Optimizing Software Build Process of Papyrus-RT By Seamless Integration of Code Generation and EMFCompare

Kanchan Nair, Mojtaba Bagherzadeh
Supervised By: Dr. Juergen Dingel

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Software Build Process

**Code based software development:**
- Build tools play critical role in software development process by automating the compiling and packaging process.
- In large software project, building account for significant amount of time and optimization of build process is an active research.

**Model Driven Development:**
- MDD tools relies on the existing build tools, so there are inherited existing problem from existing tools.
- Due to the lack of support for proper incremental code generation, these tools even suffer from inefficient build process.
Motivation

Existing Code Generation process of Papyrus-RT
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UML-RT Model

Generate ALL?

Yes

C++ Code along with make script for whole model

No

Incremental

C++ Code for changed element and make script for whole model

Direct Changes

Local Index in workspace

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Approach

Model

Model’
Approach

Model

EMFCompare

Model’
Approach

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Model

Model’

EMFCompare

Changed Elements

Impact Analysis
Approach

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Model

EMFCompare

Impact Analysis

Model’

Changed Elements

Impacted Elements

Change + Impacted Change

Code Generation
Approach

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Model

Model’

EMFCompare

Changed Elements

Impact Analysis

Impacted Elements

Change + Impacted Change

Code Generation

Patch △
Approach

Model

Model'

EMFCompare

Impact Analysis

Change + Impacted Change

Code Generation

Patch Δ

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Changed Elements

Impacted Elements
Research work focuses on

• Optimizing the Software Build Process.
• Automatic detection of the effects that any change will bring about in the model.
• Tackles the impact analysis of UML-RT based development.
• Generating a patch after Code Generation.
Thank You