

Governance Risk Assessment System:

Data Analytics to Deter Corruption



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Corruption & Inefficiency in Public Expenditures: Challenges & Opportunities



The Magnitude of the Problem: Huge losses annually due to corruption schemes that go unnoticed at all levels of government.



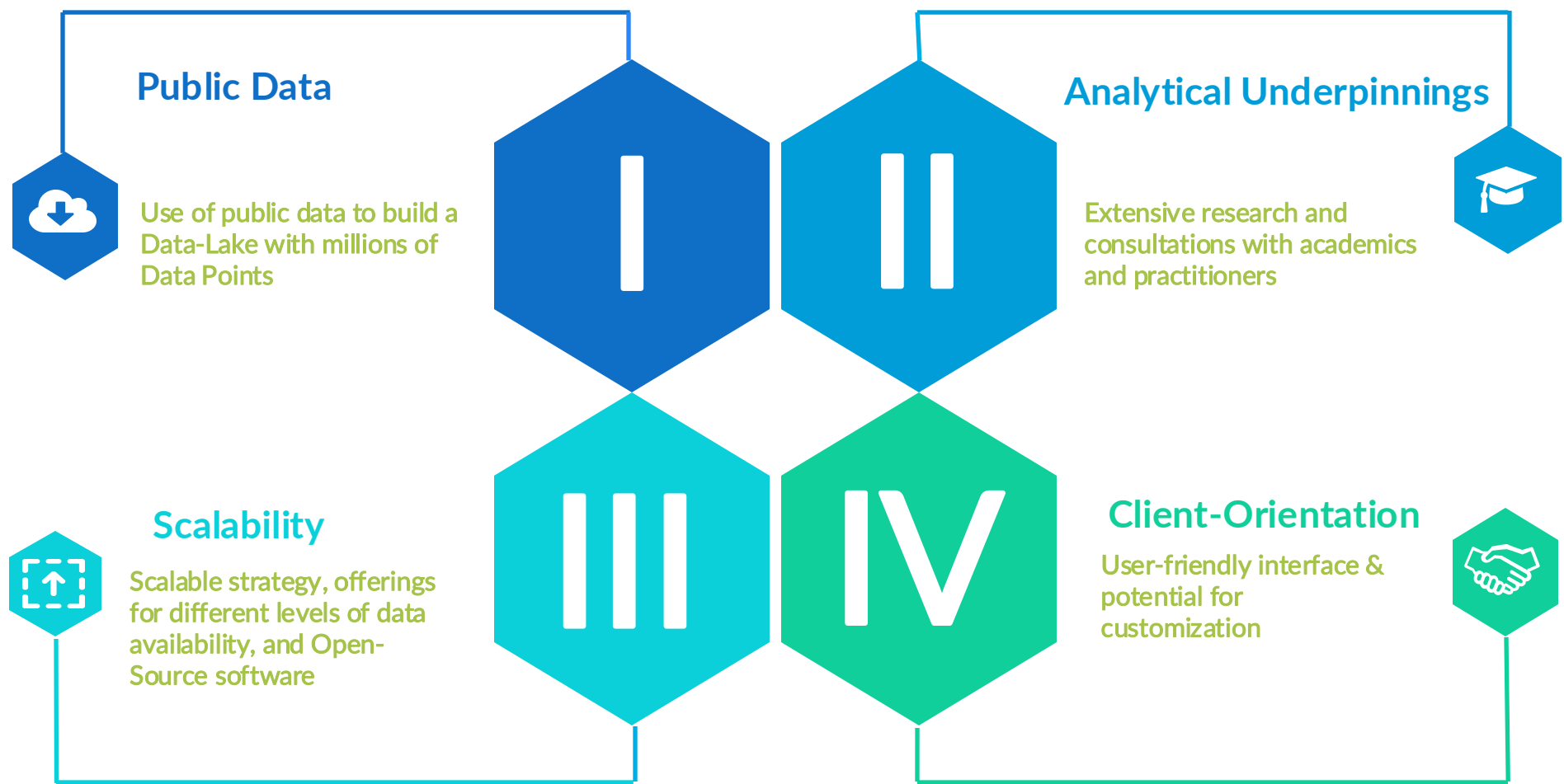
Reality Check: Generally, governments lack tools and the capacity to conduct systematic fraud risk assessments, which affect decision-making processes. Their approach is inefficient since it relies on manual analysis that generally uses anecdotal evidence; it also requires too many resources to identify potential risks and does not necessarily build strong cases.



