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INŠTITUT ZA
INFORMATIKO

Igrifikacija na primeru ERPsim praktične izkušnje

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25. 10. 2023

UM Rektorat

O nas

- UM FERi, Inštitut za informatiko

- <https://ii.feri.um.si/>

- Študijski program **Informatika in podatkovne tehnologije**

- UN, MAG



Ozadje in izzivi

- Predmet **Celovite informacijske rešitve**
 - Informatika in podatkovne tehnologije, MAG, 1. letnik
 - Študenti s poglobljenim znanjem IT
- A sicer, podobni **izzivi**:
 - Izobraževanje „digital native“ generacij
 - Pomanjkanje motivacije
 - Nizka zavzetost
 - Slab obisk (predavanj)

Kako izboljšati?

Igrifikacija in resne igre



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Igrifikacija (ang. gamification)

- Uporaba elementov, **značilnih** za **igre** v **neigralnih kontekstih**
 - (Deterding, Dixon idr., 2011)
- Uporaba razmišljanja, značilnega za igre in uporabo elementov iger za namen reševanja izzivov in vključitev sodelujočih
 - (Zichermann in Cunningham, 2011)
- Pojav 2008, splošna sprejetost po letu 2010

Igrifikacija

- Elementi iger:
 - Dosežki, napredek
 - Točke, badge, lestvice, certifikati, vrstica napredka
 - Nagrade
 - Bonusi, power-ups, oprema, zbirke
 - Zgodba
 - Pripovedovanje, iskanje, strategija, posledica
 - Čas
 - Odštevanje, urnik
 - Personalizacija
 - Izbira avatarjev, prilagoditev avatarjev, poimenovanje, interaktiv
 - Dokumentacija

Resne igre (ang. serious games)

- Ena od metod igrifikacije

- **Razlika!**

- Resne igre vključujejo uporabo celotnega sistema iger, medtem ko igrifikacija uporablja le elemente igre, igrifikacija ne vključuje zmeraj igralnega okolja

- Glavni cilj predstavlja **učenje**

- Poimenovanje se pogosteje pojavi po 2002, čeprav je mogoče že pred tem zaslediti igre za „resen“ namen

- (Naj)Pogost žanr so simulacijske igre

- Pomemben predstavnik v domeni poslovnih simulacijskih iger je **ERPsim**

	Game thinking	Game elements	Virtual world	Game play	Non purposeful
Gamification	✓	✓			
Simulation	✓	✓	✓		
Serious Games	✓	✓	✓	✓	
Game	✓	✓	✓	✓	✓

ERPsim



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ERPsim

A Serious Game
for Learning
Enterprise Resource
Planning Concepts

- **Poslovna simulacijska igra** za učenje ERP konceptov
 - ERPsim Lab HEC Montreal
 - Léger, P.-M., Robert, J., Babin, G., Pellerin, R., Wagner, 2007
- Udeleženci upravljajo s „pravim“ ERP sistemom (SAP ERP in SAP S/4HANA) ter na ta način upravljajo svoje virtualno podjetje na konkurenčnem trgu.
 - Znanje o **uporabi** sistema **SAP**
 - Znanje **poslovnih procesov**
 - Razumevanje **poslovnih odločitev**

ERPsim - scenariji

- Igre so združene v 4 skupine:

- Distribution games
- Manufacturing games
- Logistics games
- Retail games


- Znotraj skupin več scenarijev, ki omogočajo postopno povečanje **kompleksnosti**.

- Npr. Manufacturing games: Introduction – Extended – Advanced
 - Tudi posebne izdaje - Sustainability



Od osnov ...

- Osnovna simulacija – Maple Introduction



Maple Introduction Game

powered by ERPsim

User: **\$_1 to \$_9**
Initial password: **ERPSIM**

Adapted for Fiori and for SAP GUI with Fiori Visual Theme Activated
© ERPsim Lab, HEC Montréal
Last Update: July 5, 2023

FORECAST SALES

Create Planned Indep. Req. (MD61)

- Select Product group and enter the following information
Product group: **\$\$-5**
- Continue
- Enter your forecast quantities in the 2nd date column
- Save

CALCULATE REQUIREMENTS

MRP Run (MD01)

- Press Enter or click **Execute**
- Ignore orange warnings
Press Enter two more times
- In the pop-up window, click **Continue**

ORDER MATERIALS

Create Purchase Orders (MES9N)

- Make sure the Fixed Vendor field is empty
- Execute

! Purchase orders are created

! If no open requisitions: No suitable requisitions found

PLAN MARKETING BUDGET

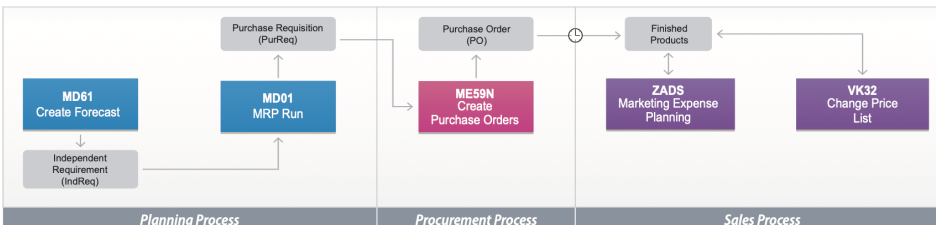
Marketing Expense Planning (ZADS)

- Enter your daily amount of marketing expenditure for each product per area
- Save

MAINTAIN PRICES

Change Price List (VK32)

- Open the Prices folder and double click on Price list
- Verify Distribution Channel is 18
- Execute
- Enter your prices
- Save



FINANCIAL STATEMENTS

Financial Statements (F01)

- In Company Code, enter your <company code>
- GUI step: Select ALV Tree Control
FIORI step: In Statement Version, enter SIM1
- GUI step: Execute
FIORI step: Go

STOCK LEVELS

Inventory Report (ZMB52)

Shows stock levels for all the products in the main warehouse

PROCUREMENT TRACKING

Purchase Order Tracking (ZME2N)

