



# Responsible AI - Co-innovation with Government

## e-Invoicing Anomaly Detection : learnings

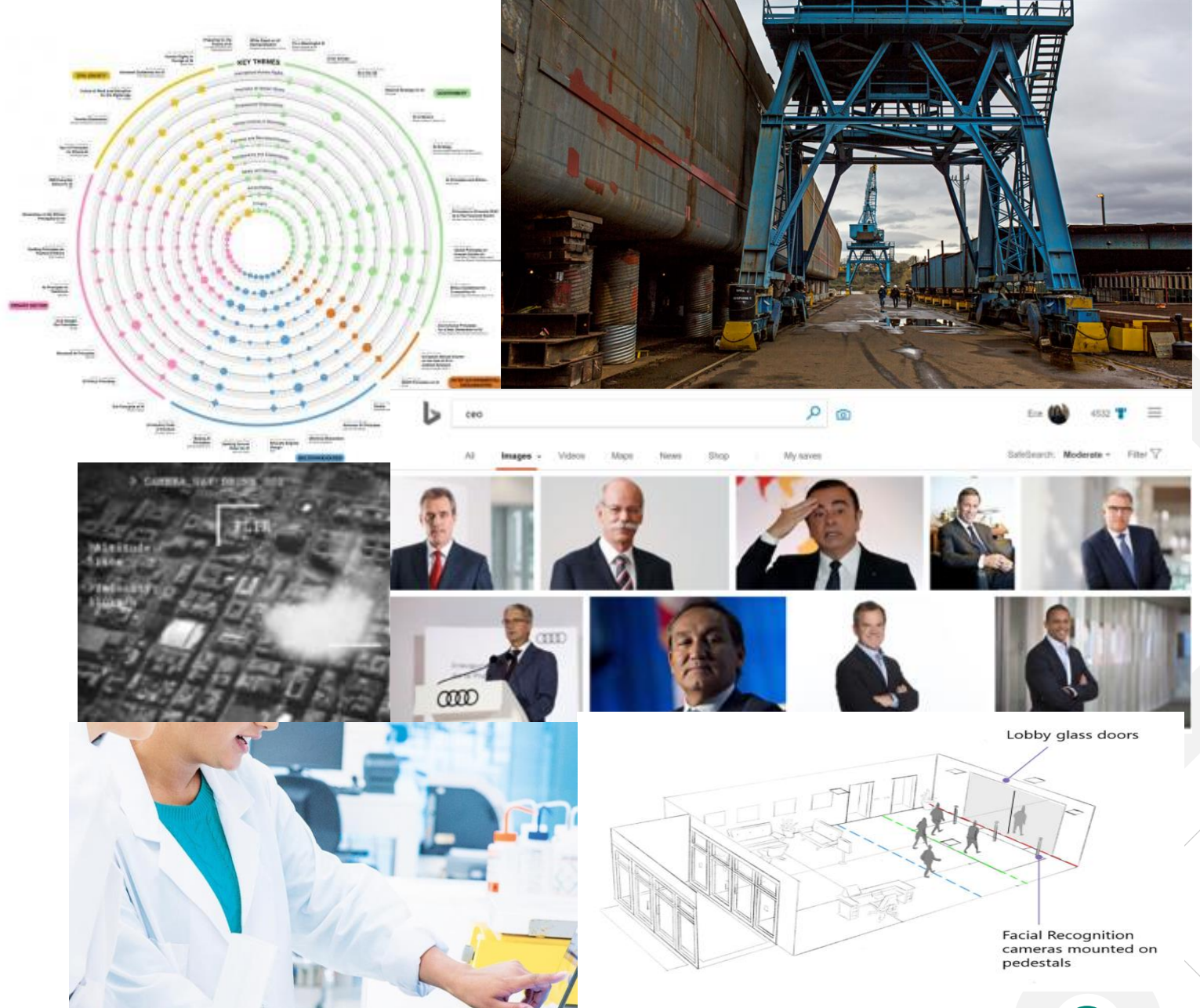
**Valentina Ion | Director Strategy**

Public Finance, Customs and Transportation Lead

Microsoft Worldwide Public Sector

# Today's Debate

- Facial Recognition
- Fairness
- Corporate responsibility
- Deepfakes
- Human rights
- Meaningful human control
- Contact tracing
- Consent
- Unintended consequences
- Disproportionate impact
- Model Fragility
- Socio-technical issues
- Algorithmic auditing
- Platform accountability
- Regulation







## Detecting anomalies in electronic invoicing

Application of artificial intelligence in tax administration: new application for detecting anomalies in electronic invoicing.

