An innovative and Brazilian funding scheme for AOIs and startups: a regional growth model

Plenary Session 5
"New funding schemes for AOI/STP ecosystems"

Author:
Luís Gustavo Henrique Peles (gustavo@anprotec.org.br)
Anprotec, Brazil

Co-author(s)
Antônio Marcon, (a.marcon@samsung.com)
SAMSUNG
Sheila Oliveira Pires, (sheila@anprotec.org.br)
ANPROTEC
Carlos Eduardo Negrão Bizzotto, (bizzotto@anprotec.org.br)
ANPROTEC
Alexandre Steinbruch, (alexandre@anprotec.org.br)
ANPROTEC
Aksara Somchinda, (aksara@anprotec.org.br)
ANPROTEC

HOSTED BY

An innovative and Brazilian funding scheme for AOIs and startups: a regional growth model

Abstract — The current meaning of competitiveness encompasses not only the performance excellence or the technical efficiency of the companies or products; CANONGIA [38]. In addition, it is important to develop a systematic approach to search for new opportunities and to overcome technical and organizational obstacles through the production and application of knowledge. Without this profile, it is difficult for an organization, whether public or private, to remain itself sustainable. Innovation is a key element, as it is associated with the entrepreneurial vision, the technological support and the improvement of processes for the achievement or maintenance of competitiveness in the market. The present work was based on "the framework for a Creative Economy Promotion Program [41]" which aims to present a new investment strategy for the Brazilian AOIs.

Keywords— *Strategy; Business Incubators, Creative Economy; Start-ups; Global Value Chains; Innovation Networks; Science and Technology Parks; Areas of Innovation; Brazil; Korea.*

I. INTRODUCTION

In 2014 the National Confederation of Industry (CNI) published the Brazilian Industry Profile [39], highlighting the existence of 519.624 industrial establishments in Brazil. In the same year, the Ministry of Science, Technology and Innovation, through the Department of Informatics Policy, announces that only 510 industrial stablishments can invest in Research and Development (R&D) projects and activities - in information technology (IT) as beneficiaries of the Informatic's law nº 8248/91.

And according to a study conducted in 2016 by the Brazilian Association of Science Parks and Business Incubators (Anprotec), in partnership with the Brazilian Service of Support for Micro and Small Enterprises (SEBRAE), Brazil has 369 incubators in operation, with approximately 5.125 tenants and graduated startups.

In the coming years, a number of tenants and startups tend to increase, requiring from business incubators more effective methods for managing, identifying and mentoring startup companies. However, Anprotec have already created five successful strategy schemes, well known as: 1- CERNE, 2- land2land, 3- UniAnprotec, 4- Accreditation, and 5- the Startup Acceleration Program based on the Korean Creative Economy method, to attend the industry needs.

Regarding the first described scenario pointing 510 industrial companies, ready to invest in R&D projects, Anprotec seems to have the biggest Brazilian startups networking which means a professional method to develop and manage a national application e acceleration process of innovative ideas for those industrial companies - beneficiaries of the Informatic's Low. As an example from such method, the fifth Anprotec's scheme strategy, the Startup Acceleration Program have shown a clear national impact for funding schemes, inviting medium and large companies for structured open innovation process.

The National Startup Acceleration application management will be presented as an additional alternative for Brazilian funding scheme for Science and Technological Parks (STPs) and Areas of Innovation (AIs), in order to create a regional growth model for more than 510 industrial establishments which can invest in Research and Development (R&D) projects and activities - in information technology (IT) as beneficiaries of the Informatic's law nº 8248/91. The whole application management technology consists of 6 steps.

Planning: The planning procedure it is responsible to define the most important criteria to understand the industry needs. Building alignment between Anprotec and the Industrial sponsor with market niche, required project maturity level, budget and the program timeline;

Qualification: The second step it is focus on qualify and capacitate business incubators that will provide local offices   and   sites,   human resources,   technology, methods, processes and practices to execute the program. Offering human   resources,   methods,   processes   and practices for the certification process; Prioritizing: The third step contributes in the designing of challenge proposals and structural themes for the bidding calls;

Call: Anprotec will perform open calls and challenges, mobilizing the network of incubators and candidates for the competitions all over Brazil through its qualified networking;

Submission: Anprotec shall manage the reception and evaluation submission process of the candidates and incubators proposals, creating project propositions that answer the bidding process, organizing and recording these proposals in formal repositories of the project; and

Selection: It's up to the industrial sponsor, according to their own criteria, provide human resources with technical and market knowledge to support the selection process. Anprotec will execute the process of classifying the project proposals, contribute in the evaluation for the projects' approval.

The Startup Acceleration Program is the result of a successful partnership between Anprotec, Samsung and the Daegu CCEI, developed from which has accumulated experience and know-how, organized as a collective set of program resources including documentation, methodologies, technologies, practices, culture, people and expertise. From this Korean technology transfer process and the full understanding of its model, the Brazilian framework for Creative Economy Promotion Program was proposed.

