Specification of a legacy tool by means of a dependency graph to improve its reusability

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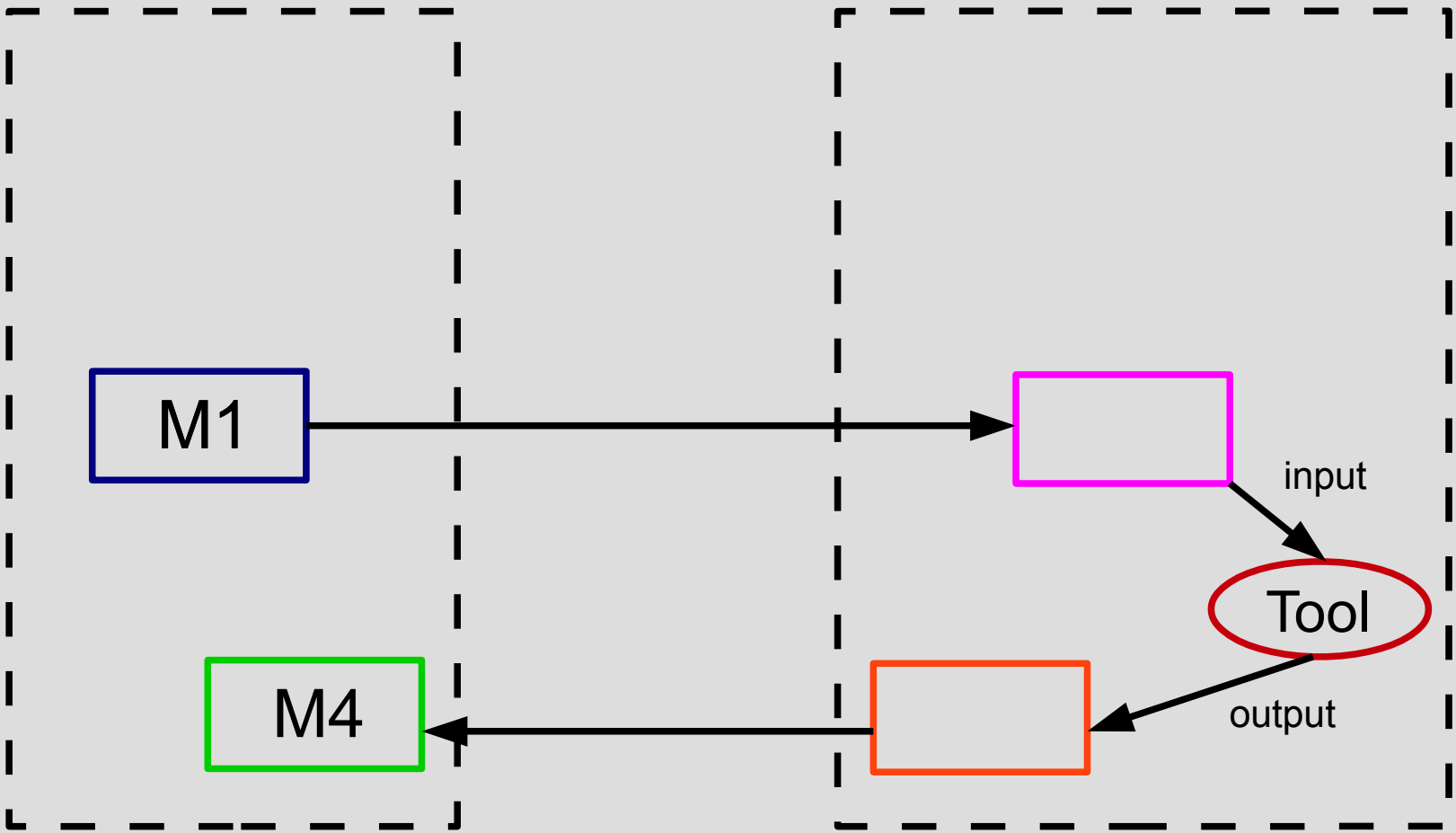
Context

- MDE (Model Driven Engineering)
- DSML (Domain Specific Modeling Languages)

- Promptly making available tool support
- Reuse instead of rewrite

Context



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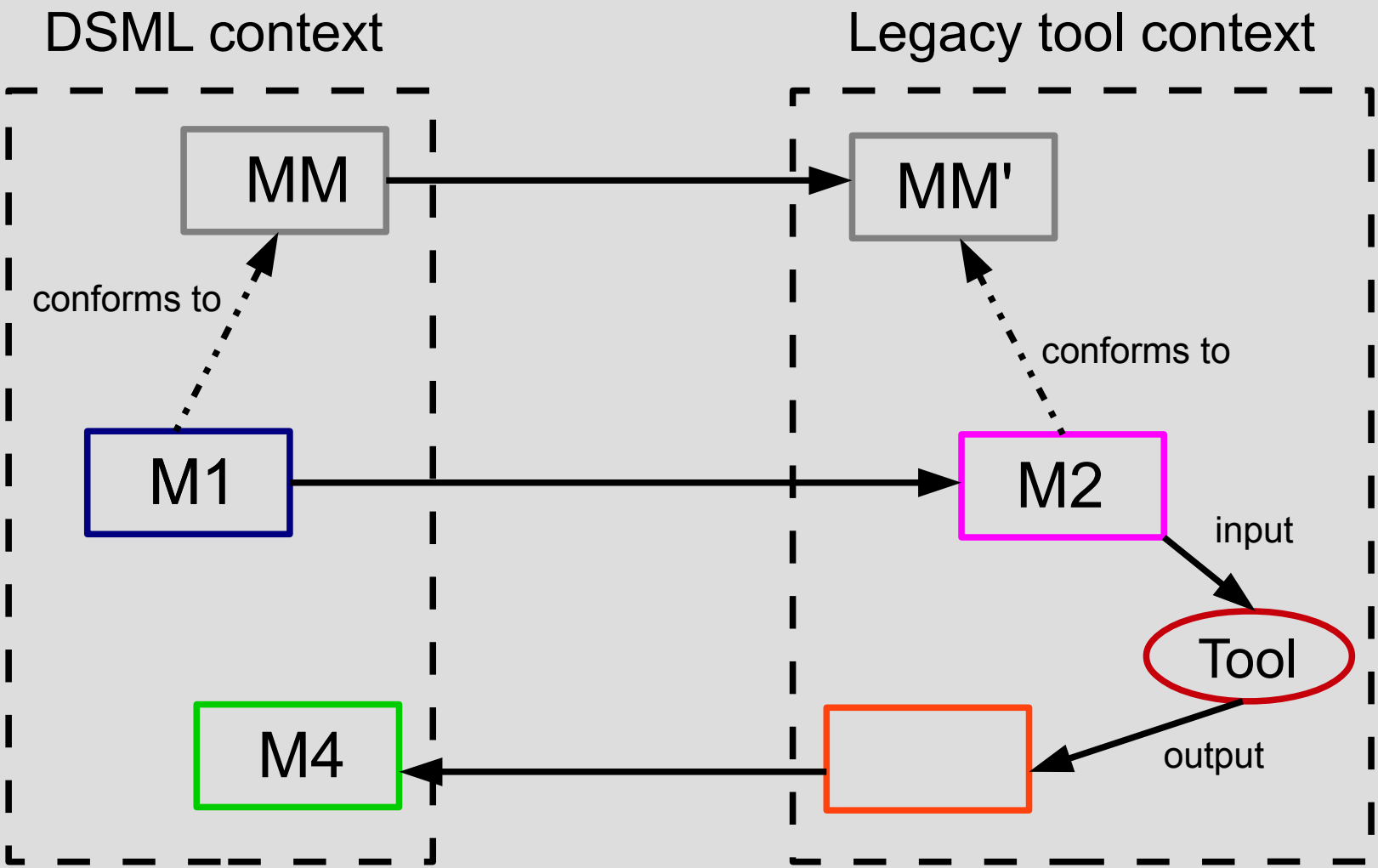
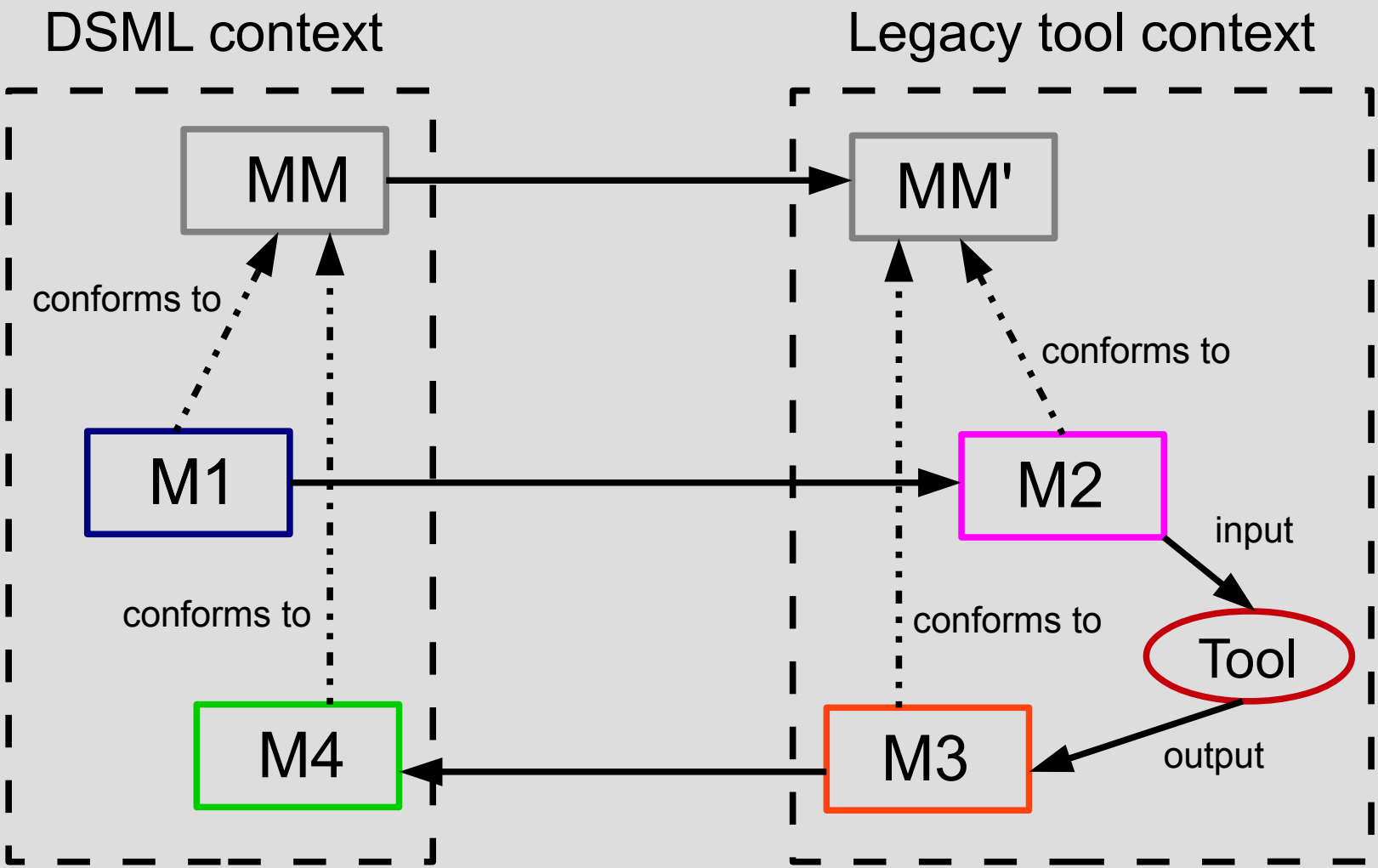

