ample, the slush collection in the process of the thermal decomposition of the wood, the energy chemical plants and the installations for its further processing, the acetic acid productions by the extraction method, the special equipment in the ethyl acetate, the furfural production, and also in the WFGCM outer layers, in order to be further improved its fracture strength.

So, the new direction in the Forestry and the Woodworking industries – is the creation on their basis the sleepers and the ties for the railways, including the timber – carrying, the logging, and also the street car and the subway routes.

If we consider, that the sleepers and the ties service life in the way is made up 13–19 years (e.g. 156–228 months), therefore, it is in 6–7 times less, than the reforestation term of this age. So, the main reasons and the causes of the wooden sleepers and its ties out of their service is their mechanical wear and the decay, and it is the primary reason and the cause is exactly the deterioration and the wear, because of which from 30 up to 60% of the stacked sleepers and the ties are being failed at all. Thus, this is explained the main reasons and their causes of their acute shortage.

So, the FAM resin, and also the wood [3, 4, 5] preliminary analysis chemical composition and the main properties have been permitted to be highlighted the following working hypothesis: the new constructional corrosion – resistant wood fiber – glass composite material (WFGCM), the matrix of which the FGCM [1] can be served, having described above, and the reinforcing filler – the wood chips, is quite able to be created at the theoretical basis and the experimental verification of such fact the FAM oligomer compatibility and the wood.

So, the potential chemical reactivity of the WFGCM components concerned us has already been identified. As it has been noted above, the wetting, which is followed by the second act of the FAM and the wood interaction – the physical adsorption, having carried out by the Van-der-Waals forces is the initial warranty examiner occurrence connection between the resin (e.g. adhesive) and the wood (e.g. the substrate). So, it its turn, the physical absorption is taken its place, simultaneously, with the dipole – dipole interaction, and, in this case, there are the hydrogen bonds. The molecules structural diagrams analysis of the WFGCM interacting components, having formed the FAM resins – mono- and difurfurilidenacetones and the wood – cellulose and the lignin, has been shown the hydrogen bonding emergence possibility by the dipole – dipole interaction and the interaction of these hydroxyle groups to be formed the ester bonds scheme, which is contributed to the durable adhesive joints in the section area between the phases, which has been confirmed, experimentally. So, the process is ended by the system hardening, having led to the wood reinforcing filler compression, due to the shrinkage forces [2, 3, 4]. From the above material, it is quite clear, that the adhesive joint emergence process is very complex, and its phases are interwoven in time.

So, the return on the capital investments in the sleepers' production from the WFGCM is taken its place in four times quicker, in comparison with the composite ties, having used in Japan. They are much convenient to be carried out, with the terms of their operation for the all types of the railways owners, and, above all, the timber industry complex – the main furfural producer, having obtained from the wood waste, and the reinforcing filler – the wood chips.

As the need in the corrosion – resistance structural materials in the RF and abroad is quite huge and enormous, then the forestry industry and the wood chemistry productions may be their main suppliers. So, this will be improved the environmental and the social situation in the regions, having harvested and the processed timber, since they can be used in almost practically all the waste timber complex; the new jobs and the working places will be created, which is very significant and extremely important at the development present stage of the Russian State.

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VIRTUAL SCIENTIFIC SOCIETY AND NETWORK TECHNOLOGIES AS FACTORS OF INDUSTRIAL AND INNOVATIVE DEVELOPMENT

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Presently science has acquired a number of new peculiarities. Evidently, formal sciences have taken leadership roles. This is attributed to the internal and external reasons. Development of the easily accessible personal computers, wide usage of Internet, transmission of 3D images, development of

programs for data processing drastically influenced the process of consciousness, ways of communication between scientists, self-analysis of a person and the system of values of the scientific community. The essence of this revolution might be briefly explained as a modification of logics of researchers' activity and thinking.

Impetuous development of informational technologies and formation of informational communities are at the forefront of the generic characteristics of the mankind development in 20–21 centuries.

And there are following changes in this world of digital technologies:

1. Scientific community has been divided into implicit sub-groups. One sub-group is focused on the development and improvement of information systems, computing and modeling within frameworks of its own discipline/direction.

2. The center of pro-active science and Hi-tech has been shifted from West to East (Russia, China, Japan). Concept of unbound rationality, developed in post-neoclassical science, has been reflected in the fact that continental and American science of 20–21 c reoriented towards eastern thinking. Prigozhin I. and Stengers I. stated «We strongly believe that we are on a way to the new synthesis and new concept of nature. Probably at some point we will be able to merge western traditions, which pay primary attention to experimental design and quantitative formulations, and such tradition as Chinese is, with all its conceptions on spontaneously changing and self-organizing world» [1, 65].

3. Leadership and status of the model developed into the category of formal sciences – a set of sciences, which deal with researching of formal systems. Key formal sciences include logic, mathematics, theoretical computer science, theory of information, theory of systems and theory of decision-making, statistics. Subject of the sciences of this group is a unity of abstract objects, not connected with external world. There are rules therein that allow for use of variety of symbols in line with syntax interpretation without considering semantic and notional substance.

4. The approach to raising scientific issues and way of thinking of scientists have also changed and were influenced by computer revolution.

5. New type of scientific community was formed – virtual communities. Virtual communities emerge and function in electronic space (through Internet) to support scientists in their professional endeavours. And, currently, we can observe the move towards sustainability by uniting these communities into non-governmental associations.

