



Project on the Energy
and Environmental Impacts
of the Digital Economy



WPI

Blockchain and Governance of sustainable supply chains

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Students: Luis Jimenez-Castillo; Tianchi Yao, Mahtab Kouhizadeh



**Alfred P. Sloan
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ENVIRONMENTAL STUDIES**

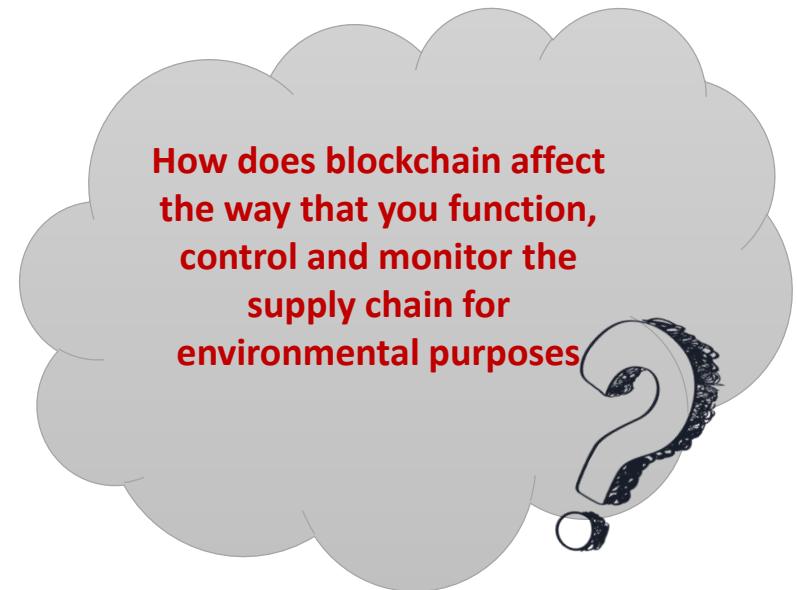
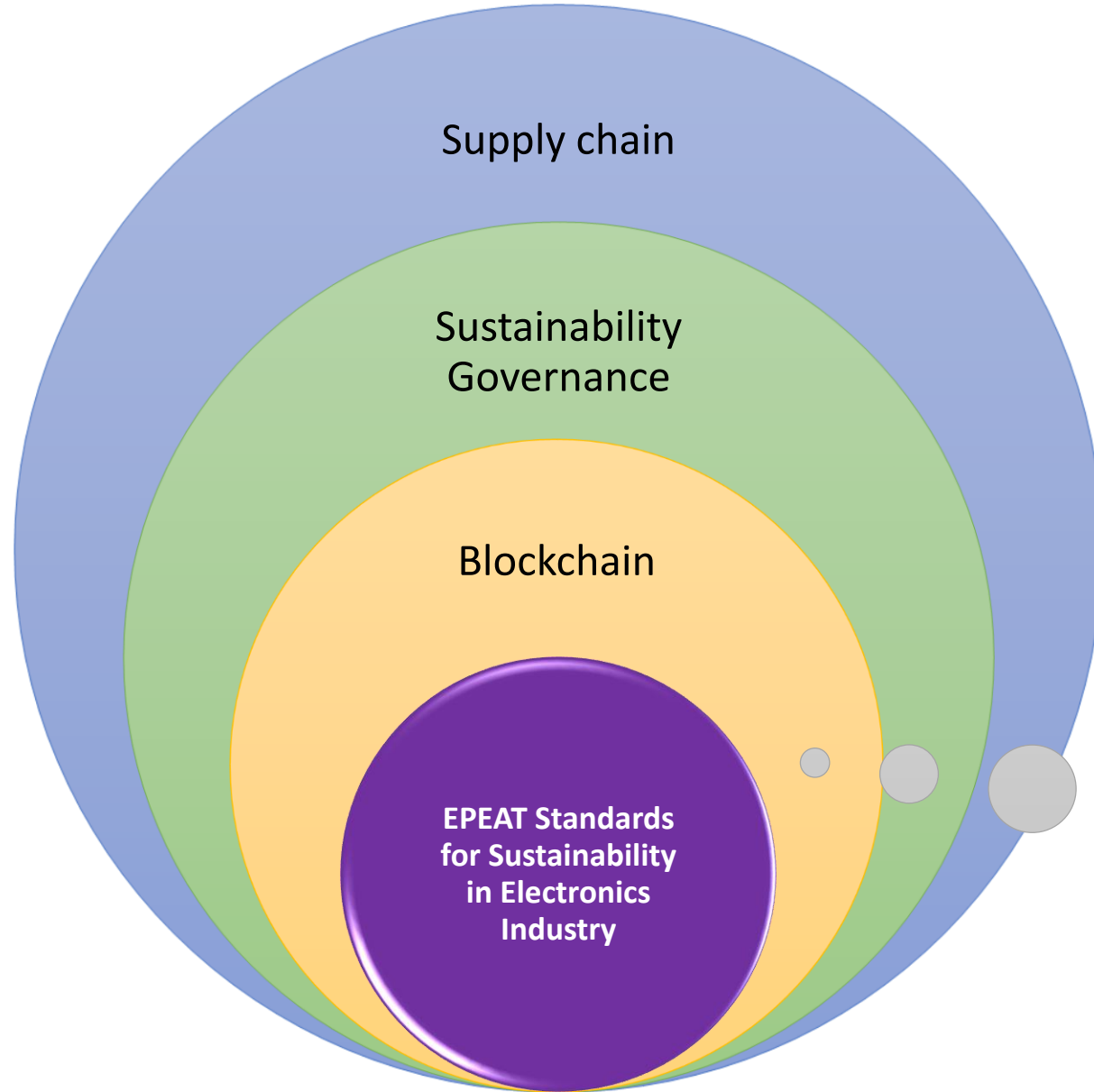
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the Environment

