

The world is flat and  
blockchain is going to proof  
it!

Blockchain and AI in the context of Industrial  
engineering and Hyperledger Fabric

- Agenda
  - Introduction to AI - Neural Networks
  - Geometrical Understanding of Neural Networks
  - Translating Neural Networks in the Geometry of a Hyperledger Fabric Cluster
- Assumptions based on the my research
- Next steps

# Is The Future Of Artificial Intelligence Tied To The Future Of Blockchain?

**Jayshree Pandya**

Contributor

**COGNITIVE WORLD**

Contributor Group

[AI & Big Data](#)

*Jayshree Pandya is Founder of Risk Group & Host of Risk Roundup.*

## Introduction

Since the beginning of modern times, each industrial revolution was driven by different automation. While factory machines and fossil fuels drove the previous industrial revolutions, the on-going automation revolution is based on data-driven artificial intelligence (AI). Understanding its impact and what will be required to support the AI-driven automation revolution is a fundamental necessity.

So, as we evaluate the impact and the support needed to harness this automation revolution, it seems that at the center of this revolution is the growing need for computing power. There are indicators that raw computing power is on its way to replacing fossil fuels and will be the most valued fuel in the rapidly emerging intelligence age. From where we are to where we want to reach in our intelligence automation journey, further advances in artificial intelligence require enormous amounts of computational power.

Just as computing power is essential to AI, so too is the data that is fed and how the results are used. This is mainly because, ultimately, the input of AI is the data through which complex algorithms provide connections, patterns, and useful insight that provide valuable output for individuals and entities across nations: its government, industries, organizations, and academia (NGIOA).

As seen across nations, many initiatives of blockchain currently provide computing power for the needs of AI. **In addition to providing computing power, blockchain technologies also hold the promise of adding structure and accountability to AI algorithms and may help in much-needed areas like security, quality, and integrity of the intelligence AI produces.** Now since big data fuels, artificial intelligence and blockchain generates big data, individually and collectively the future of AI is tied to the future of blockchain. *That brings us to an important question: How can blockchain technology infrastructure that we have power AI currently for its computing needs of tomorrow when it is struggling to meet its own computing needs of today?*

Acknowledging this emerging paradigm, [Risk Group](#) initiated a much-needed discussion on the future of blockchain with Prof. Irving Wladawsky-Berger, a Research Affiliate at MIT Sloan School of Management, Fellow of the Initiative on the Digital Economy and of the MIT Connection Science initiative, and a Guest Columnist at WSJ CIO Journal on [Risk Roundup](#).

$$\begin{bmatrix} a & b \\ c & d \end{bmatrix} \cdot \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} ax + by \\ cx + dy \end{bmatrix}$$

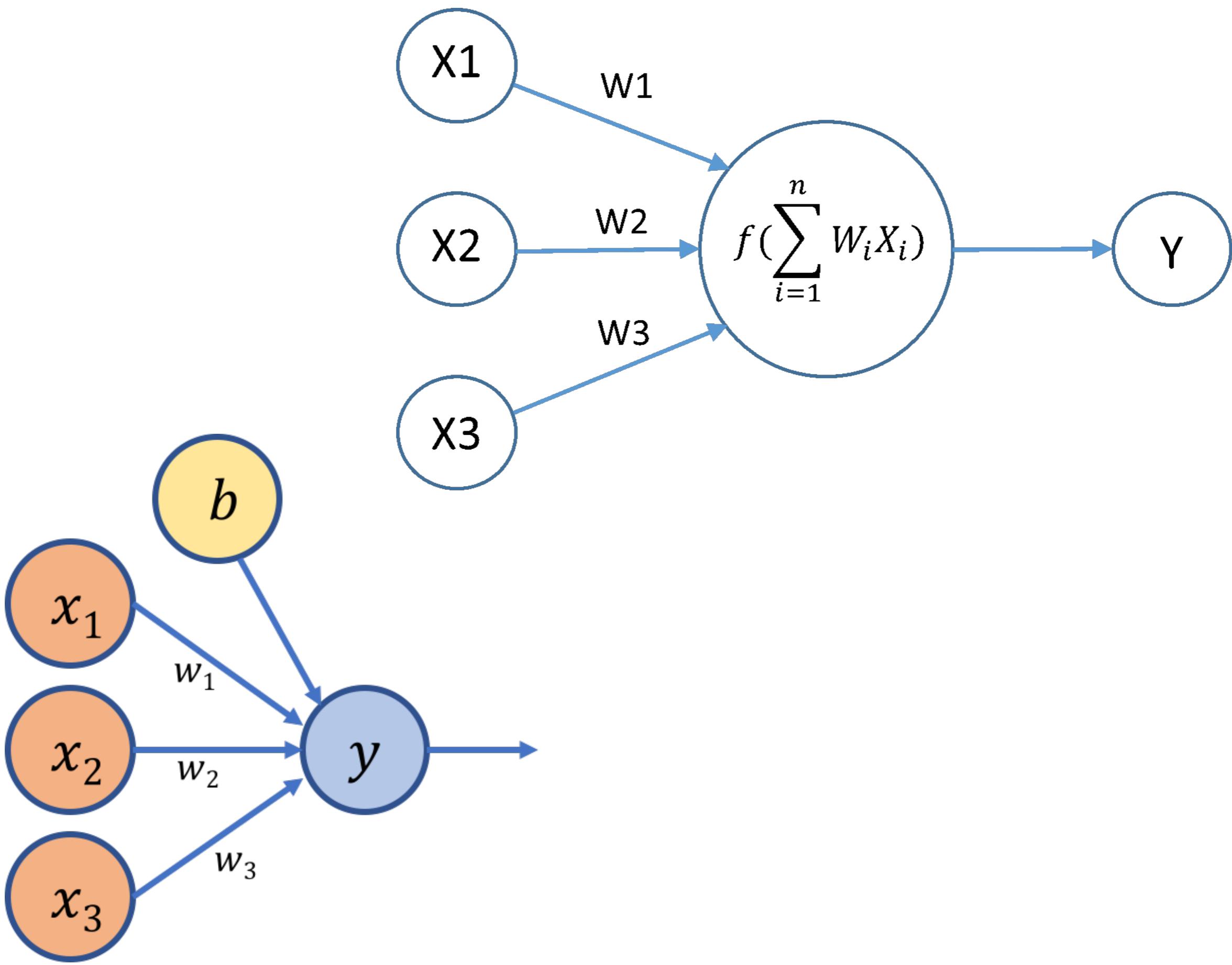
$$\begin{bmatrix} a & b & c \\ d & e & f \\ 0 & 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} x \\ y \\ 1 \end{bmatrix} = \begin{bmatrix} ax + by + c \\ dx + ey + f \\ 1 \end{bmatrix}$$

