DATA2B

WE MAKE DATA PRODUCTS

Zinnya DEL VILLAR & Christophe THOVEX

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Approaching **Big Data** from a **business perspective**

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What is Big Data?

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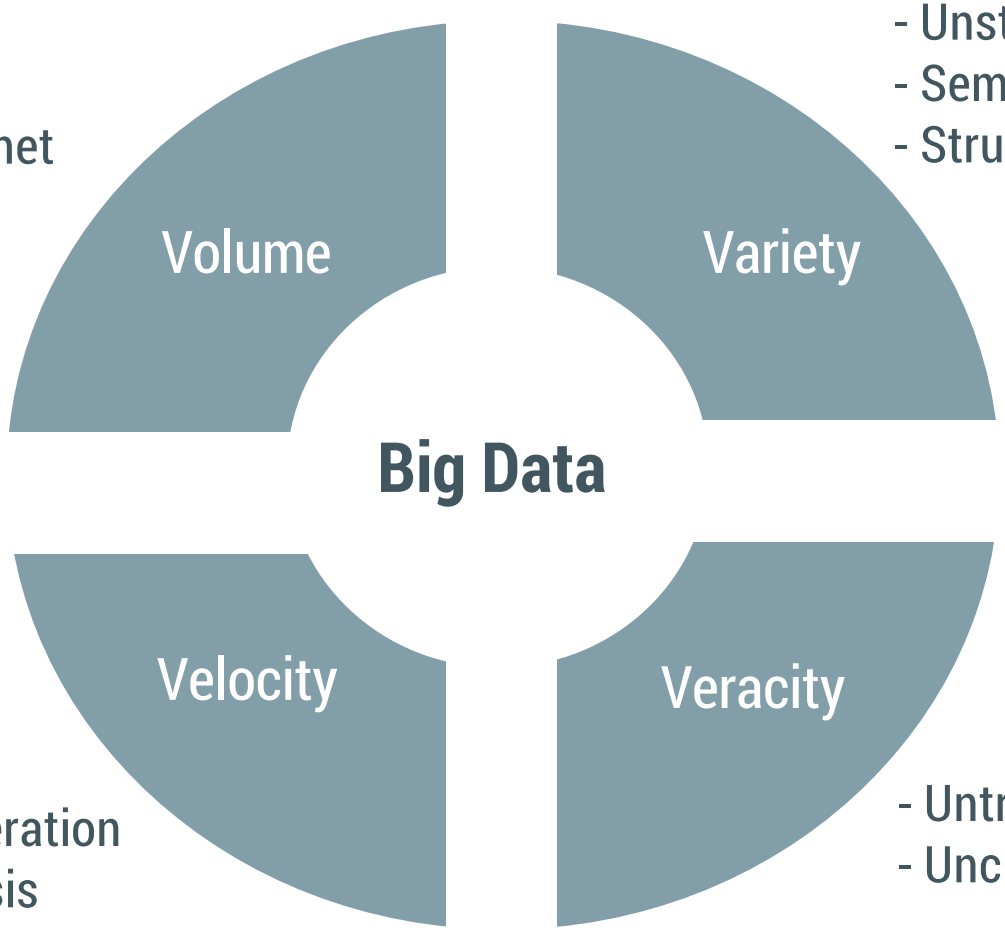
What is Big Data?



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Big Data eliminates intuition

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Big Data eliminates intuition

How?

Decisions can be made with a structured approach, through data driven insight.

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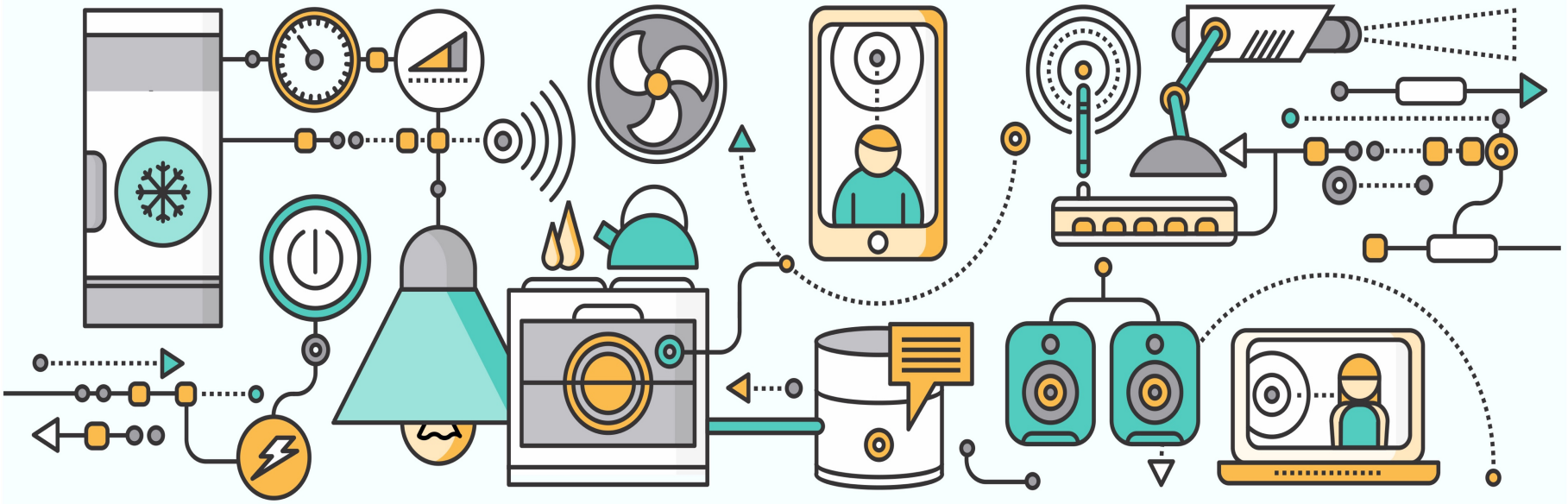
Big Data life cycle

Creation



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Big Data life cycle

Creation

Processing

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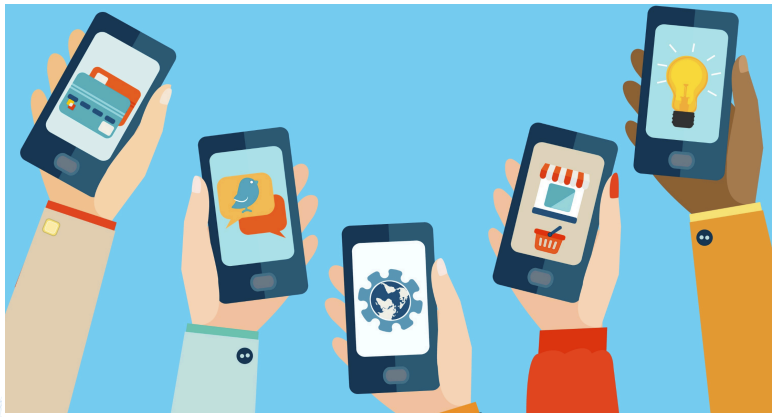
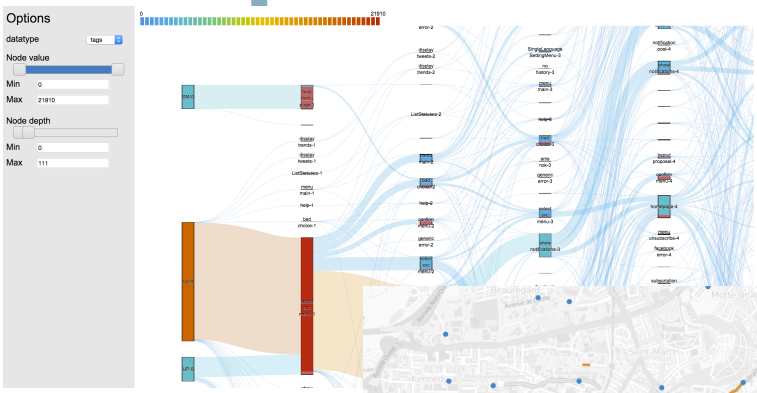
Big Data life cycle

