

Thesis Project – XSLT Engine in JavaScript

Build an XSLT engine in JavaScript good enough to replace the Chrome browser built in XSLT engine.

About XSLT

XML is a standardized, structured information format used as the foundation in everything from Word and Excel documents to Android UI definitions and data in core banking systems. XSLT is a series of instructions, itself written in XML, that tells an XSLT engine how to convert one XML file into a different kind of structured text data, typically XML, but also formats such as JSON or PDF. Web browsers contain a standardized JavaScript API that allows a web page to perform XSLT on XML. XIOS/3 uses XSLT to transform XML UI descriptions into HTML based interfaces.

Due to the lack of use in consumer applications the support in web browsers has stagnated to XSLT 1.0 while more advanced and up to date versions are standardized and used. There are also significant differences in support between different browsers making effective use difficult. The Google Chrome team would like to replace their current C++ based XSLT implementation with a JavaScript variant as soon as a quality replacement exists.

Project Goal

The goal of the project is to survey what the current supported feature set is in the XSLT implementation of all major browsers are, and look at the current cross browser set of fundamental technologies such as XML parsing and DOM tree manipulation and see if a JavaScript only implementation of comparable features can be made. The thesis should implement, if possible, a feature complete XSLT engine in JavaScript and detail how it compares to the built-in implementations in performance across these browsers.

The major components such as XML parser, XPath selection and DOM tree manipulations are already present, making the scope of the project narrow enough, and since XSLT is well established and standardized, plenty of test cases exist to ensure good test coverage and quality.

However, the current XSLT engine lacks in user friendliness and generally provide poor error messages and debug capabilities. This should be addressed in the new XSLT engine, while also writing it with extensibility and later versions of XSLT in mind, so that it can be extended to include them and private extensions in later development projects.

Extent & Qualifications

We are looking for 1 to 2 students, 30hp /each, with backgrounds in web development, familiar with JavaScript and other web technologies. The work will be done from home or the XIOS/3 office in Linköping.

About XIOS/3

XIOS/3 is a Swedish company, based in Linköping, founded with the intention to revolutionize how open source is used in web development. The XIOS/3 technology enables developers to maximize the value of web open source, facilitating unparalleled development speed, improved user experience and reduced development costs for web applications.

The technology was developed by the team behind iCloud, before iCloud was acquired by Apple. XIOS/3 was founded in 2018 and is now in its commercialization phase, with over 100-man years invested in R&D and 18 approved and issued US patents. We envision XIOS/3 as the core in every web application built in the future and we want you to help us getting closer to fulfill this vision.

Application

Please contact CEO Karl Hyltberg at karl.hyltberg@xios3.com with your application or additional questions. Admissions are ongoing, however other thesis projects might be available by request.