

Use of Disruptive Technology in Public Procurement

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Discussion Points



APPLICATIONS AND IMPACTS OF THE DTs ON PUBLIC PROCUREMENT



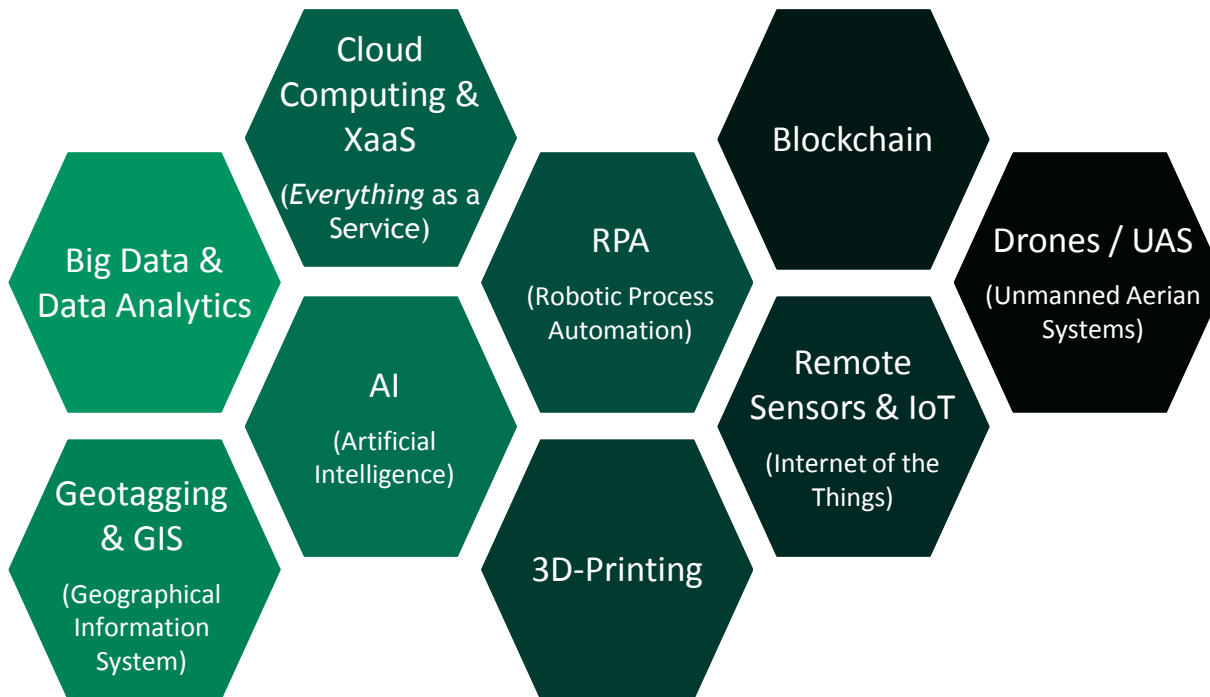
DRIVING FORCES, CHALLENGES AND RAMP-UP ANALYSES



