ERPsim Academic Version 2011-12

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ERP Simulation Game

Version : August 2011

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About PML

Dr Pierre-Majorique Léger is an associate professor in information technologies at HEC Montréal, Director of the ERPsim Lab and Co-Director of Tech^{3}Lab.

He holds a Ph.D. in Industrial Engineering from École Polytechnique de Montréal and has done post-doctoral studies in Information Technologies at HEC Montréal and NYU Stern.

He is one of the primary inventors of ERPsim, a simulation game used to teach ERP concepts, which is now used in more than 150 universities worldwide, and many Fortune 1000 organizations such as SAP, ABB, Conoco Philips and Deloitte.

His current research focuses on NeuroIS.

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About Jean-Francois Michon

Jean-Francois currently holds the position of ERPsim Lab Operations Manager. He is responsible for supporting faculty members using ERPsim, developing our internal processes and our external activities, managing the support team and contributing to product development. Jean-Francois holds a Master's Degree in Administration (E-Commerce) from Université de Sherbrooke and a Bachelor's Degree in Administration (Information Technology) from HEC Montréal.

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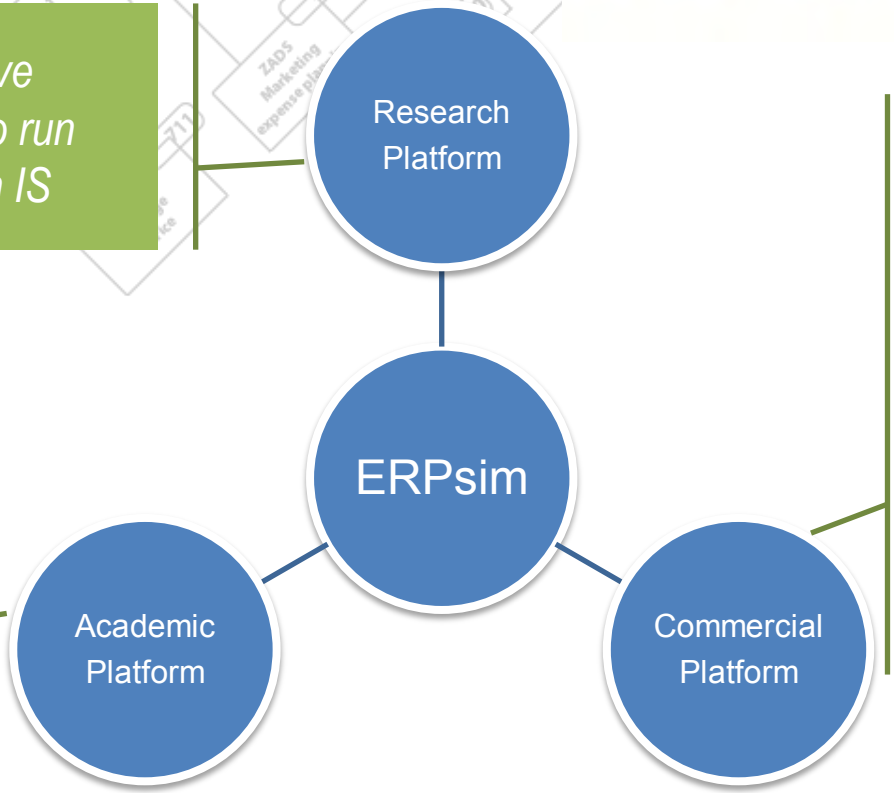
About ERPsim Lab

ERPsim Lab's mission is to conduct research, develop new products and bring innovation to the field of IT simulation games.

ERPsim Lab

Several researchers have started using ERPsim to run experimental protocol in IS

More than 160 universities worldwide are using ERPsim to teach ERP concepts to over 8000 students annually



Many large organisations such as Deloitte, SAP, Coca Cola and Crayola, are using ERPsim to train their end-users on ERP systems

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ERPsim Lab: Our Team

- Research Team
  - Prof. Pierre-Majorique LÉGER, Ph.D., Director ERPsim Lab (HEC Montréal)
  - Prof. Gilbert BABIN, Ph.D. (HEC Montréal)
  - Prof. Jacques ROBERT, Ph.D. (HEC Montréal)
  - Prof. Robert PELLERIN, Ph.D. (École Polytechnique de Montréal)
  - Prof. Bret WAGNER, Ph.D. (Western Michigan University)
- 2011-2012 Technical Team
  - Mr. Jean-François MICHON, M.Sc., Operations Manager
  - Mr. Francois PARÉ, Executive Consultant
  - Ms. Kym DAWSON, B.A., Communications Manager
  - Ms. Stéphanie BOURGAULT-MONGEAU, B.Com., Project Manager
  - Mr. Patrick SAPINSKI, Programmer
  - Mr. Philippe HÉBERT, B.Com, Analyst
  - Mr. Olivier DUBÉ, B.Com, Analyst
  - Mr. El-Hassane NDIAYE, Analyst
  - Mr. Arnaud PAQUET, Analyst
  - Mr. Juan GUILLEN, Analyst
  - Mr. Marc HÉBERT ST-PIERRE, Analyst
  - Mr. Julien PERRET, M.Sc., Research Assistant
  - Ms. Andréa MONGUILOD, MA, Research Assistant
  - Mr. Carl ST-PIERRE, MA, Statistician

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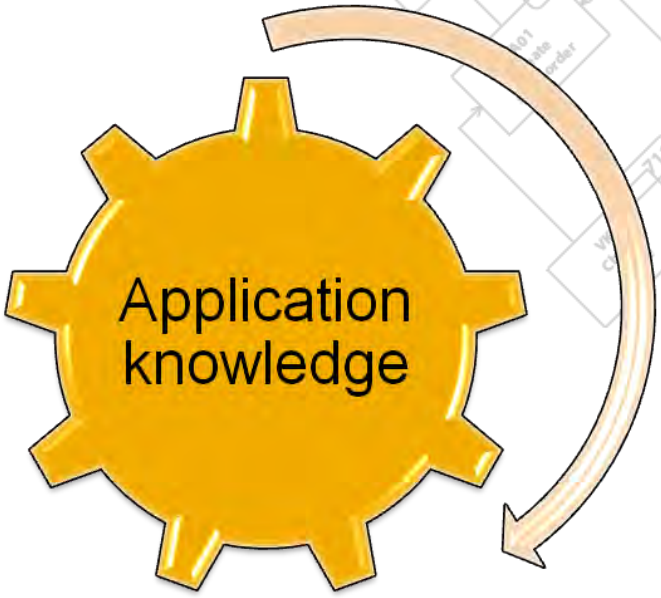
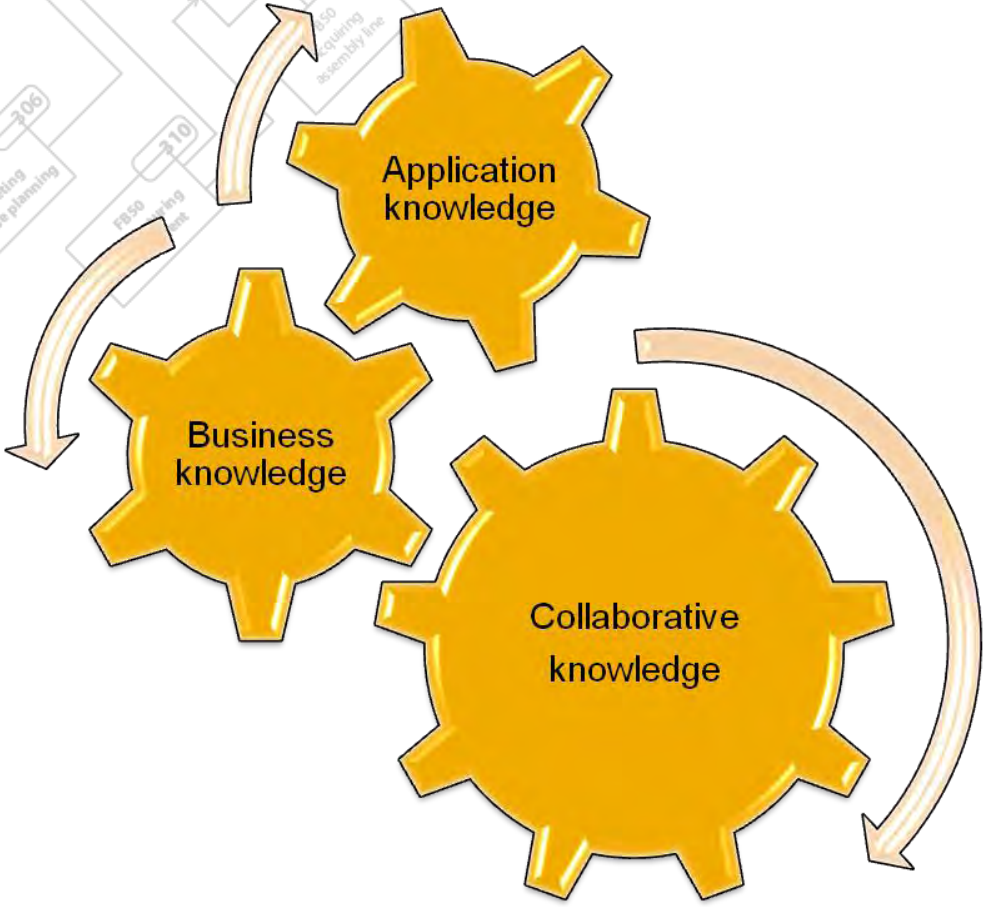
Moving Toward a Competency Approach

From a standard approach…



… to a competency approach



Kang and Santhanam, 2004

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Paradigm Shift in IT Education

- Paradigm Shift in Teaching
  - From instructors to coaches
  - From specialized technical knowledge to holistic business knowledge
- Paradigm Shift in Learning
  - From “point-and-click” to discovery of how SAP can help achieve business goals
  - From technical questions to business strategy issues

