Techno-economic modeling of Voice Call Continuity

Mikko Toivonen

9.10.2007

Supervisor: Prof. Raimo Kantola

Instructor: M.Sc (Tech) Markus Salmenpohja

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- Operator Issues
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Background

- Spread of wireless LANs
- Larger set of features supported by handsets
- Convergence of different access technologies
- Need to evaluate the economic impact of convergence technologies to operators' business
- How much profit can be made with voice call continuity (VCC)?

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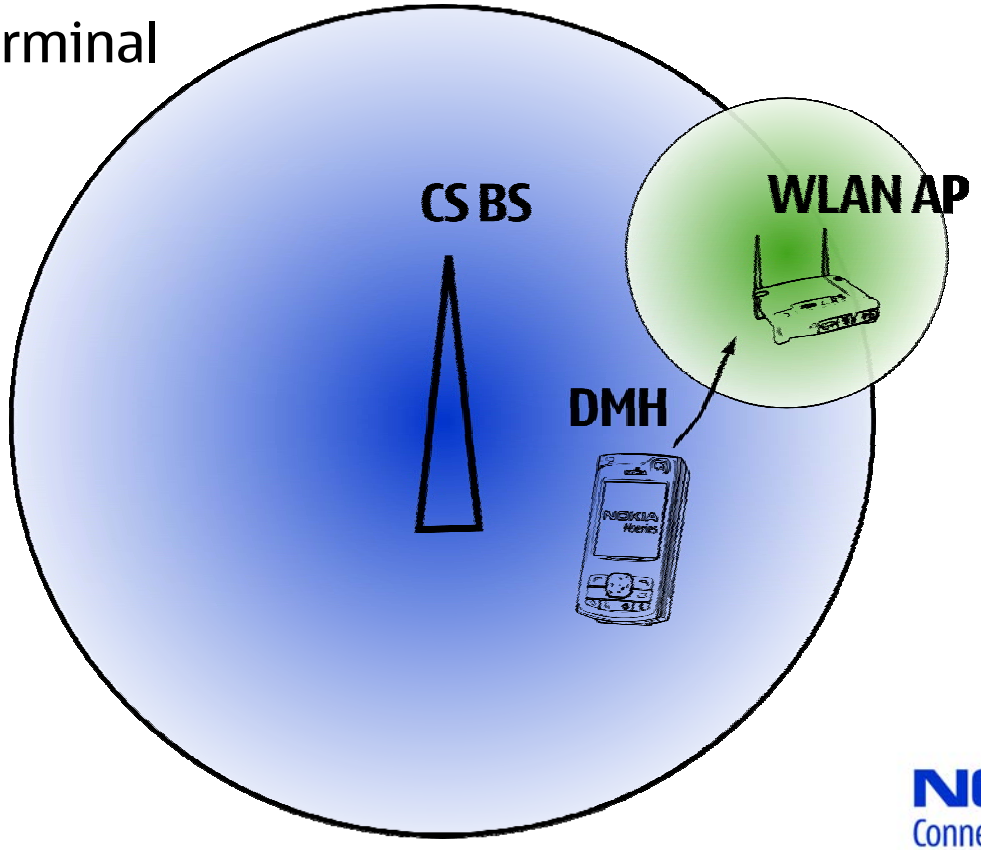
Voice Call Continuity Technology

- VCC is a fixed-mobile convergence technology
- Seamless handover between circuit switched and packet switched access networks
- Requires new network components
- Requires client software in the terminal



