

# A Feature-Based Context-Oriented Approach to Dynamic Software Evolution

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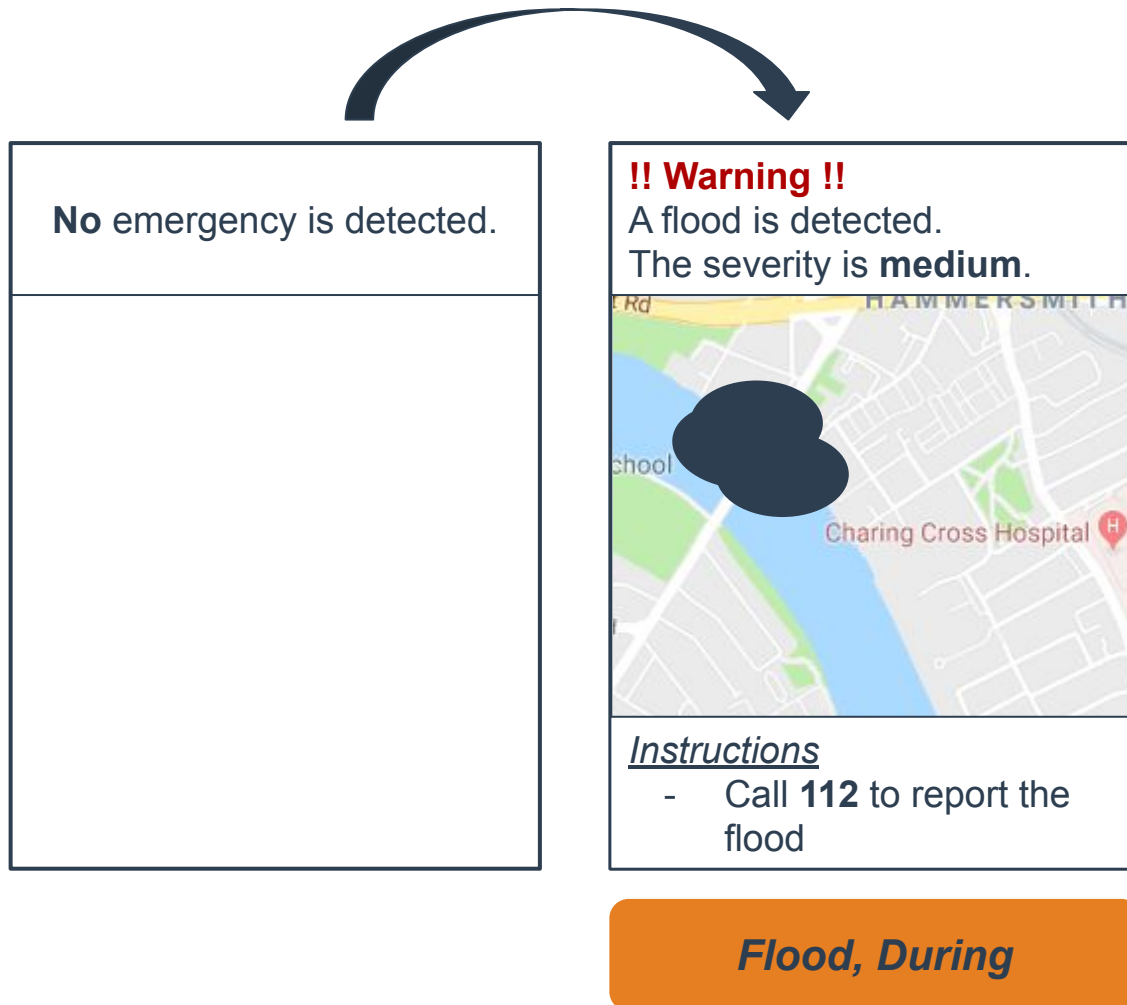
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3-4 December 2020 - Virtual event*

