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# INNOVATION AT THE HEART OF THE LEGRAND INTERNET OF THINGS

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FOR LASTING BENEFIT TO USERS

PRESS FILE

2016



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This document summarizes Legrand's approach to the Internet of Things, embodied by the Eliot program.



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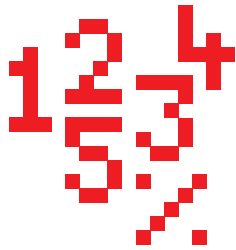
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## A FEW FIGURES

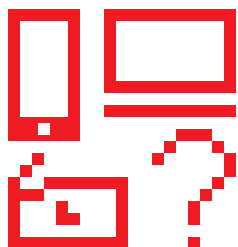
IN 2014 THERE WERE JUST UNDER **14 BILLION**  
CONNECTED DEVICES WORLDWIDE.

BY 2020, THERE ARE LIKELY TO BE **50 BILLION**.

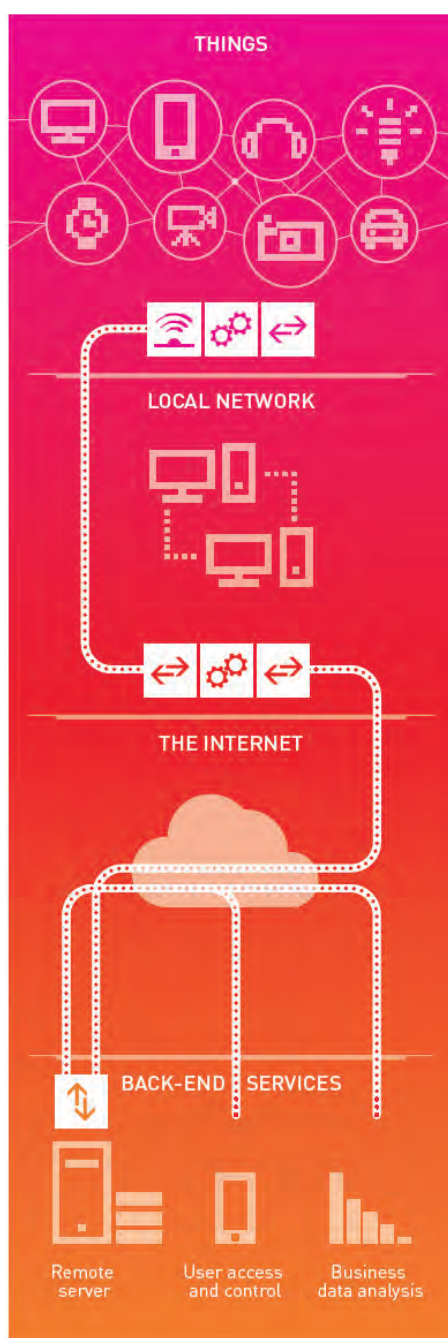
Source: Cisco

AS A SPECIALIST IN ELECTRICAL AND DIGITAL BUILDING  
INFRASTRUCTURES, LEGRAND IN 2015 MADE SALES OF OVER  
**\$350 MILLION** (USD) WITH CONNECTED DEVICES.

LEGRAND SALES OF CONNECTED DEVICES ARE EXPECTED  
TO EXPERIENCE A **DOUBLE-DIGIT** OVERALL  
AVERAGE ANNUAL GROWTH RATE BY 2020.



# WHAT IS A CONNECTED DEVICE?



Internet of Things (IoT)

## Eliot

Electricity

Eliot is an amalgamation of Electricity and IoT (Internet of Things).  
It is the name of the Legrand program dedicated to connected devices.

**“The term connected devices – or Internet of Things – is used to refer to objects (...) which an Internet connection endows with added value in terms of function, information, usage or interaction with their environment.”**

“Dictionnaire du web” Dictionary 2015



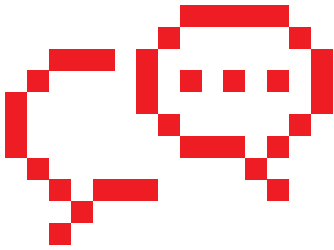
**SENSORS**  
(motion, presence, light levels, override, wearables, health-care products)



**PROCESSING**



**COMMUNICATION**



## INTERVIEW WITH GILLES SCHNEPP



**GILLES SCHNEPP**

LEGRAND GROUP CHAIRMAN AND CHIEF  
EXECUTIVE OFFICER

### **Why are buildings at the heart of the Internet of Things revolution?**

Connected devices are gradually creeping into all areas of our lives, and transforming our habits. Over the next twenty years, connected devices are likely to become the norm. Products that are incapable of communicating, acting on information transmitted to them or being remotely actuated will then be the exception. And as development of these devices increases and the flow of data travelling through buildings becomes more complex, buildings need to adapt, as of now.