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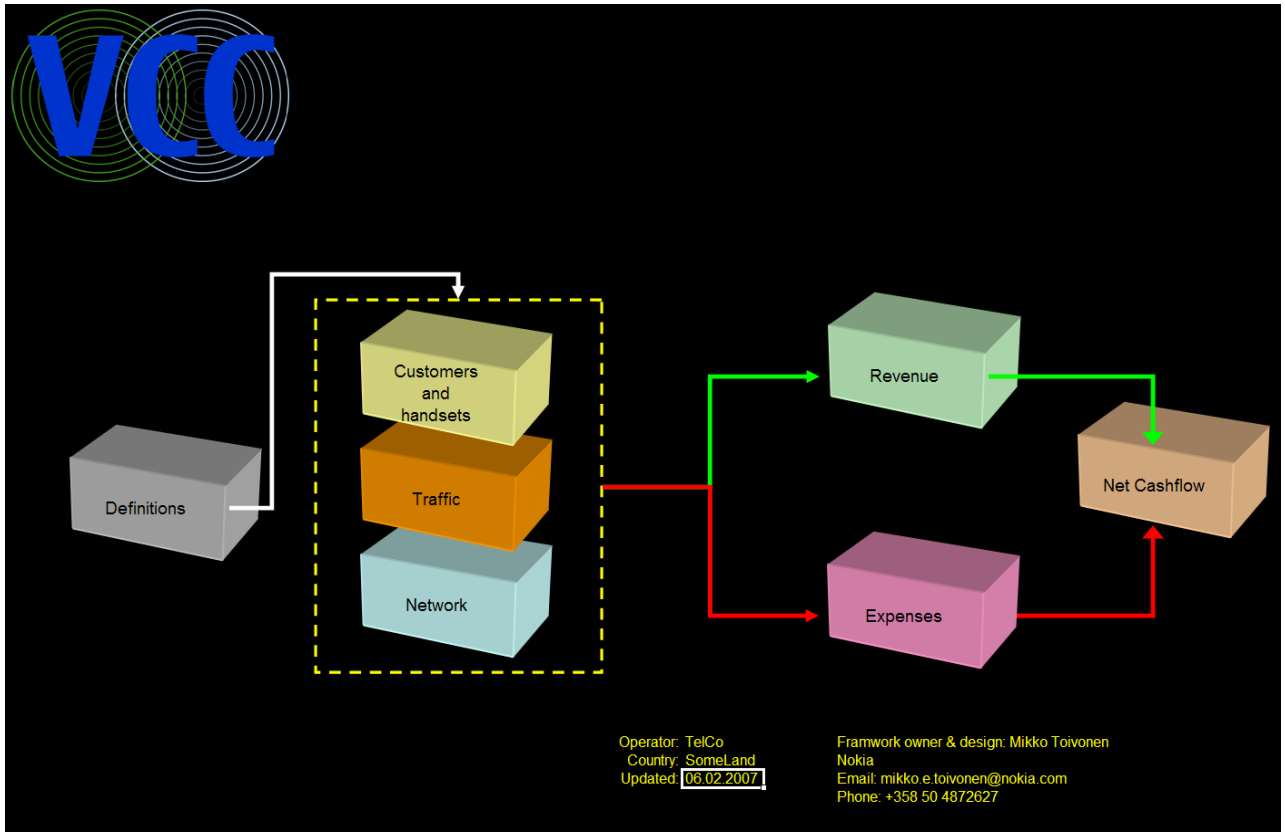
Operator Issues

- Better ability to compete against free and low priced VoIP operators
- Replace PSTN services
- Possible reduction in costs
- Reduce customer churn through bundling

Techno-Economic Model Implementation – 1/2

- Modular design
- Key output : NPV
- Analysis possibilities: Scenario, Sensitivity, Monte Carlo method



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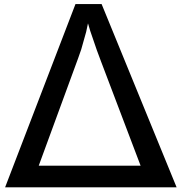
Techno-Economic Model Implementation – 2/2

- All of an operator's business is not modeled, only those that are assumed to be affected by VCC
- All analysis is based on delta analysis, i.e. what is the difference between scenarios
- Results are based on a base case. The base case is a scenario which assumes that VCC will not be implemented



