



Data Layouts

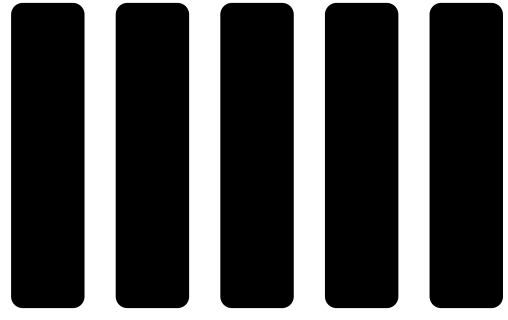
OLTP vs. OLAP

2 types of applications,
2 types of systems

Transactional



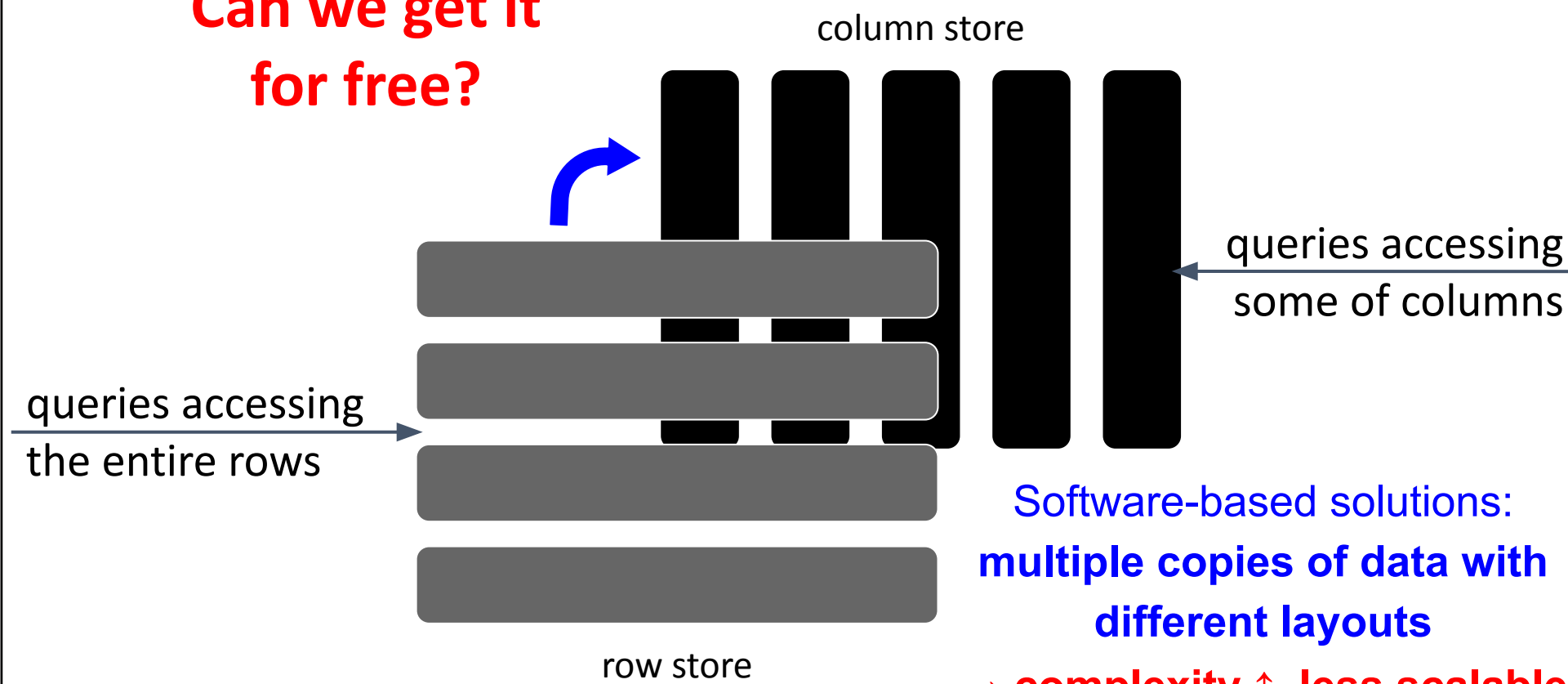
Analytical



Can we have the benefits of both
with one system?

