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**Generating Domain-Specific Visual Language Tools from Abstract Visual Specifications**

**Abstract**

Domain-specific visual languages support high-level modeling for a wide range of application domains. However, building tools to support such languages is very challenging. We describe a set of key conceptual requirements for such tools and our approach to addressing these requirements, a set of visual language-based metatools. These support definition of metamodels, visual notations, views, modeling behaviors, design critics, and model transformations and provide a platform to realize target visual modeling tools. Extensions support collaborative work, human-centric tool interaction, and multiplatform deployment. We illustrate application of the metatoolset on tools developed with our approach. We describe tool developer and cognitive evaluations of our platform and our exemplar tools, and summarize key future research directions.