图数据库行业发展及应用场景

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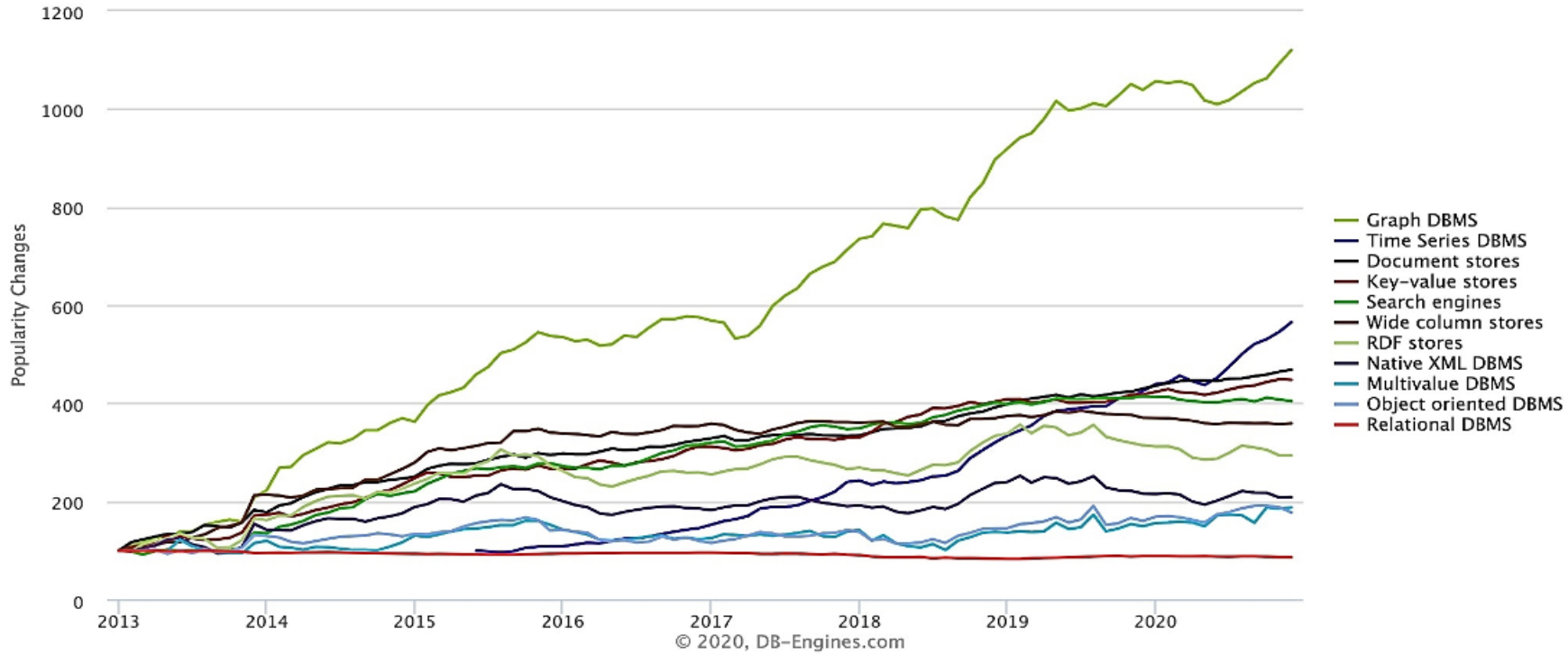
1. 市场分析

急速增长中的图数据库

Popularity changes per category, December 2020

The following charts show the historical trend of the categories' popularity. In the ranking of each month the best three systems per category are chosen and the average of their ranking scores is calculated. In order to allow comparisons, the initial value is normalized to 100.

