ARC WHITEPAPER

Automated **R**esidential and **C**ommercial

by

Ian Abbott

Abstract

We are facing a global housing crisis. An estimated 40 percent of the world's population will lack access to adequate housing by 2030.[1] Fundamentally, the housing crisis is due to market forces aligning to raise housing prices and limit supply. Meanwhile, the recent pandemic has shifted into overdrive the way people think about where they work and live. The COVID-19 pandemic has also sped up certain underlying economic, technological, and social trends causing digital nomadism and remote work to become a reality for millions of people around the world. These developments have caused people to seek alternative living solutions. We propose ARC (Automated Residential & Commercial) as a housing alternative that solves some of the main consumer and market problems present in mainstream housing systems today. ARC is a network of habitable automated parking hubs designed to store, shuffle, load, and unload multi-use containerized micro-spaces. Micro-spaces can be apartments, workspaces, retail stores, farms, fab-labs and more. ARC's installations are linked to one another by intermodal transportation, making ARC's network the first mobile apartment system and platform for micro-homes and stores. ARC's connectivity unifies distant pieces of land into a single extendable development that can take advantage of network effects and aggregate efficiencies. This means that as ARC scales it becomes more attractive to join. ARC addresses the housing crisis by offering a housing option where network economics are innate. The creation of ARC's parking spaces is naturally incentivized by network economics as adding supply is encouraged by Metcalfe's law. When you combine the product's stickiness, its capability to address fundamental housing problems and its suitability for factory production, you achieve a powerful housing solution. This document explores where housing is today, introduces ARC's next generation housing product and discusses how ARC attacks fundamental issues in housing.

[1] https://unhabitat.org/topic/housing

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The Housing Industry in Crisis

Over the past 15 years, the global housing industry has seen massive instability, starting with the 2008 housing bubble and subsequent industry implosion, which continues today with the largest global pandemic in 100 years, unchecked inflation, and recent sky-high interest rates.

Today—and for the foreseeable future—the world is poised to see the largest housing crisis it's possibly ever faced. The World Bank estimates that the housing crisis will likely impact more than 1.6 billion people by 2025.[2] And that figure will nearly double in just five years, with approximately 40 percent of the world's population lacking access to "adequate housing" by 2030, according to the UN.[3] The world will need more than 96,000 new and affordable homes to become available *every day* to meet this exploding demand.[4]

At the same time, stagnant wages, inflation, and low housing supply have put affordable housing out of reach for millions of people around the world. Despite paychecks being higher than 40 years ago, purchasing power has dramatically declined. When taking inflation into consideration, the average hourly rate for non-management workers has only grown approximately $2 since 1964.[5] What's more, today's average hourly rate is $22.58, which is about $6 lower than what a full-time worker needs to afford rent for a "modest two-bedroom apartment" in the United States.[6]

It's clear that housing prices have succumbed to inflation, rising nearly eight percent from 2022 to 2023.[7] With the average median house price climbing to more than $400,000, the typical 20 percent down payment is now $80,000 on average. Despite the US Federal Reserve taking steps to try to curb inflation by raising the overnight rate, the impact has been to make housing even less affordable. As of the time of this writing, the average long-term mortgage rate in the

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[2] https://www.weforum.org/agenda/2022/06/how-to-fix-global-housing-crisis/
[3] https://unhabitat.org/topic/housing
[4] https://www.weforum.org/agenda/2022/06/how-to-fix-global-housing-crisis/
[5] https://www.pewreseARCh.org/short-reads/2018/08/07/for-most-us-workers-real-wages-have-barely-budged-for-decades/
[6] https://www.cnbc.com/2023/06/14/state-map-shows-what-renters-need-to-earn-to-afford-a-2-bedroom.html
[7] https://www.bankrate.com/real-estate/inflation-housing-market/

United States has hit a 20-year high of more than seven percent.[8] High interest rates are driving up monthly mortgage payments by over 50 percent—and driving away buyers.[9]

Contributing to the rise in prices is the Airbnb-ization of much of the housing stock, particularly in touristy areas. While large cities saw a slight decline in short-term rentals (STRs), other large cities saw a significant increase. For example, the number of STRs in Dallas has grown by more than 50 percent since 2019.[10] STRs have grown so rapidly in some areas that many municipalities across the US are instituting limits to the number of permits allowed. Some cities have even outright banned rentals of less than 90 days.[11] The growth in STRs has had a limiting effect on long-term housing supply, which in turn contributes to price inflation.

It's important to note that these trends have been brewing for some time, but the global COVID-19 pandemic considerably exacerbated them. The pandemic put considerable strain on the housing industry through a variety of factors, including (but not limited to):

- Increased financial hardship and joblessness[12]
- Construction delays[13]
- Increased number of remote workers[14]

Ultimately, all these factors combined have made it increasingly difficult—or even nearly impossible—for many buyers. The Urban Institute projects that by 2040, homeownership rates will be considerably lower among Millennials (aged 45 – 54 by 2040) than past generations, with the biggest impact being felt in minority communities.[15]

If all this seems like an unending, downward spiral, it is precisely because it is. Homeownership has been proven to help create generational wealth. Without it, many individuals and families

