



Position Statement on
Buying Bandwidth ~~on Demand~~ only when you need it.

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Classic BoD System:

- ❑ The telephone system give you bandwidth when you need it
 - just dial a number
- ❑ Traditionally provides bandwidth from 300 Hz to 3400 Hz for conversations.
- ❑ Half of the human population are BoD customers.
- ❑ PSTN is slowly replaced by Internet based system
 - and Internet will be replaced by future networks

- ❑ Drawbacks of these BoD systems?
 1. Low bandwidth
 2. ...
 3. ...



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Man's shock at £35,000 phone bill

A businessman was stunned when he got a £35,000 mobile phone bill from Orange despite never having been a customer.



Mr Scott contacted police after he received the £35,000 bill

Mike Scott, of Darlington, County Durham, discovered the huge debt when a collection agency gave him seven days to pay up.

The kitchen firm owner had already contacted the phone company over two previous bills demanding smaller sums.

The network confirmed it was carrying out an investigation, believing mobile numbers had been obtained in his name.

Mr Scott said: "It's laughable. I've never even had a phone with Orange. I just can't believe for a second anyone could run up that kind of bill."

No apology

The businessman, who owns Darlington firm DK Kitchens, said he first received a bill for £418 on New Year's Eve and then last month got another demand for £1,470.

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'Crazy Frog doubled my phone bill'

By Hannah Bayman
BBC News

When I ordered the Crazy Frog Axel F ringtone, in an ironic mood, I expected a bit of derision from friends.

What I did not expect was to be hit with a hugely-inflated mobile bill after being sent a slew of junk texts.

After texting a number on a television advert to get the tone, I was bombarded with messages from Jamster inviting me to download more tones.

It wasn't until my next bill arrived from Orange that I discovered each junk text from Jamster had cost me £3.

When I called Orange, the call centre operator told me I was one of hundreds of people he had spoken to with the same complaint.



Crazy Frog's Axel F became the first ringtone to reach number one



Mobile phone users getting younger - and getting into debt.

Customer cash

The dramatic slowdown in the numbers of new customers signing up for mobile phone services has been seen as evidence that the mobile market in many European countries has reached saturation point.

Many industry watchers have said that this will mean times getting even tougher for mobile operators already reeling from a combination of large debts and widespread disillusionment with technology companies.

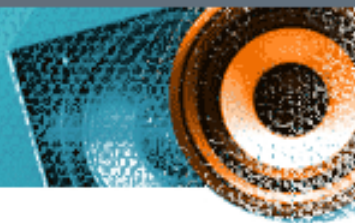
But analysis by Coleago Research suggests a different picture.

Many operators are about to see a "dramatic" improvement in their finances thanks to reduced competition, claims the research.



Mobile phone users are getting younger

There was little point in spending money to acquire new customers when there were no



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Clamping down on mobile mis-selling

Regulators are clamping down on mobile phone shops who sell contracts without giving shoppers all the right information.



Phone contract complaints have risen from 460 a month to 700

They are worried about things like cashback offers, where the customer sometimes ends up getting nothing.

Many shops and phone operators also offer incentives like free line rental and extra minutes and texts.

But it has been claimed that some have been duping customers, the small print is often too complicated and freebies are not free at all.

Your experiences

Around 700 people have been complaining every month to Ofcom, the industry regulator, about mobile contracts being mis-sold.

That is despite new voluntary codes of practice which came



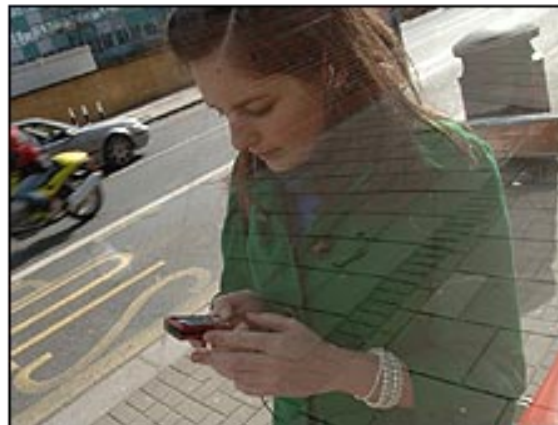
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EU challenges roaming 'rip-off'

Regulators have announced a crackdown on the cost of sending text messages on mobile phones within the EU.