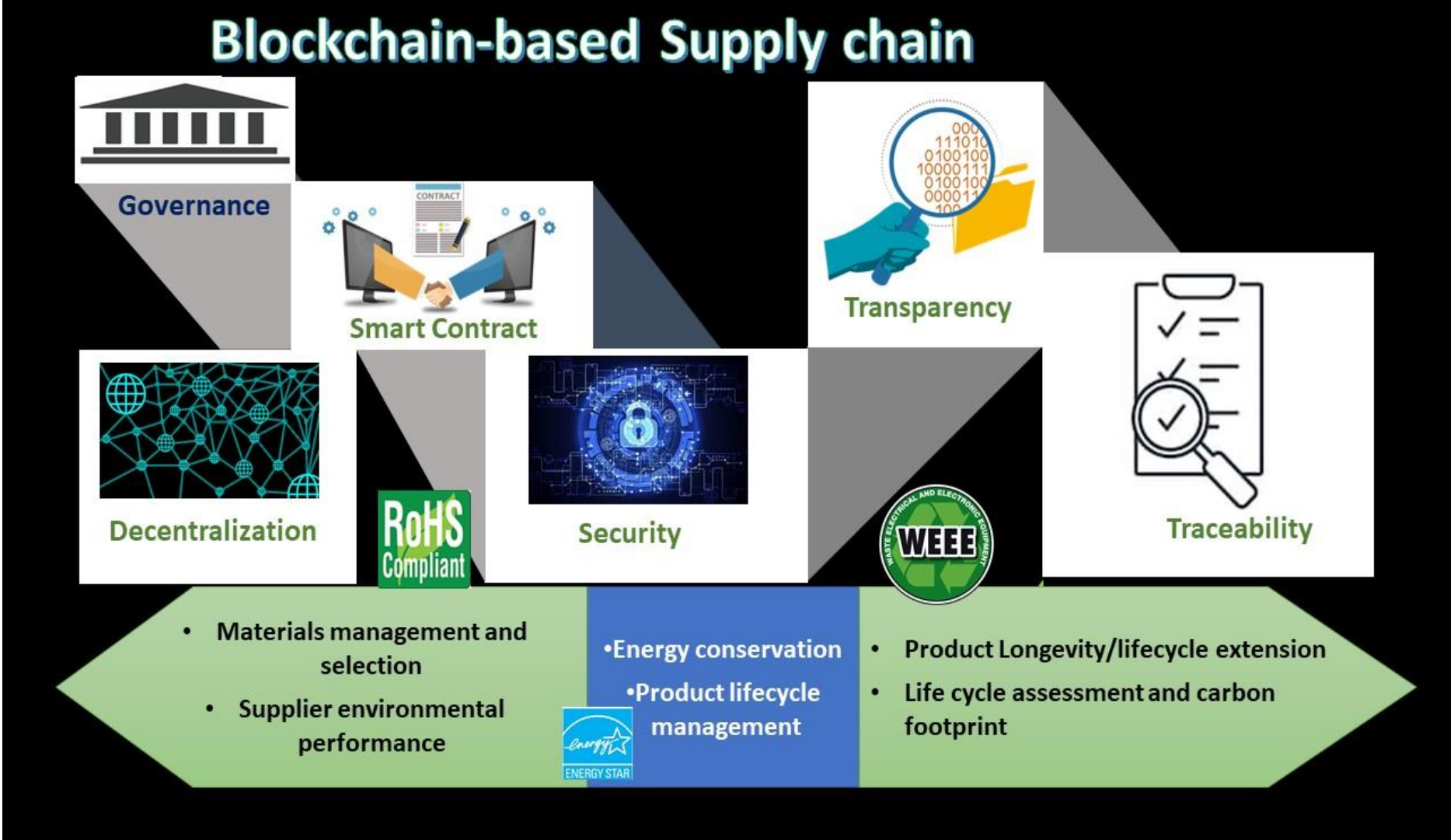


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Background



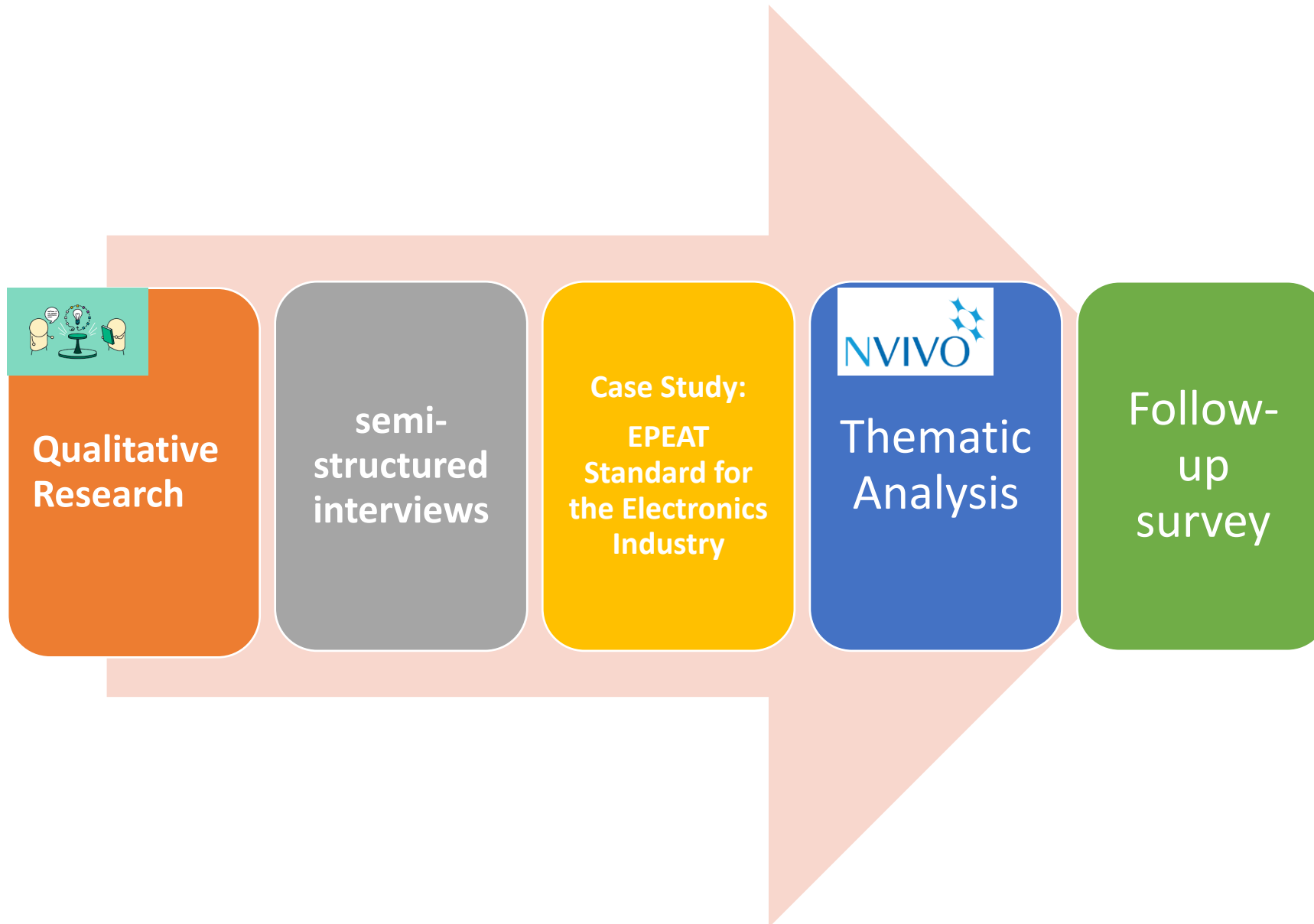
Proposed Problem



Importance of the Problem

- The deficiencies of governance mechanisms for implementing sustainability practices, including:
 - Difficulties for companies to follow all standards without compromising own interests (**lack of information sharing security**)
 - Lack of a national common reference framework to manage the collection and final treatment of waste flow (**lack of trust and transparency**)
 - Incurring high costs due to the limited number of professional certification organizations (**centralization issues and lack of smart control**)
 - Current mechanisms are not effectively used to enhance product end-of-life activities (**lack of traceability**)

