CAPITAL MARKETS DAY
CONSTRUCTION BUSINESSES

PARIS - 2 OCTOBER 2018

PRESENTATION

Making progress become reality

BOUYGUES

AGENDA

8.00	**COFFEE AND DEMOS**
	WELCOME & INTRODUCTION
8.30	O. Roussat, Deputy CEO, Bouygues
	CONSTRUCTION BUSINESSES' STRATEGY
8.40	**BOUYGUES CONSTRUCTION** P. Bonnave, Chairman & CEO
9.00	**BOUYGUES IMMOBILIER** F. Bertière, Chairman & CEO
9.20	**COLAS** H. Le Bouc, Chairman & CEO
	MAXIMIZE THE VALUE OF INDUSTRIAL ASSETS
9.45	**BITUMEN AND QUARRIES AT COLAS** L. Gabanna, EVP, Colas North America T. Méline, EVP, Colas France - Railways
10.05	**Q&A**
10.20	**COFFEE BREAK AND DEMOS**
	BE A LEADER IN ECO-NEIGHBORHOOD AND SMART CITIES
10.40	**ECO-NEIGHBORHOOD : TWO COMPLEMENTARY APPROACHES** E. Desmaizières, Managing Director, Urbanera, Bouygues Immobilier P. Minault, Managing Director, Property Development, Bouygues
11.00	**SMART CITY** F. Pitti, Director Prospective & Strategic Marketing, Bouygues Construction
11.15	**SMART MOBILITY – SMART ROAD** F. Gardes, EVP, International, Colas
11.30	**Q&A**
11.50	**INNOVATION IN THE CONSTRUCTION BUSINESSES**
	C. Liénard, Group Chief Innovation Officer, Bouygues ML. Godinot, EVP Digital Transformation, Innovation and Sustainable Development, Bouygues Construction M. Guizol, BIMbyCO, Colas N. Watine, EVP, Digital Transformation & HR, Bouygues Immobilier
12.15	**Q&A**
	CONCLUSION
12.30	P. Marien, Deputy CEO, Bouygues
12.45	**COCKTAIL AND DEMOS**

TODAY'S SPEAKERS

Olivier Roussat
Group deputy CEO

Philippe Marien
Group deputy CEO

Hervé Le Bouc
Chairman & CEO,
Colas

François Bertière
Chairman & CEO,
Bouygues Immobilier

Philippe Bonnave
Chairman & CEO,
Bouygues Construction

Louis Gabanna
EVP, Colas
North America

Thierry Méline
EVP,
Colas France

Pascal Minault
Managing Director,
Property Development,
Bouygues

Emmanuel Desmaizières
Managing Director,
Urbanera, Bouygues
Immobilier

François Pitti
Director of Prospective
& Strategic Marketing,
Bouygues Construction

Frédéric Gardes
EVP International,
Colas

Christophe Liénard
Group Chief
Innovation Officer

Marie-Luce Godinot
EVP Digital Transformation,
Innovation and Sustainable
Development, Bouygues
Construction

Nathalie Watine
EVP Digital
Transformation & HR,
Bouygues Immobilier

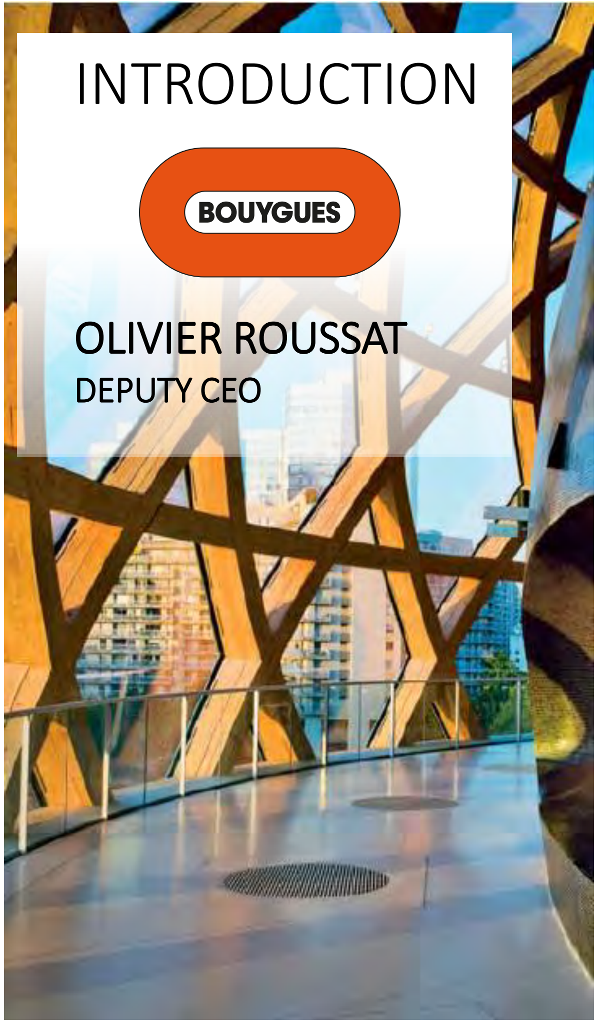
Maud Guizol
BIMbyCO, Colas

INTRODUCTION

BOUYGUES

OLIVIER ROUSSAT

DEPUTY CEO



A MAJOR PLAYER IN FRANCE AND INTERNATIONAL MARKETS

3 BUSINESS SEGMENTS

CONSTRUCTION

BUILDING & CIVIL WORKS	PROPERTY	TRANSPORT INFRASTRUCTURE
Bouygues Construction	Bouygues Immobilier	COLAS
(1952)	(1956)	(1986)
100%	100%	96.6%

#6 Worldwide[a]

CONSTRUCTION BUSINESSES' KEY FIGURES

at 31 December 2017

Revenues €25.8bn	**Backlog** €31.9bn
Employees 104,500	**Countries** 90

(a) ENR The top 250 international contractors, August 2018 (excluding petroleum)

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CONSTRUCTION BUSINESSES' KEY STRENGTHS

- **104,500 TALENTED AND COMMITTED EMPLOYEES**
- **HIGH VALUE-ADDED PRODUCTS AND SERVICES**
- **POSITIONED IN EACH STEP OF THE VALUE CHAIN**
- **STRONG AND SELECTIVE INTERNATIONAL PRESENCE**
- **RESILIENT BUSINESS MODEL**


Zagreb international airport

104,500 TALENTED AND COMMITTED EMPLOYEES

PEOPLE ARE OUR MOST IMPORTANT RESOURCE

RESPECT

EMPOWERMENT

CREATIVITY

EXPERTISE SHARING

HIGH VALUE-ADDED PRODUCTS AND SERVICES

- Worldwide recognized **technical expertise** and **commitment to quality** supporting **strong brands**
- Ability to accomplish **complex and sophisticated projects** (tunnels, high-rise buildings, bridges)
- Specific know-how in **sustainable construction**
- Offering services to **improve user experience** (mobility solutions, Nextdoor, smart city solutions)
- Supported by **constant innovation** (R&D, operational excellence, project financing, digitalization)

POSITIONED IN EACH STEP OF THE VALUE CHAIN

- Increase **contract value and strengthen competitive positioning** by covering the **entire value chain**
  - > Strengthen the **long-term relationships** developed with **customers**

- **Source, integrate and manage external expertise** to offer **full-service solutions** and provide the best to customers at **each step of the value chain**
  - > Know-how to **manage a large ecosystem of partners** of different sizes (from start-ups to large companies)

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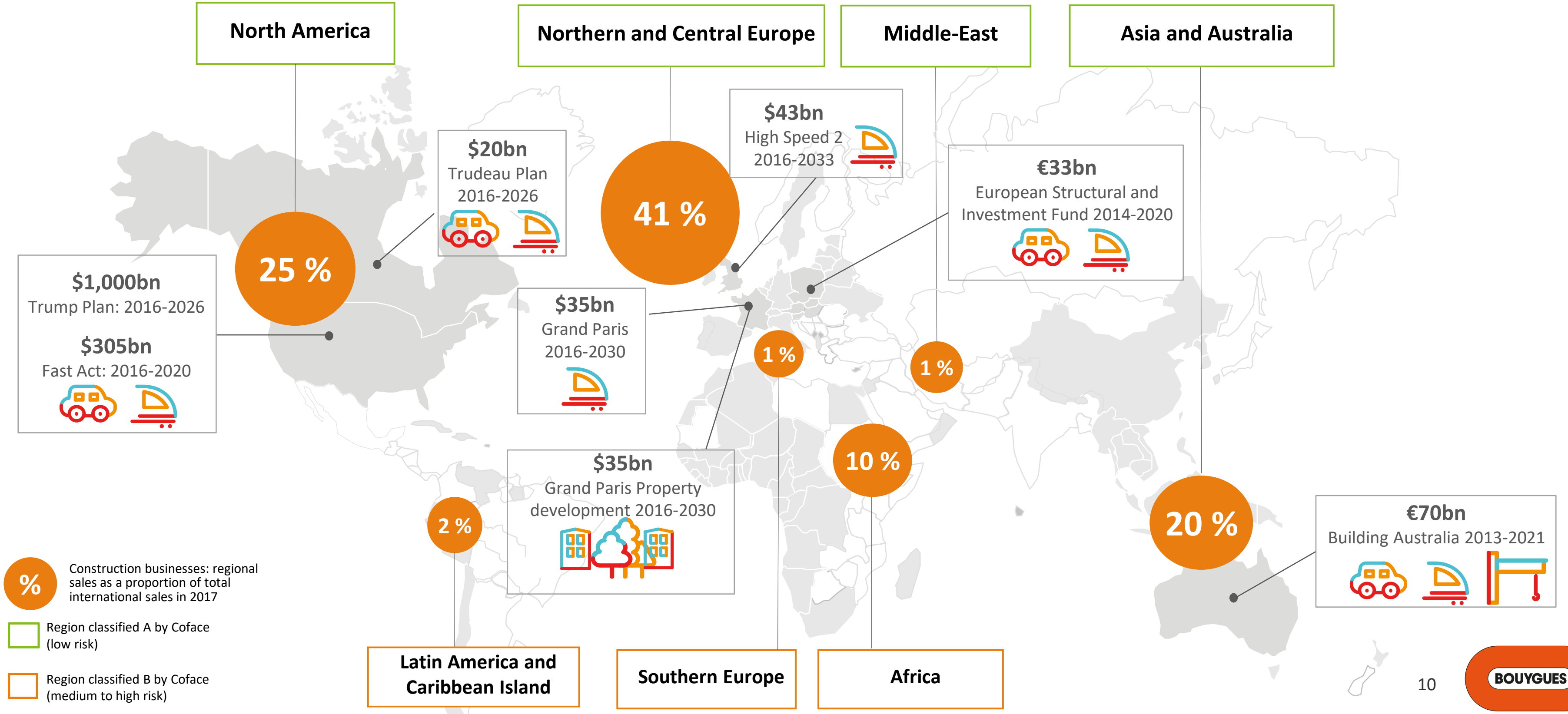
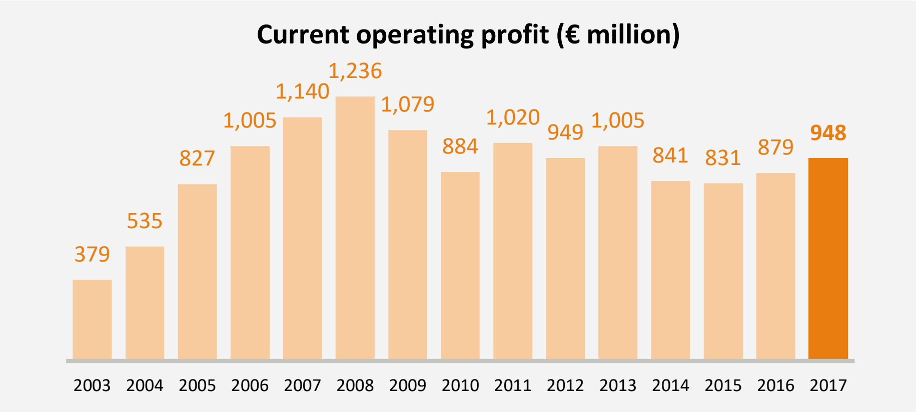
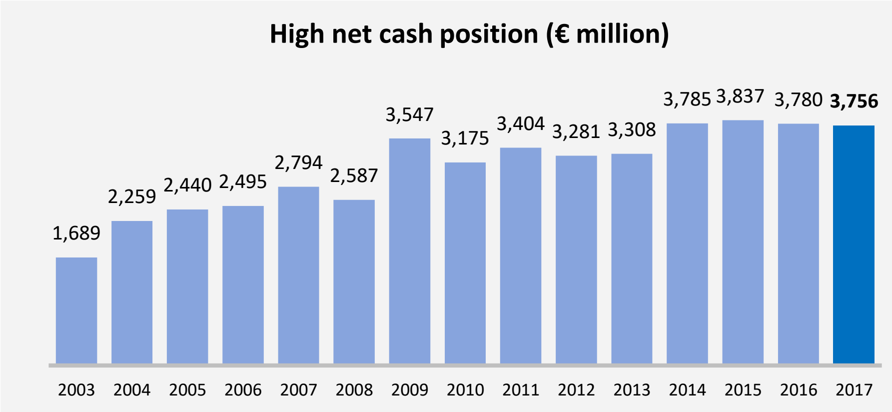
STRONG AND SELECTIVE INTERNATIONAL PRESENCE

Bouygues is located in low-risk profile countries offering advantageous infrastructure plans



RESILIENT BUSINESS MODEL





*Excluding a capital gain of €28m on Nextdoor (3.7% including Nextdoor)

- **A highly variable cost structure:** between 60 to 100% variable costs depending on countries and projects
- **Recurring FCF generation:** **~€580m** a year on average since 2003

4 MEGA TRENDS SOURCES OF OPPORTUNITY

1. POPULATION GROWTH AND URBANIZATION

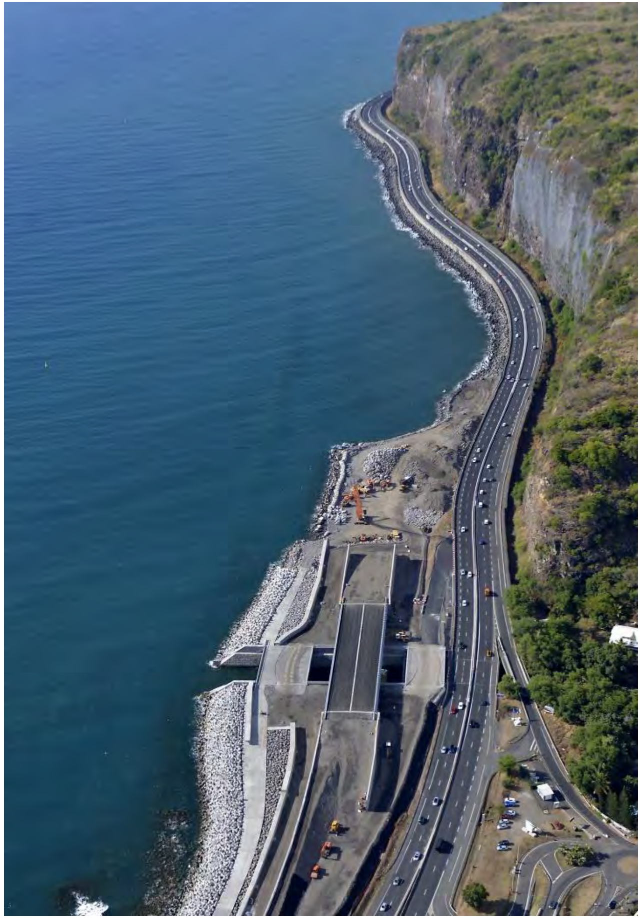
2. CLIMATE CHANGE

3. DIGITAL TRANSFORMATION

4. CHANGING USERS BEHAVIOR

CONSTRUCTION BUSINESSES' STRATEGIC PRIORITIES

- **Control key resources**
- **Be a market leader for construction and renovation** of buildings and infrastructure
- **Help customers control energy consumption** and design **less carbon-intensive construction methods**
- **Lead the market for urban design and development** – from individual housing unit, to the neighborhood and to smart city
- Offer customers **an enhanced personalized experience** and **scalable products** that can adapt to changing needs