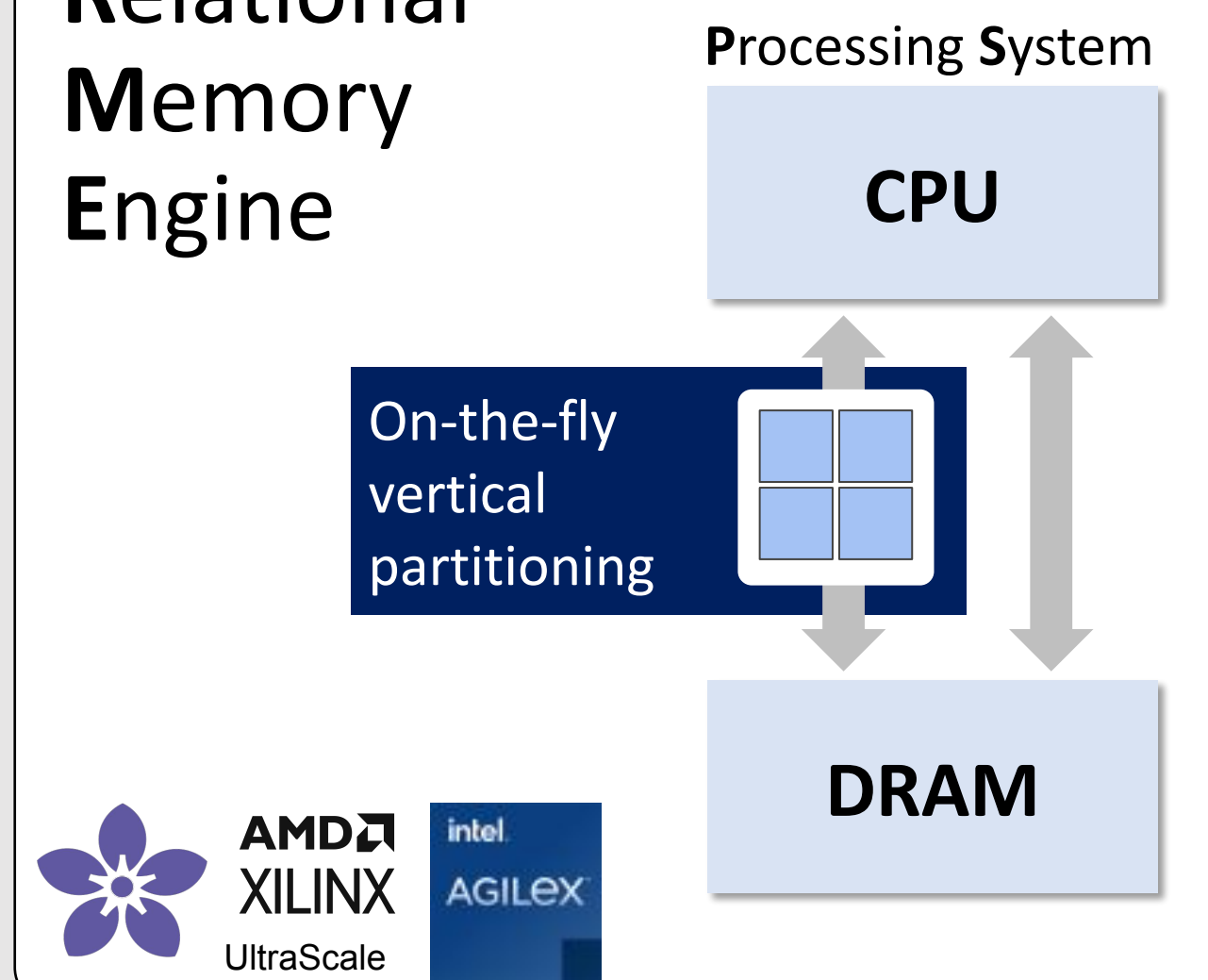
Adaptive Layout

Can we get it
for free?

