

# Research & Strategy

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## Proptech & Predictive Data Analytics are Changing Real Estate Investment

### THE PROMISE AND CHALLENGES OF PROPTECH

Technology tools designed for commercial real estate — collectively referred to as CRE tech or proptech — have leapt from a niche sector dominated by a few dozen well-established companies into a hive of creative startups, led by experienced tech entrepreneurs and venture capital firms. The new entrants claim to offer investment managers products and services capable of increasing revenue, reducing expenses, and predicting the future. Since 2017, global proptech companies raised \$27 billion of capital, far more than raised in all previous years combined, fueled by exponential growth in digital data, low-cost sensors, and a growing interest by the venture capital industry.<sup>1</sup> In the 2019 edition of the ISA, we shared a brief overview of LaSalle's approach to predictive data analytics and examples of specific analytics tools we've developed. This year, we examine how these tools, and proptech companies, could change how we invest, as well as some of the limitations behind the hype.

Alongside our parent company, JLL, we track the proptech space closely, as highlighted in our [Fall 2018 PREA Article "Commercial Real Estate Tech: A Research and Venture Fund Perspective"](#). To this end, JLL has partnered with MIT's Real Estate Innovation Lab. JLL together with LaSalle was a founding industry partner of the lab, which forecasts technology change.

#### Test Extensively and Adopt Early

Among the myriad proptech applications, ranging from coworking to improving tenant experiences, a shared theme for many is a focus on improving property operations by helping owners generate revenue from underutilized spaces, reducing the time it takes to complete tasks, and improving information flows to all the stakeholders involved with the smooth operation of a successful building. Sorting through the hundreds of proptech firms, many providing overlapping services or solutions for problems that range from 'mission critical' to the mundane, has become a key focus of LaSalle's technology, asset management, acquisitions, research, and portfolio management teams. We strive to be an early adopter of these productivity tools - piloting the most promising and implementing

<sup>1</sup>This capital raising estimate is based on CREtech data. Its estimates include all private property-related companies selling hardware-as-a-service, software-as-a-service or real estate-as-a-service, including co-working companies. CREtech's estimates are higher than CB Insights, which also tracks PropTech capital raising, in part because CREtech's data also includes companies catering to for-sale housing markets.

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those<sup>2</sup> that can deliver on improving the net operating income of buildings, - making asset managers more efficient, and assist in managing investment risk.

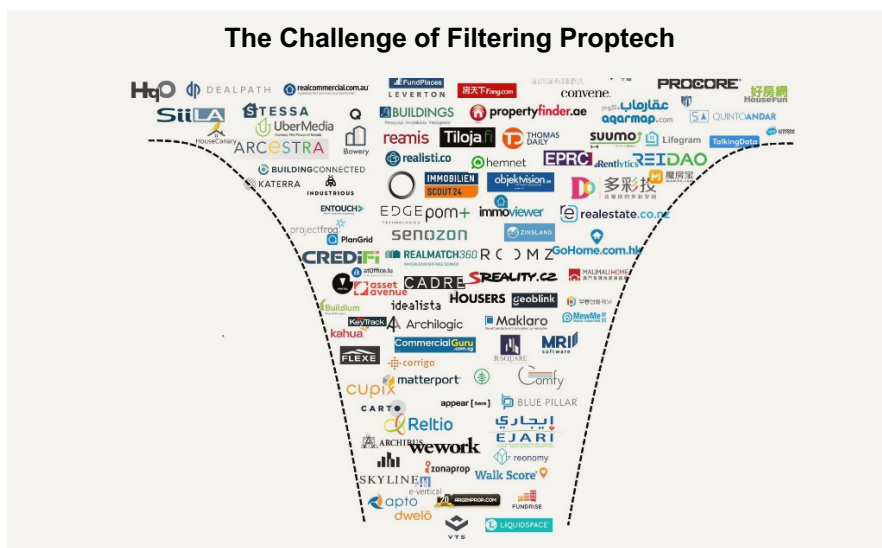
In addition to increasing efficiency, these productivity tools have a significant impact in ensuring that things are not missed due to human error because the tools have rules embedded in them that make the user put in the right info in a standardized, accurate and complete way. Cindy Parker, LaSalle's Chief Information Officer, underlines this point: "many only think technology is going to make them more efficient. What they often fail to take into account - especially those using the tool who are expected to get things done quickly - is that technology also drives accuracy and builds a base of reliable data that is usable for a variety of other projects."