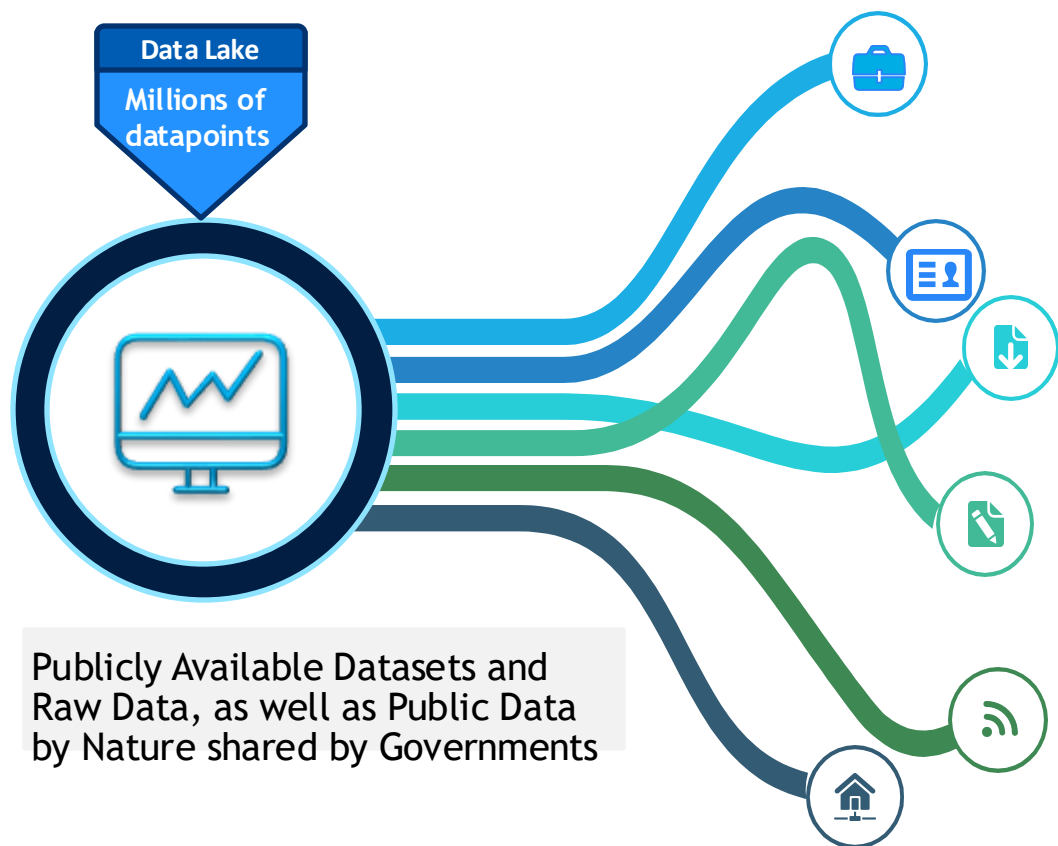
Data Science: Fraud generally leaves traces and Government agencies can use data science to systematically identify public expenditure risks and optimize the allocation of resources. This will optimize the detection of high-risk firms and enable the prioritization of scarce auditing resources.

Governance Risk Analysis System (GRAS)

Innovation: System that identifies ~200 red-flags of potential fraud in public expenditures, which has been piloted at three levels of Government in Brazil (State/Municipal)



Large Volume of Public Data: Six types of Data



Contractual Level Data

Over R\$500 billion in public procurement from 12 States and Federal Government



Public Sector Payroll

Payroll of millions of public sector officials



Govt Transfer & Social Benefits

Data on 20 million social program beneficiaries



E-Invoices

Over 15 million electronic invoices from two States



Banned Companies

Data on 30,000 + banned firms on different jurisdictions



Electoral Data

Data from 20 million politicians and 800,000 electoral donations



Online News

Over 30,000 news and reports on fraud and corruption



Corporate Data & Georeferencing

Analyzed over 750,000 firms
Details about 30 million firms (e.g. HQ address, partners, economic sector) & Google Maps reference