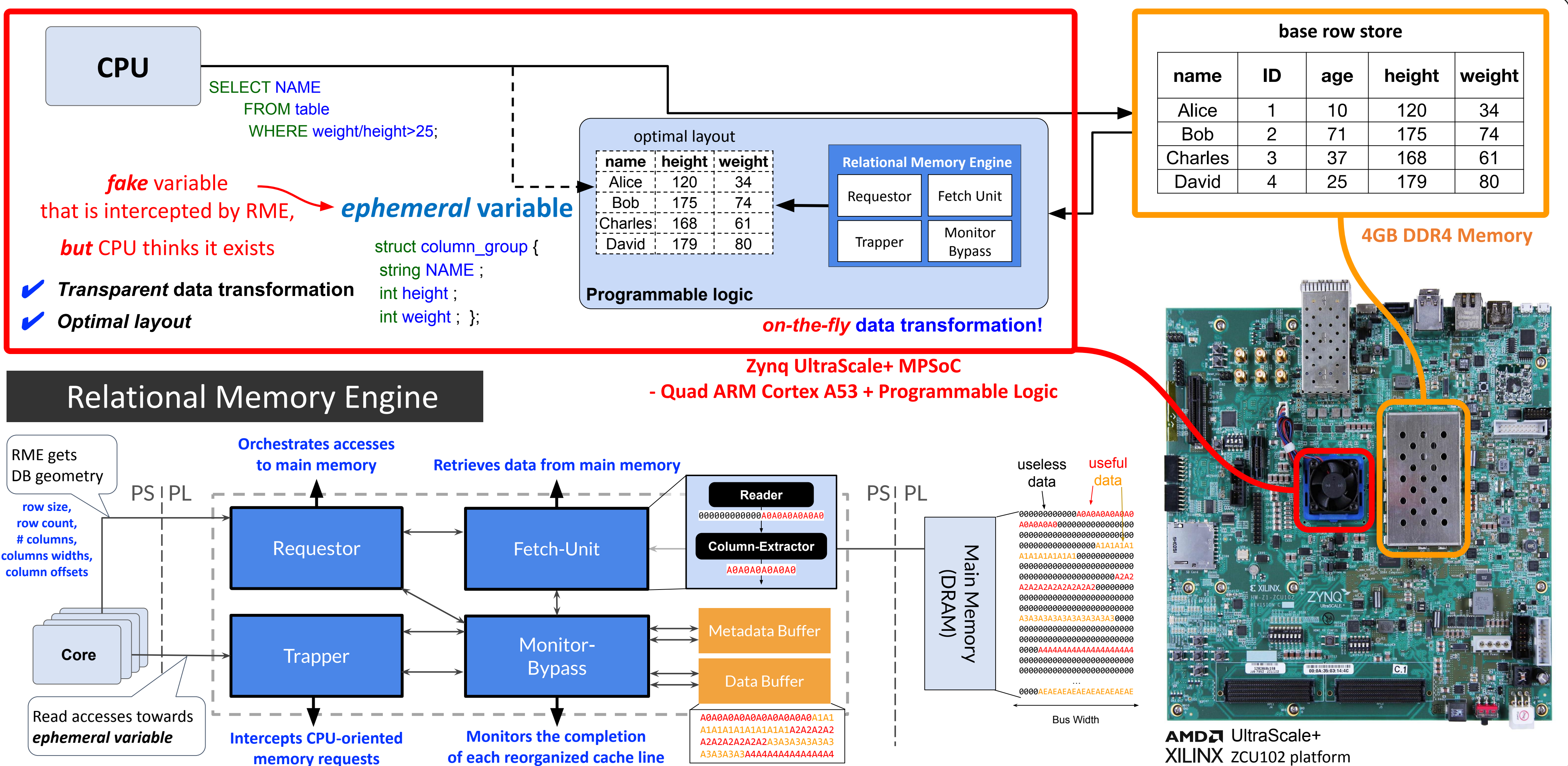


E.g. H2O (SIGMOD, 2014), HyPer (ICDE, 2011), Peloton (SIGMOD, 2016), OctopusDB (CIDR, 2011)

