In the desktop world, multitasking is more often than not "task switching," which keeps applications open so users can bounce back and forth among them. We are using multithreading also with the help of these we can improve efficiency of operating system.

Data Management-

Data management keeps track of the data on the disk or in solid state storage. The application program deals with data by file name and a particular location within the file. The operating system's file system knows where the data are physically stored (which sectors on disk) and interaction between the application and operating system is through the programming interface (API). When an application needs to retrieve or

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save data, it makes a call to the operating system's file system, which is in charge of opening, reading, writing and closing files.

Security

Operating systems provide password protection to keep unauthorized users out of the system. Operating systems maintain activity logs and may provide time accounting for billing purposes. They also may provide backup and recovery routines for starting over in the event of a system failure.

We are providing several levels of protection for security purpose. When it will boot that time also it ask for password, when it just came with welcome page then it will ask for accounts with their password , when it switch user then also it ask for common password,an on many situation.

Kernel

As shown in figure 1Kernel is the most important part of Operating System. It is a Heart of Operating System. The services are provided by kernel. So kernel has to more powerful in Operating System.

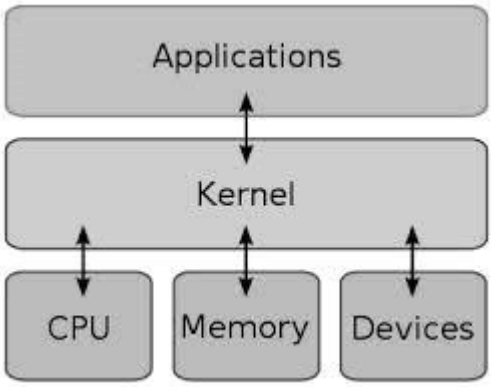

Figure 1: Kernel in Operating System

Kernel services the requests of users with a help of System Calls. Kernel types:

1. Microkernel,
2. Monolithic kernel,
3. Hybrid kernel

We are implementing Hybrid kernel. It attempt to combine benefits of Microkernel and Monolithic kernel.

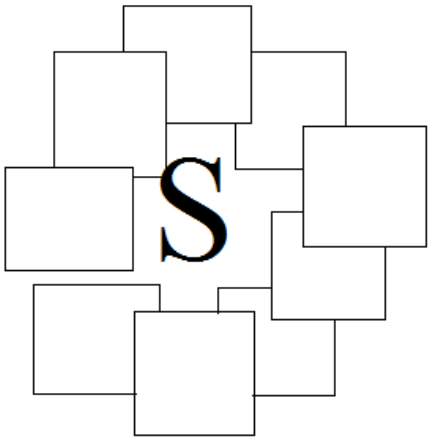

Figure 2: Home Page GUI of S-OS

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GUI- is the most powerful part of our Operating System. In our Operating System, user feels more comfortable with our GUI. It has one Home Screen on that, we place a 'S' letter on centre in 3-D form, all the shortcuts will rotating around the 'S' letter. One fix light shaded icon present there to show which application is currently user selected as shown in figure 2.

Another thing is that, home screen is empty all the time. We kept a by default sidebars to mention other applications and other services. On direction of left, right, up, down. When User moves cursor on direction of these then it will pop-up.

Future Scope- Now we are entering with the 2 versions.

1. Student version(for college purpose)

In this, colleges look for a minimum specification and minimum feature operating system for examination without browsing facilities.

2. Business version.

It includes all the features of our proposal which is mention in our document. It is our original full version of Operating System.

In future, we are implementing our operating System on so many devices like cell phones, tablets etc. Now we are focusing on only desktop and laptop. We can also design our own compatible hardware but our operating system also compatible with other platforms. We are also design our own mouse for our own hardware that will we introduce with our own hardware only. We are come up with our in-build interconnecting messenger who runs without internet.

In addition, for a startup to be recognized as one,

1. It must be an entity registered/incorporated as a:

   Private Limited Company under the Companies Act, 2013; or

   b. Registered Partnership firm under the Indian Partnership Act, 1932; or

   c. Limited Liability Partnership under the Limited Liability Partnership Act, 2008.

   2. Five years must not have elapsed from the date of incorporation/registration.

3. Annual turnover (as defined in the Companies Act, 2013) in any preceding financial year must not exceed Rs. 25 crore.
4. Startup must be working towards innovation, development, deployment or commercialization of new products, processes or services driven by technology or intellectual property.
5. The Startup must aim to develop and commercialize:

   a) a new product or service or process; or

   b) a significantly improved existing product or service or process that will create or add value for customers or workflow.

Some of the successful Incubators:

1. **NirmaLab**s is a high-tech incubator located at Nirma University campus in Ahmedabad, India. A not- for-profit Section 25 company, NirmaLabs was set up by Nirma Education and Research Foundation (NERF). NirmaLabs is a brain child of Dr. Madhu Mehta (a father of telecom revolution in India). The Department of Science and Technology, Government of India, lists NirmaLabs as a Technology

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2. **Kerala Startup Mission** (KSUM) formerly known as „Technopark Technology Business Incubator", is India's first and successful Non Academic Business Incubator, hosted and housed inside Asia's Largest IT Park Technopark. Kerala Startup Mission have been actively initiating various programmes for developing the student entrepreneurship in the state. Government of Kerala declared the startup policy with an aim to accelerate the growth of student entrepreneurs.

3. **T-Hub** is India's largest incubator for startups, located in Hyderabad, Telangana. The first phase of T- Hub was formally launched byE. S. L. Narasimhan, Governor of Telangana & AP, and Ratan Tata, Chairman Emeritus of Tata Sons, and Telangana IT & Panchayat Raj Minister K. T. Rama Rao on 5th November 2015. The second phase of T-Hub is currently in planning stage.

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V. CONCLUSION

The study has shown that to avoid the failure of the Software Startups, host Institute must focus on the model for the evolution of product development from startup to maturity by providing support and facilities consisting of three phases: startup; stabilization; and growth. As the stakeholders are amateur and new in the field of Profession and Market, the host Institutional Mentor has to play the key role start with the polishing the ideas, setup, infrastructure, outside resources, funding, launching, marketing etc. Symptoms that can appear in each phase are discussed and the underlying issues analyzed to follow the road-ahead path. This enables the stakeholders to come with ideas of software startups as discussed here for Hybrid Operating System. We have tried to understand the startup ecosystem in India and address the challenges faced by Startup Alliance India, especially an Educational Institution to establish the
Incubators to build up the startup ecosystem in India.

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