

ERPsim

Analytics with ERPsim

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SAP UA NAAC Month of Learning - Workshop
Online | June 12, 2025

ERPsimLab
HEC MONTRÉAL

Serious games to learn enterprise
systems and business analytics

Agenda

1. Professor's Experience Sharing
 - ▶ Prof. Bih-Ru Lea,
Missouri University of Science and Technology,
MO
2. Overview of Analytics Capabilities
3. In-Game Analytics
4. Post-Game Analytics
5. Course Examples
6. Questions

ERPSim

Analytic Application in Teaching & Research



Experience Sharing in ...

- [Missouri S&T ERP Program](#)
- ERPSim in Analytics classes
- ERPSim for Teaching & Research

Bih-Ru Lea, Ph.D.

SAP UA NAAC Month of Learning –Workshop
Online | June 12th, 2025 2-4 p.m. EDT



Enterprise Resource Planning (ERP)



Bih-Ru Lea, Ph.D.

Kummer College of Innovation, Entrepreneurship, and Economic Development

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<https://erp.mst.edu/people/faculty/>

<https://www.linkedin.com/in/bihrulea>

Education:

- Ph.D. in **Industrial Management**, Clemson University, SC
- Master of Professional **Accountancy**, Clemson University, SC
- Bachelor of Business (**Accounting**), Tamkang University, Taiwan

Research & Teaching

- Enterprise Resource Planning (ERP) & Data Warehouse
- Manufacturing/Production and Supply Chain Management
- Business analytics, Performance Dashboards, Data Mining, and Data Visualization
- Psychometrics, Human Factors, and Information Technology in Learning and Education

erp.mst.edu



Enterprise Resource Planning (ERP)



Missouri S&T's ERP Program

- ❑ Missouri S&T's Enterprise Resource Planning (ERP) program offers **comprehensive** and **technically advanced** courses
- ❑ One of the few self-hosted **SAP University Alliance** schools that deploy and manage **SAP ERP software** to support **education** and **research**
- ❑ Engage in joint projects with **industry partners** to investigate, design, plan, implement, and assess **ERP-integrated** real-world solutions, including **AI, Cybersecurity, Data Visualization, Business Intelligence**, and **Smart Factory**.



A pioneer SAP's University Alliance (UA) school since 1996



Enterprise Resource Planning (ERP)



Experience Sharing in ...

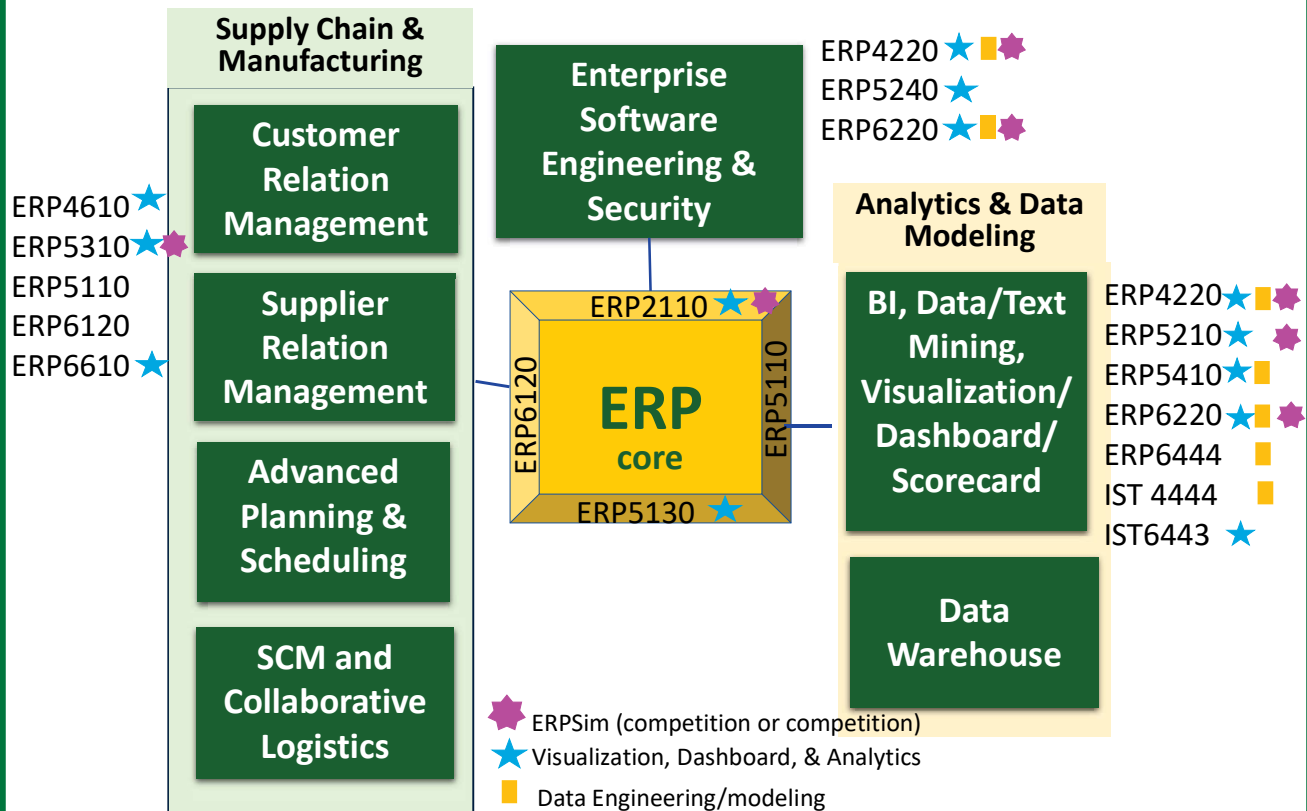
- Missouri S&T ERP Program
- **ERPSim in Analytics classes**
- ERPSim Data for Teaching and Research



Enterprise Resource Planning (ERP)



