An explicitly modeled algorithm for mining frequent itemsets in MDE settings

Tim Leys

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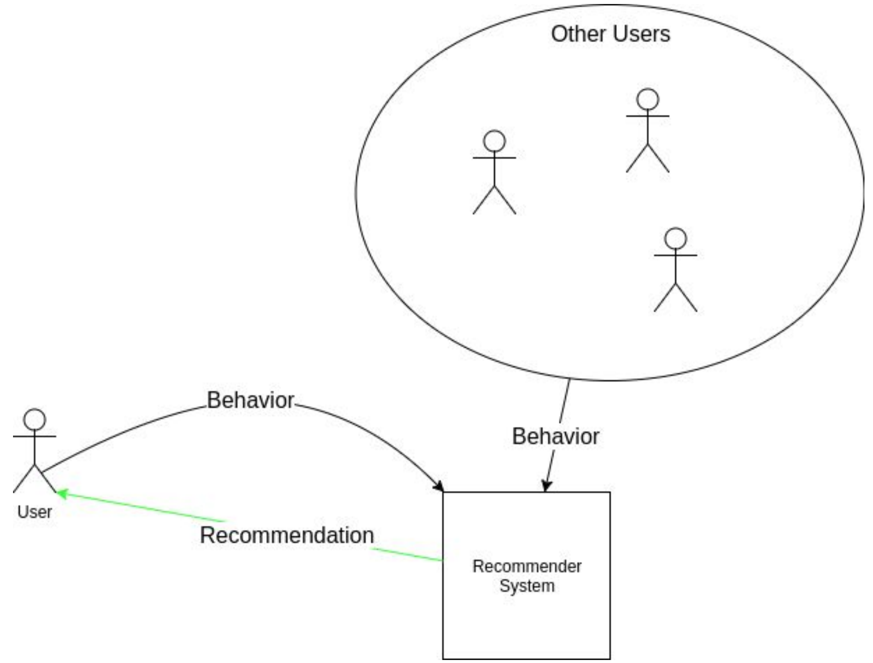
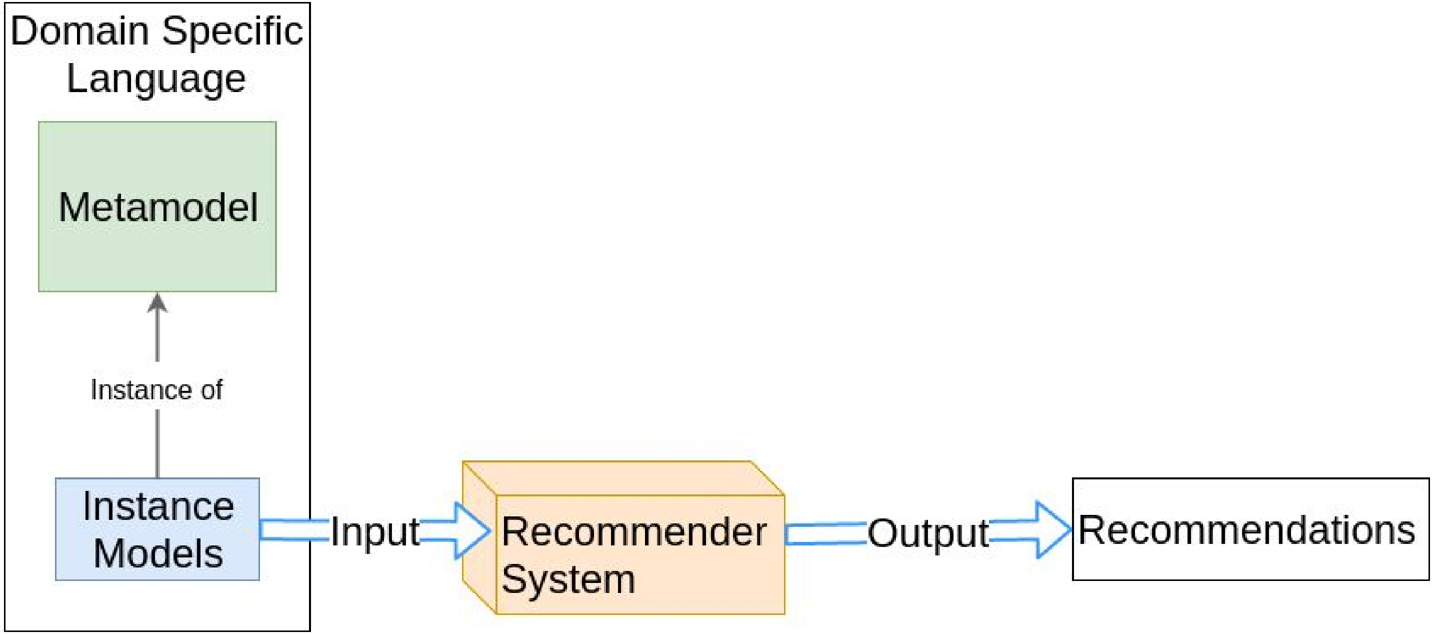
Motivation

