Leveraging new technologies

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Senior Vice President
Research & Development
Leading the way on innovation

**Industrial digital**
- Robotics
- Artificial Intelligence with Google
- Refinery 4.0
- Smart rooms

**Digital marketing**
- Digital mobility
- Blockchain
- Smart electricity

**Open Innovation**
- Joint initiatives on carbon capture
- With start-ups and funds
Industrial digital
Robotics
Contributing to safety and targeting cost reductions of 20%

**Inspection robot**
- Carry out inspections and detect equipment failures

**Autonomous underwater vehicle**
- Autonomous pipeline inspection with no surface support

**Submarine robot**
- Autonomous glider technology for low cost ocean exploration

**Seismic drone**
- High density and high quality seismic data acquisition
Artificial Intelligence to improve efficiency in Geoscience
Total & Google join forces

30 experts from Total & Google at Sunnyvale, California

～400 M$/y budget for seismic acquisition & interpretation/studies

Goal is to accelerate data treatment
• Shifting the workload to high value tasks

Potential to expand the partnership to other domains

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<th>Today</th>
<th>Target</th>
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<tbody>
<tr>
<td></td>
<td>50% High Value</td>
<td>80% High Value</td>
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<tr>
<td>Seismic interpretation</td>
<td>Aided interpretation</td>
<td>Cognitive interpretation</td>
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<td>50% Routine</td>
<td>20% Routine</td>
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<td></td>
<td>Information extraction</td>
<td>Interactive assistant</td>
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<td>Information research</td>
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A.I. changes the workload

| Information research  |                                           |
|                       | 50% High Value                            |

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Refinery 4.0
Leveraging digital for efficiency

Digital innovation center in India
• Together with TATA Consultancy services, leader in India
• 30 experts mobilized
• Pilot project in Donges refinery

Ongoing initiatives in other domains

Industrial Internet of things
Cloud technology

Advanced Production Management System

- Improved availability
- Margin optimization
- Maintenance efficiency
- Energy efficiency

Digital twin
Real time monitoring & reporting
Optimization
Smart rooms
Reducing costs through collaboration and technology

Collaborative technological environments
- Remote control and monitoring
- Improved access to data
- Quicker problem solving
- Enhanced troubleshooting services

25 Smart rooms deployed across the Group
- Main assets (Angola, U.K., Nigeria)
- Technology centers for rotating equipment, drilling operations and metering

2018 Investor Day – Leveraging new technologies
Digital mobility
Transforming our transportation business

**Mobile payment via Total wallet**
- 1,000 stations in Europe by end 2018

**Fleet management system**
- Acquisition of start-up WayKonect

**B2B Internet of Things** low cost solutions
Blockchain
Using blockchain to improve trading efficiency

Blockchain platform for **trading**

**Joint initiative** with 9 major European energy companies

Initial trading cost gain: **-20%**

**Opportunities in other domains**
- CO2 tracking, green electricity origin tracking, customer data management...
Smart electricity
Direct Energie, digital expertise to build a profitable low carbon business

Innovative services simplifying customer’s life

Low price digital model
• Only 320 employees for ~3 M customers
• Efficient cost of acquisition of a new customer at < 80 €

Established reputation through quality service

Diversity of acquisition channels, with digital marketing in-house expertise (web, social media)

Transforming client relationship through digital
Carbon capture
Accelerate deployment of CCUS technologies through open innovation

**Northern Lights in Norway**
- First integrated industrial-scale project
- FID 2020/21 - start up 2023/24

**Chemical looping combustion**
- Financial support from China & EU
- 3 MW demonstration unit planned

**Research with Stanford & Lawrence Livermore National Laboratory**
- Enable CO2 storage at gigaton scale
- 20 M$ over 5 yrs

Targeting **10% of R&D budget** on CCUS
Energy start-ups & funds
Pushing the boundaries of innovation

Open innovation across regions and sectors

New focus on start-ups in China
• Largest innovative market in the mobility sector and new energies
• 75 M$ commitment

