Decentralizing the Semantic Web through incentivized collaboration

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Web
data data data data data data data data
Massive data centralization bears responsibility for important socio-economic issues today.
We don’t have to store all our things in one place.
Linked Data can help.
Store things in your own place and *link* to others—like the Web.
Can we still give people the same app experience if data is decentralized?
Centralized systems have easier algorithms and more CPU power.
Decentralized systems require more complex algorithms but nodes have less CPU power.
We cannot compete with centralized systems
We cannot compete with centralized systems unless we collaborate.
Nodes help each other execute SPARQL queries.
How can we know results are correct and complete?

How do I know you’ll help me if I helped you?
Nodes receive *incentives* as a reward for performing query-related tasks.
Performed work is registered on a distributed ledger using a proof-of-query-results.
Ledgers can be short-lived, as they just keep track of nodes helping each other.
Data and query networks will spontaneously emerge.
Why is this a new problem?

- it taps into the emerging re-decentralized Web
- focuses on collaboration
- collaborators are incentivized
Which ideas do we build upon?

Linked Data markets

FileCoin – incentivized data storage

SPARQL query execution in networks
Where do we start?

scaling federated and collaborative data publication and querying

developing incentive models

analyzing data shapes
Which research is impacted?

Web-scale federated query execution
reasoning and proof
privacy and policies
When will this be mainstream?

it’s already happening, but we need a more coordinated effort.

the data is there, the problems are there.

we need to focus on the Web.
Linked Data can help us take back control of the Web.
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https://ruben.verborgh.org/articles/incentivized-collaboration/