### Key Takeaways

- Community ✓
- Collective knowledge ✓
- Business Impact ✓
- Sapiens ✓
- Networking ✓



# PUBLIC SECTOR STRATEGIC PARTNERSHIP ENABLED BY MICROSOFT TAX INDUSTRY SOLUTION ACCELERATOR



Historical moment: It's the first time we have developed a solution with a company from the private sector.

## Raul Zambrano

Technical Assistance and Information Technology and Communication Director, Inter-American Center of Tax Administrations (CIAT) and contributor to IOTA, WB, ONU, IBFD, OECD.

Core Team



Contributors



# Collaboration (Government + Private Sector)

*Contribution by core team members*

Tax technical advice Business Data (1 Year)	Tax Data Science advice (2 experts)	Project coordination Facilitation of interaction with the 7 participating Tax Agencies	Technical resources (10 experts) Cloud Services DevOps Practice
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Core Team

Costa Rica 	Spain 	Panama 	
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Contributors

 México	 Brazil	 Chile	 Argentina	 Guatemala
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Advice on risk patterns relevant for the Tax Compliance Business  
 Homologate data schema relevant to any e-Invoicing deployment in the World

*Contribution by participant countries*

**HOW WE BUILT IT:**

- Agile Development using DevOps and SCRUM
- Strong isolation security techniques to keep business data private and secure
- Innovation from Microsoft Engineering and Microsoft Research

**LESSONS LEARNED:**

- To build something applicable to any country we should build something no specific to anyone.
- End to end integration... point & go (easy to use, time-to-value)
- End to end telemetry... track the internals to facilitate adoption
- Integrate with your existing tools... plug it in
- Extend features and reports... make it your own

# How AI contributes to Public Finance processes improvements



**Time to value:** Accelerate the time we provide value to the tax compliance business.

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**Volume:** Do AI/ML with large volumes of FE data.

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**Scoring:** Improve the positive ratings for anomaly detection in e-Invoicing data.

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**Productivity:** Focus the analysis on an appropriate number of detected anomalies.

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**Analysis:** Provide resources to complement the auditing task.

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**Existing tools:** Facilitate integration with existing risk analysis or risk management tools.

