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Shaping ERP3 standard to manage corporate information systems in the time of Industry 4.0

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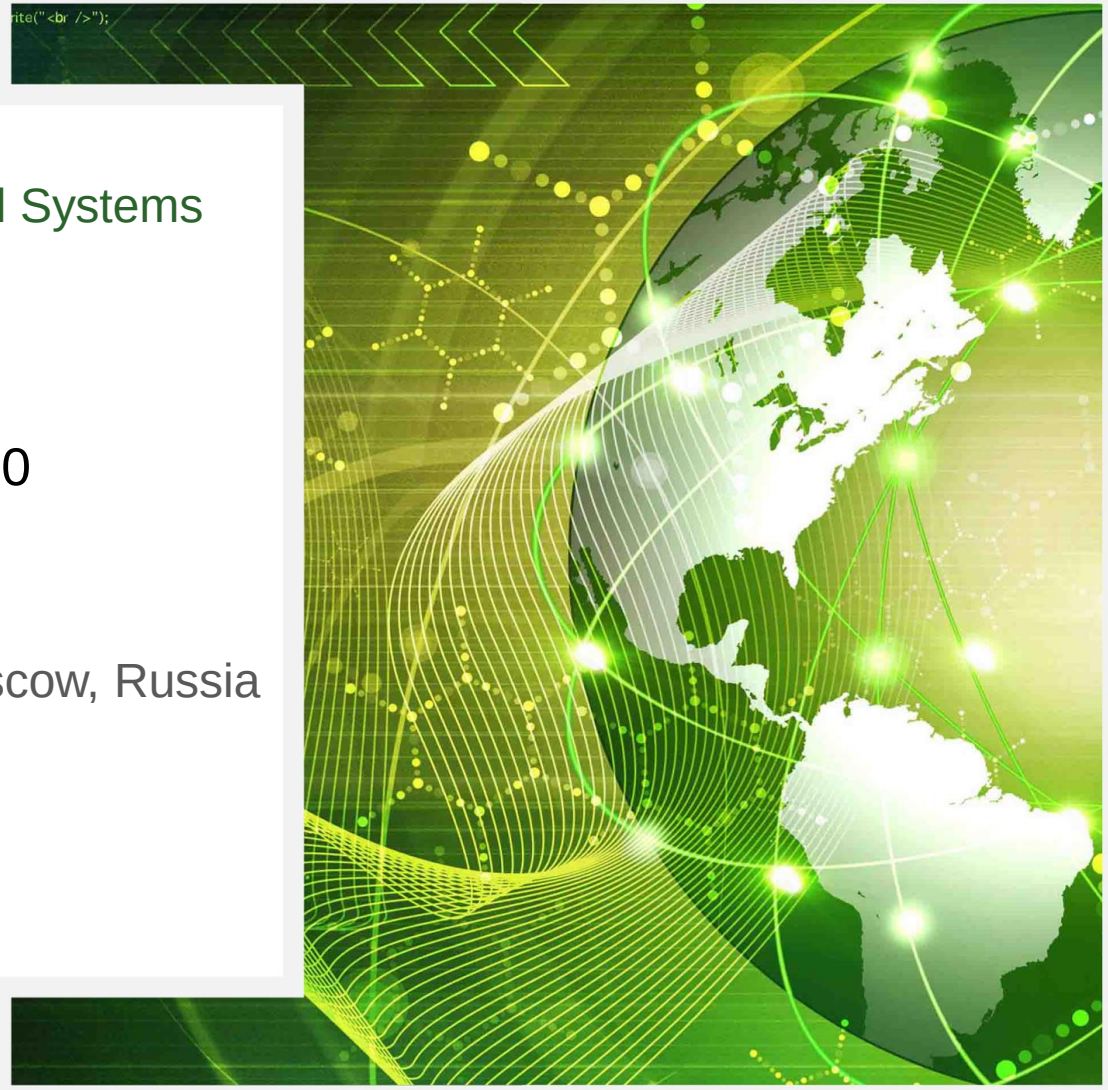

