

# Adapting Modeling Environments to Domain Specific Interactions

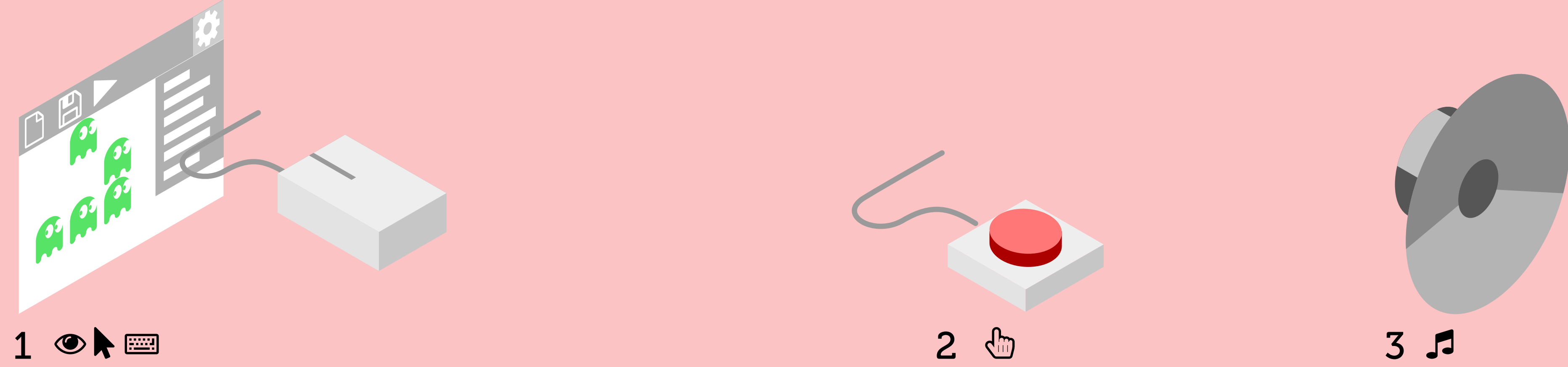
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## Introduction:

although dedicated modeling environments can be generated from DSMLs, no adaptation of the user interaction [1] is made. The main goal of this research is to explicitly include the user interaction [3] in the specification of DSML tools, so that they can be customized for the user.

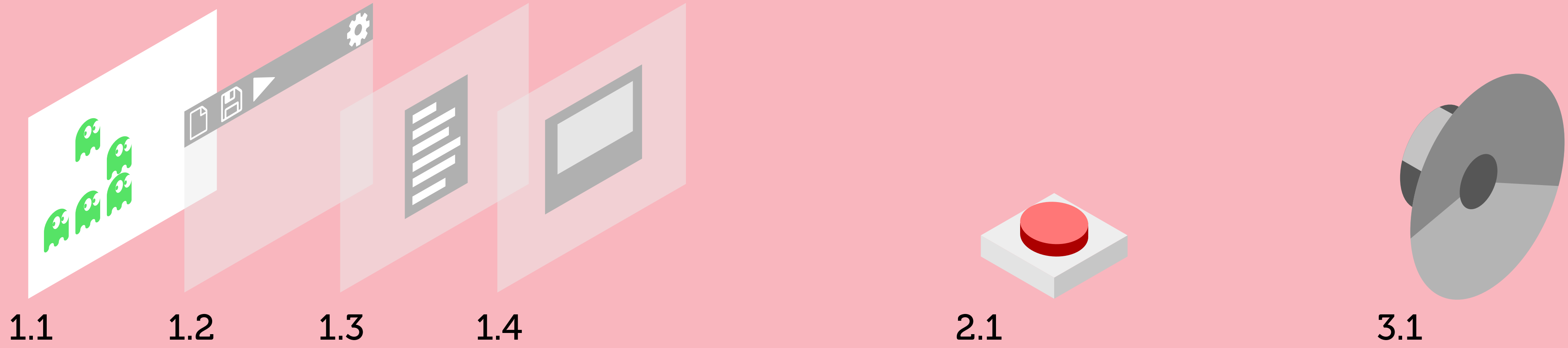
## Interaction Streams:

logical spaces of fundamentally different forms of taking or providing information to a user. Ex. VR, AR, touch scenes ...



## Interface Layers:

logical aggregations of the representations of interaction elements into reusable components. Ex. toolbars, controllers, menus ...

