

# Boiling Innovation: Creating an Environment for Technological Leadership in Russia

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## ABSTRACT

The article analyzes the phenomenon of the trading zone in Russian practice, as well as the impact of interconnection of digital (platform) instruments of aggregation, integration and decentralized network of public spaces on the development of innovation and technology entrepreneurship in Russia. The need to form a national innovation system is due to changes in the socio-economic system of society, as well as isolation caused by the pandemic. As an example, the authors analyzed the work of a digital platform Leader-ID and the network of open common work places Boiling Points launched within the framework of technological leadership development in Russia. The article discusses the mechanism of such spaces' emergence, their connection with the digital platform. The significance of online and offline environment synthesis in a pandemic is discussed.

**Keywords:** *trading zone, digital platform, public spaces, innovation, technology, interaction, infrastructure*

## 1. INTRODUCTION

In order to be competitive, it is not enough for modern national economies to be only productive, they need to possess the best production practices, technologies and skillfully integrate them into socio-cultural relations. The paradigm of development based on innovation is one of the determinants of the global economy today. It is based on the use of knowledge and inventions as the most important economic resources. "Innovation becomes a strategic factor of economic growth, it affects the structure of social production and stabilizes the social situation in the country"[1]. The article will analyze Russian practices of innovation development in the context of formation of a network society and economy.

## 2. RESEARCH METHODOLOGY

The transition to an innovative society is a process accompanied by an increasing role of knowledge, client-oriented production, and networking; it is a period in which questions of trust in old structures and established practices are raised and old institutions break down. Therefore, the government must be aware of the inevitability of changes and the need to change the public system of relations, the transition to a network society. The concept of network society was formulated by S. Braten and developed by J. van Dijk [2]. Based on these sources, network society can be defined as an environment for qualitative transformation of the culture of participation. It is a form of social structure that relies on a system of network technologies with the qualities of transparency, dynamism, flexibility and adaptability to exogenous change. A. Toffler wrote: "Post-industrial technologies not

only change production processes, but also redesign the patterns of everyday life and influence people's interactions" [3] - this means that one of the key tasks in creating the field of innovation is to change social practices and methods of communication between people. Within the new system, people are the main engine of progress: they invent, aggregate, implement, scale and modernize. However, a person's productive work is only possible in a system that has an appropriate innovation environment which is able to concentrate all the forces of production and direct them towards achieving the effect. Creation of such a system is not an easy task, in which the state often plays a leading role, because the social and economic transformation of society requires large-scale and complex changes that affect all spheres of human life. One of the possible ways to solve such a task can be the creation of such an infrastructure, which would allow to establish the exchange of experience, knowledge and technologies between subjects, as well as to consolidate the intellectual forces of different communities existing in the city/region.

There are many examples of innovation hubs in the world - trading zones, which usually represent real physical spaces, connecting thought factories, innovation laboratories and technological production: Silicon Valley (USA), Silicon Highlands (Ireland), Golden Triangle (UK), Zhongguancun science town (China), etc. There are also many examples of innovation hubs in the world. Today, each country making the transition to an innovation economy is striving to create its own sustainable cluster of innovation stimulation, development and production. Russia is not an exception, for example, the Russian version of a science City - the city of Innopolis (Republic of Tatarstan), founded in 2012.

The notion of trading zone was introduced to academia at the end of the XX century by the American historian of science P. Galison [4] to describe the interdisciplinary interaction of the scientific community. The term itself was borrowed by the researcher [4] from "anthropological studies that consider problems of trade interaction between different cultural and linguistic communities" [5]. That is, the trading zone in the scientist's understanding is a possible model of interaction between people speaking different professional languages, which is formed in the process of joint activities. However, today the trading zones are used for interaction of actors not only from different professional spheres, but also from civil communities. A. M. Dorozhkin [6] calls such trading zones "non-Humboldtian", the purpose of which is to facilitate the construction of a dialogue between scientific and non-scientific communities, such as entrepreneurs and researchers, etc. At the same time, in today's world digital technologies are widespread, and coordination, communication and, in general, interaction are partially transferred to the online environment, and sometimes it is there that it originates, finding its further way offline. Therefore, today the trading zone is not only a place of interaction between different communities, but also between virtual and real worlds.

