What enables new mobility entrepreneurs to successfully start and grow new ventures?

Accelerating New Mobility Entrepreneurship in Emerging Economies

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Executive Summary

With global greenhouse gas emissions exceeding 380 PPM[1], commute times in emerging market megacities often taking more than four hours[2], and air pollution causing over two million deaths worldwide annually[3], policymakers and business leaders are looking for ways to mitigate the environmental and human health impacts of automotive transportation. The rapid increase in mobile technology and internet access have enabled entrepreneurs around the world to disrupt traditional government-run transportation systems by providing faster and cheaper movement of people primarily in cities.

New mobility – defined as moving people, moving goods and moving less in ways that are cleaner, greener, safer, healthier, and more equitable – is an emerging field in the transportation sector where entrepreneurs are leveraging mobile technology to address these environmental and social problems. This research project sought to answer the following question: What enables new mobility entrepreneurs to successfully start and grow new ventures? It looked to understand the current state of new mobility and to provide a resource to accelerate entrepreneurship in the field. The team conducted more than 60 interviews in four markets – Brazil, India, China, and South Africa – and corroborated their on-the-ground insights through secondary research.

A number of findings emerged from this primary and secondary research. First, urban transportation means different things in different places. Second, although common barriers such as corruption, funding availability, and regulatory bureaucracy exist, different markets approach entrepreneurship in different ways. Third, similar business models emerged in each country, but each business was implemented differently based on the legal, cultural, and infrastructural environment of the region. A detailed analysis of research findings is included in the *Observations* section.

This research is relevant to both policymakers and entrepreneurs. Policymakers have historically separated transportation agencies by mode, but this has led to non-integrated systems with disjointed connection nodes and high multi-modal travel costs. By creating open communication channels between agencies, streamlining municipal-level payment systems, and providing funding and resources to entrepreneurs, policy makers can improve city transit. Entrepreneurs, on the other hand, can be overly ambitious and think that their product is right for everyone. By focusing strategically on their customers, network, local context, and operational execution, entrepreneurs can improve their chances of success and create greater environmental and health impact. The team observed that the most successful startups had begun with a narrowly focused customer base in a small market that they knew. While the study targeted urban areas in four specific emerging economies (Brazil, India, China, and South Africa), the insights have applicability to other developing markets and to developed markets such as the United States.

Leveraging these insights, the team developed *A Guide to Success for New Mobility Startups* to help early-stage new mobility entrepreneurs start and grow new ventures. The *Guide* is structured around a checklist of 20 questions that address the most common stumbling blocks this group of entrepreneurs face. Each question is supplemented with information that helps the entrepreneur develop an

actionable answer. The combination of a simple checklist with thorough guidance, case studies, and additional resources is designed to help entrepreneurs stay motivated, focused, and effective amidst the emotional and financial volatility that comes with starting a new business. The tool is being integrated into the online UM-SMART MobiPlatform. For full text of the *Guide*, see Appendix A.

Introduction

To better understand the role of transportation in human and environmental health problems, the team explored the research question: What enables new mobility[i] entrepreneurs to successfully start and grow new ventures? To answer this question, the team traveled to four major emerging economies and interviewed more than 60 entrepreneurs and support organizations. Using these findings and additional secondary research, the team analyzed the data to identify both common and unique barriers, and to develop a tool that helped new mobility entrepreneurs improve their chances of success.

Research Background

Our cities are rapidly urbanizing. Approximately half of the world's population currently lives in urban environments and that proportion is expected to grow to 60% by 2025 with 14 new megacities projected to develop (up from 23 currently).[4] Along with this urbanization megatrend, new technologies and business models are emerging that influence the way we think about, interact with, and utilize resources in the city ecosystem. Bike and car shares, advanced bus systems on dedicated lanes, and apps for on-demand taxi hailing, fare payment, and wayfinding are examples of new transportation solutions that have emerged as a result of these megatrends. Urban dwellers now have greater access to many different transportation options when traveling from point A to point B. The rapidly accelerating, widespread adoption of internet and mobile technology in emerging markets has enabled the creation and improvement of these solutions and will continue to do so in new and unexpected ways. Developing effective multimodal networks will require sustainable business models to meet growing demand for mobility services. These networks will be critical for climate change mitigation, natural resource constraint adaptation, and livable city creation.

Globally, transportation accounts for 15% of greenhouse gas emissions. In the US, that percent is even higher at 28%.[5] This project seeks to publish novel information about the current state of the transportation industry, the impact it is having on carbon emissions and energy consumption, and the emerging new mobility sector that is seeking to mitigate these impacts. The Masters Project team ("the team") built on prior work by Ford Motor Company, SMART, NextEnergy, and previous Masters Projects that focused on new mobility business model innovation by conducting primary research in Brazil, India, China, and South Africa and integrating the results into a tool to help address the barriers that new mobility entrepreneurs face. This project leveraged the reverse innovation and entrepreneurship work sponsored by the National Collegiate Inventors and Innovators Alliance (NCIIA). The tool developed, "*A Guide to Success for New Mobility Startups*" will be available through the UM-SMART online platform known as MobiNet.

Research Methods and Data

The project was composed of six phases. In the first phase, the team conducted extensive secondary research to understand the role of entrepreneurship and technology in improving transportation in emerging economies. In particular, the team focused on environmental, technological, social and

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[i] New mobility can be described as moving people, moving goods, and moving less in ways that are cleaner, greener, safer, healthier, more equitable. UM SMART, Sue Zielinski

economic factors impacting transportation in the four core countries. Secondary sources included indices, government data, non-governmental research and existing startup resources.

Next, the team visited four major emerging economies—Brazil, India, China and South Africa—and interviewed more than 60 entrepreneurs and support organizations to understand how entrepreneurs are currently addressing the need for improved urban transportation systems. The breakdown by type: 77% entrepreneurs, 7% supporting organizations (investors, incubators, and accelerators), 13% non-governmental organizations, and 3% policymakers. All interviews, which ranged from 15 minutes to 1.5 hours each, were transcribed by the team for use in developing the report and *Guide* content; they will also be distributed to clients for application in future projects. Interview subjects were identified using the team's networks and through secondary research. These interviews focused on the motivations and business models in each country. Responses were recorded through note taking and in audio and video form when possible.

The team then analyzed this primary and secondary data to identify the barriers to success, the perceptions of and access to different modes, the processes for starting and running a business, and the impact of local conditions on entrepreneurship. The team consolidated its findings into matrices to easily communicate the similarities and differences between countries with respect to attitudes towards transportation and entrepreneurship (Comparison of Attitudes) and barriers to success (Barriers Matrix).

After identifying these barriers and learning that there was no singular guide for new mobility entrepreneurs, the team developed the *Guide* to help entrepreneurs address these barriers. The *Guide* is divided into 20 questions organized in four categories: 1) Your Idea, 2) Your Experience, 3) The Context, and 4) Putting It Together. Each category includes a chapter describing how to answer the question. The team also identified implications of the findings for policymakers, and entrepreneurs.

Research Team

The Team was composed of five graduate students at the University of Michigan with diverse backgrounds and areas of expertise.

Aaron Desatnik

Aaron Desatnik is an MBA student at the University of Michigan. Before school, he was Director of Marketing for The Green Roundtable, a real estate consulting firm in Boston, and a Financial Analyst for Iridian Asset Management, an institutional investor in New York. Aaron is passionate about investing to create livable cities through multimodal transportation and dense, mixed-use development. Outside of his professional work, Aaron has been the Board of Directors Chair for a sustainable transportation non-profit and is a bike mechanic. He has a BA from The Ohio State University and is a LEED Accredited Professional.

Therese Miranda-Blackney

Therese Miranda-Blackney is a dual MBA/MS student at the University of Michigan. Before school, she worked for Deloitte helping military clients understand and manage their energy usage and as a Junior Fellow at the Carnegie Endowment for International Peace in the Energy and Climate program. Therese is focused on getting environmentally impactful technologies into the hands of people who will put

them to use through innovative business models and product design. She holds a BSFS in Science, Technology, and International Affairs from the Walsh School of Foreign Service at Georgetown University. In her free time, Therese enjoys cooking and volunteering as a tutor with 826 Michigan.

