



# FON MODEL FOR WIFI ACCESS SHARING AND ITS APPLICATION TO FEMTO CELLS

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# PLAN

**FON**

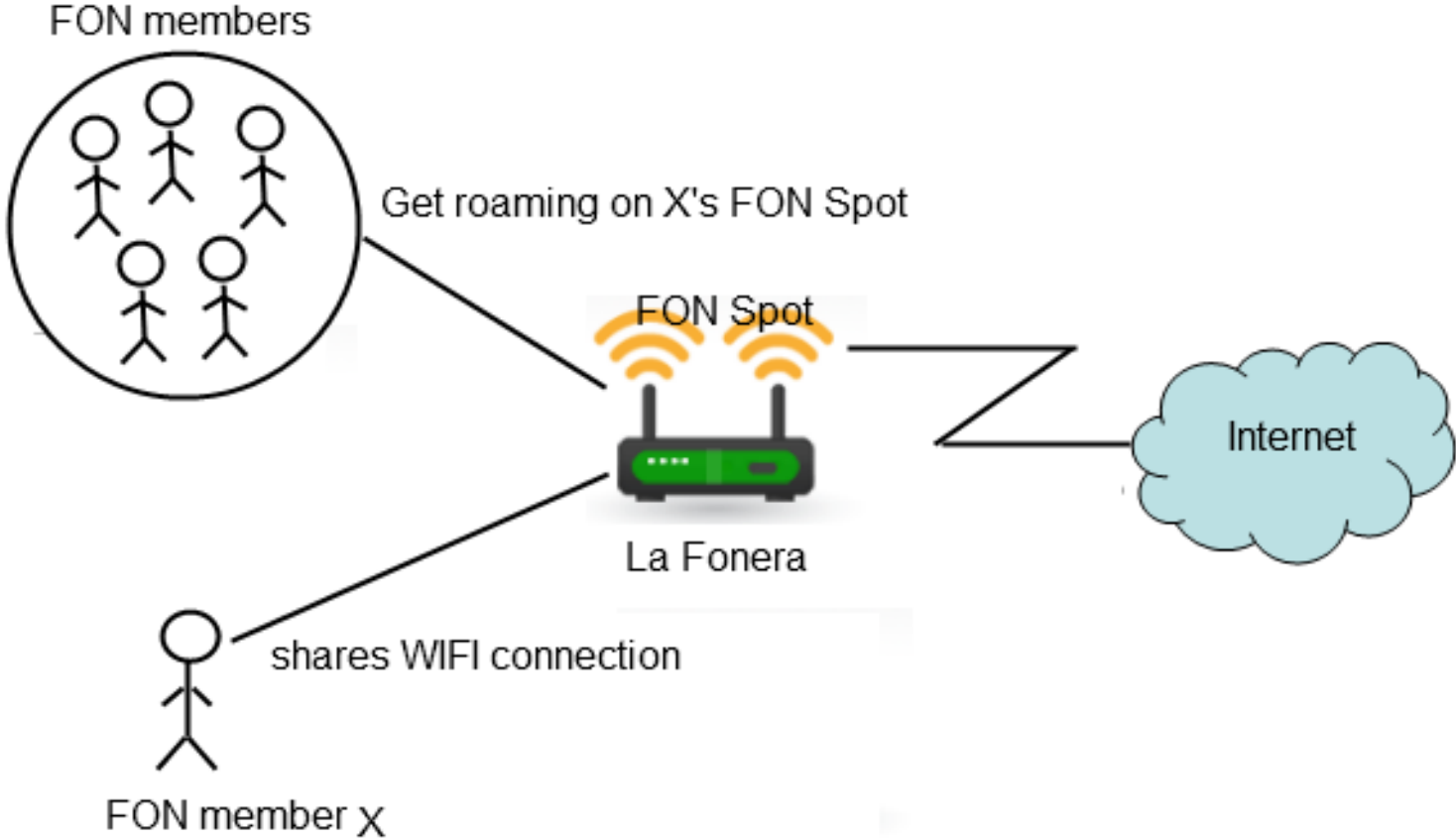
**TBAS IN A PEER-TO-PEER NETWORK**

**APPLICATION OF TBAS FOR FON MODEL**




**PARADIGM INCLUDING QoS CAPACITIES**

**CONCLUSION**







# FON



# FON Members: Characteristics

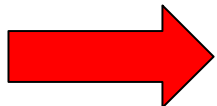
FON member category	Characteristics
 <b>LINUS</b>	<ul style="list-style-type: none"><li>-Has la Fonera/ hotspot from a FON partner.</li><li>-Shares for free WiFi connection.</li><li>-Free roaming at any FON Spot.</li></ul>
 <b>BILL</b>	<ul style="list-style-type: none"><li>-Has la Fonera/ hotspot from a FON' partner.</li><li>-Gets 50% of the revenues when an Alien gets roaming on his FON Spot.</li><li>-Free roaming at any FON Spot.</li></ul>
 <b>ALIEN</b>	<ul style="list-style-type: none"><li>-Does not have la Fonera/ hotspot from a FON partner.</li><li>-Does not share WiFi connection with other FON members.</li><li>-Accesses FON Spots by purchasing passes.</li></ul>

# FON Model for WIFI access sharing

X	Y	Process
 <p><b>LINUS</b>   <b>BILL</b></p>	 <p><b>LINUS</b>   <b>BILL</b></p>	<p>X gets free roaming at Y's FON Spot.</p>
 <p><b>ALIEN</b></p>	 <p><b>LINUS</b></p>	<p>-X pays a FON pass to get roaming on Y's FON Spot. -FON will receive the revenues.</p>
 <p><b>ALIEN</b></p>	 <p><b>BILL</b></p>	<p>-X pays a FON pass to get roaming on Y's FON Spot. -FON will share the gain with Y.</p>

# FON Model for WIFI access sharing

- Bills have more advantages than Linuses.
- Aliens pay for access per day regardless of the amount of bandwidth used and the connection duration.
- Profit cases between FON members (Bills or Linuses) exchanging connectivity could usually happen since no QoS guarantees are provided.
- The success of the connection is never guaranteed to FON Members.