In practice, only a small number of firms among the hundreds we have reviewed offer a compelling value proposition. As proptech firms refine their products and clearer standards are established, we expect the number of proven, successful firms to decrease in some cases due to consolidation<sup>3</sup> and in other cases due to fierce competition. Mike Lam, LaSalle's Associate Business Strategist responsible for cataloguing proptech companies, sees a "consolidation race" underway where "the winners will be those companies that can offer one-stop-shop solutions."

LaSalle has a technology strategy and dedicated committee to manage the task of selecting, testing and implementing new technologies. This evaluates current business needs, removes duplication in technology evaluation, and identifies integrations with the existing tools in use.

**"What they often fail to take into account is that technology also drives accuracy"**

*LaSalle Chief Information Officer, Cindy Parker*



**"A solid foundation of asset level data - including the financial data - will enable more efficient analysis at portfolio level and thus assist in managing investment risk"**

*LaSalle Head of Asia Pacific Business Technology, Kai Qiu*

### From Data Overload to Actionable Recommendations

When it comes to seeking operational efficiency alongside improved financial performance, differentiating between digital nice-to-have, necessity and noise can be a challenge due to the massive volume of data that proptech companies generate and the time it takes to pilot new systems. In our view, the rewards will often justify the effort. This applies especially to the early success of more systematic collection of operating metrics from LaSalle's assets under management to put alongside market data in our own business intelligence dashboards. Kai Qiu, LaSalle's Head of Asia-Pacific technology, highlights that "a solid foundation of asset level data - including the financial data - will enable more efficient analysis at the portfolio level and thus assist in managing investment risk and making investment decisions." Recent progress to standardize data is exemplified

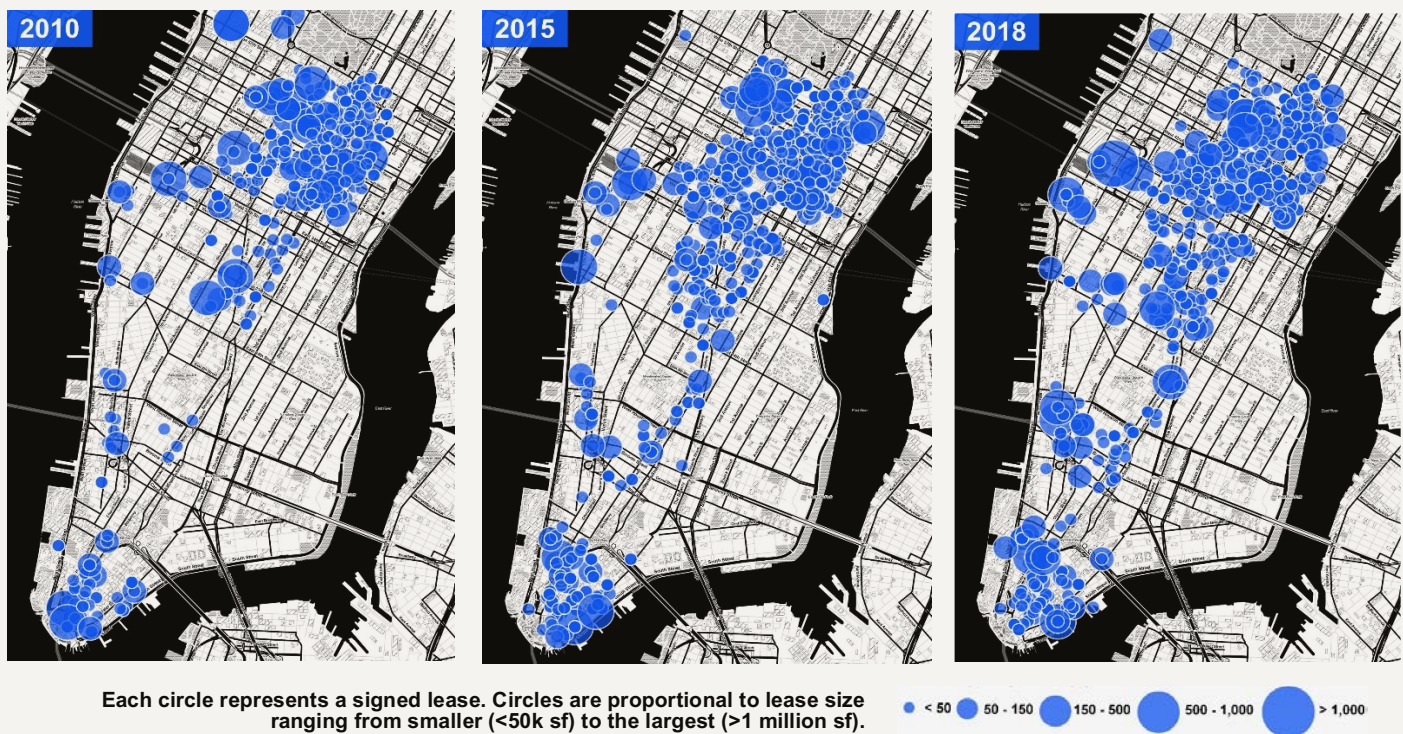
<sup>2</sup> Examples of firms in either the trial or implementation stages include: VTS, Honest Buildings, Measurabl, and Dealpath.

