Case study:

IOS -Ingenium Outsourcing Services-

Company:	**IOS -Ingenium Outsourcing Services-**
Technology:	**MVNA Platform**
Country:	**Spain**

Introduction

The mobile telephony sector in Spain started the year 2012 with nearly 56 million active mobile lines, including voice lines and datacards - 2.4% more than the previous year, with a penetration rate of 114 %. On the negative side, however, the industry suffered a significant drop in revenue of over 8.5%, an inevitable consequence of the economic crisis the country was experiencing at that time.

It was the smaller operators - Yoigo and the Mobile Virtual Network Operators, with their more personalized and price-sensitive offers, who led the way in a sector that ended 2011 with the by no means insignificant figure of 5.6 million portabilities. The year 2012 ended with 23 operational MVNOs, a market share of 9.6%, and most importantly, the feeling that there was space for new mobile business opportunities, provided that they met one of the following conditions: they were aimed at a very specific segment, they provided value apart from price as a single differential advantage, or they were able to adapt quickly to the demands of their subscribers and the movements by their competition.

The income obtained by virtual operators increased by 37.1% compared to their earnings in 2011. Virtual mobile network operators inevitably became the undisputed central figures in the sector, expanding the range, adding value and improving prices. There were 50 MVNOs operating in Spain by the end of Q3 in 2015, accounting for a market share of 17% (including Jazztel and ONO).

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IOS - Ingenium Outsourcing Services - was founded in these unusual circumstances. The company, an Ingenium Group subsidiary, was registered as a Full Mobile Virtual Network Operator with the Telecommunications Market Commission.

In May 2012, IOS signed a wholesale agreement with Orange Spain to use its radio network and to provide a service as an MVNA platform for companies interested in offering mobile telephony services.

The challenge

The challenge was ambitious - to offer the market both a technical and business solution that would meet the strong demand for new mobile telephony projects, providing help and advice from the inception to the business level, and enabling their integration and technical deployment in the shortest possible time.

The IOS range also had to meet two requirements that are critical for any brand interested in operating as MVNO. In one hand, it must enable them to minimize their initial investment, while ensuring the scalability of the platform to millions of subscribers in the event of unexpected growth, and in the other, it had to be able to provide the latest technology demanded by the market at any time.

The solution

The solution involved deploying a complete mobile services platform - an MVNA - which was robust and flexible enough to meet the strong demand for new mobile telephony projects at that time, and able to host the largest possible number of brands, with each one managed and operated on a completely independent basis.

Ingenium MVNA Technology

The IOS platform is built using JSC Ingenium's MVNA technology Ingenium Core R3 + BSS solution. It is a comprehensive solution both technically and in business terms, which was fully developed in-house and enables the various brands hosted to have a high level of independence and autonomy when operating the service, to manage their own SIMs, handle all of their subscriber information, create and launch new pricing plans, promotions, etc.

IOS core technology is able to provide a 4G service, enabling the brands deployed on its Platform to give end clients all the advantages of new cutting-edge technologies,

greatly enhancing user experience and giving them simultaneous multiple connections with different qualities of service.

IOS offers its clients all the services they need to be able to operate as a full MVNO. It has a comprehensive portfolio of network and BSS services, in addition to the most complete range of added value services on the market, with the added benefit of being able to customise them based on the client's business and brand parameters.

As well as its technology, IOS also has a multi-disciplinary business/telco team - which as well as operating and maintaining the platform, works closely with the client during all stages of the project's life cycle: business and technical consultancy, analysis of opportunities, feasibility, research and negotiations with third parties - legal advice, negotiation with the Host Operator, marketing, etc.

Outstanding features of IOS MVNA technology

The general features include: its high level of efficiency, its ability to integrate multiple services on a single platform, and its high availability for Carrier Grade infrastructure development.

1)   A high level of flexibility for:
- adapting to any mobile business model that clients demand, and adapting to technical and business flows according to their needs.
- developing new added value services.
- integrating third-party components.
- incorporating new partners in the ecosystem (new SIM providers, new telephone access providers, etc.).
- completing services in various ways: Termination of calls by third parties depending on the specific MVNO, termination of data in secure LANs, termination of SMS in SMPP providers...
- giving control of assignment of IPs in HA solutions based on SIMs.

