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# Spatial Data on the Web
# OGC Tech Trends

George Percivall

SDWIG meeting

113th OGC Technical Committee

Banff, Canada

19 November 2019

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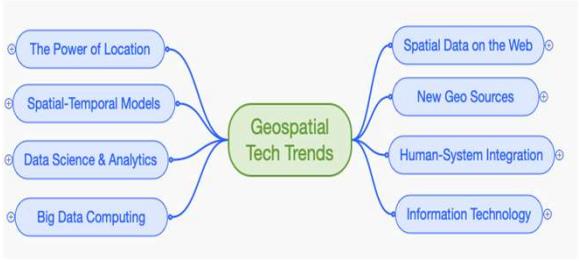
# OGC Technology Trends

## Breadth

### Identify and Characterize Trends

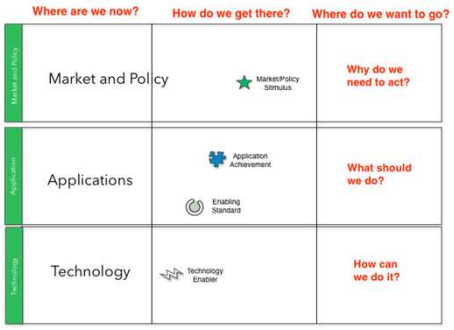
### Trends Mindmap




## Assessment

### Prioritize and Evaluate Trends

### Technology Roadmaps




## Focus

### Take Action

Innovation Program

**e.g. planning Testbeds**

Standards Program

**e.g. Future Directions**

Communications & Outreach

**e.g. Location Powers**

Member Consultation

**e.g. NDA Tailored forecasts/discussion**

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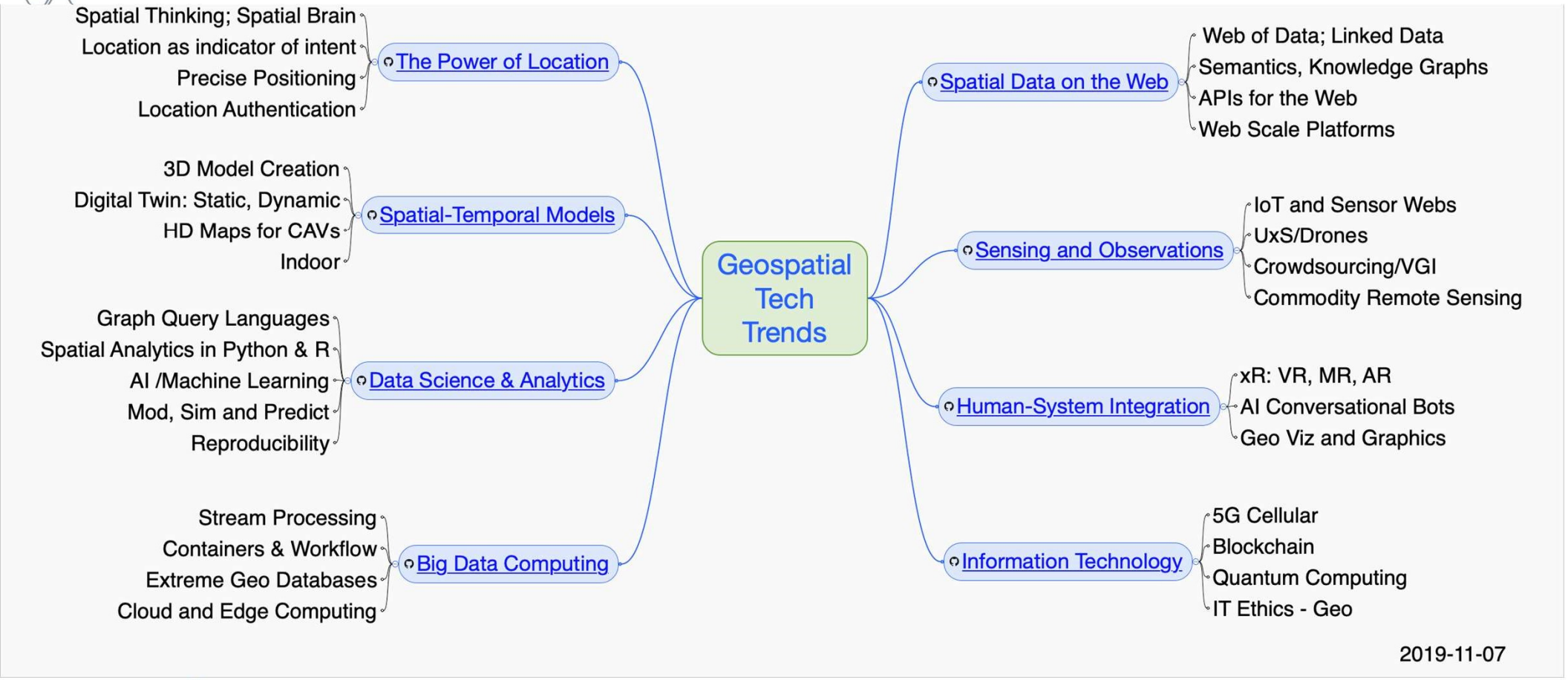
https://github.com/opengeospatial/OGC-Technology-Trends