New Littoral Road – La Réunion – France

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GROUP CONSTRUCTION ACTIVITIES POSITIONING

DEVELOPER

BUILDER

OPERATOR

CONSTRUCTION BUSINESSES STRATEGY

BOUYGUES CONSTRUCTION

PHILIPPE BONNAVE
CHAIRMAN & CEO

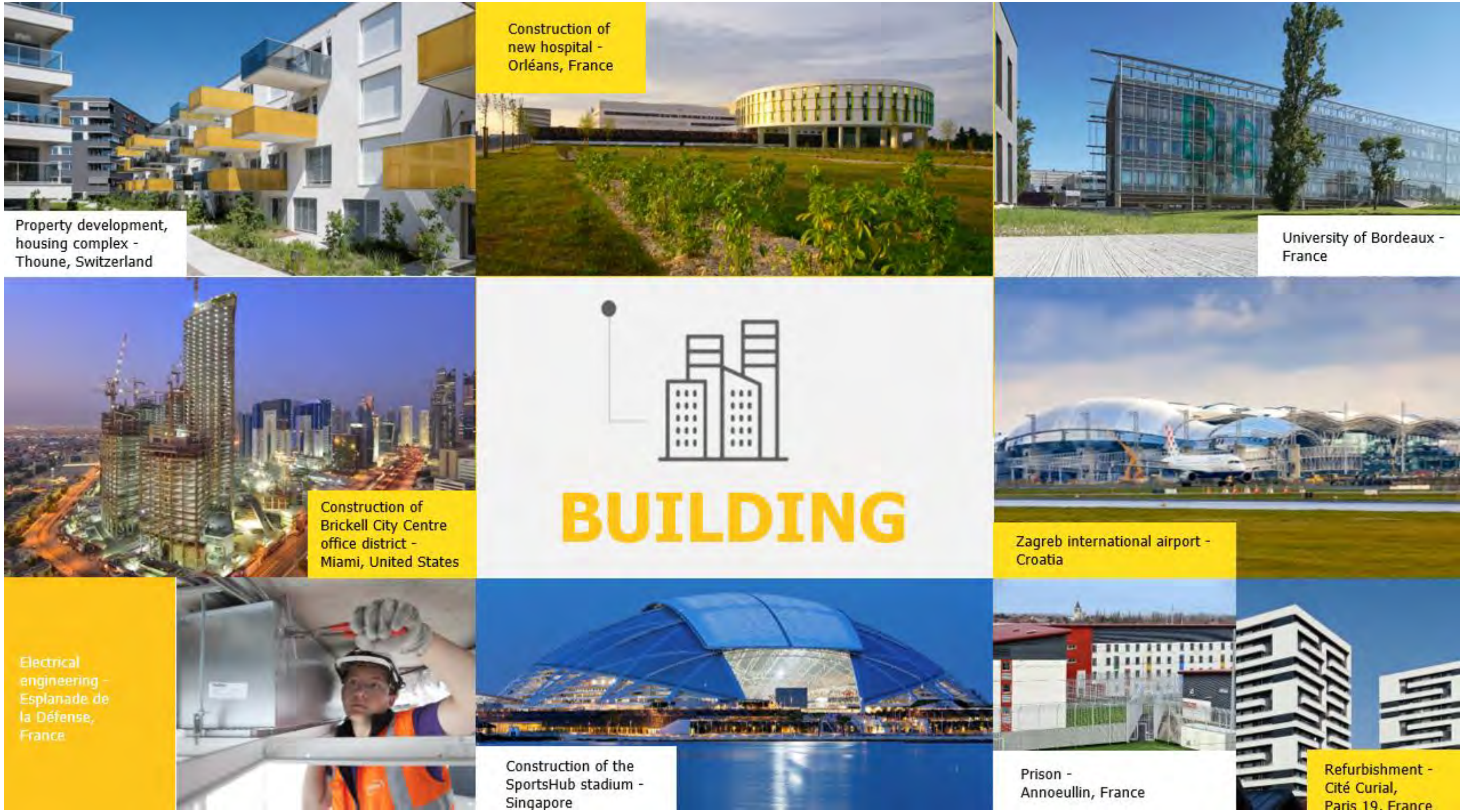
The Morpheus – Macao

BOUYGUES

CONTENTS

- WHO WE ARE
- STRATEGIC GUIDELINES
- STRATEGIC FOCUS IN OUR RESPECTIVE SECTORS
- PROSPECTS OF A NEW DIGITAL AREA

OUR SECTORS OF EXPERTISE



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OUR SECTORS OF EXPERTISE

BOUYGUES

OUR SECTORS OF EXPERTISE

BOUYGUES

OUR PEOPLE: HEALTH AND SAFETY OUR FIRST PRIORITY

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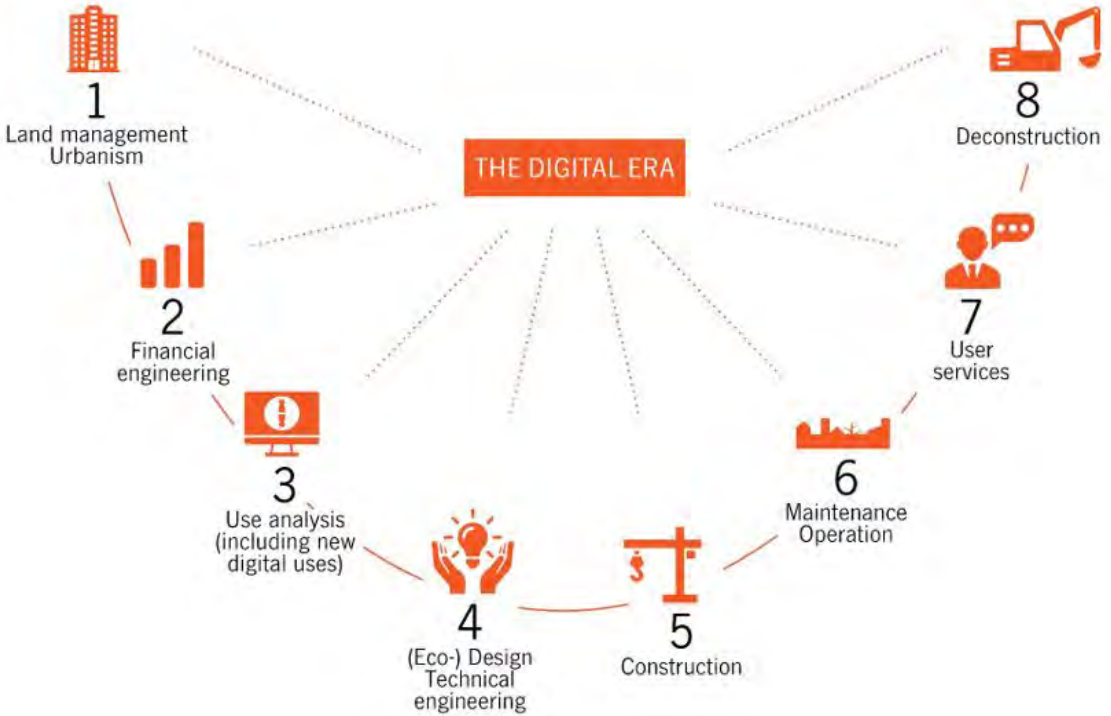
A GLOBAL CONSTRUCTION GROUP POSITIONED IN EVERY STEP OF THE CONSTRUCTION VALUE CHAIN

A RESPONSIBLE AND COMMITTED LEADER IN SUSTAINABLE CONSTRUCTION



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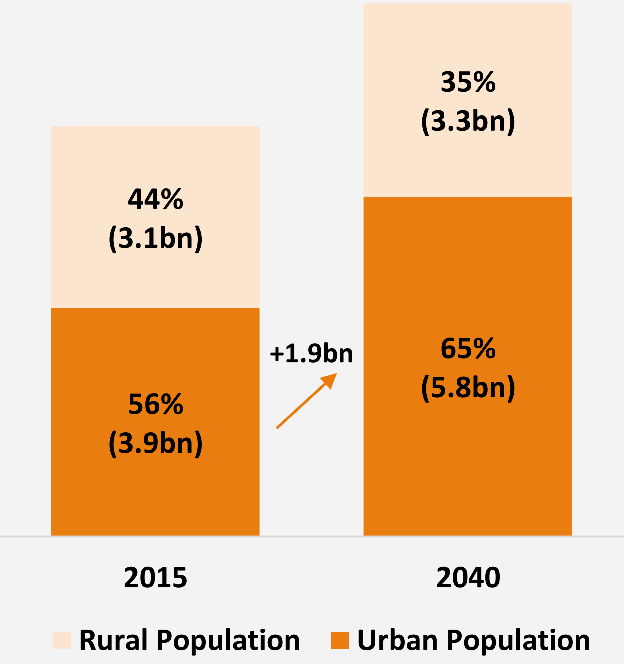
POSTIVE TRENDS IN OUR MARKET

- **BUILDING**
  - **Digitalization** allowing numerous **innovations**
  - Construction process more and more **industrialized**
- **INFRASTRUCTURE**
  - Increasing **urbanization** leading to growing needs for infrastructure
  - Strong needs for high-speed **optical fiber networks** worldwide
  - Aging infrastructure implying increasing needs for **repairs**
- **INDUSTRY**
  - Added value of services in the **industrial process** rather than in the building
  - Increasing needs for industrial **maintenance** with robotics and automation

➔ **DIGITALIZATION BECOMES KEY TO OPTIMIZE ALL OUR ACTIVITIES**

Anticipated evolution of the world population



STRATEGIC PRIORITIES

- Act as a **global player** in stable countries with a low risk profile where we have a long-established presence
- Develop **exceptional projects** with local partners in our domains of expertise
- Pursue the rebalancing of our activities towards **energies & services**

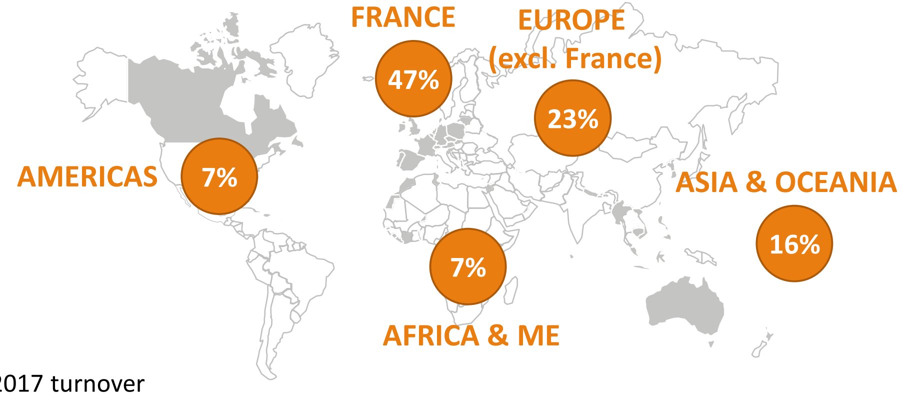
Chernobyl Arch – Ukraine

Usine Hexcel – Roussillon - France

La Seine Musicale – Boulogne – France

ACT AS A GLOBAL PLAYER IN STABLE COUNTRIES WITH LOW RISK PROFILE WHERE WE HAVE A LONG-ESTABLISHED PRESENCE

- Target **high value projects** while taking a **highly selective** approach
- Deploy the **full scope of our activities** (Infra. / Building / Industry)
- Strengthen our **market positions** through **innovative** offers
- Pursue **external growth** when relevant and value-creating



X% Share in 2017 turnover

Long-established presence

Countries with an established presence with revenues > €300m

2016	2017*
€5.5bn	€5.6bn
€1.4bn	€1.7bn
€1.0bn (Hong Kong)	€1.2bn
€0.8bn	€1.1bn (Hong Kong)
€0.5bn	€0.8bn
	€0.4bn
	€0.3bn

*Incl. FY impact of Alpiq ES & AW Edwards

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DEVELOP EXCEPTIONAL PROJECTS WITH LOCAL PARTNERS IN OUR DOMAINS OF EXPERTISE

- Leverage our strong **expertise** of large projects with exceptionally **high complexity**
- Address **local markets** with reliable and well-established **local partners** or other **major international competitors**

Zagreb international airport – Croatia

Chernobyl Safe Confinement Arch – Ukraine

Miami Brickell Center – United States

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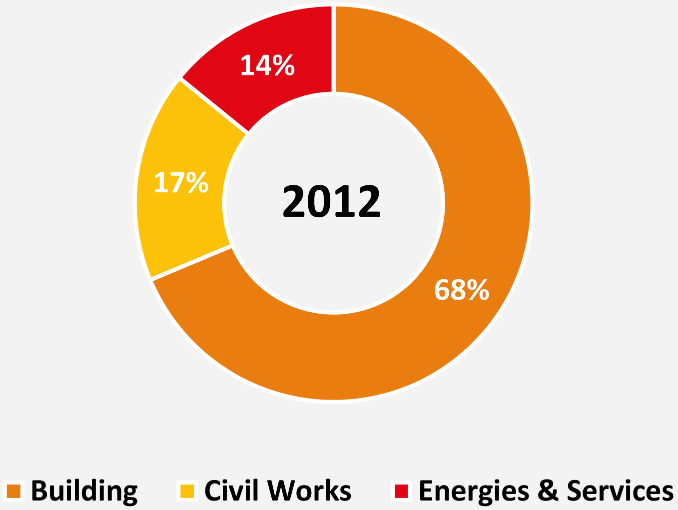
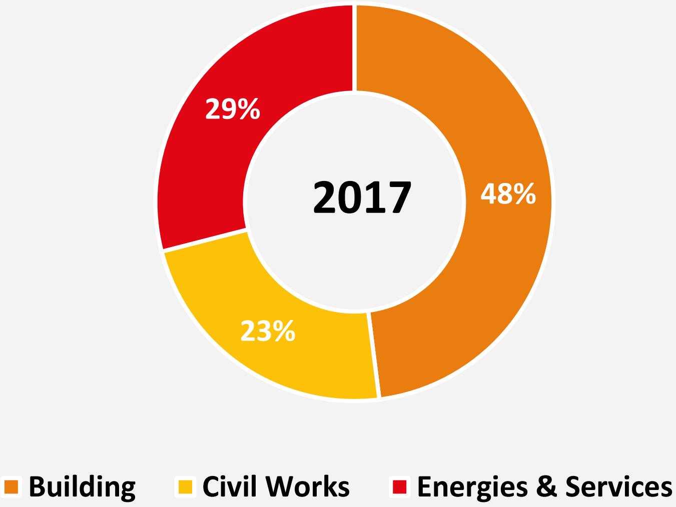
PURSUE THE REBALANCING OF OUR ACTIVITIES TOWARDS ENERGIES & SERVICES

Global turnover



Global turnover[a]



(a) incl. FY impact of Alpiq E&S and AW Edwards

POSITION AND SCOPE OF ACTIVITIES IN ENERGIES & SERVICES

- **POSITION**
  - A global leader in **energy**, **digital** and **industrial** transformation
  - Established presence in **France**, **Switzerland**, **Canada**, **UK**, **Germany**, **Italy**, **Hong-Kong** and **Romania**
  - In the **Top5 European players**
  - Export capabilities **worldwide**

- **SCOPE OF ACTIVITIES**
  - **Design, install, operate, maintain, decommission** a large range of infrastructures and facilities
  - Provide a large scope of **related services**, from early stage concept engineering studies to Mecanical & Electrical, IT, civil works, automation, technical maintenance…
  - In various environments: Energy, Infrastructure, Buildings, Industry, Telecom

France's first smart city in Dijon

Cutting-edge Stade-de-France security system

St-Martin's 27-MW turnkey thermal power plant

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ENERGIES & SERVICES IS A KEY DEVELOPMENT AREA

- **A MARKET WITH STRONG GROWTH PROSPECTS**
  - Smart cities
  - Smart buildings / smart grids
  - Smart industry
- **EXPANDING OUR PORTFOLIO OF SOLUTIONS**
  - An **increasing importance of Energies & Services** in the **global construction projects** (maintenance and operating services for instance)
  - The differentiating capability to offer **global and integrated solutions answering the most complex needs**
- **CONTRIBUTING TO HIGHER PROFITABILITY**
  - **More recurring** and **more profitable** business
  - Development of services and solutions with **high added-value**

Upgrade of Addis Ababa's power network

Design & build of a 9,300sqm data center

Transformation of Paris-Bercy sport stadium

STRATEGIC FOCUS – BUILDING

- **REINFORCE OUR PROJECT DEVELOPMENT ACTIVITIES**
  - Offer **more value** to our clients through a global and **differentiated project development** approach :
    - > Offering the **widest range** of activities across the **construction value chain** (from land management to user services in some cases)
    - > Representing **26%** of our Building revenues in 2017, aiming to reach **40%** in the coming years
  - Promote this approach in **all countries** where we have a long term presence
  - Increase the **scale** of our offers from building to **urban districts**

- **STRUCTURE AND INDUSTRIALIZE ALL ASPECTS OF OUR BUILDING ACTIVITIES**
  - Improve efficiency and profitability through **industrialized** and **lean** construction processes
  - Develop **practices and expertise sharing** across all Bouygues construction entities

linkcity

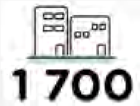
A Bouygues Construction company

in France in 2017

Offices

Commercial

Residential



units

Serviced Accommodations

units

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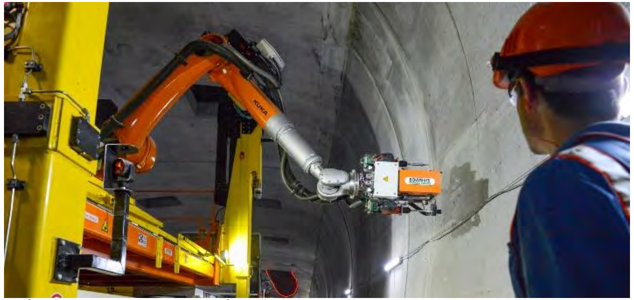
STRATEGIC FOCUS – INFRASTRUCTURE

- **STRATEGIC GOALS**
  - **Remain a reference player** in the **major infrastructure** markets
  - **Further strengthen** and market our expertise in **tunnels** and in **concessions** and **PPPs**
  - **Strengthen** our **infrastructure repair** activities as they meet a **strong market need**


RER Eole Extension - Paris


Roby 850, Liantang tunnel, Hong Kong


Exeter bridge repair project - UK

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STRATEGIC FOCUS – INDUSTRY

- **STRATEGIC GOALS**
  - Enhance our skills and level of expertise in **industrial processes** and **maintenance**
  - Become an acknowledged player in **Industry 4.0** area
  - Pursue our development in **power generation** projects (especially solar farms) where we have a strong expertise

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PROSPECTS OF A NEW DIGITAL ERA

- **DIGITALIZE OUR OFFERS**
  - Capitalize on our expertise in the **smart cities** area
  - Develop innovative offers in the **smart building** area

- **DIGITALIZE OUR ORGANIZATION**
  - Develop a **digital mindset** in every aspect of our activities
  - Continue to digitalize our **support functions**
  - Develop **open innovation** and **data management** across our organizations

Operational control cockpit, Dijon smart city project

BIM cabin, Luminy campus, Marseille

CONSTRUCTION BUSINESSES STRATEGY

Bouygues Immobilier

FRANÇOIS BERTIERE,
CHAIRMAN & CEO

Evasion – Romainville - France

BOUYGUES IMMOBILIER, "CREATEUR DE MIEUX VIVRE"[a]

- **A leading French property developer** in **residential, commercial** and **sustainable neighborhood**
- A constant **development since 1956**
- **Unique know-how** in sustainable property development
- **Diversification in new businesses** to suit new customer uses