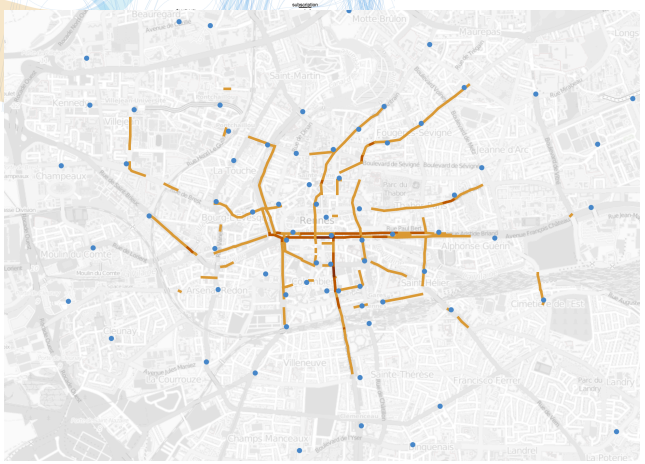
Creation

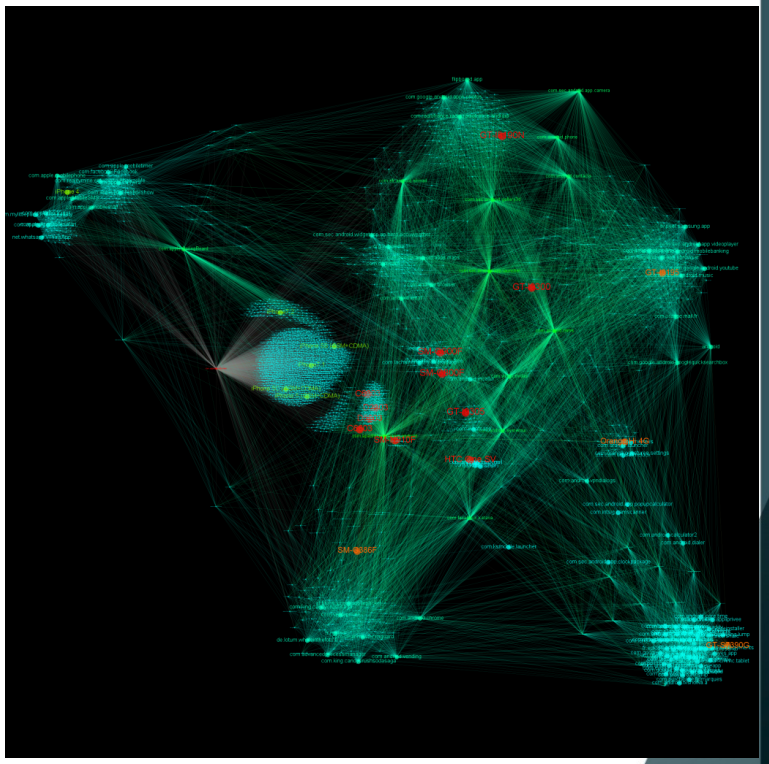
Processing

Output









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Big Data life cycle

Creation

Processing

Output

Ressources and processes

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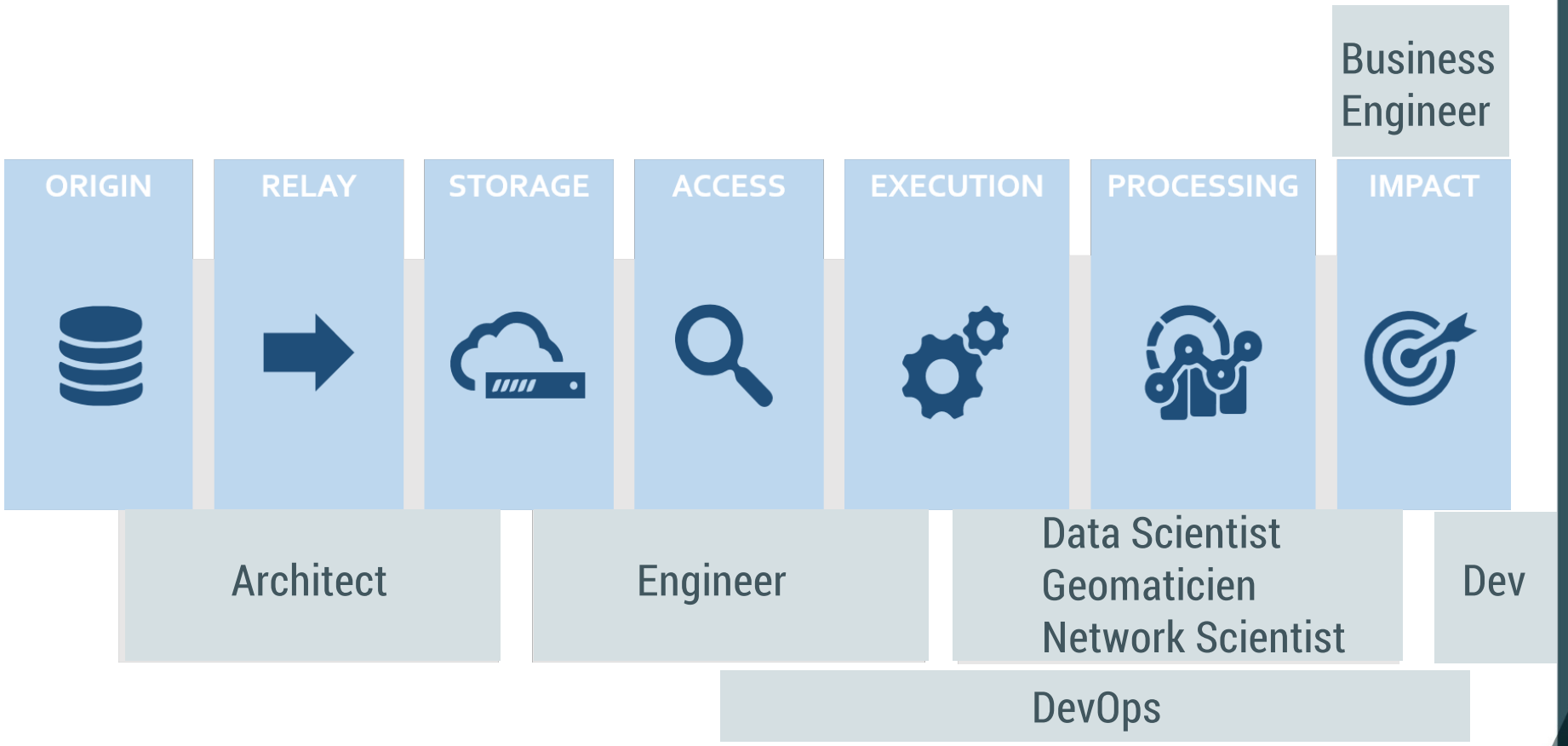
Big Data life cycle

Ressources and processes



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Big Data value chain

Improve the
efficiency and effectiveness
of every
decision and/or action

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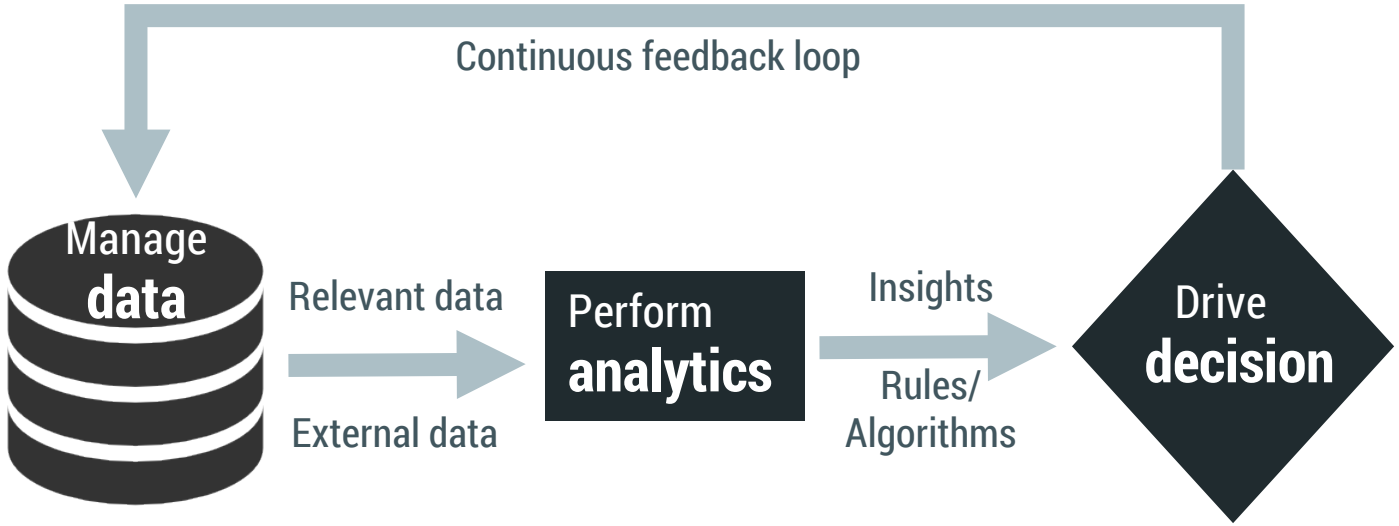
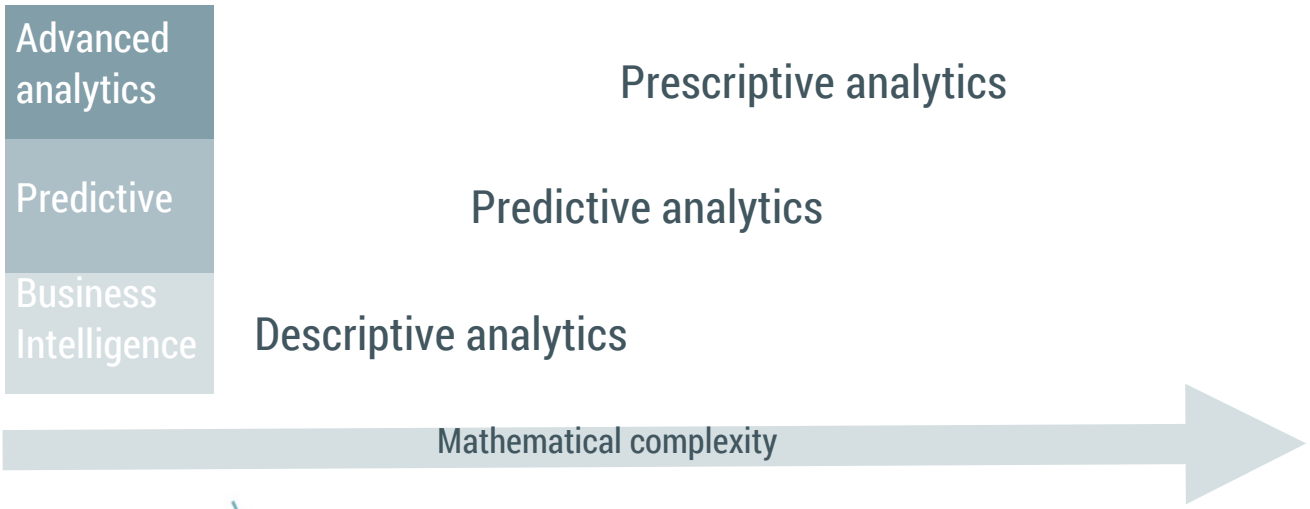
Big Data and analytics





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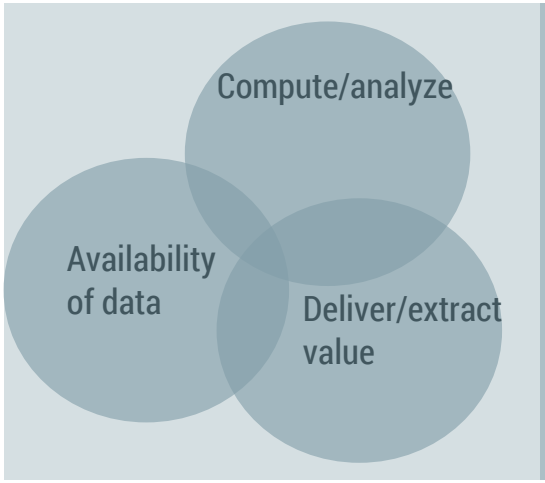
Benefits and risks of Big Data



