ABSTRACT

The high demand for building E-Content in digital libraries by non-experts requires a simplified modeling process and rapid generation of digital libraries. To enable rapid generation, digital libraries should be modeled with descriptive languages. A visual modeling tool would be helpful to non-experts so they may model a digital library without knowing the theoretical foundations and the syntactical details of the descriptive language.

In this thesis, the design and implementation of a domain-specific visual DL 5S CADDTIE model is described aimed at modeling digital libraries. DL 5S CADDTIE is based on a metamodel that describes digital libraries using the DL 5S theory. The output from DL 5S CADDTIE is a digital library model that is an instance of the metamodel, expressed in the DL 5S.

DL 5S CADDTIE presents the metamodel in a structured toolbox and provides a top-down visual building environment for designers. The visual proximity of the metamodel and instance model facilitates requirements gathering and simplifies the modeling process. Furthermore, DL 5S CADDTIE maintains semantic constraints specified by the DL 5S metamodel and enforces these constraints over the instance model to ensure semantic consistency and correctness.

The work on DL 5S CADDTIE model is an important step in a large project that aims at building E-content management in digital library generation. E-content digital library generation requires the designers to describe their digital libraries using a specific description model as the first step. DL 5S CADDTIE reduces the difficulties of this step for non-expert designers.

DL 5S CADDTIE enables component “re-use” to reduce the time and efforts of designers. The results from a pilot usability test confirm the usefulness of DL 5S CADDTIE model implemented Building E-content digital libraries.