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1. Introduction

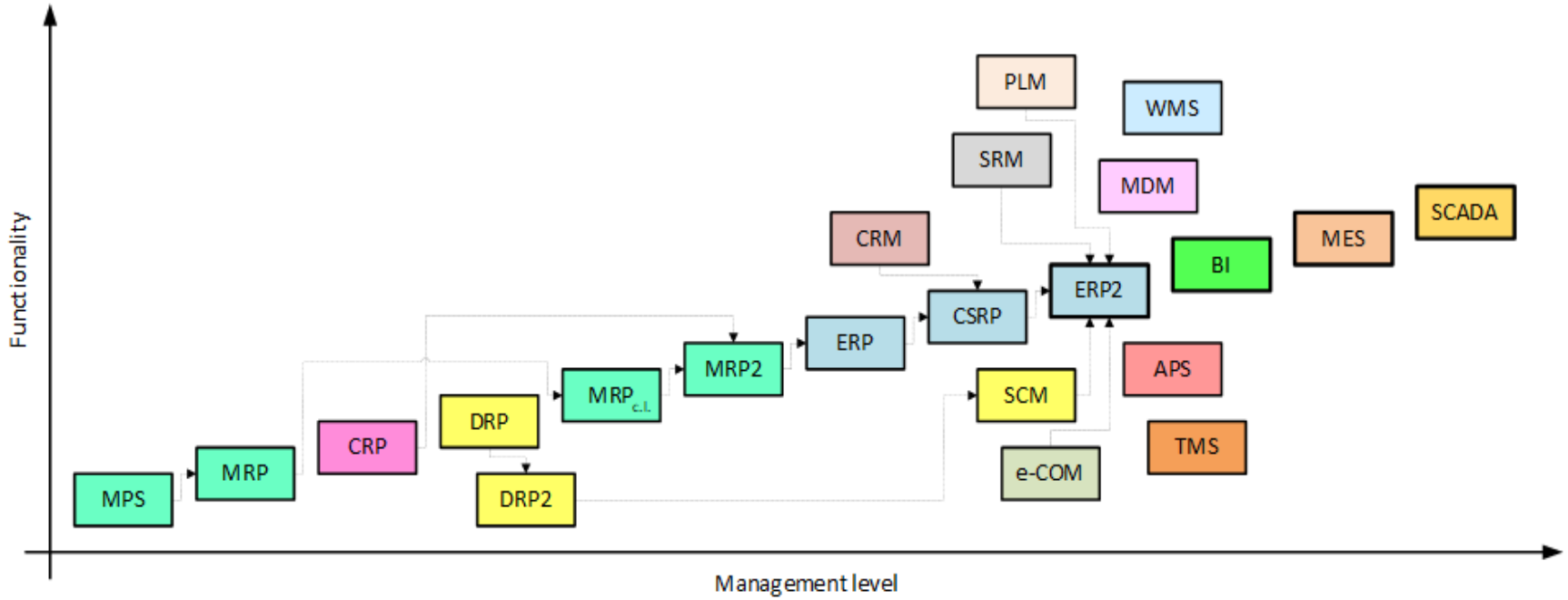


Fig. 1. Standards of corporate information systems

2. Problem statement

The purpose of this study is to propose a new standard for corporate information systems that expands well-known ERP2 due to the fourth industrial revolution. This will allow you to respond in a timely manner to changes in technologies and reflect them in a similar class of software systems. To achieve the goal following tasks to be resolved:

- consideration of technical details of the fourth industrial revolution;
- familiarization with the ERP2 standard;
- proposal of a new standard to manage corporate information systems.