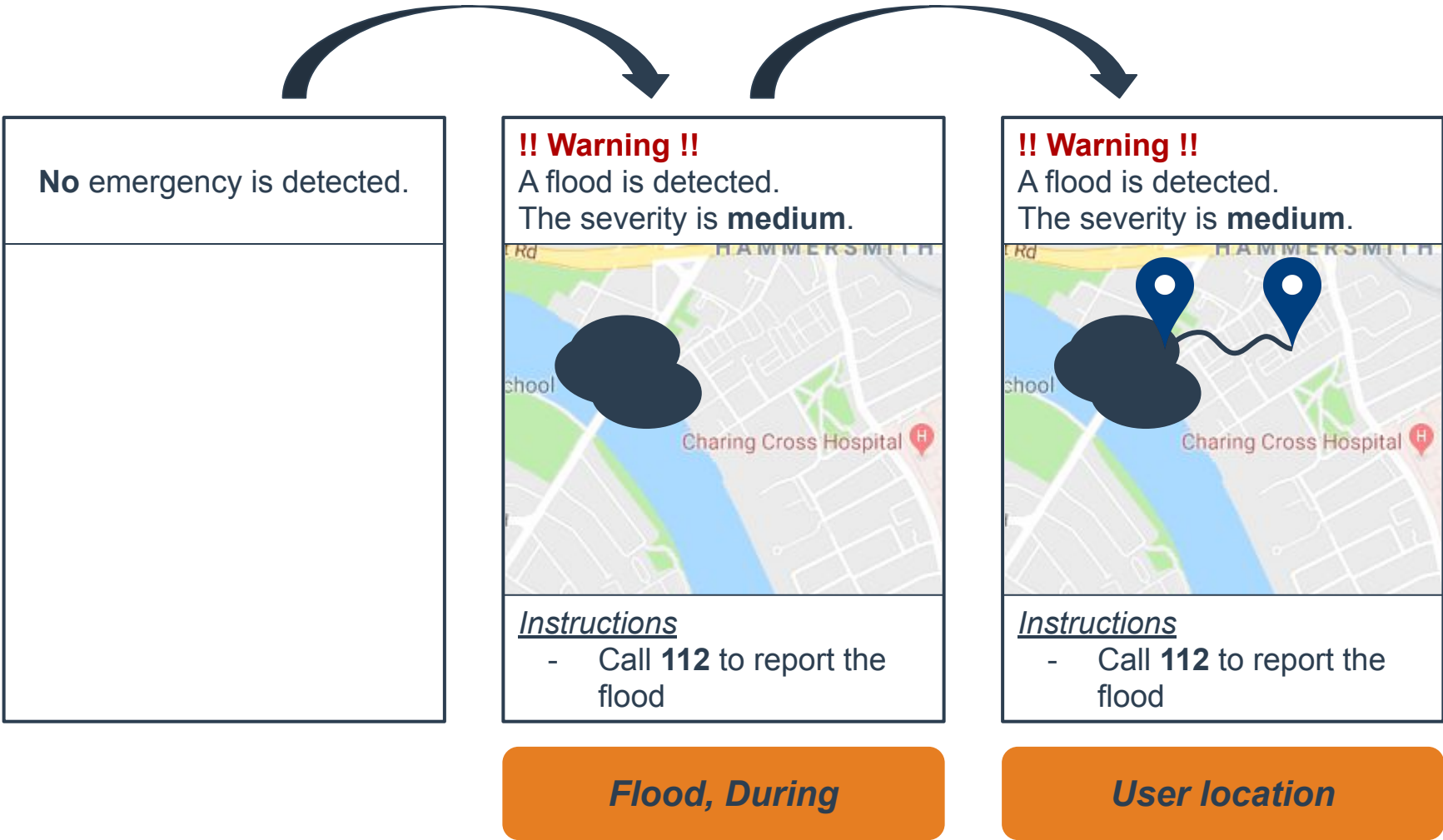
# Example of dynamic software evolution (1)

**No** emergency is detected.

# Example of dynamic software evolution (2)



# Example of dynamic software evolution (3)



# Context-oriented systems

*Context-oriented systems **adapt dynamically their behaviour** (user interface components, core logic or even data components) **depending on the surrounding environment in which they run.***

# Key challenges for building dynamic systems

*Context-oriented systems **adapt dynamically their behaviour** (user interface components, core logic or even data components) **depending on the surrounding environment in which they run.***

**Analysis and design**

**Testing**

**Implementation**

***High dynamic nature + exponential combination***

# Solution for building dynamic systems

*Context-oriented systems **adapt dynamically their behaviour** (user interface components, core logic or even data components) **depending on the surrounding environment in which they run.***