Constructed on the Korean Creative Economy Model, the Startup Acceleration Program has assisted four (4) Brazilian business Incubators to select eight (8) qualified startups. The program took six months and was organized in eight steps: 1- Incorporation; 2- boot camp; 3-Networking Day; 4- Ad hoc solution; 5- Pitching Day; 6- Demo day; 7- Pitching day and 8- Final test and Graduation. During the entire program, business Incubators and startup companies were fully monitored by ANPROTEC in order to manage their results.

As general overview, the Startup Acceleration Program brought together 12 technical lectures, 13 technical mentors, 8 invested startups, 75 nationally benefited entrepreneurs, and more than US$ 380.000,00 (Three hundred and eighty thousand American dollars) were invested in innovation areas (AIs); four business incubators and eight startup companies were entirely supported by the Startup Acceleration Program.
Based on the previous results, the Brazilian funding scheme managed by Anprotec would be able to gradually generate and delivery a potential funding of U$ 193.800.000.00 for AOIs and startups, in the next years.

The collected results from this model will conduct a positive scenario, like: gradually increase the support for Business Incubators and startups, raise the numbers of intellectual Property (IP), increment the number of industrial participants and R&D projects and boosting the number of export and import operations from the industrial participants. Moreover this model is aiming to propose a complementary alternative for Brazilian funding schemes.

This paper is a case study which presents a professional strategy to manage Brazilian corporate venture programs based in the Informatic's law and a wider network of STPs and AOIs, and is organized as follows: Section II introduces the scenario and the ANPROTEC's wider network of STPs and AOIs. Section III presents the framework of the program, its main agents and processes. Section IV introduces the theoretical framework and a bibliographic review. Section V discusses the methodology utilized in this work. Section VI displays the preliminary results from the case study. Section VII includes final considerations and alternatives for future papers and research projects. Finally, Section VIII acknowledges the main institutional contributors.

II. THE BRAZILIAN SCENARIO AND THE WIDER NETWORK

A few decades ago, it was common for companies to innovate from their own resources (financial, technological, human). However, the significant increase in the speed of launching innovations and the consequent expressive increase in global competition have led companies to emphasize open innovation, generating innovations from partnerships with other companies, universities, laboratories and startups.

Even with the practice of open innovation, companies have two major bottlenecks to be solved, namely: reducing the risk of investing in innovation and the difficulty in creating an effective network of partners with national capillarity.

The risk of innovation means that most of the companies do not invest in process or product innovation. According to the Innovation Survey PINTEC, 2014 [40] conducted by the Brazilian Institute of Geography and Statistics (IBGE), in the period 2012- 2014, from the sampling of 132 529 companies with 10 or more persons employed, 47 693 implemented new products or processes, or significantly improved, resulting in an overall innovation rate of 36.0%. Given this scenario, the Brazilian government has been investing in programs that reduce the risk of innovation by creating tax incentives that allow companies to invest part of the tax on innovations. One of these programs is known as the "Informatics Law" which "grants tax incentives for companies in the technology sector (hardware and automation areas) that have the practice of investing in Research and Development (R&D)". In 2014, 510 companies attended this program in Brazil, generating a total innovation investment of approximately US$ 500 millions. From this total, US$ 1,6 million were invested in business incubators. Thus, it is observed that there is a great potential for incubators to participate more actively in the innovation process at the value chain of large companies. This reality makes the second bottleneck mentioned above even more relevant: the difficulty in creating an effective network of partners with national capillarity. Currently, most of the companies make punctual and direct partnerships with research institutions, companies and business incubators. However, this makes the process time-consuming, more expensive, and less effective. The Brazilian Association of Science Parks and Business Incubators (Anprotec) have created its Corporate Innovation program, with the objective of promoting innovation in the value chain of large companies, through interaction with business incubators, technology parks, accelerators and startups. With 28 years of experience in interaction with innovation environments, Anprotec facilitates the development of partner networks so that companies can generate innovations in their value chains, since it has the following characteristics:
• Acting in all the Federative Units of Brazil;
• Network of partners with complementary profiles;
• Associates working in a wide variety of sectors;
• Access to ventures in different stages of maturity.

In this way, the provided resource's integration by the Informatics Law and the Anprotec's Corporate Innovation Program allows companies to reduce the risks of innovating and broadening the capillarity of their partner networks.As an example of a successful corporate venture management, we will introduce the second batch of the Startup Creative Economy Program which was developed in April 2015 by the Brazilian Association of Science Parks and Business Incubators (Anprotec), the Brazilian subsidiary of Samsung Electronics and the Korean Daegu Center for Creative Economy & Innovation (CCEI).