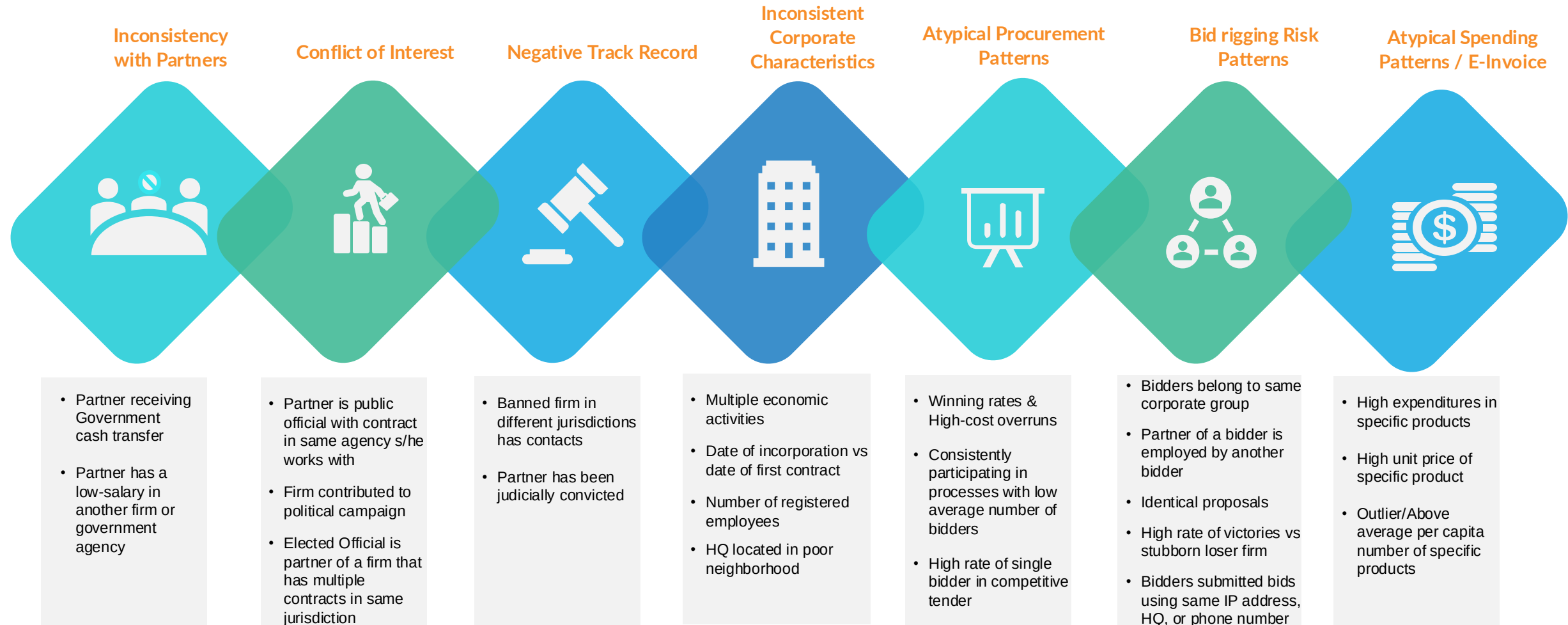


Labor Relations

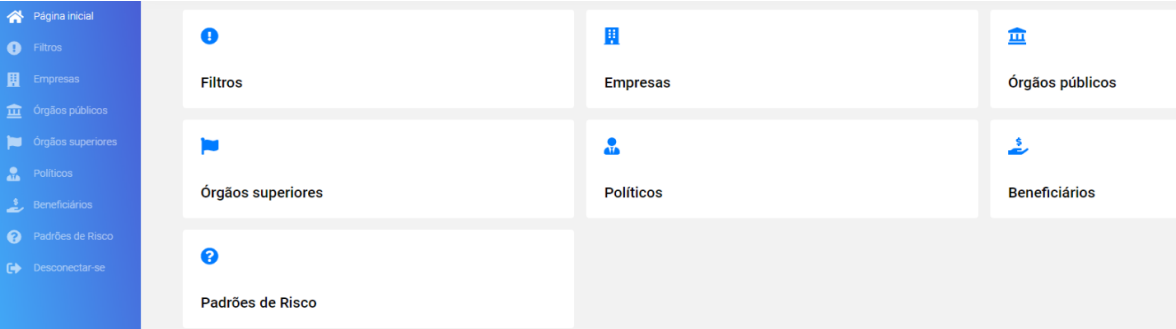
Relations between 4 million firms and 70 million Brazilians