- Governance
- Management
- Architecture
- Usage
- Quality
- Security
- Privacy

Big Data Success

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DATA PRODUCTS

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Product improvement

Increase the production performance

FOOD INDUSTRY

Logistic optimisation

Help human decisions

Understand customer behavior

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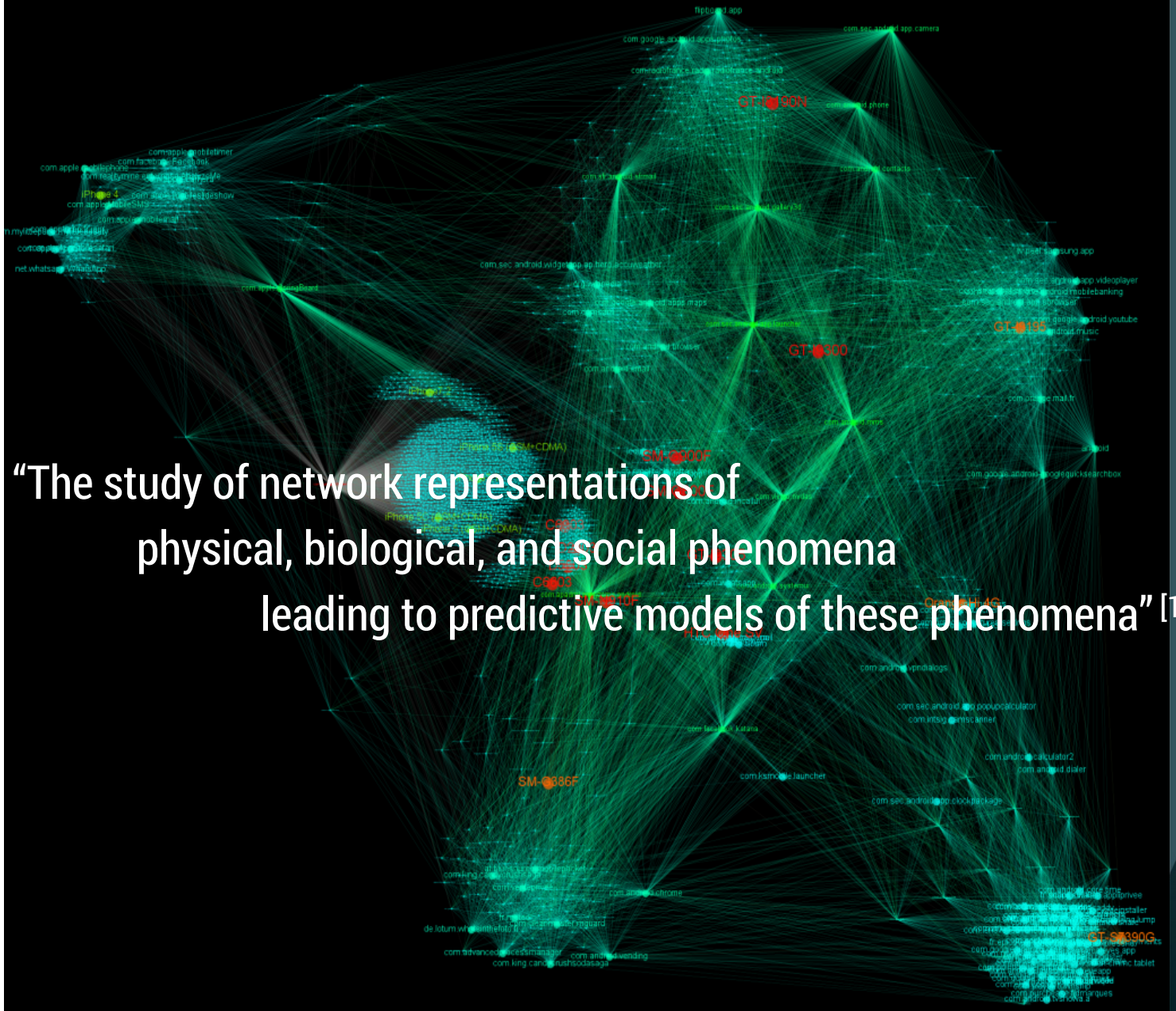
Network Science



"The study of network representations of
physical, biological, and social phenomena
leading to predictive models of these phenomena" [1]

[1] *Committee on Network Science for Future Army Applications (2006). Network Science. National Research Council. ISBN 0309653886.*

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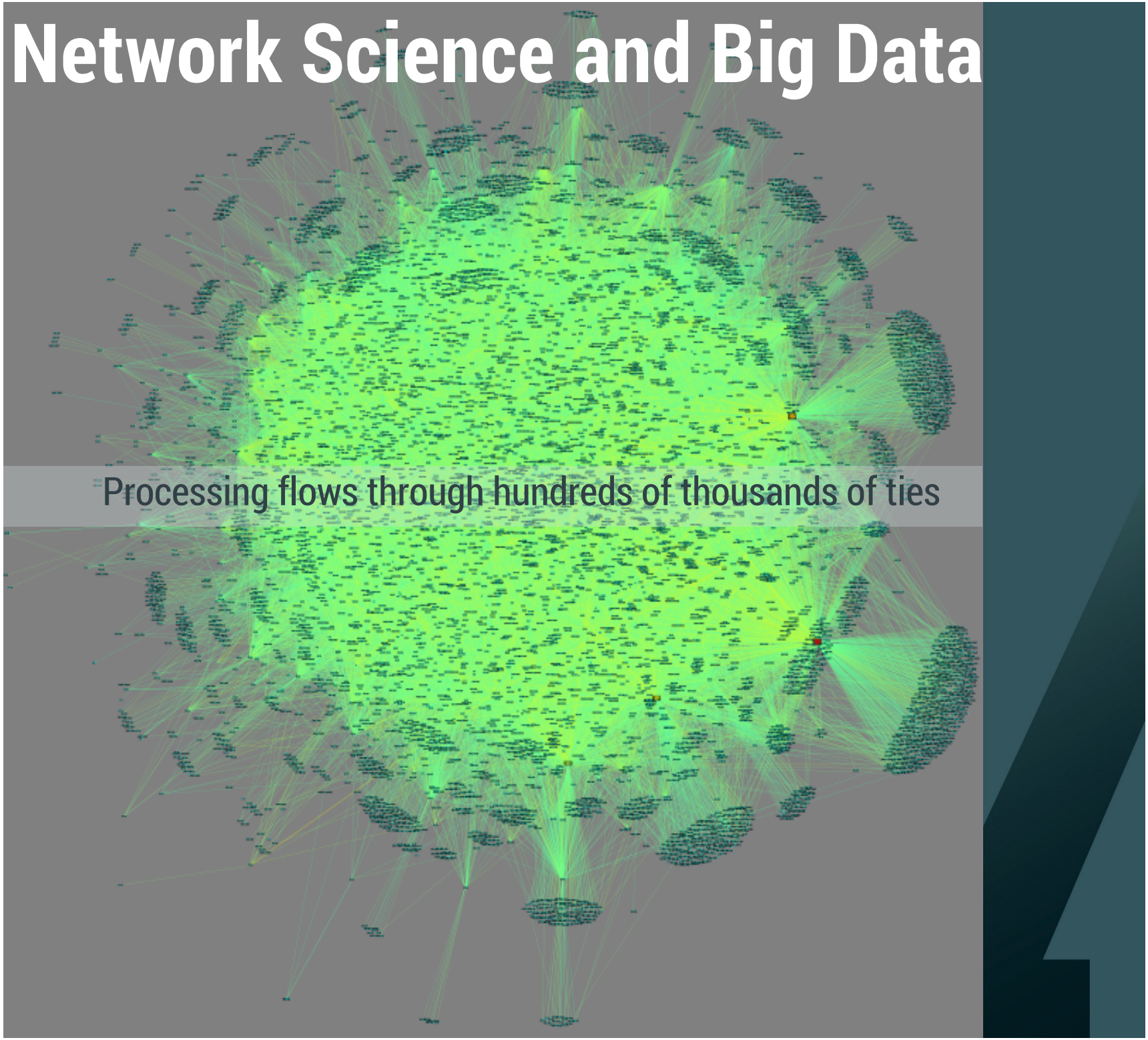
Network Science and Big Data