ERP Supported Business & IT Areas



MISSOURI
S&T

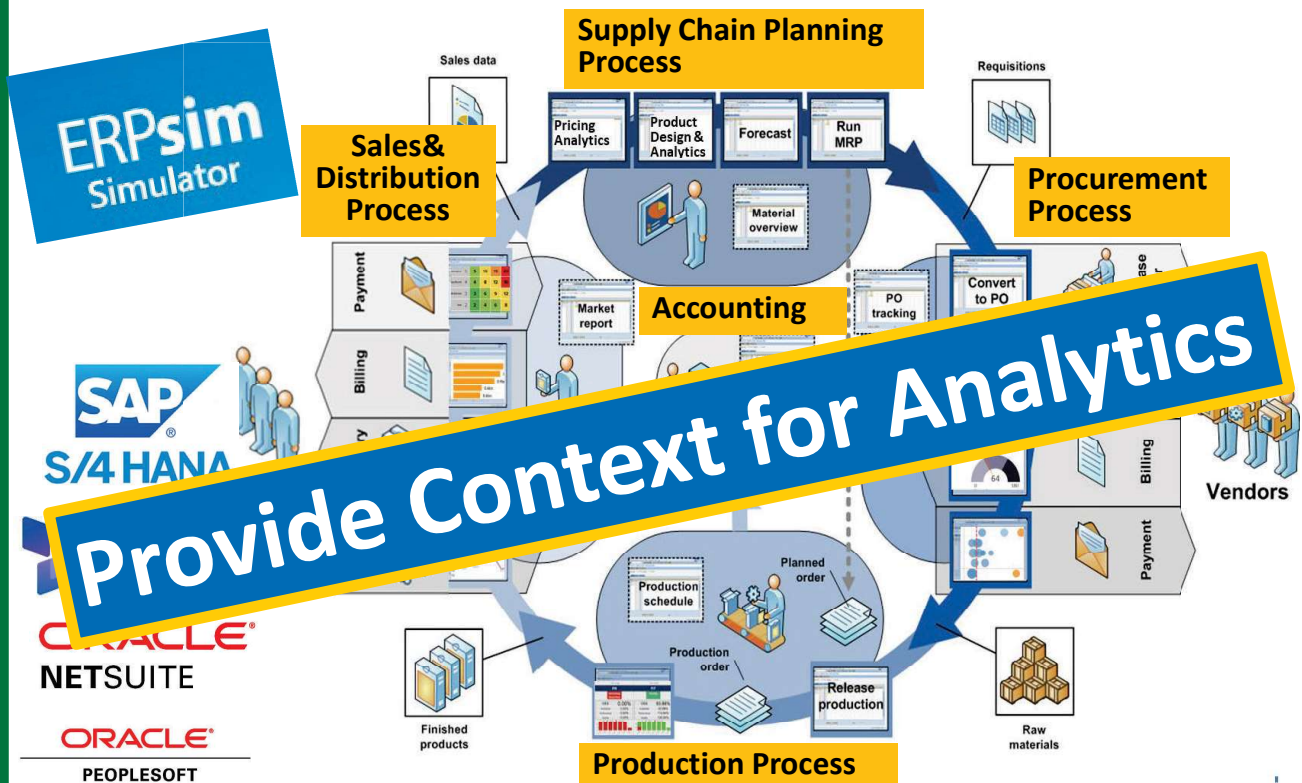
Enterprise Resource Planning (ERP)

ENTERP
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The Journey of Learning Enterprise System...



ERP System Functions



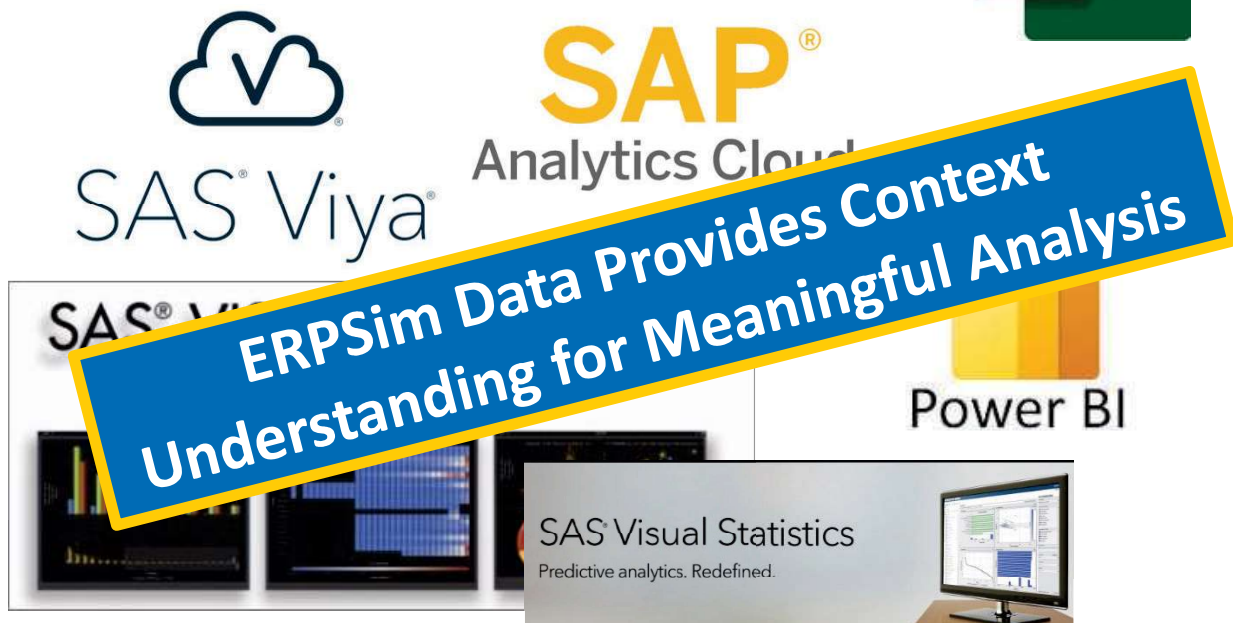
MISSOURI
S&T

Enterprise Resource Planning (ERP)

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Analytics Technologies ...

Visualization & Data Mining



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Data Modeling ...



ERPSim Data Provides Context
Understanding for Meaningful Modeling

SAP
Analytics Cloud



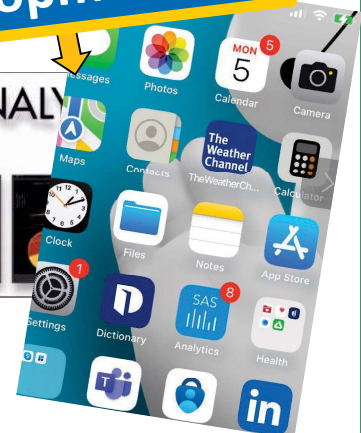
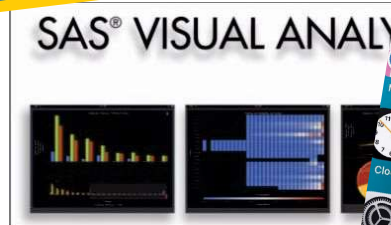
Dashboard Analytics app (desktop, web, mobile)



ERPSim Data Provides Context Understanding
for Meaningful Software Development



SAP
Analytics Cloud



Experience Sharing in ...

- Missouri S&T ERP Program
- ERPSim in Analytics classes
- ERPSim Data for Teaching and Research

