

A.G. Reus

KNOWLEDGE IN MANAGEMENT AND MANAGING KNOWLEDGE

Integrating High Technology Industries

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Knowledge in Management and Managing Knowledge. Integrating High Technology Industries. Andrei Georgiyevich Reus. Editor A.P. Zinchenko.

The book is a collection of texts and speeches by A.G. Reus, Director General (CEO) of a large mechanical engineering holding. The author analyses his experience in managerial activities over a period of several years. The team that the author was fortunate to head had to cope with quite complex managerial issues. This has resulted in principles, standards, ideas that may apply in similar conditions and be passed on to fellow colleagues.

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Foreword

This book is not intended for a broad audience, it is rather for limited use. The book is a summary of my working principles, ideas, and case studies. They should not be regarded as in-depth analysis of my work, but rather a spotlight on important stages in a mobile managerial work subject to political pressures and economic risks. The book is not memoirs, but rather it is a story of work still uncompleted. I am not in a position to tell much yet as the story is still unfolding.

The purpose of the book is to share my experiences and knowledge with the new generation of managers. Knowledge grows when you share it. That is why I appreciate learning and prefer to study whenever I am free from making managerial decisions.

There is a particular group of people the book is aimed at. They are the participants of the process called the Corporate University of the Oboronprom, Inc. It is they my conclusions are aimed at.

The experience of Soviet and Russian managers who established and developed our industries is known to a scant number of people. Due to a number of reasons these managers had not analyzed methods of their own work and forms of managerial ideas. It was believed that all that was done was made possible by the keen and proper guidance of the Communist Party organizations and its leaders. What had been analyzed and described was glossed over and forgotten. Today students in business and management schools analyze managerial achievements of G. Ford, J. Welch, and B. Gates, theoretical schemes of P. Drucer, R. Ackoff, and P. Kotler since the art of management in the U.S. has always been esteemed and appreciated.

I would like to share my own with my readers of this rather complicated text of ideas, principles, and excerpts from articles and interviews knowledge of managerial activity.

In particular, I believe it is necessary for all who aspire to become leaders to get familiar with the category “system,” which is a must for all organizers, leaders and managers. I happened to initiate preparing and publishing two readers on the subject: *A Guide to Methods of Organizing, Administrating and Managing*. Delo, 2003. *A Guide to Basic Ideas and Systems for Organizing, Leadership and Managing*. Delo, 2004. The ideas were collected in published works by my late teacher G.P. Shchedrovitsky (for details see www.fondgp.ru). To my knowledge, his texts are the easiest for any reader. But we have to move further. I will try to show how systematic tools can be used for recreating the economic, military and political might of Russia.

Moreover, a new way of thinking about methods is a necessity not only to deliberate over issues of one’s practical activity while using adequate tools but also to analyze thoughts that had worked or failed. Naturally, the team that I headed faced various tasks, and new problems surfaced which existing tools could not solve. Thus, new schemes, ideas, notions appeared. We implemented them not in order to see them in print but for further use in future work and recommendations for our colleagues.

The experience of working for the Government of Russia, the desire to work in the orderly tradition, to use systematic tools, preparing to make decisions, analyzing adopted decisions and attempting to examine

them have brought me to a simple conclusion: very few people understand me. It is a narrow circle of people. They are those who lay claim to leadership in their business. Those who believe that their most important task is to know their business much better than others do in order to have the right to lead people and determine their future. These are the people who should think methodically. This ability is not required for poets, scientists, inventors, experts, culturescientist, (the list can go on). Therefore, this text can be analyzed further by those who by dint of their life activities, their calling have to or will have to create management systems and to make managerial decisions.

Primary Task

Some time ago I discovered how difficult it is for a manager to make decisions, though I heard and read a lot about it. My fellow managers report that I have mastered the skill and am not bad at it currently. The position that I hold requires making the following decisions:

- *immediate* (who to meet in the next few days, how to organize trips the next week, etc.);
- *mid-term* (how to position people in plant management systems, investment program teams, breakthrough projects, how to form groups anti-crisis manager and new products developers);
- *long-term* (how to implement strategic plans, whom to assign enormous credit resources, how to beat powerful competitors);
- *personal* (how to maintain good physical shape, communicate with the family and friends);
- *other decisions*.

Obviously, orders, instructions, directives, etc. impact the lives and activities of many people, such as high-ranking officials, engineers, workers and their family members. They have the right to know why and how I plan my work: analyze, deliberate, and work out plans for organizing activities of big teams of people.

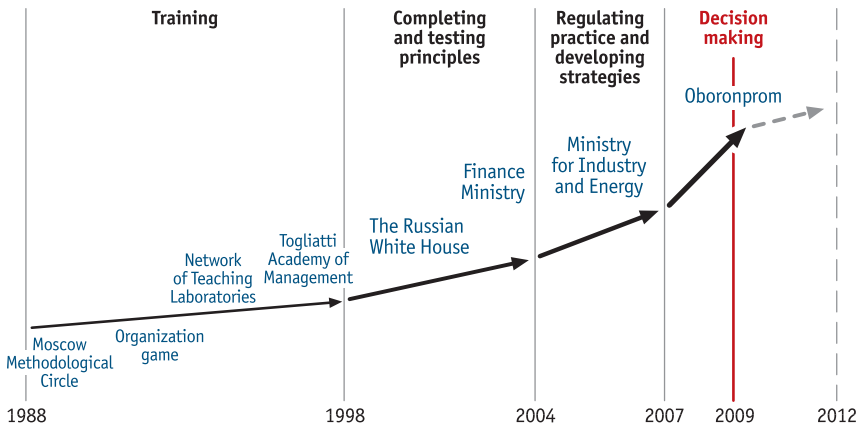
What the title of this book means

I have already lived through several sensible lives. I have the right to say that at a certain stage in my life I have acquired the ability of reflection (to constantly analyze what has been covered and done) and learned

deeply to respect culture, i.e. the requirement need to view the past through accepted principles.

At first, it was preparing for possible future activities, notably, participating in organizational games known as “life game.” Next, it was taking part in a decision making process in a strong managerial team, mastering various functions in very responsible positions. And, finally, working in the position of the person making decisions with no one behind you when the responsibility for each word and deed is yours.

Below is a drawing of the past 20 years that shows some important milestones (see pic.1).



Pic. 1. Basic milestones of the last 20 years

I think that by the age of 50 I have gone practically through all positions and trials in managerial activity in the government service and private business. Now I realize quite well that the effective system of management should embrace a multitude of other systems, organizations, people and acts of their mental activities, and coordinate them in order to reach the goal set by a manager and to attain appropriate products and results. Depending on the type of a managed system, this can be done through (1) a direct management action, (2) rate fixing, or developing integrated ideas and skills aimed at one direction for all systems, organizations, people and acts of their mental work. Latter, the 3rd scenario is the only possible for a high technology corporation competing on the world market. The well known definition that covers these kinds of operations is “managing knowledge.”

I was trained in preparation for work according to the third scenarios in the Russian methodical school working with the school's master G.P. Shchedrovitsky and the team of his students. What smart consultants today call "managing knowledge" 20 years ago was called "organizational layout." The essence is a name, not a point. To me, managing knowledge is a synonym of the art of management and the basic production process of a big high technology corporation, which this collection of principles, schemes, case histories and ideas will show.

Principles of management

During the past fifteen years I had to go through many complicated situations in managerial operations. Know-how accumulated gradually, processes and methods of procedures were refined. I decided to formulate the gist of the matter in several principles without which it is impossible to make reasonable and long-term decisions in any field of activity.

But first of all, a few words about principles, who needs them, and what they are and what they are needed for. The notion of the principle is borrowed from my teacher G.P. Shchedrovitsky:

"Life differs from the natural existence of nature's bodies by the fact that it is based on the principles proposed by people themselves and forms the cornerstone of life. Moreover, real life is in fact following a certain ideal principle."

If things go well, a management system can rest on standard principles and documents: planning, budgeting, verification. But if the situation is uncertain, e.g. a crisis in the world or in the country, the field of activity is in a mess, the decision making process has to be based on very general principles.

Principles of organization in a management system can be defined only in the group of top level associates. There is a quote from General Charles DeGaulle, the French President: "The ten commandments are brief, clear and lucid because they were written without the aid of counselors and experts."

Today, when we are often engaged in the game of "a democratic discussion of a subject by specialists, experts and public at large" a fallacious illusion forms that a collective decision may be coming from personal experience of many participants. In fact, it is only a cover for the management system that always wants to look objective.

About fifteen years ago I happened to read a thin booklet by Henri Fayol called “General and Industrial Management,” which has written in 1916. I still believe that this is by far the best manual for top managers (see Supplement). Fayol set down six basic parts of activities, five functions and 14 principles to be implemented in the work of top managers. Later on, in the decades to come many managers tried to refine and supplement this list. Among the well known are 14 principles by W. Deming, 14 principles of the Toyota production system (see Supplement).

I put these documents into the Supplement for comparison and use. Try to use them, if you can. As to me, I use them. But at the same time I prefer the Russian school of management and follow the works of A.A. Bogdanov, A.K. Gastev, G.P. Shchedrovitsky and many other great managers who left their works for us but did not have the time needed for analysis and instructions for the new generations.

The five principles I rely on in management

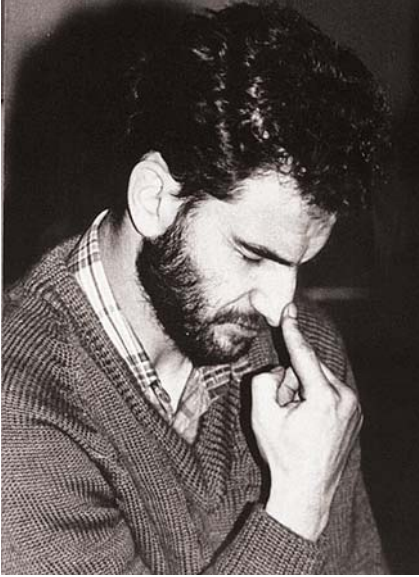
The first principle — be aware of who you work for. That is, understand the system of an organization you work in, follow the power hierarchy, and understand your mission, strategy, purpose and functions of your organization.

The second principle — work exactly on the place that you assigned in the organization, fulfill your functions. Very often many employees in big organizations do not understand what they are responsible for, while high ranking bosses try to be responsible for everything. This tends to break the organization, seriously effective operations and impedes cooperation of people.

The third principle — work in a team. This does not need clarification.

The fourth principle — think and act in accordance with tools of systematic approach. This means to think according to the rules of the “system” approach, use techniques of planning your thoughts and actions to pass them on to other fellow workers. It requires understanding that you can manage the process of moving from the past and into future, and this process is materialized in such documents as projects, programs, scenarios, plans.

The fifth principle — work according to the rules of managing knowledge. I will dwell on this principle because I think that in a modern high technology corporation managing knowledge is the main production process.



Learning

In 1988, at the age of 28, I worked as a minor superior at the Chelyabinsk Tractor Plant. I happened to attend an organizational game in the city of Rostov-on-the-Don. The game was entitled “Development of a region within the framework of developing town.” It was there that I met G.P. Shchedrovitsky for the first time. This changed my life completely. I went to seminars, read articles and books, took part in organizational games as a player, a game technician.

This was a difficult time of “perestroika” or how it was aptly named by the writer A.A. Zinoviev “cata(strophic)stroika.” Infrastructures of production, economic and social ties that were built in the course of many decades were breaking down. There appeared a possibility to participate in the radical changes and I did not want to miss it. I did have an abundance of energy then.

I will quote fragments from an important document of my private portfolio. That document was a letter to Director General of the Chelyabinsk Tractor Plant regarding a concept of its development.

“On establishing a concept of developing
the Chelyabinsk Tractor Plant”

With each passing year, working at the plant (that goes for the ChTZ) loses its social standing. This is true for most energetic, thinking youth, and is a testimony to the harsh reality. Just like many other plants, the Plant faces an onset of a crisis. This implies lack of perestroika processes aimed at accelerating production, economic and social development of the Plant and its subsidiaries. All present problems are handled by means developed decades ago when the Plant was commissioned. Today these means are inadequate. Among them are 12 hour shifts by shop heads, constant command screaming, and working overtime on weekends.

It stands to reason that the same situation is repeated over again. The times, technology, people are different, but the work style is old, which leads us nowhere. We act on the basis of our old methods and traditions, which means that we do not grow but rather reproduce stagnation, preserving everything that kept us afloat 10 years ago but leads us to a crisis today.

The main trend today signifying a crisis is the outflow of experienced and skilled personnel who possess business thinking.

Moreover, since it is impossible to hire a highly qualified expert it deprives us of the future, because the intellectual potential is the primary asset, while the rest, including production machinery, is a byproduct of the intellectual work. However, the sad truth is that we pay money for a place with a tag: head of a shop, economist, designer, etc.

Today, there are no limitations on business activities; the processes are afloat in the country aimed at liberation of a man, restoration of private property, rebirth of intellect, democratization, economic efficiency promotion, decentralization.

In view of this, we suggest to discuss a number of ideas and proposals:

1. The Plant requires independence with the right of property to the production means and manufactured products, since the choice of a method of economy is entirely up to us.

2. There is a need for our own bank for internal accounting with the structural units as well as external organizations just like in the case with the VAZ (car assembly plant). There is a possibility of shareholding companies, cooperatives, rent and lease and government cooperative organizations.

3. It will become possible to develop along the following lines: production association, corporation, concern, and syndicate. Thus it will be possible to solve the issue of the Kolyushchenko plant by making it a cooperative, and make the Chelyabinsk Department of the Institute for Automotive Transport a part of the Plant, developing co-operative and rental ties in the region.

4. Considerable changes should be made in the organizational structure of the Plant. The time has come to eliminate the head plant as such with its specialized production and replace it by three or four plants, e.g. tractor assembly, foundry and forging, other modifications; to assign all subsidiary plants the status of a legal entity and chief office, and strategic functions to all management staff. It should be noted that assigning a legal status should be done by the Plant management.

At a later stage the plants will switch over to rental and cooperative forms of property. A scientific research institution should be established that would have a legal entity status with all its rights and responsibilities.

Cost accounting is to be launched in procurement, sales, servicing, etc.

The following steps should be taken in order to discuss measures to improve economic relations in the production processes:

1. Expedite developing intra plant pricing. Pricing should become an important tool determining the performance. This would make it possible to:

- Plan earnings in all units and thus to evaluate actual contribution of each unit into the revenue generated by the Plant;
- Use contract, rental and cooperative ties in work and payroll functions;
- Use methods of team cost accounting and other methods of economy.

2. Make radical changes in the current accounting:

- Transfer the intra production accounting to the semi finished product accounting;

- Introduce at once accounting of material input, earnings, income as applied to a form of cost accounting.

Also needed are operations to improve measures of operative accounting, such as:

- Documented transfer of ready made products between production subunits;
- Provide subunits with control and measuring instruments to take stock of all fuel and energy resources.

3. Start work to establish in the Plant all kinds of technologies, including technologies for education, information support, and economy and production management. A research subunit would have to be set up. While there is an Office of the chief technologist to establish production technology no one deals with the rest of technologies. It stands to reason that activities of management subunits are not recorded and each subunit is in fact "a black box." This is one of the reasons due to which management work is practically impossible to automate.

4. Facilitate operations to define the assortment of manufactured products, strategic zones of the economy as per the terminology by Ansoff.

Serious research is needed to explore the demands of the national economy not, and I repeat not, by extrapolation as it assures us that the needs in our technology are limitless. We have to take into account statements that tractors are overproduced in the country. We have to take into account a possibility of foreign made machines in our markets and the need to freeze big construction projects.

We believe that there is a need to diversify our production. Bulldozer are the type of diversification. Other possibilities are computers, electronics, management systems, horticultural equipment, etc. It should be noted that production of consumer goods as it is now, will not fit in future diversification. The issue of conversion should be solved within the framework of diversification.

5. We must move from the idea of "production for the sake of production" to the idea of meeting demands created by a marketing system.

These and many other issues of business activities are explained by the following:

- We can not visualize the future of the corporation without a tractor servicing company the more so since we already have some elements of a servicing company in some

locations. This direction for our future development seems very important in order to find out how our products are really needed, how our quality is rated, sales efforts are required and profits expected. Obviously, we are talking about setting up a company whose units would operate on cooperative, rental and other forms of property. When the company is set up it would be possible to attract means, people and other organizations interested in similar organizations, in establishing share holding companies, etc.

• We believe that without this kind of organizational work reaching foreign markets would not be made possible. "We should dominate everywhere where our products are" - this is the main idea that should be the philosophy of the corporation.

6. A foreign trade company could be successfully employed. It should be an independent company in the corporation. Initially, the stress should be laid on examination of foreign markets, its laws and standards, on implementing business ideology in the corporation, on involving specialists to work with foreign partners, expansion of trade, setting up centers abroad, creating joint ventures and planning for 10 to 15 years ahead.

7. Review the structure of councils of labor teams, organize them professionally. As an example, set up commissions: economic, technical, personnel, social with clear cut functions in each case. The role of these commissions should become more important in cases of rent and other types of property. Leaving these teams of workers the way they are now means discrediting the idea of democratization.

8. Organize teams on temporary basis for specific problems. We would obtain unbelievable situations when the corporation could place an order for development to an outside organization. In its turn, such an organization could hire employees from the corporation to do this job, and gain profit, while the corporation is not in a position to do this work, loses its experienced specialists and wastes funds. This issue must be settled immediately and salaries for highly qualified specialists should be raised, ineffective cooperation terminated.

Such policy will make it possible to find teams of high qualification. The corporation would aim at an outfit with high intellectual potential and high profits from its use.

9. Create a system of constant training, sign contracts with colleges and universities, hire students for specific issues in the corporation, e.g. concepts of development, and train according to special programs with on-the-job training, just like in the Massachusetts Institute of Technology or at the ZIL trucks Plant.

We have to realize that investing in people is the most effective kind of investment. The motto of the corporation should be as follows: "Spare no money on training of its personnel." The issue of training people in order to develop and implement a concept of the corporation's future is one of the most vital points in the life of the corporation. We have to set the course for the development strategy and work it out through the system of training of the corporate personnel. Role playing games should be used in order to attract teams of workers to create a new economic model. The enterprises operate in a free economy. It is forecasted that only 60 to 70 percent of plants would.

Measures are underway in the country enable it to become a free economy. We have to make sure that our corporation would be among them. The corporation must immediately join the road of changes, become a subject of perestroika. Become a collective owner, build the space not only for business activities, but also for a state activity, and use widely the philosophy of experimenting.

This is the experimental production - the experimental plant, experimental sections and shops in other subunits, a cooperative shop, a plant-lessee, an economic department or state cooperative one, experimental shops of the continued education system and a lot of other.

It is common knowledge that perestroika made work of managers difficult. Therefore we face a double task - generating a concept of development and fulfilling it.

There are traditional ways:

- a) Place an order with some institute;
- b) Assign parts of the task to some units and form a coordinating center;
- c) Join a) and b).

It has to be remembered what managers of the world have been debating for decades. This is the interdependence between formal and informal structures at plants. Strategic issues will not be solved without informal structures. Therefore, it is necessary to create club-like structures

or to use existing ones within the corporation. These can be workers' teams, forms of continued training (such as role playing), a club of economists, a board of directors or a board of shop chiefs. If a director's team decides what should be developed, then this is an element of the informal structure.

The first step is a thorough discussion of the concept with subsequent consideration at a meeting with the director general.

The second step is analyzing signed contracts with the possibility of changes due to the concept.

The third step is creating a temporary team with a program and plan on the basis of structural units.

Deputy Director General	Chudinov N.A.
Deputy Chief of Economic Department	Reus A.G.

August 4, 1988”

Naturally, it was very difficult to implement all the ideas detailed in the document at that particular time at the Plant. It is important to keep in mind that those ideas were well reasoned out, pieced together and formulated. I think I would agree with them now. But if you understood something and can not implement it then you have to look for any even smallest chance to test your ideas. Such a chance was provided to me by “organizational games.” These games can be used as an experimental model of a new organization of operations. Its possibilities can be tested on this model for subsequent application in the reality. I created and conducted several big and important games by creating experimental models acting as the organizer, player and deputy chief. Later on, those games turned to be quite fruitful. I should only mention some of them.

- “Ways of Developing and Raising Efficiency of Servicing KAMAZ Trucks in the National Economy” (November 11 to November 18, 1988, Naberezhnye Chelny, KAMAZ).
- “Prospects and Strategy of Developing AvtoVAZ Servicing” (November 23 to December 2, 1988, Togliatti).
- “Industrial Enterprise of the XXI Century” (April 7 to April 16, 1989, Chelyabinsk, Chelyabinsk Tractor Plant).

- “Methods and Substance for Training a Multi Skilled Engineer” (April 22 – April 30, 1989, Ulyanovsk).
- “Prospects and Programs for Developing Automobile Manufacturing in the USSR” (December 16 – December 24, 1989. Togliatti, Research Center, VAZ Volzhsky Car Assembly Plant).
- “Program for the Regional Dedevlopment of the City of Chelyabinsk and Chelyabinsk Region” (November 26 – 3 December 1990).
- “Prospects and Programs for Developing Education and Culture in the City of Chelyabinsk and Chelyabinsk Region” (December 7 – December 14, 1991).

In 1992, I joined the team of development engineers and took part in implementing the Educational Program for the Network of teaching laboratories. Later I became one of the chiefs of programming and in 1994 I became the financial director of the Innovation Educational School (now the Togliatti Academy of Management). Recently I have enjoyed rereading summaries of my report at the Congress of Methodology (1994, Moscow) at which I had formulated my own principles at the very beginning of my management career. I don’t think that I would repudiate a single principle:

Network concepts and requirements for organizing work. As distinct from the prevailing notion of the network as an organization that acts as a parasite on the infrastructure we believe that the principles of the network organization are the principles of self organization of the headquarters in solving specific issues and tasks in the framework of the strategy being developed. Naturally, there are no networks existing in reality, no kind of production or society can be set up as a network. But the network principles of self organizing work of the headquarters’ staff designate certain requirements for organizing work in subdivisions.

Firstly, all top managers should have a certain vision and understanding of the whole, of horizons and main lines of development. The program is shown in a number of diagrams presented publicly.

Secondly, when organizing work of their units field managers should correlate their actions with tasks of the whole organization adhering to system principles.

Thirdly, the system of organizing work with personnel should make known to all specialists principles of intellectual work, and, in particular regarding their own thinking activity.

Fourthly, the principle of openness should involve the analytical work as well, since this guarantees conscious self determination of employees in existing structures and in the future.

The outline of top managers' work. The basic feature of the managerial thinking activity is that it concerns other acts, systems and thinking processes. The specific feature of the network organization is the ongoing existence of several managerial or organizational focal points in relation to which all others act as enveloping. The chief function of the headquarters is to maintain its own functioning and produce a strategic product when the situation changes or tasks change from without to manufacture products in accordance with strategic organization.

On strategy. Strategy is regarded as a function of a school tradition within which a team of development engineers work. This is the principle of self organization of a team that determines its thinking activity. The headquarters is responsible for working out uniform patterns of actions and work of executive mechanisms aimed at goals and tasks that result from the strategy.

Our team, which that set up the innovative university followed the teaching of our teacher and understood perfectly well that the main thing in establishing a modern learning institution is the contents of preparation and education, what the present leaders of the Russian system of education fail to completely understand. The substance of training a manager should naturally include history and culture of management of this activity vital for both the country and society. But what is more important is to condense and pass on to new generations important and valid principles of managerial thinking. That is why I began to actively take part in developing appropriate concepts, forms and methods in training. I analyzed what had already been done by the great managers and scholars. I also kept in mind my own experience since it had been the most unforgettable thing in my life.