3. Digitalization, industrial revolutions and systems

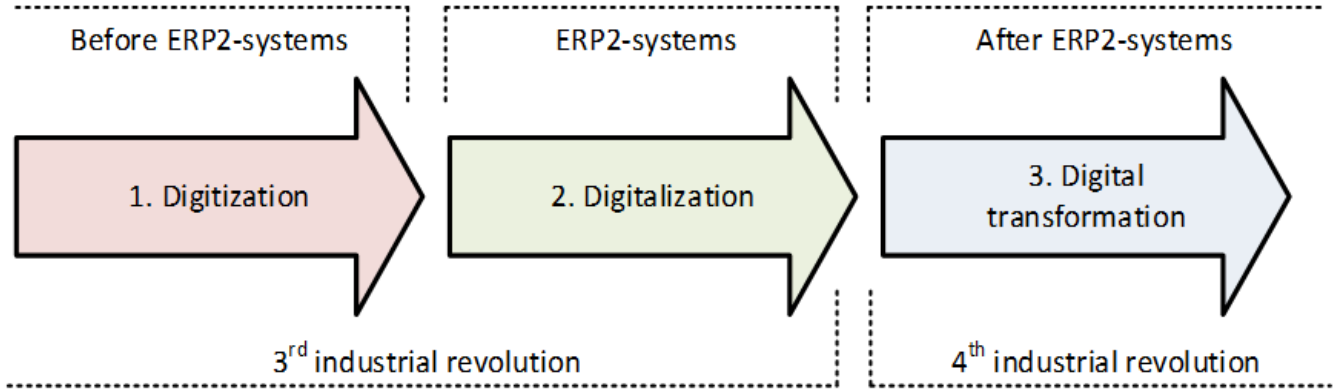


Fig. 2. Mapping digitalization steps, industrial revolutions and corporate information systems