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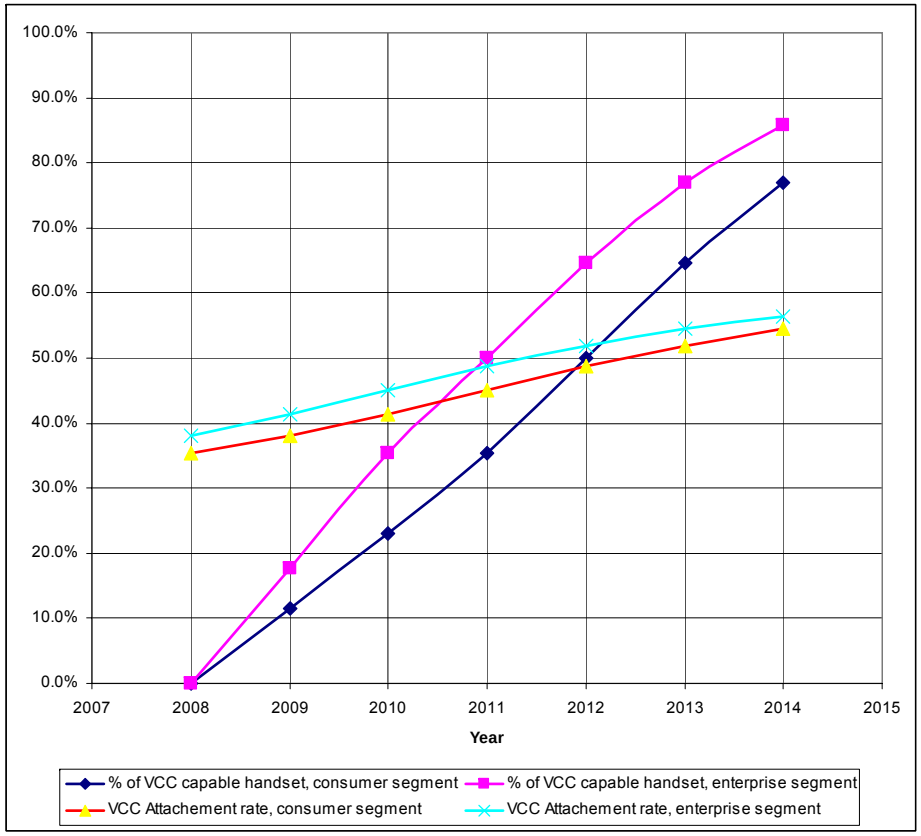
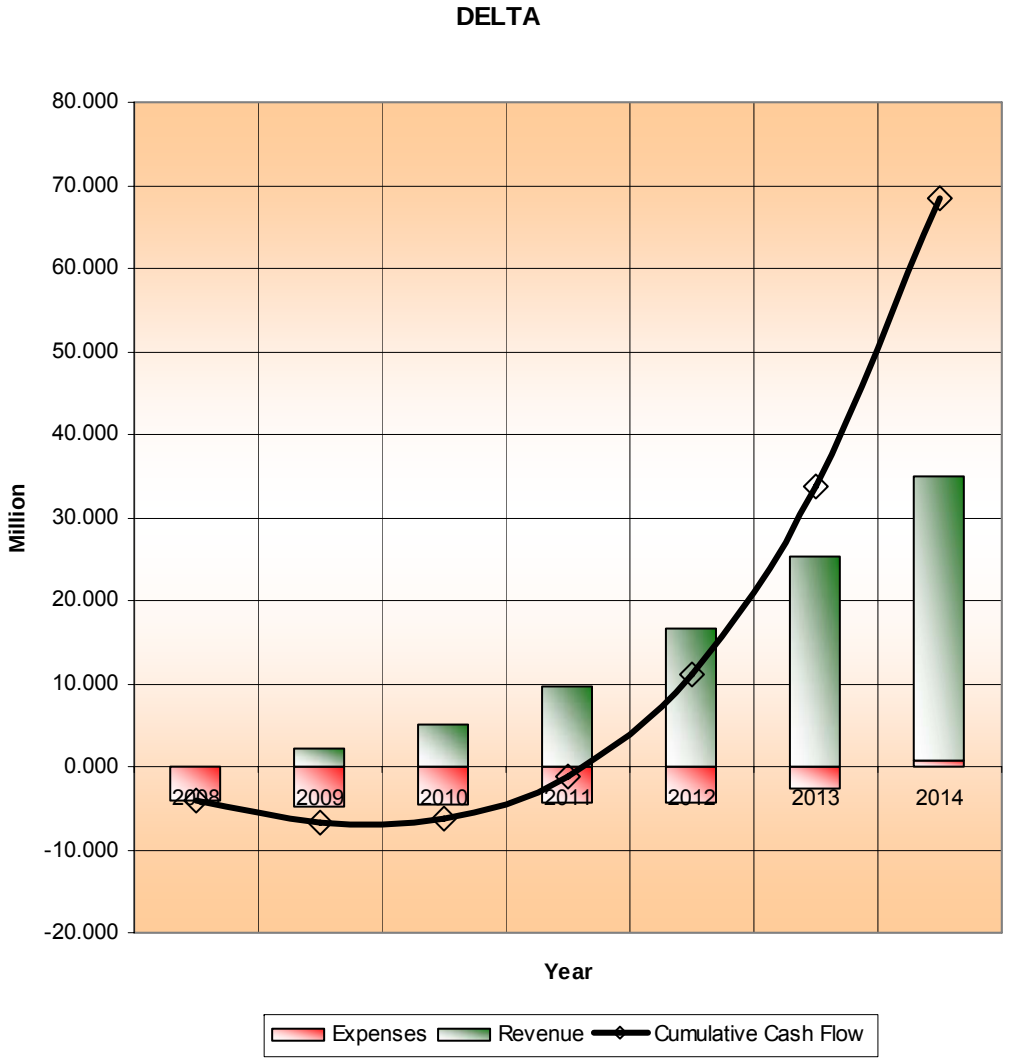
Results – Elisa 1/5