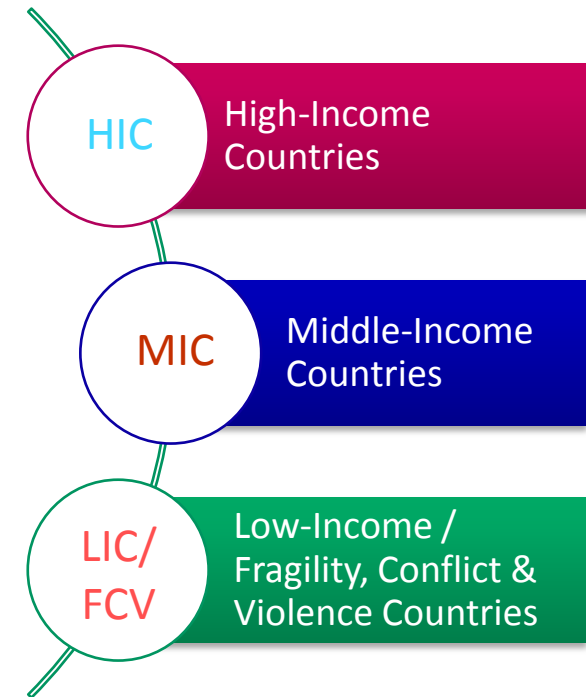
KEY SUCCESS FACTORS AND MAIN RISKS

Global approach

9 DISRUPTIVE TECHNOLOGIES



3 GROUPS OF COUNTRIES



Cloud Computing & XaaS

MATURITY OF THE TECHNOLOGY



- Subsystem development in many fields such as Communication (emails), Data storage, Data recovery (Backup-as-a-Service), ...
- Used successfully under many different conditions

MATURITY OF THE TECHNOLOGY FOR PROCUREMENT APPLICATION



- Many solutions related to end-to-end procurement steps. A lot of procurement organizations already rely on cloud computing.
- On-going developments to use Machine Learning combined with Cloud Computing to help organizations integrate AI

SUBSETS OF THE TECHNOLOGY

- SOA (Service Oriented Architecture)
- Cloud virtualization, Cloud
- Distributed Computing

MAIN "UNDERLYING" TECHNOLOGIES & TECHNOLOGICAL STANDARDS

- "Jungle" of competing technical standards

MAIN CHALLENGES/BARRIERS (Regulatory, technical)

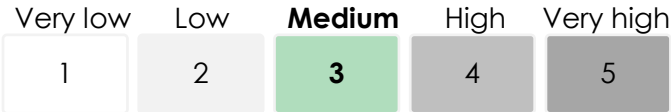
- Vendor dependence/Sovereignty issue (Geopolitical aspect related to data ownership)
- Security breach threats: no single 'security' standard has yet emerged
- Most technical Issues can only be fixed by the vendor

MARKET STRUCTURE

PERFECT COMPETITION MONOPOLISTIC COMPETITION OLIGOPOLY MONOPOLY

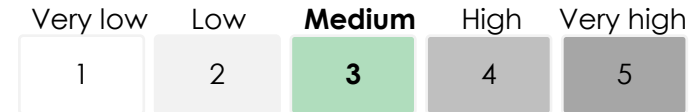
Artificial Intelligence (IA)

MATURITY OF THE TECHNOLOGY



- Technology demonstration in many fields such as Finance (fraud detection), HR (screening of job applicants), medical diagnostics...
- Used successfully under actual conditions

MATURITY OF THE TECHNOLOGY FOR PROCUREMENT APPLICATION



- Few applications, mainly to improve process efficiency (process mining), contract management and spend analysis. A lot of projects still at PoC stage

SUBSETS OF THE TECHNOLOGY

- Machine Learning (ML)
- Natural Language Processing (NLP)
- Computer Vision

MAIN "UNDERLYING" TECHNOLOGIES & TECHNOLOGICAL STANDARDS

- Main language: Python
- Open-source frameworks and Libraries : Tensorflow (Google), CNTK (Microsoft), Torch, Keras
- Kubernetes (K8S) from Googlr for running and coordinating "containerized" AI apps

MAIN CHALLENGES/BARRIERS (Regulatory, technical)

- The use of public data within AI projects is often regulated (GDPR for instance)
- Many countries lack relevant datasets (data that are used to train an algorithm to understand how to apply concepts)
- AI solutions require a trained workforce and the existence of a data culture (systematic gathering and storage of data)

