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PG-Strom
~A FDW module utilizing GPU device~

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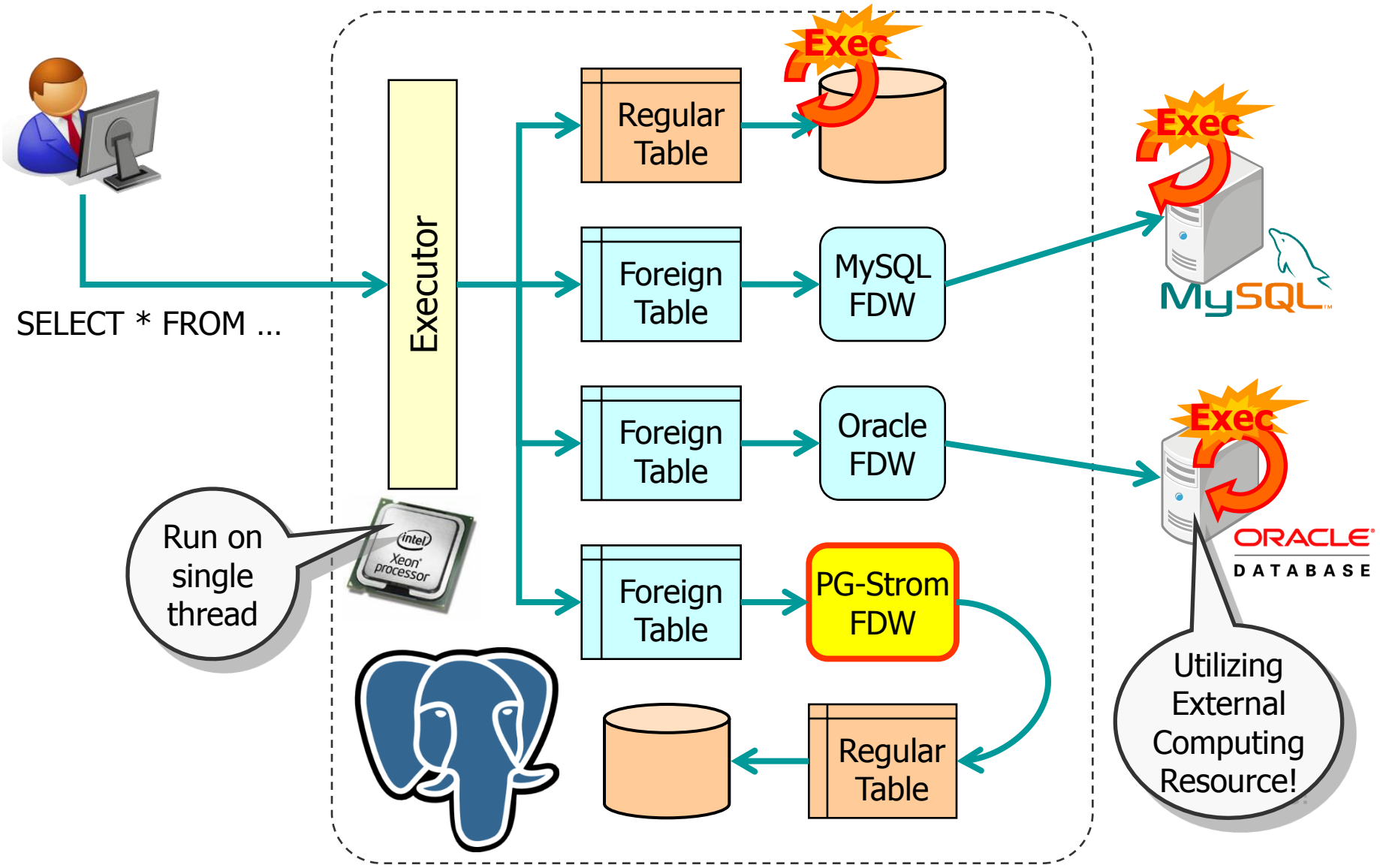