Shows the details and the status of each purchase order

Shows the dates of expected goods delivery

Procurement Sourcing (ZME13)

Shows the price of each product sold by the vendor

SALES AND MARKET DATA

Summary Sales Report (ZVC2)

Shows aggregate daily sales by product

Detailed Sales Report (ZVA05)


Shows sales related info such as sales revenue by region

Price Market Report (ZMARKET)

Shows aggregate market sales data of past 5 days

*To find your company code, refer to transaction ZORG (Organizational Structure)

■ Planning ■ Procurement ■ Sales ■ Reports



Maple Introduction Game

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Golden Grade		
Products	\$\$-501 500mL	\$\$-511 1L
Starting Inventory	1 500	1 500
Cost per unit	€8.43	€16.37
Initial price	€10.43	€18.37

Amber Grade		
Products	\$\$-502 500mL	\$\$-512 1L
Starting Inventory	1 500	1 500
Cost per unit	€7.48	€14.47
Initial price	€9.48	€16.47

Dark Grade		
Products	\$\$-503 500mL	\$\$-513 1L
Starting Inventory	1 500	1 500
Cost per unit	€7.01	€13.52
Initial price	€9.01	€15.52

Very Dark Grade		
Products	\$\$-504 500mL	\$\$-514 1L
Starting Inventory	1 500	1 500
Cost per unit	€7.96	€15.42
Initial price	€9.96	€17.42

CUSTOMERS

DC 18: Supermarkets
Payment Time : 10 days

WAREHOUSING COSTS


Current space (units) (maximum capacity without additional fees)	15 000
Daily cost per additional 1 000 units	€300

SUPPLIER (V10)

Lead time (days)	4-6
Purchase Order (PO) cost	€4 000
Payment time (days)	20

MARKET


Approximate market size	€35 000 per team per week
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1/2

... do naprednih scenarijev

• Najnaprednejša simulacija – Manufacturing Advanced



Manufacturing Advanced Game

powered by ERPSim

User: **\$_1 to \$_9**

Initial password: **ERPSIM**

Adapted for Fiori and for SAP GUI with Fiori Visual Theme Activated

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Last Update: July 12, 2023

FORECAST SALES

Create Planned Indep. Req. (MD61)

- Select Product group and enter the following information
Product group:
-
- Enter your forecast quantities in the 2nd date column
-

CALCULATE REQUIREMENTS

MRP Run (MD01)

- Press Enter or click
- Ignore orange warnings
Press two more times on Enter
- In the pop-up window, click

ORDER MATERIALS

Create Purchase Orders (ME59N)

- Make sure the Fixed Vendor field is empty
-
- Purchase orders are created
If no open requisitions: No suitable requisitions found

RELEASE PRODUCTION

Convert Planned Orders (CO41)

-
- If no planned order: Planned order could not be selected
- Select orders
-
- If conversion fails, click on X to see log

PLAN MARKETING BUDGET

Marketing Expense Planning (ZAD5)

- Enter your daily amount of marketing expenditure for each product per area
-

MAINTAIN PRICES

Change Price List (VK32)

- Open the Prices folder and double click on Price list
- In Distribution channel, enter 10, 12 or 14
-
- Modify your prices
-

FINANCIAL STATEMENTS

Financial Statements (F01)

- In Company Code, enter your <company code>*
- GUI step
Select ALV Tree Control
Fiori step
In Statement Version, enter SIM1
- GUI step
Fiori step

STOCK LEVELS

Inventory Report (ZMB52)

Shows stock levels for both finished products and raw materials

Shows quantities of raw materials reserved for production

PROCUREMENT TRACKING

Purchase Order Tracking (ZME2N)

Shows the dates and the status of each purchase order

Shows the dates of expected goods delivery

Procurement Sourcing (ZME13)

Shows the price of each raw material sold by vendors

PRODUCTION SCHEDULE

Production Report (ZCO0IS)

Shows released production orders

For each order, the time released, started and finished (or to start and finish if incomplete)

If Target Qty > Conf. Qty production is still pending

PRODUCTION COST

Product Cost Planning (ZCK11)

Shows variable and fixed costs for each finished product

Recalculates costs based on production capacity and productivity level

Shows daily amounts of fixed costs (overhead, depreciation and S, G & A)

SALES AND MARKET DATA

Summary Sales Report (ZVC2)

Shows aggregate daily sales by product

Detailed Sales Report (ZVA05)

Shows sales related info such as sales revenue by region

Price Market Report (ZMARKET)

Shows aggregate market sales data of past 5 days

CHANGE PRODUCT DESIGN

Validated BOM Change (ZC02)

- Select the material to change by clicking
- Change quantities and
- If received error messages, click on to modify the entries

REPAY LOAN

G/L Account Posting (FB50)

- In Journal Entry Date, select today's date
- | Account | 1 st Line | 2 nd Line |
|---------|----------------------|----------------------|
| D/C | 113300 | 113101 |
| Amount | ??? | ??? |
- Click on Simulate and then

REDUCE SETUP TIME

G/L Account Posting (FB50)

- In Journal Entry Date, select today's date
- | Account | 1 st Line | 2 nd Line |
|---------|----------------------|----------------------|
| D/C | 113300 | 478000 |
| Amount | ??? | ??? |
- Click on Simulate and then

INCREASE CAPACITY

G/L Account Posting (FB50)

- In Journal Entry Date, select today's date
- | Account | 1 st Line | 2 nd Line |
|---------|----------------------|----------------------|
| D/C | 113300 | 11000 |
| Amount | ??? | ??? |
- Click on Simulate and then

PLAN STOCK TRANSFER

Stock Transfer (ZMB1B)

- Select between a Push or Pull Planning Mode
- In Scheduling, enter your delivery frequency
- Enter the amount of each product you wish to send/maintain in each region
-

*To find your company code, refer to transaction ZORG (Organizational Structure)

■ Planning ■ Procurement ■ Production ■ Sales ■ Reports ■ Accounting ■ Logistics 1/2