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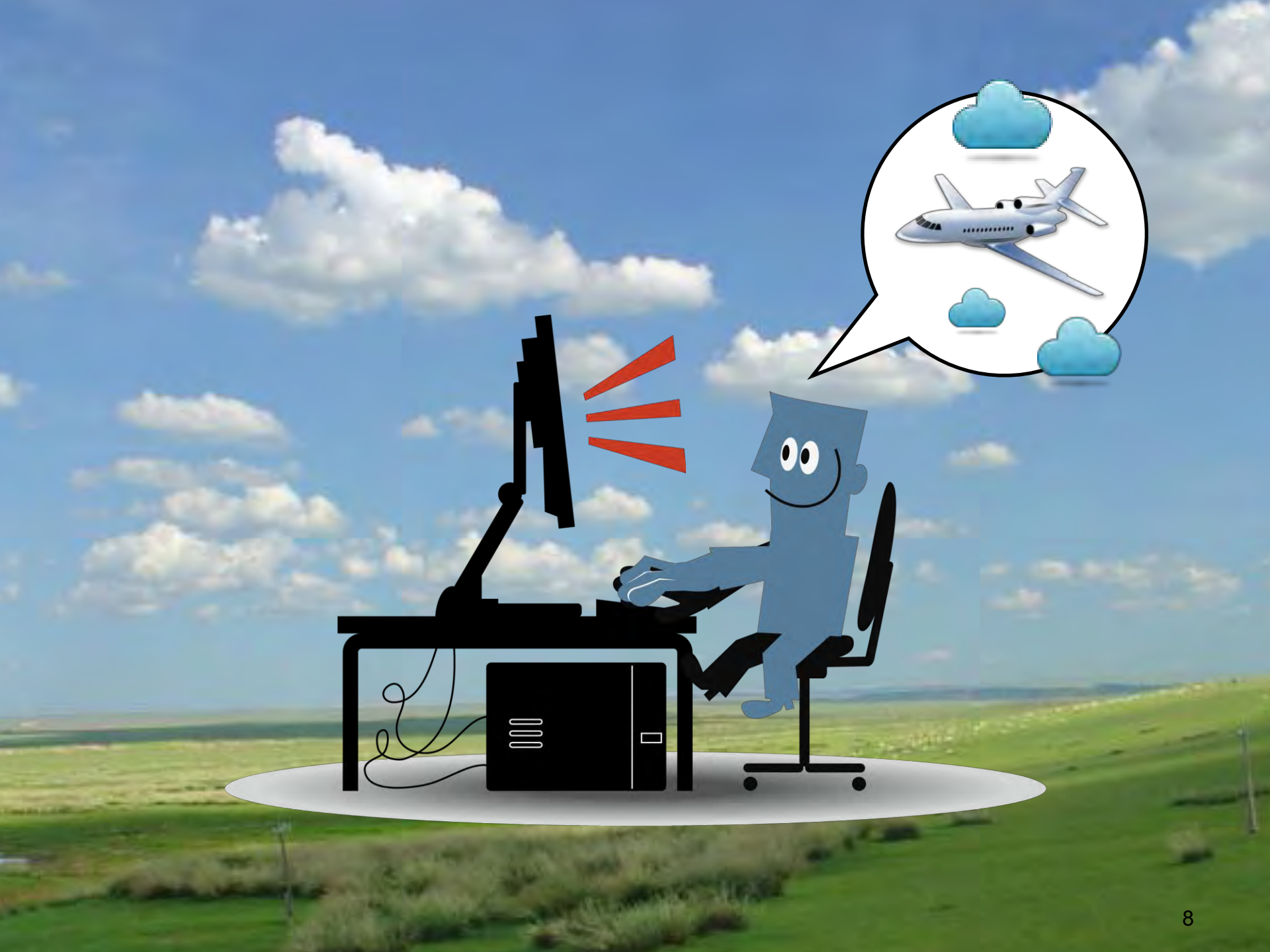
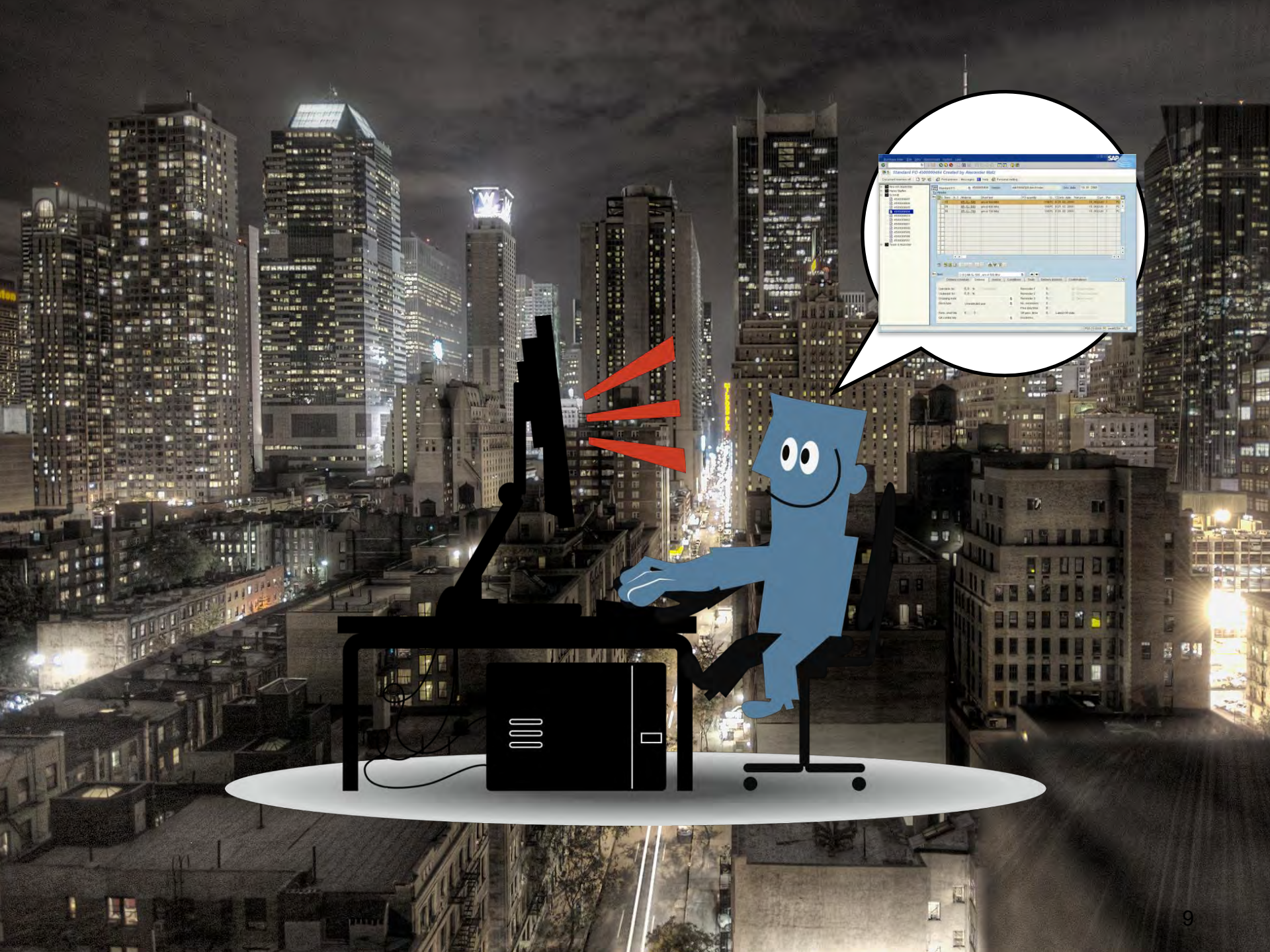


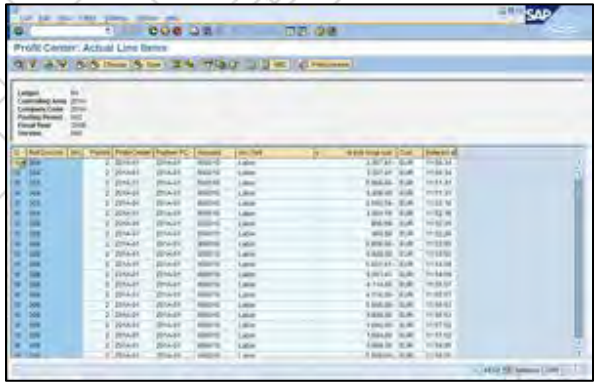


ERPsim

ERPsim

ERP System (SAP)

Participants



1) *Automation of administrative tasks*
2) *Simulation of a market*
3) *Simulation of passing of time*

1) *Business analytics*
2) *Business decisions*

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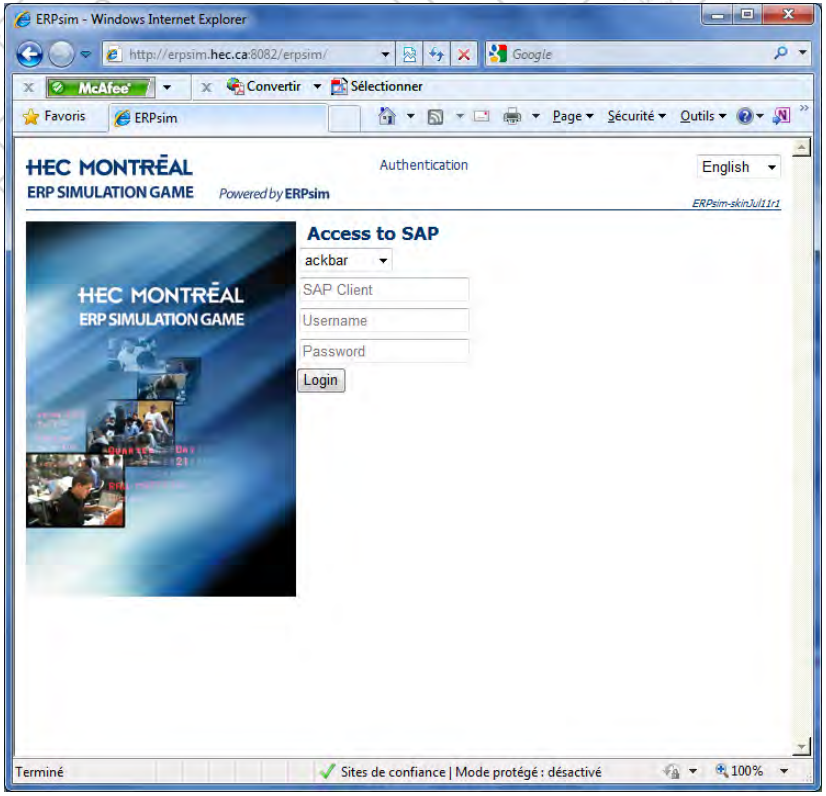
ERPsim



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Pedagogical Objectives

- Demonstrate how ERP systems support business strategies
- Develop a hands-on understanding of underlying enterprise system concepts
- Experience the tangible benefits of enterprise integration firsthand
- Develop technical decision making skills using enterprise software

MBA students experiencing ERPsim at HEC Montréal - 2007

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Targeted Simulation Games

- **ERPsim for Introduction to MIS:** A fun and engaging introduction to ERP systems
- **ERPsim for Non-IT:** Demonstrates the power of integration to business and engineering students of all disciplines
- **ERPsim for Business Analysts:** A configuration experience for IT analysts designed to make links between what is experienced in the game and the business roles involved in ERP implementation
- **ERPsim for Executives:** A simulation designed to let executives experience the different challenges of ERP implementation

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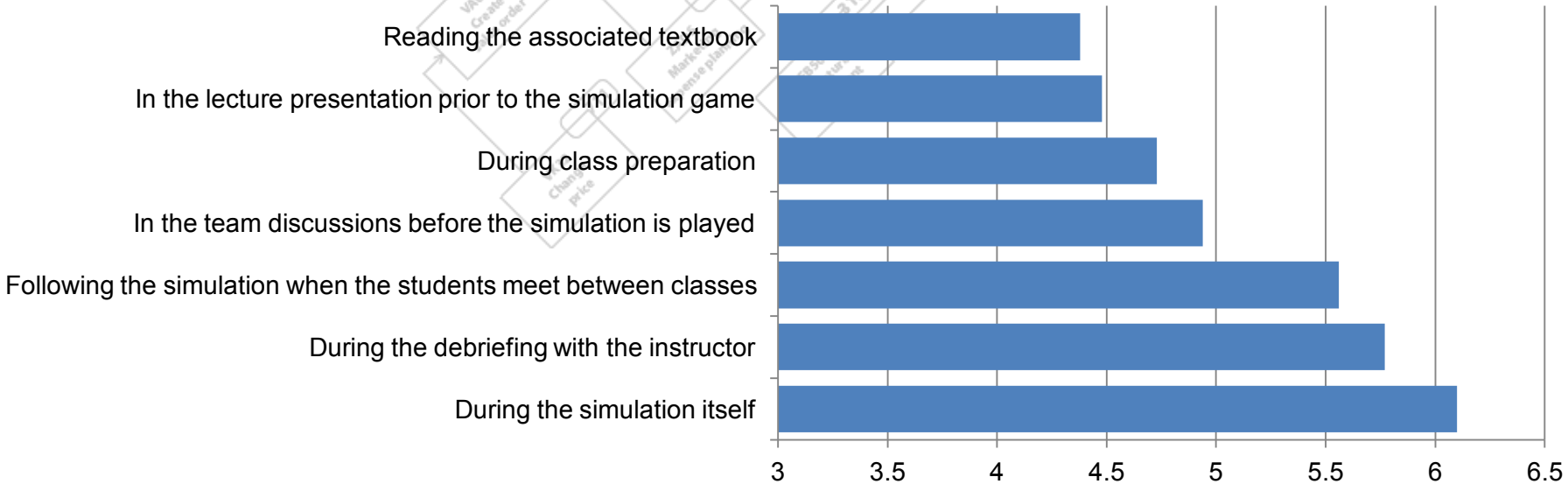
When Learning Occurs in ERPsim



n = 49 faculty

Léger et al, do not cite.

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Available Games

HEC MONTRÉAL
ERP SIMULATION GAME
Academic 2011-2012

powered by ERPsim

HEC MONTRÉAL
ERP SIMULATION GAME
Distribution Game (Academic)

powered by ERPsim

HEC MONTRÉAL
ERP SIMULATION GAME
Manufacturing Game (Academic)

powered by ERPsim

HEC MONTRÉAL
ERP SIMULATION GAME
Logistics Game

powered by ERPsim

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ERPsim Ecosystem (Academic Version)

ERPsim Lab HEC MONTRÉAL

ERPsim Website

1

ERPsim Learning Portal

2

INSTRUCTORS

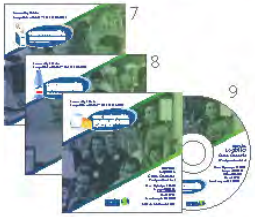
Teaching Notes

3

Videos

4 5 6

Scenarios (Configuration Files)



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ERPsim Release 07.1 (Software)

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Working Papers

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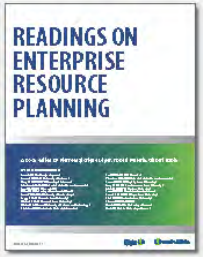
PARTICIPANTS



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Games

Job Aids

13

16

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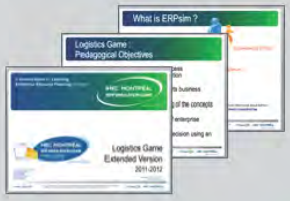
Slides



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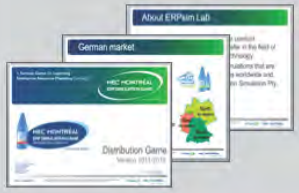

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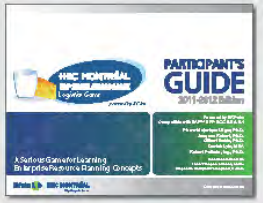
Participant's Guide



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New material in 2011-2012

- ERPsim Analytics Solution
  - The Lab's latest innovation is designed to let students experience the full potential of SAP analytics solutions, such as SAP Crystal Dashboard Design, while developing their decision making skills in the dynamic ERPsim environment.
- Readings on Enterprise Resource Planning
  - A textbook co-authored by over 20 SAP UA faculty members, written to provide a more holistic understanding of ERP. This e-book helps students make links between what they learn in the classroom and ERP in the real world.
- ERP Simulation Game: Changing the Way We Teach & Learn ERP Systems
  - Written by the inventors of ERPsim, this indispensable teaching tool containing a full set of notes about ERPsim and how to use it to keep your students fully engaged.

