



Perbadanan Insurans Deposit Malaysia  
Protecting Your Insurance And Deposits In Malaysia

# **NRS** | NATIONAL RESOLUTION SYMPOSIUM 2024

23 – 24 September 2024



## **PANEL SESSION 4:** **The future of crisis preparedness in the era of digitalisation**



**Moderator:**

**PROFESSOR DR. SANJAY SARMA**

Chief Executive Officer, President and  
Dean, Asia School of Business



**Panelist:**

**DR EVA HUPKES**

Secretary General,  
International Association  
of Deposit Insurers



**Panelist:**

**André Dias Lopes**

Head of Unit,  
Portuguese Resolution Authority



**Panelist:**

**STEVE LAM**

Asean Cybersecurity  
Leader, Ernst & Young



NATIONAL RESOLUTION  
SYMPOSIUM 2024



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# Dr Eva Hupkes

Secretary General

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# THANK YOU

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# The Future of Crisis Preparedness in the Era of Digitalisation

André Dias Lopes

Strategies and Methodologies Unit, Resolution Department

Banco de Portugal

# Strategies and Methodologies Unit



## Business-Focused solving real problems

A business-oriented team with expertise in resolution planning and execution, supporting resolution and deposit guarantee matters



## Data-centric iterative development

Focused on data-driven approaches, the team iteratively develops Minimum Viable Products (MVPs), refining solutions through continuous feedback



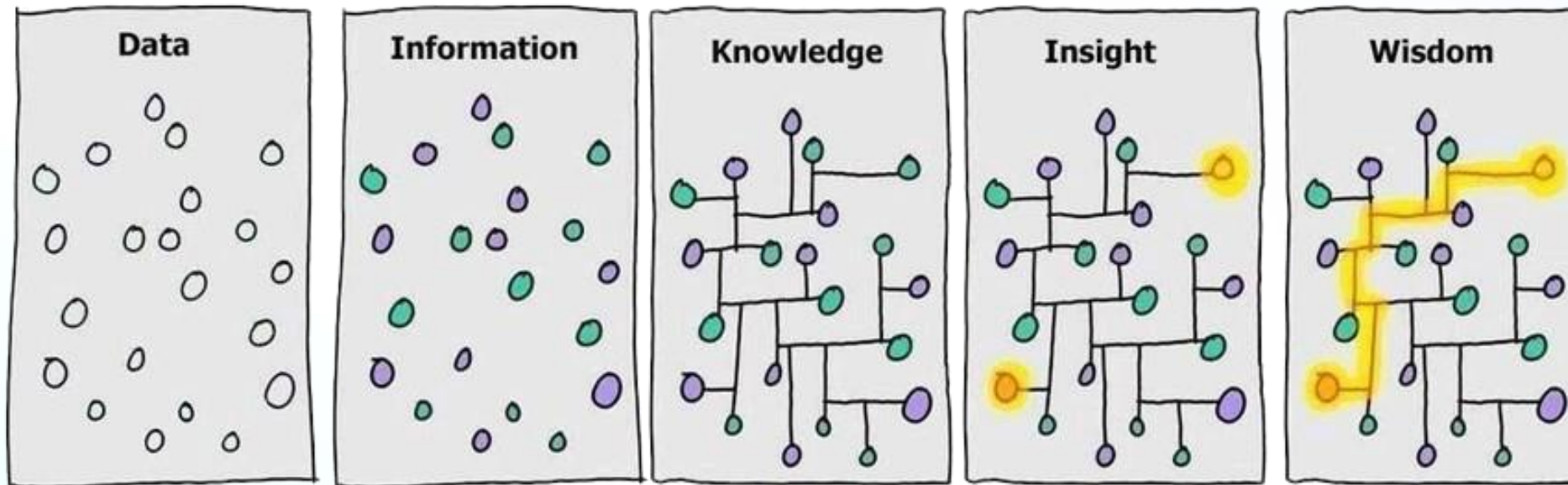
## Agile and multidisciplinary

A dynamic team with diverse academic backgrounds, working agilely to support strategies and methodologies in the context of resolution



# A data-informed process

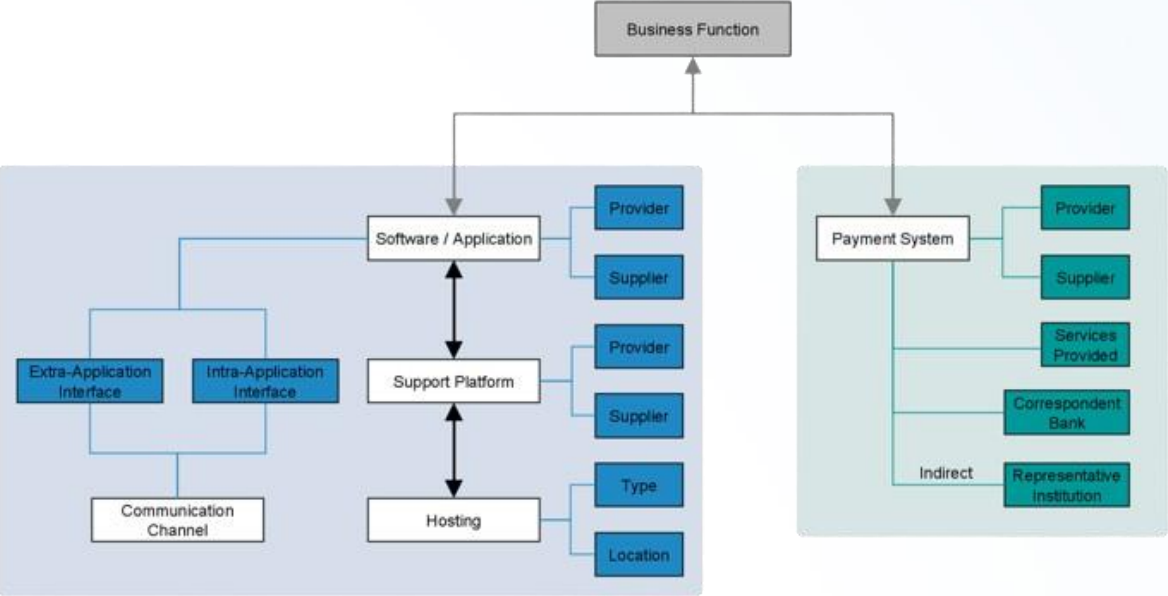
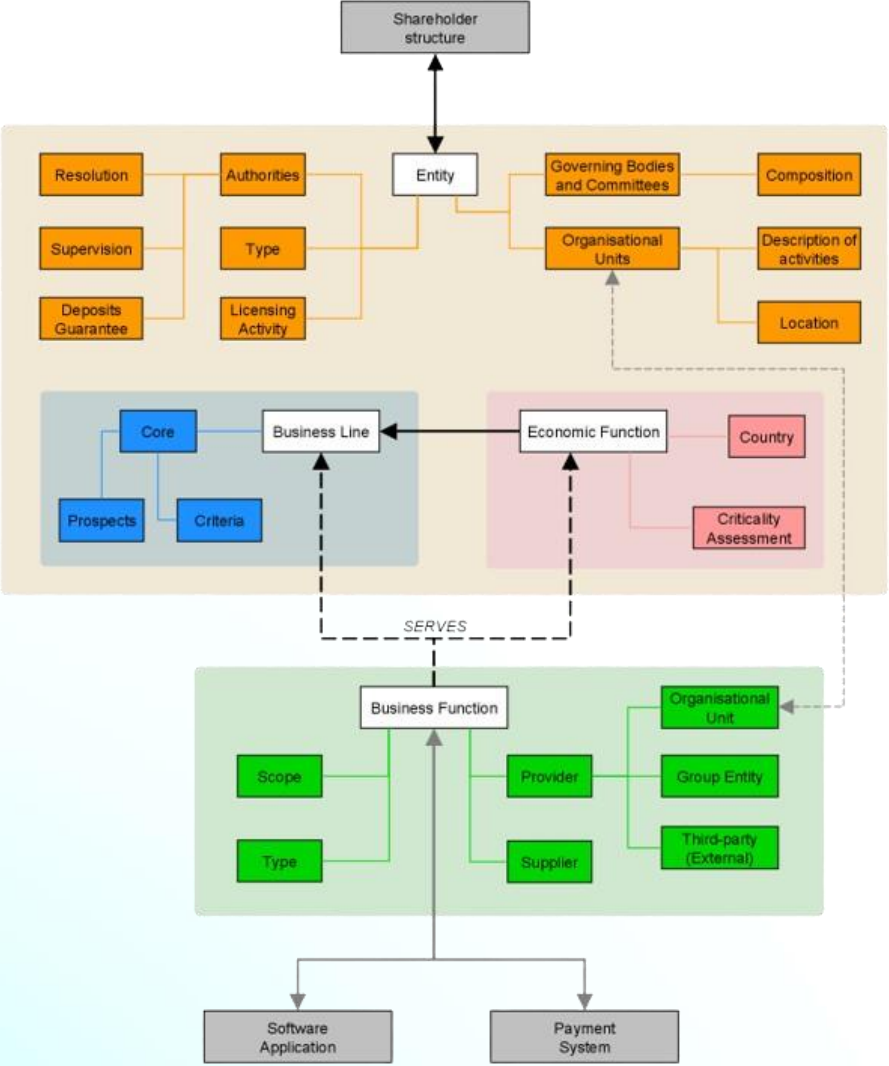
Transforming Data into Wisdom...