Manufacturing Advanced Game

powered by ERPSim

User: **\$_1 to \$_9**

Initial password: **ERPSIM**

Adapted for Fiori and for SAP GUI with Fiori Visual Theme Activated

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Last Update: July 12, 2023



Nut	
20% wheat*	500g
30% oat*	1kg
20% nut*	
1 box / 1 bag*	

*minimum



Blueberry	
20% wheat*	500g
30% oat*	1kg
20% blueberry*	
1 box / 1 bag*	

*minimum



Strawberry	
20% wheat*	500g
30% oat*	1kg
20% strawberry*	
1 box / 1 bag*	

*minimum



Raisin	
20% wheat*	500g
30% oat*	1kg
20% raisins*	
1 box / 1 bag*	

*minimum



Original	
20% wheat*	500g
30% oat*	1kg
1 box / 1 bag*	

*minimum



Mixed	
20% wheat*	500g
30% fruits & nuts**	1kg
1 box / 1 bag*	

*minimum
**At least some of all fruits/nut

CUSTOMERS

DC 10: Hypermarkets	Payment Time: 20 days Approximate Market Size €90 000 per team per week
DC 12: Grocery Chains	Payment Time: 10-20 days Approximate Market Size €360 000 per team per week
DC 14: Independent Grocers	Payment Time: 1-20 days Approximate Market Size €135 000 per team per week

SUPPLIERS (V01, V02)

Lead time (days)	1-5
Payment time (days)	20

TRANSPORTATION COSTS

Main Warehouse to Regional Storage Location	€1 000
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STORAGE CAPACITY AND COSTS

Product type	Current space	Cost per additional 50 000 units*
Finished products (Main warehouse)	250 000 boxes	€500/day
Finished products (Regional locations)	No space	€500/day
Raw materials	250 000 kg	€1 000/day
Packaging (bags and boxes)	750 000 units	€100/day

PRODUCTION CAPACITY

Capacity (units/day)	24 000
Additional Capacity Cost (€ per 1 000 units)	1 000 000**
Minimum/Maximum Lot Size	16 000/48 000

**Investing in additional capacity will increase equipment depreciation costs

SETUP TIME

Setup time (hours)	Expense (€)
8	-
7	50 000
6	125 000
5	250 000
4	500 000
3	1 250 000

FIXED COSTS (€ paid each 5 days)*

Labor	20 000
Manufacturing overhead	15 000
S, G & A	40 000
Depreciation (Building)	1 250
Depreciation (Equipment)	50 000**

*Billed automatically

*To find your company code, refer to transaction ZORG (Organizational Structure)

■ Planning ■ Procurement ■ Production ■ Sales ■ Reports ■ Accounting ■ Logistics 2/2

Job Aid

- Zbirka dvostranskih navodil:
 - Podatki o igri
 - Inventar
 - Zemljevid
 - Kupci, dobavitelji
 - Ostale pomembne informacije
 - Poslovni proces in transakcije
 - SAP transakcije

In to je to? Skoraj...

Job Aids

[Job aid for the Logistics Extended game](#)

[Job aid for the Logistics Introduction game](#)

[Job aid for the Logistics Platinum game](#)

[Job aid for the Logistics Sustainability game](#)

[Job aid for the Manufacturing Advanced game](#)

[Job aid for the Manufacturing Extended game](#)

[Job aid for the Manufacturing Introduction game](#)

[Job aid for the Maple Introduction game](#)

[Job aid for the Retail Extended game](#)

[Job aid for the Retail Introduction game](#)

[Job-aids for the Manufacturing Sustainability game](#)

ERPsim - elementi iger

- Sistem točkovanja in lestvice
 - Meri rezultate ekip, lestvice najboljših udeležencev
- Časovna omejitev
 - Sodelujoče ekipe imajo omejen čas za izvedbo odločitev, vsak dan v igri pa sovpada z minuto realnega časa
- Interaktivno sodelovanje
 - Igralci si znotraj ekip razdelijo opravila, saj lahko le tako v omejenem času opravijo vse zahtevane naloge
- Dokumentacija
 - Igralci imajo na voljo video vodi-če in na enem listu strnjene vse pomembne informacije, povezane z igro simulacije
- Posledice
 - Vsako dejanje v poslovni igri nosi določene posledice, ki vplivajo na njen potek
- Strategija
 - Spodbujanje ekip k iskanju pravilnega razmerja med ceno produktov, časom in količino nabave ter stroški, porabljenimi za izvajanje marketinških dejavnosti

Kako začeti?

- Nakup ERPsim licenc
 - 57 CAD
- Gostovanje pri SAP UCC
 - 3 mesece 1300 EUR
- ERPsim Certified Instructor (Level 1)
 - simCID

ERPsimLab
HEC MONTRÉAL



SAP @ UM

- Univerza v Mariboru je članica SAP University Alliances
 - FERI, EPF, FOV, FL
- Materiali za poučevanje in dostop do produktov
 - SAP S/4HANA 2022 Global Bike 4.2

Certifikati

- ERPsim Certified Instructor (Level 1)
- ERPsim Certified Instructor (Level 2)

- ERPsim Certified Trainer (Level 3) - TTT



ERPsim @ UM FERI



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Ozadje in izzivi

- Če se vrnemo...
- Kako študentom s **poglobljenim znanjem IT** predstaviti **osnovne ERP koncepte, upoštevajoč** trenutne **izzive** v visokem šolstvu?
 - Prilagojen način poučevanja
 - Uvedba delavnic in ne sprememba celotnega predmeta (predavanja in vaje ostajajo)

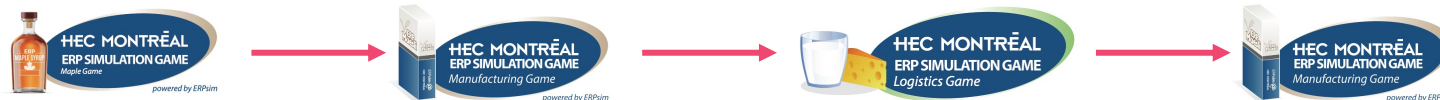
Resne igre kot dopolnitev tradicionalnega načina poučevanja za namen soočanja z izzivi.