Example: Individual Contribution Analysis

SG3(1)/532 Security Audit Log - Evaluation

Security Audit Log - Evaluation

Evaluation of Security Audit Log

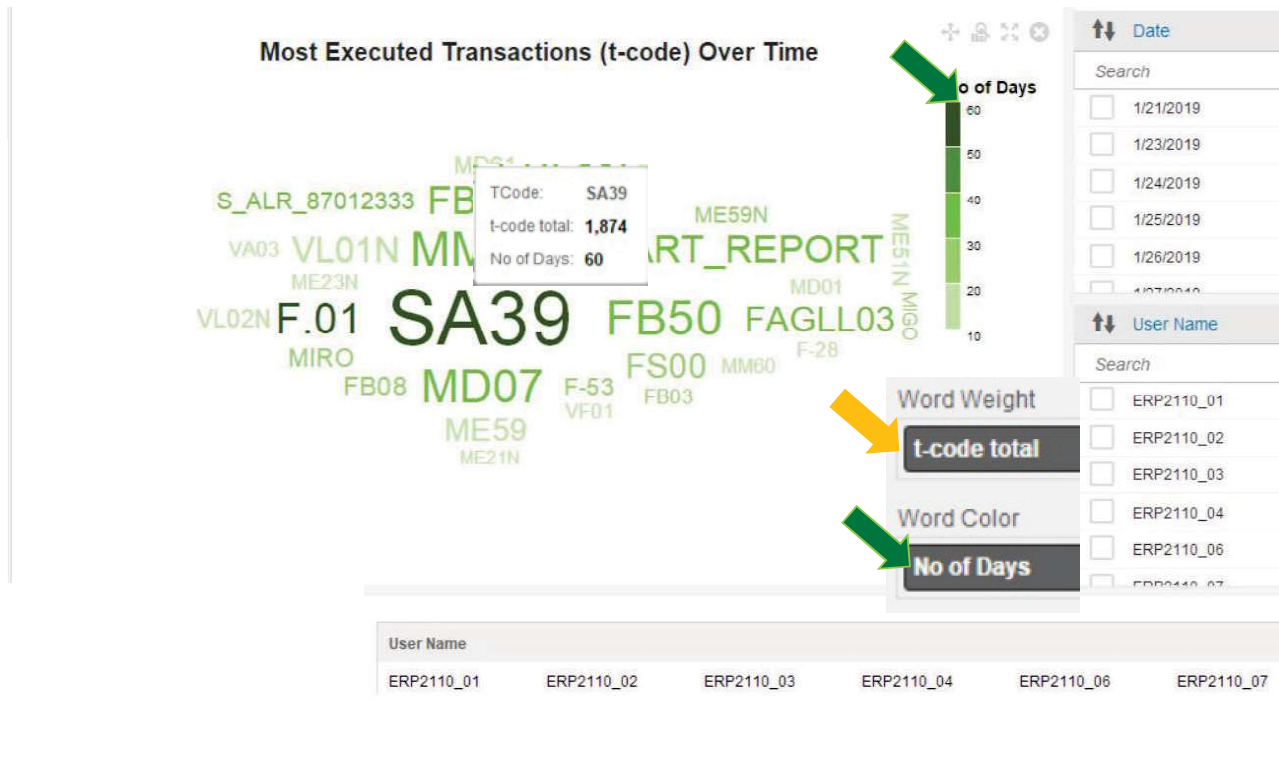
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Period Selected 24.09.2023 10:22:15 - 03.10.2023 18:23:57
Server sap-sim-3

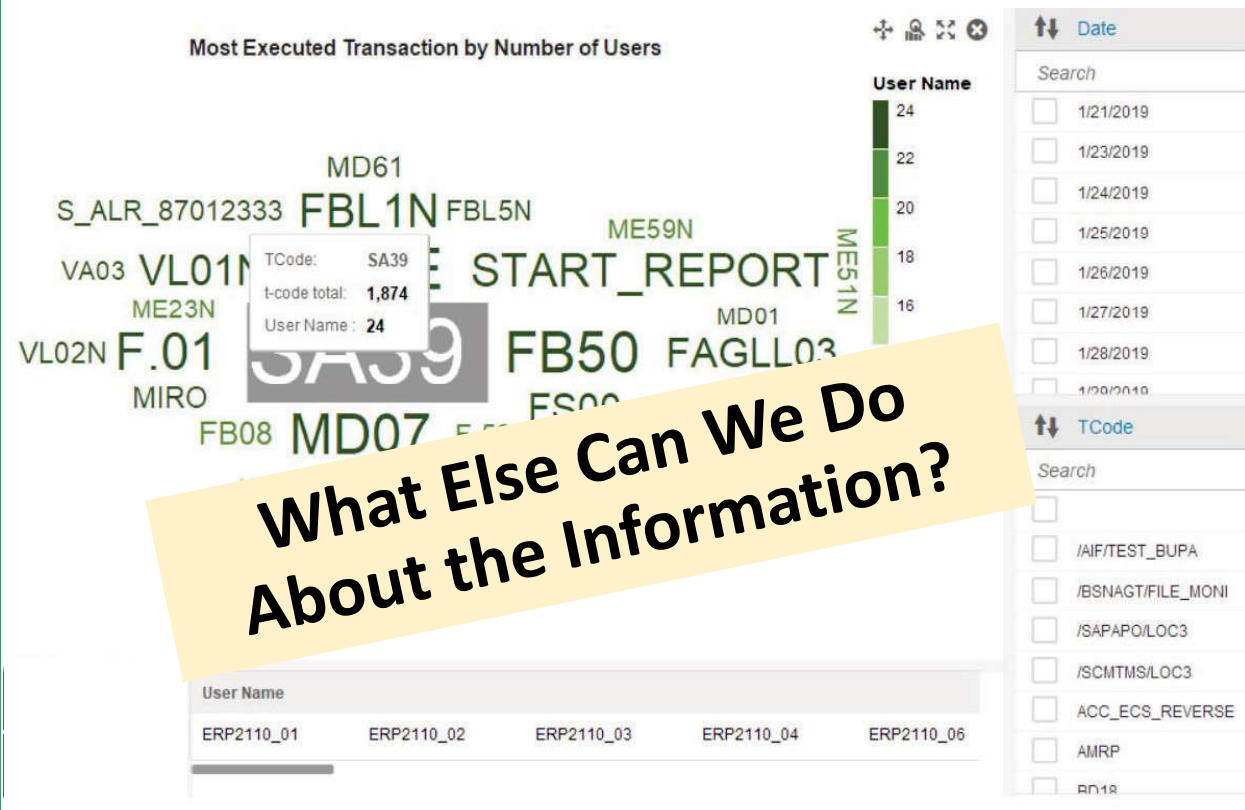
Events Read - Critical 161

SAP System	AS Instance	Date	Time	Cl.	Message ID	User	Terminal Name	Peer Address	Transaction Code	Program	Audit Log Msg. Text	Note	Variable Data	Variable 2	Variable
SG3	sap-sim-3_SG3_01	03.10.2023	18:03:23	532	AU3	B_2	rcv12aerpsap2	10.55.0.55	SESSION_MANAGER	SAPLSMTR_NAVIGATION	Transaction MD07 started.		MD07		
SG3	sap-sim-3_SG3_01	03.10.2023	18:03:26	532	AU3	C_3	172.14.225.49	172.14.225.49	SMEN	SAPLSMTR_NAVIGATION	Transaction ZMB52 started.		ZMB52		
SG3	sap-sim-3_SG3_01	03.10.2023	18:03:28	532	AU3	D_2	rcv12aerpsap2	10.55.0.55	SESSION_MANAGER	SAPLSMTR_NAVIGATION	Transaction CO41 started.				
SG3	sap-sim-3_SG3_01	03.10.2023	18:03:29	532	AU3	C_4	rcv25aerpsap2	10.55.5.30	SESSION_MANAGER	SAPLSMTR_NAVIGATION	Transaction F.01 started.				
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SG3	sap-sim-3_SG3_01	03.10.2023	18:04:23	532	AU3										
SG3	sap-sim-3_SG3_01	03.10.2023	18:04:24	532	BU1	E_4	rcv26aerpsap2	10.55.7.114	SESSION_MANAGER	SAPMSYST	Start of transaction ZC00IS failed (Reason=2)		ZC00IS	2	
SG3	sap-sim-3_SG3_01	03.10.2023	18:04:24	532	BU1	E_4	rcv26aerpsap2	10.55.7.114	SESSION_MANAGER	SAPMSYST	Password check failed for user E_4 in client 532		532	E_4	
SG3	sap-sim-3_SG3_01	03.10.2023	18:04:25	532	AU3	C_3	172.14.225.49	172.14.225.49	SMEN	SAPLSMTR_NAVIGATION	Transaction ZMARKET started.		ZMARKET		