Lizzie Reisman

Lizzie Reisman is a dual MBA/MS student at the University of Michigan. Before school, she was the Development Director for blueEnergy, an NGO that provides renewable energy and sustainable development solutions for rural communities in Nicaragua, and a financial services auditor at KPMG. Lizzie is pursuing a career in social and environmentally impactful product development at Amazon after she graduates. She holds a BA in Biology from the University of California, Berkeley and is an avid soccer player, runner, and rock climber.

Jason Sekhon

Jason Sekhon is a dual MBA/MS student at the University of Michigan. He is focused on the intersection of information technology and transportation and is fascinated by public policy's role in developing smart, sustainable transportation systems. Before school, Jason worked in the healthcare IT field at McKesson Corporation as a Product Support Analyst where he helped clients to troubleshoot their software systems. Later at McKesson, he developed financial forecasts and variance analysis reports in his role as a Financial Analyst. Jason graduated from Georgia Institute of Technology with a BS in Management and concentrations in IT Management and Finance.

Samuel Shingledecker

Samuel Shingledecker is an MS student at the University of Michigan. His focus is on sustainable systems and he is involved in the Center for the Study of Complex Systems at Michigan, and his research interests include the complex systems of transportation and mobility infrastructure and links to new consumer behavior patterns. He also works as an SEO lead at Pure Visibility, with a focus on sustainability-minded clients. He previously received a BA from the University of Michigan. He is also an experienced giant street puppet builder, avid climber, and amateur murder mystery author.

Advisory Team

Peter Adriaens

Dr. Adriaens is Professor of Civil and Environmental Engineering, and Professor of Entrepreneurship and Strategy in the Ross School of Business, where he is affiliated with the Zell Lurie Institute for Entrepreneurial Studies. He is past-President of the Association of Environmental Science and Engineering Professors, a member-by-eminence of the American Academy of Environmental Engineering (AAEE), and Member of the Belgian Royal Academy of Applied Sciences, where he was recognized for bridging engineering and business entrepreneurship in academia and practice. Most recently, he was awarded a Finnish Distinguished Professorship, focused on portfolio financing models for CleanTech.

Following a 20-year career in in technology development (environmental sensing, green buildings) and validation, his current work focuses on CleanTech innovation and entrepreneurship. Specific interests include business water risk models focused on financial risk assessment, reverse innovation strategies for new mobility strategies, and the development of indexes and investment portfolios in emerging

CleanTech clusters. He teaches courses on Business Models, Entrepreneurial Business Fundamentals, CleanTech Venture Assessment, and Sustainability Finance. He is co-developer of the KeyStone Compact™, a data-driven analytical and strategic positioning tool for that has been used by more than 1,000 global early and later stage companies in a wide range of investment domains (CleanTech, BioTech, ITC, space sciences), used by economic development organizations in the US, Europe and Asia.

He is co-founder and CEO of Water Risk Analytics, a big data and software analytics financial technology firm addressing equity and portfolio risk and performance issues related to ESG investments. He is CEO at The KeyStone Compact Group (www.keystonecompact.com), built around the KeyStone suite of tools addressing investment strategies across the business lifecycle. As co-Founder/Head Judge of the Global CleanTech Custer Association (GCCA), his interest is in building out value chains for industrial renewal by screening, repositioning and connecting CleanTech clusters and companies (www.globalcleantech.org). With 56 clusters in the Americas, Asia-Pacific, and Europe, representing nearly 10,000 companies, and $3.5 bn. under management, the GCCA catalyzes global value system development.

Aniela Kuzon

Aniela Kuzon is the Manager, New Mobility at NextEnergy, a Detroit non-profit organization founded in 2002 whose mission is to accelerate advanced energy technologies, businesses, and industries. Kuzon's current focus includes market analysis and demonstration programs that accelerate technology commercialization in new mobility areas including: vehicle connectivity, automated fleet technologies for on-demand transit and logistics, non-traditional vehicle ownership models, and energy infrastructure for multimodal transit systems.

Prior to joining NextEnergy in 2012, Kuzon worked in Beijing, China where she assisted in the commercialization of US energy technologies in China, primarily through licensing opportunities and the development of pilot and demonstration projects. Previously, she was a program director at Athgo International and worked on the development and execution of entrepreneurship programs for students and entrepreneurs. Kuzon holds a B.A. in Economics from Wesleyan University.

Eric Wingfield

Eric Wingfield is a sustainability specialist utilizing strategy and organizational development at Ford Motor Company. He specializes in green buildings, employee engagement, sustainability policy, and greening the IT supply chain. Eric graduated from the University of Michigan's Ross School of Business and School of Natural Resources and Environment with a dual MBA/MS in 2005.

Sue Zielinski

Susan Zielinski (MES, RPP) is an urban planner, and managing director of SMART at the University of Michigan. While founding director of Moving the Economy (a New Mobility innovation link tank out of the City of Toronto in partnership with Transportation Options) and then while Loeb Fellow at Harvard's Graduate School of Design, she became an accidental pioneer of the then emerging New Mobility industry. In 1998, in search of an economically viable (and vital) pathway to advancing sustainable transportation in a context of regional constraint, she launched and co-hosted Moving the Economy, the first international conference exploring and showcasing the economic benefits and industry

opportunities of sustainable transportation. Then in 2002 she commissioned and collaborated on the first study on the emerging global New Mobility industry. Fast forward, her 2006 move to the University of Michigan enabled her to contribute by catalyzing related work on a more global scale in collaboration with a small but growing eco-system of industry leaders, entrepreneurs, city leaders, NGO's and academics.

Since 2006, the evolving SMART eco-system has grown and trail-blazed on a variety of fronts, including development (and application) of a systems methodology for implementing multi-modal, IT-enabled New Mobility solutions (taken up by cities in India, South Africa, Brazil, the Philippines, China, Europe, and the U.S.); with the support of Ford Motor Company exploration of sustainable, multi-modal market opportunities in an urbanizing world; creation of the Mobi Prize and platform to advance New Mobility enterprise and industry; social science research on multi-modal decision models; behavior, policy and planning research including accessibility metrics; business research based on New Mobility industry analysis and visualization, and more. In her spare time she likes to tango, garden, and sing.

Observations

The project's first three phases involved collecting and analyzing data on the perceptions of transportation, the barriers to success for entrepreneurs, and the impact of local conditions on new mobility opportunities. Through the team's primary and secondary research, the following observations were made.

Country Profiles

Findings from the team's primary and secondary research are briefly summarized in the following two tables followed by an in-depth analysis of each country.

Comparison of Attitudes

The purpose of this table is to give the reader an overview of prevailing attitudes towards various modes of transportation and certain aspects of entrepreneurship in the countries of focus. Although attitudes and perceptions can vary greatly from person to person even within the same country, the following table is meant to provide greater context and better framing for the following country-specific profiles.

	Attribute	Brazil	China	India	South Africa
Modes	**Who bikes?**	Men, who risk the danger Not children Some corporate employees	Students People who can't afford cars	People who can't afford motorcycles or autorickshaw rides	Hipsters Fitness seekers Children
	Cars are a…	Status symbol Personal possession Guarantee of safety	Status symbol	Sign that I've made it!	Castle where I don't have to interact with the rest of the world
	Walking is…	Dangerous	Necessary	Part of daily life	Not something I do
	Public transit is…	Unreliable Crowded Dangerous Expensive	Cheap Reliable Convenient Faster than other ways	Crowded and never on time	Dangerous Limited
	What do you hate about taxis?	Trying to get one	Government controls pricing	Over paying Feeling unsafe	Trying to get one Feeling unsafe

Entrepreneurship	**How is the problem framed?**	You must solve the problems that the government will not	We need to come up with a faster, easier, and more sustainable way of getting from point A to point B	We can make this better...and make some money along the way.	We need to address the social and environmental challenges our country faces.
	How do you approach a solution?	Find connections to the members of the municipality that must sign off as soon as possible	Find a city with sustainable transit KPIs and partner with the municipality	Start piloting some ideas until you fail or bureaucrats make you stop, then find a way around those hurdles.	Start a project you're passionate about, not necessarily as a business
	Where does money come from?	Friends and family Environmental grants	Government grants Incubator/accelerator Family and friends VC and Angel investors	Friends and family Government grants	Friends and family My day job Structuring company as a non-profit
	Failing is...	Fine. Pitching new ideas and getting funded is the problem	Taboo, although becoming slightly more acceptable to take risks	Part of doing business; it's what you do after failing that matters	Socially risky - nobody wants to fail after spending life savings

Major Barriers to Entrepreneurship

The project identified a number of key barriers that were present in more than one country. Most notable are the barriers created by customer preferences for status symbols, bureaucratic organizations, and a lack of startup funding. Customer preference for status symbols, specifically the perceived status of owning a car, was a significant impediment to new mobility entrepreneurship. In all countries, an outwardly-visible sign of wealth was whether and what type of car one owned. Bureaucratic organizations were another common barrier for entrepreneurs. Types of bureaucratic organizations included large companies, non-profits, and government organizations, and the barriers they erected included limiting access to transportation data, resisting innovative solutions, and requiring high fees and lengthy processes to start new businesses. Finally, startup funding was cited by entrepreneurs and supporting organizations as a significant barrier due to under-development of capital markets for startup funding. However, it is worth noting that nearly all entrepreneurs, regardless of their country or industry, name funding, or lack thereof, as a consistent barrier.