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Upcoming development for 2012-2013

- ERPsim Data Extractor
  - An improved way to analyze transactional, configuration, and scenario data using Microsoft ACCESS.
- ERPsim Faculty iPad Application
  - A tool that pre-emptively alerts you when teams need assistance, so that you can help keep them on track and fully engaged.
- Unified SAP Client
  - Coming soon in 2012 all ERPsim games will be configured on a single SAP client, allowing you maximum flexibility when teaching your class.

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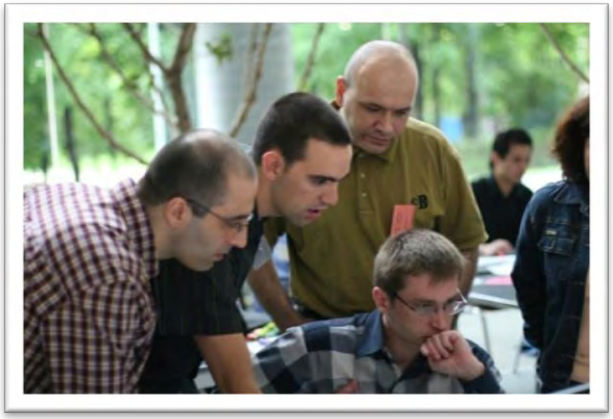
Introduction to Logistics Game

Logistics Game

- In groups of at most 4 participants, each team has to operate a company selling dairy products.
- Using standard reports, participants must make business decisions in order to ensure the profitability of their operations.



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Dairy Products

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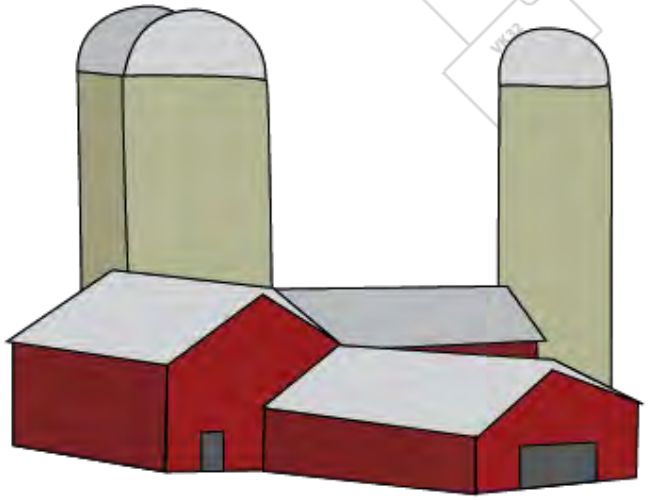
Logistics Game Design

Your company owns a main warehouse which receives and stores products you have purchased from a dairy cooperative.



Dairy Cooperative

Main Warehouse

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Products Details

Products

$$-T01 Milk

Unit	Cost
Box of 9 units	**22,95 €**

$$-T04 Cheese

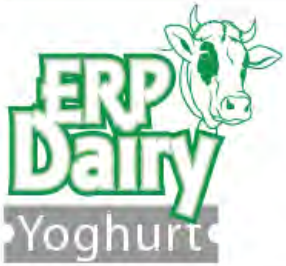
Unit	Cost
Box of 20 units	**82,68 €**

$$-T02 Cream

Unit	Cost
Box of 28 units	**72,07 €**

$$-T05 Butter

Unit	Cost
Box of 20 units	**59,88 €**



$$-T03 Yoghurt

Unit	Cost
Box of 12 units	**25,85 €**

$$-T06 Ice Cream

Unit	Cost
Box of 8 units	**43,15 €**

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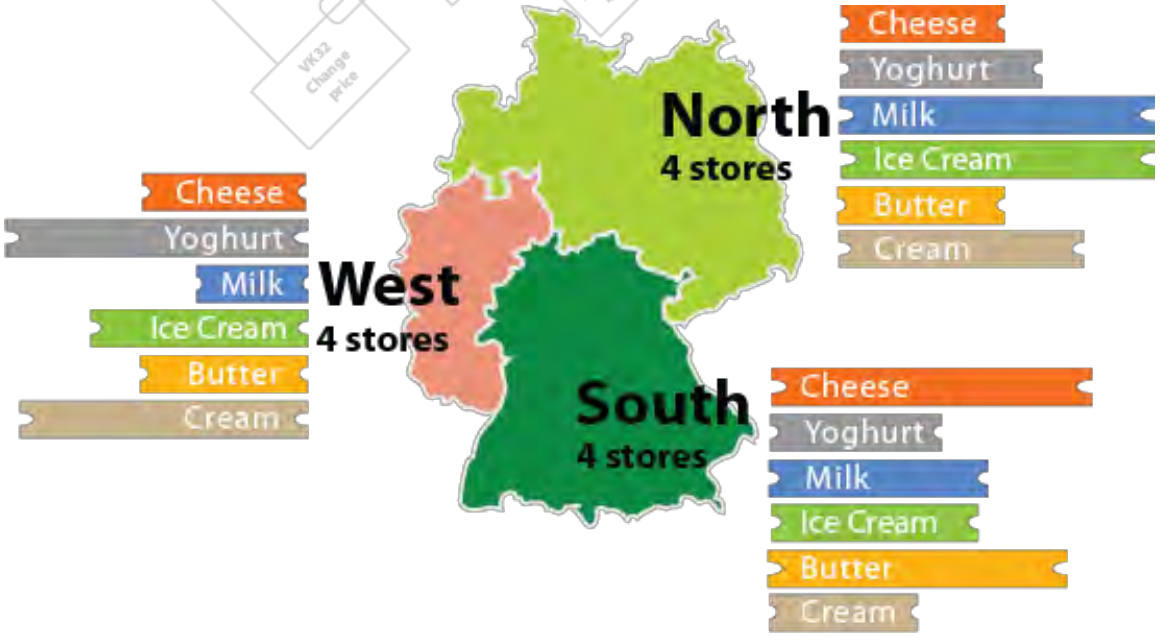
Market Preferences

Each region has unique preferences related to the products it purchases from your company. Preferences change every game.



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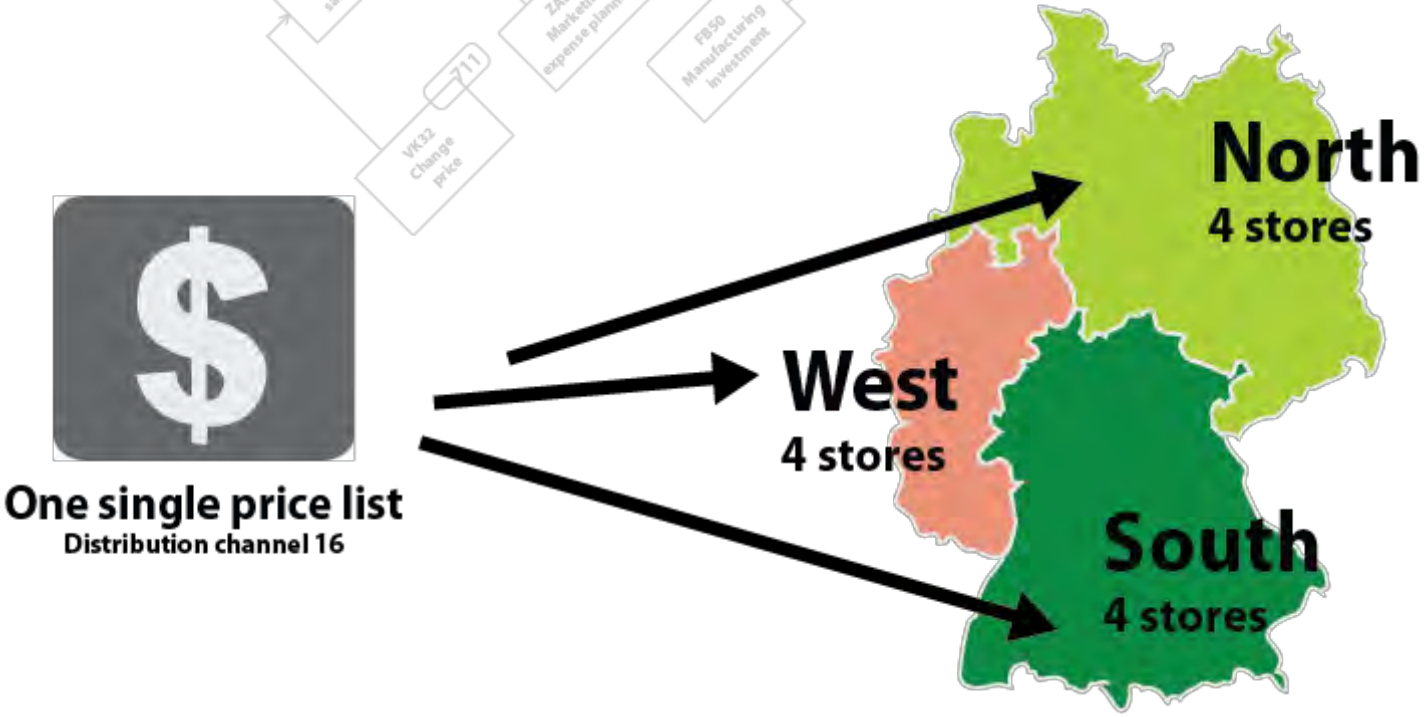
One Price List in Distribution Channel 16

You will need to set-up prices for your products. The price for each product will be applied in all 3 regions.



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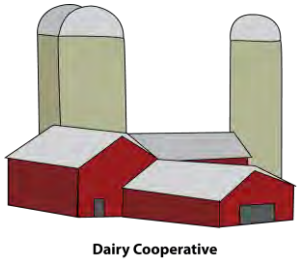
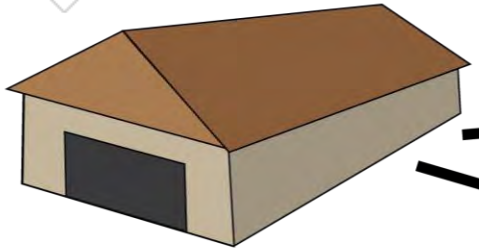
Transportation Fees

You will have to manage transportation fees carefully in order to maximize your company's profits.

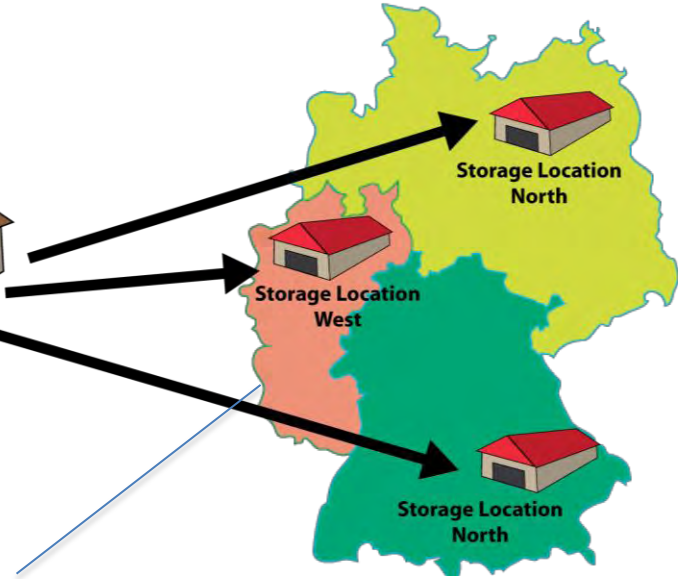
Cost : 1000 € per PO



Dairy Cooperative



Main Warehouse



Cost : 100 € per regional tranfer

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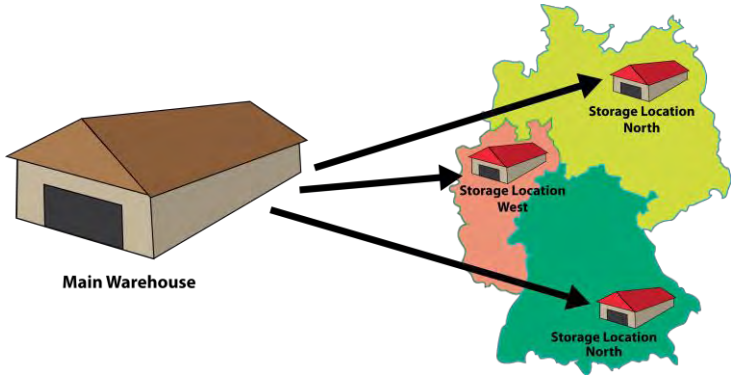
Logistics Strategy

You must determine a logistics strategy in order to make your products available for sale through your regional storage location.



