

Visualizing Cost-Based XQuery Optimization

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XML Transaction Coordinator (XTC)*

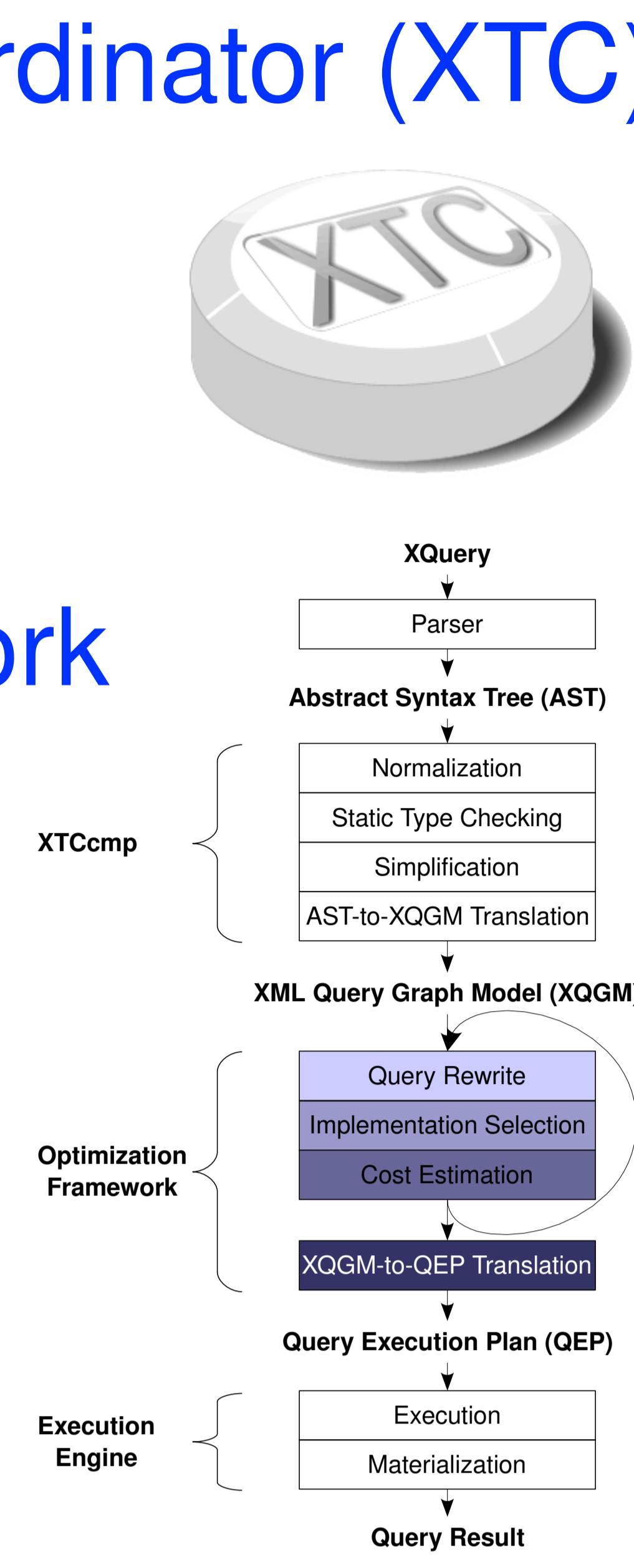
Key Aspects

- Native XML data management
- Testbed for XML query processing
- ACID transactions for dynamic XML