The following table summarizes the most frequently cited barriers by country.

Barrier	Brazil	China	India	South Africa
Customer Preference for Status Symbols	✓	✓	✓	✓
Entrenched Businesses	✓		✓	
Bureaucratic Organizations	✓	✓	✓	✓
Government Regulation		✓	✓	✓
Corruption	✓		✓	✓
Finding Talented Employees	✓	✓		
Startup Funding	✓	✓	✓	✓
Entrepreneurial Education			✓	✓

Customer Preference for Status Symbols

Potential mobility customers care about being able to demonstrate their status in society to others. The most frequent example is individuals purchasing a car to make their material wealth visually apparent to others. This can be a barrier for entrepreneurs if, for example, their idea promotes modes of transportation other than a privately-owned vehicle.

Entrenched Businesses

Entrenched businesses are existing organizations such as automobile manufacturers, taxi unions, bus operators, and railway companies that benefit from the current transportation system. Usually, they have considerable resources, including funding, political power, and membership to fight new mobility ventures that might threaten their business. This presents a barrier to entrepreneurs innovating in the transportation sector with ideas that can result in disruptive innovation.

Bureaucratic Organizations

This refers to the typical style of larger organizations, government or private, that new mobility entrepreneurs may encounter. Barriers often manifest in forms such as difficulty gaining internal approval, difficulty identifying subject matter experts, and lengthy time requirements for paperwork processing. This barrier can be particularly challenging for a cash-constrained entrepreneur since time delays divert resources and energy away from business development.

Government Regulation

These include limitations imposed on new mobility entrepreneurs because of existing laws, procedures, and government policies. Government regulation can impede transportation innovation if the new

business model does not comply with the status quo. This can result in a startup being shut down just as it starts gaining traction or force an entrepreneur to devote precious time and resources toward lobbying governments.

Corruption

For a new mobility entrepreneur, corruption can manifest as bribes, kickbacks, or preferential treatment. This is a challenge for new mobility entrepreneurs since they must spend time navigating an extra step in an otherwise clearly-defined process and can deplete monetary resources needed for the new venture.

Finding Talented Employees

New mobility startups often require a diverse set of skills to bring an idea to fruition. Individuals with the necessary breadth and depth of skillsets are more difficult to find in these countries. The scarcity of talented employees might be the result of a poor educational system, mismatch between skills taught in school and those desired by the marketplace, or excessive demand for particular skills by other organizations. Regardless of the cause, the result is the same: new mobility startups have difficulty finding the right employees for the job.

Startup Funding

Capital markets for entrepreneurial ventures, specifically in the emerging new mobility space, are under-developed in the four countries researched. Entrepreneurs in these countries often rely on informal funding channels, such as raising money from friends and family, than on traditional equity or debt. This inefficiency usually requires entrepreneurs to spend more time searching for funders that yield comparatively smaller amounts of funding instead of spending that time developing their startup.

Entrepreneurial Education

Entrepreneurs, new mobility or otherwise, often benefit from education or mentorship on the process of establishing and developing a startup. Countries with this barrier present are somewhat lacking in formal channels of developing entrepreneurs. This results in entrepreneurs potentially repeating similar mistakes instead of learning from previously successful entrepreneurs.

Brazil

Major urban areas in Brazil have extensive public transportation offerings, typically in the form of public buses. However, years of underinvestment have resulted in an over-crowded system. Inter- and intra-city roads are often choked with congestion by increasing numbers of private vehicles. Daily commutes average two hours each way in major cities like Rio de Janeiro and São Paulo. The country will host the 2014 FIFA World Cup and the 2016 Olympic games, putting even more pressure on Brazil's public transportation infrastructure.

Population (millions)	201
Median Age (years)	30.3
Population in Urban Areas	87%
Urbanization Rate of Change	1.1%
Geographic Area (km^2)	8,514,877
GDP (PPP, trillion US$)	$2.42
GDP per Capita (PPP, US$)	$12,100
Gini Index	51.9
Human Development Index	0.730

Challenges and Opportunities

Brazil's under-developed transportation infrastructure, focus on partnerships with large companies, strong community networks, few opportunities for entrepreneurial education, increasing smartphone penetration, and challenging funding environment present challenges to aspiring mobility-focused entrepreneurs. Those able to turn these challenges into opportunities, however, will access a large, increasingly mobile middle class.

Transportation Infrastructure

Brazil's transportation infrastructure has lagged far behind its population and economic growth. In 2013, the country's infrastructure ranked 107 out of 144 countries.[6] Brazil spent 0.6% of total GDP annually on transportation infrastructure over the past ten years. Over the same period, the economy grew 4.5% annually. To sustain this level of growth, Brazil needed to invest at least 2% of GDP into transportation. India and China made transportation infrastructure investments of 5% and 13%, respectively, of GDP during similar economic boom periods.[7] This underinvestment has led to heavy congestion and political unrest. Although a lack infrastructure makes it difficult to build something new, innovation that utilizes existing transit modes more efficiently can create customer value and ultimately lead to profitability. Entrepreneurs able to capitalize on this can gain customer support and quickly achieve market penetration.

Brazil's under-investment in transportation is compounded by the country's increasing urbanization. In 1940, 31% of Brazil's population lived in cities; in 2013, that number had risen to over 80%.[8] Buses dominate the urban public transportation space, accounting for 90% of all trips. However, demand for buses has declined dramatically, down 30% since 1996. This is a result of increased congestion caused by more private vehicles on the road.[9] Brazilians who can afford it take their own cars because car travel is viewed as less stressful, if not any faster.[10] The government has aided this automobile movement by providing tax incentives for the first-time car purchasers,[11] constructing more freeways, and limiting walkways and biking lanes.[12] Warner Vonk, an entrepreneur in Rio de Janeiro, experienced the problem of over-crowded buses and saw an opportunity. He developed a real-time bus app called Buus that initially used crowdsourcing to track buses through the city. The app now uses GPS tracking. After initial testing, Buus was found to accurately predict bus arrival times, improving travel predictability for passengers, which led to increased willingness to take the bus instead of drive.[13]

Public-Private Partnerships

Since winning bids for the 2014 World Cup and 2016 Olympics, Brazil has invested little in public transportation infrastructure despite a $400B plan announced at the Bid Presentation in 2007. Red tape, bureaucracy, and corruption have slowed – and in some cases even stalled – airport, high-speed train, and bus rapid transit projects.[14] In July 2013, millions of Brazilian citizens took to the streets protesting government corruption and lack of public transportation, among other things. These protests forced the government to take action by seeking help from private companies. The national government has streamlined the transportation project bidding process, reduced the up-front fees, and provided tax incentives to make the sector more attractive to private companies.[15] The government pledged over 81B Brazilian Real in 2013 to invest in private project funding to build out bus, subway, and light-rail

infrastructure. [16] Although promising for private companies, this new focus on public-private transportation partnerships could exacerbate the existing status quo of government project bidding. [17] Adding to the incumbent-favoring challenges of these new programs, entrepreneurs face an additional challenge of lengthy processing fees to start and run their business. The World Bank ranked Brazil in the bottom third (121 out of 185) in a study of international barriers to starting a business. After 13 procedures and 119 days, an entrepreneur can finally open up shop. In comparison, South African entrepreneurs only need to complete 5 procedures over the course of 19 days. [18]

