



OSGi in Networks

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In the beginning ...

- OSGi was created to promote an electronic service market
- Home related Services and Residential Gateways was the initial focus
- Basic Requirements:
 - Common execution environment (OS) on different HW
 - Applications from different independent sources / service providers
 - Lifecycle management on app level / remotely manageable



Questions to answer

- Why was OSGi not an immediate success in the Home Services Market?
- Why is OSGi successful in many Networked Services Szenarios and Environments?



Metcalfe's Law

- A theory argued by **Robert Metcalfe**, inventor of Ethernet, which states that the power of a network increases by the square of the number of nodes connected to it.
- Metcalfe observed that new technologies are valuable only when large numbers of people use them -- consider how less valuable the telephone would be if only few people in the world used them.
- The network becomes more valuable the more nodes that are connected to it.





Why was OSGi not an immediate success in the Home Services Market?

- The prerequisites to be successful were underestimated!
BUT
- Many of these prerequisites seem to be fulfilled right now:
 - Wireless and power line technology are becoming prevalent
 - WLAN users in North America to grow more than sevenfold in next 4 Years (Gartner)
 - Zigbee and powerline technologies will have similar growth paths
 - More and more devices become networked
 - Continued trend to build in network connectivity (as price tends towards zero)
 - People have become more and more technology savvy
 - GSM, Internet,...
 - The rapid growth of the Internet (ADSL/cable) has promoted an electronic infrastructure well prepared to enable the OSGi model:
Service Provider – Service Aggregator – Service Gateway



Did you know?

- the total worldwide number of DSL subscribers reached 46.7 million
- Western Europe showed the greatest 6-month growth with 12.8 million subscribers
- The Asia-Pacific region has the greatest number at 17.8 million
- South Korea remains the only country to have achieved mass market status with 29.7% of its phone lines delivering DSL services

According to the DSL Forum as of June 2003



Why is OSGi successful in many Networked Services Szenarios and Environments?

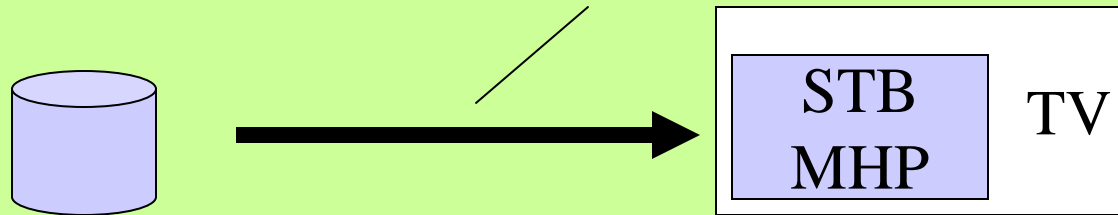
- A short comparison of OSGi and MHP can give some hints
- MHP – Multimedia Home Platform (Part of the DVB Specifications)
- Similar basic Requirements:
 - Common execution environment on different Set Top Boxes
 - Applications from different independent sources / service providers
 - Enable an open horizontal market for digital TV Services



OSGi – MHP Analogy

Initial Main Focus

Appl. Distribution via Broadcast Stream



AV Content
Broadcast Net

Java APIs to STB Ressources

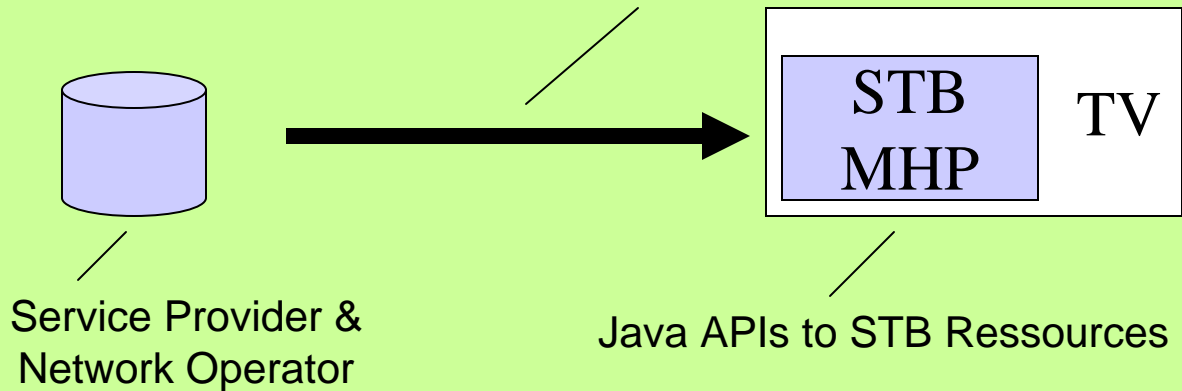
Service Provider &
Network Operator



OSGi – MHP Analogy

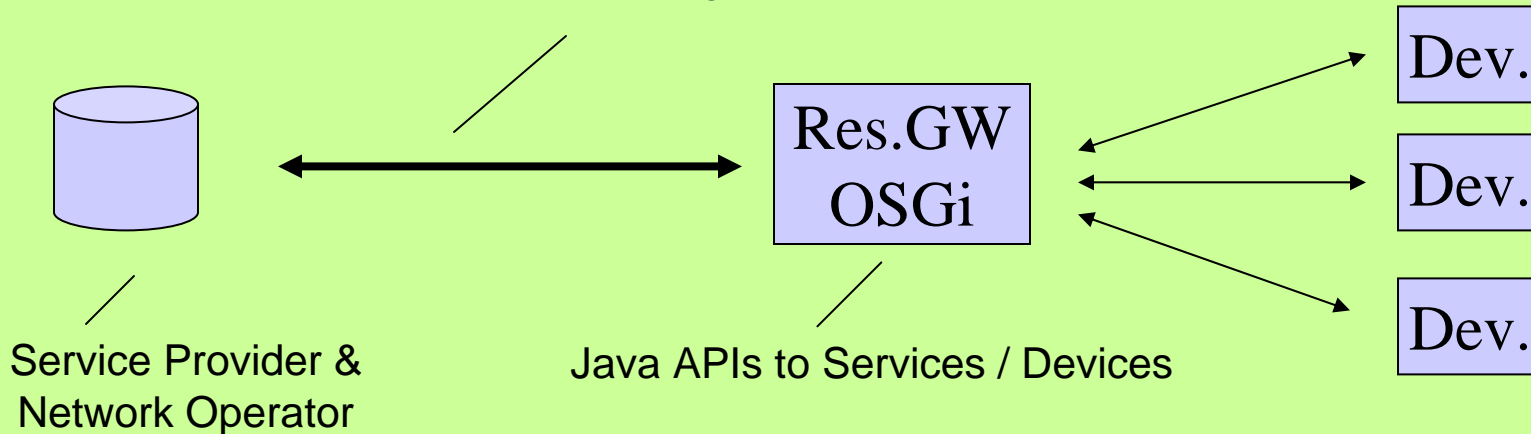
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Interactiv Remote Management & Access