MARKET STRUCTURE



Source-to-Contract vs. Procure-to-Pay



Balanced Scorecard – RPA & AI

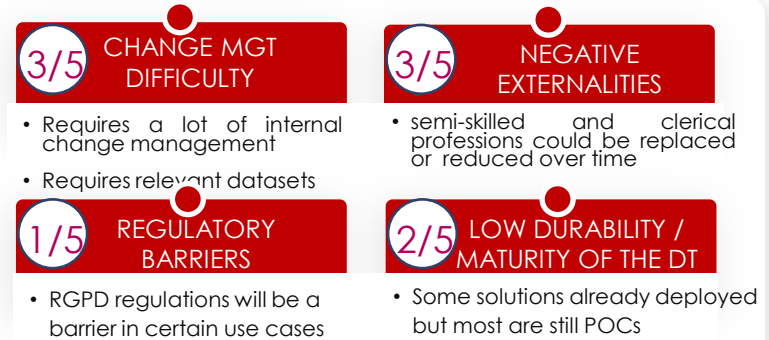
BENEFITS



Use cases

- New South Wales Procurement (Australia): Spend analysis over 150+ Government agencies (80M+ transactions)
- Federal Acquisition Service (USA): Faster processing time of suppliers offers and details
- DOZORRO artificial intelligence to identify trickery in public procurement (Transparency International, Ukraine)

RISKS



BENEFITS: 2,88/5

RISKS: 2,25/5

Cost of a pilot / POC
MEDIUM

Payback time
MEDIUM

VALUE FOR MONEY OF THE DT: MEDIUM