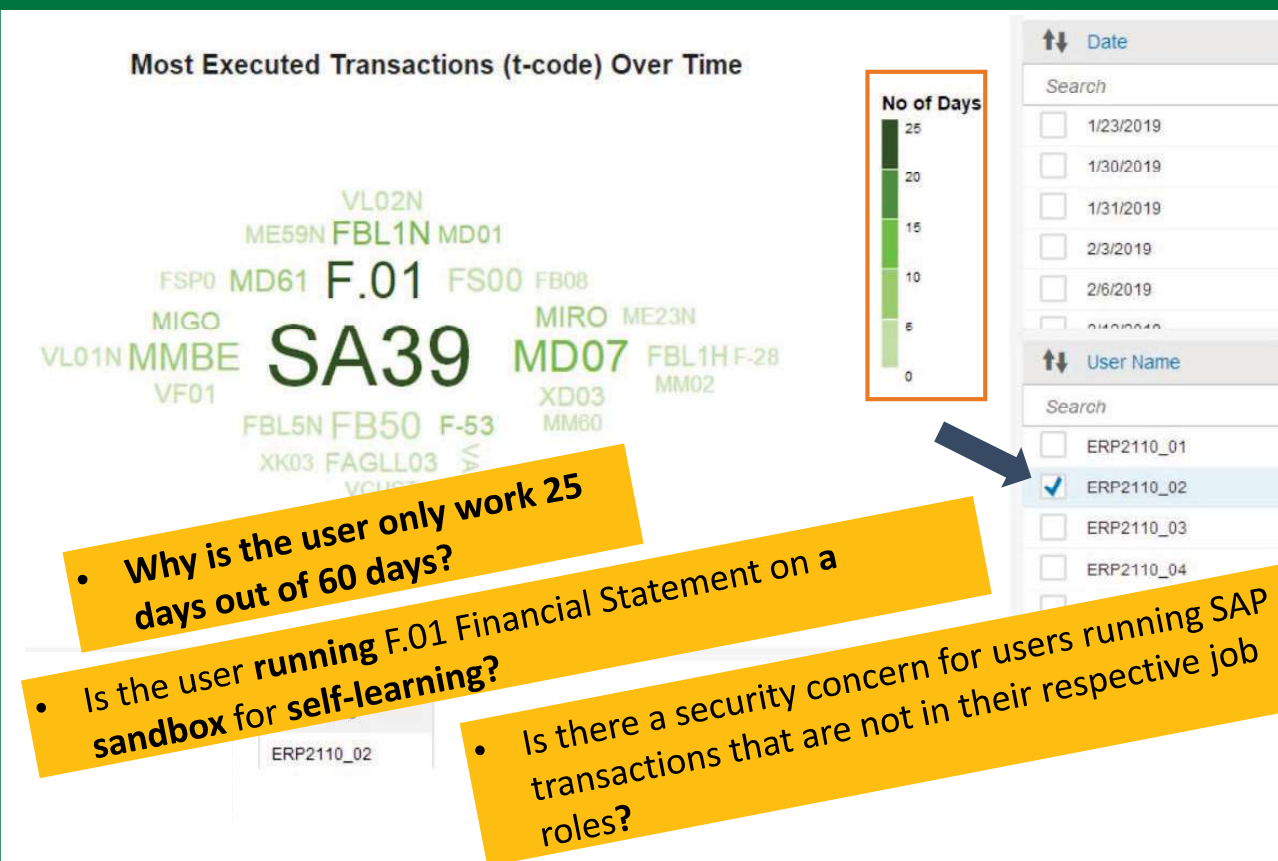
Realistic Data for Analytics

Example: ERPSim Data for Teaching & Research

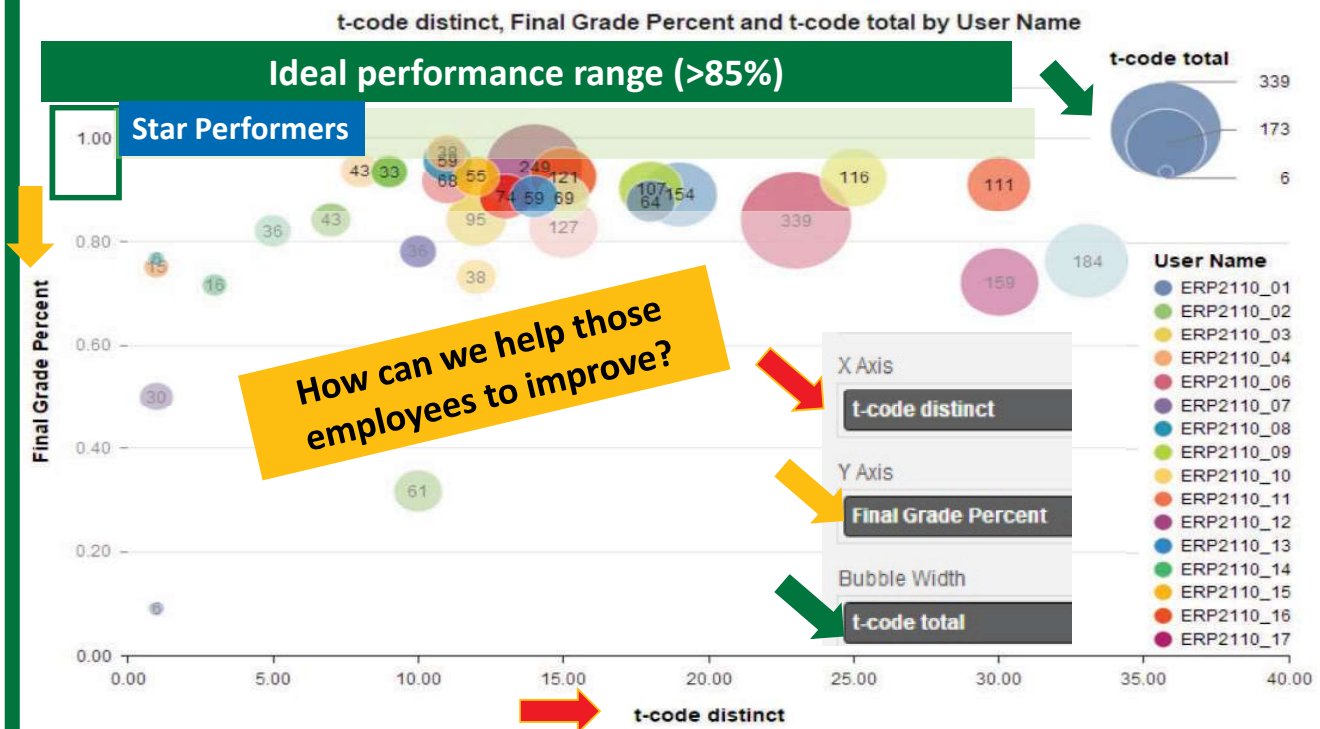




What Else Can We Do About the Information?