Community Networks

Neighborhoods in Brazil are tightknit, providing challenges and opportunities for entrepreneurs. Effective marketing to community members and shop owners can result in direct promotion, consumer insights, and customer loyalty. Ineffective marketing, however, can leave a startup floundering. SamPape ("Sao Paolo on Foot"), a startup founded by Victor Mendez, uses community networks to build out his pedestrian tour app. The app is built on Mendez's belief that the best way to learn about a city is by walking it. Sao Paolo, he says, is a beautiful city with a long history, culture, and surprises. SamPape provide walking tours for tourists and locals to learn new things about the city. When he first started, Mendez found that after walking one or two tours through a neighborhood, the shopkeepers started coming out to provide additional information on the area and recommendations for other sites to see. They even offered to put flyers and other print advertisements in their shops to help drive more business to SamPape. Mendez says that this direct community advertising has been instrumental in learning new routes and promoting the app. If a community likes and believes in a product, community members will use it and support the entrepreneur. [19]

Entrepreneurial Education

Brazil has increased its spending on education over the last ten years, up 2.3% from 14.5% from 2005 to 2012, [20] but the country's primary and secondary systems are still weak compared with other similar-sized economies and less 20% of all students entering tertiary education programs actually graduate. [21] There are few multi-disciplinary or general education programs; students must decide their field of study before they enter university and are therefore exposed to little outside that field throughout their college experience. According to Easy Taxi founder, Tallis Gomes, the education system focuses on memorizing and following existing procedures, not creating something new. [22] As a result, many Brazilians lack a set of entrepreneurial skills.

Aside from traditional education, less than 10% of all adults receive any formal entrepreneurial education. [23] Despite that fact, the startup space is considered a viable, and even desirable, career choice. In 2013, 85% of all Brazilians age 18 – 64 considered entrepreneurship to be a desirable career choice and almost 27% reported intent to start a new business in the next three years. [24] This presents an opportunity for entrepreneurs who have experience and can start up a business to educate and support new entrepreneurs. Rodrigo Baer founded venture capital firm Warehouse Ventures in 2010 to both fund and mentor startups. He saw an opportunity to take the entrepreneurial spirit embodied in many Brazilians and provide the education, resources, and support needed to make take products from ideation to launch.

Telecommunication Infrastructure

Cellular telephone adoption has dramatically increased over the past decade, with teledensity per 100 individuals rising from 19 in 2002 to 125 in 2012.[25] Entrepreneurs developing cell phone-centric solutions in Brazil must carefully consider their target customers' mobile phone functionality when designing their offerings since a majority of the population use feature phones. An increasing number, however, are adopting smartphones. Smartphone adoption in Brazil has risen as well, with smartphones numbering 22M in 2012 and predicted to exceed 41M in 2014.[26] Another area of growth is internet usage, increasing from 43M users in 2007 to 88M users in 2012.[27] This means that entrepreneurs with a mobile technology solution are able to develop more sophisticated products and reach more customers every year.

Funding and Availability of Capital

As a result of high interest rates, low investor protection, and institutional barriers to starting and running a business in Brazil, debt and venture funding for startups have historically been low. Informal investments from family and friends represent the largest capital inflows. Therefore, entrepreneurs benefit from having alternative sources of income or a network that includes wealthy individuals.

Brazil has some of the highest interest rates in the world at 10.75% BACEN SELIC.[ii] Comparatively, South Africa's central bank interest rate is 5.5%, China's is 6%, and India's is 8%.[28] Debt financing is therefore expensive.

Brazil is relatively attractive market for venture and private equity investors. The country ranked 36th out of 118 countries in Venture Capital and Private Equity attractiveness. This is relatively unsurprising considering the assumed investment opportunities available within the country hosting both the World Cup and Olympics within 2 years of one another. However, Brazil's complex processes and bureaucratic policies provide little incentive for investors. The country ranks low on investor protection, corporate governance, and skilled human capital, but high on bribery and corruption. On top of the difficulties of starting a business (discussed above), running a business is also difficult. According to the World Bank, Brazil is one of the hardest countries in the world in which to pay taxes (156 out of 180 countries) because of the complexity and bureaucracy of the system.[29]

[ii] The Banco Central do Brasil ("BACEN") is the Brazilian Central Bank and it sets the sistema especial de liquidacao e custodia ("SELIC") interest rate. This is the base rate that other banks and financial institutions in Brazil use to set interest rates on other financial products in the economy.

China

Major urban areas in China have well-developed public transportation options. However, demand for intra-city mobility—driven by rapid population growth—has outstripped the capacity of public transportation systems, resulting in overcrowding. While China's urban road systems are extensive, dramatic increases in personal car usage have saturated these roadways leading to heavy congestion and air pollution. Municipal governments cannot build transportation infrastructure fast enough to balance demand caused

Population (millions)	1,350
Median Age (years)	36.3
Population in Urban Areas	51%
Urbanization Rate of Change	2.9%
Geographic Area (km²)	9,596,961
GDP (PPP, trillion US$)	$12.26
GDP per Capita (PPP, US$)	$9,100
Gini Index	47.4
Human Development Index	0.699

by increased city population density. As a result, new businesses that improve the utilization of existing transit modes and that make inter-modal connections easier have emerged. These businesses are run by entrepreneurs and employ mobile technology.[30]

Challenges and Opportunities

China's economic growth and unique culture introduce a variety of challenges and opportunities that aspiring mobility-focused entrepreneurs must consider. These major factors are increasing population, congestion, and pollution, changes in personal transportation norms, emergence of personal vehicles as a status symbol, inability to monetize app-based products, and increasing mobile technology.

Growing Population, Congestion, and Pollution

With over 1.3B people and growing at 6.2% annually, China has the largest population in the world.[31] It is also the largest automobile market in the world.[32] There were 21.5M light-vehicle sales (defined as "cars, sports utility vehicles [SUVs], vans, and light trucks under six tons gross vehicle weight" by J.D. Power and Associates) in China in 2013 with 34.6M forecasted for 2020. If the country hits this target, China will represent 40% of all automobile sales in the world in 2020.[33] This factor, a large, growing population that exhibits a high demand for personal vehicles, has led to heavy congestion and hazardous air quality. China is now one of the worst CO_2 emitting countries in the world.[34]

Public and private attention is beginning to focus on mitigating the public health problems caused by congestion and poor air quality. This could present an opportunity for new mobility entrepreneurs. China's 12th Five-Year Plan, a document that drives policy decisions at the national, regional, and municipal level for half a decade, was implemented in 2011 and calls for higher pollution reduction targets and sustainable city growth.[35] As a result, new programs and funding mechanisms have been developed to foster congestion- and pollution-reducing businesses. There is also increasing support from the country's population for sustainability initiatives.[36] This is an opportunity for entrepreneurs to drive customer acquisition. Lee Fan founded a company called Hangzhou Chuan Xiao E-Commerce Co., Ltd. in 2011 and it does just that through a bike sharing program. In Hangzhou alone, three universities have already signed on due to student demand. The passion for bike riding as an alternative to cars is so high among these universities that the students themselves repair the bikes, determine when they need to be replaced, and are part of the marketing efforts to expand the program to the rest of the city's

residents. Hangzhou Chuan Xiao E-Commerce Co. is not the only bike sharing company to emerge as a result of the 12th Five-Year Plan. In 2012 alone, twelve new cities announced new biking businesses.[37]

Changes in Personal Transportation Norms

Personal transportation norms in China have shifted dramatically in urban areas since the 1980s when the Chinese auto market opened up to foreign OEMs. Before the 1980s, bicycle trips accounted for over 50% of all inter-city travel, with walking the next highest transportation mode. Now, mobility is evenly split between cars, gas and electric scooters, buses, and rail (both light- and heavy-rail) along with the traditional non-motorized modes of walking and biking. In Shanghai, for example, bus/paratransit/rail travel accounted for 31% of all travel, while walking accounted for another 31%, bicycling 25%, and cars/scooters 13%.[38] This change can be attributed to policy decisions, economic growth, and changes in cultural norms.[39] Another cause of the new multi-modal environment is the re-development of urban areas. Traditional Chinese cities were built around mixed-use neighborhoods: most individuals lived within walking or biking distance of work. Rapid urbanization and economic growth led many cities to re-engineer urban plans, and to invest in separate zones for residential and commercial use along with public transportation lines. This has started to change under the 12th Five-Year Plan, which presents opportunity for entrepreneurs with ideas for integrating previously disparate transit modes.[40]

Peter Chau is one entrepreneur who has capitalized on this opportunity through his company, Omnipay. Omnipay owns a fleet of bikes and electric vehicles that are available to rent by the hour from automatic kiosks situated around the city. The bikes and cars can be rented using a single card that pulls from the individuals' bank account. Omnipay has also formed partnerships with the Hangzhou public buses and the Omnipay card can also be used for bus fare.

