



Introduction

Case “SubProducer”

Turku School of Economics, Finland
Timo Lainema & Eeli Saarinen
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Welcome to VIBu training and to the Management Team of Sub-Producer Ltd!

Welcome to the VIBu simulation game training. We are looking forward to an opportunity to learn by doing in a nice and efficient way. VIBu training is especially powerful in illustrating the dynamics and the holistic structure of a business organization – issues that many of us encounter in our work, but which are difficult to illustrate by traditional business training. You are welcome to join an innovative, dynamic and successful company, where you, together with your colleagues, are responsible for the strategic management and operations management in the company.

The VIBu model applied now is a sub-producer business logic model, with two kinds of human operated companies: Sub-Producers and BioCounter producers. Sub-Producers will provide BioCounter producers with certain raw materials without which the BioCounter producers cannot run their production process. **You will be a member in a Sub-Producer company.**

With this game introduction and the video presentations at

<http://www.realgame.fi/video/start.htm>

you can make yourself familiar with the basics of VIBu/VIBu simulation and your game company. **Acquaint yourself with the introduction materials. You can also sketch out the challenges in your materials process by thinking of the questions in the end of this manual.**

The strategic management of the company consists of analyzing the external environment and analyzing the internal processes of the company. You will utilize your analyses, calculations and decisions regarding purchasing, manufacturing, sales, marketing, product development and finance to steer the company, and ultimately to determine the success or failure of Sub-Producer Ltd. Your competitors will try to maximize their profits as well.

In the following illustration you will see how the business functions in Sub-Producer Ltd are organized.

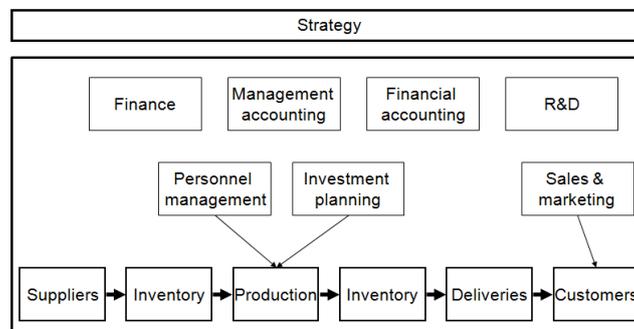


Figure 1: The business functions in SubProducer Ltd

Sub-Producer Ltd is a company manufacturing components (**Processor units** and **Electronics**) for high tech laboratory equipment. The customers are mainly North-European manufacturers of biomechanical instruments called BioCounters. The success of SubProducer Ltd has always dependent on the success of the BioCounter industry. The BioCounter industry developed in the late 1970s and early 1980s. During the 1990's the BioCounter industry experienced a dramatic change when the new generation BioCounters were introduced to the markets. The companies experienced huge demand for their revolutionary new analytical equipments and turnovers sky-rocketed. As a result of this success, the companies developed even further enhanced versions of their products, called BioCounter DLX.

Starting from autumn 2012 the tightening competition eroded profitability significantly. Many of the BioCounter companies have decided to seek ways to recreate the growth curve from the previous decade in order to increase efficiency and this way, also to increase profitability and shareholder value. The companies have realized that the growth of the companies has led to uncontrolled investments and unbalanced capacity. It is now apparent to their management that a new look has to be taken at the sourcing and at the inventory management. Thus, there is a need to balance the internal processes in order to succeed in the primary task – increasing profitability. This will definitely and unevitably affect also the Sub-Producer companies.

Your team has been brought in to manage this challenging situation!



Figure: Processor unit (one of your end products)



Figure: Bio Counter (your customers' end product, in which Processors and Electronics are used).

Competitive situation

The market is currently very competitive, and it has been difficult for any company to gain market shares. There are 9 companies (companies 6-14) manufacturing and selling different BioCounters and 5 companies (companies 1-5) selling different components to BioCounters at the moment. All companies are about to renew their strategies, the first step being the renewal of their management. A more concise way of managing the companies and a broader mix of competitive strategies may change the competitive situation overnight!