**DRAWBACKS**

# PLAN

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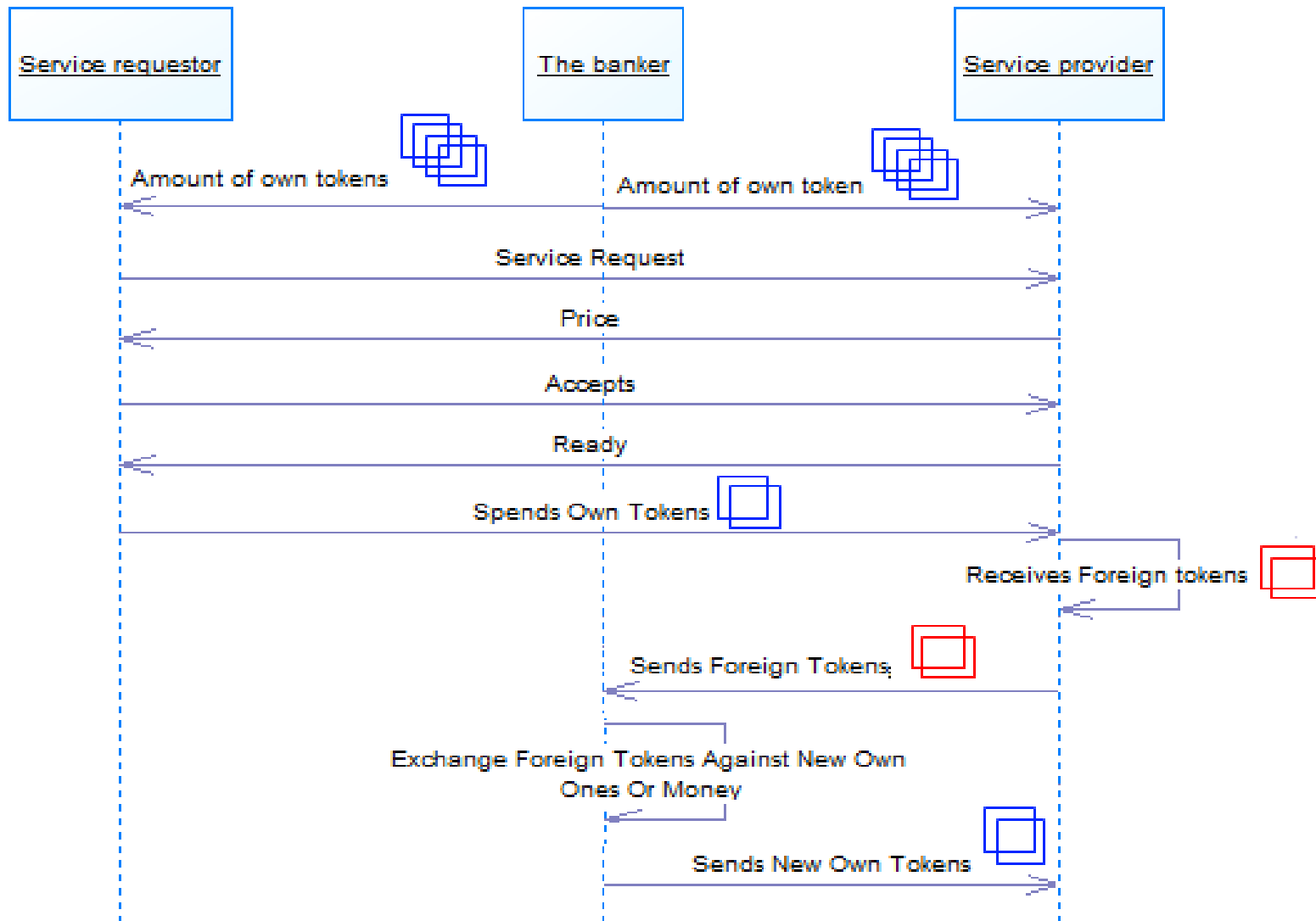
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# TBAS in a peer-to-peer network





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# Tokens Management in FON Model

FON member	Type of actor	Type of Tokens
 <b>LINUS</b> <b>BILL</b>	<ul style="list-style-type: none"><li>-Service requestor</li><li>-Service provider</li></ul>	<ul style="list-style-type: none"><li>-<b>FOT</b> (Free Own Token).</li><li>-<b>FFT</b> (Free Foreign Token).</li><li>-<b>PFT</b> (Paying Foreign Token).</li></ul>
 <b>ALIEN</b>	<ul style="list-style-type: none"><li>-Service requestor</li></ul>	<ul style="list-style-type: none"><li>-<b>POT</b> (Paying Own Token).</li></ul>

# Tokens Management in Proposed FON Model

X: Service requestor	Y: Service provider	Process
 <p><b>LINUS</b>   <b>BILL</b></p>	 <p><b>LINUS</b>   <b>BILL</b></p>	<p>1-X uses <b>FOTs</b> to have connection.                  2-Y receives <b>FFT</b>s.                  3-Y exchanges <b>FFT</b>s against new <b>FOT</b>s .</p>
 <p><b>ALIEN</b></p>	 <p><b>LINUS</b></p>	<p>1-X uses <b>POT</b>s to have connection.                  2-Y receives <b>PFT</b>s.                  3-Y exchanges <b>PFT</b>s tokens against new <b>FOT</b>s.                  3'-FON gets all the revenues.</p>
 <p><b>ALIEN</b></p>	 <p><b>BILL</b></p>	<p>1-X uses <b>POT</b>s to have connection.                  2-Y receives <b>PFT</b>s.                  3-Y exchanges <b>PFT</b>s against money.                  3'-FON shares the revenues with Y.</p>