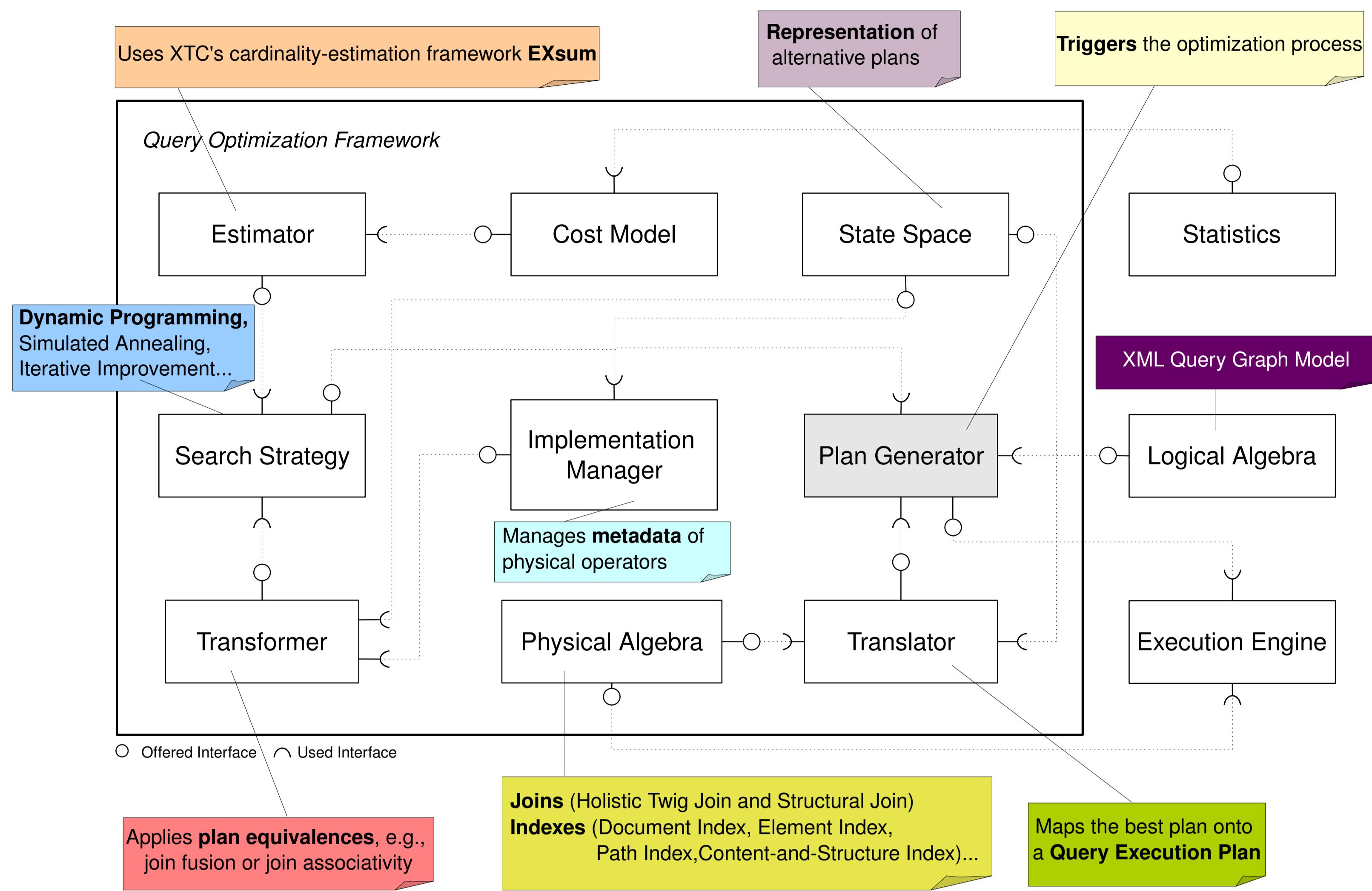
Optimization Framework

- Rule- and cost-based XQuery optimizer
- Allows to understand how and which relational query optimization techniques can be successfully (re-)used in the context of XQuery
- Visual explanation tool allows to track the complete query optimization process
- Hot reconfiguration of the optimizer