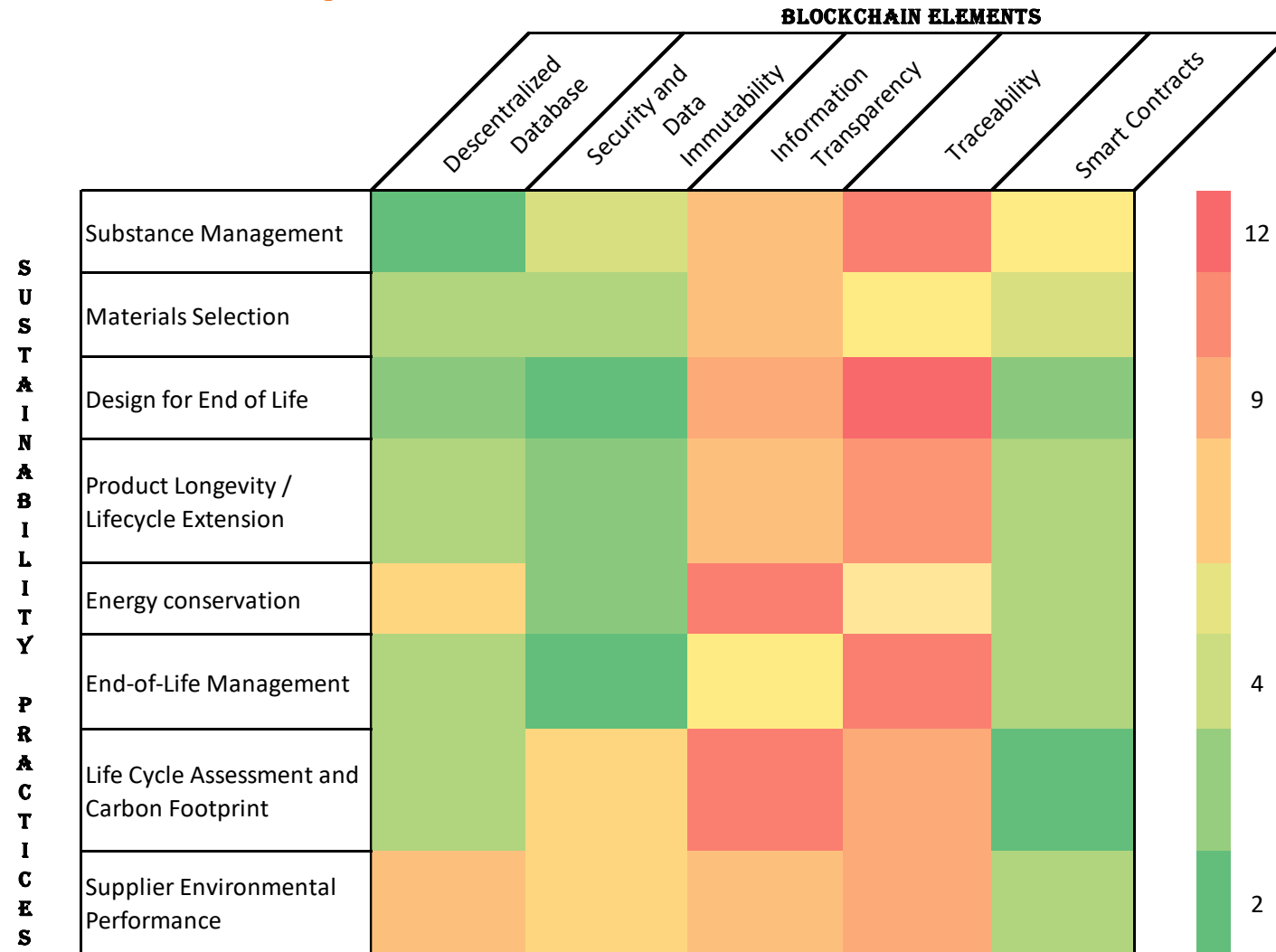
Methodology



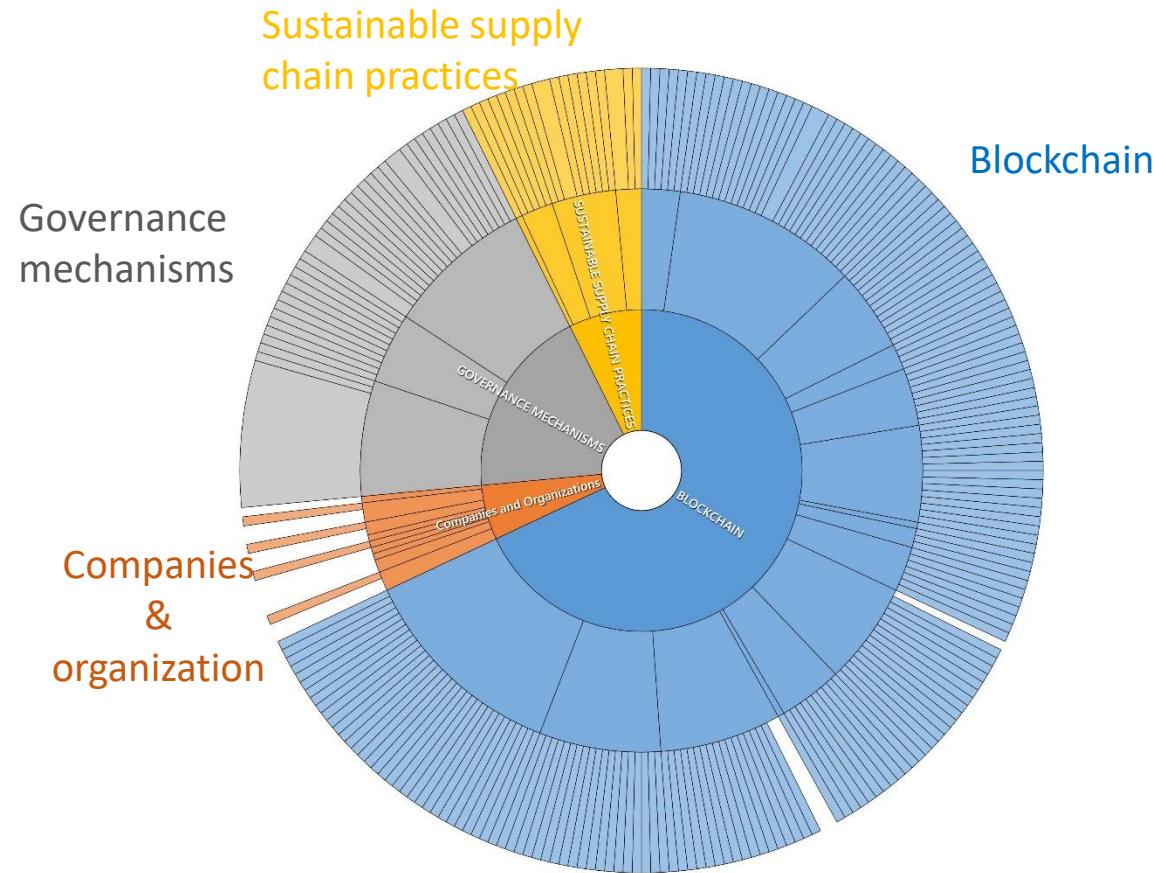
Respondents Pool

Respondent	Position	Years of experience in position	Country
A	Global Head Sustainability Solutions	15 years	USA
B	Vertical Owner	25 years	USA
C	Founder	2.5 years	Thailand
D	IT Manager	25 years	Australia
E	VP of Finance & IT	2 years	USA
F	Founder	17 years	USA
G	APJ Stewardship Manager	13 years	China
H	Responsible for Blockchain Strategy	2.5 years	USA
I	CEO	4 years	USA
J	Supply Chain Management Professor	13 years	Germany
K	Co-Founder	20 years	Canada

Heat Map



Major Findings





Interviews
Wordcloud

Barriers and Surprises

- What were the major barriers you confronted?
 - Finding experts who are familiar with both blockchain and sustainable supply chain and getting their input
 - Funding constraints
- What surprised you during the research?
 - Infancy of blockchain and its immaturity
 - Using some aspect of blockchains interchangeably or as the same.

Research Opportunities

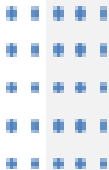
- What would you do if you had more funding?
 - Complete a broad-based empirical survey related to sustainability, supply chains and governance.
 - Investigate this problem with more dynamic perspective and technological forecasting approaches
