

## Upcoming Research\*

State of the Market Report | Publication Date: October 2018

### Cannabusiness deep-dive: Opportunities, barriers, and bottlenecks for tech innovation

Cannabis is becoming a legitimate technology area, and money is flooding into the space. This report will unpack the opportunities for tech innovation relating to legal cannabis production - from agricultural production to processing into various consumables, to the medical implications for human health.

Agro Innovation, Consumer Choices in Food, Health, and Wellness, Food and Nutrition

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### Breaking Through Barriers to Industry 4.0

All the necessary tools and technologies of Industry 4.0 are available now, yet companies continue to struggle with strategy and adoption. What is holding it back? This report will take a firsthand look at barriers to success in Industry 4.0, and how clients can find a path to success within their respective industries.

Digital Transformation

State of the Market Report | Publication Date: November 2018

### Building a Circular Economy

The Circular Economy - converting waste such as spent biomass, foodwaste, and plastic waste into products with value - has seen significant innovation interest in recent times. However, the path towards circularity requires connecting multiple technologies including waste collection/sorting, and the conversion technologies themselves. This report aims to highlight and evaluate these enabling technologies, while also highlighting gaps in creating a circular economy.

Accelerating Materials Innovation

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### Digital Thread

Digital thread is a communication framework that connects traditionally siloed elements in manufacturing processes and provides an integrated view throughout the manufacturing lifecycle. It aims to digitalize every step from concept development, materials solution, and part & production design, to manufacturing and product lifecycle management. The resulting "digital twin" makes product development iteration faster, smarter, and cheaper. Software development plays a key role in the effort of putting digital thread together.

Accelerating Materials Innovation, Digital Transformation

State of the Market Report | Publication Date: November 2018

### Electronic Materials

Materials innovation is driving the next wave of electronic devices, from flexible displays to ubiquitous sensors. We will survey the electronic materials innovation landscape to understand what materials will enable these devices, and when the materials will be ready for market.

Accelerating Materials Innovation, Digital Transformation

State of the Market Report | Publication Date: November 2018

## Innovation Activity in 3D Printing Value Chain

There is increasing innovation activity in the 3D printing space. This report compares innovation at different parts of the value chain: materials, hardware, and software. Based on each material segment (polymer, composites, metals, ceramics, and others), this report aims to visualize the areas that see more innovation, and areas that need to be improved. Finally, it aims to identify which players can create the most value, and what that means for clients' strategies.

Accelerating Materials Innovation, Digital Transformation, Materials Design and Manufacturing

State of the Market Report | Publication Date: November 2018

## China Carbon Fiber

This report will explore and answer the questions: What are the current innovation and commercialization activities of Chinese start-ups and large corporations? What are the challenges and opportunities the Chinese carbon fiber companies pose to Lux clients? What is the future outlook of carbon fiber in China?

Accelerating Materials Innovation, Advanced Materials

State of the Market Report | Publication Date: November 2018

## Carbon Nanomaterials Update

This report will update our Carbon Nanomaterial coverage. To complement last year's production-focused report, this report will focus more on applications. It will feature a detailed study of use cases and applications, case studies of industry players, a data driven analysis of applications, and updated Lux Innovation Grids.

Accelerating Materials Innovation, Advanced Materials

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## Innovations in Wave and Tidal Energy

Tidal and wave energy can deliver dispatchable power to the grid that is still renewable. As such, they may replace gas peakers and other backup facilities in the future. However, this technology is hard to deploy, mostly because of harsh mechanical conditions. This report lists the innovations in the space in order to assess its true potential.

Next Generation Power, Owning the Energy Transition

State of the Market Report | Publication Date: November 2018

## State of Innovation in Asia-Pacific

As the dynamics of the global innovation ecosystem continues to shift with the rise of China, interest in Asia-Pacific has never been greater. While historical powerhouses, such as Japan and Korea, continue to innovate at their reputable rates, China's national initiatives as well as the flow of their capital into the surrounding areas - Southeast Asia and India - will likely spur the rise of new innovation ecosystems. In this report we take a look at the key hotspots for innovation, identifying the major players in the powerhouses, as well as finding hidden gems in the less thought about countries.