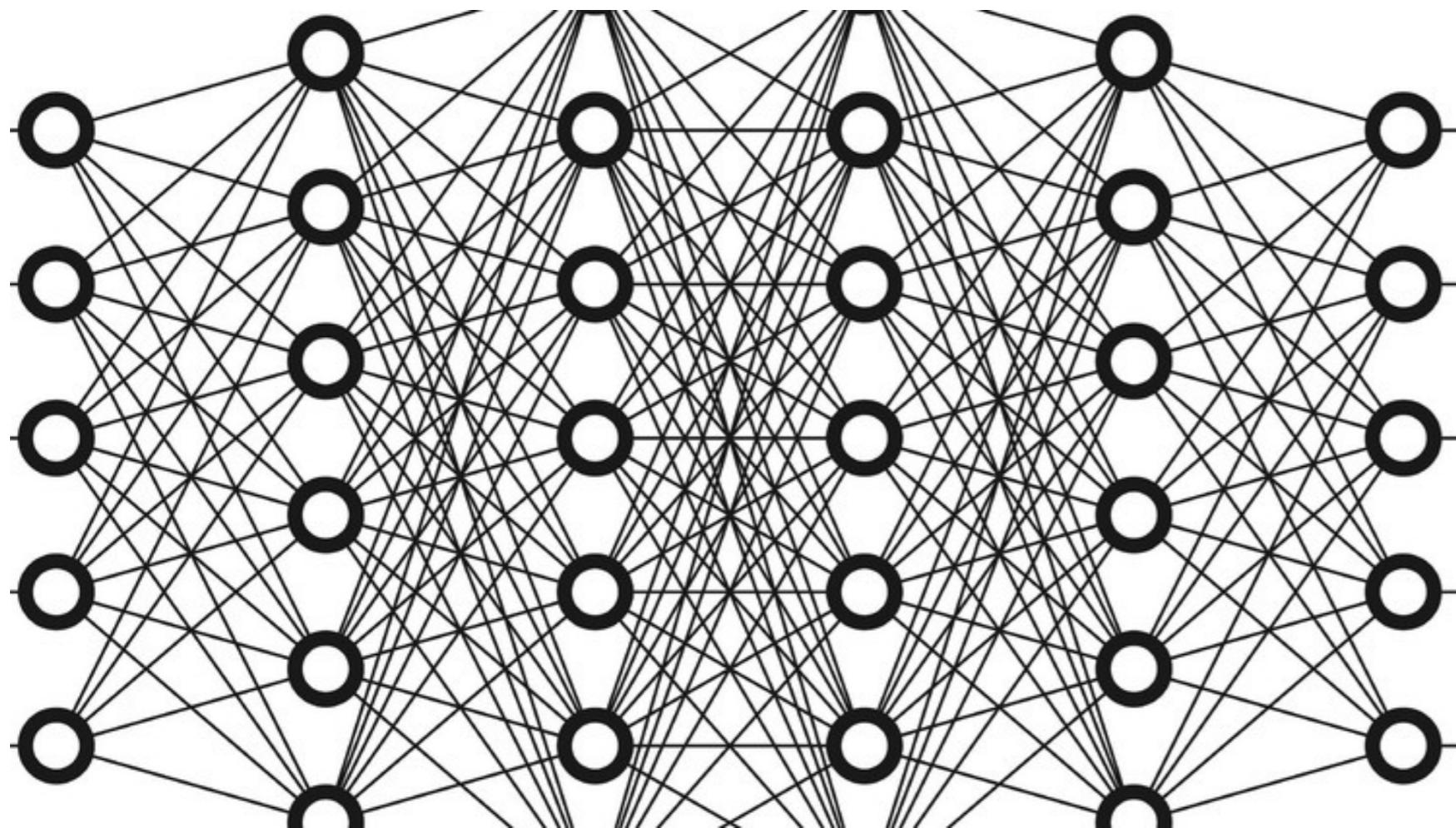
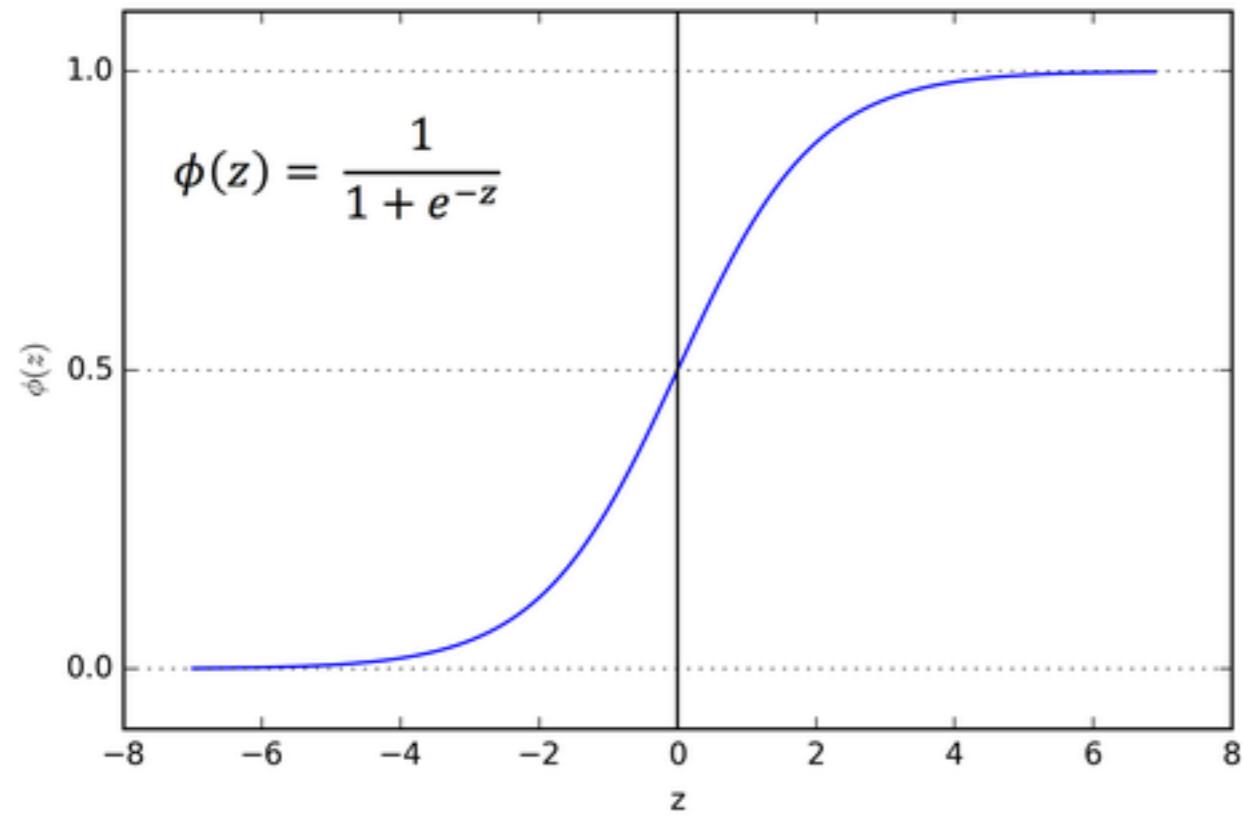
$$\begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix} \cdot \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} ax + by + cz \\ dx + ey + fz \\ gx + hy + iz \end{bmatrix}$$

