

# Real Estate Disruptions

REAL 375/875

## Instructors:

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## Course rationale:

Real Estate is changing dramatically for the first time in perhaps one hundred years. This class will examine how technology is changing in many facets (all) of the industry. Among many questions to be considered are:

- Can you crowd fund development? Can every building in the world now be publicly listed as a stock? Will it happen?
- Will the advent of AI dramatically reduce space needs? Will the office business become a part of hospitality? In what type of spaces will workers want to live and work? Do people need their own apartments or will renting an adult dorm room be enough?
- Can we build new buildings like we assemble legos? What do smart buildings mean? What is the future of emerging building management giants?
- How will autonomous vehicles affect the demand for space? How will that affect property values? Is multistory distribution the future of last mile, will it be last inch delivery in people's residential buildings or will self-driving/ flying delivery solve the problem of moving goods in an e-commerce world?
- What is the future of new data analytics services? Will they remain small independent niches? Or will they be taken over by incumbent players? Will they become the new core of the industry?
- More generally, what will all the emerging changes that are occurring today amount to? How will technology fundamentally redefine the real estate industry?

This course will address how technology has already changed the demand for real estate, how it will likely change in the future the way real estate is used, designed, developed, constructed, managed, leased, maintained, and financed.

### **Course objectives:**

This course aims to:

- Provide an overview of the emerging trends and help students form reasonable conjectures about where these trends will lead us.
- Get the students to think critically for themselves about what the next great opportunities are in real estate and real estate technology and foster students' skills at detecting, analyzing, and handling change and disruption.
- Foster the ability of students to articulate their analysis orally and in written form.
- Make students better decision-makers and real-estate industry leaders.

### **Course structure:**

This course will bring together a recognized industry leader (Richard Mack), Wharton faculty (Gilles Duranton), and a broad set of guest lecturers (Start-up entrepreneurs, incumbents, VCs, non RE technology specialists, etc). We believe there is no one single approach to gain insight about disruptions and change under uncertainty so we will propose a mix of approaches including, in-depth case-studies, interactions with guest lecturers who handle those issues daily, learning from economic history and other industries, and drawing from core economic concepts.

### **Grading/evaluation:**

- 2 memos: 20% each, 40% in total
- 1 business plan for a disruptive RE tech start-up due at the end of the class: 40% (with equal weight to the presentation and the paper)
- Class participation/attendance: 20%

The first memo should provide an analysis of the business model of a real-estate tech start-up that operates either in the finance/lending/intermediation space (session 2) or one that seeks to benefit from recent changes in lifestyle or in the nature of work (session 3). It should cover:

- Its value proposition: Which previously unmet demand does it serve, how valuable is it, and how does it capture this value? (What would happen if this company didn't exist – what is the customers' next best alternative to meet their needs?)
  - Its market and competition: What are the main competitors and how sustainable is the startup's competitive advantage?
  - Risks and challenges: What are the key threats being faced? (regulatory, technological feasibility, future changes in technology, etc)
  - Do you think this business is likely to prosper in the medium-term?
- (note: no pro-forma financial analysis needed for this memo).

This memo should be completed and submitted individually via Canvas before session 4 on XXX XXX XXX. It should be less than 1,200 words.

The second memo should provide an outline for possible RE start-up idea in RE construction, operation (session 4) or infrastructure (session 5). This should not be a fully developed business plan. The assignment should outline the basics of the idea, how you discovered it, and what your next steps would be to assess the idea further. The memo should nonetheless make the case for both the economic rationale of your project (where is the value coming from and how it will be appropriated) and its technological feasibility (i.e., your idea should rely on available technologies or incremental improvements of available technologies).

Like the first memo, the second memo should be completed and submitted individually via Canvas. The deadline is on XXX XXX XXX before the start of session 6. Again it should be less than 1,200 words.

For both memos, you are welcome to discuss ideas together but your submission should be yours and yours only. You may share the same starting point but the execution should differ. In this case, please also disclose the name of the classmate with whom you had an idea in common on your written submission. Failure to disclose this information and submit substantively different assignments will result in a large penalty.

The business plan should develop an idea for a start-up in any area of RE tech. It should cover:

- Its value proposition.
- Its market and competition.
- Risks and challenges including regulatory challenges and how you are planning to address them.
- Financial prospects, including a pro-forma financial plan, statement of likely financial capital sources, and a division of equity if relevant.
- Research, including talking to potential suppliers or customers or engaging in any relevant effort that would help you understand how your plan will work in the real world.