 - Further investigation into current and emerging concepts such as circular economic and degrowth philosophies to aid in strong sustainability



Deliverables

Publications

- Zhu, Q., & Kouhizadeh, M. (2019, July). Strategic Product Deletion and Supply Chain Information Governance Using Blockchain Technology. In *Academy of Management Proceedings* (Vol. 2019, No. 1, p. 18095). Briarcliff Manor, NY 10510: Academy of Management
- Kouhizadeh, M., Zhu, Q., and Sarkis, J., (2019) – “Blockchain and the Circular Economy: Potential Tensions and Critical Reflections from Practice” – Forthcoming in *Production Planning and Control*
- Kouhizadeh, M., Saberi, S., and Sarkis, J. (2019) – “Blockchain Technology and the Sustainable Supply Chain (paper under review – *International Journal of Production Economics*).



Presentations and related activities

- Invited talk for Economics and Entrepreneurship course, “Blockchain and Supply Chain Governance”.
- EPEAT blockchain initiative on-going discussion and involvement
- Scientific & Technical Advisory Panel of the Global Environment Facility – Washington, D.C. – Blockchain Workshop on Environment, Supply Chains, and Circular Economy
- Blockchain Workshop to be held at the Decision Sciences Institute Annual Conference in New Orleans – November 23, 2019.
 - Involvement of network of academics – Supply Chains, Governance, and Sustainability are core topics to set research agenda