III. THE STARTUP CREATIVE ECONOMY PROGRAM

The Startup Creative Economy Program requires six key players to materialize: a) Regulator: The Ministry of Science, Technology, Innovation and Communication (MCTIC), in accordance with the Brazilian Law of Information Technology; b) Sponsor: SAMSUNG BRAZIL is the sponsor representing the GVC and provides the financial resources from the Brazilian Law of Information Technology; c) Manager: The Brazilian Association of Science Parks and Business Incubators (ANPROTEC) is the executor of the Program in Brazil through its wide network of associates; d) Licensor: The Center for Creative and Innovation Economy (CCEI); e) Beneficiaries: The young independent technology-based companies called Startups and Incubator(s), affiliated with ANPROTEC and accredited by the MCTIC to manage the financial resources from the Brazilian Law of Information Technology. The projects supported are represented by young knowledge-intensive startups, defined by SCHMITZ & STRAMBACH [14] as "Knowledge-Intensive Business Services" (KIBS), and their interactions with GVCs are through annual investment cycles. This interaction involves the transfer of codified and tacit knowledge, and interactive learning is expected among firms from different sources "learning by doing, using and interacting" (DUI) [15]. The acceleration framework follows the program methodology, which derives from the adapted practices of the Korean Creative Economy Model [13] and it is funded by the Brazilian Law of Information Technology** regarding the provisioned budget of five million dollars. The customization process for the development of the Startup Creative Economy Program was carried out pursuant to Brazil's social, technological and economic scenario and was also based on Brazil's incubation methodology, called CERNE [36]. The Reference Center for Business Incubation – CERNE aims to promote significant improvement in the results of incubators in different areas, both quantitatively and qualitatively, through the creation of an operating standard and model to increase their capacity and generate systematically successful innovative companies. From the Korean model of Creative Economy and proposed technical review by CERNE's criteria, the Startups Creative Economy was designed as an acceleration program that aims to develop startups at the seed capital stage. The model provides a framework of a startup acceleration process, to be carried out in 9 months and organized into 8 main stages, namely: 1-Incorporation; 2-Boot camp; 3-Work Plan; 4- Creative Networking Hour (CNHour) 5- Creative Networking Day (CNDAY); 6-Mentorship & Solutions Ad hoc; 7-Business Pitch; and 8- Showcase & Graduation. For each cycle of acceleration, the term "batch" is given to a set of startups taking part in the program. This article addresses the framework of the second batch of the Startup Creative Economy Program.

** The financial resources from Samsung arise from incentive tax benefits derived from t Samsung, as a private organization, to support the Startup Creative Economy Program. The startup companies associated with business incubators.

Stage 1: Incorporation - The first stage begins with the incorporation process of startups and incubators. The incorporation is based on two requirements: a) a minimum maturity level by the sponsor; and b) startup suitability, i.e. mandatory registration and the participation of enterprises with a minimum age of 6 months.

Stage 2: Boot Camp - The boot camp is the first event dedicated to the preparation of startups and incubators, including: a) Introduction and training of key program themes; and b) access to SAMSUNG's mentorship and technologies. The meaning of "boot camp" comes from the military context, which offers intensive and technical training for new recruits. For two days, the sponsor and the coordinator meet the beneficiaries in person, training them on key issues, such as: a) Design Thinking methods; b) Relationship with Media Guidelines; c) Technologies and Samsung; and d) Pitching for Investors. In addition to these training activities, the startups received the first official SAMSUNG mentoring, aimed at delivering initial guidance to startups in compliance with the work plan for each startup.

Stage 3: Work Plan - The work plan is a document that details the product vision, defined by both Samsung and the startup, until the end of the program. This document is developed and led by the technical team sponsor and contains the expected results to be monthly achieved by each startup.

Stage 4: Creative Networking Hour (CNHour) - The CNDAY is a virtual event that focuses on knowledge transfer and spontaneous generation of networking. Its main objective is to promote virtual meetings among market professionals, incubators and startups in the six key areas of the sponsors' areas of expertise. By the end of the program, 12 virtual lectures will qualify more than 860 entrepreneurs.

Stage 5: Creative Networking Day (CNDay) - CNDAY is training and mentoring event which happens to provide guidance and feedback for the ongoing startups. And also it is time to share the Startup - Key performance Indicators (KPI) to evaluate their performance.

Stage 6: Mentorship & Solutions Ad hoc - Regarding the Work Plan, developed in the third stage of the program, the mentoring activities are available monthly for the selected startups to reach the expected results. The Ad Hoc solutions are understood as complementary measures to mentoring efforts, providing opportunities, for example, for startups to access specialized professionals and special sponsor tools in order to solve emergency technical problems.

Stage 7: Business Pitch - The Business Pitch is a working event to monitor preliminary results, held at the end of each month. The main objective is to present the startups' progress through a national virtual Pitch Session, to measure their results.

