DIGITAL TRANSFORMATION ON IoT, A RISK MANAGEMENT APPROACH

Overview of key findings of FG-DPM on data processing and management to support IoT and Smart Cities & Communities

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INTRODUCTION

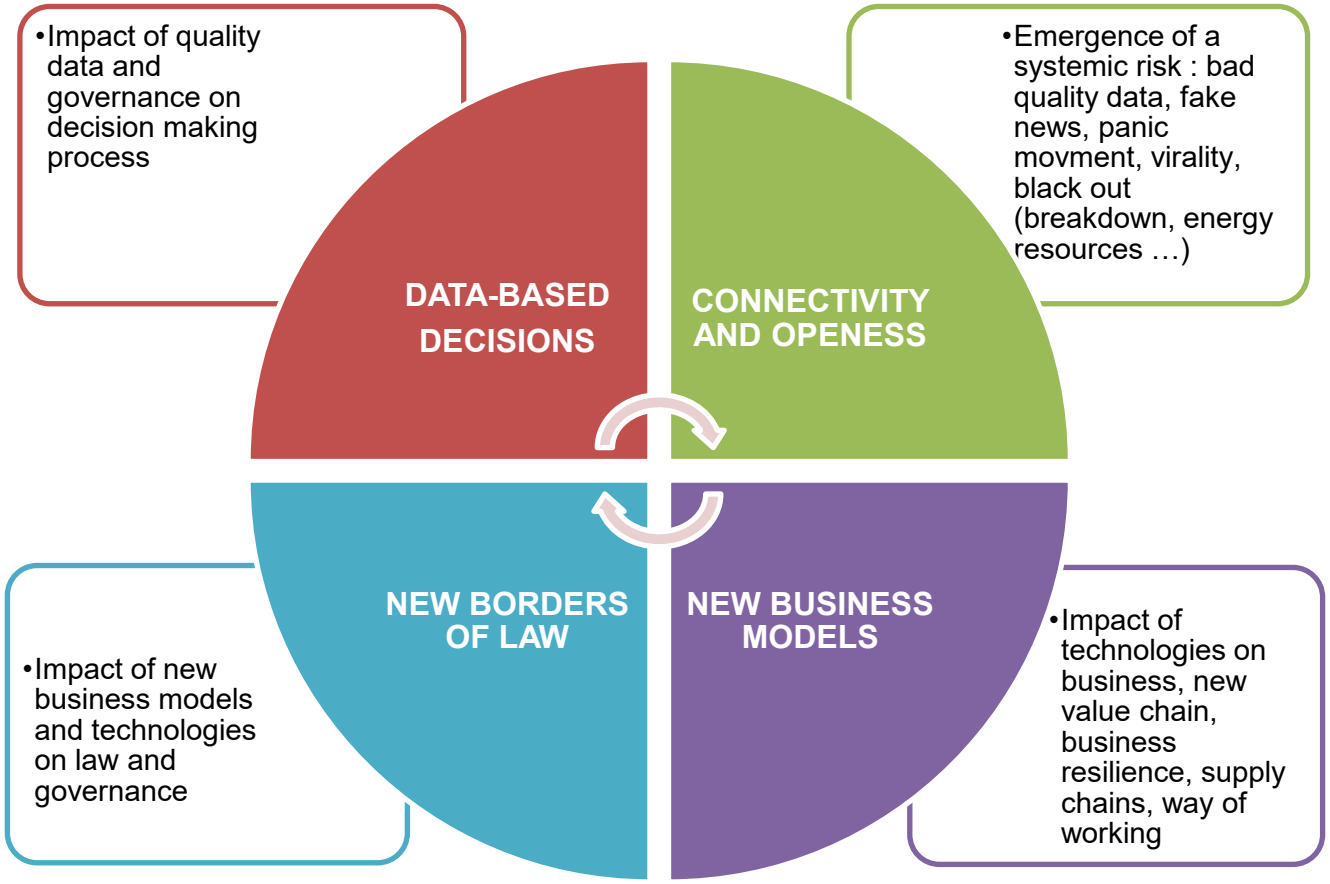
- Digital transformation of cities generate a variety of risks
- At the same time, data heterogeneity and plurality of stakeholders, applications, processes and tools involved in this transformation accentuates the need to strengthen governance
- We propose here a risk management approach integrating operational and strategic objectives

Digital transformation, IoT and data processing and management generates uncertainty

Risks include

- Security
- Privacy
- And also other risks generated by a new paradigm

Risk evolution due to new paradigm



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Risk management can ensure a safe development of cities