4. Technical components of the Industry 4.0

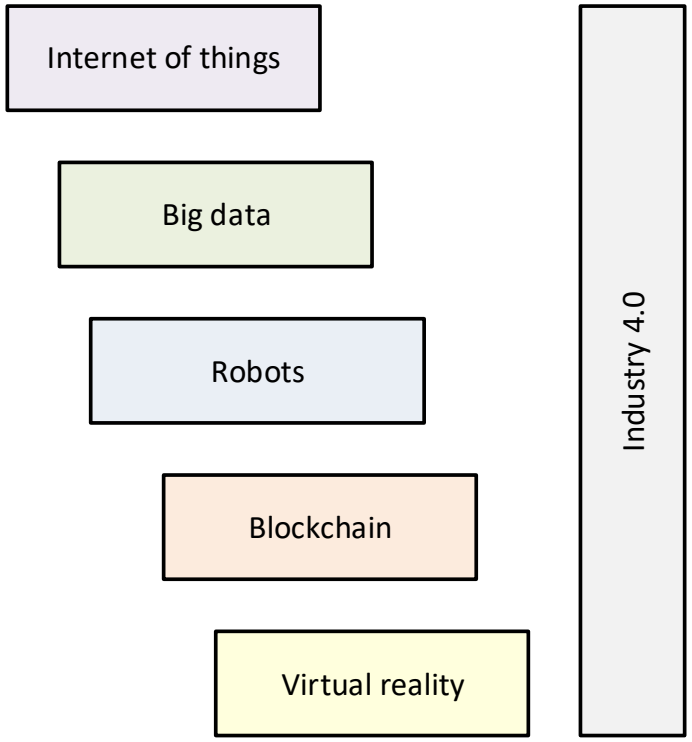


Fig. 3. Technical components of the fourth industrial revolution

5. Management levels of company

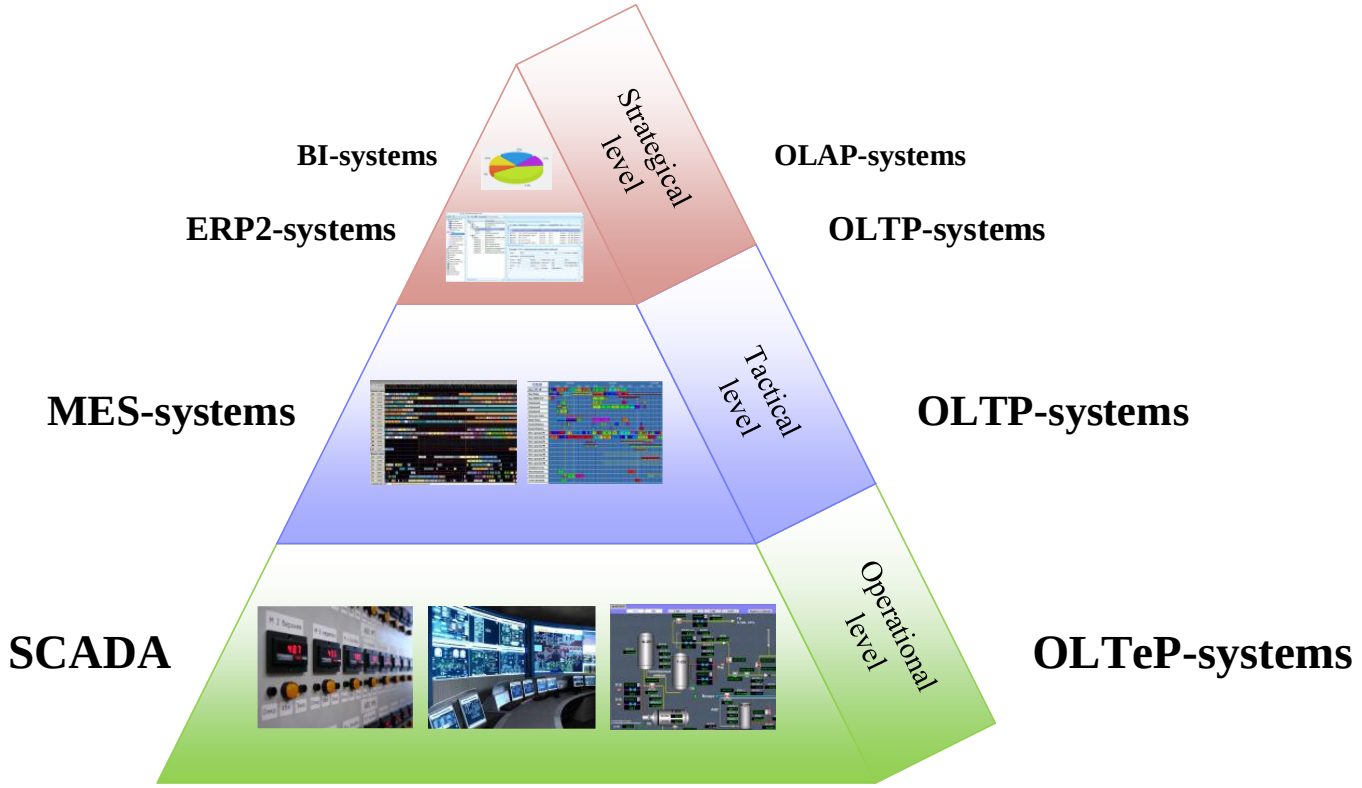


Fig. 4. Enterprise management levels

6. Components of the Industry 4.0 within ERP2 and other systems

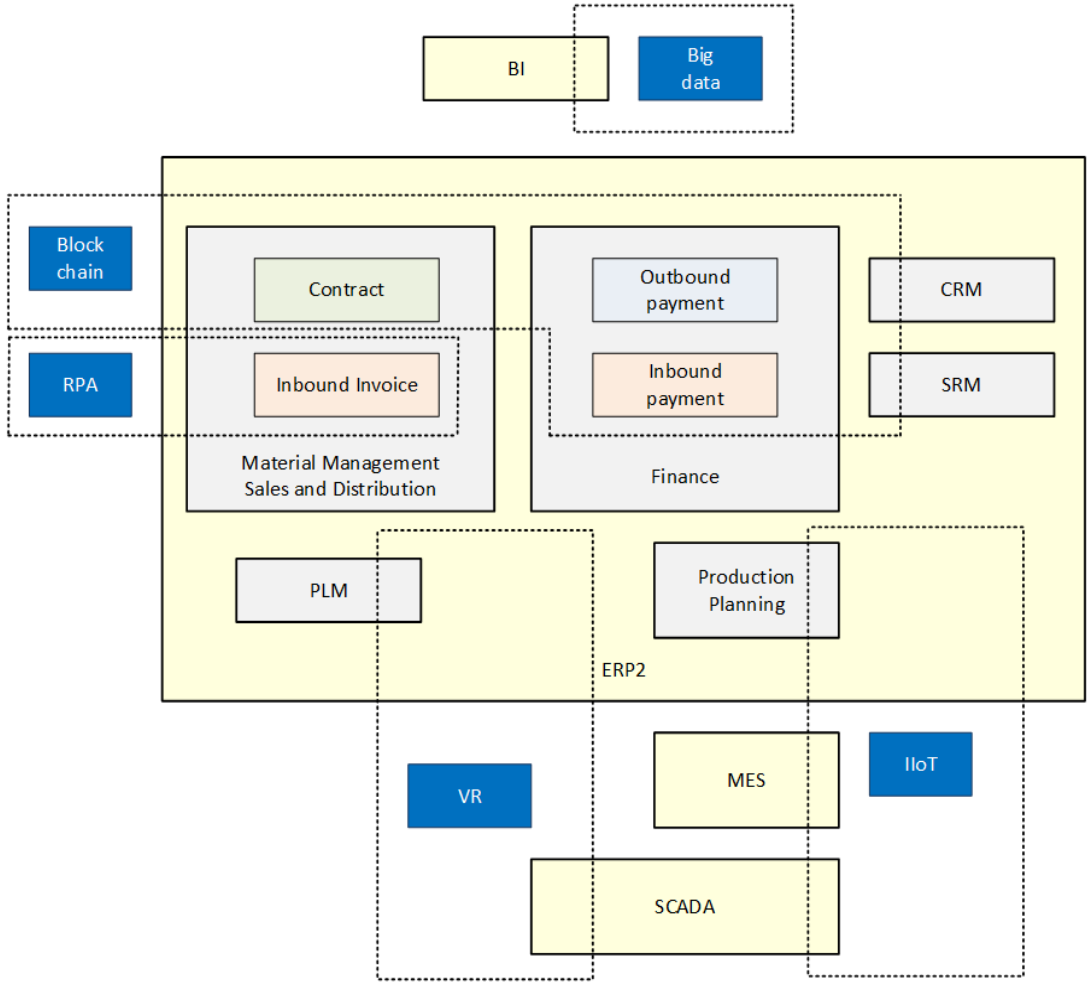


Fig. 5. Enrichment of ERP2-system by the components of Industry 4.0

7. Integration of ERP2, MES, SCADA, BI and the Industry 4.0 components

Table 1. Integration of different information systems and components

System	ERP2	BI	MES	SCADA	RPA	Block chain	Big data	IIoT	VR
ERP2		X	X		X	X		X	X
BI	X						X		
MES	X			X				X	
SCADA			X					X	X
RPA	X								
Block chain	X								
Big data		X							
IIoT	X		X	X					
VR	X			X					

8. ERP3 standard and systems

Definition 1. *ERP3 standard* is a strategy for integrating logistics, finance, human resources as well as managing relationships with suppliers and customers, supply chains, product life-cycle and electronic commerce, focused on optimizing enterprise resources by using specialized software and modern digital technologies of robots, blockchain, big data, industrial internet of things and virtual reality.

Definition 2. *ERP3-system* is a corporate information system based on ERP3 standard, including ERP2, BI, MES, SCADA solutions as well as digital technologies related to Industry 4.0.