For this business plan, you will work in teams of 5 or 6 (depending on class enrollment). Each team will make a 10 minute pitch during the last session. A written document of less than 4,000 words is also due before midnight on Friday XXXX after the last class (one team member should submit via Canvas).

Regarding teamwork, it is your responsibility to make sure your entire team prepares its business plan independently. Violations by any team member will result in the entire team getting a zero on the assignment. Teams may also decide to expel free-riders (or notify us about them).

No late assignments will be accepted.

While attendance and participation matter, we also emphasize the importance of the writing component of this course. Neatness, organization, clarity, grammar, punctuation, spelling, and conciseness matter and will impact your grade. Remember that poor writing is the main complaint of employers of business graduates (including Wharton's).

### **Class preparation:**

Case material will be shared before each session. Please be prepared. Please also bring your name tents to each class. At any time, we will make cold calls to facilitate student commenting during class. We will strive to get everyone to participate. If you feel we have ignored you, please let us know.

### **Class participation:**

In evaluating class participation, we will consider the following:

- Is the participant a good listener?
- Are the points that are made relevant to the discussion? Are they linked to comments of others?
- Do the comments show evidence of having completed assigned readings?
- Do they move the discussion forward by introducing new aspects or issues to consider, or do they restate points that have already been made?
- Do they demonstrate willingness to take risks and test new ideas, or are they “safe”?

Please keep in mind the following:

- Well posed questions are not only a legitimate way to interact but should be an important part of our discussions.
- In most of the issues we will discuss, there will be some controversy in the industry and even within firms about the best course of action. Your two instructors and the guest speakers do not have all the answers. Enlightened debate can add significantly to the understanding of the issues.
- Because of the varied backgrounds in the class, many of you will have important contributions to make based on your personal and professional experience. We will try to learn about your backgrounds over the course of the term, but you are encouraged to bring these experiences to bear in the discussion.

### **Other policies:**

- Prerequisites. Students are responsible for knowing the material covered in Real Estate Investments (REAL/FNCE 209 AND 721). The class will be taught assuming you have mastered these topics. This pre-requisite is STRICTLY enforced unless the class is under-subscribed.
- Whatever seat you choose on the first class meeting is yours for the entire course. Please sit there every class.
- A general no electronics rule applies. That includes phones, tablets, and laptops.
- Material provided in this course is for your personal, noncommercial use and may not be copied and distributed to others without the prior permission of the copyright owner.

### **Getting help:**

- Contact us. Do not think that a question is too “basic”. We are happy to help students understand any material they are having difficulty with. Please try on your own first. We hold regular office hours, schedule appointments, and can answer questions through Piazza (about course issues) or by email (about more personal circumstances).
- There is a TA assigned to the course (TBA).

## **Course schedule**

### **1. Introduction to the class, context**

GD/RM: welcome, introductions, ground rules, etc.

GD: background on growth and technology.

RM: broad outline on the RE industry today and current strategies to handle change.

Mini-case (suggested): Greenpoint Brooklyn (603 units: approx. 95 condos, 120 affordable units, and rentals) to think about what residential rental buildings today contain: co-working spaces, last inch distribution, outdoor space/ parks, retail and entertainment, parking to be repurposed later, concierge services, new forms of space/furniture managements, capitalization structures, locations choices, etc.

### **2. Lending and capital markets for real estate**

GD: How is technology changing RE investment?

RM: Computing and past financial innovations (RMBS and CMBS), what current change mean for RE.

Case study (suggested): CMBS and whether it has reduced the cost of capital in Real Estate.

Guest speaker (suggested): Someone from Harbor for tokenization, from Peer Street for crowd funding, or Mark Lodish (Mack Group).

Group discussion: Will technology allow for the democratization of real estate ownership thereby increasing value and liquidity?

### **3. Technology Enabled Demand changers**

Discuss last week's case study/speakers.

GD: Recent changes in the demand for locations.

RM: Trends in the demand for residential, retail, parking, office and distribution.

Guest speaker 1 (suggested): someone from Common, WeWork, WeWork competitor, WeLive.

Guest speaker 2 (suggested): Richard Baker (Hudson's Bay) on the Lord and Taylor building in NYC.

Group discussion: Do previous property type distinctions apply to a technology enabled society?

