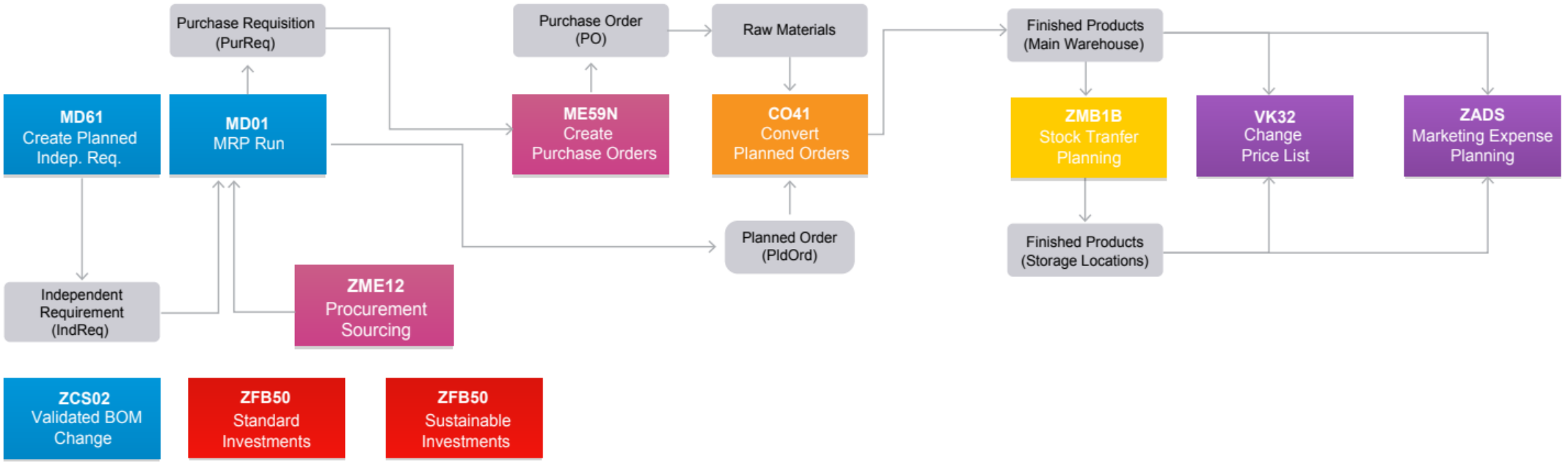
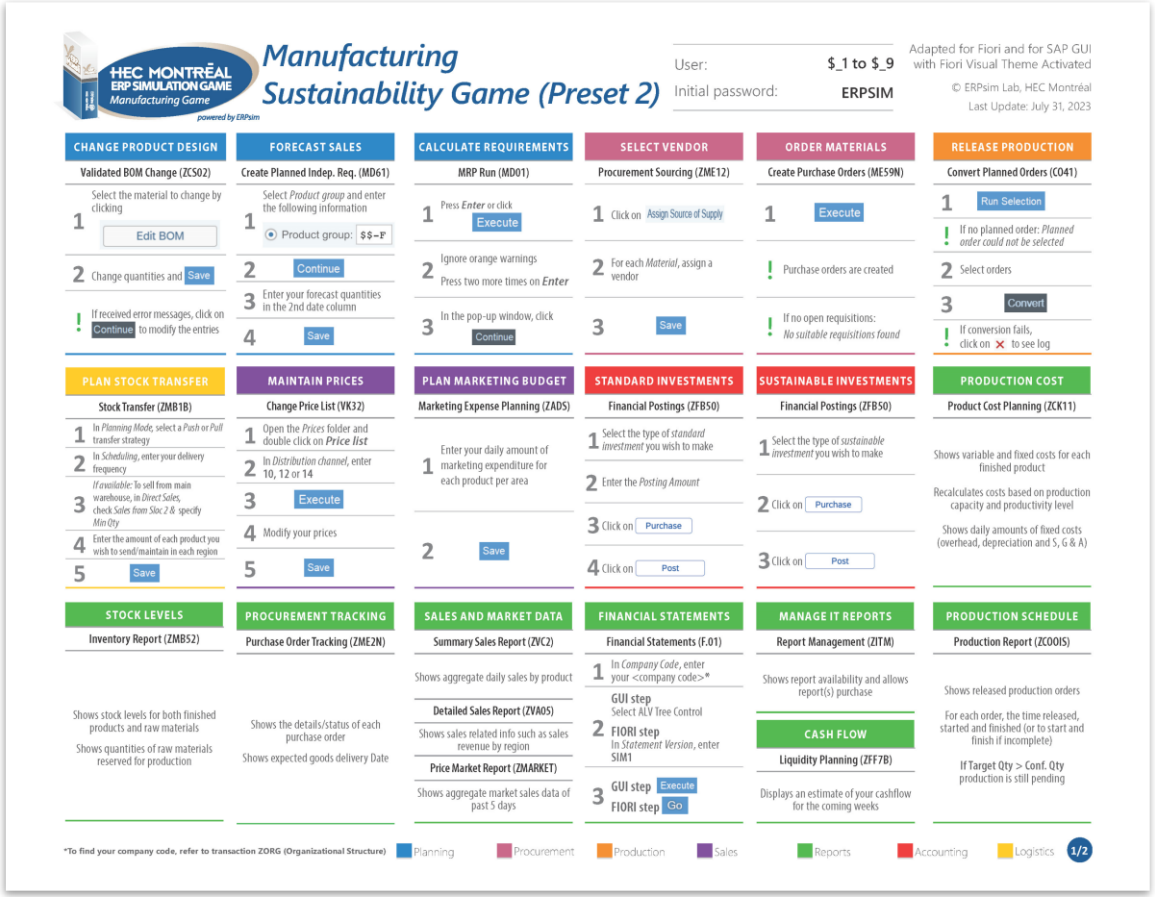
Game Scenario