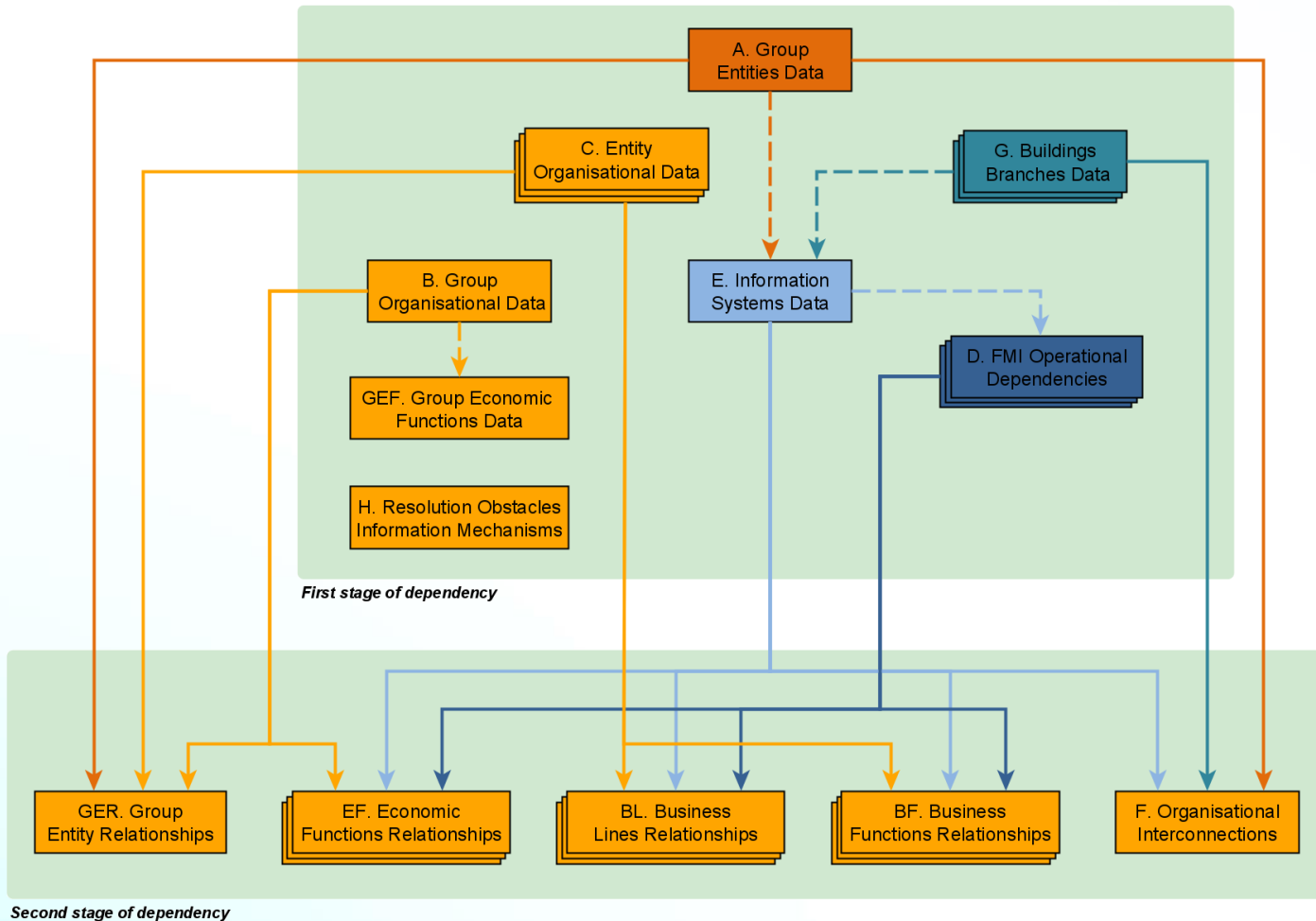
... Only possible with a robust reporting framework.



# Business data model



# On the same wavelength



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(1) The report only depends on the filling of a specific information, therefore both reports can be filled in parallel.