The simulation environment

VIBu simulation is continuously operated. It means that the operations in the simulation company are triggered hour by hour, in one hour steps. The simulation runs 24 hours per day. There are 7 days a week and all the week days are equal regarding, for example, the market demand. There are 28-31 days per month, as in the real world calendar. If you need to, you can run your company’s production in three shifts (night, morning, evening; each 8 hours long).

SubProducer product portfolio

The production and distribution functions of SubProducer are situated in Northern Europe. The company currently has two end products **Processor Unit** and **Electronics**.

Raw Material Purchases

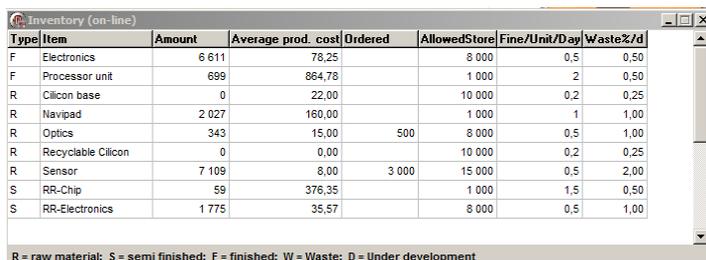
Your production line requires frequent raw material purchases. You have several suppliers for each of the raw materials. These different suppliers have different prices, delivery times and terms of payment. When you place a raw material order to a supplier, the supplier will automatically send the ordered raw material. The table below shows the raw material suppliers with different raw material delivery terms:

Supplier	Raw material	Price	Delivery time (h)	Term of payment (d)
NY Electrobits Ltd.	Sensor	6,00	7 d	14
Freezer Electronics	Sensor	11,00	3 d	18
Electronics Ltd.	Sensor	22,00	18 h	14
Johnson Controls	Navipad	90,00	5 d	14
Johnson Controls	Navipad	120,00	1 d	10
Olumpys Ltd.	Optics	20,00	12 h	14
Optics Ltd.	Optics	10,00	2 d	14
Optocussy Gmbh	Optics	15,00	1 d	14
Olumpys Ltd.	Cilicon base	20,00	12 h	14
Optics Ltd.	Cilicon base	7,00	10 d	14
Optocussy Gmbh	Cilicon base	12,00	5 d	21

Instead of **Cilicon base** you can use a raw material called **Recyclable Cilicon** in your materials process. Recyclable Cilicon is something that you can buy from the BioCounter producers (as described in Section **Sales** in this document, but the in the opposite order, the BioCounter producer makes the delivery).

Inventory

The raw materials purchased from a raw material supplier will be placed in the inventory. The inventory is an on-line inventory (inventory values are updated in real-time). The inventory value should be as low as possible to ensure that scarce capital is not unnecessarily tied up in materials.



Type	Item	Amount	Average prod. cost	Ordered	Allowed Store	Fine/Unit/Day	Waste%/d
F	Electronics	6 611	78,25		8 000	0,5	0,50
F	Processor unit	699	864,78		1 000	2	0,50
R	Cilicon base	0	22,00		10 000	0,2	0,25
R	Navipad	2 027	160,00		1 000	1	1,00
R	Optics	343	15,00	500	8 000	0,5	1,00
R	Recyclable Cilicon	0	0,00		10 000	0,2	0,25
R	Sensor	7 109	8,00	3 000	15 000	0,5	2,00
S	RR-Chip	59	376,35		1 000	1,5	0,50
S	RR-Electronics	1 775	35,57		8 000	0,5	1,00

R = raw material; S = semi finished; F = finished; W = Waste; D = Under development