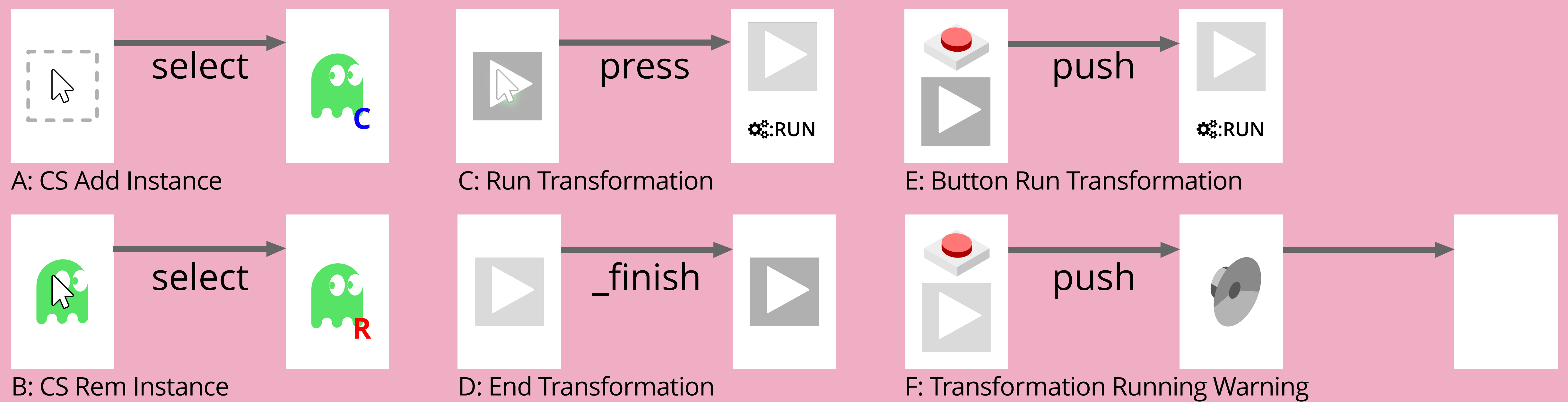


## Interactions:

atomic descriptions of pre and post conditions of interactions.

**preconditions** are defined as interface and concrete syntax symbols at the beginning of the sequence.

**postconditions** are achieved after any number of required steps.



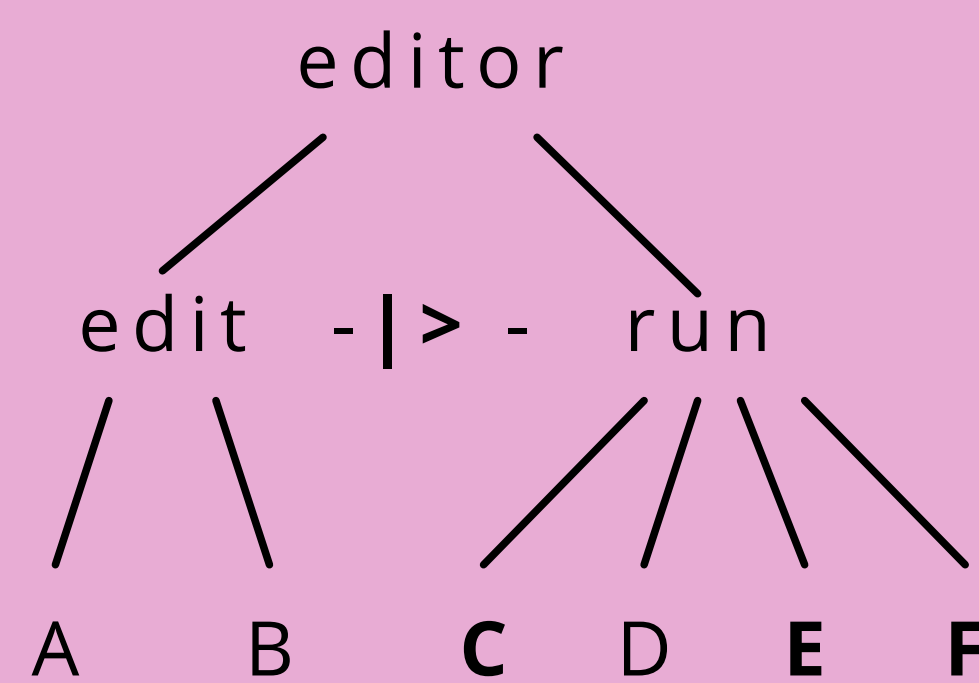
## Additional Information:

just the pre and post conditions of interactions is not enough to go from conceptual description to deployment.

### CTT:

we use an approximation of Concur Task Trees (CTT) [2] to manage conflicts.

the pause (-|>-) operator halts the source actions whenever the target actions are being performed.