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[8] https://www.msn.com/en-gb/money/other/average-long-term-us-mortgage-rate-climbs-to-709-this-week-to-highest-level-in-more-than-20-years/ar-AA1fp118
[9] https://www.nbcnews.com/business/consumer/buying-a-house-with-higher-interest-rates-how-much-does-it-cost-rcna50173
[10] https://www.nbcboston.com/news/national-international/as-housing-crunch-intensifies-across-the-country-data-gives-a-peek-at-airbnb-impact/2821373/
[11] https://www.businessinsider.com/cities-fighting-airbnbs-with-regulations-for-short-term-rentals-2022-5?r=US&IR=T
[12] https://www.cbpp.org/reseARCh/poverty-and-inequality/tracking-the-covid-19-economys-effects-on-food-housing-and
[13] https://www.jchs.harvard.edu/blog/covid-19-will-delay-housing-construction-but-for-how-long
[14] https://www.nber.org/digest/202207/pandemic-induced-remote-work-and-rising-house-prices
[15] https://www.urban.org/urban-wire/2040-us-will-experience-modest-homeownership-declines-black-households-impact-will-be-dramatic

will find it challenging to escape poverty or increase their long-term wealth. A scenario where housing stock does not increase, and home ownership decreases could spell long-term challenges to economic growth and prosperity.

To avoid this dismal future, we need to think differently about housing. We believe technology can address the problem. Here, we turn to the innovative concepts of flexible and mobile architecture to address the challenges facing housing today.

Flexible, Mobile Architecture and Digital Nomadism: A Perfect Storm for Innovation

The fluidity and dynamism of people's lives are challenges architecture has always faced due to its fixed and permanent nature. In the present age of digital nomadism, architecture's traditional focus on fixed places finds itself challenged by its own rootedness. Buildings are constructed, and people use them for a while. Then, they are demolished when they no longer serve their purpose, only to be replaced by a new, fixed structure. While that model may have worked in the past, today's economic and social environments demand a greater level of flexibility and efficiency. The world is changing at an ever-increasing pace. Therefore, permanent buildings designed to serve the same function for years are at risk of becoming obsolete.

"Flexibility" in architecture refers to the ability of a building to adapt its layout continuously (and even its structure) to meet evolving needs. Achieving such architectural flexibility has been a challenge—several investigations have been attempted over the past century. From the early stage of the Japanese Metabolist movement to mobile architecture to flexible architecture, architects have progressively enshrined plasticity, recognizing its growing need in today's fast-paced world.

To see beyond the constraints placed on our built environment today, Mobile Architecture is the best place to start. First coined Mobile Architecture, the movement has continued into Flexible Architecture. The movement was started by Yona Friedman, and the ideas of his and like-minded architects were first sketched out in a book called The Archigram. Work in this field is continued today by Robert Kronenburg and like architects under the new name of Flexible Architecture. The technology has existed to execute something in the mobile architecture

conceptual wheelhouse for a century or more. And not only has the concept of mobile architecture existed but implementation have been attempted several times going all the way back to the introduction of the first mobile home. Some heroic attempts at true mobile architecture were Skyrise, Tornado Towers and, more recently, Kasita.[16]

However, until COVID-19 kicked the remote work shift into overdrive, the economy was overwhelmingly based on local interactions, and ideas based on mobile architecture concepts were alluring but not useful to a society that was less connected, especially over long distances, and required its people to be in fixed places. On top of this, aside from the few attempts to implement true mobile architecture listed above, most attempts to achieve this flexibility instead focused on style and design, turning away from the initial ambition: to make flexibility an actual functional principle. A truly flexible architecture will allow the structure to continuously change, to upgrade, and to be completely reprogrammable.

In manifestos, avant-garde architects describe how they intend to dissolve buildings, and indeed whole cities, by creating an architecture based on a machine aesthetic primarily involving mobility. In short, they want to give their buildings legs or wheels.

The concept of a mobile home is not new, with its origin dating back to the Conestoga Wagon, and it has been in use since the 1700s.[17] Of course, today's mobile homes—more recently referred to as "manufactured homes"—are often stationary and are too easily associated with lower socio-economic status thanks in large part to depictions in media. There are, in fact, more than 22 million Americans living in mobile homes today, though residents recently have found themselves squeezed by trailer park owners.[18]

That said, demand for mobile homes has been growing, with 31 percent more mobile homes shipped in 2022 over the previous year.[19] Prices have also gone up considerably in response to the demand. This should be no surprise, given the state of the housing market and the fact that

[16] https://99percentinvisible.org/article/mobile-home-skyscrapers-elusive-dream-vertical-urban-trailer-parks/
[17] https://mobilehomeliving.org/the-history-of-mobile-homes/
[18] https://apnews.com/article/mobile-home-evictions-housing-homelessness-796097305c4ef90d7d98e1fee1489284
[19] https://finance.yahoo.com/news/dont-call-them-mobile-manufactured-165451744.html

an average mobile home only costs approximately $125,000 vs. the $400,000 median price for a single-family home.[20]

But traditional mobile homes are not the only form of home that has gained in popularity in recent years. Since the pandemic, there has been tremendous growth in interest—and ownership—of tiny homes (typically between 100 and 400 square feet), RVs, houseboats, and refurbished vans and buses. The tiny house industry, for example, is primed to grow at a healthy seven percent clip over the next eight years.[21]

One type of alternative housing that came to prominence due to being an easy starting place for DIY homebuilders is the container home. Aside from being used to transport goods across the globe, both new and refurbished containers have been used for apartment and individual housing, farming, aquaponics, and more. In fact, they're so popular that one market analyst projects the container home industry (i.e., containers used strictly for domiciles) is expected to reach nearly $75 billion by 2025,[22] dispelling myths that they are unlivable or undesirable.