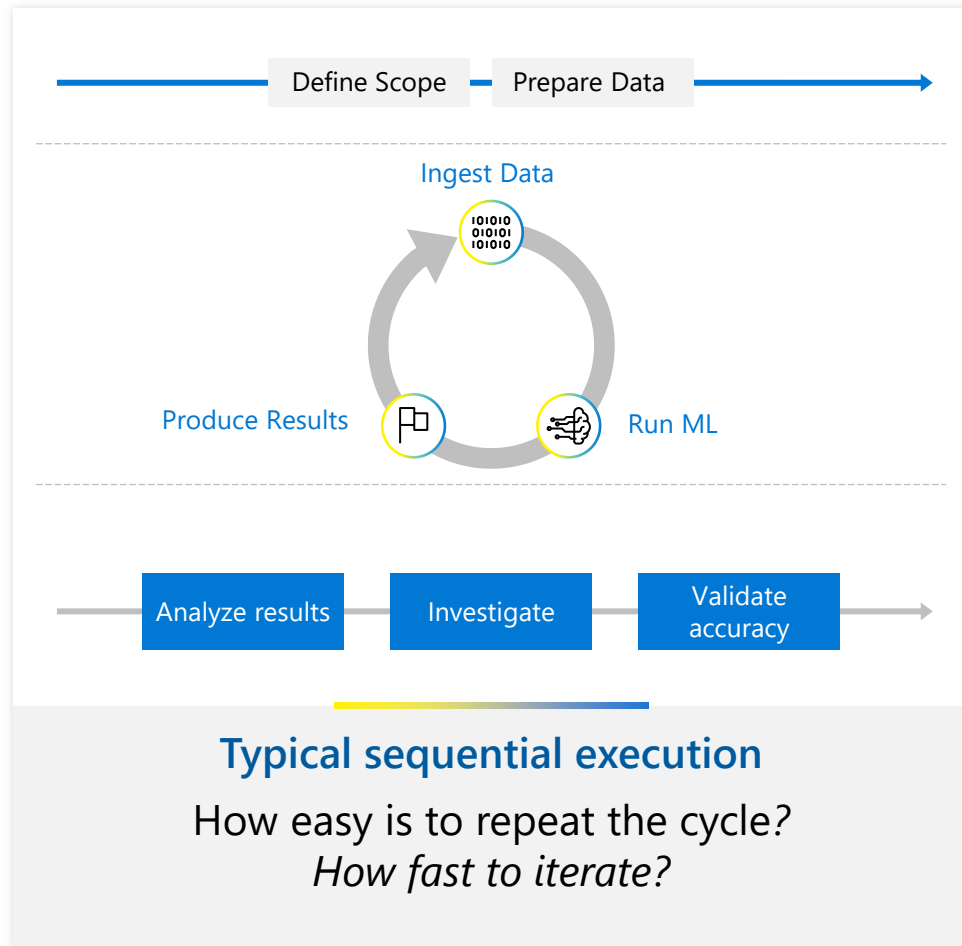
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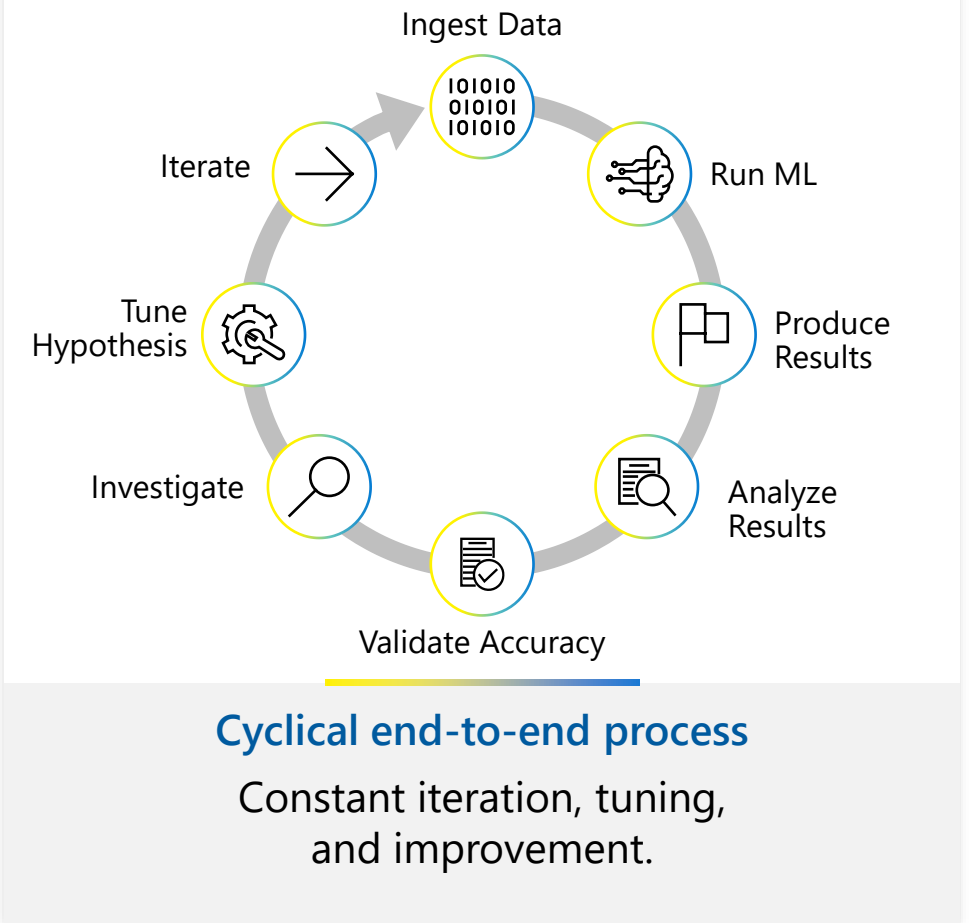
**Learning:** Improve the accuracy of the process through iterative learning.