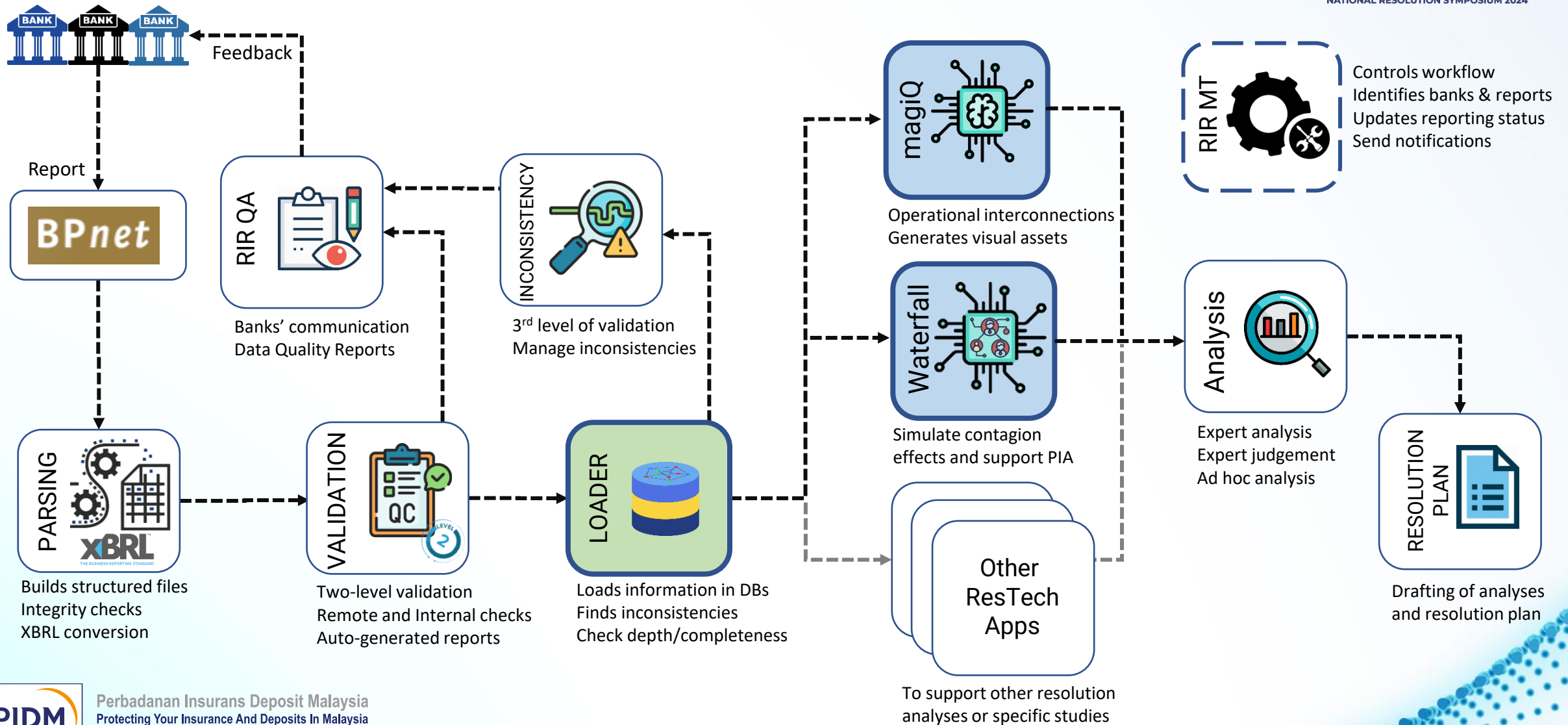
(2) There should be only one report covering all the entities of the group.

(3) There should be one report for each entity for which information is required.

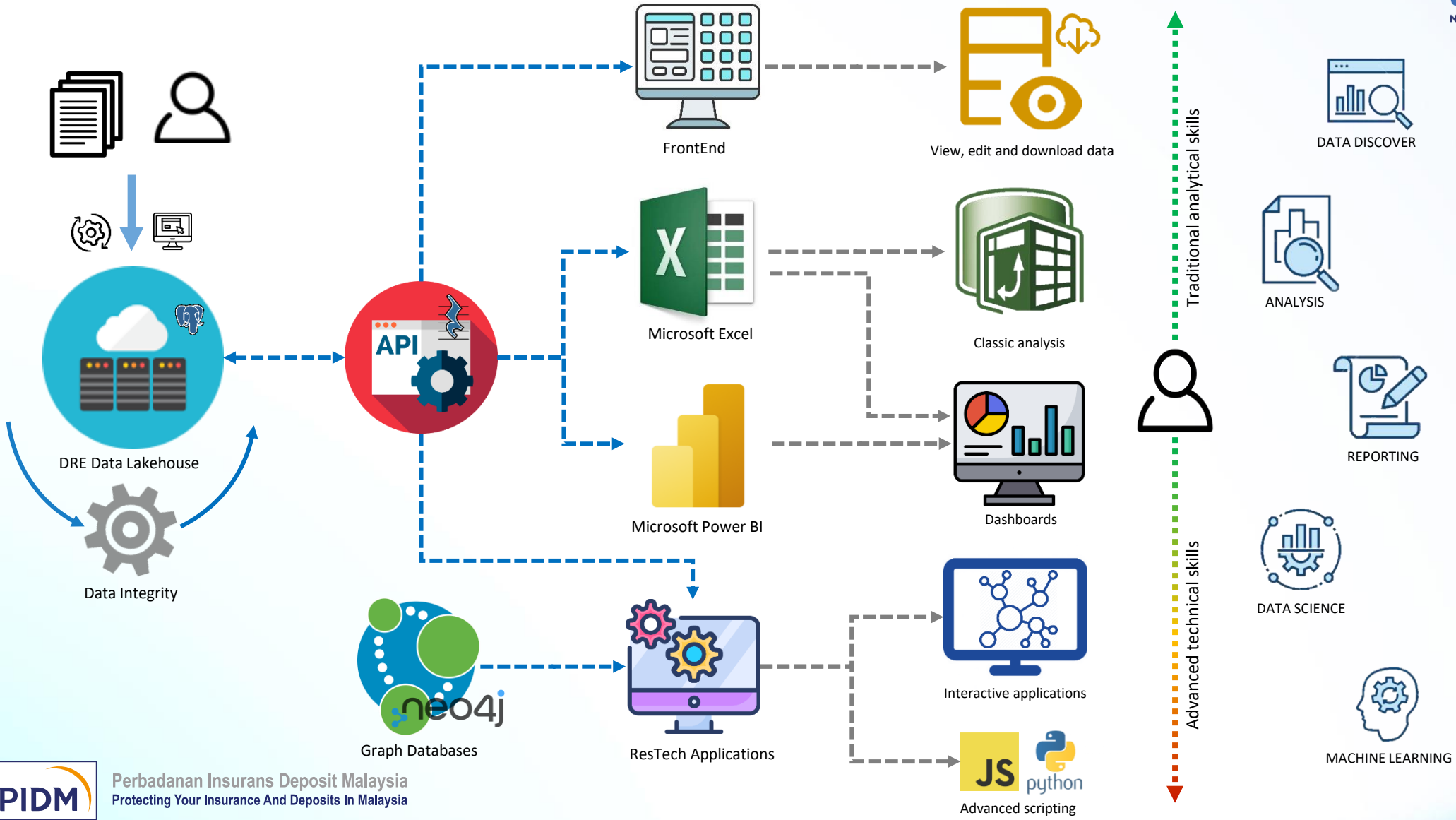


The instructions outline the business data model, the template completion order, and clear guidelines for accurate completion.