The chief measure of any activity is its output. Taking part in working out the contents of managerial training gave me the opportunity – which I used – to write a dissertation research paper, and thus I got my Ph.D. in economics. The subject of the dissertation is “The Mechanisms

for Transforming a Current Managerial Systems of Industrial Enterprises. 1997.”

The research provided me with sufficient training and propelled me to move to a work in the Government of the Russian Federation. Besides, my current work is the use of ideas and patterns that I have acquired during my training. I have graduated from the teaching community in order to test my knowledge, to go through the “training-on-the job” in managing big organization systems. Since that time 22 years have gone by. Some things have become obvious.



The Russian White House. Designing and testing managerial principles

In 1998 I was fortunate to become a member of the management team of Viktor Borisovich Khristenko, the Deputy Prime Minister of Russia.

Five years of working in the capacity of the executive of the Secretariat of the Deputy Prime Minister is a term long enough to arrive at the following conclusion: what is needed above all is a trained thought and effective intellectual tools. Over the years, our team had to research many a situation project, infrastructures, and corporate conflicts and solve them using various situations in the national economy.

I happened to work alongside V. B. Khristenko in the top positions of the federal executive power in the times difficult for Russia. It was exactly

here that my experience and training became applicable. I realized fully that no personal decisions are required of a counselor; he can not be called irresponsible, just because “he dies with the boss” he works for and therefore he shares responsibility with him.

What, where and why

I will dwell in more detail on *the classification of the “system”* that I believe to be “the queen of the intellectual battlefields.” We needed it when we began to look for means and ways to manage new objects (entirely new in the history of management of the Russian national economy). We had to begin with *organizing headquarters staff work* and solving the main system problem — *putting together patterns and structures of the new integrity on the ruins of the system planned industry without professional managers.*

Those who are concerned will find description of operations and procedures for category system thinking activities in the Supplement. Those who manage to reach the Supplement will note that its text is fairly complex for the newly converted and for the inexperienced managers. However, the present instruction has been tested and is practiced. It bears a strong personal imprint and therefore can be used by others adjusted for personal experience, situations, specific time and place.

Participating in streamlining infrastructures

Without analyzing each particular case I will describe the most typical situations we faced and worked expanding the idea of managing the Russian industries. The economic collapse in the August of 1998 is the result and testimony of the lack in Russia of the system of managing the national economy. We could observe how reasonably planned and well functioning systems were deliberately destroyed for the sake of a transition to market economy management. Elements of the whole torn out of structural ties became private enterprises. Industries that missed privatization continued to function by inertia of the past. It was not perceived how these parts and remnants should work and be managed by the invisible hand of the market economy.

After all the market economy is actually a war. A war of manufacturers, trade marks, corporations, countries, intergovernmental alliances

waged by more sophisticated armaments and technologies than “a traditional war.” This includes advertising, public relations, preferential treatment, dumping, financial manipulating and various ways of power pressure from rattling the sabre to elementary bashing heads with a baseball bat. It is perfectly obvious today that without *a clear and transparent picture of the industry management system Russia as an appreciable country, its energy and industries will not be able to survive* in the modern global world of financial and trade wars.

How to choose properly an object of management

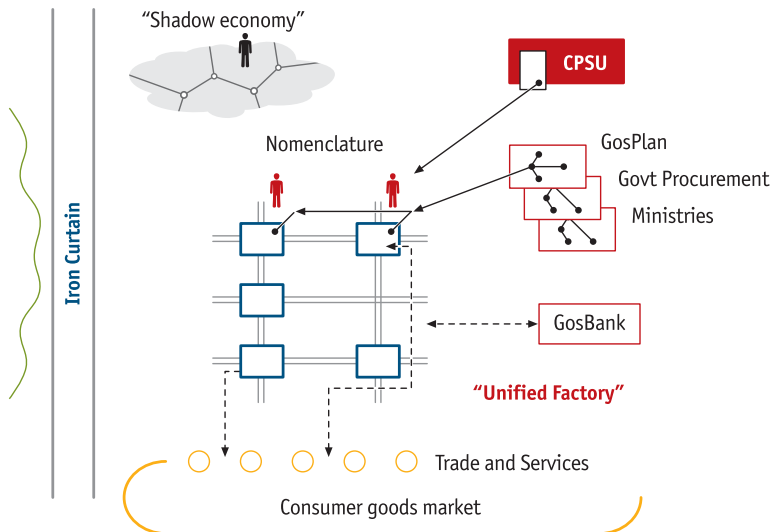
The choice of a pattern of management determines the logic of a manager’s actions. Here is an example. In my leisure time I researched the road building industry and arrived at the conclusion that the object of management was erroneously chosen. For those who are employed in this system the road itself is its property, while what is to be managed is the quality of road surface, the throughput, infra structural support of transport functioning and personnel, speed of transport, etc. That means an entirely new plan and appropriate projects are needed.

If the choice of the object is wrong, the economic interests of all those involved in the process are not aimed at efficient functioning of transportation industry as the whole. That is construction workers build certain amounts of roads, others manage functioning roads, traffic police are busy with their work, etc. And not a single participant of this process does anything about efficiency. This is not because of the ill will of those concerned but due to the wrong choice of the object, which makes everyone act in the wrong way and brings about a transportation collapse, like in Moscow.

Another example is helicopter manufacturing. One of the points that we deliberated on was a choice of a business unit. What was the choice about? Up to a certain point the business unit for helicopter manufacturers was the equipment as such, i.e. helicopter production while a life cycle of a helicopter from production to its use needs a totally different approach. Attention should be paid to quite different aspects and work should be done according to a completely different logic.

The same principle should be applied when determining outlines of *the system of managing the national economy of the Country as the whole.*

Just one glance at the basic diagram of the system of “the unified factory” under the guidance the Communist Party and GosPlan (the government planning agency) inherited by Russia from the USSR (pic.2) and the basic diagram of “the general competitive balance” i.e. “the invisible hand” or the cycle of the economic life (as provided by P. Samuelson) is sufficient to clearly understand the meaning of “the shock therapy” that the country was subjected to.



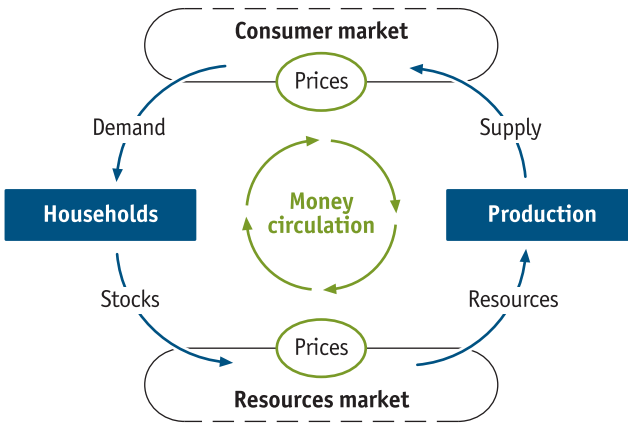
Pic. 2. The scheme of the “unified factory”

I would like to quote some principles of the concept of “the unified factory” (the term was voiced by V. Lenin, while the arrangement took several decades after his death):

- The economy is arranged as a network of production units interconnected by ties of production cooperation (specialized industry economy);
- There is no free trading, and a system of distribution is built over production cooperation;
- The basic unit of social organization of the society is workforce;
- Production is organized with the purpose of obtaining the necessary quantity of products with appropriate characteristics.

For comparison here are some principles of the market economy (pic. 3):

- The economy is set up as a multitude of private enterprises competing on a free market;
- Freedom and equality of people as the principle of the social organization;
- Individual free enterprise and economic rationalism with the aim of gaining profit.



Pic. 3. Scheme of economic cycle

We realized that our task was to build *a new, third system* that would encompass all the necessary principles of the market economy with effective managerial tools developed by a generation of the best Soviet managers. Not by the “red directors,” but by “the captains of the industry.” It was necessary to find an organizational principle by exploiting which the Russian economy could become an inseparable part of the world economy while maintaining its historical advantages.

It was clear what had to be done, but the road towards the results and the amount of work at first looked gigantic. But we worked stubbornly, systematically and consistently.

We began with attempts to construct anew the picture of the whole. We had to take part in saving the infrastructures of energy, transporta-

tion, communications and industry branches from the crisis. We had to act as anti crisis managers, developing principles of urgent industrial policies. I would like to stress that this work was not a theoretical confrontation in debating with backers of the market liberalism, although we did take part in such debates, after all we live in a democratic society. These actions were initiated by understanding the severe situation above all in basic branches of the Russian economy.

As early as in May, 1998 the Deputy Prime Minister formulated the task – to develop a body of systems by which it would be possible to visualize the financial and economic structure of the country. The task was very practical – to outline the leading working processes, functional structures and organizations with which the authorities would work. We had to confront vulgar economic views by counter posing “the visible hand” of the executive power against “the invisible hand” of the uncontrolled Russian market.

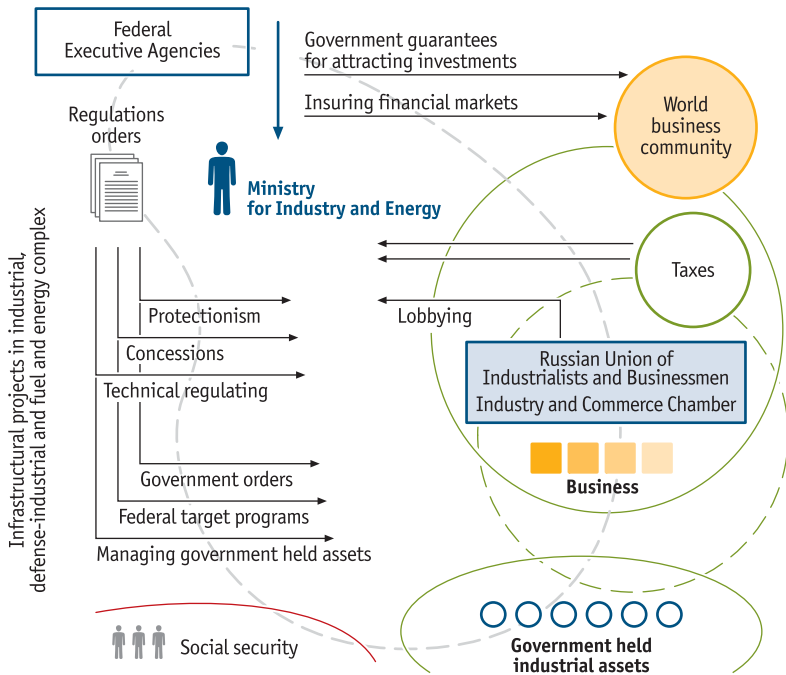
A group of developer engineers in the Deputy Prime Minister’s office took up the job with enthusiasm, and by September 1989 the first batch of documents was prepared. These were systems that embraced the principles of the federal government of the Russian Federation, particular structures of various fields of activities, systems of public finances and intra budget relationships.

These became very useful when the team of Khristenko worked on a system of intra budget relationships in the Russian Federation (the contribution by A. Lavrov should be noted). We were able to solve the issue of a clash of regional leaders with the federal center by developing transparent and simple principles of decision making processes. (These materials were the basis of the monograph and a Ph.D. degree of V. B. Khristenko). In a very short period of time we were able to turn severe conflict situations into simple and easily comprehended models. I can say with confidence that these managerial actions done on instructions by the leaders of the country made it possible to radically change the whole system of regional financing in the country. In fact, what happened was a change from a real feudalism to a true federalism.

Now it is possible to dwell on the purpose and structure of *the system three*, and its differences from the system of the Soviet unified factory and the system of “the economic circuit.” A version follows below. This

is a system we obtained as the result of numerous staff discussions and tried in various conflict situations. It reflects *basic principles of private-government partnership* (pic. 4).

What’s a private-government partnership in general? This is an approach when the government takes the responsibility to define strategic priorities and lets business know that risks of business activity along these lines can be minimized.



Pic. 4. System of principles of private-government partnership

An unusual problem had to be solved in the work of the Deputy Prime Minister or a minister: when and how to use principles, systems and plans if the field of activity kept changing all the time. Many failures in the government policies resulted from the fact that only the system patterns are taken into account and business oriented games are disregarded. When certain norms and laws are adopted it is presumed that the government

will work strictly according to the declared principle, while business acts strictly as an economic subject. In reality, both operate by choice and in violation of the written rules.

The infrastructural approach

The important approach was coordination between activities of branches of the fuel and energy industry and organizing a normal functioning of the main infrastructures of life support systems in the country — energy, housing, transportation and many others. We began to understand what big technical organizational systems were and how to manage them. For instance, we separated infrastructures vital for normal functioning of the country, and areas open for business and the ones serving financial resources of the country.

It was obvious that the networks of pipelines, electric supply lines and railroads form and support the unity of the country and should be controlled by the executive power in one way or another. Created in the Soviet times, the country's infrastructures in many ways were ahead of the time and had to be preserved. Before the process of privatization was started no analysis had been done of urban construction, engineering, technological and economic aspects in order to mark the country's priorities in the economic set up of the country, which up until the present day has been resulting in a lot of uncontrolled consequences.

We had to carry out big anti corruption operations. We worked out and implemented a number of measures that were then translated into simple rules for adopting decisions that are transparent, easy to understand and acceptable to all companies interested in access to pipelines and electric supply lines. Later on, this approach became the dominating one. That is, not to try to solve conflicts on the individual basis but rather work out rules clear to all involved in a conflict.

The book by Alan Greenspan came out in 2007 which starts with the description of the terror acts of September 11, 2001. Alan Greenspan was deeply concerned about his wife and about the U.S. payment system. He believes that if the payment infrastructure is upset this would amount to the “snowball effect” for the U.S. economy. He dwells in detail on how the infrastructure operates and how he tried to do his job in order for the payment system to function normally.

In Russia, infrastructures were completed in 1917, but later, under the planned economy, they had to be created anew; then it was decided to break them down. Today, we are beginning to build them once again. This requires big expenditures by the government because the infrastructure is a very expensive thing and can only be created with the help of government efforts. In the course of privatization we succeeded in destroying a lot of what had been created before in the course of only two years. Now we had to streamline or to put it better to create the infrastructure anew, or rather to create a reliably functioning one by assembling separate pieces into something totally new. This means that the attention of a manager should be focused not on manufacturing products but rather on creating a body of research, engineering, designing ideas, certification tests without which there can not be innovating and updating lines of products, and, consequently new buyers and clients. Besides, what is needed is a high class servicing and post sale servicing that brings most of income in the modern world. In other words, everything should match the new conditions (world market competition) and start new processes for developing corresponding branches of the industry. But here we get into the trap that we dug up ourselves somewhat earlier. Experienced personnel are required to provide for research, designing, marketing promotion, etc. But such people went away, retired or died in the years when everything that had been accumulated was sold away.

We realized that we had to start a new era – to effectively and quickly train new generations of experts of the new type who could ensure systematic designing and reliable functioning of modern economy infrastructures in each industry where our position is still strong, as in aviation manufacturing, in space exploration, in peaceful atom, in innovation branches. In order to achieve the full bloodied functioning of infrastructures financial injections alone are not enough; the human and intellectual capital has to be groomed.

Organizing teamwork in designing the Ministry for Industry and Energy

For better understanding, let me quote parts of Decree N 314 of March 9, 2004 “On the system and structure of the Federal executive agencies” by the RF President:

“In order to form and effective system and structure of federal agencies of executive power and in accordance with Article 112 of the Constitution of

the Russian Federation and Federal Constitutional Act N2 of December 17, 1997 on the 'Government of the Russian Federation' hereby I decree:

... 13. Organize

The Ministry for Industry and Energy of the Russian Federation with functions for adopting legal acts in the established sphere of operations by the eliminated Ministry for Industry, Science and Technology excepting functions in science, of the Ministry of Energy of the Russian Federation, the Ministry for the Atomic Energy of the Russian Federation, of the Russian Agency for Ammunition, the Russian Agency for Conventional Armaments, the Russian Agency for Management Systems, the Russian Agency for Shipbuilding, the reorganized Federal Mining and Industrial Supervision, The Federal Supervision for Nuclear and Radiation Safety, as well as the State Committee of the Russian Federation for Standards and Metrology, The State Committee of the Russian Federation for Construction and Housing, the Russian Aviation and Space Agency.”

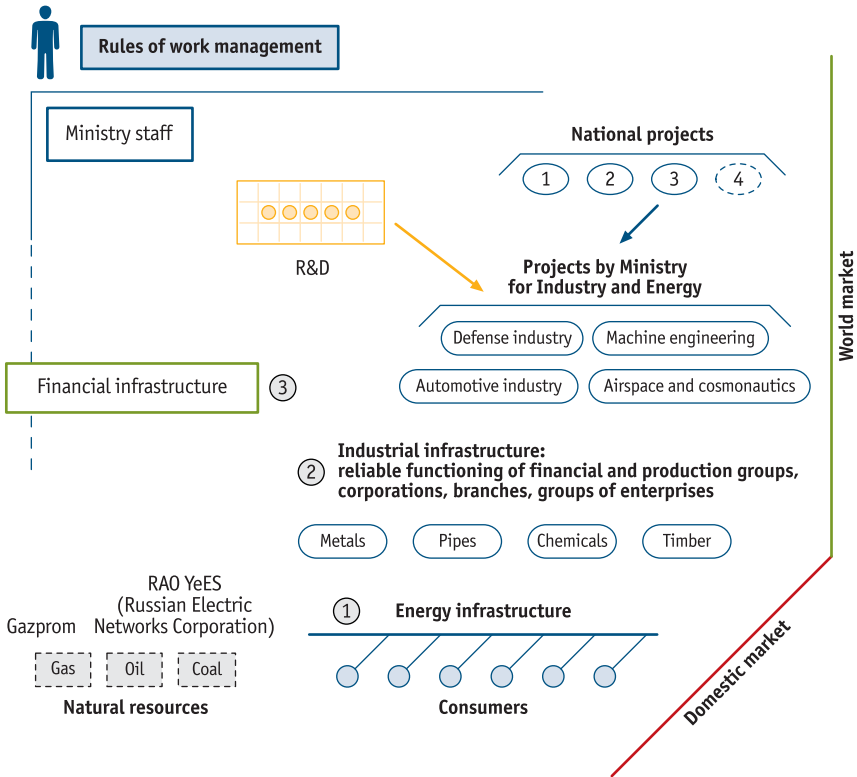
Our team of managers had already accumulated experience for solving complex problems, but now we faced a unique task of transferring our vision of the situation to the majority of the employees of the new Ministry for Industry and Energy, to the higher authorities, our partners and opponents. We had to change forms of understanding, communicating and mutual organization of many leaders, professionals, experts and thus to change their abilities to deal with issues they faced. This work had to be done not simultaneously and once and for all, but gradually, with people returning to it in each specific situation of decision making and discussing new projects.

In order to reorganize activities of approximately 12 specialized ministries that were integrated into one new ministry it was necessary to:

- put together a common ground in the form of a certain system of values, principles, mechanism of an industrial policy and its realization;
- transfer the tested idea of new activities to the employees of the Ministry as well as to those with whom we were to cooperate;
- Prepare a body of systems and documents that employees could use for their management activities.

What is setting up a big common undertaking? It is a combination of conversations, discussions, meetings, seminars, specially designed game situations that bring forth systems for making responsible decisions, programs,

projects and plans of joint operations. This is how the conceptual design of the Ministry for Industry and Energy looked like by 2006 (pic. 5).



Pic. 5. The scheme of activities of the Ministry for Industry and Energy by 2006

The industrial policy

The industrial policy is implemented by the State. In military terms, the implemented industrial policy is called a vision of the battlefield. The manager concerned must be able to see the battlefield and understand it.

Up until the 1990s we had an industrial policy, but later it was no more. From my own viewpoint we acquired it by 2004. By this time dis-

cussions about the necessity for an industrial policy as such were over. The end of the discussions was quite simple: the President just said that the industrial policy is a must.

The main idea of the opponents was that the best industrial policy was its inexistence. So they acted accordingly. The main mistake of the inexistence of the industrial policy was that it was identified with privatization. The only belief cultivated in the industry was privatization. The successful of the industry was evaluated from the standpoint of how much of an industry was privatized. The lack of an industrial policy will prevent the industry from being competitive. A manager should understand an industrial policy, take active part in its creation, fight for it and be able to see this battlefield.

Today, we realize that it was the systematic approach based on the idea of maintaining and improving the controlling role of the State in economy that had made it possible to first damp the waves and then to overcome difficulties connected with the belief in the “invisible hand” of the market economy. Markets differ. The Russian market, especially in the 90s, was only in its inception and therefore chaotic. It was only the State that could calm the market anarchy, make the market civilized and able to create something new. It was only the State that was able to first damp the waves of the market anarchy and then overcome the problems.

Being engaged in the issues of developing and growth of the national industry reforming the energy sector was a topical issue. Solving problems and promoting plans to reorganize the aviation industry means to pay attention to research and developments in technological regulating. Laying long distance trunk pipelines requires a complex designing, financial planning and coordinating estimates of resources for filling these pipelines. To ensure growth and development in various projects, assistance and promotion by the State is needed. In some cases this assistance means preservation and growth of large companies (e.g. Gazprom, Rosneft, etc.), in other cases it is reforming natural monopolies according to various patterns; the reform of the electric energy with a gradual dismantling of the RAO UES Russia, and the reform of the highly integrated OAO RZhD (Russian Railroads), in other cases it is setting up large specialized companies, such as the United Aviation Manufacturing Company (UAMC).

Many problems in the managerial activities are due to a lack of general understanding and therefore are difficult to solve. It should be noted

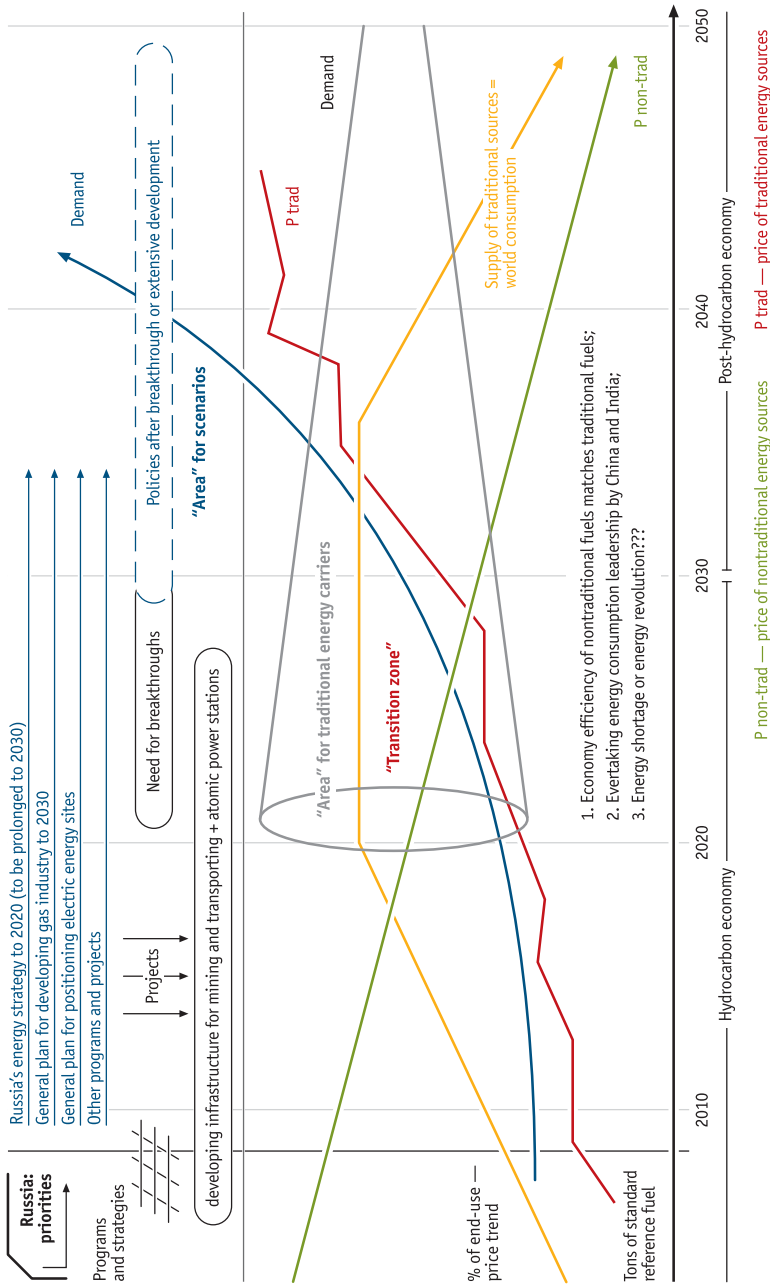


Fig. 6. The plan for world energy developments until 2050

that the work to set up communications in agencies, between agencies and outside agencies can not be accomplished once and for all. Attention has to be paid all the time to these issues, and that means that the realities and our attitude and positions of our partners and opponents change.