„Naš“ ERPsim

- Prilagojeno izvajanje glede na predloge ERPsim
 - Izvajanje **več** (skoraj vseh) **iger**
 - Izvajanje iger na 3-4 urnih **delavnicah**
 - Nadgradnja znanja z **uradnimi** SAP Teaching Materials
 - SAP UCC Magdeburg – Introduction to SAP S/4HANA using Global Bike
 - Povezava z znanjem pridobljenim na delavnicah

Nekaj zgodovine...

- **2017** – delavnica (vabljeni izvedba)
- **2018** – uvodna delavnica v predmet (prvo srečanje s predmetov in ERP vsebinami)
- **2019 - 2022** – uvodna in nadaljevalne delavnice, 4 delavnice
 - Tudi izvedba na daljavo (2020, 2021)
 - Uvodna delavnica
 - Podrobnejše vsebine
 - Zaključna delavnica – kompleksnejša igra



Potek delavnice

- **Kratka predstavite igre** - Pred začetkom igre so udeleženci seznanjeni z osnovnimi informacijami o igri
 - **Job Aid** - Vse potrebne informacije za izvedbo simulacije so na voljo na izvlečku – A4 stran
 - **Predstavitev med krogi izvajanja** – Pomembne informacije in dodatna navodila
-
- Na voljo so tudi dodatni materiali, video predstavitve, ...

Pred po po delavnici

- **Priprava igre** – Priprava okolja in simulacije
 - Class management
 - SAP
- **Zaključek igre** – Ustavitev simulacije
 - Možna analiza podatkov

ERPsim v raziskavah



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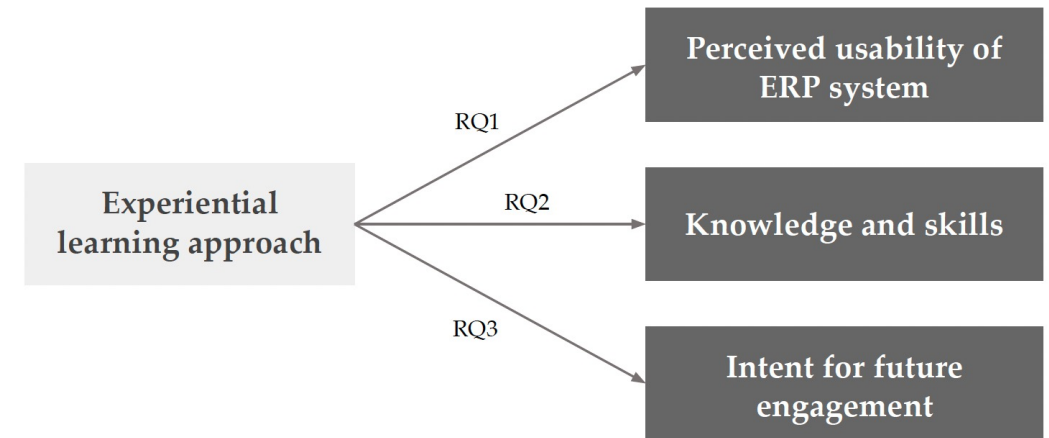
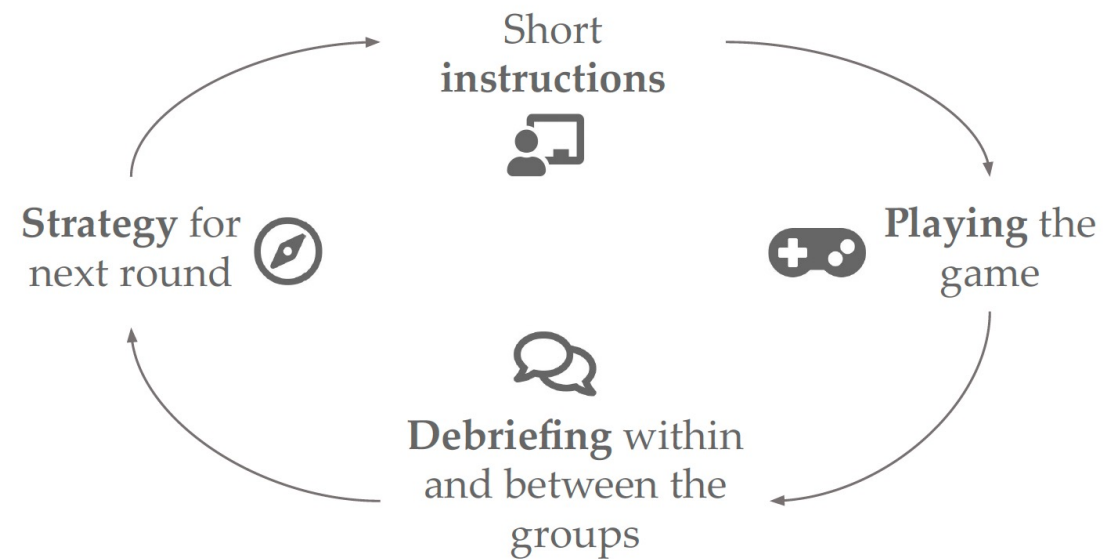
Raziskovalno delo

- Na osnovi izkušenj smo skozi leta opravili številne raziskave:
 - Vpliv na znanje in veščine na področju poslovnih procesov in tehničnega znanja
 - Vpliv na sprejetost ERP sistema
 - Vpliv na zavzetost v prihodnje
 - Vpliv na motivacijo študentov
 - Meje pozitivnih lastnosti uporabe resnih iger
 - **Overgamification**