The development and extensive use of mobile devices, high-speed Internet have made it possible and convenient to use platforms for consumers, offering them a faster, more comfortable and less energy-consuming way to get some or other goods, services and so on. By digital platforms one implies "hybrid structures focused on the formation of mutually beneficial relationships of a significant number of independent economic agents, carried out in a single information space and aimed at creating value through direct interaction and transactions between several groups of third-party users" [7]. The concept of a platform today combines both the reference to the key role of information technologies, and aspects of equality (p2p) in interrelations, and the mass nature of user involvement (and the more of them, the more successful the platform), and the element of community arising around the platform, and the specificity of openness of access or sharing as a type of relationship with material goods.

There are international practices of various digital solutions which promote innovation and provide integration, financial, information and other support to individual technology entrepreneurs and scientists, as well as research and academic organizations. There are several types: information websites about support and development programs, digital platforms with elements of crowdsourcing, integration platforms, professional social networks, etc.. Some of them have off-line access, as they inform about existing projects (Eureca), others hold regular conferences, seminars, etc., to translate interactions into the real world (COST). However, they do not have permanent public spaces integrated with the digital platform.

### 3. THE RESULTS OF THE RESEARCH

As a result of the analysis of Russian practices contributing to the innovative and technological development of the country, it was found that the phenomenon of trading zones as points of connection of representatives of various communities (political, entrepreneurial, civil, scientific, etc.) - the network of innovative educational public spaces Boiling Points and the platform for the development of Leader-ID leaders - has become widespread in Russia. At the same time, the uniqueness of the Russian experience of trading zones gives, on the one hand, the practice of synthesis of virtual interaction carried out with the help of online platforms and the real one that is transferred to offline platforms, and on the other hand, the project's network structure. Such trading zones have the potential to overcome spatial boundaries, connect different communities and create a global network. An example of such practice is the Boiling Point network united through the Leader-ID platform.

The events of 2020: the pandemic, border closures, record-breaking oil production decline, the subsequent crisis and fear of the second Covid-19 wave - all these factors not only brought to the fore the issue of building an effective innovation system at the national level, but also created a demand for autonomous operation of the innovation infrastructure without the physical presence of a person.

Under these conditions, a unique infrastructure model has been formed in the Russian environment over the past eight years, which integrates online and offline communications through platform solutions, as well as ensures interconnected operation of various territorial units. This is the Leader-ID platform and the Boiling Point collaborative workspace network. The possibility of such a model is the result of several processes: the transition to an information society and, as a result, the emergence of network relationships, as well as the partial transfer of the idea of trading zone in the virtual environment. In order to answer the question of how the connections of these processes gave such a result, it is necessary to describe their features in more detail.

Today Boiling Points is an extensive network of partner spaces in 61 regions of the country. Their focus is on building a culture of innovation, human development, territorial development, technological communities and entrepreneurship. As noted in the training materials on how to open a Boiling Point - "these are not just physical spaces or infrastructure for joint work - it is primarily a network of people engaged in community development, solving common tasks, forming a common field of communication and dissemination of ideas and practices of technological development in different cities of our country" [8]. S. V. Chupsheva, General Director of the Agency of Strategic Initiatives, believes that Boiling Points are "the pillars of our ecosystem, an opportunity for every resident of our country to be at the center of change. It is a space for leaders who are ready to take responsibility for positive changes. Here each of you can work on the future agenda" [9].