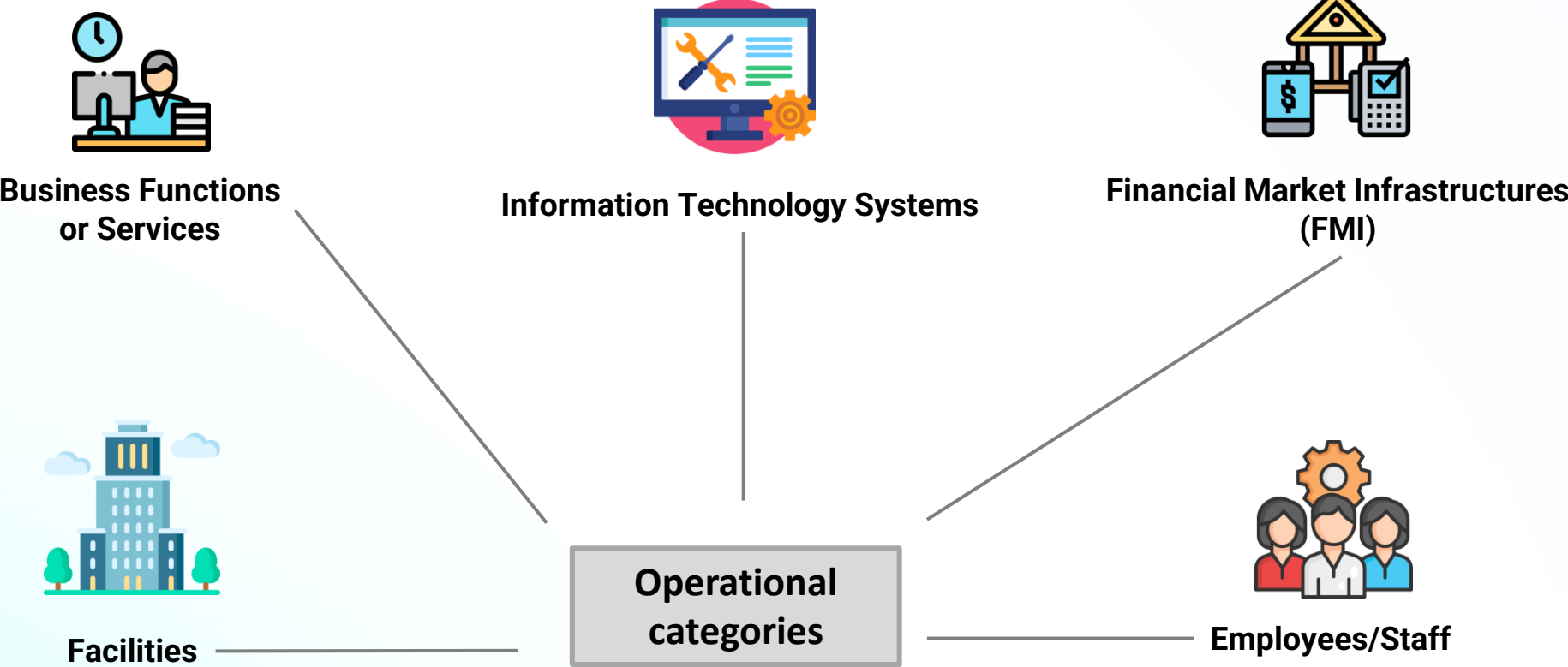
# Resolution planning workflow



# Flexible data access

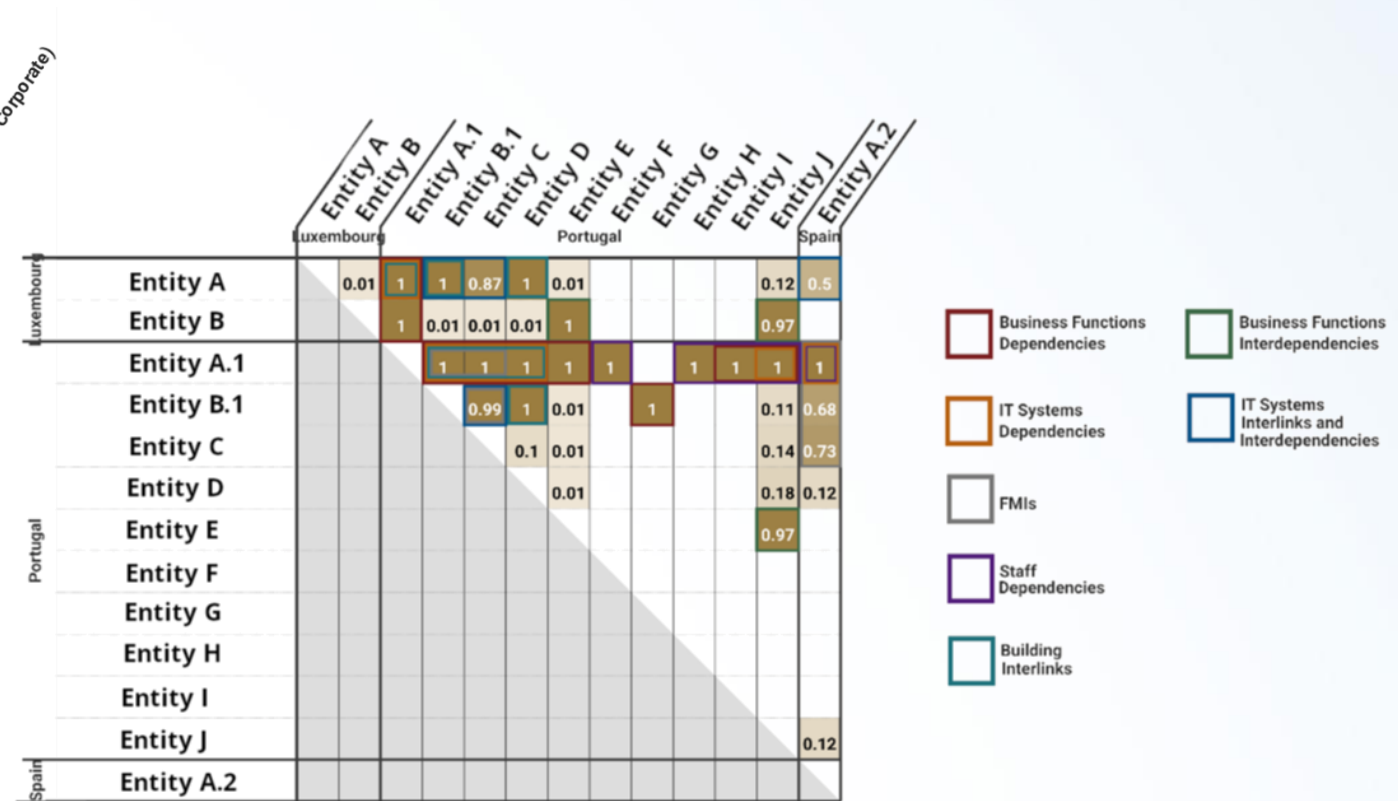
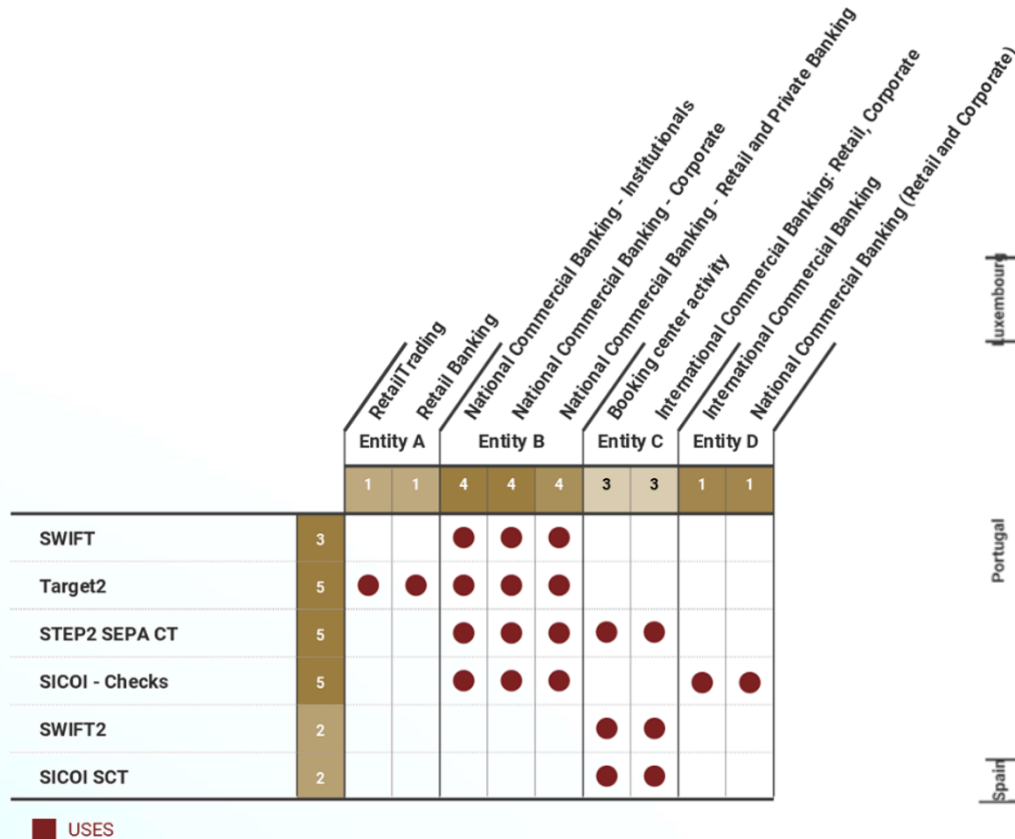