Like mobile homes, container homes are significantly less expensive than single-family homes, ranging from $50,000 - $200,000 for a finished home. However, unfinished containers themselves can be purchased new or used for significantly lower cost, generally around $1,500 - $5,000, making them a popular choice for the DIY crowd.[23] One of the top advantages of container homes is that they can be stacked, customized and modded-out, creating creative and customized living spaces.

Due to containers being the global standard for shipping, container homes perfectly fit the vision of flexible and mobile architecture. We believe that containers can be the basic building block of a new type of rearrangeable and upgradable built environment. One that can implement any urban function the human imagination can come up with.

[20] https://realestate.usnews.com/real-estate/articles/how-much-does-it-cost-to-buy-a-mobile-home
[21] https://growthmarketreports.com/report/tiny-house-market-global-industry-analysis
[22] https://www.alliedmarketreseARCh.com/container-homes-market
[23] https://www.livinginacontainer.com/how-much-does-a-shipping-container-cost-in-2022/

Emerging Lifestyle Trends that Impact Housing

In previous sections, we've discussed the global housing crisis, the factors driving it, and flexible and mobile architecture. However, there are several emerging lifestyle and social trends impacting housing decisions, particularly among younger adults. Like the housing trends discussed above, many of these lifestyle trends began long before COVID-19 but became major shifts post-pandemic.

The pandemic spurred a significant increase in remote work for those who remained employed, with approximately 50 percent of all work hours being done remotely during the height of the pandemic.[24] Today, 58 percent of Americans are working from home at least one day a week.[25] More than a third of workers have the option to work from home full-time, and 87 percent of workers say they will take advantage of flexible work opportunities when they can.

As a result of this new-found flexibility, as well as the leftover trauma of lockdowns and Covid-related deaths, many Americans' priorities have shifted. More people say that they are prioritizing their health, a better work-life balance, and spending more time with their loved ones than before the pandemic.[26] And with more remote work options than ever before, many people are reconsidering where they live, driving people from large cities to suburban or rural settings.[27] What's more, the pandemic spurred on a new wave of digital nomads—workers without a fixed base who travel and work remotely. Pre-Covid, this group was growing by 50 percent in 2020 and 42 percent in 2021, but COVID supercharged this growth.[28]

These shifts in where people live and work, how they live, and what they prioritize are likely long-lasting, if not permanent, as is evident by office buildings still being empty even though restrictions were lifted years ago. Not only is affordability a question when it comes to choosing a place to live, but workers in a post-pandemic world value their freedom and mobility more than ever. Taking all these housing challenges and shifts in lifestyle preferences into consideration, it's clear that many people want a housing situation that can afford them the freedom and

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[24] https://www.bls.gov/opub/mlr/2022/article/telework-during-the-covid-19-pandemic.htm
[25] https://www.mckinsey.com/industries/real-estate/our-insights/americans-are-embracing-flexible-work-and-they-want-more-of-it
[26] https://www.pewresearch.org/short-reads/2022/08/18/many-americans-say-they-have-shifted-their-priorities-around-health-and-social-activities-during-covid-19/
[27] https://www.pewresearch.org/social-trends/2021/12/16/americans-are-less-likely-than-before-covid-19-to-want-to-live-in-cities-more-likely-to-prefer-suburbs/
[28] https://www.mbopartners.com/state-of-independence/2021-digital-nomads-research-brief/#

flexibility the fourth industrial revolution provides without disallowing them a place to call home, store their stuff and live their lives.

The Future of Built Environments: Automated Residential and Commercial (ARC)

A new housing system is needed, one that can address the issues with dwelling technology today and its market failures. It must match humanity's increasingly dynamic temperament and be able to keep up with the increasing pace at which the world is changing. It must be dynamic, flexible, mobile and scalable while still performing the core functions of permanent structures.

“Hello, world!” I am ARC

ARC is a network of automated container parking installations designed to store, shuffle, load and unload containerized micro-homes and stores. These micro-spaces plug into central utilities and are accessible by elevators and stairs. Docked micro-spaces can act as apartments, workspaces, retail and more. Parking installations are linked to one another by the intermodal transportation network, making ARC’s network the world’s first mobile apartment system and platform for micro-homes and stores. ARC enables ownership and dynamism to unify into a next generation housing product and backbone for a new type of built environment.

ARC has two main components:

- ***Containers****:* Micro-spaces that are built to shipping containers specs (ISO standards) so they may be shipped intermodally. They can serve any number of purposes: housing, retail, office, gym, farming, 3D printing, fab lab, coworking, virtual reality, sensory experiences and more. They are human-accessible and useable shipping container-shaped micro-spaces that can perform various functions and perform functions in concert with other containers. Containers are the currency of the ARC system, live on the platform and can be composed to perform a myriad of functions.