- How much profit can Elisa make by implementing VCC?
- Publicly available data (statistics, Elisa annual report) has been used as input
- Some input data has been calculated or estimated

Results – Elisa Best Estimate





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Results – Elisa
Sensitivity Results

3/5

	NPV Sensitivity				
	-5%	**-1%**	**+1%**	**+5%**	**Inversely Sensitive?**
NPV Sensitive Parameters					
IMS Minute Charge, EUR	20.07%	3.75%	-3.62%	-16.93%	YES
% of Mobile CS Traffic for VCC Subscribers, Consumer Segment	9.51%	1.90%	-1.90%	-9.53%	YES
WLAN Coverage	-9.24%	-1.85%	1.84%	9.21%	
VCC attachement rate, Consumer Segment	-8.78%	-1.76%	1.76%	8.78%	
VCC Capable Handsets Ratio, Consumer Segment	-8.78%	-1.76%	1.76%	8.78%	
NPV Insensitive Parameters					
IMS Network, Customer Acquisition Cost, EUR/Subscriber	4.78%	0.96%	-0.96%	-4.78%	YES
VCC attachement rate, Enterprise Segment	3.42%	0.68%	-0.68%	-3.42%	YES
VCC Capable Handsets Ratio, Enterprise Segment	3.42%	0.68%	-0.68%	-3.42%	YES
% of Mobile CS Traffic for VCC Subscribers, Enterprise Segment	-2.66%	-0.53%	0.53%	2.66%	
International VCC Minute Charge, EUR	-1.58%	-0.32%	0.32%	1.58%	
Little or no effect on NPV					
Churn Rate Reduction for VCC Subs., Consumer Segment	-0.68%	-0.14%	0.14%	0.68%	
IMS Infrastructure Investement,MEUR	0.59%	0.12%	-0.12%	-0.59%	YES
IMS Investment split to VCC	0.59%	0.12%	-0.12%	-0.59%	YES
Churn Rate Reduction for VCC Subs., Enterprise Segment	-0.23%	-0.05%	0.05%	0.23%	
IMS Minute Cost, EUR	0.04%	0.01%	-0.01%	-0.04%	YES
VCC Roaming Minute Charge, EUR	0.00%	0.00%	0.00%	0.01%	
International VCC Minute Cost, EUR	0.00%	0.00%	0.00%	0.00%	
VCC Roaming Minute Cost, EUR	0.00%	0.00%	0.00%	0.00%	