# Interconnections framework



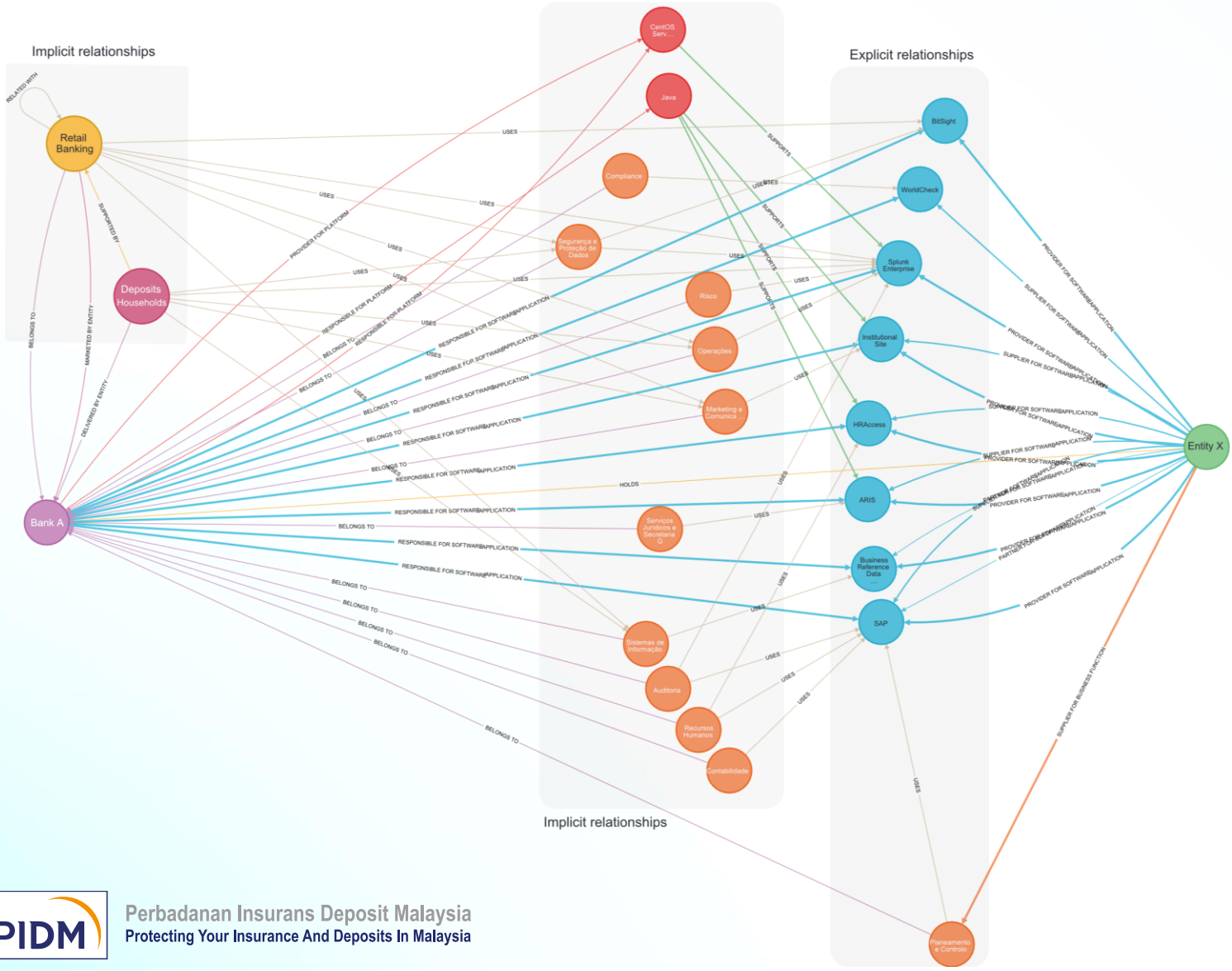
Conceptual Framework for identifying and assessing operational interconnections in resolution planning. It defines key concepts (interconnection, interdependency, dependency, interlink) and offers a methodology to estimate a global operational interconnection using numerical indicators (0-1).

# Answering with visual assets



Examples of pre-defined auto-generated visual assets to understand the group's business model, internal and providers, interconnections and separability, used in the resolution plan.

# Exploratory analysis



Bank	Business Function	Shareholder
Business Line	Software / Application	
Economic Function	Support Platform	