### **What makes Legrand a stakeholder in this revolution?**

The fact that it's our business! For more than 100 years we have been innovating to find the best solutions to users' expectations in terms of electrical and digital building infrastructures. The Internet of Things is a reality that we have already taken on board: over €300 million in our sales in 2015 were attributable to connected devices. Connected objects are an opportunity for us to move up to a mass market.

### **What is the rationale of the Eliot program?**

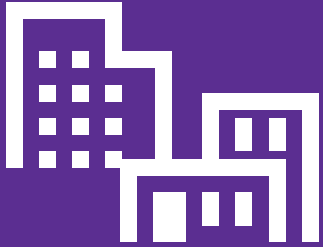
The question is not knowing whether the Internet of Things is coming, but in what form. We at Legrand see this as an opportunity to provide our customers with more added value. And by customers we mean both private individuals and professionals. Our aim is genuinely to provide users with additional benefits. The ability to communicate should enhance the product's value in use, by offering a real lasting benefit.

### **Numerous players are getting into the market for connected devices. How can Legrand stake a rightful claim to be a part of it?**

Because Legrand has a long history of involvement in the building sector. Because innovation is in our genes. Because we are close to our users, we know their requirements and expectations, and we respect them, especially the security of their data. Because at the end of the day this is what we do: offering simple, intuitive products that make a lasting difference to the daily lives of users, whether they are consumers or professionals.



*"Buildings are at the heart of the Internet of Things revolution."*



# OUR VISION

The growth of the market for connected devices is opening up a new era for the building sector. Already a player in this Internet age, Legrand is convinced that the expansion of the Internet of Things will lead to growth in so-called “smart” solutions for both private individuals and professionals.