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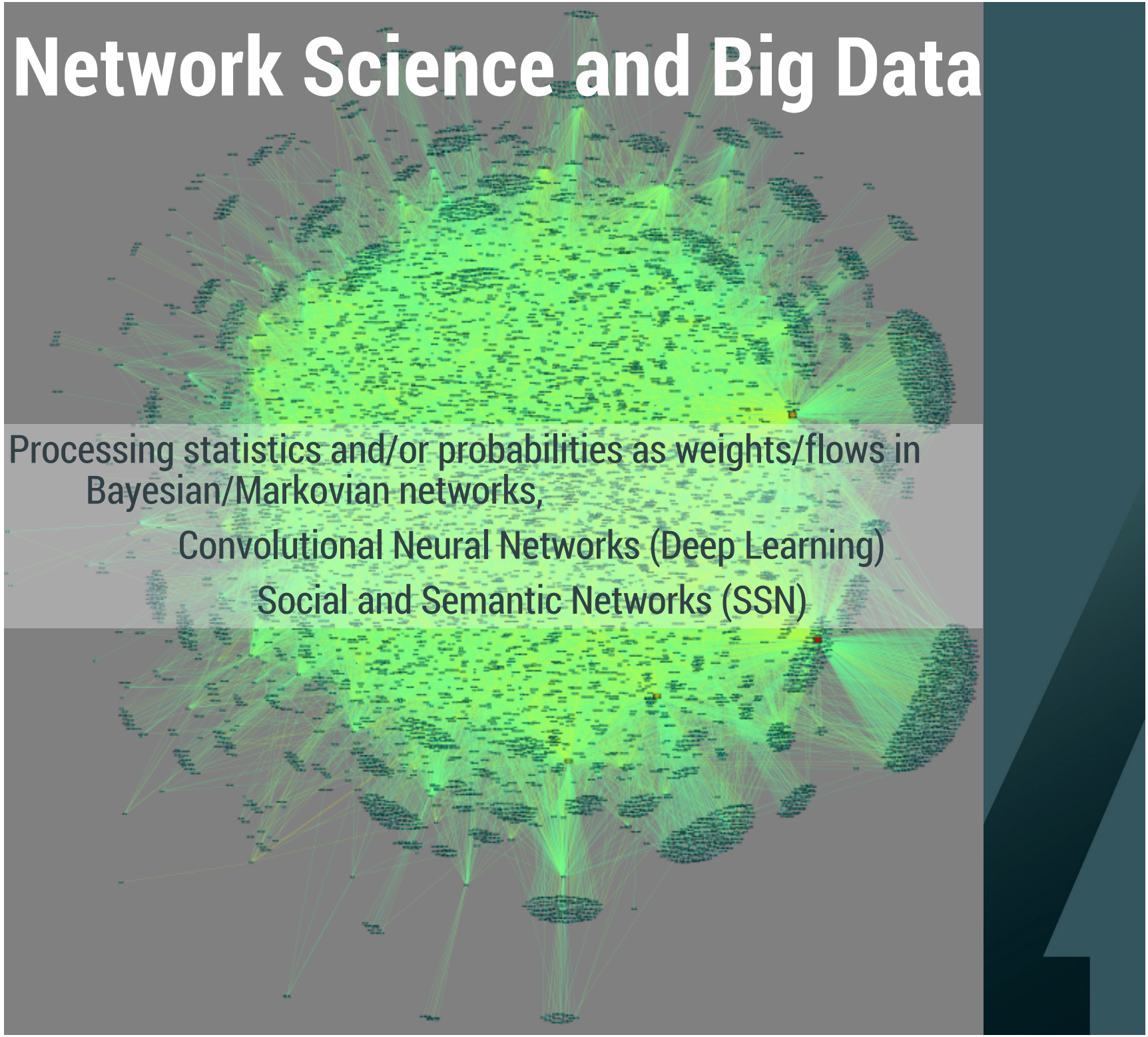
Network Science and Big Data



Processing statistics and/or probabilities as weights/flows in Bayesian/Markovian networks,

Convolutional Neural Networks (Deep Learning)

Social and Semantic Networks (SSN)

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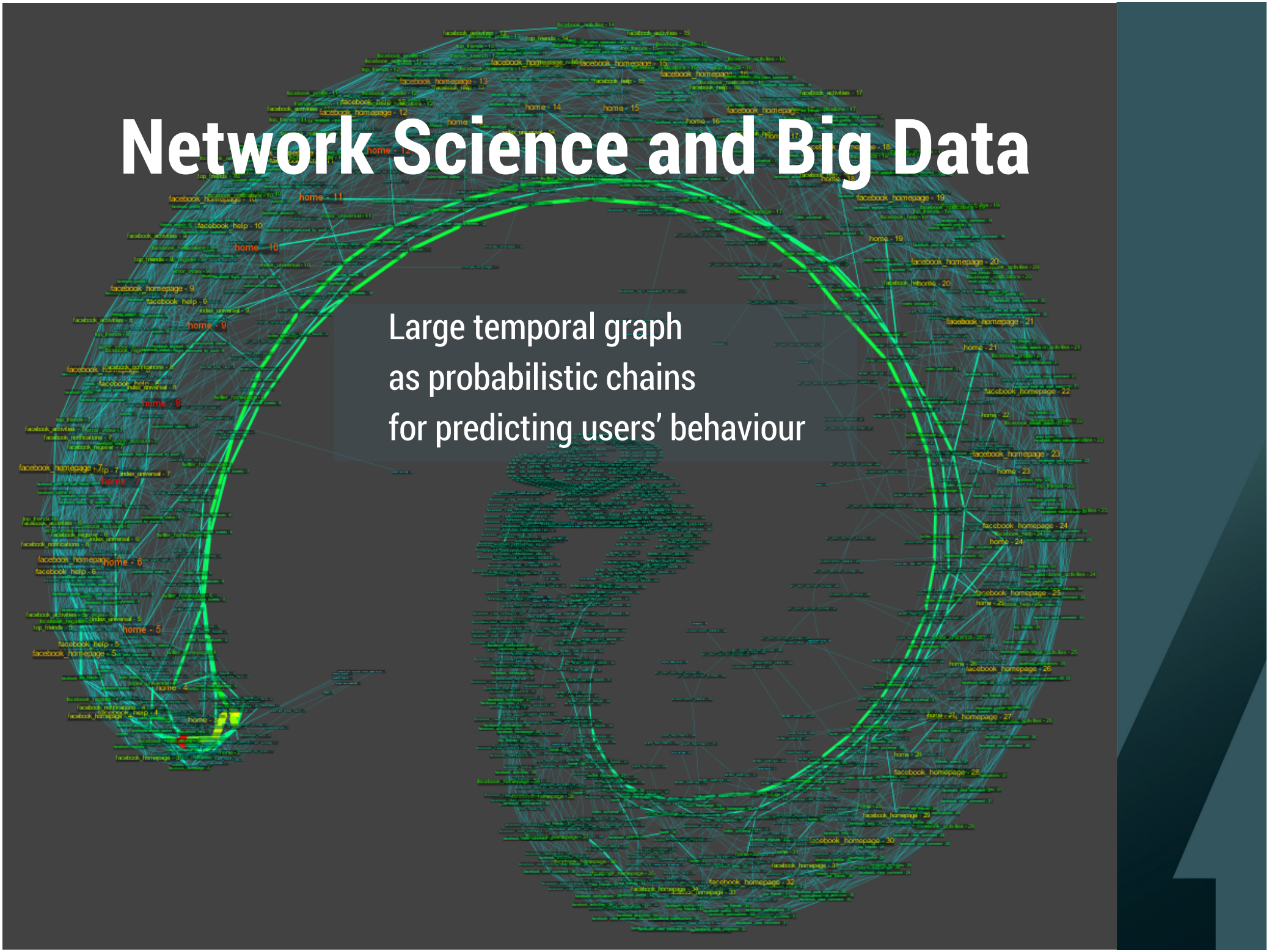
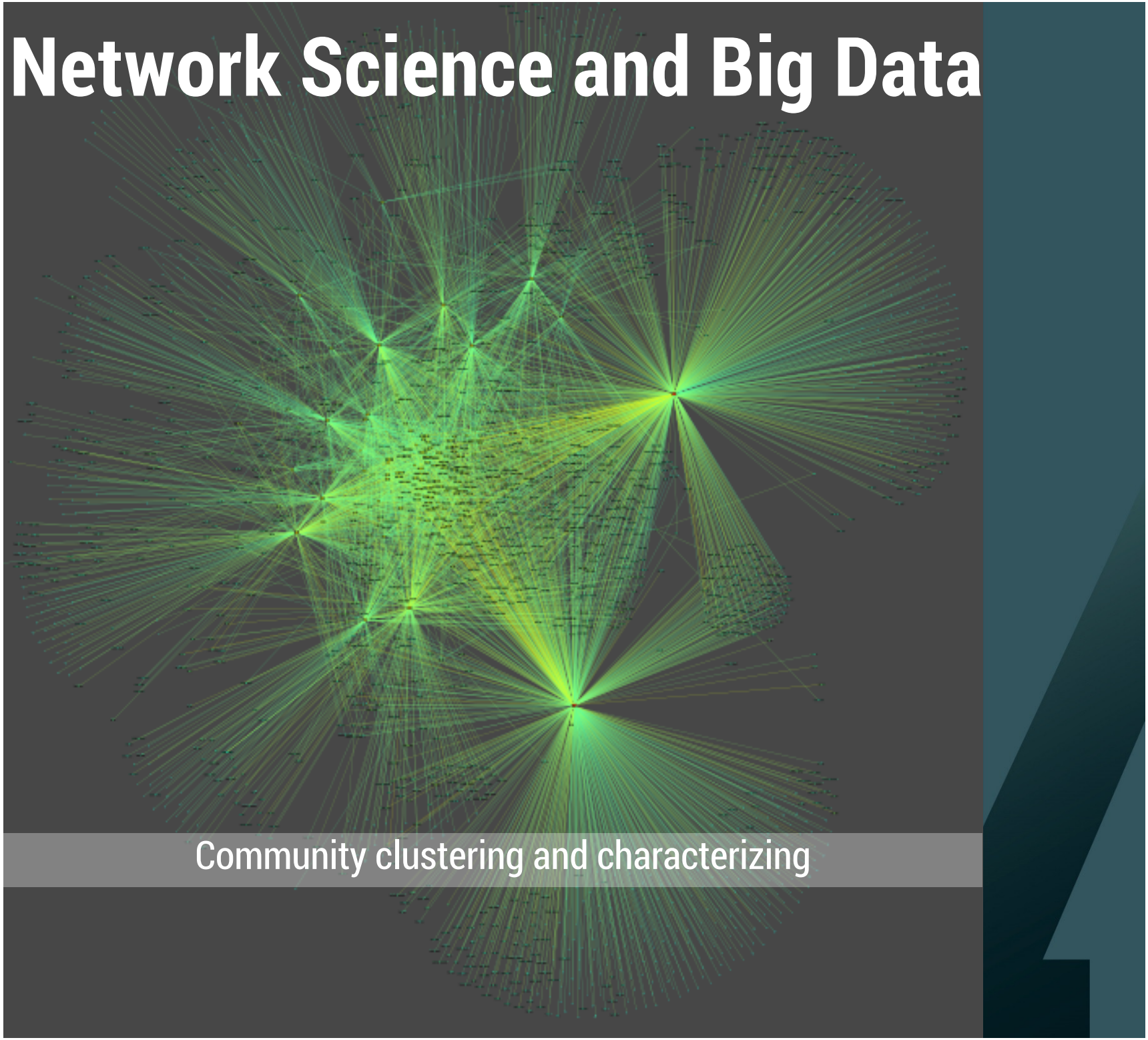
Network Science and Big Data



