

EFFECTS OF TECHNOLOGY (+ COVID 19) IN REAL ESTATE

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Why do I speak about this topic

- **Buying in in 2009-16 was “easy”, properties were at a discount to replacement costs and with enough spread to cost of capital to allow for “cushion”.**
- **It’s becoming harder to find good opportunities and it’s very important to identify risk.**
- **In 2017, I told my partners that residential working class is the best risk adjusted investment because shelter is a basic need, and it does not have much technological risk.**
- **My partners did not believe the idea of technological risk in real estate, I started to look for articles and books about it and did not find much.**
- **I started to read technology articles with the “optic” of how that technology can affect real estate or how that technology can help create a business model that can disrupt real estate.**
- **I’m now starting to write a book to organize my ideas and concepts. Working on futurealogy.com, a website that will allow for the exchange of ideas.**
- **I am not a researcher or an academic, I am just an observer with a different point of reference.**

Takeaway:

It's not about returns; it's about **identifying and evaluating Risk**. Present and **FUTURE** Risk. Add to your language **“risk adjusted returns”**

The world is evolving at an exponential pace, **technology is affecting all the asset classes and COVID is accelerating this**. If you are buying into an asset class you **NEED** to understand **what Technologies or Business models are Affecting your asset**

Technological change might not be here, but most likely will be in 5-10 years. **Exponential technologies are colliding into each other, reinventing products, services and industries.**

If you are planning to sell assets in the future your asset might be devalued by technological change or business model change.

We think **LINEARLY**, Technology evolves **EXPONENTIALLY**, and Business models evolve **LOGARITMICALLY**.

Shelter is a basic need. Technology will have very little effect in Residential Real Estate. **Working class Residential Real Estate is the safest of the real estate assets**

Disruptive Tech - the Uber Effect

This is what happens when technology affects a market 80% drop in the value of an asset in 4 years—this is real!!



Uber was launched in NYC May 2011. **Lyft** Launces NYC July 2014.

The “writing was on the wall” but the price of the license kept on going up...why?

History repeats itself: Blockbuster, Toys R us, Kodak, Sears....

Disruption from Technology- Its Fast!!

This is what happens when technology affects a market

Easter morning 1900: 5th Ave, New York City. Spot the automobile.



Source: US National Archives.

Easter morning 1913: 5th Ave, New York City. Spot the horse.



Source: George Grantham Bain Collection.

Key Points of This Presentation

- **YOU must understand how TECHNOLOGY will affect your asset class:** Real estate investors are not including technological risk in their evaluations of opportunities. Most of them do not have on their radar the technologies that will directly or Indirectly impact their investment. Would you buy a Barnes and Noble without thinking about the Amazon effect?
- **It will happen sooner than you think:** The pace of adoption of technology is much quicker than markets anticipate. Its exponential and not linear
- **Its going to be a new world:** Exponential technologies are colliding into each other, reinventing products, services and industries. Human behavior will be changed by the COVID experience. The 2008 crisis saw the birth of the **Sharing and Gig Economy**, the COVID crisis will see the birth of the **Collaborative and Distance Economy**.
- **Technology allows for new business models to be created:** Technology is not only about hardware, it is also about business models – We Work, Uber, Airbnb. For Example; In the same way the smart phone enabled the creation of many business models, the autonomous driving platform will create many opportunities. One of my bets: “Storage Pods” on autonomous driving platforms will replace self-storage!

Key Points of This Presentation

- **Residential is a safer bet:** These assets are safer because people always need a place to sleep. This might be one of the reasons investors are consciously or unconsciously paying more for residential. Be mindful of requirements to accommodate technology in residential assets, for example charging stations, repurposing parking garages.
- **Geographical preferences will change:** New technology will allow people to live in places that are not close to their jobs. Migration towards more affordable cities with affordable housing.
- **The labor pool will change:** Technology affects employment. New technologies take jobs and give jobs.
- **There are no absolutes:** No asset class is going to disappear.