ERPsim Academic Edition

Game Layout



Job Aid (Manufacturing Sustainability Preset 2)



HEC MONTRÉAL ERP SIMULATION GAME Manufacturing Game — powered by ERPsim

Manufacturing Sustainability Game (Preset 2)

User: $_1 to $_9
Initial password: ERPSIM

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

Last Update: July 31, 2023

CHANGE PRODUCT DESIGN
Validated BOM Change (ZCS02)

1 Select the material to change by clicking — Edit BOM
2 Change quantities and Save
! If received error messages, click on Continue to modify the entries

FORECAST SALES
Create Planned Indep. Req. (MD61)

1 Select *Product group* and enter the following information — Product group: $$-F
2 Continue
3 Enter your forecast quantities in the 2nd date column
4 Save

CALCULATE REQUIREMENTS
MRP Run (MD01)

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

SELECT VENDOR
Procurement Sourcing (ZME12)

1 Click on Assign Source of Supply
2 For each *Material*, assign a vendor
3 Save

ORDER MATERIALS
Create Purchase Orders (ME59N)

1 Execute
! Purchase orders are created
! If no open requisitions: *No suitable requisitions found*

RELEASE PRODUCTION
Convert Planned Orders (CO41)

1 Run Selection
! If no planned order: *Planned order could not be selected*
2 Select orders
3 Convert
! If conversion fails, click on ✕ to see log

PLAN STOCK TRANSFER
Stock Transfer (ZMB1B)

1 In *Planning Mode*, select a *Push* or *Pull* transfer strategy
2 In *Scheduling*, enter your delivery frequency
3 *If available:* To sell from main warehouse, in *Direct Sales*, check *Sales from Sloc 2* & specify *Min Qty*
4 Enter the amount of each product you wish to send/maintain in each region
5 Save

MAINTAIN PRICES
Change Price List (VK32)

1 Open the *Prices* folder and double click on ***Price list***
2 In *Distribution channel*, enter 10, 12 or 14
3 Execute
4 Modify your prices
5 Save

PLAN MARKETING BUDGET
Marketing Expense Planning (ZADS)

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

STANDARD INVESTMENTS
Financial Postings (ZFB50)

1 Select the type of *standard investment* you wish to make
2 Enter the *Posting Amount*
3 Click on Purchase
4 Click on Post

SUSTAINABLE INVESTMENTS
Financial Postings (ZFB50)

1 Select the type of *sustainable investment* you wish to make
2 Click on Purchase
3 Click on Post

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)

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 details/status of each purchase order
Shows expected goods delivery Date

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

FINANCIAL STATEMENTS
Financial Statements (F.01)

1 In *Company Code*, enter your <company code>*
GUI step Select ALV Tree Control
2 FIORI step In *Statement Version*, enter SIM1
3 GUI step Execute
FIORI step Go

MANAGE IT REPORTS
Report Management (ZITM)

Shows report availability and allows report(s) purchase

CASH FLOW
Liquidity Planning (ZFF7B)