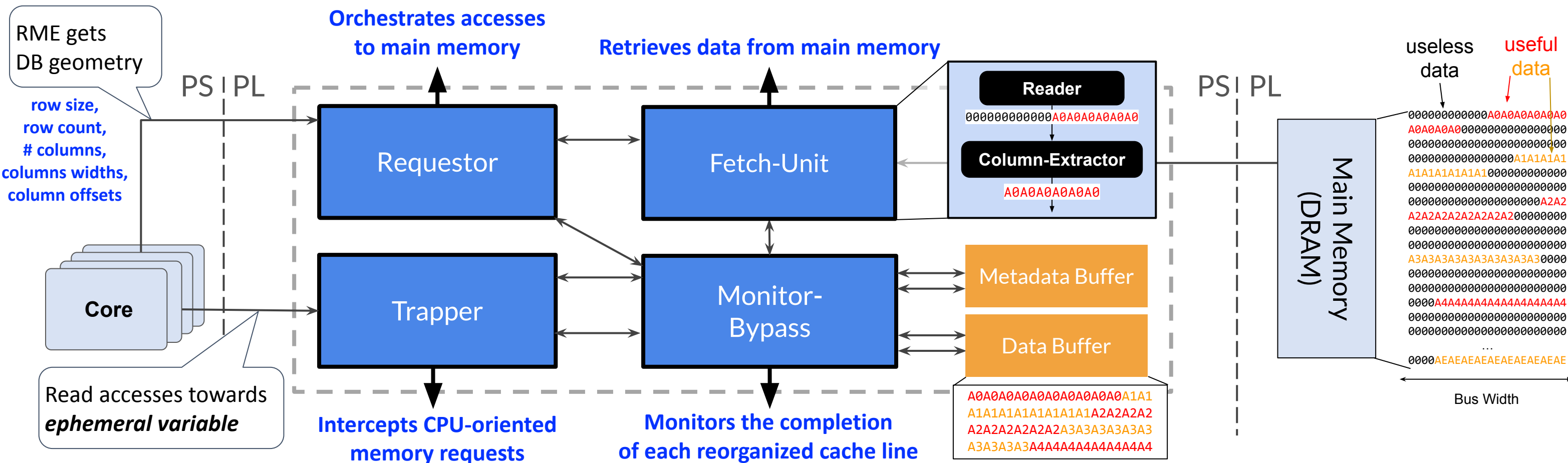
Relational Memory Engine



Relational Memory



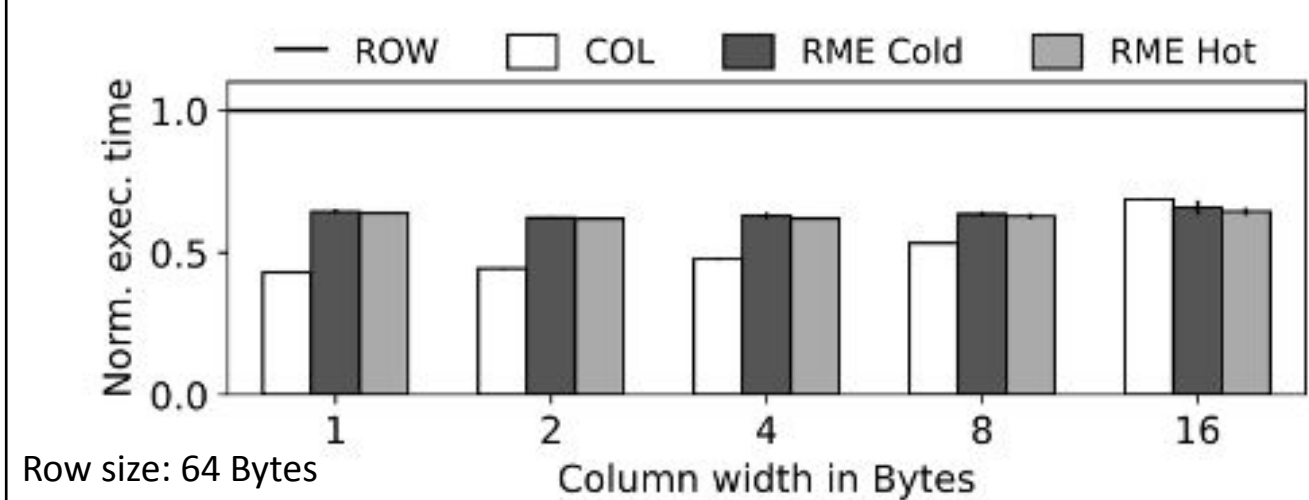
Relational Memory Engine



Demonstration Scenarios

S1. Overhead of Fetching Data through RME

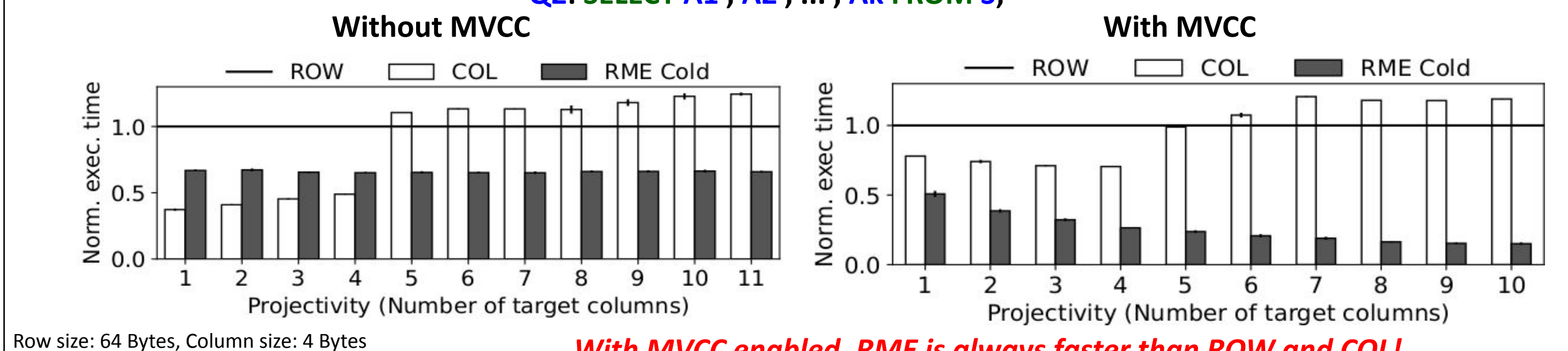