# OGC Tech Trends Mindmap

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# Trend Characterizations 2019 by Quarter

- 2019Q1
  - Indoor
  - UAV/UAS/UxS
  - Blockchain
  - Immersive Geo: AR, VR, xR
  - Mod, Sim, Predict
- 2019Q2
  - Digital Twin: Static and Dynamic
  - Web of Data: Linked Data, GQL
  - Machine Learning
  - Quantum Computing & Sensing
- 2019Q3
  - Edge Computing: AI/ML, VR
  - Maps for CAVs
  - Geo IT Ethics
  - Data Science: AI/ML
- 2019Q4
  - Commodity remote sensing
  - 3D Model Creation
  - Precise Positioning
  - Spatial Analytics in Python & R

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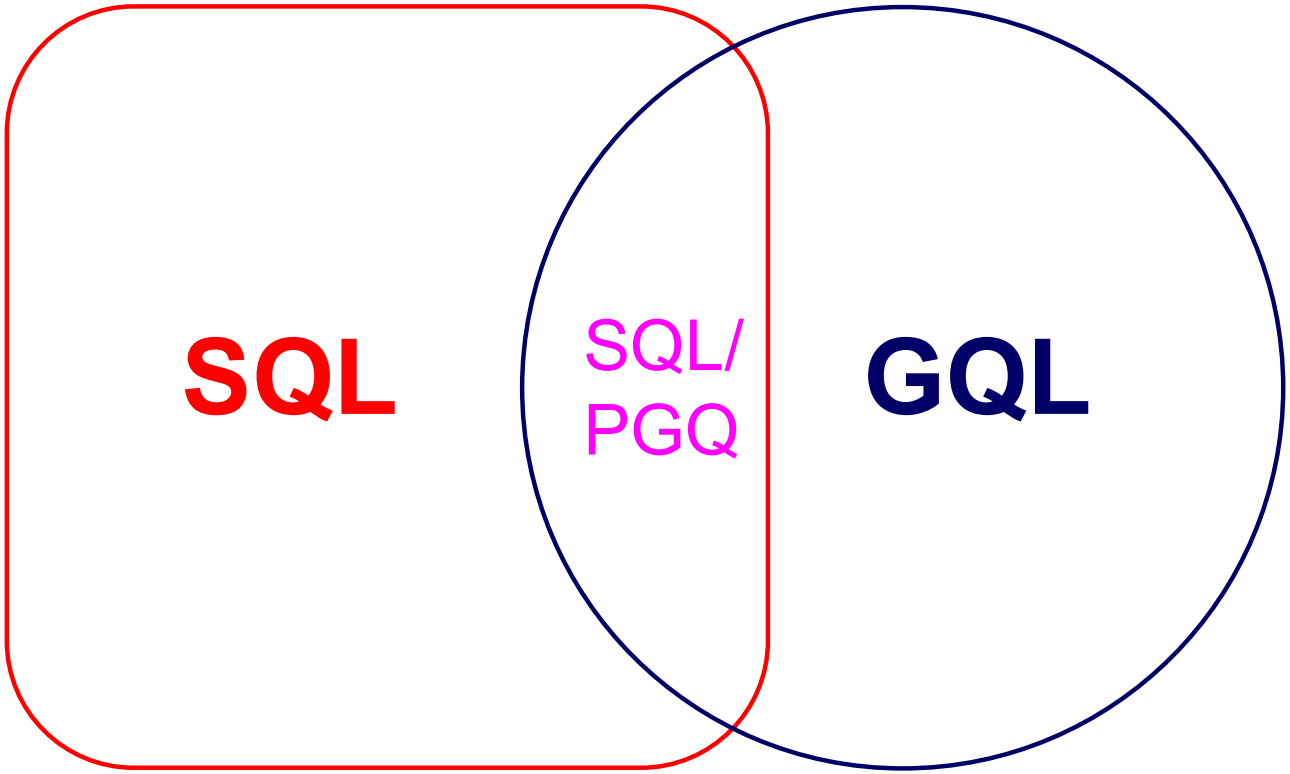
# Characterization: Web of Data/Linked Data

