



REPUBLIC OF SLOVENIA
MINISTRY OF PUBLIC ADMINISTRATION



Lessons Learned and Challenges of Big Data Pilot in Slovenia

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Workshop: Public Sector Data: still a missed opportunity?

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Starting Points and Challenges of Data Analytics in Public Administration in Slovenia

- **Data bases are unlinked** and located in **different siloses**.
- Estimation: **weekly / monthly reports** by governmental agencies, e.g. for finances, HR (**manually**) takes **0,5 - 2 days**.
- Most **reports are repetitive** -> could be **predefined and automated**, analysts could focus on **predictive analytics**, what if scenarios and data interpretation.
- Daily / weekly various **journalist / parliamentary questions** – it's estimated **0,5 - 2 days** for answering since **data are not collected and managed**.
- We estimate **the savings: 0.3 - 0.5 FTE / year** of the current work per the analyst.



Goals, Challenges and Perspective

- **Data driven decision making** for more transparency and more efficiency.
- Informational Commissioner and legal frame: **personal data security & GDPR.**
- **For analysts: automatisisation of repetitive tasks**, support to infographics and predictional analytics,
- **Important role of users:** owners / guardians of the data,
- **Continious activity** for governmental administration: **competence center for user support.**

Big Data Pilot Project in Ministry of Public Administration

- **Purpose** - to learn what Big Data could enable to improve efficiency in the field of HR and public procurement on our **private cloud**.
- Pilot with partner company **EMC Dell** – 5 experts + 23 MPA team members.
- **Duration** April 2016 to February 2017. MPA data, from January 2015 to August 2016.
- **Data sources:** data on employee's time management (Codeks), ISPAP – salaries data, HR data and finance data (MFERAC), data on public procurement + open data – postal codes and weather.
- **Media** – personal data. **Informational Commissioner** - Impact Assessment on Privacy.
- Data **substitution** and **anonymisation** (personal data).
- **R Language, Python, R studio**, Hadoop, Apache Spark, Jupither Notebook.
- **Change management** – Restablishing Trust.





Big data: Cluster Descriptions From Over 250 Employee Characteristics

Cluster A

Operational Personnel

Average Performance Score = 4.49
Minimum working time on Friday
Low average salary
Fewest third education level
Fewest business absences

Cluster C

Regimented Staff

Average Performance Score = 4.46
Lowest variation in working time on Mondays, Tuesdays and Thursdays
Lowest variation in daily start time
Fewest private time relative to department peers

Cluster B

Extra Hours Workers

Average Performance Score = 5.00
Maximum working time on Friday
Lowest count of lunches taken
Latest average end hour relative to department peers

Cluster D

Flexible Schedules

Average Performance Score = 4.75
Greatest variation in working time
Greatest business absence count

Cluster E

Social Employees

Average Performance Score = 4.55
Highest count of private events
Highest count on lunches taken

Profiling each of the clusters reveals different 'segments' of employees that work across the MPA

