## AGENDA

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>8.00</td>
<td><strong>COFFEE AND DEMOS</strong></td>
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<tr>
<td>8.30</td>
<td><strong>WELCOME &amp; INTRODUCTION</strong></td>
<td>O. Roussat, Deputy CEO, Bouygues</td>
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<tr>
<td>8.40</td>
<td><strong>CONSTRUCTION BUSINESSES’ STRATEGY</strong></td>
<td><strong>BOUYGUES CONSTRUCTION</strong></td>
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<tr>
<td>9.00</td>
<td><strong>BOUYGUES IMMOBILIER</strong></td>
<td>F. Bertiére, Chairman &amp; CEO</td>
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<tr>
<td>9.20</td>
<td><strong>COLAS</strong></td>
<td>H. Le Bouc, Chairman &amp; CEO</td>
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<tr>
<td>9.45</td>
<td><strong>MAXIMIZE THE VALUE OF INDUSTRIAL ASSETS</strong></td>
<td><strong>BITUMEN AND QUARRIES AT COLAS</strong></td>
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<tr>
<td>10.05</td>
<td><strong>Q&amp;A</strong></td>
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<tr>
<td>10.20</td>
<td><strong>COFFEE BREAK AND DEMOS</strong></td>
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<td>10.30</td>
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<td>11.00</td>
<td><strong>SMART CITY</strong></td>
<td>F. Pitti, Director Prospective &amp; Strategic Marketing, Bouygues</td>
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<td>11.05</td>
<td><strong>Q&amp;A</strong></td>
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<td>11.15</td>
<td><strong>SMART MOBILITY – SMART ROAD</strong></td>
<td>F. Gardes, EVP, International, Colas</td>
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<td>11.50</td>
<td><strong>INNOVATION IN THE CONSTRUCTION BUSINESSES</strong></td>
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<tr>
<td>12.00</td>
<td><strong>Q&amp;A</strong></td>
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<td>12.30</td>
<td><strong>CONCLUSION</strong></td>
<td>P. Marien, Deputy CEO, Bouygues</td>
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<tr>
<td>12.45</td>
<td><strong>COCKTAIL AND DEMOS</strong></td>
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TODAY’S SPEAKERS

Olivier Roussat
Group deputy CEO

Philippe Marien
Group deputy CEO

Hervé Le Bouc
Chairman & CEO, Colas

François Bertièrè
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

OLIVIER ROUSSAT
DEPUTY CEO
A MAJOR PLAYER IN FRANCE AND INTERNATIONAL MARKETS

3 BUSINESS SEGMENTS

CONSTRUCTION BUSINESSES’ KEY FIGURES
at 31 December 2017

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

#6 Worldwide

(a) ENR The top 250 international contractors, August 2018 (excluding petroleum)
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
104,500 TALENTED AND COMMITTED EMPLOYEES

PEOPLE ARE OUR MOST IMPORTANT RESOURCE

RESPECT

CREATIVITY

EMPOWERMENT

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)
STRONG AND SELECTIVE INTERNATIONAL PRESENCE

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

North America
- $1,000bn Trump Plan: 2016-2026
- $305bn Fast Act: 2016-2020

Northern and Central Europe
- $20bn Trudeau Plan 2016-2026
- $43bn High Speed 2 2016-2033

Middle-East
- €33bn European Structural and Investment Fund 2014-2020

Asia and Australia
- €70bn Building Australia 2013-2021

Construction businesses: regional sales as a proportion of total international sales in 2017

- Region classified A by Coface (low risk)
- Region classified B by Coface (medium to high risk)
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

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

DEVELOPER

BUILDER

OPERATOR
CONSTRUCTION BUSINESSES STRATEGY

PHILIPPE BONNAVE
CHAIRMAN & CEO

The Morpheus – Macao
CONTENTS

● WHO WE ARE

● STRATEGIC GUIDELINES

● STRATEGIC FOCUS IN OUR RESPECTIVE SECTORS

● PROSPECTS OF A NEW DIGITAL AREA
OUR SECTORS OF EXPERTISE
OUR SECTORS OF EXPERTISE

INFRASTRUCTURE

- Tramway - Reims, France
- Coastal Highway viaduct - Reunion Island
- Nuclear power plant - Flamanville, France
- Cable car - Brest, France
- Road infrastructure - Abidjan, Ivory Coast
- Raymond Garre Bridge - Lyon, France
- Construction and concession, Henri Kanon Bridge - Abidjan, Ivory Coast
- Installation of fibre optics - Oise department, France
OUR SECTORS OF EXPERTISE
OUR PEOPLE: HEALTH AND SAFETY OUR FIRST PRIORITY