Cars as a Status Symbol

Although the personal travel breakdown indicates that people are equally interested in all forms of mobility, cultural norms dictate otherwise. Cars are a status symbol in China. Interviewees in China expressed an eagerness to earn enough to buy a car; one interviewee said that some individuals are willing to sit in traffic for two hours rather than walk or ride a bike to reach their destination.[41] Bicycles are viewed as necessary for students and lower income individuals. This could be shifting, however, as public bike sharing programs increase in popularity and fixed-gear, hipster bikes emerge on the streets of Shanghai every Tuesday night for a group ride sponsored by Factory Five, a boutique bike shop that designs, builds, and repairs high-end road bikes.[42]

Monetization of Mobile- and/or App-Based Products

A challenge entrepreneurs face in China is the difficulty of monetizing apps or internet-based products. This requires innovative funding mechanisms. Chinese tech startups are evaluated for equity financing by the number of users, company size, run rate, and growth rate. The key is therefore to grow the company quickly and to develop a large customer base. This has resulted in many companies, especially in the highly competitive taxi hailing service business, paying customers to use their product.[43] Transportation requires network and capital investments, which offers an additional challenge for Chinese entrepreneurs in the new mobility space.

Telecommunication Infrastructure

Cellular telephone adoption has dramatically increased over the past decade, rising from 270M subscribers in 2003[44] to 1.23B in 2013[45] and resulting in a teledensity of 88 subscribers per 100 individuals.[46] Another area of growth is internet usage, growing from 384M users in 2009 to 564M users in 2013 with nearly 80% of these users accessing the internet via mobile device.[47] Smartphone adoption in China has risen as well, with smartphones numbering 330M in 2012; penetration is predicted to exceed 500M people in 2014.[48] Entrepreneurs developing web-based solutions in China must design their offerings with the understanding that most users will access the product using a mobile device.

Funding and Availability of Capital

China was ranked 24th in Venture Capital (VC) and Private Equity (PE) attractiveness due to its high economic activity, relatively deep capital markets, and attractive entrepreneurial tax incentives. Pulling the country's VC/PE attractiveness score down, however, is the lack of investor protection, a limited entrepreneurial culture, and ongoing human/environmental issues.[49] In 2013, China's economy grew faster than expected according to the International Monetary Fund (up 0.3% to 7.7%, projected vs. actual) driven largely by increased national and international investment.[50] Foreign direct investment in 2013 grew 5.3% to $116.5B as international investors saw continued growth opportunities and China's bank purchased 2.84T Yuan in an attempt to keep the country's currency from appreciating too rapidly. This growth, however, came after a year of depressed economic activity in 2012.[51] New policy measures in 2014 are expected to increase the cost of capital and decreasing credit growth, thereby curtailing foreign investors in 2014 – 2015.[52]

VC funding, the primary source of startup capital in China, rebounded in 2013 after a precipitous drop in 2012 due to a decline in the country's economic growth.[53] According to Rui Ma of 500 Startups, traditional Chinese banks are not yet comfortable assessing risk for tech startups, so any debt financing comes primarily from international banks with local Chinese branches.[54]

There has been an increase in Angel funding and capital from accelerators/incubators over the past five years. This is due, in part, to national government funding and KPIs encouraging entrepreneurship at the municipal level, and in part to increased interest from the international community. In 2009, China's National Development and Reform Commission announced 9B Yuan in VC funds to be invested in home-grown startups. The National Natural Science Foundation of China (CNSFC) has created a new entrepreneurship panel that is tasked with monitoring and measuring startup creation.[55]

India

Intra-city transportation in India takes many different forms: pedestrian, bicycle, motorcycle, autorickshaw (a 3-wheeled, semi-enclosed vehicle, usually for hire like a taxi), car, taxi, truck, bus, train, and even the occasional horse and buggy. Major urban transportation methods face severe capacity constraints, resulting in congested roads and over-crowded trains and buses. [56] Additionally, many urban roads are poor quality, posing challenges to vehicle durability and passenger comfort and safety.

Population (millions)	1,221
Median Age (years)	26.7
Population in Urban Areas	31.3%
Urbanization Rate of Change	2.47%
Geographic Area (km^2)	3,287,263
GDP (PPP, trillion US$)	$4.72
GDP per Capita (PPP, US$)	$3,800
Gini Index	36.8
Human Development Index	0.554

Challenges and Opportunities

India's unique culture and geography introduce a variety of challenges and opportunities that aspiring mobility-focused entrepreneurs must consider. The major factors to consider include vehicle ownership as a status symbol, corruption, organized industry incumbents, and bureaucracy.

Vehicle Ownership as Status Symbol

A major challenge and opportunity is the idea that material goods can serve as a status symbol to others, particularly items related to transportation and technology. For example, driving a motorcycle is perceived as being lower status than driving a car. This is in spite of the fact that the motorcycle allows shorter travel times in heavy congestion due to its ability to navigate around stopped cars and trucks. The car's perceived status poses a challenge for entrepreneurs seeking to increase adoption of other modes of transportation. Zoomcar, a startup in Bangalore, is actively educating potential first-time car buyers about the benefits of car-sharing. Since they will not have the status symbol of owning their own car, customers might normally see car-sharing services as a loss, but Zoomcar is changing that mindset by demonstrating the economic and environmental gains of car-shares over individual car ownership.[57] Conversely, perceived status can benefit entrepreneurs who provide technology-enabled solutions. For example, owning a smartphone is perceived as being a higher status than owning a feature phone. Such a perception benefits entrepreneurs who provide mobile app-based products or services.

Corruption

Corruption is common in India and will likely be encountered by any entrepreneur at some point.[58] One of the most frequent forms of corruption is bribery. For example, an entrepreneur might need to give a bribe in order to simply start or operate their business efficiently. Unfortunately, the pervasiveness of the issue and lack of recourse results in many business-owners treating bribery as a cost of doing business.[59] Kickbacks, another form of corruption, are likely to be encountered when dealing with government contracts, such as when attempting to launch a municipally funded bike-share program.[60]

Corruption can be found on a smaller scale as well. For example, taxi and autorickshaw drivers in some cities will often attempt to charge customers more than the official rate set by the government. This small-scale corruption was viewed as an opportunity for the Mumbai-based startup Mobound. Mobound's smartphone app allows users to check taxi rates within their city of travel so they can know

when a driver attempts to charge a higher rate. Since the introduction of Mobound, a taxi driver "stops before telling the actual fare and checks whether the person is using [a] mobile or not," according to entrepreneur Sachin Teke.[61] The mere existence of Mobound can stop corruption by reducing information asymmetry between taxi drivers and customers.

Organized Industry Incumbents

Organized industry incumbents, such as taxi unions, pose a significant risk to transportation startups in India. Take the example of Bangalore Club, a startup focused on increasing the number of electric vehicle used as taxis and on improving taxi ridership with the goal of decreasing traffic congestion associated with high private vehicle ownership. The founders cite taxi unions in Mumbai and Chennai as organizations that must be supportive of their startup in order to succeed. The unions hold a great amount of power over local political leaders due to the size of their organizations, the economic benefit provided by their services, and their ability to cripple local transportation systems by going on strike.[62] Bangalore Club's founders needed to first understand underlying motives and incentives for taxi drivers and union leaders alike. Once these were identified and addressed, the founders could make a meaningful difference with their startup idea.

Bureaucracy

Finally, bureaucracy within both the government and companies presents a significant challenge to entrepreneurs in India. Dealing with bureaucracy within a company is best illustrated by the experience of Ideophone's founders. Ideophone developed a program that would calls a customer's cell phone 20 minutes prior to arrival at a train station—a solution that addresses the common problem of trying to sleep without missing one's stop while riding trains between cities over long distances. After successfully testing his program, founder Sundar Lakshmanan had difficulty navigating the bureaucracy of Indian railway companies to expand his solution nationwide. Sundar met with the railway companies, but could not gain traction due to internal difficulties related to jurisdiction, responsibility for the service should it fail, liability, and potential data ownership issues.[63] Finding the correct individual(s) within massive, bureaucratic organizations poses a significant challenge for entrepreneurs.