Raziskovalno delo

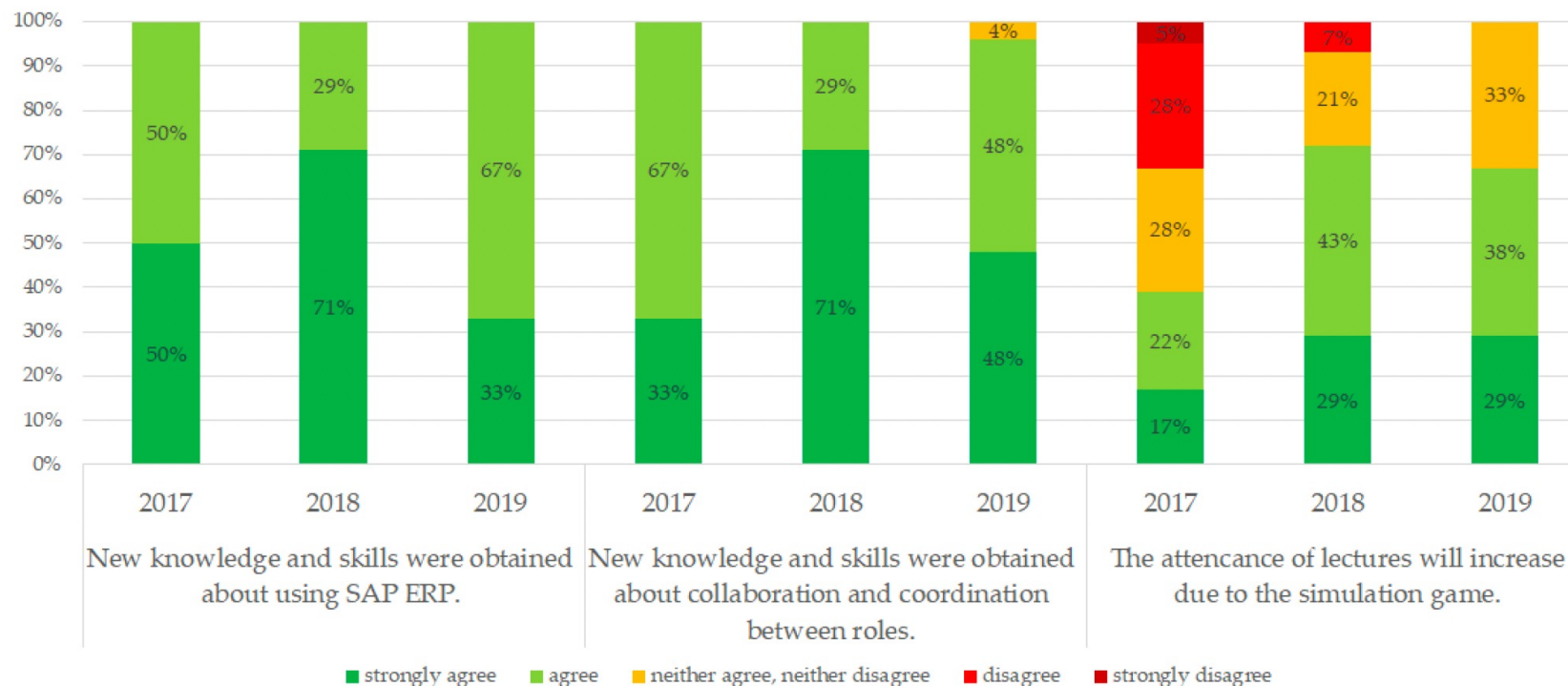
- Na osnovi izkušenj smo skozi leta opravili številne raziskave:
 - Introducing ERP concepts to IT students using an experiential learning approach with an emphasis on reflection
 - The impact of serious games in economic and business education: a case of ERP business simulation
 - Avoiding the risks of overgamification in education - a case of ERPSim
 - Impact of an introductory ERP simulation game on the students' perception of SAP usability
 - Overgamification: can the gamification have a negative impact?
 - In progress

Introducing ERP concepts to IT students



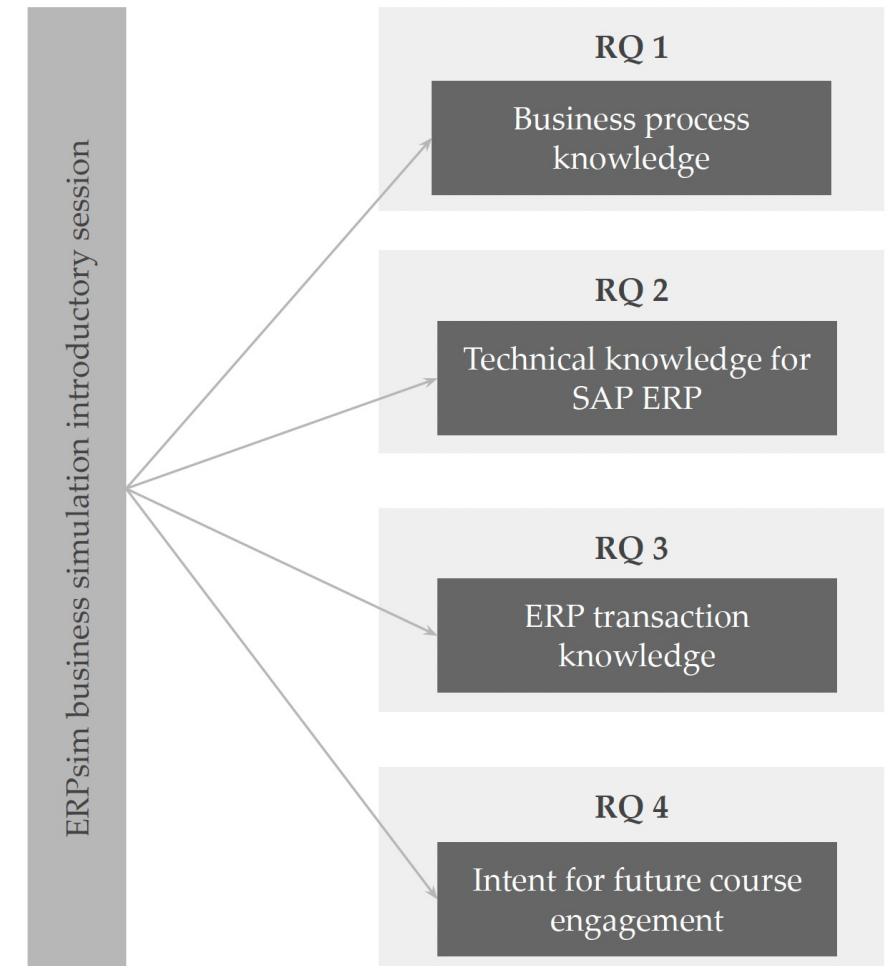
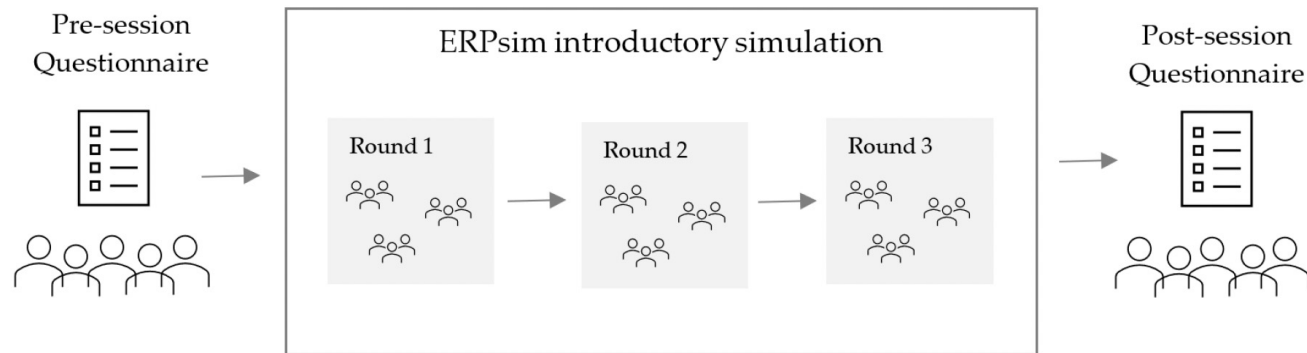
BERANIČ, Tina, HERIČKO, Marjan. Introducing ERP concepts to IT students using an experiential learning approach with an emphasis on reflection. Sustainability. 2019, vol. 11, iss. 18, str. 1-17. ISSN 2071-1050. DOI: 10.3390/su11184992. [COBISS.SI-ID 22576918]