Headquarters analysis

In order to solve newly created system problems where needed we held theoretical – analytical meetings involving leading managers and specialists of business and government management.

The example may be the session on 19 March 2005 on the subject “The institution of private property and the private-government partnership,” which resulted in the scheme that combined the principles of the private-government partnership (see above).

Another example was the meeting “Russia 2050” on March 19–24, 2007, that brought together a big team of specialists, experts, businessmen in order to outline future trends of development of the energy, industries, finance and education in Russia. Another result was the plan for developing the world energy complex until 2050. How did it appear and what were the functions of the plan? For several years I happened to be an observer from Russia at the OPEC, and also to work on the project of setting up the organization for gas exporters. Our plan was implemented in establishing the Center for Sustainable Energy Development at the UNESCO.

In order to understand any activity one should be able to see its prospects (Pic. 6).



Heading the OPK Oboronprom, Inc.

The situation

I had been a government official for ten years and looked at the world with the eyes of a government official. It has been almost three years now that I am working in Oboronprom, Inc. The last four years I had for supervised all industries in the Ministry for Industry and Energy, worked on strategy development, and now I am implementing some of these strategies.

The system of managing Oboronprom, Inc. works on assignments of the government leadership and provides integrating the helicopter and aircraft engine manufacturing. Strategies for development were worked out and approved by the Board of Directors. A package of breakthrough programs and projects of various types of helicopters and gas turbine engines have been developed and are being implemented.

In the course of implementing the strategies serious problems have been registered that should be under strict control by the management system so as to solve these problems. For most of our plants *it is primarily the problem of poor management organization, an operating efficiency extremely low by world standards and slack workforce. Outlines of the Program for reorganizing production at the corporation enterprises in implementing breakthrough projects had been approved.*

In order to fulfil breakthrough projects with great resources assigned to it, the corporation will have to solve the issue of effective cooperation of teams of design engineers in many enterprises. Using its own engineering centers and other outfits in aircraft engine manufacturing business the corporation will have to set up research, R and D activities, production and after sale servicing of its products in accordance with the stage gate process practiced by the world leading corporations. This means implementing a transition from administrative to team, network and command management and a clear cut purpose: we do only what increases our product value and reject the unimportant.

In order to solve specific issues as well as ongoing problems, we have to place “the right kind of people” with the mentality open for communication and implementing everything new and effective in the systems of managing programs and projects.

Managing a modern industrial corporation

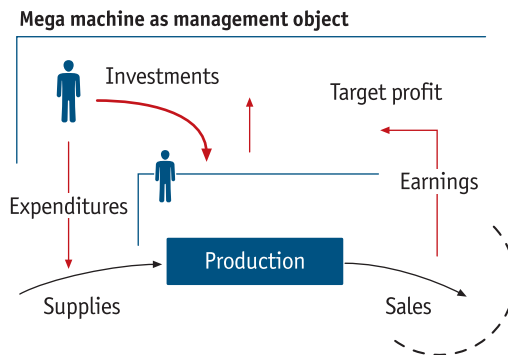
Achieving consolidation and programming development of a high technology industry requires designing and application of a proper *management system*. It should be appropriate to the complexity of activities of dozens of plants, research centers, institutes, other organizations involved and interests of those employed in it. If the management system does not regard itself as the whole it is blind.

How a high technology corporation should visualize itself. In the first place, it should part with the previous history, with endless issues of the ongoing reality and move into the totally different world of concepts, systems and ontological problems. It is necessary to first of all analyze the reality and understand what we have to do. This requires appropriate thinking. As soon as it becomes clear how to organize everything it will be possible to turn to problems in our reality. This process of mental work

takes a lot of time. A couple of days of such work will bring no results. A couple of years may. Those who are not ready for a lengthy process act quickly and find quick solutions which as a rule are wrong.

The mega machine and the system. Today many people continue to perceive the corporation, its R&D center and plans as a mega machine. This notion was introduced by Lewis Mumford, an American sociologist who researched the organization of human society and various types of its structure. He believed that the first and basic form of the human society organization was a mega machine, or a machine made of people who were engaged in the construction of the Egyptian pyramids.

Plants and R&D centers of the former Ministry for Aviation Industry were also built in its time as mega machines (Pic. 7). A plant was supposed to manufacture products, to make procurements. The plant's management system was located in Gosplan, which decided how much money would be allocated to the plant and how much would be left to the State. Besides, there existed the Ministry for the Aviation Industry, which decided what, where and in what quantities would be produced.



Pic. 7. Mega machine as management object

From machines to systems

Sometime in the 1960s, that is 50 years ago, some thinkers realized that the age of machines and mega machines was over. The most advanced countries started to think in terms of systems. Russell Ackoff, a wellknown system researcher wrote a book called “Planning the future

of a corporation,” which stated that we lived in the age of transition from the age of machines to the age of systems. In Russia it was G.P. Shchedrovitsky, the organizer of the Moscow Methodological Circle, who trained his pupils to think in terms of systems. We tried out his principles of thinking in terms of systems in his team.

Ackoff and his colleagues from the Moscow Methodological Circle (MMC) realized that to regard a corporation as a machine is the level of the industrial age. Today, in the age of big organizational technical system thinking a corporation should also think in terms of systems.

Systems should not be perceived statically but in terms of changes. Let me quote a well known contemporary expert. Michael Dell, a founder of Dell corporation, said that stability today is everything that changes. This well known thought was worded 3000 year ago by Parmenides, who said that it was impossible to enter the same river twice. If we do not comprehend a process of changes in a corporation and do not perceive a change process in terms of systems we are not even in the industrial age but are still in the primitive age.

How does a machine differ from a system? A machine is technical equipment that is clear to us. This equipment has a drawing: an automobile, gas turbine engine, nuclear power plant, a submarine. A system is something totally different. This is something that constantly eludes us, changes all the time, and we can never get its accurate drawing. This is due to the fact that a system is always in the state of changing. An automobile also changes, it gets rusty, unconnected and finally goes into a dump. But even then this automobile is like a new one, although rusty and ugly. Its arrangement had not changed. A system is completely different. At this particular time it is so and so, but it will become completely different in half an hour. These ongoing changes can not be stopped.

That is why a management system should control a process of changes, bridle it and lead to goals set by a manager, while it should be kept in mind that a system can not have only one goal. A management system of a modern corporation is not a ministry of aviation industry that meant an industry branch, had a budget and everything in the industry branch was organized according to the principle of a machine. The system of managing a corporation requires a different approach.

The object of management: the project and program approach

The following can be put in short: if a specialized management system was *quite a determined object of management with distinct limitations, a modern corporation has no such object of management*. There are no stable conditions, no clear cut borders in corporate property rights, no final drawn layouts of activities arrangements, no single position for decision making as the top manager has to mentally analyze positions of many stake holders, etc. From the view point of a machine organization a corporation is a complete chaos.

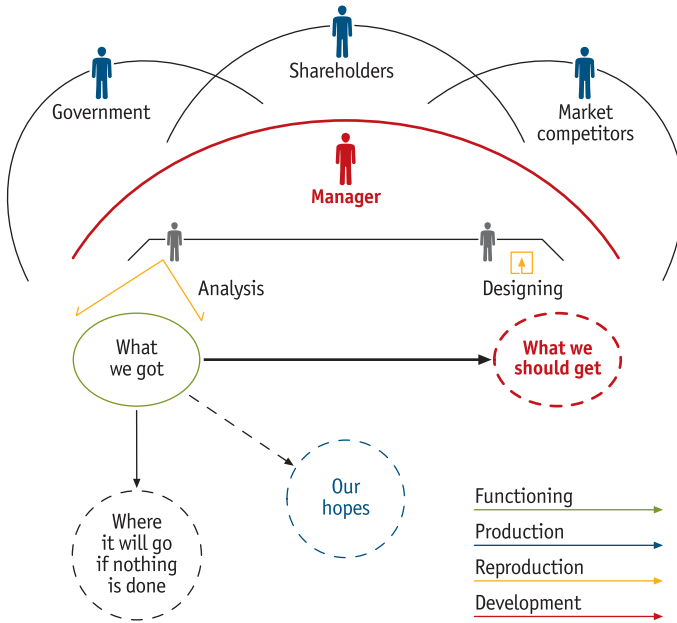
However, the experience of managing many global corporations testifies that systems of management are obvious there and function very often successfully. What is used in such cases is *not an idea of an object but rather a project and program approach*. The thinking and acting of modern managers of great high technology corporations are aimed not at objects in routine understanding like plants, production, markets, financial resources, but at such points as a course of actions, managing developing and implementing projects, rotation of experienced personnel, rates of advancement towards goals and predetermined areas.

Unfortunately, it has to be admitted that most of our present top managers are ignorant of such considerations. For them, patterns of the time of the ministry for aviation industry is still the benchmark to follow. But this is the model of the age of machines. A modern corporation managed according to the systems of the project and program approach must have an analytical and a R&D center. It needs completely different people ready to welcome all that is new, who are flexible and quick. In the West, where the issues of management were always critical, this became obvious a century ago. There the management systems are operated by young and daring people who disregard the future of human material who support the system. That is why they are free to come up with new rules that, when applied, will mean that some respected people in the past who became a liability are removed and may only be employed where past experience may be used.

The system of managing a corporation

So, a system of managing a corporation is *a constantly changing entity, and therefore it is necessary to determine its parts that should be controlled*. We create this system in such a way that we can control and make changes

along the following processes: ongoing functioning; manufacturing our products, including breakthrough items; reproducing personnel and technologies; development (that is what we will be able to and shall manufacture in 5, 10, and 15 years) (pic. 8).



Pic. 8. The scheme of program approach to managing

For this purpose, a corporation needs to have an analytical function in order to follow what is being done and how things change. Another must is a function of R&D beyond the system of corporation managing in order to have projects and visions of the future to have the bearings on in future planning. Today, these functions are provided for by a *thorough and stable structure of inner communications process* (meetings, managers and other top officials’ seminars, etc.).

Corporation as a multi system

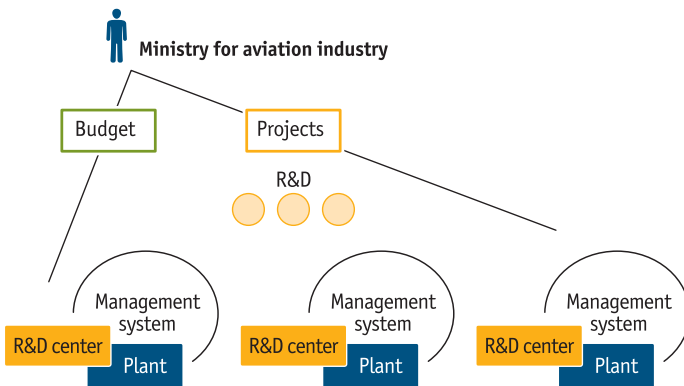
Problems that appear when attempts are made to sustain an industry branch and its management make it possible to assert that in this particular case we deal with a “multi system” and need appropriate notions and schemes. In other words, the principle described as “a system is what

is at a distance of my stretched out arm” will not work in the case of the engine manufacturing industry. The system is so big, complex and has so many multidirectional processes, the structure so branched out and manifold that an “outstretched arm” will not be able to reach many problem plagued places.

What is a “multi system”? What notions and schemes are needed to analyze its processes and comprehend various situations? Above all, what is needed to make balance and long term decisions?

In order to figure out these issues it is necessary to construct a succession of logically and historically structured schemes. The schemes that will follow do not fit in the function of analytical models. They should be completed in the course of analytical research; in their present form they are quite fit for *the types of management systems* to be taken into account when implementing the strategies of the UEMC (United Engine Manufacturing Corporation).

Principles of management of the Ministry for Aviation Industry of the USSR (pic. 9)

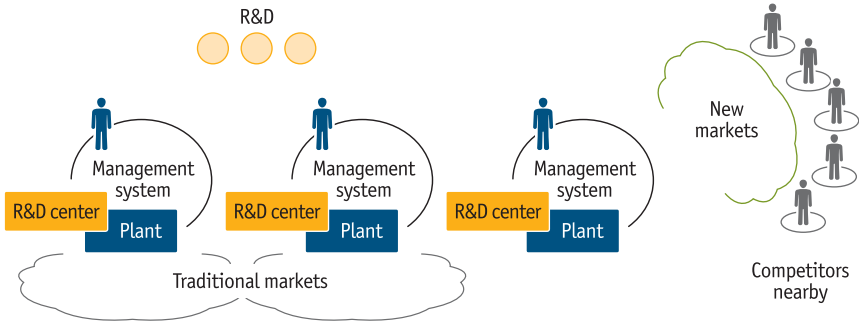


Pic. 9. Organizational structure of the Ministry for Aviation Industry of the USSR

- Rigid vertical line authority, centralized budget.
- Mega machine management of activities
- Fast consolidation of resources aimed at solving new strategic tasks and effective managers for solving these tasks, e.g. plant managers, chief designers.

- Artificial competition by R&D companies and manufacturing plants in isolation from the world markets in appropriate designs.
- The branch management system with experienced professionals with skills acquired in WWII and various occupations in manufacturing and R&D centers; an understanding of the whole through experience).
- Accumulation of scientific and engineering projects experience including German war efforts in competition with possible adversaries.
- A particular system of manufacturing processes.
- Inexhaustible human resources: high prestige of the profession in the USSR and well developed system of training.

Collapse of the Ministry.
Lack of management system for 20 years (pic. 10)

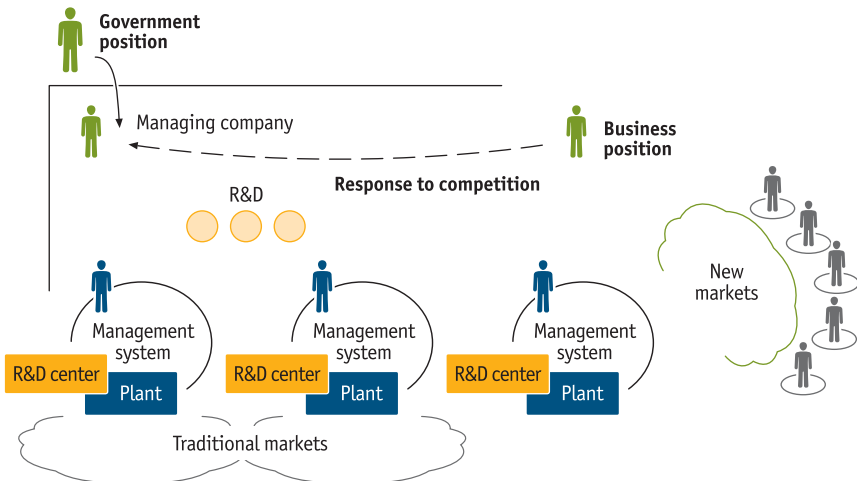


Pic. 10. Lack of system management of the industry branch

- The strategy is survival.
- Manufacturing plants and R&D centers looking for market places for obsolete products.
- Some plants and R&D centers managed to start joint operations with world leaders and began independent development programs.
- Competition in the markets among former parts of one industry.
- Lack of orders for R&D centers is degradation of appropriate institutions and units. The plants are operating on projects launched in the past.

- Attempts by groups of plants to restore a complete system of engineering operations.
- Meanwhile leaders of the world markets consolidate their assets within market competition and concentrate their resources in order to create their own engineering reserve.

Consolidating resources of the industry branch (pic. 11)



Pic. 11. Consolidation of branch resources

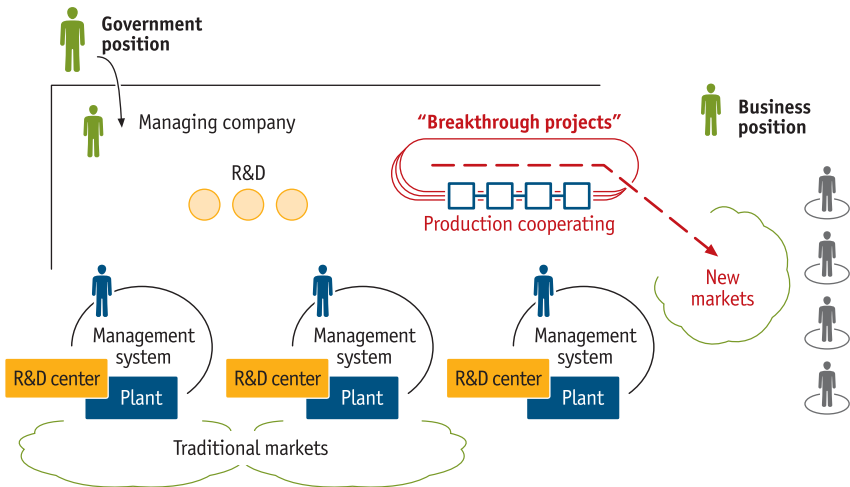
- Forming a single center of authority in a management company with regard to three points: government interests, business efficiency (profit of the main activity) and internal consolidation resulting in a gradual transfer of corporation to work according to modern systems.
- Takeover of manufacturing plans and integrating them in a single corporation by any means. The basic function of a management company is support of unprofitable enterprises in order to maintain capabilities accumulated in the industry branch.
- The industry branch should be reorganized to fit development programs (breakthrough projects) without breaking the ongoing functioning.

Programs for production and innovation integration

The management system in the new stage of its activity should be able to systematically solve *the problem of integrating the basic activity or providing coordinated actions of several managerial focal points*, each of which contradicts others in terms of contents and resources and tends to have a management system of its own. The following steps are needed:

- Designing a development strategy;
- Managing programs and projects aimed at development;
- Reorganizing manufacturing processes according to modern economical patterns amid crisis and social upheavals;
- Organizing R&D centers to ensure breakthrough projects and renew efforts to create R&D to provide for breakthrough projects and renew operations to create engineering reserve;
- Search, selection and training of human resources for placing people in key positions of activities.

Programs to concentrate branch resources in order to promote breakthrough projects to obtain and increase the corporation’s share of the world market (Pic. 12)

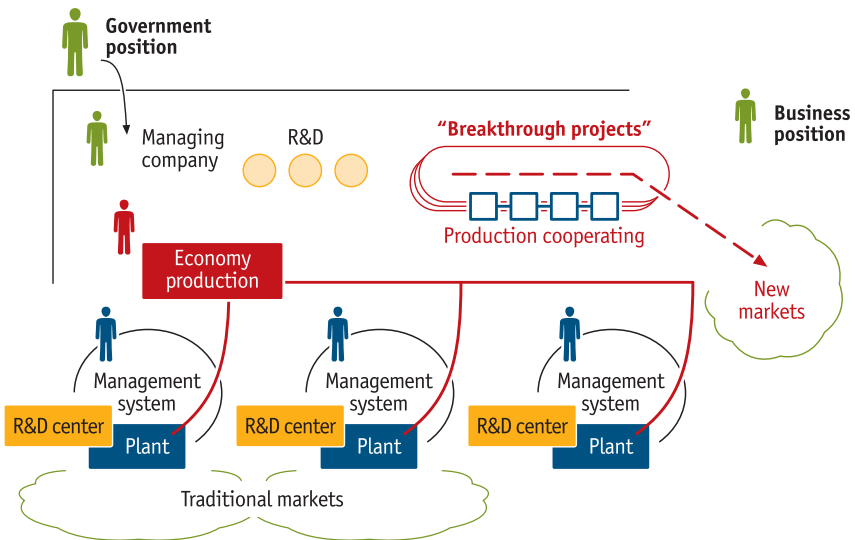


Pic. 12. Concentration of branch resources in promoting breakthrough projects

- Determine the scope priorities, promising models of the corporation's products.
- Organize teams that will fulfill programs and projects using all available resources.
- Problem of cooperation 1 — plants in the framework of creating a value for a client — placing orders for manufacturing products.
- Problem of cooperation 2 — in the framework of technological re-equipment — setting goals for technological research, R&D centers.

While managing projects, corporation top managers should strive to achieve acceptable financial results in keeping with business laws.

Program to involve managers, R&D and plant engineers in operations to implement systems and tools of “economy production” (Pic. 13)



Pic. 13. Involving managers and R&D and plant engineers in implementing systems and tools of “lean production”

When implementing “lean production,” managers’ main task is re-training personnel, changing the thinking patterns of field and top management.

Programming innovative growth of corporation

This is a communications process coordinated for the purpose of program and project cooperation aimed at discussing of various projects by development engineers at various levels of the corporation, as well as the whole range of operations to promote breakthrough projects, research and designing new materials, technologies.

Programming comprehensive organization of engineering R&D to ensure programs for corporation's projects and development

Difficulties and problems in managing the development of the corporation are due to lack of sound ideas of arrangement principles, and connections of R&D operations with processes of creating, manufacturing, sales and servicing of new technology. At earlier stages in the development of aviation manufacturing a similar organization was provided for by administrative resources of the Ministry for Aviation Industry and of the Communist Party, as well as by personal abilities and resources of specialists, i.e. directors of R&D centers, plants, etc. and could not be passed on to next generations. What could be used became hopelessly obsolete in the course of 30 years. In the meantime world leaders have moved far ahead. Now we have to create the necessary systems and skills by utilizing world experience, but mostly by acting independently.



Knowledge management — corporate university

A simple logic of a historic narration of how the managerial position was formed takes me back to the theme noted in the contents.

It becomes clear from what has been said that the task of integrating a high technology industry branch should be solved by leading specialists, tools of the system approach and the scheme organizational activities. In order to bring together a team of specialists, provide it with instruments and organize for development research special forms of organization are needed. That is why such a structure as a corporate university was set up. I stress that this is a form of organizing work for corporation specialists outside a production process but close to it and conditioned by the problems emerging in it.

Many mistakenly believe that the corporate university is a special type of an educational establishment as a miniature educational school in a large corporation set up for retraining and upgrading personnel by means of conventional lectures and seminars for particular purposes without comprehensive educational tasks. A soviet analogy of a technical school in a plant is often recalled.

However a corporate university is a way of selecting and training people and the modern approach to designing big organizational technical systems.

This particular method of training — corporate universities — appeared in the 1980s. How are they built? In the course of the last 200 years the number of people with university and business school education had grown several times over. During the past 50 years efforts by mass media, publishing business, and internet technologies have saturated the world with information and knowledge. Resolute managers of the world's largest corporations decided to use these resources economically and carefully. It is believed that a corporation's specialists know everything that is necessary. And those tens of thousands of people who work in the corporation know everything that is needed.