Recommender Systems

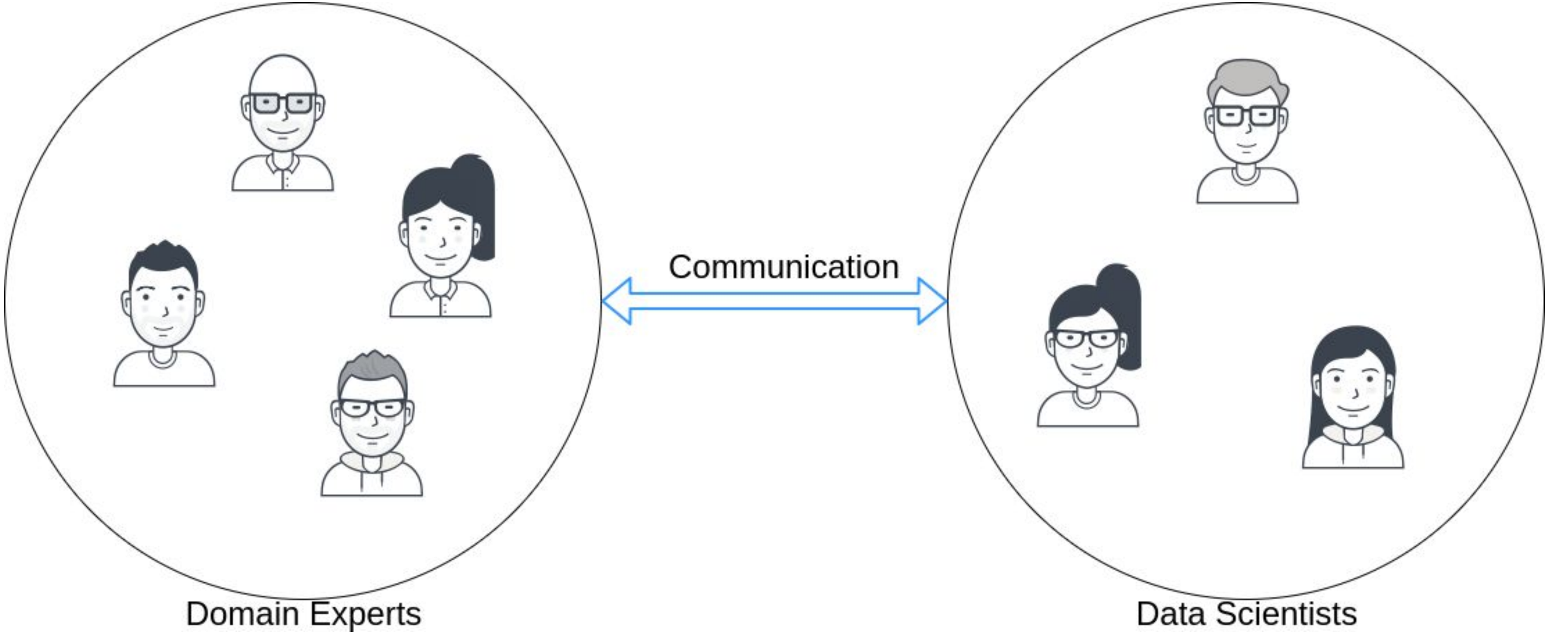


[1] Andrej Dyck, Andreas Ganser, and Horst Lichter. Model recommenders for command-enabled editors. MDEBE2013, 2013.