## A REVOLUTION UNDER WAY

# 50 BILLION

CONNECTED DEVICES BY 2020

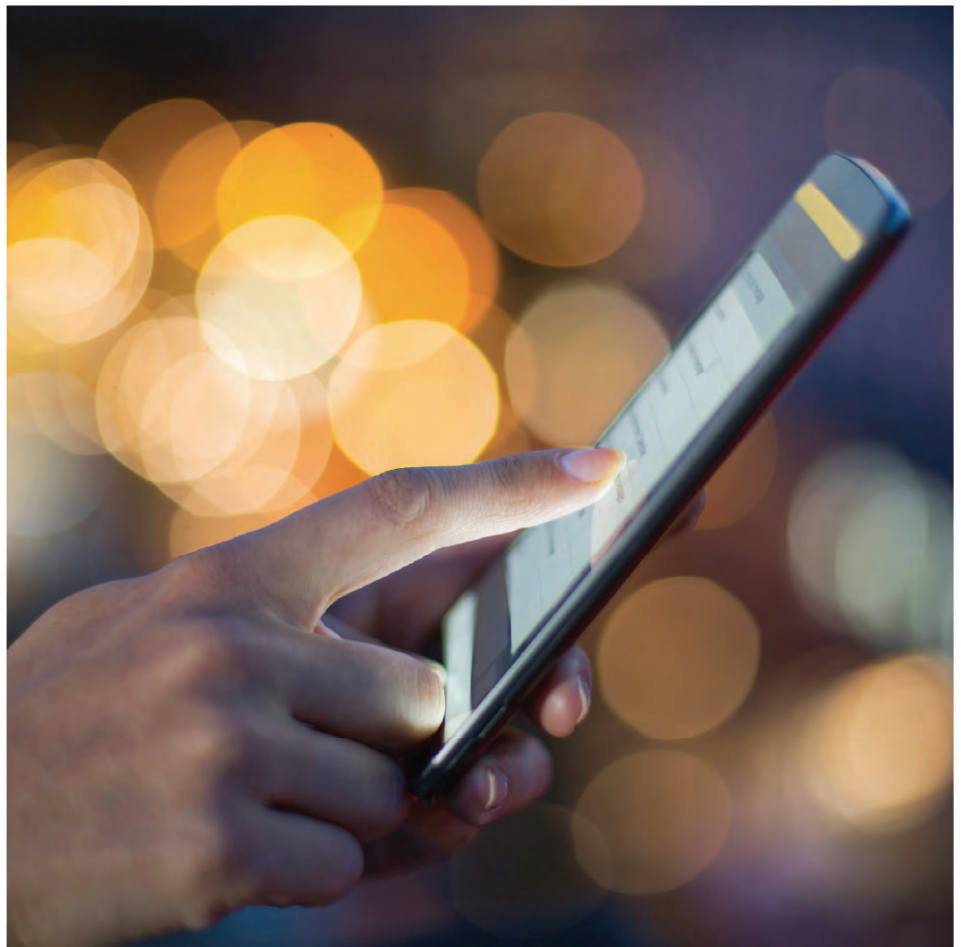
Source: Cisco

### RAPID GROWTH

In 2014 there were just under 14 billion connected devices worldwide. There are likely to be 50 billion by 2020. The average number of connected devices per person is thus likely to rise from 2 in 2014 to 4 in 2020 (source: Cisco).

### A MASSIVE SOCIAL TREND

Connected devices are gradually invading every sector: health, transport, commerce, energy, the environment, leisure, the home, industry, etc. No segment of the economy has been left untouched. The Internet of Things has gradually become established as the standard.





# LEGRAND — ALREADY CONNECTED

LEGRAND IS ALREADY A PLAYER IN  
THE INTERNET OF THINGS REVOLUTION.

OUT OF THE GROUP'S 2015 SALES, OVER **\$350 MILLION**<sub>(USD)</sub>  
WERE ATTRIBUTABLE TO CONNECTED DEVICES, UP **+34%**  
COMPARED TO 2014.



**JOHN SELLDORFF**  
PRESIDENT, CEO

AROUND THE WORLD LEGRAND ALREADY HAS OVER  
**22 MILLION** NODES\* INSTALLED.

**23** LEGRAND PRODUCT FAMILIES WERE CONNECTED IN 2015.



*"Legrand is built-in,  
not simply plugged in. We're  
integrated into virtually every  
space where people live  
and work."*

\*The term "node" refers to a connection point in a network.

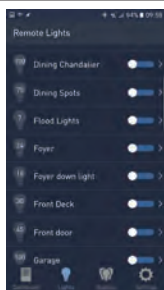




# LEGRAND — ALREADY CONNECTED

## EXAMPLES OF PRODUCTS THAT ARE ALREADY CONNECTED

### LIGHTING



### RF WHOLE HOUSE LIGHTING CONTROL

#### CONTROL WITH MOBILE DEVICES.

Smart Whole House lighting control solution using Legrand's topdog RF protocol enables the use of mobile devices (android, iOS and Apple watch) to control your lights. Set convenient scenes to control groups of lights by time of day or with swipe of an app. Tru-Universal dimming capabilities let you dim all bulb types including LED's for maximum energy savings.

### HOME AUTOMATION



### INTUITY SYSTEM

#### A SMARTER SYSTEM WITH AN EASY-TO- USE APP INTERFACE.

The smart home just got smarter. A home automation system designed with the new home builder and installer in mind. An affordable solution that delivers security, comfort and entertainment.

### ENERGY EFFICIENCY



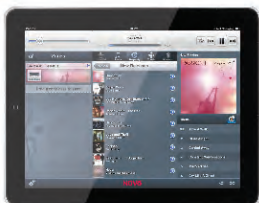
### WATTSTOPPER® DIGITAL LIGHTING MANAGEMENT

#### SINGLE ROOM TO WHOLE BUILDING.

A digital Lighting Control System that provides installers a self-configuring room based solution that simplifies design and installation costs, while ensuring energy code compliance.

Combining digital sensing and power monitoring with networking and remote management support, this allows building managers and owners to monitor occupancy and energy usage by room type to enable efficient and sustainable use of the facility.