GRAS: Evidence-Based / Scalable / Customizable

Innovation: System that identifies ~200 red-flags of potential fraud in public expenditures, which has been piloted at three levels of Government in Brazil (State/Municipal)



The System



High-risk red flags

Does the firm have a partner who is a beneficiary of Social Programs? sim não	Does the firm have a partner who is a beneficiary of Bolsa Familia CCT Program? sim não
Number of employees No data	Number of days between the date of incorporation and the date of the first bid. 0
Negative number of days between the date of incorporation and the date of the first bid. sim não	☒ Não usar campo
Negative number of days between the date of incorporation and the date of the first contract. sim não	Number of days between the date of incorporation and the date of the first contr 0
☒ Não usar campo	☒ Não usar campo
Number of sub-classification of economic activities 0	Number of different economic activities 0
☒ Não usar campo	☒ Não usar campo
Does the firm have a previously blacklisted partner? sim não	Has the firm been blacklisted? sim não
Does the firm have a partner earning the minimum wage in another firm? sim não	Does the firm have a low technical qualification partner? sim não

General Filters

High-risk red flags

Political Connections

Procurement Patterns

Public Servants Red Flags

Bid Rigging

Collusion Among Bidders: Stubborn Loser

FILTRAR EMPRESAS

GRAS – Detailed Firm Report

Vínculo político

Sócio doador de campanha política

Sócio fornecedor de campanha política

Beneficiários sociais

Sócio beneficiário de Bolsa Família

Vínculo empregatício

Sócio é servidor público

Quadro societário

Esta empresa possui 2 sócios.

Pesquisar

CPF	Nome	Data de entrada no quadro societário
> 000.000.000	00000000000000000000	09/02/2017
> 000.000.000	00000000000000000000	13/08/2014

Atividade econômica

A empresa possui 32 CNAEs, 25 classes, 17 grupos e 10 divisões. A CNAE (Classificação Nacional de Atividades Econômicas) é código que categoriza de maneira hierárquica as atividades econômicas de uma empres classificação mais abrangente possível, seguindo do grupo, da classe e, então, do próprio CNAE, que fornece o ramo de atuação da empresa da maneira mais específica possível.

Pesquisar

CNAE	Descrição do CNAE	Nome da classe	Nome do grupo	Nome da divisão
		nao especificados anteriormente	construção	
> 4641903	Comércio atacadista de artigos de armarinho	Comércio atacadista de tecidos, artefatos de tecidos e de armarinho	Comércio atacadista de produtos de consumo não alimentar	Comércio por ataca automotores e mot
> 4646002	Comércio atacadista de produtos de higiene pessoal	Comércio atacadista de cosméticos, produtos de perfumaria e de higiene pessoal	Comércio atacadista de produtos de consumo não alimentar	Comércio por ataca automotores e mot
> 4322302	Instalação e manutenção de sistemas centrais de ar condicionado, de ventilação e refrigeração	Instalações hidráulicas, de sistemas de ventilação e refrigeração	Instalações elétricas, hidráulicas e outras instalações em construções	Serviços especializ:
> 4313400	Obras de terraplenagem	Obras de terraplenagem	Demolição e preparação do terreno	Serviços especializ:
> 4651601	Comércio atacadista de equipamentos de informática	Comércio atacadista de computadores, periféricos e suprimentos de informática	Comércio atacadista de equipamentos e produtos de tecnologias de informação e comunicação	Comércio por ataca automotores e mot
> 4330401	Impermeabilização em obras de engenharia civil	Obras de acabamento	Obras de acabamento	Serviços especializ:

Sócio servidor público

Pesquisar

CPF do sócio servidor público	Nome do sócio servidor público	CNPJ do órgão	Nome do órgão	Município	UF	Carga horária semanal (estimativa)	Cargo	Salário médio
000.000.000	00000000000000000000	00.000.000/0000-00	M00000000000000000000	RIO DE JANEIRO	RJ	40	Assistente social	R\$ 73.026,00