<sup>3</sup> In "The Rapid Growth of Flexible Office" April 2019, LaSalle's research team identified the consolidation of co-working operators as a trend that is already well underway.

by a recent project to collect the same set of attributes for each asset globally and assign single asset identifiers.

A byproduct of many proptech productivity tools is real-time data on metrics like tenant prospect activity, lease transactions, and tenant behavior that, when combined, provide a leading indicator of market demand and rents. These new types of data aggregators, alongside proptech business models based on the crowdsourcing of information (e.g., CompStak) or on leveraging large datasets (e.g. mobile device data aggregators) from other industries are helping us to upgrade our strategies in two main ways. First, because the data are geocoded to specific asset locations, not to a broad market definition, we can assess our strategies in a more targeted manner. Second, because the data are high frequency and often based on many individual transactions, the evidence they provide is especially valuable at the micro level. As a result, we can more quickly confirm or disprove our investment hypotheses. solid foundation of asset level data (including the financial data) will enable a more efficient analysis at portfolio level and thus assist in managing investment risk and making investment decisions.

### Getting Granular: Manhattan Office Leases Signed by Size and Location



There is also a wealth of information produced by industries outside real estate that we use to predict market fundamentals, risks, and returns. Tech companies like Google and Yelp have digitalized the physical world and various economic activities. We leverage these data to quantify and benchmark neighborhood amenities against comparable areas in the same market and across a country using our Location Amenity Tool (LAT). We use information from mobile phone data aggregators to map our trade areas, track sales, and see where customers at a shopping center are spending their time. Social media data that captures users' preferences are also being geolocated and have the potential to predict tenant demand.

Crowd sourced lease transaction information, tracked by JLL as well as CompStak, is an illustrative example. While Real Capital Analytics has long tracked transaction activity, high-quality, comprehensive databases on lease transactions are relatively new. The new leasing databases make it possible to quickly identify the who, what, where, and when of signed leases. This information allows us to track when neighborhoods are starting to realize rent spikes. In New York City (see the figure entitled Getting Granular), these data provided early signals of tenant migration to Midtown South and to Hudson Yards. As these databases improve in quality, especially outside the office sector, they will provide savvy users with a competitive advantage.

