



DISRUPTIVE TECHNOLOGY: POTENTIAL IMPACTS ON THE PROPERTY MARKETS

CONFIDENTIAL AND PROPRIETARY

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Transforming Real Estate Demand

Alternative Workplace Strategies



Activity-based
working

E-Commerce



Maximum selection
and convenience

Sharing Economy



Access over
ownership

Game changers, yes... but...

Potentially Far More Powerful Breakthroughs



Disruptive Technologies



If Taxi Drivers Are Worried About UBER...

Technology and France: A Volatile Mix



CHARLES PLATON/REUTERS

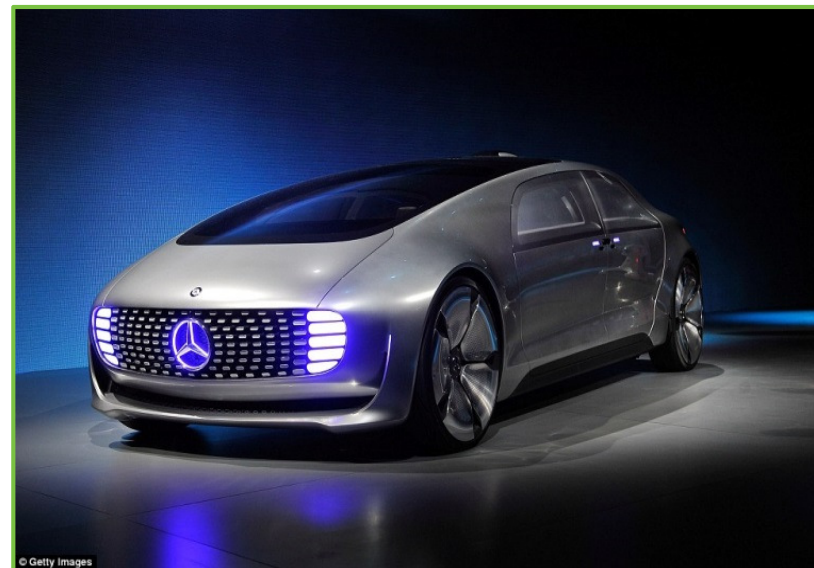
French riot police pushed a car overturned by taxi drivers protesting the Uber car service. 'Uber hurts us, so we are going to make them suffer just as much,' one protestor said.

Self-Driving Cars Could Spell the End of the Taxi Industry. Is That A Good Thing?

By Amy X. Wang



Autonomous Vehicles – They're Here



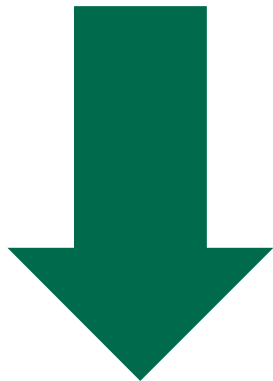
Autonomous Vehicles – Not Just For People



Autonomous Vehicles – Huge Potential Impacts

Traffic Accidents

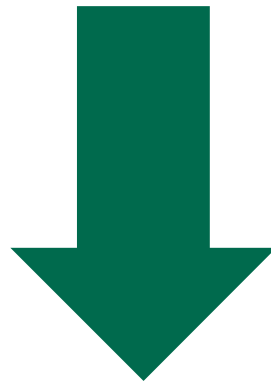
10.8 million



1.1 million

Commute Time/Energy

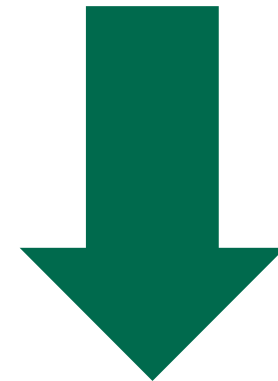
1.9B gallons



190M gallons

Vehicle Fleet

245 million



2.4 million

Source: PWC

Autonomous Vehicles – Potential Implications



Vehicle as real estate: Work/Play/Sleep

Accident/Congestion Free World



More Disposal Income?

Here's a Question



Will parking garages be obsolete?