Changes in Automobile Industry

India's automotive industry has experienced high growth over the past decade, with current annual passenger vehicle sales over 2 million.[64] Automotive manufacturing is responsible for 7% of India's GDP and employs nearly 8% of the country's workforce.[65] With about 100 million vehicles on the road, India has 18 vehicles per 1,000 people.[66] Although this is low when compared to the United States' 797 vehicles per 1,000 people, the future market for cars in India is expected to grow immensely.[67] India's continued economic growth and large population has made the country a major focus for the well-established, multinational automotive manufacturers. Mobility-focused entrepreneurs should consider the potential policy implications that could result from an entrenched, growing industry especially in light of the corruption issues mentioned previously. Startups which seek to overtly upend the automotive industry will likely face resistance from both the automotive industry in the market and policymakers in the government.

Telecommunication Infrastructure

Although India's telecommunication networks have traditionally been small when compared with those of developed nations, wireless infrastructure has seen tremendous growth over the past decade. There had been only 20 million mobile subscribers in 2002,[68] but by 2013 there were over 880 million with over 5 million additional subscribers signing up every month.[69] This development of mobile infrastructure has resulted in an overall teledensity of 71.3 subscribers per 100 individuals and urban teledensity of 138.4 subscribers per 100 individuals.[70] However, with only 6% of subscribers using smartphones,[71] a unique challenge is posed to technology-oriented entrepreneurs in the mobility space: how best to utilize India's expansive mobile networks when the majority of subscribers cannot use apps or other web-enabled programs?

Funding and Availability of Capital

India was ranked 29th in the world for Venture Capital (VC) and Private Equity (PE) attractiveness in large part because of its economic size (as measured by GDP) and relatively deep capital markets. Detracting from its overall ranking in VC/PE attractiveness is India's unattractive taxation policy toward entrepreneurs, bureaucratic difficulties in establishing and operating a business, and pervasiveness of corruption and bribery.[72] The 2008-2009 global economic recession affected India's foreign direct investment (FDI) attractiveness, and resulted in a 45% reduction in FDI from a peak of $43B in 2008 to $24B in 2012.[73] According to the Royal Bank of India, over 40% of the population does not have a bank account and only 14% of adults have taken out a loan.[74] The limited financial and credit history of many people in India limits the ability to raise debt financing for entrepreneurial endeavors. As a result, entrepreneurs who are unable to access funding in more traditional VC channels are forced to rely on raising capital from friends and family for their ventures. Although these methods allow some to access sufficient funding, a more efficient, structured capital network could further the development of entrepreneurial startups.

South Africa

Transportation in South Africa's urban centers is hampered by congestion due to the prominence of automobile usage. Public transportation is supplemented by a network of private minibuses, locally known as jitneys. The government has focused efforts on expanding the size and quality of public transportation options, most visibly in the years leading up to the 2010 FIFA World Cup. Major cities have implemented or are planning to introduce bus rapid transit (BRT) systems. Cape Town, the country's

Population (millions)	49
Median Age (years)	25.5
Population in Urban Areas	62%
Urbanization Rate of Change	1.2%
Geographic Area (km^2)	1,219,090
GDP (PPP, trillion US$)	$0.60
GDP per Capita (PPP, US$)	$11,500
Gini Index	63.1
Human Development Index	0.629

second-largest city, has introduced the Integrated Rapid Transit (IRT) initiative, which intends to incorporate the disparate modes of public transportation into a single, comprehensive system.

Challenges and Opportunities

South Africa's history of apartheid left its mark on all aspects of society, and transportation is no exception. Apartheid's divide and rule strategy led to marginalization of black people to areas far from

both the economic centers and from white neighborhoods that often employed black people. According to Andrew Wheeldon from Bicycle Empowerment Network, "The best areas to live in were reserved for white people and they were always around the beaches, around the city itself, near the mountain, in all of the more beautiful spots and the areas which had greatest access to control of the city."[75] Although Apartheid ended in 1990, the land use legacy has continued to make it difficult for black South Africans to access jobs and education, resulting in limited economic mobility.[76]

Legacy of Apartheid Planning Stunting Growth

Go to Cape Town, Johannesburg, Pretoria, or any other South African city, and one of the first things that will strike you is the visible income inequality. The Center for Climate and Energy Solutions states that in South Africa, "Spatially, an advanced, modern urban economy coexists in sharp contrast with the socioeconomic poverty of disadvantages townships, informal settlements, and rural areas."[77] Overall poverty declined 16% from the late 1990s to 2010 (from 51% to 35%), but 90% of the black population still lives in poverty. There are two key drivers for this: a lack of social mobility and a lack of educational opportunity for black South Africans. After apartheid fell, thousands of new workers flooded into the labor force but were unable to find employment. GDP grew at a marginal 3.2%, but this was insufficient to support the thousands of people looking for work.[78] As a result, shantytowns developed on the outskirts of major cities leaving residents again segregated, with their basic economic, mobility, and educational needs unmet.

Lagging Educational System a Drag on Entrepreneurship

Another poverty driver is the country's overall sub-par education system. According to the World Bank, "South Africa's educational outcomes in terms of reading and math scores do not augur well for the development of a skilled labor force in the long run."[79] The World Bank has concluded that this void in education has been a major cause in locking the country into low-level growth and unresolved poverty.[80] However, there has been a noticeable increase in the number of entrepreneurs in South Africa in recent years. This is a result, in part, of the growing number of incubators in major cities such as Umbono.[81] Incubators and accelerators help fill the education gap by providing financial incentives and support networks to people that may not otherwise pursue entrepreneurial ventures.

Auto Manufacturing Is Key to South African Economy

South Africa currently produces half a million vehicles a year. The automobile manufacturing sector contributes at least 6% of annual GDP, almost 12% of goods exports, and employs 300,000 people directly or indirectly. The sector has doubled since 1994 under the Motor Industry Development Programme (MIDP) and aims to double again to 1.2M vehicles by 2020.[82] Major automakers such as BMW, Ford, and Toyota and component manufacturers such as Arvin Exhaust and Corning have plants in the country.[83] Auto companies are motivated by relatively low production costs, access to new markets, and availability of raw materials.[84] These facts help explain why both the government and corporations incentivize people to own cars.

World Cup Motivated Major Investments in Transit

Transit in South African cities has been better than in neighboring countries over the past two decades. However, the country still lags behind other developed countries. After the multi-racial democracy took

hold in 1994, the resulting privatization negatively impacted transportation due to lower capital investments in public transportation and increased incentives for car use. The informal minibus "jitney" system evolved out of the gap.[85] According to a report prepared for the Pew Center on Climate Change, "In only two decades, jitneys have expanded to account for two-thirds of all public transportation services and over one-third of total passenger travel in South Africa. They are expensive relative to bus and rail transit, but ubiquitous, providing service to many poor travelers."[86] To address the poor transit system and motivated by the 2010 World Cup, the city of Cape Town has established an Integrated Transport Plan to bring all transport-related organizations under one roof and improve communications and synergies.[87] The city also launched a new bus rapid transit (BRT) system, which has been widely considered a success both by volume and by the diversity of passengers it serves. Leading up to the 2010 World Cup, the government spent 13.6B ZAR ($1.2B USD) on transportation-related capital investments, including passenger rail upgrades, bus rapid transit, taxi improvement, and airport-city links. The government is also considering a single-card payment scheme to allow seamless use of various modes across neighborhoods and cities.[88]

Auto Use Nurtured By Government

Cultural norms in South Africa promote car ownership as preferable to public transit. One entrepreneur summarized the attitude by saying "South Africans are wedded to our cars. It's a kind of personal space where we feel like we are kings and queens in towers and we don't want to get rid of them."[89] This is in part motivated by the perception that transit is unsafe.[90] Policies that subsidize car ownership such as car allowances and subsidized prices have also motivated people to switch to personal.[91] Even the new Gautrain isn't enough to motivate people to abandon their cars, according to Amiene van der Merwe: "We still have people who live less than two kilometers from their place of work and they get their car out of the garage, drive into a congested city, sit in traffic for an hour to travel 2 km, and go pay exorbitant parking because cars are very much a status symbol."[92] But with fuel costs rising and people becoming more environmentally conscious, many interviewees expect a mode shifts away from cars.[93] Further supporting a mode shift is South Africa's decision in 2011 to sign on to the United Nations Framework Convention on Climate Change. In this document, the government committed to an emissions reduction goal of 34% below current "Business as Usual" levels by 2020, and an additional reduction of 40% by 2025.[94] However, recently the National Treasury decided to delay a proposed $11/metric ton carbon tax, a nod to the difficulties of directly addressing climate change amid weak economic conditions.[95] The government will play a major role in whether or not South Africa will continue to rely on cars as the primary mode of transportation.