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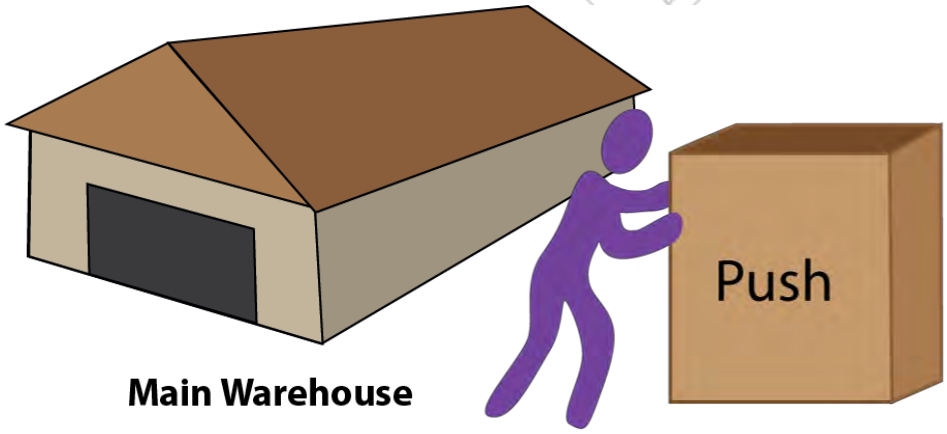
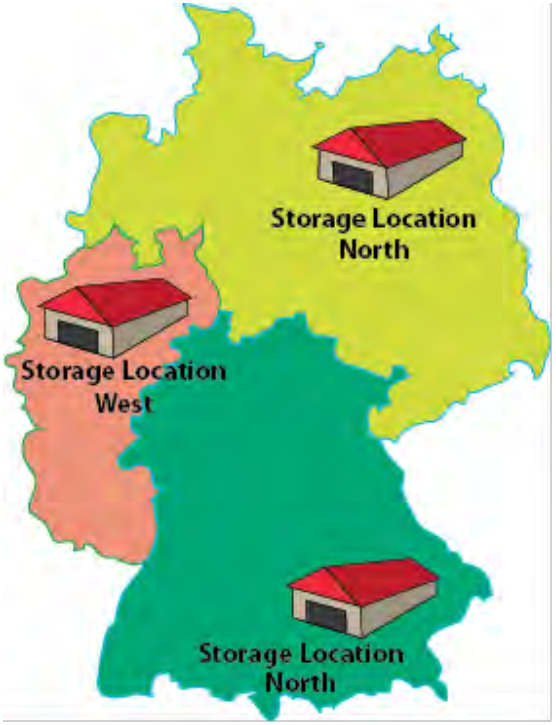
A **Push** Logistics Strategy

A Push strategy specifies the quantity of each product to be delivered to each area, and the number of days between deliveries.





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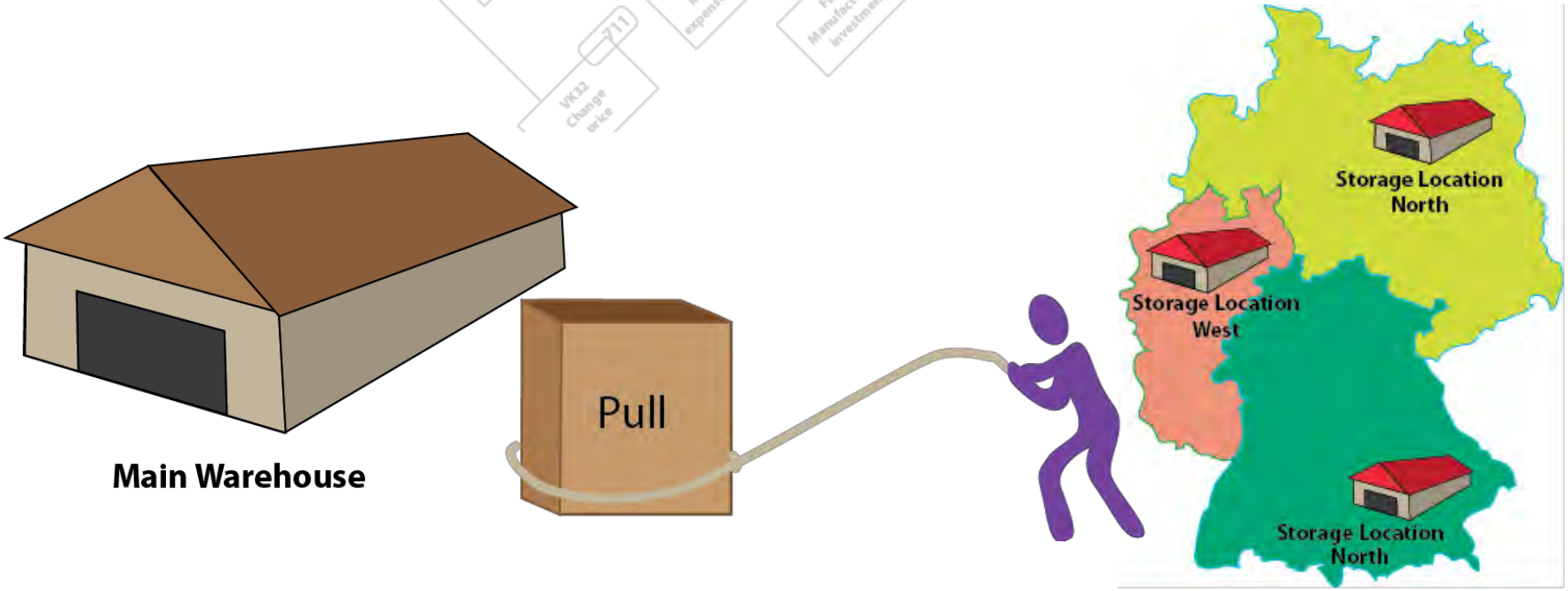
A **Pull** Logistics Strategy

A Pull strategy specifies the target quantity for each product in each area and the number of days between deliveries.



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Rules

- Each round will last 20 days
  (a bit more than one minute per day)
- End-of-round inventory is carried over to the next round.
- You may sell a product only if the stock is available through your regional storage location.
- You are competing against other teams.
- Your objective is to maximize profits.

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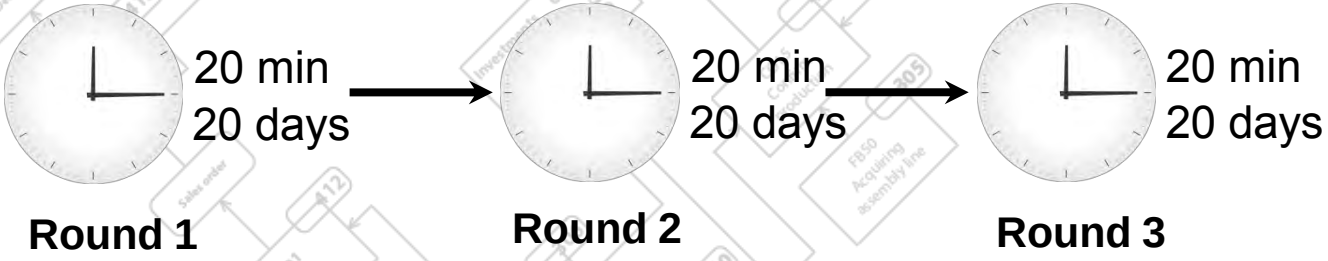
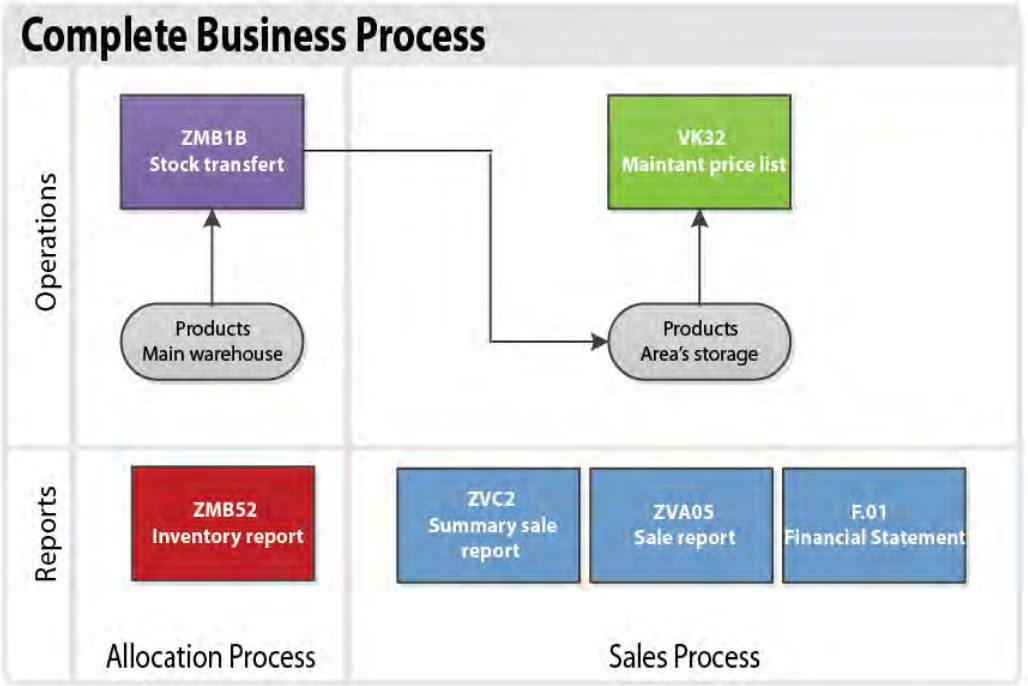
Game Layout





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4 Players Per Team

Logistics Manager

Stock Manager

Pricing Manager

Sales Vice-President

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Job Aids (1/2)

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ERP SIMULATION GAME
Logistics Game
powered by ERPsim

Job-Aid
Executives Game

Products

ERP Dairy Milk	$$-T01	Milk	
	Unit: Box of 9 units	Cost: 22,95 €	
ERP Dairy Cheese	$$-T04	Cheese	
	Unit: Box of 20 units	Cost: 82,68 €	
ERP Dairy Cream	$$-T02	Cream	
	Unit: Box of 28 units	Cost: 72,07 €	
ERP Dairy Butter	$$-T05	Butter	
	Unit: Box of 20 units	Cost: 59,88 €	
ERP Dairy Yoghurt	$$-T03	Yoghurt	
	Unit: Box of 12 units	Cost: 25,85 €	
ERP Dairy Ice Cream	$$-T06	Ice Cream	
	Unit: Box of 8 units	Cost: 43,15 €	

German Market

Suppliers	
Lead time (days)	1-3
Payment time (days)	2

Customers	
Lead time (days)	1-3
Payment time (days)	2

General information

Days / Quarter
20

Distribution Channel
DC16: Retail stores

Replenishment Inventory (Quarter 1)		
Product Code	Description	Units (every 5 days)
T01	Milk	950
T02	Cream	300
T03	Yoghurt	700
T04	Cheese	350
T05	Butter	400
T06	Ice Cream	300

Total Market Size
Approx. € 6,000 per company per day

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Job Aids (2/2)

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ERP SIMULATION GAME
Logistics Game
powered by ERPsim

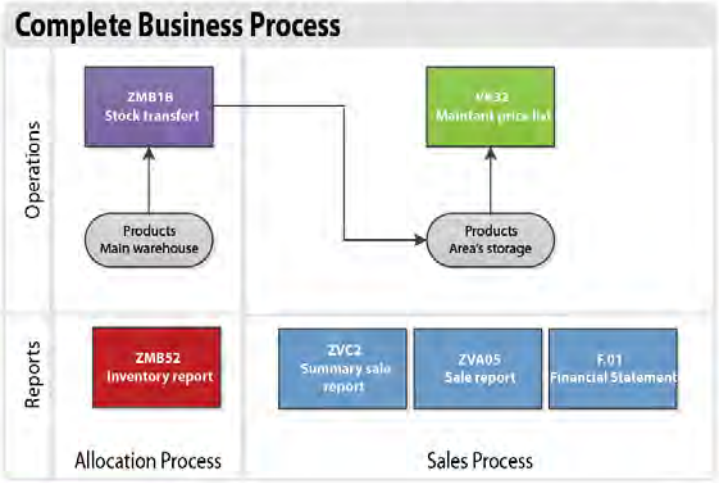
Logistics Manager

Login ***$_TRANSFER*** *Password* ***ERPSIM***

Replenishment Level		
Product Code	**Description**	**Number of Units (every 5 days)**
$$-T01	Milk	1400
$$-T02	Cream	300
$$-T03	Yoghurt	900
$$-T04	Cheese	600
$$-T05	Butter	450
$$-T05	Ice Cream	350

Transportation fees	
Supplier to main warehouse	€ 1000
Main warehouse to storage location	€ 100

Complete Business Process



stock transfer	
Stock Transfer Planning (ZMB1B)	
❶	Choose between a push and a pull stock allocation logistic
❷	Choose your delivery schedule
❸	Enter the amount of products you wish to send/maintain in each region

- Logistics Manager
- Stock Manager
- VP Sales
- Pricing Manager

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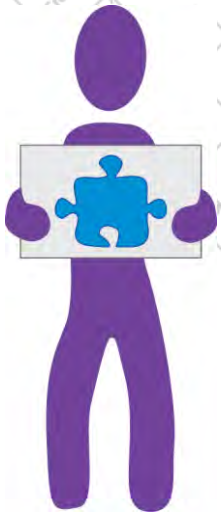
SAP Navigation

