SQLAlchemy

(Not just) ORM Magic

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https://github.com/ajkavanagh/pyne-sqlalchemy-2015-04

What are we going to cover?

- History
- Some key features
- Code examples
- Q & A

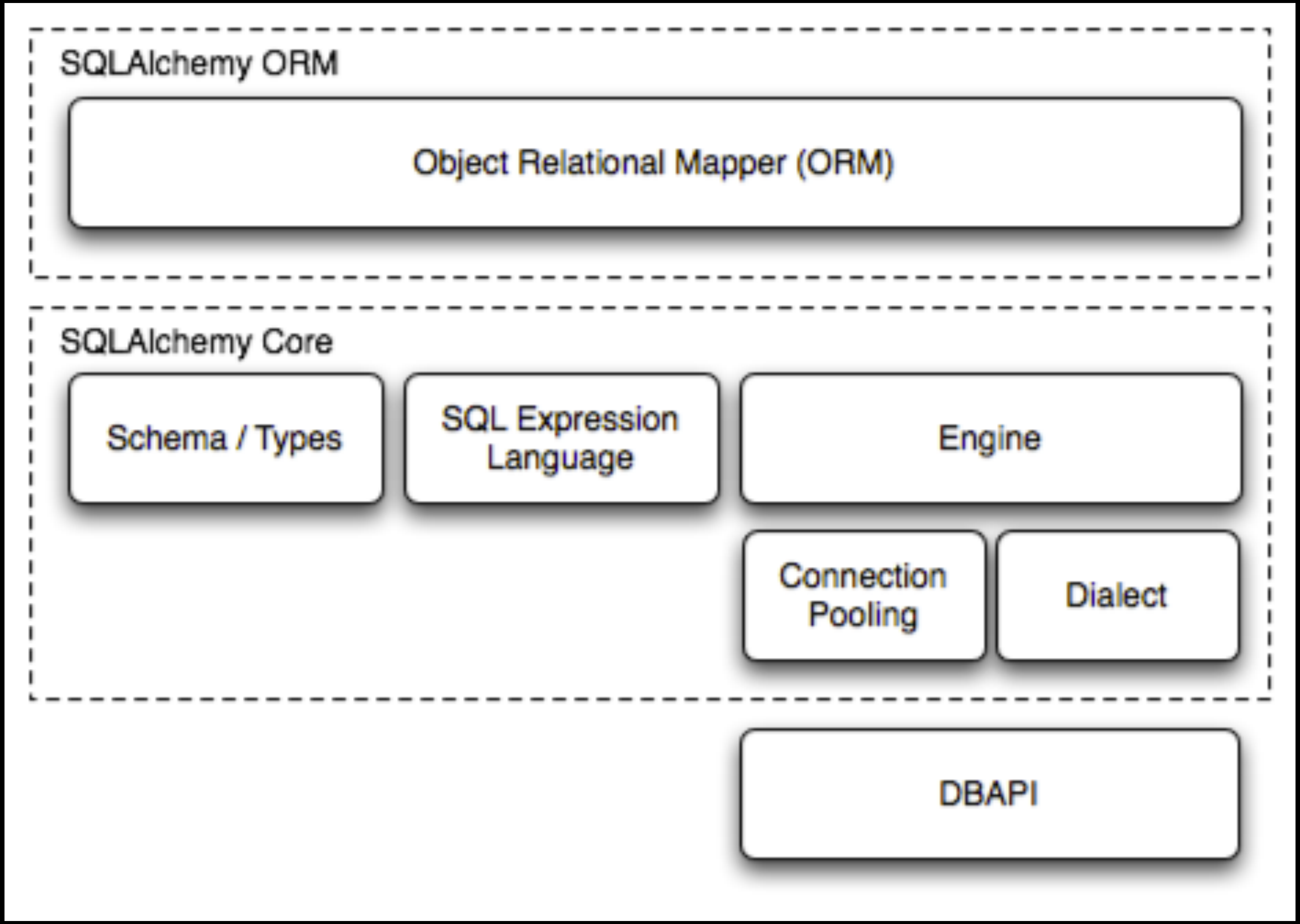
SQLAlchemy History

- First release 14 February 2006
- Version 1.0.0b5 released 3 April 2015
- Version 0.9.9 is stable released 10 March 2015
- Mike Bayer, @zzzeek

Key Concepts:

No ORM Required

Block Overview

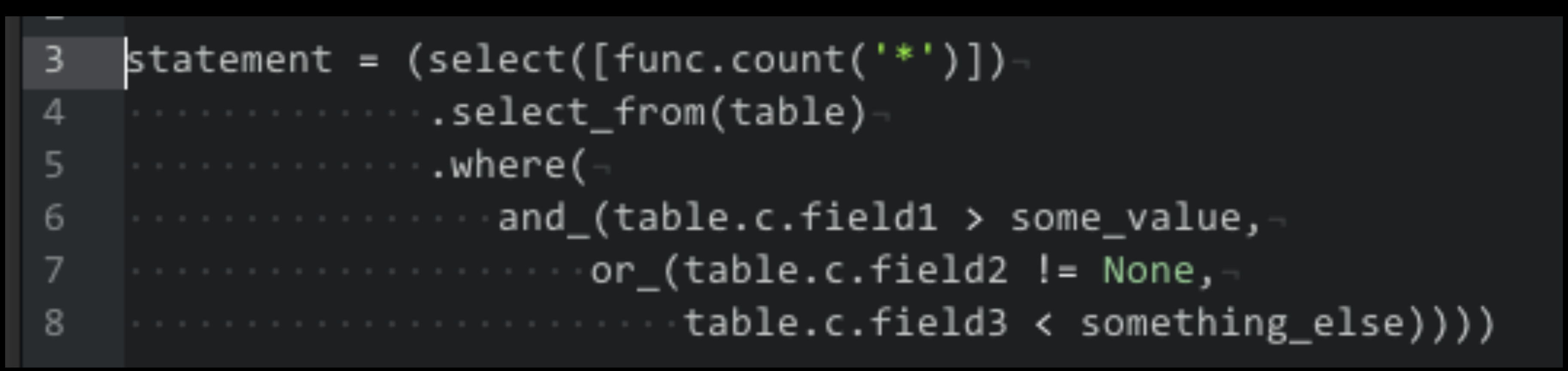


Non-Opinionated

Unit Of Work

… the ‘Session’ in the ORM

Function-based query construction



```
statement = (select([func.count('*')])
             .select_from(table)
             .where(
                and_(table.c.field1 > some_value,
                    or_(table.c.field2 != None,
                        table.c.field3 < something_else))))
```