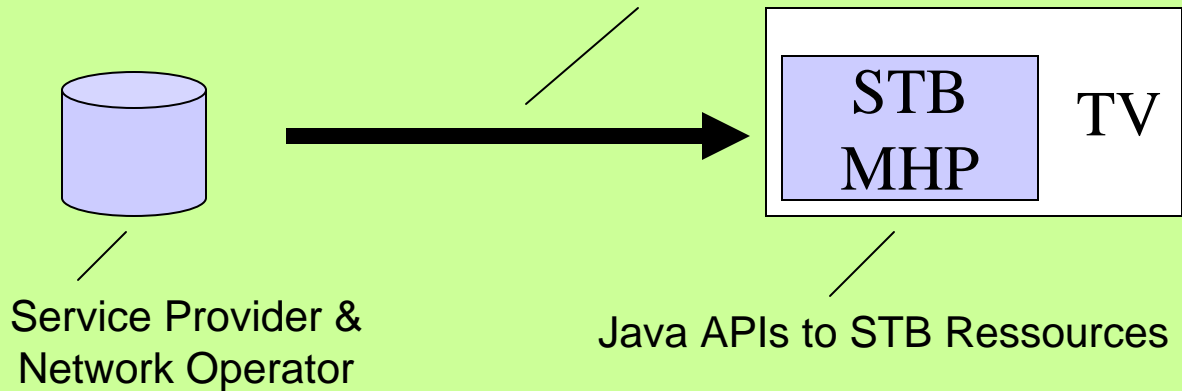
Non AV
Broadband IP



OSGi – MHP Analogy

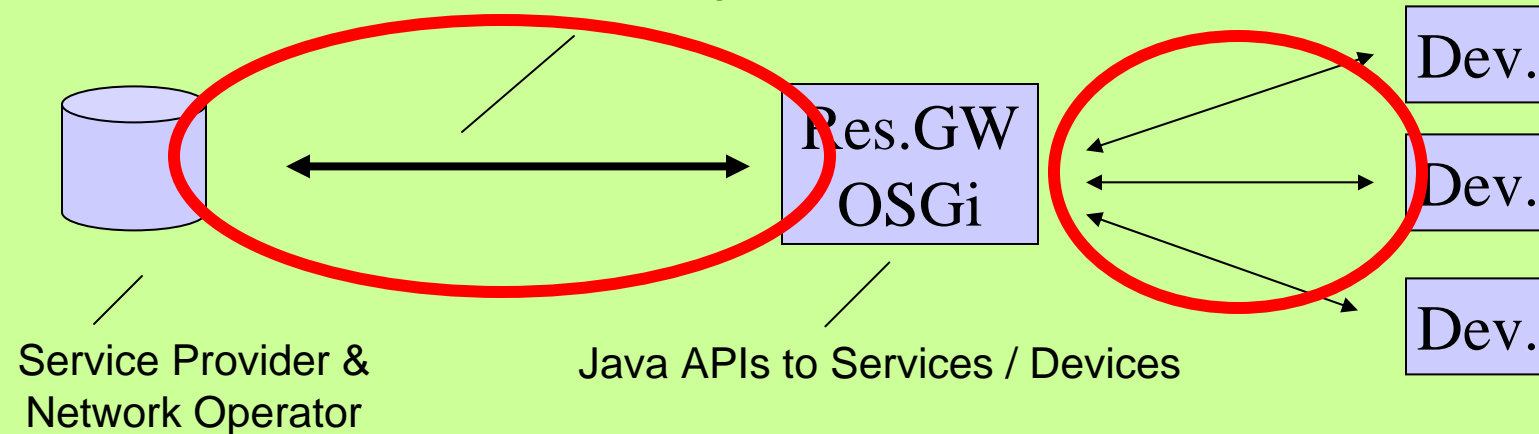
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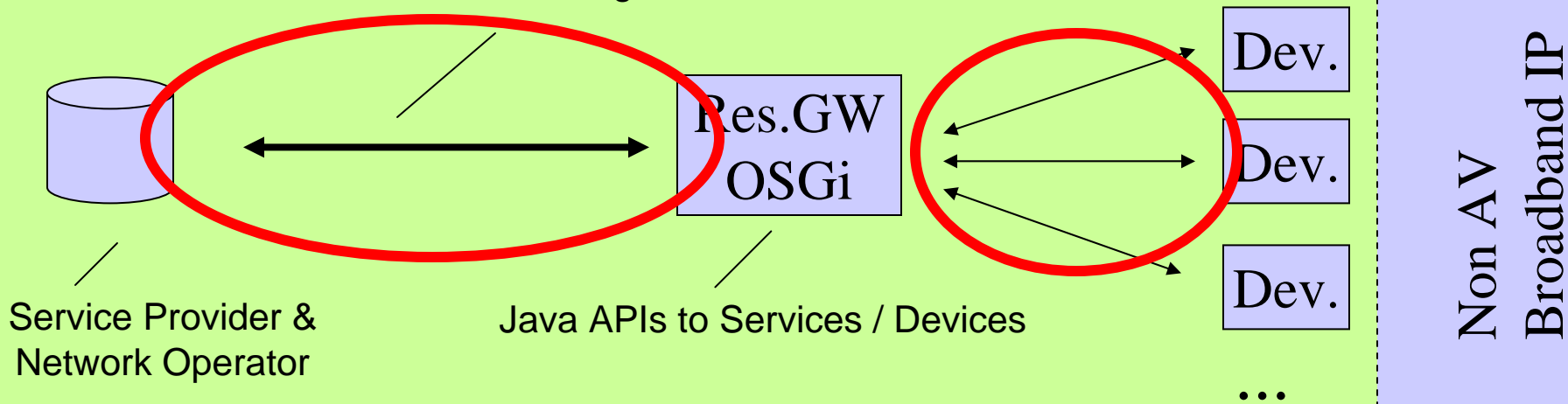


OSGi – MHP Analogy

Initial Main Focus

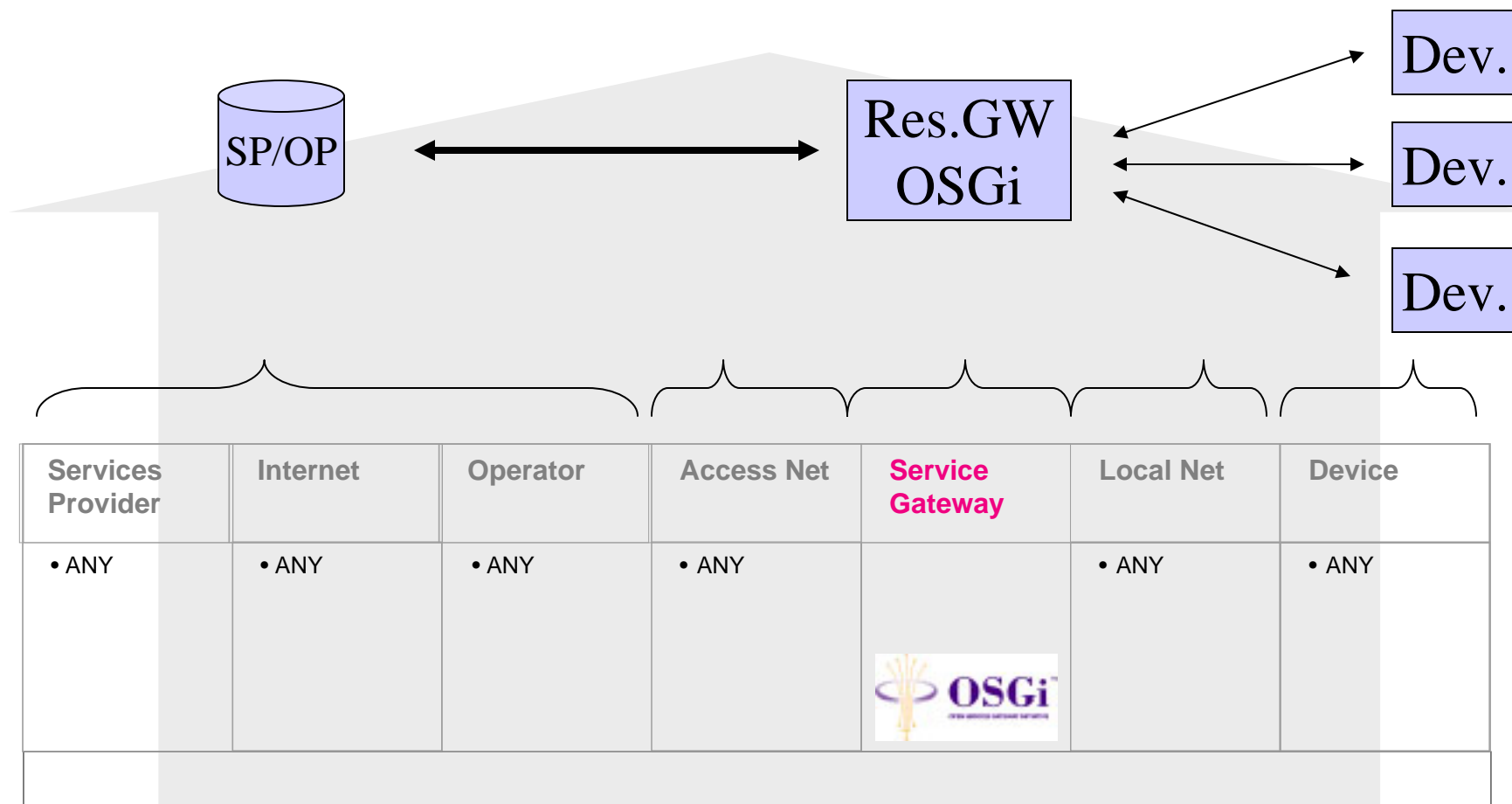
- The OSGi model was more complete and extendible to become a key architectural component in the networked world.
- (However, the potential of a MHP / OSGi synergy still has to be made effective!)