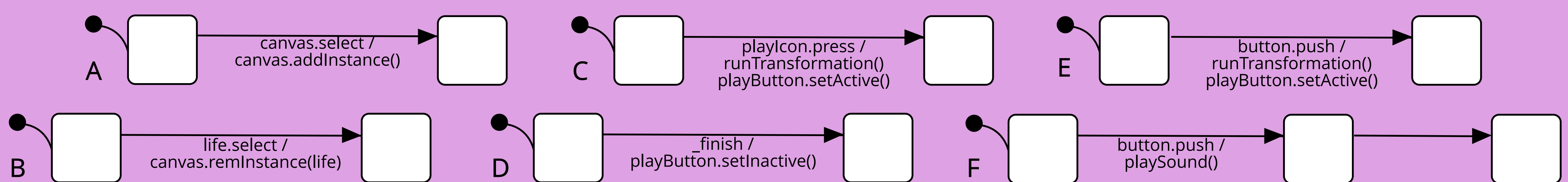
### Mapping:

a left total function mapping is used to translate actions into concrete system calls.

	select	press	push	_finish	RUN
onLeftClick()	x	x			
onTouch()	x	x			
inputGetKeystroke()			x		
runTransformation()					x
transformationEnded()				x	

## Statecharts:

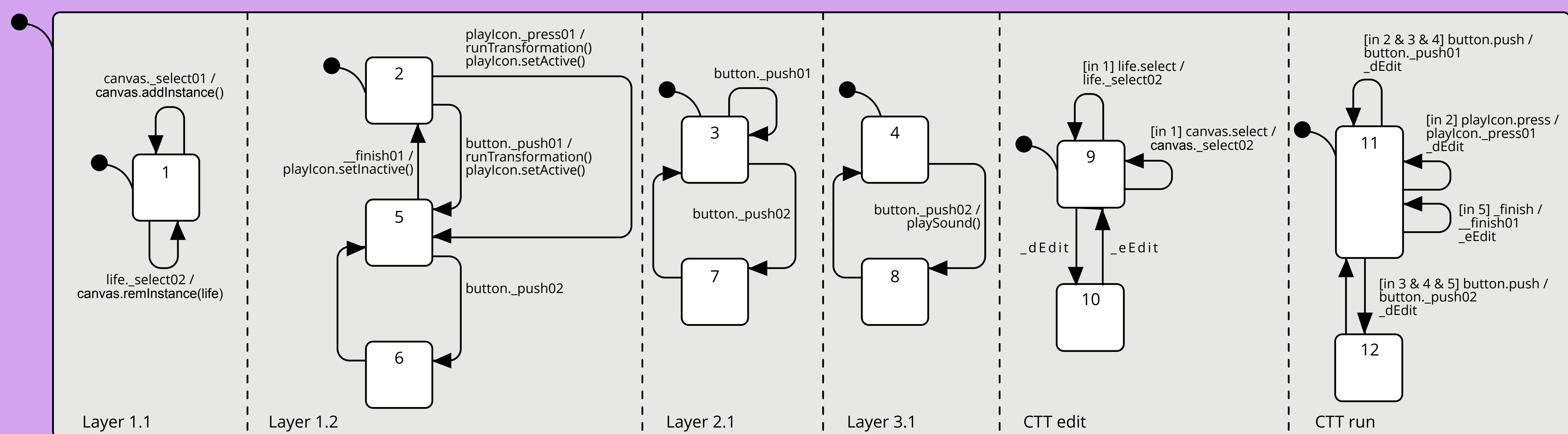
semantic construction of the interaction descriptions.



## Statechart Refinement:

mergere of all component semantics of a specific instance into a single executable statechart.

this is done with use of statechart refinement [4].



## Conclusion:

with this work we open the development process of DSML environments to include user experience (UX) knowledge and in this way further increase the adaptability and reach of DSML approaches.

from a UX perspective this work allows for a focused description of interaction that is independent from implementation. This in turn, through the specification of DSML environment variations, permits the exploration of new UX.

## References:

[1] J. K. Burgoon et al. 2000. Interactivity in human-computer interaction: A study of credibility, understanding, and influence. *Computers in human behavior* 16, 6 (2000), 553-574.  
 [2] Fabio Paterno. Model-based design of interactive applications. *intelligence*, 11(4): 26-38, 2000.

[3] J. M. Rouly et al. 2014. Usability and suitability survey of features in visual IDEs for non-programmers. In *Workshop on Evaluation and Usability of Programming Languages and Tools*. ACM, 31-42.  
 [4] E. Syriani, V. Sousa, and L. Lúcio. 2016. Structural and Behavioral Preserving Statecharts Refinements. *Science of Computer Programming* (2016). (submitted).