Key figures at 31 December 2017

Revenues
€2.7bn

Reservations
€3.1bn

Housing Units Reserved
15,199

Nextdoor[b] Sites
11

Green Office®
positive-energy office buildings
12

UrbanEra
1,150,000
Sqm in progress

a) « Creator of better living »
b) Collaborative workspaces offer

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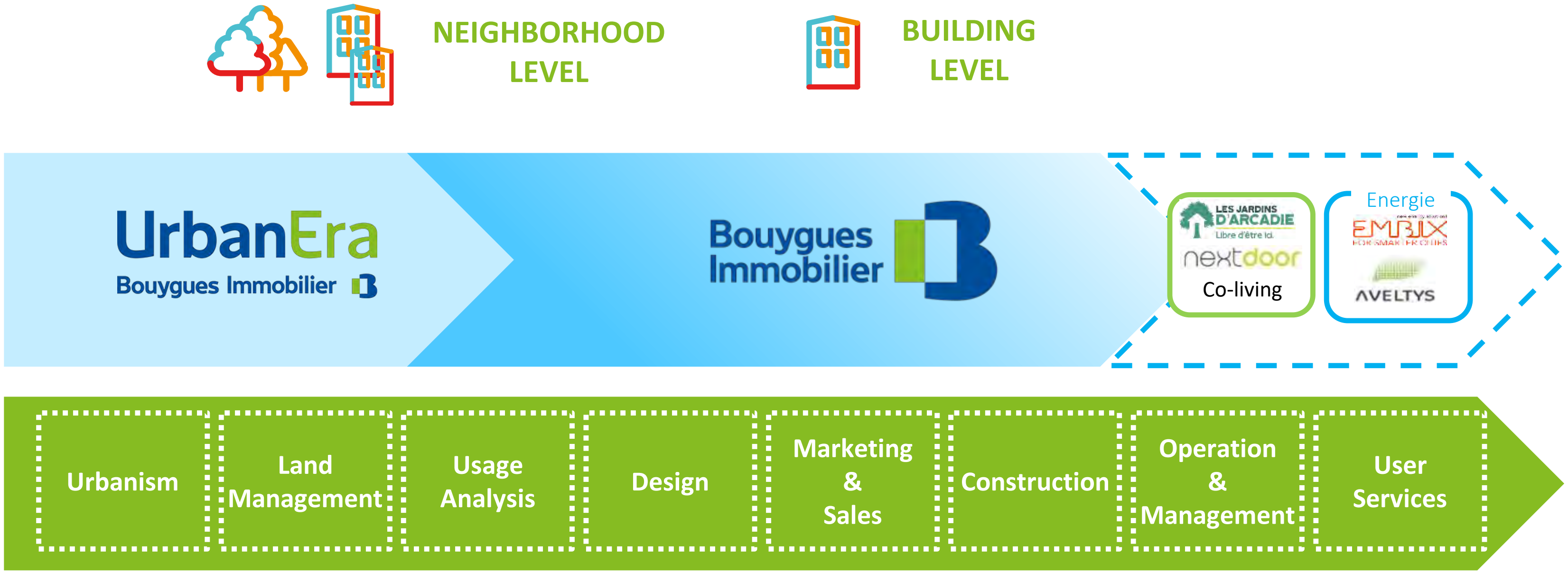
BOUYGUES IMMOBILIER OPERATES ON THE ENTIRE REAL ESTATE VALUE CHAIN, FROM BUILDING TO NEIGHBORHOOD



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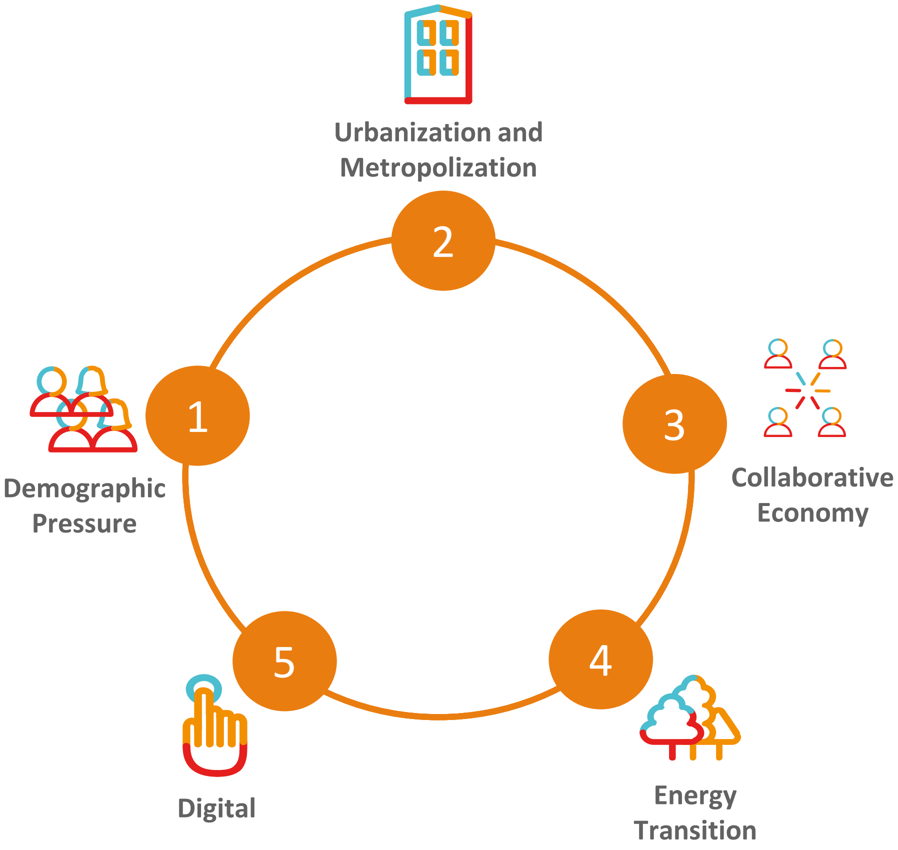
BOUYGUES IMMOBILIER STRENGTHS AND ASSETS

- **EXTENSIVE GEOGRAPHIC COVERAGE IN FRANCE**
- **WIDE AND DIVERSIFIED RANGE OF INNOVATIVE PRODUCTS AND SERVICES ADAPTED TO NEW USAGES**
  - **Residential:** affordable, intermediate and premium housing for owner-occupiers, buy-to-let properties, student and senior citizen accommodation, single-family home, co-living
  - **Commercial property products :** turnkey buildings, Green Office® positive-energy office buildings, Rehagreen® office building rehabilitation and Nextdoor collaborative workspaces
- **ACKNOWLEDGED EXPERTISE IN SUSTAINABLE NEIGHBORHOODS**
  - **4** eco neighborhoods already delivered and **16** under development
- **A ROBUST BUSINESS MODEL THAT PRIORITIES RISK MANAGEMENT AND GUARANTEES A HEALTHY FINANCIAL STRUCTURE**
  - Land portfolio offering **2 to 3 years visibility**
  - **Majority of land reserved as an option**
  - **Purchase** of the land **only when achieve at least 30% of pre-sales**

A STRATEGY RELYING ON 5 MEGA TRENDS



3 STRATEGIC PRIORITIES

1. Leader in customer experience, focused on usage

2. From single buildings to neighborhoods

3. Digital transformation

STRATEGIC PRIORITIES IN RESIDENTIAL

Maintain leadership by enhancing customer experience

- **Development** in **large French cities** to **improve market share gradually,** notably with accelerating in Grand Paris area
- Propose **differentiated and innovative offers** to suit new usages
  - First developer to propose 100% connected and intelligent homes (Flexom, "Entre Voisin" App)
- **Improve customer experience** through digital and personalized approach
- **Develop data utilization** to offer more value added services to customers
  - Managing and forecasting energy consumption tool inside the apartment
- Maintain a **strict quality policy**

D'une rive à l'autre program, Neuilly-sur-Seine, France

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RESILIENT RESIDENTIAL MARKET IN FRANCE (1/2)

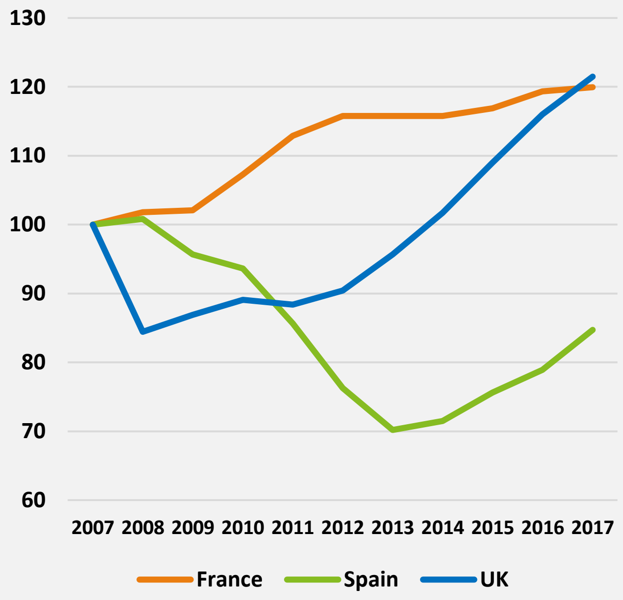
SPECIFICS OF THE FRENCH RESIDENTIAL MARKET

- **VEFA scheme** (sales before completion)
- **Bank lending policies**:
  - Loans are granted according to the ability of a household to repay its obligations
  - Majority of fixed-rate loans
  - Historically high average loan duration

LONG TERM GROWTH POTENTIAL

- **Strong demand** related to demographic pressure and change in usage patterns
- Consistent structural **lack of supply**
- Market develop around **major metropolitan areas**
- **Obsolescence** of housing stock

Trend in average housing price (index base 100 in 2007)



Sources: ECLN, Ministry of housing, Instituto Nacional de Estadistica

→ **RESILIENCE IN REAL ESTATE PRICES DESPITE THE 2008 ECONOMIC CRISIS**

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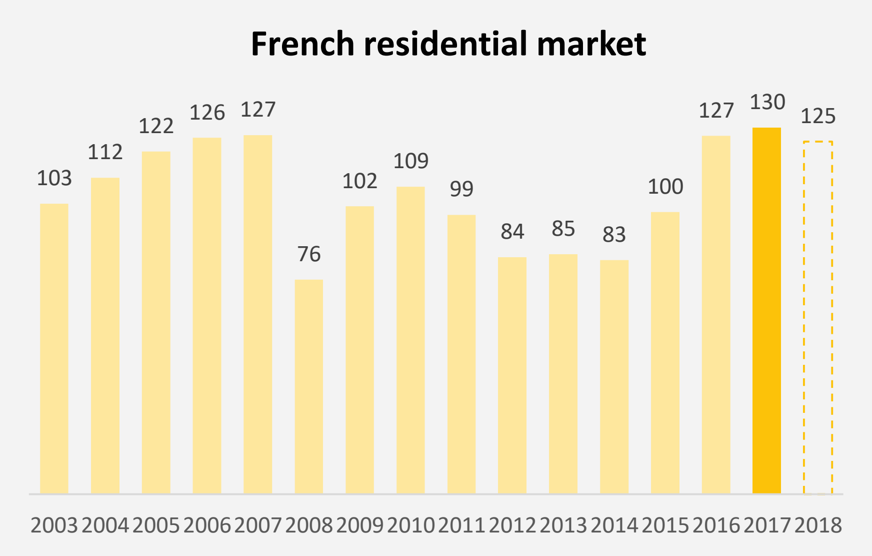
RESILIENT RESIDENTIAL MARKET IN FRANCE (2/2)

SHORT TERM DRIVERS

- **Interest rates** remaining **at a low level**
- **Zero-interest loan program** and **Pinel tax incentive confirmed** until 2021 in dense areas
- **Loi Elan** supporting residential development
- Major urban development related to **Grand Paris, Olympic Games** and the **ongoing expansion of regional key cities**



Source: SDES – Enquête sur la commercialisation des logements neufs

➔ French residential market expected around 125,000 units in 2018, then stabilizing at a high level (around 120,000 units/year in 2019-2021)

STRATEGIC PRIORITIES IN COMMERCIAL

Maintain leadership in sustainable and innovative offers

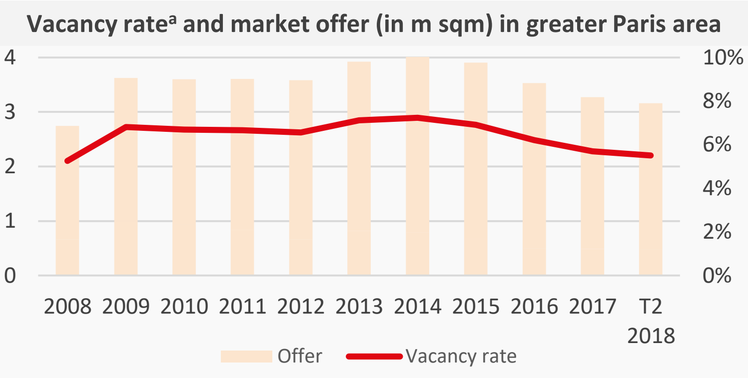
- Remain **leader in Green-Office®** positive-energy buildings
- **Develop Rehagreen® activity** (office building rehabilitation) in obsolete tertiary market
- **Balance portfolio of projects** between turnkey, presold operations (VEFA), and speculative development

Green Office Rueil - Rueil Malmaison - France

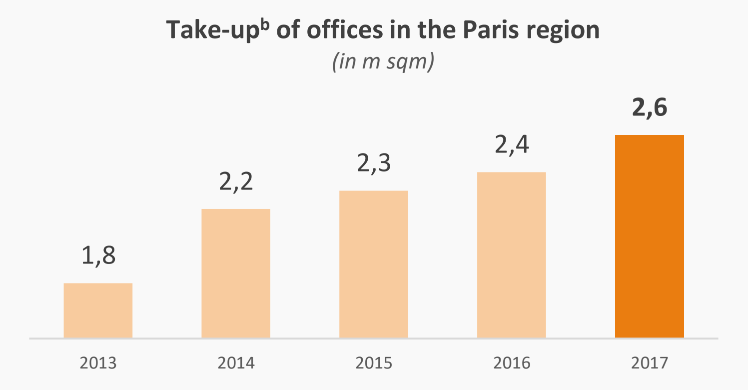
COMMERCIAL MARKET IN AN UPWARD CYCLE

- **THE LARGEST COMMERCIAL MARKET IN EUROPE (54M sqm STOCK) SUPPORTED BY**
  - **Major urban development** related to **Grand Paris**
  - **Attractiveness of Paris** following **Brexit**
- **OBSOLESCENCE OF COMMERCIAL REAL ESTATE IN GRAND PARIS AREA**
  - **Renewal market** of existing buildings (83%[a] of stock below international standards and needing renovation)
- **NEW CUSTOMER EXPECTATIONS**
  - **Cost optimization**, Pay per use
  - **New working patterns**: digitalization, nomadization, connectivity, well-being at work
  - **Collaborative economy**: mutualization of usages, services to individuals, opened to neighborhood

(a) Source: APUR



Source: CBRE Research. (a) Immediate supply of space to total stock of space



Source: CBRE Research. (b) Transactions carried out by occupiers (let and sell), including turnkey schemes

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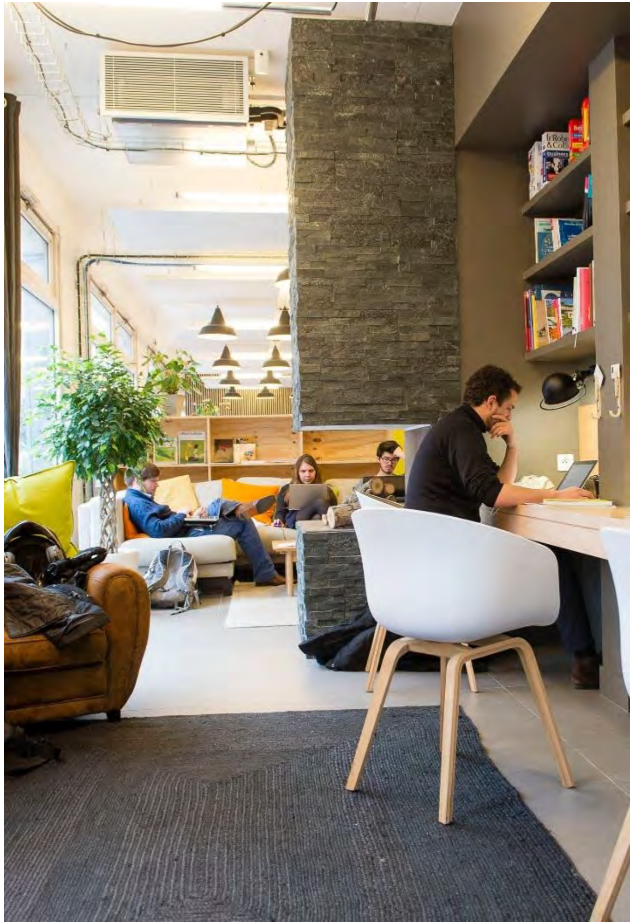
DIGITAL TRANSFORMATION AND NEW BUSINESSES

- **CUSTOMER EXPERIENCE**
  - Virtual reality
  - CRM
  - Flexom
  - *Entrevoisins* application
- **BUILDING INFORMATION MODELING**
- **MARKET PLACES**
  - *Valorissimo* platform: market shop and housing units for buy-to-let
  - *Co*-design platform to create a housing program with future buyers
- **NEW BUSINESSES**
  - Nextdoor
  - Co-living
  - Jardins d’Arcadie, new service for senior citizens
  - Embix, Aveltys



Nextdoor Lyon - France

CONSTRUCTION BUSINESS STRATEGY

COLAS

WE OPEN THE WAY

HERVÉ LE BOUC

CHAIRMAN & CEO

A WORLD LEADER IN CONSTRUCTION AND MAINTENANCE OF TRANSPORT INFRASTRUCTURE

- Mission: promoting infrastructure solutions for sustainable mobility
- Vision: global expertise federated around a strong brand
- Main business segments

COLAS
WE OPEN THE WAY

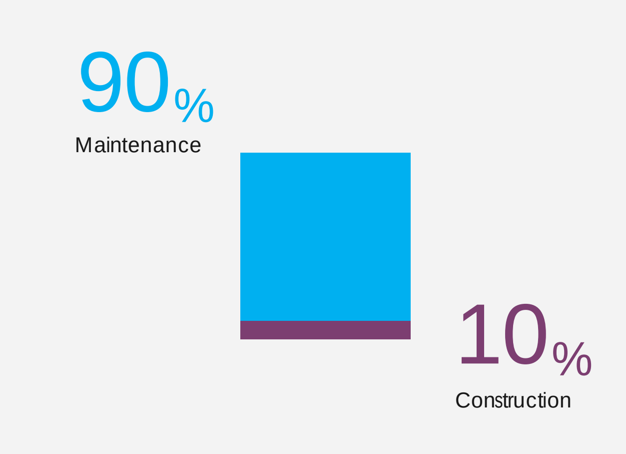
ROADS	MATERIALS	RAILWAYS
		

PRESENT IN OVER 50 COUNTRIES VIA MORE THAN 800 CONSTRUCTION BUSINESS UNITS AND 2,000 MATERIAL PRODUCTION SITES

COLAS OPERATES IN LONG-TERM GROWTH MARKETS

- **GROWING NEED FOR CONSTRUCTION AND MAINTENANCE OF TRANSPORT INFRASTRUCTURE**

- **FAVORABLE FUNDAMENTAL TRENDS**
  - Population growth and urbanization
  - Infrastructure upgrading programs in developed countries
  - Equipment needs in emerging countries
  - Stricter environmental constraints
  - Transition to a service economy
  - Digital transformation



Pacific Highway - Brisbane

MAIN STRATEGIC AXES

1. **VALUING INDUSTRIAL ACTIVITIES**

2. **EXPANDING SERVICE OFFERING**
   - Major projects
   - Smart Roads, Smart Mobility