# PLAN

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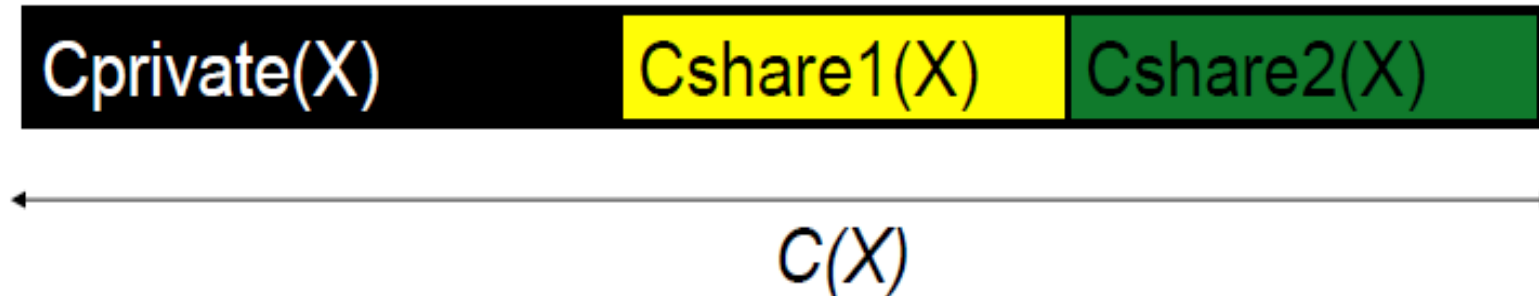
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## Paradigm including QoS capacities

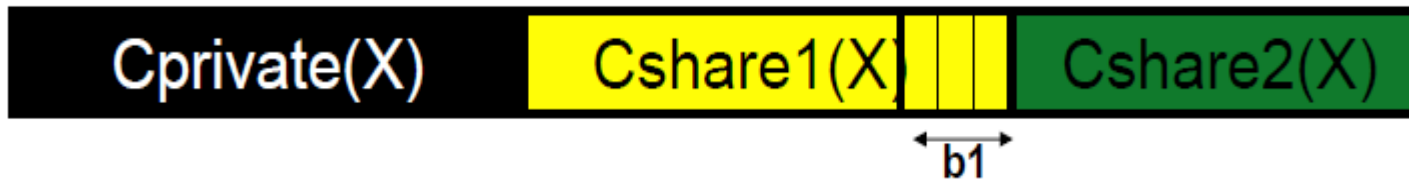


- $C_{private}(X)$  : Part of bandwidth used for  $X$ 's private access.
- $C_{share1}(X)$  : Part of bandwidth that all FON members  $Y \neq X$  could use without having priority on it.
- $C_{share2}(X)$  : Part of bandwidth on which all FON members  $Y \neq X$  have priority.

# Paradigm including QoS capacities

$C_{private}(X)$ ,  $C_{share1}(X)$  and  $C_{share2}(X)$  are used as follows:

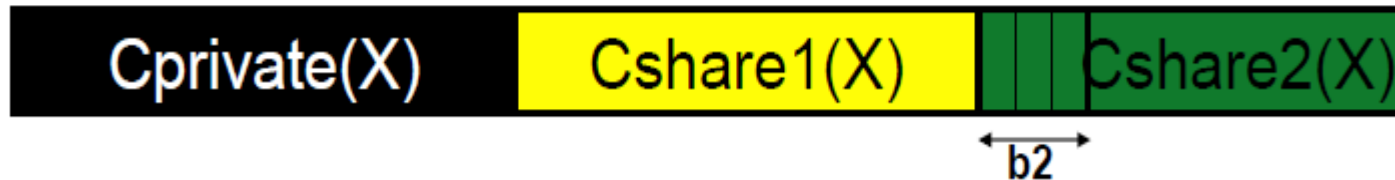
1.



1.1 Y can use  $b1$  only if it is free.

1.2 Y is a *YELLOW STATE* while using  $b1$ .

2.



2.1 X can use  $b2$  only if it is free.

2.2 Y is in a *GREEN STATE* while using  $b2$ .

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# CONCLUSION AND PERSPECTIVES

- FON is the world's largest WIFI community.
- TBAS in a peer-to-peer network is applied in FON Model to avoid profit cases and guarantee QoS.
- The FON model for sharing WIFI access could be adopted for Femto-cells.
- The problem of sharing femto access in FON could be modeled as a game.



**THANK YOU FOR YOUR  
ATTENTION**