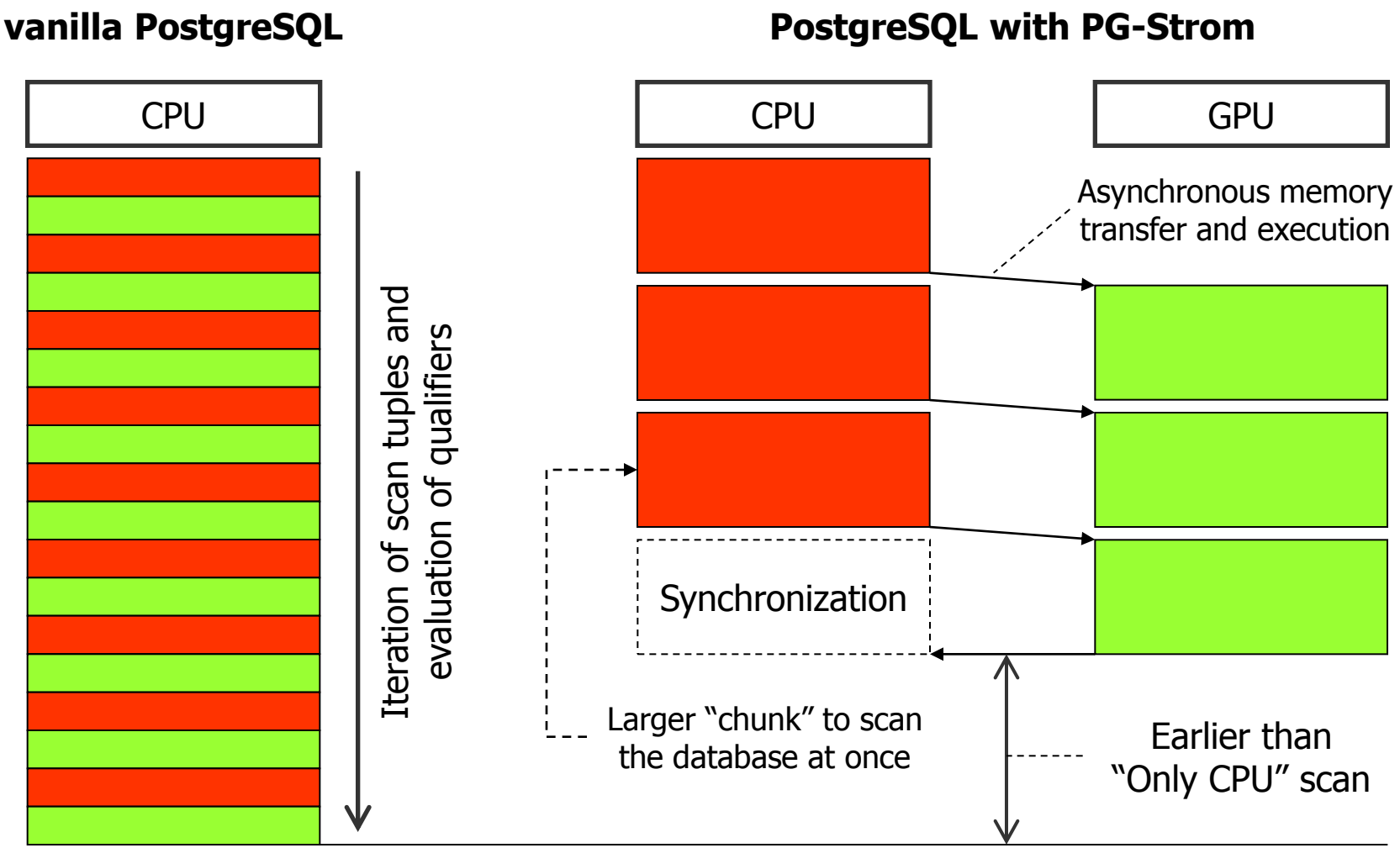
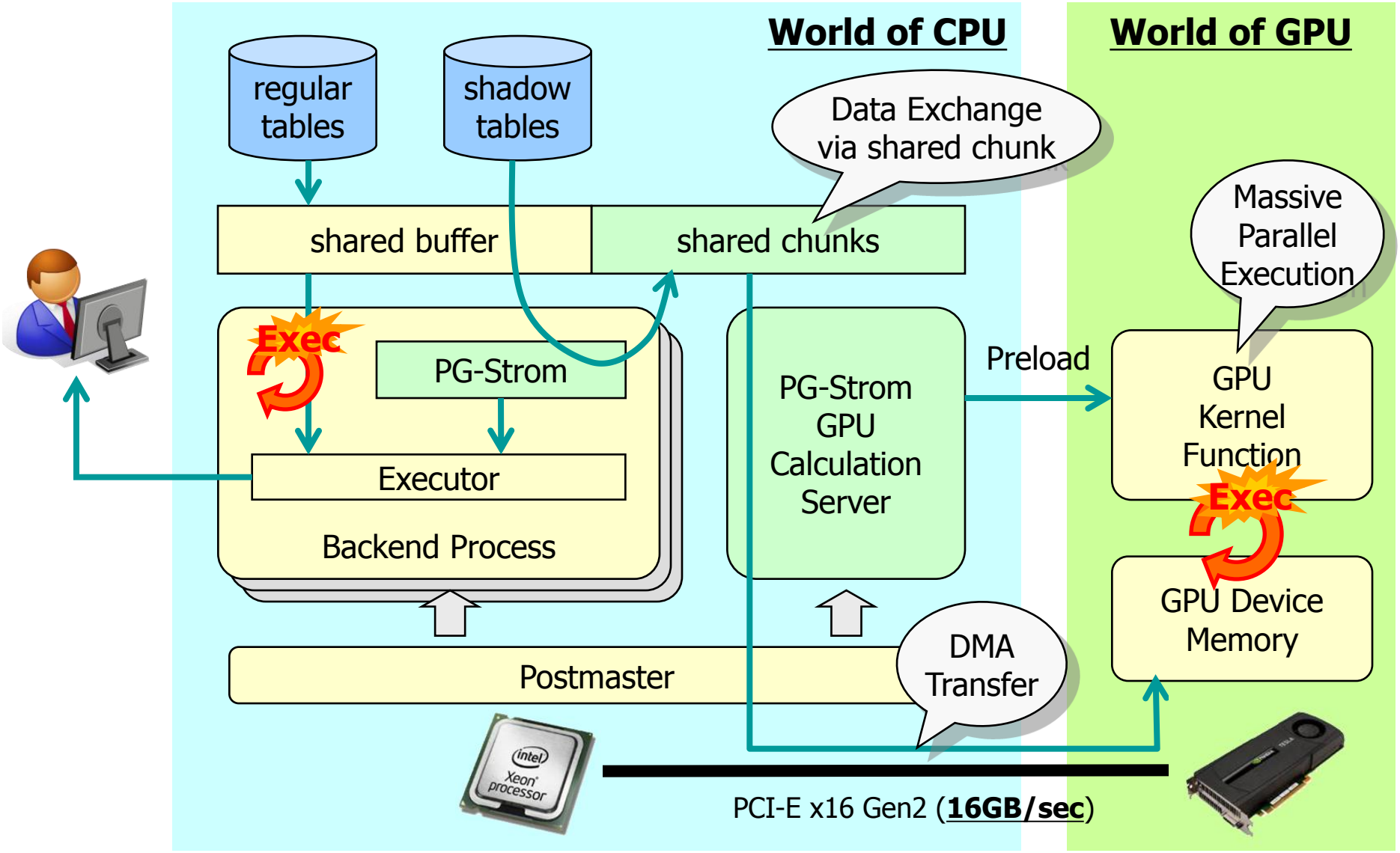
FDW is fun