4 Players Per Team



Logistics Manager

Login : $_transfer

Password : ERPSIM

Stock Manager

Login : $_stock

Password : ERPSIM

Pricing Manager

Login : $_pricing

Password : ERPSIM

Sales Vice-President

Login : $_sales

Password : ERPSIM

N.B. : $ is your team letter

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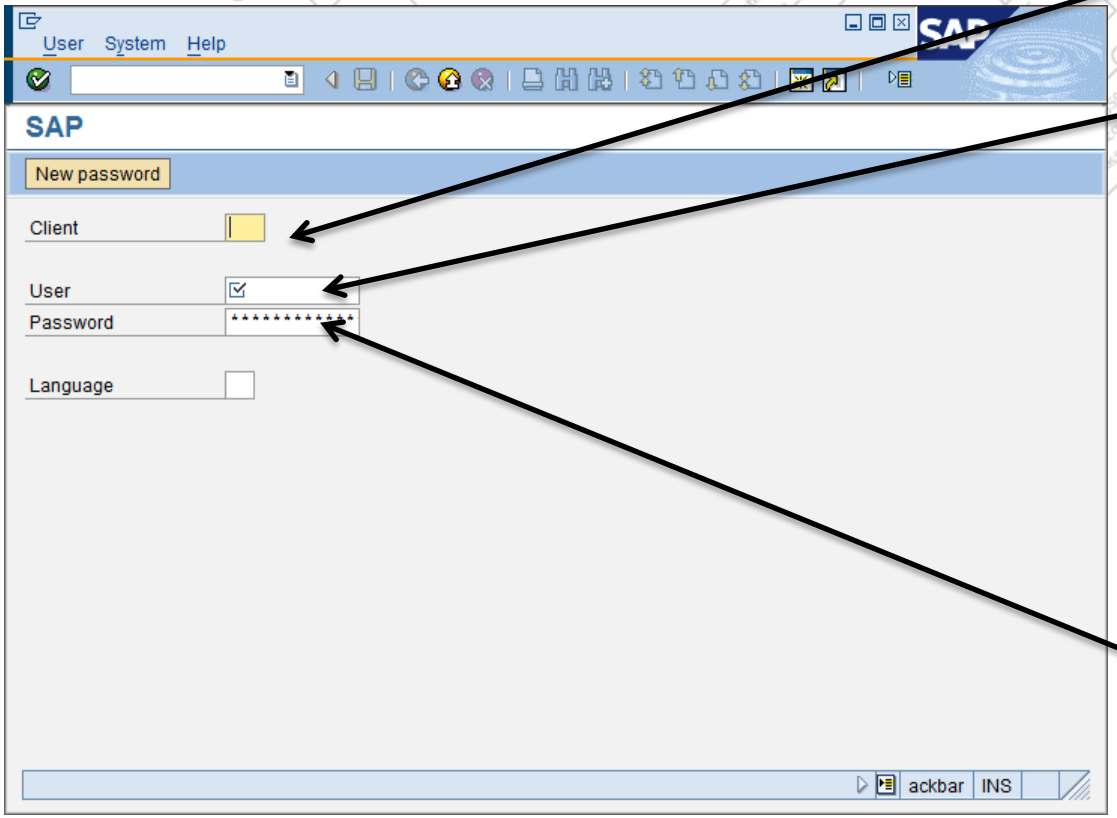
Login Information



Client will be provided by the instructor

Login:

According to your role:

$_transfer
$_stock
$_pricing
$_sales
$_report

Where $ is your team letter

Password: ERPSIM

You will have to change your password the first time you enter.

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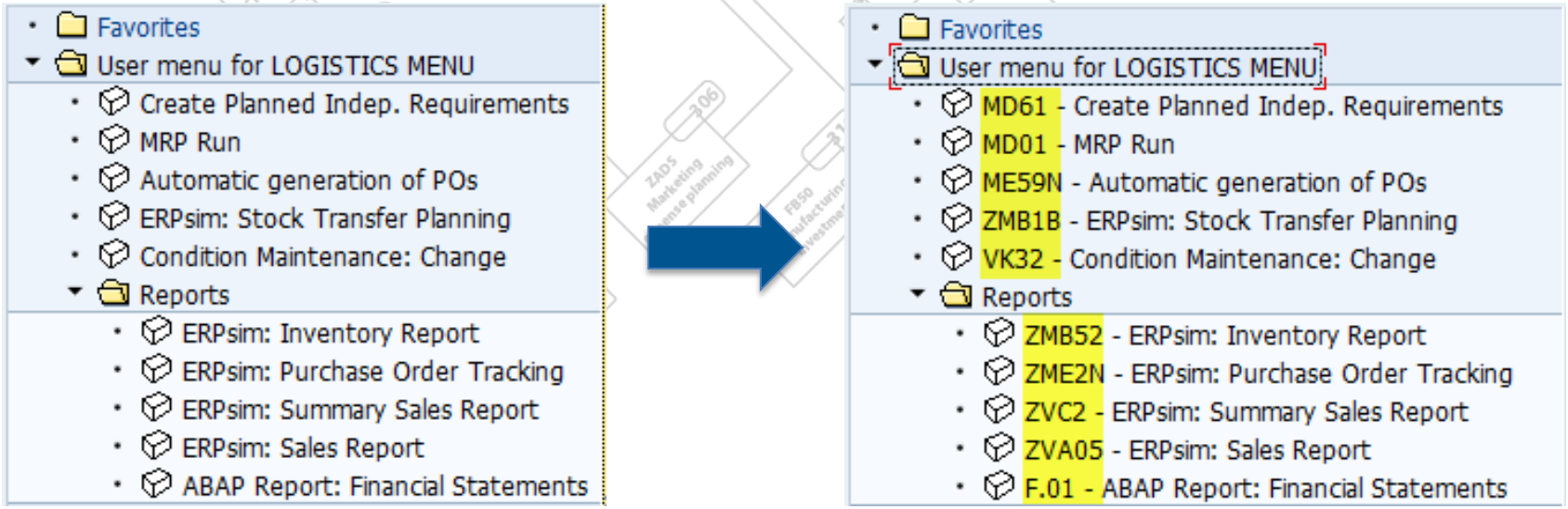
SAP Menu & Navigation



Top Menu: Extras / Settings / Display Technical Names

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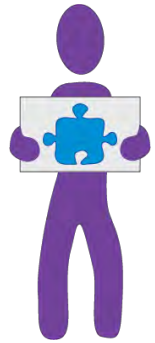
Training for Your New Job!

Logistics Game:
Logistics Manager



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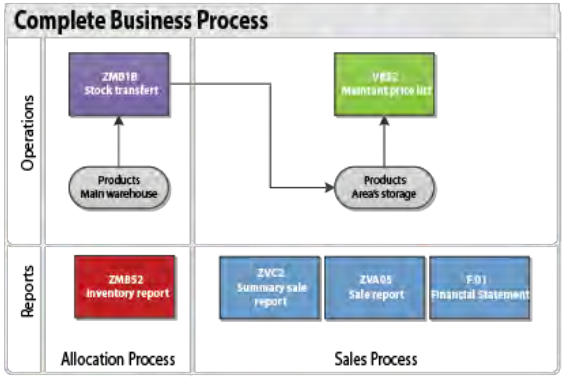
ERP SIMULATION GAME
Logistics Game
powered by ERPsim

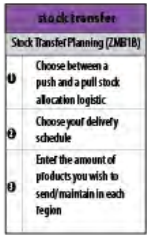
Logistics Manager

Login **$_TRANSFER** *Password* **ERPSIM**

Replenishment Inventory		
Product Code	Description	Units (every 5 days)
T01	Milk	950
T02	Cream	300
T03	Yoghurt	700
T04	Cheese	350
T05	Butter	400
T06	Ice Cream	300

Transportation fees	
Supplier to main warehouse	€ 1000
Main warehouse to storage location	€ 100





- Logistics Manager
- Stock Manager
- VP Sales
- Pricing Manager

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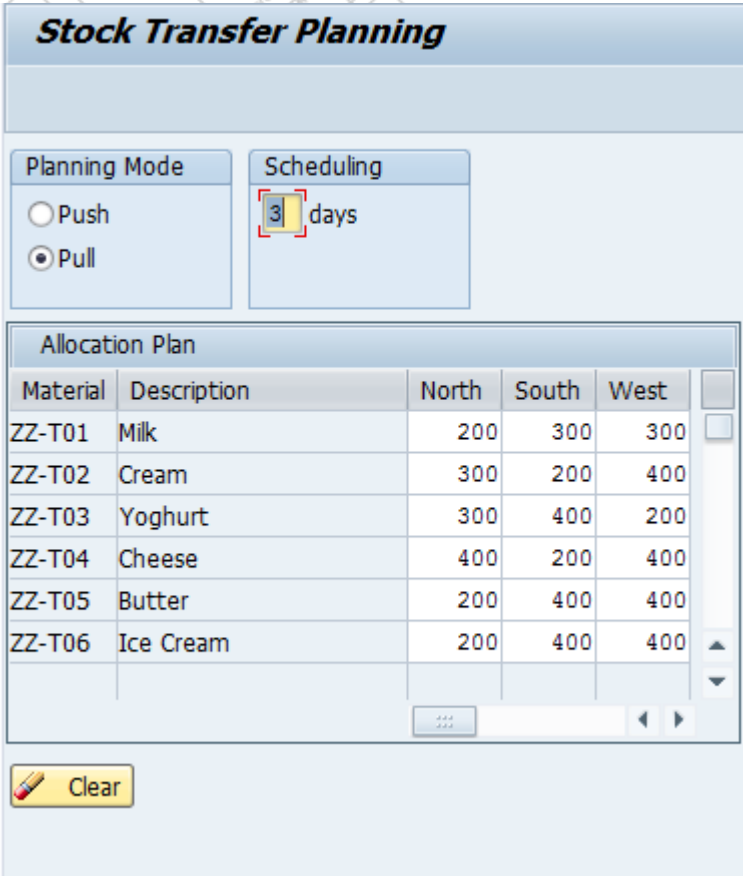
Login **$_TRANSFER** *Password* **ERPSIM**

ERPsim @ HEC MONTRÉAL
http://erpsim.hec.ca

Transfer Planning Logistics

stock transfer	
Stock Transfer Planning (ZMB1B)	
❶	Choose between a push and a pull stock allocation logistic
❷	Choose your delivery schedule
❸	Enter the amount of products you wish to send/maintain in each region



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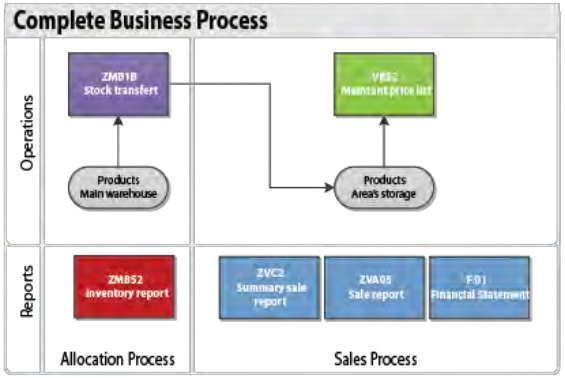
Logistics Game: **Stock Manager**

Stock Manager

Login $_STOCK Password ERPSIM

Replenishment Inventory		
Product Code	Description	Units (every 5 days)
T01	Milk	950
T02	Cream	300
T03	Yoghurt	700
T04	Cheese	350
T05	Butter	400
T06	Ice Cream	300

Transportation fees	
Supplier to main warehouse	€ 1000
Main warehouse to storage location	€ 100



Logistics Manager
Stock Manager
VP Sales
Pricing Manager

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Login **$_STOCK** Password **ERPSIM**

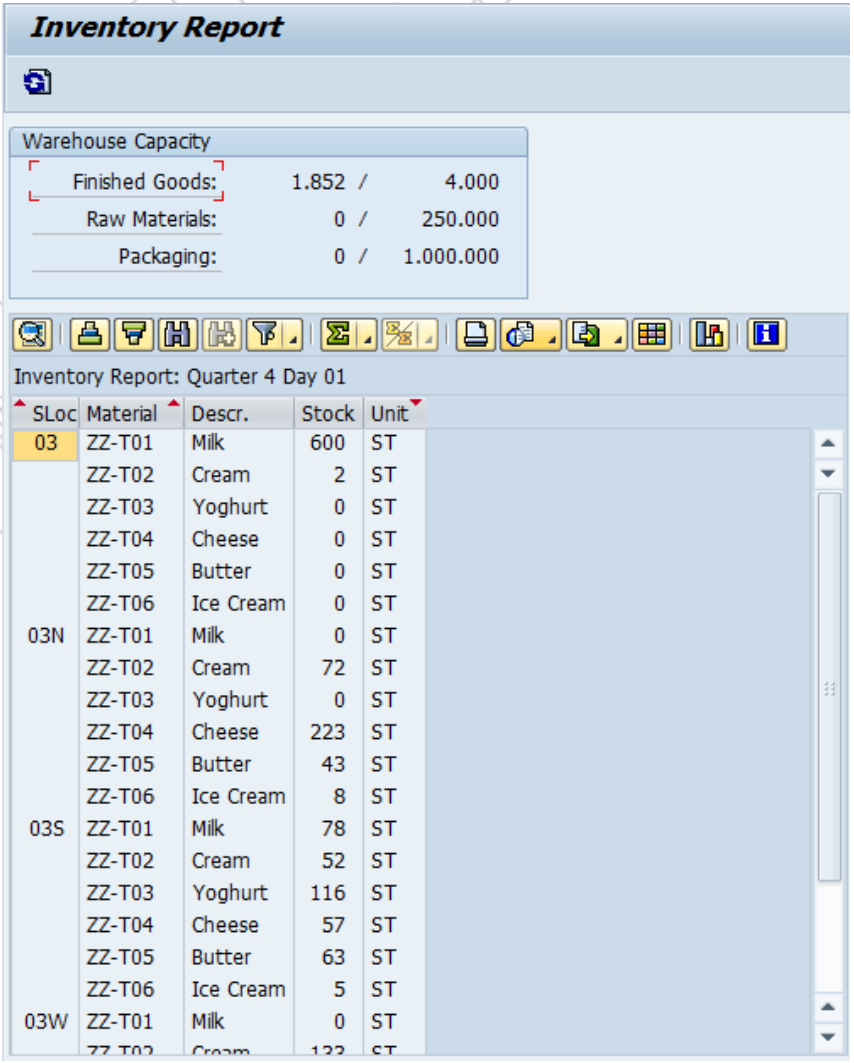
ERPsim Lab HEC MONTRÉAL
http://erpsim.hec.ca

Stock Levels in Material Overview

stock levels

Inventory report(ZMB52)

Shows all stock levels.