EU Telecoms Commissioner Viviane Reding outlined plans to cap the price of texting from abroad - making it more comparable to doing so at home.



Proposals for laws that force firms to cut bills are likely to be put forward in October, with the EU saying that self-regulation had failed.

Texting from abroad could become cheaper

The mobile phone operators argue that customers are not being ripped off.

The industry body, the GSM Association, said that they are in a competitive business and that prices are falling.

'Wallet draining'

The 2.5 billion text messages sent every year by roaming customers in EU countries cost 10 times as much as domestic messages, Ms Reding said.

“ EU citizens should be free to text across borders without being ripped off ”

Viviane Reding
EU Telecoms Commissioner



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EU may cut overseas mobile costs

The European Commission has outlined plans that could cut the cost of using mobile phones abroad by up to 70%.



Brussels says there is too big a discrepancy in call charges

The plans put tight limits on how much operators can charge customers who make or receive international or national calls while in other EU states.

Telecoms operators often charge much more for calls made abroad than they do for those made at home.

Roaming charges are estimated to earn the operators about £6bn (8.6bn euros) annually, or 10-15% of profits.

The commission estimates its changes would wipe £3.5bn off of these earnings.

The changes to roaming charges would benefit business users in particular, who make up 80% of the 147 million EU citizens whose phone calls involve roaming fees.

Industry opposition

Consumers' organizations have long argued that roaming



Why? My Personal Opinion and Position Statement...

- ❑ Charging system are bought and operated by service providers
 - to fulfill providers needs.
 - to increase providers profits.

- ❑ Long term contracts (e.g., flat rate for 2 years)

- ❑ No IAB/IETF standardized solution for buying of Internet connectivity.
 - We need a standard that considers the interest of sellers and buyers.

- ❑ Old fashioned charging and billing solutions
 - Frequently lack many new technical developments from the area of eCommerce, eMoney, and automated contract negotiation.
 - How long do you need to buy WLAN Internet access at a airport?



BoD requires Transactions

1. Demand Bandwidth? Buy it...
2. Buying bandwidth requires a contract of sales
3. BoD is a transactions between provider and customer.

Transaction:

Exchange of commodity or service, through market or other institutional arrangement.

Contract of Sale:

is a legal contract about the exchange of goods, services or property between a seller and a buyer for an agreed upon value in money paid or the promise to pay same.



§145 Bürgerliches Gesetzbuch (BGB)

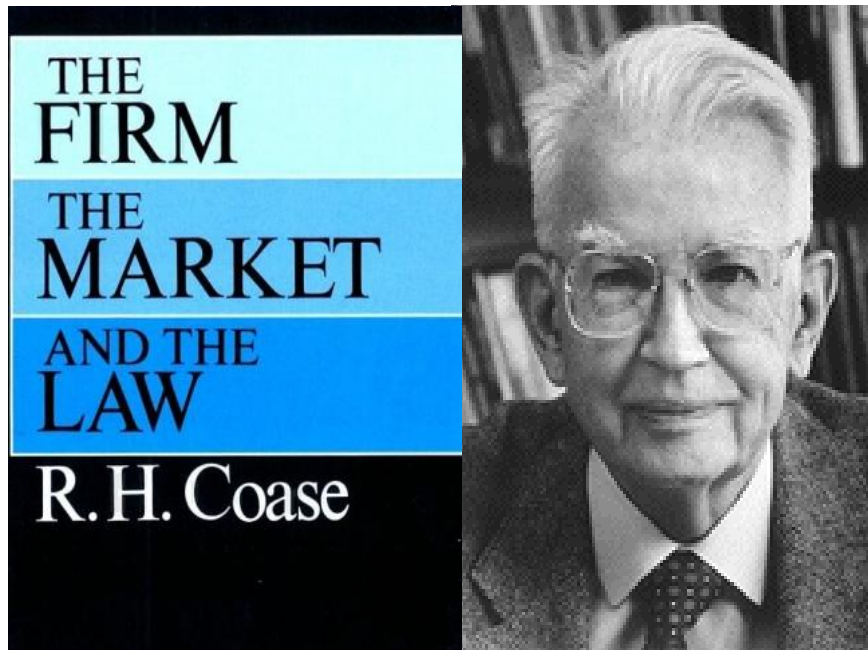
1. Request for tender (German: Aufforderung zur Abgabe eines Angebots; lat. *invitatio ad offerendum*) to ask for an offer.
2. The seller writes an offer (German: Angebot according to §145 BGB) to show his willingness to sell goods at given conditions and to settle a trading contract (German: Handelsvertrag).
3. Contract contains the most important facts (lat. *essentialia negotii*)
4. Offer is binding for some limited period of time.
5. If both parties agree on the same *essentialia negotii*, the deal is settled and a contract is agreed upon.
6. An offer can be accepted with an unqualified expression (not necessary a signature).
Content of the deal can be recorded in a written contract.
7. If the offer is accepted and the rules are followed by both sides, then the deal is fulfilled.