Accelerating Materials Innovation, Consumer Choices in Food, Health, and Wellness, Digital Transformation, Owning the Energy Transition

State of the Market Report | Publication Date: November 2018

## The Digital Transformation of Energy

The digital transformation is affecting nearly every industry, and energy is no exception. In this report, weâ€™ll examine how digital technologies are making their mark on the energy industry today, identify hurdles yet to be overcome as companies begin to adopt digital technologies, and explore how the industry and players will change as the digital transformation takes hold.

Digital Transformation, Owning the Energy Transition

State of the Market Report | Publication Date: November 2018

## Smart Packaging

Technologies like printed electronics and RFID communication are maturing and enabling new features and capabilities in smart packaging which allows both business and consumers to interact with products in novel ways. In this report, we will look at the advances in smart packaging technologies, such as the ability to sense or measure an attribute of the product, the inner atmosphere of the package, or the shipping environment.

Consumer Choices in Food, Health, and Wellness, Consumer IoT, Digital Transformation, Industrial Internet of Things, Sensors

State of the Market Report | Publication Date: November 2018

## Genomics in agriculture

Big data in agriculture was initially synonymous with "precision agriculture," however the rise of genomics and other informatics tools are fundamentally changing the roles DNA and data play in agriculture. (This report will be the first of a "Genomics in X" series, building on the "Power of DNA" report/webinar)

Agro Innovation, Consumer Choices in Food, Health, and Wellness, Digital Transformation, Industrial Big Data and Analytics

State of the Market Report | Publication Date: November 2018

## Roadmap: Next Generation PV

This report will describe the economics and scenarios of deployment of three next generation solar PV technologies, while referring to the relevant Tech Pages for details on the technologies proper.

Next Generation Power, Owning the Energy Transition

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## APAC Oil and Gas Innovation Landscape

The demand for hydrocarbons is growing and is projected to be led by major Asian economies such as India and China. With the region largely driven by national oil companies, this report analyses the innovation landscape of Asian oil companies, how it differs from their IOC counterparts, and the potential opportunities the region offers to western oil companies as countries such as India begin to privatize its oil and gas market.Â

Owning the Energy Transition

State of the Market Report | Publication Date: December 2018

## Polymer Innovation

This report will develop a landscape of polymer innovation in terms of industry players, key technologies, and trends. It will also highlight unmet needs and emerging opportunities.

Accelerating Materials Innovation

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## CSI Large Company Report: Corning

In June 2018, Lux published a report rating 40 of the world's largest chemical and material companies on innovation effort and business performance using the Lux Competitive Benchmark (LCB). The company that scored highest on both Innovation Effort and Business Execution was the New York-based specialty glass and ceramics company Corning. This report will examine the role of tech innovation in the firm's business strategy and business operations.

Accelerating Materials Innovation, Corporate Strategic Intelligence: Chemicals and Materials

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## Monitoring and Control for Water Quality

Due to the size and complexity of water and wastewater systems and the premium instrument costs, the water industry has struggled to automate water quality monitoring. Meanwhile, increasing concerns over public health and irregularly but inexorably tightening regulations put utilities under pressure to ensure safe drinking water and wastewater discharge. Potential to improve plant performance and uptime also encourage more active adoption of advanced sensors among industrial operators. This report shows the interesting use cases for different water quality sensors across the water space.

Owning the Energy Transition, Water

State of the Market Report | Publication Date: December 2018

## Data Sharing

Effective data sharing has the potential to optimize industrial processes by gaining access to larger and/or adjacent data sets. However, the risk is sharing confidential data potentially with competitors. In this report, we will examine how to make the most of data sharing in your supply chain and potentially even with competitors, while mitigating the potential data security risks.

Digital Transformation, Industrial Internet of Things

State of the Market Report | Publication Date: December 2018

## Autonomous Vehicle Development in APAC

There has been an enormous amount of activity from Asia in autonomous vehicles. Korean giants (LG, Samsung) want to become premium Tier 1s. Japan wants commercial robotaxis by the 2020 Olympics, China wants to beat the U.S., and Singapore is interested in every space-saving, smart city related technology out there. In this report, we will analyze the autonomous vehicle innovation activity coming out of APAC.

Autonomous Systems 2.0, Consumer Choices in Food, Health, and Wellness, Consumer IoT, Digital Transformation

State of the Market Report | Publication Date: December 2018

## Smart Home

The smart home has largely fallen short of expectations to date, but new innovations like Amazon Alexa and the ecosystems they support, in addition to new technology and product development, are starting to make some of the hype into commercial reality. We evaluate the categories of smart home innovation to understand the landscape and products ready for market.