### SOUND DISTRIBUTION



### NUVO® WIRELESS AUDIO SYSTEMS

#### PLAY MUSIC IN DIFFERENT ROOMS.

Combines the clear, full-bodied audio with the convenience of wireless, creating an unmatched high fidelity audio experience in up to sixteen zones. Fill your entire home, room by room, with the music you love, through unlimited access to your own personal library (Windows or iTunes), as well as Internet Radio stations. Brings together digital content, from online services and your personal devices, into a single access point.



## OUR BELIEF

THE MARKET FOR CONNECTED  
DEVICES IN 2020:

40% 60%

BUSINESS

TO CONSUMER

BUSINESS

TO BUSINESS



CONNECTED OBJECTS WILL REVOLUTIONIZE USAGE  
ALSO IN THE INDUSTRIAL AND SERVICE SECTORS.

### A NEW ERA IS DAWNING FOR THE BUILDING SECTOR

Today's growth in the number of connected devices is creating a revolution in the building sector. Firstly because digital infrastructures need to be expanded. But above all because changing usage means more and more building-related products being connected and controllable, including remotely.

### CONCERNING BOTH INDIVIDUALS AND PROFESSIONALS

Connected devices will increasingly become must-have objects for professionals in the commercial and industrial sectors as well as for private individuals in the home.

### PROVIDING ADDITIONAL BENEFITS

Smart, connected devices will help add new value for users: offering additional services, automating processes, reducing response times, understanding a status and adjusting decisions accordingly. Legrand's connected products will make users' lives even simpler, with for example automated maintenance, centralized remote controls and even enhanced building security.

### IF THEY ARE TO LAST, CONNECTED DEVICES MUST BE RELIABLE

Connected devices will only become established if they bring lasting, substantial and reliable user benefits. Legrand's pragmatic approach, its expertise in the building sector, its proximity to customers and its capacity for innovation are testament to the solidity and permanence of its offer.



# OUR APPROACH

## THE ELIOT PROGRAM

Convinced that the Internet of Things will become established as the standard, Legrand is speeding up development of its connected offer with the Eliot program. Mobilizing the whole of the Group, Eliot is designed to revitalize communication about Legrand products, wherever the Internet of Things can provide users with additional benefits.



## THREE PRINCIPLES

### A LABEL FOR ALL LEGRAND CONNECTED DEVICES

As well as a development program, Eliot is also a label. Legrand connected devices will be marked with the program logo for easy identification.



**ROGER CZUCHRA**  
CHIEF INFORMATION OFFICER



*“Privacy and data security are at the core of the Eliot program.”*

### 1. ENHANCING THE PRODUCT'S VALUE IN USE

The aim of the Eliot program is not the production of connected devices as an end in itself. The communication capacity added to the Legrand product should permanently increase the benefit for the user.

#### Eliot facilitates daily life

Connected objects carrying the Eliot signature can:

- SIMPLIFY usage
- FACILITATE maintenance
- DEMOCRATIZE complex functions
- CUSTOMIZE products according to users' needs, desires and habits.

Eliot also helps to respond to societal developments, particularly the quest for enhanced comfort and energy savings, increasing security needs and home care for people with loss of autonomy.

### 2. DESIGNING SIMPLE DEVICES THAT ARE INTUITIVE AND EASY TO INSTALL

Legrand products are characterized by their simplicity and their ease of use and installation, which are part of the Group's DNA. These values also underlie the expansion of the Group's connected devices. In line with our aim of ensuring "Design for all"\*, Legrand connected devices are very intuitive.

### 3. RESPECTING THE USER

Consistent with its values, respect for the user is an imperative for Legrand. Eliot thus contributes to preserving the confidentiality of data.

\*"Design for all" refers to an approach aimed at providing products that are simply and easy to use.



## A DRIVE FOR INNOVATION

R&D AT LEGRAND  
REPRESENTS BETWEEN

4 AND 5%

OF THE GROUP'S  
SALES EACH YEAR



**STEVE SCHOFFSTALL**  
CHIEF MARKETING OFFICER



*"Eliot is driving innovation. We are innovating not just to add connected interfaces to our current offering, but also to develop natively-connected devices."*

### THE ELIOT PROGRAM IS PART OF THE LEGRAND GROUP'S STRATEGY OF CONTINUOUS INNOVATION.

The program aims to:

- Connect existing devices, by adding gateways to the existing offer.
- Develop new products that are natively connected, in other words intrinsically designed to communicate.
- Imagine ground-breaking concepts, to give a taste of the future.