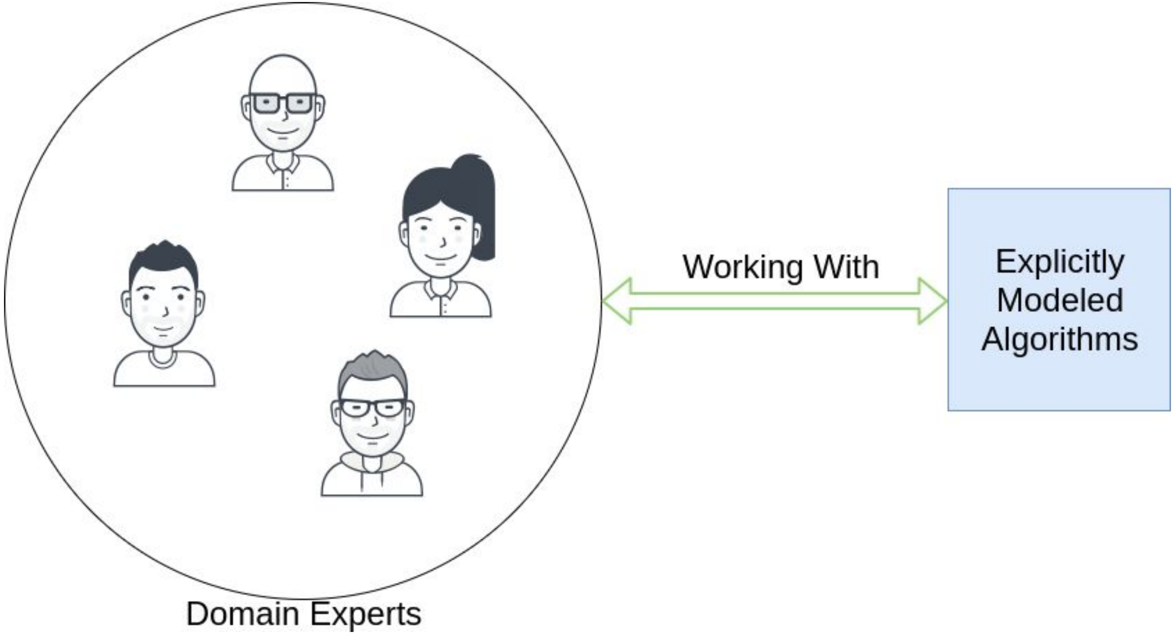
Domain Specific Languages



Reducing Communication Overhead



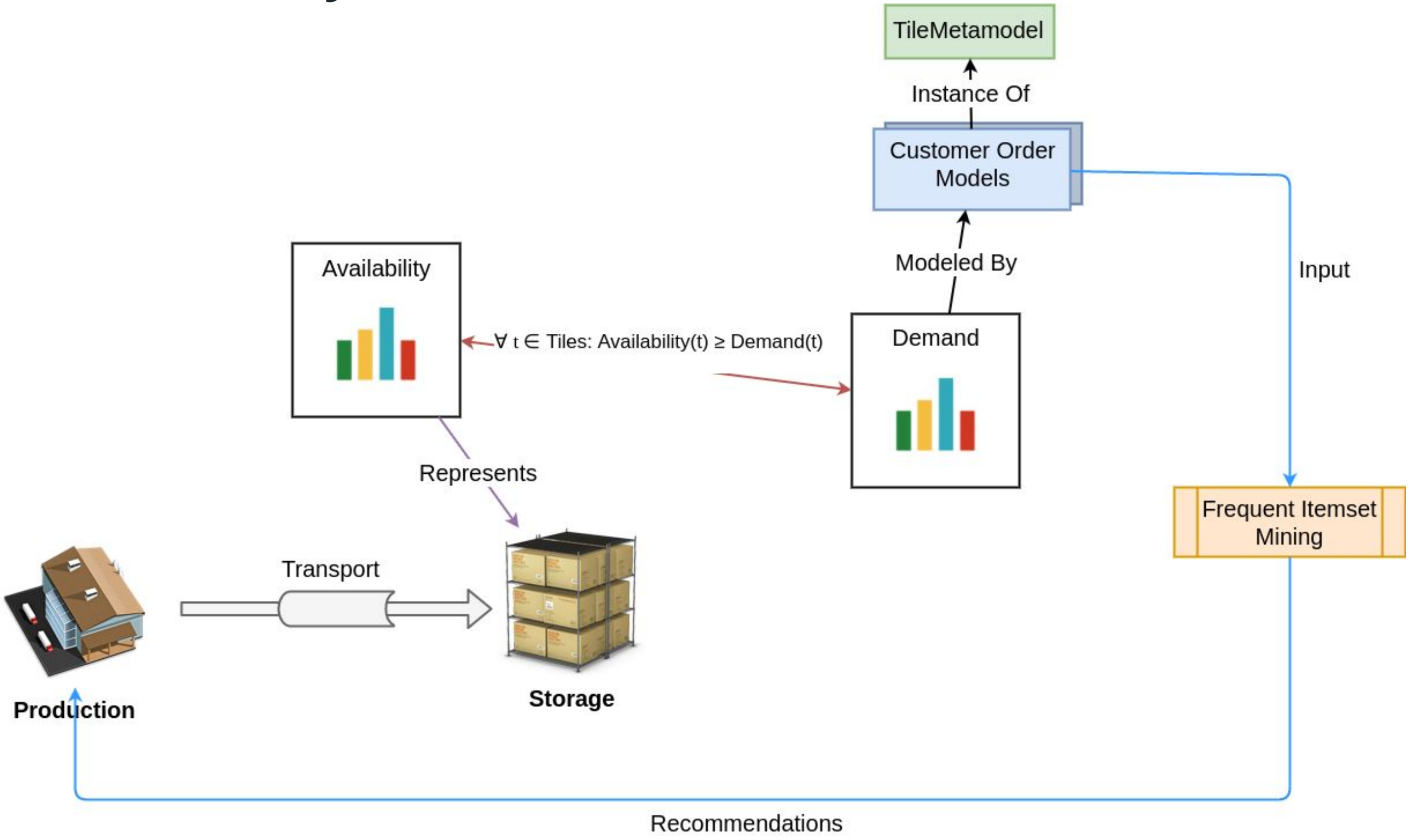
Reducing Communication Overhead



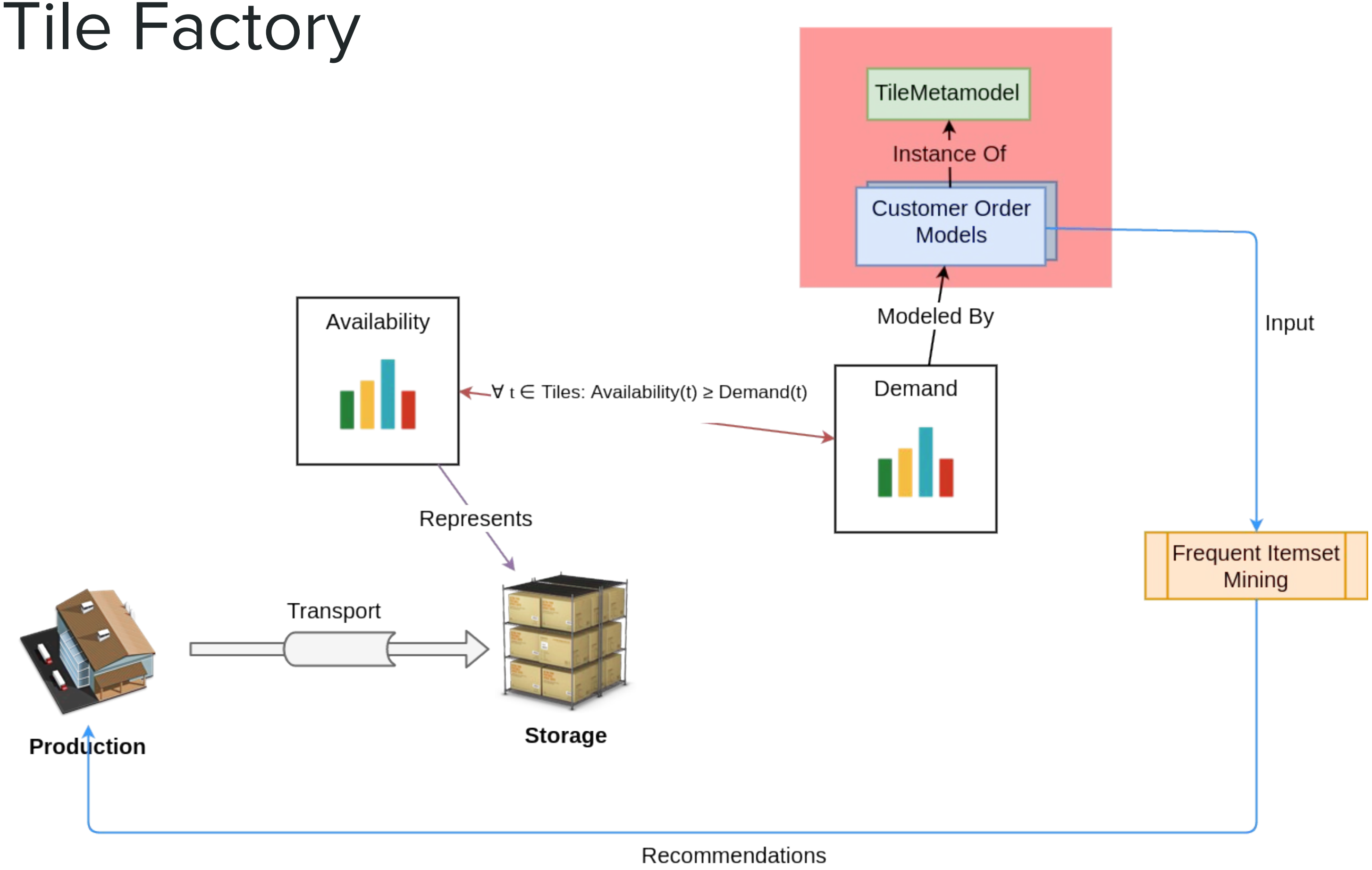
[2] Thomas Kühne, Gergely Mezei, Eugene Syriani, Hans Vangheluwe, and Manuel Wimmer. Explicit transformation modeling. In International Conference on Model Driven Engineering Languages and Systems, pages 240–255. Springer, 2009.

