



Helsinki University of Technology
Department of Electrical and Communications Engineering
Networking Laboratory

Functional Extensions to Mobile Operator Business Game

Mathias Tallberg

mtallber@netlab.hut.fi

January 27th, 2005

Supervisor: Prof. Heikki Hämmäinen, TKK

Instructor: Prof. Juuso Töyli, TKKK



Outline

- Introduction
- Introduction to Business Games
- Mobile Operator Business Game (MOB)
- Experiences
- Modeling of Additional Extensions
- Conclusions
- Future Research



Introduction (1/2)

- Motivations for the Research
 - To gain better insight into the mobile operator business and to model this insight into a business game (MOB)
 - Results from research projects (e.g. LEAD) implemented into MOB
 - Goal: A teaching tool
- Objectives of the Research
 - The main objective:
 - To define and model extensions to MOB



Introduction (2/2)

- Objectives of the Research, continued...
 - Special interest is also put on making the business game more user-friendly and playable.
 - The secondary objective:
 - To improve MOB and to gain experiences through testing
- Methodology
 - Literature study
 - Using a feedback loop consisting of:
 - Modeling, implementation and testing, and user feedback



Introduction to Business Games (1/2)

- The usage of active and problem-based learning has increased
- Naturally applied in business games
- To summarize different areas of business under one teaching event
- “The purpose of a teaching simulation is to convey experimental lessons transferable to the real world” (Lane 1995)



Introduction to Business Games (2/2)

- A business game can not exactly tell how the future will will turn out
- However, it can be used to:
 - Analyze business constraints, dependencies and possible futures
 - Help to gain better understanding of business
 - Improve teamwork
 - Be fun
- Complexity vs. simplicity



Mobile Operator Business Game (MOB)

- The Mobile Operator Business Game (MOB) is a business simulation game specifically related to the mobile operator business environment
- Purpose of the game is to introduce players to mobile operator business related decisions
- Focus will be on new mobile data services
- An elementary prototype developed by J. Kokko (Kokko, 2004)



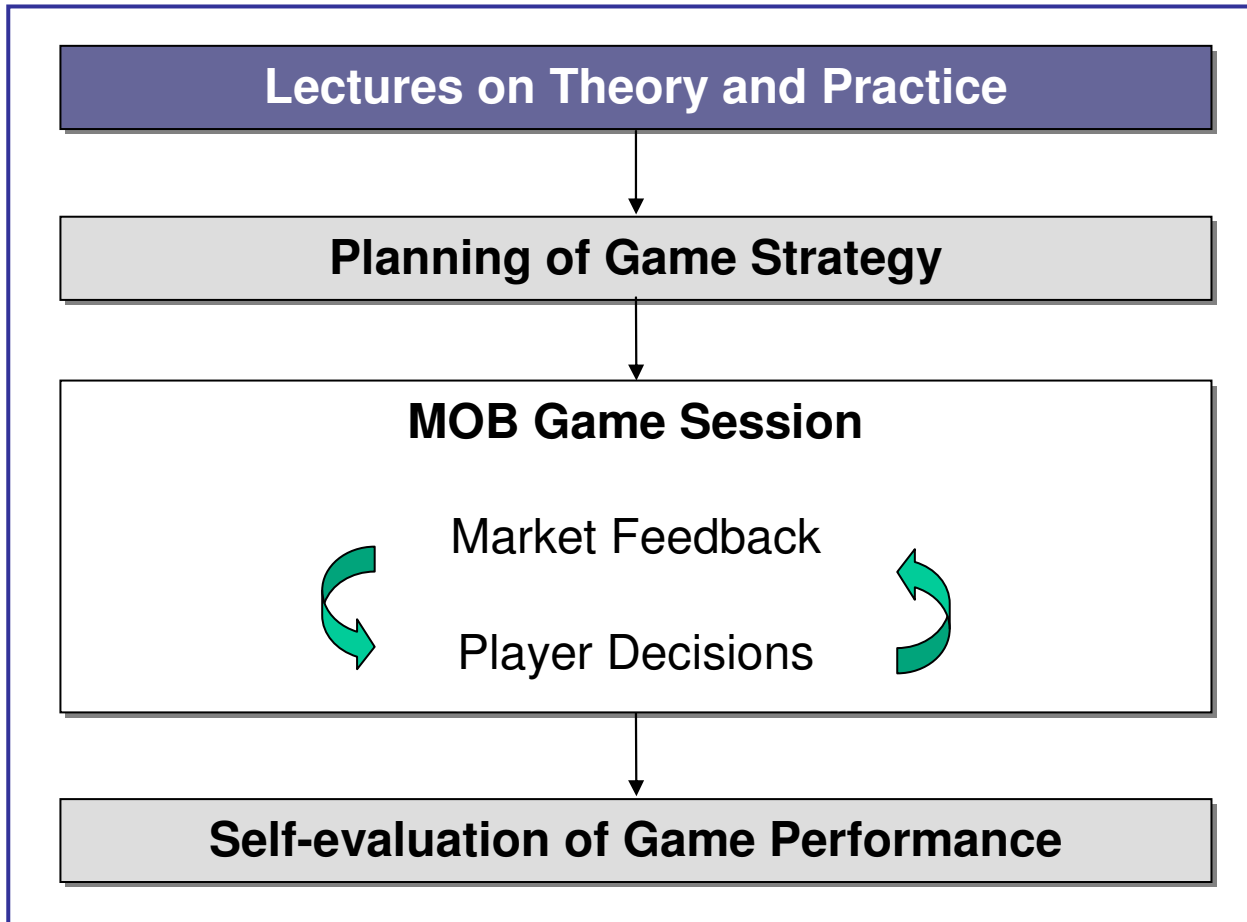
Experiences (1/5)

