

# ANR Captures

## Minutes of the kick-off meeting

### INRIA Rennes

13th of January, 2009

## 1 Participants

- INRIA: B. Tuffin
- Telecom Bretagne P. Maille
- Orange Labs: M. Bouhtou, H. Le Cadre, C. Saaverdra
- ANR: F. Jacquenet.

## 2 Agenda

- *10h-10h20*: Welcome coffee
- *10h20-10h45*: few words from François Jacquenet (ANR)
- *10h45-11h30*: administrative points
- *11h30-12h*: WP1, demand modelling
  
- 12h-14h: Lunch break
  
- *14h-14h30*: WP2, Capacity planning
- *14h30-15h*: WP3, Price of Anarchy
- *15h-15h30*: WP4, Specific contexts
- *15h30-16h*: WP5, Regulation issues
- *16h*: coffee.

### 3 Information from ANR

Discussion about the selection process, the administrative issues, rights and obligations from partners. We are advised to attend (and to talk soon during) the STIC Colloquium.

### 4 Administrative issues

The administrative  $T0$  is 15/12/2008. Expenses from 15/12/2008 to 14/12/2012 are eligible.

The scientific  $T0$  is 13/01/2009 (this meeting). It remains to check which  $T0$  is the valid one for the deliverables.

There is a web page: <http://captures.inria.fr/> managed by Bruno. Everyone welcome to correct error, make suggestions on its organization, and on its content.

About the available positions:

- A PhD student between INRIA and Telecom Bretagne.
  - expected to start in September/October 2009.
  - The first 18 monts at Telecom Bretagne, then at INRIA Rennes.
  - An intern hired on another but related project, a potential candidate.
  - Announce posted via INRIA and ABG. Any other way to distribute it welcome.
- A post-doc at Orange Labs. Announce to be posted.

A consortium agreement to be signed. Deadline  $T0 + 12$ . No specific template from ANR.

The deliverables can be posted on the web page. A summary of results, with attached papers. The deliverables are described Table1.

On the other hand, there are no more semestrial reports: only at

- $T0 + 6$
- $T0 + 24$
- $T0 + 48$ .

We recall the chronogram Table 2.

Livrable	Titre	Date	responsable
WP1.1	Survey on demand modelling in a competitive environment in telecommunications	T0+6	FT R&D
WP1.2	Pricing models analysis using different demand modelling assumptions for a slotted game	T0+18	INRIA
WP1.3	Pricing models analysis using different demand modelling assumptions when QoS is mainly delay	T0+24	TELECOM Bretagne
WP2.1	Survey on capacity planning and pricing game in telecommunications	T0+12	INRIA
WP2.2	Pricing models when providers play on capacity, then on price	T0+24	FT R&D
WP2.3	Pricing models when providers play simultaneously on capacity and price	T0+36	FT R&D
WP2.4	pricing model, when capacity investment is considered on a longer term, and for FTTx	T0+48	INRIA
WP3.1	Survey on price of anarchy and related issues	T0+6	TELECOM Bretagne
WP3.2	Price of Anarchy for networking problems in a competitive environment	T0+18	FT R&D
WP3.3	New definitions of efficiency in telecommunications	T0+30	TELECOM Bretagne
WP3.4	design of mechanisms driving to an optimal outcome	T0+42	FT R&D
WP4.1	Analysis of a game Wifi provider against Wimax	T0+6	TELECOM Bretagne
WP4.2	Analysis of a game when (wifi) providers share the available resource	T0+30	INRIA
WP4.3	Analysis of a game when providers offer service differentiation	T0+48	INRIA
WP5.1	Survey on retention policies of providers, alliances and regulation	T0+12	INRIA
WP5.2a	Retention game and regulation in a competitive environment		
WP5.2b	Analysis of alliances and associated regulation rules	T0+30	FT R&D
WP5.3	Retention and pricing game in a competitive environment	T0+36	TELECOM Bretagne

Table 1: Deliverables

WP	INRIA	TB	FT	6	12	18	24	30	36	42	48
WP0	X			D			D				D
WP1	X	X	X	D	X	D					
WP2	X		X		D	X	D	X	D	X	D
WP3		X	X	D	X	D	X	D	X	D	
WP4	X	X		D				D			D
WP5	X	X	X		D	X	D	X	D		

Table 2: Working plan

## 5 WP1

- H el ene presented her work on demand modeling, that is submitted for publication (two submissions). It modelizes the reserve prices from questionnaires and simulation.
- We also discussed the possibility of using other simple demand (utility) functions, such as those used by Bruno and Patrick (demand distributed according to Wardrop’s principle), and the possibility to study the impact (by comparison) of other relevant modeling. A good reference for this kind of issue is:  
F. Bernstein and A. Federgruen. A General Equilibrium Model for Industries with Price and Service Competition. *Operations Research*, Vol. 52, Num. 6, pages 868-886, 2004.
- We also discussed the negative externality to be used.
- Finally, we discussed the content of the 1st deliverable ( $T0 + 6$ ), only on the state of the art. The work with H el ene will be inserted in the second one.

## 6 WP2

- Cluadio presented her work on Network neutrality. It is actually more related to WP5. A paper is almost finished and will be distributed to partners for possible extensions.
- We laso dicussed current works on relations between an MNO and an MVNO (problem also withij WP4).
- Finally, Bruno and Patrick quickly explained a (submitted) work on power determination for a WiFi provider in a pricing war against a WIMAX competitor. An interesting conclusion is that there is a power threshold above which there is no need to transmit: it would not increase revenue.

- We also discussed the possibility to play a game on prices and capacities, which can be in two steps
  - capacities then prices,
  - or both at the same time.
- Impact of alliances on capacity expansion has to be studied (request from ANR). Bibliographical study to be realized.

## 7 WP3

- Patrick presented the notion of Price of Anarchy and the work from the literature.
- Discussion about the notion of measure to be used (total throughput, social welfare).
- Possibility also to compare with, or use, other efficiency indexes, such as Jain index.

## 8 WP4

- The work for the 1st deliverable ( $T0 + 6$ ) is done. It describes a game WiFi against WIMAX.
- We also want to see a game with a partial sharing of bandwidth. This is typically what happens if we want to optimize the resource in wireless networks where an operator could lease a part of its bandwidth or not totally used. A subcase of this is an MNO selling resources to an MVNO.
- The service differentiation game will be studied later.

## 9 WP5

- Bruno and Patrick presented a work with M. Naldi (Rome) on regulation issue and its impact when a game on retention time for churning customers. Several extensions of the work are described and discussed.
- We also discussed the necessity to work on models including alliances, and then to design mechanisms preventing collusion. Here too, we need to do a bibliographical work.