

# From Sketches to Specs: AI-Assisted Lightweight Metamodeling for Spec- Driven Development

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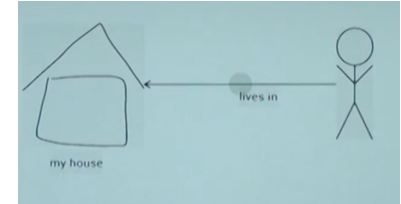
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# Motivation

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Sketching is a natural medium in early RE



However, informal sketches are hard to carry forward



A decade ago, the FlexiSketch approach showed a way out of this dilemma: free-form sketching combined with lightweight metamodeling



LLMs and SDD raise new possibilities for flexible, lightweight modeling, which we explore in this paper

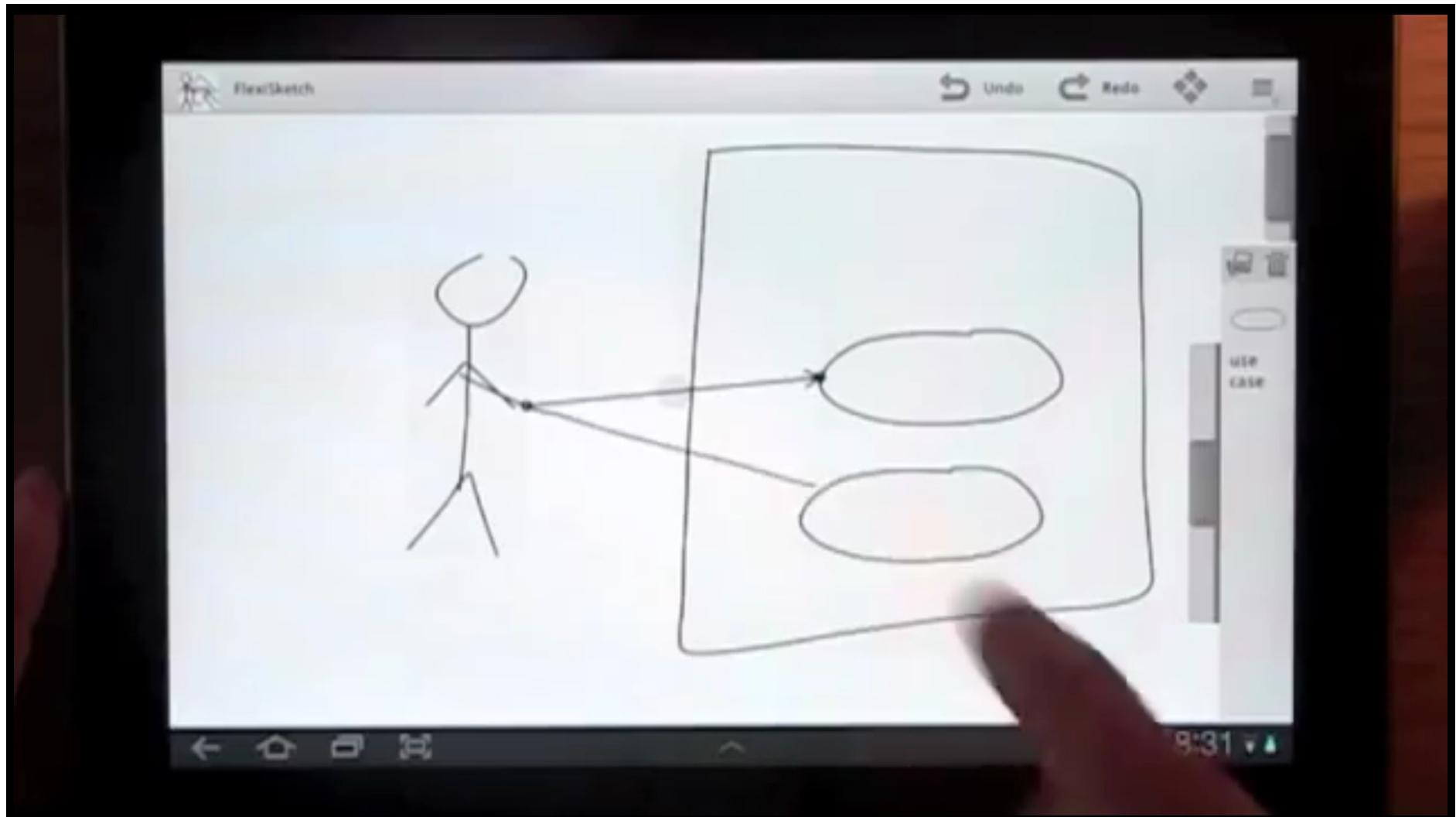


# FlexiSketch (developed 2011-2019)

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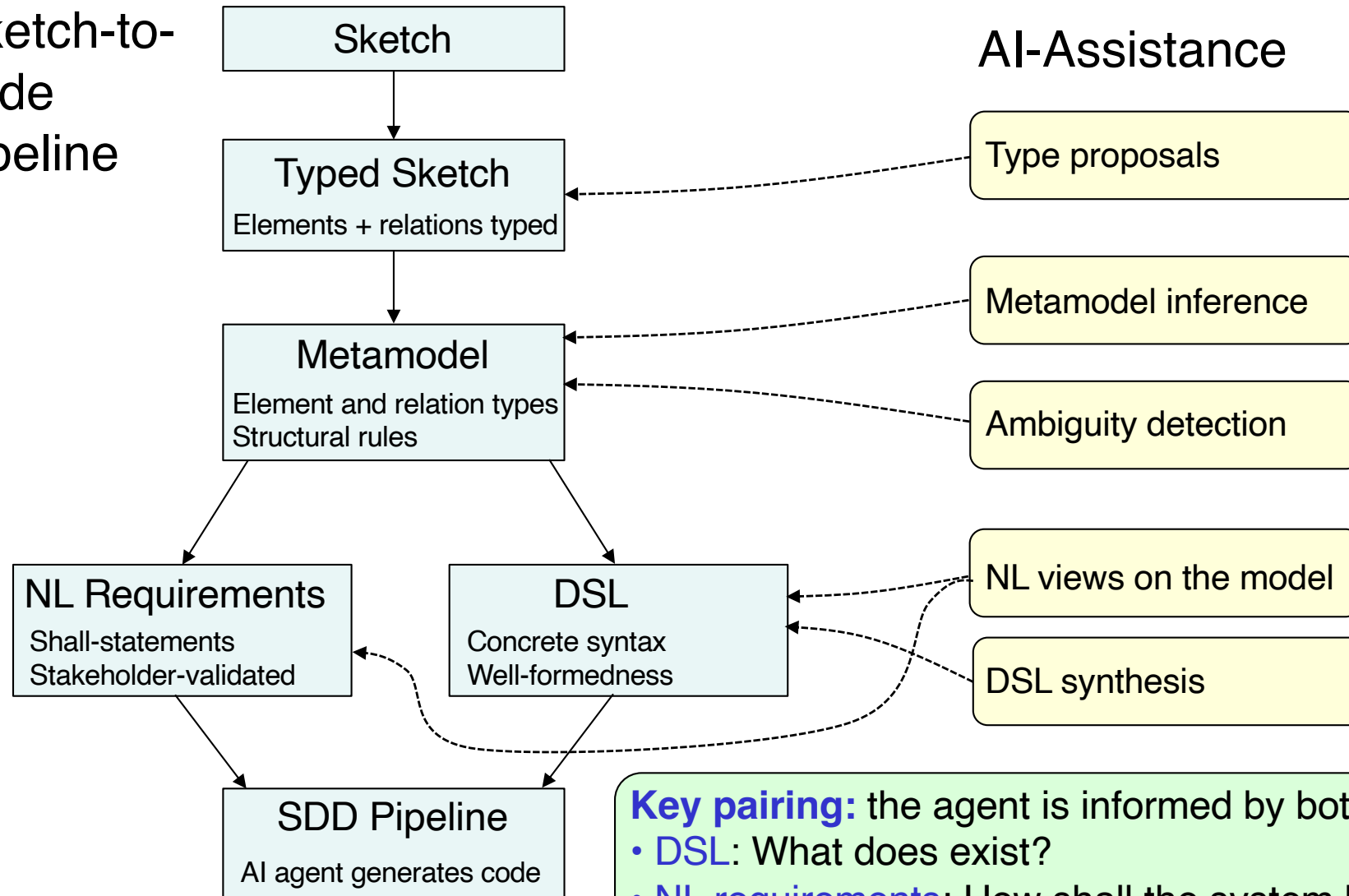
- Tablet-based, free-form sketching tool
- Allows users to define their own notations & languages on the fly
- Lightweight metamodeling by co-evolution of models and their metamodels
- Created by Dustin Wüest in his PhD research at UZH

# FlexiSketch Teaser Demo



# Revisiting FlexiSketch with AI Assistance

Sketch-to-code  
pipeline



# Design Principles

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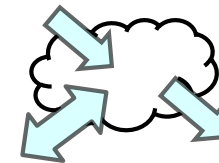
Derived **design principles** for **AI-assisted lightweight metamodeling**

- User authority over notation
- Resistance to notation homogenization
- Visible and reversible AI inferences
- Preservation of productive ambiguity
- Traceability of AI inferences to sketch origin

# Our paper in a nutshell

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**Context** Revisiting the FlexiSketch Idea  
in the age of LLMs and SDD



**Vision** AI-assisted workflow from sketches  
to code, keeping creative freedom



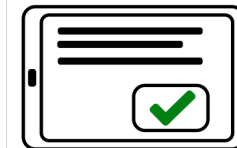
**State of work** Analysis of AI assistance in sketch  
to code pipeline



Design principles derived



**Future** Evaluation, Research Agenda



Core evaluation questions:

- Does it work technically?
- Do DSL + validated requirements beat other spec sources?