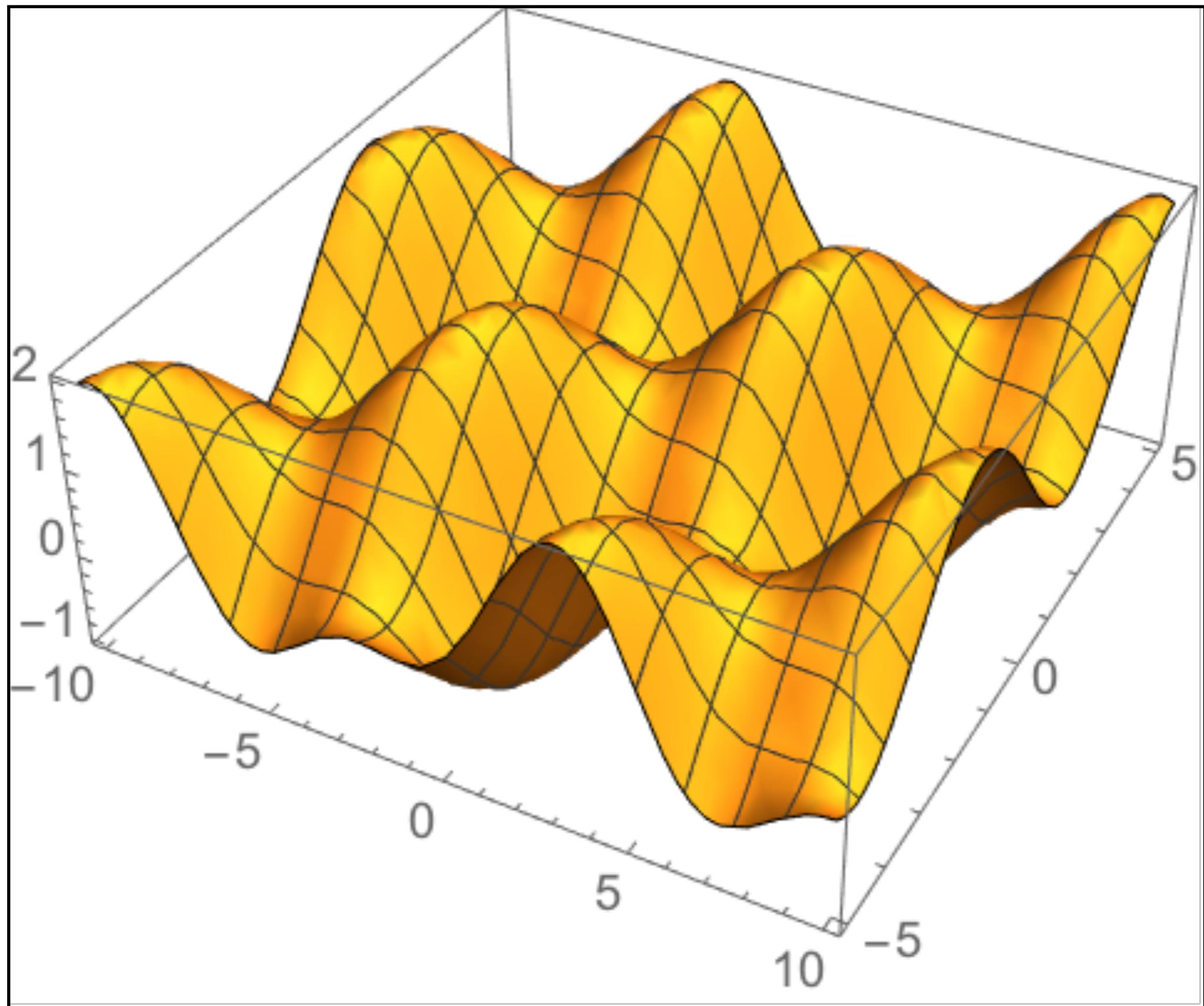
$$\begin{bmatrix} a & b & c & d \\ e & f & g & h \\ i & j & k & l \\ 0 & 0 & 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} x \\ y \\ z \\ 1 \end{bmatrix} = \begin{bmatrix} ax + by + cz + d \\ ex + fy + gz + h \\ ix + jy + kz + l \\ 1 \end{bmatrix}$$