- ***RAPS*** *(Random Access Parking Structures):* A collection of high-bay systems, accessways and utility plug-ins that containers can be automatically loaded and unloaded into in such a way that a bottom unit can be moved without moving a unit on top of it. RAPS hand containers off to intermodal carriers for transportation between RAPS in disparate locations for efficient transpiration. RAPS are a hub for containers equipped with connections for containers to services including internet, HVAC, utilities and others, allowing containers to simply “plugin” without them needing redundant systems.

ARC can quickly and easily reorganize its elements, making it a truly fungible built environment. New market and urban dynamics never possible within a built environment before can take hold, and the consequences of such are unknown.

When customers buy into ARC, they buy the right to park their unit on the platform; however, they end up owning a part of the network. ARC formalizes this through Rights To Use (RTUs). RTUs will be sold as parking points and will enable container owners to access ARC’s network of RAPS. The best way to conceptualize this is to think of it as buying a virtualized parking space. Customers own a virtualized version of a slot, which can manifest as any slot in any location. They are buying a finite number of permanent parking rights to our network and thus own a share of the total number of container parking spaces.

ARC will build sites in beautiful and stylish locations and provide regular access for customers to shuffle their units between them and enjoy the natural as well as ARC built amenities. Owners can shuffle between sites of varying types, demography, culture, design, landscape, and climate.

The shuffling of containers allows a high throughput of people and services between RAPS. This arbitrage allows sites with small populations to support a diverse number of services and social options by replicating large static populations with a large number of rotating services and people. This sharing of containers (which can be supplies or useable spaces) leads to what one could call “distributed agglomeration”: ARC behaving as a single distributed city by being able to draw upon agglomeration-like efficiencies.

The power of cities comes from the high number of interactions between people and things. It is those interactions that make urban settings economically and culturally vibrant. ARC supercharges these interactions via container sharing—and thus, economic and cultural output should follow—but in a new and distributed way. It is a reimagination of the urban, taking all its benefits and distributing them across a network of formerly disconnected lands. The efficacy, functionality and diversity of ARC grows exponentially as more nodes are added.

Since ARC is a network, we can sell slices of that network directly to customers. This marks a switch from housing's traditional supply and demand economics to network economics. Expansion is now encouraged instead of stifled as market forces incentivize it.

What is ARC?

Plainly stated, ARC is a network of random-access parking structures (RAPS) for container homes and commercial spaces. Container apartments, stores, experiences and more can be detached and transferred to other RAPS on request.

ARC: an Urban Computer

ARC can be conceptualized as an urban computer. RAPS, as well as the entire network, can change configuration over time, evolving to meet users' needs. ARC's network is a "housing cloud" that users can run "container programs" in this fashion. ARC is the first urban computer in that it is a "universal" urban system.

Detachability, mobility, and composability give RAPS their computational advantage. Containers can detach in random-access fashion, be upgraded, or be shared between distant RAPS. RAPS can also be reconfigured on demand, able to serve any function based on the types of installed containers.

ARC is universal in that any containerizable function can be loaded onto and run on our platform. And the number of functions ARC can host grows exponentially with the number of

RAPS installations. Most, if not all, human processes can be containerized or implemented by a composition of containerized spaces is a thesis of ours. Universality allows computers to change their abilities to meet the demands of different operators who wish to perform different functions with the device. Containers can be slotted into RAPS in different configurations, composed in different ways, these containers can be many different types and this organization can be altered in time to implement any operator's required functions. This gives rise to the concept of running container programs on ARC's network of RAPS. The ARC network, in this light, can act as a distributed urban computer running various urban functions as container programs. This opens a new universe of possible experiences, services, and functions for us to explore—think "4-Dimensional retail".

The Housing Crisis and ARC

ARC is capable of lowering costs over time without affecting initial buyers. Like any new technology, ARC will be expensive to start; however, we expect that RAPS parts and installation costs will fall with economies of scale and automation. Thus, we have financialized ARC in such a way to account for this.

ARC's naturally runs a network economic model. This is formalized by ARC's mechanism design (diagrammed in the Parking Points section). As a result:

1. Adding supply is incentivized:
    a) Expanding ARC's network is growing parking space supply
    b) Following Metcalfe's Law, the value of a network equals its size[29]
    c) Customers own fractions of this network
2. Organically bringing costs down is incentivized. The less expensive parking access becomes, the more parking access users who bought in gain, the larger the market for parking access becomes and the more room the network can grow.

In other words, the larger and cheaper ARC grows, the more customers will be attracted to the system, resulting in a virtuous cycle.

[29] https://en.wikipedia.org/wiki/Metcalfe%27s_law

As a network, ARC will be able to leverage network economics. Network economics are the background magic enabling ARC to incentivize the creation of its own supply. This is in direct contrast to the traditional housing market, where supply is restricted for profit. Network economics are the phenomenon by which a good or service's utility increases when the number of users increases. This contrasts with traditional supply and demand economics, where increased supply lowers value. ARC sells its customers a part of its growing network instead of a disconnected product.

Connecting Urban to Rural Settings

One key challenge in housing today is that urban and rural settings are vastly different in terms of housing, each with its own unique benefits but also with its own unique challenges and tradeoffs. People who live in urban settings enjoy the convenience of amenities such as shopping, transportation, entertainment, etc. Those who prefer rural settings often tradeoff that convenience for additional space and a closeness to nature.