# How do you introduce iterative learning in your anomaly detection?

To continuously improve results/accuracy

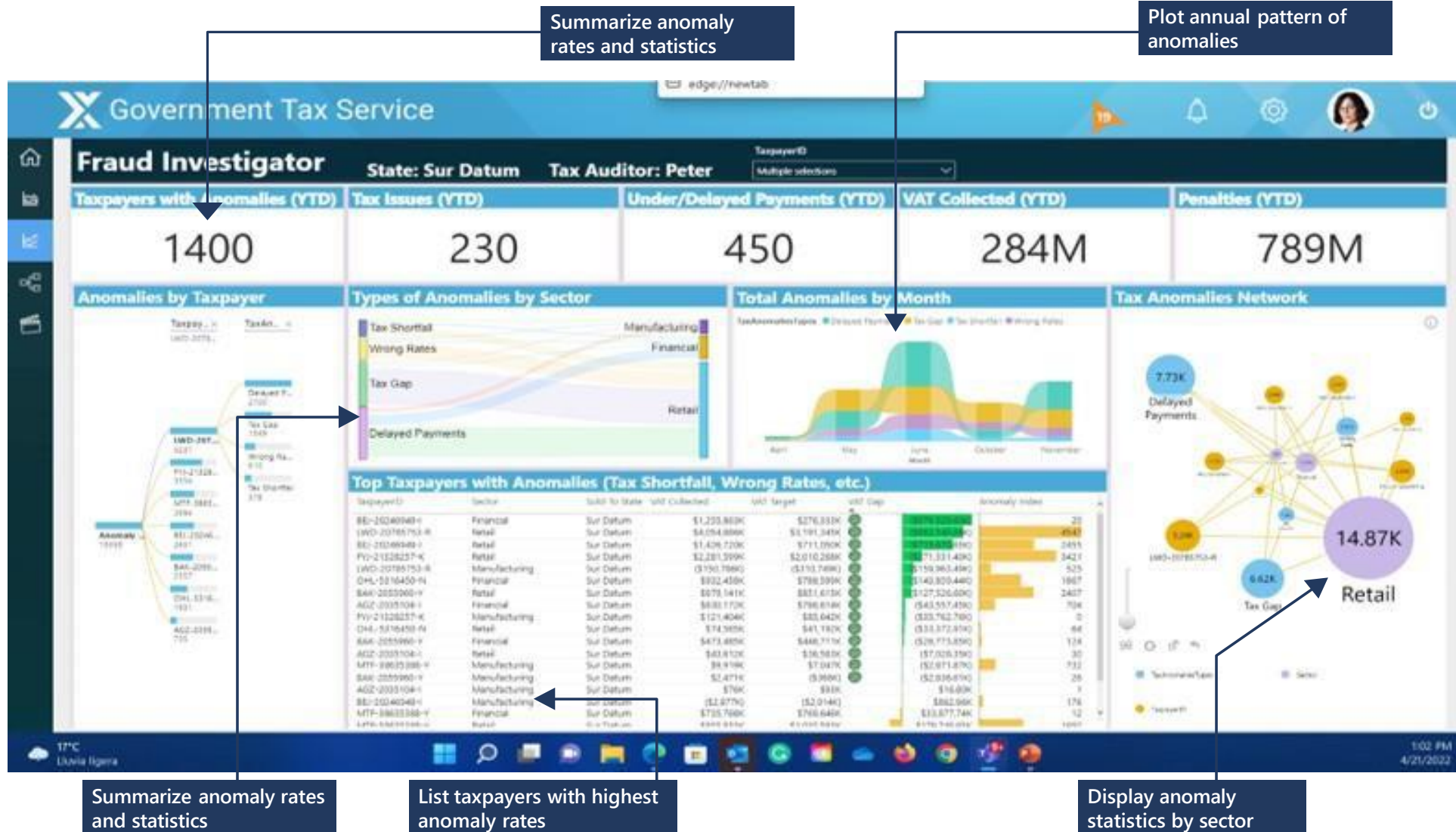


*e-IAD introduces the ability to iterate quickly, to improve accuracy by learning from initial results.*



# Microsoft e-Invoicing Anomaly Detection

The e-Invoicing Anomaly Detection Solution Accelerator is