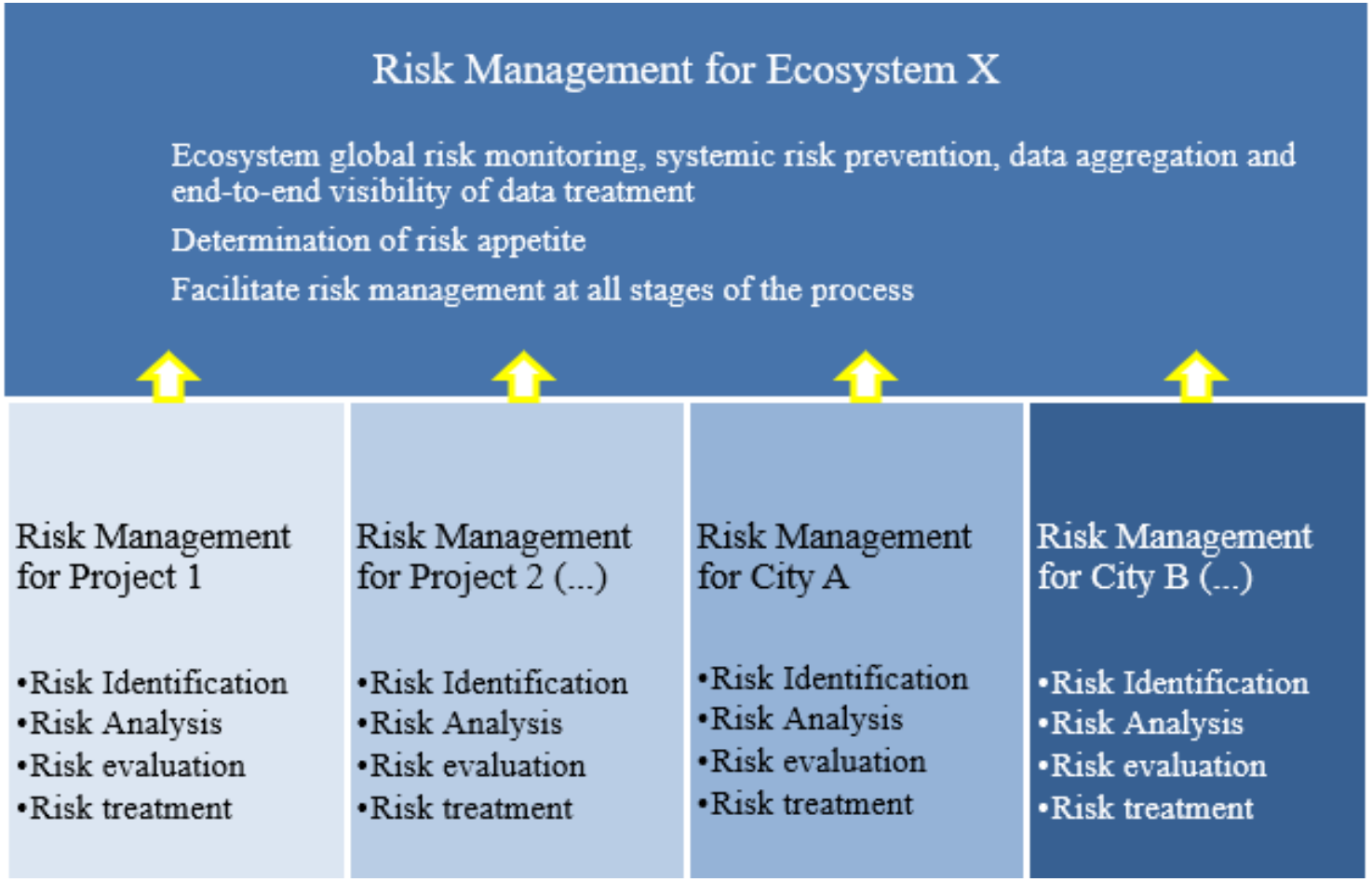
- Existing standards and methodologies could be adapted to the specific needs, contexts and complexities of cities, communities and projects…

- …taking into account the governance challenges generated by data heterogeneity and plurality of stakeholders, applications, processes and tools involved…

Risk management framework

MACRO

MICRO



* Terminology from ISO31000:2009 /new version ISO31000:2018

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MICRO level 1/4

- Task : identify the different risks and threats that can appear at short, medium and long term

- Best practice : regularly evolve the list of risks and threats

MICRO level 2/4

- Task : analyse and assess the impact of each identified risk
- Best practice : improve risk assessment (likelihood and magnitude) through the collection and analysis of loss data

MICRO level 3/4

- Task : evaluate the ability of the project/city to bear the risk or not, determine the risk tolerance

- Best practice : work on risk appetite, ensure that the maximum risk a project/city can/wants to take is well articulated and communicated