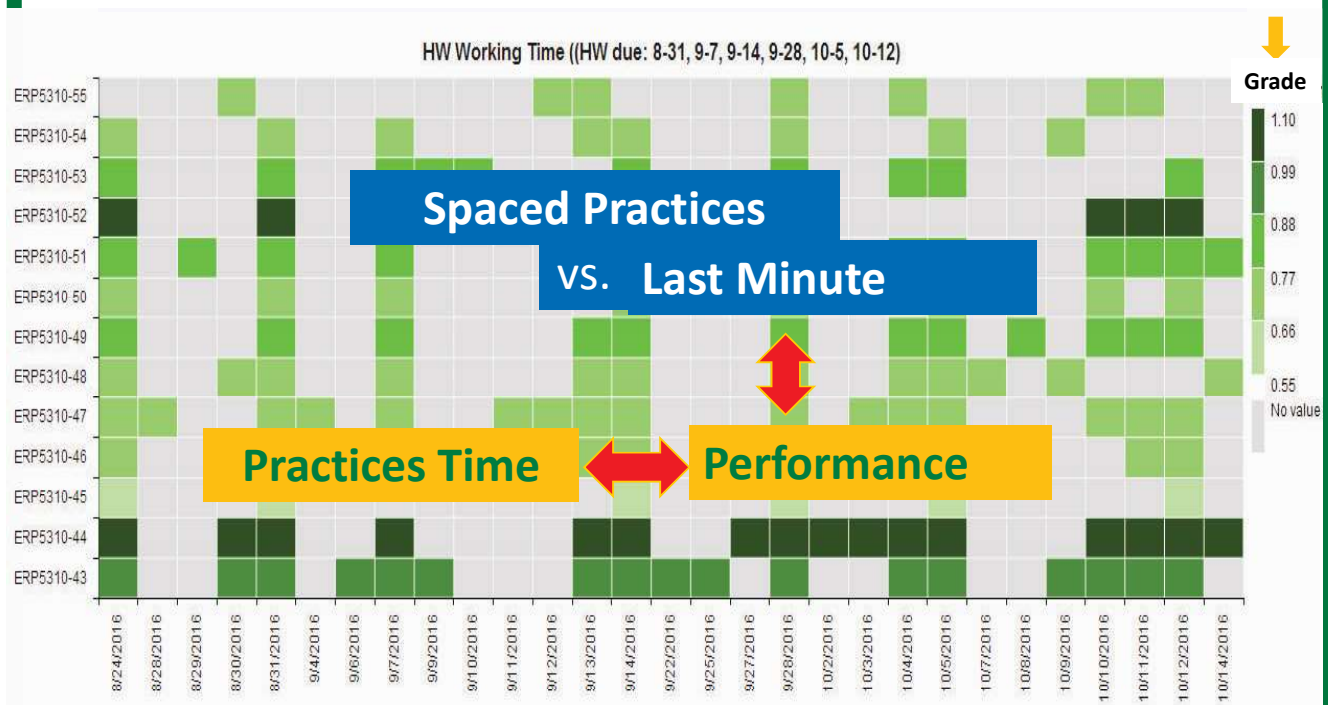
Example: ERPSim Data for Teaching & Research



Example: ERPSim Data for Teaching & Research



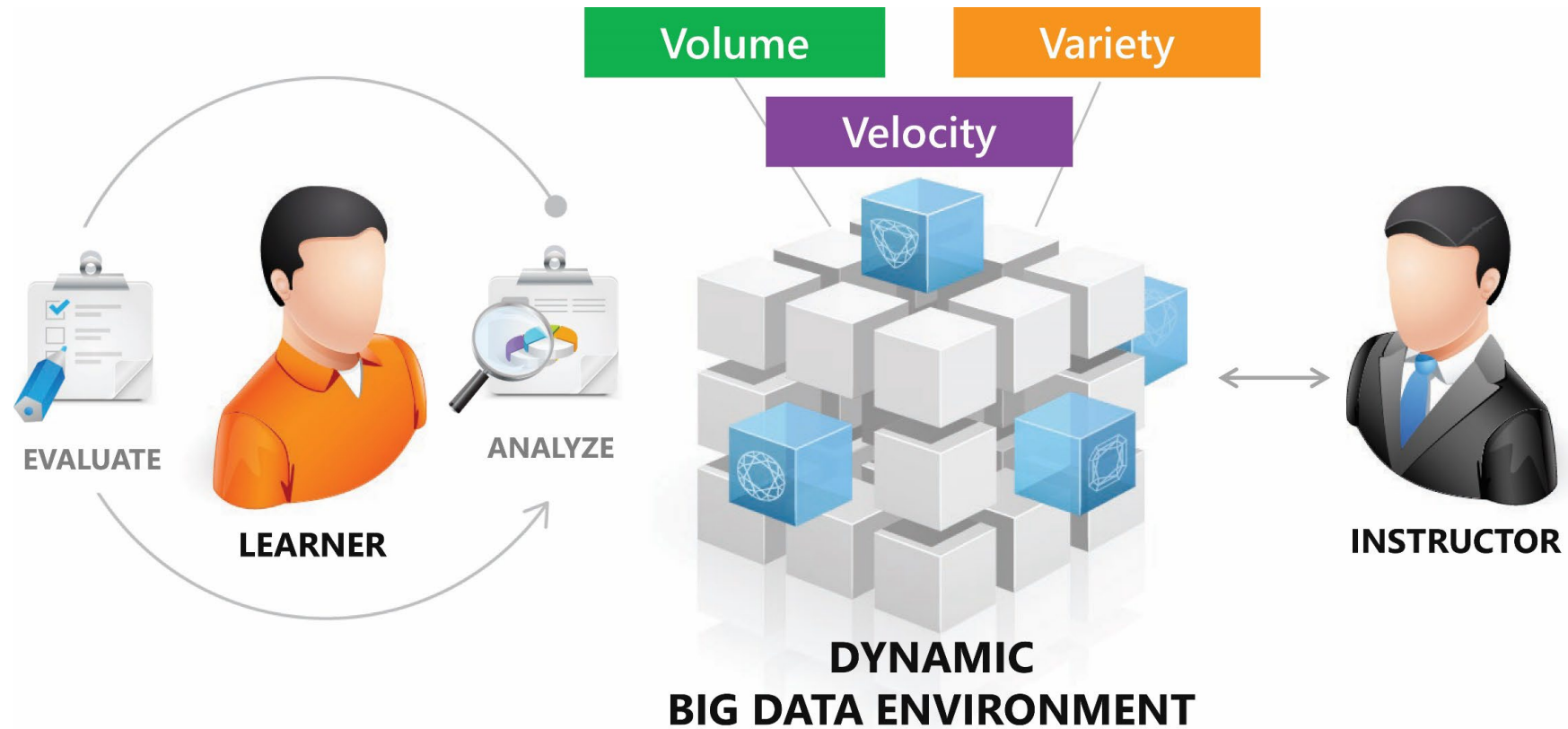
When cross-referenced with performance ...



Why analytics in the context of a simulation?