Prerequisites

- SaaS e-procurement system (including e-billing) implemented
- STC sub-processes and internal procedures clarified
- Available data related to Procurement activities

Related technologies and software

- Big data
- Process mining
- ETL
- STC Systems (SaaS)

Level of interaction / potential synergies between DTs

The combination of Disruptive Technologies may be worth to leverage their respective potential and create additional value.

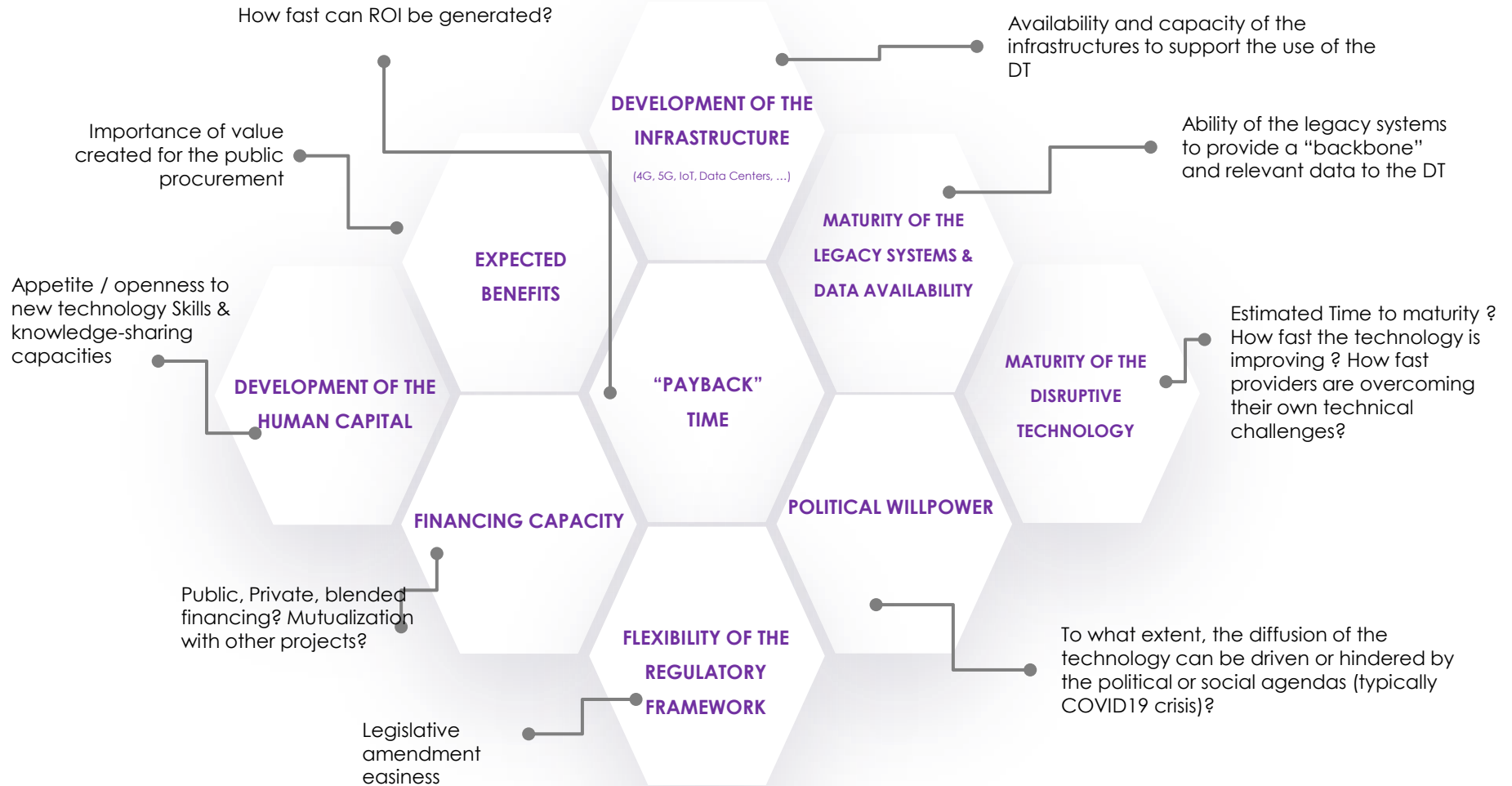
Level of interaction between DTs, rated on a scale ranging from « Very low » to « Very high »