ARC creates a synthesis between urban and rural settings through the creation of a new type of built environment, one that could be considered a semi-urban space. Unlike suburban or peri-urban spaces, ARC sites will not necessarily be located in an urban-to-rural transition area but will themselves be a mix of the two. Because of container throughput, owners can station their container in a small rural site when they desire the connection to nature without potentially sacrificing the convenience of urban living as new services and amenities can cycle through the container slots in that rural area, offering city-like diversity in a small population rural setting. Residents and operators can also buy access to multiple container slots for a higher price. This gives them access to more than one container space at a time. Residents can own two, three, four or more containers worth of space and compose them by parking them side by side and opening up the walls between them.

Container owners will have the freedom to move between larger, less remote nodes and smaller, more remote nodes. The system our customers buy into offers baked-in freedom and mobility without sacrificing private, customizable, and expandable space that serves as their home and storage for their treasures and memories. A container does not need to be permanently located in any particular region, but rather can be easily mobile via RAPS while

maintaining its connection to services, retail, a community, and technology. ARC's residents and community are non-localized and nimble. For example, should an owner desire a long-term change of scenery, they don't have to worry about selling their home; they can simply transfer it to another ARC site. If a changing climate or political landscape is adversely affecting one location, you can just transfer to another. If that site is lost due to a coup, war, or natural disaster the whole network shares the burden of that cost, helping prevent financial tragedy from striking particular individuals. ARC is a platform for container living that provides freedom while retaining a sense of community and access to a dynamic set of services. It's the best of all worlds.

The ARC Business Model

Growth happens in a distributed fashion and therefore is not hindered by local constraints. After a base of locations is constructed, ARC will leverage network effects and establish RAPS as a highly developable real estate product. ARC will leverage network effects to pitch real estate developers on installing RAPS and extending the network. This franchise strategy for scaling ARC removes the capital-intensive part of the business as well as ARC as the standalone developer bottleneck. This development beckons unbridled expansion.

In addition to its core franchise model, ARC will run an infrastructure-as-a-service (IaaS) business model on its network of constructed RAPS. This will monetize RAPS users through multiple sources of recurring revenue, realizing long-term value long after the sale of network access through parking points. ARC will earn recurring revenue through compatible unit sales, running container programs, partnerships, events, advertising, retail data, upselling services, experiences, retail commissions and more.

Parking Points

ARC will sell owners Rights to Use (RTU) in the form of parking points. Parking points provide the right to park your container in one of our container spaces in any of our RAPS. Customers can buy more parking rights than the full-time requirement to dock multiple containers at once or to move their container to a more sought-after space, such as an in-season or penthouse container space. ARC's parking points will constitute real property, affording its owners access

to traditional property financing and tax efficiencies such as the 1031 exchange. ARC will hold a percentage of RTUs for market-making purposes as well as for enabling easy mobility by ensuring some slots remain empty.

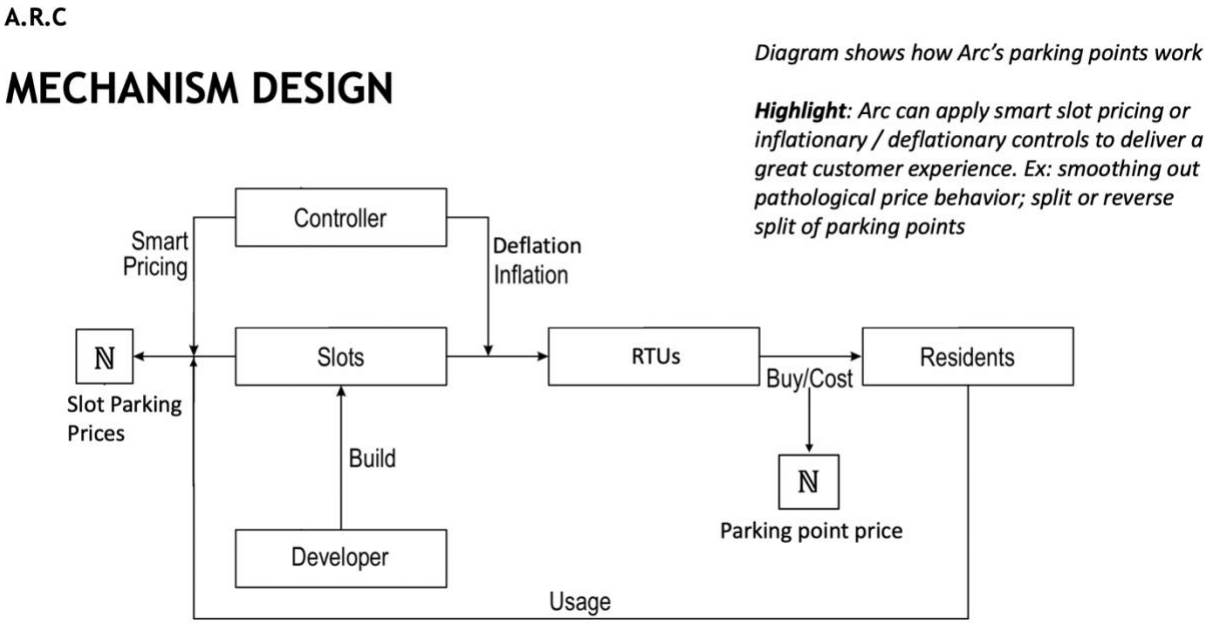
Why Points?