- Based on three different sessions during the course S-38.041 Networking Business at HUT
 - 36 students participated
 - 3-4 teams per session, 2-4 players per team
 - Mainly undergraduate students, but also some postgraduate students



Experiences (2/5)

- The structure of the training process:





Experiences (3/5)

	I totally agree	I agree	I agree/ I don't agree	I don't agree	I totally don't agree	I can't say/ no comments
The preliminary report added value to the learning of the game as a whole	14	16	6	1		
The final report added value to the learning of the game as a whole	3	16	10	8		

- *The preliminary exercise is essential for the game. There is no point in just going to the session and play if one has not thought about the strategy beforehand*
- *Playing without planning and without creating our own strategy would not have given the experience that we got with carefully planned strategy*
- *I think it's very important to review your own decisions afterwards. One needs to go through the decisions and analyze them, especially if one has not made it very well during the game*
- *The final report made me repeat the game in my mind and to think about what we did and why*



Experiences (4/5)

	I totally agree	I agree	I agree/ I don't agree	I don't agree	I totally don't agree	I can't say/ no comments
The goal for MOB was clearly presented	9	20	6	1		
The presented goals were achieved	3	24	8	1		
The grade (4-10) for the presentation of the goals		Average: 8,1				
A strategic approach was needed to succeed in the game	11	20	4	1		
A systematic and well planned approach helped in succeeding	8	15	11	1	1	
The success in the game was only about luck		2	7	17	10	
MOB seemed realistic	2	21	11	2		
MOB was too complicated		1	6	16	13	
MOB was demanding	1	16	13	4	2	
There are too many decision items in MOB	1	1	5	25	4	
The value chain is sufficiently covered in MOB	3	9	13	11		3
MOB was easy to use	8	22	3	2	1	
MOB gave enough information for making decisions	1	17	10	7	1	
The grade for the teaching (4-10)		Average: 8,4				
The grade for your own learning (4-10)		Average: 7,9				
The grade for MOB (4-10)		Average: 8,6				



Experiences (5/5)

- Some general comments about MOB:
 - The MOB session was very interesting and educational
 - This kind of teaching is very efficient compared to lecturing
 - Learning by doing is much more effective
 - This was a nice way to complement the studies in the class room
 - Definitely better than lectures. Personally I never learn anything during lectures, but today I did. MOB gave a good view about all the things that a successful operator has to consider.
 - Learning can also be fun!



