modern technologies envisages the use of necessary equipment; this is another problem, such as the lack of modern equipment for the training process.

Development of information technology leads to the problem of creating viral programs and data insecurity. The high level of technology allows you to write such viral programs that the user will not see for a long time, but his data will be obtained by malicious people or the information will be changed or deleted. At a higher level, this is reflected in public services; this can be identified as a separate, serious problem.

The use of malicious programs by government agencies from different countries is called cyber weapon. Its purpose is to obtain classified information, data destruction, intelligence, etc.

So, explosive growth of information technology and related areas requires:

• training highly skilled IT specialists;

• government financing and investments;

• creating state and commercial programs for the effective development of IT technology;

• strengthening protection of intellectual property and personal data at the legislative level.

The new technologies could completely change Ukraine. The IT world can speed up the rebooting of Ukraine. And young people, who dominate in the IT industry, are more open to change than others.

IT can solve the problems that humanity is facing now. Penetrating into certain sectors of life, IT simplifies many things, makes life easier, safer and more interesting.

If we talk about food production, there are many examples of how a large amount of products are grown on a small piece of land thanks to information technology.

The second is, probably, medicine. It is not a secret for anyone that the main problem of almost all diseases is late diagnostics. Now, huge efforts are being made to develop systems for removing vital signs of the human body in real time and opportunities, analyzing them, predicting possible diseases.

The third, perhaps not the most important, is that IT makes people's lives around more interactive and interesting. Only thanks to IT we can see what is happening in Africa via a webcam, or communicate with people in another place on the planet. The day before yesterday it was impossible at all, yesterday – only by phone, expensive and not very audible, today – we can do it with the help of video. Tomorrow we will be able to go through virtual reality in any part of the world without leaving our own apartment.

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THE ORGANIZATION OF SERIAL PRODUCTION FOR LARGE-SCALE MODELS OF THE FOKKER DR. I AIRCRAFT

The Fokker Dr. I is a light maneuverable fighter designed and built by Fokker-Flugzeugwerke during the First World War. Alhough this triplane was produced in

small numbers and had many design flaws, it saw widespread service and gained worldwide fame for being the main fighter plane in which German air pilot Manfred von Richthofen, the Red Baron, won his last 20 battles. Today both individuals and museums are interested in building large numbers of its replica and reproduction.

The fighter Fokker Dr.I is a single-engine triplane of mixed design with the following specifications: Crew: 1; Length: 5.77 m; Height: 2.95 m; Empty weight: 406 kg; Weight of the loaded: 586 kg; Practical ceiling: 6095 m; Wing span: 7.20 m; Wing area: 18.70 m².

For the implementation of the technological part of its reproduction, it is necessary to use the developments related to the original design of this aircraft model as well as the experience of its manufacture, assembly, ground and flight tests; to apply standard technologies associated with the manufacture of large-scale models that were produced by leading designers, aircraft modelers and world aeromodeling clubs; to employ the appropriate means of technological equipment to perform work on the aircraft modeling

The known methods of assembling aircraft structures are characterized by methods of basing, degree of interchangeability in the assembly, rigging, accuracy and economic characteristics.

When creating a modern aircraft, preference is given to assembly methods through assembly holes, base holes, laser beams, the inner surface of the skin and the frame. In practice, several methods of basing and, correspondingly, several methods of assembly can be used to build aviation structures simultaneously. In this case, the assembly method is called combined or special, and the main basing method is the one at which the aerodynamic circumference of the aircraft structures is directly formed.

The technical specifications for the supply of assembly parts for the Fokker Dr.1 scale model is the main technological document that establishes requirements for assembly parts as the elements of assembly units. These specifications are established taking into account the scheme of structural and technological division; the chosen (developed) method of assembly; the assembly scheme; maximum production completeness of the assembly parts; availability, dimensions and areas of location of compensators and machined allowances in the assembly part designed to provide a specified accuracy of geometric parameters; the ability to assemble the Fokker Dr.1 scale model design; structural and technological characteristics and features of the assembly parts.

To perform work on the preparation of the initial data to form the working technology for assembling the Fokker Dr.1 scale model, it is necessary: 1) to choose the assembly bases and method of linking; to build the scheme of assembling and linking of considered aircraft structures; to obtain an information array of data for the preparation of working technological documentation; 2) to calculate the number of worker and specialists in the assembly area; to develop and analyze the cycle schedule; to develop a site layout and arrange the organization of workplaces; 3) to fulfill the economic part we need calculations of all the necessary indicators that characterize the technology of the assembled scale model, as well as to find the quantities that allow to form a competent business plan, strategy for the coming years and the possibility of mass production at a modern aircraft building enterprise. It is also necessary to identify the main problem areas that need to be addressed in ensuring the appropriate level of safety for modern aircraft manufacturing.

Thus, it is very important for the enterprise to observe safety rules, at least for reasons of ensuring the stability of production. Health care of the staff is of special

importance due to a widespread tendency to use foreign equipment, which has special requirements for its operation.

Serial production of large-scale models of the Fokker Dr.1aircraft as well as the possibility of its testing for aerodynamics in a wind tunnel can be carried out by Antonov State Company.

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3D PRINTING IN AVIATION

Industrial 3D printing methodology as a unique production tool is used to create narrowly focused products, for example, implants in medicine and plastic prototypes of something. In the aerospace sphere mass "printing" of aircraft engine parts from metal alloys is an important stage of this technology.

GENERAL ELECTRIC became the industry pioneer. The manufacturer of aircraft engines drew attention to the fact that the use of different alloys in the parts significantly improved their physical and technical properties and made it possible to bring aircraft performance to a fundamentally new level. The traditional method of casting does not allow to combine different materials within the same technological process, while 3D printer for metal makes it possible to make a part from a single piece of material, saving time and money. GE used 3D printed nozzles in a new engine for improving the injectors. Experimental nozzles were certified in 2016. And now the cost of orders is reported to have reached $ 22 billion. The manufacturer intends to produce 25,000 parts per year made by three-dimensional printing technology.

AIRBUS, the European leader in the field of aviation, was one of the first companies to take a responsible step in implementing 3D printing**.** It was here that the first experiments were carried out with the manufacture of exclusively 3D-printed components for aircraft, and the introduction of 3D technologies at the industrial level was welcomed. It is thanks to Airbus 3D printer in aviation is no longer a dream but a full-fledged reality. Some 3D printing elements are already used in selected Airbus models, among them A320neo and A350 XWB. The company announced the inclusion of components printed on a 3D printer into the serial production of A350 XWB aircraft capable of carrying from 266 to 280 passengers, the fuselage and wing designs of which are made of a carbon fiber reinforced polymer. As for the details for which the 3D printer was used in aviation, it is a titanium bracket built into the suspension assembly. 3D printing is designed to facilitate aircraft building by optimizing the geometry of components, the use of composite materials in manufacturing aircraft parts, lower consumption of material for additive production, which reduces costs enabling aircraft to save fuel and eliminate waste of material. In this case, a powder of chromium and cobalt is used. The computer controls the laser, which melts it in the indicated places, creating layers 20 microns thick. This method is faster than manual