↔

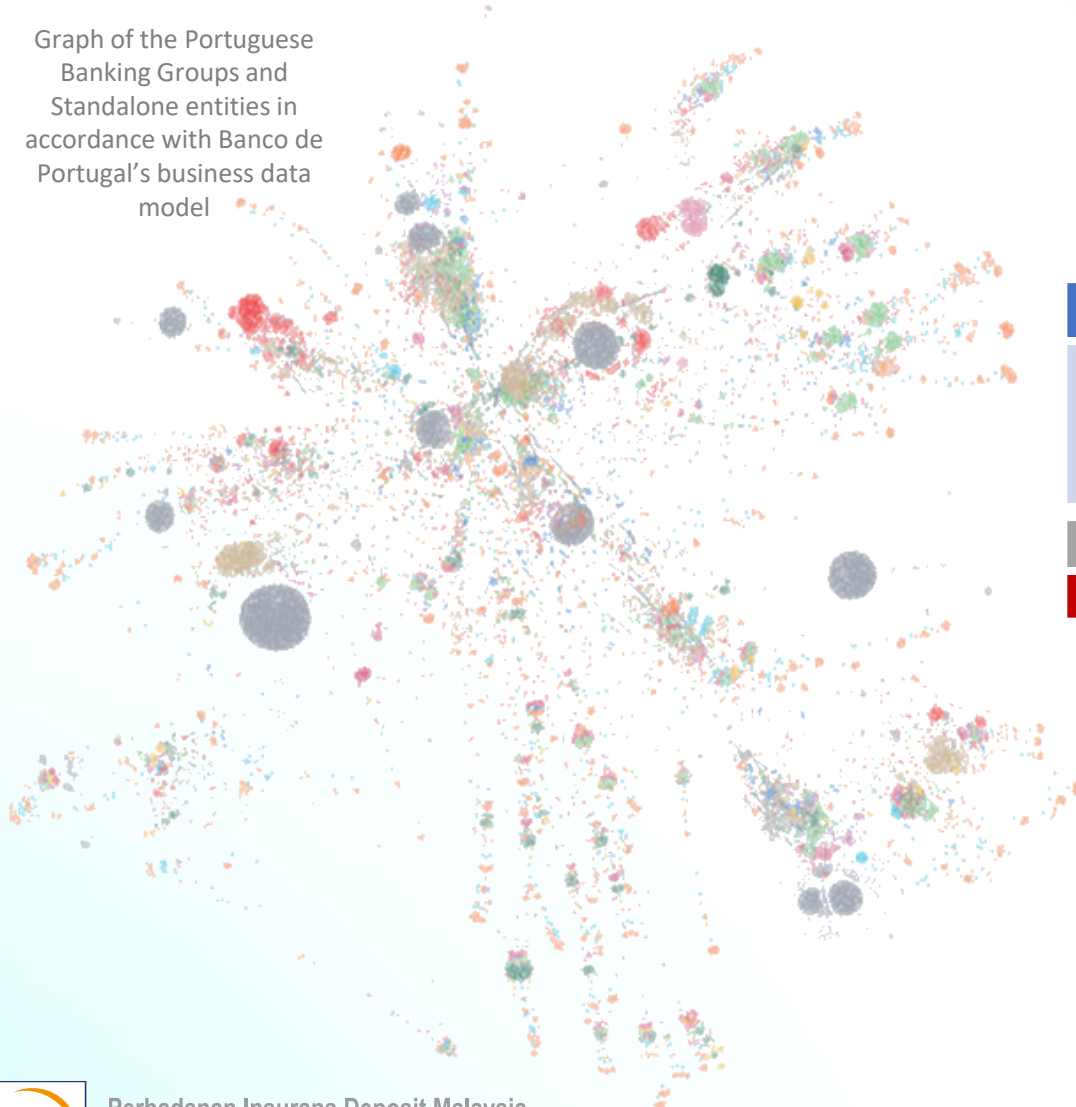
**PLAN**

- ✓
- ✓
- ✓

Example of an exploratory analysis of explicit and implicit operational interconnections between a Bank and its Shareholder, used in the resolution plan.

# A study about Third-Party Providers

Graph of the Portuguese Banking Groups and Standalone entities in accordance with Banco de Portugal's business data model




$$attention\ score = \max\left(\frac{x}{n_x}, 1\right) * y_{weighted} * \max(k + z, 1)$$

<b>Contract Information</b>	<b>Number of graph connections</b>	<b>Core Business Lines and Critical Economic Functions</b>
<ul style="list-style-type: none"> <li>Resolution-proofness</li> <li>Third-country laws</li> <li>Estimated time for Substitutability</li> <li>Time to access the contract</li> </ul>	<ul style="list-style-type: none"> <li>Number of services that are provided by the Provider/Supplier</li> <li>Centrality in the graph (Degree Algorithm)</li> </ul>	<ul style="list-style-type: none"> <li>Number of Core BL and Critical EF connected to a provider/supplier</li> </ul>

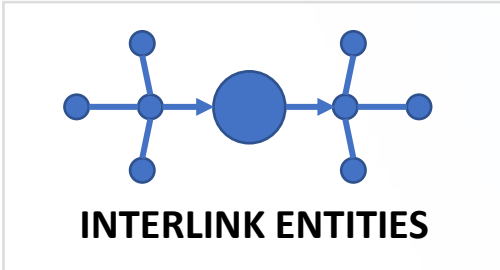
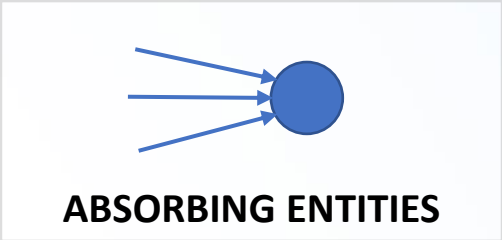
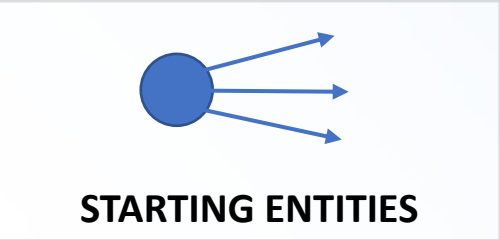
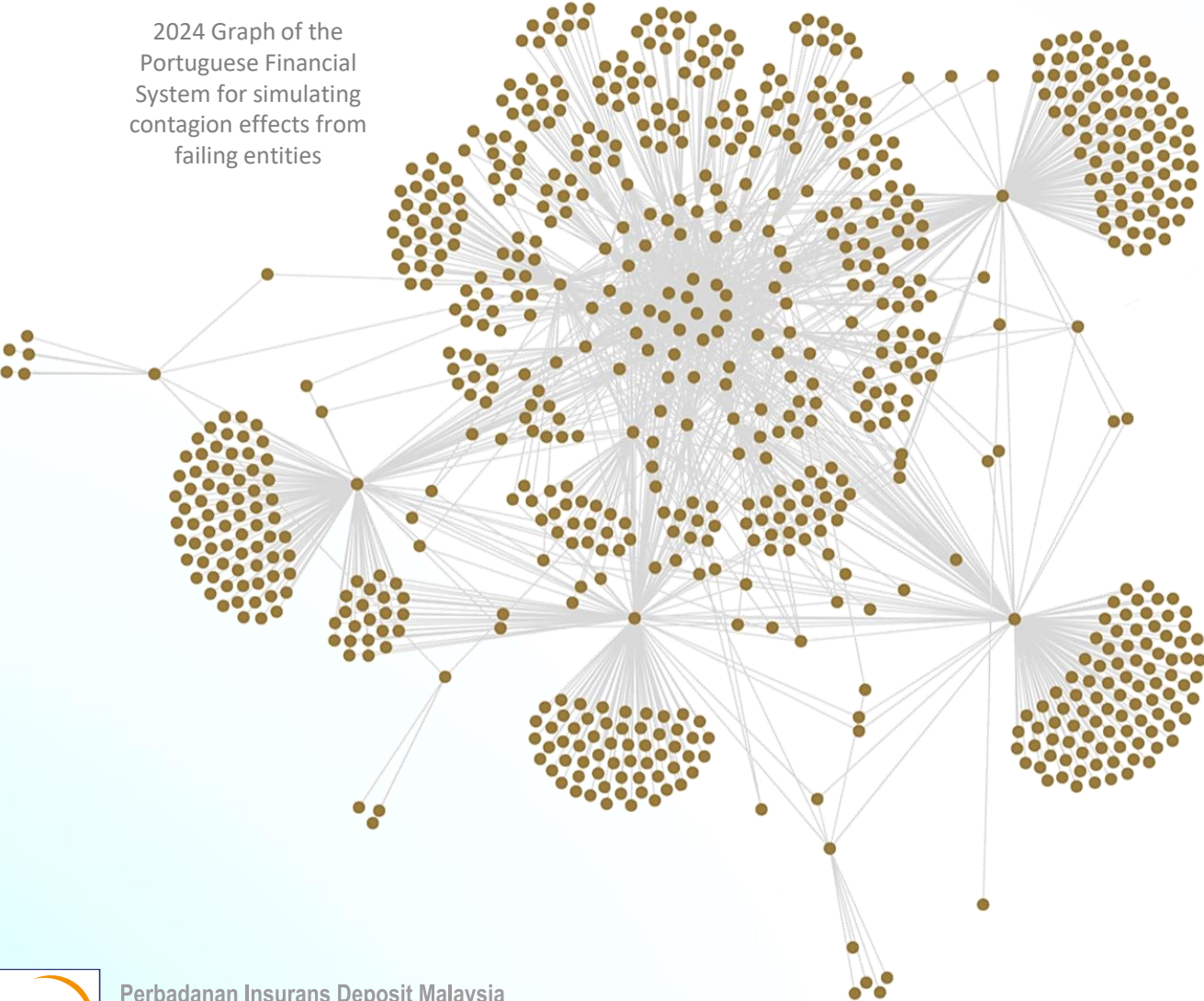
Risk Categories			
Very High	High	Moderate	Low

