GnB FIWARE Case Study *April 2016*

Project Name: Glue & Blue (GnB) **Company Name:** HOP Ubiquitous S.L.
FIWARE Accelerator: FABulous **Country:** Spain
Funding Period: March 2015 – December 2016 **Grant Funding:** €118,000
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Target Sector: Consumer DIY/design **Email:** jara@hopu.eu

Vision and Market Need

The GnB Value proposition is to provide personalizable and easy to use/deploy home automation kits. The main features include:

- Personalisation of automation sensors / devices (shape, colour and material).
- Easy to install and use;
- Easy to deploy capability.

Competitors do not currently have these features. The main barrier to uptake is that people usually need technical skills to customise sensor kits. GnB lowers this barrier compared to competitors.

Market needs identified by Glue & Blue include that:

- Consumer electronics have limitations in terms of Apps. The physical presence is standard (ABS) and is not coherent with user style.
- Do It Yourself Market presents difficulties to be used (skills in electronics & coding). The physical presence makes it not acceptable by the end-user

The GnB market opportunity includes that:

- GnB App integrates all the sensors in a single solution. The physical presence is personal in materials (wood) and shape
- GnB offers a very easy to use solution based on proximity configuration, the electronic is based on pre-built modules called “blues”. The physical presence is totally personalizable with the “glues”

Market Potential

GnB is targeting two target markets via a hybrid approach that gets the best from each one of them. On the one hand, GnB is targeting the consumer electronics markets with a special focus on home automation, and on the other hand, the Do It Yourself market, i.e., makers market.

The current market trends, as identified by the Intel Internet of Things Market Report, is that classic markets such as home automation are moving towards a makers-oriented market through the makers movement. These need to enable users to build, deploy and define their own sensors as seen in the makers solutions such as Arduino and Raspberry Pi. They also need to show how the market was getting echo with the development of disruptive gadgets and devices that make use of this open innovation to offer ready to be deployed and used product.

Some proof of the markers and personality aspects for home automation devices can be seen in the trends from innovative products such as Nest, based on the philosophy from Apple and acquired by Google to start the development of their Home Automation ecosystem. Similar approaches focused on design and mobile integration can be found in HomeKit from Apple and individual projects from Kickstarter and other crowdfunding platforms.

The GnB approach is focused on bridging the gap between Arduino and the most fundamental maker solutions where several limitations are found in terms of physical presence, knowledge about electronics / coding etc., and the other side of the bridge with consumer electronics focused on finalized and closed products. GnB see a clear opportunity in the development of solutions that remove the barriers and complexity from the electronics via a collection of tiny and versatile modules (called blues) and a wide collection of encapsulations for the blues, thereby users can choose the encapsulation (called glues) that is more coherent with his personality, environment (style, decoration). Thereby, Glue and Blue is the combination between the electronics capacities that the user need for a solution (sensing / actuation capabilities) and the look and feel that he desires (encapsulation and integration).

Success is based on the diversity of Glues that satisfies and cover the needs that other solutions are not able to cover. For this purpose, a community will be developed around 3D printing and designers, opening a catalogue for open contribution at the same time that offering to consumer the opportunity to request personalized encapsulation based on their needs, in case that they do not find what they want.

According to the Intel Market Research Report, this makers market is worth 22 billion euros in 2015 and will be duplicated in 2018. As a result GnB consider that this disruptive way to understand and offer the benefits of the Do It Yourself and IoT market can have a relevant place inside that emerging market.

The most important market barrier that the consumers market presents is user acceptability and visibility. For that reason, GnB will focus on the development of channels that make it scalable via online platforms, at the same time that are near to the user via the promotion with local stores.

GnB has started to interact with marketing, new business models and portfolio directors from companies such as HomeServe, Allianz and MultiAsistencia as part of the collaboration with Fujitsu. These interactions and market analysis has allows GnB to identify the key modules (sensors and actuators) that are required by the residential market in the areas for safety, maintenance and preventive monitoring. These initial sales and market impact will be extended with more comfort and personal sensors in order to satisfy both safety needs (primary needs) and also comfort and personal needs (secondary needs).

FIWARE Usage

GnB platform is built using Generic Enablers (GEs) and Specific Enablers (SEs) from FWARE such as the GE Orion to subscribe for updates of products/firmware, GE Marketplace / GE Repository / GE Object Storage to build the marketplace, the SE FITMAN 3DScan to visualize in the Web the 3D models, and other enablers, the SE FITMAN CBMP for the logic development, and the Complex Event Processing (PRONTON) and Data Analytics (COSMOS) for the data processing. Finally, security and identity management cross-platforms (apps, cloud backend and web) with the GE Keyrock.