DSML context
Legacy tool context
MM
MM'
conforms to
conforms to
M1
M2
input
Tool
M4
output

Context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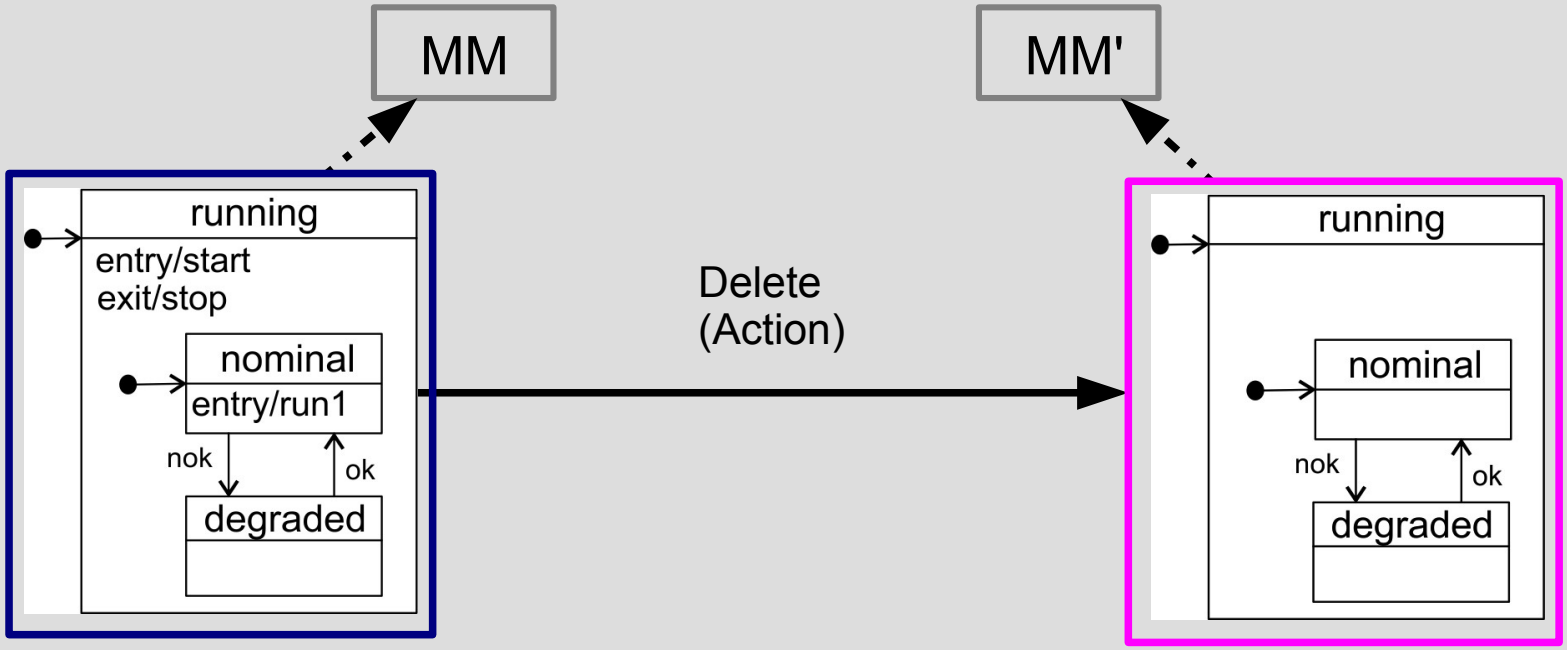
Example


MM
MM'
running
entry/start
exit/stop
nominal
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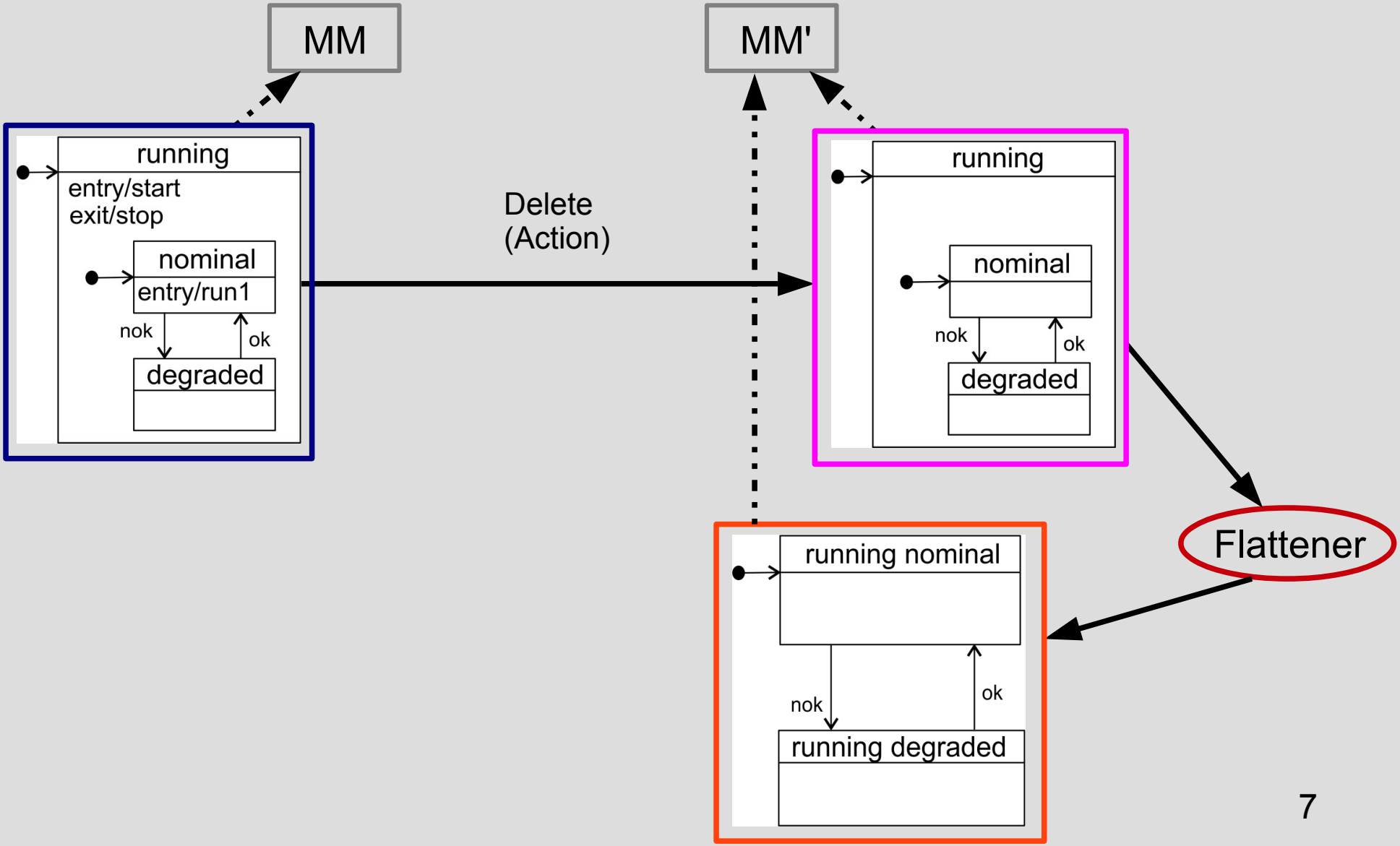
nok
ok
degraded
Delete
(Action)
running
nominal
nok
ok
degraded