Modeling of Additional Extensions

- The need for the modeled extensions:

	I totally agree	I agree	I agree/ I don't agree	I don't agree	I totally don't agree	I can't say/ no comments
Which of the following features would, in your opinion, be good to have in MOB?						
The mobile content business	8	13	8	4		4
The roaming business	9	12	7	7		2
The MVNO business	14	10	6	4		3
The handset business	1	8	8	15	4	1

- Clear need for MVNO business
- Sceptical about handset business



Mobile Content Business (1/2)

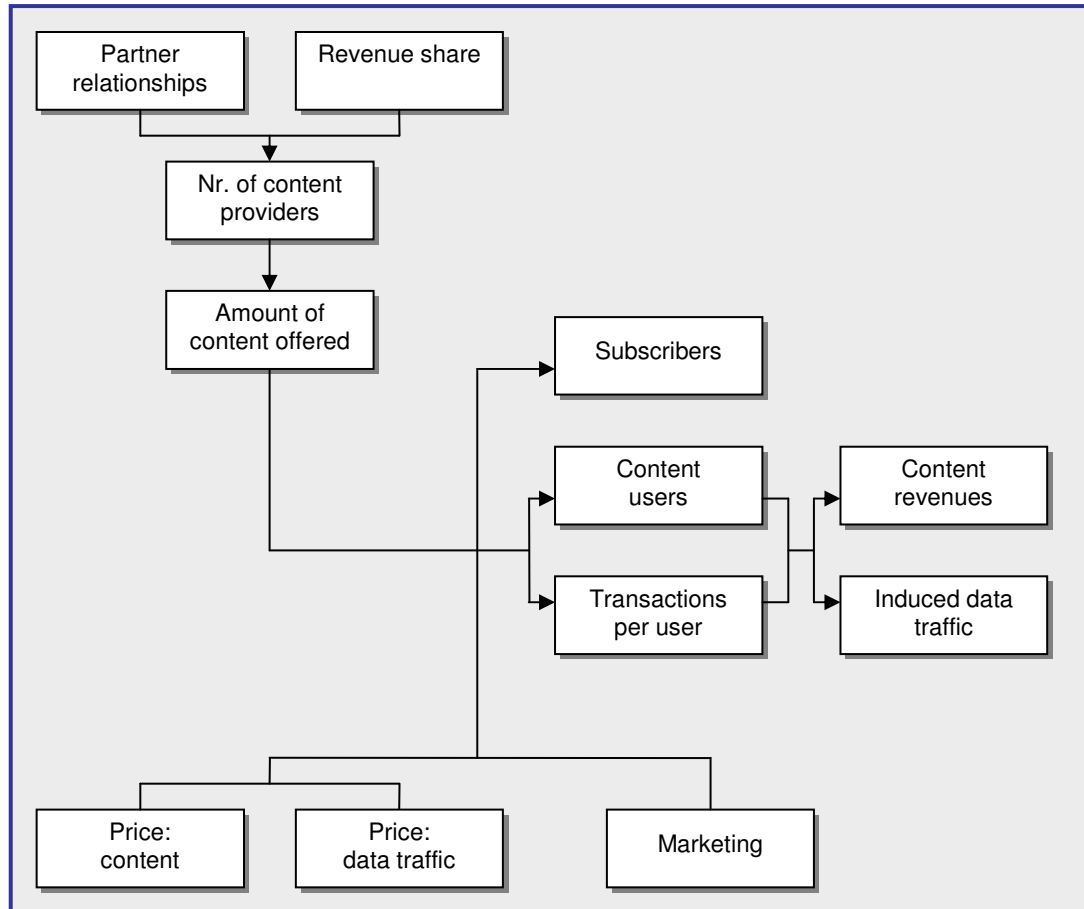
- Decision window:

Mobile Content					
	Digital				Physical
	Games	Music	Information	Other	
Usage & pricing					
Previous season:					
Number of content users:					
Average price (€/transaction):					
Transactions (transaction/user/month):					
Total induced traffic volume (MB/month):					
Next season:					
Estimated number of content users:					
Average price (€/transaction):					
Estimated transactions (transaction/user/month):					
Estimated total induced traffic volume (MB/month):					
Revenue share					
Previous season share of revenue:					
Next season share of revenue:					
Partner relationships					
Number of content providers:					
Previous investment on partner relationships (€):					
Next investment on partner relationships (€):					
Revenues					
Revenues previous season (€):					
Estimated revenues next season (€):					



Mobile Content Business (2/2)

- Dependencies:





Roaming Business (1/2)

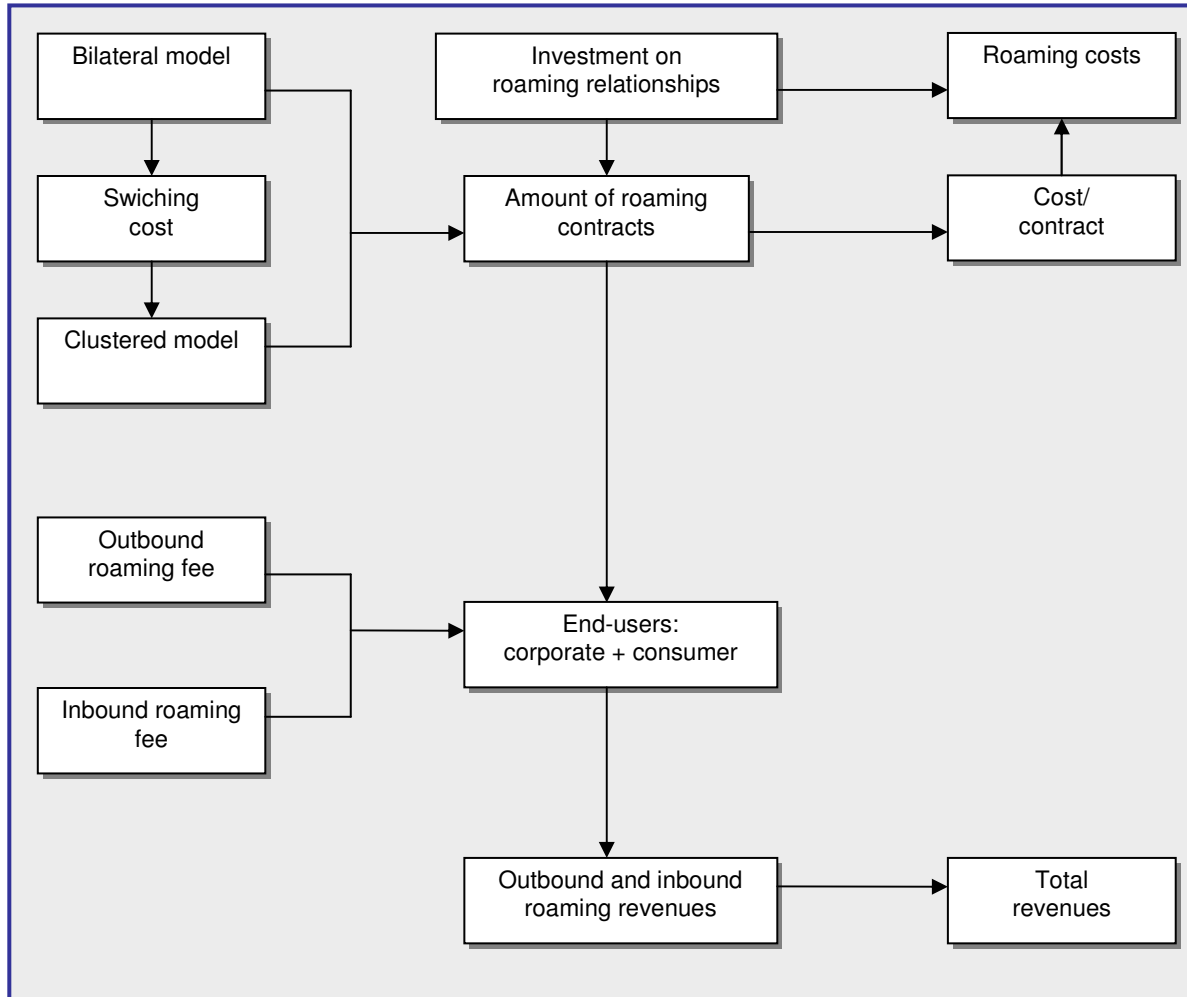
- Decision window:

Roaming				
Roaming decisions				
International clusters:				
International mobile operators / cluster:				
Switching cost: bilateral => clustered:				
Switch to clustered model (Yes/No):				
	Voice	SMS	MMS	Data
Roaming model:				
Previous season roaming contracts:				
Estimated next season roaming contracts:				
Cost/contract:				
Investment on roaming relationships:				
Roaming costs:				
Total roaming costs:				
	Voice	SMS	MMS	Data
Outbound roaming				
Previous season outbound roamers:				
Estimated next season outbound roamers:				
Previous season average usage/month/user:				
Estimated next season average usage/month/user:				
Previous season outbound roaming fee:				
Next season outbound roaming fee:				
Outbound roaming revenues:				
	Voice	SMS	MMS	Data
Inbound roaming				
Previous season inbound roamers:				
Estimated next season inbound roamers:				
Previous season average usage/month/user:				
Estimated next season average usage/month/user:				
Previous season inbound roaming fee:				
Next season inbound roaming fee:				
Inbound roaming revenues:				
Total roaming revenue:				



Roaming Business (2/2)

- Dependencies:





MVNO Business (1/2)

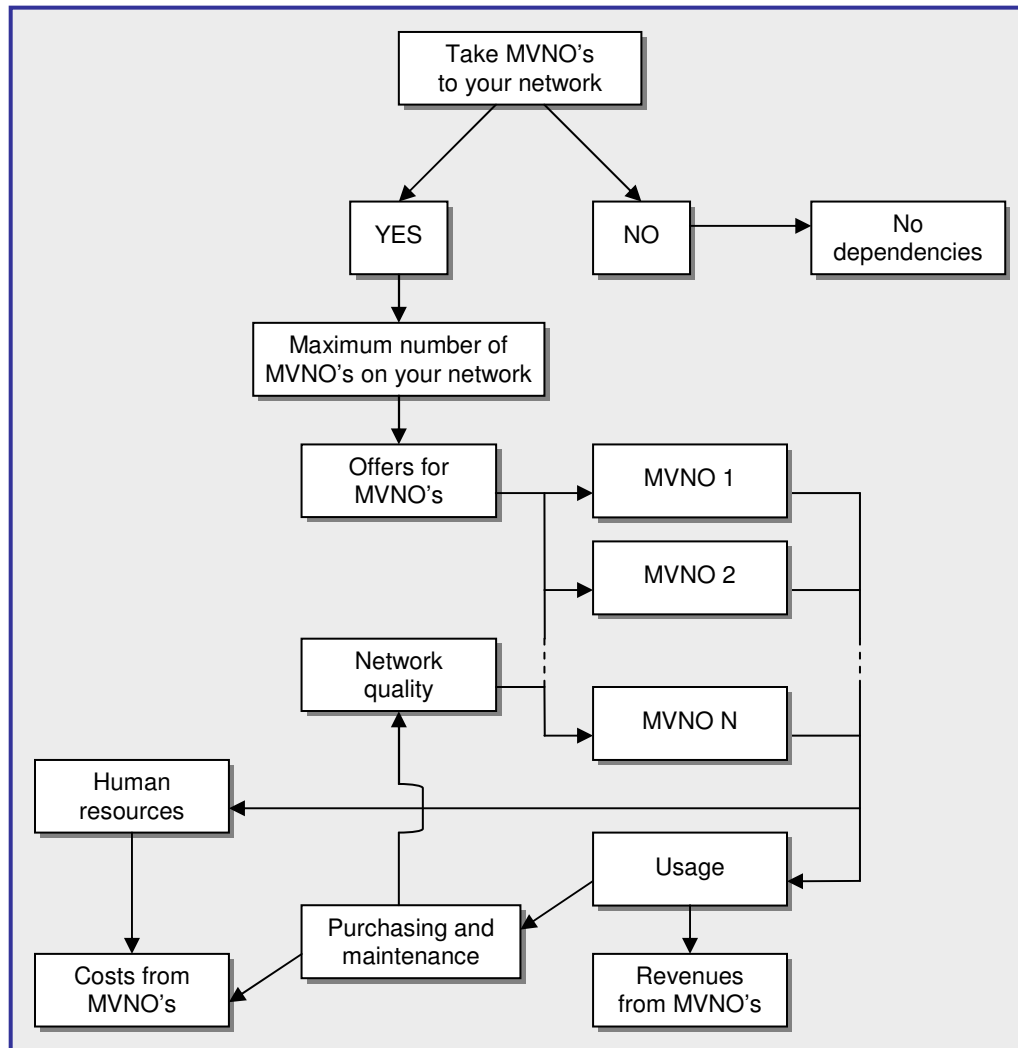
- Decision window:

MVNO				
MVNO decisions				
MVNO's on the market:	<input type="text"/>			
Potential new MVNO's:	<input type="text"/>			
MVNO's on your network previous season (Yes/No):	<input type="text"/>	Allow MVNO's		
MVNO's on your network next season (Yes/No):	<input type="text"/>	<input type="button" value="YES"/>	<input type="button" value="NO"/>	
Offers for MVNO's:				
Fixed part (k€):	<input type="text"/>			
Per subscriber (€):	<input type="text"/>			
Per usage:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	Voice (€/min)	SMS (€/SMS)	MMS (€/MMS)	Data (€/MB)
Your MVNO's:				
Maximum amount of MVNO's on your network next season:	<input type="text"/>			
Amount of MVNO's on your network previous season:	<input type="text"/>			
Estimated amount of MVNO's on your network next season:	<input type="text"/>			
Amount of MVNO subscribers previous season:	<input type="text"/>			
Estimated amount of MVNO subscribers next season:	<input type="text"/>			
	Voice	SMS	MMS	Data
Previous season average usage/month/user:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Estimated next season usage/month/user:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Revenues (k€):	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Estimated total revenues (k€):	<input type="text"/>			



MVNO Business (2/2)

- Dependencies:





Handset Business (1/2)