The main benefits offered by FIWARE are, first as an Open Source and Cloud Computing platform it has presented the ability and flexibility to evolve and be adopted to build their solution. FIWARE is very interesting, because it provides capabilities for integrating sensors, but also much more information technology oriented such as a) 3D visualization, b) Marketplace, c) Security and Identity Management and finally d) data storage and analytics.

In addition, a significant benefit from the FIWARE Accelerator Programme has been the ecosystem with coaching, company support and the community / entrepreneurship spirit.

Competitive Positioning

The main competitors for the development of personalizable products is the makers market such as Dog Hunter (http://doghunter.org), SeedStudio (http://www.seeedstudio.com), SparkFun (https://www.sparkfun.com) and Cooking Hacks from Libelium (https://www.cooking-hacks.com/). Arduino or Raspberry pi satisfy similar needs but they do not offer the same features. Moreover they target technical persons (engineers for example) while GnB targets non-technical people.

The main difference is that they do not provide the innovations regarding the IoT stack to make it easier to use and deploy via IoT management simplified via Apps based on proximity. They also do not provide services for personalized solutions, in terms of encapsulation (casing), firmware development, and integration of sensors on demand. This is one of the key benefits from HOPU, the capacity of personalization and tailor-made development, which is the main driver of GnB's current market.

Therefore, while current competence is focused on Open Hardware with a very narrow target market due to the barriers to use and deploy it, GnB is addressing the challenges with reaching user acceptance via the personalization and customization of the products and services to make it usable through easy mechanisms and interfaces. At the same time, GnB is taking into account key issues such as the commissioning, easy of use and security that make its innovation unique as part of the technological basis from research and innovation.

GnB is innovating by providing an easy-to-use mobile app and cloud-enabled platform that can be used by non-technical people. GnB is also innovative by integrating IoT sensors and 3D models, in order to provide the basis for the development of personalized products. Finally, GnB is focused on making cost affordable and adaptive the consumer electronics market, impacting on social aspects such as security, energy and wellness.

The image below compares the features of GnB with competitive offerings:

Solutions \ Features		Internet Connectivity (Mobile Access)	Customizable Sensing / Actuation	Easy to use and intuitive Apps	Usable without Electronics / Coding skills	Customizable Physical Presence	Ecosystem / Standards (Inter-operability)
Glue and Blue		✓	✓	✓	✓	✓	✓
Makers	Arduino	−	✓	✗	✗	✗	✗
Makers	SeedStudio / SparkFun *(Arduino Extensions)*	✓	✓	✗	✗	✗	✗
Consumer Electronics	Thread / Nest (Google) SmartThings (Samsung)	✓	✗	✓	✓	✗	✓
Consumer Electronics	Z-Wave & other legacy (Interlogix)	−	✗	−	✓	✗	✓

The key advantages from GnB is the fusion between the advantages of freedom for creativity to develop the user needs, without requiring electronics or computer programming (coding) skills. At the same time its offers the integration with open standards to be part of an ecosystem with other sensors and actuators (eg. Smart meters, thermostats etc.). The other great advantage from GnB is the opportunity for personalization, which is a highly appreciated value in the current markets driven by design, fashion and aesthetic canons.

The key challenges facing GnB is the lack of a support community promoting it as Arduino and the DIY market offers, and the excellent marketing campaigns that consumer electronics market is able to fund to reach a wide market visibility and impact. GnB plans to address these challenges via its channels development, community development from the 3D design/printing (as an alternative approach to the Arduino community based on electronics) and finally the support of marketing campaigns via social media and online platforms (interviews, blogs, specialised newspapers / magazines etc.).

Business Model

Glue & Blue (GnB) has a B2C model. It proposes a mobile-oriented marketplace to bring the opportunities of the 3D printing and the IoT to the consumers market. Customers buy sensors for between 30-50 euros based on the personalisation, included the mobile application and Cloud service.

GnB also sells sensor kits (basic components and complex modules) to insurance companies (B2B model). GnB sells to customers through online marketing, online sales and resellers (such as Amazon) and to insurance companies through direct contact (salesforce, demonstration, meeting etc).