Context

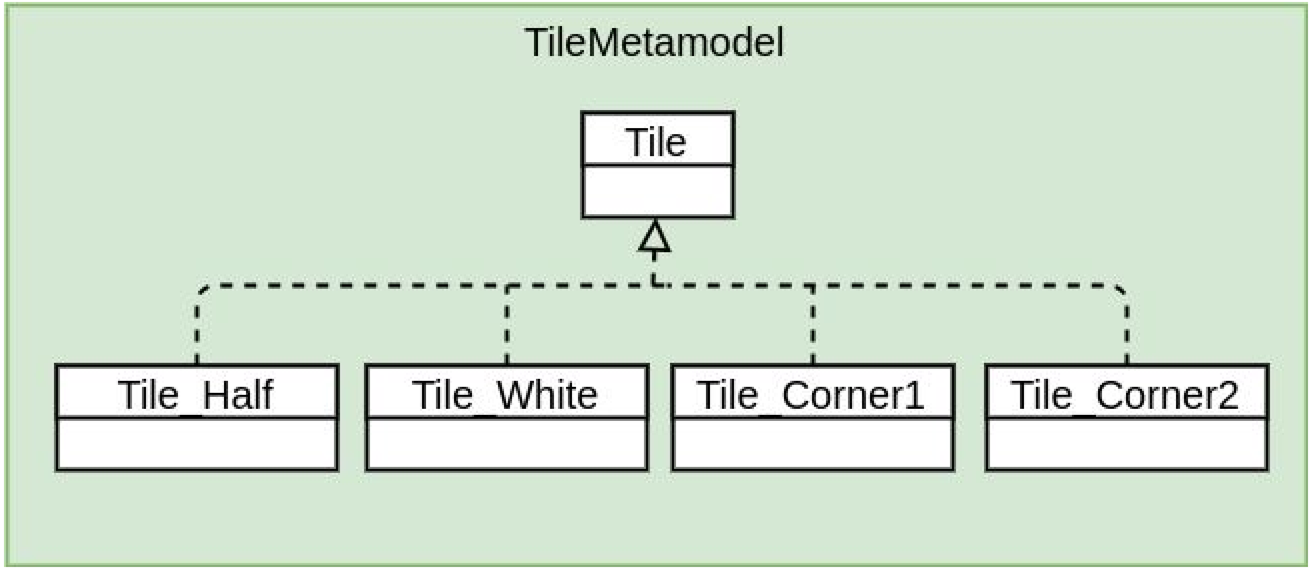
The Tile Factory



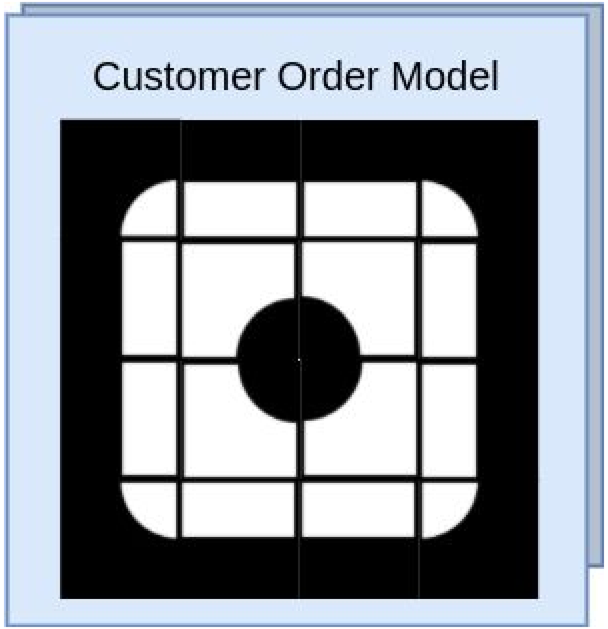
The Tile Factory



Tile Metamodel



The Instance Model