Major Technologies to Watch

TECHNOLOGY	IMPACT
Autonomous Platforms, not just Cars and Trucks	The delivery economy Transportation as a Service (TaaS)
Virtual Reality-Holographic Telepresence - ZOOM	“Being” there without being there
3d Printing	On demand manufacturing
Batteries and Solar Energy	Reduction of EV Costs and Efficiencies
Artificial Intelligence / “Alexa’s” shopping bots/ Big data	Efficiency of time and resources
5G-Internet speed	On demand data for multiple interconnected devices and sensors with no Latency

Cool Presentations

YOU NEED TO WATCH THIS

Tony Seba: Clean Disruption – How Technology Disrupts a Market and Adoption Curves:

<https://bit.ly/2VnFPxi>

Morgan Stanley: future of autonomous vehicles and the economics of the industry:

<https://mgstn.ly/2e2Fmi3>

AND READ THIS

Rethinking Transportation 2020-2030 The Disruption of Transportation and the Collapse of the Internal-Combustion Vehicle and Oil Industries:

<https://bit.ly/2UrwBTB>

Key Takeaways from Tony Seba

Mass adoptions of autonomous technology: By 2030, within 10 years of regulatory approval of fully autonomous vehicles, 95% of all U.S. passenger miles will be served by transport-as-a-service (TaaS) providers who will own and operate fleets of autonomous electric vehicles providing passengers with higher levels of service, faster rides and vastly increased safety at a cost up to 10 times cheaper than today's individually owned (IO) vehicles.

Savings will be the driving force: The TaaS disruption will be driven by economics. The average American family will save more than \$5,600 per year in transportation costs, equivalent to a wage raise of 10%. As a result, Americans will keep an extra \$1 trillion in their pockets, potentially generating the largest infusion of consumer spending in history.

A new economy will be created: The creation of the multi-trillion-dollar TaaS industry will create wealth comparable to or larger than that generated by the personal computer, internet or mobile telephony booms.

Key Takeaways from Tony Seba

The Transportation as a Service (TaaS) disruption, will have profound implications across the automotive and oil value chains. These include:

- The number of passenger miles will increase from 4 trillion miles in 2015 to 6 trillion in 2030.
- The cost of delivering these miles will drop from \$1,481 billion in 2015 to \$393 billion in 2030.
- The size of the U.S. vehicle fleet will drop from 247 million in 2020 to 44 million in 2030.
- Annual manufacturing of new cars will drop by 70% during the same period.
- Annual manufacturing of new ICE mainstream cars sold to individuals will drop to zero. Car dealers will cease to exist.
- Global oil demand will drop from 100 million barrels per day in 2020 to around 70 million barrels per day in 2030.
- The price of oil will drop to around \$25 per barrel.
- Oil prices might collapse as soon as 2021.

Let's Brainstorm

So...how will technology affect different asset classes? These are some examples.

<p>Office</p>	<p>Holographic Teleconference/ZOOM: No need to be in the office</p> <p>AI: Work will be more productive, less use of people</p> <p>Autonomous Platforms: People able to work from a car</p>
<p>Shopping Centers</p>	<p>AI: More efficient inventory and SKU means less need for space</p> <p>Autonomous Platforms: No need to have inventory in the front of the store. People will go see it and touch it, will order it and be immediately delivered by a drone/AV robot</p> <p>3D printing: Why keep in in inventory if it can be printed/manufactured on demand</p>
<p>Self Storage</p>	<p>Autonomous Platforms: Storage pods will come to you on an autonomous vehicle The pod will be stored in the “boonies”, no need to pay for premium real estate</p> <p>AI: Empowered by the sharing economy, why buy something that you can share? AI will search and share on your behalf.\</p> <p>3D printing: Why keep it in inventory if it can be printed/manufactured on demand</p>