A simple and logical step follows: it is necessary to organize within the corporation a sharing of skills, translate it into convenient forms and transfer them where it can and should be used. In fact, it is what is called "*managing knowledge.*"

We should move from managing people to managing knowledge. This idea does not mean that we stop working with people, but rather stresses that instructing should be done with regard to knowledge, skills and habits which performers have. At the same time it is imperative to keep changing this system, the whole setup in keeping with the tasks that a particular employee should handle. The experience of business activities as well as of government service shows that acquiring a job that is in discord with skills and knowledge of a person results in a stressful outcome.

A position of an employee in a functional structure requires a clear cut set of skills, ideas and techniques in order to execute the necessary functions and, accordingly, a number of systems that make it possible to maintain and develop further structural ties. Otherwise the whole system collapses as the structure ceases to operate, functions are not carried out, and there appear malfunctions that have to be dealt with and corrected.

Even if an activity is described in detail which is so rare with us this special work in managing knowledge is a must.

The most adequate work is project teams. Managing knowledge is quite effective when project teams are used. One of the biggest problems in any structure is inserting a set of project teams into an existing structure.

It is commendable if this work is integrated into an information system and to convince experienced specialists to share their knowledge, or if after project seminar appropriate information about it would appear at the company's portal. Then any corporate employee wherever he is would be able to enter this system, ask a relevant question and find the answer useful.

Why do I, the chief executive of the OPK Oboronprom need a corporate university? The tasks that my company has to meet require people of a new generation with an appropriate training. These people must have:

- Awareness of the country's needs;
- Business talent;
- Understanding;
- System thinking;
- Perseverance in getting to the bottom of a designated problem;
- Free command of modern technical tools (English language, information technologies, engineering approach, anthropo-technology and social engineering);
- Other.

Not a single educational establishment can provide this kind of education. Most of what I listed is mastered by people from life – working in a responsible position, in the course of solving a technical issue or in creating a new organization.

Training practiced in the corporate university surmises a special answer to the following questions:

- What knowledge means;
- What is knowledge as the object of management?
- How it is possible and necessary to manage knowledge.

Here we arrive at important conclusions and answers. Such a subject can not be regarded as a thing that can be transferred, saved, purchased etc. Knowledge that is used by specialists in practice has to be viewed from *the point of activity*. Knowledge is a certain place and function in a practical activity. *Knowledge is what enables a specialist to act correctly.*

Managing knowledge is called upon to solve problems of organization and management in big organizational systems. The main and constant problem is a complicated issue – how to make manageable networks of organizations made of tens of thousands of people located on sites separated by huge distances and engaged in various types of activities. Managing knowledge is made possible by such a form as the corporate university.

A local management system is at the distance of an outstretched arm of a manager when he is able to reach every member of an organization. And then use an order, an instruction, a motivation and other tools of direct action. Traditional tools for local systems are discipline, authority, motivation.

Network management system is required in organizations when sizes and numbers of tasks exceed possibilities of an outstretched arm. In this case a manager needs tools of indirect action, i.e. semiotic management, corporate culture, “teaching corporation,” “network of communications,” that have replaced the administrative hierarchy.

Managing knowledge is a result of systematic correlating and constructive assembling management tools in big organizational systems based on network systems.

Ideas like exchange of knowledge, collective thinking that today are referred to with the borrowed term “managing knowledge” were devised in our country long ago. The corporate university allows making operations of knowledge, sharing experience and collective thinking not accidental but systematic and transparent. This is exactly for this purpose that I created the university, and I will support and use it for my own and corporate purposes.



Reserve personnel

Big projects and investment programs that we are dealing with now are not adequate to life time and possibilities of a single man in terms of implementation time interval and human resources input, even if this person is a giant. World experience shows that even a hardy person lasts only about 5 years and no more than 12 years in the case of the most durable human being.

Therefore *a manager who tackles a big project has to collect a team and grow a replacement.*

Those who fail to do it or can not do it are either quacks or incompetent for the position they hold. Today, we can assert that many leaders of our industry in the past failed to leave behind them a new generation or describe their past experience. Today, we have no right to repeat the mistakes of the past and must always keep in mind that the task of a top

manager is not only to maintain normal functioning of their organization but to provide impetus and clear the way for the young. Failing this there can not be any future growth that we need so much today.

That is why selecting, training and promoting reserve personnel are very important for our corporation. And it is the corporate university that provides and equips those who take part in this work with the tools.

Principles of work with corporate reserve personnel

In today's corporate situation we have *to move from corporate consolidation to a systematic integration of the branch*, meaning *to form the single managing system of the UEMC* and thus provide a new stimulus to processes of corporate consolidation.

In the process of fulfilling our strategic plans we have to grow *a new competence or a new generation* of engineers, designers, process engineers, production managers who will be able to create models of world class engineering and ensure its long term sales and effective servicing.

It is for implementing this mission and achieving appropriate goals that we *assemble into one joint corporation* managerial, engineering and production resources of the Russian helicopter and aircraft engine construction. The concentration of resources itself is meaningless unless we provide a reasonable organization and proper use.

In order to achieve these goals and to gradually make such serious changes a reality we have *to change the way of thinking* of most those involved in the coming operations. "I have no other writers for you" what comrade Stalin used to say. We need *competent professionals* and at the same time *young, hopeful and dynamic people*. That is why we undertake a series of operations aimed at establishing *a human resources policy of the corporation*.

We need a concentration of the best specialists, resources and efforts in breakthrough projects. Pursuing strategies of developing helicopter and aircraft engine manufacturing we have set the chief goal to be on the world level of designing high technological products and hold a high place in the world market. For this purpose we have set up a package of breakthrough projects, a prospective model line and are plan-

ning to implement it. In order to solve this task we shall have to make several breakthroughs in organizing and working with the corporation personnel.

We need to considerably raise labor productivity and to switch all our plants to *work according to economy production principles*. This very complicated task requires a change in mindsets of tens of thousands experienced specialists. Performance of Russian machine engineering enterprises, including ours, proves that this is going to take a lot of time. I recall a famous quote from Arcady Raikin [a famous comedian] that says “Forget everything that you were taught in the university.”

We have to set up *R&D designs, production and post production servicing of our products in terms of management of projects in keeping with rules accepted by world corporations, e.g. stage gate processes*. This signifies a move from administrative to team ways of organization and adoption of rigid ideology, i.e. we do only what adds value to our products and cast off everything unimportant.

A breakthrough in labor productivity *requires fewer workers of much higher qualification*. It may seem that we are just reducing our workforce. In fact *we are creating possibilities for those who try to be better and move upward on the professional and career ladder*.

I can not but quote Jack Welch, a veteran leader of General Electric (1981–1996), the man I respect deeply:

“I begin to change the company; I want to raise productivity, to radically improve the quality, to halve the number of hierarchy levels, etc. The company can survive only under such conditions, this is not my choice, and this is the competition principle. I invite to join my team those who are ready to build a new company. I am not firing anyone, but those who will not catch up with changes and leaders in changes will have to go.”

In the long run all this should lead to integrating our enterprises according to the principle of the learning corporations. Corporations created by Oboronprom should provide our country with a possibility to gain leading technological positions and to raise its share of the world market. Naturally, we have to look at the benchmark forms of organizing and working with human resources. Our R&D centers, plants and workforce should be imbued with the spirit of continuous training and desire to be the best in the world.

Our *best specialists should have a chance to be in the management reserve of the corporation and have an appropriate preparation*. If we do not train a replacement for the leaders of our industries today, it will not be a development but a collapse of the resources that we still have. *Building teams of managers in all determined directions* is the most difficult task that we must solve.



Programs and actions. Excerpts from articles and interviews — not “classified”

Principles of a new system for training personnel in aircraft industry. Opinion

*A speech at the conference “Creating a system
for personnel training in the aircraft industry”
August 24, 2007*

I am speaking at this conference not only because of my professional duties but because the subject matter of the conference is my personal concern. The point is that since 1988 I have been a member of the team

headed by G.P. Shchedrovitsky that began work out on a fundamentally new system of education in Russia. Since then a great deal of theoretical and experimental concepts and outlines have been developed. Several innovative training platforms have been set up. Experience has been gained and principles for training up-to-date specialists determined, and that should make a significant contribution to implementing innovative development of the country. Since 2004 we have been trying to put into practice the main results we obtained into activities of the Ministry for Industry and Energy. We do it in our work with the Ministry’s staff where a program for managerial training has been under way, as well as in designing strategies for developing certain branches and fields of activities. Besides, my colleagues and I strive to be in the forefront of all breakthroughs and innovations of the world practice for training engineers, researchers, managers. These are the reasons why I would like to speak on some fundamental summaries on the subject matter of the conference.

1. “High accuracy weapons to replace carpet bombing and shelling”

This principle is well known to specialists of the defense industry complex. I believe it the key principle with regard to the ongoing system of training personnel for the complex. What does it mean? When in the 1930s–50s we were laying the foundation of our defense industry we acted without counting expenses, resources and human lives, which at that time seemed inexhaustible. Plenty of R&D centers, plants, and testing grounds were commissioned. In order to provide the defense industry with personnel, dozens of higher education establishments were set up in the same manner that “baked” a surplus of young fresh specialists. I would like to stress this particular word “baked,” because the graduates had to go into long on-the-job retraining. I know it well from my personal experience.

Huge numbers of labor force and natural selection made it possible to solve complicated problems, but today we face issues that are much more complicated. Highly qualified professionals were those who aspired to be them; meanwhile redundant graduates with engineering diplomas who preferred a salary of machine tool operators brought about devaluation of the engineer profession.

All those present here know that there is an enormous gap between those who are 60 and 20 year old. Unfortunately, there are practically no 40 year olds in production field. When creating the UAMC to carry out high technology projects and marketing actions we should devise as precise projects for training managers, designers, researchers, engineers, operators for the branch industry. We have to move from wasteful mass training to clear cut defined goals of training special groups of experts. We have the experience and deep rooted traditions.

2. “Let the dead bury their kind but we have to act and breathe life into others”

In the course of ten years we managed quite effectively to lose intellectual and engineering potential created by selfless labor of many generations of the Russian people. The problem is how to give a new life to it and multiply it. All present here know about a generation gap now in the industry. The popular proverb says: “If the youth knew how and the old could.” When growing a new generation of specialists with all due respect we can not rely on the knowledge and experience of veterans. The luggage of traditional experience has lost its permanent value, while the system of education ceased to be the main bearer of knowledge. We need to give up the Soviet system of training personnel not because it is impossible to restore it in the original shape, but because it is unable to provide for attaining the goals set by the Strategy for developing the aircraft industry as well as in other activities in the country. Today we need to support teams of acting professionals who are able not only to do something but to teach their abilities to pupils. In other words it is instructing or teaching by a master, or managing knowledge – that is how this work is called in the world practice. It follows that this is not a return to medieval type of shop organizations, but on the contrary it makes it possible to use modern technology in working with knowledge. The technology of managing knowledge or “knowledge management” is used in the largest aircraft engine construction corporations with the UAMC among them. Knowledge born in the daily practice of solving designing, engineering and production tasks becomes used throughout the corporation as the whole. (Examples: General Electric, Boeing, Toyota, British Petroleum, etc.).

We should not try to go to extremes to revive what does not meet new goals. Meanwhile the human, intellectual and engineering potential should be thoroughly accessed and multiplied, or to be capitalized.

3. A new personnel policy does not mean providing new jobs but defining prospects for growth of specialists that includes recompense

The Soviet system of assigning people to production ceased to exist long ago; the labor market become mobile. The principle of identifying prospects should be set against the principle of providing jobs. In this case capitalization of an expert grows proportionally to his participation in important projects.

Practical training should be acquired on the job while requirements to the general level of education should be entrusted to a specialist’s discretion. What is a practical training? It is a compliance of the person to requirements of a certain work place, while general education is up to individual discretion. For instance, learning foreign language or not doing it is always a personal choice. If you want to take part in operations connected with exports to the South East Asia or want to go to Iran then you have to learn Chinese or Persian; if you don’t, you will work where a foreign language is not required.

4. The UAMC may and must become a leader in creating a corporate system of special training

New generations of personnel should be raised in terms of competent centers, one of which is in fact the UAMC. Lately, I happened to communicate with the leadership of the Sukhoi Corporation, and I know well enough about the structure and development projects of the Sukhoi corporate university, about its evenly balanced system of selecting and promoting specialists in this company. It is quite possible to make this experience as the nucleus for the UAMC corporate university.

I believe that the system of training personnel for the aircraft industry should be made independent of the system of the Russian higher education, which still remains unreformed and hazy. While 50 years ago new fields of activity were grown inside the systems of training personnel, today the opposite is true — newly developing fields of activity create systems of training professionals of all necessary types.

Technical assignments for training new type specialists should be done in the centers of creating intellectual capital. That is why I propose to create such a center in the UAMC. It should have new systems and standards of training. The experience of creating such a center could then be transferred to other fields of activity and industry production processes.

Industrial policy: the infrastructural approach

“Vedomosti”

February 28, 2008

In the course of the last 15 years several periods saw changes in the structure of the Russian national economy management: from expelling the “red director” up to the infrastructural system of economic activities.

The short course of the crisis

During the total expulsion of the “red directors” decisions were made in favor of a new owner. It was said and with good justification that most of the Soviet directors were not in a position to think independently and adopt responsible decisions. It was believed that in the course of privatization there would appear effective owners and managers of the Western type, i.e. with spirit of entrepreneurship, independent, and ready to compete in the conditions of a tough market competition. It was further maintained that as soon as such leaders arrive, the national economy would embark on a new way and the country would make a decisive jump in its development. The privatization was equated with the economic policy in general and as a result had become a provisional state ideology. This equation is the main economic error of that period.

New owners and managers arrived. But it turned out quickly that they are good only in those enterprises and fields of activities where their products had a demand in the world markets. Foreign trading houses and armies of intermediaries marched in where there was something to buy. Fuel, energy, metal, chemistry, forestry, fish products sold in a brisk trade. Next, new managers learned to trade without intermediaries. The task of the government was to pursue the country’s interests, i.e. to collect taxes, prevent monopolization, ensure safety of products, etc. Enterprises appropriated by new owners and managers were left without government

investments, that is without injections into depreciation and technology development. Gosplan and government supervision was no more in place. The result was a severe technical and technological collapse and growing lag from world economies in technology innovation. Depreciation of equipment in energy engineering, machine building, transport and other key infrastructure industries grew disastrously. Engineers went into trading business to sell in cities and world markets, teachers of engineering schools degraded, the youth went to learn where the money was: banking, lawyers, economists, sales managers.

The situation in the defense industry was even worse: in the Soviet times it guaranteed sales in the countries of the Warsaw Treaty and in the USSR's friendly countries. After the collapse of the USSR defense products in the outside world were not in demand, while inside Russia there were no government orders for defense products. As the result, high potential accumulated by the industry sector in its research institutes, R&D centers, testing grounds, etc. became on the verge of collapse. The axiom was ignored — i.e. the intellect of the defense industry — is the capital of the country and it stays only where it is nourished by the government treasury.

Anti-crisis management

It was in this particular situation that the Ministry for Industry and Energy where I worked in the team of Viktor Khristenko had to act as the team of anti crisis management and work out foundations of the urgent industrial policy as instructed by the president. I want to underline that our actions were not a result of debates with champions of the liberal market. Our actions were due to realizing the severe problems that plagued the main industries of the Russian national economy.

It was imperative to stop attempts to fragment and privatize network of pipeline of the country, of Gazprom and RZhD [Russian railroad system], In fact, we tried to prevent the disintegration of the country. We could not lose control of the transport engineering industry, engineering potential and other industries critical for the economic safety of the country. We prepared and launched many strategies for developing the most important branches of the country's national economy.

What was the purpose and meaning of such a strategy planning that looked chaotic at first glance? The modern world economy is infrastruc-

tural. The XX century saw new rules of global trade and financial interaction. For instance, it is impossible to sell products in a region that has no well developed network for its servicing and repairs. From the standpoint of an infrastructural organization it is much more important to have a free access and reliable supply of goods and services rather than the issue of their costs and volumes. The best example is the Internet, but the same principle applies to trading in electricity, gas, oil, transportation services, machine tools, automobiles, airplanes and rockets.

Infrastructures have been growing in developed countries for over 400 years. Soviet managers were able to establish infrastructures in the course of several decades.

In the course of privatization we managed to destroy much of what had been achieved before in the matter of a couple of years. Now we had to create piece by piece something completely new. That meant that the focal point of our attention should be not just manufacturing a product, but first of all at its after sales servicing and a mass of research, engineering, designer, certification tests without which we would not be able to improve a model line and therefore have no buyers and clients.

Technological backwardness is not only due to underfinancing to update production assets and R&D activities. After all our technological lagging became evident by 1990 despite a sufficient financing. The same goes for home appliances, measuring instruments, machine tool building, etc. The lack of a special technological infrastructure that would make it possible to grow new competitive technology and products was another important factor of the backwardness. To create this infrastructure it is necessary to provide an effective system interconnecting design engineers of various parts, units, materials and processes. Another important matter is a feedback with the consumer, since it is the consumer who determines what technology is called for, what concept is competitive and recoups investments.

Efforts to construct such an infrastructure are underway now. They include techno parks, special economic zones, and science towns. However, we fall into the trap that we dug up ourselves. In order to ensure research, engineering concepts, design patterns we need qualified personnel. In the course of sales of what was accumulated before these people have left, retired, died.

The new era

Today, we have to begin to build a new era. We have to start to effectively train specialists of a new type i.e. those who will be able to provide system designing and reliable functioning of modern economy infrastructures in machine engineering, in the defense industries and in innovative industry branches and where we still hold strong positions.

We don't confiscate, we buy shares

“Vedomosti”

July 15, 2008

The process of redistribution of property will take a long time. «Today there is a general understanding of the fact that the strategic industry branches may be consolidated,” says Andrei Reus, the Oboronprom chief.

Andrei Reus took up the duty of the director general of the Oboronprom Corporation a little over one year ago. In his previous position in the Ministry for Industry and Energy Andrei Reus supervised fuel and energy issues. Right after the government resignation he was talked about as a possible appointee to the position of the minister of the same ministry. As luck would have it A.Reus was the first who was retired by the new Prime Minister Viktor Zubkov. On the same day the former government official became the director general of the united industrial corporation Oboronprom. At the same time Andrei Reus still chairs boards of directors of Zarubezhneft [oil company], Transnefteprodukt [oil products], and is a member of the Trasneft [oil] Board of directors.

— You have been in charge of Oboronprom Corporation for less than a year. Aren't you sorry that you stepped from the position of the deputy minister of the industry?

— I was in the position of a government official for 10 years. This period is enough to grow roots into this position and to never get out of it. That is why I am not sorry about the change. When I was a deputy minister I had to spend about 3.5 hours a day on just reading documents. Now I work for about the same amount of time, but I am not tied to paperwork, and this makes working much easier.

— **Was the idea to divide the Ministry for Industry and Energy sound?**

— I did not take part in making this decision, and I refuse to judge others. The division of the ministry will require a lot of internal changes and this may take time. But the Ministry of Energy will have an enormous amount of work to do and there is certain logic in creating the Ministry for Energy.

— **How do you rate the competence of the new government? What will be the center for decision making?**

— It is competent; there is a sense of continuity in the structure. I can also say that I feel quite comfortable working with the people who represent the new government. I know many people there and understand where to go and who to address to reach goals of the defense industry.

— **Where do you go most often?**

— To the Ministry of Industry and Trade, naturally.

— **Oboronprom Corporation is a government owned company. Do you see yourself a manager or a businessman?**

— If you feel like a manager you should not go into business at all. Oboronprom is a business structure, and I work in accordance with business laws.

— **Government officials argue whether or not Oboronprom should become a part of Russian Technologies. What is your opinion?**

— I am a hired manager, while there are owners who are called on to make decisions. If you mean the opinion of the Ministry of Finance [it does not support merging Oboronprom with Rosoboronexport –Vedomosti] this is a normal thing: it is a working process of exchange of opinion between two organizations that are involved in the procedure of document coordination. As for Oboronprom, we have always worked in close cooperation with Rosoboronexport. The latter, which is a part of Russian Technologies, provides guarantees for our credits, sells our defense technologies, we use its infrastructure not only in Russia but abroad as well. Independent solution of all these issues is very costly. This is what is called a business logic that makes our interaction effective. Our positions with Russian Technologies do not differ.

— **Apart from Oborobprom Russian Technologies show keen interest in consolidating a huge amount of assets — from AvtoVaz to the Udokan copper deposits. Aren’t such appetites excessive, what do you think?**

— Had you asked me this question a year ago, when I was a deputy minister, I would have probably thought about appetites. Now I can only say one thing: there is general understanding that strategic government industries may be consolidated. The government should have control in them because it invests there a lot of budget money. Those branches where Oboronprom works, namely, helicopter and aircraft engine manufacturing are a part of them.

— **That means you are certain that creating government corporations in industrial sector will be effective?**

— Naturally. Once I took part in a discussion regarding “the invisible hand of the market.” As recently as in 2000 there were statements that the best industrial policy was when there was none. But this same “invisible hand” had strangled aviation, aircraft engine manufacturing and many other strategically important industries. The situation has changed now: there is the industrial policy, it is pronounced in the goal programs and being implemented. Besides, industries tied with defense matters have government participation everywhere in the world.

— **Will replacing government officials in the boards of directors by independent directors that Igor Shuvalov, the First Deputy Prime Minister, talked recently about, really help?**

— There is a certain sense in reducing the number of government officials in boards of directors of various companies. Being a deputy minister I took part in the work of 10 boards of directors. How much work can you do working like that? You have to get into the heart of the matter of each company, take responsible decisions. So the idea of professional directors is a healthy one.

— **Will Oboronprom have independent directors?**

— Oboronprom is a strategic company. But as far as our subsidiary enterprises are concerned it would be a logical step. The IPO of the Helicopters of Russia will require electing three independent directors.

— **Do you know who your candidates are?**

— We shall decide when the time comes.

— **You ceased to be a government official but still keep the position in the board of directors in Rosneft...**

— Well, wasn't it you who wanted to have as many independent directors as possible?

(Smiling).

— **Don't you vote by command?**

— Yes, I do. I work in a company where 51 % of shares belong to the government. But my presence in the board of directors of Rosneft is quite justified. Rosneft, Gazprom and other oil and gas and energy companies use a lot machine engineering products. In the case of Rosneft I have a possibility to understand the needs of the potential client.

— **By the time of your appointment in Oboronprom the holding company Helicopters of Russia was practically formed. Is your task to consolidate aircraft engine manufacturing? How is the process of establishing the united aircraft engine manufacturing corporation going?**

— According to the decree that the President signed in April we have 15 months to consolidate controlling blocks of shares of enterprises that would become part of the UEMC. A government order is about to be issued to start fulfilling the decree. We are now working on a structure of management of the holding company and its business model; we are purchasing blocks of shares of aircraft engine manufacturing companies. We have bought 19.27 % of shares of the Ufa engine manufacturing plant — the UEMP. We plan to buy some 9 % shares of Roinco Enterprises Ltd. We are in the process of all necessary procedures including raising financing.

— **What is going on with the investigation started by Rosimushchestvo [government property agency] regarding privatization of 25 % shares of the Ufa plant which the government insists was illegal.**

— The litigation is not over yet. The federal commercial court of the Urals Region remanded the case to the lower court but at the same time ruled to secure a claim against the purchase of 19.98 % shares of the Ufa

plant by the Saturn company last December. The court ruling bans Saturn from purchasing or mortgaging these shares. I am sure that this block of shares has to be returned to the government.

— **But the Saturn company applied to the anti monopoly office with a request to raise their share to controlling in the Ufa plant.**

— Right after the Presidential Decree we sent the Saturn company shareholders a written offer to sell us 13% plus 1 share of the Saturn company, which would give us control over the Saturn company. We have not had a response to it yet.