a collaboration between Microsoft, the Inter-American Center of Tax Administration (CIAT), and innovative tax agencies around the world.

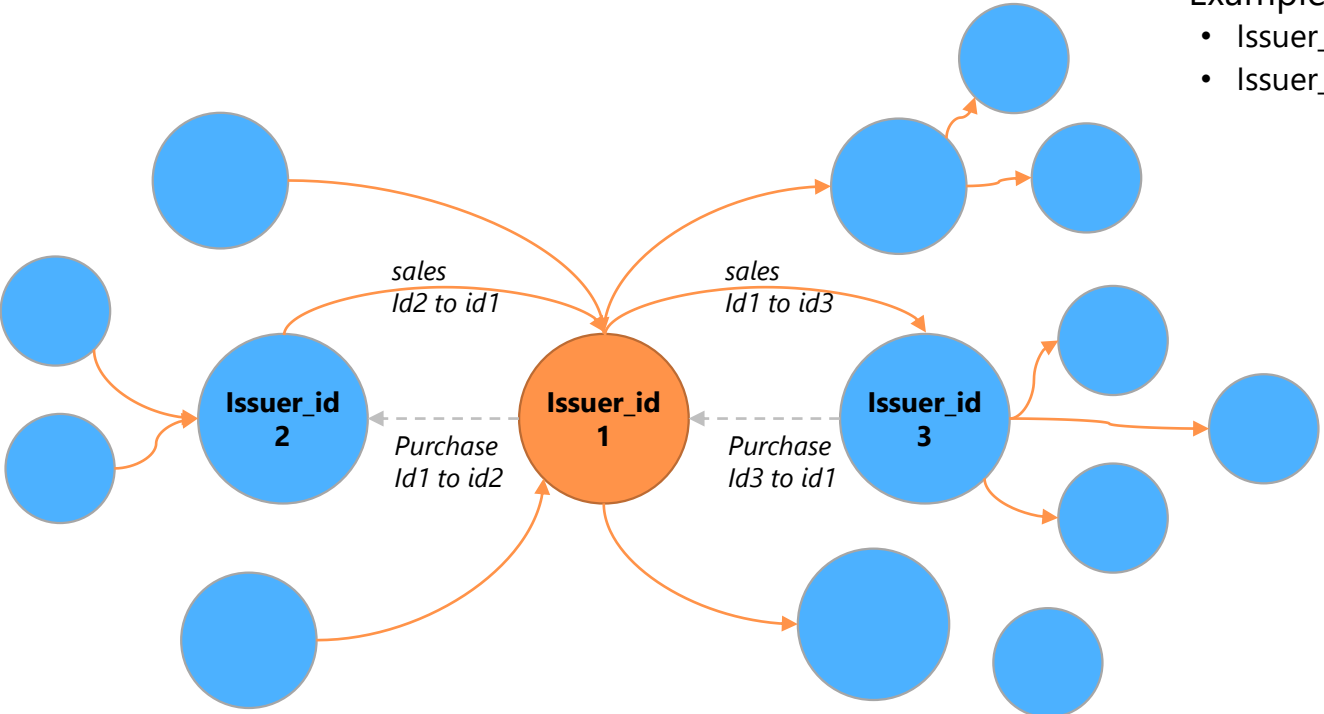


The Microsoft e-Invoicing Anomaly Detection Solution Accelerator is for informational and illustrative purposes only. The results may not be replicated in production environments.