47,350 employees

26% women & 74% men

WE’RE ALL BOUYGUES CONSTRUCTION
A GLOBAL CONSTRUCTION GROUP POSITIONED IN EVERY STEP OF THE CONSTRUCTION VALUE CHAIN

A RESPONSIBLE AND COMMITTED LEADER IN SUSTAINABLE CONSTRUCTION
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**
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**
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

### Countries with an established presence with revenues > €300m

<table>
<thead>
<tr>
<th>Region</th>
<th>2016</th>
<th>2017*</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRANCE (excl. France)</td>
<td>€0.8bn</td>
<td></td>
</tr>
<tr>
<td>EUROPE</td>
<td>€1.0bn</td>
<td>€1.2bn</td>
</tr>
<tr>
<td>ASIA &amp; OCEANIA</td>
<td>€0.5bn</td>
<td>€0.8bn</td>
</tr>
<tr>
<td>AFRICA &amp; ME</td>
<td>€0.4bn</td>
<td>€0.3bn</td>
</tr>
</tbody>
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*Incl. FY impact of Alpiq ES & AW Edwards

<table>
<thead>
<tr>
<th>Region</th>
<th>Share in 2017 turnover</th>
<th>Long-established presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMERICAS</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>FRANCE</td>
<td>47%</td>
<td></td>
</tr>
<tr>
<td>EUROPE</td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td>ASIA &amp; OCEANIA</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>AFRICA &amp; ME</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>X%</td>
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</table>

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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
PURSUE THE REBALANCING OF OUR ACTIVITIES TOWARDS ENERGIES & SERVICES

Global turnover

- 2012:
  - Building: 68%
  - Civil Works: 17%
  - Energies & Services: 14%

Global turnover\textsuperscript{a}

- 2017:
  - Building: 48%
  - Civil Works: 23%
  - Energies & Services: 29%

(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
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
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**
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.
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
CONSTRUCTION BUSINESSES STRATEGY

FRANÇOIS BERTIERE, CHAIRMAN & CEO
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

<table>
<thead>
<tr>
<th>Revenues</th>
<th>Reservations</th>
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<tr>
<td>€2.7bn</td>
<td>€3.1bn</td>
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<table>
<thead>
<tr>
<th>Housing Units Reserved</th>
<th>Nextdoor\textsuperscript{b} Sites</th>
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<tr>
<td>15,199</td>
<td>11</td>
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<table>
<thead>
<tr>
<th>Green Office\textsuperscript{®} positive-energy office buildings</th>
<th>UrbanEra</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>1,150,000 Sqm in progress</td>
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\textsuperscript{a} « Creator of better living »
\textsuperscript{b} Collaborative workspaces offer
BOUYGUES IMMOBILIER OPERATES ON THE ENTIRE REAL ESTATE VALUE CHAIN, FROM BUILDING TO NEIGHBORHOOD
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 PRIORITIZES 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

1. Leader in customer experience, focused on usage
2. From single buildings to neighborhoods
3. Digital transformation

1. Demographic Pressure
2. Urbanization and Metropolization
3. Collaborative Economy
4. Energy Transition
5. Digital
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**
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

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

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

[Graph showing trend in average housing price (index base 100 in 2007) for France, Spain, and UK from 2007 to 2017.]
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**

![French residential market chart](chart.png)

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)**
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
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% 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

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(a) Source: APUR

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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

Take-up of offices in the Paris region (in m sqm)

- 1.8
- 2.2
- 2.3
- 2.4
- 2.6

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

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
1. VALUING INDUSTRIAL ACTIVITIES

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

3. CONTINUING TARGETED INTERNATIONAL DEVELOPMENT

4. ACCELERATING THE DIGITAL TRANSFORMATION
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

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

- 1 refinery
- 125 emulsion plants
- 568 asphalt plants
- Storage and logistics sites on 5 continents
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
Colas makes roughly 50% of its revenue outside France - 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.
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 »
MAXIMIZE THE VALUE OF INDUSTRIAL ASSETS

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

- Securing supply
- Guaranteeing quality products
- Stabilizing profit margins
- Increasing profitability
- Improving competitive edge

Guaranteeing quality products

Securing supply

Stabilizing profit margins

Increasing profitability

Improving competitive edge
MAXIMIZE THE VALUE OF INDUSTRIAL ASSETS

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
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

- **Canada - USA**
  - McAsphalt
  - Third-party sales ~700 kt

- **Southeast Asia**
  - Tipco Asphalt
  - Third-party sales ~1,600 kt

- **Australia**
  - SAMI
  - Third-party sales ~200 kt
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
BULK STORAGE - 300,000 TONS ACROSS CANADA
McASPHALT SUPPLY NETWORK
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