A total of 91 Boiling Points have been opened in Russia, of which 54 are university ones. It is planned that by the end of 2020 there will be 100 spaces in Russia. The main goal of Boiling Points is to broadcast the agenda of the National Technology Initiative (NTI) at the regional level, develop innovative markets and introduce innovative technologies and systems into education and everyday practice. Boiling Point represents a space for communication and teamwork, which, on the one hand, is a kind of intellectual entertainment with its subculture, with a focus on the development of technologies and communities, language and symbolic field, which is reflected in the design and design of the space. On the other hand, a common language is developed there, as well as hypotheses in the development of cross-cutting technologies are tested, and technological and other projects are launched and developed.

Boiling Points are not funded from the federal budget and are a project of grassroots initiative, the search for funding, space and team is carried out by each team of initiators themselves. The stability of the format and its connectivity is ensured through the common information platform Leader-ID, various training practices by format holders - the NTI Platform, general principles of work and goals shared by the teams.

Leader-ID is an information platform, which is a digital environment of Boiling Points and part of the ecosystem of technological entrepreneurship development. The main focus of the platform for the year of 2020 is to create an infrastructure for exchanging data with partners in the NTI ecosystem and beyond, and to provide open tools for working with data and analytics related to innovation development as a service [10]. In this way, the offline and online components complement each other to form a single communication field. Boiling Points is one of the entry points to the Leader-ID platform and an exit for technological, social and other developments in the world, and the platform allows you to accumulate information and provide tools for connectivity and communication, career development, etc.. It allows not only to connect people and inform them about what is going on, but also has extended analytical functionality for Boiling Points. All this contributes to the formation of connectivity between the Leader-ID platform and Boiling Points. Leader-ID is a kind of mirror and a data warehouse on human activity, topics and frequency of events on the topic of technological development and related agendas, as well as allows you to analyze the connectivity of spaces and people in places where Boiling Points are present, to recommend to participants the trajectory of development, people and events.

"The concept of Boiling Points is based on the association of physical spaces and digital services, the formation of a center of attraction for existing and potential participants in the ecosystem of NTI". [11]. Of interest to the analysis is the comparative analysis of the Boiling Point network before and during the pandemic conducted by the NTI Platform. [12]. Despite the fact that no face-to-face events were held, activity within the network and its connectivity increased. Whereas in the period before isolation a high

force of connection was considered to be 8 (i.e., a point has a connection to eight or more nodes of the network), during the pandemic this figure increased to 17. That is, with the closure of borders between regions, lack of opportunities for personal physical communication, new contacts and ways of interaction emerged. Moreover, new islands of connectivity (i.e., interconnected nodes forming groups) have been formed. While in the period "before" the key actors were the capital cities' Boiling Points as centers of community attraction and network actors, in the conditions of the pandemic the emphasis shifted to the region (the Southern Federal District was the most active). Consequently, the network structure and connectivity of Boiling Points is confirmed, which functions regardless of the presence/absence of real interaction. With the growing trend of "erasing the boundaries of platform and network connections to the real ones", the separation of online and offline connections of actors becomes practically impossible" [13]. Consequently, trading zones appear as points of connection of virtual and real worlds and concentration of intellectual potential.

Boiling Points exist in two formats: urban Boiling Point and university Boiling Point.

The urban Boiling Points function on the basis of the triple helix model and involves the scientific community, universities, business and government in its work - to solve urban and regional problems. It operates on the principle of open safe space: any person can hold a free event aimed at technological development, social and other important tasks for the community, region, and country.

The activity of the university Boiling Points focuses on transforming the educational model within one or several universities and involving other actors (expert community, business, etc.) in its work. It is a kind of experimental field where "everything is possible", including the creation of informal scientific and technological communities. For regional universities, inclusion in the Boiling Point network is "an engagement in a technological leap" [14]. Students have the opportunity to learn the latest practices, get access to technological equipment, in addition, the model of the "University of the Future" is based on individual educational trajectories, which are tested in the framework of the Boiling Point, such as in the National University of Science and Technology "MISiS". "The task of the Boiling Point in the work of National University of Science and Technology "MISiS" is the transformation of the educational process, where all students are given the opportunity to immerse themselves in the project activities and form their own educational trajectory" [15].