Innovation across energy sectors

- Mobility, 16%
- Energy management, 20%
- Energy access, 1%
- CO2, 26%
- H2, 3%
- Methane, 10%
- O&G, 3%
- Digital, 7%
- Green chemistry, 3%
- Cleantech, 10%

~200 M$

* % based on book values in start-ups & commitment in funds
Financial information by business segment is reported in accordance with the internal reporting system and shows internal segment information that is used to manage and measure the performance of TOTAL. In addition to IFRS measures, certain alternative performance indicators are presented, such as performance indicators excluding the adjustment items described below (adjusted operating income, adjusted net operating income, adjusted net income), return on equity (ROE), return on average capital employed (ROACE) and gearing ratio. These indicators are meant to facilitate the analysis of the financial performance of TOTAL and the comparison of income between periods. They allow investors to track the measures used internally to manage and measure the performance of the Group. These adjustment items include:

(i) Special items
Due to their unusual nature or particular significance, certain transactions qualified as “special items” are excluded from the business segment figures. In general, special items relate to transactions that are significant, infrequent or unusual. However, in certain instances, transactions such as restructuring costs or asset disposals, which are not considered to be representative of the normal course of business, may be qualified as special items although they may have occurred within prior years or are likely to occur again within the coming years.

(ii) Inventory valuation effect
The adjusted results of the Refining & Chemicals and Marketing & Services segments are presented according to the replacement cost method. This method is used to assess the segments’ performance and facilitate the comparability of the segments’ performance with those of its competitors.

In the replacement cost method, which approximates the LIFO (Last-In, First-Out) method, the variation of inventory values in the statement of income is, depending on the nature of the inventory, determined using either the month-end price differentials between one period and another or the average prices of the period rather than the historical value.

The inventory valuation effect is the difference between the results according to the FIFO (First-In, First-Out) and the replacement cost.

(iii) Effect of changes in fair value
The effect of changes in fair value presented as an adjustment item reflects for some transactions differences between internal measures of performance used by TOTAL’s management and the accounting for these transactions under IFRS.

IFRS requires that trading inventories be recorded at their fair value using period-end spot prices. In order to best reflect the management of economic exposure through derivative transactions, internal indicators used to measure performance include valuations of trading inventories based on forward prices.

Furthermore, TOTAL, in its trading activities, enters into storage contracts, which future effects are recorded at fair value in Group’s internal economic performance. IFRS precludes recognition of this fair value effect.

The adjusted results (adjusted operating income, adjusted net operating income, adjusted net income) are defined as replacement cost results, adjusted for special items, excluding the effect of changes in fair value.

Euro amounts presented herein represent dollar amounts converted at the average euro-dollar (£-$) exchange rate for the applicable period and are not the result of financial statements prepared in euros.

This document also contains extra-financial performance indicators, including a carbon intensity indicator for TOTAL energy sales that measures the weighted average greenhouse gas emissions of energy products sold by TOTAL from their production in TOTAL facilities to their end use by TOTAL customers. This carbon intensity indicator covers, besides direct GHG emissions of TOTAL (scope 1), indirect GHG emissions (scopes 2 and 3) that TOTAL does not control (for the definitions of scopes 1, 2 and 3, refer to TOTAL’s Registration Document).

Cautionary Note to U.S. Investors – The SEC permits oil and gas companies, in their filings with the SEC, to separately disclose proved, probable and possible reserves that a company has determined in accordance with SEC rules. We may use certain terms in this presentation, such as resources, that the SEC’s guidelines strictly prohibit us from including in filings with the SEC. U.S. investors are urged to consider closely the disclosure in our Form 20-F, File N° 1-10888, available from us at 2, Place Jean Millier – Arche Nord Coupole/Renault - 92078 Paris-La Défense Cedex, France, or at our website: total.com. You can also obtain this form from the SEC by calling 1-800-SEC-0330 or on the SEC’s website: sec.gov.