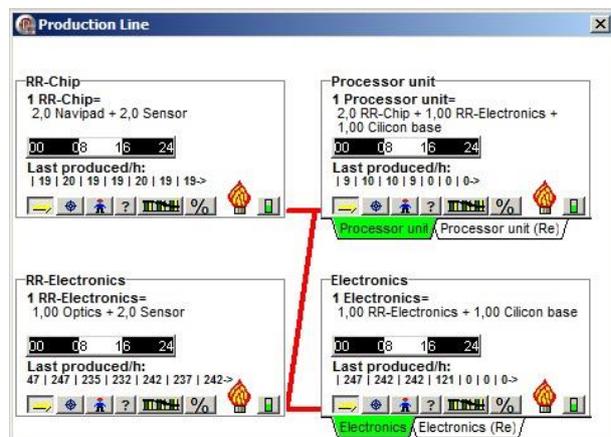
Type F items in the inventory are finished goods, type R are raw materials, and type S are semi-finished products. Note that there are some deliveries towards to the inventory, that will arrive in the near future (for example 3.000 units of Sensors are on their way towards the inventory). Waste-% means that a certain percentage of each of the inventory items will get spoiled every day. The cost of this may be considerable, if inventory levels are too high. For example, the waste from the Sensor inventory in the figure is $2\% \times 7.109 \text{ units} \times 8,00\text{€} = 1.137 \text{ €/day}$.

There may also be extra inventory costs. For example, the Navipad inventory in the figure is so high (2.027 units) that there are extra costs from arranging the inventory: $(2.027 - 1.000) \times 1 \text{ €} = 1.027 \text{ €/day}$.

Production

The manufacturing consists of four production cells. Production decisions include: selecting during which shifts the cells will be working (morning, evening, night), investing in machine capacity, and hiring workers.

The finished goods from production will be placed in the inventory where from they are to be delivered to the customers.

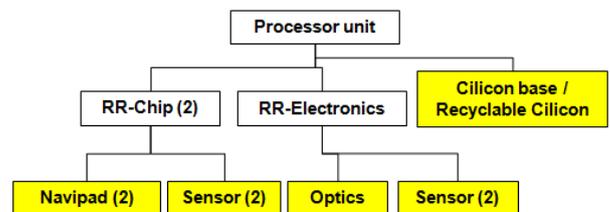


The bill of materials (BoM) of Processor Unit is shown on the right. To produce 1 Processor unit you need 2 RR-Ships + 1 RR-Electronics + 1 Cilicon base or Recyclable Cilicon.

In the sub-assembly, to produce 1 RR-Ship you need 2 Navipads + 2 Sensors, and so on.

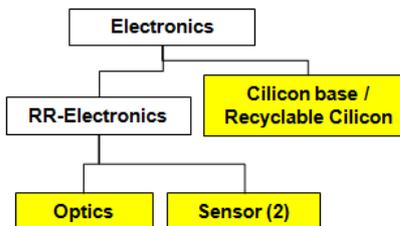
Altogether, to produce one Processor unit you need the following raw materials:

- 6 Sensors
- 4 Navipads
- 1 Optics
- 1 Cilicon base or Recyclable Cilicon



On the right you can see the bill of materials for the Electronics end product. Altogether, to produce one Electronics you need:

- 2 Sensors
- 1 Optics
- 1 Cilicon base or Recyclable Cilicon



The production cell capacities are the following:

Production Cell	Capacity per hour	Capacity per shift	Capacity per day	Price for a new machine	Machine capacity
RR-Chip	20 units	160 units	480 units	150.000 €	4 units
RR-Electronics	240 units	1920 units	5760 units	300.000 €	40 units
Processor Unit	20 units	160 units	480 units	150.000 €	4 units
Electronics	240 units	1920 units	5760 units	300.000 €	40 units

Capacity per day can be achieved by using all the three shifts. The above capacity values are theoretical and they are very seldom achieved. Note, that the production shift extra salaries are very high when using evening and night shifts. The production costs of producing a Processor Unit is approximately 700 €/unit and 45 €/Electronics. After the variable production costs you also need to pay fixed costs which are roughly from 30% to 40% of the amount of production costs.

Sales

Your customers are the other gaming groups within the simulation environment (BioCounter producers, companies no. 6-14). They make purchase decisions based on your offering. When you want to sell Electronics or Processor Units, you need to contact (by phone, Skype, face-to-face) these customers in order to agree on the sales terms. When you have agreed on the sales terms with your customer, you create a Phone delivery and enter the values you have agreed for the delivery.

Phone delivery

If you have agreed (over phone or face-to-face) with a fellow company to sell your goods to it, the delivery can be done using this form.