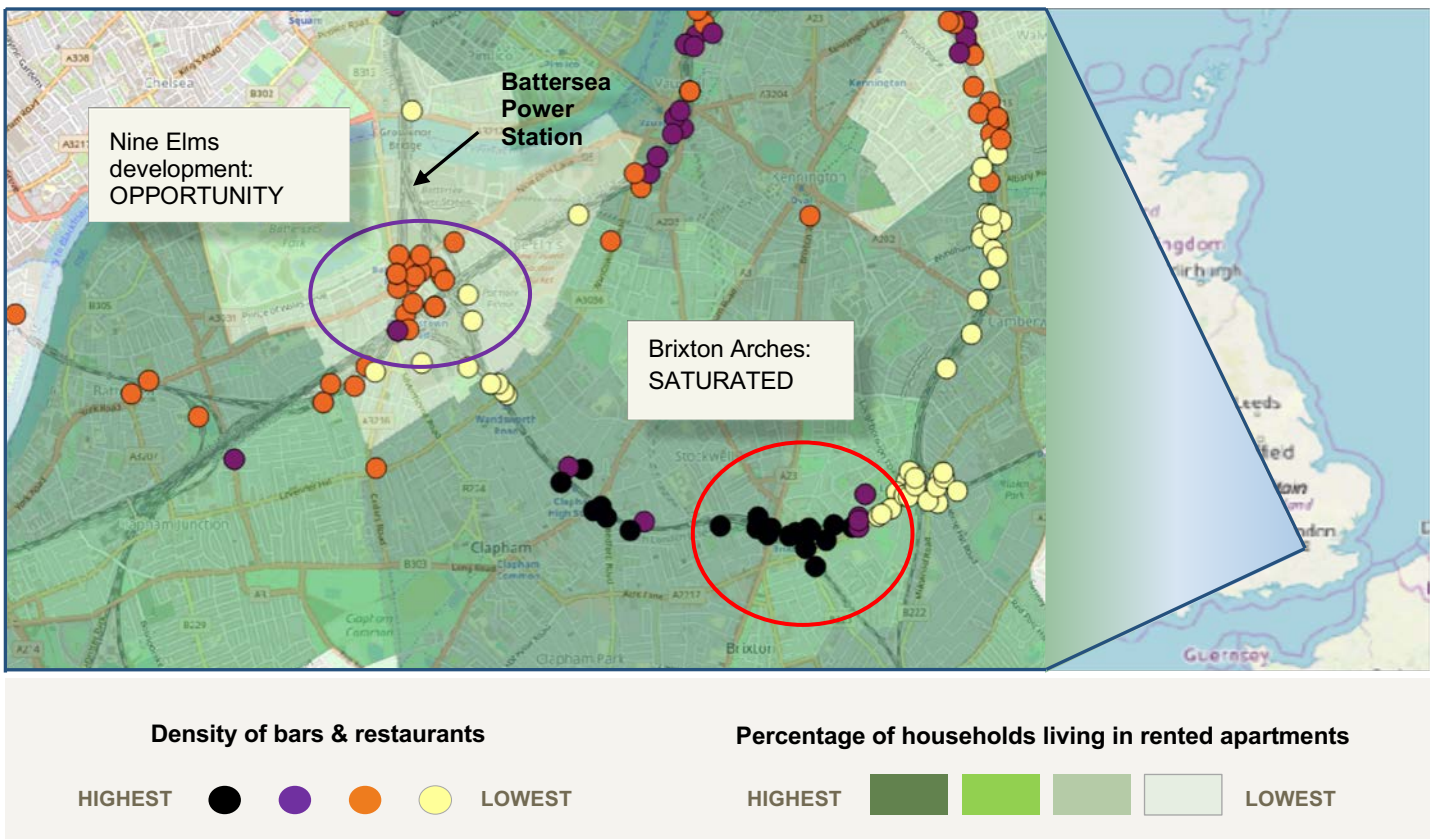
LaSalle combines its own internal data with externally-sourced data [e.g., the Office for National Statistics (ONS) in the U.K. or U.S. government statistics] to deliver actionable investment insights. For example, we focused on enhancing income growth in a portfolio of small-floorplate assets, many in central urban locations in the U.K. We employed ONS demographic data, as well as asset-microlocation amenity statistics from LaSalle’s LAT to target specific vacant assets for occupation by food and beverage industry tenants. Seeking portfolio locations not yet saturated with hyperlocal food and beverage offers, but with development activity and supportive local demographics, asset management initiatives could be targeted at the Nine Elms development area surrounding the Battersea Power Station in south London, the location of the future headquarters of Apple in the U.K. and the new U.S. Embassy.