Sócio doador de campanha

Pesquisar

CPF do sócio doador	Nome do sócio doador	Valor da doação	CPF do candidato	Nome do candidato	Ano	Partido	Cargo	Valor da doação	Município	Eleito
000.000.000	00000000000000000000	R\$ 460,00	000.000.000	00000000000000000000	2012	PTN	VEREADOR	SAO GONCALO	RJ	☐

Sócio fornecedor para campanha

Pesquisar

CPF do sócio fornecedor	Nome do sócio fornecedor	Valor da contratação	CPF do candidato	Nome do candidato	Ano	Partido	Cargo	Valor da doação	Município	Eleito
000.000.000	00000000000000000000	R\$ 250,00	000.000.000	00000000000000000000	2014	PMDB	DEPUTADO ESTADUAL		RJ	☐

Padrão de risco sócio beneficiário de programa social

Pesquisar

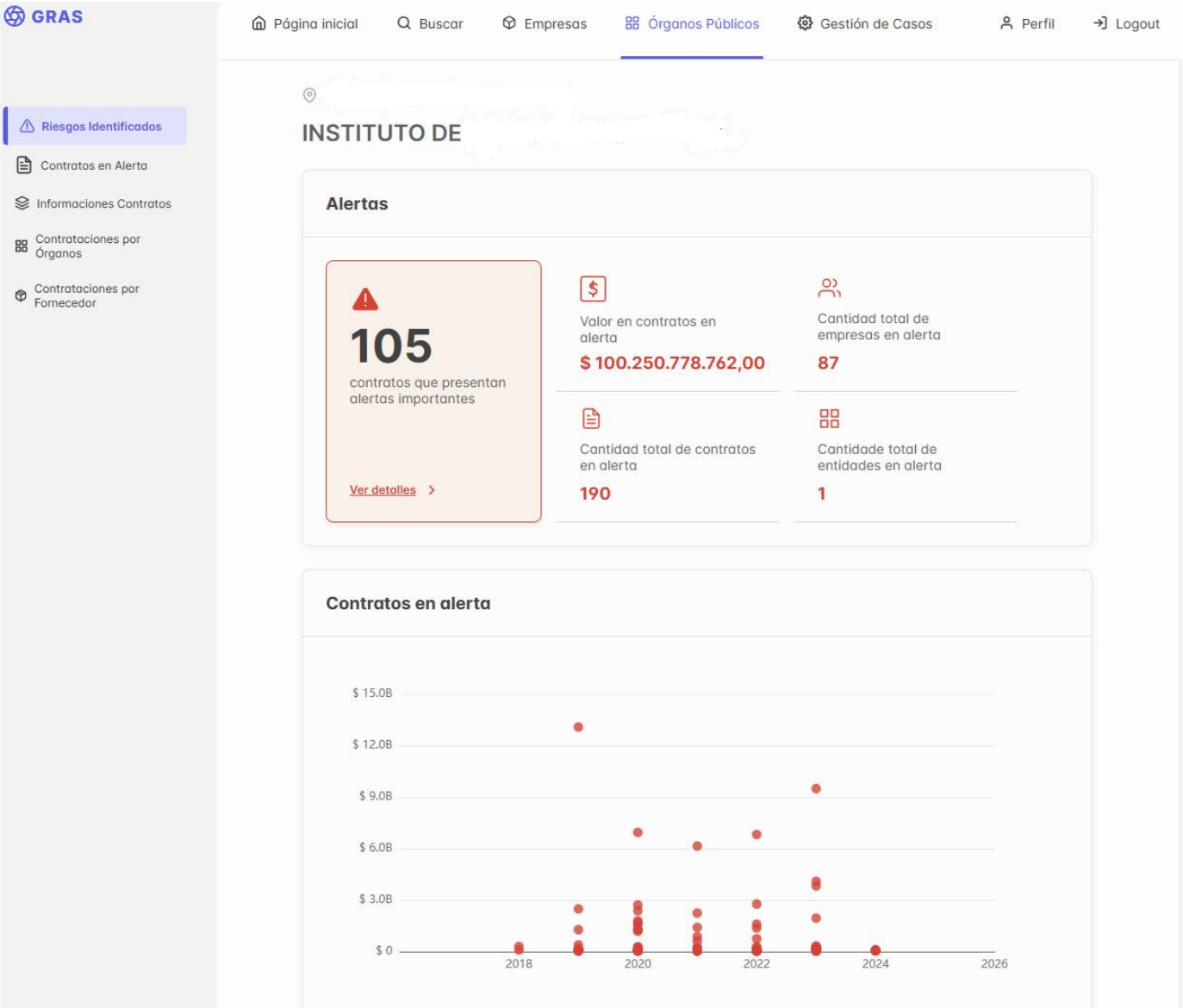
CPF do sócio beneficiário	Sócio beneficiário	Benefício
000.000.000	00000000000000000000	Bolsa Família