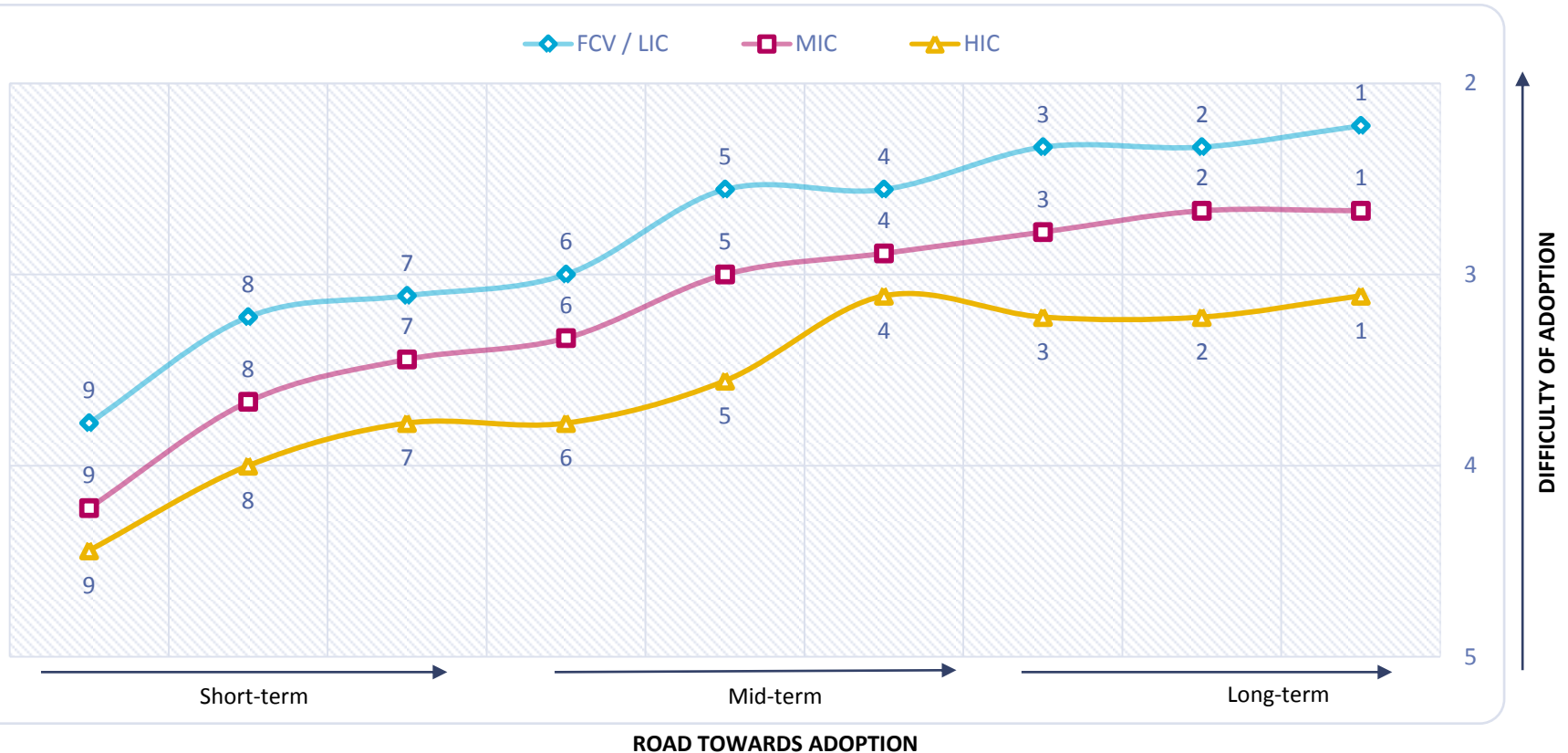
	Cloud & XaaS	Big data & Analytics	RPA	AI	Geotagging & GIS	Blockchain	IoT	Drones	3D printing
Cloud & XaaS									
Big data & Analytics	5								
RPA	5	1							
AI	3	5	4						
Geotagging & GIS	3	5	1	1					
Blockchain	3	4	2	2	1				
IoT	2	4	2	1	3	2			
Drones	1	3	1	1	3	1	1		
3D printing	1	1	1	1	1	1	1	1	