Government Has Failed to Lift Citizens Out of Poverty

Even with its major investments in infrastructure and economic development programs, the government has mostly failed to lift living standards and to address income inequality, especially in urban areas.[96] The World Bank recommends that to resolve this, the government must invest in employment-intensive growth, which includes transportation.[97] Furthermore, while it is easier to do business in South Africa than in other countries in Sub-Saharan Africa, at the central government level there is still a high level of bribery specifically in the granting of government contracts.[98][99] Business leaders ranked the central government as strongly favoring well-connected companies and individuals

when deciding on policies and contracts.[100] Given the importance of contracts in transportation infrastructure projects, corruption may well preclude promising new mobility innovations from taking hold due to entrenched political and economic interests. Access to data is also an important issue for new mobility entrepreneurs. One interviewee told us that data is the biggest challenge for his real-time transit app business: "I have people that were like, let me know this route, I cannot find that data. There's no public information, so I'm getting the help from friends on other routes."[101] Finally, as is the case in many developing nations, power is often unreliable. According to the startup *A Way to Be*, "There's nothing worse than slowing down from the power being cut. I had no power for six hours, the app couldn't be built."[102] The ability of the government to operate equitably and transparently will play a major role in determining the populations' access to quality, affordable public transit.

Bicycles Not Historically Considered a Mode of Transport

Bicycle use across South African cities is so low that no statistics exist pertaining to its share of rides. This is a result of the country's car culture, the long distances from poor neighborhoods to job centers, and the prevailing perception that bikes are for children only. Andrew Wheeldon from Bicycle Empowerment Network says that many people don't think bikes are cool and are too much work. Furthermore, bikes are thought of as children's toys, not as a legitimate means of transportation. But that's changing. "Motorists are slowly starting to say, 'I'm more attuned to cyclists. It's now becoming a daily occurrence that I'm seeing them, and I'm having to adjust my behavior as a driver accordingly.'"[103] Increased adoption by motorists, as well as the government's impending carbon tax, are leading to better infrastructure to make cycling a more feasible mode of transport.

Telecommunication Infrastructure

South Africans rank fifth in the world for mobile data usage per capita, ahead of the US. Of the 53 million citizens, nearly half are under 25 years old, and more than 40% have Internet access. Of those with Internet access, 80% use only their mobile device to log on. The ratio of mobile to fixed broadband Internet usage is 8:1, although this rate is growing with leading mobile operator MTN doubling the number of 3G base stations in 2013 and mobile broadband usage increasing 136% in the past year. Most people (71%) have feature phones but the smartphone market is growing quickly (45% annually).[104] According to *A Way to Be*: "Internet connections in South Africa are expensive. The joke is that it's cheaper to fly to Taiwan [to download] a movie, and fly back, than [it is to download a movie] from here."[105]

Though feature phones by definition have fewer features than smartphones, the limitation has sparked ingenuity. Although South Africa has a sophisticated financial system, only 28% of adult South Africans have access to credit and only 21% have a bank account while more than 90% have a mobile phone. Having learned from other developing countries, entrepreneurs and banks have exploited this opportunity by offering banking and even securities trading via feature phones, offering improved access, convenience, and security when compared to traditional banking.[106] The burgeoning e-commerce market, which generated $326M in sales in 2012 and has seen both established payment platforms (PayPal) and new platforms emerge, bodes well for the increased utilization of mobile for transportation solutions.[107] Interviewees discussed a number of innovative applications of technology to

address local transportation problems such as YouTube videos to show how easy it is to bicycle around cities from Cherryflava and Facebook posts to update the Cape Town Bicycle Map.

Funding and Availability of Capital

Interviewees all shared the view that starting a business in South Africa is hard. Sixty-percent of startups are self-funded, 26% didn't receive funding, and only 25% have received funding from VCs, Angels and family - more than 40% of startups are currently looking for funding. Jonathan Cherry from Cherryflava Media shares: "Entrepreneurship is expensive, since we're not lucky enough to have crowdfunding platforms such as Kickstarter or a philanthropic mindset." He also said that since capital was difficult to find, most successful entrepreneurs have access to capital from friends or family.[108] This is one of the reasons that a disproportionate number of South African entrepreneurs have developed businesses to sell tangible goods that could be immediately monetized. Others discussed how for the most part entrepreneurs invest their own money while working at least one other job.

Telecom is the leading entrepreneurial sector (16%), followed by software (13%), health (9%). and ecommerce (3%).[109] Similar to other emerging markets, the amount of VC investments have waned over the past four years since the World Cup, dropping from a high of 56 deals in 2008 to a low of 15 in 2012, the lowest since 2003.[110] The country ranks 30th in the IESE Business School Venture Capital and Private Equity Country Attractiveness Index as of 2013, behind China (24) and India (29) but ahead of Brazil (36).[111] Compared to its peers in Africa, South Africa has more economic activity, more deal opportunities, better investor protection and corporate governance, better taxation, and better depth of capital markets.[iii, 112] Compared to other rapid-growth G20 economies, South Africa has slightly better education and training, access to funding, tax and regulation, and coordinated support, and markedly worse entrepreneurial culture. At its core, the country's decline of entrepreneurship is primarily a function of the poor education system, difficult labor laws, limited financing, and government corruption.[113]

Inventory of Business Models

The entrepreneurs interviewed for this project spanned many transportation modes and utilized various business models. The following framework categorizes these business models to help illustrate the similarities and differences between them. Each column represents the issue each organization is trying to address and each row represents the transportation mode(s). In addition to business models that fit into this matrix, the team also encountered a set of supporting organizations such as investors, accelerators, incubators, planners, and think tanks that play an important role in enabling new mobility businesses. These are also included in the matrix. The team then identified blank cells where other startups or companies not interviewed are already working; these organizations were included in the matrix. The remaining blank cells represent either areas of opportunity for future entrepreneurs or areas where a business does not make sense (e.g. walking asset sharing).

[iii] This category considers the following issues: education and human capital, labor market and corruption

Functional Definitions

The following functional definitions were developed using primary and secondary research and are treated as mutually exclusive. While there may be business models that span multiple categories, they typically express their value proposition relative to one of these functions.

Asset Sharing

Business models focused on asset sharing aim to increase the utilization of existing transportation resources, such as bikes or cars, by facilitating sharing across customers. This category is therefore not applicable to modes in which sharing is impractical (e.g. walking, train).

Information Availability

Business models focused on information availability seek to provide new information or to repackage existing information in a more user-friendly format. They tend to be based on the belief that people are not using alternate modes of transportation because of a lack of knowledge.

Traffic Management

Business models focused on traffic management aim to improve the efficient flow of traffic, often through technology or pricing systems. These systems often need to be implemented city-wide, and therefore may be less attractive to entrepreneurs due to the associated capital intensity.

Convenience

Business models focused on convenience aim to simplify the process of using various modes of public transportation. They do this in a number of ways, typically involving a service component that goes beyond simply providing information (i.e. "Information Availability" category).

Redesigned Goods

Business models focused on physical goods aim to offer an improved vehicle or infrastructure. They typically focus on re-envisioning a specific mode of transportation to update it for changing conditions or to incorporate new innovations.

Affordability

Business models focused on affordability aim to lower the cost to customers associated with various modes of transportation. They use a number of different strategies to do so, such as cross-subsidizing through higher-paying customers and institutional grants.

Supporting Organizations

These organizations provide services that help entrepreneurs succeed. They may fund businesses, facilitate relationships, or serve as a policy advocate, among other services. These services help create an ecosystem that supports businesses working to directly address new mobility challenges.