Modular and Extensible

Composite (multiple-column) primary keys

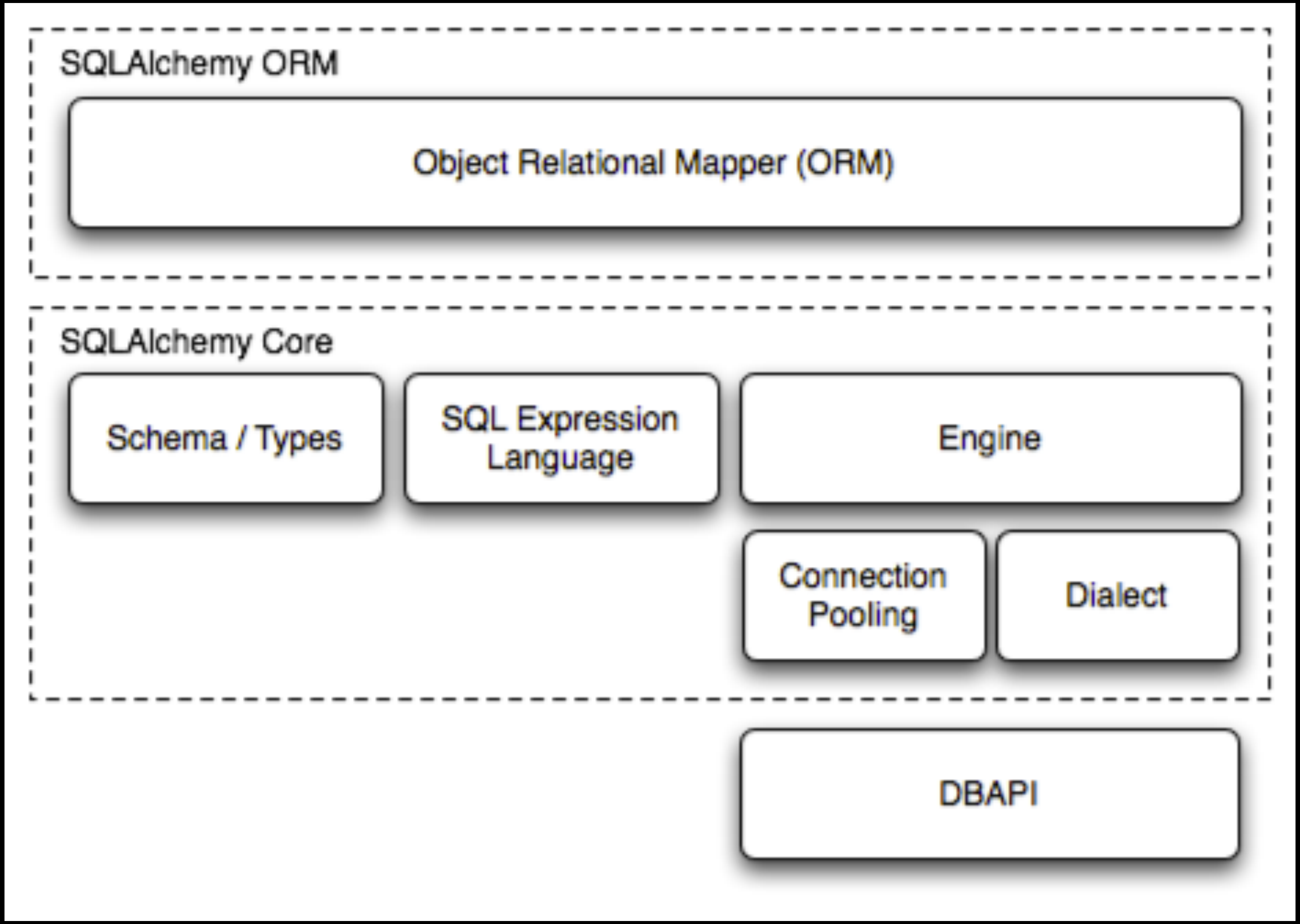
Supported Databases

via the standard Python P249 DBAPI v2

In-the-box support

- Drizzle
- Firebird
- Microsoft SQL Server
- MySQL
- Oracle
- PostgreSQL
- SQLite
- Sybase
- … and custom types!

Here we are again!



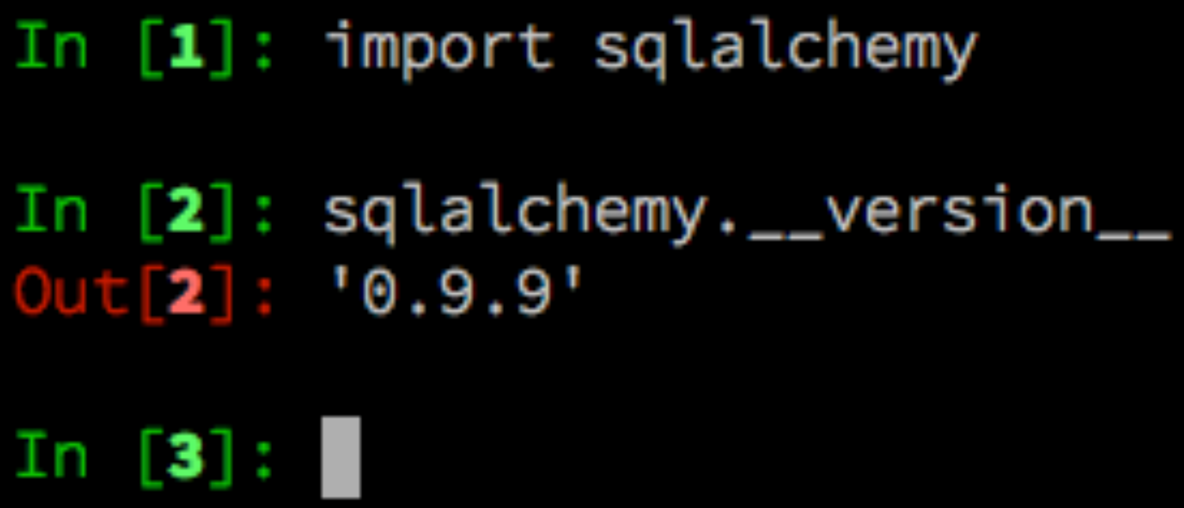
SQLA Core

- Schema Centric Model
- Tables and Columns
- SELECT, UPDATE, DELETE functions
- SQL as Python functions
- Returns rows of tuples representing columns

SQLA ORM

- Domain Model focussed
- Uses the “Session” to manage object lifetimes
- Classes for Objects mapped to tables/columns
- Built on the SQLA Core
- Choice depends on your application!
- You can use both in the same application.

Getting Started



```
In [1]: import sqlalchemy

In [2]: sqlalchemy.__version__
Out[2]: '0.9.9'

In [3]: 
```

SQLA ORM Session

- A whole talk in itself
- The SQLAlchemy Session - In Depth - Youtube
    - http://tinyurl.com/m5xl6tr

Session - key points

- It’s “Lazy”
- Transactions by default
- Dirty ‘data’ (not yet committed)
- Objects identified by primary_key are always the same (i.e. class objects are proxies for data in the session)
- You can flush the session at any time.
- Session object states of ‘transient’, ‘pending’, ’persistent’ and ‘detached’

That’s all folks!

- Q&A
- Me: @ajkavanagh / alex@ajkavanagh.co.uk
- SQLAlchemy: http://www.sqlalchemy.org/