### THE ELIOT PROGRAM CONCERNS ALL LEGRAND GROUP TEAMS, ALL BRANDS, ALL AROUND THE WORLD.

It is especially supported by:

- **An innovation and systems team** working on technological components, such as communication protocols.
- **Development teams** responsible for integrating these technological components into the product portfolio.
- **Legrand's design team** in Europe, Asia and the US, whose role is to explore trends and usage and to search for the best ratio between form, function and use of the Group's products and solutions.

### A DEDICATED CLOUD-BASED SYSTEM

Eliot involves a cloud storage system for data gathered via the Group's applications. Its architecture and storage mode help to ensure the protection of user data confidentiality.

### SUITABLE INFRASTRUCTURE

To communicate, connected objects not only require high-performance networks but also a building infrastructure that allows them to connect to these networks. As a specialist in electrical and digital infrastructures, Legrand is providing innovative solutions for this purpose at several levels, from mesh networks to distribution solutions, via convergent networks.

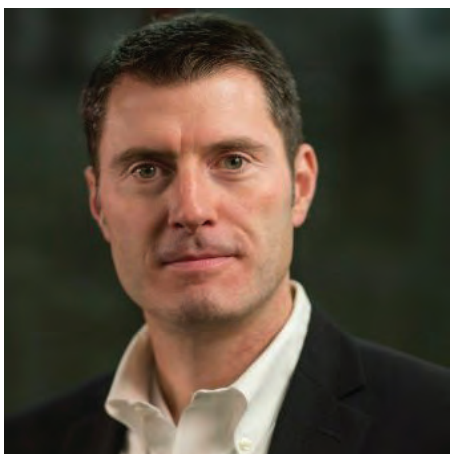
### ELIOT, A PROGRAM WITH AN INTEROPERABILITY FOCUS

Interoperability refers to the capacity of a product or system to enter into standard communication with other products or systems. As this is an essential pre-condition for effective development of connected objects, Legrand makes every effort to help define relevant standards. The challenge is to promote open languages able to ensure data exchange and third-party system integration, with the ultimate aim of providing added user benefits.



## A DRIVE FOR INNOVATION

OVER **2,100**  
PEOPLE IN R&D IN 2015,  
INCLUDING CLOSE TO **39%**  
DEDICATED TO ELECTRONICS,  
SOFTWARE AND DIGITAL  
OFFERINGS



**BRIAN DIBELLA**  
PRESIDENT, ELECTRICAL DIVISION

### STRATEGIC ALLIANCES

On the strength of the Eliot dynamic, Legrand is engaged in various alliances aimed at ensuring that a common language enables connected objects to communicate, thereby ultimately generating additional usage patterns.



#### Open Connectivity Foundation

Legrand is an active member in the Open Connectivity Foundation.

Billions of connected devices (tablets, phones, computers and sensors) should be able to communicate with one another regardless of manufacturer, operating system, chipset or physical transport. The Open Connectivity Foundation (OCF) is creating a specification and sponsoring an open source project to make this possible. OCF will unlock the massive opportunity in the IoT market, accelerate industry innovation and help developers and companies to create solutions that map to a single open specification. OCF will help ensure secure interoperability for consumers, businesses, and industry.

The OCF unifies the entirety of the former Open Interconnect Consortium (OIC) with leading companies at all levels – silicon, software, platform, and finished-goods – dedicated to providing this key interoperability element of an IoT solution. The OCF sponsors the IoTivity open source project which includes a reference implementation of our specification available under the Apache 2.0 license. The OCF also includes all the activities formerly sponsored by UPnP Forum.



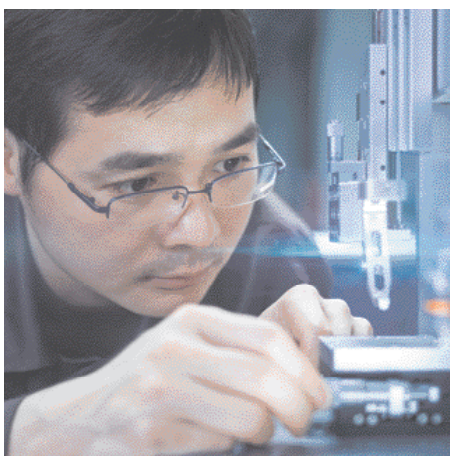
Legrand is a long-standing member of the ZigBee® Alliance. ZigBee® is the open global wireless standard for the Internet of Things designed to make simple and smart objects work together, increasing the comfort and efficiency of everyday life.