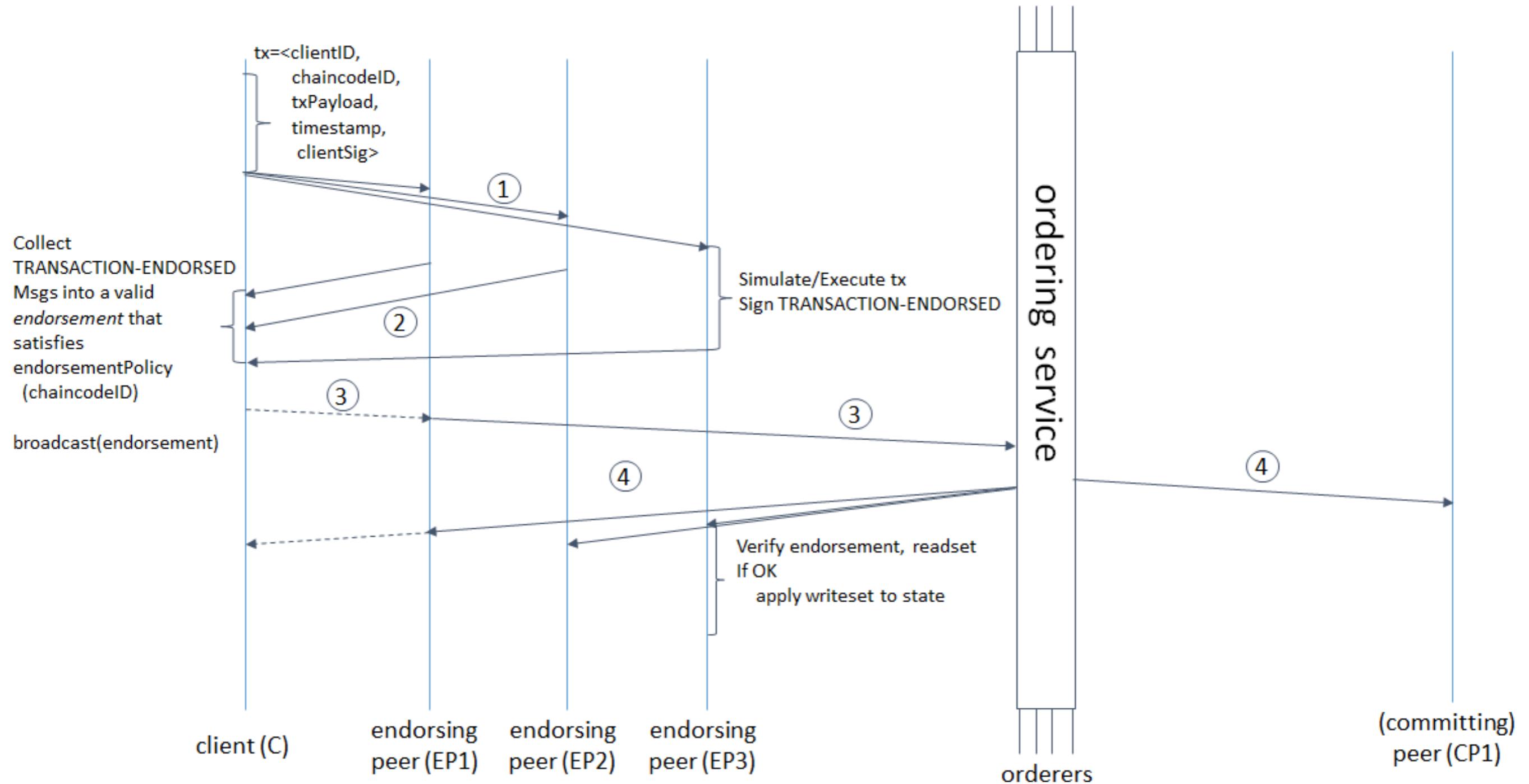
**a = km, b = kg, c = morning service  
x = price by km, y = price by kg, z = 1**

complexity that might be added: qbmi or ldm, several services like morning, evening, neutralisation, cash payment, warehousing delivers on demand by day, definition of a shipment ....