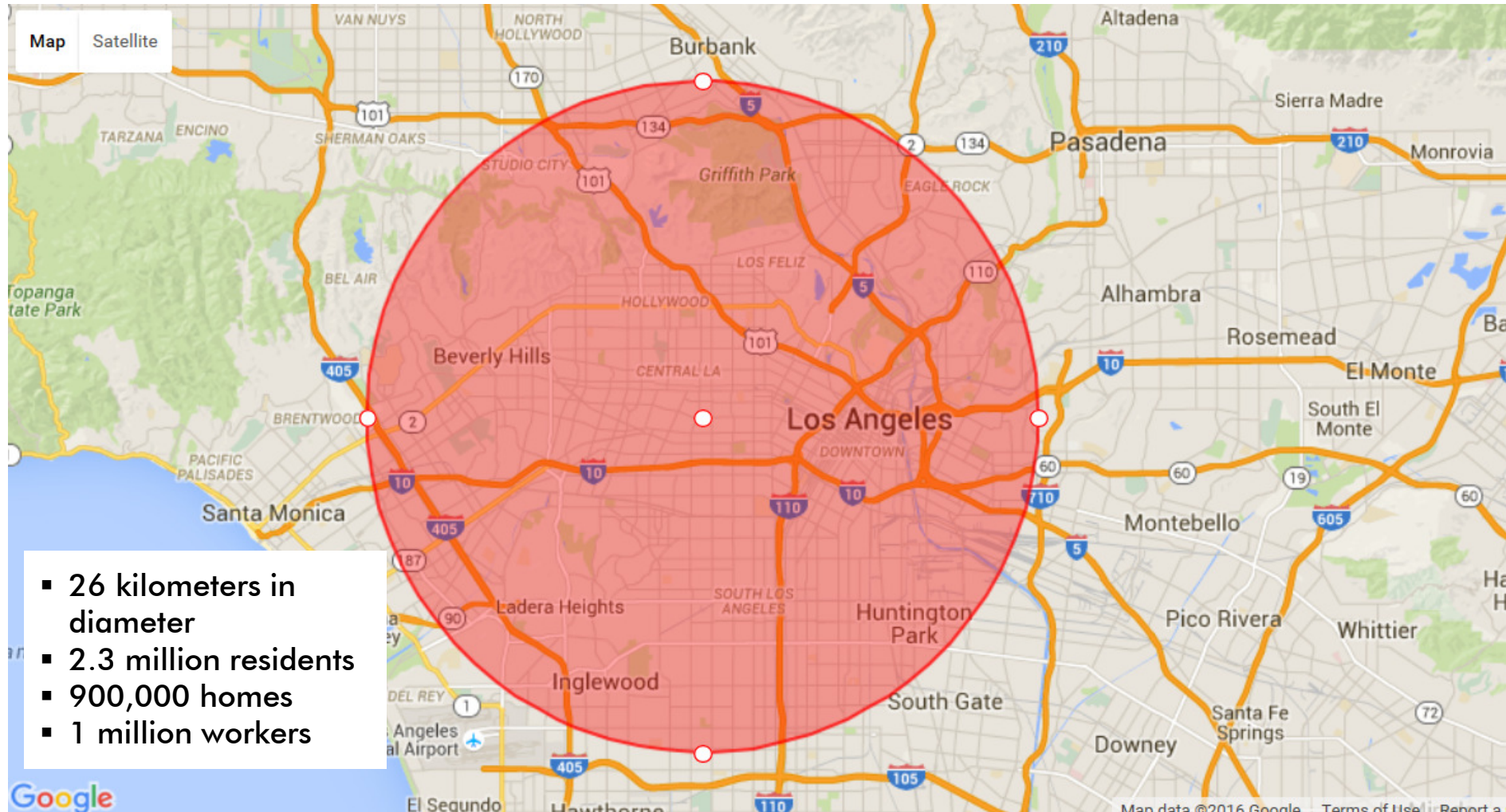
Where will the vehicles go?



More infill development sites?