Inventory Report

Warehouse Capacity

Finished Goods:	1.852 /	4.000
Raw Materials:	0 /	250.000
Packaging:	0 /	1.000.000

Inventory Report: Quarter 4 Day 01

SLoc	Material	Descr.	Stock	Unit
03	ZZ-T01	Milk	600	ST
	ZZ-T02	Cream	2	ST
	ZZ-T03	Yoghurt	0	ST
	ZZ-T04	Cheese	0	ST
	ZZ-T05	Butter	0	ST
	ZZ-T06	Ice Cream	0	ST
03N	ZZ-T01	Milk	0	ST
	ZZ-T02	Cream	72	ST
	ZZ-T03	Yoghurt	0	ST
	ZZ-T04	Cheese	223	ST
	ZZ-T05	Butter	43	ST
	ZZ-T06	Ice Cream	8	ST
03S	ZZ-T01	Milk	78	ST
	ZZ-T02	Cream	52	ST
	ZZ-T03	Yoghurt	116	ST
	ZZ-T04	Cheese	57	ST
	ZZ-T05	Butter	63	ST
	ZZ-T06	Ice Cream	5	ST
03W	ZZ-T01	Milk	0	ST
	ZZ-T02	Cream	133	ST

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Logistics Game: **Pricing Manager**

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Logistics Game
powered by ERPsim

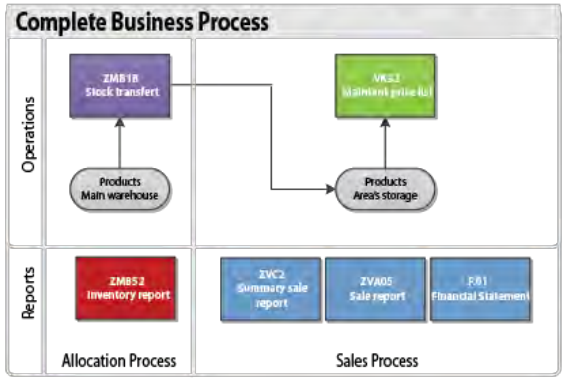
Pricing Manager

Login **$_PRICING** Password **ERPSIM**

Replenishment Inventory		
Product Code	Description	Units (every 5 days)
T01	Milk	950
T02	Cream	300
T03	Yoghurt	700
T04	Cheese	350
T05	Butter	400
T06	Ice Cream	300

Transportation fees	
Supplier to main warehouse	€ 1000
Main warehouse to storage location	€ 100

Complete Business Process



change price
Condition Maintenance: Change (VK32)
❶ Open *prices* folder and dbl click on *Price list*
❷ In *Distribution channel*, enter DC 16
❸ In *Material*, enter product code (optional)
❹
❺ Enter your prices
❻

- Logistics Manager
- Stock Manager
- VP Sales
- Pricing Manager

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Login **$_PRICING** Password **ERPSIM**

ERPsim Lab HEC MONTRÉAL
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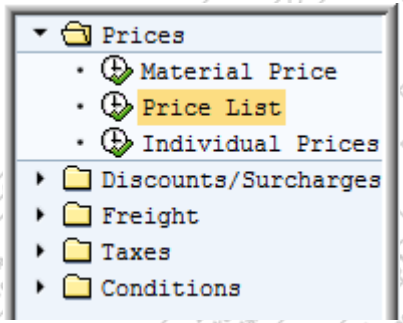
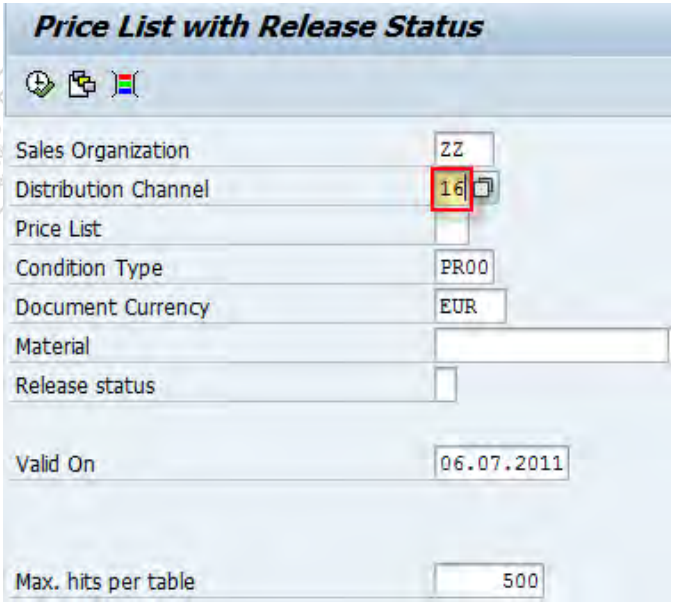
Maintain Prices for DC 16

change price	
Condition Maintenace: Change (VK32)	
❶	Open *prices* folder and dbl click on *Price list*
❷	In *Distribution channel*, enter DC **16**
❸	In *Material*, enter product code (optional)
❹	
❺	Enter your prices
❻	





S	Variable key			Amount
	CnTy	Curr.	Material ReSt	
	PR00	EUR	ZZ-T01 Milk	25,25
	PR00	EUR	ZZ-T02 Cream	79,28
	PR00	EUR	ZZ-T03 Yoghurt	28,43
	PR00	EUR	ZZ-T04 Cheese	90,95
	PR00	EUR	ZZ-T05 Butter	65,87
	PR00	EUR	ZZ-T06 Ice Cream	47,47

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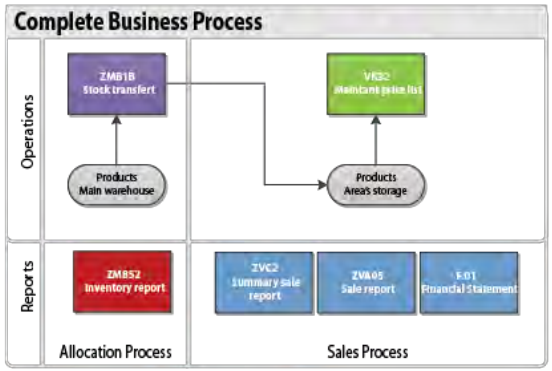
Logistics Game: **Sales Vice-President**

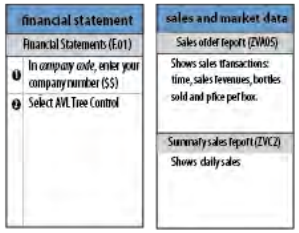
VP Sales

Login **$_SALES** Password **ERPSIM**

Replenishment Inventory		
Product Code	Description	Units (every 5 days)
T01	Milk	950
T02	Cream	300
T03	Yoghurt	700
T04	Cheese	350
T05	Butter	400
T06	Ice Cream	300

Transportation fees	
Supplier to main warehouse	€ 1000
Main warehouse to storage location	€ 100





Logistics Manager
Stock Manager
VP Sales
Pricing Manager

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Login **$_SALES** Password **ERPSIM**

ERPsim Lab HEC MONTRÉAL
http://erpsim.hec.ca

Checking the Sales Summary Report

sales and market data
Sales order report (ZVA05)
Shows sales transactions: time, sales revenues, bottles sold and price per box.
Summary sales report (ZVC2)
Shows daily sales

Summary Sales Order Report

Summary Sales Order Report: Quarter 4 Day 01

Qtr	Day	Descr.	Orders	Qty	Value
1	10	Butter	4	62	4.083,94
		Cheese	5	61	5.5
		Ice Cream	2	56	2.6
		Milk	6	244	6.1
		Yoghurt	5	250	7.1
	09	Butter	3	42	2.7
		Cheese	4	54	4.9
		Cream	1	14	1.1
		Ice Cream	2	41	1.9
		Milk	5	209	5.2
		Yoghurt	4	165	4.6
	08	Butter	6	102	6.7
		Cheese	5	65	5.9
		Cream	2	27	2.1
		Ice Cream	6	167	7.9
		Milk	5	269	6.7
		Yoghurt	8	320	9.0

Detailed Sales Order Report

Detailed Sales Order Report: Quarter 4 Day 01

Qtr	Day	DChl	Area	Descr.	Sold-to pt	Price	Qty	Value	A/R Qtr	A/R Day
1	10	16	NO	Cheese	80294	90,95	17	1.546,15	2	02
				Milk	80294	25,25	33	833,25	2	02
				Butter	80296	65,87	19	1.251,53	2	02
				Yoghurt	80296	28,43	65	1.847,95	2	02
				Yoghurt	80295	28,43	49	1.393,07	2	02
			SO	Ice Cream	80300	47,47	17	806,99	2	02
				Milk	80300	25,25	51	1.287,75	2	02
				Butter	80299	65,87	17	1.119,79	2	02
				Yoghurt	80299	28,43	43	1.222,49	2	02
				Butter	80298	65,87	14	922,18	2	02
				Yoghurt	80298	28,43	36	1.023,48	2	02
				Butter	80299	65,87	12	790,44	2	02
				Cheese	80299	90,95	18	1.637,10	2	02
				Milk	80299	25,25	69	1.742,25	2	02
			WE	Ice Cream	80302	47,47	39	1.851,33	2	02
				Cheese	80302	90,95	9	818,55	2	02
				Milk	80302	25,25	47	1.186,75	2	02

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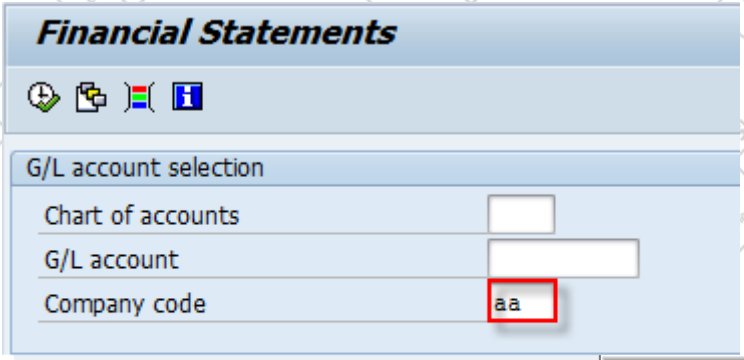
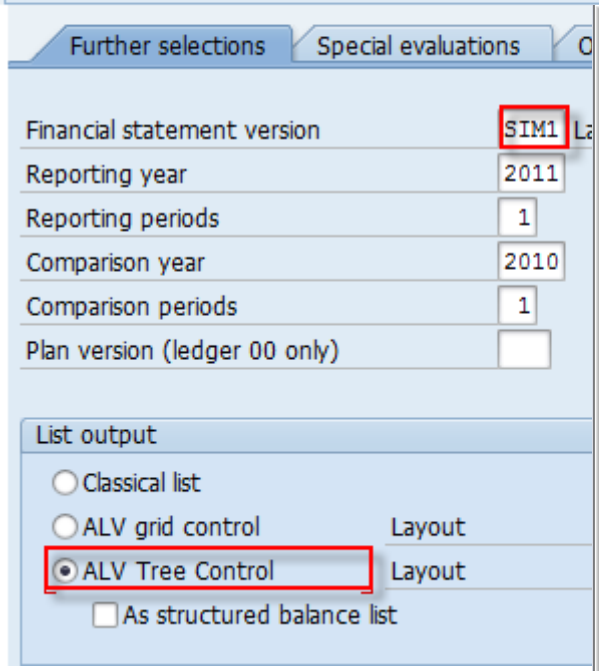
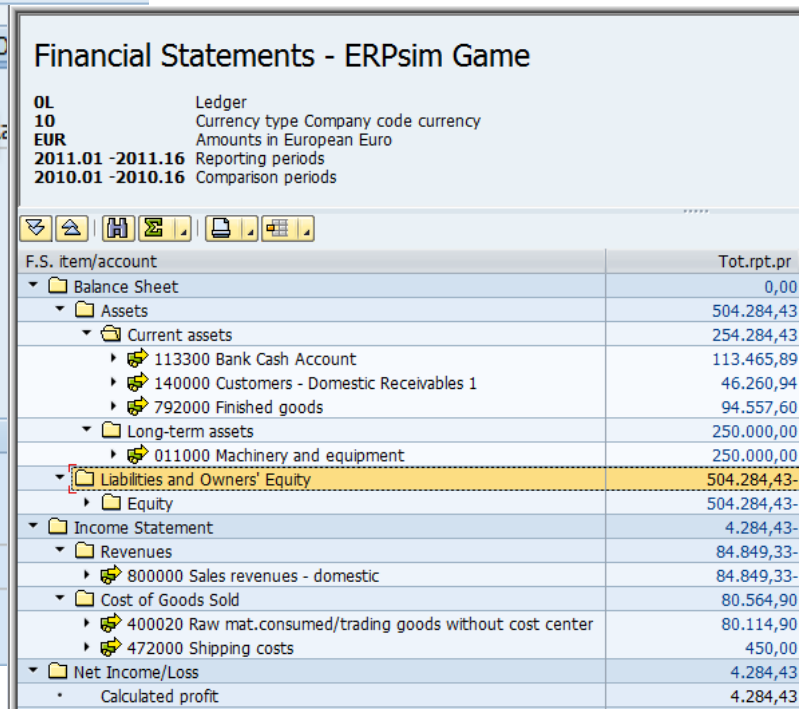
Checking the Financial Statements

financial statement	
Financial Statements (F.01)	
❶	In *company code*, enter your company number ($$)
❷	Select AVL Tree Control