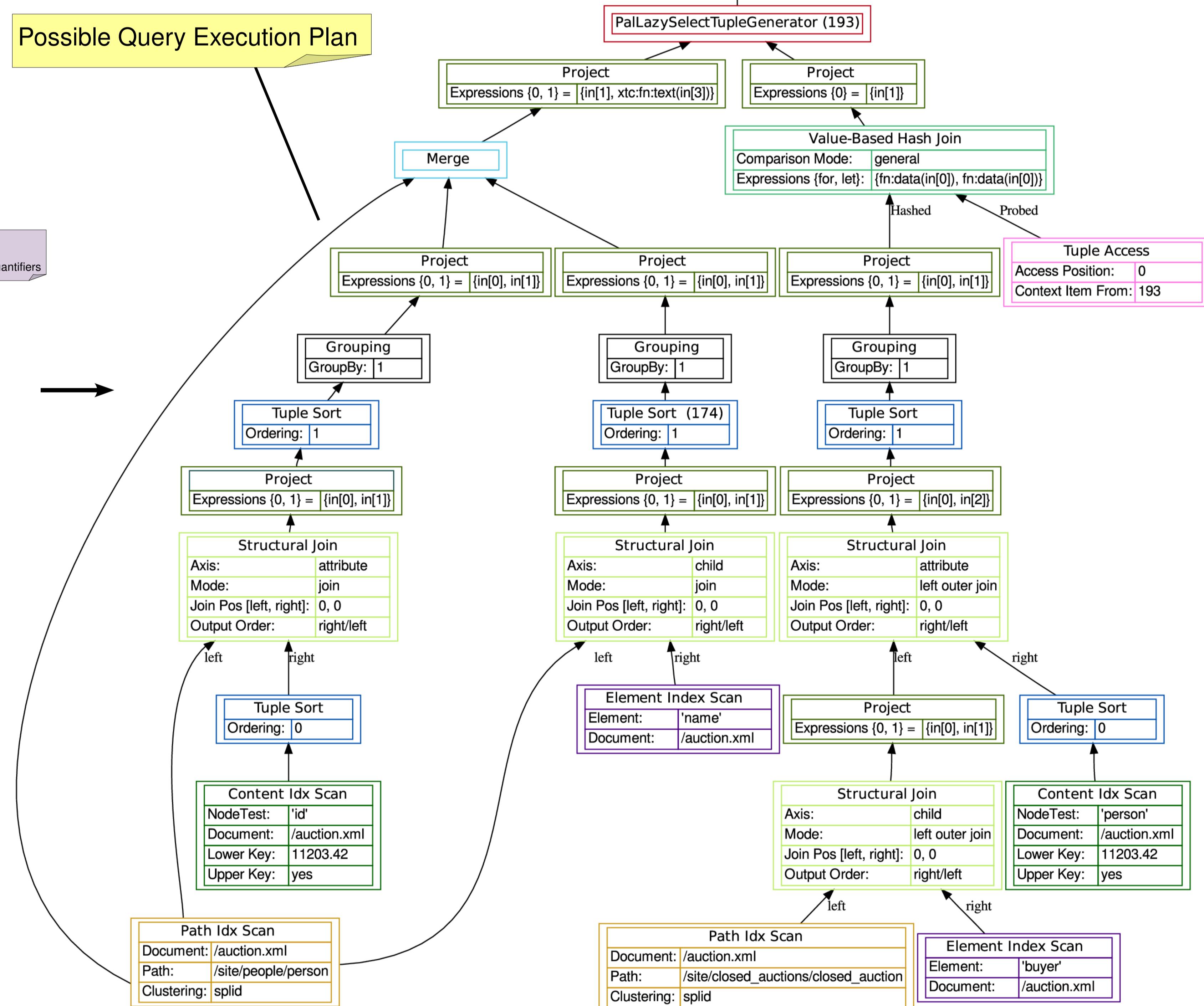
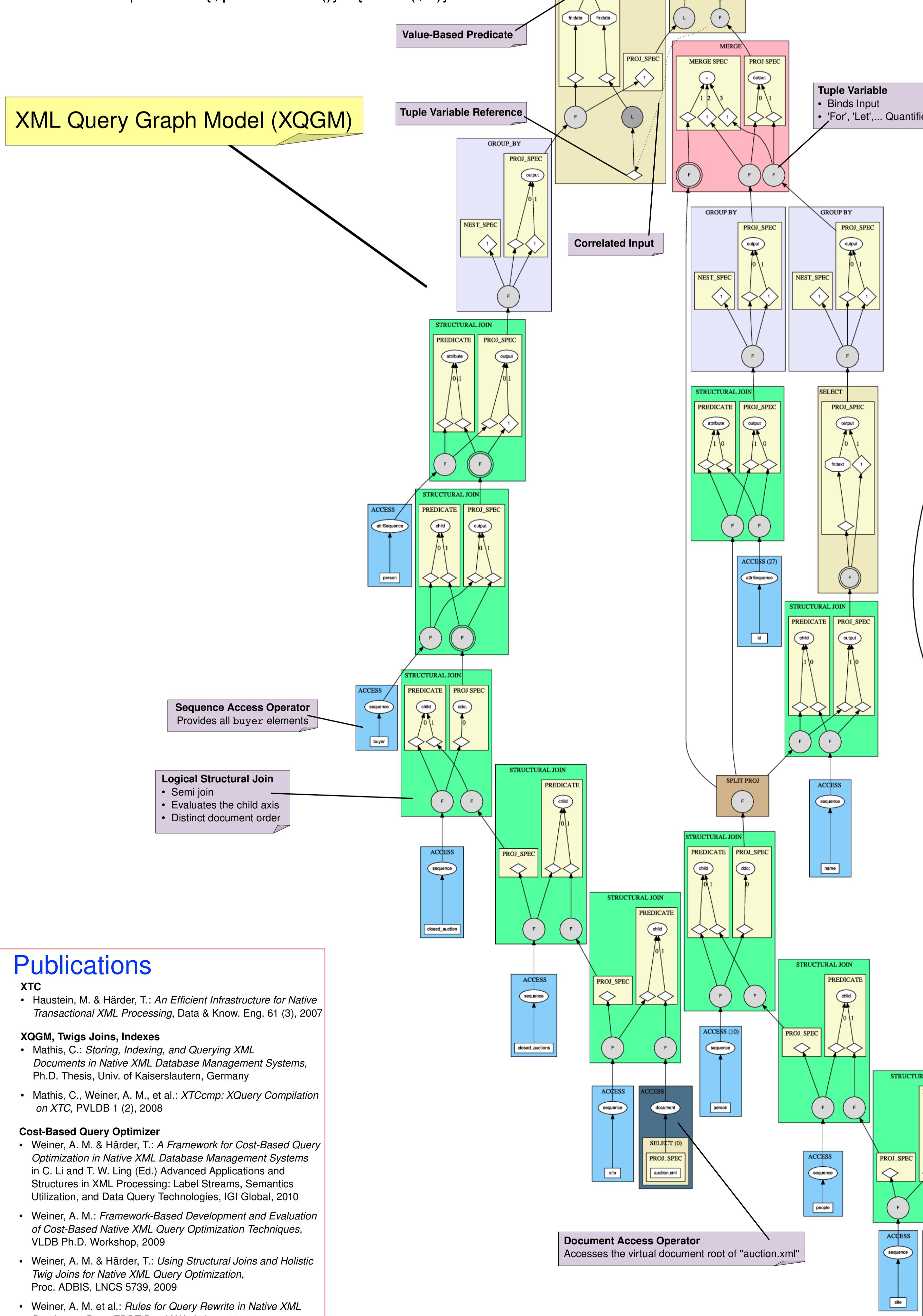
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Optimizer Architecture