Interactiv Remote Management & Access



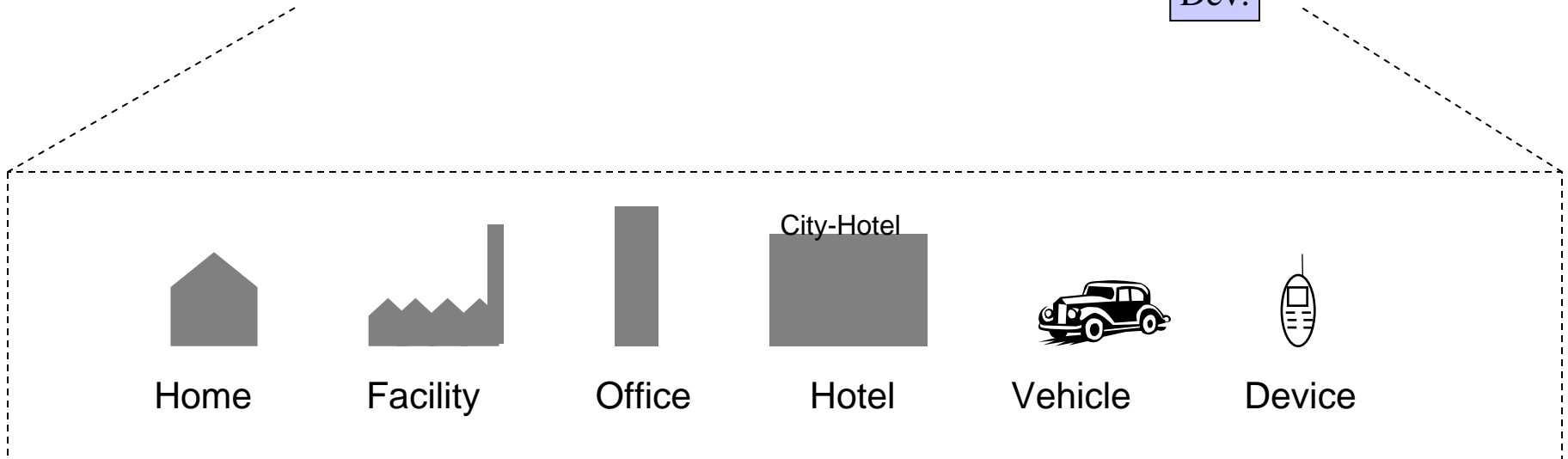
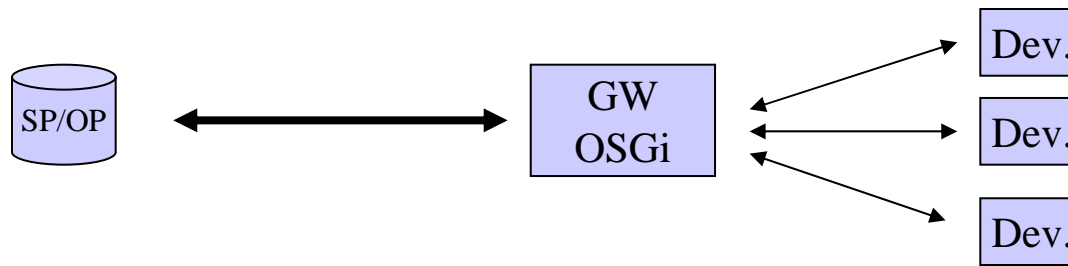


Archetypal OSGi Networked Services Model



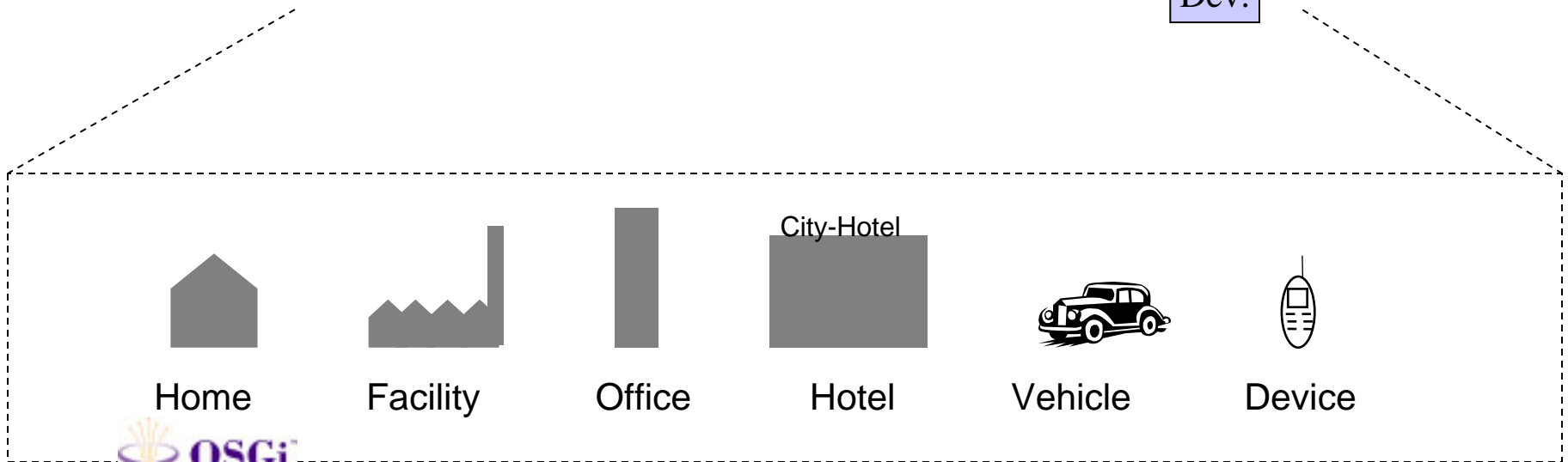
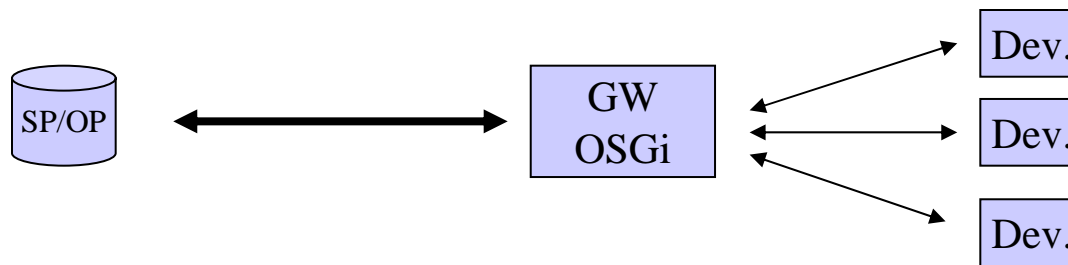


The OSGi Model can be and is applied / adopted to many environments...