Ganhadora de top loser

Pesquisar

CNPJ da top loser	Nome da top loser	Número de vitórias sobre esta top loser	Frequência de vitórias sobre esta top loser	Valor total vencido sobre esta top loser	Significância valores sobre esta top loser
00.000.000/0000-00	00000000000000000000	1	1	R\$ 4.548.000,00	
00.000.000/0000-00	00000000000000000000	1	1	R\$ 4.548.000,00	

GRAS – Detailed Organization/Ministry Report



Red Flag Report:

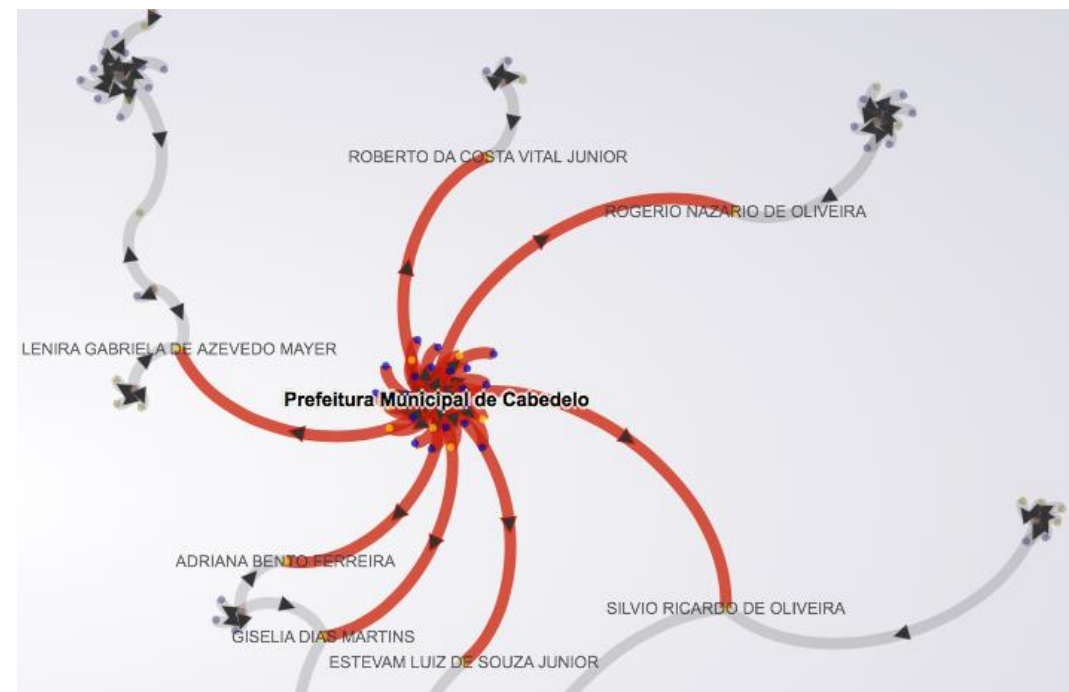
- Number of Contracts with critical red flags
- Value of contracts
- Direct link to reports for each Contract

The System: Detailed Georeferenced & Network Analysis

Georeference of firms: R\$ 200M in proposals and no contracts



Network Analysis: Potential Conflict of Interest



Results and Expected Impact

Results

Identified over 420 firms that won bids against companies which have a high likelihood of being shell companies and reflecting potential bid rigging.

Identified 857 companies that won bidding processes against firms that have at least one partner in common.

450 firms whose partners are beneficiaries of the conditional cash transfer program *Bolsa Família*, and potentially strawmen.