- Gain insight on your decisions and their impact
- Make learning more enticing by exploring data that was generated by your own decisions
- Provides a change of pace from the live game

Learning Loop



2024-25 ERPsim Specs

Version

SAP S/4HANA 2022

Supported UI

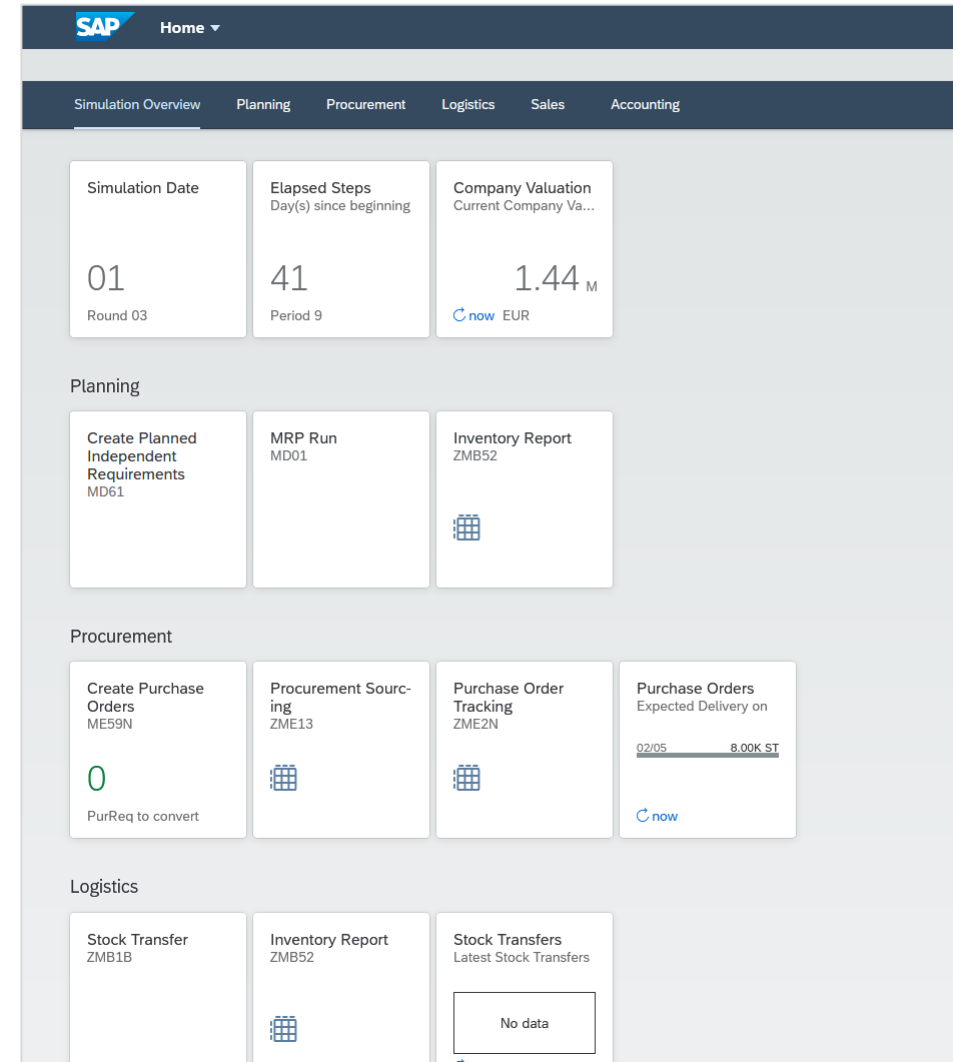
SAP Fiori and SAP GUI

Analytics

SAP standard reports
SAP Smart Business
OData Service 2.0

Languages

English, French,
Spanish, German



SAP Fiori Launchpad configured for the Logistics Extended game

SAP Standard Reports

SAP Detailed Sales Order Report

Logistics Platinum

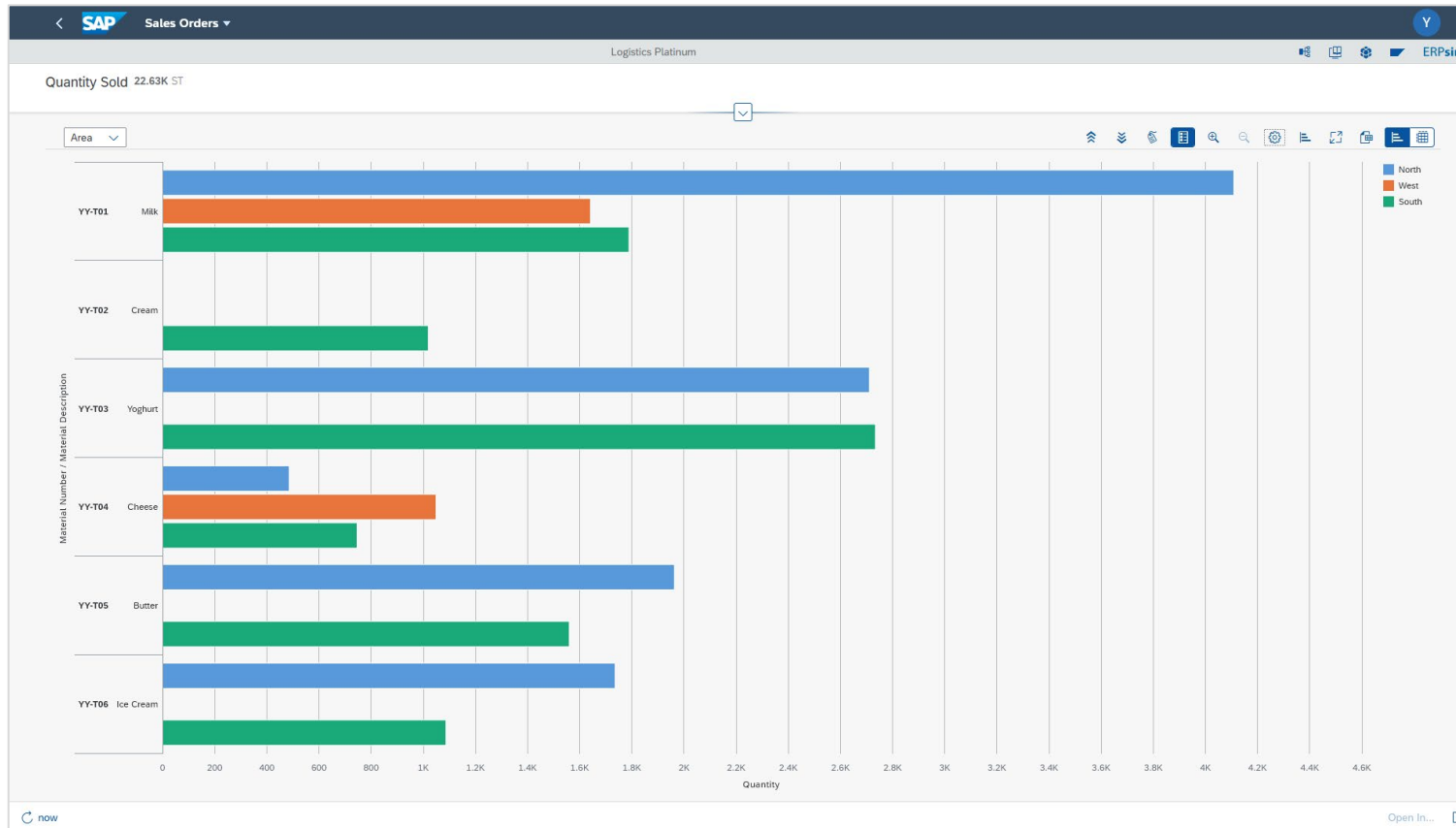
Refresh Report Data More ▾

Detailed Sales Order Report : Round 09 Day 01

Rou...	Day	Area	Material	Material Description	Price	Qty	Value	Cost
8	10	SO	YY-T01	Milk	25.25	76	1,919.00	1,757.88
			YY-T02	Cream	79.78	24	1,914.72	1,758.00
	09	NO	YY-T06	Ice Cream	47.47	12	569.64	521.76
			YY-T05	Butter	65.87	35	2,305.45	2,116.80
			YY-T04	Cheese	90.95	18	1,637.10	1,501.02
			YY-T03	Yoghurt	28.43	3	85.29	78.15
			YY-T05	Butter	65.87	17	1,119.79	1,028.16
		SO	YY-T02	Cream	79.78	25	1,994.50	1,831.25
			YY-T04	Cheese	90.95	17	1,546.15	1,417.63
			YY-T05	Butter	65.87	31	2,041.97	1,874.88
			YY-T02	Cream	79.78	27	2,154.06	1,977.75
			YY-T06	Ice Cream	47.47	34	1,613.98	1,478.32
			YY-T04	Cheese	90.95	26	2,364.70	2,168.14
			YY-T05	Butter	65.87	10	658.70	604.80
	08	NO	YY-T06	Ice Cream	47.47	49	2,326.03	2,130.52
		SO	YY-T06	Ice Cream	47.47	47	2,231.09	2,043.56
			YY-T05	Butter	65.87	23	1,515.01	1,391.04
			YY-T05	Butter	65.87	34	2,239.58	2,056.32
	07	NO	YY-T03	Yoghurt	28.43	37	1,051.91	963.85
			YY-T05	Butter	65.87	36	2,371.32	2,177.28
			YY-T06	Ice Cream	47.47	47	2,231.09	2,043.56
			YY-T05	Butter	65.87	30	1,976.10	1,814.40
			YY-T03	Yoghurt	28.43	55	1,563.65	1,432.75
		SO	YY-T05	Butter	65.87	34	2,239.58	2,056.32
			YY-T06	Ice Cream	47.47	42	1,993.74	1,826.16