QUARRIES
THIERRY MÉLINE
EXECUTIVE VICE-PRESIDENT, FRANCE - RAILWAYS
QUARRIES LOCATED AS CLOSE AS POSSIBLE TO CONSTRUCTION ACTIVITIES

- North America: 392 sites, production 2017: 26 MT (*)
- France: 258 sites, production 2017: 43 MT (*)
- Rest of the World: 91 sites, production 2017: 27 MT (*)
- Group Total: 741 sites, production 2017: 96 MT (*)

(*) MT = million tons
COLAS CONTINUES TO GROW IN QUARRIES

MAIN ACQUISITIONS OVER THE LAST THREE YEARS

- Graymont
- NY state
- Quebec
- Miller
- Aggregates
- Pays de Loire
- La Compagnie
- Meloche
- Carayon
- Languedoc
- Malet (50%)
- UAE
- Oman
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
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

<table>
<thead>
<tr>
<th>Zone</th>
<th>Authorized reserves (in Mt)</th>
<th>Year of production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Americas</td>
<td>1,300 Mt</td>
<td>50 years</td>
</tr>
<tr>
<td>Rest of the World</td>
<td>600 Mt</td>
<td>23 years</td>
</tr>
<tr>
<td>France</td>
<td>1,000 Mt</td>
<td>23 years</td>
</tr>
</tbody>
</table>
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
  - Recycling of materials
  - Storage activities
INITIATIVES TO PROTECT THE ENVIRONMENT AND BOLSTER COMMUNICATION WITH THE PUBLIC AROUND THE WORLD
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
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
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

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

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

- **OTHER PROPERTY DEVELOPERS**

- **SOCIAL LANDLORDS**

Concession contracts

UrbanEra
Bouygues Immobilier

Reselling land acquisition costs to property developers
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
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
FORT D’ISSY, AN ICONIC ECO-NEIGHBORHOOD

- 95% 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

(a) Opinion Way survey conducted in 2015
GINKO, SPEARHEAD OF “BORDEAUX 2030”

- **76%** 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
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
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
OUR INCLUSIVE APPROACH TO DISTRICT DEVELOPMENT

- IMPROVE OUR VALUE PROPOSITION BY OFFERING AN INCREASINGLY INCLUSIVE APPROACH
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)
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
“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 cooperatives

● CONSTRUCTION VALUE
  ■ CHF600m

→ OTHER PROJECTS: CUMULATIVE VALUE OF PROJECTS IN PIPELINE > CHF 2.5 BILLION
IN DEMAND FOR SMARTER CITIES
USER-CENTRIC EXPECTATIONS
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
A GLOBAL ECOSYSTEM
EUREKA - LYON - PARTNERSHIPS

Consortium Industriel

16ème Comité de suivi
12 Octobre 2017
SMART CITY IN DIJON

Single control center available 24/7 year round

- 148 traffic light intersections
- 34,000 street lamps (100% LED)
- Geo-tracking of 205 vehicles
- Automatic bollards
- Safety of 220 public buildings
- 142 km of optical fiber
- Wi-Fi hot spots
- 220 CCTV
- Displays
- 1,600 smart car parking spaces
- Town hall

Companies
Citizens
Representatives and public services
END USER VIEW

Stake: + 
Social

Stake: + 
Environmental

Stake: + 
Connected

Types of places in the neighborhood

Quality of life and ecocitizenship

Smart governance

Stakeholders of 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

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

- Over 30 trial sites around the world: North America, Europe, Japan
- Numerous use cases have been identified
- 2019: beginning of commercial launch phase
SMART ROAD - FLOWELL: FOR DYNAMIC, MULTI-MODAL ROADS

- Characteristics
  - Luminous marking
  - Dynamic marking
  - Programmable marking

- Use cases
  - Crosswalks
  - Sharing infrastructure
  - 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

Activator of mobility services
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
& 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
Soft mobility services
Connected services
(conciergerie, logistics, packages,…)
### BENEFITS AND STAKES FOR COLAS

<table>
<thead>
<tr>
<th>Duration</th>
<th>Benefits and Stakes</th>
</tr>
</thead>
</table>
| 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
INNOVATION IN THE CONSTRUCTION BUSINESS

CHRISTOPHE LIÉNARD
GROUP CHIEF INNOVATION OFFICER
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
INNOVATION CULTURE AND MANAGEMENT