Information is the key notion in the chain of values of a virtual community paradigm. It becomes the only type of resource, which the mankind is not wasting in its historical development, but, on the contrary, it creates and accumulates information exponentially with the help of formal sciences and IT. Informational space of the science includes the units of information, presented in the form of scientific facts, empirical generalization, challenges, hypothesis, theories, fixed in certain language forms, the mechanisms and means of development, processing, dissemination and uses of scientific information, the structures, languages and institutions in which this information is fixed, stored and translated, as well as the channels of internal and external communication, the means of organization of scientific knowledge and support of institutional forms in which science and scientific communities exist. Network technologies become the major basic structure, which organizes science space. Overall democratization of science and significance of international cooperation in the products of scientific research accompany this process. Virtual communities are characterized primarily by prompt and free conversion of information and unique educational opportunities. For this type of community there is a necessity of its own paradigm. Its outline is already formed, but there is no deep research of this theme in the frameworks of the science philosophy. It is also necessary to note the new technological opportunities of the virtual communities for organization of scientific researches. One of them is use of methods of distribution of calculations among thousands of computers, connected to Internet; another – improving a dialogue between scientists of various countries worldwide based on available electronic translators. We hope that current issue of insufficient fluency in various languages, which is a break on scientific progress, will be resolved. Most probably it will be addressed by specifically developed language of world science, which will be more formalized one than modern English with its variations – American, British, Australian. In the context of quick communications, up-to-date information and scientific knowledge similarly rapidly become obsolete, but is constantly renewed.

For verification of our hypothesis we have collected empirical facts and conducted philosophical generalization based on the work with IIA.

International Informatization Academy (IIA) is an independent and self-governed public association of people sharing same views in the cognation of the nature of information, information technologies, environmental and information-analytical activities, informatization of society and development of the common informational cyberspace and society. IIA is a 'third sector' in the Republic of Kazakhstan.

The notion of the 'third sector' is presently widely accepted in the global terminology and associated with non-commercial, philanthropic initiatives ('first sector' is governmental, 'second' is commercial). In some cases the 'third sector' is acting quicker and more effectively than state structures.

IIA mission is to develop national informational infrastructure and to integrate the Republic of Kazakhstan into the global informational community based on strict scientific methods. The Academy implements its mission within economic spheres, collaborating with state structures, civil society, international organizations, mass media and social sphere. Its role in the system of scientific communities IIA sees in proactive supporting of the infromatization process of Kazakhstani community and the organization of virtual scientific communities.

IIA proposes the following much needed products for business:

1. Development of spheres of interest.

2. Assistance in search of high professional specialists for expansion of virtual communities, since IIA is an intellectual association on a wide range of scientific directions.

3. Information support and optimization of scientific activities.

4. Development of the concept of philosophy and corporate spirit of the virtual communities. G. Ford noted that production is not just an implemented «business theory», but something beyond that; it is a theory which primary task is to create from a world of things a source of happiness, which will support life freedom.

5. Provision of expert services at high professional level by the virtual communities of the members of IIA.

Virtual communities function in these directions with the overall aim to solve emerging issues. Experience is accumulated and norms and standards are formed as elements of the new paradigm. As opposed to the views of T. Kun, the elements of the paradigm of the virtual community are formed in a new environment which is provided for the non-governmental organizations and are returning through networks to the communities representatives. Ignoring this fact leads to slowing the pace of the scientific progress and, finally, to locking of the scientific community (including also in the US) in their own rules and technologies, which lose gradually its effectiveness in a global world.

Presently, there is a struggle ongoing between the countries worldwide for ability to develop and incorporate effective organizational, commercial and technological innovations. Most of the researchers link contemporary sources of economic growth to a greater extent to informational technologies and products of virtual scientific communities as compared to capital and labour force. Development of the new technologies is one of the priority direction of modern economies. Targeted system of a series of activities towards development, application, implementation and commercialization of innovation becomes a norm as opposed to sporadic and isolated innovation.

There is a number of reasons for innovations development and implementation. Among the most important are technological break-through and obsolescence of products, services or technologies. In the contemporary world innovative economy ensures global economic leadership and competitiveness of the country which invests in it. The core basis for innovative development is formed from the key areas of hi-tech and new forms of governance.

Based on the recommendations and theoretical products if the virtual scientific community the innovative development is introduced through a series of activities and projects, which are aimed at consistently incorporation and development of hi-tech and scientific governance targeting integral effectiveness. Innovative development unites all spheres influencing upon a common result (state program, governance, marketing, personnel capacity development, finances, export, etc.)

In the context of the globalization and international competitiveness most of the countries have less chances to become competitive at the world market, with the exception of economically strong states (USA, EC, Japan, China, etc.) and small countries with powerful scientific production and services (Finland, Sweden, Denmark, Norway, Israel, etc.) As a possible way out of this situation countries with lower level of competitiveness shall seek integration with states with the same level of development (global experience show that integration of developing countries with developed ones only aggravates a difference between them) and shift to innovative development. The main precondition for this shift is agreed common innovative policy and unified innovative legislation, based on the best global innovative practice.

Due to its advantageous geographical location, Kazakhstan may become a transit center of the Eurasia, thus, connecting East and West and this predetermines the necessity of the transport infrastructure development. The selected model of industrial-innovative development in the context of integration is aimed at positioning of Kazakhstan as service-technological regional center. This is why the core directions of public policy for development of innovative economy become strategic priorities of industrial-innovative development of Kazakhstan, which will build the demand for the products and services and competitive advantages of the country in the global economy.

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