- Consolidate data produced by SaaS platforms and turn it into high value-added analytics
- Associate AI with Big Data, as AI requires a large amount of data to produce relevant results
- Link between GIS and Big Data & Analytics to offer insights that go far deeper than what traditional « business intelligence systems » enable
- Associate IoT and GIS to steer the execution of contracts relating to the management of water, energy, transport or waste infrastructures.

Driving Forces for the Adoption of DTs

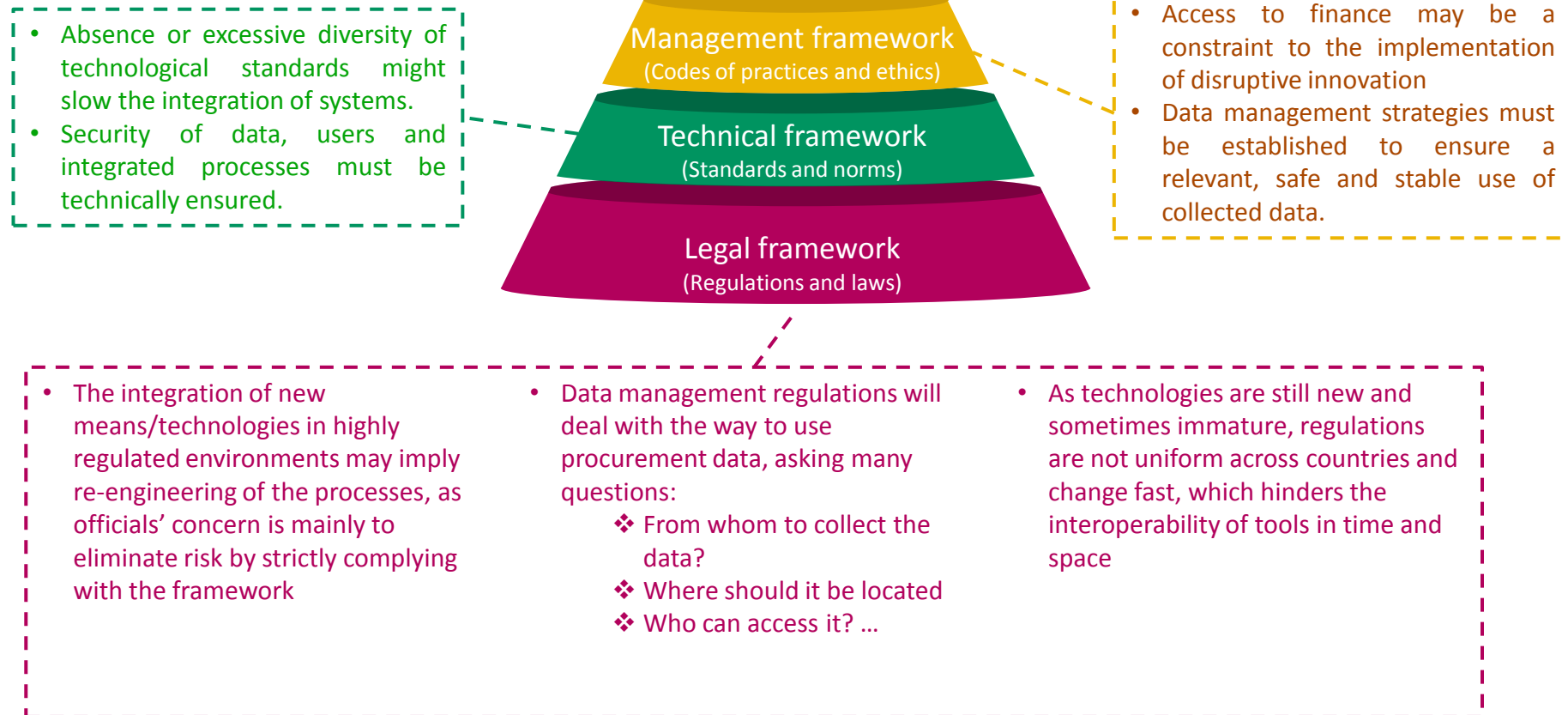


Ramp-up Analysis per Type of Country



- No significant difference in the relevant order of adoption between the types of countries.
 → Cloud and XaaS is the easiest to appropriate technology in every case.
- An early introduction of blockchain-based technologies is more interesting as the countries are less “wealthy”.

Legal, Technical and Management Frameworks



Different level of risks

		Interoperability issues					Reversibility and dependency issues					Procurement complexity and difficulty to specify				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	XaaS															
2	Big Data and Data Analytics															
3	IA / RPA															
4	GIS															
5	Blockchain															
6	IoT															
7	Drones															
8	3D Printing															