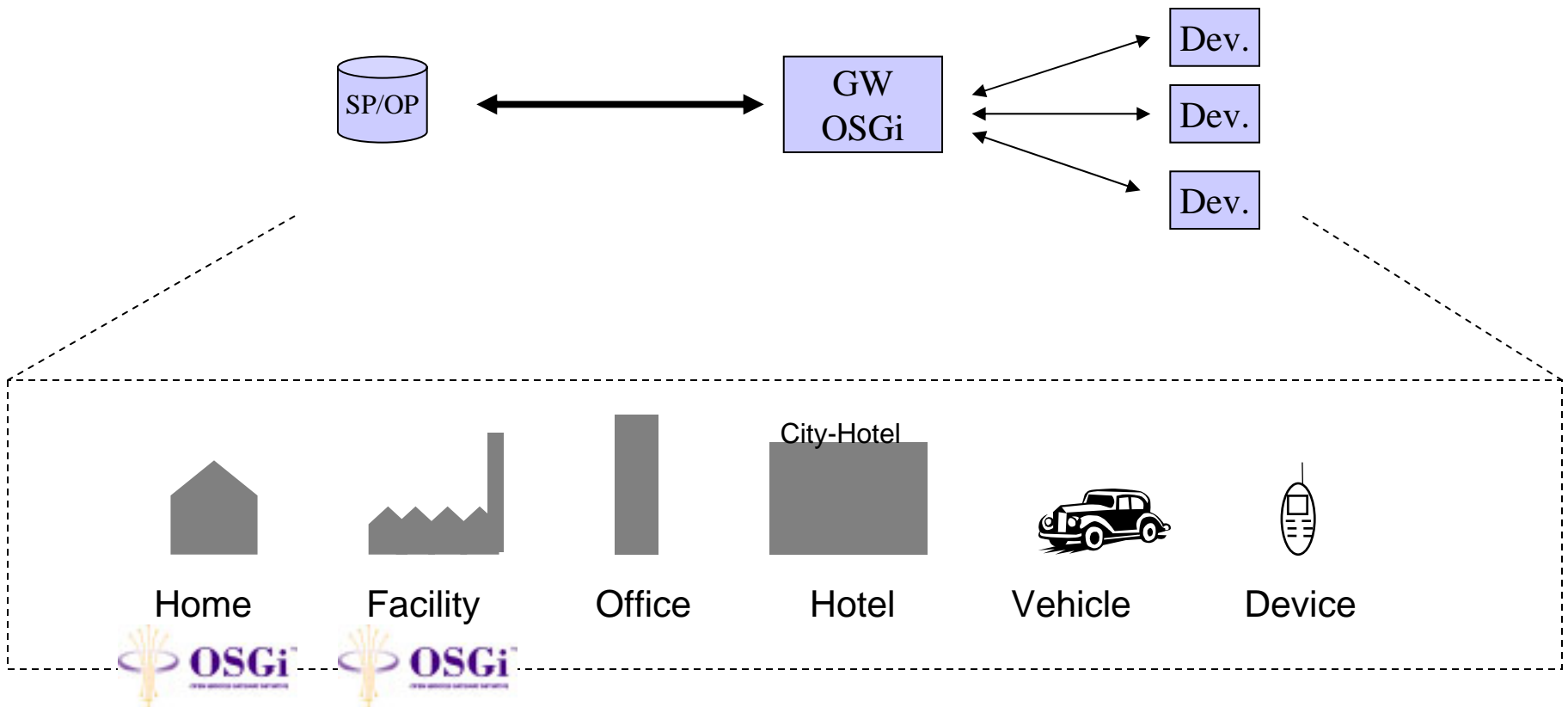


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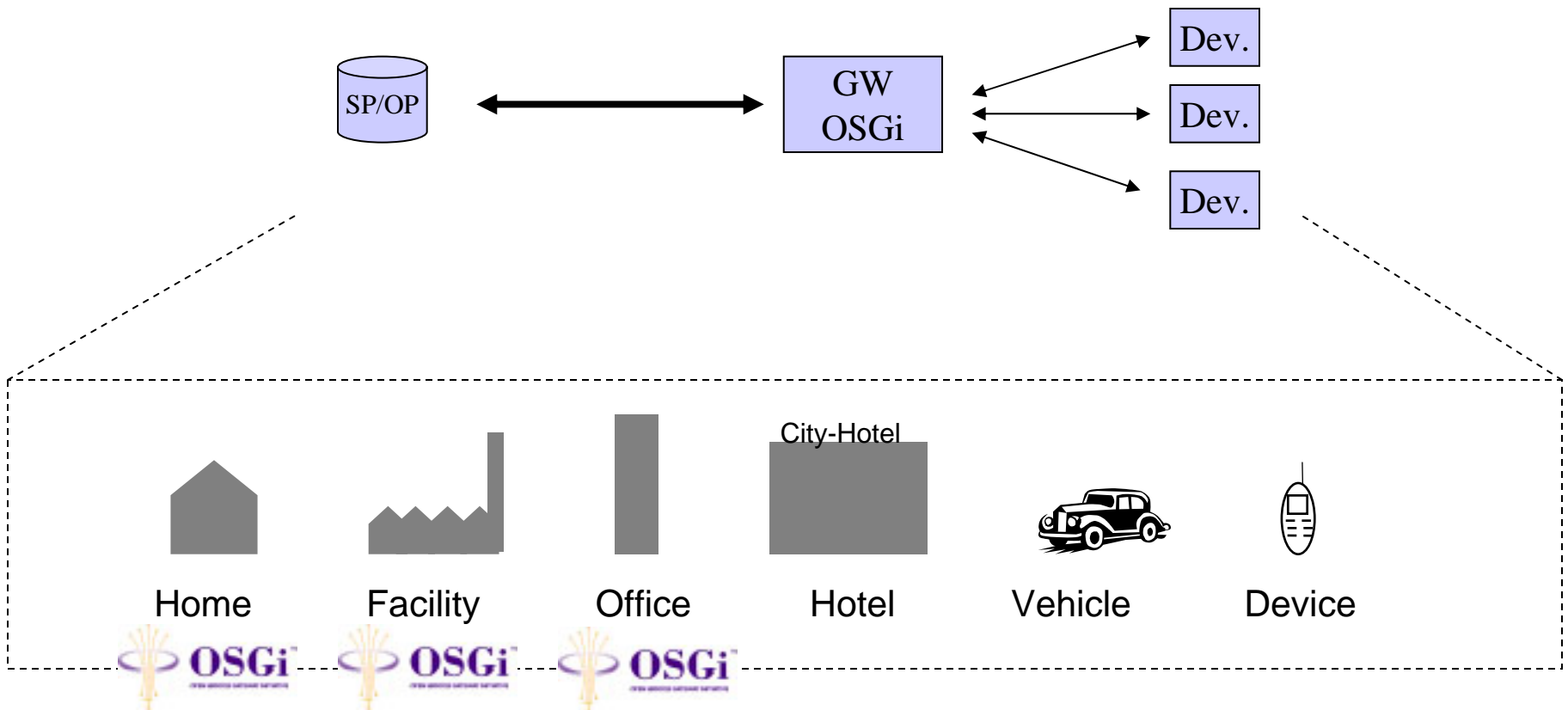


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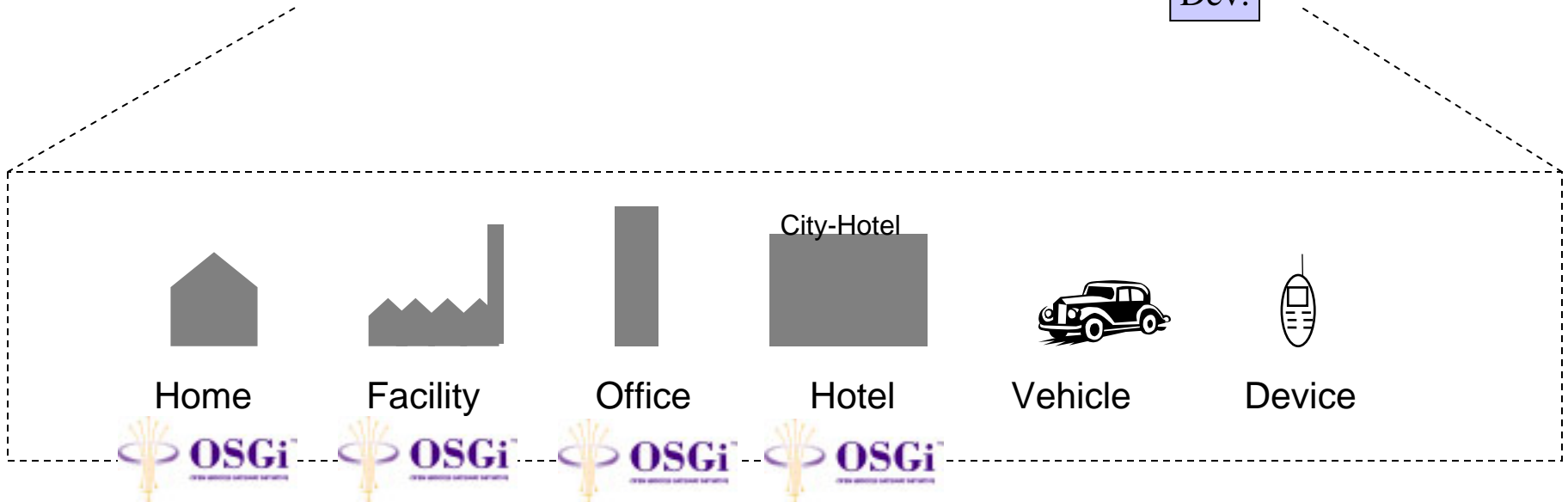
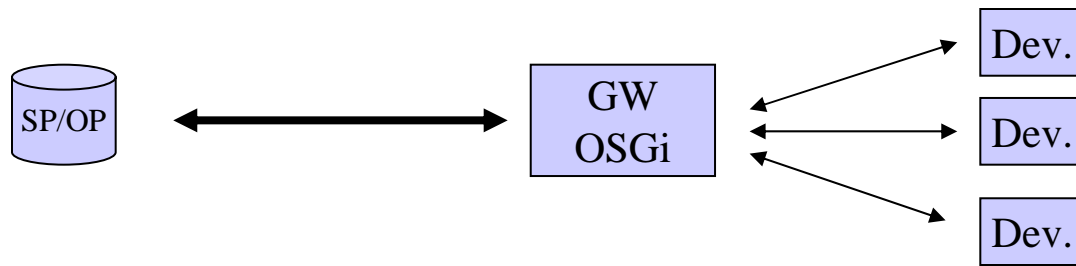