#### **4. DISCUSSION OF THE RESULTS**

The Boiling Points model corresponds to the characteristics of an trading zone.

First of all, a unique common language, i.e. a non-protocol language, a symbolic image base, is formed inside it in order to imagine local situations that arise when two complex social and sign systems meet. To form a

communication field in Boiling Points different approaches are used: working with the space, and the use of different knowledge bases and the use of event formats to form a common language field. The common semantic environment is the presence of different semantic maps, infographics, texts, QR-codes with links to voluminous materials telling about what the communities of this place do. The use of different communication formats helps to form a common language between representatives of different spheres to solve common tasks, which are formulated in the form of social order from community leaders. The problem of understanding is solved by developing intermediate vocabularies (in-between vocabularies), from which such common languages emerge [4]. To submerge into this language, a knowledge library [16] was created in the platform, which tells about the development of the project and technology.

Secondly, Boiling Points is a flexible space for both individual and team work. Each room of the Boiling Points is designed to meet the needs of those communities that initiate its opening. There is a functional zoning: zones for collaboration, cafes, open zones for collaboration, etc.

Thirdly, it is a social and intellectual space characterized by interdisciplinarity and the possibility to exchange theories, ideas, tools and technologies. As P. Galison [4] notes, it is in the course of practical collaboration between different scientific and technical practices that a new language, common to all participants of the trading zone, a new common culture emerges. Boiling Point teams use more than 25 different formats to ensure communication of different types and diversity of participants. For example, the Hackaton format, according to the Leader-ID platform, "collects from 3 to 21 specializations, and by median value (excluding unreasonable emissions) - 10 specializations" [17]. At the same time, each of the Points retains its identity due to the uniqueness of the audience, theme and content of the event, therefore, formats are the instruments of interaction between different communities. For example, the business community most often acts as an organizer and takes an active part in management fights, meet-ups; government agencies are most active in acceleration programs, celebrations and workshops; universities participate in foresight, design sessions and workshops [17].

At the same time, it should be noted that representatives of different and often polar communities interact in communication in Boiling Points, and therefore, they need a common language or a mediator to help them "translate". A. Tomskikh believes that a productive dialogue between scientists and entrepreneurs is one of the approaches "that should address the most pressing issues today". [18]. For Russia "implementation of the strategy of interaction of science and education with industry of the region is a way to achieve market autonomy and state security" [19] in general. That is why today there is a high demand for "specialists - "interpreters" who understand what the industry wants and are able to see applied solutions to the tasks set by the industry" [19]. From the point of view of the theory of trading zones, mediators can become such "translators". A mediator is "an individual who has

mastered interactive expertise and is able to move easily between different social groups, "translating" the problems of some into the language of others and back" [20]. A number of researchers argue [6, 20-22] that a mediator-philosopher is necessary for successful resolution of interdisciplinary communication difficulties. N. Baranets points out that "it is not easy to be a mediator of cognitive communication, because neither the technology of such activities, nor the target audience, nor the ways to educate such a level of experts are clear" [20]. Therefore, it is necessary to promote the development of potential mediators. In the network Boiling Points it is implemented through the format of Thinking Clubs, launched in 2018 in St. Petersburg, where through different schools of thought, solutions for complex problems are sought, "thinking marathons" are organized, where cross-disciplinary and business problems are solved. Thus, "search for unifying ideas that suggest and create the possibility of positive existence of different opinions" is carried out [20]. The composition of Thinking Clubs varies from city to city, but the absolute majority belongs to entrepreneurs. The difference in the composition of Thinking Clubs is due to the uniqueness of each Boiling Point, which forms a set of factors. First, the format of Boiling Points: in the Clubs, which exist on the basis of the University Boiling Points, the percentage of scientists and students is higher, so their goal is an interdisciplinary synthesis. Urban Boiling Points involve representatives of the business community and civil society in the interaction, focusing on the development of a culture of thinking. Secondly, the development of Boiling Points and the work of the Thinking Clubs is influenced by the regional agenda and economic specifics, which provide relevant and often unique tasks to be solved. Thirdly, the focus (specialization) of each individual Boiling Point directly influences which communities will be interested in its work.