Stage 8: Showcase & Graduation - The eighth stage officially ends the program and has two objectives: a) to present the latest version of the product in compliance with the Work Plan; and b) to host the graduation ceremony, certifying the progress made by the companies and the completion of the second batch.

IV. THE THEORETICAL FRAMEWORK

The significance of knowledge for society and the economic order has been debated for a long time in the literature [31]. In accordance with Kuznets, the distinctive characteristic of modern industrialized societies is the systematic application of knowledge to the economic context. Many authors argue that the economic activity shifted away from big industrial plants towards the

exploration of knowledge [32]. As a result, the economies of scale that gave machine- and labor-based activities their competitive advantage in the past were no longer important and separated the economy from its physical resources. As stated by Stam & Garnsey, the fuel of today's economy is knowledge and, while former scholars from the 20th century emphasized the economic importance of large firms, a shift from the managed economy to the study of entrepreneurial economy in OECD countries has been recently identified [33]. Still according to Stam & Garnsey, knowledge-based firms have the potential to demonstrate the economic value of new knowledge, and economies equipped with a high number of knowledge-based firms are building the expertise necessary for the future, when emerging technologies will diffuse into other parts of the economy, which is when knowledge-intensive entrepreneurial activity becomes critical. A basic definition of Knowledge- Intensive Enterprises (KIEs) is given in terms of three basic characteristics: "KIEs are new firms that are innovative, have significant knowledge intensity in their activity, and develop innovative opportunities in diverse sectors" [34]. Since Schumpeter isolated the entrepreneurial function existing in the economic system [10], entrepreneurship became a crucial engine through which opportunities and inefficiencies in an economy are discovered and mitigated [11]; however, undertaking the development of entrepreneurs and venturing is neither obvious, nor a trivial occupation. There are several paths and possibilities; thus, determining the appropriate tools to collaborate with entrepreneurial systems is crucial to increase the chances of success in venturing business projects. This work instantiates the economic entrepreneurial function through SMEs and focuses on the analysis of knowledge-based SMEs' interactions with Global Value Chains (GVC) [1][2] and Innovation Networks (IN) [8][9], creating collaborative arrangements to mitigate venturing risks of early-stage startups and strengthening the nesting infrastructure and conditions for SMEs business development. SMEs are recognized as engines for "open innovation," and high-growth SMEs are generally shown to have characteristics of innovation, market linkages, and networks focused on encouraging SME growth [30]. Humprey & Schmitz [2] define GVCs as one of the possible approaches to condense in a single idea the principle that a chain of activities distributed across different locations and organizations involves design, production and commercialization of products. The authors analyzed the pressures on existing firms, particularly on firms based on developing countries, and suggested that *Upgrading* is a tool to develop local innovation activities of SNIs, given the following main definitions of an SNI in the literature: "*the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies*" (Freeman, 1987), or "*[...] the elements and relationships which interact in the production, diffusion and use of new, and economically useful, knowledge [...] and are either located within or rooted inside the borders of a nation state.*" (Lundvall, 1992), or finally "*[...] a set of institutions whose interactions determine the innovative performance [...] of national firms*" (Nelson, 1993), increasing production efficiency or adding value to products, and allowing firms to assume new functions in the value chain. Presumably, it has relevant implications for firms from developing countries to interact with GVCs led by multinational enterprises (MNEs) as commercial partners or suppliers, enabling them to access innovation *Upgrading* mechanisms [12]. Still according to the literature, not only GVCs, but also interrelationships between SMEs and specialized INs are potential catalysts to strengthen SME's abilities and accelerate business expansion, especially towards internationalization [6][7][8][9]. Therefore, the connections between SMEs, GVCs and INs are a relevant subject of research. Identifying what are the characteristics of those symbiotic interactions can directly contribute to the improvement of knowledge-based entrepreneurial activity in emerging economies [3][4][5].

V. THE METHODOLOGY

This section presents the methodology and procedures for the development of the study. The work structure is divided in three main steps: i) bibliographic   research;

ii) context observation and diagnosis, in which the roles of Global Value Chains and Innovation Networks are explored through the case study; and iii) evaluation of results, discussion and diagnosis. *And finally* the *Prioritizing* which was adopted as supporting tool to address the problem of identifying emerging technologies and selecting projects to develop knowledge-intensive SMEs. The bibliographic research presents and critically discusses the existing literature, which includes different methods of prospecting and prioritizing projects. Our starting point for observation and diagnosis is the context of the "Startup Creative Economy" program. It is worth mentioning the direct engagement of the authors in this project's institutional context during process, proposition and execution, contributing to a better understanding of the context studied. Considering that the project horizon is for five years, from July 2015 to June 2020, it was estimated that the outcomes from the project would arrive in the street market between 2017 and 2021, at a flat rate of 10 new SMEs every year. Then, the formulation of the problem was organized in two parts.

This methodology has already been validated in the first round of the Program, thus justifying the use of this new round.