3. **CONTINUING TARGETED INTERNATIONAL DEVELOPMENT**

4. **ACCELERATING THE DIGITAL TRANSFORMATION**

Brotonne bridge – Rouen – France

High speed lane – Nîmes Montpellier – France

Tuck Inlet Road – Canada

BOUYGUES

VALUING INDUSTRIAL ACTIVITIES

- Thanks to its drive to ensure **vertical integration**, Colas now boasts a **competitive edge** with **strong footholds in aggregates and bitumen**

- 741 quarries

- 168 concrete plants

- 1 refinery[a]
- 125 emulsion plants
- 568 asphalt plants
- Storage and logistics sites on 5 continents

- By reinforcing its positions (in particular in bitumen with McAsphalt in North America), Colas has the resources and expertise to **expand its leadership** and **better value its industrial activities**

(a) Kemaman plant in Malaysia

BOUYGUES

EXPANDING OFFERING

- With the creation of *Colas Projects* in 2016, Colas **federated and strengthened its resources** for studying, arranging the financing and executing complex projects, allowing to **expand its offer** and **increase its market share**
  - > Major road and airport projects
  - > Major international railway projects
  - > Concessions, PPPs, multi-year maintenance contracts
- Colas also continues to **innovate to broaden its range of products** and invent the services and business lines of tomorrow
  - > New road techniques
  - > New uses → Smart Roads
  - > Infrastructure solutions → roads "as a service"
  - > Services to improve mobility → Mobility by Colas

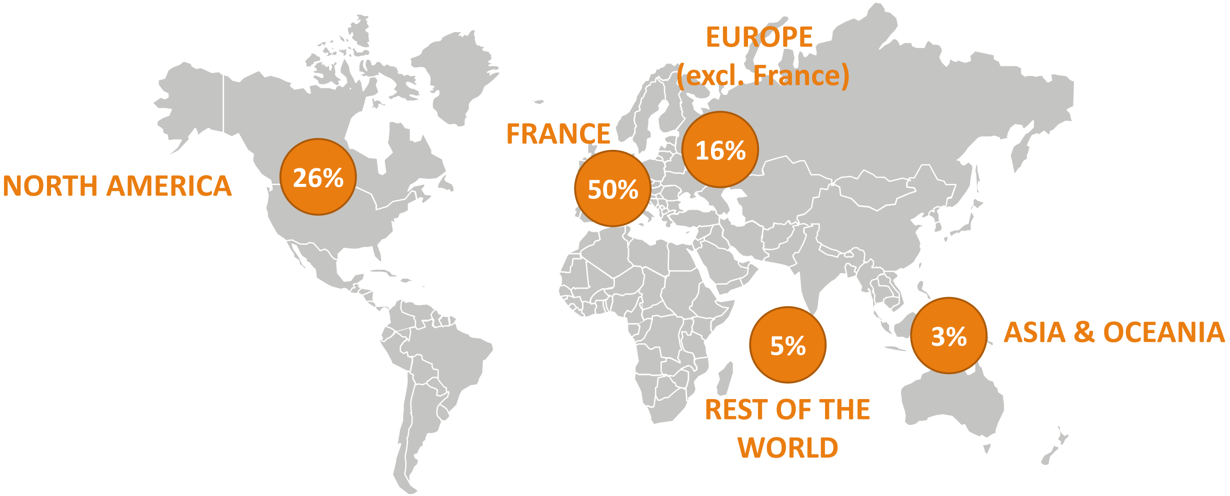
Iqualuit airport

High Speed Train in Morocco

Wattway

CONTINUING INTERNATIONAL DEVELOPMENT

- Colas makes roughly **50% of its revenue outside France[a]** - mainly **in low risk countries**



- In 2018, with the acquisition of Miller McAsphalt (Canada) and Alpiq's railway activities (Europe), Colas boosted its growth in its core businesses: road construction, materials and railways
- **Colas has high growth potential in target countries in the OECD**

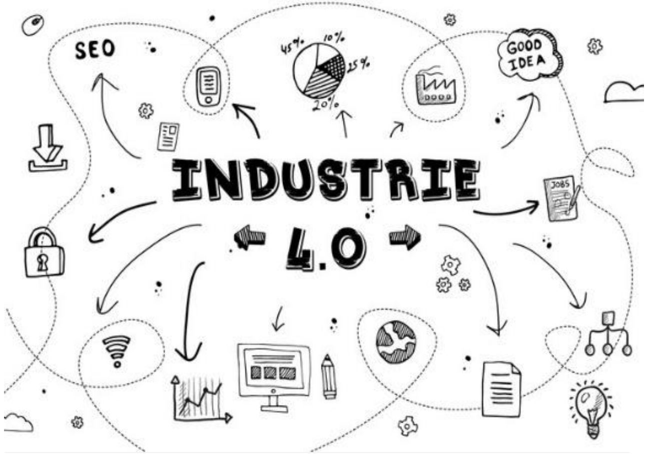
(a) Estimation 2018

BOUYGUES

ACCELERATING THE DIGITAL TRANSFORMATION

- Digital technologies are now part of our businesses, and this means transformation
  - Process
  - Industries 4.0
  - New businesses

- With digital technologies, Colas has a **major lever to take full advantage of its global position**
  - Sharing of know-how and expertise
  - Valuing data assets



Colas was awarded the « BIM d'or »

BOUYGUES

MAXIMIZE THE VALUE OF INDUSTRIAL ASSETS

COLAS

WE OPEN THE WAY

BITUMEN PRODUCTS

LOUIS GABANNA

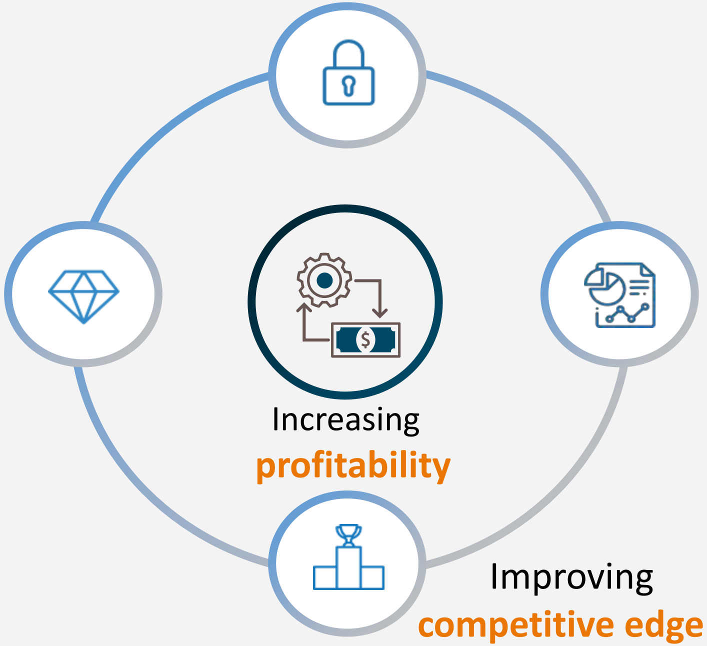
EXECUTIVE VICE-PRESIDENT, NORTH AMERICA

QUARRIES

THIERRY MÉLINE

EXECUTIVE VICE-PRESIDENT, FRANCE - RAILWAYS

VERTICAL INTEGRATION, A LONG-STANDING MODEL AND STRATEGIC ASSET AT COLAS



BOUYGUES

MAXIMIZE THE VALUE OF INDUSTRIAL ASSETS

COLAS

WE OPEN THE WAY

BITUMEN PRODUCTS

LOUIS GABANNA

EXECUTIVE VICE-PRESIDENT, NORTH AMERICA

BITUMEN IS PART OF COLAS' DNA

- **BITUMEN IS WHERE COLAS STARTED**
  - Creation of Colas in 1929 with Cold Asphalt
  - Many products and specialties invented and patented by Colas since

- **COLAS HAS AN INTERNATIONAL CAMPUS FOR SCIENCE AND TECHNIQUES**
  - 130 employees
  - 90 years of capitalized expertise

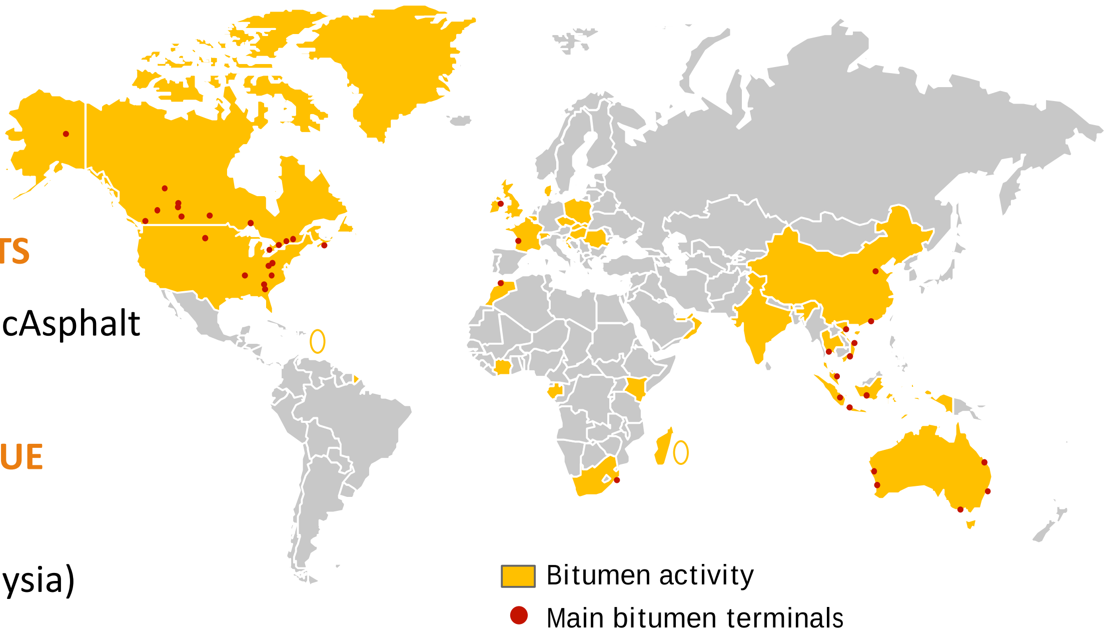
COLMAT®

COLBIFIBRE®

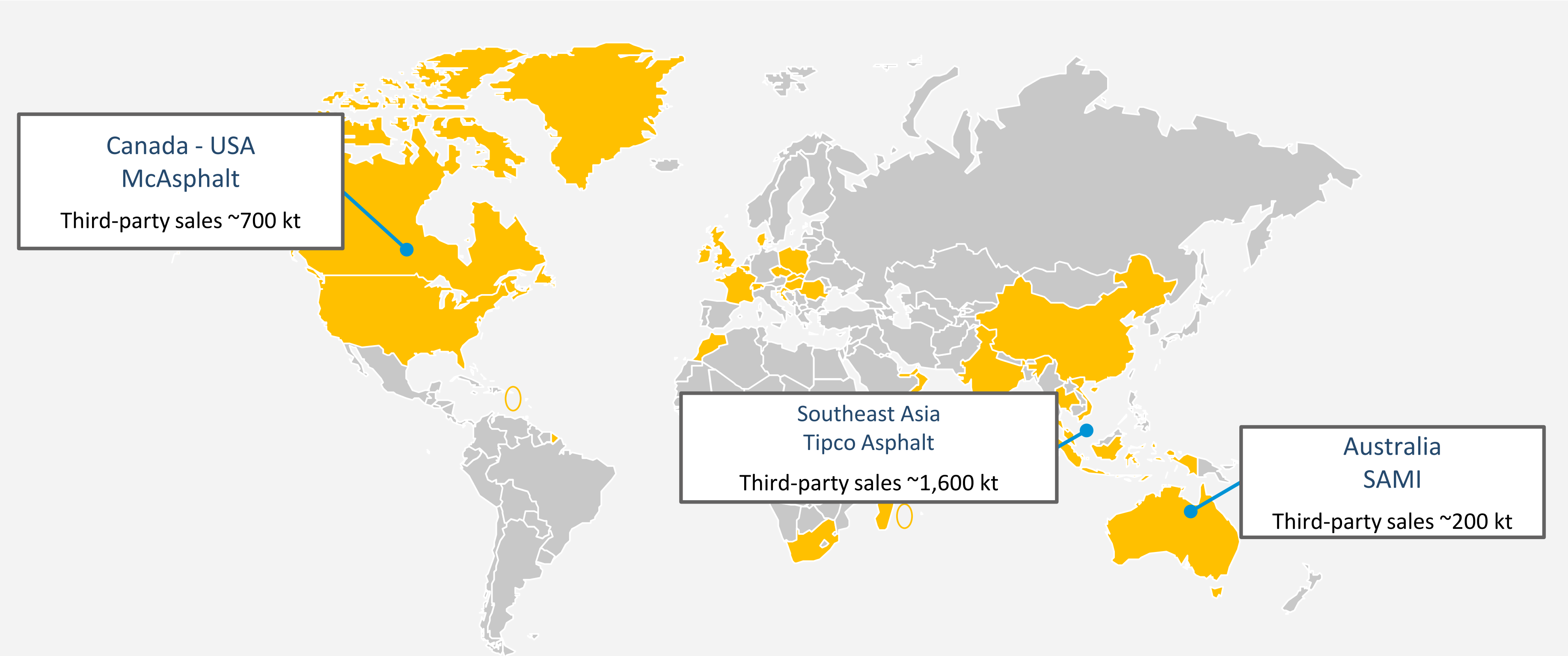
BOUYGUES

COLAS IS A MAJOR PLAYER IN THE BITUMEN MARKET

- **BIGGEST PURCHASER WORLDWIDE**
  - 5 million tons / year
  - ≈5% share of the market
- **GREAT NUMBER OF DISTRIBUTION POINTS**
  - Network reinforced by acquisition of McAsphalt in 2018
- **PRESENT THROUGHOUT THE ENTIRE VALUE CHAIN**
  - Production (Kemaman Refinery in Malaysia)
  - Storage terminals
  - Emulsion plants
  - Transport / logistics



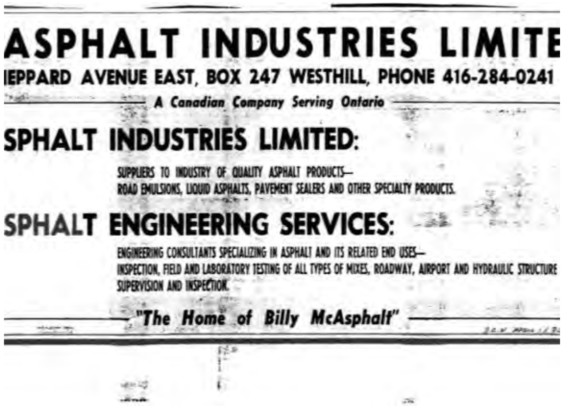
COLAS SELLS AND DISTRIBUTES BITUMINOUS PRODUCTS



McASPHALT: A MAJOR COLAS ACQUISITION IN 2018

- **AN ENTREPRENEURIAL SUCCESS**
  - Established in 1970
  - **Rapid growth** through acquisitions, building storage depots, sustainable ventures with major industry players

- **THE LEADER IN THE BITUMEN INDUSTRY IN CANADA**
  - **Strong expertise** in product formulation
  - Stakeholders are very demanding

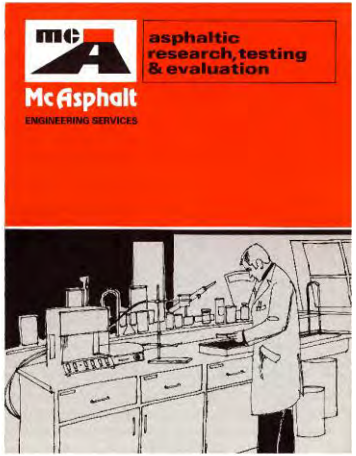


ASPHALT INDUSTRIES LIMITE
IEPPARD AVENUE EAST, BOX 247 WESTHILL, PHONE 416-284-0241
A Canadian Company Serving Ontario

SPHALT INDUSTRIES LIMITED:
SUPPLIERS TO INDUSTRY OF QUALITY ASPHALT PRODUCTS—
ROAD EMULSIONS, LIQUID ASPHALTS, PAVEMENT SEALERS AND OTHER SPECIALTY PRODUCTS.