#### **4. Operation and construction**

Discuss last week's case study/speakers.

GD: How technology affects scale, monitoring, holdup, etc. (the key frictions in operations and constructions). What can we expect from smart buildings?

RM: Regulatory and capital market challenges to technological advances in construction, changes in how space is bought or leased.

Case study (suggested): Yardi and the leasing and management integration, VTS, Concierge or a new home sales venture (e.g. Open Door).

Guest speaker (suggested): Someone from Costar, Open Door or Hello Alfred Concierge.

#### **5. Infrastructure / autonomous vehicles**

Discuss last week's case study/speakers.

GD: Projected effects on cities and RE of autonomous vehicles.

RM: RE and autonomous vehicles: transit, parking (focus on Metropolis), etc.

Guest speaker (suggested): Dan Doctoroff from Sidewalk Labs.

Group discussion: How public infrastructure increases real estate values and what role should the private sector play in public infrastructure in a technology enabled future?

## **6. Analytics and big data: challenges and opportunities**

Discuss last week's case study/speakers.

GD: Data and analytics challenges in RE.

Interactive data exercise: predicting houses prices.

RM: Tech, real estate and data (e.g., what is WeWork). Analytics in retail.

Guest speaker 1 (suggested): Someone from CBRE (or another incumbent like JPMC).

Guest speaker 2 (suggested): Someone from Zillow (or another recent start-up).

## **7. Integrative session: the promises of RE tech**

Student presentations/pitches: 10 minutes per team.

Integration panel with a VC (suggested: Jake Fingert from Cambers Creek or someone from Fifth Wall) and the founder of a start-up.



**Reading list (so far mostly technology readings, more real estate short articles to be added, readings to be sorted by session)**

Agrawal, Ajay, Joshua Gans, and Avi Goldfarb. 2019. *The Economics of Artificial Intelligence*. University of Chicago Press.

(\*Chapter 1. Artificial Intelligence and the Modern Productivity Paradox: A Clash of Expectations and Statistics. Erik Brynjolfsson, Daniel Rock, and Chad Syverson.

Azevedo, Eduardo M. and E. Glen Weyl. 2016. Matching markets in the digital age. *Science*, 352(6289), 1056-1057.

(Uber example about efficiency, what analytics can add, regulation of platforms – credit card example)

Christensen, Clayton M. 2016. *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Harvard Business Review Press.

Duranton, Gilles. 2016. Transitioning to driverless cars. *Cityscape: A Journal of Policy Development and Research* 18(3) 193-196.

Evans, David S. and Richard Schmalensee. 2016. *Matchmakers: The New Economics of Multisided Platforms*. Harvard Business Review Press.

Fuller, Brandon. 2016. Cautious optimism about driverless cars and land use in American metropolitan areas. *Cityscape: A Journal of Policy Development and Research* 18(3) 181-184.

Glaeser, Edward L. 2011. *Triumph of the city: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier, and Happier*. New York: Penguin Press.

Habibian, Sina. 2018. The tokenization of real estate. [www.sinahab.com](http://www.sinahab.com)

Hewlin Todd, Scott A. Snyder. 2019. *Goliath's Revenge: How Established Companies Turn the Tables and Digital Disruptors*. Hoboken (NJ): Wiley and Sons.

MacDuffie, John Paul. 2018a. The policy trajectories of autonomous vehicles. Wharton PPI issue brief 6(4).

MacDuffie, John Paul. 2018b. Long road ahead: The promise — and perils — of self-driving cars. Knowledge @ Wharton, July.

McAfee, Andrew and Erik Brynjolfsson. 2017. *Machine, Platform, Crowd: Harnessing Our Digital Future*. New York: Norton.

Parker Geoffrey G, Marshall W. Van Alstyne, and Sangeet Paul Choudary. 2016. *Platform Revolution: How Networked Markets Are Transforming the Economy and How to Make Them Work for You*. New York: Norton.

Reader, Ruth. 2019. WeWork grows up (and out and everywhere). [www.fastcompany.com](http://www.fastcompany.com)

Sahlman, William A. 1997. How to Write a Great Business Plan. *Harvard Business Review* (July-August), 98-108.

\* Tirole, Jean. 2017. *Economics for the common good*. Princeton University Press.  
(Chapter 13, competition and industrial policy, Chapters 14 and 15, digitization and its challenges, Chapter 16, innovation, Chapter 17, regulation).