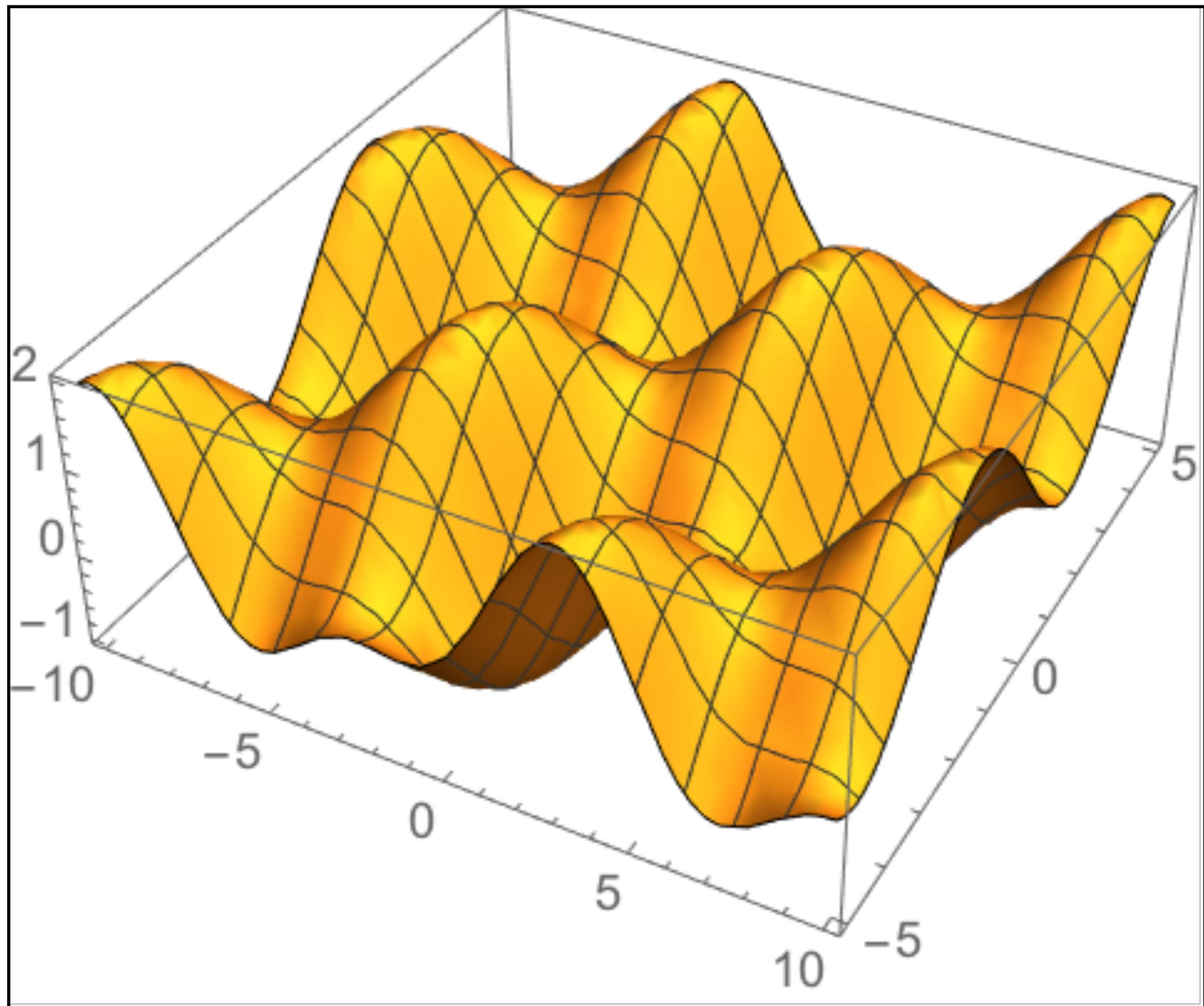






**Hyperledger Fabric's ability to produce data of perfect integrity (in the view of magnitude, time, identity ....) and the ability to prevent double spending and assuring consensus permanent will produce a much more predictable environment.**

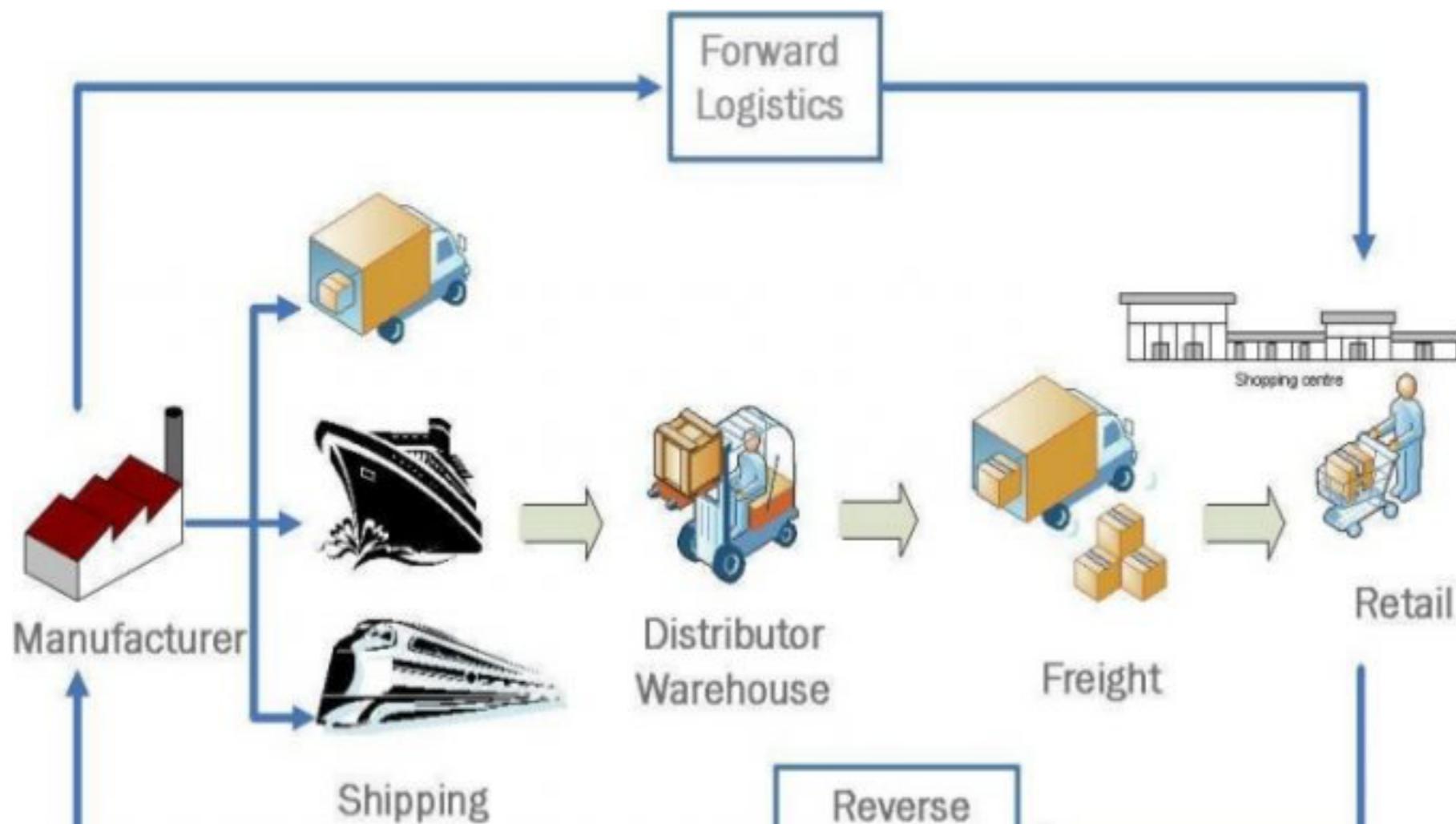
**This environment will have his own topological shape. Which must be understood in order to use it properly.**



# 94 Companies Join IBM and Maersk's Blockchain Supply Chain

## IBM and Maersk

<https://www.coindesk.com/90-companies-join-ibm-and-maersks-blockchain-supply-chain>



When we talk about projects like IBM – Maerks Blockchain project we talk actually about digitalisation of a supply chain. Before this approach took place every stakeholder used to have his own data warehouse. From our point of view this is a silo as blockchain is implemented the silos are distributed and with them the realtime consensus enabled. As every action is instantly present on the ledger we talk about digitalisation.