SPHALT ENGINEERING SERVICES:
ENGINEERING CONSULTANTS SPECIALIZING IN ASPHALT AND ITS RELATED END USES—
INSPECTION, FIELD AND LABORATORY TESTING OF ALL TYPES OF MIXES, ROADWAY, AIRPORT AND HYDRAULIC STRUCTURE
SUPERVISION AND INSPECTION

"The Home of Billy McAsphalt"



BULK STORAGE - 300,000 TONS ACROSS CANADA

McASPHALT

BOUYGUES

McASPHALT SUPPLY NETWORK

McASPHALT

BOUYGUES

MCASPHALT: RAPID INTEGRATION

- **INTEGRATION OF COLAS CANADA BITUMEN ACTIVITIES IN MCASPHALT**
  - Integration started at a high level, immediately upon acquisition
  - Each company independently reviewed their own processes and best practices

- **WITH IMMEDIATE SYNERGIES**
  - Common brand
  - Mutualization of assets
  - Share of best practices

MAXIMIZE THE VALUE OF INDUSTRIAL ASSETS

COLAS

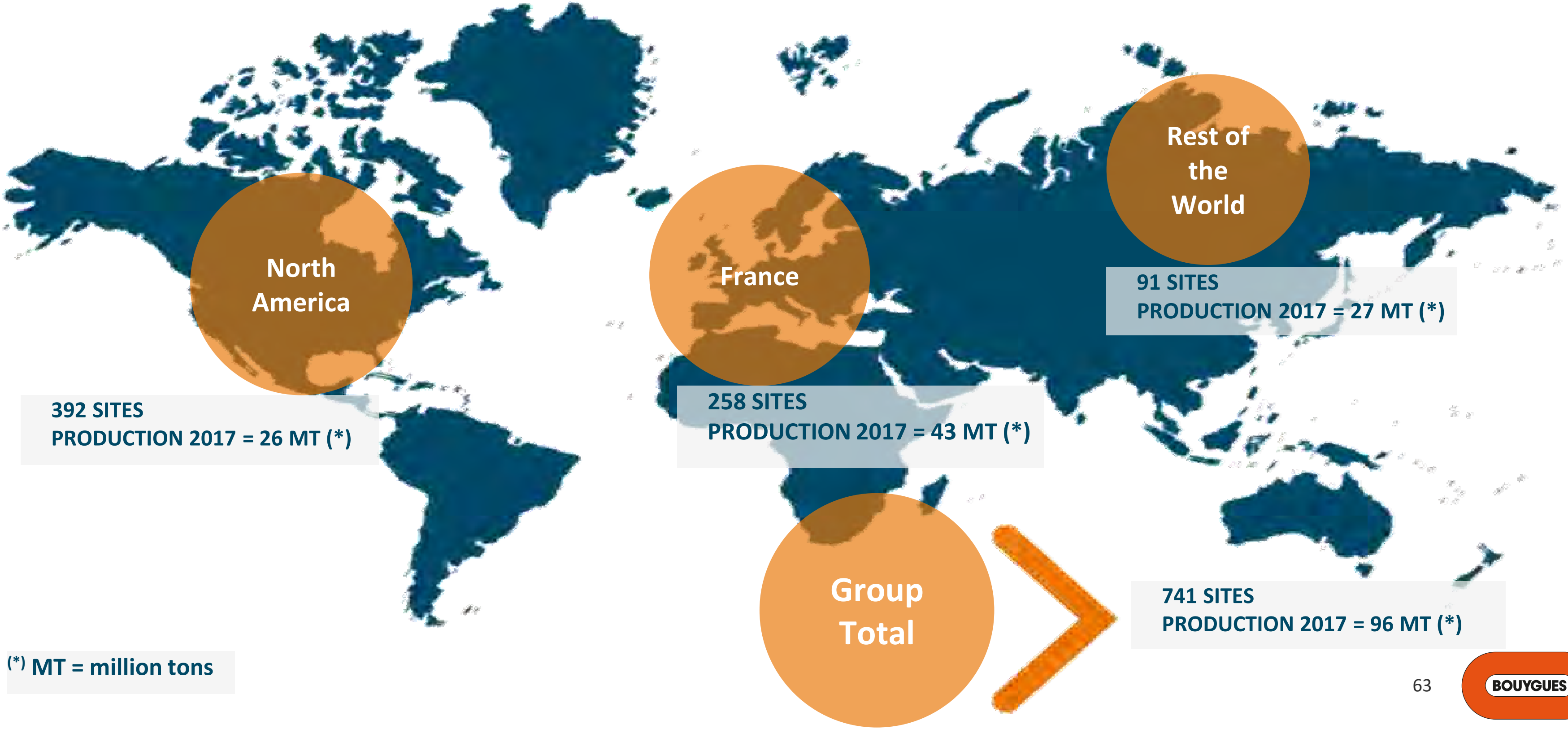
WE OPEN THE WAY

QUARRIES

THIERRY MÉLINE

EXECUTIVE VICE-PRESIDENT, FRANCE - RAILWAYS

QUARRIES LOCATED AS CLOSE AS POSSIBLE TO CONSTRUCTION ACTIVITIES



(*) MT = million tons

COLAS CONTINUES TO GROW IN QUARRIES

MAIN ACQUISITIONS OVER THE LAST THREE YEARS

BOUYGUES

QUARRIES, A STRATEGIC ASSET FOR COLAS

- **IN ORDER TO MEET A BASIC NEED**
  - Aggregates, **2nd most consumed resource** after water
  - Growth in demand for infrastructure
- **QUARRIES ARE A MAJOR ASSET FOR COLAS, TO**
  - **Secure the supply** of road and railway building materials
  - **Supply manufacturing facilities**: asphalt plants, ready-mixed concrete plants
  - **Generate business and profit**, with 70% of sales made externally
- **THEY ARE MANAGED BY DEDICATED OPERATIONAL TEAMS, WHICH ALSO**
  - Ensure land control
  - Manage operating permits

BOUYGUES

DIVERSIFIED ASSETS

- Different types of **deposits**
  - > Massive rocks
  - > Soft rocks
- Different types of **operations**
  - > Quarries
  - > Gravel pits
- Different types of **end-users**
  - > Industries
  - > Building
  - > Public works
  - > Railways

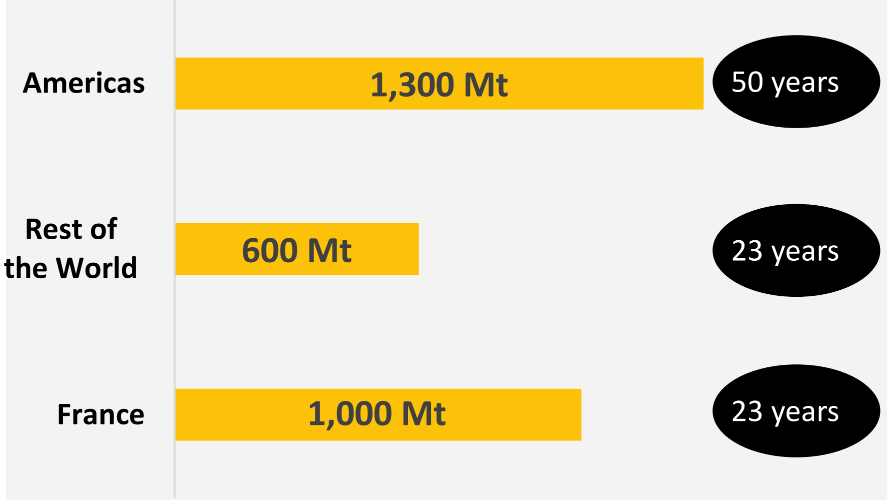




VERY LONG-TERM ASSETS

- **AUTHORIZED RESERVES AMOUNT TO**
  - **2,900 million tons**, i.e. **30 years** of production
  - **4,800 million tons** including potential reserves

Authorized reserves by zone (in Mt) and by year of production at end 2017



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MAIN STRATEGIC AXES (1/2)

- **PURSUE TARGETED ACQUISITIONS IN RELATION TO OUR ACTIVITIES**
- **INCREASE THE VOLUME OF INTERNAL AND EXTERNAL SALES**
- **REDUCE PRODUCTION COSTS AND OPTIMIZE INVESTMENTS**

MAIN STRATEGIC AXES (2/2)

- **DEVELOP CIRCULAR ECONOMY ACTIVITIES**
  - Deconstruction PREMYS
  - Recycling of materials
  - Storage activities

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INITIATIVES TO PROTECT THE ENVIRONMENT AND BOLSTER COMMUNICATION WITH THE PUBLIC AROUND THE WORLD






CONCLUSION

- Backed by **vertical integration strategy**, Colas has developed **strong positions in aggregates and bitumen** sectors

- These activities provide Colas with an **additional lever to improve performance** in the future thanks to the development of their own business model

BOUYGUES


Q&A

A BUOYANT MARKET

A favorable context

- **Demographic pressure** and **growing urbanization**
- Decrease in local authority budget emphasizing the **need to cooperate with the private sector**
- Incentives fostering the **renewal of socially isolated neighborhoods**

New expectations

- From **elected representatives**
  - Urban renewal aiming to:
    - Develop the attractiveness of areas
    - Respond to new urban usages
    - Address sustainable development issues
    - Improve urban quality of life
- From **clients**
  - Modern, vibrant and connected living neighborhoods offering new services and usages

BOUYGUES

URBANERA

Bouygues Immobilier

EMMANUEL DESMAIZIÈRES,

MANAGING DIRECTOR, URBANERA

URBANERA'S MISSION

- Design **mixed neighborhoods**, with a **common identity that creates value** for **all stakeholders of the urban project**: residents, employees, companies, investors, local authorities, public developer, elected representatives
- Since 2015, the activity developed by UrbanEra represents **1,150,000sqm** of building rights of which **670,000sqm** for Bouygues Immobilier

THE 6 COMMITMENTS OF URBANERA

1. ENERGY & UTILITIES
2. URBAN SERVICES & MOBILITY
3. WATER & WASTE
4. URBAN BIODIVERSITY AND NATURE
5. BUILDINGS & USER COMFORT
6. CONSULTATION & PARTICIPATION

URBAN DEVELOPMENT "END-TO-END COORDINATOR"

- **LOCAL AUTHORITIES**
  - Defining zoning regulations
  - Defining and financing public infrastructure
  - Public consultation

Concession contracts

UrbanEra
Bouygues Immobilier

Urban developer

- **URBAN DEVELOPER**
  - Designing and developing public infrastructure
  - Sale of macro lots
  - Following up the operators' commitments

Reselling land acquisition costs to property developers

- **BOUYGUES IMMOBILIER**
  - Housing
  - Offices
  - Shops

- **OTHER PROPERTY DEVELOPERS**
- **SOCIAL LANDLORDS**

BOUYGUES

URBANERA STRATEGIC PRIORITIES

- Respond to **city expectations** and **end-user needs**
- **Become a leader in** the fast growing **urban renewal market**
- **Increase** Bouygues Immobilier **market share** and **profitability** on its three business segments: residential, commercial and retail
- Generate **additional revenues** through sales to other developers
- Use financial model that limits **the level of indebtedness**

Cœur Université – Nanterre – France

BOUYGUES

URBANERA'S KEY STRENGTHS

- **PROPOSE UNIQUE PROJECTS TAILORED TO AREAS, RESPONDING TO CITY EXPECTATIONS AND PROVIDING NEIGHBORHOODS THEIR OWN IDENTITY**
  - **"Les Fabriques" in Marseille**: development of a productive city with makers
  - **"Quartier de la Gare"** in Divonne Les Bains: revitalization of the city center
  - **"Charenton – Bercy"**: creation of a virtual reality cluster

- **BRING TOGETHER AND MANAGE INTO AN ECO-SYSTEM THE MOST RELEVANT PLAYERS**
  - From start-up to industrial firms, up to **70 partners** on a project

- **DEVELOP URBAN SERVICES RESPONDING TO NEW USAGES**
  - Soft mobility, concierge services, third location, smart grid, shared gardens, recycling of materials

Les Fabriques – Marseille – France

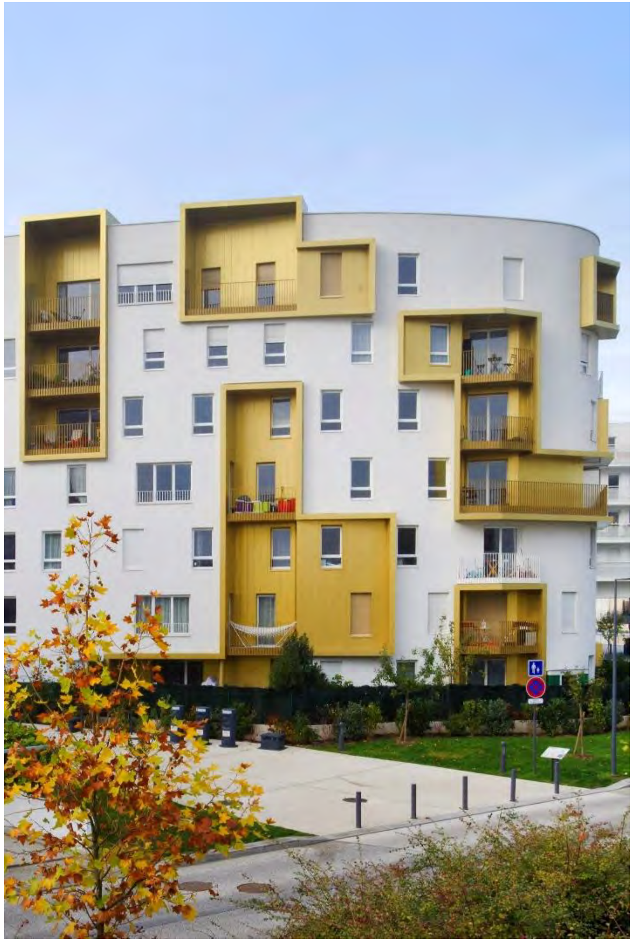
BOUYGUES

FORT D'ISSY, AN ICONIC ECO-NEIGHBORHOOD

- **95%[a] OF PERSONS INTERVIEWED PROUD TO LIVE IN FORT D'ISSY**

- **SPECIFICS**
  - " IssyGrid ", a **smart Grid** serving the whole district
  - **Optimum energy consumption** with geothermal energy covering 75% of needs
  - **Pneumatic waste collection system**
  - **Ecological water management** (recovery of rain water from roof)

- **DESCRIPTION**
  - **12 hectares**
  - 1,623 housing units (of which 330 social housing)
  - Shops and public equipment: 2,300sqm
  - Total sales from property development: **€450m** of which **€250m** for Bouygues Immobilier



Fort d'Issy – Issy les Moulineaux – France

BOUYGUES

(a) Opinion Way survey conducted in 2015

GINKO, SPEARHEAD OF “BORDEAUX 2030”

- **76%[a] OF PERSONS INTERVIEWED SAY THAT GINKO IS A PLEASANT NEIGHBORHOOD TO LIVE**

- **SPECIFICS**
  - **Biomass heating plant**
  - **Lagooning water treatment**
  - 4.5 hectares of park and 20 shared garden plots
  - **50%** of roads dedicated to **soft mobility**
  - Concierge services

- **DESCRIPTION**
  - **32 hectares** of which 3,000 housing units, 10,000 sqm of resident services, 14,000 sqm of offices, 52,000 sqm of retail and public facilities
  - **11 year concession** (2010 to 2021)
  - **EcoQuartier certified** in 2014 / BBC / NF Habitat
  - Total sales from property development: **€650m** of which **€575m** for Bouygues Immobilier

(a) Harris survey conducted in 2016

Ginko – Bordeaux – France

CHARENTON, FLAGSHIP PROJECT OF "REINVENTING GRAND PARIS"

- **STRONG AMBITIONS**
  - Create **a new economic hub** in Eastern Paris based on the **virtual reality**
  - Open up the district
  - Deliver a **remarkable sustainable neighborhood**

- **SPECIFICS**
  - A **180m green** residential and hospitality **tower**
  - A **garden bridge** of 1 hectare and 5 hectares of new public spaces
  - **" Well " certification** (new standard for interior well-being)
  - A strategic partnership with Tikehau Capital

- **DESCRIPTION**
  - **12 hectares of land**, 360,000 sqm developed including 1,000 housing units, 167,000 sqm of offices and 49,000 sqm of retail and public facilities
  - Development until 2030
  - Total sales from property development: **over €2.2bn**

Charenton-Bercy – France

BOUYGUES

SUSTAINABLE DISTRICTS

BOUYGUES

PASCAL MINAULT
MANAGING DIRECTOR,
PROPERTY DEVELOPMENT,
BOUYGUES SA

La Colline des Mathurins (Bagneux - France)

BOUYGUES

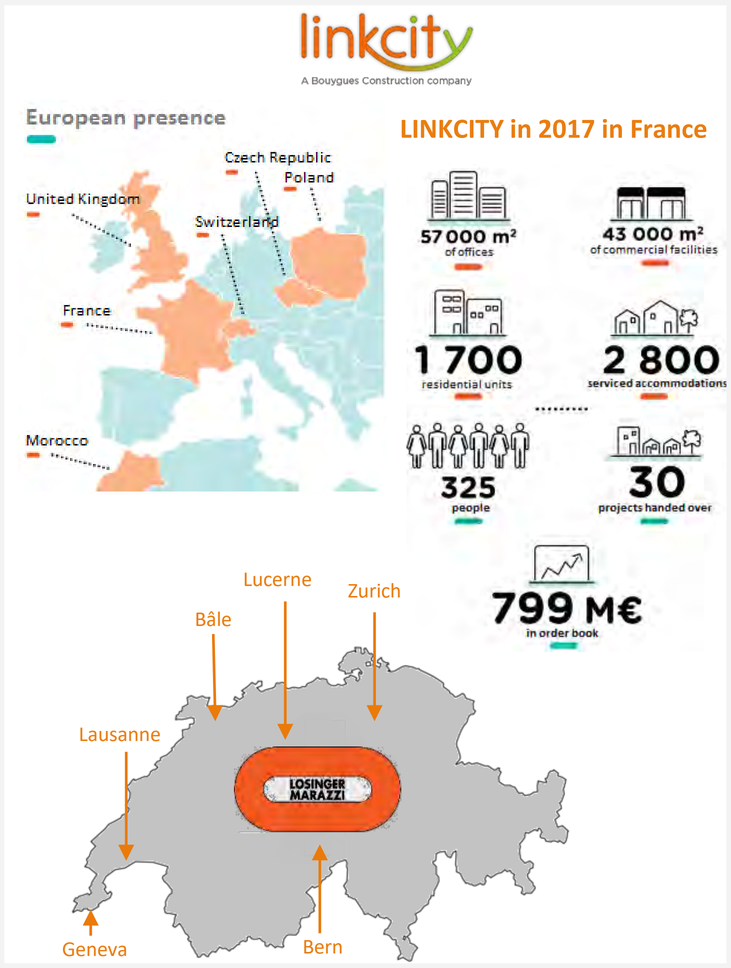
OUR VISION OF PROJECT DEVELOPMENT

- **A SOPHISTICATED AND DIFFERENTIATED MARKETING APPROACH**
  - Positioned as **the long-term strategic partner** to local authorities, property investors and operators
  - Positioned across the **whole value chain**, from land management to operation and user experience through construction
  - **In-house design & construction capabilities** are a key skill, as well as our extensive range of **technical, cross-disciplinary expertise**
- **A CAPABILITY TO DEVELOP A WIDE RANGE OF PROJECTS: BUILDINGS, BLOCKS, URBAN DISTRICTS**
- **AN ACTIVITY OFFERING A VERY ATTRACTIVE RISK PROFILE**
  - **No property market risk**, with no upfront financial investment to buy land or start construction before the financing and exit are 100% secured
  - **No marketing risk**, with strong and reliable partners on the commercial side of projects (no B-to-C activity)
  - Use of **non-recourse financings**

OUR MARKET APPROACH

- **LINKCITY: GLOBAL BRAND, LOCAL PRESENCE**
  - An **umbrella brand name** to market project development offers in various countries
  - **Capitalizing on the local networks** of our construction subsidiaries

- **SPECIFIC EXPERTISE OF LOSINGER-MARAZZI IN SWITZERLAND**
  - An historical player with **unique and acknowledged capabilities in sustainable urban districts**