Example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running nominal
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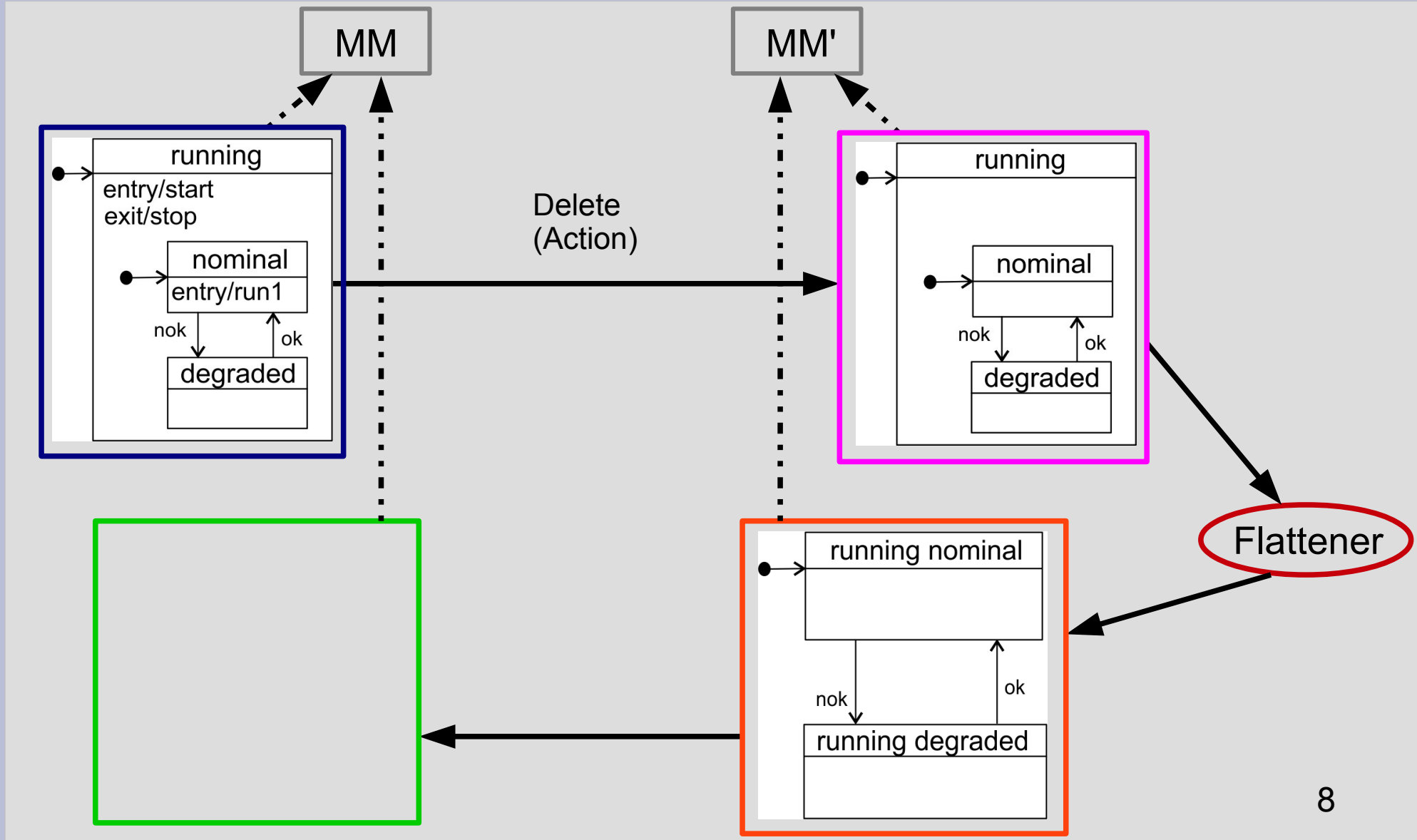
running degraded

