Building scalable distributed network systems using a modified pipeline design pattern*

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Abstract

Actor model (see [1]) and Flow-Based Programming paradigm (see [2]) are widely used for designing concurrent processes. With these fundamental concepts software engineers and architects are able to design and develop distributed network systems in which several devices and participants communicate and work simultaneously. This paper discusses these models in a context of developing applications for the "Internet of Things". The basic concepts of these models are explained, too. We develop our own framework in .NET. Our framework is based on the pipeline design pattern (see [3]) and it is used for building distributed network systems. We show the usability of the new pattern and suggest some research directions for the future.

Keywords: pipelining, flow-based programming, actor model, internet of things, developing distributed applications, device communication framework,

MSC: 68M14, 68N19, 68Q85

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* The work was supported by the TÁMOP-4.2.2.C-11/1/KONV-2012-0001 project. The project has been supported by the European Union, co-financed by the European Social Fund.