Network Science and Big Data



Community clustering and characterizing

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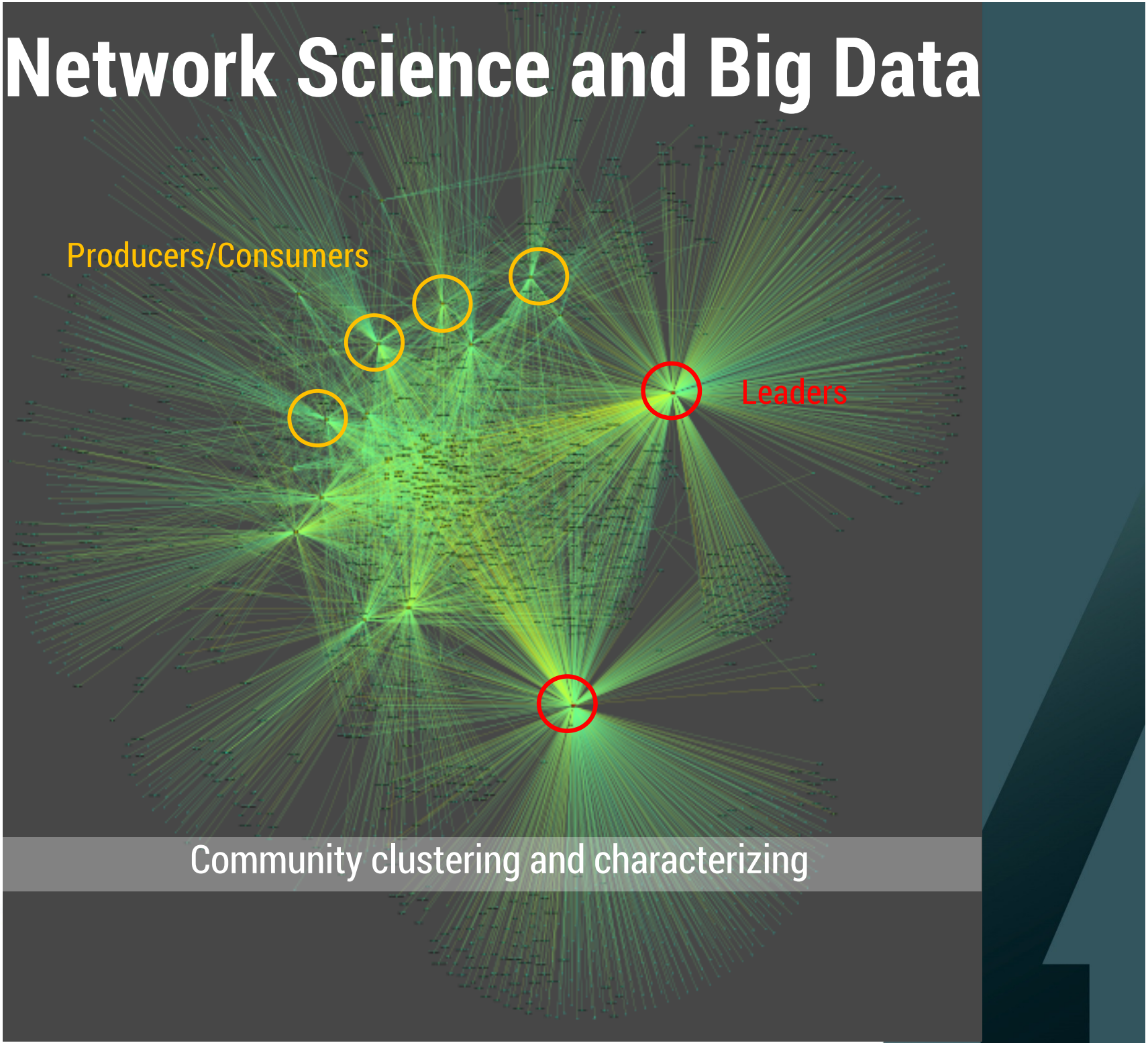
Network Science and Big Data



Community clustering and characterizing

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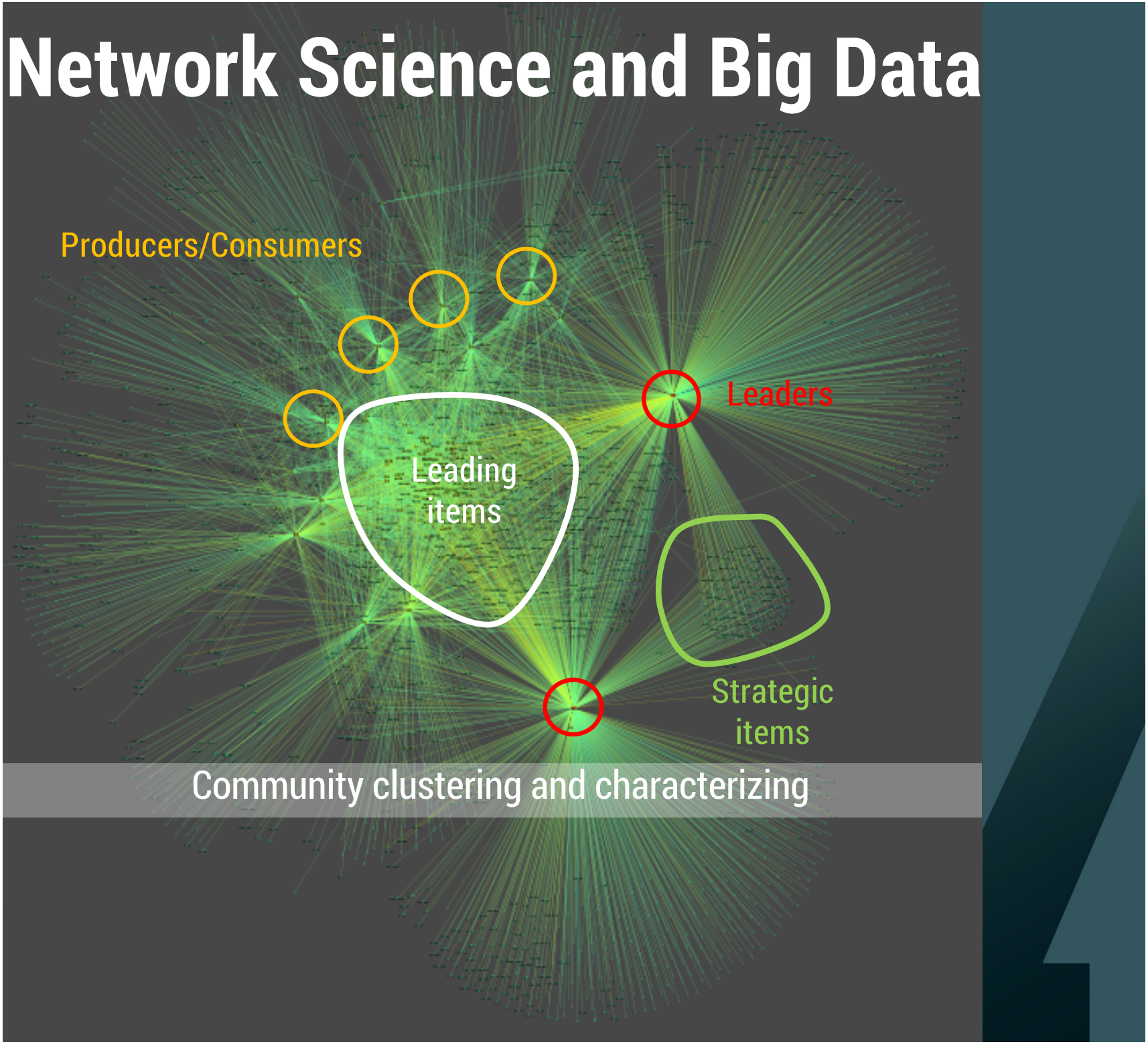
Network Science and Big Data