Example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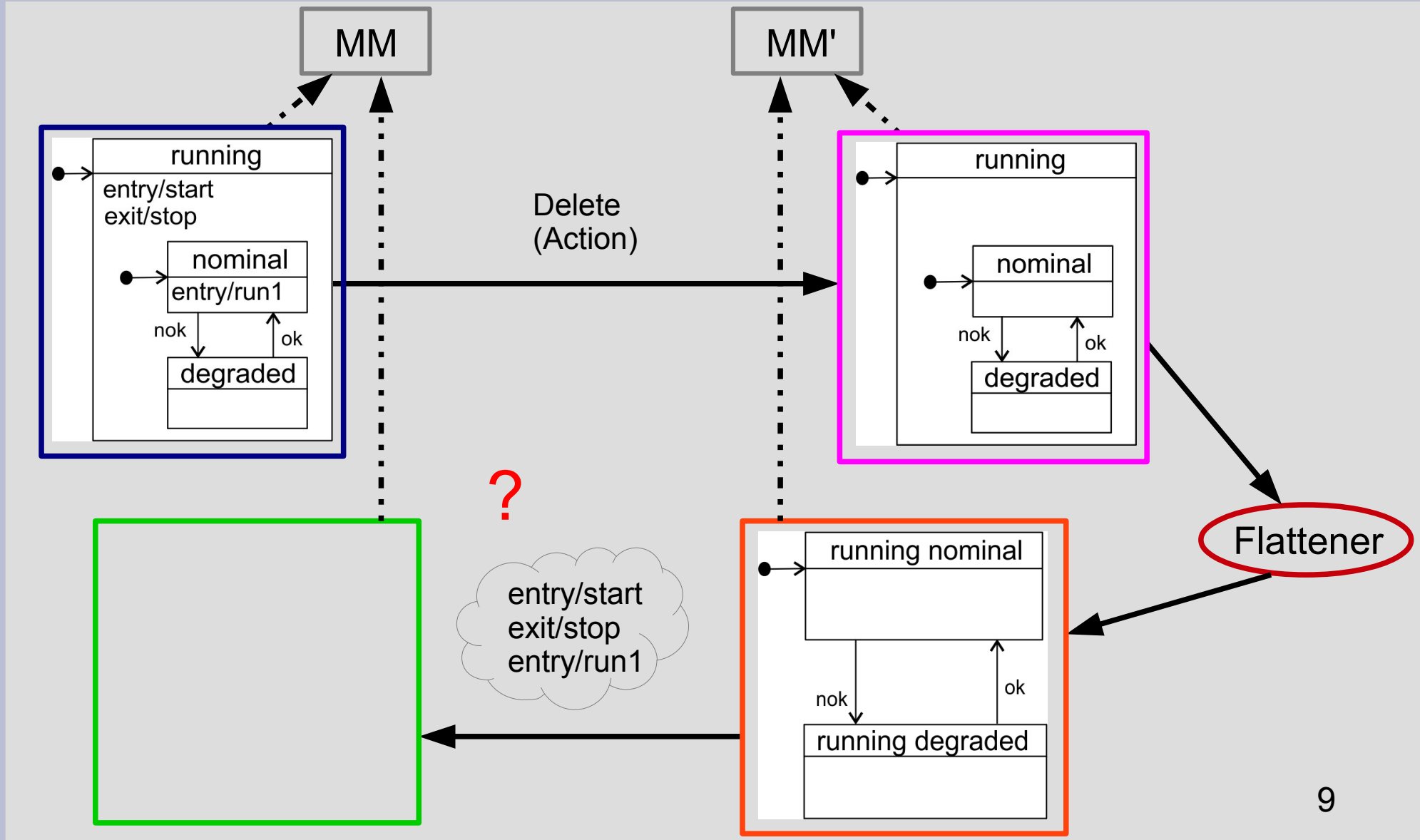
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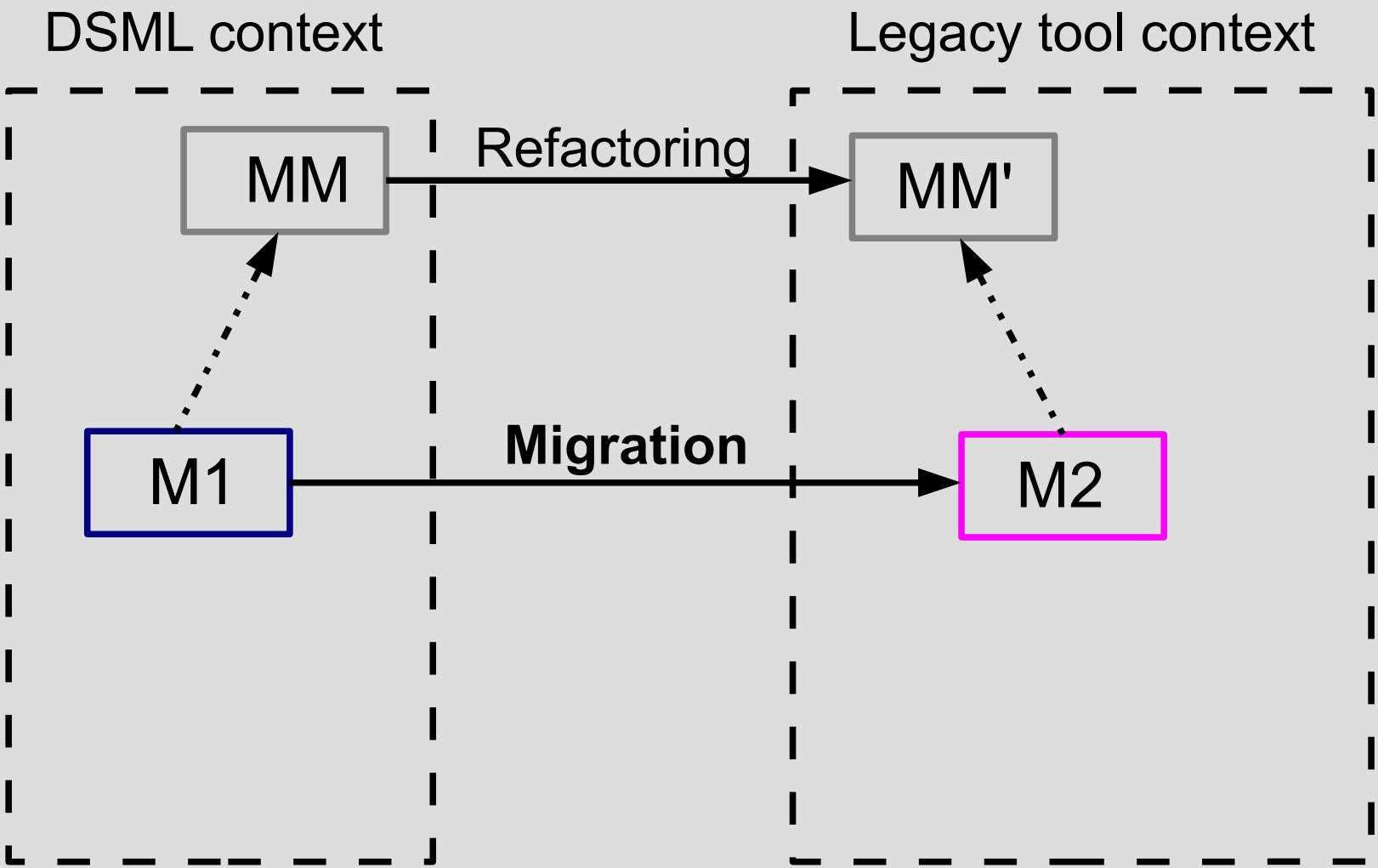
Challenge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MM
Refactoring
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M1
Migration
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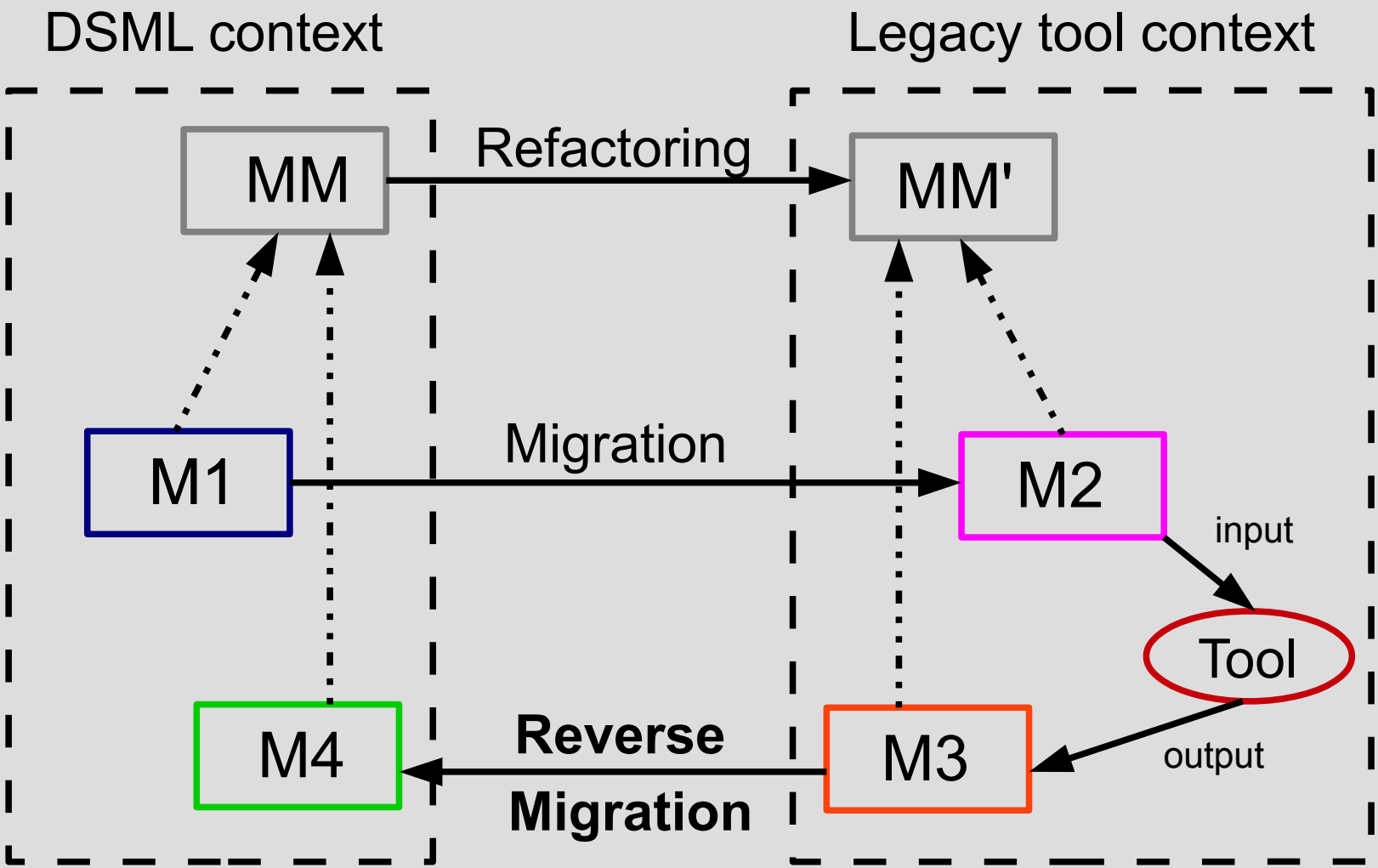
Challenge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Reverse
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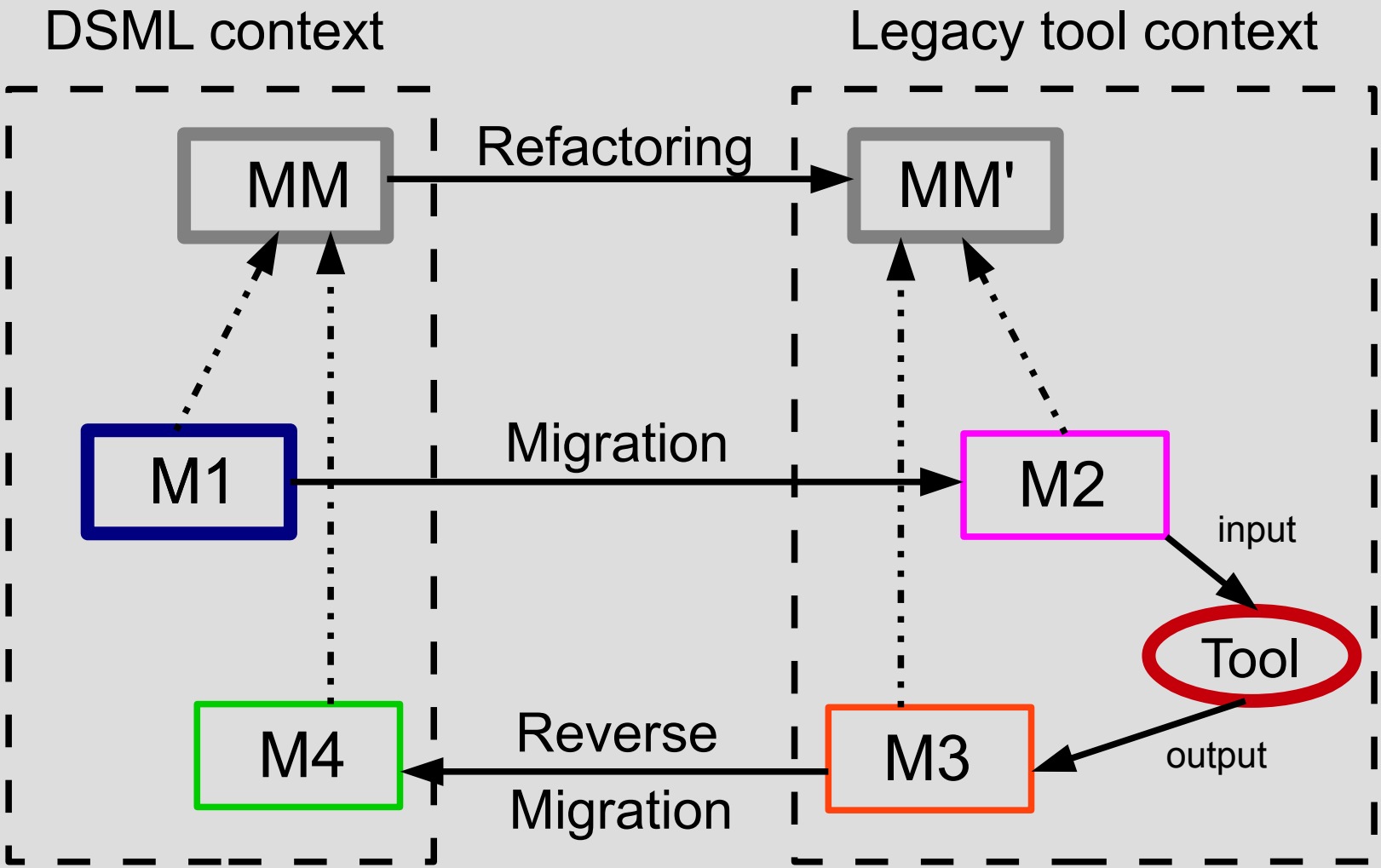
M3
output

Agenda

- Context
- Example
- Challenge
- Key mechanism
- Dependency graph
- Implementation
- Conclusion