— **But Yury Lastochkin, Director General and co-owner of the Saturn company, repeatedly stated that he prefers the idea of a merger with the Ufa plant that would maintain its control by private shareholders. Are you going to bargain with him?**

— I think that the head of the Saturn company Yury Lastochkin does not seem to understand the idea of creating the holding and prospects of further development of the industry branch. I would like to underscore that we do not take away the shares, we buy them. The controlling block of shares that we are after is necessary to implement control over the strategic industry branch. No one tries to block cooperating and interacting by the Saturn company with the Ufa plant as well as with other enterprises which are to be a part of the united corporation. Just as the Perm engine plant [the Perm engine plant is under control of Oboronprom] with the Saturn company, so it will continue to work. Oboronprom is to get the government owned block of shares of the Saturn company, that is 37% of the shares. This is a solid block of shares that would make it possible to continue negotiations. I hope that common sense will prevail. The negotiating process may take time but I am positive that we will succeed.

— **How much do you offer for 13% of the shares of Saturn?**

— Right now I suggest an independent assessment of the company.

— **How much do private shareholders want?**

— Bargaining always has an element of risk, it is a creative work. There are people who want the price to include synergy but you have to work to have it. In the case of Saturn we are ready to invite an in-

dependent appraiser so both parties would be satisfied. I would like to note that this is not the first offer we have made. Several offers have also been made: a direct sale, converting shares of private shareholders into Oboronprom shares on the basis of an independent appraising of our enterprises. But the Saturn leader's attitude to these offers has been destructive.

— **What other deals are under way?**

— We bought 11.66 % of shares of the Aviadvigatel Corporation that is a part of the Perm engine manufacturing corporation and 12.27 % of the privileged shares of the Motorostroitel Corporation. Right now we are in a process of making a decision as to how the Samara cluster of enterprises will function: will it be a management company or a group of companies with a head company that could be Motorostroitel with subsidiary plants with the status of legal persons. The decision is to be made in the nearest future. These actions should not upset the production process. We have concluded a number of long term contracts with Gazprom, including the Nord Stream, and with Roskosmos. The goals in both tasks are to provide Oboronprom enterprises with orders and to streamline the management. These tasks are being resolved simultaneously.

— **Motorostroitel is headed by a representative of Roskosmos. Will you replace the leadership after your deal with Kaskol?**

— Structural changes in the management of the Samara cluster may involve personnel changes but they are not my immediate decisions.

— **What will the United Engine Manufacturing Corporation be like and how do you see its financial and manufacturing future?**

— Our goal is to create an economically viable holding that would provide aviation, cosmonautics, energy and helicopter manufacturing. In the process the Russian aircraft engine manufacturing should become a world market player and compete with transnational companies. The basic tasks we face are to raise the labor productivity, to cut down expenses, to stabilize the financial wellbeing of the enterprises and eliminate money losing internal competition.

We plan to restructure the manufacturing process. Russian plants still have a full production cycle; the world had stopped doing it long ago.

So far our manufacturers have been losing ground to Western producers. For instance, the annual volume of production of all Russian engine manufacturers is worth about \$2.5 bln, employing 125,000 employees. Compare it with Pratt&Whitney’s \$11 bln and 38,500 employed; Rolls-Royce’s \$12.5 bln and 27,800 employed. It is impossible eliminate this situation without structural changes and government support. I do not know any private investors who are ready to invest now up to 10 bln rubles annually into the industry. This can only be managed by the government. A federal program for developing the national engine manufacturing is underway up to 2015 that should clearly define strategic goals of the industry and the size of its financing. We believe that the industry development needs outlays of no less than 84 bln rubles up until 2015. If the industry is consolidated and investments are sufficient a planned growth of sales would be around 15 % annually. The country’s economy is on the upswing and engine manufacturers must be able to meet new demands organization wise and financially.

— **Who is financing the consolidation of the Oboronprom assets?**

— The government hands us big assets that would be acquired by the corporation through additional issue of shares in favor of the government. We are getting credits from the government and private banks.

— **Do you plan to work with the Bank for Development?**

— We are cooperating with the Bank in the helicopter business and count on interaction in engine manufacturing. There is a possibility of a strategic partnership including with the Bank taking part in the shareholding capital of the UEMC. We just started negotiating that possibility.

— **You negotiated a possible merger with the Ukrainian Motor Sich. Is it still viable?**

— The idea remains attractive to the both parties. But there are no practical results yet.

— **Aren’t your plans to start manufacturing helicopter engines at the Chernyshev Company would stand in the way of your potential partnership with Motor Sich?**

— No. On the one hand we are still interested in cooperation with Motor Sich, on the other hand, we naturally do not want to depend fully on a partner, and a foreign one at that. I am certain that there should be an engine production in the country. Beginning with 2010 we plan to get the first Russian helicopter engines from the Chernyshev Company.

— **The strategy “Helicopters of Russia” has been approved. What are its main points?**

— The first point is to create an effective corporate management structure, otherwise it would be simply impossible to compete with Western companies. Right now the Helicopters of Russia is the management company for almost all enterprises of the group. We plan to transfer blocks of shares from Oboronprom directly to the Helicopters of Russia. By 2010, we should have the common share for the Helicopters of Russia group, and by 2011 we plan to have an IPO.

The second important point in our strategy is to create and develop a new business unit that would be responsible for servicing our technological products and sales in the course of their life time cycle. Keep in mind the fact that a helicopter life span is some 35 to 40 years. This means that we can get income from the products servicing that amounts to five to six times as much as the price of a helicopter. Servicing a life time of an engine gives the amount equalling three fold price of an engine. The rest of the world had been working according to these principles but in Russia servicing business is not yet well developed. Right now we are setting up a servicing network; we have signed agreements to set up one center in India, next plans are for China, Latin America, Near East, Africa.

— **Apart from the IPO schedule do you have other ideas?**

— IPO will be done in Russia as well as abroad. We have no doubt in foreign investors’ interest, since about 80% of our helicopter products are exported. Besides, a number of foreign investors have already invested in some enterprises and they access their investments as effective. It is a bit too early to name specific places and amounts for IPO, but the government will have 50% plus one in any case.

— **What are your forecasts for financial benchmarks of the Helicopters of Russia?**

— We have outlined plans for production and sales volumes which will influence the company’s capitalization. Right now sales of helicopters grow by 20 to 30 % annually. In 2007 the holding plants delivered 120 helicopters. By 2010 we plan to deliver some 280 helicopters. Our further plans are to deliver up to 400 helicopters by 2015. I think these target figures can be upraised. By 2010 we hope to increase the share of the Helicopters of Russia to 7–8 % of the world market share. This is a very ambitious task if you keep in mind that the world players are very active and grow much faster than we do. The earnings of the group in 2007 topped 29, 5 bln rubles, we expect a growth of 20 to 30 % in 2008. Net income of enterprises was 2 bln rubles. Beginning with 2011 we plan to have average annual sales of helicopter products worth 75 bln rubles.

— **Have you a definite model line?**

— The Helicopters of Russia have an approved model line that is the basic version and includes a wide complement of technological products. This is done on purpose, since the greatest possible diversification provides for stable operations in the world market. During this year the Helicopters of Russia will go through preparation of business plans and detailed investment projects for every model.

— **Are there any priority projects?**

— We singled out seven key investment projects; they are: Mi-8, Mi-38, Ka-226, Ka-62, Mi-54, Mi-28H and Ansat, developed and manufactured by the Kazan Helicopter Company. We have already chosen and approved an engine for each type of helicopter. We have applied to the Bank for Development to finance the Ka-226 project as well as other projects.

— **Is it true that Ka-60 is not in the model line?**

— It is. But it is a military machine, and it is financed by the military. However, this financing is not sufficient for a normal development of this project.

— **Oboronprom plans to sell the holding Avtokomponenty that consolidated a number of VAZ parts suppliers to Avtovaz. Is the deal ready?**

— Oboronprom has sufficient experience in consolidating assets, in particular in helicopter manufacturing. That is why we now have the task to bring this business to order. But it is not our main business, therefore this company will be sold. The deal should be through in the nearest future.

Cooperation with foreign companies

“Last May we set up a venture company on a par with AugustaWestland for distributing our products in Russia and countries of the former Soviet Union. This project is important to us from the standpoint of getting the experience in sales organization. We are now in a process of negotiating to set up a joint venture for producing helicopters AugustaWestland in Russia. Our participation in joint projects means that Russia is joining international cooperation in high technology industries. We believe that it should be a 50–50 arrangement. This is suitable for both parties. The venture will be managed by AugustaWestland.”

“At the exhibition HeliRussia-2008 the Helicopters of Russia signed a protocol of intentions for creating an engine for Mi-38 with the Pratt&Whitney Canada.”

“With C Eurocopter we discuss possibilities for interacting in joint work and production of a helicopter technology.”

“We are negotiating engine deals with Turbomeca.”

It would be inopportune on my part to assert that with arrival of Oboronprom all problems would be immediately unraveled

*“Izvestia”, supplement “Aviation Complex of Russia”
August 2009*

The Joint Industrial Group Oboronprom faces an uneasy task of creating a modern machine engineering company of a top world level that would unite such high technological industry sectors as helicopter manufacturing (The Helicopters of Russia), aircraft engine manufacturing (The United Engine

manufacturing Corporation — UEMC) and would ensure smooth functioning of enterprises and producing competitive products. Andrei Reus, the Director General of Oboronprom, tells Izvestia about how the corporation is progressing.

— **The strategy of the corporation has been completed, you have repeatedly spoken about it in the press and publicly. How would you sum it up?**

— We should provide support and restore a modern engineering thinking in the field of producing gas turbine engines. This can be done only by setting tasks for designing and organizing serial production of modern engines in the world market. It is necessary to build the best and reliable engines for combat air force, civil and transport airliners, produce a prospective model line of engines for The Helicopters of Russia as well as for industrial facilities used in producing hydrocarbons and power engineering. That is to say that we in fact should raise a new generation of engineers, designers, technologists, production managers who would be able to create standards of the world class modern technology and to ensure its long term sales and effective servicing. With the view of the international aspect of this strategy we plan to stay among the world top five leaders in engine manufacturing.

— **The plans are impressive. What is being done to implement them?**

— First of all, we have completed a new system of management based on a program and project approach. We have determined the priority projects in the holding company headed by chiefs responsible for its completion. These chiefs have all the necessary authority to use all resources to fulfill the projects.

Secondly, work is under way to shape the single common model line, as well as to limit manufacturing plants to work in exclusively helicopter and engine production. I can say that this is a very complicated task. During the last 15, years practically all enterprises have lived according to the laws of the subsistence economy, i.e. they tried to obtain the complete infrastructure from designs by their own R&D centers to manufacturing the final product. This had led to duplicating functions, destructive competition among these plants for government resources and clients. This is the barrier that we are sorting out! The

engineering center was set up especially for this particular task in the corporation. After we complete the list of the engine model line to be manufactured in the corporation we will approve it at a session of the council for strategies and investments of the corporation. Chiefs of all companies in the corporation work in the council.

Still another novelty – working according to the principle the “leen production,” i.e. production with low costs. Among the leaders of this drive are the Ufa plant, Saturn and the PEP [the Perm Engine Plant]. The “leen production” shall be instituted at all enterprises of the holding company. We estimate that just through this system we can reduce costs by 15 %. That means a growth of labor productivity and incentives for employees.

— Let us move from theory to practice. Are there any practical results from the activities of Oboronprom in the engine manufacturing industry?

— It would be inopportune on my part to assert that with Oboronprom’s arrival all the problems would be solved outright. The main very positive factor is that we have analyzed and taken into account all the problems in the industry, and we now have a clear and realistic action program. It goes without saying that we have received enterprises in various stages of austerity. For instance, the Samara cluster requires setting up a common research and production facility on the basis of the Motorostroitel plant, the Kuznetsov company and the Samara R&D machine engineering center. We have already started the process of merger and selling unimportant assets and optimizing human resources. We also plan to establish an enterprise based on the Perm plants to design and manufacture engines for aviation and gas pumping. Besides, we have succeeded in obtaining the government support of the enterprises. Motorostroitel is allocated 1.46 bln rubles for additional capitalization. Apart from the credit line opened to Saturn by the Bank for Foreign Trade, the company is getting 5.2 bln rubles in additional financing for working on the promising SaM146 engine in the framework of an additional issue in favor of Oboronprom. The Chernyshov Company is getting a government credit worth 2.9 bln rubles.

The production program for the UAMC (United Aircraft Manufacturing Company), the Defense Ministry, Gazprom, and Roskosmos

has been drawn up and is in operation. On the whole, it can be said that today it is only the government support that makes it possible for the industry to exist and develop. Our task is to use this assistance and not waste it but create an effective business that produces competitive products and earns profits. We have a complete support from Sergei Viktorovich Chemezov, the head of Russian Technologies and the chairman of the board of Directors of our corporation.

— Is it possible to say that The Helicopters of Russia are developing successfully against the background of an uneasy state of things with engine manufacturing?

— It is important to remember what the starting point was. Our two businesses — the engine manufacturing and helicopter manufacturing earned over 100 bln rubles in 2008, the UEMC earned almost 60 bln rubles and The Helicopters of Russia over 40 bln rubles respectively. The Helicopters of Russia show a production and financial growth by 30 to 40 %, while the engine manufacturing industry generates considerable losses amounting to several billion. That is why the helicopter manufacturing industry looks better compared with the engine manufacturing industry.

But if we go into deeper processes and not just about the current results like earnings, profits, then we can say that The Helicopters of Russia requires attention as great as the UEMC. Our own industry resources are far from being sufficient for its development and effective competition in the world markets. We had designed the model line of the Helicopters of Russia that includes models that are able to take a world market share.

The government also supports us in implementing these plans. For instance the Bank for Development finances a serial production of the Ka-226; the Ministry for Defense has ordered Mi-28N and Ka-52 helicopters. We count on government support in producing a promising high speed helicopter. On the whole, I can say that despite the problems we have, and given systematic and thorough work and support by the government and sufficient financing both the helicopter and engine industries of Russia have every opportunity not only for normal work but for a real breakthrough for a new technology level.

Work of Samara enterprises is critically important for Strategic Air Force

“Volzhskaya Kommuna” (Samara)

April 1, 2009

The well-known Samara engine manufacturing enterprises of the air-space industry passed under the control of the Joint Industrial Corporation Oboronprom last February. The Government-owned holding company plans to create on the basis of the Samara enterprises a common modern structure for designing and serial producing aircraft engines. However the enterprises are now in a difficult situation, they are practically on the verge of collapse. Andrei Reus, the Director General tells about the program for saving the plants from the crisis situation and their future development.

— How does Oboronprom plan to pull the plants from the crisis?

— I would like to underline that Oboronprom became the legal owner of the Motorostroitel Company, the Kuznetsov Company and the Samara engineering R&D Center only in mid February of 2009 at the time when we were handed government owned blocks of shares. By this time legal proceedings were started against all the enterprises, their property and bank accounts were arrested. The total debts exceeded 7 bln rubles against the annual sales of roughly 3.5 bln rubles. The Kuznetsov Company as a producing unit does not function. The situation requires immediate anti crisis actions. Oboronprom and the Joint Aircraft Engine Manufacturing Corporation experts have devised a plan for changes until 2015. The key measure is restructuring the management system of the three enterprises by merging them. The leading production unit will be Motorostroitel. This will make it possible to cut down the losses of the plants and create a streamlined effective production. The program had been forwarded to the country’s and region governments.

— How will this process be executed? What structures and productions will have to be jettisoned?

— I want to stress right away that we do not close production! We will keep and develop further key operations at all three plants. The

merger process itself will be eliminating duplicating services at the three enterprises. For many years the enterprises duplicated each other in a number of issues that was in fact a competition. This can be demonstrated with the story of Gazprom orders. On the one hand, Gazprom needs in the NK engines could keep the plants afloat financially and regenerate their operations. On the other hand, it was these orders for engines that became the reason for the controversy, and the result was the Gazprom orders for engines were divided between Motorostroitel and the Kuznetsov plant, while the latter has only a R&D production facility. Gazprom repeatedly filed claims against the Kuznetsov plant regarding the poor quality of its engines. The conflict between the two plants resulted in their economic and reputation damages. It will take a lot of efforts to rectify the situation.

We plan to set up a facility based on Motorostroitel that would provide designing, production and repairs of engines for the Strategic Air Force as well as the needs of space programs. It would also manufacture equipment for Gazprom and other raw material companies. The brand name Kuznetsov will be kept. The engineer’s team of that plant will focus on designing and updating units while Motorostroitel will remain the only enterprise in the region mass producing gas turbine engines. The Kuznetsov plant has a modern testing facility for manufacturing by the way of explosion that can not be transferred to other places. Therefore these facilities shall continue to function at this plant while other facilities and unused space will be disposed of. The effectively functioning enterprise shall provide stable jobs, decent income, smooth payment of taxes, and shall create conditions for further development of the enterprises. It is so much easier to survive in the integrated systems, as demonstrated by the Russian and world experience.

— **What other moves are planned by the anti crisis program?**

— We count on an government support for the plants in credit guarantees, and on increase in government share of the authorized capital. These funds are needed to repay borrowed money and restore the plants’ efficiency. The borrowed funds would be repaid from 2011 to

2015. Still, another stage for emerging from the crisis is to form and fix short term three year programs for orders beginning from 2009. I mean the government order for manufacturing engines for the Roscosmos space programs as well as technical support and repairs of the whole line of the NK engines for the Strategic Air Force. The allocated funds and long term government orders will bring the immediate solvency of the enterprises with their key capacities and effective development. The program is now being considered by the Russian government. We hope that this program will be supported by the Samara region government.

— **Are there any other ways to save the plants but the merger?**

— In the course of the past year we thoroughly analyzed the situation at the plants and worked on how the Samara cluster plants would work as the whole. Oboronprom took an active part in realizing how to prevent bankruptcy of the plants throughout 2008. At the end of 2007 government subsidies were paid to the Kuznetsov plant in the amount of 676 mln rubles, and 1,129 bln rubles to Motorostroitel in December of 2008. The monies were used to repay payroll debts and tax arrears.

Oboronprom credited the Samara plants with 615 mln rubles and provided bank guarantees for 2,126 bln rubles. But that failed to radically improve the situation. So we arrived at the only possible solution, i.e. to merge the enterprises. We need to restructure production. Right now our companies are losing compared with the Western manufacturers. An output by a worker in the Samara plants is many times less than at similar plants abroad.

— **What is your opinion of the nature of the current condition of the plants?**

— The situation is largely due to the fact that since 1991 the government has not placed a single order for mass production of engines for the Strategic Air Force. All past 18 years the plants shared the sparse market of repairs and maintenance of the engines manufactured in the Soviet times, and that inevitably led to duplicating functions and non productive competition. The experience proved that the private owners were not effective managers. The enterprises found it difficult

to survive in the conditions of a tough market competition. The defense production plants were left without government investment, without outlays into depreciation and development of technology. This happened not only with the Samara plants, it happened everywhere. As the result, the high potential accumulated by the industry got on the verge of collapse.

— **Do you feel support of region a authorities and the state?**

— It is impossible to change the situation without government and regional authorities. Oboronprom addressed the RF Ministry for Industry and Trade and the RF Ministry of Finances and the Administration of the Samara Region for extra support. Such support would involve attracting the federal budget funds to assist strategic plants in order to increase the authorized capital of Motorostroitel. This would help adjust issues of enforcement proceedings, and to set up property mortgaging, to execute production concentration and to create pre-conditions for getting government guarantees in accordance with the rules approved by the government, and government guarantees for bank credits up to five years. This is necessary to refinance debts and to replenish current assets.

As for the assistance by the Samara Region government, we support constructive relations with the administration and work on the best possible solutions, in particular to create positive conditions to provide plants with electric power, heating and gas. Still another important issue is providing jobs for redundant employees laid off as the result of streamlining plant employment.

— **Do you have to enforce redundancy?**

— Yes. Huge operating expenses make the work of this big enterprise unprofitable. The enterprise has to be downsized so that its operations become profitable. It is not possible to determine the point when the plant ceases to lose money due to its complex and multiple operations. A reduction of administrative and managerial work force by only 10 % would save over 100 mln rubles. In the current situation this kind of money is very welcome. But right now we are only talking about reducing administrative and managerial personnel by 10 %. The first to be reduced will be vacant jobs and administrative jobs. We are

ready now to offer jobs to some 340 specialists of the Kuznetsov plant at Motorostroitel. This has become possible due to downsizing managerial personnel.

Production workers, especially qualified ones, are in high demand and we will offer new jobs in working professions. We do not mean to reduce momentarily thousands of people! Reduction will be done gradually. The laid off employees shall get their compensations as provided by the labor legislation.

— **What are the payroll arrears now?**

— Last week we paid out the Kuznetsov plant's payroll debt for November and an advance pay for December. At present the payroll arrears are 52 mln rubles. The Motorostroitel plant payroll debts for January and February are 103 mln, and advance payments for these months in the amount of over 30.8 mln rubles had been paid out. The issue of paying salaries is important for us because it is directly related to carrying out the production plan. We are handling this issue on timely basis and will fulfill our obligations.

— **What is the situation with backlog of orders? How would you describe relations with potential clients?**

— So far the contracts have been signed only with Roscosmos this year, but we are negotiating deals for three year contracts with the Defense Ministry and Gazprom. The problem is that the basic production assets are critically obsolete; the machine tools had not been upgraded for several years. To survive, the plants need government support and defense clients.

— **Experts believe that without the Defense Ministry orders there is no future for the Samara plants: the only possible products of the plants would be only gas pumping stations. Is such outcome possible?**

— This is out of the question. Smooth and high performance operations by the Samara plants are very important in order to maintain combat effectiveness of the Strategic Air Force and manned space programs. That is why we do our best not only to support these operations but to provide a new impetus for further development.

I believe it necessary to keep all processes under personal control

RBK Daily (Moscow)

April 2, 2009

The Joint Industrial Group Oboronprom was set up in 2002 as a multi profiled industrial corporation with the purpose to concentrate on four business directions. But over time it became obvious that the size of tasks faced by the industry requires a narrower specialization. While the helicopter production shows stable profit earning, the aircraft engine production faces many unsolved issues. Our correspondent Sergei Starikov interviewed Andrei Reus, the Director General of Oboronprom about how these issues would be addressed.

— Rumors of liquidating Oboronprom and transfer of assets directly to Russian Technologies have been afloat lately. Would you care to comment on this?

— I regard it as mere speculating that has no foundation whatsoever. In fact, Oboronprom is instructed with the following task: to create integrated systems in helicopter and aircraft engine production. This means not only consolidating blocks of shares but forming effective systems for management, production, sales and servicing. We are only at the start of this long journey, leaving alone the issues of corporate procedures of transfer to common shares of these holding companies. In its turn, Russian Technologies also has a huge area of work with the assets it acquired. I should like to remind the following fact: Sergei Viktorovich Chemezov is the chairman of the Board of Directors of Oboronprom. Besides, after executing government decrees a block of Oboronprom shares that belongs to Rosimushchestvo will be transferred to Russian Technologies. Therefore, relations between Russian Technologies and Oboronprom are fully transparent and visible for years to come.

— Andrei Georgiyevich, tell about what has already been done — the results of activities of the Helicopters of Russia in 2008.

— The helicopter producing industry is one of the few industries in Russian machine engineering that shows a positive production deve-

lopment in the course of the last five years including the present time. In 2008, we delivered 169 helicopters to our clients. This increase is 3 % above the 2008 planned quota, and 40 % higher than in 2007 (120 helicopters). The Kazan helicopter plant (KVZ) manufactured 55 helicopters, the Rostvertol plant manufactured 44 helicopters, the Ulan Ude aircraft plant 59 helicopters, and the Kumertau aircraft plant 11 helicopters. The lion share of the helicopters built is the traditional Mi-8/17 helicopters or 114 pieces, but we continued to produce Mi-24/35, Mi-28N and Ka-27/32. In 2009 we plan to sell about 230 helicopters. Our preliminary estimates show that earnings of the helicopter manufacturing holding company exceeded 40 bln rubles that are 20% higher than in 2007 with its 33.7 bln rubles. The holding's profits somewhat decreased and were 1.56 bln rubles while in 2007 they were 1.8 bln rubles. This was due to growth of prices for spare parts and stock, rise in credit interest, ruble stabilizing that went on during the whole year. Nonetheless, this was a good year considering the overall situation in the Russian machine engineering and the global financial crisis.