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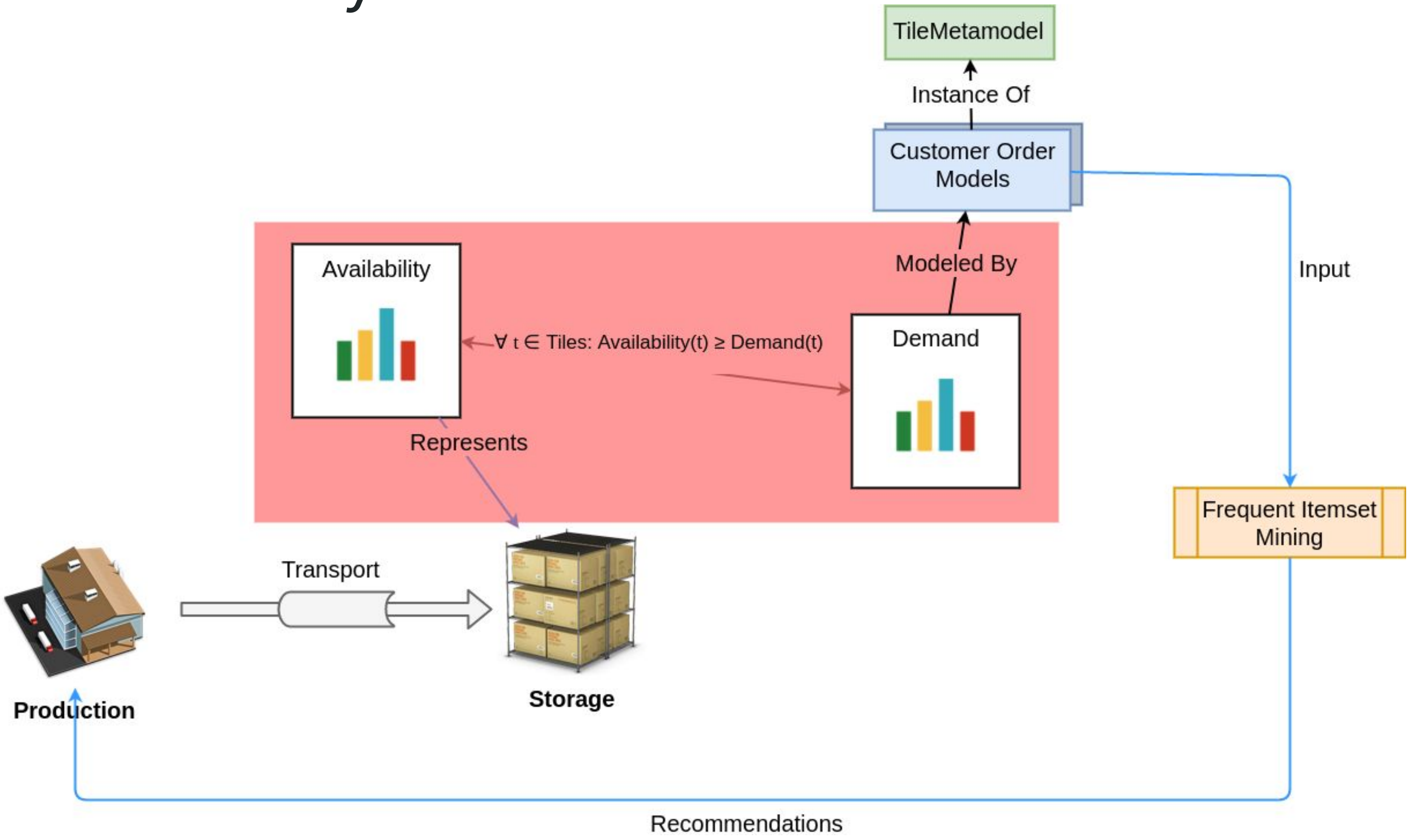

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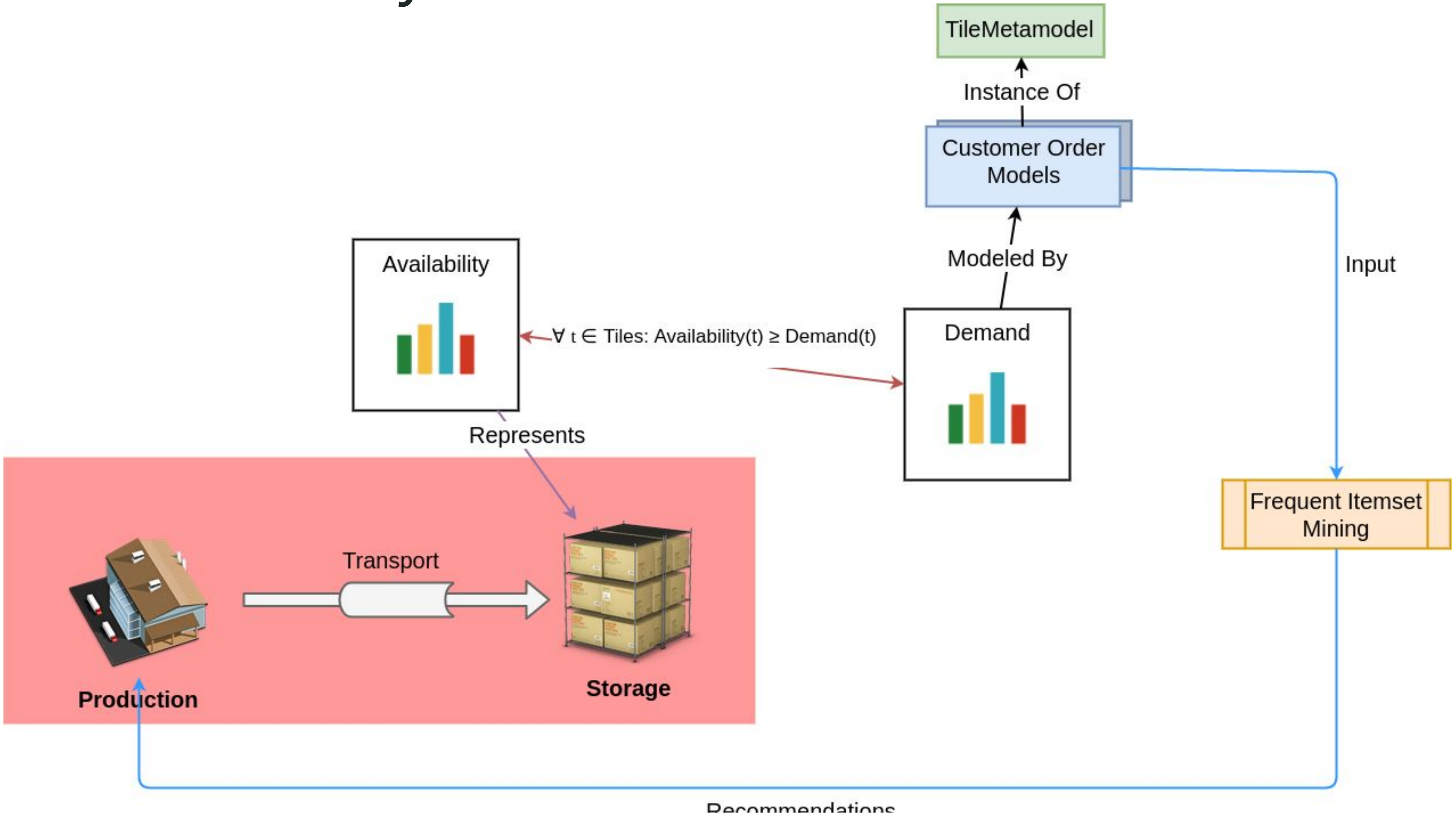