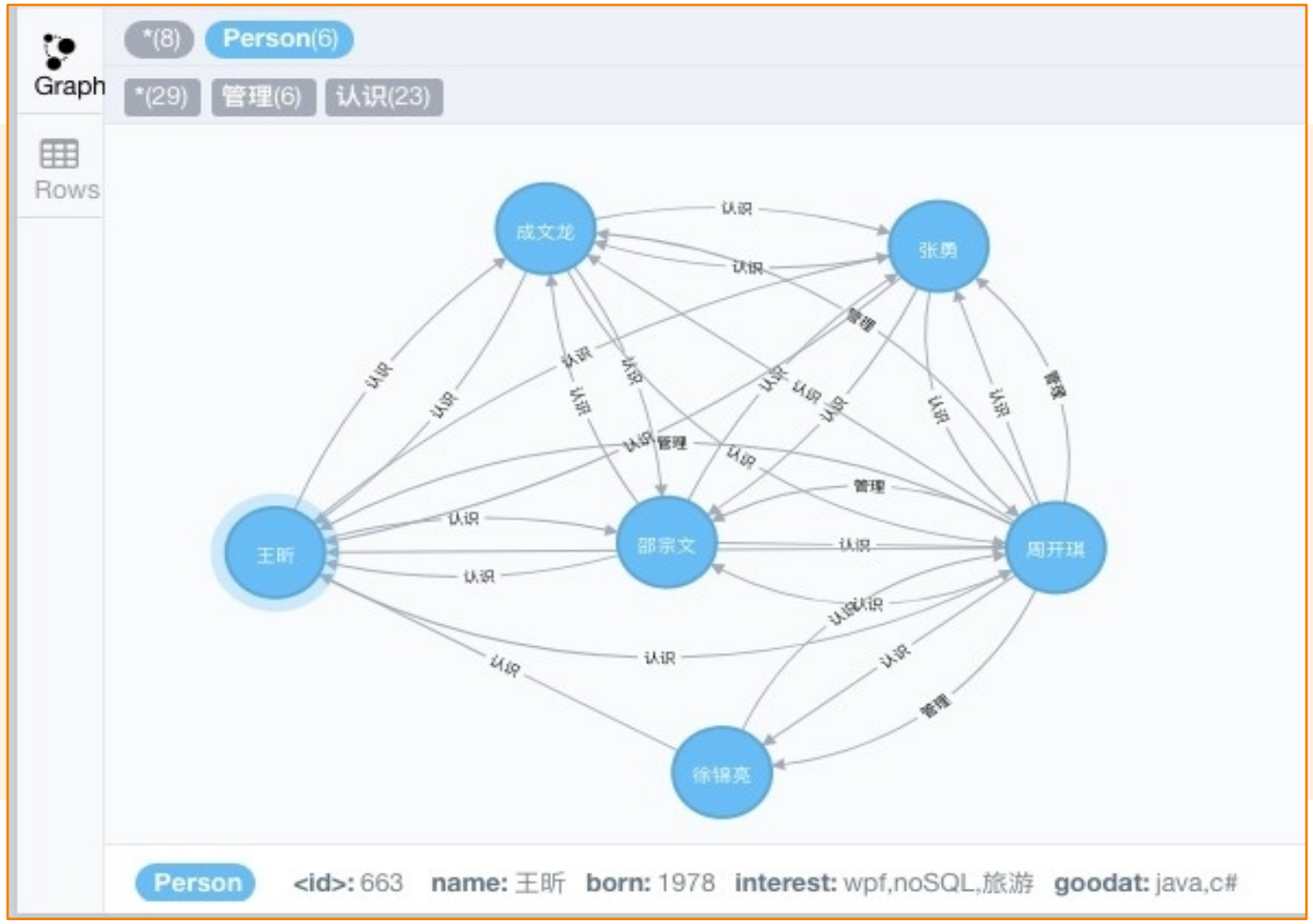
Complete trend, starting with January 2013



兼具直观性的图数据库

一图胜过千言万语

比起传统的信息存储和组织模式，图数据库能够很清晰揭示复杂的模式,尤其在错综复杂的社交，物流，金融风控行业效果更为明显。



图数据库：特点

更好，更快速的查询和分析：

图数据库为查询相关数据（无论大小）提供了卓越的性能。 图模型提供了固有的索引数据结构，因此它不需要为给定条件的查询加载或接触不相关的数据。 这使得它成为更好、更快的实时大数据分析查询的绝佳解决方案。