Introducing ERP concepts to IT students



BERANIČ, Tina, HERIČKO, Marjan. Introducing ERP concepts to IT students using an experiential learning approach with an emphasis on reflection. Sustainability. 2019, vol. 11, iss. 18, str. 1-17. ISSN 2071-1050. DOI: 10.3390/su11184992. [COBISS.SI-ID 22576918]

The impact of serious games in economic and business education



BERANIČ, Tina, HERIČKO, Marjan. The impact of serious games in economic and business education: a case of ERP business simulation. Sustainability. 2022, vol. 14, iss. 2, 17 str. ISSN 2071-1050. <https://dk.um.si/lzpisGradiva.php?id=85051>, DOI: 10.3390/su14020683. [COBISS.SI-ID 92658435]

The impact of serious games in economic and business education

Transaction	Mean
Change Price (VK32)	4.00
Marketing Expense Planning(ZASD)	3.79
Create Planned Indep. Req. (MD61)	3.92
MRP Run (MD001)	4.13
Create Purchase Orders (ME59N)	3.73
Inventory Report (ZMB52)	3.77
Purchase Order Tracking (ZME2N)	3.82
Sales Order Report (ZVA05)	3.73
Summary Sales Report (ZVC2)	3.50
Financial Statements (F.01)	3.67
Price Market Report (ZMARKET)	3.62

Opinion on gamification and introductory simulation	5	4	3	2	1	Mean	SD
Virtual learning environments should be upgraded with gamification elements.	28.1%	46.9%	25.0%	0%	0%	4.03	0.740
The concept of an introductory simulation would be appropriate within other courses.	46.9%	43.8%	9.4%	0%	0%	4.38	0.660
Courses' project tasks lack gamification elements.	21.9%	43.8%	31.3%	3.1%	0%	3.84	0.808
The achieved results should be the part of course grade where this is possible.	31.3%	43.8%	18.8%	6.3%	0%	4.00	0.880
A simulation is an appropriate approach for introducing the basic functionalities of SAP ERP.	34.4%	62.5%	3.1%	0%	0%	4.31	0.535
A simulation is appropriate for learning basic navigation and use of controls in SAP ERP.	31.3%	62.5%	6.3%	0%	0%	4.25	0.568
The concept of an introductory simulation would be appropriate for the next generations of students.	43.8%	46.9%	9.4%	0%	0%	4.34	0.653
The simulation was fun.	53.1%	37.5%	9.4%	0%	0%	4.44	0.669
I would suggest the participation to other students.	34.4%	56.3%	9.4%	0%	0%	4.25	0.622

BERANIČ, Tina, HERIČKO, Marjan. The impact of serious games in economic and business education: a case of ERP business simulation. Sustainability. 2022, vol. 14, iss. 2, 17 str. ISSN 2071-1050. <https://dk.um.si/lzpisGradiva.php?id=85051>, DOI: 10.3390/su14020683. [COBISS.SI-ID 92658435]

Risks of overgamification in education

Risk group 1: Game design and gamification

Main challenges

- Lack of progression [19]–[21].
- Students' mastery level is not being challenged [19].
- Game appears manipulative or unfair [21].
- Lack of customization, only one path to the goal [21].
- Difficulties to combine the software functionality with theoretical knowledge about business processes and strategies [26], [27].

Risk group 2: Introduction and application of the game

Main challenges

- The rules of the games are not clearly presented or clearly understood [20], [23].
- Participation in the game is mandatory [24].
- Lack of freedom to fail [21], [22], [25].
- Public and non-anonymous leaderboards [24], [25].
- Lack of timely feedback [21], [22].

Risk group 3: Individual differences between the participants

Main challenges

- Individuals might differ in their preferences [20], [21], [23].