Distributed by	
<b>Groups or Entities</b>	Assess concentration and level of dependency (relative percentage)
<b>Countries</b>	Check which jurisdictions pose higher risks
<b>Categories</b>	Understand the type of services being provided (ICT/Service/FMI)

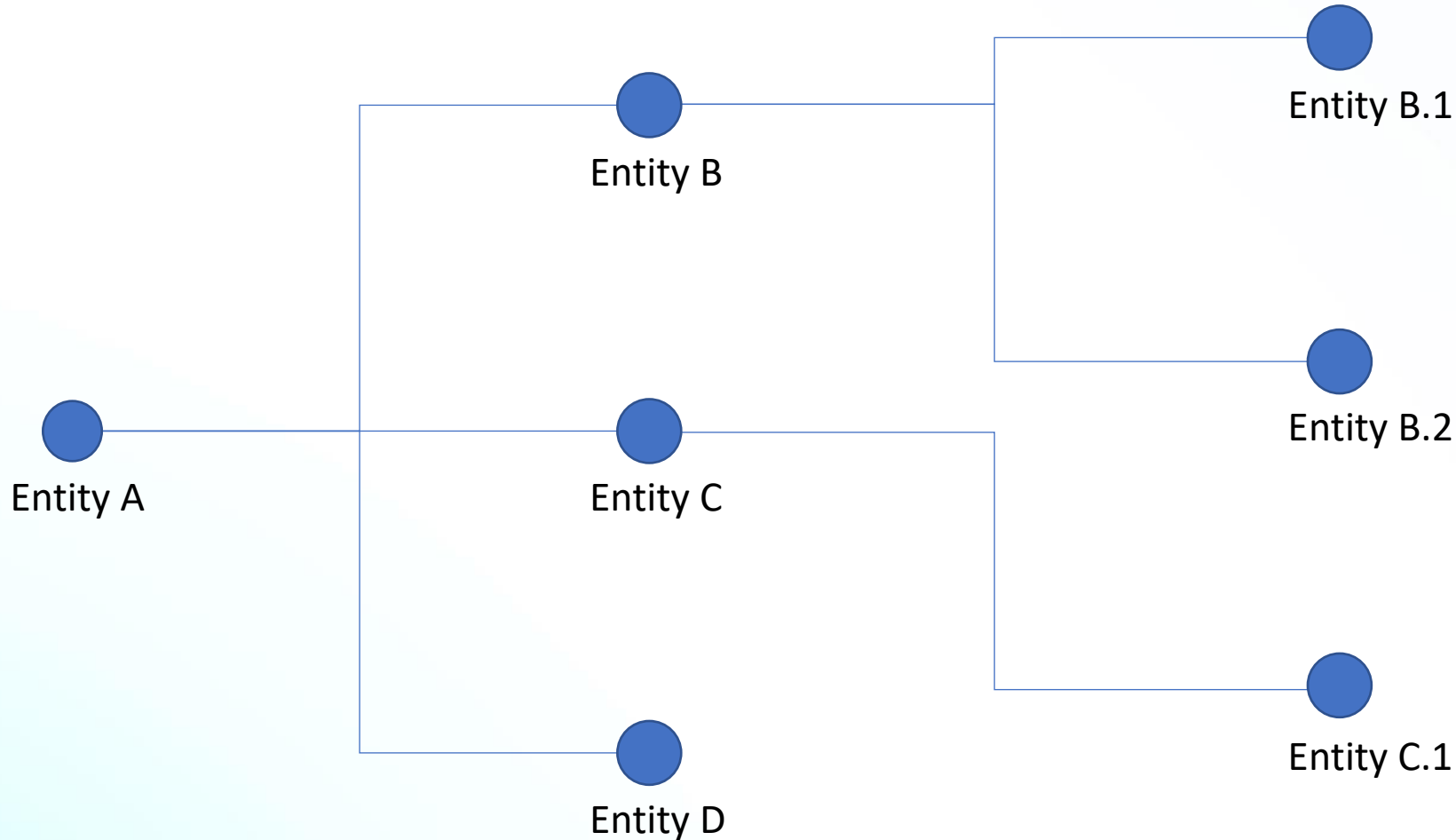
 **Neuralgic Operational Providers (NeuralOPs)** assess financial stability and risk by analyzing high-risk provider contracts, supporting the new requirements under the Digital Operational Resilience Act (DORA).