更简单和更自然的数据建模：

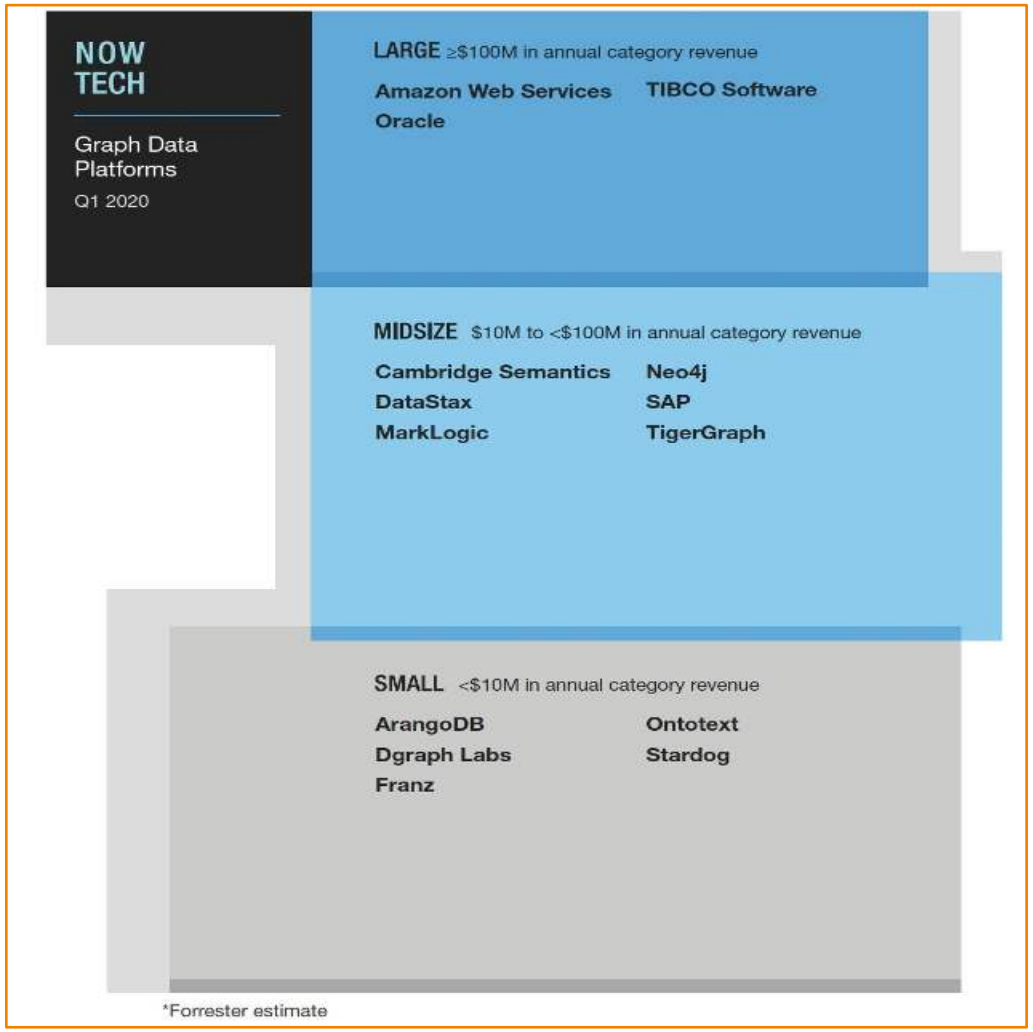
使用关系型数据库建模的人都需要了解数据库的规范化和参照完整性的严格规则。 一些NoSQL数据库则走向了另一个极端，将所有类型的数据放在一个大型表中。 另一方面，在图数据库中，可以定义任意类型的顶点类型来表示对象，并定义边类型来表示特定的关系。

同时支持实时更新和查询：

图数据库支持对大图形数据的实时更新，同时支持查询。

图数据库具有灵活的schema修改。 用户可以不断添加或删除新的顶点、边和属性，扩展或缩小数据模型。 这对管理不断变化的对象类型特别方便。 大多数图数据库可以在线修改schema，同时继续提供查询。