This digitalisation means also that the whole supply chain has a topological form. That means that certain behaviour can be predicted. On the other hand some factors will change over time like cost factors as there are: fuel, customs through sanctions and so on..

But anyways over time the topology will become very accurate and the AI filled with real time data will figure out the optimal path through the chain.

**Assumptions:**

Within competing parties a race for the best AI will emerge.

The AI will shape the the Topology of the Blockchain just as Blockchain will teach the AI.

Blockchain will be more Dynamic trough AI.

AI can simulate Blockchain before implementation.

AI tells Blockchain how to form Blockchain tells AI how to curve.

Last but no least AI is a good example why Blockchain does not belong on the cloud.

<https://www.theverge.com/2019/2/6/18213453/gmail-tensorflow-machine-learning-spam-100-million>

## Gmail is now blocking 100 million extra spam messages every day with AI

1  [COMMENT](#)

*Google is using its machine learning platform, TensorFlow, to eke out additional gains*

# Blockchain in Forwarding

Blockchain in Forwarding in the context of  
Industrial engineering and Hyperledger Fabric

# Agenda

- 1996
- Hyperledger Global Forum
- Endorsement Validation
- The meaning of Endorsement Validation for Forwarding
- Introduction in Forwarding
- Looking into the future

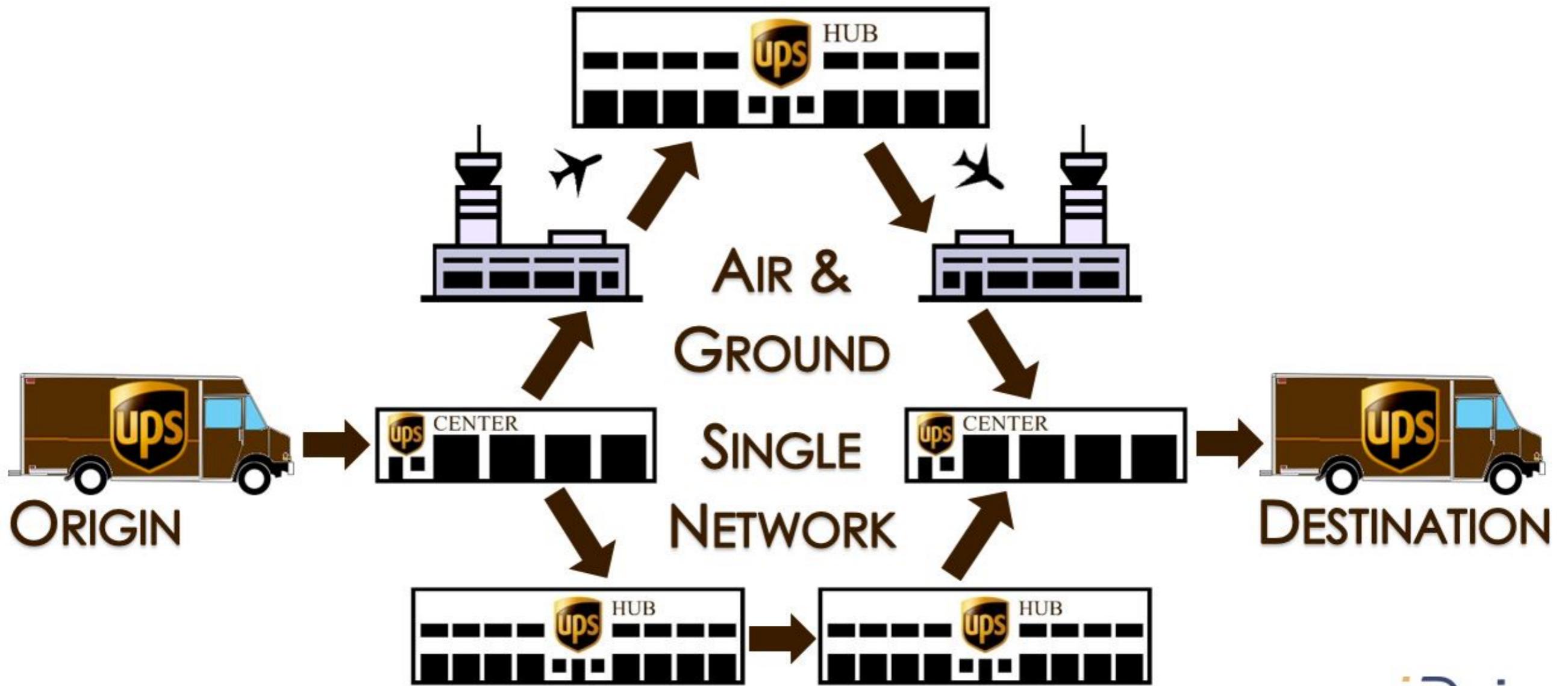
# **United Parcel Service**

## Leveraging IT Investments to Win in e-business

*Patricia B. Seybold May 1999*

*Prepared for IBM Corporation*

If UPS offered web based track and trace to his clients already 1995 why  
do we need blockchain now?



# Hyperledger in Supply Chains

Moderator: Allison Clift-Jennings, CEO, Filament

Panelists:

Yuanzhang Liu, Solution Architect, Blockchain Service, Huawei Technologies Co. Ltd.