2)   Customization

- **In business terms:**
- price plans: completely independent pricing policies for each brand.

- self-care: the look and feel of each brand can be customized, with operational self-care.
- internal processes: new clients, billing, customer service, etc.
- download qualities and speeds.

- **At telco level.** Integration of telco services:
  - voice:
    - o Customization of the service's accessory components, ranging from recorded message notifications, to call completion, for either national or international termination, depending on the interconnection agreements involved.
    - o Convergent services with landline telephones: unified voicemail and short dialing - extensions.
  - data:
    - o Brands can carry out their own termination, especially designed for cases in which the brand is an internet service provider -ISP-.
    - o Private and public IP address assignment according to the brand's IP addresses.
    - o Delivery of data via VPN especially designed for businesses and large accounts

3) **The ability to create offers, promotions, campaigns, etc:**
   - almost immediately, within hours, and price plans and promotions can be published, changed or withdrawn instantly.
   - full autonomy. The marketing and sales teams for the various brands can use the price plan editor to create, publish and modify a price independently of their own technical team and technology partner.
   - without compromising the service

4) It can operate as both an MVNE Platform and as an extension of the Host Operator

- deployment of new brands and services with zero impact on Host's network
- fast time to market. Implementation of the MVNE Platform in less than four months.

5) Interworking Functions capacity. Full MVNOs can be incorporated on the MVNA/E Platform, to:

- give SIP network partners control of calls to.
- give third parties credit control.
- share credit control with third parties.
- be the HOST for MVNEs connected on IOS.
- advanced features of STPs for filtering components not interpreted by partners
- translate 4G signalling to third parties with HLR and HSS.

6) The capacity to integrate operators with their own 4G radio coverage on the MVNA platform, so that they can provide 4G access in their area and offer a 3G calls and data service with the Host Operator.
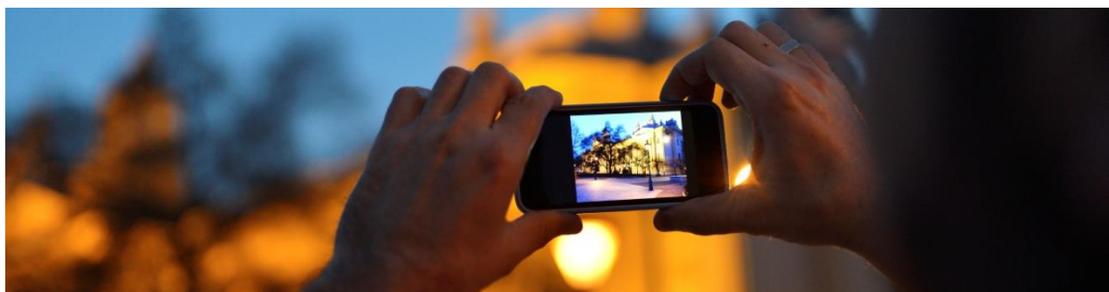
Other advantages of IOS MVNA technology

- Cost-effectiveness:

  a) Solutions are built based on a very low entry level with a vast capacity for scalability.

  b) uses mission-critical general purpose hardware.

- Isolatation of the Host operator's network, facilitating new developments on the MVNA network without impacting on the Host network, or requiring specific developments on the network, thereby avoiding delays.

The result

In October 2015, when the case study was published, IOS became Spain's leading MVNA platform, with 16 operational brands and was in the process of integrating the seventeenth for its commercial launch in Q4 of 2015.

A very wide variety of mobile services operate on IOS España's platform: quadruple-play operators, low-cost, M2M, roaming broker, exclusive operators for businesses, communities, super-niche operators, data operators, etc. The success of IOS has been primarily based on two cornerstones - its flexibility and capacity for customization to handle any mobile business model, dealing with each brand completely independently and meeting each one's technical and business requirements.