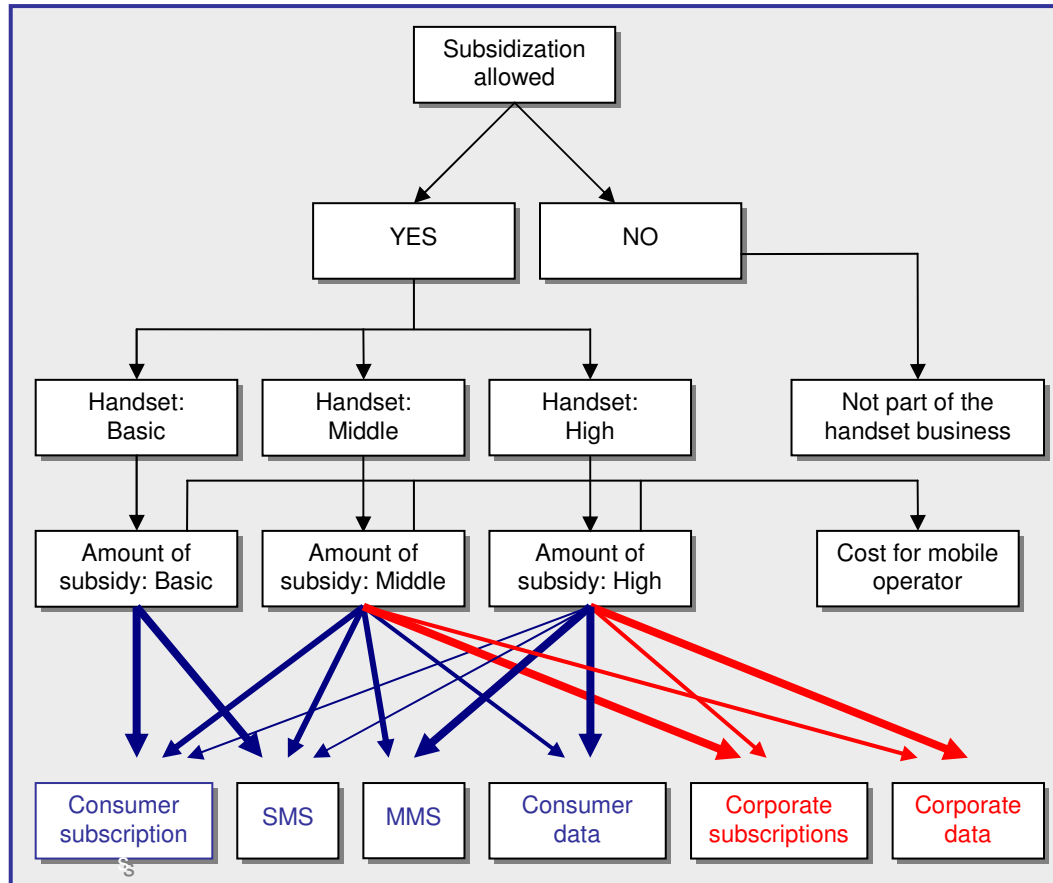
- Decision window:

Handsets						
Mobile handset sales						
Subsidization allowed	YES					
Mobile handset model	Basic		Middle		High	
	Season 1	Season 0	Season 1	Season 0	Season 1	Season 0
Price (€/handset)	109,00	110,00	224,00	230,00	476,00	490,00
Amount of subsidy offered (%)	15,00	20,00	20,00	25,00	40,00	40,00
Amount of subsidy offered (€)	16,35	22,00	44,80	57,50	190,40	196,00
Estimated sales (handsets)	250 000	240 000	135 000	150 000	50 000	55 000
Sales (handsets)		242 335		143 267		42 102
Estimated cost for the mobile operator (k€)	4 087,50	5 280,00	6 048,00	8 625,00	9 520,00	10 780,00
Cost for the mobile operator (k€)		5 331,37		8 237,85		8 251,99
	Total					
	Season 1	Season 0				
Estimated total cost for the mobile operator (k€)	19 655,50	24 685,00				
Total cost for the Mobile operator (k€)		21 821,21				



Handset Business (2/2)

- Dependencies:





Conclusions

- MOB has largely reached the goals that were set (teaching tool)
- Usability and playability now at a reasonable level
- Students felt that MOB was a nice complement to lectures
- Clear need for the modeled extensions



Future Research

- Suggestions for further research include:
 - Stronger division between MNO and MSO parts of the operator business
 - ARPU structure
 - Explicit division of subscribers into existing and new ones to enable specific marketing decisions and churn rate monitoring
 - Further improvements to:
 - Usability
 - Documentation
 - Existing models