Displays an estimate of your cashflow for the coming weeks

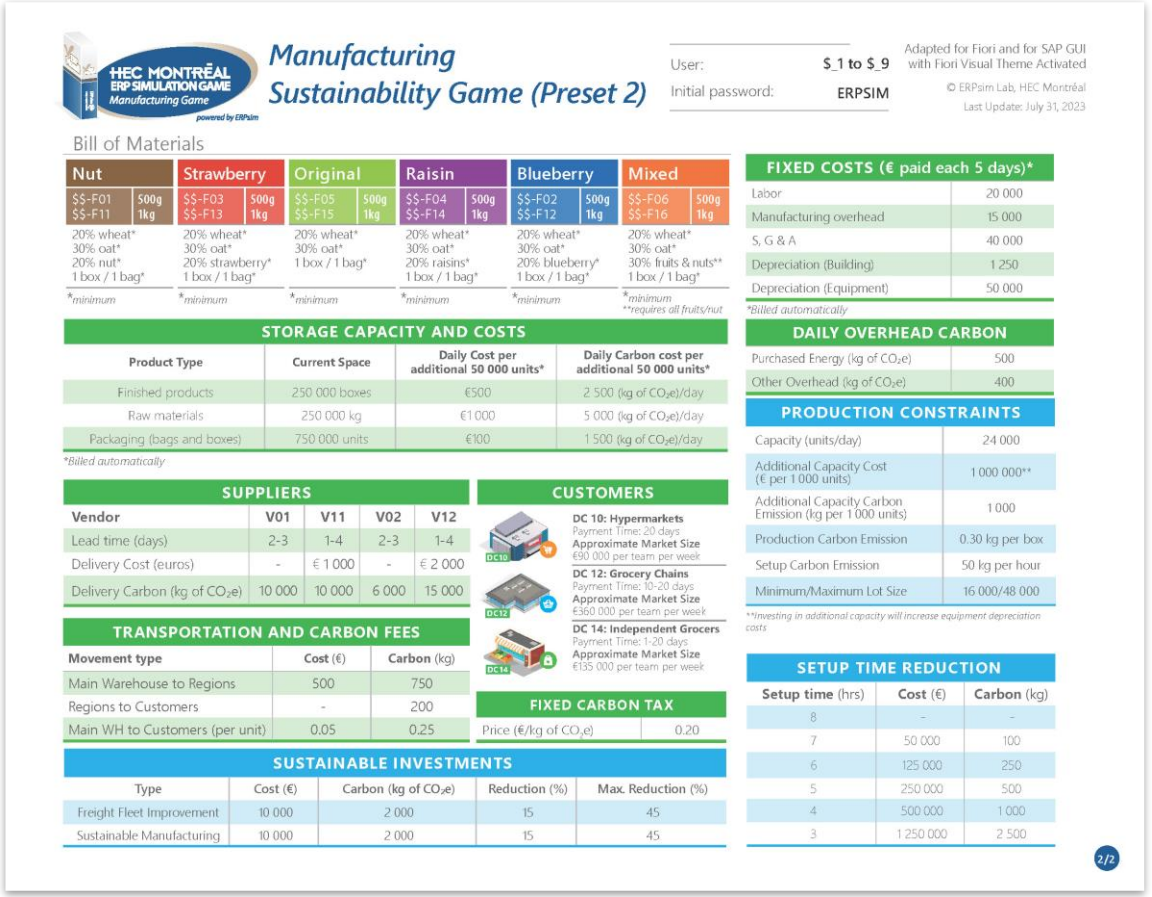
PRODUCTION SCHEDULE
Production Report (ZCOOIS)

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

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

Planning | Procurement | Production | Sales | Reports | Accounting | Logistics

1/2



HEC MONTRÉAL ERP SIMULATION GAME Manufacturing Game — powered by ERPsim

Manufacturing Sustainability Game (Preset 2)

User: $_1 to $_9
Initial password: ERPSIM

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

Last Update: July 31, 2023

Bill of Materials

Nut	Strawberry	Original	Raisin	Blueberry	Mixed
$$-F01 / $$-F11 — 500g / 1kg	$$-F03 / $$-F13 — 500g / 1kg	$$-F05 / $$-F15 — 500g / 1kg	$$-F04 / $$-F14 — 500g / 1kg	$$-F02 / $$-F12 — 500g / 1kg	$$-F06 / $$-F16 — 500g / 1kg
20% wheat* 30% oat* 20% nut* 1 box / 1 bag*	20% wheat* 30% oat* 20% strawberry* 1 box / 1 bag*	20% wheat* 30% oat* 1 box / 1 bag*	20% wheat* 30% oat* 20% raisins* 1 box / 1 bag*	20% wheat* 30% oat* 20% blueberry* 1 box / 1 bag*	20% wheat* 30% oat* 30% fruits & nuts** 1 box / 1 bag*
*minimum	*minimum	*minimum	*minimum	*minimum	*minimum **requires all fruits/nut