Q1: SELECT AVG(A1) FROM S;



RME Cold has virtually the same performance
as RME Hot!

S2. MVCC Updates

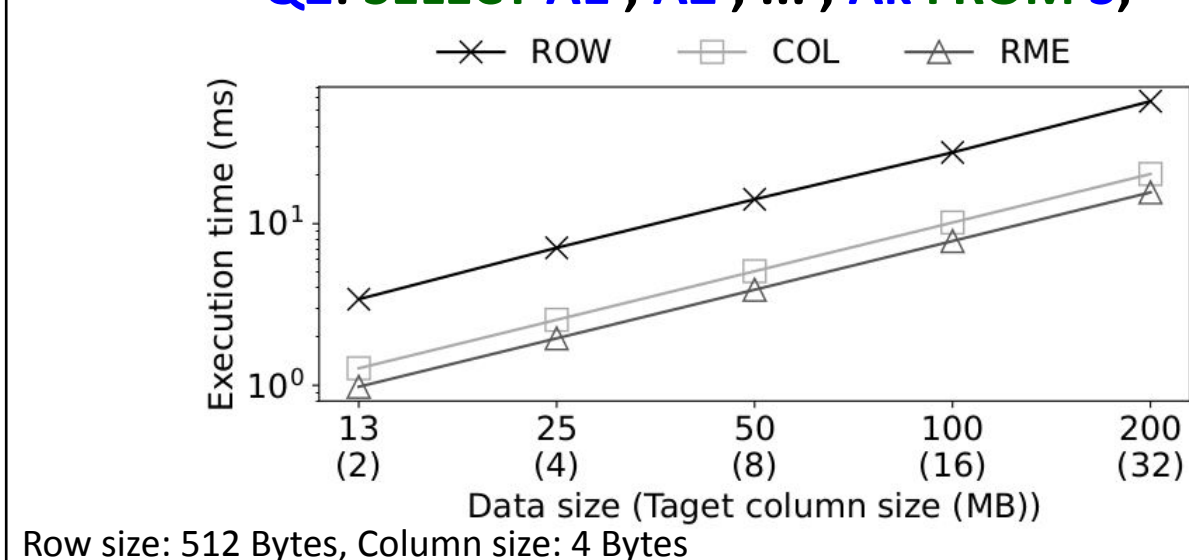
Q2: SELECT A1, A2, ..., Ak FROM S;



With MVCC enabled, RME is always faster than ROW and COL!