ARC's slots are identical, connected by mobility, and containers can plug into any of them. Slots are completely fungible in this way. Points are a natural mirror of this. Resident and service operators acquire parking points that are not tied to a particular RAPS but instead represent access to ARC's network of RAPS. Because of this separation between RAPS and units we can create a dual separation between users' personal parking point balances and the balance required to park in a particular slot. Because these can vary independently ARC can sell parking access for fewer points over time without reducing the number of points individual users own. This is ARC's secret sauce solution to the financialization issue with housing: how can the cost of housing come down when it's considered an asset? Well, in ARC's system, if parking costs come down, those users who bought a high number of points for a high price at the beginning will own a relatively larger and larger percentage of the network compared to newer users buying a fewer number of parking points at lower access prices. This means that as the cost to park in the average slot comes down, those with high balances will wind up owning more slots. These users can sell their excess points, rent them out, use them to park multiple containers at once or park in the most sought-after slots.

ARC plans to bring its RAPS cost down considerably over time via economies of scale, factory production and automation. ARC will do this to unlock new markets and increase sales for its system benefitting the entire network via growth.

Points additionally allow us to deal with demand between slots varying. For example, a parking space in location A may require 400 points to park a container, while a slot on a higher floor in location B might require 500 points to park. Usage patterns will algorithmically determine the parking point prices for slots. Should a container owner wish to move their container to a different space—either in the same RAPS or a new one—they may deploy their own reserves, or purchase or rent the additional points needed to reserve the space from us (the market maker) or from other users. Once they have secured the appropriate parking balance, they can

transfer their points to the new space and schedule their move. ARC's parking point system is implemented rigorously using ARC's mechanism design. The mechanism financializes ARC in such a way that adding supply and bringing down costs are, as discussed, both incentivized thus achieving proper market design for ARC's housing product:



Parking points will be generated and managed using a four-part process

1. **Point Creation**

   Points will be created through the process of adding slot supply by developers (with ARC being the first developer).

2. **Slot Pricing**

   How many points will it cost to park in a particular slot? As discussed, we will let supply and demand determine this but within normalized bounds. There are a finite number of points representing the total RTUs for the finite number of slots available across the entire network. Parking points may only be used for a single slot at a time; thus, it makes sense to normalize parking point prices. If the point price of certain slots increases, then others decrease accordingly as part of the slot pricing algorithm. Essentially, slots that are requested most often will require higher parking point balances. And the least

requested slots will require lower parking point balances. We believe this will create a balanced marketplace for slots: as people with greater financial means bid on desired slots, it drives their parking prices up; however, simultaneously this drives down the parking price of other slots. Resulting in a market structure where “greed is good” solving incentives issues further.

3. **Other Uses for Parking Points**

Parking points will be usable for other features in the ARC system. They will be transferrable to other customers, allowing owners to trade slots or reserve a slot for a time in the future using parking points as incentive pay. Parking points will also be held and used by ARC for market-making purposes to help with liquidity and slot accessibility. The more uses the more liquidity for our customers.

4. **Maintenance Fees**

Ownership of parking points represents ownership of physical land and operating equipment, buildings, manifest and management contracts. These cost money to run, and we will charge a monthly maintenance fee to each parking point holder to support, maintain and eventually replace the infrastructure they own.

ARC’s Masterplan: How We Plan to Implement this Technology

ARC will use its core technology (RAPS) as a backbone for a next-generation, distributed Master Planned Community (MPC).

MPCs are designed as a cycle of value creation. The general idea is that an MPC developer acquires a large but finite amount of empty but usable land in a single, very well thought out location. The developer builds on a small portion of the land creating the first residential neighborhoods. These neighborhoods generate demand for commercial services, such as retail or office space. The existence of these amenities, along with a starter community, makes the remaining land more valuable. The MPC developer then sells its supply of land to homebuilders at a higher valuation. This cycle repeats itself until the developer runs out of land and the deal is

done. Each tranche of sale and development builds on the last. This is the virtuous cycle that runs until the deal ends.

ARC plans to use its technology to form an entirely new type of MPC that can continuously crawl to new land without running out. Our Master Planned Community will follow a traditional evolution but with a distributed spin. ARC's network is formalized by its RTUs. RTUs will be the proverbial land that can be infinitely extended unbound by the limits of any locale. ARC will leverage network effects to incentivize expansion and create the same housing flywheel MPC developers have created in the past; however, this time, we have an unbounded supply of land and expand indefinitely leveraging more and more of the same advantages. The deal is never done, ARC can keep going ad Astra.

ARC's Growth Plan

We envision the following steps to grow ARC into a mature housing system.

1. ARC acquires two empty, usable parcels of land on which to install our first two RAPS.
2. The developer (who initially will only be us) installs a RAPS on each site, creating the first supply of slots and generating the first parking points. This will be our first test of the technology and our MVP.
3. ARC will then scale up its network by installing more RAPS in more locations.
4. Once we have developed a sufficient network base, ARC will open RAPS installation to developers. Developers will be able to install RAPS, leverage our locations, and extend the network by selling parking points for a franchise fee. Developers driving expansion for ARC is using the same MPC magic; however, in an MPC they can only grow locally, eventually hitting a ceiling on growth when they run out of local land, marking the end for their MPC. Our goal is to be able to grow exponentially, indefinitely, and non-locally through leveraging network effects to franchise installation removing ARC as the development bottleneck. This will allow the community to diversify, flourish and expand.