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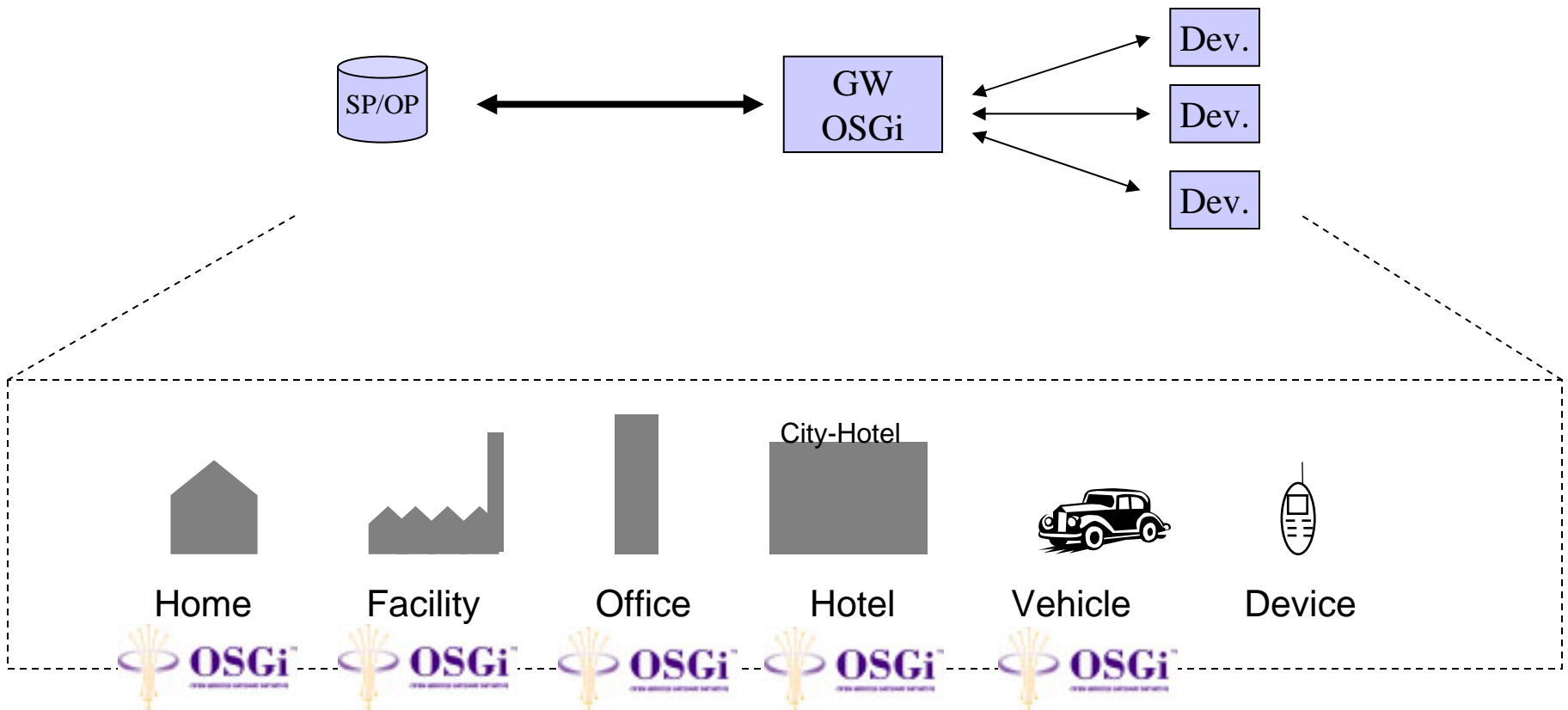


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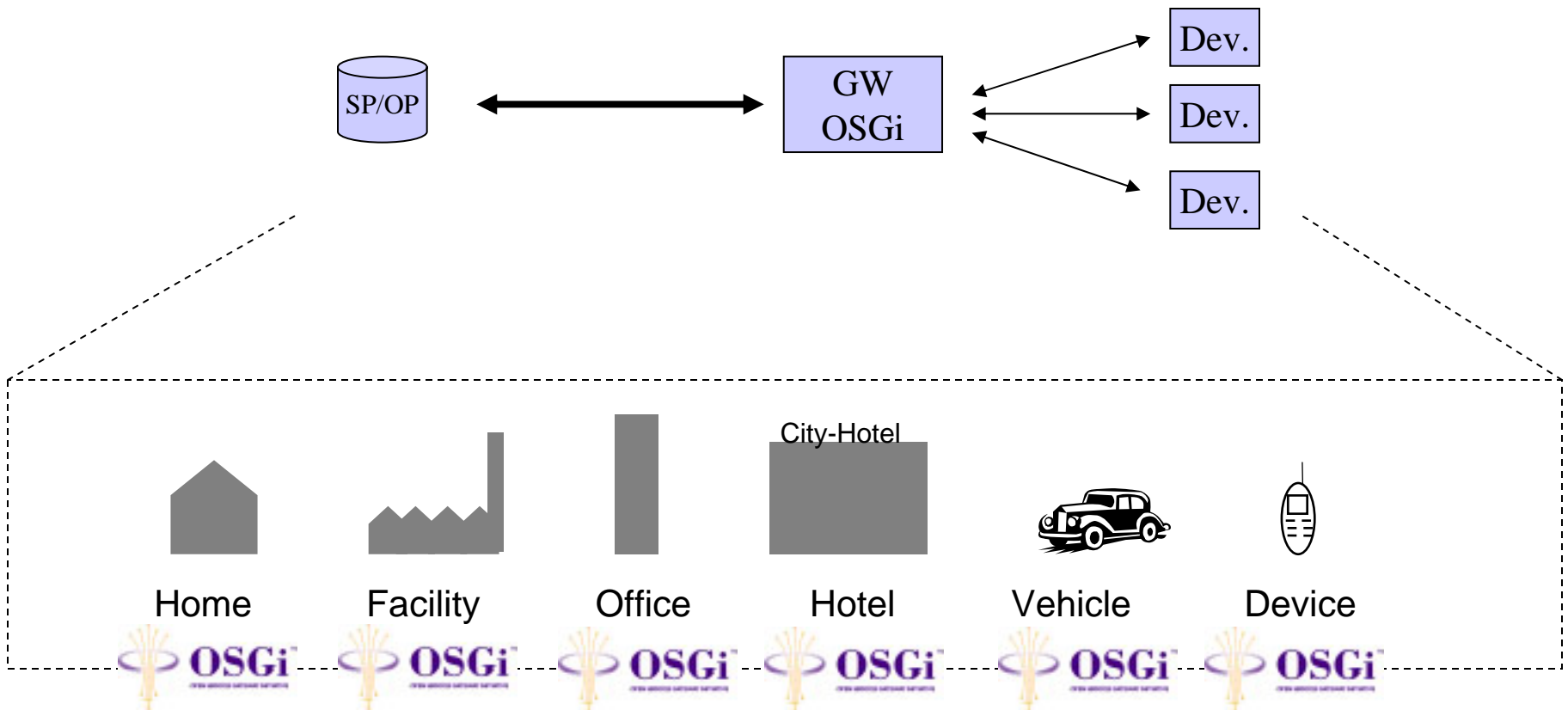


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The OSGi Model can be and is applied / adopted to many environments...