Every Transaction has Costs

Transaction costs (TC)

are “(a) costs of undertaking a transaction, including search and information costs, bargaining costs and monitoring, enforcement costs of implementing a transaction; and (b) the opportunity costs of non-fulfilment of an efficient transaction.”





Transaction Costs

- ❑ Search and information costs (pre)
 - marketing a good
 - determining where to buy the good
 - Who has the lowest price
- ❑ Bargaining costs (pre)
 - negotiating and forming a contract
- ❑ Goods exchange
- ❑ Policing and enforcement costs (post)
 - ensure that the contractual agreements are followed.



- *The transaction costs are spitted between the seller, the buyer, and external parties and be expressed as*

$$C_t = C_{t.b} + C_{t.s} + C_{t.e}$$

- *with $c_{t.b}$, $c_{t.s}$, and $c_{t.e}$ referring to the buyers, sellers and external transaction costs.*

- *The price of a good if sold from one seller to one buyer in a deal is defined by as $p(g, s, b, t)$ with $g \in \mathcal{G}$, $s \in \mathcal{S}$, $b \in \mathcal{B}$, and t defined the time of purchase. . We can assume that that*

$$\sum p = \sum_{i=1}^n p(g_i, s, b_i, t_i) \geq \sum c \geq \sum_{i=1}^n c_{t.s}(g_i, s, b_i, t_i)$$