When it comes to processing all this data, Mike Lam underscores that translating data into action and decisions is the key challenge. “Business intelligence tools are not just for fancy charts and data, they first need to be integrated into existing workflow and they secondly need to provide direct feedback to users on the previous decisions they have made.”

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*LaSalle Associate Business Strategist,  
Mike Lam*

### Layering Up: Matching Data Spatially for Investment Insight in London



Rise of the Algorithms? Yes, But Maybe Not So Fast. The marketing hype of many proptech firms based on predictive data analytics is often far in advance of their actual deliverables, similar to many entrepreneurial firms early in their development. Technology entrepreneurs are bringing much needed knowledge and skills to the field of real estate, but they are still getting up to speed on the fine points of property investment. Tech developers and real estate investors have a lot to learn from each other.

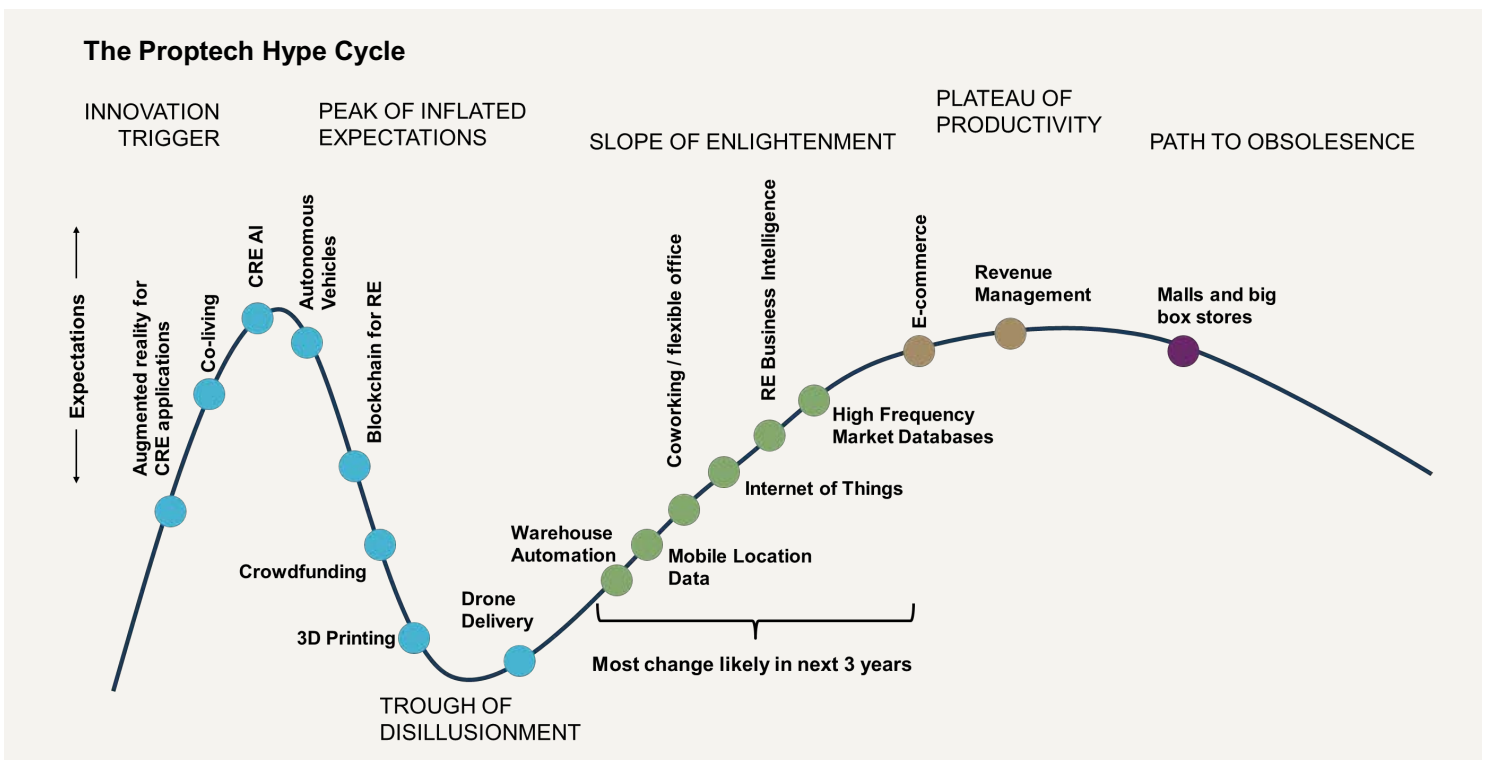
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One useful framework for thinking about proptech is the Gartner Hype Cycle. JLL's innovation lab has tapped into the knowledge of MIT scientists and researchers who have expanded and adapted this "expectations" model to real estate tech, with a new website on the MIT / JLL Real Estate Lifecycle set to go live later in 2019.