Things were evolving in two directions...

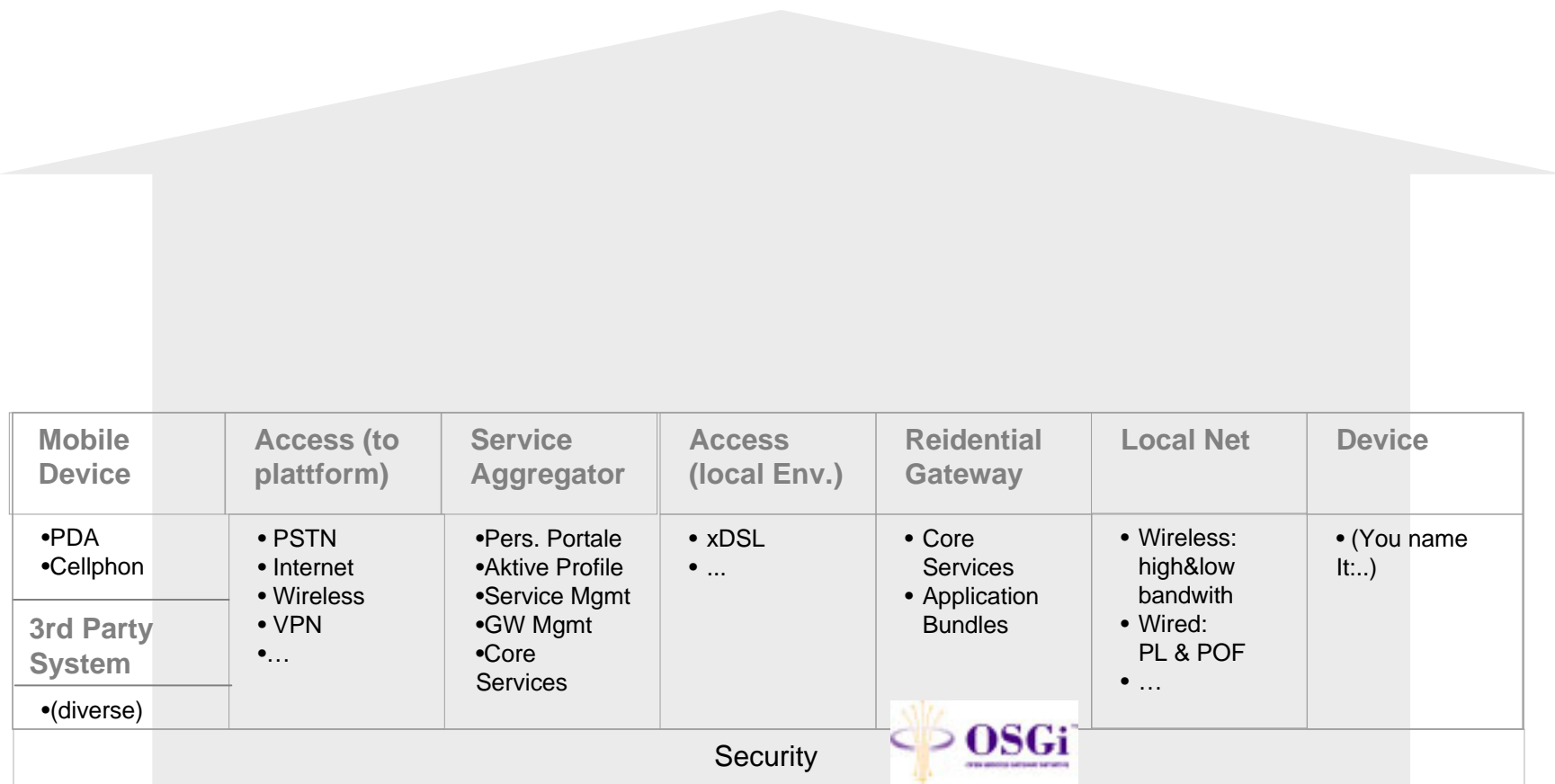
- As we just saw, OSGi can be used in many environments like Automotiv, Home, Industry...

while in the same time

- In the initial Residential Gateway and Home Services Szenario OSGi technology now will be used in many places, not only the Residential Gateway.