The L.A. County Parking Crater

18.6 Million Parking Spots Use 520 Square Kilometers of Space



Equivalent to All of Amsterdam



Autonomous Vehicles – Potential Implications

Senior Housing

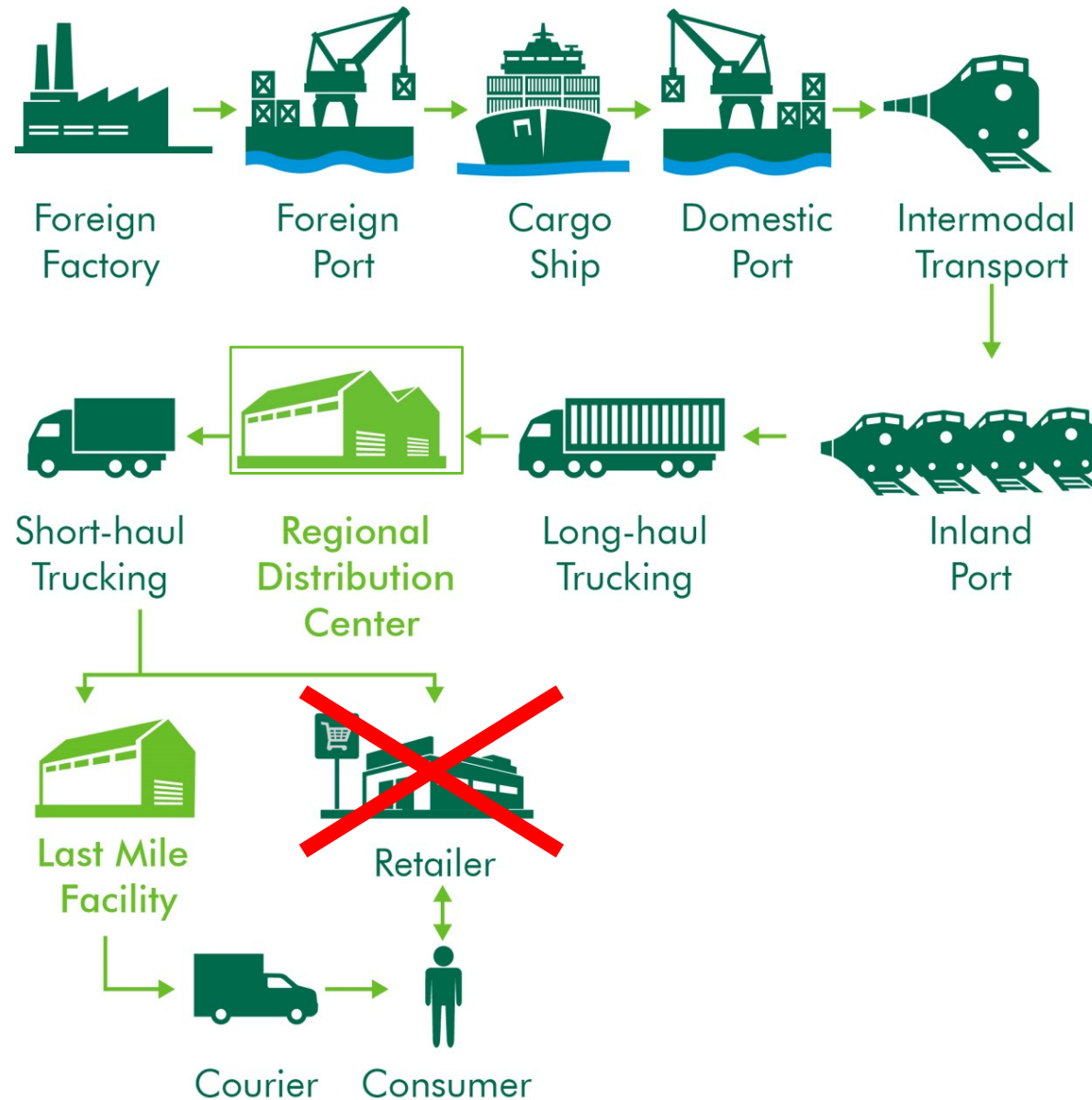
Out-of-town Logistics

Insurance Companies,
Auto Dealerships

Urbanization

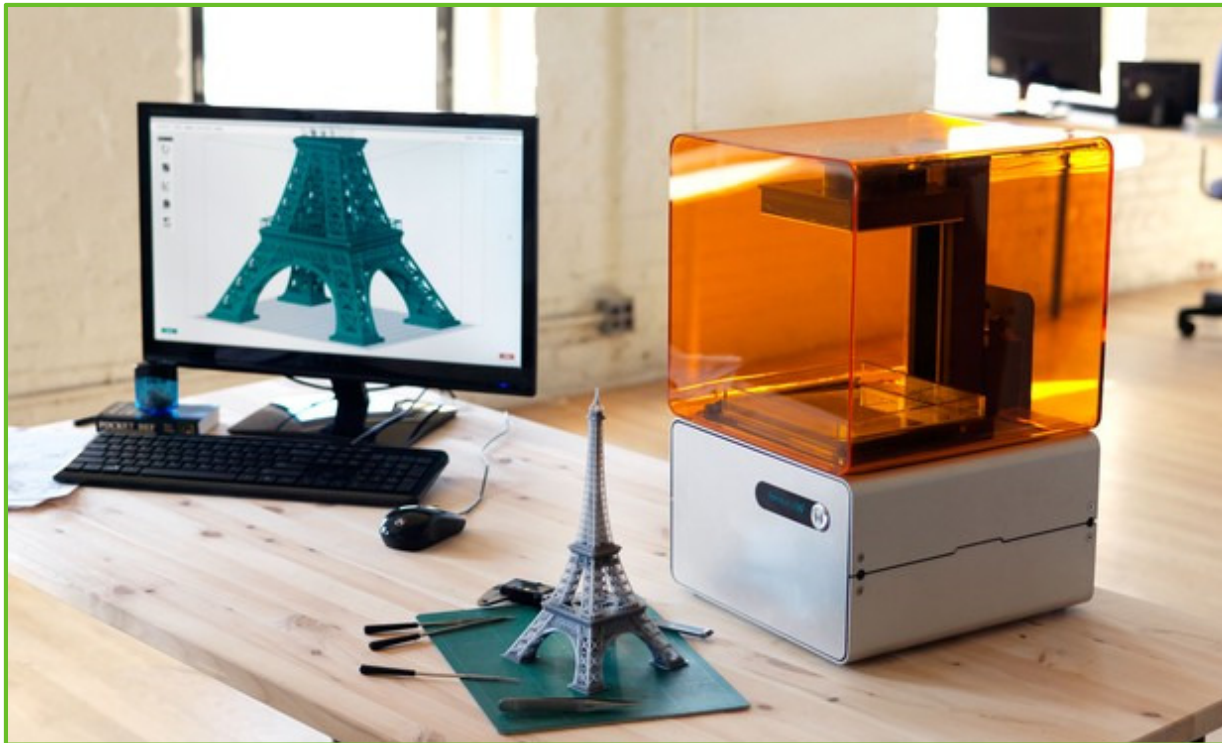


E-Commerce Has Challenged Physical Stores



3D Printing

Manufacturing technique that creates objects based on digital schematics



National Harbor to
open 3D car printing
factory and showroom

- The Washington Post

Architects in Amsterdam
have built one of the
world's first full-sized
3D-printed houses

- BBC

At Home?

3-D Printer Firms Fall Flat as Buyers Wait for New Models ^{8/7/15}

By BOB TITA

The companies that make 3-D printers are struggling with an increasingly uncertain outlook as many buyers hold out for what they hope will be better, faster machines.

3D Systems Corp., one of the biggest 3-D printer producers, on Thursday reported second-quarter sales and profit that fell short of expectations.

The Rock Hill, S.C., company said it swung to a net loss of \$13.7 million in the period, from \$2.1 million in profit a year earlier. Overall revenue rose, but organic sales, which exclude revenue from acquisitions and exchange-rate changes, slid 5%.

The results came after rival **Stratasys Ltd.** last week said its loss widened in the latest quarter to \$22.9 million from \$173,000 a year earlier, while its sales of printers and production

materials fell 13%.

Both Stratasys and 3D Systems, which together accounted for more than a third of industry sales last year, also have discarded their guidance for the year.

The move is an unanticipated slump in an industry where sales had been increasing around 34% annually for the past three years.