THE IDEA BEHIND SUSTAINABLE DISTRICTS

TRANSFORMING EXISTING, ABANDONED, DISOWNED URBAN AREAS

INTO NEW VIBRANT SUSTAINABLE MIXED-USE DISTRICTS COMPOSED OF HOUSING, OFFICE, RETAIL, EDUCATIONAL FACILITIES

Eole Evangile – Paris 19e - France

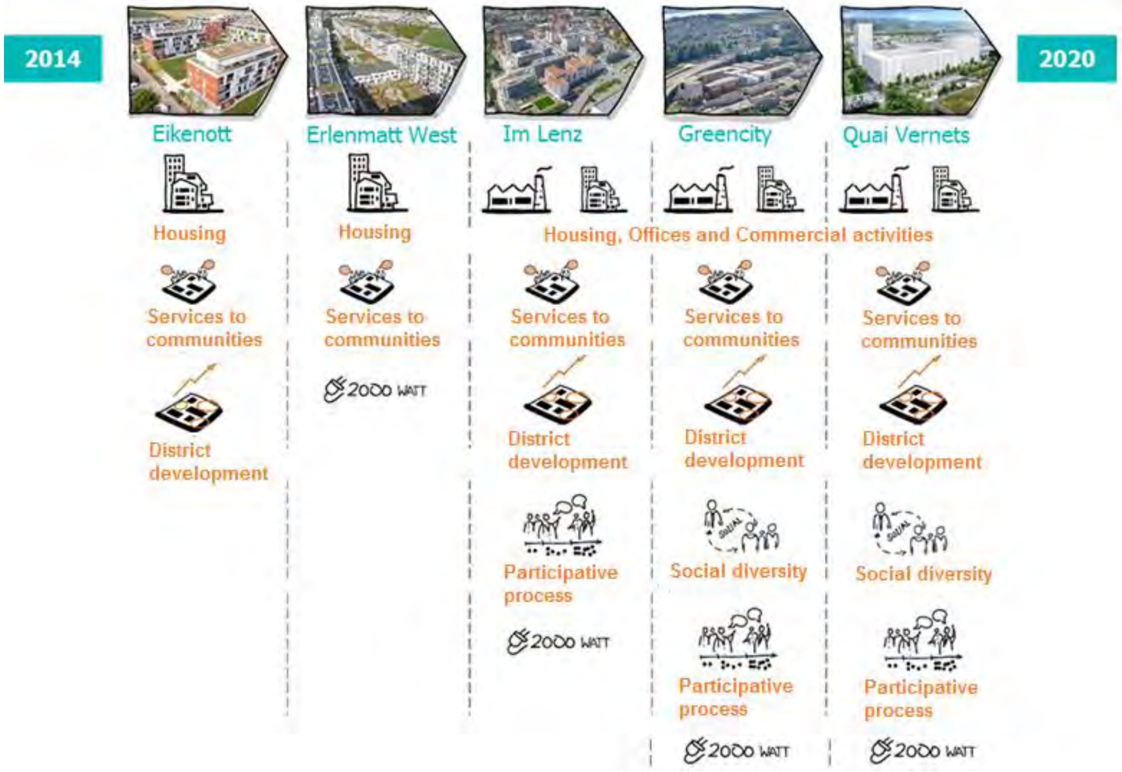
SUSTAINABLE DISTRICTS REPRESENT A TRUE OPPORTUNITY

- Little or no upfront investment
- No property market risk assumed
- High profile / high impact projects
- Generating high volume / long term projects
- Extended skill set required (building on Bouygues Group's businesses)
- Limited competition / higher margin expected

BOUYGUES

OUR INCLUSIVE APPROACH TO DISTRICT DEVELOPMENT

- **IMPROVE OUR VALUE PROPOSITION BY OFFERING AN INCREASINGLY INCLUSIVE APPROACH**



BOUYGUES

AN ICONIC DEVELOPMENT PROJECT

● “CASERNE DES VERNETS” IN GENEVA

- Existing Swiss Army barracks in central Geneva
- Geneva’s ambition to create a new sustainable housing district
- Public tender to select investors to develop, build and operate the district
- Bouygues Construction’s Swiss subsidiary to lead and coordinate a consortium of investors (insurers, pension funds, cooperatives)

Caserne des Vernets District in Geneva – Switzerland

MASTERING CONTRACTUAL ENVIRONMENT AT EACH STAGE OF A PROJECT

- **URBAN DISTRICT DEVELOPMENT: AN AMBITION, AN OPPORTUNITY**
  - Development partnerships with stakeholders: land owners, public authorities
- **PROJECT DEVELOPMENT: A MARKET, A PROPERTY**
  - Leases and sales agreements with future tenants/investors
- **CONSTRUCTION: A CLIENT, A PROJECT**
  - Build or Design & Build contracts with Bouygues Construction companies
- **OPERATIONS: A COMMUNITY, A PLACE TO LIVE, WORK, SOCIALIZE**
  - Urban Service Level Agreements with public & private operators (mobility, waste services, energy utilities, facility management, retail)

BOUYGUES CONSTRUCTION’S EXPERTISE

- **URBAN DISTRICT DEVELOPMENT**
  - Local knowledge, contacts with administrations/city executives
  - Sociology, demographics, community management, co-living
  - Urban planning, mobility, energy, bio-diversity
- **PROJECT DEVELOPMENT**
  - Market knowledge and investor/operator relations
  - Architecture, permitting process, land transactions
- **CONSTRUCTION**
  - Pricing, engineering, construction delivery

ALL THESE ACTIVITIES IN CLOSE COOPERATION WITH AN ECOSYSTEM OF LONG-TERM PARTNERS

La colline des Mathurins – Bagneux - France

GREENCITY IN ZURICH

- **PROGRAM**
  - 165,000 sqm built area
  - 60% housing/40% offices, hotel, senior housing, education
  - 2000 Watts certified
- **TIMELINE**
  - Project development: 2004-2013
  - Construction: 2014-2021
- **INVESTMENT VALUE**
  - CHF800m

Greencity – Zurich - Switzerland

“CASERNE DES VERNETS” IN GENEVA

- **PROGRAM**
  - 150,000 sqm
  - 1,500 housing units
  - Offices, hotel, retail, public facilities
- **TIMELINE**
  - Bid: 2013-2014
  - Development: 2015-2019
  - Construction: 2020-2024
- **INVESTORS**
  - 2 insurers (Swisslife, Mobilière), 3 local pension funds, 3 housing coooperatives
- **CONSTRUCTION VALUE**
  - CHF600m

➔ OTHER PROJECTS: CUMULATIVE VALUE OF PROJECTS IN PIPELINE > CHF 2.5 BILLION

Caserne des Vernets District in Geneva - Switzerland

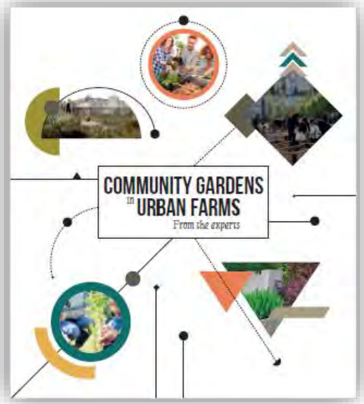
BOUYGUES

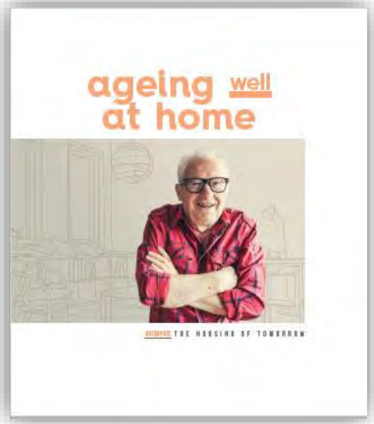
BOUYGUES SMART CITIES APPROACH

FRANÇOIS PITTI
DIRECTOR PROSPECTIVE & STRATEGIC MARKETING, BOUYGUES CONSTRUCTION

IN DEMAND FOR SMARTER CITIES

USER-CENTRIC EXPECTATIONS





BOUYGUES

OUR OBJECTIVES FOR SMART DISTRICTS AND CITIES

MORE LIVELY, MORE COMMUNAL, MORE INTENSE

MORE EFFICIENT, MORE RENEWABLE, GREENER

MORE CONNECTED, SMARTER, MORE INTERMODAL

A GLOBAL PARTNERSHIP-BASED APPROACH

Work together on challenges

Define
Your sustainable neighborhood project

Conduct
the development plan

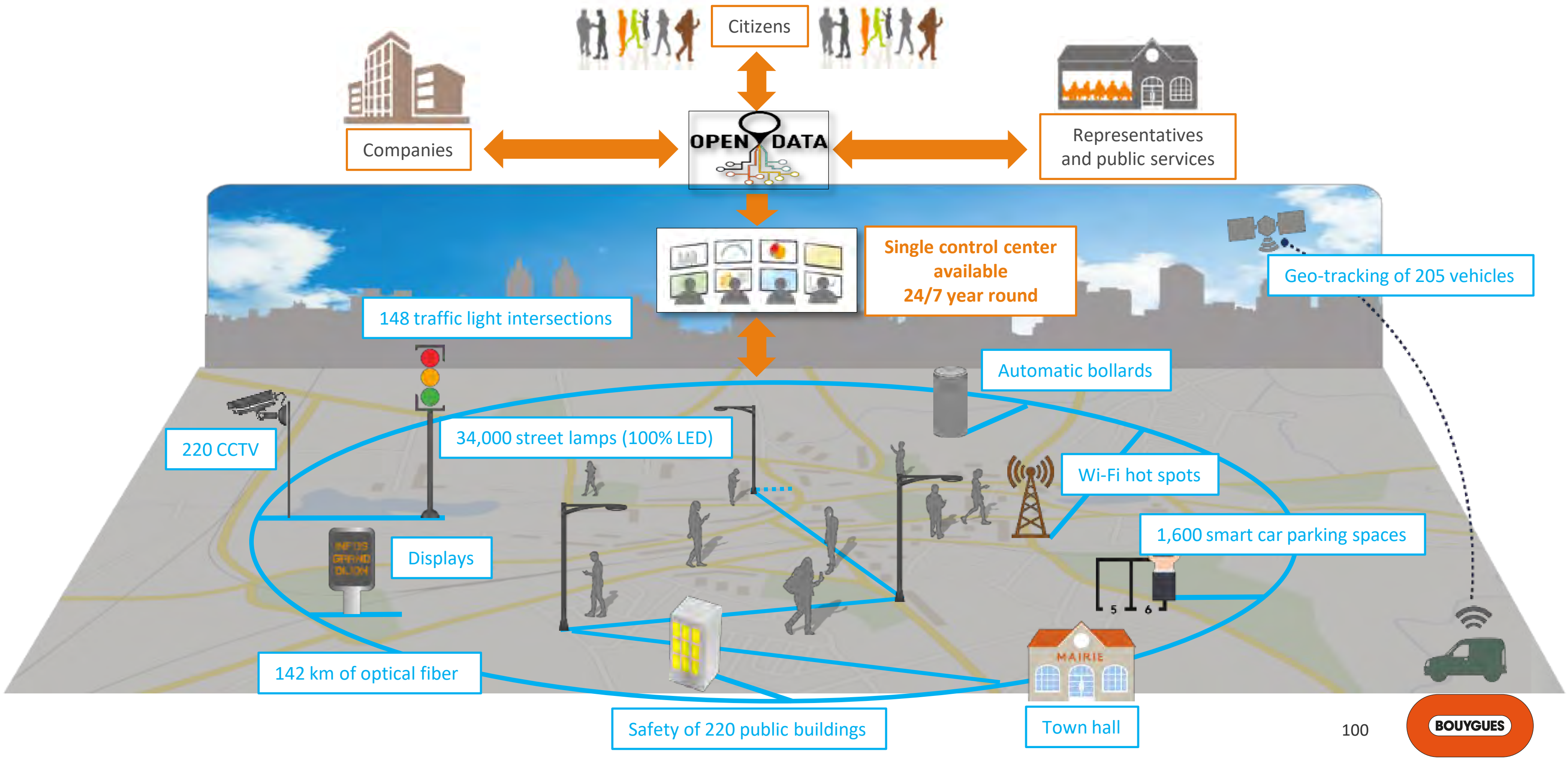
Support and maintain
a long term commitment

BOUYGUES

A GLOBAL ECOSYSTEM

EUREKA - LYON - PARTNERSHIPS

SMART CITY IN DIJON



END USER VIEW

Stake : + Social

Stake : + Environmental

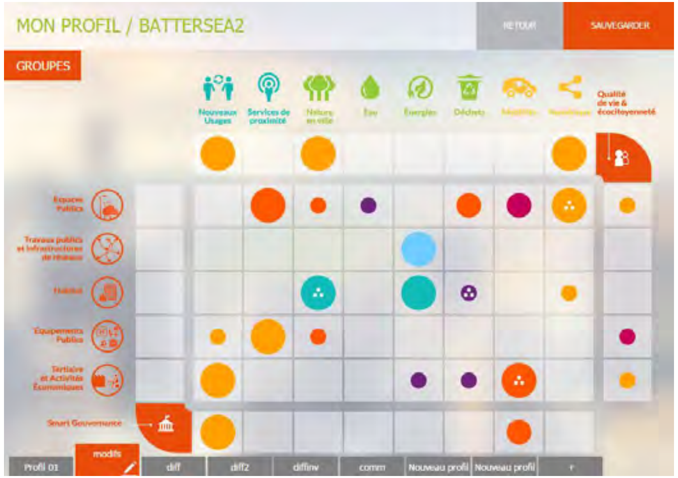
Stake : + Connected

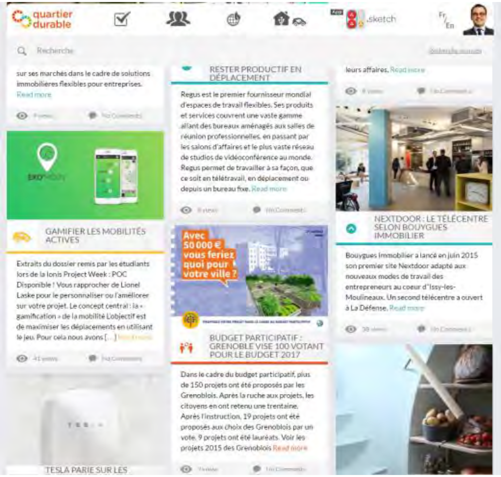
Types of places in the neighborhood

Quality of life and ecocitizenship

Smart governance

TOOLS TO CO-DEVELOP THE NEIGHBORHOOD





Play
Collaborative Game for co-conception

Sketch
Neighborhood profiling application

Board / Market Place
Innovations and best practices

CONCLUSION

SMART ROAD
SMART MOBILITY

COLAS

FRÉDÉRIC GARDÈS
EXECUTIVE VICE-PRESIDENT,
INTERNATIONAL

FROM INFRASTRUCTURE TO MOBILITY SOLUTIONS

- To respond to underlying trends and new expectations
  - From infrastructure to mobility solutions
  - With the rise of Mobility as a Service (MaaS)
- Colas expands its range of offerings to
  - **Adapt to the specificities** of each territory
  - **Be more and more creative** to meet expectations regarding innovation even though public funding is tight
  - **Meet performance requirements**, both for communities and users

MOBILITY SOLUTIONS, A MAJOR AXIS FOR COLAS

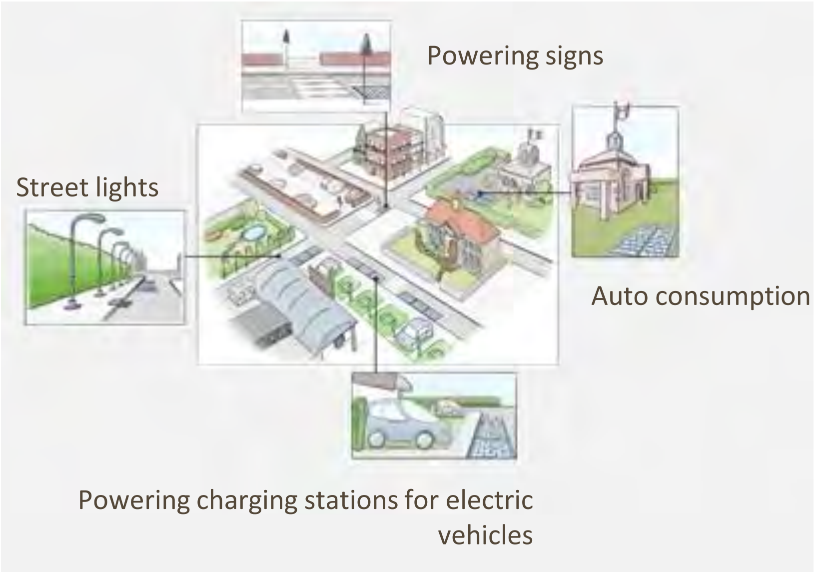
- **Major resources** earmarked **for innovation**
  - Campus for Science and Techniques, **world's leading private research center** dedicated to roads
  - Creation in 2017 of Mobility by Colas, a **digital offer** designed **to serve infrastructure**

- For roads that are
  - **Safer**
  - More **sustainable**
  - More **connected**
  - More **shared**

COLAS HAS THREE TARGETS IN MOBILITY

- **CREATING NEW FUNCTIONS FOR INFRASTRUCTURE**
  - Smart Roads
- **ANTICIPATING MAINTENANCE NEEDS**
  - Roads as a Service
- **DEVELOPING A CUSTOMER-FOCUSED APPROACH BY SERVING USERS**
  - Smart Mobility

SMART ROAD - WATTWAY: POSITIVE ENERGY ROAD SURFACING



Trial site in Japan 7-Eleven store

wattway

- Over 30 trial sites around the world: North America, Europe, Japan
- Numerous use cases have been identified
- 2019: beginning of commercial launch phase

BOUYGUES

SMART ROAD - FLOWELL: FOR DYNAMIC, MULTI-MODAL ROADS

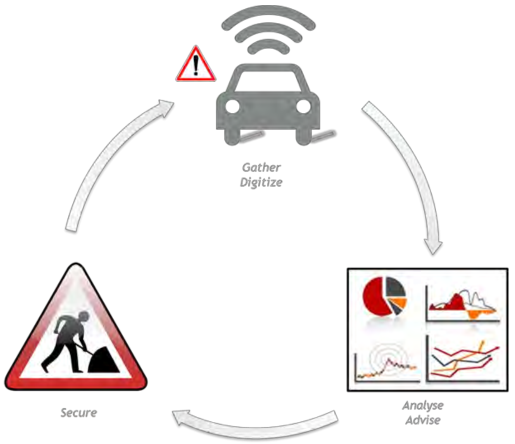
- Characteristics
  - > **Luminous** marking
  - > **Dynamic** marking
  - > **Programmable** marking

- Use cases
  - > Crosswalks
  - > Sharing infrastucture
  - > Dynamic lane allocation

- 1st in-situ, real-life trials at the beginning of 2019

ROAD AS A SERVICE - ANAÏS

ACQUIRE - DIGITIZE - ANALYZE - INFORM - SECURE

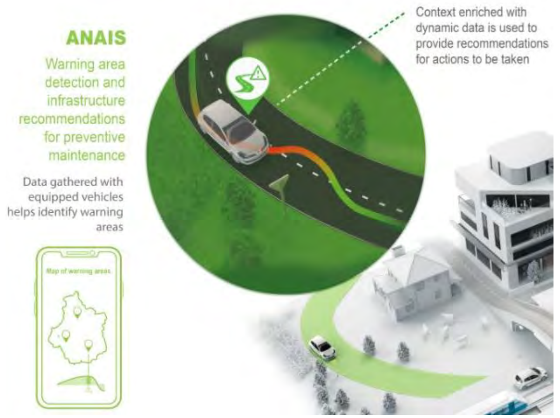


- **Digital action recommendation tool** for infrastructure maintenance

  > **Preventive detection of risk zones** using on-board sensors and near accident statistics