## A DRIVE FOR INNOVATION

### THESE PARTNERSHIPS ENABLE

- Common languages for devices to communicate reliably and securely
- Ability to connect products and services through secure cloud-to-cloud exchanges
- Acceleration of product and system innovation
- New services and service models
- New revenue opportunities



### AN ACTIVE PARTNERSHIP POLICY

In order to improve the experience and the value that our customers expect at home and work, Legrand engages in strategic partnerships with select technology leaders, innovators and leading edge start-ups.

#### SAMSUNG

##### CONNECTING LIGHTING CONTROL TO THE SAMSUNG ARTIK™ CLOUD FOR REMOTE CONNECTIVITY, VOICE CONTROL, AND THIRD-PARTY INTEGRATION

Samsung's ARTIK end-to-end open platform is designed to enable faster and simpler development of new enterprise, industrial, and consumer applications for the Internet-of-Things.

Legrand's RF lighting devices including the LC7001 whole house lighting controller, Tru-Universal dimmers, switches, scene controllers and plug-in devices will communicate with the SAMSUNG ARTIK™ Cloud ecosystem. This new functionality, developed using Samsung ARTIK™ Cloud, includes remote connectivity, voice control with Amazon Alexa, integration to third-party cloud services such as IFTTT, and compatibility with iOS and Android phones, tablets, and wearables such as Samsung Gear and the Apple Watch.

The new functionality will be backwards compatible with existing Legrand RF Lighting Control installations.

In addition to the partnerships featured below, Legrand is also engaged in partnerships with many others, especially in the field of sensors for heat, presence and air quality.



##### CISCO DIGITAL CEILING FRAMEWORK

In June 2016, Cisco announced their Digital Ceiling Framework, a new initiative that seeks to change the way our buildings and services are connected and managed. Legrand joined this initiative as an ecosystem partner.

Legrand serves as an infrastructure enabler, providing resilient digital building communication and connectivity solutions to ensure the highest performance and reliability of cabling systems. The framework objective revolves around the convergence of previously disparate networks, enabling a greater level of building intelligence by leveraging the information from other devices not previously connected. With the Eliot program, Legrand looks to further support this framework beyond infrastructure and connectivity solutions.





## A DRIVE FOR INNOVATION



**PETE HORTON**  
VP, MARKET DEVELOPMENT



### RADIO FREQUENCY (RF) LIGHTING CONTROL SYSTEM TO WORK WITH AMAZON ALEXA SMART HOME SKILL

In December 2016, Legrand will release an Amazon Alexa smart home skill for its Radio Frequency (RF) Lighting Control system. Legrand customers with Amazon Echo, Echo Dot, Amazon Tap or Amazon Fire TV will be able to control their RF Lighting Control system via Alexa.

Highly intuitive and scalable, RF Lighting Control can be deployed in a single room and is easily expanded to serve as a whole house lighting control solution.

Legrand's RF Lighting Control is currently available in two stylish and highly functional design collections, radiant® and adorne®. The new IoT functionality is backward compatible at no cost with existing Legrand RF Lighting Control installations.



### CONNECTED INTELLIGENT LIGHTING APPLICATIONS

Demonstrating its commitment to connectivity and intelligence in the Built Environment, Legrand has formed a partnership with Lumenetix. The two companies are working together to accelerate advanced digital lighting applications such as Human Centric Lighting (HCL).