A. Prioritization Methodology

Quantitative methods are frequently mentioned in the literature concerning project selection and resource allocation [27][28]. Comparative models such as Q-Sort, Analytical Hierarchic Process (AHP), punctuate models, economic models, group techniques, dynamic programming, stochastic models, fuzzy logic, simulation, heuristics and even cognitive models constitute the array of possibilities, but qualitative methods also have their space in the context of prioritization. Peer-review, for example, is largely used to evaluate the quality of academic research, and expert panels are a common tool for prioritization. In this case study, we noticed the intensive use of multi- criteria analysis to prioritize projects, as discussed by many different authors, such as Zopounidis & Doumpos in 2002 and Mavrotas et al. in 2003, allowing a combined qualitative and quantitative approach. Given the particularities of this case study, the multi-criteria analysis was combined with ADHOC qualitative analysis, considering that there were many other tacit and strategic interests involved in investment decision- making processes. As a result, the prioritization was carried out in three steps, after the realization of the open call to gather candidate proposals: 1) MCDA – Multi Criteria Decision Analysis. Evaluators from the sponsoring organization's business and research and development areas, together with evaluators from the selected Incubators, evaluated the candidate proposals individually, based on the criteria described in table IV.2, each ranging from 0-minimum to 2-maximum, balanced by weights from 5 to 10%. A group of 20 evaluators was appointed to execute this step. Based on the consolidated results, the evaluators filtered the more than three hundred candidate proposals and recommended finalist candidate projects to move ahead to the next stage.
2) ADHOC Qualitative Workshop – this phase selected the top projects by means of a workshop to carry out an in-depth qualitative analysis of these project proposals. The evaluators ranked the project proposals in this   phase.
3) ADHOC Executive Decision – this stage was held by the sponsoring organization's executive committee, who selected the winner proposals to be further developed by the direct investments of the Acceleration Program.

#	Criteria	h%	Definition
1	Market opportun.	10	0 - No clear market can be identified 1 - Solution will compete in existing market 2 - Solution has potential to create a new market
	Market size	10	0 - Solution impacts regional market (municipal/state level) 1 - Solution impacts domestic market (national level) 2 - Solution impacts international market (global export)
	Market Regulation	10	0 - Market regulation is extremely tied 1 - Market regulation is weak 2 - There is no market regulation at all
2	Contribution to the R&D chain	5	0 – There is no potential contribution to the R&D chain 1 - Potential as a mid/long-term technology partner 2 - Explicit contribution to optimize time or specific R&D costs
	Contribution to Product &Services portfolio	10	0 - There is no potential contribution to Samsung sales opportunities 1 - Potential to contribute to mid/long-term sales B2B/B2C/B2G 2 - Potential to contribute to short-term sales in B2B/B2C/B2G
	Adherence to Areas of Interest	5	0 - No adherence to the areas of interest 1 - Somehow connected with the areas of interest 2 - Fully adheres to the areas of interest
3	Degree of innovation	10	0 - No innovation: saturated market and technology 1 - Incremental Innovation : addresses existing market 2 - Radical Innovation : creates/destroy market
	Intellectual Property	5	0 – Competitors hold similar solution or patent 1 - No similar solution or patent filing detected 2 - Proponent has ownership of patent (filed)
	Business Shielding	5	0 - Solution or Business Model easy to replicate 1 - Solution or Business Model hard to replicate, 2 - Solution or Business Model, complementary assets
4	Leadership competence	5	0 - Leaderless team without cohesion 1 - Regular team with average leadership 2 -Strong leadership, entrepreneurial spirit, motivated
	Research competence	5	0 - Proponent Partners without formal academic degree 1 - Proponent Partners with formal undergraduate degree 2 - Proponent Partners with formal Master's or PhD level
	Experience competence	5	0 - Team experience unrelated to the Business 1 - Team has some experience in the field of the Business 2 - Team has extensive experience in the field of the Business
5	Consistency	5	0 - No technical / financial / market consistency 1 – It has technical and financial coherence but lacks market 2 – It has technical/financial/market consistency
	Minimum Viable Product/Prototype	5	0 - No MVP available 1 - Low fidelity MVP available 2 - High fidelity MVP available
	Investment Readiness	5	0 - MVP not validated with the market 1 - MVP already validated with the market

2 - Revenue scaling started with evidence of traction

Table IV.2 – MCDA parameters for Prioritization

VI. PRATICAL RESULTS

As a result of the execution of the Prospection and the Prioritization Plans, more than 300 Incubators were invited to participate in the process, 23 of which submitted their proposals. Eleven incubators were qualified and ten(10) were effectively selected for the second Batch in 2017.The ten incubators selected are located in the following regions and respective states of Brazil: North (Amazonas), Northeast (Paraíba), Midwest (Goiás), Southeast (São Paulo, Ribeiro Preto, Minas Gerais and Rio de Janeiro) and South (Santa Catarina and Porto Alegre). There were approximately 2000 interested startups in the second application round, 300 of which submitted their project proposals. After running the prioritization process, twelve (12) projects were selected for the second Startup Creative Economy Program. These twelve startups belong to the Digital Education, Digital Health, Mobility, and Information Security sectors and were incubated in early 2017. More than 20 evaluators were invited to join the prioritization exercise and evaluate these projects. The prioritization was considered satisfactory by all stakeholders. The main results of this stage are:

1) Customization of a special application round for the North region in order to select ideation projects level, and 2) the development of a work plan by the sponsoring organization and the selected startups. These startups initiated their incubation process in January 2017, and should achieve market product maturity in the first quarter of 2018. From January to April 2017, Anprotec followed the evolution of the incubators and the results of the startups, such as:

A. **Incorporation:** full compliance with the acceleration program conditions: twelve partnership agreements were signed between: SAMSUNG, Startups and the Incubators.

a. We emphasized that a new agreement was created in order to manage a cooperation between accredited CATI/CAPDA business incubators and non-accredited business incubator.

B. Boot Camp: the official opening of the second batch

- Startup Creative Economy Program, it was a three-day event that offered intensive entrepreneurial training for 95 professionals from incubators, startups and entrepreneurs in the following areas: 1 Design Thinking; 2 Relationship with Media Guidelines; 3 Samsung Technologies; and 4 Pitching for Investors. The event was closed with twelve startup pitches and approximately 80 mentorship sessions.

C. **Creative Networking Hour (CNhour):** 12 twelve virtual training events were carried out by connecting all Brazilian regions: North (Manaus) Northeast (Paraíba), Midwest (Goiás), Southeast (São Paulo, Ribeirão Preto, Minas Gerais and Rio de Janeiro) and South (Santa Catarina and Porto Alegre). The CNHour have trained 12 startups and will capacitate more than 800 entrepreneurs until august 2017. The entrepreneurs were trained on: 1- Iot road map; 2- Embrapii Units; 3- 10 things that you do not know about startups; 4- Models of recommendation and 5- Pricing.

D. **Business Pitch:** The first Pitch Day was marked by an in-person and virtual event, managed by the incubator from the Northeast region. The event brought together 10 professionals to evaluate twelve pitches and monitor the general results. Up until August 2017, five Business Pitches will be performed in all over Brazil.

E. **Government perspective:** The first evaluation of the Ministry of Science, Technology and Innovation (MCTIC) emphasized the importance of the Brazilian Law of Information Technology to the country's competitiveness. In accordance with the MCTIC, the Startup Creative Economy Program became a benchmark in using this funding model for open innovation and entrepreneurial support in Brazil, an important tool for innovation and interaction between government, incubators, multinationals and SMEs. The program became an example for other companies intending to use the Brazilian Law of Information Technology funding model. In line with the MCTIC, Anprotec is directly linked to the development of business incubators and technological parks and the execution of the Startup Creative Economy Program in different regions of Brazil has begun to smoothly spread the Korean

F. Creative Economy Culture. The successful implementation of this model to support innovation involves transferring knowledge to AIs and STPs and strengthening the industry based on intensive knowledge of SMEs. The Daegu-CIEE aims at promoting the creative industry, by identifying innovative startups in the Brazilian market. Finally, by the end of July 2017, more than three hundred and eighty thousand dollars (US$380,000.00) will be invested in areas of innovation (AIs); and ten business incubators and twelve startup companies will be entirely supported by the Startup Creative Economy Program. Until the end of 2020, the program will invest five million dollars (US$5,000,000.00) and more than 30 Brazilian startup companies will benefit from business incubators certified by ANPROTEC and accredited by the Brazilian government to manage financial resources from the Brazilian Law of Information Technology to be invested in Research, Development and Innovation (R&D&I).

G. **Highlight accelerated startups:** From the twenty startups which belonged to the first and the ongoing second batch, only three will extent their commercial partnership with Samsung.

H. **General results:** Two startups from the first batch, were ranked as one of the most valuable startups of Brazil according the RANKING 100 OPEN STARTUPS BRASIL 2017.

VII. FINAL CONSIDERATIONS AND FUTURE WORK

The purpose of this work was to present a model of regional growth model through the management of corporate venture programs based on the Informatics law.

Through this article, we have noticed the low quantity of industrial establishments qualified to invest in Research and Development (R&D) through the Informatics law.

In parallel, we also identified a broad network of innovation environments, which connects with over 360 incubators and 5000 startups, managed by Anprotec.

Uniting the main characteristics to the realization of a successful program, the startup creative economy program, brought national opportunity for the acceleration of dozens of startups in all Brazilian regions: North (Manaus) Northeast (Paraíba), Midwest (Goiás), Southeast (São Paulo, Ribeirão Preto, Minas Gerais and Rio de Janeiro) and South (Santa Catarina and Porto Alegre). In particular, we reinforce the regional impacts for three regions, where the startups that were highlighted during the Acceleration program: North, Northeast and South are located.