Fourth, specialization forms a key component of trading zones - a common object called by P. Galison [4] a boundary object: "mixed (material-information) case matrix/problem/activity that occurs at the interface of broadcasts from all interested parties" [5]. In Boiling Points, such an object is generated by formulating a "thematic direction" for each specific space. For example, "Boiling Point - St. Petersburg" is focused on the development of the Tehnet market, so the communities and institutions specializing in solving engineering and technological problems take an active part in its work, and Boiling Point - Ulyanovsk is focused on the topic of digital economy and deals with digital transformation of the region.

Each of the Boiling Points is included in a common network that helps to form urban, intraregional and interregional links. Interaction between the Boiling Points is done at the expense of:

- Firstly, the Leader-ID platform, through which information is exchanged between Points (announcements, live broadcasts and video archive of events, data exchange, a unified system of profiles of potential speakers/lecturers, etc.) and broadcasting of the common NTI agenda (main

goals and objectives, publication of reports and results of activities, etc.);

- Secondly, conducting common, networked events for Points of Events (e.g., IT-dictation);

- Thirdly, design of the Boiling Point space in accordance with the objectives of regional and NTI innovation development;

- Fourth, a common language and approaches to communication.

Networked organization is one of the key characteristics of the information society, which, unlike the hierarchical one, allows contact between subjects belonging to different horizontal and vertical structures. Thus, the boundaries between communities are erased and new channels and forms of interaction are born. It is this kind of interaction that underlies the possibility of an innovative product. As J. Purdehnad notes, "The dynamics of open innovation requires information from external sources and collaboration. The wider the collaboration in the development of an idea or project, the greater the results. According to this logic, the addition of ideas from thousands or millions of people will give rise to new ideas and technologies" [23].

The Boiling Point network is actively involved in the development of projects and ideas contributing to the country's development. Thus, in October 2020 in Boiling Points are held strategic sessions with the participation of the leadership of the subjects of the Russian Federation, where the most relevant ideas in the regional context are selected for the forum "Strong Ideas for the New Time" [24], which aims to reset the economy and social sphere, to develop a technological strategy for the development of the country in post-covid time. The task of Boiling Points was not only to accumulate ideas, but also to help refine them and to test them among different groups. As the program director of the Boiling Point - Tomsk, L. Kobzeva noted, "the idea of the Boiling Points network, its mission is to bring the process of idea generation beyond the narrow limits of an individual organization, industry or social layer, to make it a truly social process" [25].

## 5. CONCLUSION

The analysis of the mechanisms and practices of the Boiling Points network and Leader-ID showed that they do not seek to directly change the economic situation in the region, they create an infrastructure and environment for change: they form a place for interaction, transform communication formats and form a "language of innovation", integrate the region into the all-Russian network, provide access to specialists, data, events, connect disparate communities and promote innovation education. Events at Boiling Points are a voluntary initiative and are implemented on a non-profit basis; the site operates on the principle of open space. Network analysis of interactions in Boiling Points in St. Petersburg and Moscow has shown that a complex and dense network of interaction has been formed between the actors, i.e. the

organizers and participants do not just come to the Boiling Point as a conference hall to hold another event without feedback, the results of the events are inter-institutional contacts, interaction between the actors-organizers and the involvement of ordinary listeners and participants in the production of knowledge, as well as real projects that arise in the process of communication: Agreed. And if in the framework of forums and conferences there is a short-term creation of such trading zones, fields for inter-group communication, the Boiling Point, as a public space, offers to do it on a permanent basis, focusing on stimulation, development of innovative potential.

Such a synthesis, on the one hand, helps to reduce the costs of interregional and intersectoral communication, remove administrative barriers and develop new solutions. It is a place of mediation and concentration of active people, and, on the other hand, collects data and forms the digital space, i.e. to create a special environment for technological development of the country.

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