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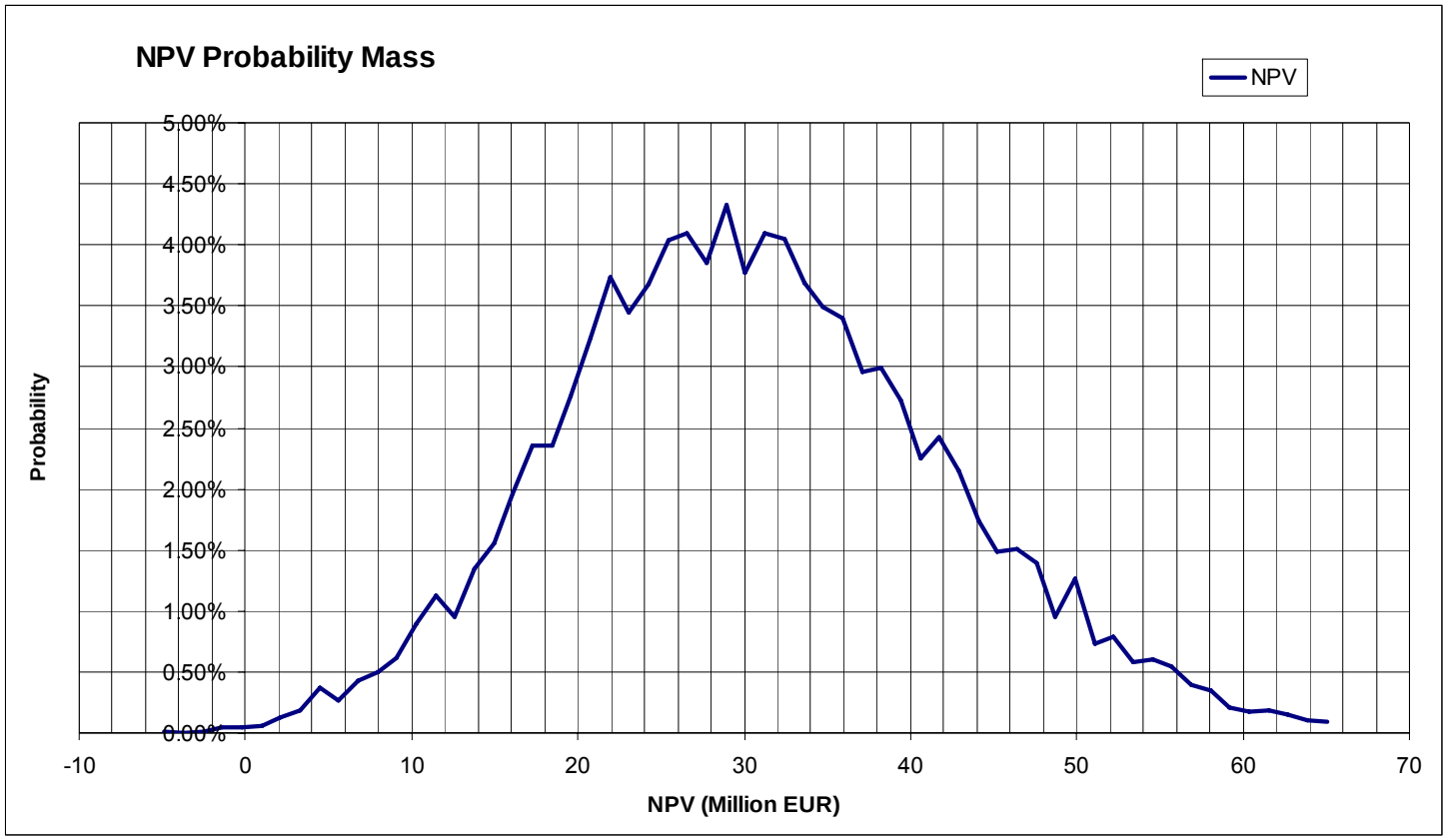
Results – Elisa 4/5
Monte Carlo –Total Uncertainty (10 % parameter uncertainty)



Min:	-8.211 MEUR
Max:	80.914 MEUR
Mean:	30.085 MEUR
Standard Deviation:	11.645 MEUR
Number of Iterations:	10000