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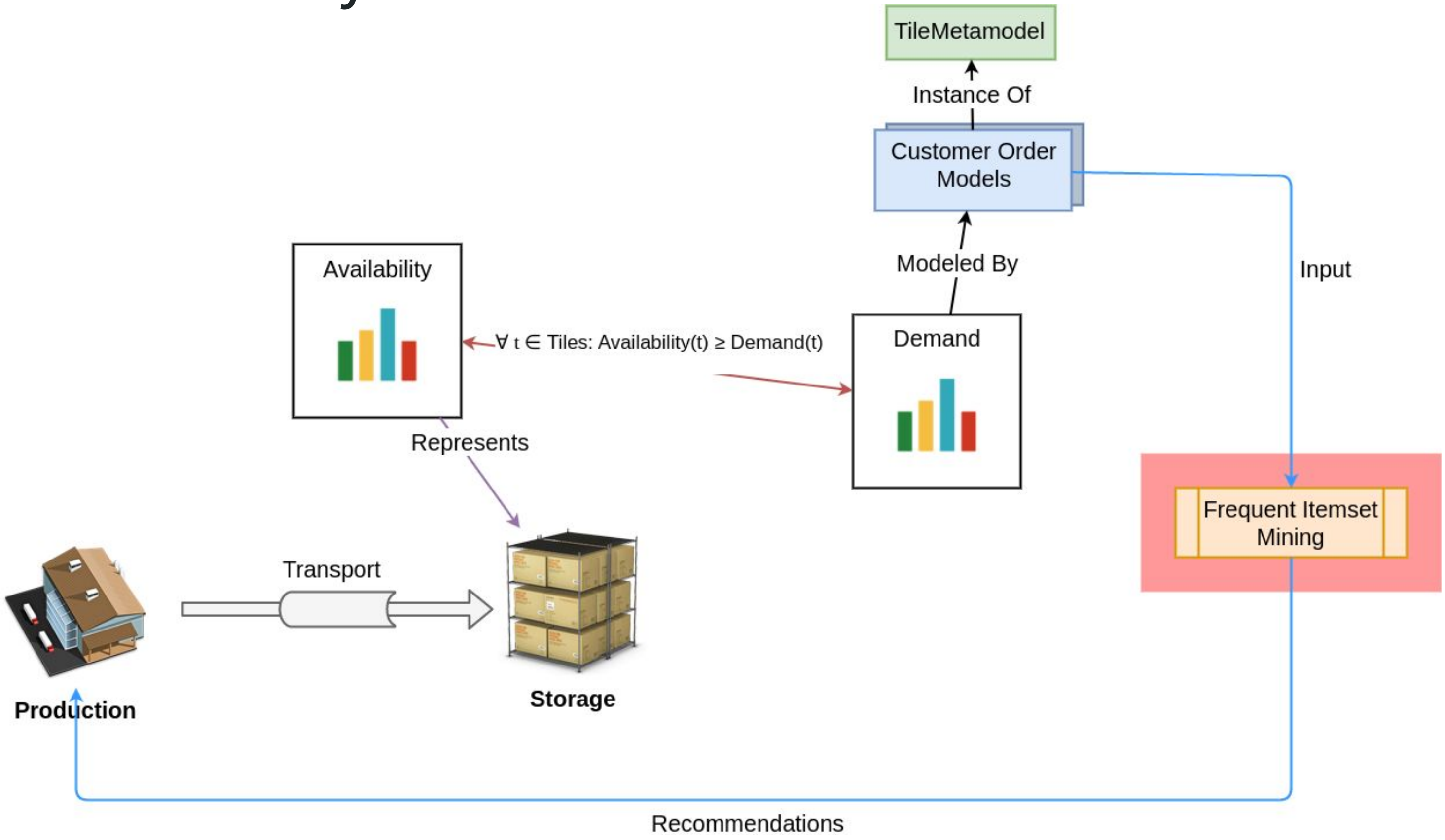
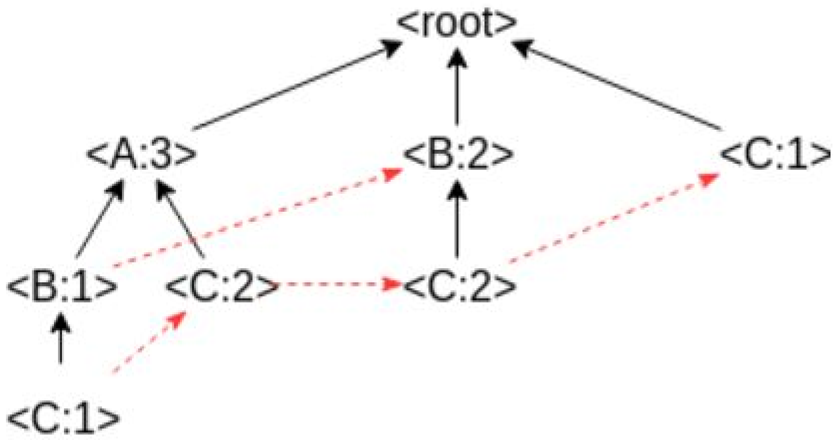