Modif Reuse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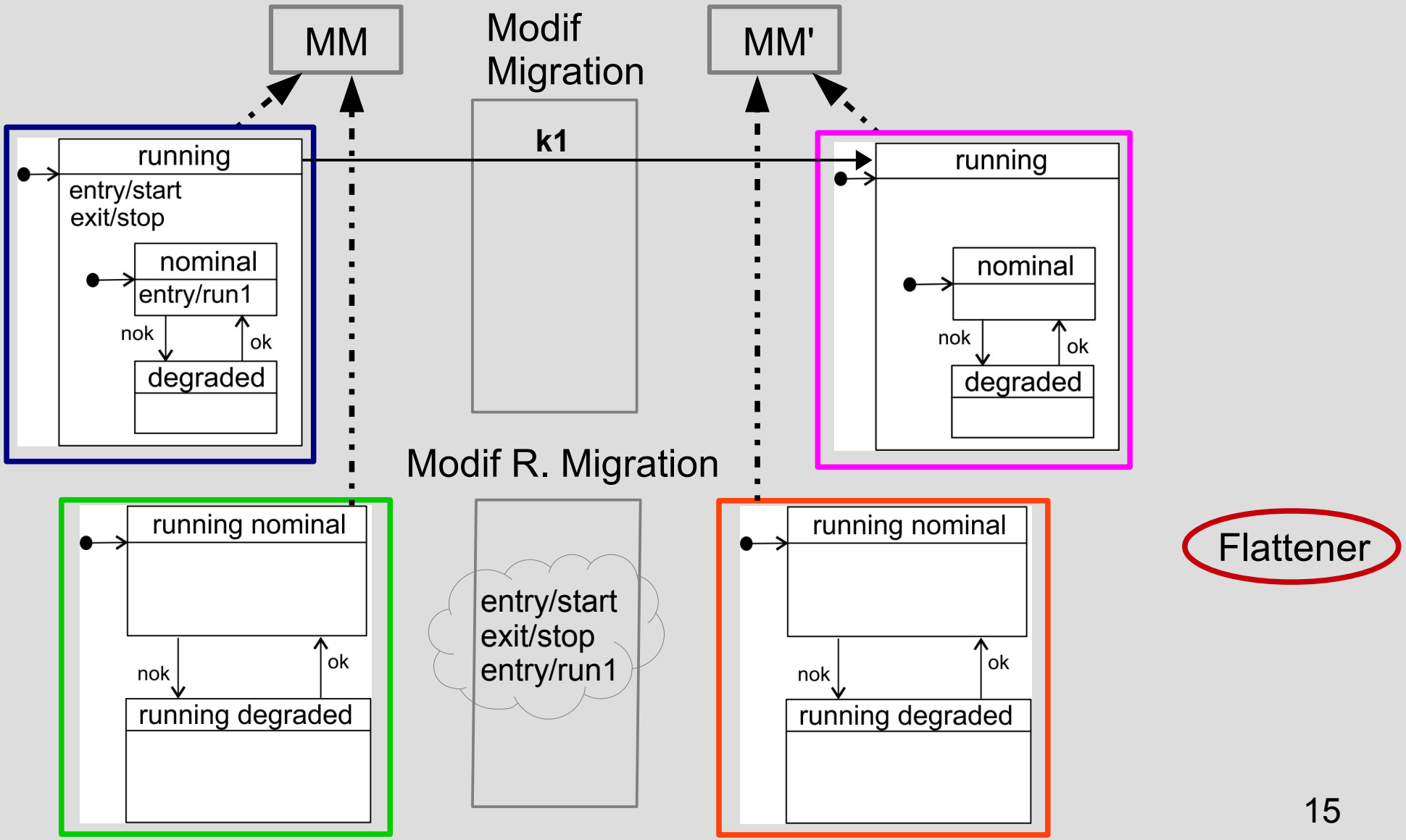
Keys mechanism

- Unique identification
- 1 source instance → 1 target instance
- Identifies in M2 and M3 deleted instances of M1
- Recover and contextualize deleted instances

- Loss of some instances
- New instances

Example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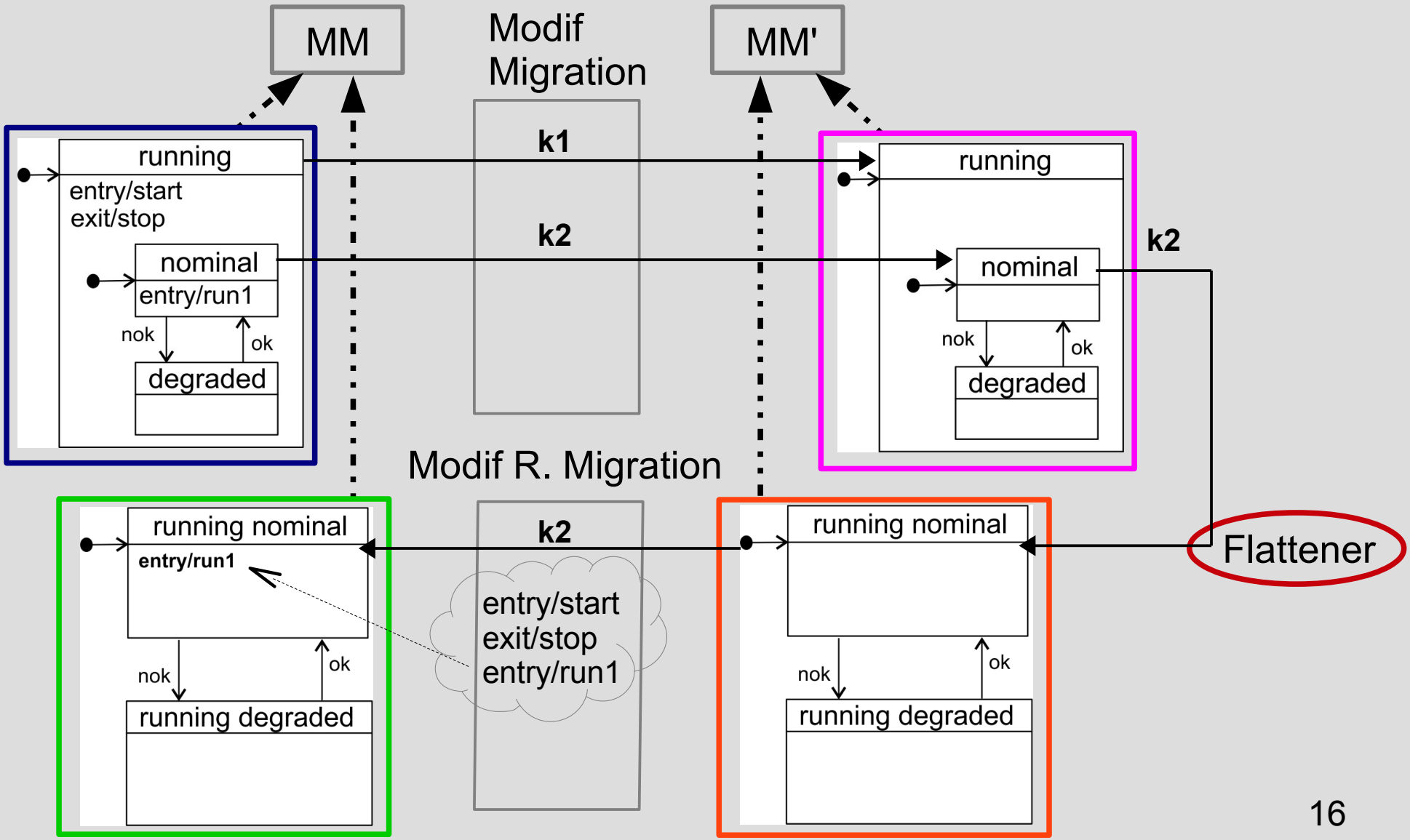
Flattener