Consumer Choices in Food, Health, and Wellness, Consumer IoT, Digital Transformation

State of the Market Report | Publication Date: December 2018

## Food Value Chain CVC Comparison

Food companies have become more serious about their commitments to supporting start-up innovation efforts through the formation of numerous corporate VC groups - and their investments have been widely varied in scope. This report will assess the landscape of those funds, demonstrating the winning approaches.

Consumer Choices in Food, Health, and Wellness

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## Asia's Future City

Asia's rising urbanization presents numerous opportunities for bleeding edge technology deployment. However, at the same time, lack of traditional infrastructure and a variety of problems from traffic congestion and pollution, will only be amplified as droves of people migrate into cities. While most nations plan to address the immediate needs, several have futuristic aspirations for developing digital societies in a future city. In this report, we analyze the key technologies that will address the demands of Asia's future city as well as highlight the key innovators developing them domestically.

Digital Transformation, Owning the Energy Transition

State of the Market Report | Publication Date: December 2018

## 19 for 2019: Transformational Innovations Reshaping the World

We asked the Lux Research analyst team: "What innovations and technologies will you be following in 2019 that have the greatest potential to transform the world over the next decade?" We also investigated the same question using our Lux Intelligence Engine data platform. This report shows the top 19 transformational technologies reshaping the world, ranked and evaluated for their industry impact. We also highlight what changed from last year's list, what companies are best-positioned to lead based on their innovation in these 19 areas, and what the longer list - the Lux 299 - looks like.

Accelerating Materials Innovation, Consumer Choices in Food, Health, and Wellness, Digital Transformation, Owning the Energy Transition

State of the Market Report | Publication Date: December 2018

## How to Make Money in Energy Storage: Deriving Value through Stacking Revenue Streams

Batteries for grid energy storage are not yet economically viable, but this may change if it becomes possible to address multiple businesses at the same time. That is hard to do, however, because different applications require different battery characteristics. This report will investigate the technical and business potential for application stacking, and identify which locations in the grid are most favorable to tap into different revenue streams.

Energy Storage, Owning the Energy Transition

State of the Market Report | Publication Date: December 2018

## China's role in the future of energy storage

China's rapidly growing EV sales and concentration of battery production has impacted the world's emerging energy storage industry. This report analyzes China's focus on becoming vertically integrated leaders of the lithium-ion industry, their future activities in next-generation batteries, and implementing those batteries in automotive or stationary applications.

Energy Storage, Owning the Energy Transition

State of the Market Report | Publication Date: December 2018

## Strategic Ways to Monetize Data

Current approaches to data monetization are fairly straightforward and can be imitated by competitors, leading to a game of catch-up. This report will discuss a framework that companies can use to be strategic in monetizing data, thereby setting up competitive barriers for themselves.

Digital Transformation

State of the Market Report | Publication Date: December 2018

## The hurdles to microLED displays

In the past five years, there has been a significant uptick in investment in microLED technology. Apple, Foxconn-Sharp, Samsung, and Facebook have all recently acquired startups in this space, as microLED is considered a direct competitor to OLED, with its longer lifetime and more responsive performance. In this report, we will discuss the microLED landscape and its major barriers to entry.

Digital Transformation, Electronic User Interfaces

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## The State of Your Innovation in 2019

What keeps innovation executives up at night? Tapping into our proprietary data around the world's innovation executive peer group, we analyzed more than 100,000 recent technology-related searches run on our platform, 10,000 questions asked of our analysts, and 1,000 key innovation initiatives of leading companies (all aggregated and anonymized, of course). The results paint an accurate and insightful look into the state of the world's actual innovation trends going into 2019: What technologies are attracting the most interest, what strategic questions are proving hard to answer, what start-ups are attracting the most attention, and more.

Accelerating Materials Innovation, Consumer Choices in Food, Health, and Wellness, Digital Transformation, Owning the Energy Transition

State of the Market Report | Publication Date: Q1 2019

## Water Infrastructure in the Developing World

The main opportunity for innovation in water infrastructure exists in developing countries, because they are not hampered by difficult-to-replace legacy infrastructure. This report looks into the developments and describes what technologies are actually being deployed, and why.

Owning the Energy Transition, Water