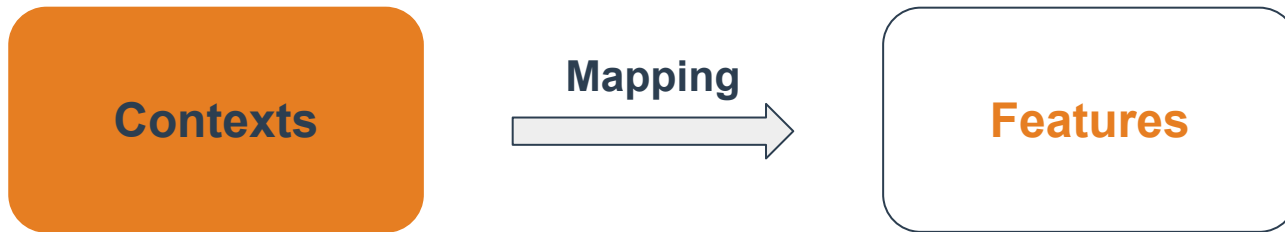
**Analysis and design**

**Testing**

**Implementation**

***Feature-based context-oriented software approach***

# Contexts and features: key notions



Reifies a particular situation in the environment surrounding the running application.

*Ongoing emergency, time, user location, ...*

Can be activated to adapt the application's behaviour to a particular context.

*Navigation, information, alert, ...*



# Solution for building dynamic systems

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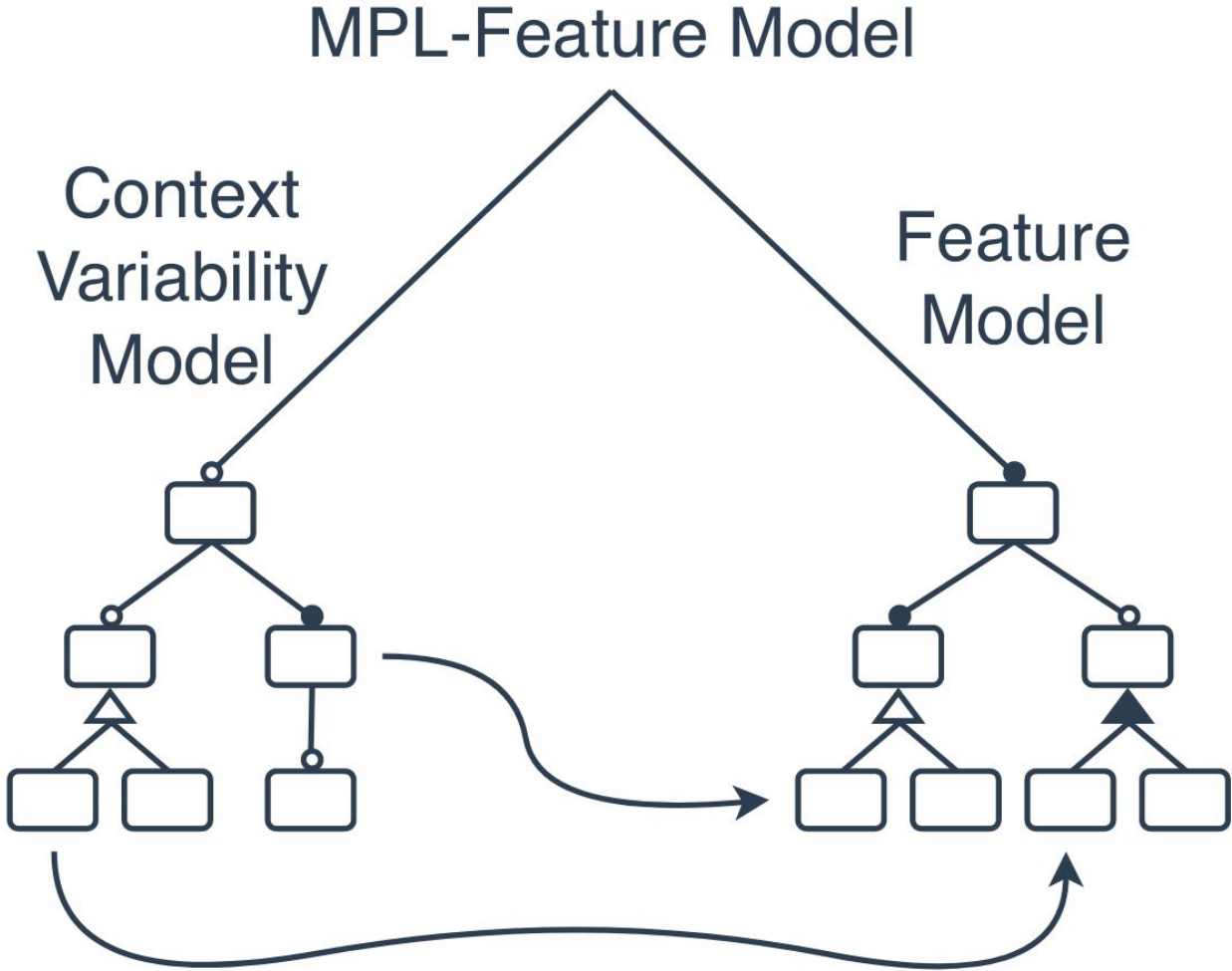
Analysis and design