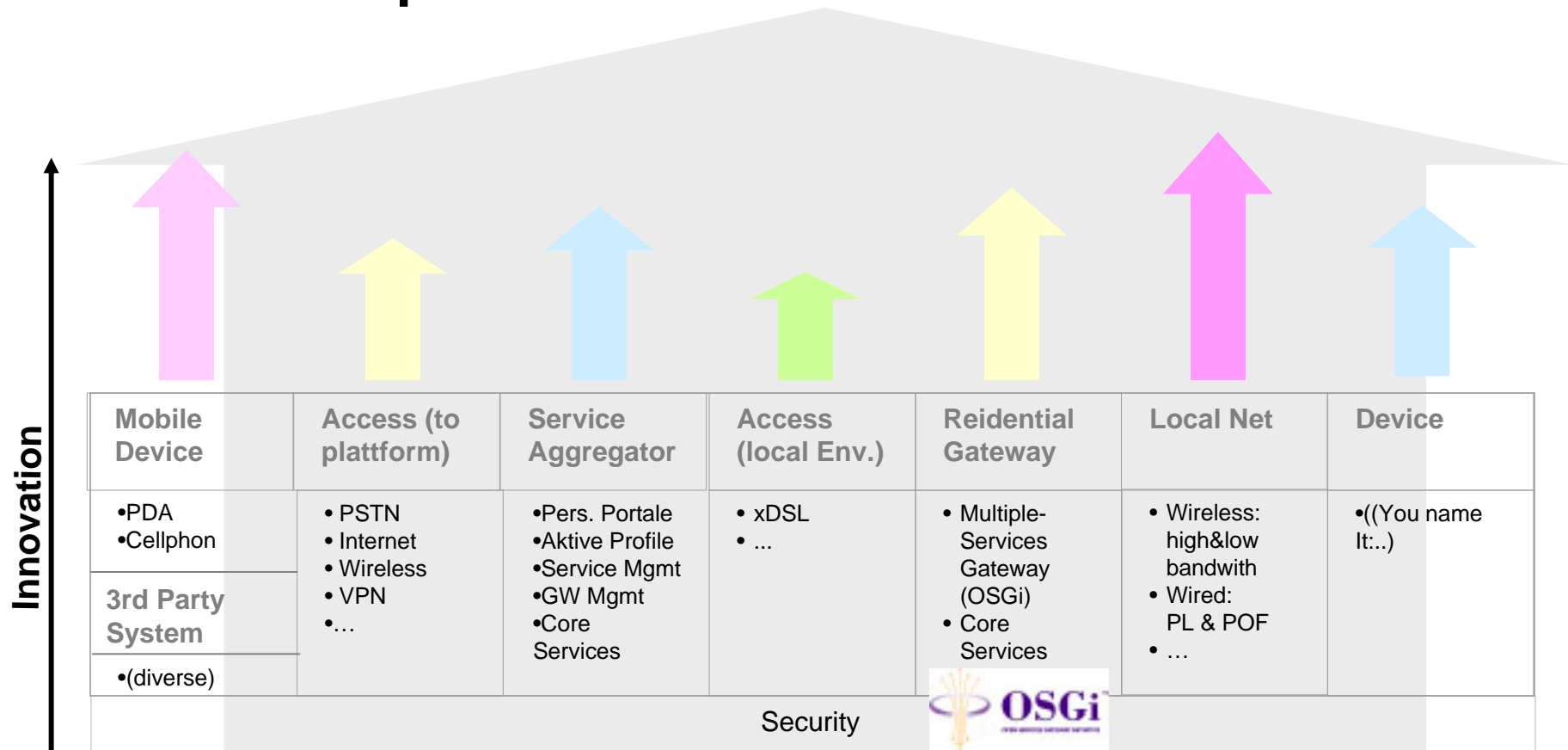


Home Services End to End Architecture



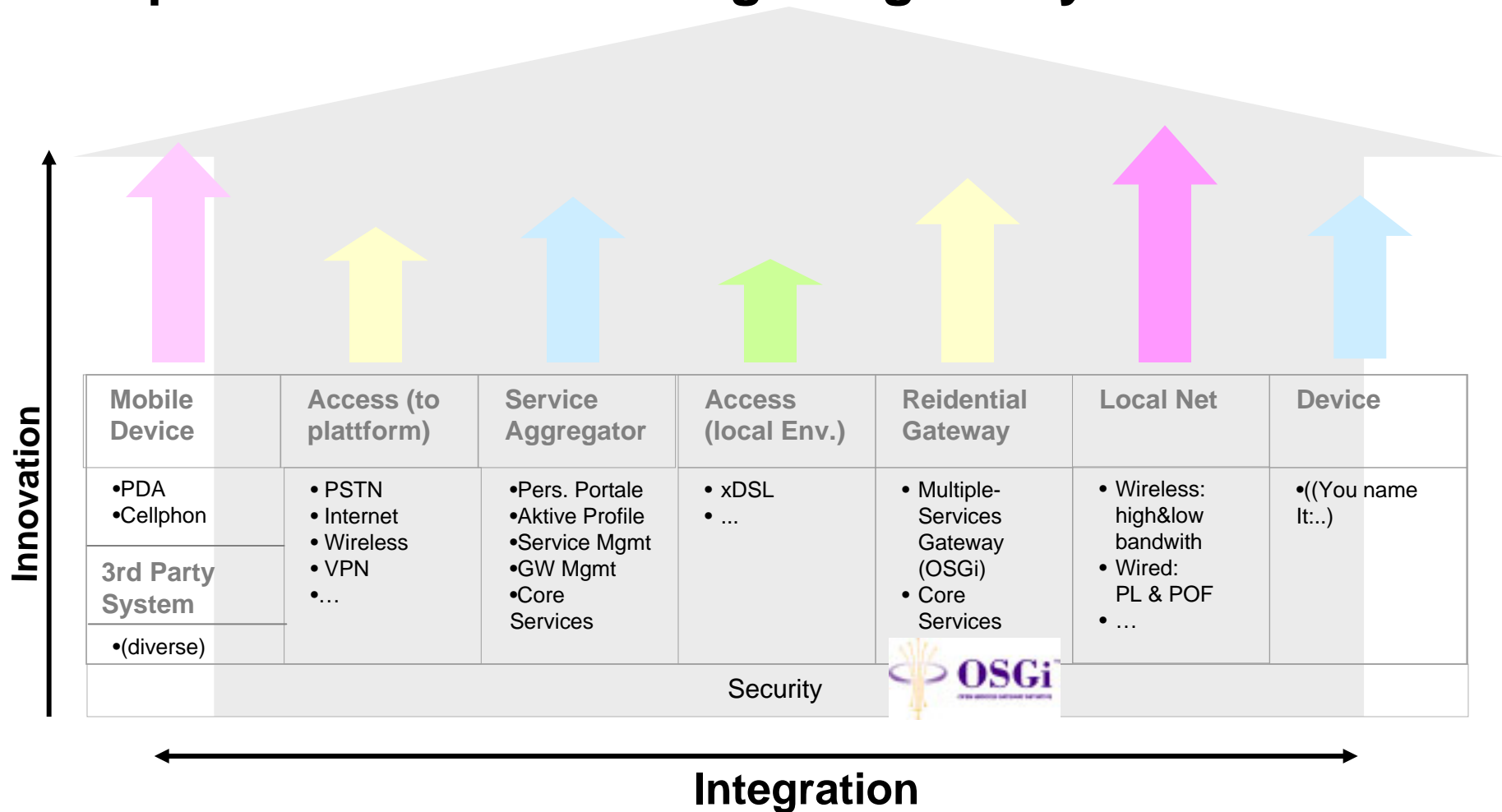


All segments in the architecture have a different innovation path...





... that has to be supported, developed and exploited without disintegrating the system





OSGi adds the flexibility needed to...

- Dynamically adopt to the changing/growing needs and infrastructures of the customers
- Extend product lifecycles without retrofit
- Unbundle devices from specific services
- Dynamically repurpose and remotely manage nodes in then network

Innovation

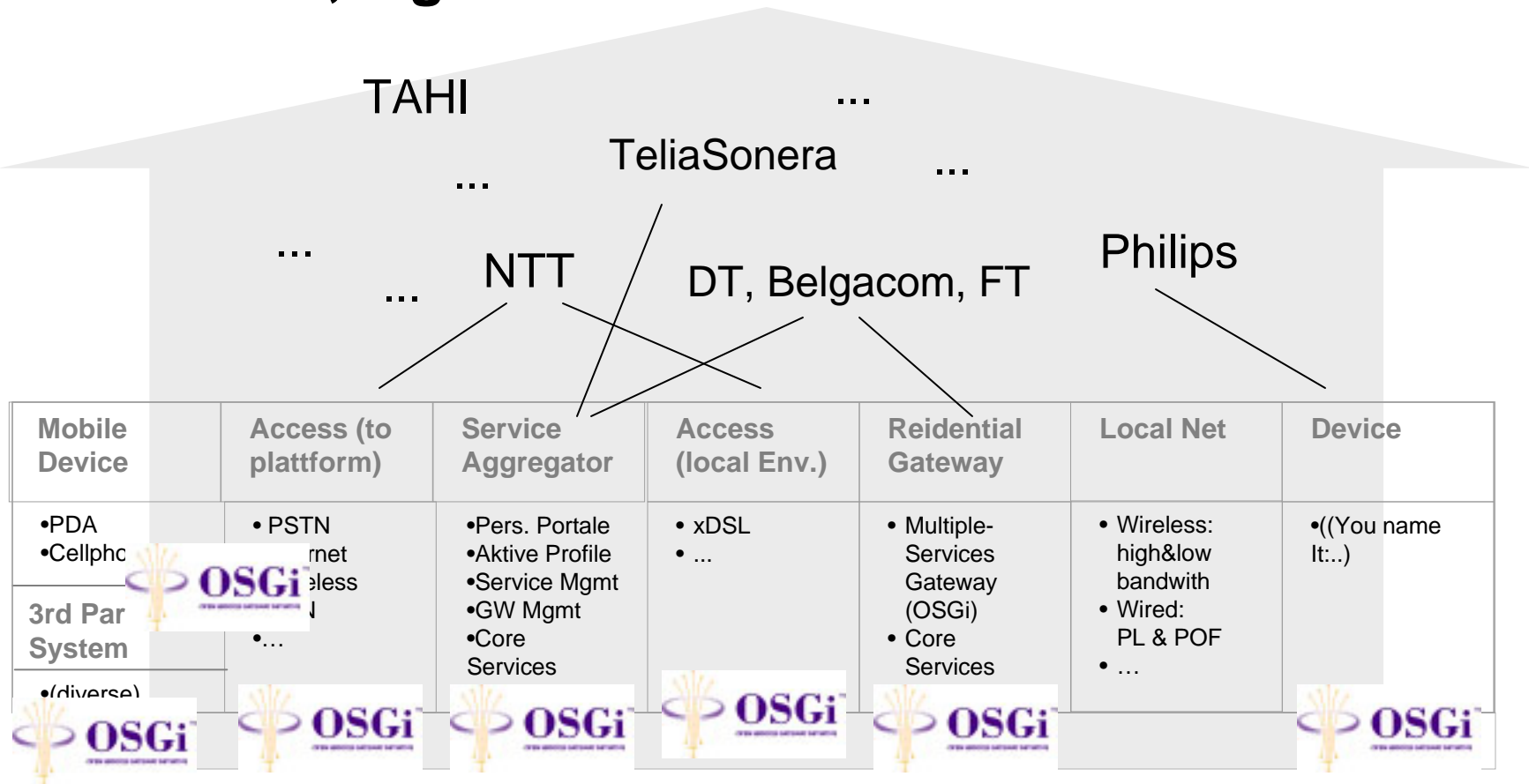
Mobile Device	Access (to platform)	Service Aggregator	Access (local Env.)	Reidental Gateway	Local Net	Device
<ul style="list-style-type: none"> •PDA •Cellphc 	<ul style="list-style-type: none"> • PSTN • Wireless • ... 	<ul style="list-style-type: none"> •Pers. Portale •Aktive Profile •Service Mgmt •GW Mgmt •Core Services 	<ul style="list-style-type: none"> • xDSL • ... 	<ul style="list-style-type: none"> • Multiple-Services Gateway (OSGi) • Core Services 	<ul style="list-style-type: none"> • Wireless: high&low bandwidth • Wired: PL & POF • ... 	<ul style="list-style-type: none"> •((You name It:..))
3rd Par System						
•(diverse)						