  > **Recommendations for actions and improvements** on road assets

  > **Optimization** of road asset management



mobility by COLAS

Activator of mobility services

MOBILITY AS A SERVICE - MOOV'HUB IN PARIS - SACLAY

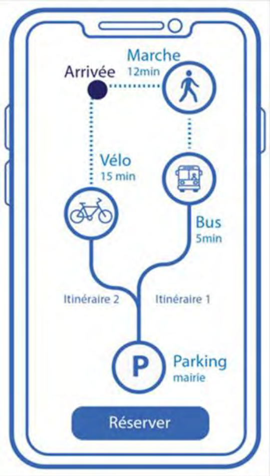
- **PILOTING TOOL FOR PARIS-SACLAY**
  - Innovation partnership
  - Smart, shared parking management service
  - Digital experience centered on the user
- **CHARACTERISTICS OF THE PROJECT**
  - 2 phases over 5 years: R & D then roll out
  - Public & private connected parking – 3,000 parking spaces
  - Public-private co-financing
- **A FIRST STEP TOWARDS MAAS**
  - One customer account - one bill - single access to mobility services
  - Mobility observatory for city managers

Mobility platform
& and web site **Moov'Hub**

Observatory
Mobility and Parking

Data sharing platform
Moov'Hub

Payment: dematerialized, invoicing, commissioning,…



Interfaces to mobility services

Connected parking	Mobility services Public transport	Soft mobility services	Connected services (conciergerie, logistics, packages,…)

BOUYGUES

BENEFITS AND STAKES FOR COLAS

1 to 2 years

- **REINFORCING BRAND IMAGE**
  - Notoriety to reinforce the value of the Colas brand
  - Positive impact on employer brand as resources are lacking

2 to 5 years

- **POSITIONING ON VALUE CHAIN**
  - Leadership strengthened in ecosystem of mobility
  - Added-value partners

5 to 10 years

- **DEVELOPING NEW ACTIVITIES**
  - New offers and new services
  - Decentralized energy, data exploitation, mobility platforms…

Q&A

Future APHP building

INNOVATION IN THE CONSTRUCTION BUSINESS

BOUYGUES

CHRISTOPHE LIÉNARD
GROUP CHIEF INNOVATION OFFICER

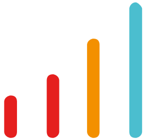
Paris , October 2nd 2018

MAIN TRENDS IMPACTING US

- *Climate Change*

- *Changing user behavior*

- *Population growth and urbanization*



- *Digital and technological revolution*

INNOVATION AND DIGITAL

NEW USAGES MADE POSSIBLE THANKS TO THE DEVELOPMENT OF 4 KEY TECHNOLOGIES

VIRTUAL, AUGMENTED AND MIXED REALITY

A new **interactive** environment for the user

BLOCKCHAIN

Information storage and transmission technology, transparent, **secure**, and working without a central control body

INTERNET OF THINGS AND BIG DATA

Collecting **massive amounts of data** from the real world

Multiple **analysis** capabilities

ARTIFICIAL INTELLIGENCE

From automation to **augmented** human

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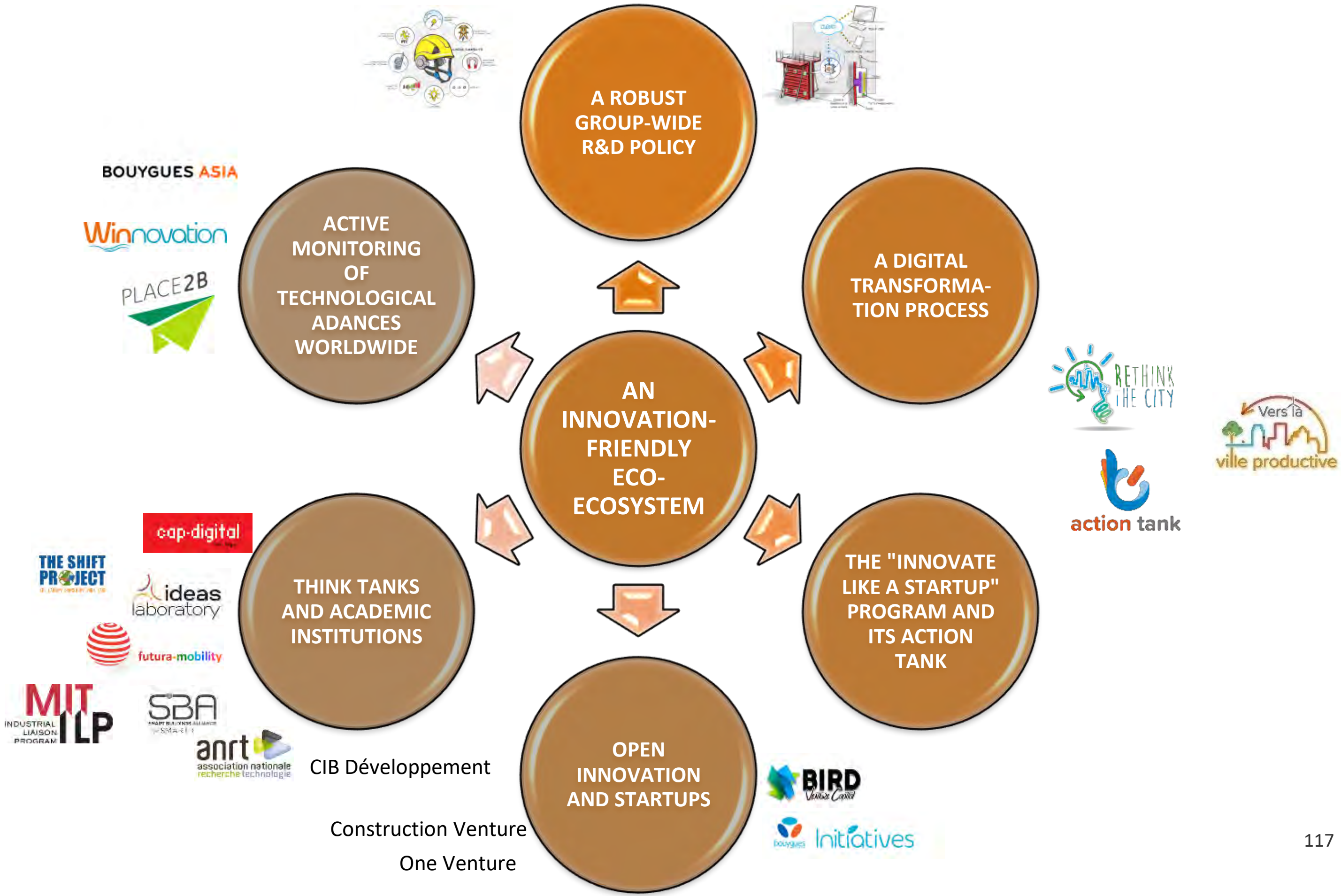
INNOVATION CULTURE AND MANAGEMENT



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DIGITAL: A PILLAR OF THE GROUP'S TRANSFORMATION

A PLAN DEVELOPED ALONG 3 AXIS

- Transform **INTERNAL** processes and work methods
- Improve customer experience and develop new business related to the **EXTERNAL** ecosystem
- Instill a digital **CULTURE** within the group

La Seine Musicale – Boulogne

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EMPLOYEES ARE KEY PLAYERS OF THIS TRANSFORMATION

SPACE AND EVENT SHARING IMPLEMENTED SO EACH EMPLOYEE PARTICIPATES IN THE GROUP DIGITAL TRANSFORMATION

- The **TRANSFORMER CLUB** founded in January 2018, comprised of 30 participants belonging to 5 digital sections, working swiftly for 3 month to empower the Group Digital Committee.

- The program "**INNOVATE AS A START-UP**" to create new activities
  - Fifty employees involved in each session as intraprenors
  - Action-tank of business leaders implementing the financing, development and launch
  - 3 sessions, 20 concepts, 6 retained projects, 3 launches

- Sharing and innovation events such as the Digital Easy Challenge (2017) and **VIVATECHNOLOGIES**

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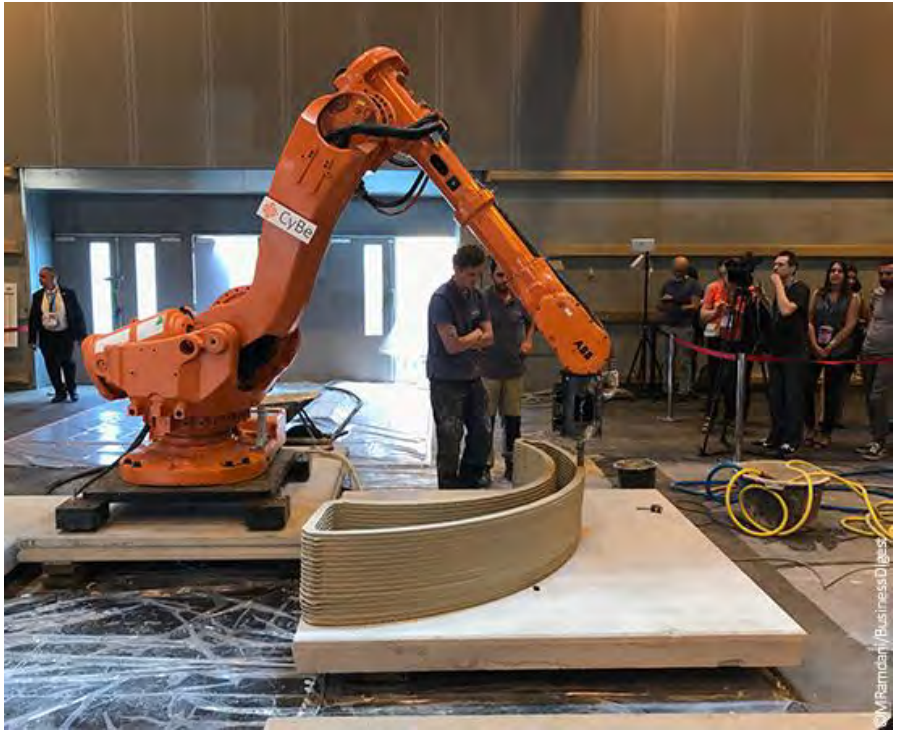
R&D AND INNOVATION ARE ACCELERATORS OF DIGITAL TRANSFORMATION

1- IMPROVE PRODUCTIVITY AND PERFORMANCE

2- ENRICH AND RETHINK THE CUSTOMER EXPERIENCE

3- UNCOVER DISRUPTIVE ACTIVITIES



3D printing

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IMPROVE PRODUCTIVITY AND PERFORMANCE

EXAMPLES

- **AN EXOSKELETON FOR OUR SITES (COLAS): EXOPUSH**
  - A tool to facilitate the work of our companions on road works, co-developed between Colas and the RB3D startup
  - The deployment of **EXOPUSH** underway with 35 devices already in the field. It contributes to improving the performance and quality of our operations and opens new horizon with connected tools.
- **YHNOVA, HOUSE PRINTED IN 3D (BYCN)**
  - Yhnova is the first 3D printed house. 3D construction projects are growing with the printing of concrete parts, even for the most advanced projects, the completion of entire wall sections.
  - Saving time, saving materials, reducing the environmental impact, the benefits are numerous.

ENRICH AND RETHINK THE CUSTOMER EXPERIENCE

EXAMPLES

- **"COLAS & MOI" SMARTPHONE APPLICATION**
  - An application that creates a direct link with residents of worksites to improve their experience and inform them of our work progress. This approach is favorably perceived by our clients and prompted international applications.

- **CONNECTED BUILDINGS: "WIZOM" (BYCN) AND "FLEXOM" (BY IMMO)**
  - Wizom and Flexom allow the building residents to control their comfort, their well-being and their budget. Each resident can manage temperature, brightness and the opening or closing of blinds. The goal is to simplify the life and experience of our customers.
  - Wizom and Flexom are built on an open architecture connecting the sensors for marketing purpose

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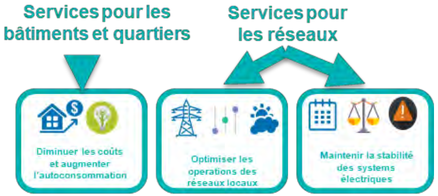
EMERGENCE OF DISRUPTIVE ACTIVITIES

EXAMPLES

- **BLOCKCHAIN TO MANAGE THE CONSUMPTION OF ENERGY (BY IMMO)**
  - A first model was produced in 2017 with Microsoft and the startup Energisme
  - The implementation of a blockchain in Lyon in the Hikari district (Island joint offices/housing/shops) will be current 2018

- **ENERGY STORAGE - THE PROJECT "ELSA"(BYCN)**
  - Development of an industrial system of storage of energy for buildings and the distribution networks of electricity from the second life of electric vehicle battery recycling,
  - Renault, Nissan and 7 other partners including three research centers and universities and two distribution networks are the ELSA project coordinated by Bouygues Energies and Services partners



DIGITAL TRANSFORMATION OF PROJECT ACTIVITIES

BOUYGUES CONSTRUCTION

MARIE-LUCE GODINOT

EVP DIGITAL TRANSFORMATION, INNOVATION AND SUSTAINABLE DEVELOPMENT

Construction data from products and projects are sources of innovation and value creation

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OUR BUSINESS CHALLENGES

THE DIGITAL TRANSFORMATION OF BOUYGUES CONSTRUCTION PROJECT ACTIVITIES

Bouygues Construction launched in 2014 the B In Motion project

Implement BIM: Building Information Modeling

B In Motion

Data of buildings and structures

THE DIGITAL TRANSFORMATION OF BOUYGUES CONSTRUCTION PROJECT ACTIVITIES

Bouygues Construction launched in 2014 the B In Motion project

Implement BIM: Building Information Modeling

B In Motion

Digitise our projects activities

Data of buildings and structures

3D V+R i^i

Data of projects

DASSAULT SYSTEMES 3DEXPERIENCE

THE DIGITAL TRANSFORMATION OF BOUYGUES CONSTRUCTION
PROJECT ACTIVITIES

Use cases providing value to projects

REQUIREMENTS

ACTIVITIES AND EVENTS

BIM MODELS

DOCUMENTATION

THE DIGITAL TRANSFORMATION OF BOUYGUES CONSTRUCTION PROJECT ACTIVITIES

Use cases providing value to the company

Simplify & standardize current business process

LEAN

Massify purchasing activities

COST EFFICIENT

Provide a consolidated & transversal project overview to management

DASHBOARD

Provide access to other projects data to draw upon company collective intelligence

KNOWLEDGE SHARING

CONCLUSION

- **AN EXPERIMENTATION PHASE WITH REAL PROJECTS**

- **A MAJOR INNOVATIVE ADVENTURE : FIRST IN OUR INDUSTRY TO LAUNCH A PROGRAM OF THIS SIZE**

- **AN IMPORTANT EXPECTED VALUE**

TUNNEL LAB

MARIE-LUCE GODINOT

EVP DIGITAL TRANSFORMATION, INNOVATION AND SUSTAINABLE DEVELOPMENT

TWO CHALLENGES

- **IMPROVE SAFETY**
- **INCREASE PRODUCTIVITY**

tunnel lab

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DATA COLLECTION ON A WORKSITE

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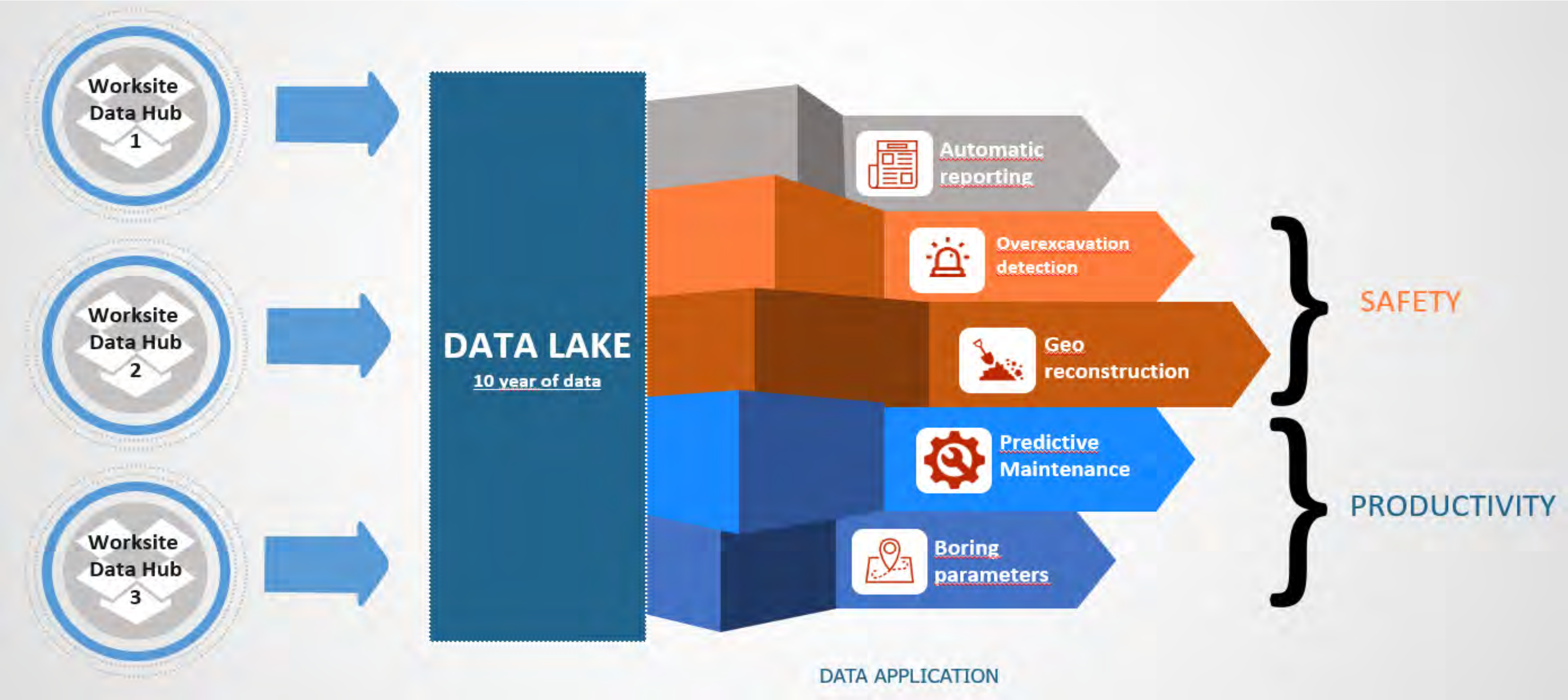
POWERFUL DATA PLATFORM LEADS TO NEW APPLICATIONS