— **How are things going with the helicopter servicing? It is known that this market is worth some 200 mln dlrs.**

— The helicopter servicing is the most important for us. We had marked the year of 2009 as the “service year” for the Helicopters of Russia. The servicing is now one of the priority activities without which there will be no sales. Marketing begins with servicing, logistics and realizing how quick our technology is repaired. There should be no equating sales of spare parts with servicing. It just happened so that the domestic producers don't like to provide this service. It is not easy to overcome this old mentality and work in keeping with the ideology of selling servicing, selling the whole life time of the product. Our estimates show that The Helicopters of Russia may soon count on a half of the world market service worth some 100 million dollars. And then we will see how things develop. In India, we set up a joint venture with the company Vektra to service our products, and this venture is becoming the main legitimate player in the Indian market for the deliveries of spare parts and repairs. In China, we signed a framework agreement on organizing servicing of the

Russian helicopters. We realize that we have to build a servicing infrastructure throughout the world since the Russian helicopters are operated in some 80 countries of the world and actively sell in 40 countries.

— **What is a progress of the Ka-226T project that was credited by the Bank for Development?**

— The bank issued an investment credit of 100 mln dlrs for 8 years. Despite the crisis the credit terms had not been restructured and the interest rate remains the same. We had set up a team working on the project. We analyze its work on the project practically every week. We have settled the issue of engines. We signed a contract with Turbo Mecca to build and certify a modified version of the Arrius 2G1 engine. At the same time, we work on sales of Ka-226T to the Ministry of Emergencies, FSB, Gazprom, and via Rosoboronexport we plan to take part in the Indian tender for light helicopters.

— **What is going on with the Mi-38 project? As far as we know there are some problems with the supplier of the engine for this helicopter?**

— This is a very good machine but work on this project has slowed down. Unfortunately, we have not been able to raise financing for this project before the crisis started, and we are very busy now in a very uneasy situation. The refusal of Pratt&Whitney Canada to supply engines for this helicopter despite the signed protocol of intentions played its role in the slowdown. May be it was due to the negative experience of working with Russian enterprises in the 90s. Nonetheless, the work is underway to install the aircraft engine TV7-117 in the Mi-38 that we can convert for helicopter use. It is planned to employ the Chernyshev plant.

— **Do you still plan on IPO?**

— There is a government decree approved to transfer to the common share of the Helicopter of Russia in the next two years and that is a preliminary step before entering capital markets. I would like to stress that the IPO for us is not an idee fixe. This is a way to attract investments. That is why the IPO should be considered depending on the situation in the holding company and the market.

— **Is the partnership with AugustaWestland continuing?**

— Our joint venture in distribution is set up and working. The project to create production of the licensed helicopter AW139 is going according to the plan. We plan on signing a license agreement soon enough. The Italian party plans to appoint a director general of the venture and the Russian party will appoint his first deputy in charge of financing. We believe that the first serial helicopter will be produced by the end of 2010 and supplied to a client in 2011.

— **Will you reconsider the targets of the comprehensive program for development of the helicopter industry due to the crisis?**

— Despite the successes of the helicopter industry in manufacturing we should not forget that we use now models developed in the past decades. The industry urgently needs investment and new ideas that will make it possible to maintain its potential. Therefore, the program to develop helicopter construction as targeted remains unchanged. Today we just introduce minor changes in the model line. In particular, this goes for the light helicopter, the 4 ton payload helicopter that may be created on the basis of the Ansat. The most important task for us is to build a prospective high speed helicopter that would define the position of the Russian helicopter construction in the world market for decades to come. We have already started work on that. We need a great support from the government.

— **Do you plan on a rise of the domestic helicopter orders?**

— I hope very much so. The Helicopters of Russia have certain plans to increase these orders.

— **Now there is a question about the other holding company – the United Engine Manufacturing Corporation, the UEMC. When will the first stage of the merger be over?**

— The stage of extensive expansion of the UEMC is practically over. Oboronprom has already received the government held block of shares of Saturn, Motorostroitel, the Kuznetsov plant, Metallist-Samara, the Perm complex plants.

One of the latest necessary acquisitions was the purchase of the block of shares of Metallist-Samara from the private shareholders. The last

of the required acquisitions was the purchase of a block of shares of the Metallist-Samara enterprise from private shareholders. We will complete all legal procedures to form the United Engine Manufacturing Corporation by the end of 2009. Right now we are in the process of implementing the concept of the common management of all the enterprises by way of the UEMC managing company. We will eliminate redundant management systems like, for instance the PMK management company. The management system of the UEMC is premium now and we will not overload it with personnel not only to save on costs but to keep the management system transparent. Practically all Oboronprom top managers working in the UEMC hold more than two positions.

— Why did you take the position of the UEMC Director General? You couldn't find a better candidate?

— Thank god, the industry has many experienced and professional managers. But at the initial stage of creating the UEMC it is essential to work out the unified action program, to find a consensus among all the participants. That is why I find it important to keep all these processes under my personal control.

— Did Yury Lastochkin transfer to Oboronprom his block of shares in Saturn?

— The deal is through and Saturn payments have been made. We have also received the block of the UEMP shares. Oboronprom controls both enterprises now.

— Will the engine manufacturers for the MiG plants be transferred to Oboronprom? How will you solve the issue of replacing imports of helicopter engines?

— Decisions to provide government support to the Chernyshev enterprise have already been made in the amount of 7 bln rubles, including an additional issue of the plant's stock worth 2.9 bln rubles. There were speculative press reports concerning this event. I can only say that we have no controversies with the Chernyshev management regarding Oboronprom's participation in the plant's authorized capital. There were some technical problems with corporate issues of the deal but they are settled now.

As for replacing imported engines the Klimov enterprise is able to manufacture the helicopter engines TVZ-117 and VK-2500 by way of using repair kits. The Chernyshev plant will manufacture the TV-117 engines for Mi-38 as well as repair kits.

— When will the UEMC merge with the Salyut plant? Did the president's visit to the plant expedite the process or slow it down?

— We have a number of serious issues for restructuring the plant assets. The Salyut plant is now solving the issue of converting to an open share holding company and setting up a holding company in accordance with the presidential decree. Each party has to complete reorganization work in each holding company. But today we cooperate with Salyut in several fields. The enterprise has all that is needed by the UEMC.

— What enterprises in the UEMC are “strong” or “weak?” Will some plants be closed down, for instance, in Samara?

— I would like to stress that we do not close down the Samara plants. We will keep and develop key capacities of all three plants: Motorostroitel, the Kuznetsov plant and the Samara engineering R&D center. We plan to create one organization for designing, manufacturing and repairs of aircraft engines for the Strategic Air Force and needs of the space program with Motorostroitel as the base for it. This organization will also manufacture equipment for Gazprom and other companies producing raw materials. The Kuznetsov brand name will be kept. The Kuznetsov work team will focus on designing and updating accessories, while Motorostroitel will be the only plant manufacturing serial gas turbine engines. The Kuznetsov facility has quite a modern testing ground that can not be moved to another place. Therefore, this production will continue to function at this plant, while other idle space and territories will be disposed of. On the whole, the Samara plants are in arrears of some 7 bln rubles, and production facilities need to be urgently modernized. We can not use standard approaches, which is why we began urgent anti crisis steps. The Perm cluster of enterprises functions normally on the whole, but it also will be consolidated. Despite the problems in the financial matters the Saturn plant is a strong enterprise with modern production

and technology base, and is the place where an engine is being certified according to the European standards. The Ufa enterprise has a promising future, and we plan to use it as a specialized facility for all the plants in the holding company.

— **Maybe it would be easier to destroy everything and start from zero?**

— No, we will not do it this way, although sometimes a green field is better than reconstructing something old. The Chernyshev plant has 10 idle hectares that require permanent financial support in taxes, housing expenses, etc. Obviously, such expenses are not rational. We also plan to get rid of the unneeded assets in Samara. We are not in the developer and tourism business. We can not afford to maintain guest houses and resorts that the plants have to pay for. Social benefits should be based on monetary recompense. We will only keep hostels that are needed to attract labor force.

— **Do you plan to reorganize the Perm cluster of enterprises? What is the attitude of Pratt&Whitney since it is a share holder of the Perm engine plant?**

— As I have already said the Perm plants are quite stable both from the view point of finances and production; but it also needs a serious restructuring. We have begun the procedure for transferring management operations from the Perm engine plant to the UEMC, the merger process is underway of the Perm motor plant and other plants associated with the engine plant. We are discussing all procedures with share holders, including Pratt&Whitney that we regard as the strategic partner of the Perm engine plant.

— **What goals do you set for the UEMC?**

— We have resolved that the UEMC’s strategic goal is to restore and support the modern Russian engineering school in the field of gas turbine engine. So the main task is to build engines that would meet the requirements of the domestic and foreign markets. We have stated that by 2020 we plan to be among the five world produces in the gas turbine engine field. Our work will be aimed at implementing these plans. We have also determined main strategic projects for the UEMC. This is the SaM146 project, a new engine for civil aviation —the MC-21 en-

gine, a new engine for the Air Force – project PAK FA, new engine for a high speed helicopter. We continue to work on the equipment that we already have. For instance, it is certification of the engine PS-90A2 in cooperation with the American Pratt&Whitney Company.

The strategy of the industry development will be completed in the UEMC in the nearest future, and will be presented at the meeting of the board of directors in Oboronprom. Then the strategy will be submitted to the government for consideration.

— **What kind of structure do you see in the UEMC and principles of operations in the holding company?**

— 8 committees have been working in the UEMC structure; the committees included all plant directors, experts, scientists. The process was completed on March 27. It is evident to me that the UEMC managing company should focus on international activities and financing. But this is coordination and not substituting those operations that are being done at enterprises. The basic principle of work of the UEMC is in projects and programming. All human resources moves are considered from the standpoint of expediency in the use of experience and skills of a particular manager in a specific position. This is very important for me, since directors are the main asset in the UEMC structure. Appointments to the leading projects were made on that principle. The project SaM146 will be realized by the Director General of Saturn Yury Lastochkin, the program for producing helicopter engines will be headed by Alexander Artyukhov, the director general of the Ufa enterprise. The director general of the Aviadvigatel Alexander Inozemtsev will be in charge of creating the engine with 9 to 18 ton thrust. The program for industrial gas turbine plants is entrusted to my deputy in the UEMC managing company and in Oboronprom Dmitry Petrov. My other deputy in the UEMC Ilya Fedorov, who headed the Dubna Machine Engineering plant Kamov Company will be responsible for the project to create an engine for PAK FA. The foundry project that we consider common for the helicopter and engine holdings is headed by the deputy designer general of the UEMC Gennady Zubarev. All appointment orders have been signed by me. There is a number of plans e.g. composite materials, tool production, etc. where directors will be appointed in

the nearest future. All projects will be examined at the expert council of Oboronprom and financial arrangements will have to be approved as well.

— **What were the financial results of the UEMC enterprises for 2008?**

— This year for the first time we combined all financial figures of enterprises of the UEMC. The preliminary results show that earnings in 2008 exceeded 57 bln rubles. But the industry generates a lot of losses and that means wage and tax arrears, etc. This means that we have system problems that we still have to solve.

I have always been and remain a team player

“Natsionalnaya Oborona”

August 2009

— **Andrei Grigoriyevich, today Russia and the rest of the world are in a quite difficult economic situation; has the crisis hinder the implementation of the corporate plans?**

— Activity of Oboronprom has to be divided into work on helicopter construction and engine construction. Oboronprom began to deal with these issues in different times, therefore each project is in a different stage of its development.

From the standpoint of design and flight performance, we are serious players on the global arena. Our helicopters operate in 80 countries of the world; we supply helicopters to 40 countries. But in order to compete in the world markets and to work on the level of our foreign partners, the country should have a powerful system of holdings with a single brand name. I do not want to disparage the brand names of Mil and Kamov, they are famous by now. When I say a brand name I mean first of all an organizational form. Everybody knows AugustaWestland, Eurocopter, and Sikorsky. The Helicopters of Russia should also become a key player in the world market just like the other names. The Helicopters of Russia as a single structure has been created quite recently, therefore advantages of cooperation, production restructuring, increase in efficiency, proper redistribution of its managerial functions have not yet been fully felt. A lot of work is still ahead.

We declared 2009 the “year of servicing” because it is my firm belief that servicing is the subject that influences sales, the image, and the competitive edge. We have to establish servicing of the highest world standards. But it is not easy to do because, unfortunately, the mentality of many leaders and the labor force is not conducive to good servicing. Obsolete mindsets, simplified understanding of the issue based on the fallacious idea that servicing equals sales of spare parts. We have to break these approaches and build a new modern system. We have just started to make first steps in this direction, but we intend to deal with the issue with vigor. A servicing center had been set up in India, and a similar center is planned for in China and in a number of other regions.

Another real problem is work performance. We lose to our competitors in the issues of organizing production, labor efficiency, and a number of other issues. We have already embarked on the program for considerable improvement of our quality to reach the levels of our competitors. We mean the “lean production,” the program and project method of organizing work process, etc.

A big issue is our suppliers of sets and stock. Our production sometimes depends on the capabilities of our suppliers. In particular this goes for transmissions, gear boxes. We have decided to build a new plant to produce gear boxes or we will not have the future.

The same goes for our limited capabilities in foundry facilities. We must modernize the facilities that we have and, possibly, to build a modern foundry. After all, the issues of cost efficiency are connected with the lack of necessary specialization. The malady of the Soviet economy was a full cycle of production, a subsistence economy and it simply kills the idea of effectiveness.

— **How are things with investments into the projects of the Helicopters of Russia?**

— It was in the pre crisis period that we determined the strategy of helicopter manufacturing and approved it at the board of directors of Oboronprom and submitted it to the Ministry for Industry and Trade and in the RF Government. There is a helicopter technology that feeds the industry. Above all it is the Mi-8/17 helicopter. The helicopter was designed quite a long time ago, is reliable but despite its moderniza-

tion, we need new models. The strategy proposes creating new helicopters that are able to win serious market shares. Naturally, these projects require big investments, first of all government investments.

We have received the credit from the Bank for Development for serial production of the Ka-226T helicopter. We expect an interest in this helicopter from Gazprom, Ministry for Emergency Situations. We are getting ready for the Indian tender (the Indian armed forces plan to buy 197 helicopters). We will face serious competitors, including Eurocopter. The Helicopters of Russia signed an agreement with the French company Turbomeca to supply engines for the Ka-226T adapted for operations in highlands and in hot and humid climate. So far we have been working on schedule.

In present day conditions it is obvious that to obtain the necessary amount of investments is not an easy task. Therefore, we materialize all possible internal resources in order to finance the priority projects. One of them is improving production efficiency and investing through earnings by sales of technology produced by the Helicopters of Russia. Incidentally, sales are on the upswing: in 2007, we sold 120 helicopters, while in 2008 we delivered almost 170 helicopters. It is a growth of 40 %. We anticipate that in the future, despite the general negative situation in the world, helicopter technology will remain in demand and our helicopters will continue to be called for. We plan on achieving a 20 % growth in 2009 from 2008.

Still another source of investments is budget financing. Helicopter construction is targeted in the special federal program for developing civil aviation in 2011–2020, and it stipulates the necessary means for advanced research, including a high speed helicopter. Everyone understands perfectly well that whoever wins the race will have a considerable share of the market.

Naturally, we want our helicopter technology to fully provide for the activities of Gazprom, the Ministry for Emergency, the Ministry for Interior, FSB. There are very many functions that the Helicopters of Russia can effectively carry out over the territory of the Russian Federation. An example is a high rate of mortality in traffic accidents due to failure to provide timely medical assistance to victims of traffic accidents. Considering long distances of the Russian roads the issue can only be solved by rescue helicopters.

I believe that each Russian region should have reliable Russian helicopters. The issue of fast transportation availability is the issue of effective managing of territories. I have been talking with my colleagues in many different regions, and it turns out that to get from a regional center to a district place is often easier from Moscow than from a region capital. That is absurd!

— **It would be logical if every governor could have a mobile helicopter of the Russian make using which the governor would be able to control situation in his region.**

— I believe it absolutely proper. Because a management system is effective only when you can follow the situation at the length of “an outstretched arm.” You should be mobile and see everything with your eyes.

— **What share of the world market do you expect to have?**

— Our strategy has a target of up to 15 % of world sales. This is a very ambitious plan considering that the Eurocopter is not wasting time and moves ahead quickly. Another strategic goal is to change the correlation “domestic market vs. exports” in favor of the domestic market to 50–60 %. We have a strong team, able leaders, and I am positive that our plans will come true.

We will use international ties. Our strategic alliance with Augusta-Westland is one of the elements of this strategy. We are getting ready to start building a plant near Moscow to assemble civil helicopters AW139. This joint venture should become a kind of a training ground for proper organization of our own production processes and servicing.

— **How important are government defense orders for you?**

— They are important since they help us design new models of helicopter technology. This is true for the Ka-52, Mi-28N. The Defense Ministry like a very much the helicopter Ansat and it is expected to become the basic training model in the Air Force.

— **What are plans for cooperation in designing and manufacturing helicopters?**

— It is impossible to talk about modern production without global cooperation. We should cooperate with those countries and regions where our technology functions and is in demand. We will cooperate actively with India and China. For instance, we are working on the idea of building a heavy helicopter. We also plan to offer a number of projects for investments in some Arab countries who take an interest in Russian helicopters. Strategic alliances in designing technology with other world producers are possible. We are open for cooperation.

— **Do you expect new personnel coming into the industry?**

— Very much so! In fact, we need to raise in the country a new generation of engineers, designers, technologists, production managers who would be able to create samples of new world class technology and make possible long term sales and efficient servicing.

We are not idle but are determined to solve this task. We maintain relationships with higher education establishments with the view of helicopter and engine construction. Our target is to have students working at our enterprises from the first year so that they live in the production process, become a part of it.

Another important element is a system of managing knowledge. The corporate university of Oboronprom has been functioning for some time now where special attention is paid to training management specialists, an exchange of skills and knowledge in existing teams.

— **Now that the Helicopters of Russia had been established is there a possibility of competition between the Kazan and Ulan-Ude helicopter plants?**

— It is out of the question. There remains a factor of competitiveness between them, but it should stay that way because this is an extra incentive to work more efficiently. Manufactured helicopters are something else. They should be unified so that the Helicopters of Russia could offer their clients the basic model of Mi-8/17 with various extra options.

— **Do you plan to increase you block of shares in Rostvertol?**

— Yes, we do, because in accordance with the strategy the Helicopters of Russia will switch to the common share. Today we have normal forms of cooperation between the Helicopters of Russia and Rostver-

tol and interaction. I am sure that the logic of business will lead to Rostvertol becoming a full participant in the group, including common shares. It is a matter of time.

— **Do you plan on reaching the world securities market?**

— By all means. This goes for the subsidiaries — the Helicopters of Russia and the UEMC. Despite the fact that the IPO procedure makes some experts smile sarcastically, it has to be realized that crises come and go but the securities market will never disappear.

The Russian industry's position in the world economy is the key issue. It is either we operate in the business dimension or we don't exist there.

— **Will re-privatization of industry branches be in the way of your plans?**

— Growth of the government share in certain segments of industry, especially in system generating branches does not contradict the logic. Show me at least one private investor who is able to invest billions and help develop engine production that could manufacture modern engines. No one will take chances.

When I was a deputy minister for industry and energy I would explain that a partnership between a private business and government means that the government acts to minimize risks of the private business down to acceptable levels. That is to the levels where business would be ready to invest its money. The government underwrites business risks in areas that it thinks are the most important and lets business initiative take chances.

A clear and apparent arrangement was formed as to what functions should be performed by the government. The government can not control production of titanium, engines, airplanes, ships and a number of other operations. But the Russian State can not do without what ensures the national security! The rest is done by the market.

— **It is common knowledge that in the past several months the subject of the engine construction has lively debates, the process of consolidation has not been quite smooth. Have the key issues been resolved?**

— Accumulation of the engine construction assets has been completed. The Presidential decree and the government directives regarding

transfer of the government held blocks of shares to Oboronprom has been finalized. The Saturn, the Ufa plant, the Perm and Samara plants are now parts of Oboronprom, which controls 83 % of the industry assets.

Now the key issue is to arrange a proper management system. The enterprises have a very impressive amount of credits, the industry sector is fraught with rather serious system problems, and as the 2008 results show it generated losses.

We are taking necessary steps to improve performance and its organization. The performance and labor productivity are several times lower than our competitors. We compete only with the world renowned companies with excellent reputation.

The steps include the program and project approach, approval of the model line, the “lean production” method, and other tools.

No new engines have been manufactured in Russia in the past 20 years except the SaM146 engine that is being produced with the cooperation of Safran. Our task, as far as the project to create an engine construction corporation is concerned, is to regenerate the engineering thinking that would be able to create new engines and to create the requisites — organizational, financial and personnel to start serial manufacturing. That is the key issue.

We realize perfectly well that there are top priority projects that are considered strategic, in particular the SaM146 engine for the jet liner Sukhoi Superjet 100. The European certification of this engine an entirely new thing, as we have never done it before, but it is a very important step to enter the world market.

Among other priorities are: a new engine for the Air Force, a new engine for the civil aviation, a new engine for a high speed helicopter. The work on these projects is under way, heads of these projects have been appointed, steps in cooperation have been outlined.

— What are the plans for relations of the Russian engine manufacturers with the Motor Sich enterprise?

— Motor Sich for us is a partner as Safran, Pratt&Whitney and others. The main thing for us is to be supplied with engines for our helicopters. We are in daily contact with the Ukrainians within the usual contract relations.

The issue of a merger of Motor Sich with the UEMC is a long one, it has been debated repeatedly. Right now there are no negotiations to buy Motor Sich. It requires a big enough financing and is a questionable issue in today's conditions. Nonetheless, we are ready to discuss various other types of cooperation.

— Do you know now who would be the producer for the fifth generation fighter engine?

— This engine can be produced only in cooperation with all the industry enterprises. Among them are Salyut, Saturn, and other plants. Technical details are now under consideration.

— What is the situation with the engine construction plants in the Samara Region?

— For me the Samara Region plants first of all mean the manned space program and the Strategic Air Force. We have a comprehensive program of operations with Roskosmos and the Defense Ministry. We are to initiate of restoring production of the NK-32 engine for the strategic bombers Tu-160. But we are not giving up the production of energy plants, since it keeps afloat the plants financially, but we will concentrate on the production of strategic products.

We will set up one organization on the basis of three plants: Motorostroitel, the Kuznetsov plant and the Samara R&D Center, keeping all their capabilities, plus the Kuznetsov brand name. We will dispose of unimportant assets, will sell extra space, we will downsize labor force. As you probably know, the local trade union and minority shareholders are not very happy. But the economy has its own rules; it is not possible to please everyone. I will not, because I have my goals approved by my superiors to set up effective business units.

The government has repeatedly helped the Samara plants by providing multimillion subsidies to these particular plants. This year, the government has again allocated some 5.2 bln rubles for the Samara Region plants. This can not go indefinitely. That is why these funds will go towards restructuring debts, cleaning up bad debts, and that will make it possible to normalize production and financial situation.

— Do you discuss the issue of restructuring production within the whole holding?