Example


MM
Modif Migration
MM'
k1
k2
running
entry/start
exit/stop
nominal
entry/run1
nok
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nok
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k2
Modif R. Migration
k2
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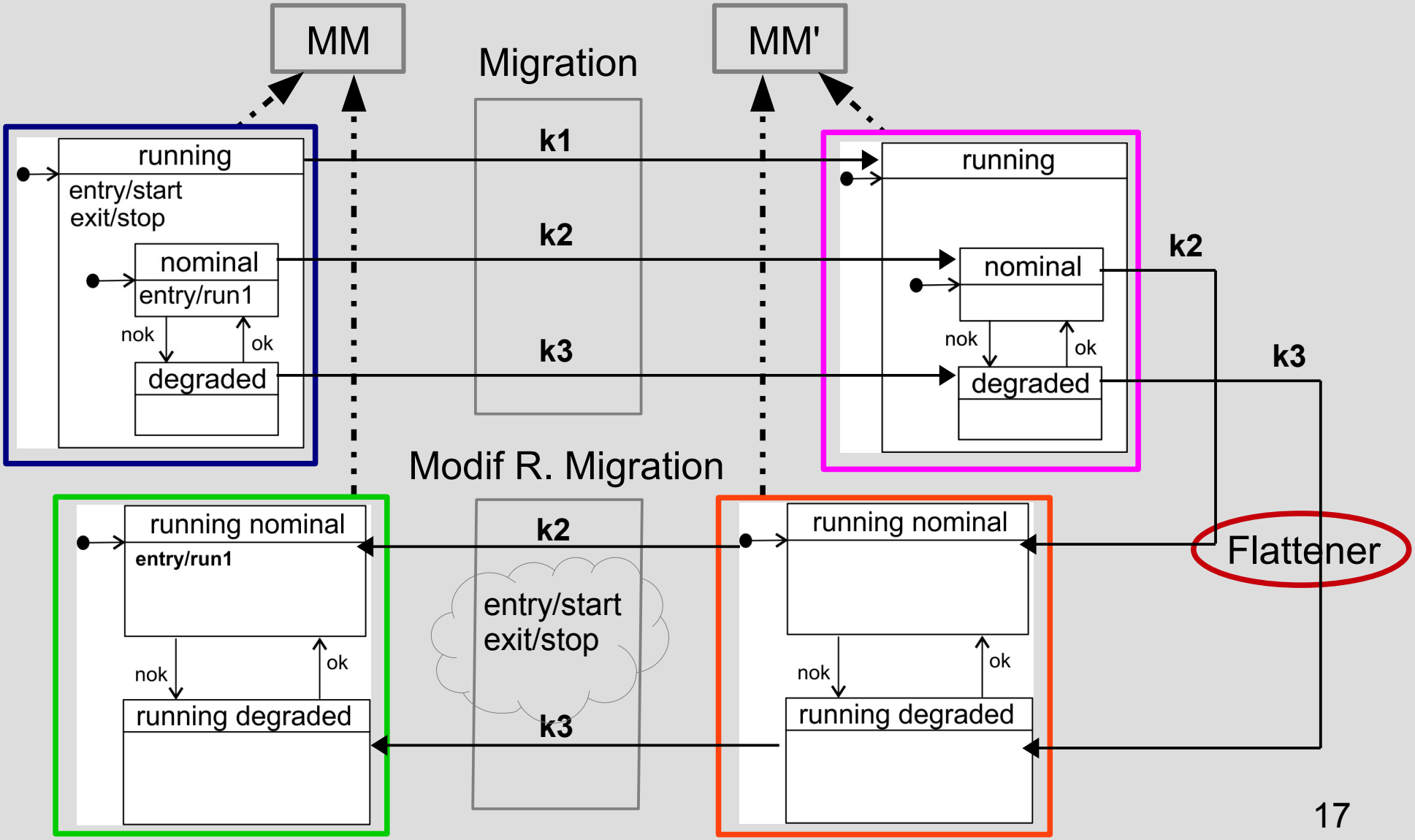
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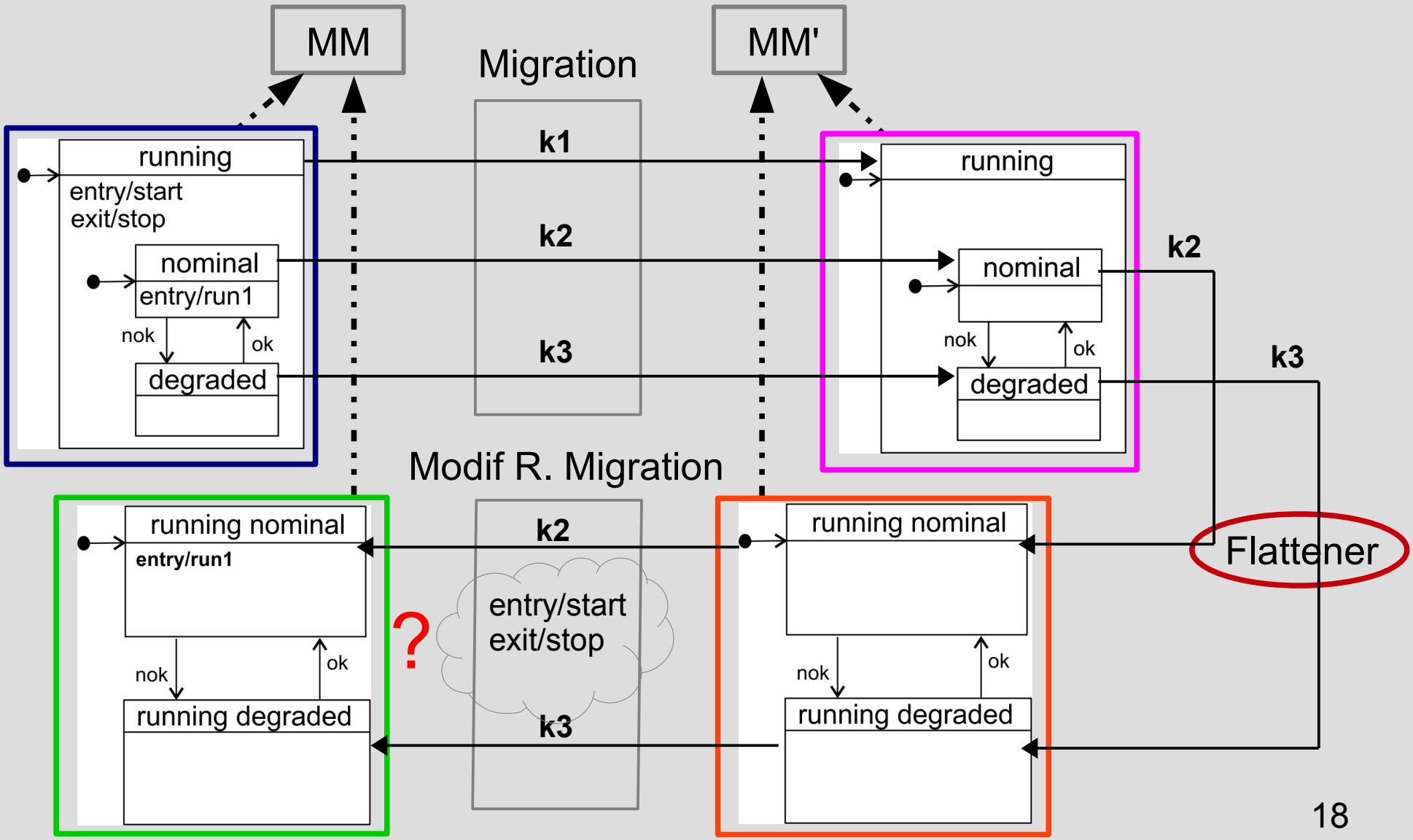
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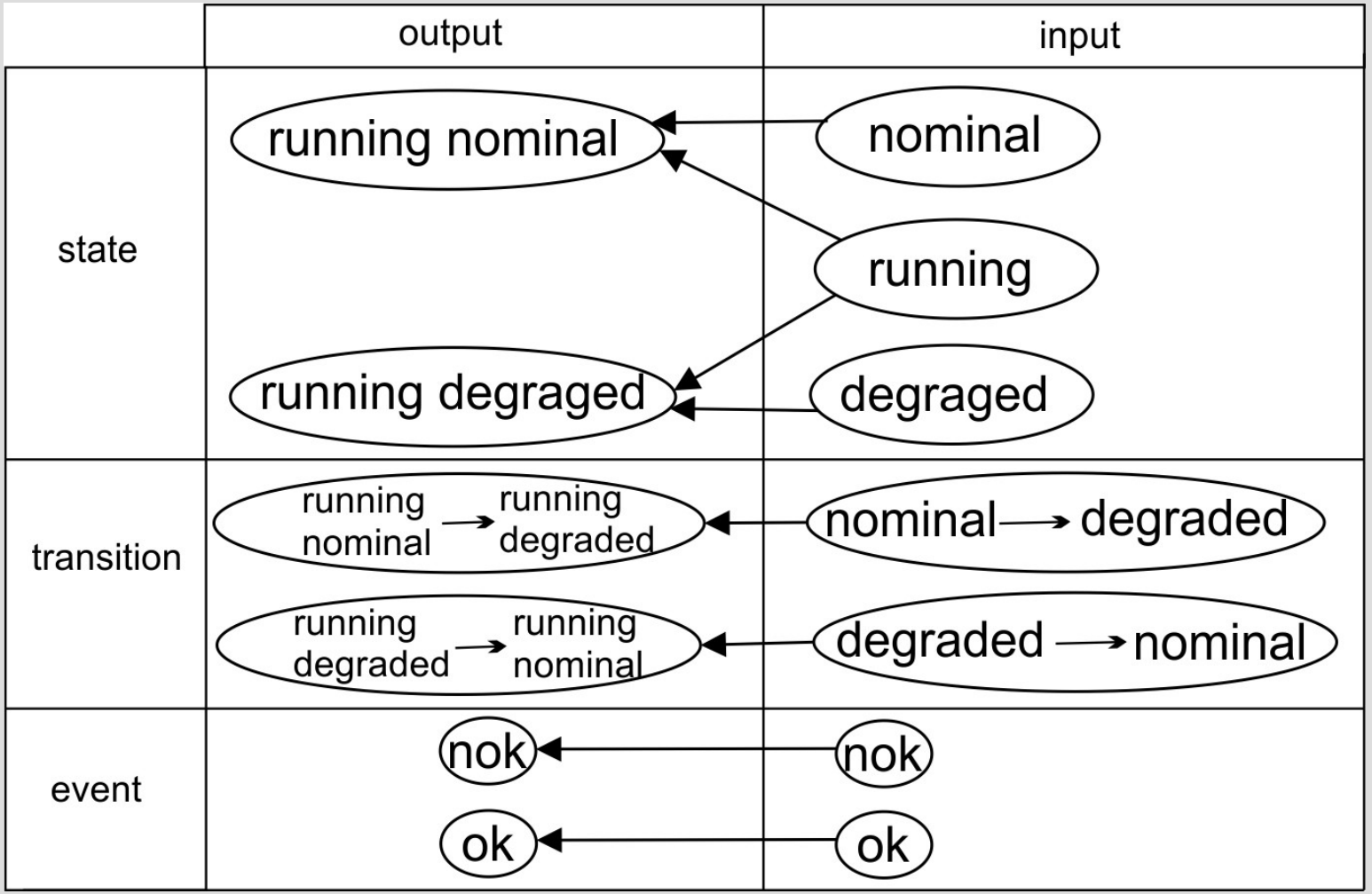
Dependency graph

- Specification of the legacy tool
- 1 output instance → 1 set of input instances
- Instances involved in modification or creation