Both companies have acknowledged suffering quality and reliability problems with their printers as sales have increased rapidly and the companies absorbed acquisitions.

The expected household market for printers hasn't caught on, despite widespread availability of printers at big-box retailers for under \$5,000. Less than 10% of Stratasys's annual sales come from home users, according to an analyst estimate.

"We felt all along there isn't

much of a consumer market for these machines," said Terry Wohlers, a 3-D printer market consultant in Fort Collins, Colo. "They're not easy to use. A lot of them in homes are sitting there collecting dust."

Some analysts believe businesses, given tight budgets, are delaying purchases because of the limitations of the current models, and in anticipation that Hewlett-Packard Co. and other heavyweights from the two-dimensional printer industry could enter the 3-D market in the next year or two with faster-running, more reliable printers.

"We've gone through an early adopter phase where [companies] bought printers to convey innovation," said Brian Drab, an analyst for William Blair & Co. "We're going into more mainstream adoption where you're going to look silly if you make a

Please see 3-D page B5



Analysts say firms are delaying purchases of 3-D printers. Pictured, candles made by a 3D Systems printer.

At Home? Or the Shared Economy?



In-Store



3D Printing Cafe



Apartment Common Area



3-D Printing Will Challenge the Whole Production/Delivery Chain



3D Printing – Potential Implications



Manufacturing



Retailing



Construction

Augmented and Virtual Reality

Live view of a physical, real-world environment with elements that are augmented with computer-generated sensory input



Devices combine virtual reality with real-world experience to create augmented reality

It Goes Way Beyond Gamers



Does this Hurt or Help?