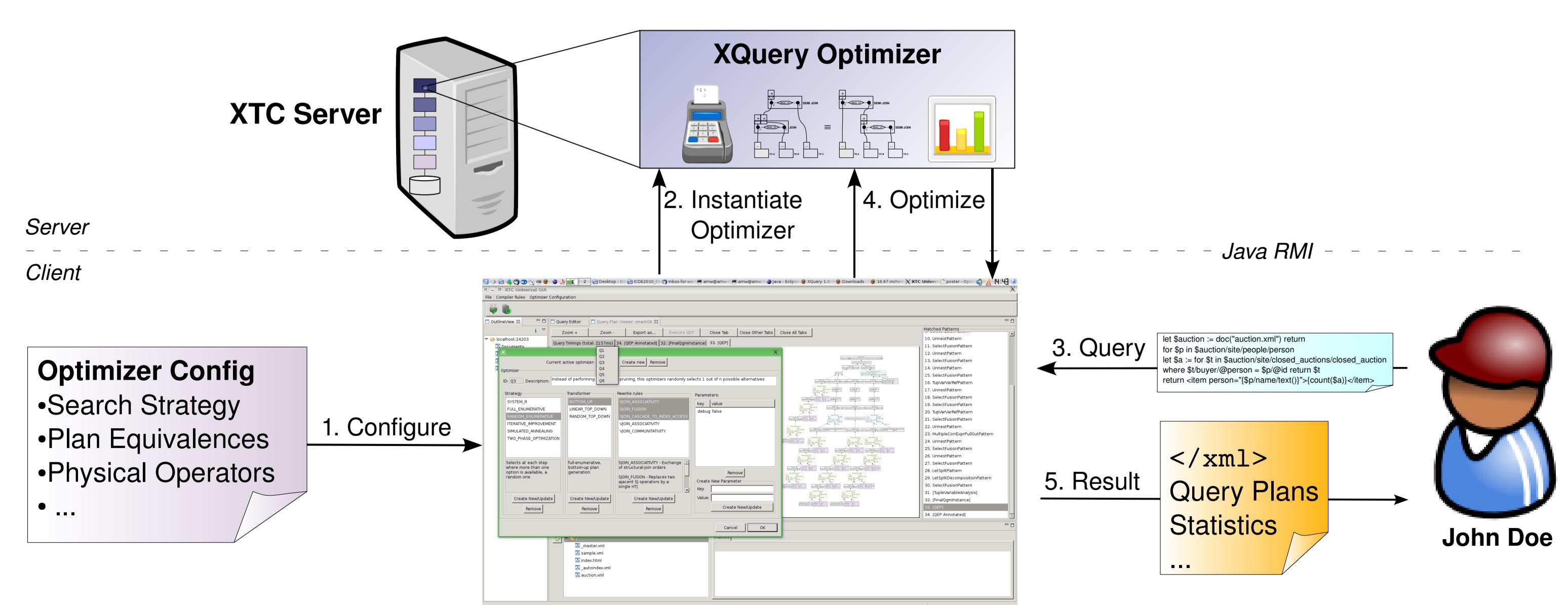


XMark Query Q8

```
let $auction := doc("auction.xml") return
for $p in $auction/site/people/person
let $a := for $t in $auction/site/closed_auctions/closed_auction
where $t/buyer/@person = $p/@id return $t
return <item person="{$p/name/text()}">>{count($a)}</item>
```



Demonstration Setup



Publications

- XTC**
 - Haustein, M. & Härdter, T.: An Efficient Infrastructure for Native Transactional XML Processing, Data & Knowl. Eng., 61 (3), 2007
- XQGM, Twigs Joins, Indexes**
 - Mathis, C.: Storing, Indexing, and Querying XML Documents in Native XML Database Management Systems, Ph.D. Thesis, Univ. of Kaiserslautern, Germany
 - Mathis, C., Weiner, A. M., et al.: XTCmp: XQuery Compilation on XTC, VLDB 1 (2), 2008
- Cost-Based Query Optimizer**
 - Weiner, A. M. & Härdter, T.: A Framework for Cost-Based Query Optimization in Native XML Database Management Systems in C. Li and T. W. Ling (Ed.) Advanced Applications and Structures in XML Processing: Label Streams, Semantics Utilization, and Data Query Technologies, IGI Global, 2010
 - Weiner, A. M.: Framework-Based Development and Evaluation of Cost-Based Native XML Query Optimization Techniques, VLDB Ph.D. Workshop, 2009
 - Weiner, A. M. & Härdter, T.: Using Structural Joins and Holistic Twigs Joins for Native XML Query Optimization, Proc. ADBIS, LNCS 5739, 2009
 - Weiner, A. M. et al.: Rules for Query Rewrite in Native XML Databases, Proc. EDBT DataX Workshop, 2008