MICRO level 4/4

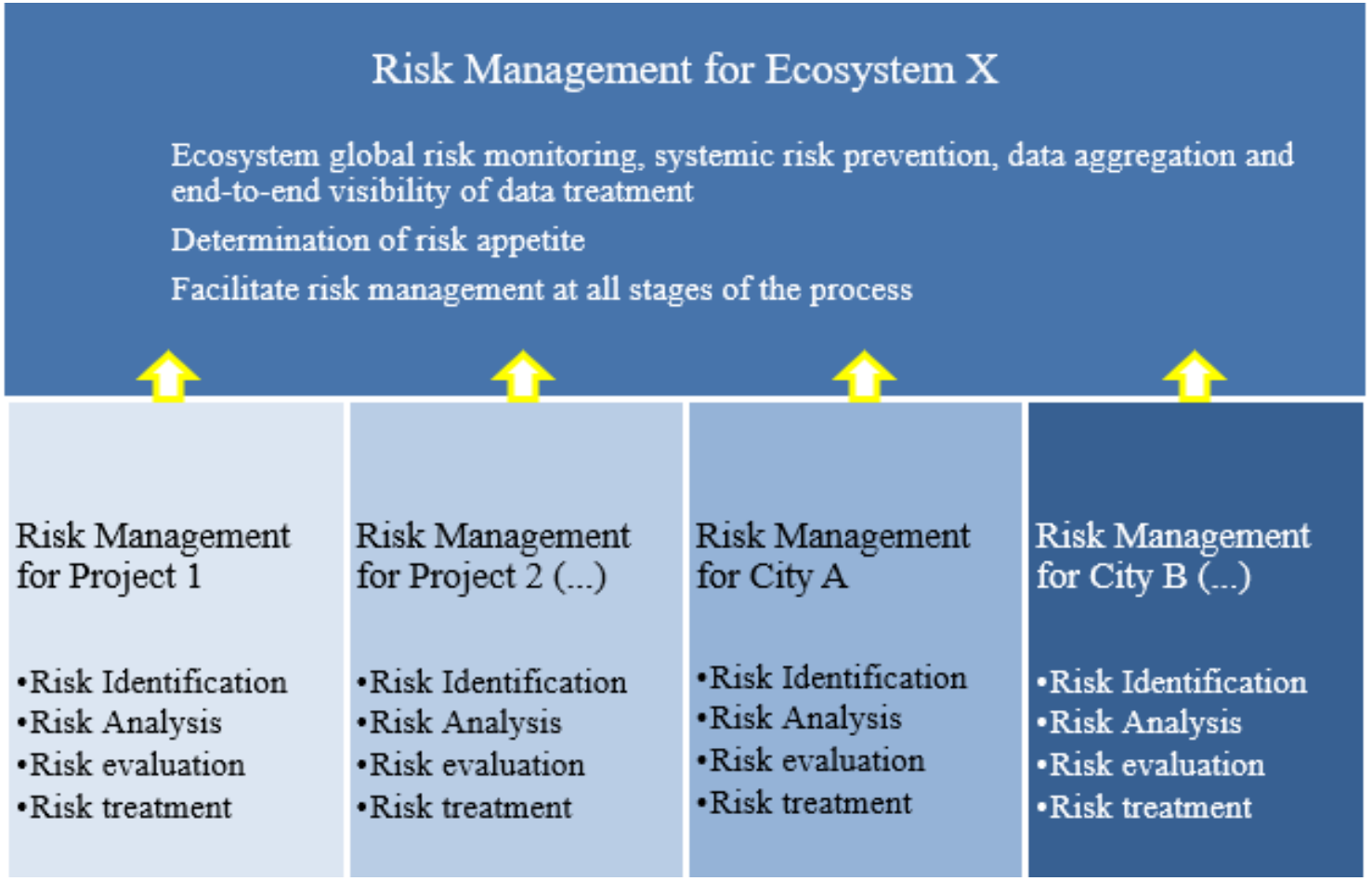
- Task : treat each risk and threat by providing an adapted answer regarding the ability of the project/city to bear the risk or not

- Best practice : develop the knowledge about usual risk answers and foster the development of innovative solutions

Risk management framework

MACRO

MICRO



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MACRO level 1/3

- Task : forecast and manage risks at 360° and provide quick answers

- Best practice : global risks management, such as systemic risk, suppose an ability to capture the big picture of the global activity through an efficient capacity of reporting, data interoperability and data aggregation

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MACRO level 2/3

- Task : evaluate the ability of the ecosystem / organization to bear the risk or not, determine the risk tolerance

- Best practice : work on risk appetite, ensure that the maximum risk an ecosystem/organization can/wants to take is well articulated and communicated

MACRO level 3/3

- Task : facilitate risk management through actions and governance

- Best practices :
  - Digital education and development of a data & risk culture
  - Data minimization to reduce significantly the related risks
  - Fluent communication btw. heterogeneous systems/players
  - Foster collection of loss data at a global level
  - Overall coordination of risk management

CONCLUSION

- Digital transformation and IoT generate a variety of risks
- Privacy and security represent a significant threat, and other risks are also of concern: systemic risk, concentration risk, risk of bias in decision-making…
- Risk management process is required, distinguishing between operational and strategic objectives, micro vs macro level

References

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