Testing

Implementation

***Feature-based context-oriented software approach***

# Designing contexts and features



# Solution for building dynamic systems

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**Analysis and design**

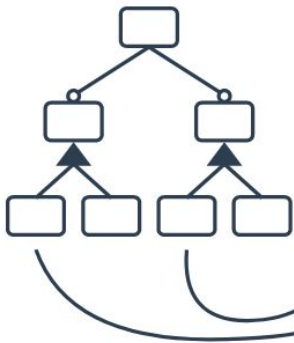
**Testing**

**Implementation**

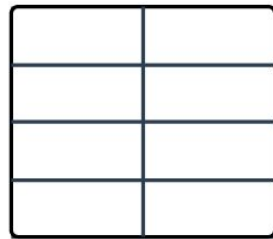
***Feature-based context-oriented software approach***

# Feature-based context-oriented programming

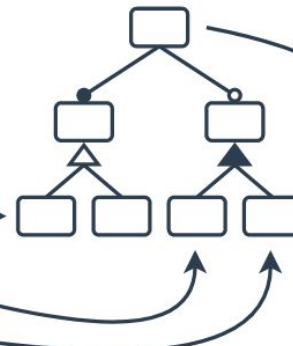
Context Model



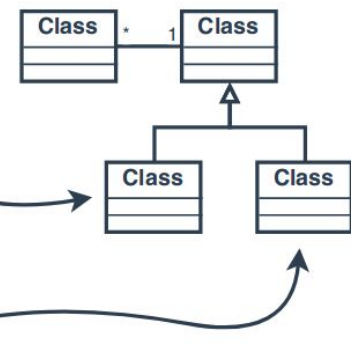
Mapping Model



Feature Model



Class Diagram



Context  
Activation

Feature  
Selection

Feature  
Activation

Feature  
Execution

# Solution for building dynamic systems

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**Analysis and design**

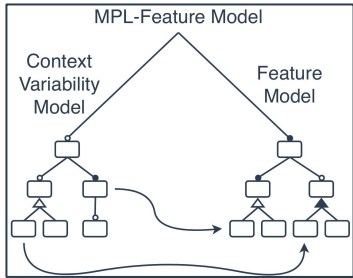
**Testing**

**Implementation**

***Feature-based context-oriented software approach***

# Conclusion

## *Feature-based context-oriented software approach*



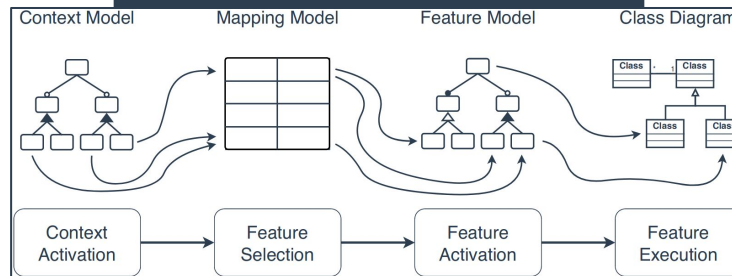
**Analysis and design**



**Testing**



**Implementation**



**Validation**



# Images sources

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