Let's Brainstorm

Manufacturing	<p>3D printing: Why keep it in inventory if it can be printed/manufactured on demand</p> <p>AI: Work will be more productive, less use of people and stock</p> <p>5G: Internet of Things, wide use of sensors will result in more efficient processes</p>
Distribution centers	<p>AI: More efficient inventory and SKU means less need for space. AI coupled with the reliability of autonomous platforms can reduce the time to reach a client</p> <p>Autonomous Platforms: Cost of transportation/distribution will decrease, consolidation to decrease transportation costs will not be a factor</p> <p>3D printing: Why keep in in inventory if it can be printed/manufactured on demand</p>
Gas Stations	<p>Autonomous Platforms: Autonomous vehicle fleets will be electric no need for gas</p> <p>Batteries and Solar Energy: Even if shared autonomous vehicles do not evolve as expected advances in battery technology and solar energy will accelerate the adoption of electrical vehicles</p>
Business Hotels	<p>Holographic Teleconference: No need to be physically present</p> <p>AI: As machines take over less need for specialized talent to be involved in processes</p> <p>Autonomous Platforms: Autonomous "RV's" can take you to your destination saving on hotels and flights</p>

Let's Brainstorm

<p>NNN Stand Alone (i.e. Walgreens)</p>	<p>3D printing: Why keep in inventory if it can be printed/manufactured on demand</p> <p>Autonomous Platforms: Convenience Stores will come to you on demand</p> <p>AI: AI will manage house hold and will order items as needed creating less trips to stores</p> <p>Amazon Effect: With better and more immediate last mile less need for physical convenience shopping</p>
<p>Residential SFR/MF</p>	<p>Holographic Teleconference: No need to be in the office or closer to the office, no need to pay a location premium. Possible migration to tertiary cities where cost of leaving is cheaper</p> <p>Autonomous Platforms: Less premium on being close to the office if you are not driving. No need for garages in homes, maybe most will be converted to home offices.</p> <p>3D printing: 3D printed houses will help solve the affordability crisis in housing</p>



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PIA Residential Opportunities

Invest in Workforce Housing in the South East US

Founded in 2009, PIA invested heavily in the single-family and medium-sized multifamily market; and through successful management and repositioning, PIA reaped the benefits of tremendous value appreciation.

PIA's seasoned team of professionals brings over 180 years of combined experience in selecting, evaluating, structuring, financing, improving, managing, and selling multifamily assets. With an institutional mindset and entrepreneurial spirit, conservative underwriting, and defensive acquisition strategies, PIA strives to produce above average, risk-adjusted market returns for our Family Office and HNW individual investors.

PIA
Objective:

To offer focused strategies to participate in opportunities to capitalize and preserve wealth by investing in stable real estate funds or SPVs.

Current Opportunities include the PIA Residential Fund, comprised of value-add work force housing, Hard Money Lending Fund, and Opportunity Zone Fund investments.

Equity positions in workforce housing are stable investments that recognize shelter is a basic need:

- Workforce housing is historically recession proof in a downturn
- Lower rent properties draw in trade-down customers while maintaining high occupancy rates
- Consistent Cash on Cash returns and strong risk adjusted returns (10+ CoC – 14+IRR)
- Workforce employment is inherently stable, emanating from industries of Education, Medical, and Government (EMG)

THANK YOU

**Questions, Comments, Ideas?
Feel free to reach out**

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- [Excellent presentation on future of autonomous vehicles by Morgan Stanley](#)
- [Growing Waymo's Partnerships in Metro Phoenix](#)
- [Aptiv releases 'industry's largest' public dataset for autonomous driving](#)
- [Food-as-a-Service: The \\$3 Trillion Meal Delivery Market](#)
- [A Better Understanding of ARK's Autonomous Taxi Model](#)
- [Portland startup develops AV remote control](#)
- [Video on 3d printing](#)
- [Solar vs. Coal: Why the "74 Percent Report" Signals a New Era for US Energy: This moment has been coming, so what's next?](#)
- [Daimler takes majority stake in US robotics firm as it targets autonomous truck market](#)
- [Aurora raises over \\$530 million for its AV Driver](#)
- [Avinew designs insurance programs around autonomous and semi-autonomous features](#)
- [Self-driving vehicle deployments announced at the Brooklyn Navy Yard and Paradise Valley Estates](#)
- [Robot Coworkers Are Coming, and They're Going to Really Mess with Your Head](#)
- [Owning a Car Will Soon Be as Quaint as Owning a Horse: The shift away from private vehicles will happen faster than we think.](#)
- [How do you insure a driverless car?](#)