$$\Rightarrow \bar{p} \geq \bar{c}_{t.s}$$

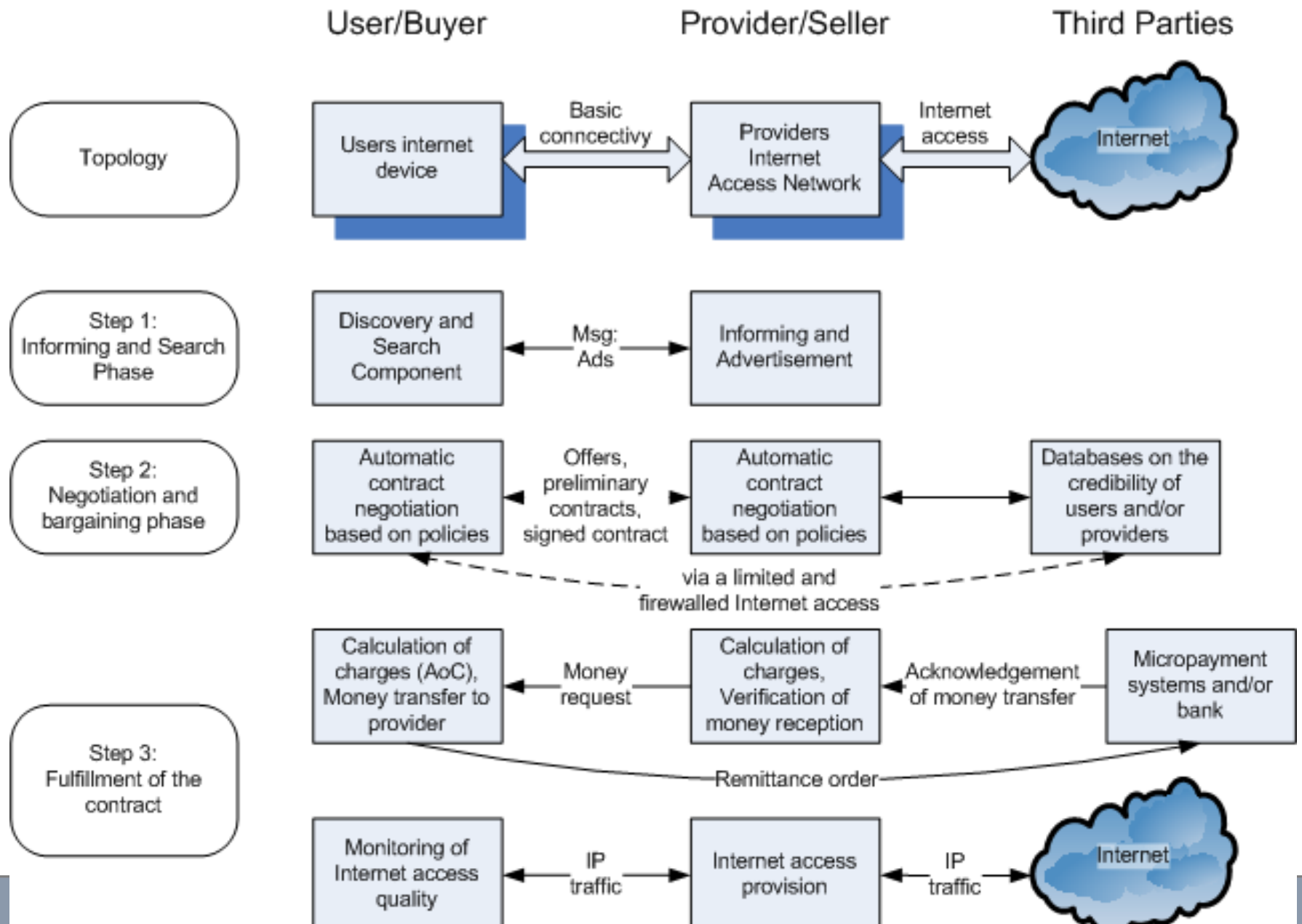


- *If a buyer b wants to minimize the costs for buying the good g , he selects the offer with the lowest sum of offered price and his transaction costs.*