Finally, we draw your attention to the importance of monitoring the development of startups and their respective regions, in light of the following indicators: socioeconomic, taxes, skilled labor, employment and income generation.

WEISS [37] defines evaluation as an activity that aims to assess the operations or results of a program or policy, based on a comparison or set of patterns that can be pre-defined, explicit or implicit, and that contribute to improvement. The author lists five key components of evaluations: the first is the nature of research; the second and the third refer to the focus of the evaluations, i.e., if they focus on the analysis of operations (such as the program being conducted) or on program results (outcomes and impacts for beneficiaries); the fourth is the definition of criteria for comparison of the objectives to be achieved; and the fifth relates to the purpose of the evaluation and its contribution to the improvement of the programs.

VIII. ACKNOWLEDGMENTS

References

[1] GEREFFI, G. (1994) – "The organization of buyer-driven global commodity chains: How U.S. retailers shape overseas production networks". In G. Gereffi and M. Korzeniewicz "Commodity Chains and Global Capitalism". Chapter 5, Westport, CT, 1994;

[2] HUMPHREY, J. & SCHMITZ, H. (2000) – "Governance   and Upgrading: Linking Industrial Cluster and Global Value Chain Research", Working Paper 120, Brighton: IDS, 2000;

[3] KUNDU, Sumit & RENKO, Maija (2005) – "Explaining Export Performance: A Comparative Study Of International New Ventures In Finnish And Indian Software Industry". In: KATZ J.A. and SHEPHERD D. International Entrepreneurship, Advances In Entrepreneurship, Firm Emergence and Growth Volume 8, p 43- 84, A. Leeds School of Business, University of Colorado, Boulder, USA, ELSEVIER, 2005;.

[4] ZAHRA, SHAKER A. ; NECK HEIDI M. ; KELLE DONNA J. (2004) - "International Corporate Entrepreneurship And The Evolution Of Organizational Competence: A Knowledge-Based   Perspective" In: KATZ J.A. and SHEPHERD D. Corporate Entrepreneurship, Advances In Entrepreneurship, Firm Emergence and Growth Volume 7, p.145-172 A. Leeds School of Business, University of Colorado, Boulder, USA, ELSEVIER, 2004;

[5] OECD & WORLDBANK (2015) – "Inclusive Global Value Chains Policy options in trade and complementary areas for GVC Integration by small and medium enterprises and low-income developing countries" . OECD and World Bank Group - Report prepared for submission to G20 Trade Ministers Meeting Istanbul, Turkey, 6 October 2015.

[6] COVIELLO, N. E. & MUNRO, H.J. (1995) – "Growing the entrepreneurial firm networking for international market development". European Journal of Marketing, Vol. 29 No. 7, 1995, pp. 49-61. © MCBUniversity Press, 0309-0566.;

[7] FREEMAN, S.; EDWARDS, R.; SCHRODER, B. (2006) – "How Smaller Born-Global Firms Use Networks and Alliances to Overcome Constraints to Rapid Internationalization". Journal of International Marketing © 2006, American Marketing Association Vol. 14, No. 3, 2006, pp. 33–63 ISSN 1069-031X (print) 1547-7215 (electronic).

[8] TOLSTOY D. (2010) – "International Entrepreneurship in Networks The Impact of Network Knowledge Combination on SMEs' Business Creation in Foreign Markets". Dissertation for the Degree of Doctor of Philosophy, Stockholm School of Economics 2010;

[9] VONORTAS, N. & McPHERSON, M. (2012) - "Networks and Strategic Options for Innovative performance in Knowledge- Intensive Enterprises", George Washington University, April 2012;

[10] SHANE S. & VENKATARAMAN S. (2000) – "The Promise   of
Entrepreneurship As A Field Of Research ". The Academy of Management Review, Vol. 25, No. 1, pp. 217-22, 2000;

[11] KIRZNER, I. (1997) – "Entrepreneurial discovery and the competitive market process - An Austrian approach". Journal of Economic Literature, 35: 60-85, 1997;

[12] WORLDBANK (2014) – "Latin American Entrepreneurs - Many Firms but Little Innovation" - ISBN (paper): 978-1-4648-0012-2, ISBN (electronic): 978-1-4648-0013-9. DOI: 10.1596/978-1-4648- 0012-2

[13] SMART KOREA (2014) – "Smart Korea Creative Economy". World Economic Forum, Annual Meeting, South Korea Ministry of Science, ICT   &   Future   Planning,   January,
2014. http://www.korea.net/NewsFocus/Policies/view?articleId=1217 27;

[14] SCHMITZ, H. & STRAMBACH, S. (2009), "The organisational decomposition of innovation and global distribution of innovative activities: insights and research agenda". Int. J. Technological Learning, Innovation and Development, Vol. 2,
No. 4, 2009 p231-249

[15] LUNDVALL, B.A, et al (2009), "Innovation system research and developing countries" in LUNDVALL,A.B., Joseph, K.J., CHAMINADE, C. and VANG, J. (eds.) Handboook of Innovation Systems and Developing Countries. Building Domestic Capabilities in a Global Setting. Edward Elgar, Cheltenham, UK and Northhampton, MA, USA.