Links to Interesting Stories

- [The world's first 5G hologram call just happened and the future is officially here](#)
- [How 5G will transform manufacturing](#)
- [Why Waymo Is Worth A Staggering \\$175 Billion Even Before Launching Its Self-Driving Cars](#)
- [SoftBank, Other Investors in Talks to Invest \\$1 Billion in Uber's Self-Driving Unit](#)
- [3-D-printed homes are coming to the US: Austin-based developer plans to use tech for affordable housing](#)
- [Optimus Ride Announces Strategic Partnership with Brookfield Properties](#)
- [8 robots racing to win the delivery wars of 2019](#)
- [A doctor in California appeared via video link to tell a patient he was going to die. The man's family is upset](#)
- [GM is gone. Now come 3D printers and robots](#)
- [This Is What Peak Car Looks Like](#)
- [FedEx turns to Segway inventor to build delivery robot](#)
- [Daimler AG and BMW Group to jointly develop next-generation technologies for automated driving](#)
- [Imagine a city with no cars, free bikes — and 50,000 people in one square mile](#)
- [Rivals BMW and Daimler are spending \\$1 billion \(together\) on the future of transportation](#)
- [Elon Musk: Tesla will have all its self-driving car features by the end of the year](#)

Links to Interesting Stories

- [Why retired people could be ideal customers for self-driving cars](#)
- [IBM's fast-talking AI machine just lost to a human champion in a live debate](#)
- [Deliver Bots Have Awkward Sidewalk Interactions Too](#)
- [SOFTBANK INVESTS \\$1B IN ROBO-DELIVERY STARTUP NURO](#)
- [Amazon Invests in Electric Pickup Truck Startup Rivian](#)
- [The Green New Deal Needs These 5 Cutting-Edge Energy Innovations to Succeed](#)
- [Will self-driving cars wreck the self-storage industry?](#)
- [The Transportation Revolution: The Impact of Ride-Hailing and Driverless Vehicles on Real Estate 2017](#)
- [Stop & Shop to launch on-demand, self-driving grocery vehicles](#)
- [Amazon invests in self-driving vehicle startup Aurora](#)
- [Could Automating Food Services Create Jobs?](#)
- [Shell snaps up EV charging player Greenlots](#)
- [Amazon is hauling cargo in self-driving trucks developed by Embark](#)
- [Report: On-demand goods storage startup Clutter raising up to \\$250M](#)
- [Aptiv announces 5000 self-driving public rides](#)

Links to Interesting Stories

- [Apple shifts staff from autonomous vehicle project](#)
- [Robot valets may soon park your car at this London airport](#)
- [How Driverless Cars Are Going to Change Cities](#)
- [How Autonomous Cars Will Reshape Our World](#)
- [Automation and Artificial Intelligence: How machines are affecting people and places](#)
- [Boeing's first autonomous air taxi flight ends in fewer than 60 seconds](#)
- [How Robot Taxis Will Change Mobility Over the Next 10 Years](#)
- [A Triple Threat to Automakers: Recession, Demographics and Disruption](#)
- [Conference Calls Are Terrible. This Startup Is Replacing Them with Holographic Meetings](#)
- [Why holograms could replace conference calls](#)
- [Ford Testing Last-Mile Delivery with Postmates](#)
- [Continental Shows Future Technology Vision at CES: Dog-like robots could one day be delivering packages from driverless vans](#)
- [China's Baidu will help deliver Walmart groceries in self-driving vans](#)
- [Rinspeed announces its further-advanced Snap ecosystem: a vehicle in which the chassis \(Skateboards\) and bodies \(Pods\) can be swapped out at any time](#)
- [Toyota's 'e-Palette' is a weird, self-driving modular store on wheels](#)

Links to Interesting Stories

- Why Your Ice Cream Will Ride in a Self-Driving Car Before You Do: Moving a few pounds of stuff to people turns out to be much easier than getting large, impatient and litigious human beings to their destinations
- PepsiCo is rolling out a fleet of robots to bring snacks to college students
- GM Cruise and DoorDash are partnering on autonomous food deliveries
- Volvo's New Pitch: 'Don't Buy This Car'