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

STORAGE CAPACITY AND COSTS

Product Type	Current Space	Daily Cost per additional 50 000 units*	Daily Carbon cost per additional 50 000 units*
Finished products	250 000 boxes	€500	2 500 (kg of CO_2e)/day
Raw materials	250 000 kg	€1 000	5 000 (kg of CO_2e)/day
Packaging (bags and boxes)	750 000 units	€100	1 500 (kg of CO_2e)/day

*Billed automatically

DAILY OVERHEAD CARBON

Purchased Energy (kg of CO_2e)	500
Other Overhead (kg of CO_2e)	400

SUPPLIERS

Vendor	V01	V11	V02	V12
Lead time (days)	2-3	1-4	2-3	1-4
Delivery Cost (euros)	-	€ 1 000	-	€ 2 000
Delivery Carbon (kg of CO_2e)	10 000	10 000	6 000	15 000

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

PRODUCTION CONSTRAINTS

Capacity (units/day)	24 000
Additional Capacity Cost (€ per 1 000 units)	1 000 000**
Additional Capacity Carbon Emission (kg per 1 000 units)	1 000
Production Carbon Emission	0.30 kg per box
Setup Carbon Emission	50 kg per hour
Minimum/Maximum Lot Size	16 000/48 000

**Investing in additional capacity will increase equipment depreciation costs

TRANSPORTATION AND CARBON FEES

Movement type	Cost (€)	Carbon (kg)
Main Warehouse to Regions	500	750
Regions to Customers	-	200
Main WH to Customers (per unit)	0.05	0.25

FIXED CARBON TAX

Price (€/kg of CO_2e)	0.20

SETUP TIME REDUCTION

Setup time (hrs)	Cost (€)	Carbon (kg)
8	-	-
7	50 000	100
6	125 000	250
5	250 000	500
4	500 000	1 000
3	1 250 000	2 500

SUSTAINABLE INVESTMENTS

Type	Cost (€)	Carbon (kg of CO_2e)	Reduction (%)	Max. Reduction (%)
Freight Fleet Improvement	10 000	2 000	15	45
Sustainable Manufacturing	10 000	2 000	15	45

2/2

Competition Rules

- Teams will play 4 Rounds of the ERPsim **Manufacturing Sustainability** (Preset 2+) scenario.
- Teams are **only allowed** to perform **transactions** described on the **Job Aid**.
- Teams must **finish with a debt less than the initial one** (8 Million EUR).
- Investing in **capacity increase** and **setup time reduction** is **irreversible**.
- **Coaches** can join their team's breakout rooms, but they will be asked to come back to the main room when the simulation is running. **Coaches** can login, but they are not allowed to input transactions.
- Teams have **access** to the **OData** service.
- Teams must always **behave ethically** and responsibly.
- Teams will be ranked based on their **company valuation**.

Rounds Evolution

Round 1

- No carbon tax
- Sales from the main warehouse only
- Standard investments allowed

Round 2

- Carbon tax now implemented
- Suppliers V11 and V12 now available
- Sustainable investments allowed
- ZITM enabled

Round 3

- Increased carbon tax
- Sales from regional warehouses now available
- Random disruption

Round 4

- Increased carbon tax
- Random disruption

Random Disruptions

Event	Name	Context	Scope
1	Cold Spell	The cold spell increases the carbon emission per unit of raw material purchased, as suppliers must use energy-intensive protection measures to protect the fruits/nuts/cereals from the cold. However, your company requires less energy to stock them in a cool environment.	All suppliers, 2 random raw materials
2	Heat Wave	The heat wave decreases the carbon per unit of raw material purchased, as suppliers must use less energy-intensive protection measures to protect the fruits/nuts/cereals from the cold. However, your company requires more energy to stock them in a cool environment.	All suppliers, 2 random raw materials
3	Disruption in Supply Chain (Vendors)	Disruptions in your supplier's supply chain required them to use less-optimal sourcing and routing. Therefore, all products purchased from this supplier will be generating more carbon emissions.	Random suppliers, All products
4	New Legislation, Renewable Energy Adoption	New legislations in Germany increases drastically the carbon tax while reducing the carbon footprint of purchasing energy as more energy is now generated by renewable sources.	-
5	Waste Heat Recovery System	Newly installed waste heat recovery system on your machineries allow your company to reuse heat from your production process, thus reducing the amount of energy purchased. However, the more complex machineries require more care when cleaning up between production batches.	-
6	Main Warehouse Relocation	A recent relocation of your main warehouse increases the distance between your main hub and two regions and Germany while reducing the distance with the third region. The distance difference will be impacting the carbon emissions generated by deliveries from the main warehouse to the regions and by sales delivered directly from the main warehouse.	Random regions