The images below shows the GnB Business Model structure and marketing strategy:

<table>
<tr><th colspan="2">Glues / Encapsulations
(3D printing and injection)</th><th colspan="2">Blues & Gateway
(Electronics)</th><th colspan="2">App + Cloud Platform
(SaaS)</th><th>B2B</th></tr>
<tr><td rowspan="2">In-house design</td><td rowspan="2">6-9€
4-6€ design ~70% +
2-3€ ~30% material

60-80% inital margin –
Design costs =
40-60% margin</td><td colspan="2" rowspan="2">HOP Chipsets Range from 19€ to 80€ based on complexity

60% flat rate margin for sensors and 80% for Gateway in HW</td><td colspan="2">Homard platform and App based on Freemium Service
30-40% margin</td><td rowspan="2">OEM Sensors provisioning for insurance companies, hotels and other industries interested in personal devices</td></tr>
<tr><td colspan="2">Service Payment structure</td></tr>
<tr><td rowspan="5">Designed by Community</td><td rowspan="5">Design for the marketplace
4-6€

25% total cost of the design for GnB and 75% for the designer
30-50% margin</td><td colspan="2">Blues models (60%)</td><td>1-3 Sensors</td><td>Free</td><td>Costs Structure</td></tr>
<tr><td>HOP Basic</td><td>19€</td><td>4-8 Sensors</td><td>12€ / year</td><td rowspan="2">Sensor Personalization one off

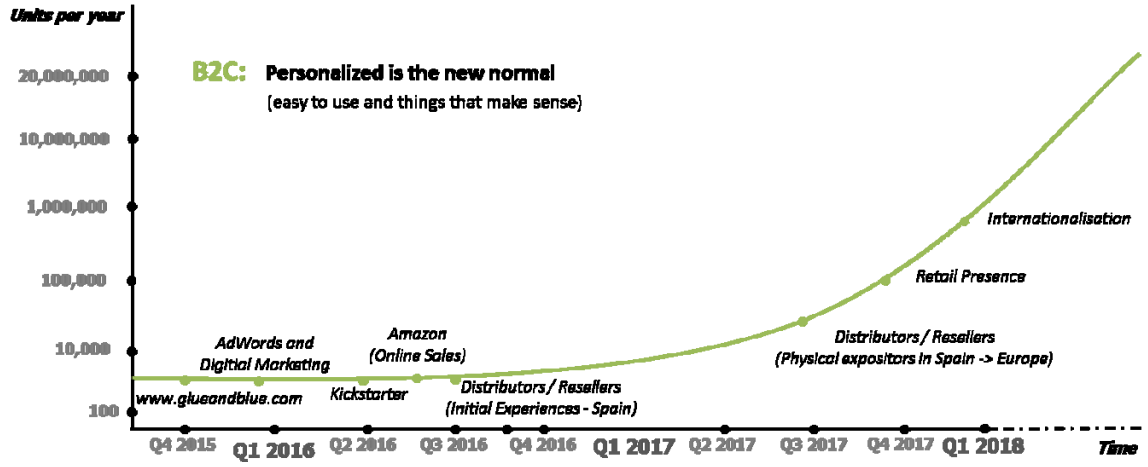
22000-30000€ per sensor design and prototyping

80% margin</td></tr>
<tr><td>HOP Core</td><td>38€</td><td>9-20 Sensors</td><td>60€ / year</td></tr>
<tr><td>Valve Actuator</td><td>90€</td><td>>20 Sensors (Buildings)</td><td>360€ / year</td></tr>
<tr><td>Dedicated Server >100</td><td>900 € / year</td></tr>
<tr><td rowspan="3">Customized for Customer (on demand)</td><td rowspan="3">30€-50€ design
25% total cost of the design for GnB and 75% for the designer

28%-30% margin</td><td colspan="2">Gateway (80%)</td><td colspan="2">Infrastructure costs</td><td rowspan="3">Production and Running

40-60% margin

5000-50000 sensors
volumes</td></tr>
<tr><td>Ethernet</td><td>190€</td><td>800-900 Sensors</td><td>550€ Cloud Cluster / year</td></tr>
<tr><td>WiFi / 3G</td><td>240€</td><td>Average User (3)</td><td>4-4,8€ / year</td></tr>
</table>



Main Achievements to date

GnB and HOP Ubiquitous have received awards for their innovation around Internet of Things from IPSO Alliance (sponsored by Google) in 2013, Best DEMO award from the MIT in 2014, FIWARE Fabulous in 2015, ScaleUp Startup Europe as one of the top innovative IoT companies in Europe in 2015, Top startup from Spain with the grant from the Spanish Ministry of Industry and Competitiveness. GnB is collaborating with Fujitsu in targeting the Home Automation market. It is also raising awareness with companies such as Google in terms of its easy to use and interactive mechanisms to make the IoT more friendly.