			YY-T05	Butter	65.87	25	1,646.75	1,512.00
			YY-T02	Cream	79.78	26	2,074.28	1,904.50
		WE	YY-T01	Milk	25.25	60	1,515.00	1,387.80
			YY-T01	Milk	25.25	22	555.50	508.86
			YY-T04	Cheese	90.95	7	636.65	583.73

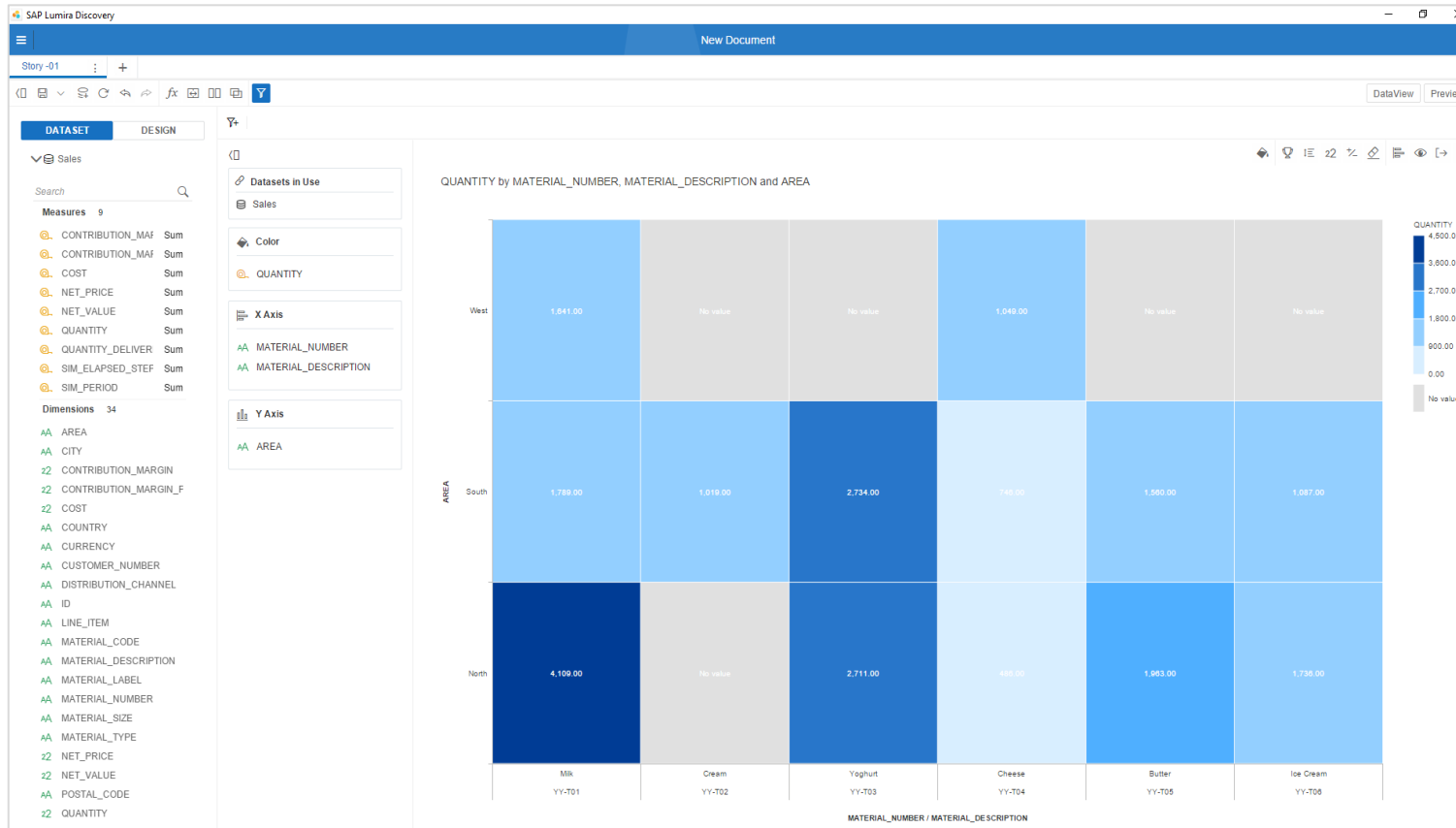
- First level of analytics
- Data presented in a tabular format
- Allows basic manipulation of data (sum, avg, count, grouping)
- Can be exported to CSV format

SAP Smart Business



- Second level of analytics
- Data presented in a visual format
- Allows basic manipulation of data, aggregation rules cannot be modified
- More dimensions and measures than standard reports

OData Service 2.0



- Third level of analytics
- Data presentation dependent of the tool used to consume it
- Allows advanced manipulation of data
- Available in XML-based AtomPub, JSON and XLSX formats

Deep diving

In-Game Analytics

Knowing business processes and how to run transactions is essential but finding how to answer the right questions is a key to success.

Examples

- Inventory levels
- What is being sold and where
- Identifying market preferences
- See how quickly products are selling
- Predicting stockouts

OData Services

Features

- Same login credentials as for the ERP system
- Compatible with any self-service BI tool that supports OData 2.0
- Restricted to own company code by default; Access to all teams data can be granted

Available entities

- BOM_Changes
- Carbon_Emissions
- Company_Valuation
- Current_Game_Rules
- Current_Inventory
- Current_Inventory_KPI
- Current_Suppliers_Prices
- Financial_Postings
- Goods_Movements
- Independent_Requirements
- Inventory
- Market
- Marketing_Expenses
- NPS_Surveys
- Pricing_Conditions
- Production
- Production_Orders
- Purchase_Orders
- Sales
- Stock_Transfers
- Suppliers_Prices

OData Services

All users (admin and students) can find the URL, account and entity list under "OData Services" in Fiori.