Explicitly Modeled Algorithm

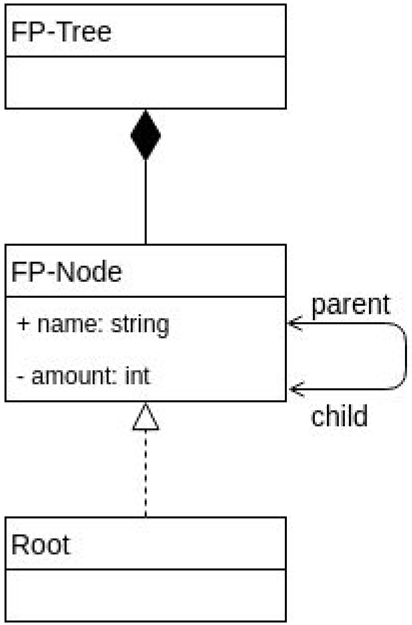
FP-Growth Algorithm

T1: A, B, C
T2: C
T3: B, C
T4: A
T5: A, C
T6: B, C

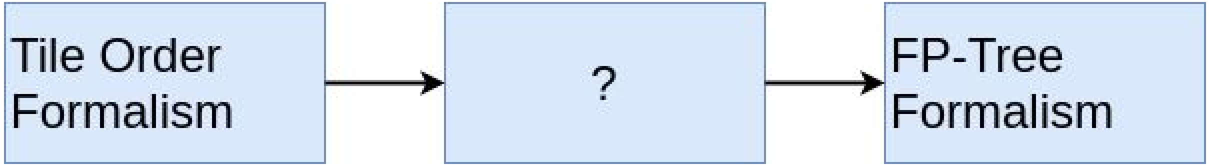


[5] Jiawei Han, Jian Pei, and Yiwen Yin. Mining frequent patterns without candidate generation. In ACM sigmod record, volume 29, pages 1–12. ACM, 2000.