# Financial Data Model

2024 Graph of the Portuguese Financial System for simulating contagion effects from failing entities



# Simulating losses in the financial system



**LOSSES**

- Total amount received
- Total amount propagated
- Total amount not propagated

**ASSETS AND LIABILITIES**

- Initial amount
- Amount depleted
- Reflected on the asset side

**CAPITAL RATIOS**

- Estimated RWAs
- New ratio estimations
- Compliance computation

# Avoiding black-box models

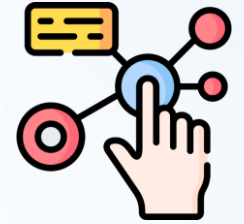
25	Assets available (Total assets) 110295.41 (126276.99)	Liabilities available (Total liabilities) 77863.83 (121863.4)	Capital available (Total capital) 4427.91 (4427.91)	Losses accumulated 5956.16	Losses not propagated 0	Losses to propagate 14.31	RWAs 29873.72	Ratio capital 6581.59	-																																																																																																																																										
<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <h3>Incoming Losses</h3> <table border="1"> <tr> <td>0</td> <td>Asset losses accumulated</td> <td>0</td> <td>Impairment losses accumulated</td> <td>0</td> <td>+</td> </tr> <tr> <td>1</td> <td>Asset losses accumulated</td> <td>0</td> <td>Impairment losses accumulated</td> <td>0</td> <td>+</td> </tr> <tr> <td>2</td> <td>Asset losses accumulated</td> <td>0</td> <td>Impairment losses accumulated</td> <td>0</td> <td>+</td> </tr> <tr> <td>3</td> <td>Asset losses accumulated</td> <td>2222.04</td> <td>Impairment losses accumulated</td> <td>125.68</td> <td>-</td> </tr> <tr> <td>0</td> <td>Type</td> <td>Multiplier</td> <td>Losses</td> <td>Asset value available</td> <td>Impairment value available</td> </tr> <tr> <td>4</td> <td>Financial</td> <td>1</td> <td>646.3</td> <td>0</td> <td>0</td> </tr> <tr> <td>4</td> <td>Financial</td> <td>1</td> <td>519</td> <td>0</td> <td>0</td> </tr> <tr> <td>14</td> <td>Financial</td> <td>1</td> <td>144</td> <td>0</td> <td>0</td> </tr> <tr> <td>16</td> <td>Financial</td> <td>1</td> <td>849.64</td> <td>0</td> <td>0</td> </tr> <tr> <td>24</td> <td>Financial</td> <td>0.5</td> <td>63.1</td> <td>64.77</td> <td>0</td> </tr> <tr> <td>36</td> <td>Financial</td> <td>0</td> <td>0</td> <td>759.36</td> <td>14.44</td> </tr> <tr> <td>4</td> <td>Asset losses accumulated</td> <td>4.68</td> <td>Impairment losses accumulated</td> <td>0</td> <td>+</td> </tr> <tr> <td>-</td> <td>Asset losses accumulated</td> <td></td> <td>Impairment losses accumulated</td> <td></td> <td>.</td> </tr> </table> </div> <div style="width: 48%;"> <h3>Outgoing Losses</h3> <table border="1"> <tr> <td>0</td> <td>Liability losses accumulated</td> <td>0</td> <td>+</td> <td>53</td> </tr> <tr> <td>1</td> <td>Liability losses accumulated</td> <td>0</td> <td>+</td> <td>+</td> </tr> <tr> <td>2</td> <td>Liability losses accumulated</td> <td>0</td> <td>+</td> <td>+</td> </tr> <tr> <td>3</td> <td>Liability losses accumulated</td> <td>0</td> <td>+</td> <td>+</td> </tr> <tr> <td>4</td> <td>Liability losses accumulated</td> <td>259.56</td> <td>-</td> <td>+</td> </tr> <tr> <td>1</td> <td>Type</td> <td>Multiplier</td> <td>Losses</td> <td>Remaining Own Funds</td> </tr> <tr> <td>1</td> <td>HOLDS</td> <td>1</td> <td>259.56</td> <td>224.58</td> </tr> <tr> <td>10</td> <td>Financial</td> <td>1</td> <td>0</td> <td>Liability value available 155.1</td> </tr> <tr> <td>18</td> <td>Financial</td> <td>1</td> <td>0</td> <td>Liability value available 353.4</td> </tr> <tr> <td>5</td> <td>Liability losses accumulated</td> <td>0</td> <td>+</td> <td>+</td> </tr> <tr> <td>6</td> <td>Liability losses accumulated</td> <td>25.37</td> <td>+</td> <td>+</td> </tr> <tr> <td>7</td> <td>Liability losses accumulated</td> <td>0</td> <td>+</td> <td>+</td> </tr> </table> </div> </div>										0	Asset losses accumulated	0	Impairment losses accumulated	0	+	1	Asset losses accumulated	0	Impairment losses accumulated	0	+	2	Asset losses accumulated	0	Impairment losses accumulated	0	+	3	Asset losses accumulated	2222.04	Impairment losses accumulated	125.68	-	0	Type	Multiplier	Losses	Asset value available	Impairment value available	4	Financial	1	646.3	0	0	4	Financial	1	519	0	0	14	Financial	1	144	0	0	16	Financial	1	849.64	0	0	24	Financial	0.5	63.1	64.77	0	36	Financial	0	0	759.36	14.44	4	Asset losses accumulated	4.68	Impairment losses accumulated	0	+	-	Asset losses accumulated		Impairment losses accumulated		.	0	Liability losses accumulated	0	+	53	1	Liability losses accumulated	0	+	+	2	Liability losses accumulated	0	+	+	3	Liability losses accumulated	0	+	+	4	Liability losses accumulated	259.56	-	+	1	Type	Multiplier	Losses	Remaining Own Funds	1	HOLDS	1	259.56	224.58	10	Financial	1	0	Liability value available 155.1	18	Financial	1	0	Liability value available 353.4	5	Liability losses accumulated	0	+	+	6	Liability losses accumulated	25.37	+	+	7	Liability losses accumulated	0	+	+
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Resolution experts can simulate various scenarios, impose new losses at each iteration, and audit the outcomes. It allows the simulation of cascading effects triggered by FOLTF entities, providing insights about the Public Interest Assessment (PIA).

# Ongoing and upcoming work

## Interactively answering resolution-specific questions

- Self-service application that dynamically adapts to changing questions and contexts
- Environment that resolution experts can use to explore graph data and apply pre-defined business rules
- Useful for both resolution planning and crisis situations



## Leveraging on Large Language Models (LLMs)

- Retrieve resolution-specific data from structured sources like knowledge graphs using natural language
- Explore contextual understanding and the automatic generation of analyses



## Collaboration and Testing

- Improve resolvability by developing testing programmes (dry runs, deep dives and on-site inspections) to evaluate practical implementation
- Examine the interplay between Digital Operational Resilience Act (DORA) and Operational Continuity in Resolution (OCIR), and how it affects resolvability



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Protecting Your Insurance And Deposits In Malaysia

# Cyber Resiliency

Steve Lam

Asean Cybersecurity Leader

Ernst & Young Singapore

# Common cyber resiliency challenges

## Common cyber resiliency challenges



Cyber Resilience Programs lack a **unified governance structure and vision**



Technology stacks are **increasingly complex**



Impact to **value chain** due to disruption and **ability to recover is unknown** to most organizations

# Priorities for cyber resilience

## Organizational priorities for cyber resilience

- Establish a unified resilience program with an executive leading a multi-talented team providing program visibility to the CEO and Board of Directors
- Identify surge support requirements for critical business support and services during and after a large scale malicious cyber event.

## People



## Process



- Embed resiliency objectives as part of the daily operations as well as transformation initiatives.
- Develop resilience processes and execute supporting tests to sustain critical business and third-party services while protecting the data throughout the event.

- Implement air-gap solutions for technology and data to ensure clean recovery taking complexity of technology stack into consideration.
- Perform testing of real world mass disruption scenarios due to cyber attacks and enhance recovery strategy and solutions.

## Tech



## Data



- Implement capabilities to identify last known good copy of data for critical business processes.
- Develop ability to rebuild clean data using last known good copy for effective recovery and to meet regulatory requirements.

# Cyber resiliency cheat sheet

## 1 | Strategy and operating model

- Governance, policy, and operating model design
- Crisis management team
- Surge support

## 2 | Resilience planning

- Critical business process mapping
- Dependency mapping
- Playbooks for high likelihood scenarios
- Third party/Cloud vendors

## 3 | Technology enablers

- Data flows
- Cyber resilient backups
- BCP/DRP

## 4 | Catastrophic scenario testing

- Table-top exercises
- Business recovery practice
- Exercise, practice, exercise, practice

# THANK YOU