Like many frameworks, the original Gartner Hype Cycle is a simplification of very complex forces and constantly-shifting perceptions. In practice, it will be different for every technology, but it can help us distinguish between technologies likely to have a big impact over the next three years versus those where implementation challenges will likely delay their impact. The hype cycle begins on the left with an invention and proof of concept, which raises expectations, attracting early stage venture funding. As young companies aim to roll out the technology more broadly, however, execution challenges often lay low those initial expectations and the technology can enter a "trough of disillusionment." Successful technologies build back up from this, overcoming problems, gaining wider adoption, and becoming more productive as they rise along the "slope of enlightenment" and then stabilize as a more mature technology.

In the figure below, we plot a number of specific real estate technologies, as well as technologies that will affect real estate, along the Gartner Hype Cycle. Technologies with great potential but challenges ahead are to the left side of the cycle. Augmented reality, for example, which has been touted by Apple CEO as a "big idea like the smartphone," has the potential to streamline design changes during a building's construction by giving architects and construction managers a real-time blueprint view overlaid on the actual site.

It could change the way pedestrians experience the street, giving them information on nearby real estate, stores, restaurants, and directions via a heads-up display. But many challenges of implementation lie ahead—these challenges represent the difference between over-hyped tech (flying cars) and under-estimated tech (the power of the internet).



Similarly, proptech firms using artificial intelligence to estimate property values, like GeoPhy, Skyline, and RealPage, have great promise but also significant challenges. By generating estimates of value for commercial real estate akin to Zillow’s “Zestimates” of U.S. single-family home values, or Zoopla’s equivalent “Zed-Index” in the U.K., these firms aim to identify mispriced opportunities or guide investment decisions. By training their algorithms on large data sets, these firms are generating models with low rates of statistical error. They are ground-breaking efforts and have real value, especially for their ability to compile and process data more efficiently without human cognitive biases, like a tendency to overweight recent information or seek confirmatory rather than contradictory evidence.

However, statistical models created using artificial intelligence also have biases that reflect assumptions made by their creators. This is more problematic when the underlying assumptions are not transparent. For example, some assumptions may be driven by correlations detected in new alternative data sources based on relatively short time series. Moreover, the algorithms themselves often do not have a proven track record. The lack of frequent and granular data has historically been an inherent issue in private equity real estate, yet the landscape is quickly changing. We recommend that these tools be employed as part of real estate investors’ strategy toolbox, but they cannot replace human judgement. They uncover new investment insights if correctly deployed. Investors should also be aware of the new risks introduced by these tools if the assumptions behind them are not transparent.

On the “slope or enlightenment” in the figure above, however, are technologies that have surmounted big implementation hurdles and we believe will have a major impact on the way we invest over the next three years. These include mobile location data, flexible office and co-working, business intelligence systems that integrate information from many sources, and high frequency, more granular data sources.