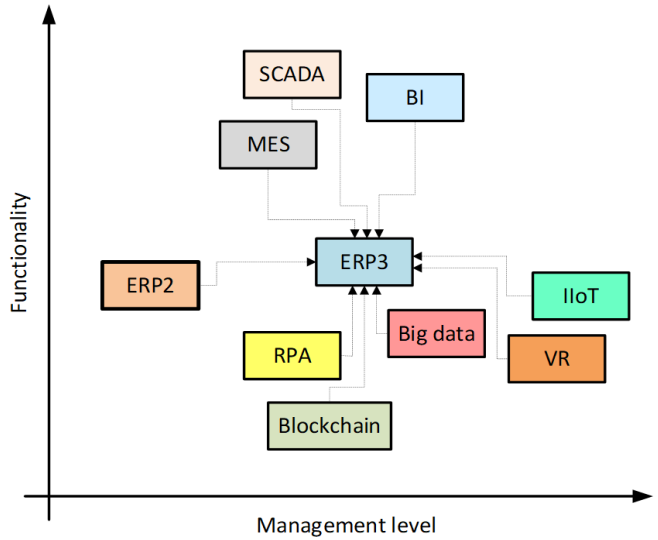
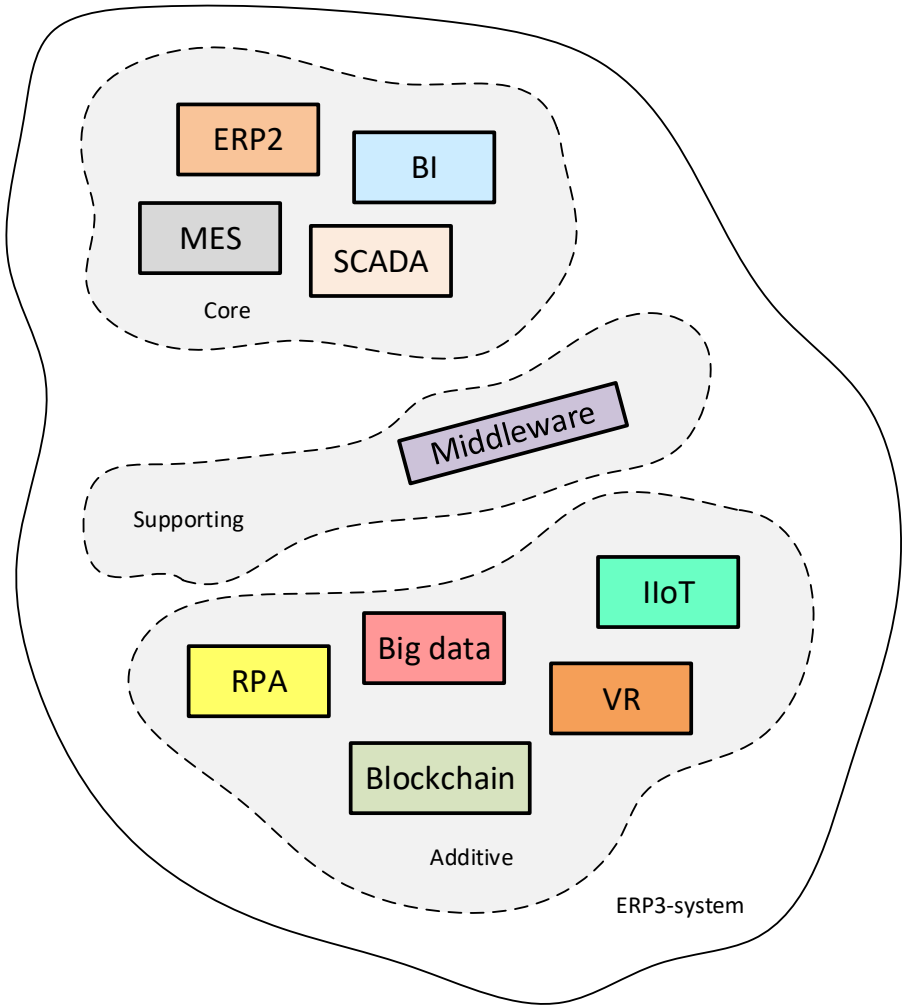


Fig. 6. Components of ERP3 standard

9. Core and additive parts of ERP3-system



10. Conclusions

There was a new standard to manage corporate information systems focused on the fourth industrial revolution discussed in the study. The relationship between transition of enterprise to a digital format, corporate systems and industrial revolutions was shown.

The components of Industry 4.0, consisting of robots, blockchain, big data, industrial internet of things and virtual reality, were briefly considered. The description of ERP2 standard was given. A comparison of Industry 4.0 components and ERP2-systems allowed us to formulate a new class of systems, presumably named as ERP3.

ERP3-system is a product of the fourth industrial revolution, focused on digital transformation and the use of the latest digital technologies. The new class of systems extends the existing ERP2 standard by adding Industry 4.0 components in the form of separate program subsystems.

Thank you for the attention!

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