HERIČKO, Marjan, KERMAN, Katja, BERANIČ, Tina. Avoiding the risks of overgamification in education - a case of ERPSim. V: UDEN, Lorna (ur.), LIBERONA, Dario (ur.). Learning technology for education challenges : 9th International Workshop, LTEC 2021 Kaohsiung, Taiwan, July 20-22, 2021 : proceedings. Cham [etc.]: Springer, 2021. Str. 124-137. Communications in Computer and Information Science, Vol. 1428. ISBN 978-3-030-81349-9, ISBN 978-3-030-81350-5. ISSN 1865-0929. https://link.springer.com/chapter/10.1007/978-3-030-81350-5_11. [COBISS.SI-ID 71632131]

Risks of overgamification in education

Risk group 1: Game design and gamification

Main challenges

- Lack of progression [19]–[21].
- Students' mastery level is not being challenged [19].
- Game appears manipulative or unfair [21].
- Lack of customization, only one path to the goal [21].
- Difficulties to combine the software functionality with theoretical knowledge about business processes and strategies [26], [27].

Solutions / Strategies to overcome / Addressed by

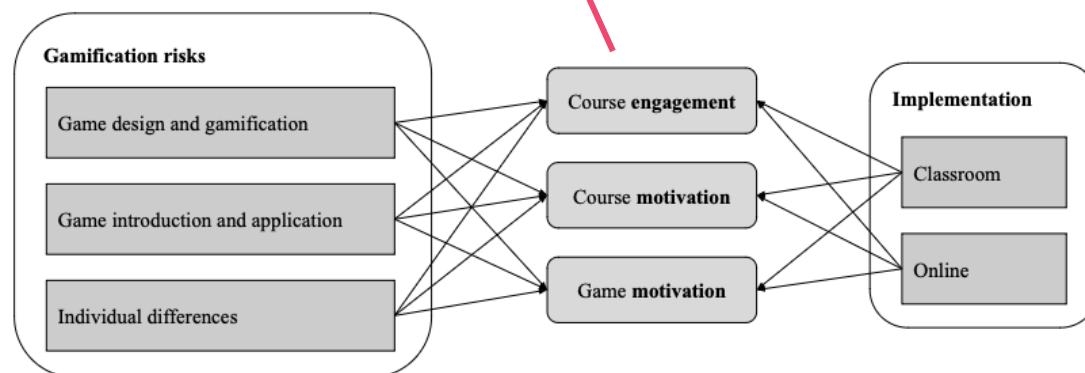
- The progression of functionalities is achieved within and between games, with increasing complexity.
- After each round of a simulation game, participants get feedback in the form of achieved business results.
- The ratings of the groups in the same simulation can be significantly improved.

HERIČKO, Marjan, KERMAN, Katja, BERANIČ, Tina. Avoiding the risks of overgamification in education - a case of ERPSim. V: UDEN, Lorna (ur.), LIBERONA, Dario (ur.). Learning technology for education challenges : 9th International Workshop, LTEC 2021 Kaohsiung, Taiwan, July 20-22, 2021 : proceedings. Cham [etc.]: Springer, 2021. Str. 124-137. Communications in Computer and Information Science, Vol. 1428. ISBN 978-3-030-81349-9, ISBN 978-3-030-81350-5. ISSN 1865-0929. https://link.springer.com/chapter/10.1007/978-3-030-81350-5_11. [COBISS.SI-ID 71632131]

Overgamification

- Kdaj je igrifikacije **preveč**?
 - **Negativni** učinek.

	Engagement	
	M	SD
1 st workshop	4.44	0.53
3 rd workshop	4.80	0.62



RG1 - game design and gamification		
RG1.1	Perception of boredom	Ravayse et al. (2017)
RG1.2	Perception of difficulty	Zhonggen (2019); Toda et al. (2018)
RG1.3	Non-challenging students' mastery level	Ravayse et al. (2017)
RG1.4	Lack of progression tracking	Ravayse et al. (2017); Zhonggen (2019); Campbell (2016)
RG1.5	Manipulative or unfair game	Campbell (2016)
RG1.6	Difficult knowledge aggregation	Nisula and Pekkola (2018); Seethamraju (2011)
RG1.7	Simulation abstraction level	Nisula and Pekkola (2018)
RG2 - game introduction and application		
RG2.1	Simulation game appropriateness	Campbell (2016)
RG2.2	Unclearly presented or understand rules	Zhonggen (2019); Toda et al. (2018)
RG2.3	Too much information	
RG2.4	Public and non-anonymous leader boards	Hanus and Fox (2015); Machajewski (2017)
RG2.5	Lack of freedom to fail	Campbell (2016); Stott and Neustaedter (2013); Machajewski (2017)
RG2.6	Untimely feedback	Campbell (2016); Stott and Neustaedter (2013)
RG2.7	Mandatory participation	Hanus and Fox (2015)
RG2.8	Lack of opportunity to practice	Seethamraju (2011)
RG2.9	Trivial rewards	Campbell (2016); Toda et al. (2018)
RG2.10	Distraction from the learning objectives	Nisula and Pekkola (2018)
RG3 - individual differences of the participants		
RG3.1	Learning approaches preferences	Campbell (2016); Nisula and Pekkola (2018)
RG3.2	Counter effect on intrinsic motivation	Hanus and Fox (2015)
RG3.3	Challenging group work	Nisula and Pekkola (2018); Seethamraju (2011)
RG3.4	Uneven knowledge and motivation	Nisula and Pekkola (2018); Seethamraju (2011)

Rezultati vpeljave in uporabe



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Rezultati in spoznanja

- Višja **angažiranost**
- Večja **motivacija**
- Pridobitev **znanja**
- Uspeli smo **obdržati motivacijo** – avoiding overgamification