Virtual Reality



Leisure



Travel



Real Estate Space Tours



Augmented Reality – Potential Implications



Training

“Extreme” Showrooming



Outsourcing/Offshoring

A World Transformed

Artificial Intelligence



Big Data



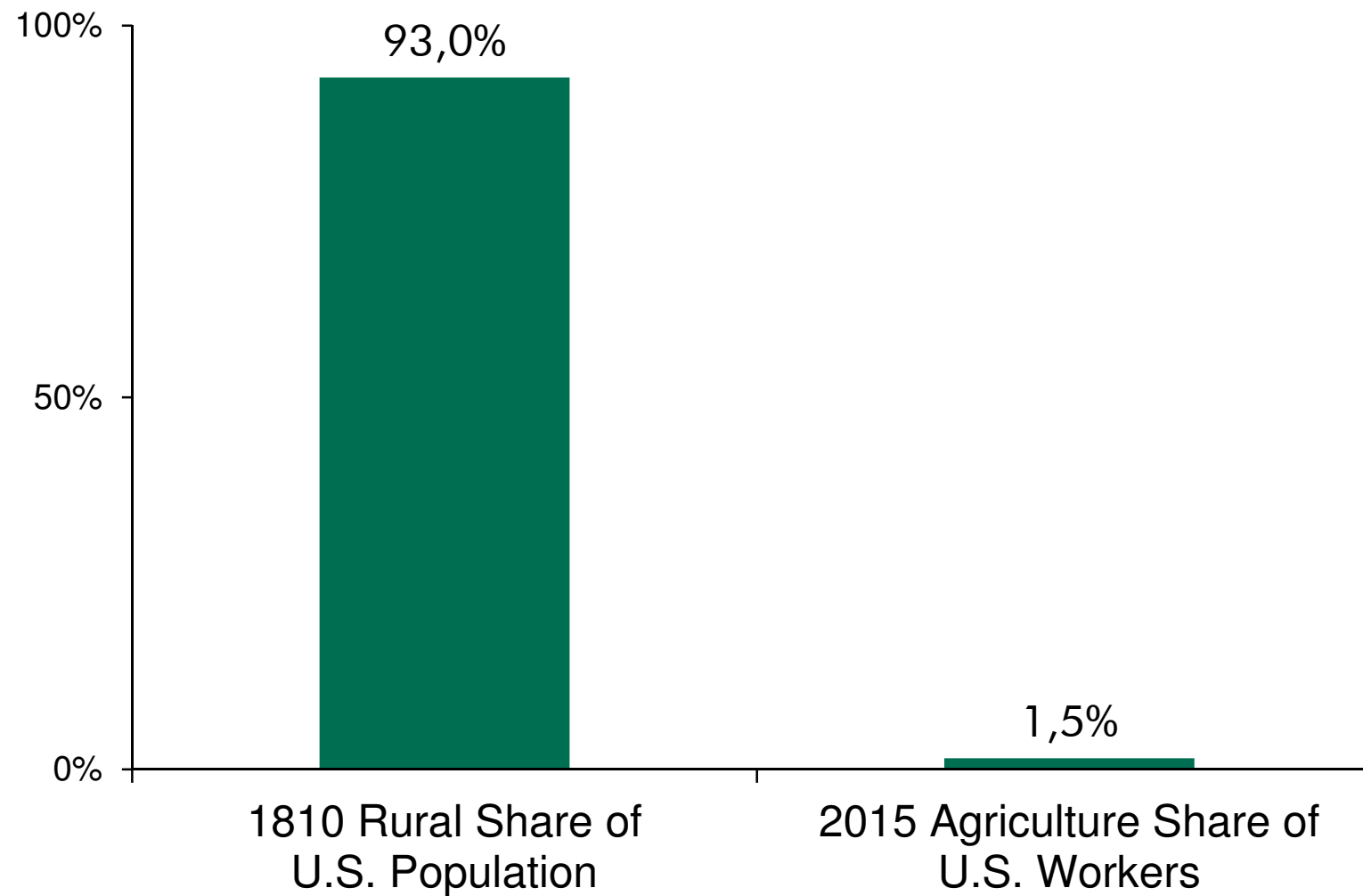
Advanced Robotics



Internet of Things



What Are We All Going to Do?



We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten.

- Bill Gates



Disruptors' Potential Location Impacts



	Driverless Vehicles	3-D Printing	Virtual Reality
OFFICE	Huge	Small	Small
LOGISTICS	Big	Big	Small
RETAIL	Moderate	Moderate	Big
RESIDENTIAL	Moderate	Small	Small

Disruptors' Potential Structure Impacts



	Driverless Vehicles	3-D Printing	Virtual Reality
OFFICE	Moderate	Small	Moderate
LOGISTICS	Moderate	Huge	Small
RETAIL	Moderate	Big	Big
RESIDENTIAL	Moderate	Moderate	Small

We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten.



Don't let yourself be lulled into inaction.

- Bill Gates

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