*"On the strength of the Eliot dynamic, Legrand is engaged in many strategic partnerships."*

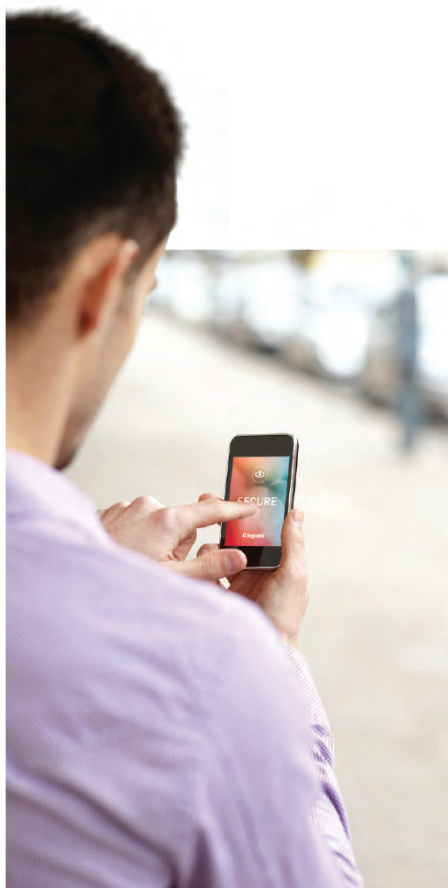




## ELIOT IN ACTION



### ADDITIONAL EXAMPLES OF CONNECTED PRODUCTS



### DIGITAL AUDIO

#### MULTI-ROOM



Introduce exceptional at-home listening with the On-Q® Digital Audio System, delivering digital source variety, aesthetic app control, and high-quality sound, through an easy-to-install structured wiring design. Simple, scalable, and easily repeatable, the ideal solution for feature-rich distributed audio in up to sixteen rooms is here. Embrace your audio opportunity.

**All Legrand products that need maintenance, supervision or remote control will benefit enormously by being connected, and therefore take priority in the Eliot approach.**



## ELIOT IN ACTION



### WIRELESS ROUTERS

ENTERPRISE GRADE RELIABILITY



Luxul XWR-1200 & XWR-3100 Wireless Routers with 802.11ac technology provide super fast internet connections and enterprise grade reliability for the residential market. With built-in wireless controller functionality, integrators are able to add Wireless Access Points in the home and give the home-owner a seamless roaming experience.

### WIRELESS ACCESS POINTS AND WIRELESS BRIDGE SYSTEMS

RELIABILITY & PERFORMANCE



Luxul XAP-1410, XAP-1510, WAB-xxx Wireless Access Points and Wireless Bridge Systems provide the home-owner with high-power, enterprise grade equipment that gives the user high-network reliability and performance. Up to 1900mbps throughput, based on 802.11ac 3x3 systems, these products give home-owners the wireless network infrastructure they want both inside and outside their home. Working with our Wireless Controller, these products provide a seamless roaming experience throughout the home.



# ELIOT IN ACTION



## LIGHTING CONTROL PANELS

### ARCHITECTURAL DIMMING AND SHADING SYSTEMS



Architectural dimming is Lighting Control for applications where precise color, temperature and dimming are required - and where comfort and aesthetics are critical.

Integrated solutions for lighting and shade control in both residential and commercial applications provide the proper combinations of natural and artificial light with intensity and color control. Daylight harvesting with shade and lighting control eliminate glare and provide a comfortable, sustainable building for any application. This includes commercial offices, healthcare facilities, hotels, educational institutions and homes.





## ELIOT IN ACTION



### UPS

#### LOCAL & REMOTE ACCESS



The Middle Atlantic UPS portfolio enables local and remote access to UPS battery state and outlet control to ensure proper system shutdown in the case of a power outage. Optional IP control provides support from anywhere in the world via PC application or through a Control System.

### PDU (POWER DISTRIBUTION UNITS)

#### MAXIMUM PERFORMANCE & MONITORING



Middle Atlantic's RackLink™ enabled Intelligent Power Distribution helps integrators deliver amazing AV experiences through comprehensive system management of power, temperature & device status.

With multiple form factors, RackLink allows for remote system monitoring and control from anywhere in the world via a browser, app or control system interface - as well as through partner cloud environments.

RackLink also supports the energy management objectives of facility owners and can contribute to LEED certification. It's the only AV power distribution solution that is compliant with the ANSI/InfoComm Energy Management Standard.





## ELIOT IN ACTION

### TRAILBLAZING RESEARCH

The Eliot program is also about end user research. Some examples born of research: the Group is working on connected surge protectors, natively connected sockets and smart sensors for assisted living.

But the Eliot dynamic goes even further, inspiring exploratory projects conducted by the Legrand Design team to imagine far reaching concepts that explore future possibilities, that allows Legrand to interact with users in a deep and meaningful way.