Product:

Customer:

Amount (in store 17 806):

Unit price:

Term of payment (days):

Delivery:

Estimated transfer duration: 72 hours
 20,00€ haul + 5,00€ units

Delivery methods

If a BioCounter producer wishes to buy your end products, you have the following delivery methods (the methods available in the Nordic area) available for the delivery process.

Market area	Delivery method	Duration (h)	Fixed cost	Cost/unit
Nordic	Truck	72	20	5
Nordic	Air freight	48	10	10
Nordic	Courier Service	24	20	20

Note, that faster deliveries are more expensive than slower ones. This has to be taken into account when you agree on the sales terms: a faster delivery should have a higher sales price than an offer with a slower promised delivery, if you want to make same profit.

Based on the information given on previous pages, you can think of the answers to these questions.

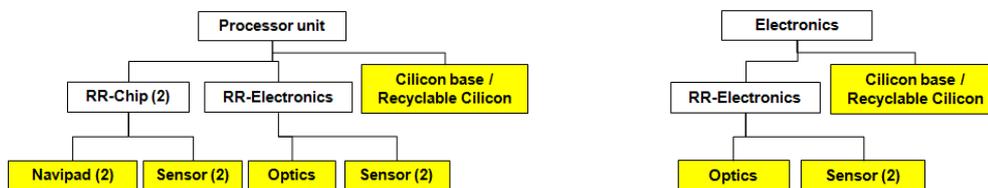
1. What are the main challenges of SubProducer Ltd?
2. What are the most important tasks of the Top Management Team?
3. Which are the factors that affect your success in VIBu simulation?
4. Your customers' estimated total demand is 46.000 Bio counters and 30.000 Bio counter DLXs per month. To produce one Bio Counter requires 1 Processor Unit and 6 Electronics. To produce one BioCounter DLX requires 2 Processor Units and 8 Electronics. There are 3 other SubProducers besides of your company. So, what is the demand you may expect in the simulation environment?
5. Based on the previous calculation, how much raw materials are required per day to answer to the demand you calculated above?
 - Navipads?
 - Optics?
 - Sensors?
 - Cilicon bases?
6. Suppose that you order each raw material from the cheapest suppliers. How much of each raw material you need to have in the inventory when you place the order, in order the raw material inventory to last for production during the raw material delivery? See the supplier table on the next page.
 - Navipads?
 - Optics?
 - Sensors?
 - Cilicon bases?

APPENDIX

RAW MATERIAL SUPPLIERS

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PRODUCT HIERARCHIES



OUR OWN INVENTORY IN THE BEGINNING

Item	Type	Inventory (units)	Waste-%/ Day	Store capacity, units	Extra cost from store exceeding the capacity, €/day
Sensor	Raw material	20.000	2 %	15.000	0,5 €
Navipad	Raw material	3.000	1 %	1.000	1,0 €
Optics	Raw material	6.000	1 %	8.000	0,5 €
Cilicon base	Raw material	6.000	0,25 %	10.000	0,2 €
RR-Chip	Semi-finished	250	0,5 %	1.000	1,5 €
RR-Electronics	Semi-finished	1.500	1 %	8.000	0,5 €
Processor units	Finished product	400	0,5 %	1.000	2,0 €
Electronics	Finished product	2.000	0,5 %	8.000	0,5 €

TERMS OF DELIVERY

Market area	Delivery method	Duration (h)	Fixed cost	Cost/unit
Nordic	Truck	72	20	5
Nordic	Air freight	48	10	10
Nordic	Courier Service	24	20	20

OTHER INFORMATION

New machinery in use (days after the order)	7 days
Production worker recruiting delay	4 days
Production worker sacking delay	7 days
Probability for a worker resignation	2% / month
Production worker salary	60 €/h
Extra salary cost during evening shift	12 € / worker / h
Extra salary cost during night shift	25 € / worker / h
Cash in the beginning	250.000 €
Interest for negative cash	5% / month
Interest for a bank loan	6% / year
Fixed administrative costs / month	300.000 €
Administrative costs / production machine	20.000 €
Raw material ordering cost (per order)	700 €