

THE PHYSICAL, VIRTUAL, LOGICAL AND FUNCTIONAL CYBER-PHYSICAL PRODUCTION OBJECTS HIERARCHY

Danil Zakoldaev^{1, a)}, Anatoly Shukalov^{1, b)}, Igor Zharinov^{1, c)} and Oleg Zharinov^{2, d)}

¹Faculty of Information Security and Computer Technologies, ITMO University, 49, Kronverksky Av., Saint Petersburg, 197101, Russia

²Department of Problem-Oriented Computing Complexes, Saint Petersburg State University of Aerospace Instrumentation, 67, Bolshaya Morskaya str., Saint Petersburg, 190000, Russia

^{a)}Corresponding author: d.zakoldaev@mail.ru

^{b)}aviation78@mail.ru

^{c)}mpbva@mail.ru

^{d)}zharinov73@inbox.ru