| Trend | Web of Data/Linked Data |
|---|---|
| Meta Trend | Spatial Data on the Web |
| Description | Data published on the web are made discoverable, accessible and interoperable using WWW best practices for data formats, data access, data identifiers, metadata, licensing and provenance. |
| What is new or emerging? | • W3C Workshop on Web Standardization for Graph Data – March 2019<br>- Support for adding geospatial and temporal to graph query languages<br>• Emerging progress on Property Graphs standards in JTC 1 SQL - June 2019<br>- Property Graph Queries as a new part of SQL standards, 9075-16.<br>- New declarative property graph language - may be called GQL.<br>• Schema.org and JSON-LD |
| Why might it matter? | • OGC Environmental Linked Features Interoperability Experiment<br>Power of OGC APIs to expose features in the context of rich domain-feature-model-based linked data while following W3C best practices<br>• Advantages similar to adding Topology to Geometry queries. |
| SW TRL | TRL 5 Component validation in relevant environment |
| References | • OGC T15 Scenario: Richelieu River hydro linked data harvest model |
| Tipping Point | Standards established and implemented broadly for Property Graph queries |

# Property Graphs

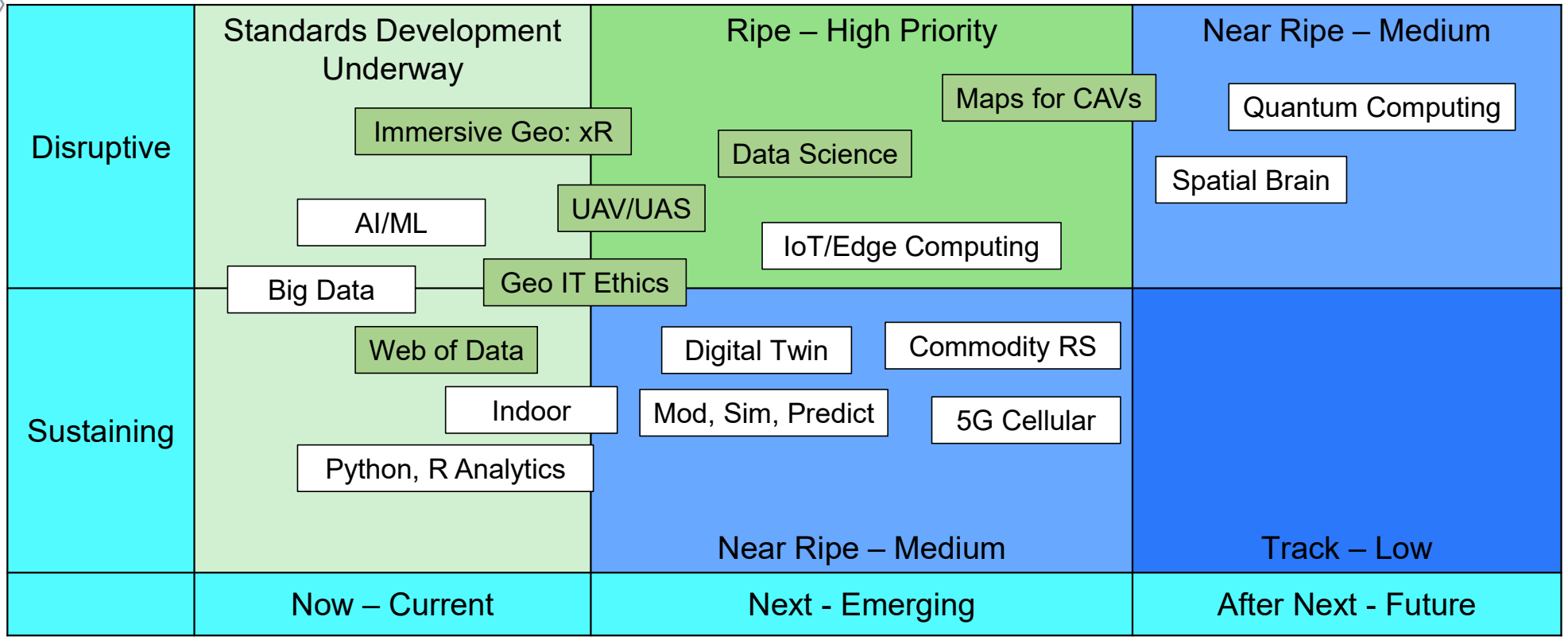
- Property Graph queries in SQL – SQL/PGQ
  - Integrate property graph queries into SQL queries
  - Path language
  - Define property graph views over relational data
- New project to specify a Declarative Property Graph Query Language – GQL
  - Add, Modify, Query, Delete
  - Path language
  - Transactions
  - Use SQL specification where possible
  - Defined schema or schema-less

# SQL, SQL/PGQ, and GQL




Keith W. Hare SC32 WG3 Convenor JCC Consulting, Inc.
Location Powers: Data Science November 13, 2019

# Priority Tech Trends




= Priority for coming year

2019-11-07

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