Source: EMC Dell



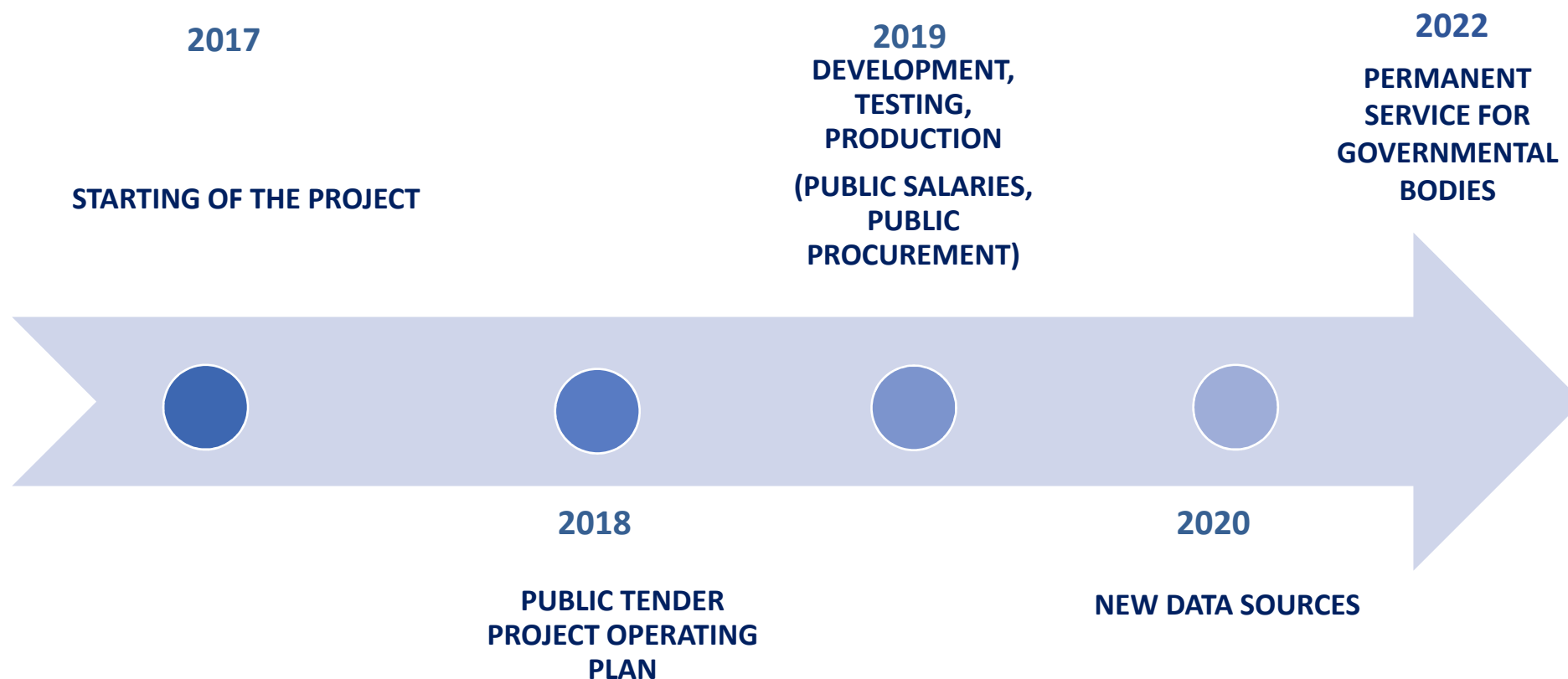
Big Data: What Clusters did MPA Attritors Belong to?

		Performance Value		
		2	4	5
Cluster	Average Performance Score			
A	4.49	0	2	3
B	5.00	0	0	1
D	4.75	1	1	3