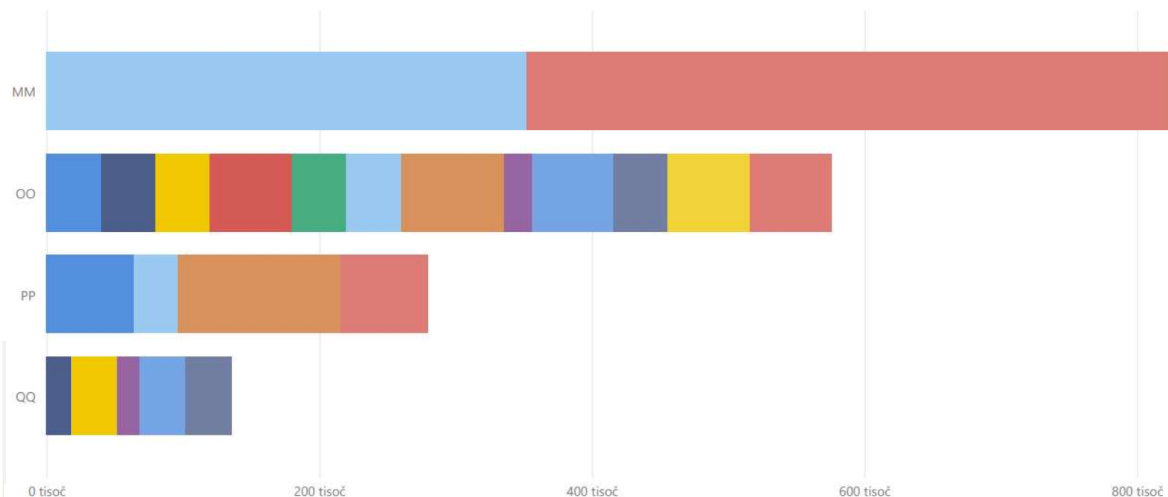
Kako naprej?

- Iskanje inovativnih načinov za vpeljava novih, specializiranih iger
 - Trajnostne izvedbe
- Vpeljava analitike

ERPsim analitika

Analytics with ERPsim for SAP S/4HANA

The purpose of the following guides is to enable you to access data from a SAP HANA database using data sources specifically designed for ERPsim. Refer to the [Reference Guide](#) for an overview of the available sources with their description and structure, as well as a few examples of the knowledge you can extract from them. Below you can also find a list of tested tools and specific instructions to access data.



Category	MM	OO	PP	QQ
Current_Inventory	✓	✓	✓	✓
Current_Inventory_KPI	✓	✓	✓	✓
Current_Suppliers_Prices	✓	✓	✓	✓
Financial_Balances	✓	✓	✓	✓
Financial_Postings	✓	✓	✓	✓
Goods_Movements	✓	✓	✓	✓
Independent_Requirements	✓	✓	✓	✓
Inventory	✓	✓	✓	✓
Market	✓	✓	✓	✓
Marketing_Expenses	✓	✓	✓	✓
MRP_Runs	✓	✓	✓	✓
NPS_Surveys	✓	✓	✓	✓
Pricing_Conditions	✓	✓	✓	✓
Production	✓	✓	✓	✓
Production_Orders	✓	✓	✓	✓
Purchase_Orders	✓	✓	✓	✓
Sales	✓	✓	✓	✓
Stock_Transfers	✓	✓	✓	✓
Suppliers_Prices	✓	✓	✓	✓

- MATERIAL_DESCRIPTION
- 1kg Blueberry Muesli
 - 1kg Mixed Fruit Muesli
 - 1kg Nut Muesli
 - 1kg Original Muesli
 - 1kg Raisin Muesli
 - 1kg Strawberry Muesli
 - 500g Blueberry Muesli
 - 500g Mixed Fruit Muesli
 - 500g Nut Muesli
 - 500g Original Muesli
 - 500g Raisin Muesli
 - 500g Strawberry Muesli

DS

[Reference Guide / R11](#)

[NPS Guide / R2](#)

[Sustainability Carbon Footprint Reporting / R2](#)

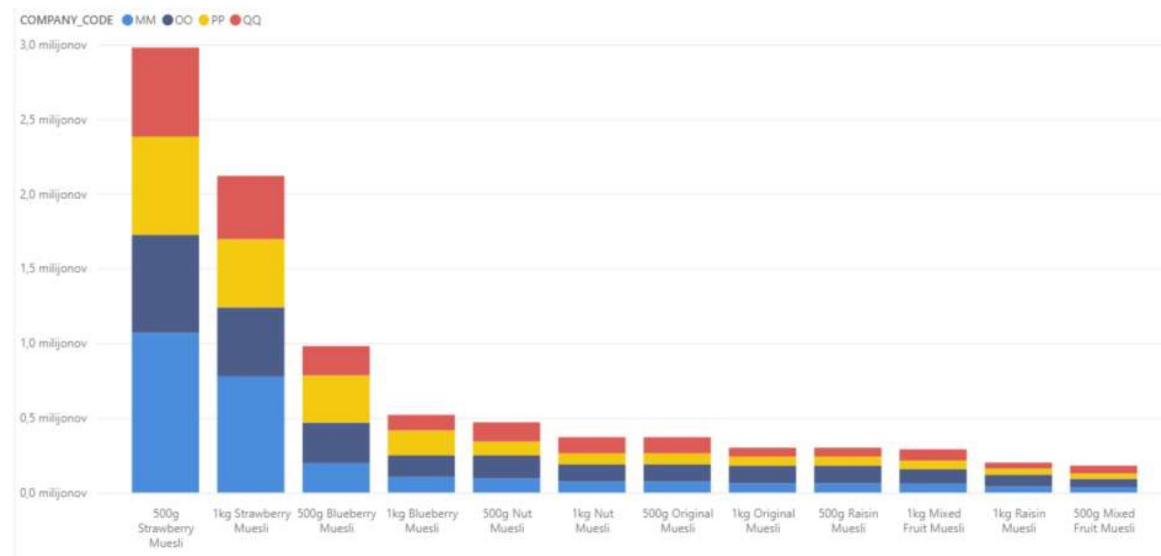
Last update: 2023/07/18

Last update: 2021/04/12

Last update: 2023/07/18

specific Instructions

Tool / Tool	Using OData Services	Supported OS
Analytics Cloud	Instructions	Windows, OS X
mira	Instructions	Windows



Kako naprej?

- Iskanje inovativnih načinov za vpeljava novih, specializiranih iger
 - Trajnostne izvedbe
- Vpeljava analitike
- Financiranje...

- Glede na izkušnje, zagotovo **nadaljujemo!** 😊

Igrifikacija na primeru ERPSim praktične izkušnje

Vprašanja? Izkušnje?

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