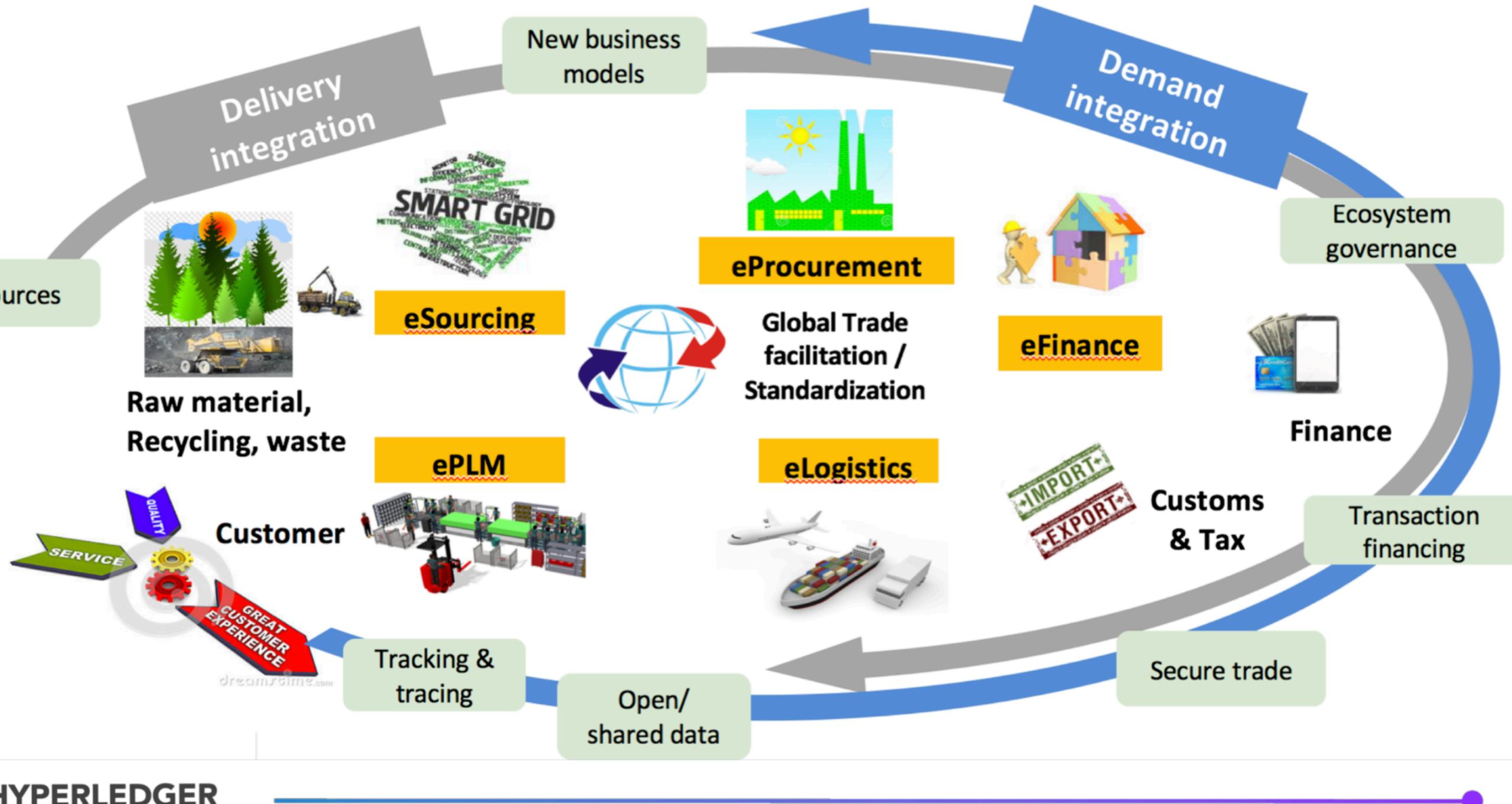
Kari Korpela, Academic Researcher, Lappeenranta University of Technology

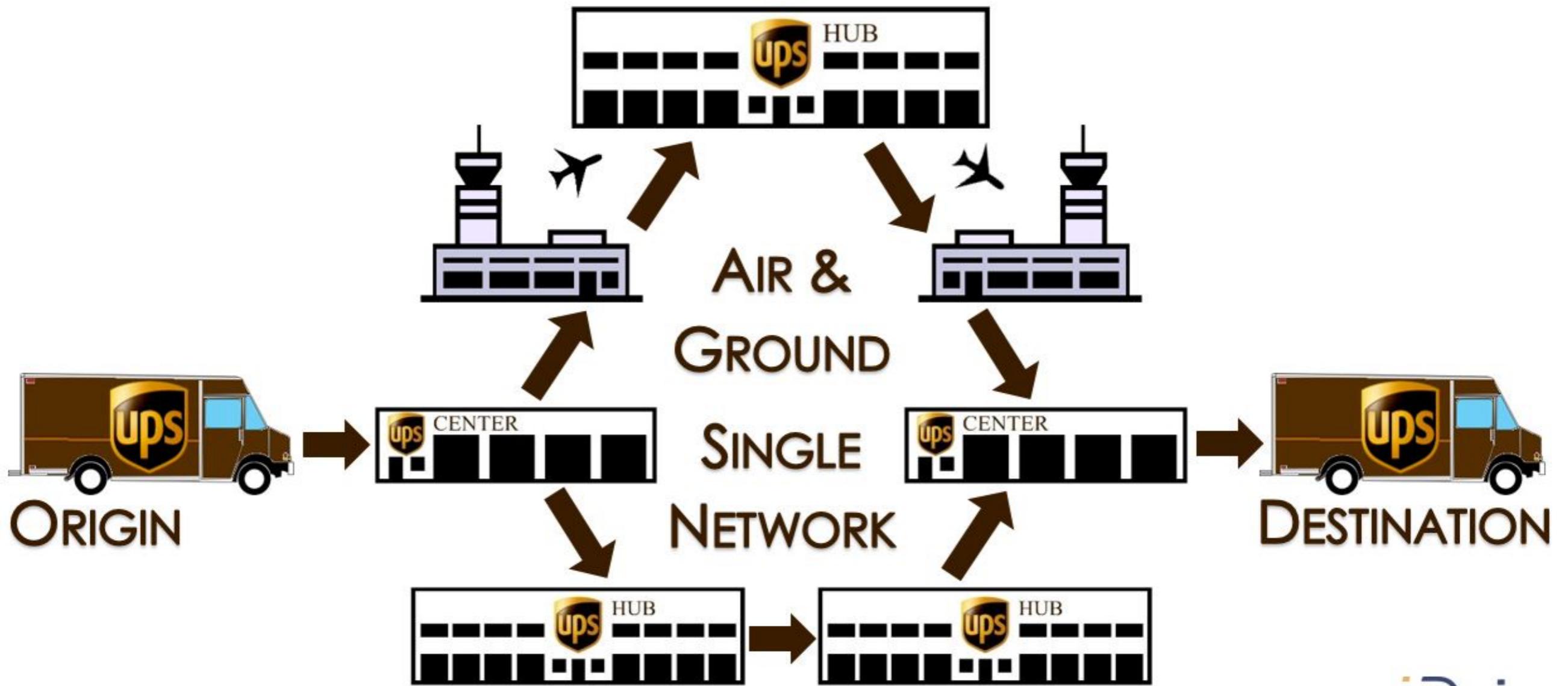
Petr Novotny, Research Staff Member, IBM T.J. Watson Research Center