OData Services

OData services provide real-time access to data from the simulation. Refer to the documentation for more details.

Service URL

Use the URL to connect to the OData service. Some applications require adding the entity name at the end of the URL. Open the "Advanced" panel for the complete list of entities.

URL (case sensitive)

User Account and Password

Username

Password Same as your own password for this SAP platform

Advanced

URL (case sensitive)

Entities

[Documentation](#) [Close](#)

Post-Game Analytics

Beyond what's available in the end-of-round report, it is possible to have a deeper look at students' behavior.

Students can also access **data from all teams**, should you activate this feature in transaction ZODATA.

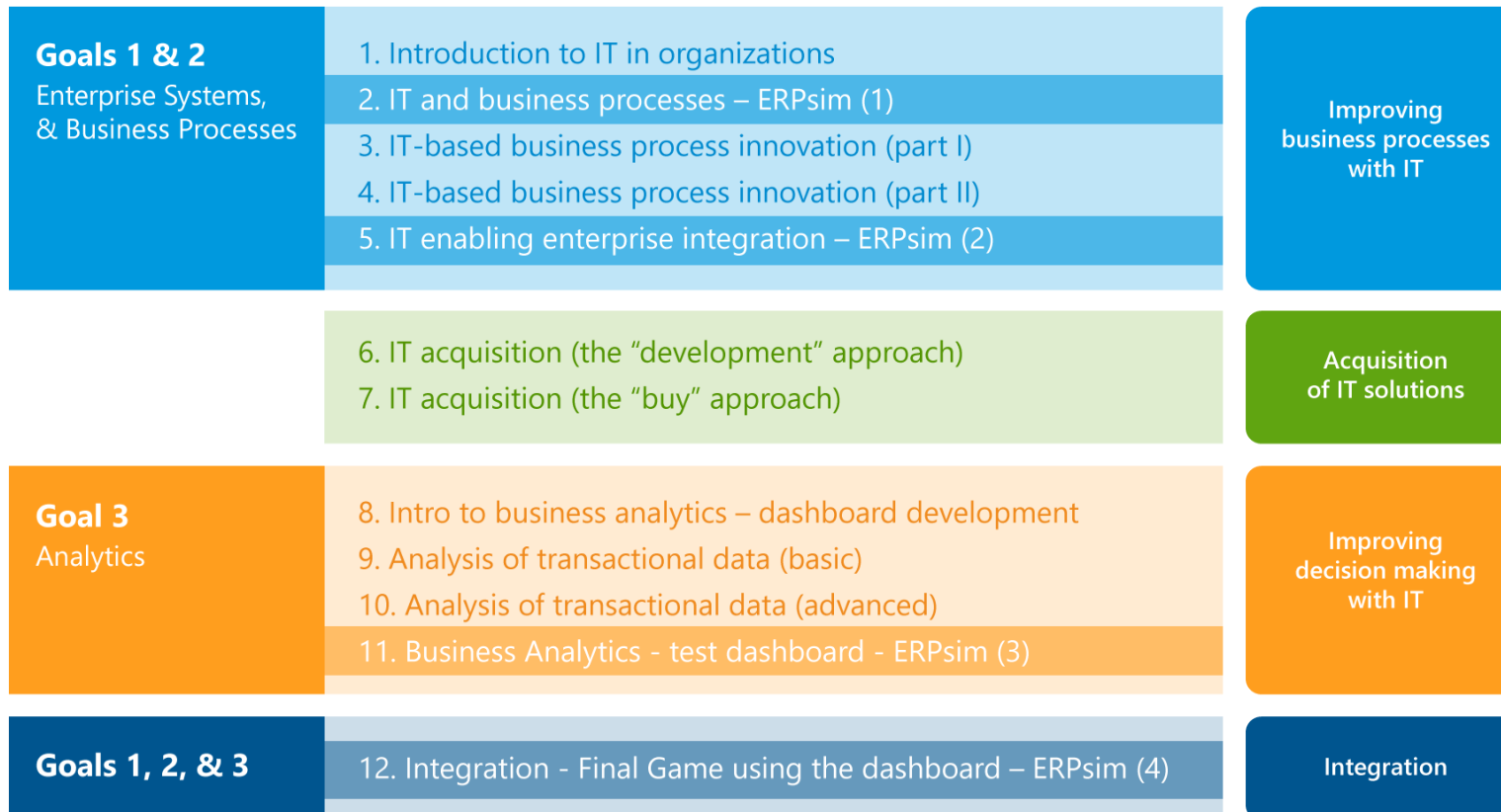
Examples

- Product availability
- Market distribution
- Effective production
- Profit margins & price change behavior
- Growth of business
- Cash usage

Course Examples

Introduction to Information Technologies

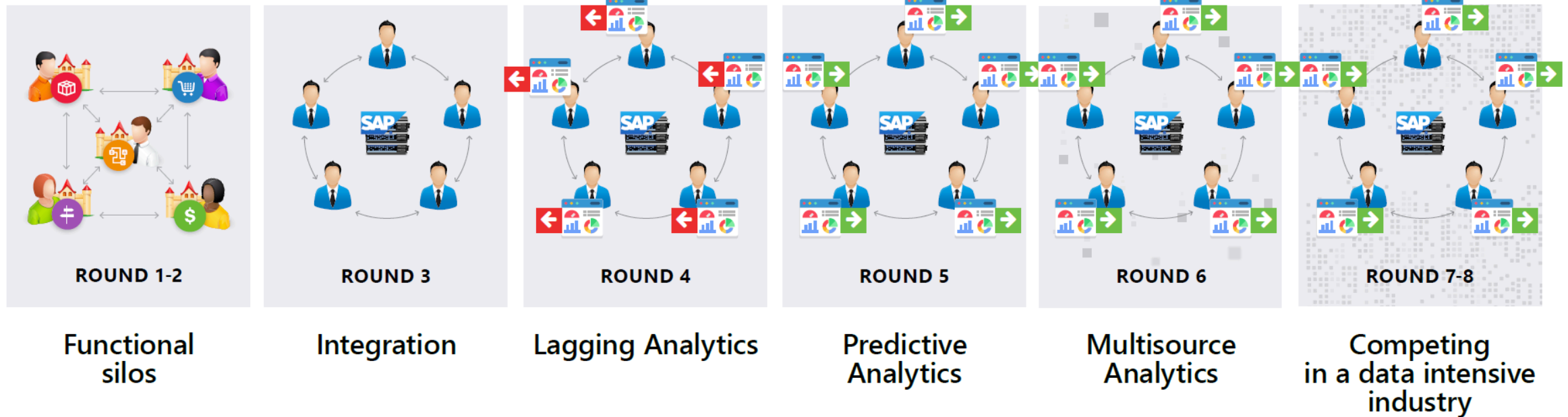
Available at
erpsim.hec.ca/node/165



Digital Transformation

Available at
erpsim.hec.ca/node/238

A simulation to experience the leadership challenges faced by managers when digitally transforming an organization



Questions

Thank You!

Website: erpsim.hec.ca

Email: erpsim@hec.ca