$$\exists i : \forall j : p_i + c_i \leq p_j + c_j$$

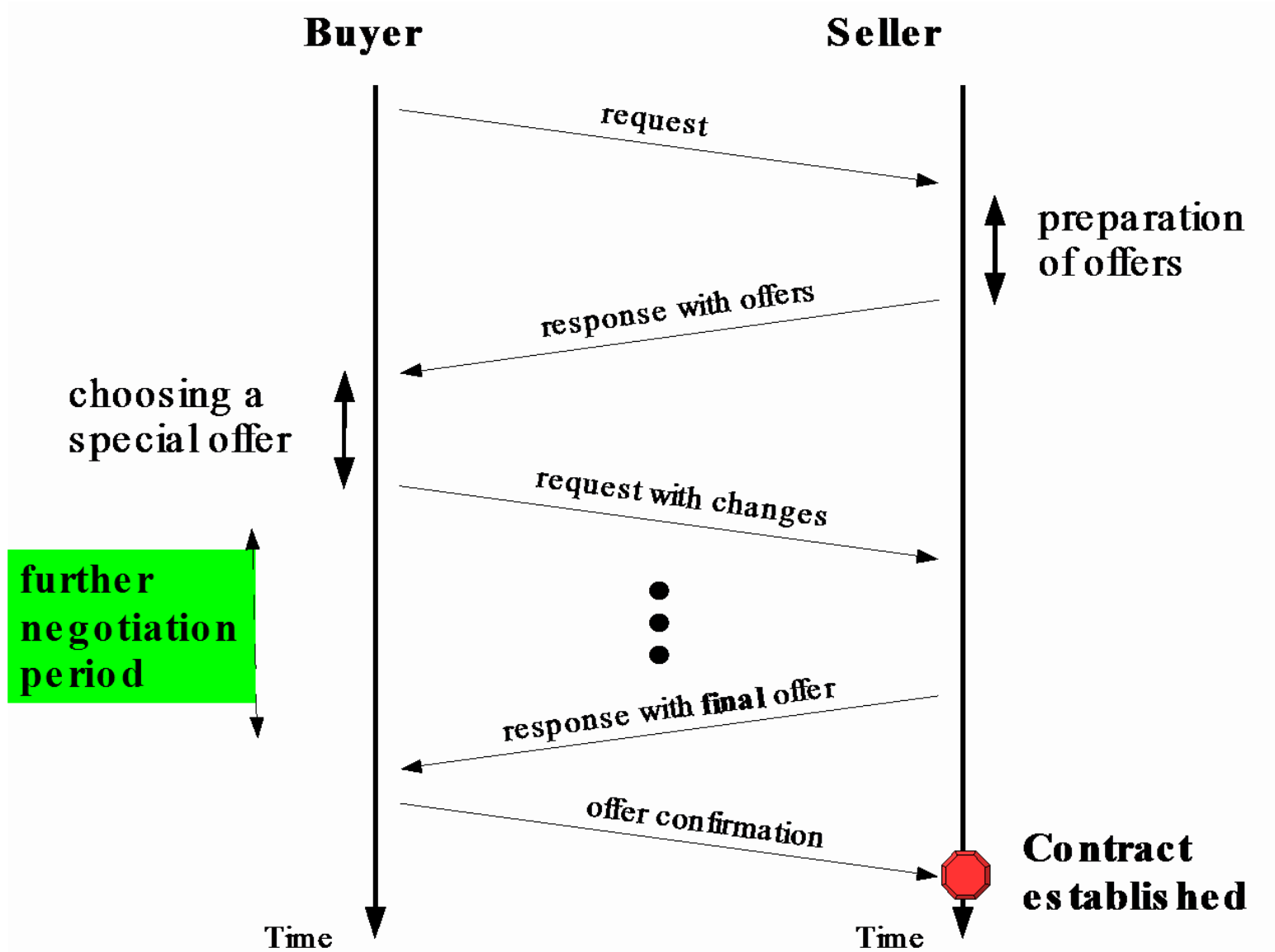


BoD System with Low Transaction Costs





Negotiation





BoD: Contract Negotiation

- ❑ Semi-automatic Contract Negotiation
- ❑ The essentialia negotii of the contract:
 - Simple tariffing scheme (aka 3GPP AoC)
 - Choice of micro payment system
 - Selected time of money transfer
 - No direct authentication required
(indirect authentication via the charging system)
- ❑ Machine understandable content of the contract for automatic negotiation



Internet Simple Charging Model

$$Price = \begin{cases} \text{fix}_{price} + \text{vol}_{price} \left[\frac{\text{Bytes}}{\text{vol}_{unit}} \right] & CDUR < \text{time}_{first} \\ \text{fix}_{price} + \text{time}_{price} \left[\frac{CDUR - \text{time}_{first}}{\text{time}_{unit}} \right] + \text{vol}_{price} \left[\frac{\text{Bytes}}{\text{vol}_{unit}} \right] & CDUR \geq \text{time}_{first} \end{cases}$$

fix_{price} constant price

$CDUR$ chargeable duration

time_{first} charging for e.g. the first minute

time_{unit} unit of time you charge for.

time_{price} Money you charge for a unit of time.

vol_{unit} amount of a unit of data

vol_{price} price of a unit of data

- Support of time and volume based tariffs
- Support flat rates: $\text{time}_{unit} = 1 \text{ month}$



Time of Money Transfer

Element	Dimensions	Description
<i>Initial</i>	<i>Value+Currency</i>	Initial amount of money to be paid to close the deal
<i>Prepaid</i>	<i>Value+Currency</i>	Amount of money to be paid beforehand
<i>PostAmount</i>	<i>Value+Currency</i>	Money that need to be paid if service usage as reached the limit
<i>PostDelay</i>	<i>t</i>	Time after which money need to be transferred



Conclusion

- ❑ We need a performance metric for charging/billing protocols
- ❑ BoD need automatic negotiation of the essentialia negotii of a Internet access contract
- ❑ Getting Internet access should costs you a only few seconds of your precious time.

Design BoD systems that have low transaction costs!