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FACTS

More than 10 Data Scientist

Tunnel Lab + Data Lab

More than 8 Terabytes

Raw Data

More than 10 computing nodes

Processing power

DATA ANALYSIS – USE CASE

CREATE A DECISION MAKING TOOL FOR PRODUCTION CREWS BASED ON MACHINE DATA

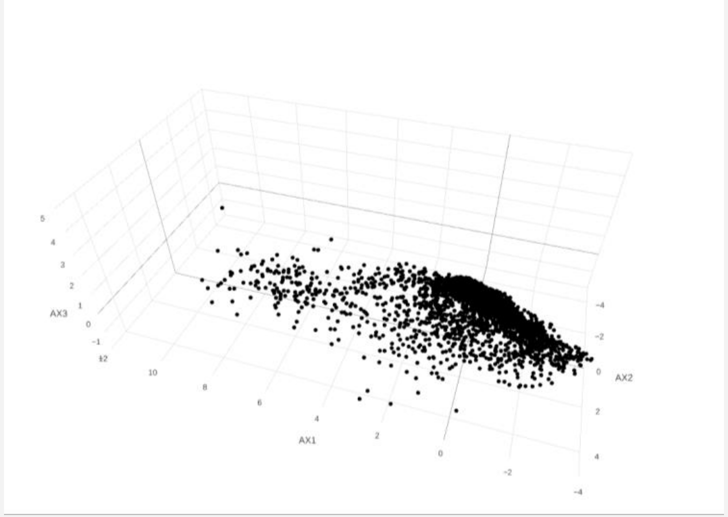
GOAL & TARGET

- **GOAL**
  - Prescribe appropriate boring parameters to the production crew depending on soil and machine configuration in real time
- **TARGET**
  - Improve safety
  - Reduce risk of over excavations or cavities
  - Reduce waiting time
  - Improve equipment availability time
  - Increase productivity

DATA ANALYSIS (1/3)

1

Analysis over 50 variables sampled at 1hz from Tunnel Boring Machine regarding soil and excavation



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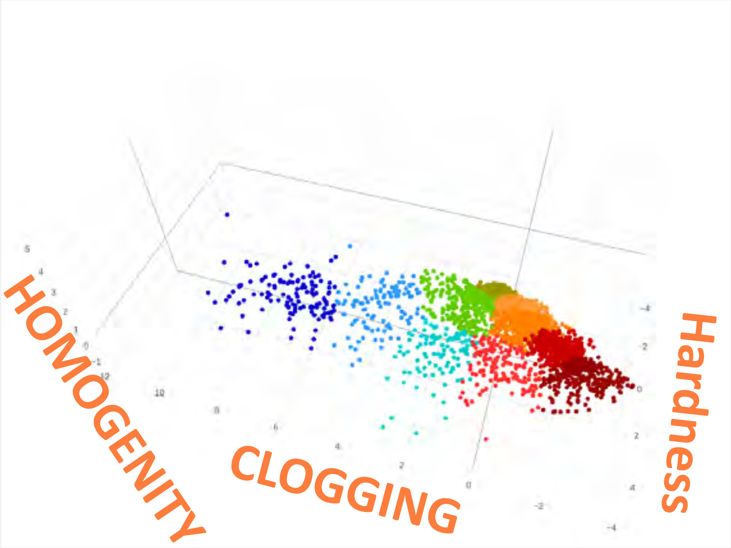
DATA ANALYSIS (2/3)

2

Create a soil / machine interaction classification



- Clogging +++
- Clogging ++
- Clogging +
- Soft-- Clogging +
- Soft - Clogging +
- Soft -
- Soft +
- Hard +
- Hard ++
- Hard +++

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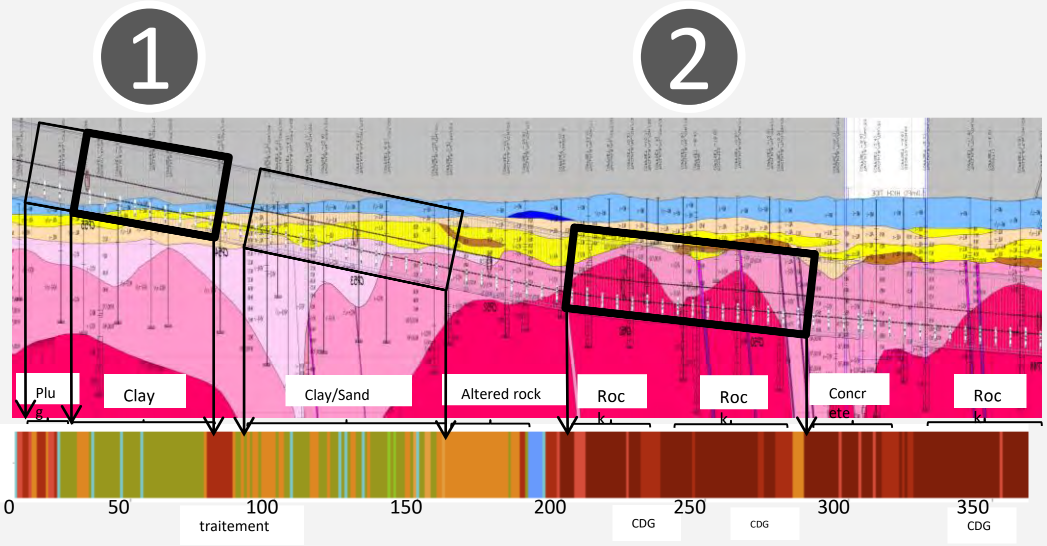
DATA ANALYSIS (3/3)

Classification robustness checking



- Clogging +++
- Clogging ++
- Clogging +
- Soft--
Clogging +
- Soft -
Clogging +
- Soft -
- Soft +
- Hard +
- Hard ++
- Hard +++

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MACHINE LEARNING ON DIFFERENT WORKSITES

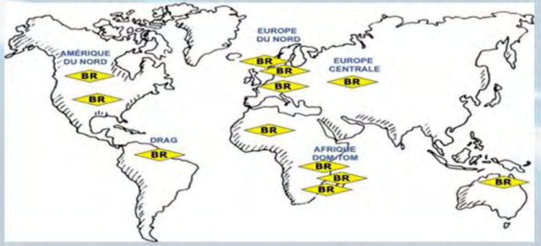
BIM AT COLAS

COLAS

WE OPEN THE WAY

MAUD GUIZOL

BIM BY COLAS



GOVERNANCE

TRAINING

INNOVATION

bimbyco

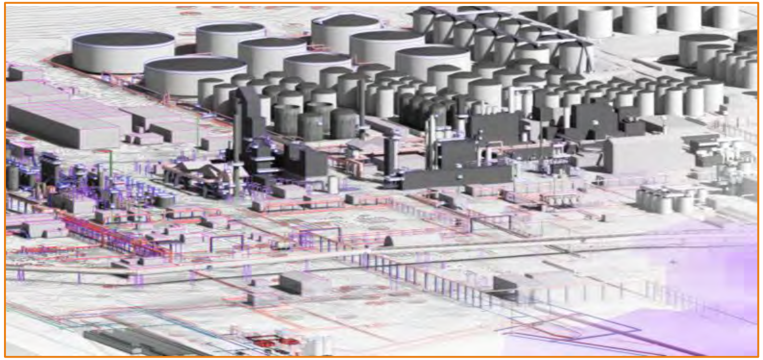
Building Information Modeling by Colas

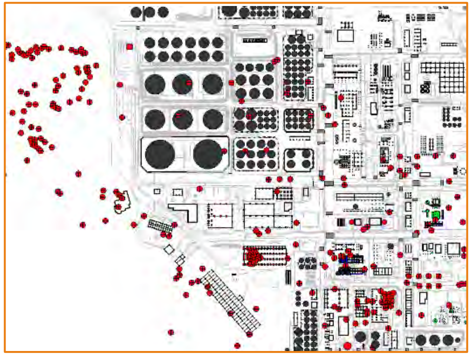
TECHNICAL ASSISTANCE

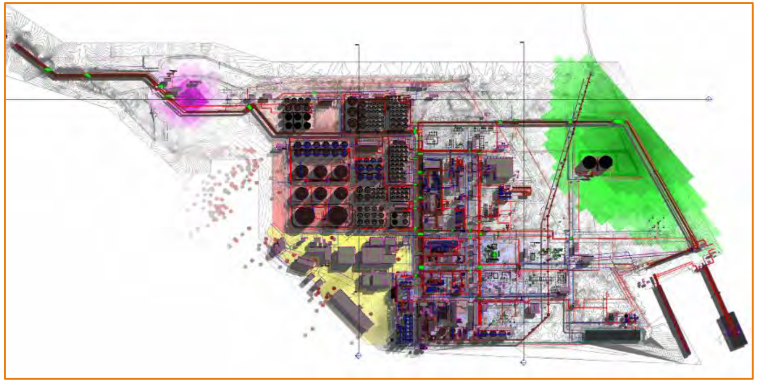
SOLUTIONS INTEGRATION

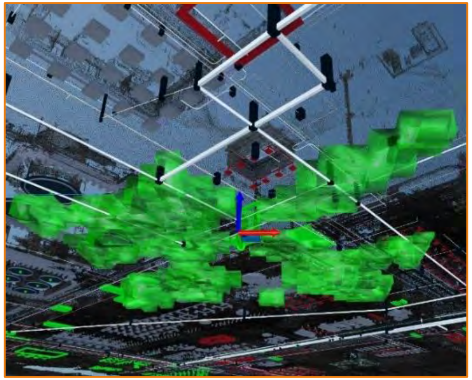
PRODUCTION

DUNKERQUE REFINERY SITE









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DIGITAL TRANSFORMATION

NATHALIE WATINE,
EVP, DIGITAL TRANSFORMATION & HR

Ginko – Bordeaux - France

DIGITAL TRANSFORMATION: RAPIDLY CHANGING THE PROPERTY ACTIVITY

Very fast pace

400 start-ups created in the property sector in the last 4 years

Half are less than 2 years old

20 billion USD of investments expected in 2020

Split by technology

Source: KMPG Real Estech, first survey of real estate start-ups in France

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BOUYGUES IMMOBILIER IS STEPPING UP ITS DIGITAL TRANSFORMATION

Preparing for change and creating new businesses

Digitising business processes

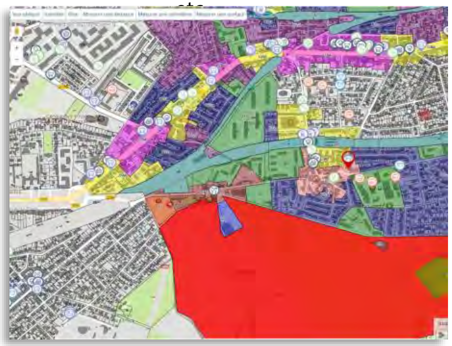
Augmented customer and employee experience

Enhancing culture, expertise and soft skills

USING DATA AND BIGDATA TO FIND LAND LOTS

Faster and more reliable land identification and valuation

Zoning regulations, transportation, minutes of meetings, etc.



- **STRONG PARTNERSHIPS TO OPTIMIZE DATA**

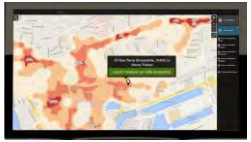
SPALLIAN
SMART IDEAS FOR BIG DATA

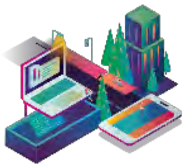
ORUS

mygeomarket
LOGICIELS & TECHNOLOGIES GEOMARKETING

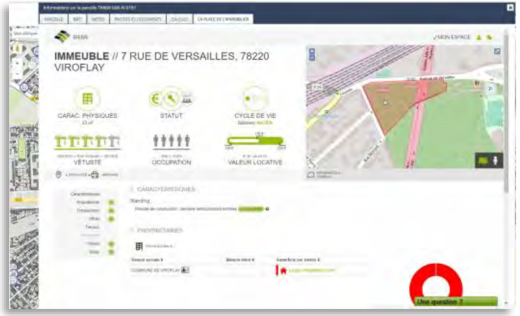
PlaCE del'IMMOBILIER PRO

- **INNOVATIVE SOLUTIONS FOR OUR BUSINESSES**





Identification of value-added plots, appointments planning, prospecting, etc.



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DATA AND BIGDATA, FOR MORE EFFICIENT MARKETING

DATA LAB_

Using data (Private & Open Data) and **creating a Data Lab:** analysis, statistics, algorithms, projection, etc.

Targets for marketing campaigns

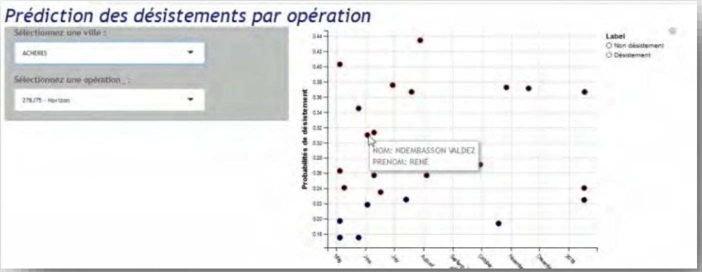
Use data from mobile phone base stations to identify catchment areas by flow analysis

Analyze this data to:

- Optimize the allocation of **advertising resources**
- Implement **targeted prospection**

Ranking of prospects and reservations

Statistical analysis of cancellations to **score customer reservations,** identify "uncertain" reservations and to **adjust marketing policy**



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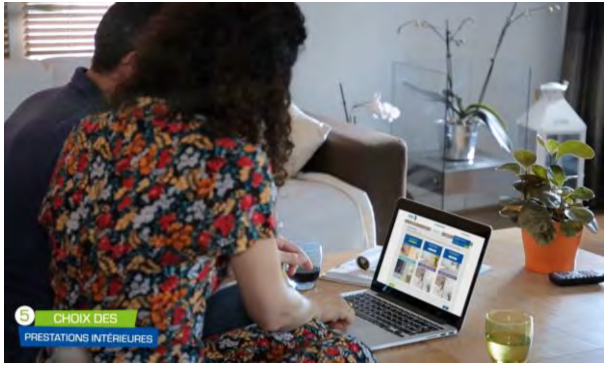
AN EVEN BETTER CUSTOMER EXPERIENCE

DIGITAL, AN OPPORTUNITY TO TRANSFORM THE CUSTOMER EXPERIENCE

- Visualize and conceive
- Customize, configure and implement on-line

7,500 LOTS CAN BE CONFIGURED ON-LINE IN 2D OR 3D



PERSONALIZED CUSTOMER RELATIONS ENHANCED BY DIGITAL

- **PERSONALIZED PURCHASING PROCESS, FROM RESERVATION TO HANDOVER, WITH DIGITAL TOOLS AND SUPPORT**

  - Electronic contract and paperwork
  - Online appointments (options, move-in inspection, pre-handover, handover, etc.)
  - Chatbot
  - Information on worksites
  - First digital visits recorded and analyzed automatically by datamining

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ULTRA CUSTOMIZATION: CO-DESIGN PLATFORM

From commercial offers to personalized responses to customer enquiries by combining BigData and BIM

Marketing lots

Designing developments

Finding **land**

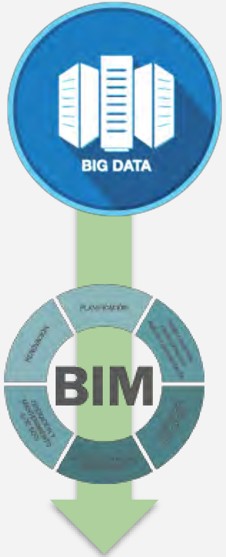
Demand

Supply

Finding **customers**

Land opportunities

Co-designing
developments



A new customer experience that goes beyond personalization (configurator, Flexom): co-designing customers' apartments, houses and living spaces

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NEW USES IN THE HOME

BOUYGUES

Q&A


Low-carbon construction
Eco-neighbourhood construction
Soft mobility and smart roads
Urban services
BOUYGUES
COLAS
TF1
Bouygues Immobilier
Mobilité douce - Services à la ville
Rendre la ville plus sobre et plus accueillante
Objets connectés, services de conciergerie
- Mobilier urbain connecté
- Objets connectés
- Parkings connectés
- Lampadaires intelligents
- Conciergerie

CONCLUSION

PHILIPPE MARIEN

DEPUTY CEO

Departmental road 177 Ille et Vilaine – France

WE ARE IN A LONG PERIOD OF HIGH DEMAND AT WORLWIDE LEVEL

4 Megatrends

Urbanization & Population growth

Climate change

Digital revolution

Changing user behavior

Large infrastructure plans in mature countries

Strong need for renewal and maintenance

Infrastructure, roads, districts, buildings, industry

EVOLUTION OF THE CONSTRUCTION SECTOR LEADS TO HIGHER ENTRY BARRIERS AND LESS CYCLICALITY

1. POPULATION GROWTH AND URBANISATION

2. CLIMATE CHANGE

3. DIGITAL TRANSFORMATION

4. CHANGING USER BEHAVIOUR

HIGHER DEMAND FOR

- **More complex** and **sophisticated** projects
- Offers with **enhanced services**
- **Integrated** offers
- **Maintenance**

- **Bigger** projects requiring **more expertise**
- **Longer** projects
- **More recurring** businesses

HIGHER ENTRY BARRIERS

LESS CYCLICALITY

BETTER SUSTAINABILITY OF MARGIN OVER THE LONG TERM

HIGH CASH GENERATION

A KEY OPPORTUNITY FOR THE GROUP'S CONSTRUCTION BUSINESSES

DEVELOPER

BUILDER

OPERATOR

- **OUR POSITIONING AND STRENGTHS BRING US STRONG COMPETITIVE ADVANTAGES**
  - Ability to realize **complex and sophisticated projects**
  - Specific knowhow in **sustainable construction**
  - **Full-service solutions** offering the best to customers at **each step of the value chain**
  - Knowhow to **manage a large ecosystem of partners** of different sizes
  - **Strategic development** on **high growth markets**: Energy and Services, urban development, eco-neighborhoods, smart cities, smart roads

➔ **Bouygues is well positioned to maintain its leadership and keep the direct relationship with the client**

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CONCLUSION

- We have entered a **long period of high demand** at **worlwide level**
- The **evolution of the construction market** leads to **high entry barriers** and **lower cyclicality** and thus to a **better sustainability of margin**
- Bouygues’ **construction businesses positioning** and **strengths** bring us **strong competitive advantages** within that market environment

Yves Saint Laurent Museum - Morocco