## Quo Vadis?

The explosion of proptech firms will change the way that investors get real-time operating information on the assets they manage. These data streams will also change the way that owners communicate with property managers, leasing agents, tenants and various specialized services like contractors, security personnel and engineers. Efficiency gains are already evident from LaSalle’s adoption of these new platforms. As more assets and managers migrate to proptech platforms, the quality of the benchmark data will improve, and the early-mover advantage could erode in terms of predictive power. However, the efficiency gains and risk mitigation that come when service providers shift from written reports, conference calls and Excel spreadsheets to relational database sharing, are likely to be permanent. And, as LaSalle’s Head of US Asset Management Kristy Heuberger points out, “the gains are not limited to efficiency and prediction.” Other gains that are already evident at the asset level include enhanced marketing of assets and improved tenant experiences thanks to new apps, which have the potential to differentiate properties to tenants who increasingly see real estate as a bundle of amenities, service, and community.

The Gartner Hype Cycle approach to evaluating new companies is a useful way to classify each value proposition. This approach reminds users that there is a sentiment-driven aspect to the adoption of new technology. Also, it reminds us that the early media coverage of a new tech platform can often be misleading --we won’t all be using Alexa.

**“The gains are not limited to efficiency and prediction.”**

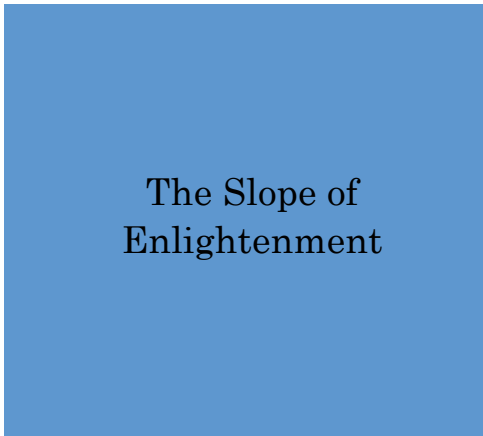
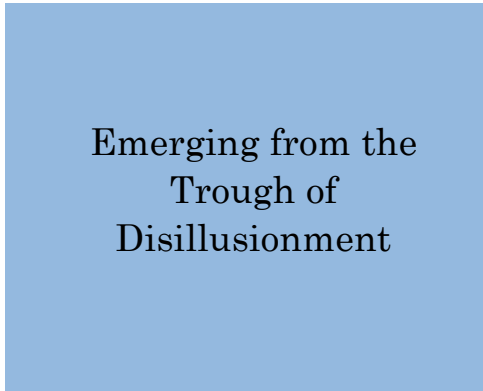
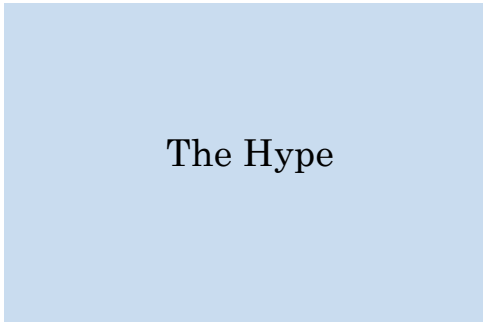
*LaSalle Head of US Asset Management, Kristy Heuberger*

At the same time, “out of favor” tech applications can stage a comeback when the market isn’t paying close attention-- Webvan and Peapod struggled 15 years ago, but nearly every major grocery store chain is now adopting both “click and collect” technology and/or home delivery. The same is true when considering the Regus serviced office model from twenty years ago versus the rapid adoption of the co-working operators exemplified by WeWork.

Proptech is in about year four or five of rapidly accelerating adoption in many countries, especially in the US and the UK. Early reports indicate that China is also going through rapid adoption. This is tremendous progress in an industry (commercial real estate) that has been slow to adopt new technology that many other industries have embraced. The opportunities for efficiency gains are already being realized. The potential for capturing new granular datasets, as well as adopting algorithms with strong predictive power used by other industries (machine learning and AI), still lie ahead.

**From top to bottom:**

- Lazzarini Design flying hover car concept
- Starship Self-Driving Delivery Robot
- VTS leasing dashboard



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