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Logistic Game:
Round 1

Game timing

Round 1

20 days

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Cost, Inventory, and Initial Pricing

Material	$$-T01	$$-T02	$$-T03	$$-T04	$$-T05	$$-T06
Name	Milk	Cream	Yoghurt	Cheese	Butter	Ice Cream
Number of Units per Package	Box of 9 units	Box of 28 units	Box of 12 units	Box of 20 units	Box of 20 units	Box of 8 units
Initial Cost	€22.95	€72.07	€25.85	€82.68	€59.88	€43.15
Initial Price	€25.25	€79.28	€28.43	€90.95	€65.87	€47.47
Initial Stock	950	300	700	350	400	300

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The Logistic Game: Round 1 (10 days)

Let's start the simulator for 20 days!

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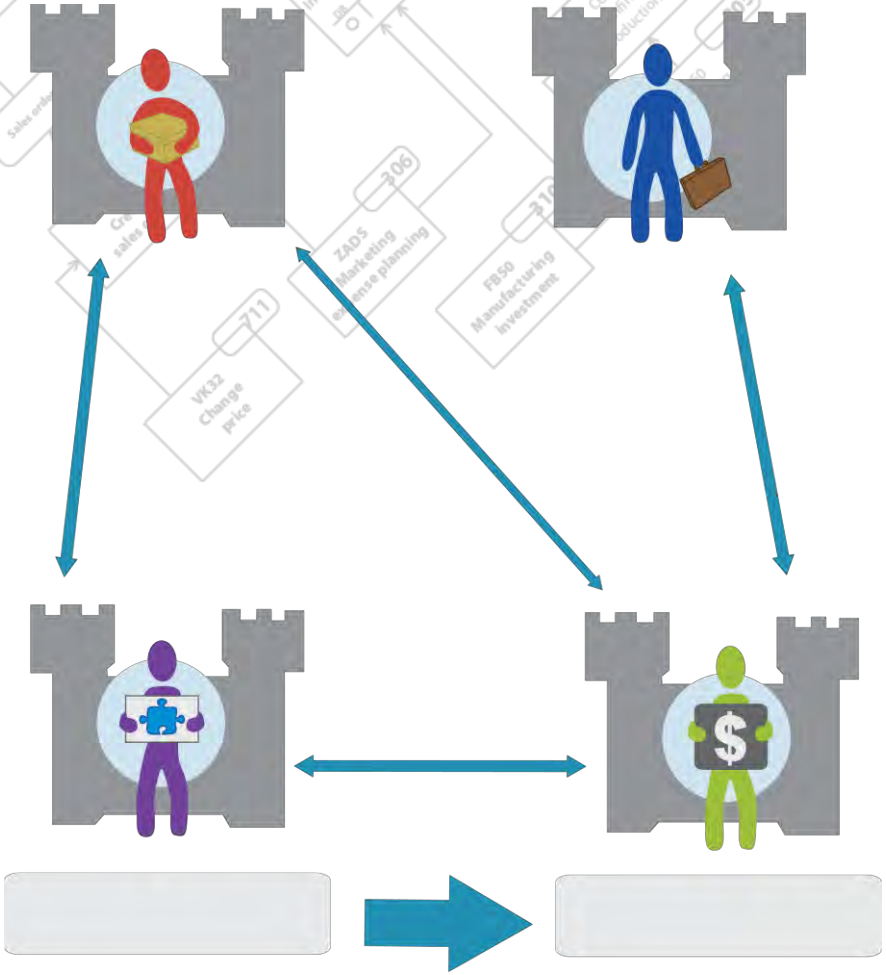
Debriefing:
Round 1

Working in Silos



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Logistics Game:
Round 2

New Logins

Login : **ERP_#$**

Password : **ERPSIM**

Login : ERP_1$
Password : ERPSIM

Login : ERP_2$
Password : ERPSIM

Login : ERP_3$
Password : ERPSIM

Login : ERP_4$
Password : ERPSIM

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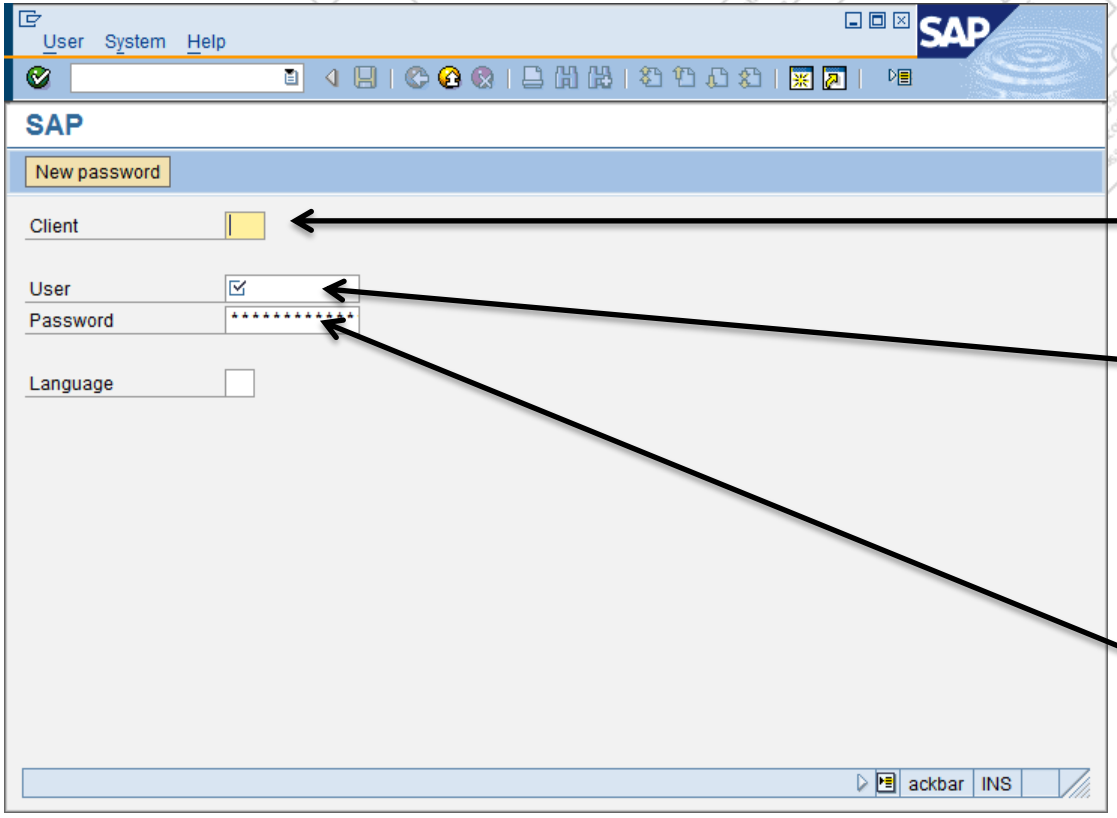
Login Information



Client will be provided by the instructor.

Login:

ERP_$ #

Where $ is your team letter, and # is your team number.

Password: ERPSIM

You will have to change your password the first time you enter.

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News Job-Aid

HEC MONTRÉAL
ERP SIMULATION GAME
Logistics Game
powered by ERPsim

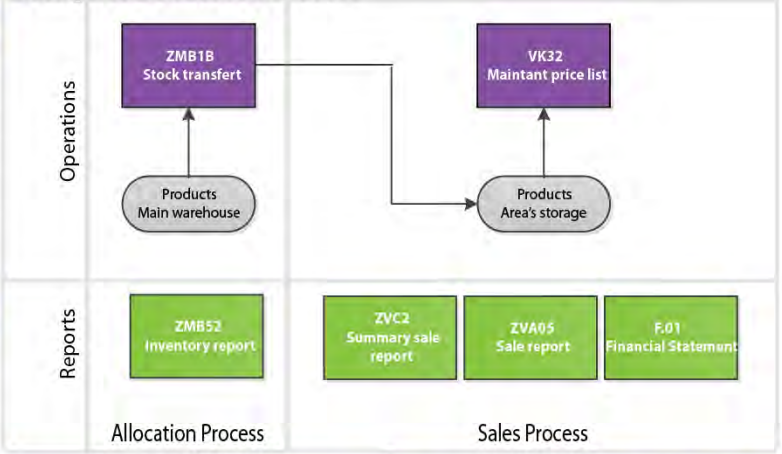
Logistics Game

Login **ERP_$#** *Password* **ERPSIM**

Replenishment Level		
Product Code	**Description**	**Number of Units (every 5 days)**
$$-T01	Milk	1400
$$-T02	Cream	300
$$-T03	Yoghurt	900
$$-T04	Cheese	600
$$-T05	Butter	450
$$-T05	Ice Cream	350

Transportation fees	
Supplier to main warehouse	€ 1000
Main warehouse to storage location	€ 100

Complete Business Process



stock transfer
Stock Transfer Planning (ZMB1B)
Choose between a push and a pull stock allocation logistic
Choose your delivery schedule
Enter the amount of products you wish to send/maintain in each region

change price	
Condition Maintenace: Change (VK32)	
❶	Open *prices* folder and dbl click on *Price list*
❷	In *Distribution channel*, enter DC **16**
❸	In *Material*, enter product code (optional)
❹	
❺	Enter your prices
❻	

financial statement	
Financial Statements (F.01)	
❶	In *company code*, enter your company number ($$)
❷	Select AVL Tree Control

stock levels
Inventory report(ZMB52)
Shows all stock levels.

sales and market data
Sales order report (ZVA05)
Shows sales transactions: time, sales revenues, bottles sold and price per box.
Summary sales report (ZVC2)
Shows daily sales

