

**A. U. Miatlitski**  
(*F. Skaryna GSU, Gomel*)

## **BLUEPRINT SDK ARCHITECTURE AND DESIGN**

Рассмотрены вопросы разработки BluePrint SDK.

BluePrint SDK was implemented according to «Chain of Responsibility» pattern. Library's components are separated into modules, each of them play their separate role in generating the final data. Modules are software units that require files of certain format as an input and produce files of other format as an output. Data produced by a previous step should be used as an input for the next step. Chaining these modules one after another results in the chain of responsibility.

Specifically for BluePrint SDK, it consists of three modules. First module is a program that takes image file as an input, processes it, and returns file of an image that suits for computer vision to be detected. Second module is responsible for creating 3D-model by taking AR mark that was generated by the previous module. Third module produces application file that is based on 3D-models produced by the previous module (pic. 1):



Picture 1 – BluePrint SDK’s chain of responsibility

This way, modules operate as one whole program while being absolutely separate, enabling them to be used by their own. Changes in one of the modules do not affect other modules, unless file format is changed.

This pattern allows SOLID principles to be used during development process. Every module has a designated role, which implies Single-Responsibility Principle. Functionality of components can be extended by adding new modules into the chain, or wrapping modules into other modules – Open-Closed Principle. Every module has certain formats for input and output files, and can be replaced other module that obeys to same rules – Liskov Substitution Principle. In general, specific formats of the files passed between the modules provides level of abstraction required for SOLID principles.

Each component of the SDK is tested separately by checking format and contents of each module – Unit testing. After that, the workflow is ran as a whole (without intervention between the layers) – integration testing.