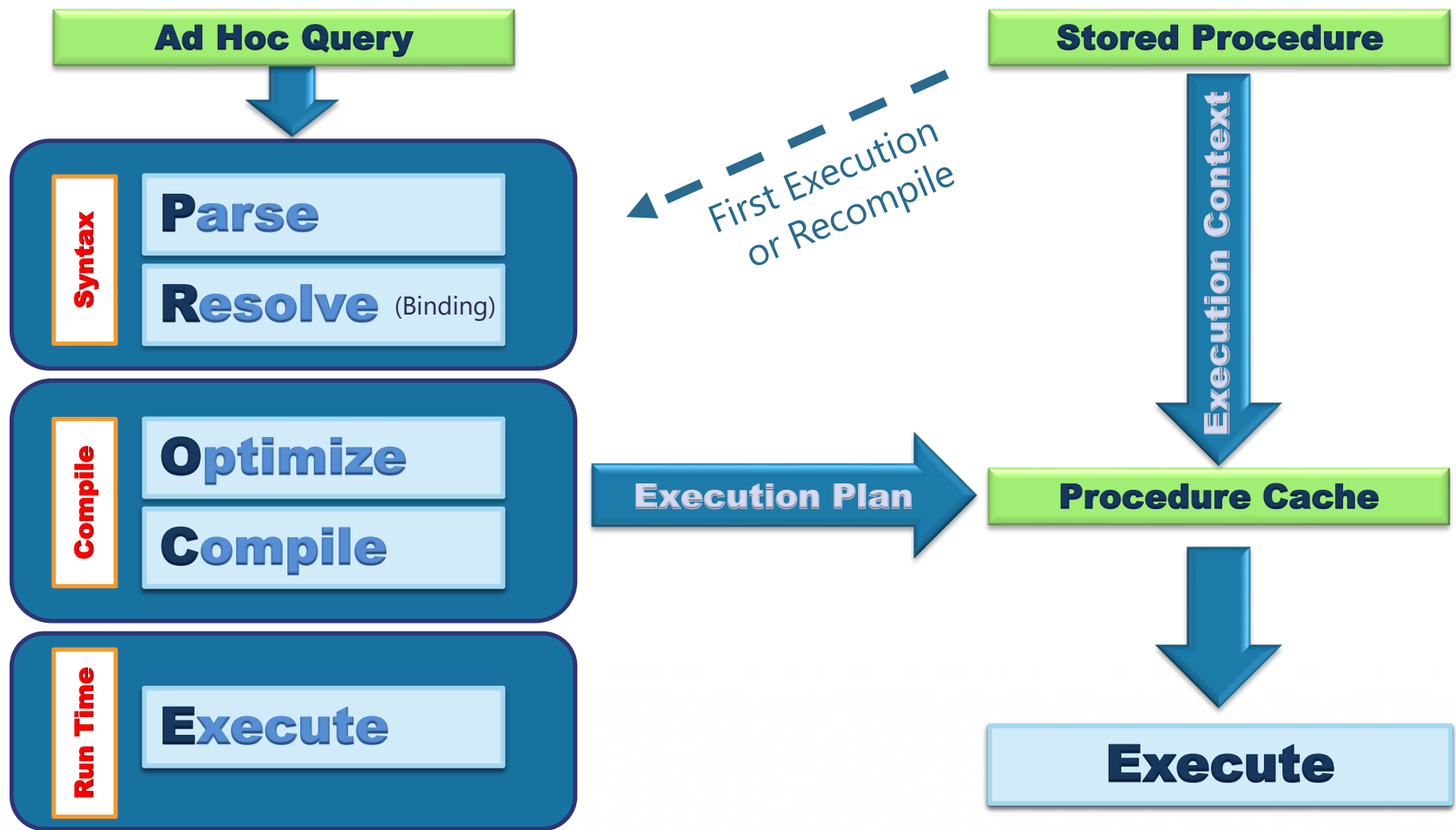


The background of the slide is a dark, abstract composition. It features a dense field of fine, vertical blue lines that create a sense of depth and movement. Overlaid on this is a faint, glowing grid pattern that resembles a wireframe or a digital landscape. The overall color palette is dominated by deep blues and blacks, with bright blue highlights that give the impression of light reflecting off a complex, three-dimensional structure.

The PROCESS of Query Optimization

John Deardurff



SQL

Sets

empid	lastname	firstna...	title	titleofcourt...	birthdate
1	Davis	Sara	CEO	Ms.	1958-12-08 00:00:00.000
2	Funk	Don	Vice President, Sales	Dr.	1962-02-19 00:00:00.000
3	Lew	Judy	Sales Manager	Ms.	1973-08-30 00:00:00.000
4	Peled	Yael	Sales Representative	Mrs.	1947-09-19 00:00:00.000
5	Buck	Sven	Sales Manager	Mr.	1965-03-04 00:00:00.000

What does the binding step resolve?

Existing cached plans

User permissions are checked

Object names (Tables, Views, Columns, etc.) to see if they exist.

Aliases of columns and tables

Data types and performs implicit data type conversions.

Query Simplification phases

Constant Folding: Expressions with constant values are reduced

- **Quantity = 2 + 3** becomes **Quantity = 5**
- **10 < 20** becomes **True**

Contradiction Detection: Removes criteria that doesn't match table constraints

- **Constraint:** Age > 18
- **Contradiction:** WHERE Age < 18

Domain Simplification: Reduces complex ranges to simple ranges

- **Complex range:** ID > 10 and ID < 20 or ID > 30 and < 50
- **Simplified range:** ID > 10 and < 50

Join Simplification: Removes redundant joins that are not necessary

Predicate Pushdown: Perform calculations only on rows returned