Our goal is to launch the process of specialized production. This will cut down costs drastically and optimize expenses. All those involved understand this perfectly well. This is manifested in discussions in the council for strategy and investments in the UEMC by all chiefs of the holding enterprises. Right now most of the plants have closed cycles from a foundry to final assembly. We plan to specialize in foundry operations, and create a specialized blade production unit. The mid-term plans call for producing by all plants of specialized kinds of operations but with extensive cooperation of all UEMC participants.

— **Are you sure that Russia will remain a center of the world engine construction?**

— I am positive. This is one of our goals, it is a strategic priority. There are five key world players. We should remain among them.

— **How does your work day look like?**

— I come to the office at 9.00 to 9.30, start appointments at 10. Prior to that I check documents, handle immediate questions. I end my working day from 21.00 to 24.00. Saturdays are devoted to the corporate university and to managing knowledge that is to seminars, administering, brain storming, etc.

— **What are your hobbies?**

— I like to play tennis. I train four times a week. If I didn't do it, I would not survive. I believe that sports activities are a must for a leader with a high level of stressful situations. Sports activities serve to clear your brains, reduces your blood pressure, keep you in good shape. I insist that all supervisors in our company take up some sports activity.

— **It has been almost two years since you are in charge of Oboronprom. Since you have moved from the government service into a business have you changed your habits?**

— There is a lack of time, because the volume of work is tremendous. One thing is very positive — I don't have to waste three and a half hours daily on reading documents and orders. In Oboronprom I can focus on certain points, I am in charge of my working time and make most of decisions myself.

There is another important point. In my previous position I worked out industrial strategies, worked on legal matters, rules, while now I have to directly implement those strategies. I believe that this is a proper occupation, since I can evaluate what I have done before. You can understand your own mistakes.

Of course, my ministerial background helps me a lot. I don't even see how I would work in my present capacity if it had not been for my past. The decisions I make now require interactions with very serious government officials, and mutual understanding is a half of success.

— **What alcohol drinks do you prefer? Of course, when you are not engaged in sports activities?**

— I like red wine and good Scotch. I can not say that I am an expert in wines; that would be a bold statement. But I believe that Russian vodka is second to none.

— **How do you take you rest?**

— I am a fan of trekking; I have done many trekking routes, including some in Himalayas. I like alpine skiing, diving. I decided to go in for the kinds of sports that my children like in order to advise them professionally.

— **What is your life philosophy?**

— I was very fortunate with my teacher – Georgy Petrovich Shchedrovitsky, whose photo is on my desk. He had changed my world view, provided me with a way of solving complicated issues, and helped me create the necessary theoretical tools for it. Unfortunately he is no more with us, but I believe myself to be indebted to him and do all I can to be worth his memory.

I am used to working in situations when it is not clear what to do when everything around you is collapsing. If you manage to accomplish something well done and reasonable out of a chaos, this makes you happy. The engine construction is just this kind of a problem. Besides, I have always been and still am a team player.

On the other hand, I would like to see the place where my children live well organized. If it had not been for my desire to leave them a reasonably organized life I would have taken up some other occupation.

The image of “terminators” from Oboronprom is somebody’s sick imagination

“Vremya” (Samara)

September 7, 2009

The process of consolidating assets that will become a part of the United Engine Manufacturing Corporation has slowed down. The Samara cluster of enterprises — Motorostroitel, the Kuznetsov enterprise and the Samara R&D machine engineering center have been picked up for a special role: designing a manned space program and servicing the needs of the Strategic Air Force. Andrei Reus, the Director General of Oboronprom (the United Industrial Corporation) tells about the situation at the UEMC Samara plants and the coming changes.

Getting on with competition

— Under the Presidential Decree signed on April 16, 2008, Oboronprom is to consolidate the control block of shares of the enterprises that would make the United Engine Manufacturing Corporation. What will the UEMC look like in the long run? Where is the holding company now?

— Right now the process of consolidating the engine construction enterprises is practically over. Oboronprom controls now 83 % of the assets of the whole industry; the remaining 17 % belong to the Moscow enterprise Salyut. Oboronprom has received government held shares of the Saturn plant and other allied enterprises, of the Ufa engine construction enterprise, and enterprises belonging to the Samara and Perm clusters. That is we have carried out the main points of the Presidential Decree and the government directives.

On the other hand, the Presidential decree means not only putting together assets but a whole set of corporate procedures to bring companies to normal functioning. The main “headache” is to set a clear management system at plants. After all, any corporation works as its management system does. We want to create a management system that is able to function in modern conditions, while many enterprises that have become a part of the UEMC are not fit for it.

We are taking necessary measures to raise performance such as: we rollout the “leen production” system, improve quality measures, start specializing production. These are the priority steps because our labor efficiency and productivity are several times lower than those of our competitors. We have to compete with the worlds’ best known companies.

— **What role will the Samara plants play?**

— The Samara plants have their own function, and a specific one. The first is the manned space program and the Strategic Air Force. Everyone feels strongly when I talk about Samara and do not mention the Gazprom energy deals. But this function, the so called civil production, remains unchanged and grows in volume.

Likewise in the 1990s

— **Are these strategic plans backed up by real new plans or the Samara plants are doomed to repairs of old engines?**

— This is a wrong idea. First, the task is to restore production of the NK-32 engine of the original type. We are to submit to the Defense Ministry a feasibility study of fulfilling this project in 2013. There has not been a single new engine built in Samara for the Strategic Air Force since the early 90s. All work was just repairs. We are rectifying the situation now.

Second, there is a goal to restore production of the NK-33 engine. Next September we plan to sign a contract with the Samara R&D Center to finance R&D operations for the NK-33. We estimate that the total sum of R&D operations will be some 700 mln rubles. It is possible that some credits will be involved. There is nothing special about it, the engine is popular and it is in demand. The project is expected to be profitable.

Oboronprom had set a clear and rational program that outlines real tasks and offers the way to do it. No one has done it before.

— **What other measures to save the Samara plants do you plan?**

— I do not like the word “to save.” I am not in the saving business and do not work for The Emergencies Ministry. I am sure that we need to consolidate enterprises to make them work efficiently. Such a program has

been developed and I think it is realistic. There should be a certain system of production and management processes at the Samara enterprises to meet the tasks and goals, and we organize it correspondingly.

— Why do you think that the Samara plants can not exist as separate business units?

— There will be one single organization, this is a settled issue. For us the most important is to keep the skills and knowledge existing in Samara, and not to maintain bankrupt legal entities. After all, we do not create anything new, but rather recreate what was destroyed after 1991. In the Soviet times these enterprises were integrated in exactly the same way. The Kuznetsov enterprise did not have serial production, while Motorostroitel had no R&D facilities. I just do not understand this fear to change the organizational structure. By uniting the enterprises it will be much easier to bring these plants to normal functioning. We have to keep engineering, designing traditions of the R&D Centers, the serial production traditions of Motorostroitel. We destroy nothing. Designers will continue to design but within one organization, and producers will continue to produce. The existing image of “terminators” from Oboronprom is somebody’s sick imagination.

Outsiders

— Oboronprom is blamed for beheading the scientific potential since without this there can be no serial production.

— Designers’ offices, engineering schools are to me the most important components in the industry, and we will keep them, develop and care of them. This is the key issue. The case in point is the the NK-33 engine. The engine is so good that it is way ahead of the times. We shall restore it and it will be used for 40 to 50 years to come because the school of Nikolai Kuznetsov, which produced the engine did it brilliantly. The mission of our corporation is to keep skills and knowledge for the designing, creating and serial production of new products. There can be no such thing without an engineering school.

— Has there been any other options to solve the Samara plants problems?

— It has to be realized that every solution is specific and each management situation is original. On the one hand, you use standard ap-

proaches because of your experience, practice that can not be discounted. But there is also a real situation when you have to keep an R&D center, pay salaries, etc. and it can not be ignored. Any strategy has a tactical component and it is only time that tells whether a solution used in various situations by managers has been correct. There are actual appraisals of situations. For instance, no one remembers now that employees at the Kuznetsov enterprisedid not get there salaries for 7 months, the debts amounted to over 100 mln rubles and electricity at the plant was turned off for nonpayment. Now it turns out that before we came the enterprises were abundant in “gold,” everyone was happy, but then Oboronprom came and everything became awful. Let me tell you what happened: we came, paid the salaries, turned on electricity, because I personally talked with the energy grids, since I happen to know their bosses; we provided the plants with work. We have already invested over 5 bln rubles including all government funds and the funds of Oboronprom. I have never before invested as much money as in the Samara plants.

— **Why then Oboronprom has so many opponents?**

— I appointed outsiders to command positions at the plant. It happened before in other places. Everywhere you appoint an outsider local people feel very strongly about it because they feel they are no less competent. But the teams at the plants have been kept, and only several managers are new. Conceivably, some may feel uncomfortable because they are not in command. I do not rule out the possibility that we hurt somebody’s shadow business, because these things always happen around plants. When income ceases to come in, there are always the displeased. I realize that interests of some people in the region mast have been ignored, but it is impossible to take into account everybody’s interests when you have to take urgent steps. The economy has its own laws and you can not please everybody.

Operation “Resuscitation”

— **How long do you plan to take to solve the Samara plants problems?**

— We estimate that it will take two more years. We are beginning some arrangements now that need regular work. A technological re-equip-

ment is in order. We will allocate some 150 mln rubles in 2009 to 2010. It is not much but it is just the beginning. For today the state of the plant with equipment manufactured before the 1970s it is vital.

— **How do you rate the situation at the plants?**

— The situation is normal. What goes on is comprehensible. Everybody knows that there are certain problems. I realize that downsizing always hurts. But how can you be profitable if performance in Samara is three times less than at the holding company plants in Rybinsk, Ufa and Perm? Let alone foreign competitors. The situation in Samara now is somewhat: improving extra orders by Roskosmos and Gazprom and cutting down the number of jobs helped. The crisis is not the point. It has to be realized that such a thing exists as a level of production profitability. If the output is below this level than the work force has to be optimized. We can not continue to generate losses and then go to the government and ask for yet another money transfer. Not a single enterprise anywhere has had so much money given to it as the Samara plants. I am not saying that the amount of funds paid to the Samara plants is sufficient. The Samara plants were neglected for a long time. I don't know where all these people who criticize us now were in the past. But in order to say that this anti crisis program is no good, the solutions are not adequate and let us do something else, you have to offer something else. But there are no other solutions. Besides, when changes happen it takes time and money. The Samara plants have neither. We have to take up one program and complete it. Moreover, this program is coming to fruition. We have a clear program with Roskosmos and the Defense Ministry that is being fulfilled. We have begun repaying debts to Gazprom and that is noteworthy. It was only last week that the plants' blocked bank accounts have been released. These bank accounts had been blocked for five years for repeated tax and other compulsory non payments, although our opponents kept saying that everything at the plants have great.

— **Recalty a government decree was singed to extra capitalize Motorostroitel by 1,461 bln rubles. When do you plan to carry an additional issue?**

— I think we will settle all corporate issues so that we will have the funds by early October.

— What does another big share holder – Kaskol think about additional issue? Do they plan to buy out the issue in proportion to its share or are they ready for the assets erosion?

— We are negotiating with Kaskol now. It is not an easy decision for them: they have either to settle for the assets erosion, or spend money to buy out shares, or to block the decision to issue extra shares. But I think we will find a solution and settle the problem. We will carry out the extra issue, and the plant will have the money, there is no doubt about it. We are in a strong position for negotiating: if you don't want to water down assets then pay real money. It may sound tough, but this is a real life situation. If I am a co-owner of the plant and the plant is in a severe trouble I should do something to alleviate the trouble. The government subsidy is real money. The government invests its money into its plant and it wants other shareholders to do the same or to reduce the size of their block of shares.

— Last April, the intergovernmental committee for the support of strategic enterprises at the Organization of Industrial Corporations at the Finance Ministry approved allocating 3.5 bln rubles in government guarantees to Motorostroitel and the Kuznetsov plants for bank credits of 5 bln rubles. What do you need the money for?

— For re equipping the technology, for restructuring. To maintain the financial situation under control and take steps to expand production in all directions.

— The top management of the enterprises also planned to restructure the debts to the regional and the city budgets. Do you know how the authorities respond? Are there plans to restructure debts?

— The authorities respond positively and understand that we are doing our best to stabilize the situation. That is why I hope that they will cover their part of the way. After all, the reconstruction is going on in the situation when we begin to pay current taxes. We are ready to get rid of redundant assets. If they are salable now they have to be sold and the money used to plug “financial holes.” For instance I sold a vacation center and several hectares of unused land and bought some equipment, etc.

— **Are there any salary arrears? What is the amount?**

— There are no salary debts now.

New horizons

— **Gazprom has repeatedly complained about a poor quality of products manufactured at the Samara plants. Besides, over the past several years the Samara plants have accumulated big liabilities before their clients. Can the Samara plants expect new contracts from Gazprom in this uneasy situation? How are the relations with Gazprom?**

— We are gradually repaying our debts and try to build relations anew. New contracts are expected. For instance, a decision has been made to use the NK-36ST at the compressor station Vorkutinskaya at the Bovanenkovo-Ukhta pipeline. This is the order for nine engines and one in reserve. The contract is expected soon. This will be the first order for engines the plant gets in several years. Add to it five engines for the Novogryazovetskaya station. Gazprom is witnessing the changing situation at the Samara plants. One of the Gazprom demands is to fully repay are debts accrued in 2005 to 2006.

— **Any plans to expand work for space programs?**

— Yes, beginning the next year. We will increase the number of engines produced for the Progress Samara R&D machine engineering Center. I don't want to quote precise figures.

— **The deal to buy and sell 25% of the shares in the Metallist Samara was frozen. What were the reasons? What other actions will Oboronprom undertake, i.e would the deal be renewed? If so, when, and would the details be changed, the price? Are there any claims against the current owners of the Metallist-Samara?**

— I wouldn't want to discuss the issues of corporate purchases and sales. The Metallist is a very attractive enterprise, we have worked with it in the past, are working with it now and will work in the future. We have now a block of shares and we are in a position to influence their decisions. There is nothing unusual in us not having a controlling block of shares. The same is true for all other assets in the UEMC. When the financial situation in the country and the industry becomes stable we will go back to this subject.

We should predict the market and not catch up with it

Aviaport.ru

January 28, 2010

Early in 2009 Oboronprom established the United Engine Manufacturing Corporation (the UEMC) and began to prepare the holding The Helicopters of Russia for IPO. Andrei Reus, the Director General told AviaPort what projects were top priority for this engine and helicopter manufacturer, how relationships among the plants were structured inside the UEMC, and how Oboronprom planned to work with its foreign partners.

— What are the preliminary results of Oboronprom, the Helicopters of Russia, and the UEMC in 2009?

— The total earnings of the Oboronprom plants in 2009 were 131.5 to 132 bln rubles, this is comparable with the earnings of 101.5 bln rubles in 2008. The group shows a steady growth of earnings. The Helicopters of Russia's earnings reached some 60 bln rubles, increased twofold 40 % higher which is than in 2008. The profits of the companies grew twice and reached 4.5 bln rubles.

The results of the UEMC plants are more temperate compared with helicopter manufacturers: in fact the holding was only set up in 2009. Nonetheless, the earnings grew by 20 % to 72 bln rubles.

— The UEMC had negative net profits in 2008. Will 2009 be also in the red?

— Yes. But we have managed to cut our losses by about 60 %. More precise figures will be available sometime by March, the time of completion of annual financial statements. A number of contracts were signed right before the New Year that will impact the results of the year.

Current debts are inevitable as production cycles are long enough, while advance payments do not exceed 25 % of the total.

The so called toxic debts are a special problem; the enterprises inherited these debts before they became parts of Oboronprom when fulfilling their production programs. Thanks to the financial assistance of the Russian Federation budget in 2009 we have eliminated these debts. By increasing Oboronprom's capital the enterprises manufac-

turing engines and helicopters have received 16 bln rubles. Besides, Oboronprom plans to place a bond loan.

— **When do you expect to place a loan and in what amount?**

— The decision about the terms of placing should be made in the first quarter of 2010. The loan will be some 21 bln rubles, and its sponsor may be the VTB-Capital Bank. A normal working process with the Finance Ministry is underway. The chief purpose of the loan is to re-finance debts of the corporation to Russian banks that resulted in consolidating the engine manufacturing industry, and accrued liabilities to purchase non governmental shares of plants.

— **Do you plan a future IPO?**

— Access to capital markets is a strategic goal for us to attract means for development. We are thinking now of an IPO for the Helicopters of Russia in 2012. I would not venture to name a date for the engine manufacturing industry, but we are working on it.

— **What capitalization of the Helicopters of Russia could be by 2012?**

— It is hard to evaluate it right now. The main thing now is to maintain investments. The government helped plug the holes in finances but it is up to us to create a modern efficient production so that its shares could be offered to private investors.

— **During a meeting devoted to engine manufacturing in St. Petersburg in August 2007 then President Vladimir Putin ordered to set up four holdings that could then be united in one company. The UEMC has already passed this stage. Is this good or bad?**

— It is definitely a plus. We are forming new production centers in the UEMC, we use a common policy in our relations with clients. As a result, the unnecessary competition is ending. The same project to build the engine MS-21 involves the Motor plant, the R&D Center Aviadvigatel, the Ufa engine manufacturing plant, the Perm engine plant, the Samara plants. Before joining the holding company the Saturn plant refused to work on the project, but now it is an active participant.

Had we gone along the way of setting up intermediate stage for creating several holding companies, we would have never agreed to pro-

duce just one engine. Four holdings mean model lines that could never be brought down to a single denominator. Let alone the government support! Just fancy what would go on in a fight for government support funds.

— **How many helicopters are planned to be manufactured?**

— The Helicopters of Russia have supplied some 180 helicopters, 70 % have been exported. On the whole a little bit less than planned. The crisis has nothing to do with it. I keep telling top managers of the plants: “Start the production cycles, do not wait for firm orders! Start production. Take chances!” The helicopter market keeps growing despite the crisis; we should be able to predict the market, not catch up with it. As a result of hard work for the past two months the helicopter manufacturing holding company has now a backlog of orders for two years. On the one hand, this is an unmitigated success of our technology; on the other hand, it is a great responsibility, since we can not slow down the pace and have to respond rapidly to market changes.

— **Have your products gone up in price?**

— Yes, they have. This goes mostly for helicopters, which is natural, because the Russian technology was undervalued in the past. The main factor in the price growth is suppliers of sets and stock. We will have to work with them in 2010. We have developed a number of proposals as to how efficiently work with suppliers. We are setting up centralized organizations that should be able to drive the prices down due to increases in volumes purchased. Long term contracts are expected to be signed. For instance, a five year contract with the Urals Optical Instruments Plant.

The conditions are not very stable in the foundry and gear box business: the production facilities do not cope with orders, while production growth rates are quite high, and we run a chance to stop the growth, unless we solve the issue with the foundry and gear box production. The Perm gear box plant Reduktor-PM was transferred to The Helicopters of Russia. On the one hand, transmission production is a part of the helicopter production throughout the world; on the other hand, this area requires special attention. We are working

on a project to establish a modern facility for gear box production on the basis of the Reduktor-PM plant. A new foundry plant is under construction to meet the needs of the holding company. We do not limit ourselves to the Russian suppliers of sets and stock; we aim at contacts with foreign supplies manufacturers.

I recommend strongly my colleagues to learn English so they could communicate with any company in the world. I for one try to work without an interpreter and expect the same from my subordinates.

— **Do you expect an increase in earnings in 2010?**

— A growth of some 30% is certain, although the uneasy financial situation makes it somewhat difficult. The big problems in the engine manufacturing industry are too many credits and servicing debts. The government has provided serious assistance to the industry, the acute debt issue has been resolved, but it is not removed completely.

The debt burden on the Saturn company is great. We are in the process of consolidating some production operations vital for the engine manufacturing at that plant, but the financial state is rather heavy. I plan to work on the issue on a daily basis in the first quarter of 2010. The Chernyshev plant is also in a financial quandary, and we are working on it now.

— **Regarding the tender for an engine for the Fighter PAK FA, when do you expect to know the date determined by the military?**

— The delay was due to the fact that there were two possible manufacturers: the UEMC and Salyut. We are now in agreement with Yury Yeliseyev (the Director General of the Salyut plant) to cooperate and for the UEMC to be in charge of the engine for the PAK FA. The Defense Ministry is supposed to make a decision on the issue in 2010. Anyway we have begun to work on the project.

— **What part of the engine will the Salyut plant be responsible for?**

— I would not like to discuss this prior to the contract signing.

— **The holding that is being set up by the Salyut plant, is it going to be integrated into the UEMC?**

— There are no specific plans at present. The Salyut enterprise is working to implement the Presidential decree to set up a holding com-

pany of its own. Its share in the industry assets is 17%, while the UEMC share is 83%. Naturally, there are some competing factors that I find not very productive. I think that the PAK FA engine brings us closer in cooperation that may become over time a reason for integrating. I believe that in the future there will be a common organization in the engine manufacturing business. This would be logical from the standpoint of production, financing and competition in the world markets. But the decision is to be made by the government anyway.

— **Right now the helicopter and engine manufacturing earnings area is accounted for military orders, mostly foreign. Is there a trend to increase the share of civil production?**

— The civil helicopter production grows. Three or four years ago the defense orders made some 90%, now the figures for the civil production are over 30%.

The helicopter servicing grows actively. The civil aviation manufacturing is keenly interested in this activity. As soon as there appears a servicing business of the Helicopters of Russia in some region, the local market becomes agitated. When we certified the Ka-32A11VS according to the EASA standards, interest in this helicopter grew considerably. The Ka-226T helicopter that is being readied for the Indian tender is very popular in the civil market. We are working now on the improved version of the Mi-34 (the Mi-34S2 Sapsan with a gas turbine engine Arrius-2F), and on the Mi-38, Ka-62.

We also plan a thorough improvement of the Mi8. This model will stay the same for the plants in Kazan and Ulan-Ude. This is our fundamental position. If we offer our client a standard product, this should be a basic model at a reasonable cost. I am sure that the Mi-8 will keep its share in the world market for a long time to come because the technology functions ideally.

As for the engine manufacturing, it is the industrial energy production that provides for the industry growth. The UEMC operates within the framework of the government program to improve energy efficiency in heat supplies. Pilot projects in cogenerating will be started in 2010 in the Yaroslavl Region, Bashkortostan, and other regions. Orders from Gazprom and oil companies grow. By the end of December a project will be approved to manufacture 110 MW turbines. In two or three

years, the UEMC should be able to manufacture 5 turbines of this capacity per year. Naturally, the production of engines for civil aviation remains important, especially of the SaM146 engines.

— You presented the strategy of the UEMC at the international exhibition MAKS-2009, where you noted that the share of civil aviation engines was 36 % in 2008, in 2015 it would go down to 18 %, while by 2020 it would grow to 30 %. Is your forecast accurate?

— Our plans for the civil aviation engine production are tied to the Aircraft Manufacturing Corporation. Things change in the aircraft and united engine construction rapidly; we have to take into account a time factor. Besides, growths of helicopter engine production and of energy plants are expected.

— Some 13 bln rubles were allocated for additional capitalization of the Saturn Company, the Chernyshev plant, the Samara plants, the Klimov Company by the RF budget, and credit lines were opened by the VTB Bank. Will you ask the government for extra financing to support your producers?

— The government provides a constant support to the industry both through special programs and specific assistance. This assistance will be maintained in 2010 but in a different way. Today it is important to support plants by way of subsidizing interest rates because the interest rate of 15 % for the machine engineering plants is unaffordable.