S3. Scalability of RME

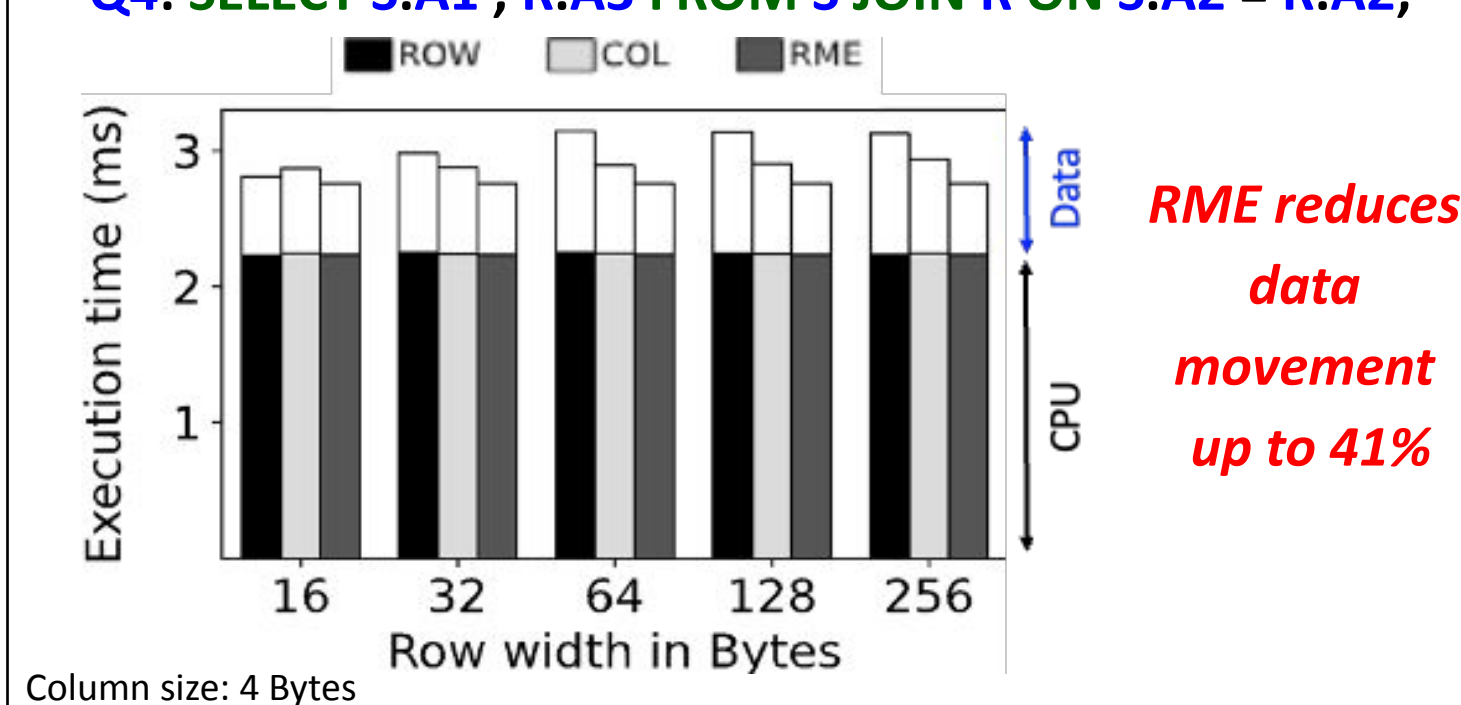
Q2: SELECT A1, A2, ..., Ak FROM S;



RME benefits regardless of the data size
by offering optimal layout

S4. Join Queries

Q4: SELECT S.A1, R.A3 FROM S JOIN R ON S.A2 = R.A2;



RME reduces
data
movement
up to 41%

Ongoing Work