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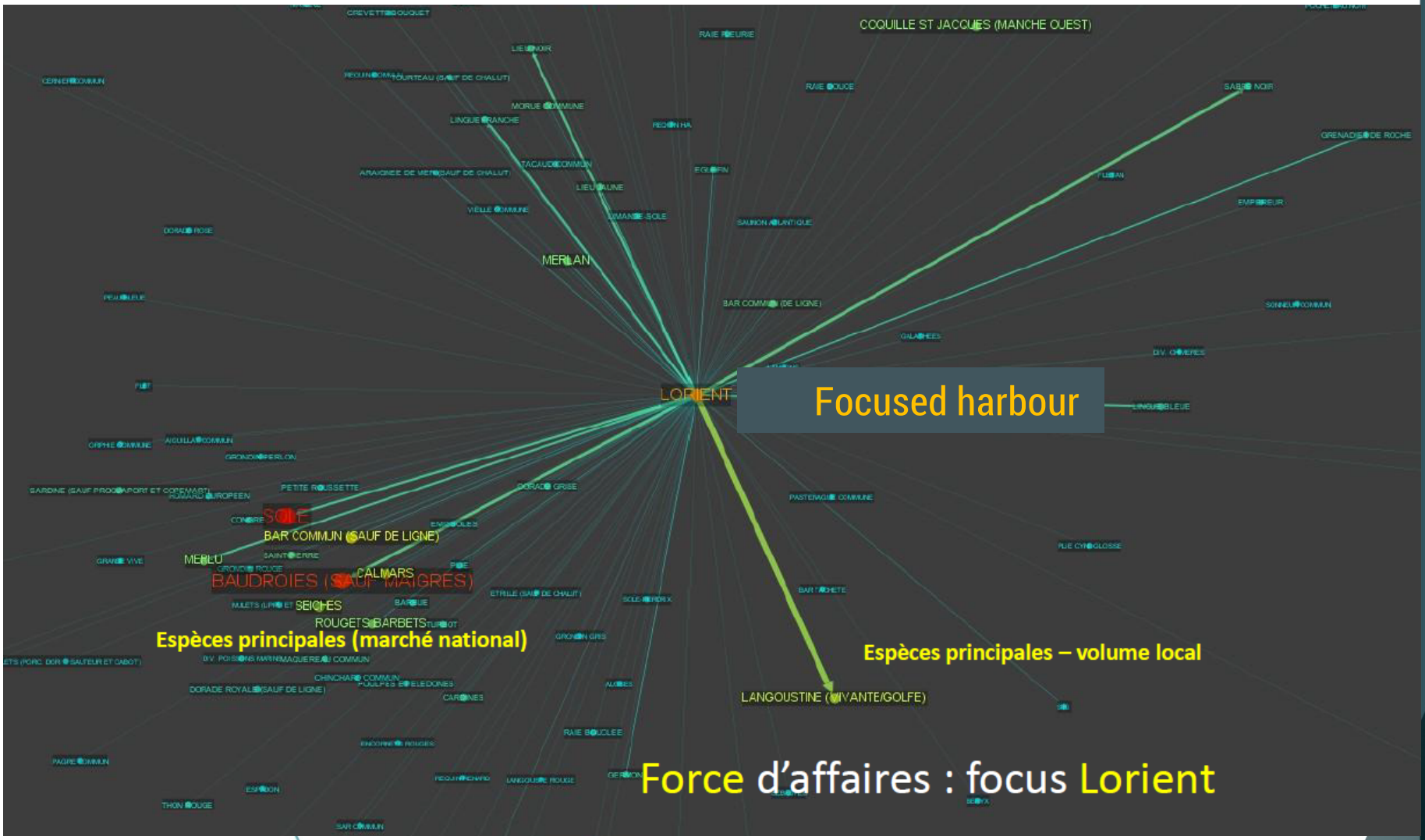
Stocks and sales by fish species – multiscale visualization



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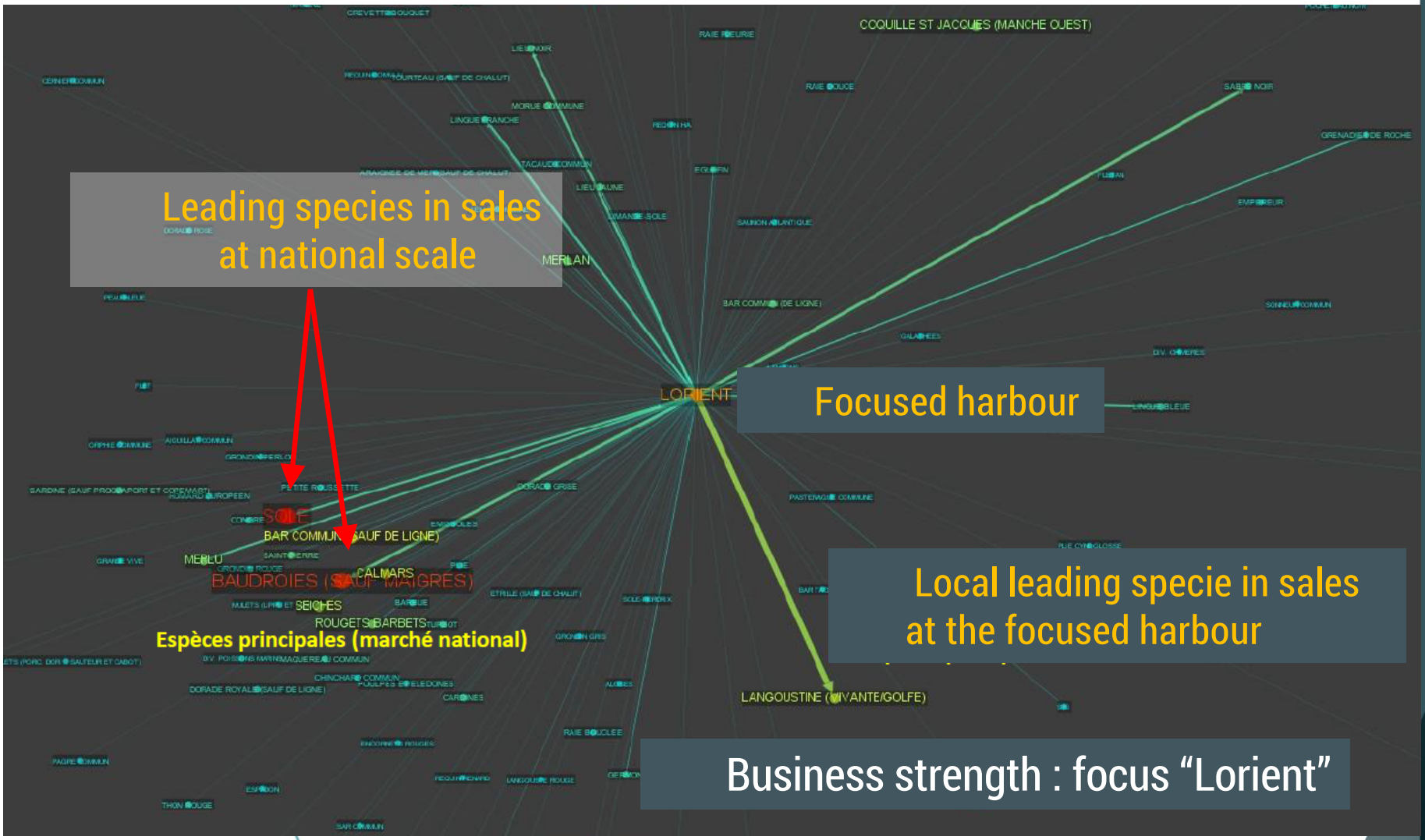

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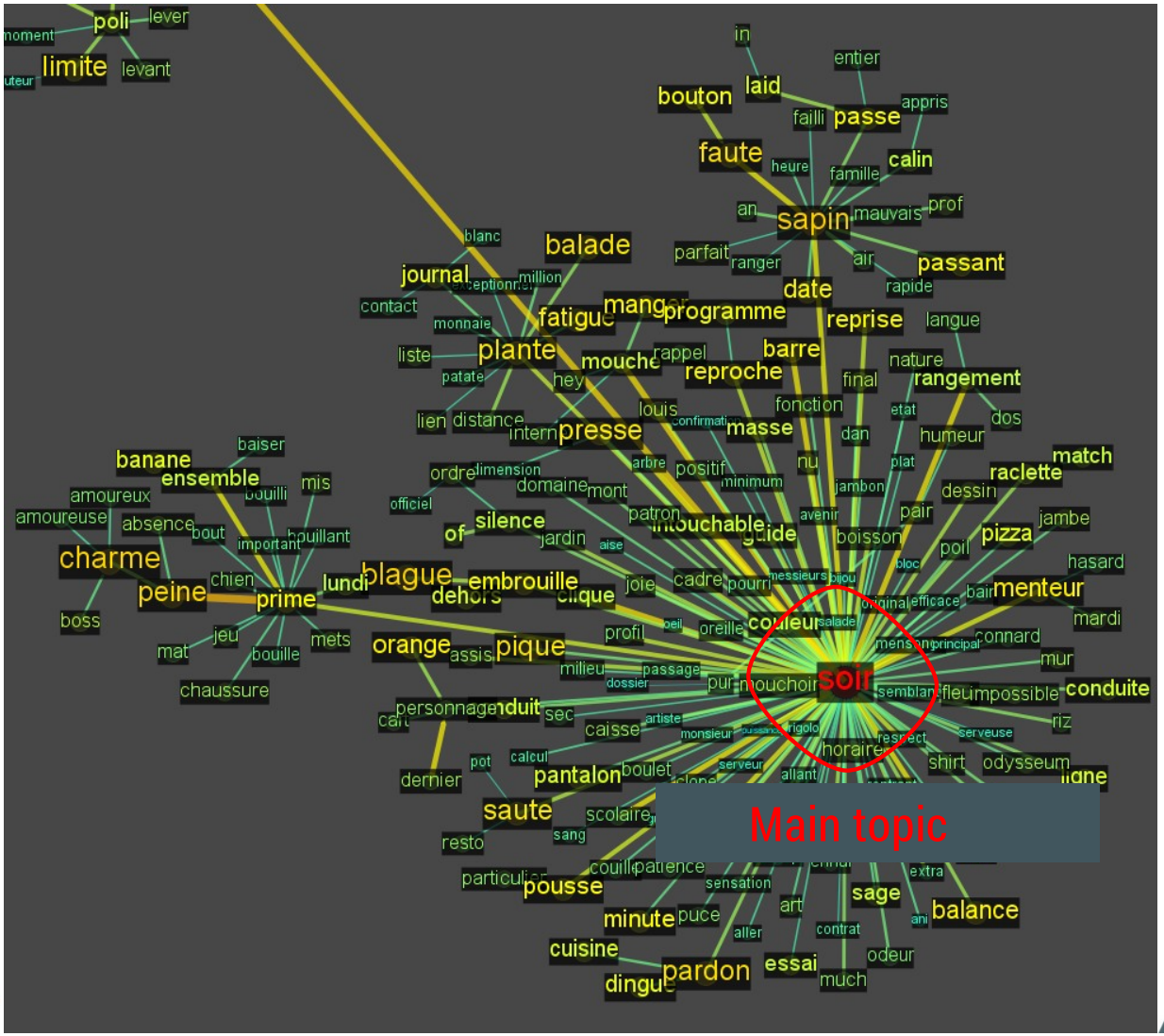
Hidden sentiment extraction from the talk of crowds