Special Issue Editorships – On-going and Forthcoming

- *International Journal of Production Research*
– “Blockchain Technology and Transportation” – Transparency and Sustainability Research is aspect.
- *Business Strategy and the Environment* –
“Blockchain Technology – Business, Strategy, the Environment and Sustainability” – Governance is one of the topical areas.
- *Production Planning & Control* – “Blockchain Technology and Operational Excellence” – Improvement of Operations, Production, and Supply Chain Systems – Sustainability Management is one aspect



Production
Research

International Journal of Production Research

Volume 55(1) February 2017

The cover features a green leaf-like graphic with a grid pattern.



Business Strategy
and the Environment


The cover is a solid light green color.



PRODUCTION
PLANNING &
CONTROL

THE MANAGEMENT OF OPERATIONS

The cover features a green and grey striped design.



Proposed Requested Grant

PI: Sara Saberi;

- Title: Blockchain Platform for Food Supply Chain on Campus at WPI: A Pilot Study
- Source: Women's Impact Network (WIN), WPI, 2020.

Advisor: Sara Saberi

- Title: Blockchain based supply chain traceability
- PI: Jeyaram Perumalsamy, Textile Ledger INC.
- Source: NSF SBIR, Phase I, 2020.



**ANY
QUESTIONS?**

Thank you!