

**Express.NET - DOMAIN SPECIFIC LANGUAGE FOR DEVELOPING
MICROSERVICES**

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Submitted in partial fulfilment of the requirements for the
MSc in Advanced Software Engineering

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in collaboration with
University of Westminster, UK.**

2021

Abstract

This dissertation presents Express.NET - A domain-specific language for developing RESTful web services. During the last few years, the REST architectural style has drastically changed how web services are designed. Due to its transparent resource-oriented model, the RESTful paradigm has been incorporated into several development frameworks. These frameworks are primarily based on general-purpose programming languages. Since general-purpose programming languages support multiple paradigms, a developer must write some logic to wire up the web framework. This wire-up logic is called boilerplate code, and it does not add any value to the requirement of the developer's project. The boilerplate code required for different languages differs. Most dynamically typed languages require less boilerplate code when compared with statically typed languages. With the increased demand for quicker deliverables, developers tend to choose web frameworks for dynamic languages. The performance of these web frameworks is often not given the necessary consideration required in the design/development stage. It can lead to issues when the services move into production scale.

This is where a domain-specific language for developing RESTful services shines. The goal of domain-specific languages (DSLs) is to increase developers' productivity by abstracting low-level boilerplate code. Since the DSL can implement its compiler infrastructure, the code generation can be optimized to be on par with even the fastest web frameworks available.

Keywords: Domain-Specific Language, Language Design, Compilers, RESTful Web Services, Software Architecture, ASP.NET 5, C#, Roslyn