图数据库营收基于Forrester的预估，3家超1亿美金，6家在千万美金以上



LARGE >$100M in annual category revenue

	Primary functionality segments	Geographic presence (by revenue %)	Vertical market focus (top three by revenue %)	Sample customers
Cambridge Semantics	Standalone graph database; bundled with other solutions	NA 65%; EMEA 30%; AP 5%	Life sciences; financial services; government	Credit Suisse; Eli Lilly and Company; Merck & Co.
DataStax	Bundled with multimodel database	NA 60%; EMEA 30%; AP 10%*	Financial services; government; shipping	Capital One; Comcast; Expedia
MarkLogic	Bundled with multimodel database	NA 75%; EMEA 20%; AP 5%	Healthcare; public sector; financial services	Airbus; Northern Trust; US Air Force
Neo4j	Standalone graph database; bundled with other solutions	NA 55%; LATAM 5%; EMEA 35%; AP 5%	Financial and insurance; retail; telecom and utilities	Comcast; UBS; Walmart
SAP	Bundled with multimodel database; bundled with other solutions	NA 26%; LATAM 6%; EMEA 49%; AP 19%	High-tech; consumer products; utilities	City of San Diego; kantwert; Munich Re
TigerGraph	Standalone graph database; bundled with other solutions	NA 60%; EMEA 20%; AP 20%	Healthcare; financial services; telco	Intuit; OpenCorporates; Wish

*The vendor did not provide information for this cell; this is Forrester's estimate.

图数据库客户主要集中在北美，欧洲，行业集中在金融，电信，政府

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	Primary functionality segments	Geographic presence (by revenue %)	Vertical market focus (top three by revenue %)	Sample customers
Amazon Web Services	Standalone graph database	NA 55%; EMEA 30%; AP 15%*	Financial services; healthcare; telco*	Nike; Siemens; Thomson Reuters
Oracle	Standalone graph database; bundled as multimodel database; bundled with other solutions	NA 55%; EMEA 29%; AP 16%	Pharma; automotive; financial services*	Mazda; Paysafe Group; Roche Pharma
TIBCO Software	Standalone graph database; bundled as multimodel database; bundled with other solutions	NA 60%; EMEA 30%; AP 10%	Logistics; telco; insurance	Vendor did not disclose
Cambridge Semantics	Standalone graph database; bundled with other solutions	NA 65%; EMEA 30%; AP 5%	Life sciences; financial services; government	Credit Suisse; Eli Lilly and Company; Merck & Co.
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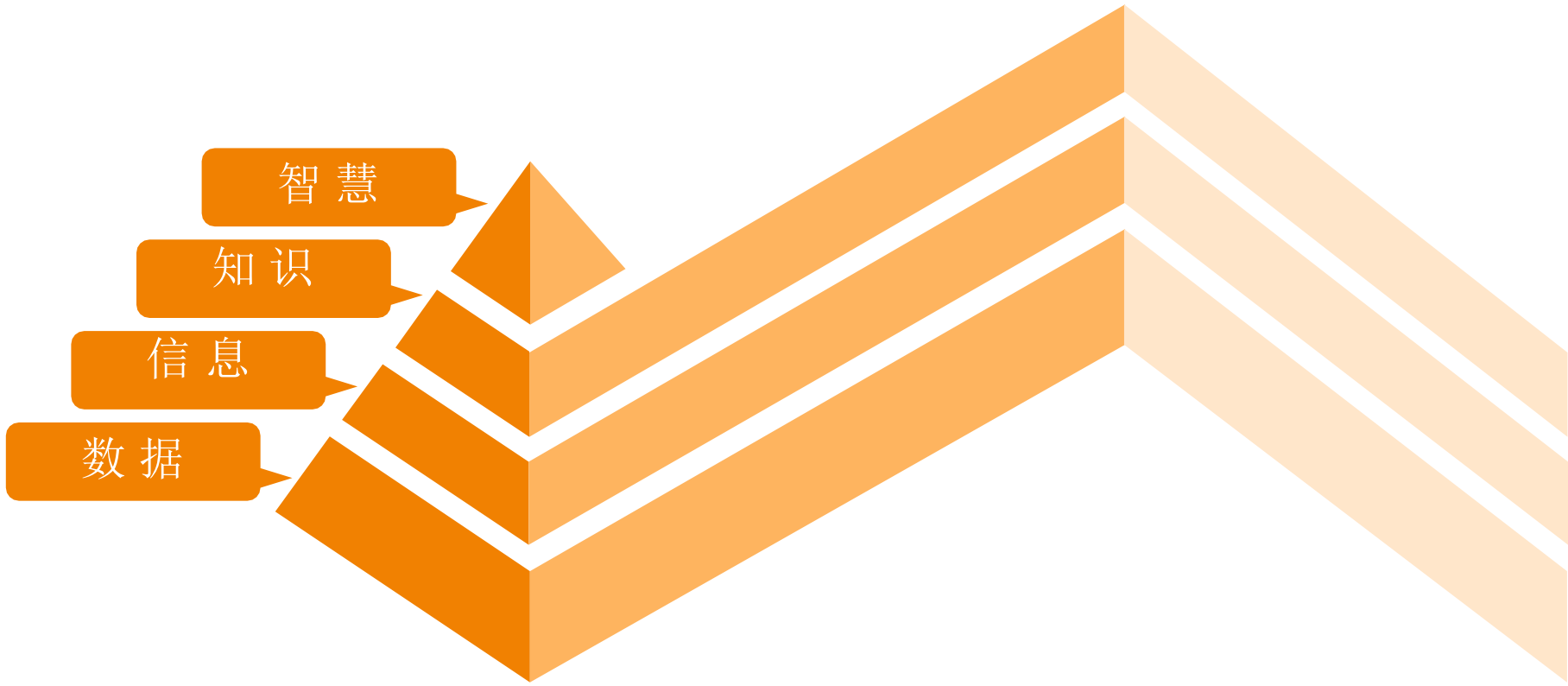
图数据库的关注度越来越多，并且大都是有持续在更新