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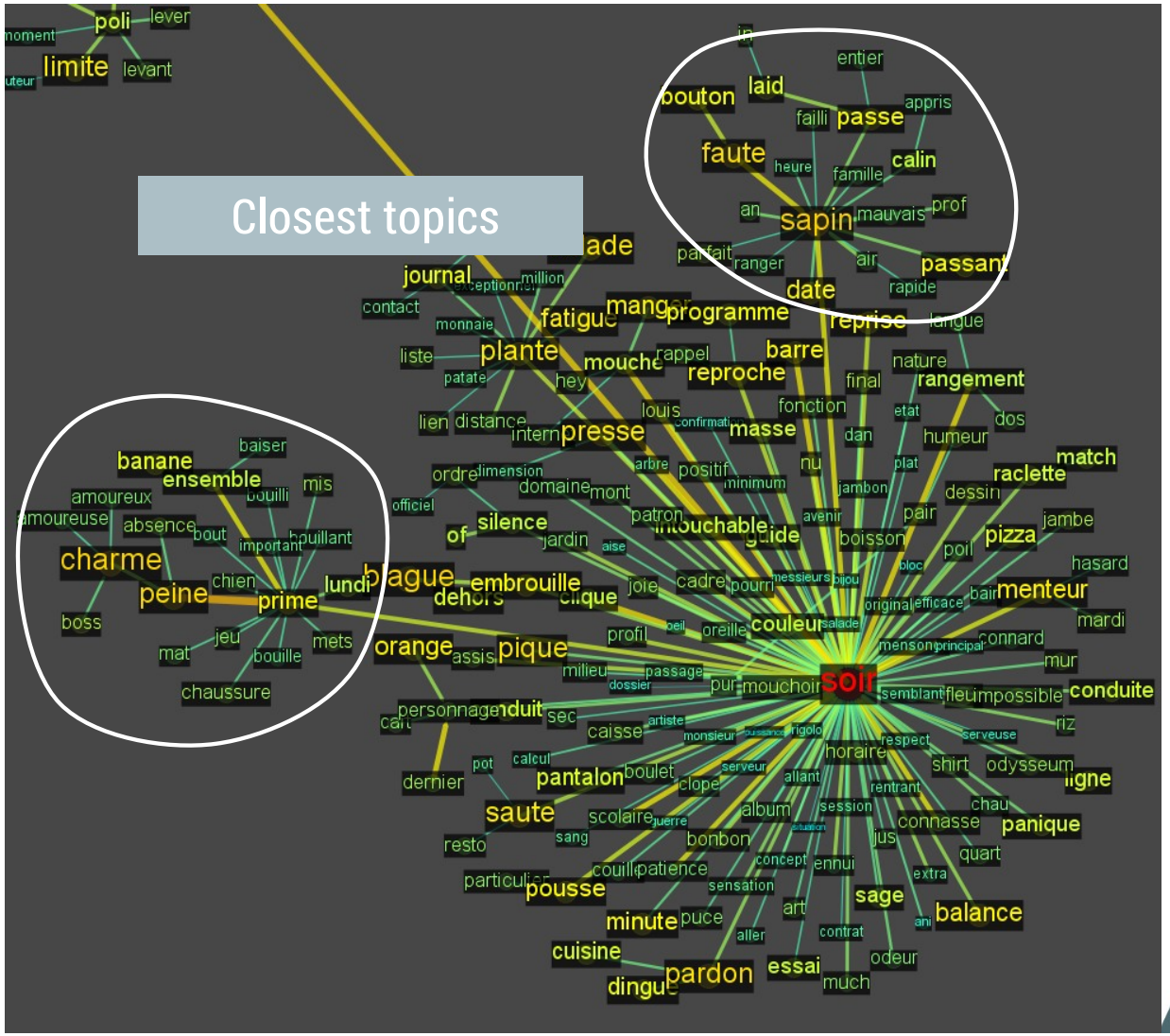
Hidden sentiment extraction from the talk of crowds



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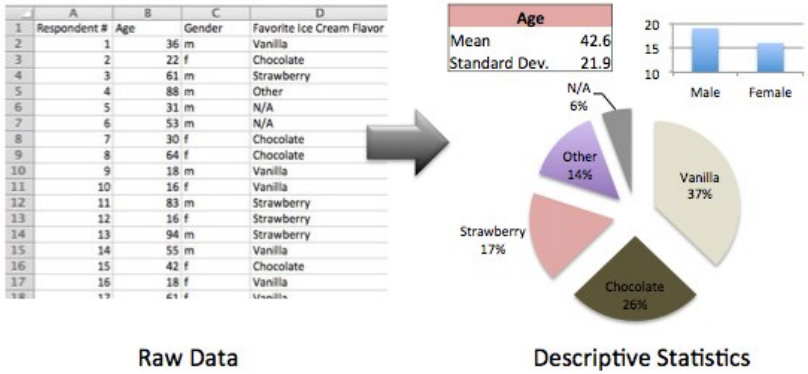
Data Science & Networks

Quantitative analysis :

Descriptive statistics, inferential statistics…



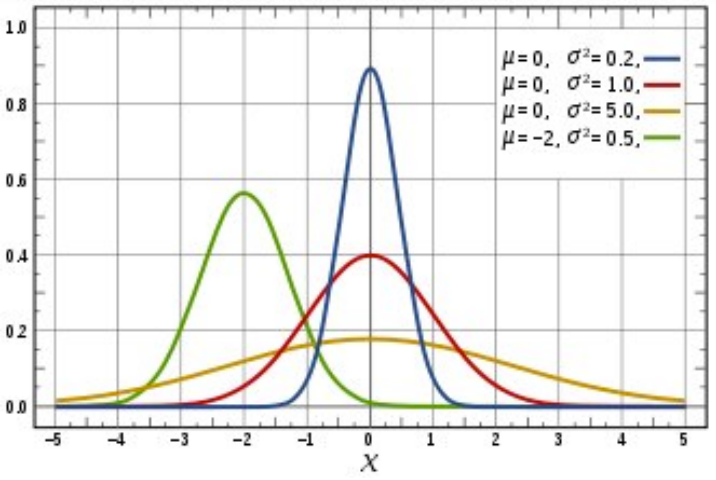
	A	B	C	D
1	Respondent #	Age	Gender	Favorite Ice Cream Flavor
2	1	36	m	Vanilla
3	2	22	f	Chocolate
4	3	61	m	Strawberry
5	4	88	m	Other
6	5	31	m	N/A
7	6	53	m	N/A
8	7	30	f	Chocolate
9	8	64	f	Chocolate
10	9	18	m	Vanilla
11	10	16	f	Vanilla
12	11	83	m	Strawberry
13	12	16	f	Strawberry
14	13	94	m	Strawberry
15	14	55	m	Vanilla
16	15	42	f	Chocolate
17	16	18	f	Vanilla

Raw Data

Descriptive Statistics

Descriptors

Estimators



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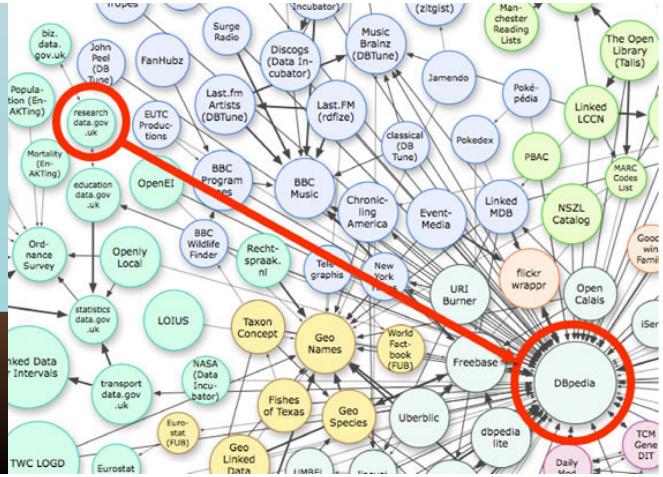
Data Science & Networks

Qualitative analysis :

To uncover and understand the “big picture”, using the data to describe the phenomenon and what this means.

Semantic and Social Web, Linked Data, Ontologies for information retrieval



Internet *is_a* communication network = true

Linked Data *is_a* data network = true

Ontology *is_a* semantic network = true

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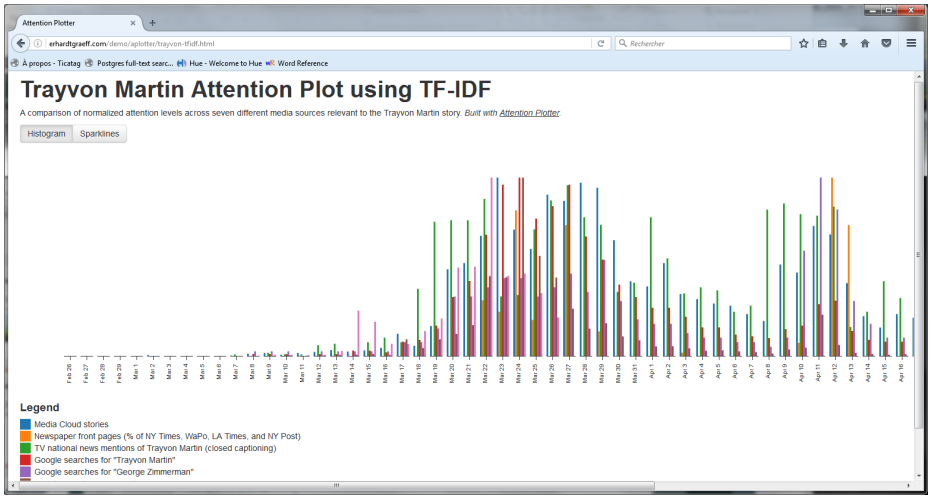
Data Science & Networks

Qualitative analysis :

From **linguistic statistics** towards **semantic inferences** and fuzzy reasoning



Axiom : Birds ⇒ to fly

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Qualitative analysis :