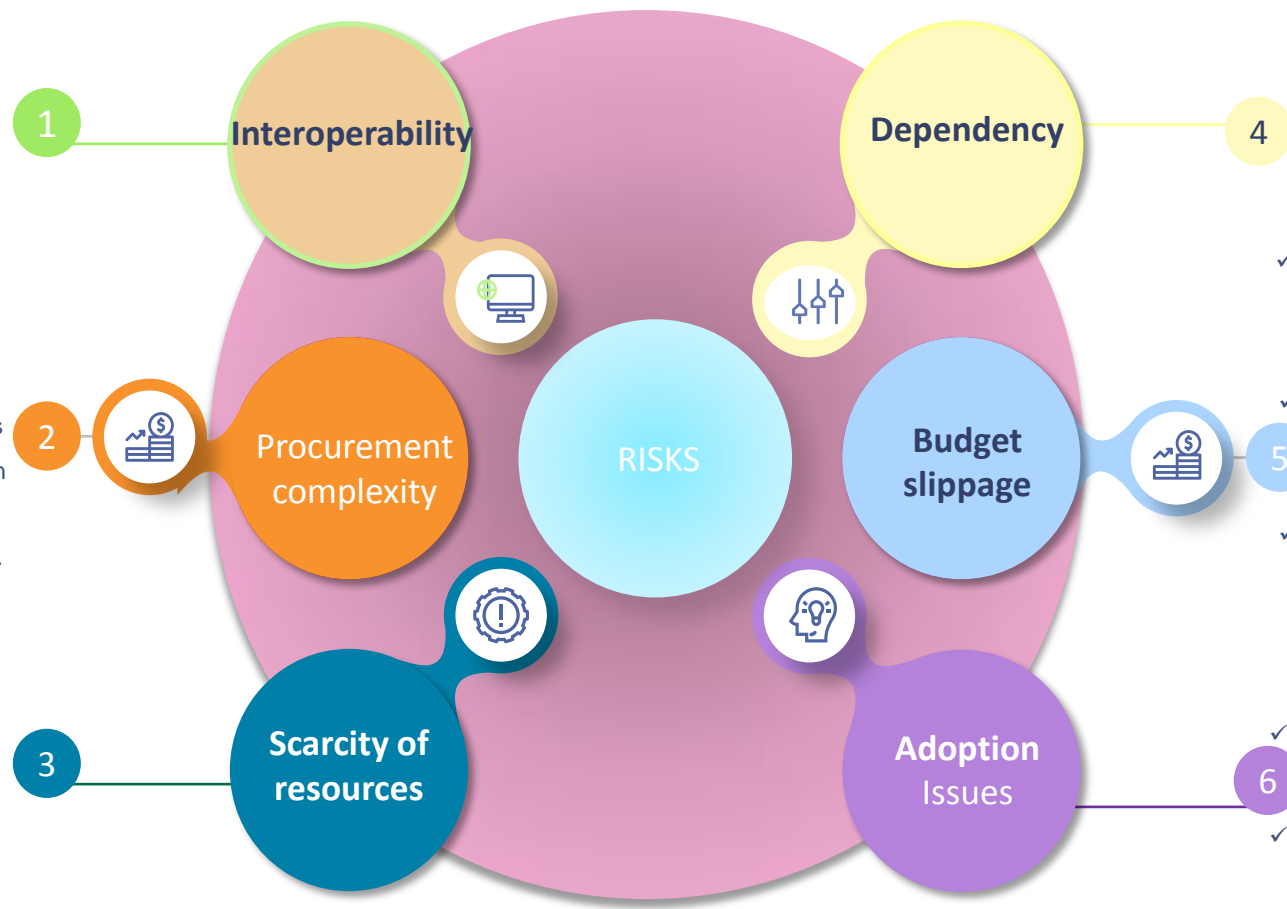
		Risk of budget slippages					Adoption Issues					Scarcity of resources				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	XaaS															
2	Big Data and Data Analytics															
3	IA / RPA															
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6	IoT															
7	Drones															
8	3D Printing															

How to mitigate these risks?

- ✓ Sourcing interviews for a real understanding of market standards
- ✓ Mapping of applications and components, mapping of data flows

- ✓ Preliminary study to prioritize needs and define realistic implementation strategies
- ✓ Formulate the needs in terms of functionalities and performance rather than in terms of solutions.

- ✓ Facilitate access for SMEs
- ✓ Include in the contracts an obligation to transfer know-how on the administration and first-level maintenance



- ✓ Clear commitments in the tendering documentation in the event of reversibility/transferability (data migration, technical documentation in order to enable a smooth transition...)
- ✓ Avoid proprietary frameworks

- ✓ Start small with pilot projects and invest progressively according to roll-out plan
- ✓ avoid "custom" adaptations that are costly to build and maintain.

- ✓ Avoid solutions that are too complicated for users to handle
- ✓ Involve end-users and middle management as early as possible

THANK YOU!



For More Information visit

<https://blogs.worldbank.org/governance/disruptive-technologies-can-provide-developing-countries-pathway-revamp-their-public>

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