Identified more than 500 firms who are owned by public servants working at the same governmental agency that has executed the contract



Expected Impact

Savings for identifying risks and improve public spending & More evidence to formulate cases against potential fraudulent firms

Use of Evidence for Decision-making & a potential “race to the top”

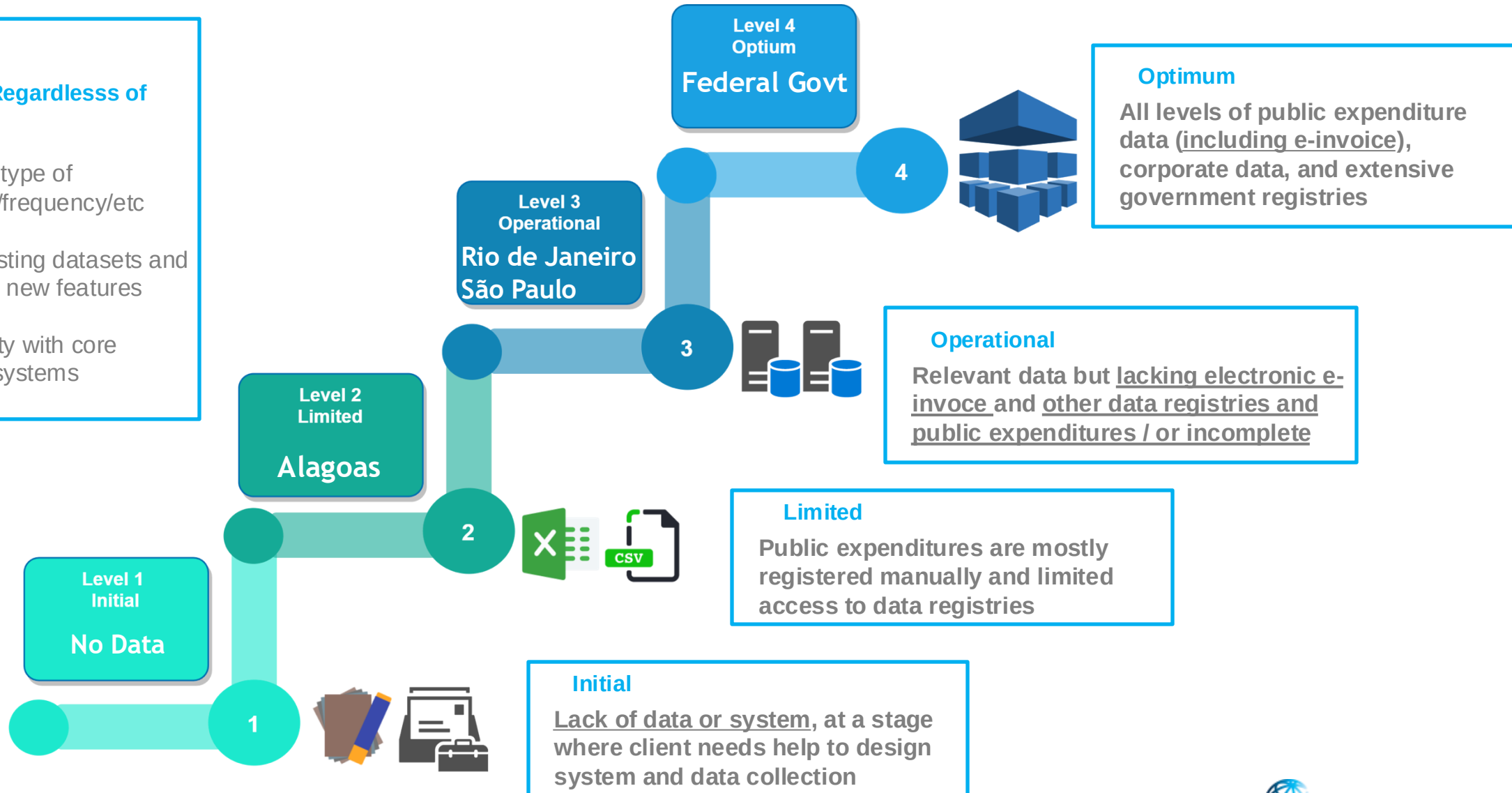
Positive signal to the market and companies to increase participation and competence in public bids