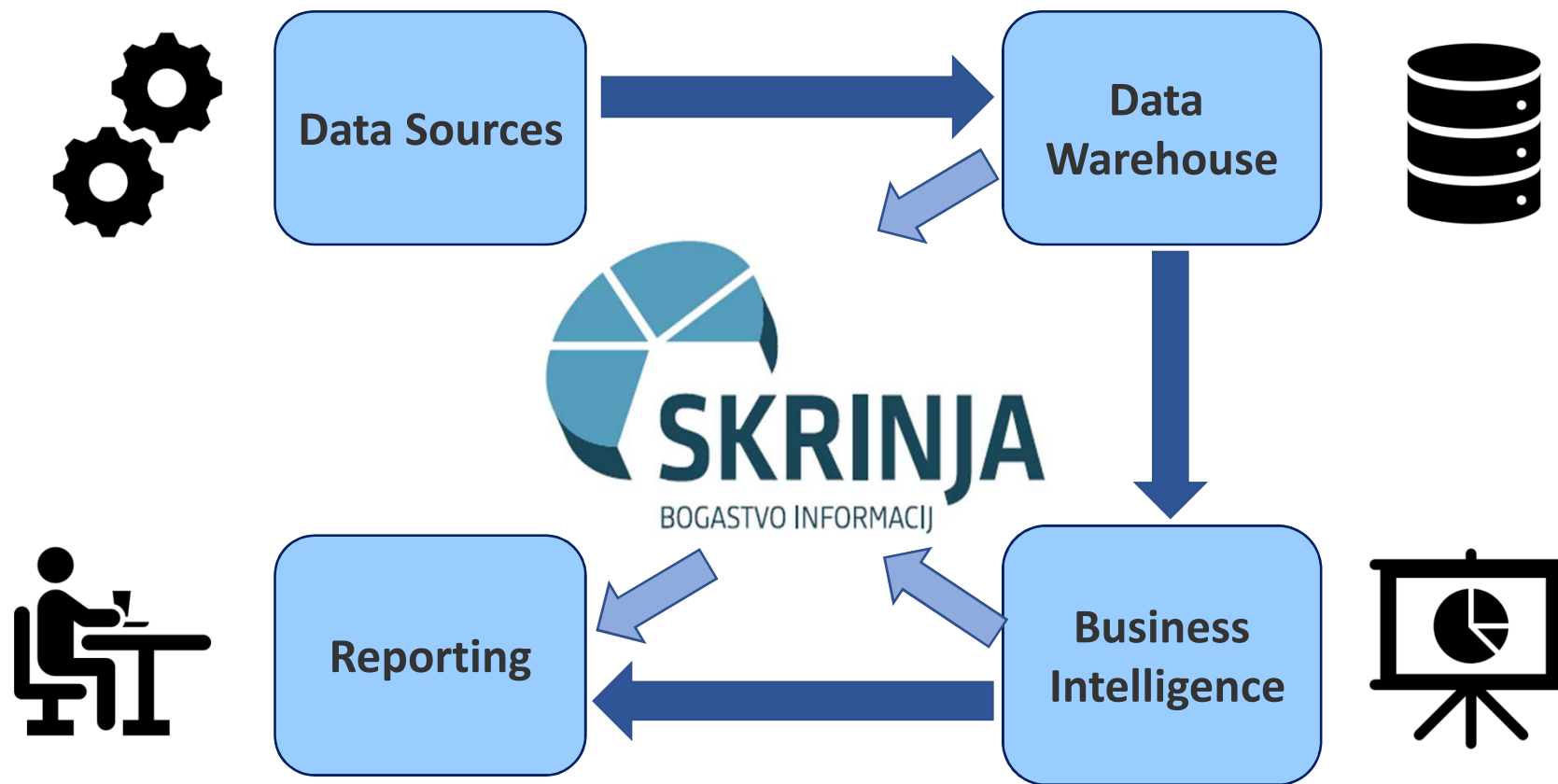
Source: EMC Dell



Business Intelligence Project - Chest / Skrinja

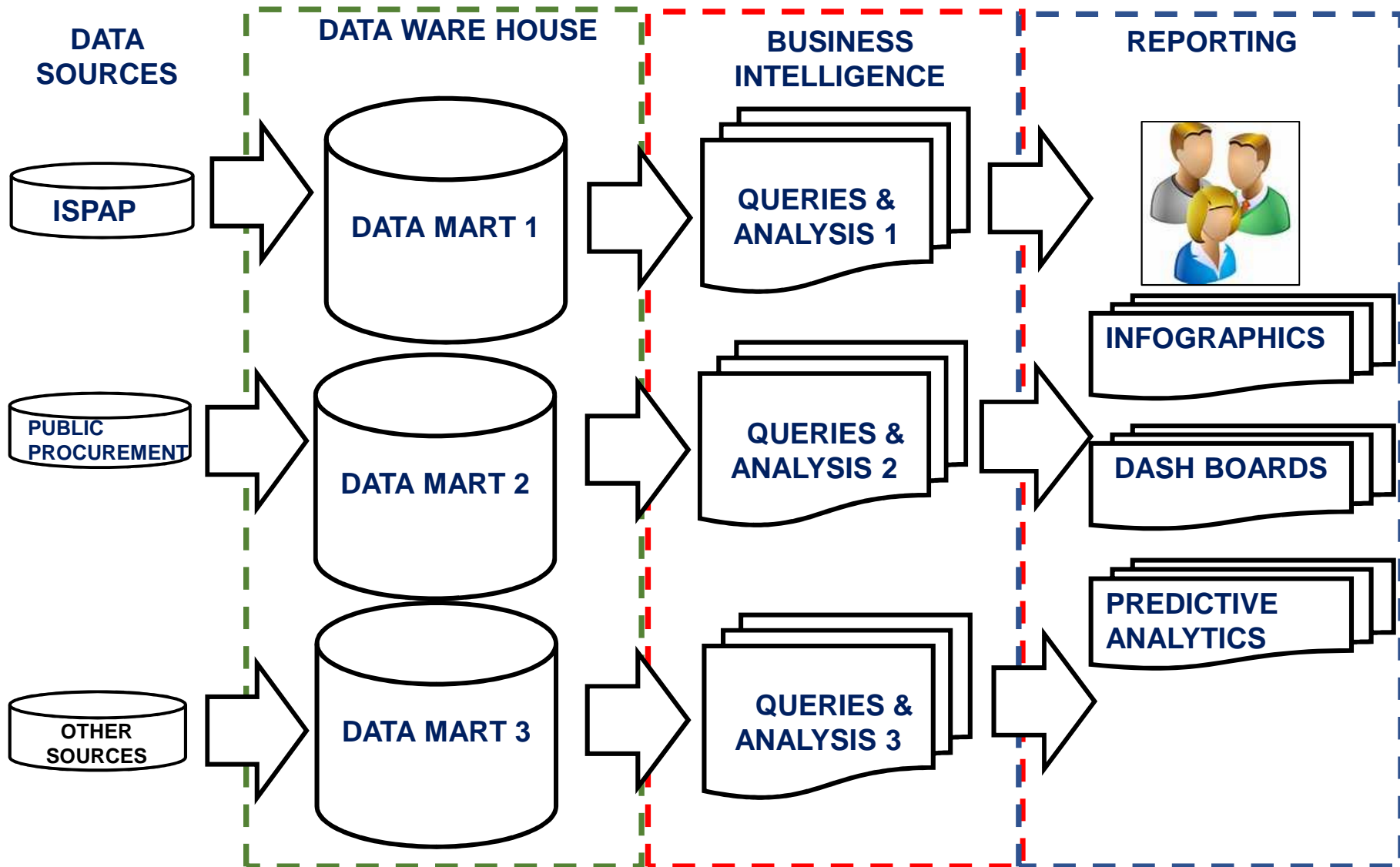


Business Intelligence Project - Chest / Skrinja





Business Intelligence Project - Chest / Skrinja





Benefits of Data Analytics

<p>Quicker finding of data errors</p>		<p>Self-service dashboards</p>	
	<p>Linkage and visualisation of different data sources</p>		<p>Cleaning of data on the source</p>
<p>New knowledge within the data</p>		<p>New patterns</p>	
	<p>Verified and masked data</p>		<p>Data interpretation – one truth</p>
<p>Important role of advanced users</p>		<p>Real time reports & transparency</p>	



Main Lessons Learned and Further Challenges

- **Change management** challenge.
- Personal data **security** and **anonymisation**.
- **One team -> one goal** (HR, Finance, Legal department, IT).
- **Statistics, interpretation of mid-data** and connection to business analytics.
- **Training programme for public servants** with University of Ljubljana and University of Maribor by **MPA Administration Academy** (more than 200 participants).
- **Common Governmental Platform for Data Analytics** => Data Warehouse + Business Intelligence + Data Lake for Big Data + Artificial Intelligence.
- **Demo Presentation of Business Intelligence:**
- <https://app.powerbi.com/view?r=eyJrIjoiaNzQ4ZjJkMTEtYWE5Ny00M2NmLTk1MTAtNjMxYjkwMzBmNmU3IiwidCI6ImE5YTE5NjMzLWI2NjltNGJINC04ZGEyLTdhZjg4NWQzNjVmZiIsImMiOiJh9>