A ROBUST GROUP-WIDE R&D POLICY

A DIGITAL TRANSFORMATION PROCESS

AN INNOVATION-FRIENDLY ECO-ECOSYSTEM

ACTIVE MONITORING OF TECHNOLOGICAL ADVANCES WORLDWIDE

THINK TANKS AND ACADEMIC INSTITUTIONS

OPEN INNOVATION AND STARTUPS

THE "INNOVATE LIKE A STARTUP" PROGRAM AND ITS ACTION TANK

ACTIVE MONITORING OF TECHNOLOGICAL ADVANCES WORLDWIDE

THINK TANKS AND ACADEMIC INSTITUTIONS

OPEN INNOVATION AND STARTUPS

AN INNOVATION-FRIENDLY ECO-ECOSYSTEM

A DIGITAL TRANSFORMATION PROCESS

A ROBUST GROUP-WIDE R&D POLICY

INNOVATION CULTURE AND MANAGEMENT

CIB Développement

Construction Venture

One Venture
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
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 months 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
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
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.
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.
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.
Construction data from products and projects are sources of innovation and value creation.
OUR BUSINESS CHALLENGES

- Improve our efficiency
- Strengthen our competitiveness
- Better manage the growing complexity of our projects
- Integrate the digital revolution into our businesses
Bouygues Construction launched in 2014 the B In Motion project

Implement BIM: Building Information Modeling

Data of buildings and structures
Bouygues Construction launched in 2014 the B In Motion project to implement BIM (Building Information Modeling) and digitise our projects activities.

- Data of buildings and structures
- Data of projects
THE DIGITAL TRANSFORMATION OF BOUYGUES CONSTRUCTION
PROJECT ACTIVITIES

Use cases providing value to projects

CLIENTS
PROJECTS
BUILDINGS and STRUCTURES
EXCHANGES

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
- Massify purchasing activities
- Provide a consolidated & transversal project overview to management
- Provide access to other projects data to draw upon company collective intelligence

LEAN  COST EFFICIENT  DASHBOARD  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
DATA COLLECTION ON A WORKSITE

Access control
Shift reports
Cranes

Trucks
STP
TBM

Worksite
Data Hub

Energy
Geotechnical investigation
POWERFUL DATA PLATFORM LEADS TO NEW APPLICATIONS

DATA LAKE
10 year of data

---

Worksite Data Hub 1
Worksite Data Hub 2
Worksite Data Hub 3

Automatic reporting
Overexcavation detection
Geo reconstruction
Predictive Maintenance
Boring parameters

SAFETY
PRODUCTIVITY
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
1

Analysis over 50 variables sampled at 1hz from Tunnel Boring Machine regarding soil and excavation
Create a soil / machine interaction classification
DATA ANALYSIS (3/3)

Classification robustness checking

1

2

Class Diagram
MACHINE LEARNING ON DIFFERENT WORKSITES

DEPLOYEMENT:
CREATION OF A DECISION MAKING TOOL

Model Score on the Soil / Machine Interaction indicator

141
DUNKERQUE REFINERY SITE
DIGITAL TRANSFORMATION

NATHALIE WATINE, EVP, DIGITAL TRANSFORMATION & HR
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
BOUYGUES IMMOBILIER IS STEPPING UP ITS DIGITAL TRANSFORMATION

Preparing for change and creating new businesses

1. \#ADD BUSINESS
2. \#ADD EXPERIENCE
3. \#CHANGE HUMAN

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

● STRONG PARTNERSHIPS TO OPTIMIZE DATA

● INNOVATIVE SOLUTIONS FOR OUR BUSINESSES

Zoning regulations, transportation, minutes of meetings, etc.

Identification of value-added plots, appointments planning, prospecting, etc.
DATA AND BIGDATA, FOR MORE EFFICIENT MARKETING

**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**.
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
ULTRA CUSTOMIZATION: CO-DESIGN PLATFORM

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

Marketing lots

Demand

Supply

Designing developments

Finding land

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
NEW USES IN THE HOME

MON LOGEMENT
100% CONNECTÉ

#MaVieEnMieux
Low-carbon construction
Eco-neighbourhood construction
Soft mobility and smart roads
Urban services
WE ARE IN A LONG PERIOD OF HIGH DEMAND AT WORLDWIDE 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

BETTER SUSTAINABILITY OF MARGIN OVER THE LONG TERM

HIGH CASH GENERATION

HIGHER ENTRY BARRIERS

LESS CYCLICALITY

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

More complex and sophisticated projects
Offers with enhanced services
Integrated offers
Maintenance
A KEY OPPORTUNITY FOR THE GROUP’S CONSTRUCTION BUSINESSES

- 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
CONCLUSION

- We have entered a long period of high demand at worldwide 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.
Thank you for attending