Increased Transparency of public expenditures and procurement processes

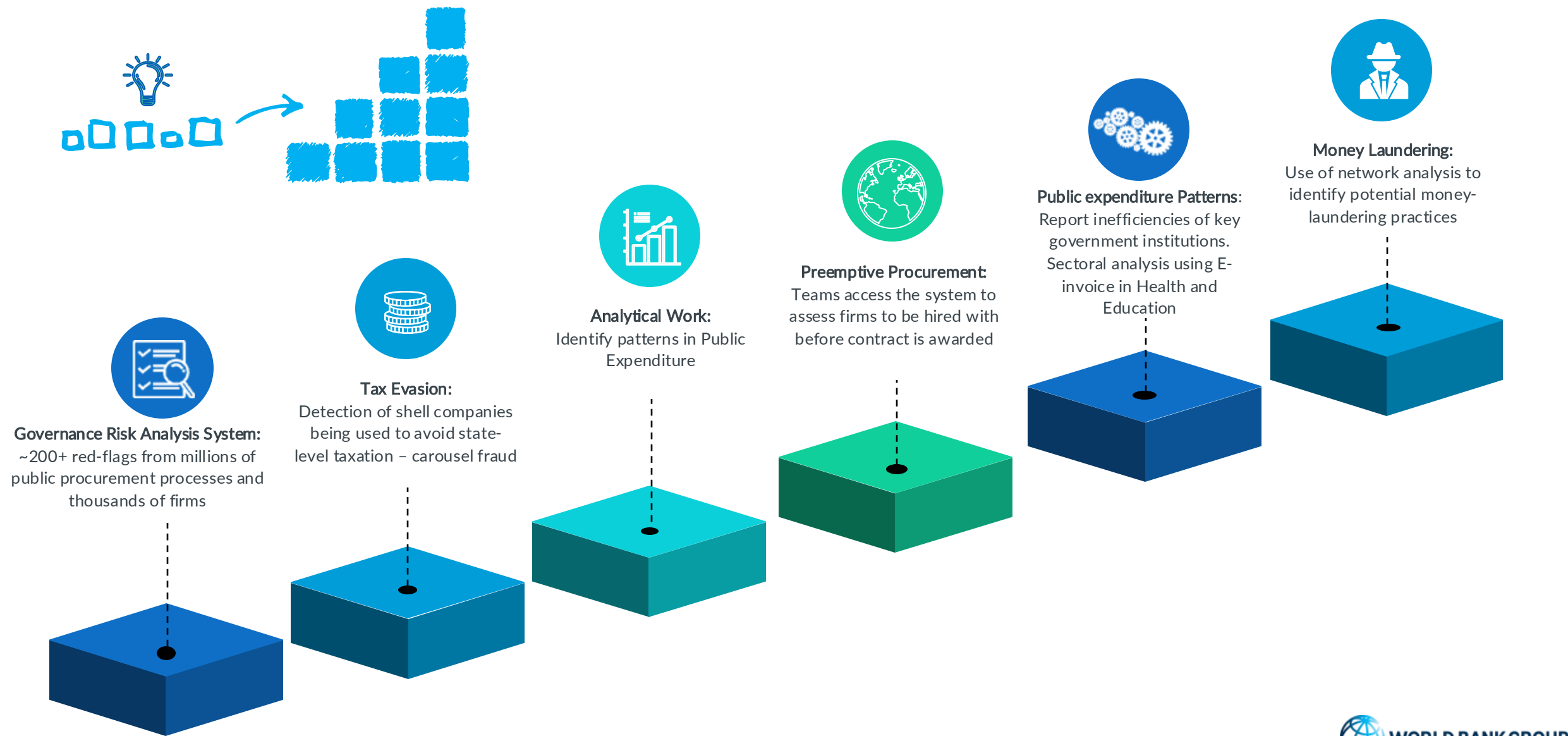
Scaling-up Data Requirements

Opportunities Regardless of Maturity Level:

- Guidance on type of data/sources/frequency/etc
- Leverage existing datasets and enhance with new features
- Interoperability with core government systems



Use Cases: Current & Future



Moving Forward: Data Environment Assessment



- The GRAS Report provides an overview of the Analytical Framework, the datasets, and the key variables required to build it.
- The GRAS Report presents the Data Environment Assessment, which is the first step to analyzing a country's data and check the feasibility of implementing GRAS.

[Governance Risk Assessment System \(GRAS\): Advanced Data Analytics for Detecting Fraud, Corruption, and Collusion in Public Expenditures](#)