**HYPERLEDGER**  
GLOBAL FORUM

## Products-Services-Finance and Information





# Bordero

Forwarder 1

ACME  
Vienna

Forwarder 2

ACME  
Bratislava

1 Shipment

Shipper

Receipt

KG

Instructions

delivery time

pal. change

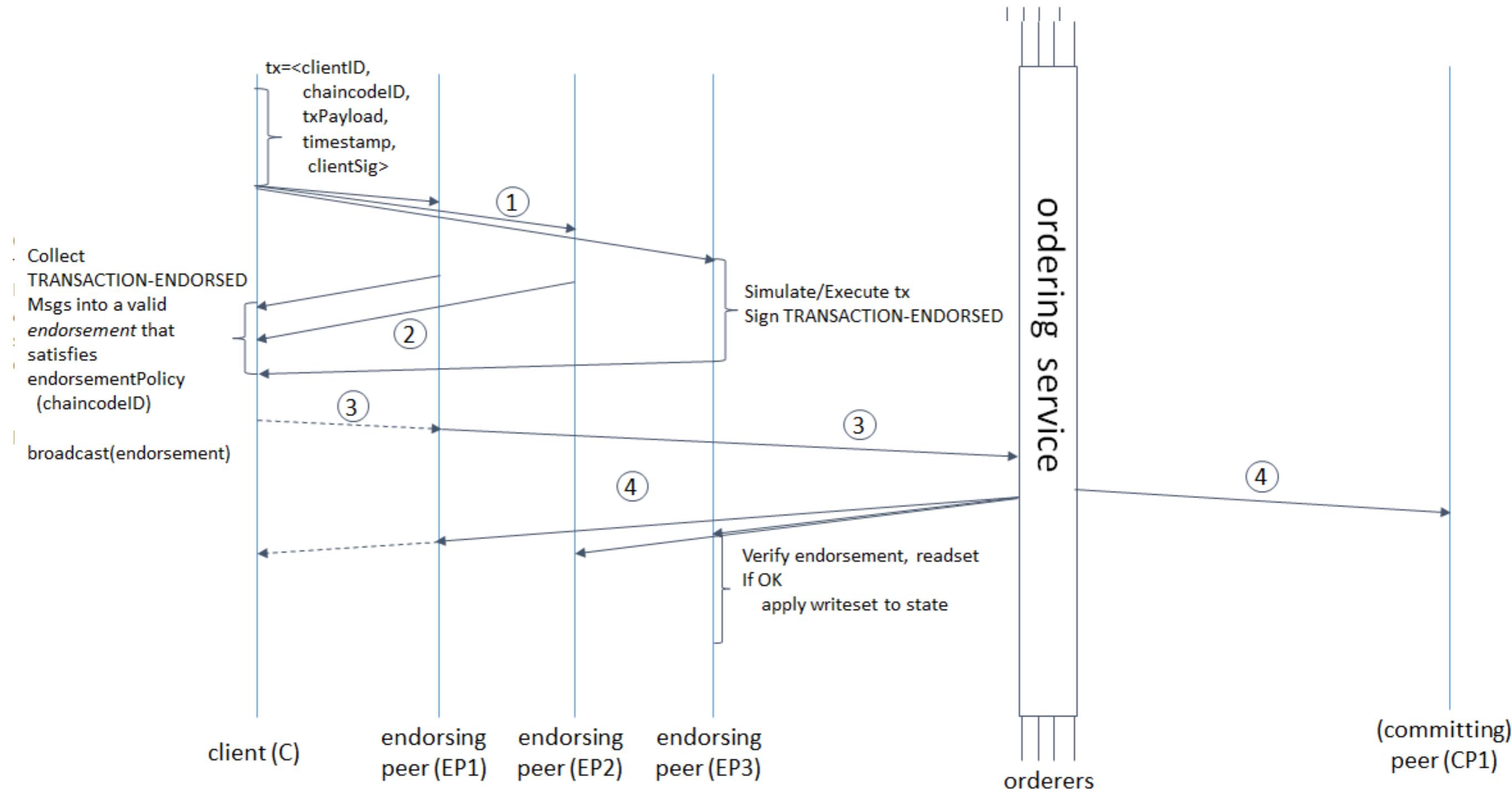
Invoicing

price

terms of  
payment

to collect

clearing



The role of permissions Blockchains is it to ensure the dictatorship of the consensus!

The ability to do this through the endorsement validation is one of the most valuable features of Hyperledger Fabric. For somebody with my background this ability means nothing else but to keep the Clearing always synchronous to the Physical business transaction.

## Description

[\[edit\]](#)

In trading, clearing is necessary because the speed of trades is much faster than the cycle time for completing the underlying transaction. It involves the management of post-trading, pre-settlement credit exposures to ensure that trades are settled in accordance with market rules, even if a buyer or seller should become insolvent prior to settlement. Processes included in clearing are [reporting](#)/monitoring, [risk margining](#), [netting](#) of trades to single positions, [tax](#) handling, and failure handling.

[Systemically important payment systems](#) (SIPS) are payment systems which have the characteristic that a failure of these systems could potentially endanger the operation of the whole economy. In general, these are the major payment clearing or [real-time gross settlement](#) systems of individual countries, but in the case of Europe, there are certain pan-European payment systems. [TARGET2](#) is a pan-European SIPS dealing with major inter-bank payments. [STEP2](#), operated by the [Euro Banking Association](#) is a major pan-European clearing system for retail payments which has the potential to become a SIPS. In the United States, the [Federal Reserve System](#) is a SIPS.

# Forecast

- No need for a Clearing house
- Implementations of DIN ISO and other standards in EV
- Improvement of the activity based costing