

responsible for the strategy and development of the program at the highest level. COMAC – Commercial Aircraft Corporation of China will develop and produce a metal-composite fuselage, while Russia is responsible for developing and producing a composite wing. The final assembly of the liner will be accomplished in Shanghai on the basis of COMAC. The engineering center will be located in Moscow.

It is planned to manufacture a new generation of wide-body aircraft up to 15% cheaper than its main Western competitors. The letters "C" and "R" stand for China and Russia. "9" in CR929 is the largest single figure representing a long-lasting tradition in China. "2" refers to the two parties' cooperation and co-development. The total investment in these project will range from \$13 to 20 billion.

Three versions of the aircraft are planned to be manufactured, namely: shortened, basic, and extended – CR929-500/600/700. The first flight is to take place no later than in 2022. Deliveries of serial aircraft to customers will begin in 10-12 years after the launch of the project, approximately in 2026-27. The whole program is designed to be implemented by 2045.

The aircraft will be assembled with the usage of composite materials, it will have advanced aerodynamic design of wing and fuselage. Improved new generation high bypass ratio engines will be installed with the purpose to reduce fuel consumption at the same efficient power and thrust and to improve the total aircraft performance. The assembly will take place in China to lower costs.

Having renounced the use of engines manufactured by Western competitors, China has designed independently the CJ-2000 engine for the new aircraft. It could also use AI-38 engines co-developed by China and Ukrainian Ivchenko-Progress Design Bureau as a modification of 225kN Progress D-18T engine powering the An-124/An-225. Russia itself is likely to develop engines for this new aircraft.

Experts say that more than a half of global demand for wide-body passenger jets comes from the Asian-Pacific market and if Russia and China succeed in keeping up the current pace of cooperation, the designers will soon be able to test the new aircraft in the air.

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CRITERIA OF GOOD SOFTWARE ARCHITECTURE

A good software structure is as important as its proper operation. Well organized architecture is needed not only for large projects. Complexity grows much faster than the size of the program. If you do not take care of it in advance, then the moment when you stop controlling it comes quickly. Proper architecture saves a lot of effort, time and money. There is no generally accepted attitude to the term "software architecture". Nevertheless, when it comes to practice, for most developers it's clear which code is good and which is bad.. That is, in fact, you can formulate a list of quite reasonable and universal criteria:

- **Efficiency of the system.** First of all the program of course must solve the tasks and perform its functions well under different conditions. These include features such as reliability, security, performance, the ability to cope with increased load (scalability), and so on.

- **Flexibility of the system.** Any application has some amendments over the time caused by some requirements changes. The possibility of making changes quickly and easily reduces the number of problems and errors changes will cause.

- **Extensibility of the system.** The ability to add new entities and functions to the system, without violating its basic structure. At the initial stage of the system it makes sense to lay only the basic and most necessary functionality (the principle of YAGNI – you aren't gonna need it). So the architecture should allow you to easily add functionality as needed. Making changes in the future will require the least effort.

- **Testability.** The code, which is easier to test, will contain fewer errors and work more reliably.

- **Possibility of reuse.** The design of the system should allow to reuse its parts in other systems.

- **Well-structured, readable and understandable code. Support.** Usually a lot of people work at the same project – some leave, new ones come. Therefore, a good architecture should be easily understood by new developers.

Some rules should be followed to avoid creating poor architecture:

- **Rigidity.** The system is difficult to change, because any change affects many other parts of the system.

- **Friability.** When making changes, other parts of the system unexpectedly break.

- **Immobility.** The code is difficult to reuse in other application because it is immobile.

Construction of software architecture and creating its structure exactly means decomposition of the program into subsystems (functional modules, services, layers, subroutines) and organizing their interaction with each other and the outside world. A program consisting of a set of modules/subprograms has the following advantages:

- **Scalability** – the ability to expand the system and increase its performance by adding new modules.

- **Maintainability** – changing one module does not require changing other modules.

- **Module replaceability (swappability)** – the module can easily be replaced with another one.

- **Unit testing** – the module can be released from a system and tested or repaired separately from others.

- **Reusability** – the module can be reused in other programs and other environments.

- **Maintenance** – the program divided into modules is easier to understand and maintain.

We can say that partitioning of a complex problem into simple fragments, is the goal of all design methods. The term "architecture", in most cases, simply denotes the result of this division. Therefore, we can formulate the following definition: "The architecture identifies the main components of the system and how they interact. It is

also the way of creating solutions that are interpreted as fundamental and will not change in the future”.

So good and correct architecture based on these criteria can save a lot of time, money and other resources in the further development of the system, so it is very important to pay due attention to system architecture at the beginning of the project.

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ALTERNATIVE EDUCATION AT SCHOOL 42

“42” is the "answer to the Ultimate Question of Life, the Universe, and Everything" in The Hitchhiker's Guide to the Galaxy books, as well as the name of the Xavier Niel project, programming school, which is an alternative to the classical IT education. The first school was opened in 2013 in Paris and immediately attracted the attention of the whole world. Innovations of the school are the absence of teachers, lectures, a clear schedule, as well as tuition fees. Students find the necessary information by themselves, perform tasks and check each other. Also the moment of gaming is important – when the task is done, the level of student rises and new "achievements" on the profile in the system are opened.

Anyone who is from 18 to 30 years old regardless of education can come to the school. It is necessary to go through 3 stages of selection. The first step is test for logic and memory, second step is a personal meeting, and the third is a 4-week programming marathon for 14 hours in a day. In case of successful overcoming of these stages, the student receives the offer to complete a full course of study, duration of which is from 2 to 4 years.

Schools with this education system also exist in the Silicon Valley in the United States, South Africa, Moldova, Romania, Armenia and, of course, in Ukraine. In our country the school is called "Unit Factory", which is a part of the technological park "Unit City" that is located in Kiev. The factory was established in 2016 by "K.Find", the fund of V.Khmelnitsky. Nowadays more than 800 students are studying at the Kiev school. The first graduates are expected in the spring of 2018.

After completion of the course, students can obtain a specialist diploma in such growing IT areas as management of IT projects, software or network architecture, web development, mobile application development, IT security and video game development. Students will not find it difficult to find a job after leaving school, because in the process of studying they learn many technologies and programming languages, and most importantly they learn the skill of effective self-education. Two semiannual internships are also a plus for going from theory to practice.

An advantage of system, compare to ordinary university, is the opportunity to independently choose the schedule and rhythm of work. Schools work 24/7 and everyone can study when it is comfortable for him. In addition, students do not learn