厂商	产品	版本	版本最新发布时间
AWS	Neptune	1.0.4	
ArangoDB	ArangoDB	3.7	Sep 2020
Cambridge Semantics	AnzoGraph DB	2.1.5	
Dgraph Labs	Dgraph,Slash GraphQL		Sep 2020
Franz	AllegroGraph	7.0	April 2020
Microsoft	Azure Cosmos DBGraph		Feb 2018
Neo4j	Neo4j Graph Database	4.1	Jun 2020
Ontotext	Ontotext Platform,GraphDB	3.2,9.4	Sep 2020
Oracle	Oracle DataBase Graph		Jun 2020
Stardog	Stardog,Stardog Studio,Stardog Cloud	7.3	May 2020
TigerGraph	TigerGraphDB/TigerGraph Cloud	3.0	Jun 2020
OrientDB LTD	OrientDB	3.1	Jun 2020
Linux Foundation	JanusGraph	0.5.2	May 2020

2. 应用分析

从数据中提取信息，串成知识，然后不断验证，形成智慧



覆众多行业场景，尤其是在社交和金融风控领域

社交网络　金融风控　知识图谱　关系分析　车联网应用

网络&IT运维　推荐引擎

社交网络

数十亿个关系查询延迟降低到秒级，目前传统关系型数据库基本无法实现超过3层好友关系的查询。

推荐引擎

通过用户兴趣、好友和阅读历史记录等信息之间的关系，向用户提供推荐。

电商，短视频,新零售等都有强烈需求。

网络&IT运维

基础设备规模庞大、结构复杂，帮助深入了解设备状态、设备之间的关系，实现全网络设备智能监控与管理。

金融风控

提供实时的用户行为检测，识别敏感用户，及时识别欺诈风险，错综复杂的人物关系分析，进行用户分群，识别异常群体

金融风控场景涉及维度多，传统数据库无法很好解决

银行风险压力

合规监管风险

黑产欺诈风险

内部员工风险

利用图谱网络开展风险管理

员工管理

员工与亲属、员工与外部企业

客户管理

财务状况、征信、行业、资金流动性、重大事件

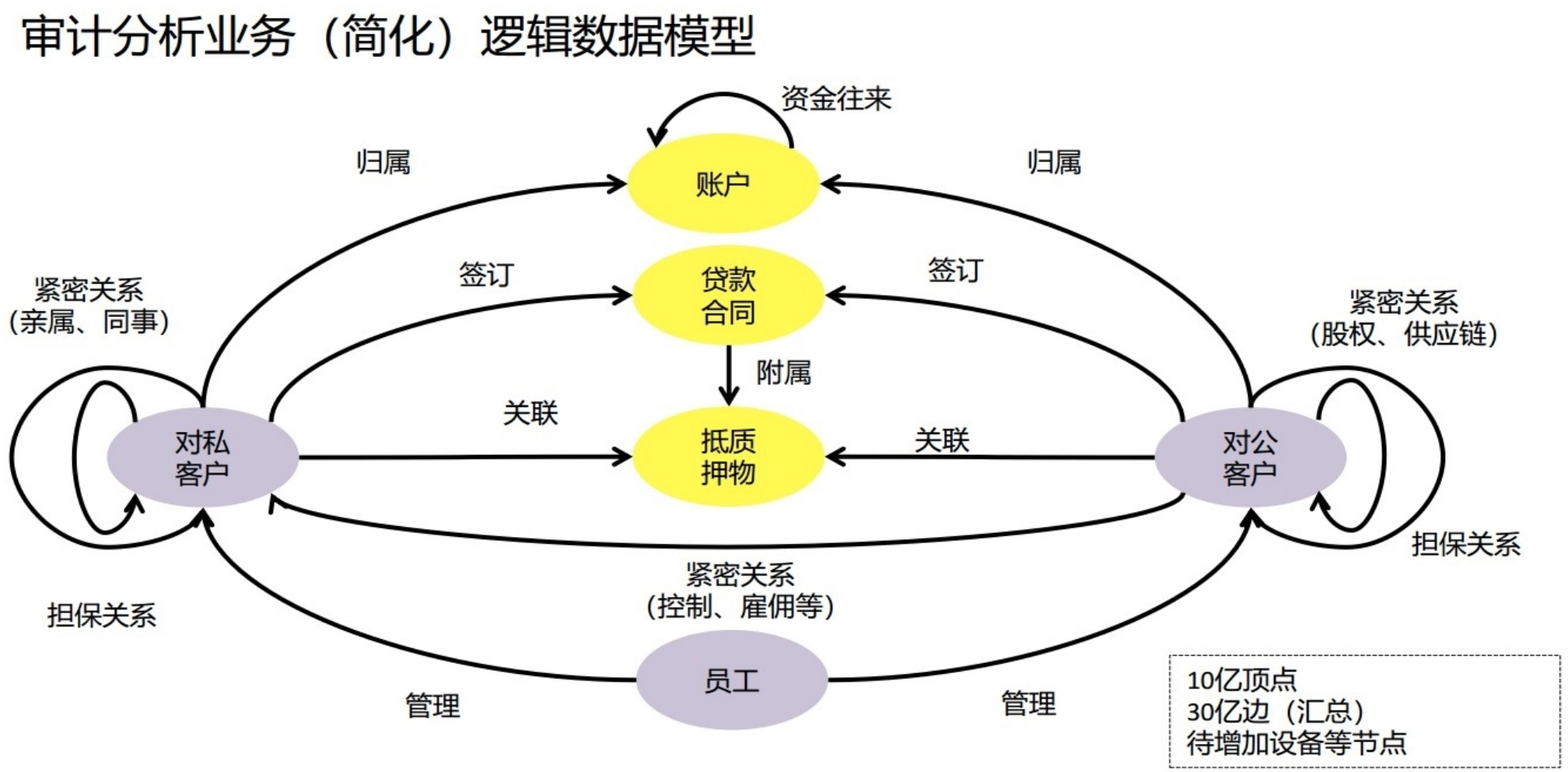
关系管理

亲属关系、股权关系、集团关系、业务关系、供应链、行业关系

业务管理

业务流程、业务合规、业务资金、业务进展、业务数据

金融风控场景涉及维度多，传统数据库无法很好解决



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