[16] ROTOLO D. ;HICKS D. ; MARTIN B. (2015) – "What Is An Emerging
Technology". Research Policy , Elsevier V.44 (2015) pp. 1827– 1843

[17] JANTSCH, E. (1967) - "Technological Forecasting in Perspective: A Framework for Technological Forecasting, its Techniques and Organisation". OCDE, 401p;

[18] GEORGHIOU, L., HARPER, J. C., KEENAN, M., MILES, I., POPPER,
R. (2009) – "The Handbook of Technology Foresight". Cheltenham: Edward Elgar Publishing;

[19] SARITAS, O.; AYLEN, J. (2010) –"Using scenarios for roadmapping: The case of clean production". Technological Forecasting & Social Change;

[20] GARY, J.E.; GRACHT, H.A. (2015). "The future of foresight professionals: Results from a global Delphi study". Futures, 71. p. 132–145

[21] SARITAS, O.; SMITH, J.E. (2011). The Big Picture – trends, drivers, wild cards, discontinuities and weak signals. Futures, 43. p. 292–312;

[22] MILES I.; SARITAS O., (2012) - "The depth of the horizon: searching, scanning and widening horizons", Foresight, Vol. 14 Iss 6;

[23] PHAAL R.; FARRUKH C.; PROBERT D., (2004)   –"Technology
Roadmapping – A planning framework for evolution and revolution". Science Direct, Technological Forecasting and Social Change Vol 71;

[24] LOVERIDGE, D. (2002) – "Experts and Foresight: review and experience". PREST, Discussion papers series;

[25] CHANG, SB (2012) - "Using patent analysis to establish technological position: Two different strategic approaches". Technological Forecasting and Social Change. Volume 79, Issue 1, January 2012, Pages 3–15;

[26] DAIM, T.U.; RUEDA, G.; MARTIN, H.; GERDSRI, P. (2006) –
"Forecasting emerging technologies: Use of bibliometrics and patent analysis". Technological Forecasting & Social Change, 73. p. 981–1012

[27] HEDGEBETH, D. (2007). "Data-driven decision making for the enterprise: an overview of business intelligence applications", VINE, 37(4). p. 414 – 420;

[28] MINER, G. (2012). "Practical Text Mining and Statistical Analysis for Non-structured Text Data Apps". Science Direct. Cap 1. http://www.sciencedirect.com/science/book/9780123869791 ;

[29] PALOMINO, M.A. et al. (2012). "Web-based horizon scanning: concepts and practice", Foresight, 14(5), p.

[30] VONORTAS, N. & McPHERSON, M. (2012) - Strategic Options for Innovative performance in Enterprises". George Washington University, April

[31] KUZNETS, Simon (1966) - "Modern Economic University Press, New Haven, Conn, Chap 1, 1966:

[32] BIRCH, D. L., HAGGERTY, A., & PARSONS, W. creating jobs? Boston: Cognetics Inc. Birch, D. L. Parsons, W. (1995) Who's creating jobs? Boston:

[33] AUDRETSCH, D & THURIK, A. (2001) - "What's New Economy? Sources of Growth in the Managed and Economies", Industrial and Corporate Change vol 2001

[34] MALERBA, F. (2010) – "Knowledge-intensive innovation systems. Evidence from Europe", Franco London & New York: Routledge, 2010. ISBN (Hardback), 352 pp

[35] MCTIC, Setor de tecnologias da informação: resultados da Lei 8.248/91. http://www.mct.gov.br.

[36] BIZZOTTO, C. E. N; GARCIA, F. P.; PIRES, S. O.   e T. Reference Center for Business Incubation: a model of operation. In. IASP Annual Conference.

[37] WEISS, C (1998) – "Evaluation: Methods for Policies. 2nd Edition" : ISBN-13:978-0133097252

[38] CANONGIA, Cláudia; SANTOS, Dalci M.; SANTOS, ZACKIEWICZ, Mauro. Foresight, Competitive Knowledge Management: Tools for Innovation Produção. 21 v.11 n. 2, 2004.

[39] The National Confederation of Industry (CNI), The profile 2014. – ed. rev. – Brasília : CNI, 2014.

[40] The Brazilian Institute of Geography and http://www.pintec.ibge.gov.br/downloads/PUBLICA C3%87%C3%83O%20PINTEC%202014.pdf

[41] PROCOPIO, Francilene et al. An International STPs and AIs: The Framework for a Creative Progra