Shaping Affordability and Expansion

To adequately address the housing crisis, ARC's top priority is bringing the cost of ownership down to successfully scale its solution. We intend to leverage ARC's growth to access continually less expensive inputs as follows:

1. **Inexpensive Land:** ARC can grow not just in each location but also in a distributed way. Since ARC can expand non-locally it is provided with a virtually infinite reservoir of cheap land it can jump development to. This is in contrast to local growth, which drives up the price of contiguous land and makes expansion less and less affordable over time, eventually meaning that growth peters out for any single location even if the geography allows for more growth.
2. **Lower Capital Participation Requirements:** With stable and growing sales and a smooth expansion process, access to capital for building will be less expensive and abundant, with a proven and growing market for the product.
3. **Lowering Installation Costs:** We can drive down construction costs through bid-to-build and auction systems. As people in the industry become familiar with installing our system, we expect to see multiple bids on projects that will competitively lower install pricing. Automation is also coming for construction, and ARC is well poised to take advantage of this shift. If the installation of RAPS can be even partially automated, huge cost and time efficiencies will be realized.
4. **Reducing Manufacturing Costs:** In terms of innovation, the best way ARC can bring its costs down is for each generation of RAPS to be constructed with the goal of maximizing cost reductions without sacrificing functionality. RAPS can be manufactured in an assembly line with a minimized number of materials and parts, reducing installation time and complexity. Normal market dynamics will likely bring down the cost of parts through economies of scale.
5. **Reducing shipping costs:** with larger intermodal contracts and more optimized scheduling shipping efficiencies can be realized.

Locations

In choosing RAPS install locations, ARC will identify plots that fit the following criteria:

1. No NIMBY, political or legal red tape to installing RAPS
2. Easy access for an intermodal shipping partner
3. Enough land available for the planned number of RAPS
4. Natural amenities such as unique climate, flora, and fauna
5. Access to surrounding communities
6. Easy airport, train station or port access for convenient customer travel

Zoning

ARC fits right into existing mobile home park zoning. The strategy is simple: mobile home manufactures specify ARC RAPS as the “install and foundation method” for the mobile homes they manufacture that are compatible with our system. Since mobile homes and mobile home parks fall under HUD guidance the rules are federal and do not change from county to county. This gives us a simple zoning solution for RAPS that falls under existing US zoning rules and that works across locations within the United States.

ARC’s Advantages and Differentiators

ARC offers several advantages that differentiate it from the solutions of today. Here are some noteworthy advantages to ARC aside from its shift to network economics:

1. Mixed Lease + Own Model*:* Customers can lease the unit and own the slot via parking points because the unit is independent of the slot (and vice versa). This creates an efficiency over permanent buildings where you typically don’t lease the structure and own the land since one is not separate from the other.
2. Bulk Break Cargo and Containerization: Instead of shuffling belongings between houses, customers can move the domicile between locations. This is far more convenient and allows customers to take all their belongings with them live without breaking them down

and boxing them up or living out of a suitcase as the home is already the box. This ability is not just convenient for residences but for services, experiences, and retail. Specialized equipment, design and inventory are now all completely mobile. Container operators can seek new markets and happen upon more customers for their services.

3. ARC technology can be the backbone for an entirely new type of mechanical built environment. Living, working, shopping, production, and other aspects of life can be modularized, containerized, and ported over to the platform. Modifying containers is easier than typical home or factory renovations as they can be unplugged and sent back to the manufacturer for disassembly, modifications or upgrades and can then be plugged back in. Containers can also act as lockers or “cores” that plug into larger spaces containing a family’s or a factory’s things.
4. ARC can address not only housing, which takes up only two percent of space but also land use in general for a variety of functions and services, such as agriculture via container farms, energy via SMR containers, industry with DUV containers and so on.
5. ARC's application of RAPS technology will bring together not only travel and home but also urban and rural and industrial and play. We will use this system to arbitrage people and services between beaches, deserts, forests, mountains, prairies, and plains, countries, towns, and villages driving more interactions between people, services and these places. We believe this is game-changing for collaboration and creation.
6. ARC’s units are totally customizable. Customers can upgrade them, swap them out for new models, and decorate them to fit their own tastes. And in the future, they will be able to select from a vast array of types offered by many manufacturers.
7. Because the units are the least expensive part, customers could theoretically own multiple units with different designs, themes, and purposes. Loading in the one they want to use while they let their other containers sit in non-random access storage (stacked). Customers can own multiple units, each with a different purpose and lease out those not in use. In fact, as RTU prices come down over time, it will be feasible for a family to own multiple units for themselves and load them onto the system at the same time, and even turn it into an interlinked home.

8. ARC's built-in hydraulic backbone can load units in and out – we can use these transport lines to perform the major urban functions such as garbage removal, mail delivery, and transportation for communities based on ARC technology
9. All the technology ARC uses already exists. It's just a matter of putting the pieces together. No whizzbang needs to be invented to get this system operational. Every component is live independently in the market today. All we do is combine them.

ARC Technology

ARC's housing technology can be broken up into two main parts: the hardware and the software. The following describes our technology implemented in the simplest way possible using all readily available equipment.

