# Abstract


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### A Framework for Developing Cross-Browser Data Intensive Arabic Web Applications


Arabic web content is estimated to double every year. Such growth creates demand for better web applications developed using resources in the Arabic language. Moreover, Internet users use different types of Web browsers on multiple operating systems making the localization process more complex as Arabic language rendering is not persistent across browsers. Therefore, it is not unusual that the Arabic user would face a situation where the information presented is not rendered correctly according to the Arabic rules. This Problem adds a new level of complexity when the web application is connected to a database. The frequent encounter of incorrectly functioning Arabic Websites, especially those of large businesses and governments, calls for a clear and applied framework to help practitioners develop properly functioning Websites. Website internationalization has been addressed in a plethora of standards, guidelines and tutorials. However, standards may not be directly comprehensible to the practitioner. In addition, guidelines and tutorials are usually designed to address one issue requiring practitioners to integrate knowledge from different sources. Despite the availability of many standards, guidelines and tutorials for internationalization and localization of Web applications, there is no one generic coherent Arabic focused methodology that guides practitioners in making the right decisions in different areas of the web application architecture. In this thesis, a comprehensive step-by-step framework is proposed, where it integrates knowledge from different standards and technologies, and calls attention to issues that could be overlooked in designing and implementing data-intensive Arabic web applications that perform consistently across popular Web browsers. The contribution to knowledge in this study comes from collecting scattered knowledge and best practices related to internationalization, and organizing it in a step-by-step approach that can benefit the practitioner. The proposed framework ensures correct representation of static and dynamic Arabic content on different web browsers, and correct representation of Arabic content if web server encodings are different than web page encodings. It also ensures that the business logic layer does not interfere with data sent from the presentation layer, and that the data is ed into the database correctly without data loss and retrieved back again to the browser correctly.