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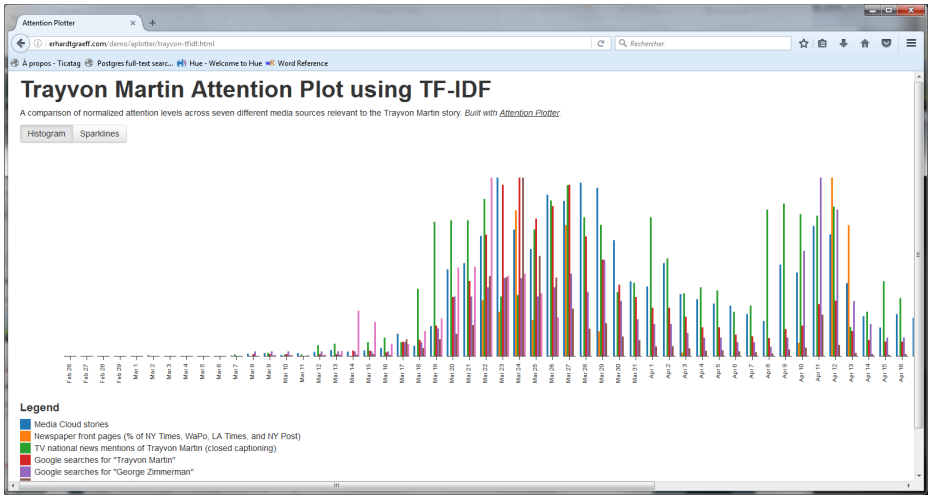

Axiom : Birds ⇒ to fly

p (Birds ⇒ to fly) = 0.99

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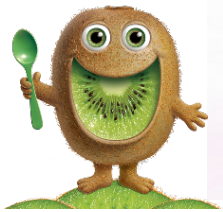
Qualitative analysis :

From linguistic statistics towards **semantic inferences** and **fuzzy reasoning**

Axiom : Birds ⇒ to fly

p (Birds ⇒ to fly) = 0.99



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Data Science & Networks

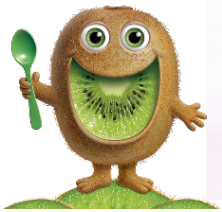
Qualitative analysis :
Fuzzy reasoning and Analytic Intelligence

Discrimination
of lexical ambiguities
in semantic networks

Axiom : Birds ⇒ to fly

p (Birds ⇒ to fly) = 0.99

p (Fruit ⇒ to fly) = 0.001



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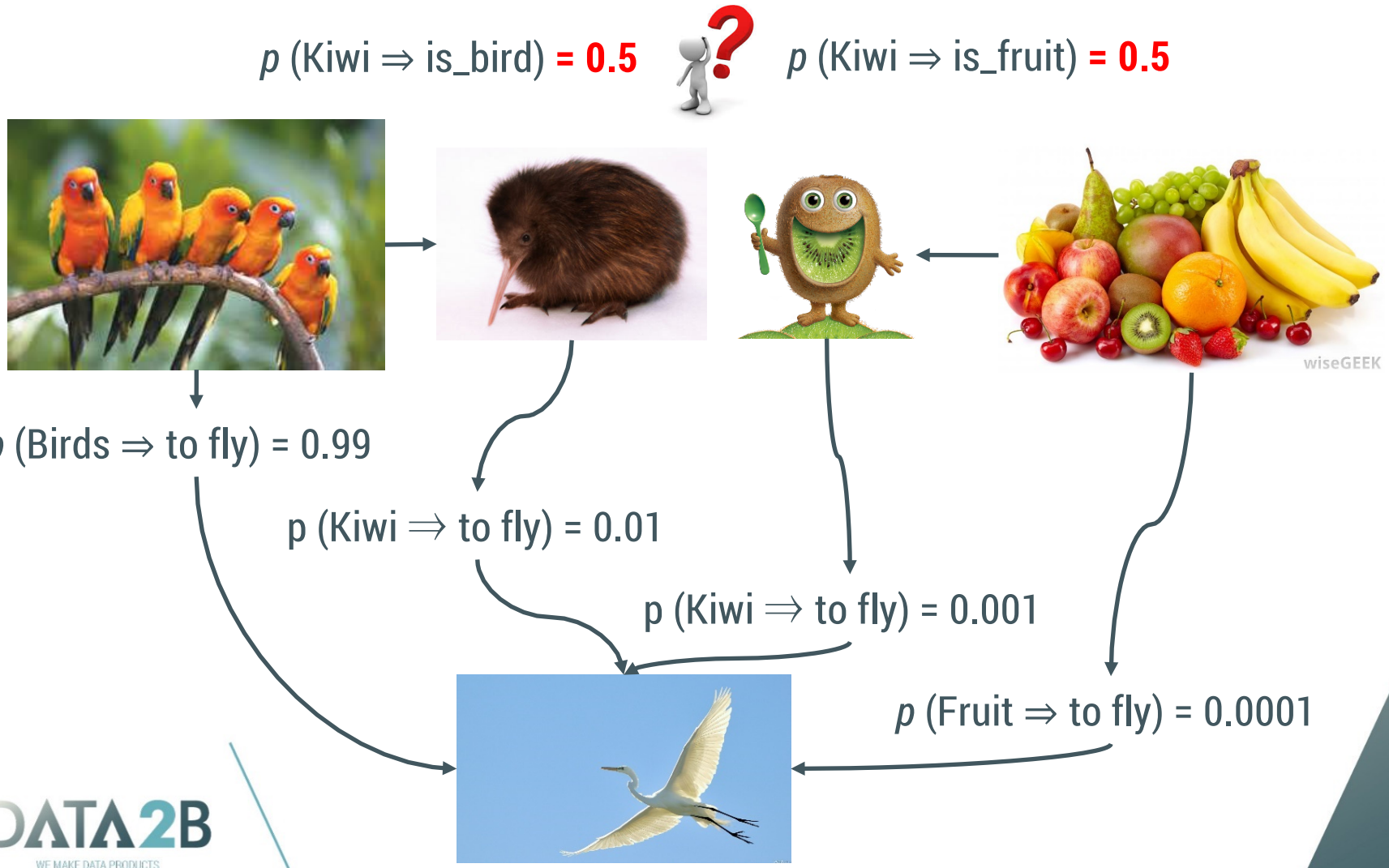
Big Data + Data Science + Network Science

➔From machine learning towards machine reasoning



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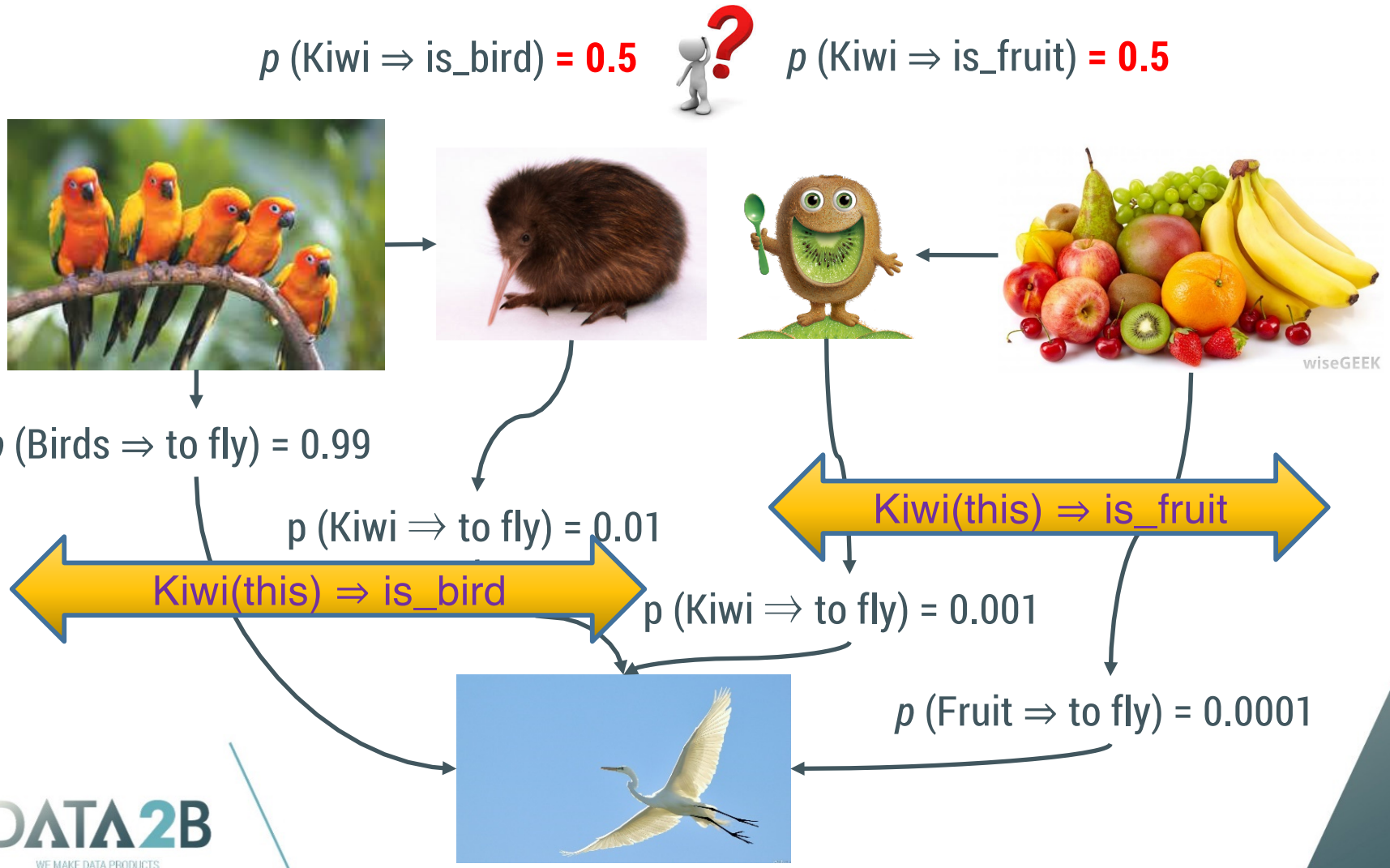

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Big Data Science & Networks

Other Works :

- Daily recommendations for high stock availability reducing distribution costs in round trips with stock return from delivery points and constrained transportation capacity.

Perspective example :

- Fuzzy reasoning on the Game Theory for Trading and Marketing

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THANK YOU

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