Hardware

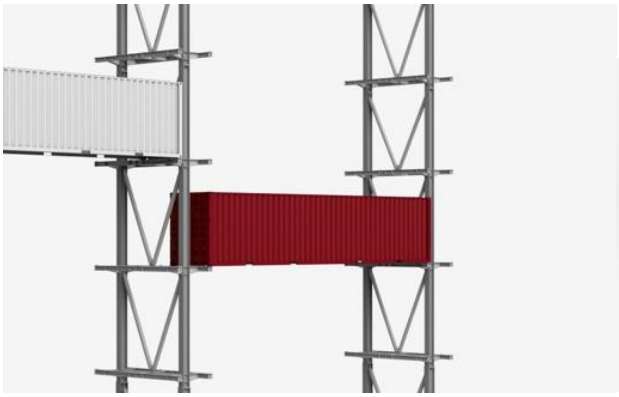
RAPS

Basic RAPS has five macro components: reefer racks, a high bay system, utilities, adapters, and elevators.

Reefer Racks

A permanent scaffolding that attaches to the exterior of a high bay system with built in stairs that act as a joint accessway.

Container High-bay System



Similar to the high-bay storage and retrieval systems used in warehouses but built for shipping containers. There is a gantry-type device central to these systems that moves in a 2D plane and can shuffle containers between slots as well as hand them off to container transportation. The system ARC will use is already manufactured by a company in the EU. The high-bay system pictured above is of their system. This company has fulfilled an order for one already and it is live and operational in a port in the Middle East.

Utilities

Utilities such as grey water, clean water, fiber optics, power, HVAC, central heating and cooling run up the reefer racks to the common areas and to adapters where the units plug into them.

Adapters

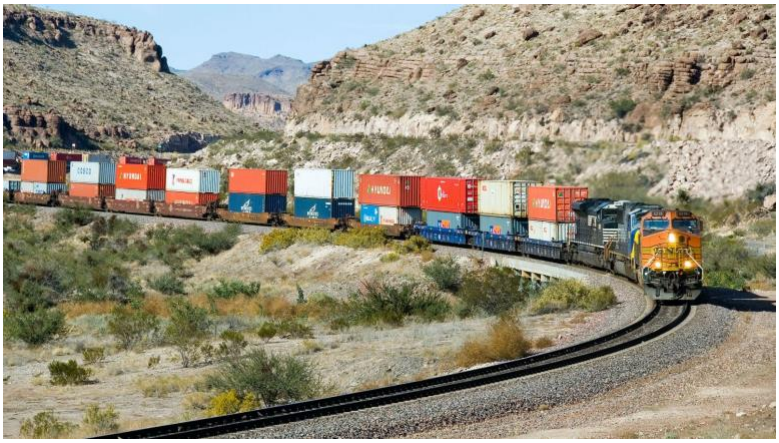
The utilities come together inside an adapter that will connect the units to RAPS, enabling their function. These can come from the RV and yachting industries.

Elevators

Elevators may be attached to the ends of the reefer rack for accessibility purposes.

Transportation Technology

In addition to the technology used to make RAPS, ARC will rely on intermodal technology for moving containers to and from RAPS.



Software

ARC will develop a customer-facing smartphone application and a website that will provide residents with the means to interact with ARC's features and connect with the ARC community. The following are ARC's key software components:

1. **Wallet**

   The wallet will serve as an account where the customers can store and manage parking points. Users can use the app to rent or buy points and can see how much their market rate is—managing their purchases and rentals from their wallets. They can also contact a broker for larger point trades or connect with other point holders and negotiate schedules. It will

allow them to buy and sell points as well as trade points back and forth with each other, enabling people to move into the slot they want to be parked in or accept points for leaving, as well as providing each other with enhanced liquidity and possibly borrowing options. If they want to hold onto their points, they can also make offers to slot occupiers in dollars or other currencies.

2. **Scheduling and Slot Management**

Customers will be able to schedule unit transfers and pick their next slots (provided they have sufficient parking points for those slots).

3. **Community Engagement**

Customers will be able to participate in community votes and discussions, indicate preferences and interact with a virtual community bulletin board in the app. The app will also allow owners to contact management, maintenance, utility, emergency services, and more.

Conclusion

We are on the cusp of a seismic shift in housing, both in the United States and around the world. Market forces and stagnant housing innovation are making it expensive and challenging to achieve the age-old dream of owning property. As supply falls further behind demand due to poor market design both sales and rents will continue to rise faster than income and the future of housing looks grim.

At the same time, the COVID-19 pandemic rebooted the fourth industrial revolution and inspired people to re-evaluate how they live and work. People are looking to spend their money and live their lives in more fluid ways, enabling them to travel, have new experiences, and engage with others in more dynamic ways.

For those who want freedom and flexibility but don’t want to leave ownership behind, ARC is the habitation solution for you. Our users will have all the amenities and services that urban living offers embedded in various environments and will be part of one community capable of leveraging network advantages.

The number of interactions between people and services is the driving force behind cities—ARC supercharges this force using container throughput together with network effects with consequences unknown. Our goal is to provide a platform for container homes. This will enable customers to travel the world without having to leave their home—their treasures, memories and friends synchronizing and coming along for the ride with them. The world needs a housing solution that does not rely on government subsidies and that is not a ghetto. That solution is ARC.