**PHILLIP PRESTIGOMO**  
DIRECTOR OF INDUSTRIAL DESIGN  
& USER EXPERIENCE



*"The Internet of Things allows users to create new solutions that further enhance their personal experience."*



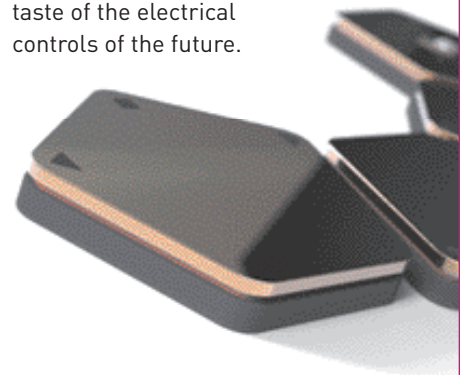
### LEGRAND GIVES US A TASTE OF THE ELECTRICAL CONTROLS OF THE FUTURE

FLOCOON Pixel puts the spotlight on an unprecedented form and concept, with control units which create a completely new relationship between people and their homes. Drawing inspiration from the world of connected devices, FLOCOON Pixel aims to explore a smart and intuitive way of managing controls based on interaction and the merging of function with form. In a truly ground-breaking way, users get to play and combine functionalities simply by making intuitive gestures.

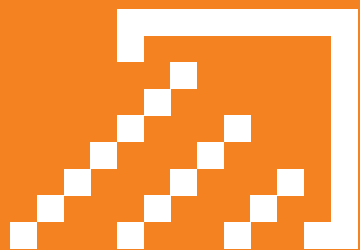
Thanks to the Internet of Things, the pixel, as a basic unit in the shape of a pentagon, can be combined with others to create an infinite wealth of combinations. Thanks to a dedicated app, users are placed centre-stage in personalizing their interface, in both aesthetic and functional terms. For instance, they can combine the

"dimmer" pixel with the "motion sensor" pixel, thereby generating enhanced functionality in a playful, intuitive way.

FLOCOON Pixel turns lighting control into something playful, and gives a taste of the electrical controls of the future.

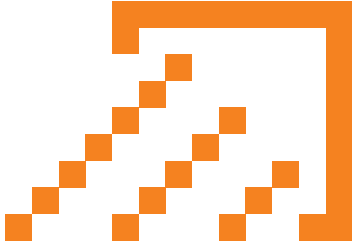


FLOCOON PIXEL,  
A GROUND-BREAKING CONCEPT IN ELECTRICAL  
HOME CONTROLS INTRODUCED AT THE SAINT-  
ETIENNE INTERNATIONAL DESIGN BIENNIAL 2015



# OUR AMBITION

By revitalizing Legrand's offer with an increasing number of connected devices, the Eliot program is contributing to the Group's growth.



## A GROWTH DYNAMIC

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### INCREASING THE NUMBER OF CONNECTED PRODUCT FAMILIES

The aim of the Eliot dynamic is to drive up the Group's number of connected product families from 20 in 2015 to around 40 by 2020.

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### GENERATING GROWTH

The expansion of connected devices will result in smarter solutions achieving greater market penetration. Legrand's connected offer, which represented over \$350 million (USD) in sales in 2015, should experience double-digit overall average annual growth between now and 2020.

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### OFFERING NEW SERVICES TO PROFESSIONAL USERS

New LED lighting capabilities with color and intensity control, combined with connected sensors, machine learning and analytics are enabling new Legrand concierge services.

This improves operational efficiency and allows us to focus on the occupants to improve happiness and productivity in spaces where people live and work.

# GLOSSARY

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**INTERNET OF THINGS**

The Internet of Things represents the extension of the Internet to things and places in the physical world. While the Internet usually does not extend beyond the electronic world, the Internet of Things (IoT) represents the exchange of information and data from devices in the real world to the Internet.  
(Source: Wikipedia)

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**CONNECTED DEVICE**

A device having a connection to the Internet or connected to a smartphone whose connection it uses.

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**DESIGN FOR ALL**

Refers to an approach aimed at providing products that are simply and easy to use.

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**INTEROPERABILITY**

The capacity of a product or system to communicate in a standard way with other products or systems.

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**NATIVELY CONNECTED**

Refers to products inherently designed to communicate.

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**NODE**

Connection point in a network.

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**LEGRAND**

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