Dependency graph



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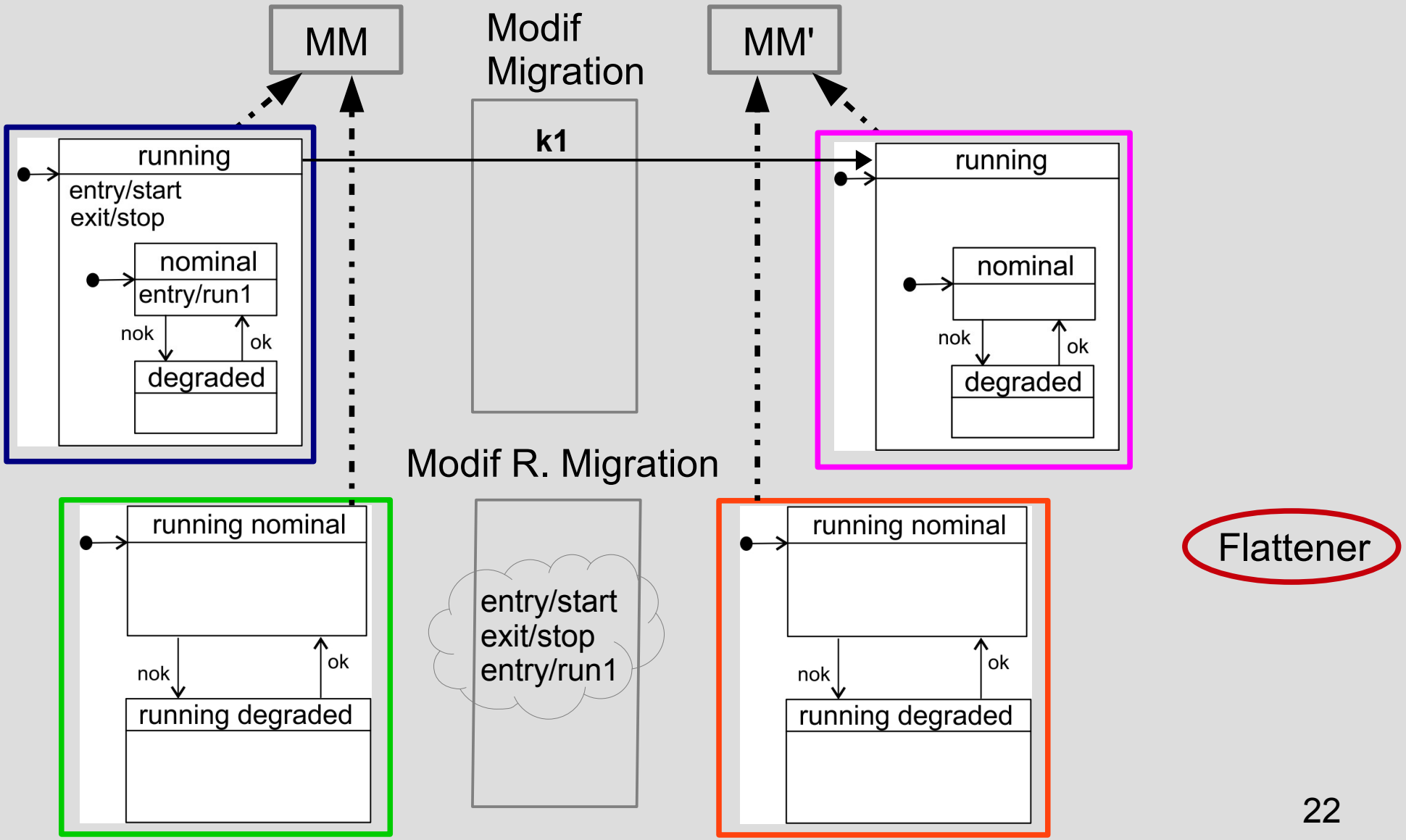
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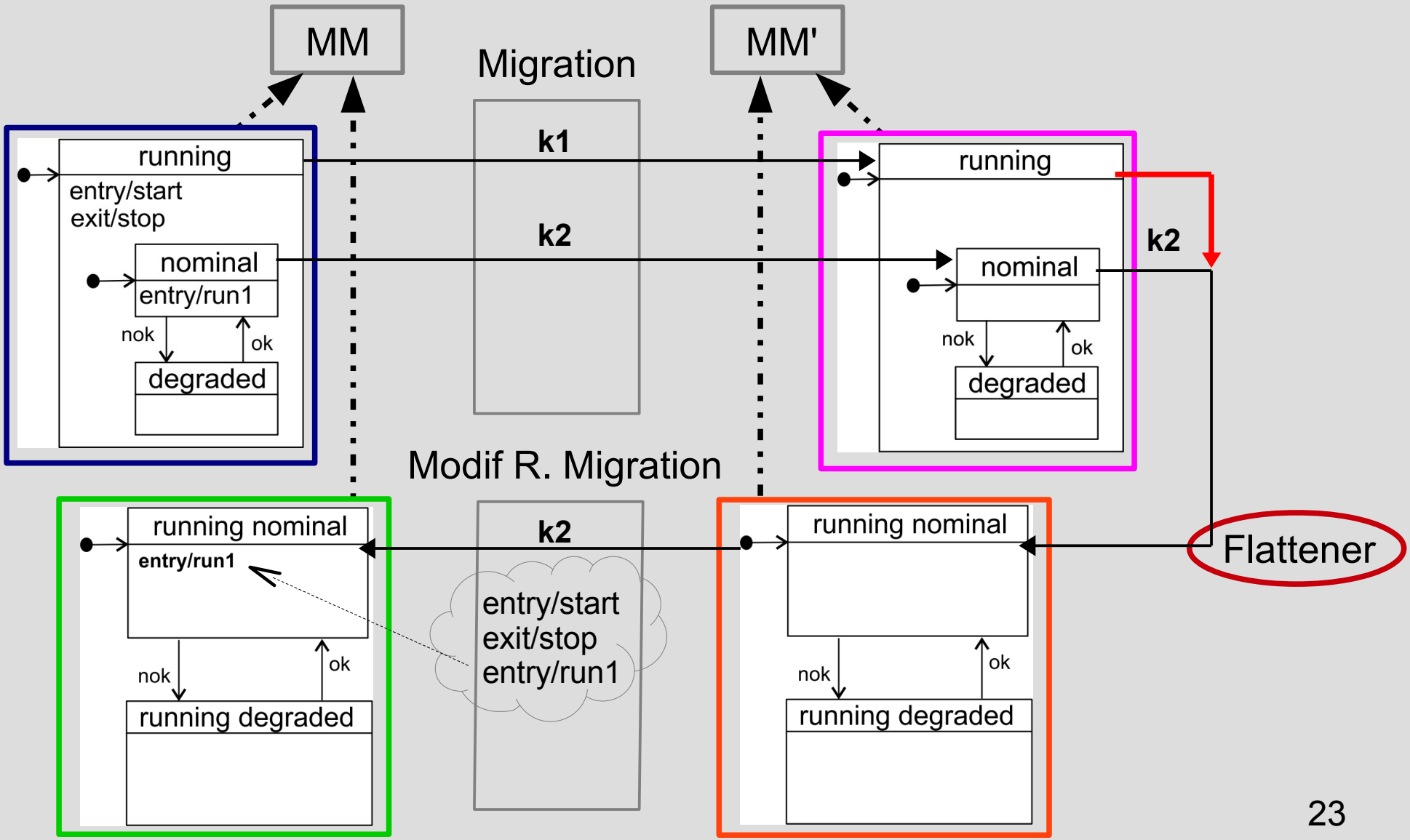
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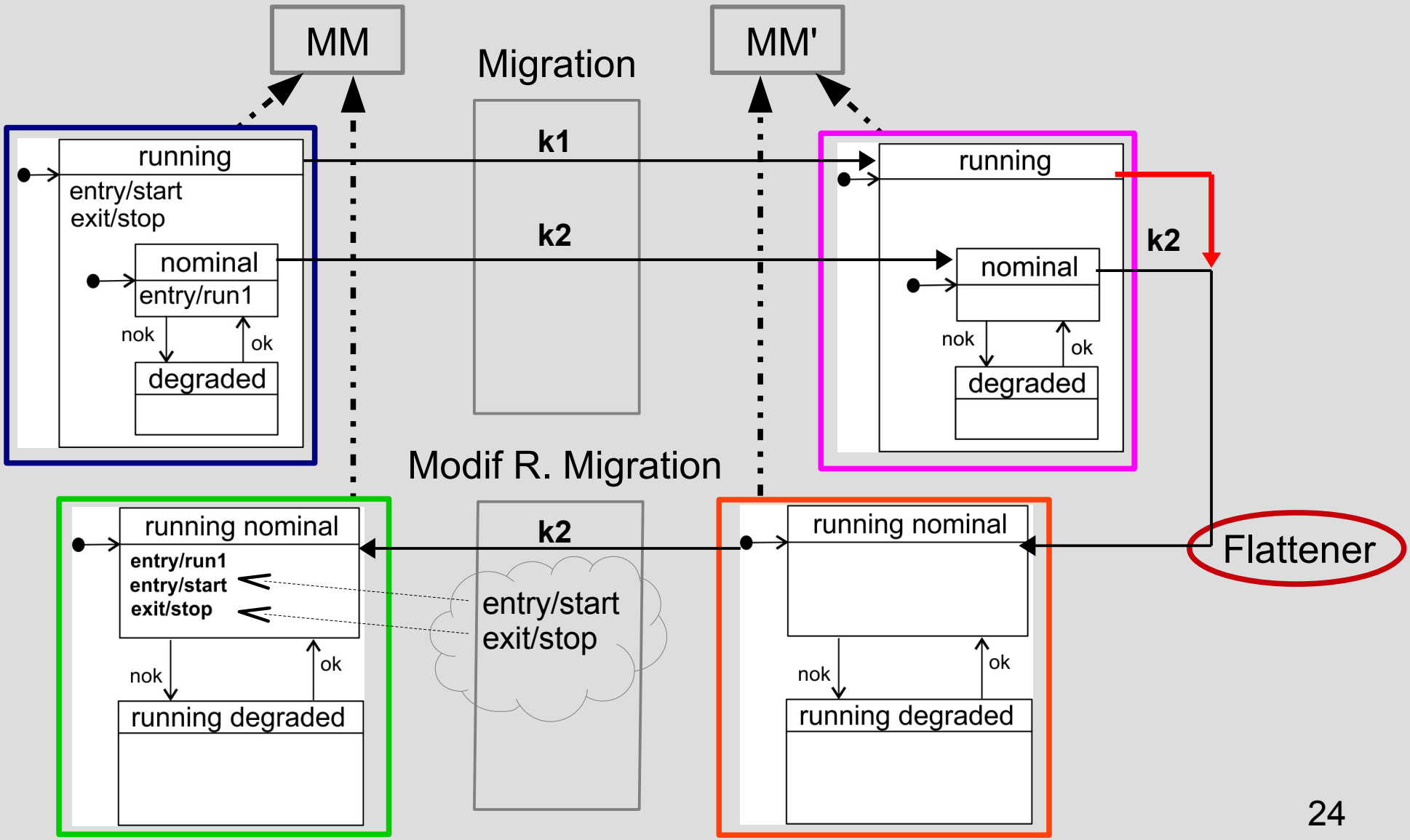
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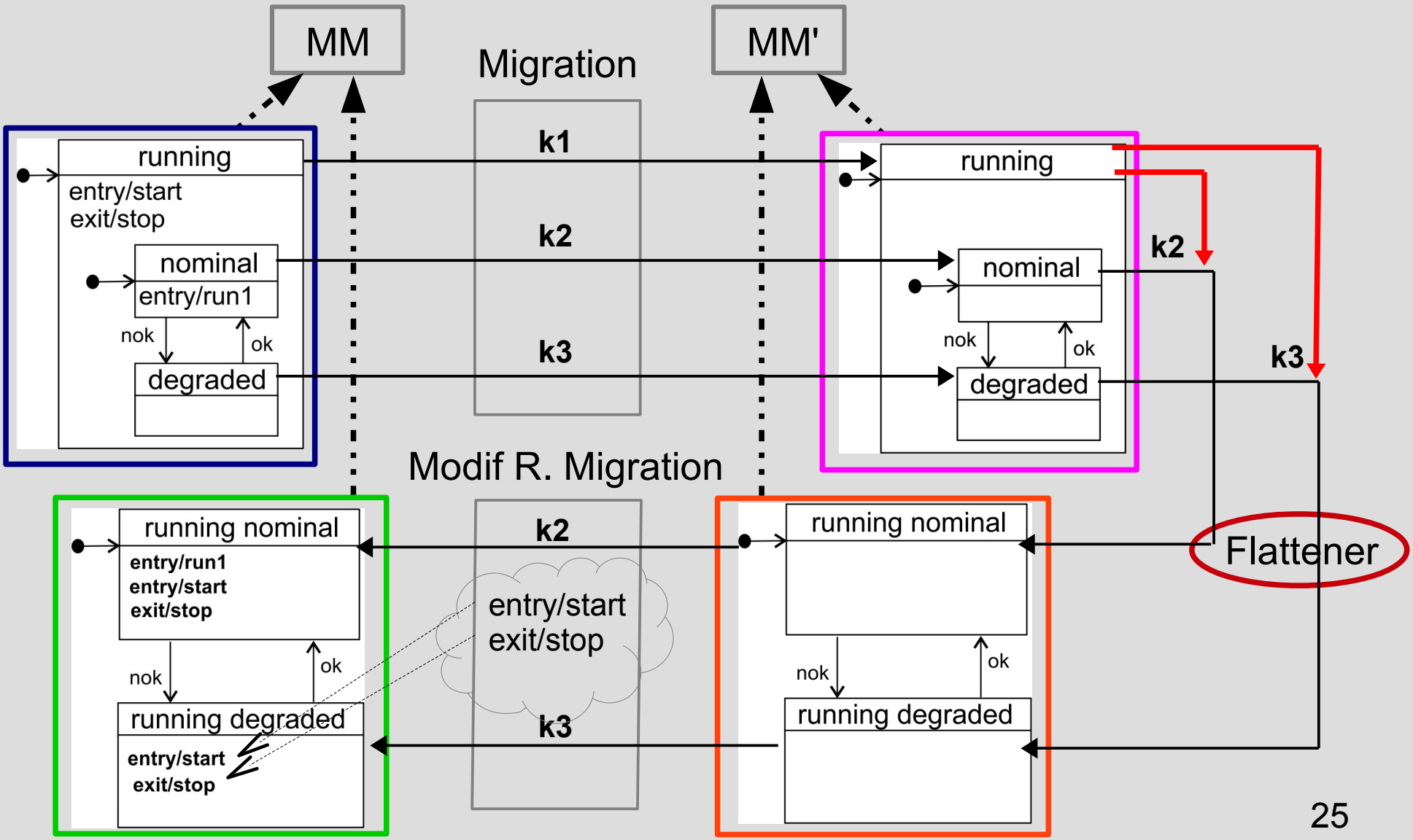
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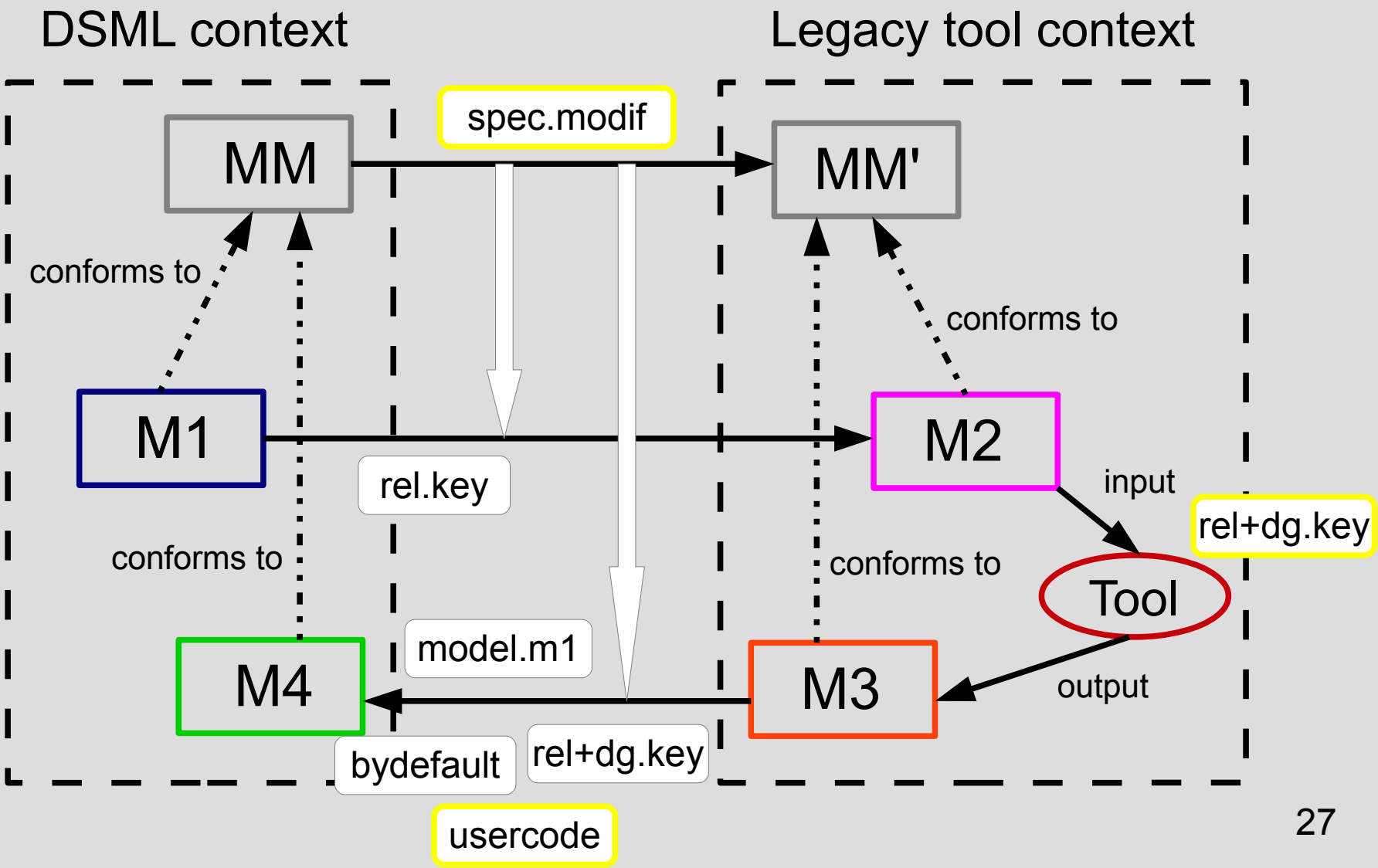
Implementation



User code example

```
public class DefaultBehavior implements Migration{

    public void putAction(M3.State state, Elist<M1.State> relatedStates){...}

    public void preFunction(){return ;}
    public void postFunction(){return ;}

    final void function(M3 M3model, Key dicoKeys, M1 M1model){
        for(M3.State state : M3StatesList){
            relatedStates = getRelatedStates(state);

            for(M1.State related : relatedStates){
                putAction(state, relatedStates);
            }
        }
    }
}
```

```
void migration (Migration byDefault){
    ...
    byDefault.preFunction();
    byDefault.function();
    byDefault.postFunction();
    ...
}
```

```
//execution of by default migration
migration (new DefaultBehavior()) ;
```

```
//execution of customized migration
migration (new CustomizedBehavior()) ;
```

```
public class CustomizedBehavior extends DefaultBehavior{
    ...
    public void preFunction(){...}
    public void putAction(M3.State state, Elist<M1.State> relatedStates){...}
    ...
}
```

Conclusion

- Additional information of the legacy tool
- Recover deleted instances
- Contextualize new instances
- Migration: metamodel dependent
- Reverse Migration: tool dependent

Questions ?

Thank you !