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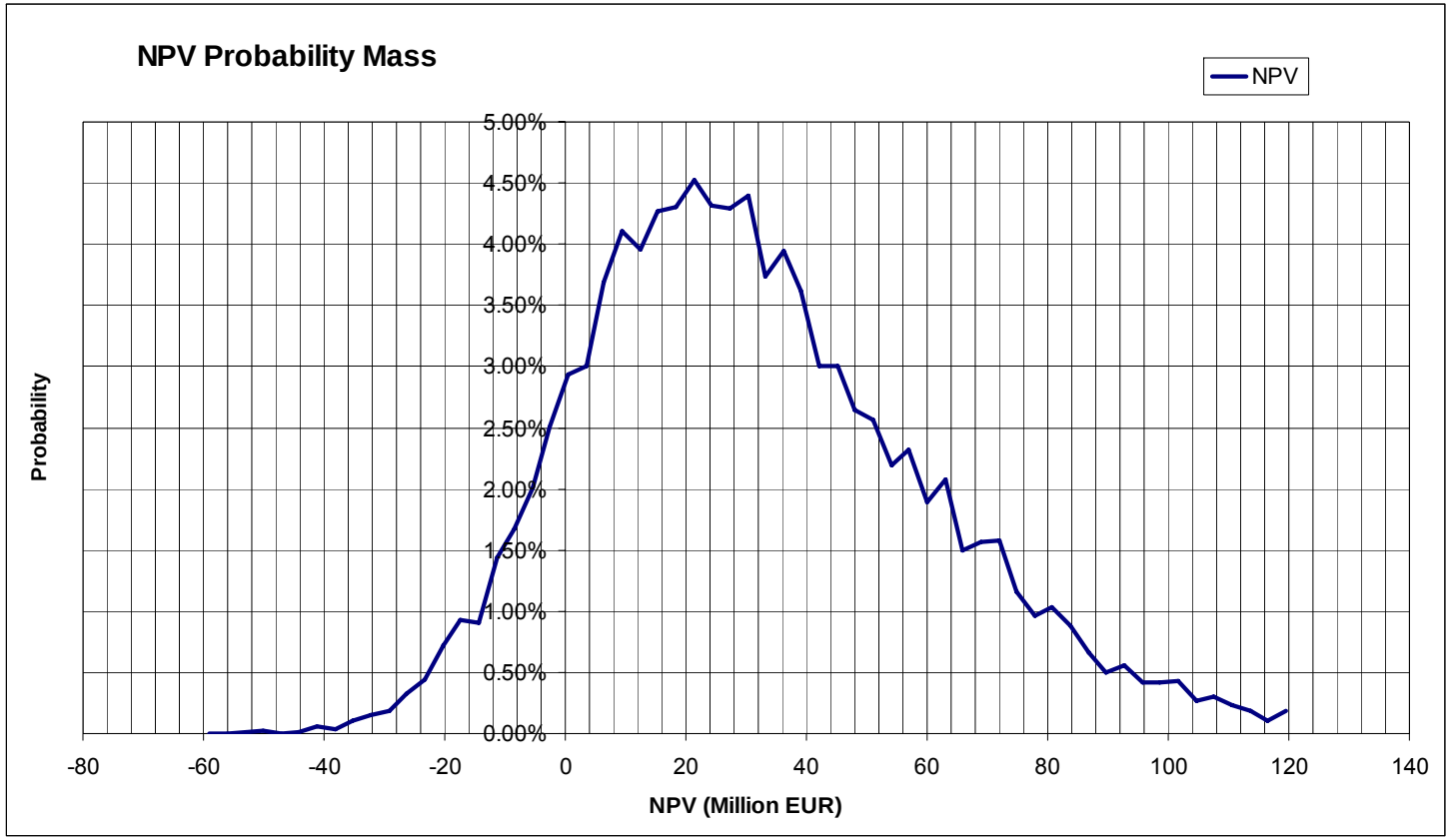
Results – Elisa 5/5
Monte Carlo –Total Uncertainty (25% parameter uncertainty)



Min:	-53.103 MEUR
Max:	212.151 MEUR
Mean:	30.241 MEUR
Standard Deviation:	29.748 MEUR
Number of Iterations:	10000

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Conclusions & Further Development

- Conclusions
  - Voice Call Continuity can be profitable for operators
  - Sensitivity results indicate that fixed monthly charge would be most successful strategy
  - Increase in revenue mainly from increased overall consumption
  - Expense savings are likely to be small
- Development
  - Current model assumes symmetric traffic between operators
  - In asymmetric cases further analysis of transfer costs needs to be made
  - Current model does not consider fixed charges associated with subscriptions

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Questions, please?