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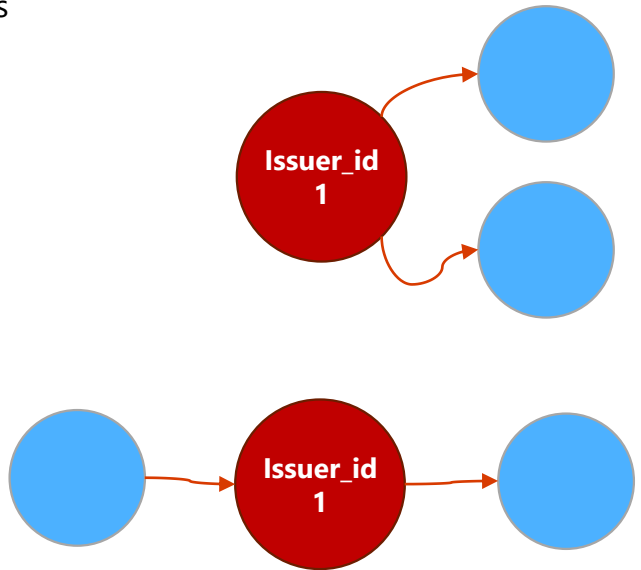


# Unlocking new type of insights: Risk Pattern Coverage: Supply Chain Deviation



Example of a regular supply chain network:

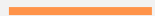

- Issuer\_id1 has multiple buyers
- Issuer\_id2 has multiple suppliers



## Hypothesis

Taxpayers are expected to have a regular supply chain network according to their company size, industrial activity, maturity, and financial resources. When a taxpayer has an irregular supply chain network, it could be an indication of risk, such as:

- The deep of the supply chain is trending to zero.
- The number of suppliers is small or trending to zero, but the sales transactions are significant in number or value.
- The number of buyers is small or trending to zero, but the sales transactions are significant in number or value.

	<i>Regular Pattern issuer_id1</i>
	<i>Irregular pattern issuer_id1</i>

# Empowering Responsible AI

The screenshot shows the Microsoft AI Business School landing page. At the top, there is a navigation bar with the Microsoft logo, 'AI', and various menu items like 'Products & Services', 'Approach', 'AI for Good', 'Learn', and 'Blog'. The main content area features a large dark banner with the text 'Think big picture with AI Business School' and a sub-headline 'Get resources and insights from industry experts.' Below this is a 'Play the overview video' button. To the right, there are two smaller image-based sections: 'Our approach to responsible AI' with a 'Explore practices and principles >' link, and 'How State Farm® innovates responsibly' with a 'Learn about their solution >' link. At the bottom, there is a section titled 'Lead with confidence in the age of AI' with a sub-headline 'AI is changing how business works across all industries. We created AI Business School to share insights and practical guidance from top executives on how to strategically apply AI in your organization.' and a 'Learn about the initiative >' link. Below this are four circular icons representing different aspects of responsible AI: a network of nodes, a group of people, a scale of justice, and a circuit board.

Establish a responsible AI strategy

[Aka.ms/AIBS >](https://aka.ms/AIBS)

The screenshot shows the Microsoft Responsible AI resources landing page. It features a large hero image of people in an office setting. The main heading is 'Responsible AI resources' with a sub-headline 'Explore resources designed to help you responsibly use AI at every stage of innovation - from concept to development, deployment, and beyond.' Below this is a section titled 'Guidelines for responsible AI' with a sub-headline 'Find guidelines designed to help you anticipate and address potential issues throughout the software development lifecycle, putting responsible AI into practice.' At the bottom, there are three small images: a person pointing at a screen, a person working at a computer, and a group of people in a meeting.

Design, build, and manage your AI solution

[Aka.ms/RAIresources >](https://aka.ms/RAIresources)



Thank you !

Q&A