At the same time we are charged with strict requirements to cut down our losses. Oboronprom is fulfilling the centralized program for “lean production,” that should reduce in-process items by two times and raise labor productivity considerably. The Samara plants fulfilled the 2009 production plan: the space and energy products are doing fine. In 2010, we will merge the three plants into one enterprise, and extra facilities will be utilized. I believe that the crisis situation for the Samara plants is over, and they are operating now at a normal pace. Of course, labor productivity at these plants remains lower than in the industry as a whole, but positive shifts in production and financing are evident. We expect that in 2010 we will break even.

Right now we are busy optimizing management of the Perm Region enterprises, and improving quality of the PS-90A engine, which is second in earnings after the energy engine production at the Perm PMZ

plant. At the end of last December the Aviadvigatel plant certified the improved version of the PS-90A2 engine at the government aviation committee.

The Klimov plant and the UEMP will be in the black in 2009. At the end of December the UEMC project commission approved the Klimov project to build a new R&D facility and vacate space in downtown St. Petersburg. The project is realistic and financially sound. The city authorities provide great support.

— **Apart from selling the space right in the city center how does the Klimov plant plans to attract funds to build a new facility?**

— Borrow them.

— **Some time ago the Klimov plant strategy was based on manufacturing helicopter engines, which provide most of its earnings. Now that helicopter engines will be at the UEMP, how will the Klimov plant fill the void?**

— To make it possible for the Klimov plant to function gainfully, we are building a modern center, an R&D center. The Klimov plant becomes the basic R&D facility for continuous operations to support an up-to-date technical level of the existing helicopter engines and their serial production. The Klimov plant will also be responsible for creating breakthrough projects, which are new generation helicopter engines. Supporting a lifetime cycle of a product always provides a stable and profitable earning source. Besides, the federal targeted program allocates considerable amounts of money to fulfill our projects. That is why I am certain of the Klimov future.

It is important to have a serial production of helicopter engines at the Ufa plant, because you can never feel safe without a serial production of your own.

In the meantime, we will continue to actively cooperate with foreign companies like the Turbomeca Company on the joint project for the Ka-226T helicopter engine and possibly for, Ka-62. There is a possibility of a joint venture with our French partners to coordinate work along these lines.

— **How do you rate a suggestion of Vyacheslav Boguslayev, the chief of Motor Sich to set up a joint company to manage the Ufa project?**

— I do not understand what a management company should be doing with Motor Sich. Jointly manage the UEMC assets? Why should the Ukrainian partners want it? A management company should have an object to manage. This could be some big project. Yes, Motor Sich has made a number of proposals for a joint production of helicopter engines, but our analysis shows that these proposals run counter to the UEMC’s own plans. Therefore, proper contract relations with Motor Sich are good enough for us currently.

— What projects for “Development of Civil Aviation in 2011–2020” will be financed?

— The Federal Targeted Program “Development of Civil Aviation” is to be the key one beginning in 2011. It details our priority products, such as the Mi-38, Ka-62, a high speed helicopter and an engine for it. In fact, the federal budget ensures our capabilities and new efforts. However, this does not limit our efforts to search for other sources of financing. We will offer strategic partnership along these lines to companies in India, China, and other countries.

— How much will developing an engine for the MS-21 cost?

— We estimate the cost at 35 bln rubles.

— As far as the MS-21 project is concerned, the UEMC president Alexei Fedorov said that a little over the half will be financed by the RF budget, i.e. 70 bln rubles of the total cost of the program of 150 bln rubles, according to the situation in July 2008. The rest of the amount would come from borrowed funds. Will you attract borrowed funds to develop the engine?

— So far we do the work on the government money. Naturally, when we reach the serial production we will have to get credits based on contracts and market predictions.

Unfortunately, the industry has not made any progress for a long time. If we do not get the skills and capabilities to create new technology we will not be able to compete but to degenerate. That is why one of the engines for the MS-21 will be developed by the UEMC. For us the situation when an aircraft engine will be developed by two companies (a tender for the first engine was won by Pratt&Whitney) is the most welcome. This is a real competition that will give us an incentive for active and high quality work.

— **Is the PD-14 engine comprehensible? The design was shelved?**

— It is quite comprehensible. There is a number of fundamentally new ideas in the so called risk areas in new engineering, new materials that require intricate and precise work.

We attract young people to work on this project — young able designers, engineers, technologists. One of the biggest problems is that it is not possible to train if they have not been involved personally. I am certain that we will be able to restore skills and knowledge through the independent development of engines in the country.

— **Has the top management in Pratt&Whitney discussed with you what part of their engine for the MS-21 could be done by the Aviadvigatel R&D Center?**

— Yes, we discuss these points, our experts meet.

Cooperating with Pratt&Whitney on this project will mean that in the case of their engine the UEMC will be a subcontractor in some units and systems, while in the case of our engine we will use the American side. This kind of cooperation is quite welcome to us.

— **When do you expect the engine certification?**

— Obviously, the development and certification of the engine are linked to the development of the airplane itself. The first planes are expected to appear in 2015–2016. So all issues related to the engine should be solved by the end of 2014. The engine certification is an extremely complicated work that is not fully tuned up yet. While the process of certification of the SaM146 engine used a lot from what was available at that time, this time the work is done from the scratch.

— **Will you continue to consolidate assets of the Perm Region engine producing plants?**

— Yes, we will as long as there is a process of merger of the Perm engine construction plant with a number of enterprises connected with it in the technological process. We have a plan for creating a common structure of the Perm engine plant and the Aviadvigatel R&D Center that was coordinated with our partners from Pratt&Whitney and should keep a 25 % interest in the new vehicle. However, I see no need right now to speed up the merger process.

— **When does Oboronprom plan to sign a license agreement with AugustaWestland to set up an assembly line of Italian helicopters in Russia?**

— We still have some issues that we will settle this quarter. I have no doubts that we will build a plant to produce the AW139.

— **Have you considered producing the AW109 model in Russia?**

— The AW109 has a growing market, but the Helicopters of Russia have the Ka-226T and the Ansat in this particular niche. We have agreed on possible options, and the AW139 will get its market share.

— **Oboronprom signed a cooperation agreement with the Eurocopter, the agreement makes a provision for manufacturing units for the Eurocopter, a development of a heavy helicopter NTN and a light helicopter of up to 2.5 tons. Is this agreement adhered to?**

— There was a protocol of intentions signed with the Eurocopter, but that was it. I do not see any desire on the part of the Eurocopter to share knowledge and skills. They decided to build a heavy helicopter on their own. They offered to do the assembly of technology in Russia, but I see no need to do it. Nonetheless, I do not rule out the possibility of a joint project. The Helicopters of Russia are interested.



The Supplement

14 principles of “economy production” (Toyota Production System) (1980)

1. Make management decisions keeping in mind long term prospects even if this harms short term financial targets.
2. A continuous flow process contributes to detecting problems.
3. Use a “pull” system to avoid overproduction. Organization of production requires that a client gets what he wants at the right time and in the right quantity.
4. Level out the workload. In order to create proper lean production and reach improvement of quality of servicing it is necessary to level out the production schedule by not necessarily following the sequence of supply orders.
5. Stop the production process if the quality requires.
6. Standard tasks and delegating authority to fellow colleagues are the basis of continued improvement.
7. Use a visual control so that not a single problem could be undetected.
8. Use only reliable and tested technology.
9. Teach leaders who know their business in detail, believe in the company philosophy and are able to teach others.
10. Teach outstanding people and form teams believing in the corporate philosophy.
11. Respect your partners and suppliers, set before them difficult goals and help them to improve themselves.
12. If you want to understand a particular situation look at it by your own eyes.
13. Don't rush to make a decision, look at all options.
14. Make your company learning from a constant analyzing and continued improvement.

14 principles of quality management of Edwards Deming (1950)

1. Create consistence of purpose toward improvement of the product and service so as to become competitive and provide jobs.
2. Adopt the new philosophy. We are in a new economic age. We no longer need to live with commonly accepted levels of delay, mistake, defective material and defective workmanship.
3. Stop the dependence on mass inspection; require, instead, statistical evidence that quality is built in.
4. Improve the quality of incoming materials. End the practice of awarding business on the basis of price alone. Instead, depend on meaningful measures of quality, along with price.
5. Find the problems; constantly improve the system of production and service. There should be continual reduction of waste and continual improvement of quality in every activity so as to yield a continual rise in productivity and a decrease in costs.
6. Institute modern methods of training and education for all. A modern method of on-the-job training use control charts to determine whether a worker has been properly trained and is able to perform the job correctly. Statistical methods must be used to discover when training is complete.
7. Institute modern methods of supervision. The emphasis of production supervisors must be to help people to do a better job. Improvement of quality will automatically improve productivity. Management must prepare to take immediate action on response from supervisors concerning problems such as inherited defects, lack of maintenance of machines, poor tools or fuzzy operational definitions.
8. Fear is a barrier to improvement so drive out fear by encouraging effective two-way communication and other mechanisms that will enable everybody to be part of change and to belong to it. Fear can often be found at all levels in an organization: fear of change, fear of the fact that it may be necessary to learn a better way of working and fear that their positions might be usurped frequently affect middle and high-

her management, whilst on the shop-floor, workers can also fear the effects of change on their jobs.

9. Break down barriers between departments and staff areas. People in different areas such as research, design, sales, administration and production must work in teams to tackle problems that may be encountered with products or service.
10. Eliminate the use of slogans, posters and exhortations for the workforce, demanding zero defects and new levels of productivity without providing methods. Such exhortations only create adversarial relationships.
11. Eliminate work standards that prescribe numerical quotas for workforce and numerical goals for people in management. Substitute aids and helpful leadership.
12. Remove the barriers that rob hourly workers, and people in management, of their right to pride of workmanship. This implies, abolition of the annual merit rating (appraisal of performance) and of management by objectives.
13. Institute a vigorous program of education, and encourage self-improvement for everyone. What an organization needs is not just good people; it needs people that are improving with education.
14. Top management's permanent commitment to ever-improving quality and productivity must be clearly defined and a management structure created that will continuously take action to follow the preceding 13 points.

14 principles of administrating by Henri Fayol (1916)

Henri Fayol (1841–1925) has more rights than anybody else to be called the founding father of the modern management. He began his career as a mining engineer in a French industrial company. As a director of the company he turned the company from almost a bankrupt company into a highly profitable enterprise. In 1916, when he was 75, Fayol wrote the book “Administration Industrielle et Generale” (“General and industrial management”) which summed up his 50 year long experience.

The basic factors of activity

1. Technical: manufacturing a product.
2. Commercial: buying products, sale and exchange of ready made products.
3. Financial: obtaining and use of capital.
4. Providing safety of labor and security of property.
5. Accounting
6. Management as such, where Fayole singles out *five function or types of tasks set out by a manager*.
 - 1) **planning**. Setting up goals, search for ways to reach them and determining directions for enterprise to move ;
 - 2) **organizing**. Designing and creating a structure appropriate for goals and means targeted in the course of planning;
 - 3) **instructing**. Operational control of planned steps by managers;
 - 4) **coordinating**. Coordinating and streamlining of activities of subunits and representatives of organization aimed at reaching the highest efficiency ;
 - 5) **control**. Evaluating efficiency in accordance with the developed system of rules.

14 principles were designed to explain the managers how precisely to execute these functions.

1. Division of labor. The number of duties and tasks of every single worker should be minimized through the narrowest possible specialization. Fayole believed that division of labor always leads to higher labor productivity and cuts down losses.

2. Authority. Authority and the right to make decisions, give orders and require their performance by other people are the key element in any organization. Authority may be obtained through a formal position or through non formal status.

3. Discipline. To ensure orderliness and performance control is essential. The best way to maintain discipline is to select proper leaders, clear and simple rules of rights and mutual responsibilities of supervisors and subordinates and carrying out disciplinary action only through the set rules.

4. Undivided authority. Every worker should get instructions from only one supervisor. This principle determines direction of communication inside the organization.

5. The unity of direction. All activities of the organization in one direction are under control by one man and are determined by one plan.

6. The system of seniority. Personal interests comply with the general ones. Interests of the organization are above all.

7. Recompense. A wage should merit value. Fayole realized that an amount of recompense is determined by many factors that often are related neither to a value of the person nor to intentions of a superior, but he realized that managers should strive for the greater conformity between the factors.

8. Centralization/decentralization. The idea of centralization surmises the state when all decisions are made at the highest levels of the organization while the role of the lowest levels boils down to performing the decisions. Decentralization implies the state when the right to make important decisions is delegated to the lower levels. For big organizations decentralization is vital.

9. The vertical line of authority. It is relationships of subordinating connecting the supervisor of the whole organization with every worker through the chain of supervisors of lower levels. But a too rigid chain of command reduces flexibility of the organization and its ability to respond to changes. Therefore organizations acting in the unstable media allow for violations in the vertical line of authority and participation of subordinates in the decision making process along with their superiors.

10. Arrangement. Sequence or arrangement of things, events and acting persons that ensures a place for each. This principle requires that each organization has a plan that reflects the arrangement.

11. Equality. The attitude of a superior to subordinates should be tactful, friendly and fair. No one should get advantage due to personal reasons.

12. Stability. Relationships with personnel should be based on stable principles that make actions of superiors predictable for subordinates. This provides for security in the future and the feeling of safety.

13. Initiative. Subordinates should be encouraged to submit new ideas and suggestions that could be used for the benefit of the organization.

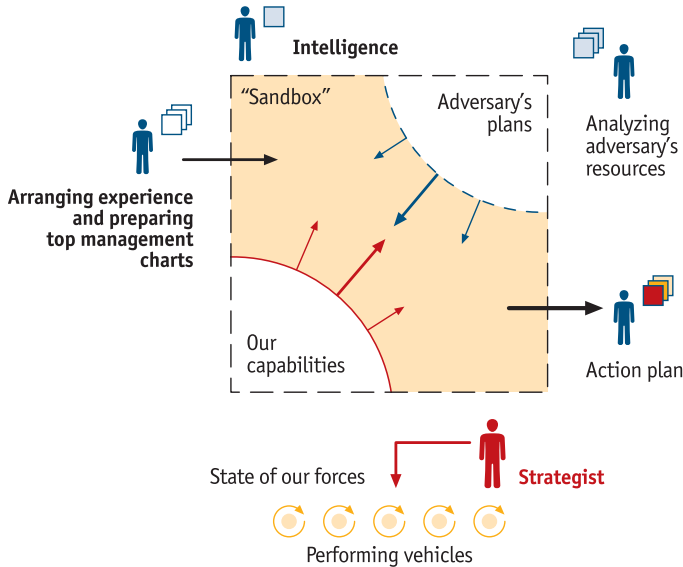
14. The corporate spirit (*espri do corps*). The task of the superiors is to grow and cultivate the sense of harmony and unity in the organization.



The tools of the system thinking and headquarters work organization

A standard of our work is given in the Moscow Methodological Circle (MMC), i.e. *The methodological reflection was realized* along with schemes research being used in decision making, controlling and upgrading system tools for team self organization in research and analysis. We solved practical problems and issues pertaining to restoring the Russian economy problems such as certain enterprises, infrastructures, various spheres of activities. We moved from old systems of managing industry branches that were outdated and obsolete to searching new ways adequate in the new historical conditions. We used schemes of *headquarters' activities*. (pic. 14).

Analytical and research work was done in the framework of a standard operational system.



Pic. 14. The scheme of headquarters analysis

- 1) Registering disruptions, difficulties, problems (an inability to fulfill a technical assignment);
- 2) A collective multi position thinking about the situation on the headquarters plan charts;
- 3) Testing tools and system approaches to understand and outline scenarios for decision making.
- 4) Utilizing the rules of structural assembly of schemes at hundreds of objects, a move to a research of management systems (on schemes), practical use of diagrams and operative plans , and finally, prorating this work for future use.

What kind of norms are we talking about?

“The gist of the system problem is that we have several different ideas of the object and in fact, these ideas are not co related with each other, each one existing in its special subject space. But at the level of practical activity and engineering we are always dealing with the objects of this practical activity and engineering that are not divided and dispersed among various agencies. Therefore, willingly or unwillingly, we have to join these things together. So

it is exactly in this situation when we have several different ideas and believe that only one whole object relates to them, then we start saying that our object is a system, meaning a banal and primarily obvious fact that it is represented in several various images, and that they should be regarded as a whole thing, but the simple mechanical connecting and uniting is impossible since these ideas go different ways "in different agencies." It is then that we begin to solve a task as to how to collect these ideas, join them and transform them in order to get a single system picture of the object." (G.P. Shchedrovitsky).

It is possible to conceive in a systematic way only an object that you plan to manage. This is a repetition that has a definite meaning. The use of this theory denies the possibility of the "natural system" existence that is such systems that have no superstructure. For instance, there can be no systems in the nature (apart from those created by the will of God), as there can not exist the invisible hand of the market. Take a close look and you will see the iron hand of a manager somewhere behind the iron curtain.

The "system" category: a guide to use

1. You need thinking in our interpretation of this work only when you *get into a situation*. You get into a situation when you are unable to act according to a certain tradition, scheme, stereotype; when your previous skills, knowledge are useless; when your partners, fellow workers, colleagues are helpless just as you are. You have to move into a search mode and assume a "pupil" position.
2. In order to conceive a situation you have to assume a certain *position*, and for that you have to separate yourself from the daily routine, from familiar and understandable ways of working that had led you into the situation. At the first glance the source of trouble is close, in the situation itself. But in order to see it and understand you have to move "without," outside. It has to be realized that a break in a work process depends not on an inability of the man and the ongoing ways of working, but on those notions, schemes and ways of thinking that a man uses.
3. In order to think properly from the technological standpoint (I can imagine how this expression jars the ear of a person who believes thinking to be the result of insight, inspiration, etc.). it is necessary to:
 - Maintain the order of the *mental discipline* and follow the system (we remind a reader one more time: those who create management systems will understand it, others don't have to worry):

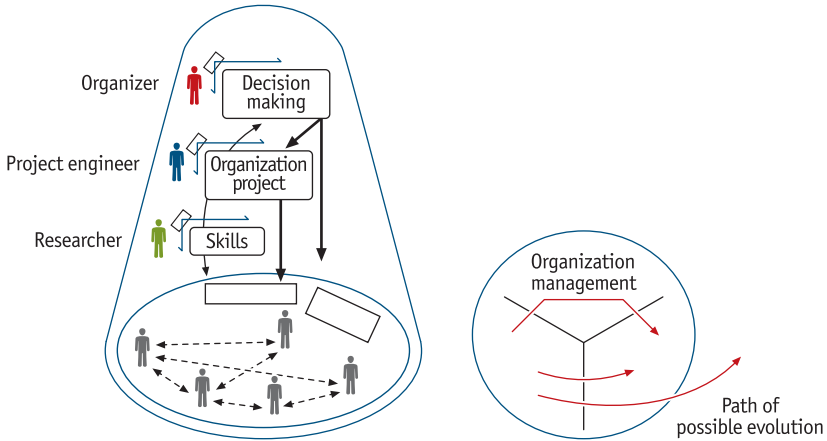
- Undertake a case study;
- Begin analyzing the case on schemes;
- Set your goals in motion along layers and places on situation schemes, stressing priorities and building “target trees.”

I would like to dwell on the functions and purposes of schemes in our work, since you will come across them many times, and let me provide a clear and apparent quote to this effect.

- *“Unlike word texts a scheme is a specific sign form that quotations enables us to build and implement a structural and systematic thinking and therefore a structural and systematic comprehension.*
- *It is exactly complex, heterogeneous and multi plan schemes (all schemes are), that made structural and systematic thinking possible.*
- *Schemes make it possible to show what is being done. Methodology instructors were the first to depict what we do in our thoughts.*
- *Work with a sign form became a part of the sign form. Traditional thinking, common as well as scientific, work with sign forms is never included into the sign form itself.*
- *This leads to a lot of surprising things, in particular new possibilities for thinking self development.*
- ***The general conclusion: structural — systematic thinking is impossible in word language.” (G. P. Shchedrovitsky)***

4. Analyzing a situation, as well as target assumption, will require defining the borders of the whole (your system). The borders should at first be drawn no further than at “the distance of an outstretched arm,” that is where you are able to look at and reach out. At the same time, you should define a process (processes) that is going on or the one you plan to start in your system, or to start a system in the process. In general, a process is a flow of any changes, but since you initiate it on purpose in the direction you choose, you have to consider it as a development process. Why should people deal with management systems? After all, destruction happens by itself when there is no management.

Formulated theses should be attached to the scheme of organizational technical system and a scheme of processes that it arranges. Below see the pictures from the well known works of G. P. Shchedrovitsky (pic.15, 16).

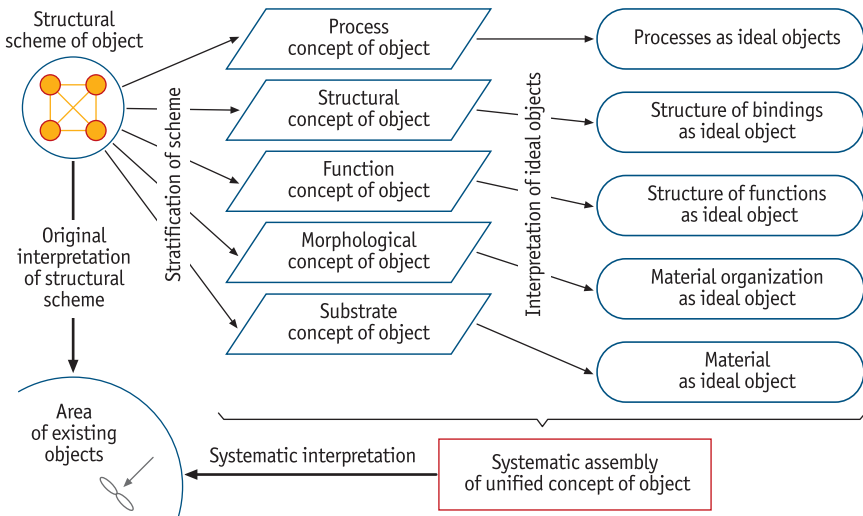


Pic. 15. Schemes from works by P.G. Shchedrovitsky

5. In any case it makes sense to define borders of a management system only to bring it into a new condition — from the past condition into the future. The latter should be represented as a project — a set of schemes in each important parameter. Try to understand the meaning of designing technology and planning techniques. But the requirement is tough: modern thinking is projective and should be presented in appropriate schemes.
6. The next step is designing structural schemes that should indicate the most significant places to ensure functioning and producing a system, and in order to continue our business, to indicate processes of reproduction and development. For this purpose, we need to take stock of what we have for an activity we plan, and to build a defective part list, that is knowledge of what we lack. Depending on a field of activity, these may be structural schemes of a product life time, basic business processes, organizational structures, structures of work on a project, etc. In any case, a system thinking approach requires to distinguish steps of intending, of transferring the idea into a construction project (material) for organizing production, testing for usefulness, durability, beauty (according to Vitruvius) and maintaining it in a working condition during its operation.
7. On the schemes binding structures there is a search for the best versions that is the best possible binding into constructions, i.e. new or-

ganizational form of a system. It determines a relationship of places and contents activity ties between them. These may be cooperative ties (logistics), communicative ties (transfer and developing skills), communication (understanding and reflection depicting by some places of the targets of other places).

8. Next, we have to determine material arrangements and decide what kind of morphology will be used for various places in the structure that we create. These may be the ones borrowed from the past that work on the existing morphology. They will be transferred into the future with new functions and that will require force (retraining, partial replacement) over the old material (the morphology of material arrangement: people, technologies, computer programs, technical gadgets).



Pic. 16. Principles of systematic thinking by G. P. Shchedrovitsky

9. Naturally, it is desirable to see the material arrangements, newly designed. In this case a result of working on the picture of the whole which we got while analyzing the situation using 5 layers (strata), we can arrive at the schemes of the object of the management system. This is how the principles of the systematic thinking we compiled in the scheme by G.P. Shchedrovitsky (pic.16).



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