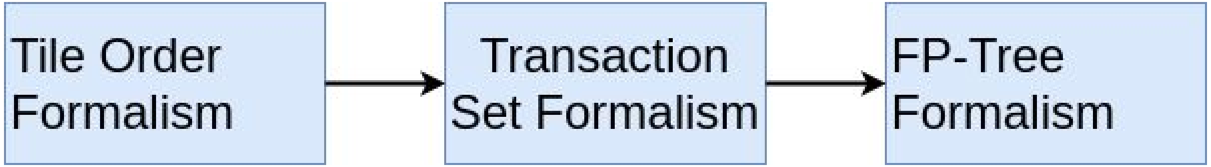
The FP-Tree Metamodel



Correspondence Model



Correspondence Model

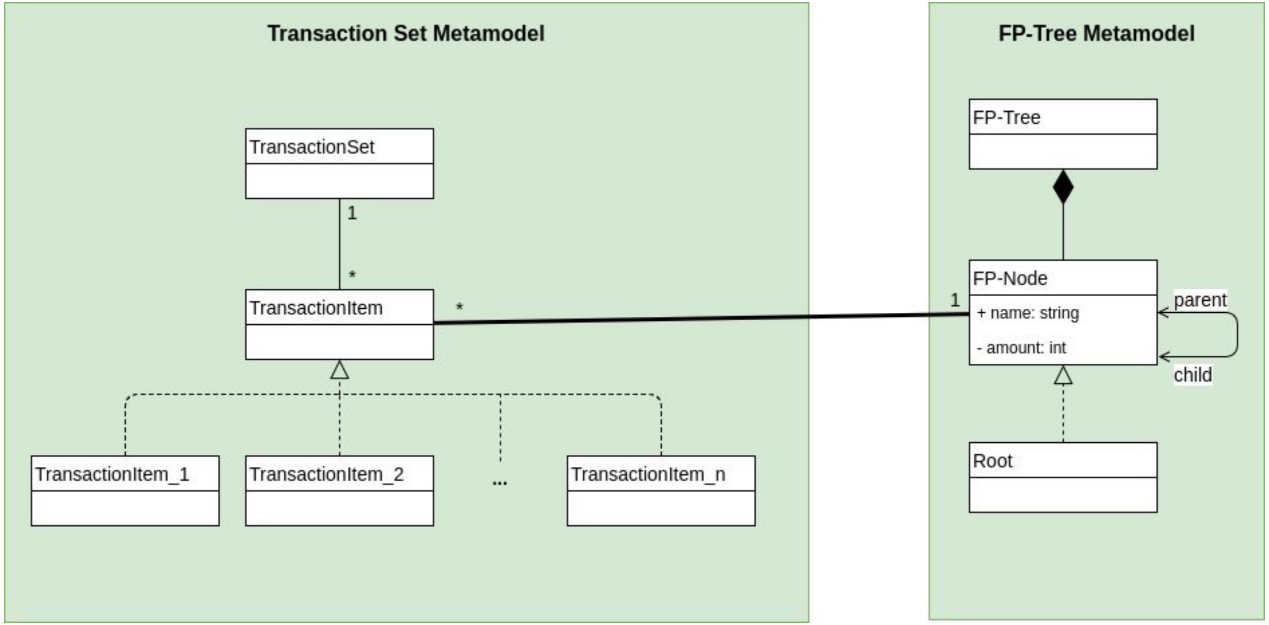


Tile Order Formalism

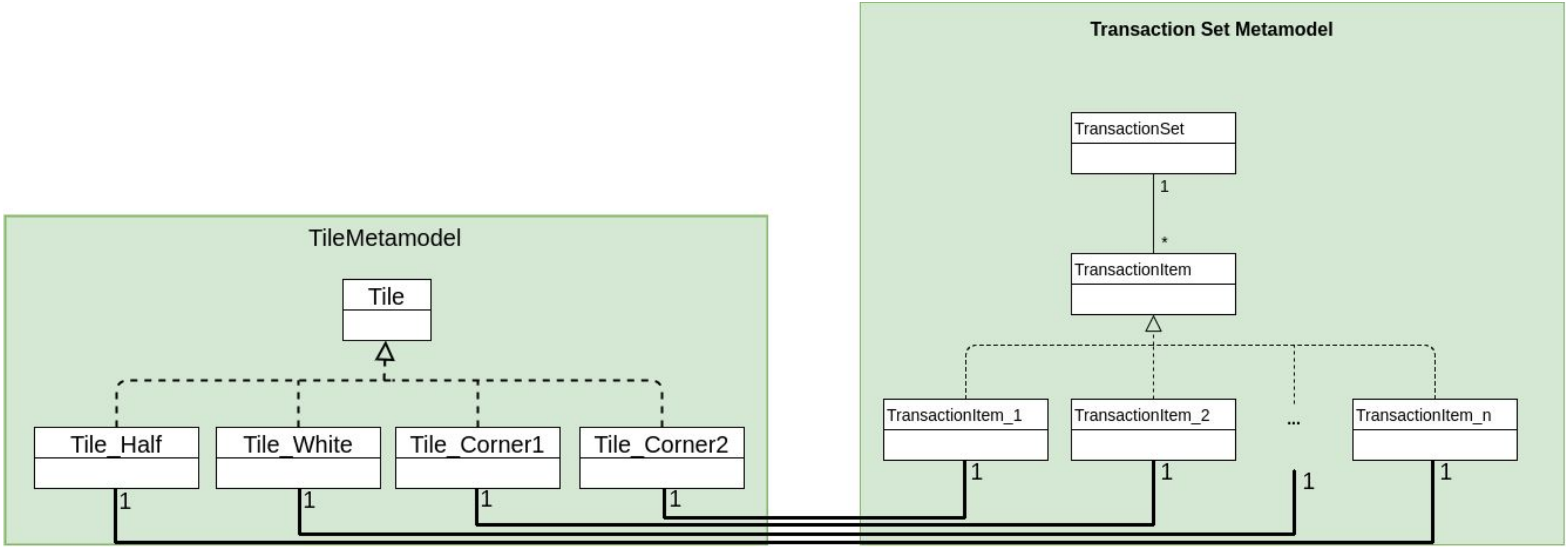
Transaction Set Formalism

FP-Tree Formalism

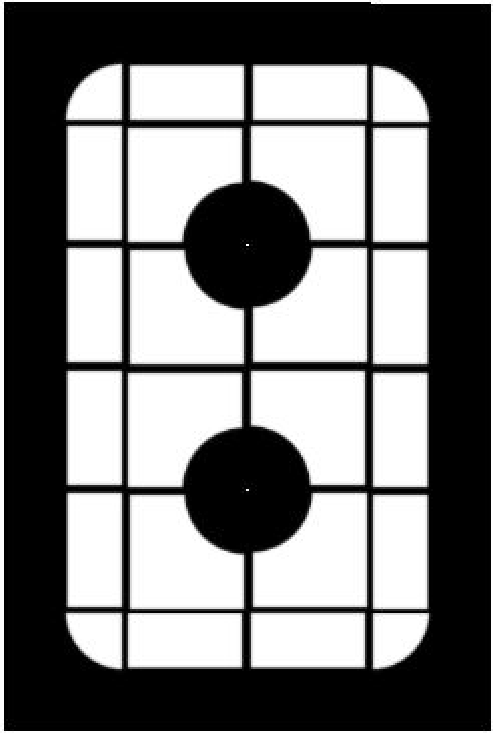
Transaction Set Metamodel



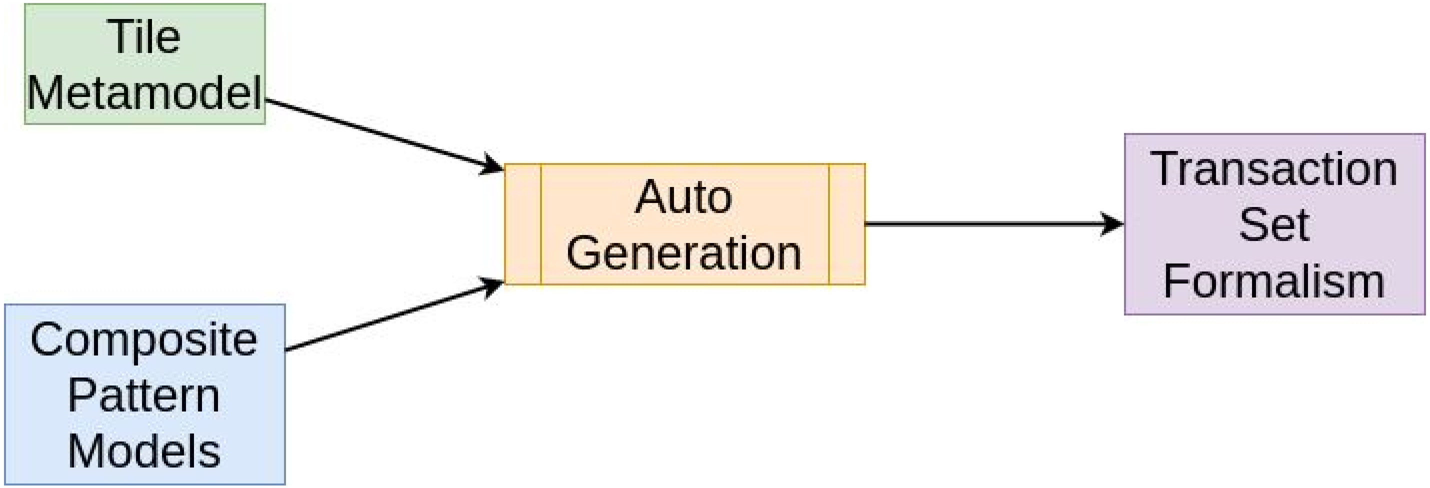
Transaction Set Metamodel



Composite Patterns



Auto Generation



Conclusion And Future Work

Conclusion

Explicitly modeling of algorithm

Model and algorithm on same level of reasoning

Application in supply chains

Future Work

A framework for applying any data mining algorithm to any kind of DSL.

Autogeneration of the correspondence models.

Performance study and possible optimizations.