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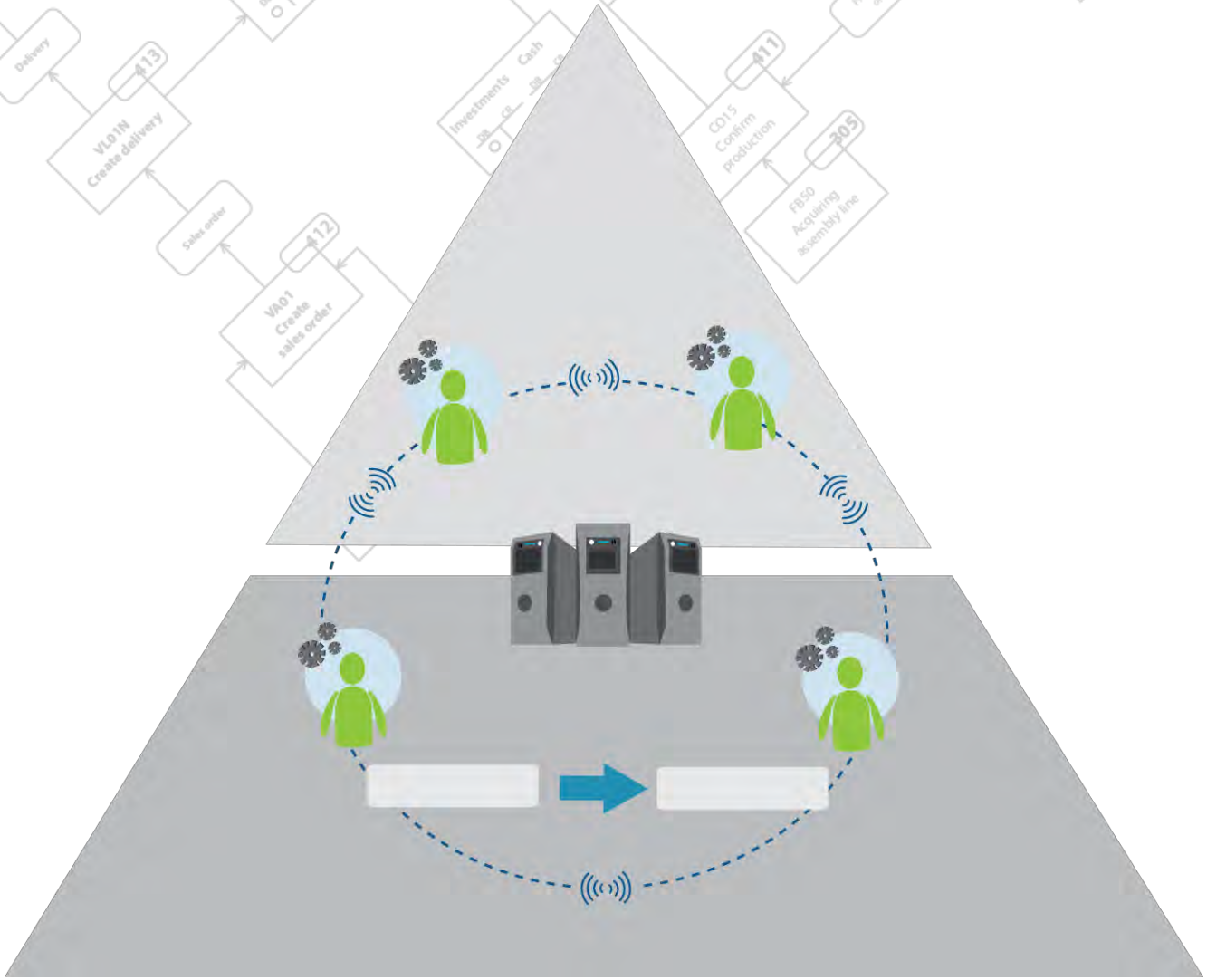
Game Design



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The Logistics Game: Round 2 (20 days)

Let's start the simulator for 20 days!

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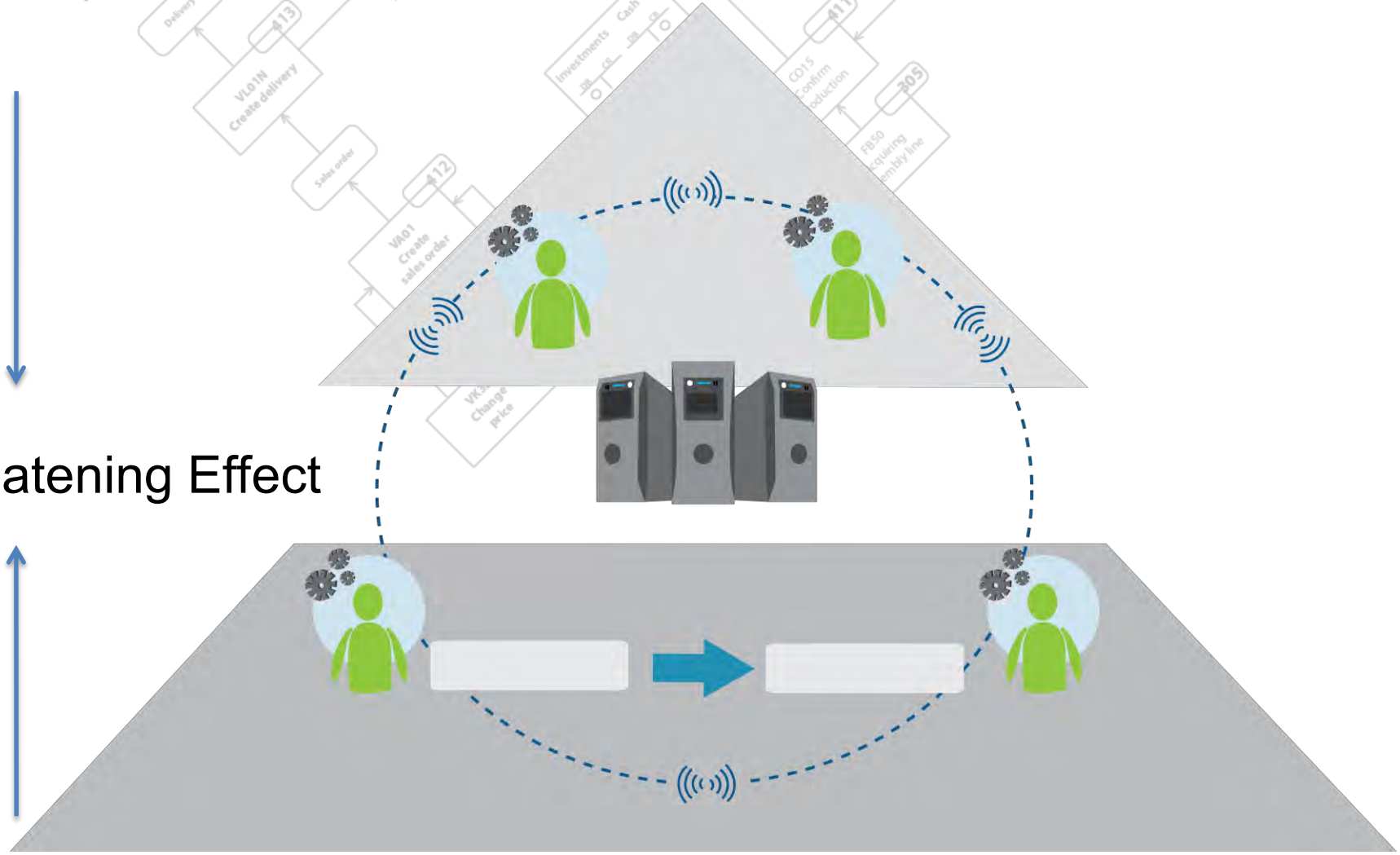
Debriefing:
Round 2

Flatening Effect



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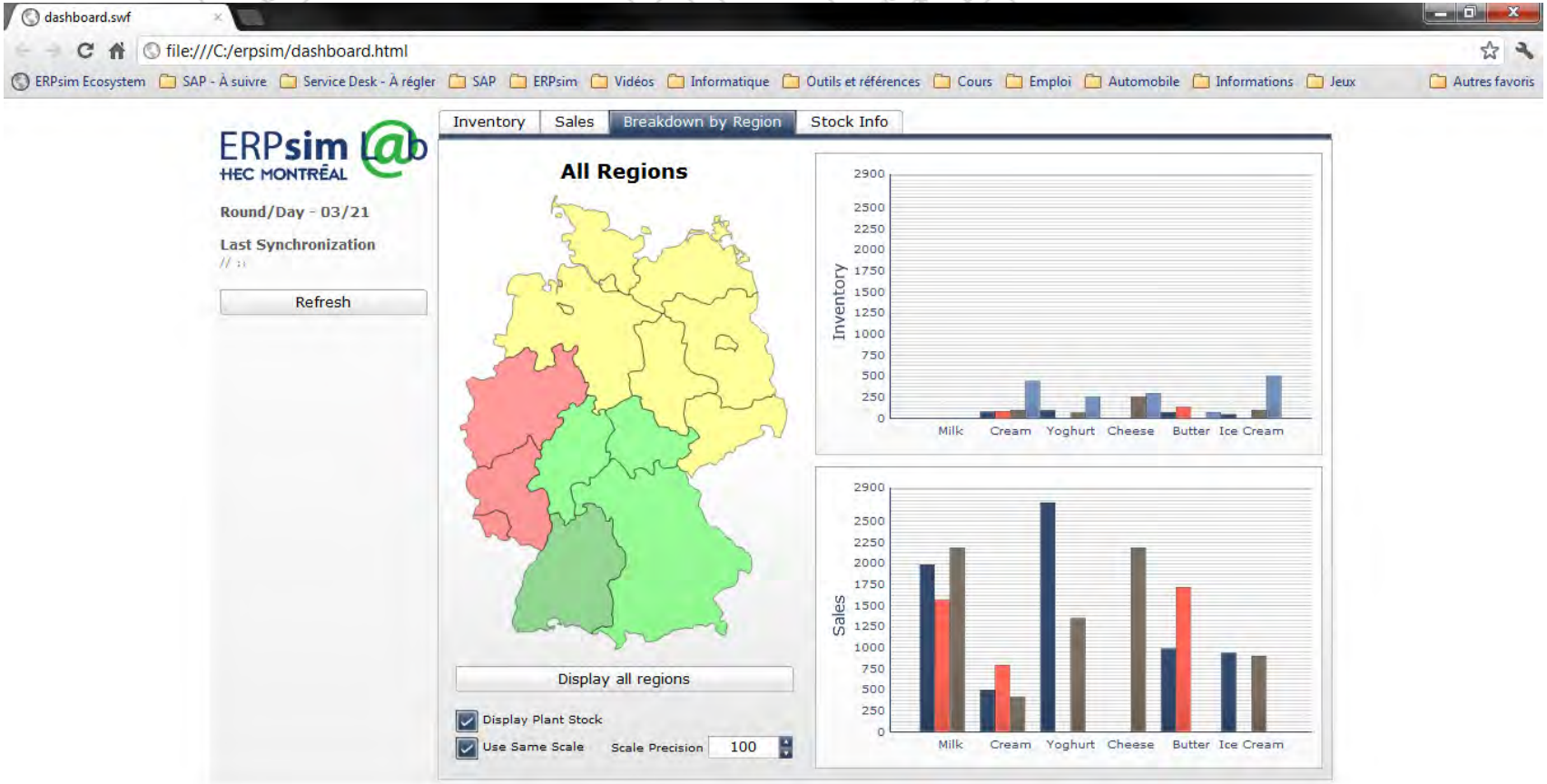
Logistics Game:
Round 3

SAP Crystal Dashboard for ERPsim



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The Logistics Game: Round 3 (20 days)

Let's start the simulator for the last 20 days!

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Final Debriefing

Conclusion

Pedagogical Material and Resources ERPsim Participant's Guide

- The ERPsim Participant`s Guide (eBook) is the main source of ERPsim R&D funding.
- Authors of the eBook have transferred copyrights to ERPsim Lab.
- ERPsim Lab's mission is to ensure the continued development and support of this simulation software.
- Proceeds from the sale of this eBook are used to fund the faculty support website and the team behind it.

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Requirements

- HEC Montréal grants a free educational ERP Simulation Game license to members of the SAP University Alliance (client request subject to a fee from the UCC).
- Students must purchase electronic material and access to the simulation for the manufacturing game.
- In order to have access to the game, interested Faculty members require ERPsim Instructor Training (Level 1) from one of our ERPsim Certified Trainers.

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SAP Summer Workshop

- Montreal, June 18 to 22, 2012
- Two Concurrent Tracks:
  - Level 1 : ERPsim Instructor
  - Level 2 : ERPsim Trainer
- Symposium on Experiential Learning in IT Education: June 17th

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Level 1: ERPsim Instructor

- Objectives:
  - Learn how to use ERPsim effectively and become confident in using the solution
  - Understand how to implement ERPsim and SAP in a curriculum
- Coverage:
  - Before the workshop
  - Distribution game (pre-workshop game)
  - During the workshop
  - Manufacturing Introduction
  - Manufacturing Extended
  - ERPsim Console administration
  - Simulation game and enactive learning pedagogical approaches
- Additional notes
  - A pre-workshop game is required. The remote game will use the Distribution game as an introduction to ERPsim.

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Level 1: ERPsim Instructor

Day	Description
1	Intro Manufacturing
2	SAP related knowledge for manufacturing scenario
3	ERPsim console admin
4	Extended Manufacturing and pedagogical approaches

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Level 2: ERPsim Trainer

- Pre-requisite
  - Level 1 training required
- Objectives:
  - Learn advanced ERPsim functionalities
  - Obtain Level 2 certification to become a “Train-the-Trainer”
- Coverage:
  - Logistics game
  - ERPsim BI and SAP Business Object
  - Advanced pedagogical approaches and troubleshooting
- Level 2 Certification Exam

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Level 2: ERPsim Trainer

Day	Description
1	Logistics game
2	Enactive approach to learning BI
3	Enactive approach to learning BI and configuration
4	Advanced pedagogical approaches and ERPsim troubleshooting, and Level 2 certification exam

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Symposium on Experiential Learning in IT Education: Call for Participation

- Organizers: Pierre-Majorique Léger (HEC Montréal), Paul Cronan (University of Arkansas), Jacques Robert (HEC) and Gilbert Babin (HEC Montréal)
- The purpose on this conference is to bring together researchers and educator willing to share their pedagogical experience and ongoing research related to the use of experiential learning in IT education.
- Workshop topics include, but are not limited to:
  - 1) Presentation of novel pedagogical material using experiential approach in IT, such as serious games, business simulation games and role playing simulations
  - 2) Research on the impact and benefits of experiential learning in IT.
- June 17, 2012 at HEC Montréal, Montreal, QC.

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ERPsim Academic Version 2011-12

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ERP Simulation Game

Version : August 2011

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