SELECT * FROM ...
Executor
Regular Table
Exec
Foreign Table
MySQL FDW
Exec
MySQL
Foreign Table
Oracle FDW
Exec
ORACLE DATABASE
Foreign Table
PG-Strom FDW
Regular Table
Run on single thread
intel Xeon processor
Utilizing External Computing Resource!

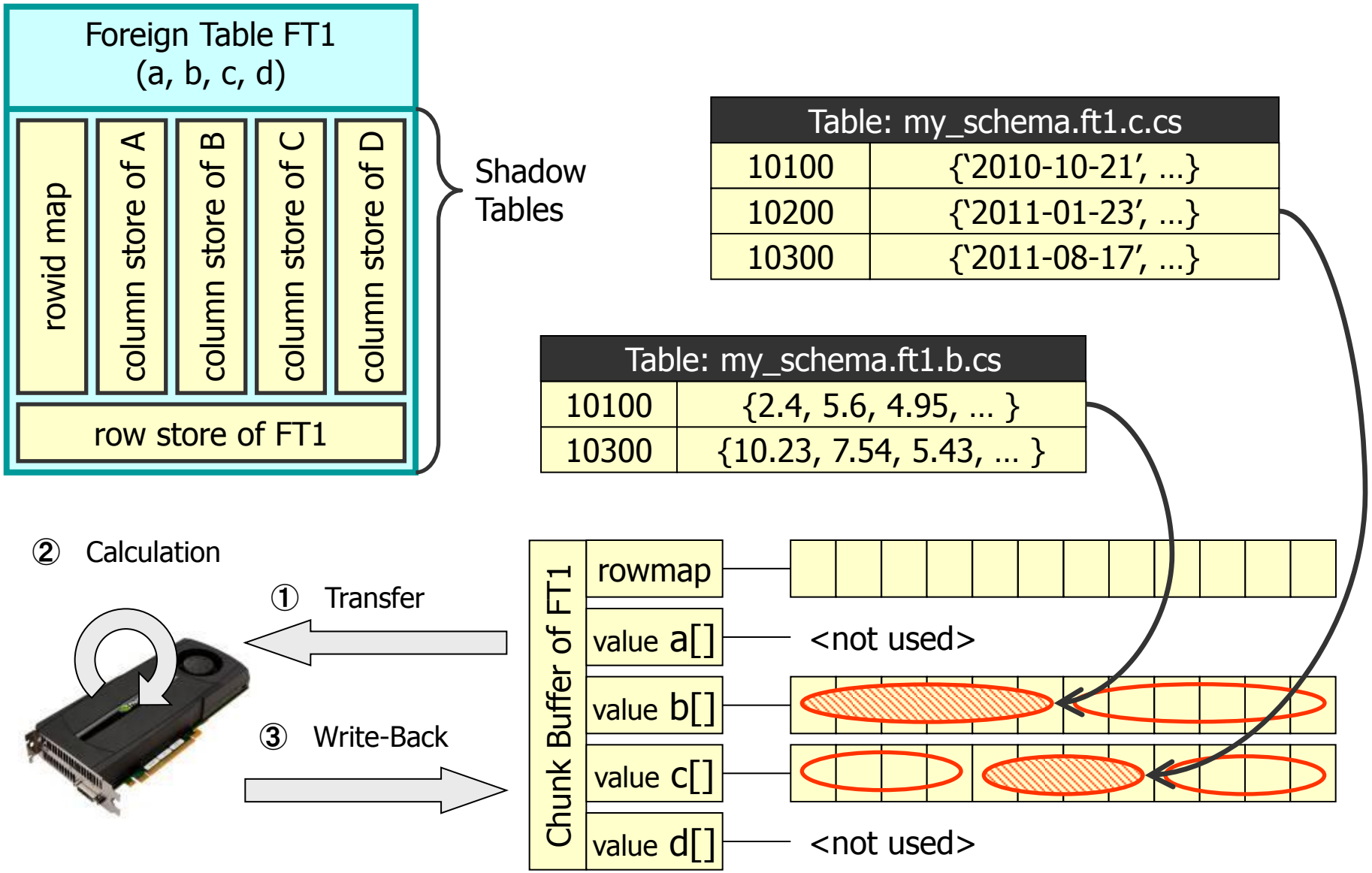
Idea of Asynchronous Execution using CPU and GPU



Architecture of PG-Strom



Data Density and Column-base structure



Benchmark Result

```
postgres=# SELECT COUNT(*) FROM rtbl
                WHERE sqrt((x-256)^2 + (y-128)^2) < 40;
 count
-------
 25069
(1 row)

Time: 3739.492 ms

postgres=# SELECT COUNT(*) FROM ftbl
                WHERE sqrt((x-256)^2 + (y-128)^2) < 40;
 count
-------
 25069
(1 row)
Time: 227.023 ms
```

GPU Accelerated!

X10 times Faster

- CPU: Intel Xeon E5504 (2.0GHz/4core), GPU: Nvidia GeForce GTS450 (128 cuda core)
- **rtbl** and **ftbl** contains 5 million tuples, with same values.
- All the tuples are already in the shared buffers, so seldom disk i/o happen.

Future Development

Git URL

https://github.com/kaigai/pg_strom

v9.3 development

- Writable Foreign Table
- Sort / Aggregate acceleration using GPU
- Inheritance between regular and foreign tables

Need your help

- Folks who can review the patches
- Folks who can provide real-life big data
- Folks who can know typical workload of analytic queries

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