Scalable Graph Applications with DataStax Enterprise Graph
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DSE Graph

- Real-time Graph DBMS
- Very large graphs
- Many concurrent users
- Proven technologies
- Search capabilities
- Analytics capabilities
DSE Graph Design

Graph Applications
DSE Graph Design

Graph Applications

Property Graph and Gremlin
DSE schema API
DSE Graph Design

Graph Applications

Property Graph and Gremlin

DSE schema API

Fully integrated backend technologies
DSE Graph Design

Graph Applications

Property Graph and Gremlin
DSE schema API

Schema, data, and query mappings
OLTP and OLAP engines

Fully integrated backend technologies
DSE Graph Use Cases

- Internet of Things
- Customer 360
- Personalization
- Recommendations
- Fraud detection
Property Graph Data Model

• Instance
  • Defined in *Apache TinkerPop™*
  • Vertices, edges, and properties

• Schema
  • Defined in *DataStax Enterprise*
  • Vertex labels, edge labels, and property keys
Vertices

- person
- user
- user
- movie
- genre
- movie
Edges

- actor
- rated
- knows
- rated
- belongsTo
- belongsTo
Properties

personId: p4361
name: Johnny Depp
moviId: m267
title: Alice in Wonderland
year: 2010
duration: 108
country: United States

userId: u185
age: 12
gender: M
rated
ingrating: 5

userId: u75
age: 17
gender: F
rated
ingrating: 6

genreId: g2
name: Adventure
user
knows
user

moviId: m16
title: Alice in Wonderland
year: 1951
duration: 75
country: United States

movie
gene
moves
to
movie
Multi- and Meta-Properties

movield: m267
title: Alice in Wonderland
year: 2010
duration: 108
country: United States
production: [Tim Burton Animation Co., Walt Disney Productions]
budget: [$150M, $200M]

source: Bloomberg Businessweek
date: March 5, 2010

source: Los Angeles Times
date: March 7, 2010
Gremlin Graph Traversal Language

• Gremlin is defined in *Apache TinkerPop™*
• Expressive language to define traversals
• Functional language with a fluent syntax
• Bindings in Groovy, Java8, Scala, Clojure, and more
Gremlin Traversal

- **Traversal source**
  \[ g = graph\text{.traversal}() \]

- **Traversal steps**
  \[ g.V().has("title","Alice in Wonderland")\].has("year",2010).out("director").values("name") \]

- **Traverser**
g.V().has("title", "Alice in Wonderland")
  .has("year",2010)
  .out("director")
  .values("name")
Thank You

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