Integration



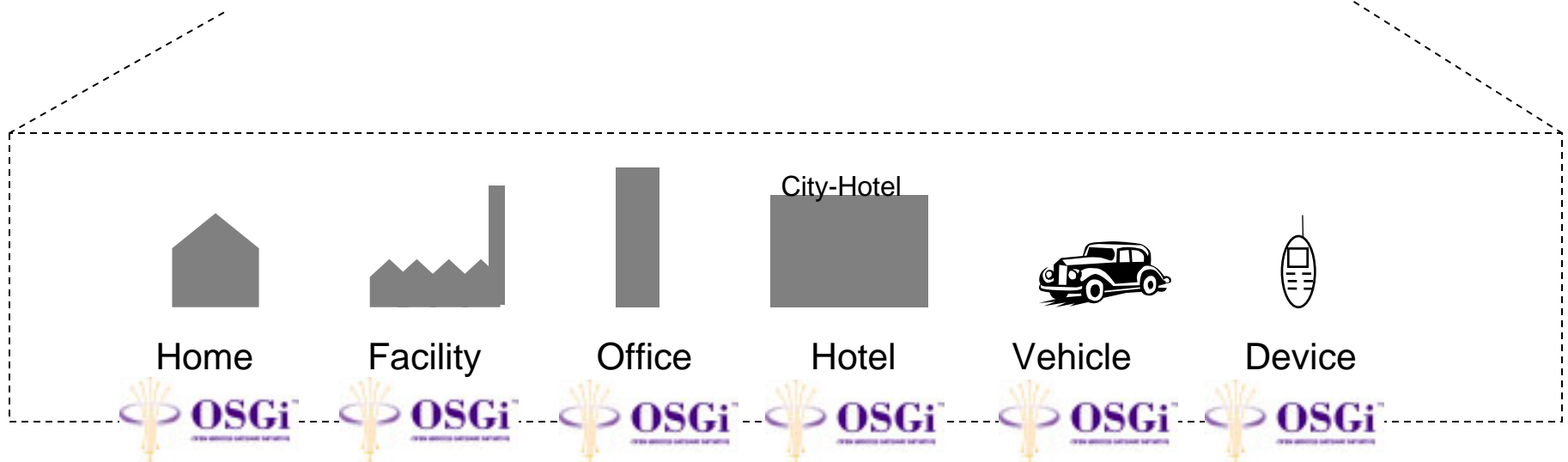
Tomorrow some examples will be presented in more detail, e.g.





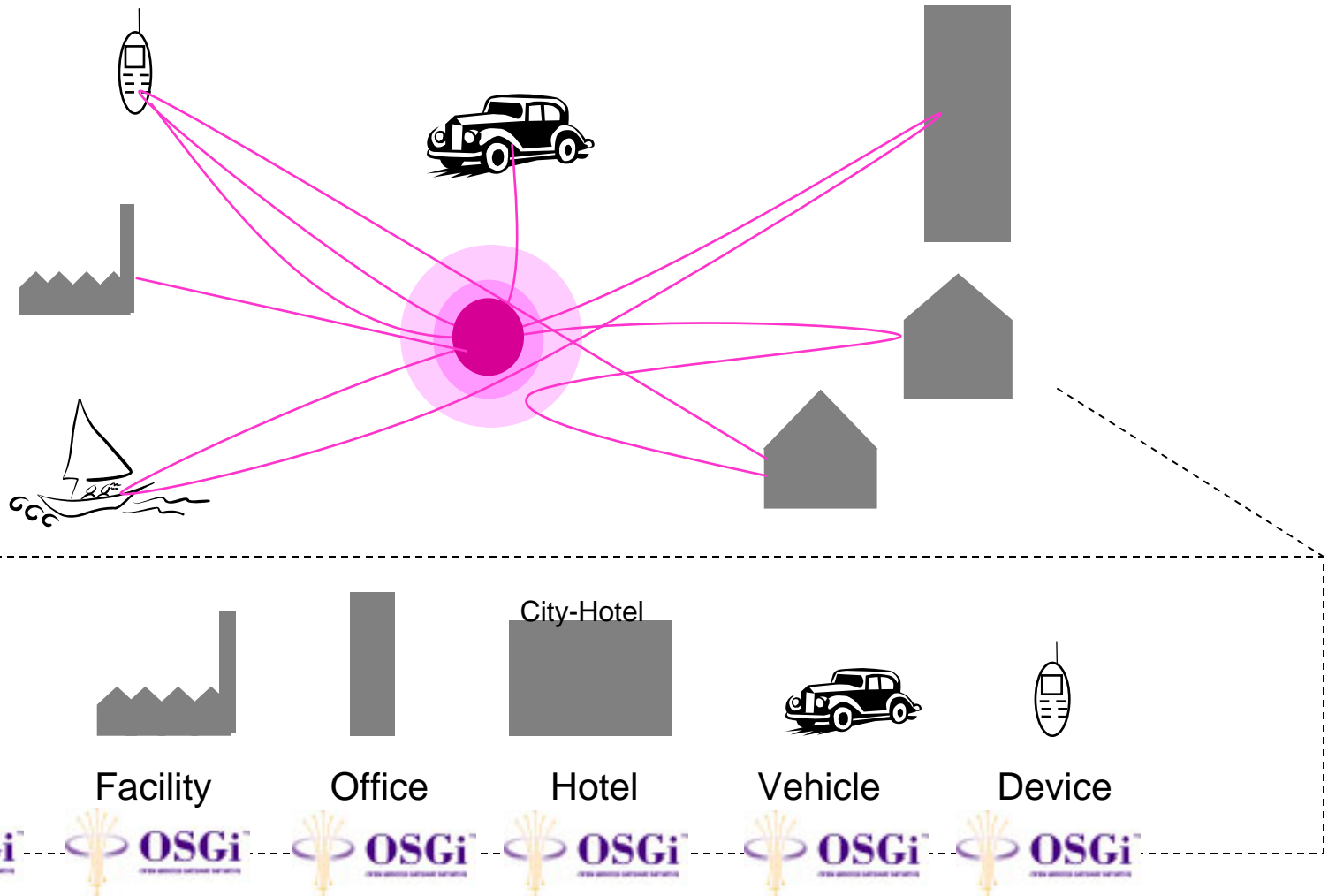
Seamless services over different venues is another opportunity

- All these “islands” eventually should to be integrated (analogy: network islands in the home)
 - For the user, to take his services anyplace
 - For the provider/operator it is an advantage, if diff. venues would use common/compatible/interoperable architectures and components, so his backend and management systems can be used most efficiently
 - If he is able to provide his services to the customers (consumer & business) in many environments, he will keep them and win new ones.





Seamless services over different venues is another opportunity





What will be the role service network operators will find for themselves?

- Infrastructure Provider
- Service Aggregator & Integrator
- „Service Owner“
- Single Point of Contact

- Infrastructure Provider
- Service Aggregator & Integrator



Home



Facility



Office



City-Hotel

Hotel



Vehicle



Device





Questions?