Business Model Matrix

	Asset Sharing	Information Availability	Traffic Management	Convenience	Redesigned Goods	Affordability	Supporting Orgs
Bike	UpCycles (SA) Xingoxing (C)	Cape Town Bicycle Map (SA)	O	Pedego (G)	Treecycle (C) Flywheel Custom Chariots (SA)	Bicycle Empowerment Network (SA) Camissa Bikes (SA)	Jurema (B)
Car	ZazCar (B) Caronetas (B) Leve (B) Hangzhou Chuan Xiao E-Commerce Co., Ltd. (C) Zoomcar (I)	Waze (US)	Waze (G) Tom Tom (G)	Carpark (O)	Mobius Motors (O)	Connect Parks (B)	O
Train	X	Google Transit (G)	X	Ideophone (I)	X	O	O
Bus	O	Buus (B) Cade e Onibus (B) Redbus (I) GoMetro (SA)	X	YourBus (O)	O	Busanti (O)	O
Taxi	O	EasyTaxi (G)	X	Easy Taxi (G) ResolveAI (B) Uber (G) Lyft (US)	The Green Cab (SA) Bangalore Club (I)	Priyadarshini (I)	O
Walking	X	Sampape (B)	X	Beijing Transport Research Center (C)	X	X	O
Multi-modal	X	Cherryflava Media (SA) Transporte Ativo (B)	O	Hangzhou Omnipay (C)	X	Beijing Entrepreneur (C)	Green Mobility (B) CoLab (B) Warehouse Investments (B) Ernst & Young (G) Veli Mobi (B) Transporte Ativo (B)

(B) = Brazil	(C) = China	(G) = Global	(I) = India	(SA) = South Africa
(US) = United States	(O) = Other			
O = Opportunity	X = No Opportunity			
Interviewed	Not Interviewed			

Trends and Observations

Many of the business models within a cell of the matrix appear to be the same at first glance. However, deeper examination reveals that while there may be global themes in the business models observed, successful organizations add local flavor. While the matrix contains many taxi hailing apps, the messaging, revenue streams, customer acquisition methods, and even value proposition change from place to place and company to company. For example, Resolve AI in Rio de Janeiro, Brazil, an app that tracks when users are digitally calling for a taxi to make taxi dispatches more efficient and more coordinated with the fluctuating demands in different areas around the city. Easy Taxi, also from Rio de Janeiro, instead focuses on making the hailing process more efficient, safe, transparent and convenient for the user.

The matrix also shows that there are few entrepreneurial efforts focused directly on traffic management in the countries studied. It is unclear exactly why this particular area lacks entrepreneurial involvement, but it may relate to the capital intensity associated with implementing a city-wide network or the fact that most traffic management solutions are currently sold to government entities, and these groups may be unwilling to work with start-ups.

Additionally, most entrepreneurial activity to-date has focused on a single mode. In many cases, this makes sense because focusing on a single mode helps the entrepreneur to define a niche target customer and clearly express the value proposition. However, failing to understand the broader system is potentially harmful and there are many opportunities for entrepreneurial solutions that take a multi-modal perspective.

Conversely, supporting organizations are more likely to be multi-modal. There are multiple reasons for this trend. First, investors may want to diversify their risk profile by focusing on a variety of modes and even other industries. Second, new mobility is still a relatively new space, especially for entrepreneurial activity and supporting organizations may therefore be worried about having a small audience if they focus on only one mode of transportation. Lastly, by focusing on multiple modes, supporting organizations are better positioned to facilitate cross-mode interactions and the development of innovative multi-modal solutions. Supporting organizations have a role to play as conveners and connectors. Under current conditions, all of these factors push supporting organizations to be multi-modal and offer new mobility entrepreneurs distinct advantages over a single-mode supporting organization.

Conclusions

The project's final three phases involved drawing conclusions from the primary and secondary data analyses discussed previously. In the following section, the team discusses implications this research has for policy makers and entrepreneurs, and introduces a tool to help entrepreneurs navigate the business development process. This tool is called the *Guide to Success for New Mobility Startups*.

Implications for Policymakers

When transportation was still solely controlled on a large scale, by a few key players, it made more sense to design transportation policy at the top-down, country-wide level. However, the comparative agility of policy formation at the city level makes mobility policy planning a more effective option for policy makers in the new mobility space. The rapidly shifting policy space at the city level charges city managers with tackling problems of social justice, environmental degradation, and infrastructural planning in light of rapid, unpredictable technological progress, all at the same time. However, entrepreneurship in the new mobility space offers opportunities for policy makers to leverage the various creative startup activities and ideas within this space to create a more flexible and robust policy environment, which will be more prepared to address the many complex policy problems that transportation policy must interact with.

Planning Benefits

Policy makers can construct this robust environment in part by considering the value and needs of entrepreneurs in the new mobility space. Increasingly, there is the need for local transportation solutions at the neighborhood level. Entrepreneurs are less encumbered by the politics of starting a new project than are policy makers. They also bring fresh ideas to the table that have not been tried before and that may get around some political dead ends. Additionally, entrepreneurs who had garnered strong, positive press for their business were able to leverage the resulting goodwill of the city's population to grow their business. If policy makers work with these entrepreneurs, this positive PR can also be attached to the city or region where the business is benefiting its community. Given the nature of businesses in the new mobility space, this can go far to help a city beleaguered by pollution issues and environmental degradation concerns. Working with these entrepreneurs also can demonstrate positive economic and job growth for the city or region. Finally, working with entrepreneurs in the new mobility space can help policy makers to better understand new technologies and social trends in technology use, so as to better understand how to update policy and infrastructure planning to better service emerging technologies.

Moving Forward with Entrepreneurs

Policy makers are in a unique position to provide the supportive infrastructure that new mobility entrepreneurs need, because they are on the execution level of product and business development: they can convene diverse groups of stakeholders for the purpose of collaborating, networking, and exchanging ideas. Additionally, they can support entrepreneurs by granting funding, promoting innovation contests, and organizing and backing incubators and accelerators. This support can encourage more robust multimodal transportation systems within cities, which can ease planning burdens, reduce risk in new mobility businesses, and give system users greater freedom of

transportation. Finally, entrepreneurs can also benefit from policy changes through the creation of simple transportation and development policy or policy planning that is aligns their businesses with policy priorities. China's Five-Year Plan exemplifies this: entrepreneurs have an idea of where policy priorities are going and plan their businesses with a lower risk of running into policy barriers as they grow and scale.

Implications for Entrepreneurs

Entrepreneurs typically have less control over the space in which they work than policymakers because they are on the execution level of product and business development: they are less able to address systemic barriers that limit entrepreneurship such as bureaucracy and funding. However, they have a much higher degree of control over idiosyncratic barriers that are specific to an idea than do policymakers. The team found four areas that entrepreneurs should pay particularly close attention to as they develop their new mobility venture: customer, network, context, and execution.

Customer

Many entrepreneurs that the team interviewed struggled to successfully launch and/or expand their businesses because they did not truly understand their customer. Entrepreneurs should spend time developing a hypothesis about who their target customer is, testing that hypothesis on a limited group, and making sure that they truly understand the target customer's desires. Defining these characteristics helps entrepreneurs develop a deeper understanding of what their idea is and how to market it.

Network

Entrepreneurs that the team spoke with all stressed the importance of their network across many aspects of their business, from finding the right team to securing funding to getting regulatory approval. Those considering launching a new mobility start-up should spend time developing their network in the transportation space before moving forward: having strong connections will help entrepreneurs refine their idea(s) and implement more quickly.

Context

As previously discussed, attitudes towards transportation and entrepreneurship were very different across the four countries that the team studied. Even within countries, the context varied across cities. As a result, a car sharing model that is highly successful in Brazil may struggle in India: while the basic business models remain the same, the details and the execution need to be adjusted to the local context. Entrepreneurs should be cognizant of the external environment in which they operate and develop an understanding of how that influences their strategy.

Execution

Execution is almost completely within the control of entrepreneurs, yet many entrepreneurs interviewed struggled to successfully execute their ideas. The entrepreneurs that did execute well kept the idea and approach simple. Developing a clear, straightforward execution strategy helps entrepreneurs focus in the face of roadblocks. As with customers, starting with a narrow focus enables entrepreneurs to successfully execute their idea and then expand from a stable foothold instead of trying to adjust every part of their strategy ad hoc. While speed is important to any entrepreneurial

venture, spending some time up front designing the execution strategy ultimately saves time down the road.

Reverse Innovation Opportunities

The innovations in new mobility business models around the world can be applied in more developed economies such as the US. This process is called reverse innovation. According to Peter Adriaens, reverse innovation changes "how products and processes are designed, to include: stripping out complexity without sacrificing customer experience; a high degree of customization not through features but by re-using underlying platforms; and customization at the latest stage of the value chain so as to not disrupt materials, components, and subsystems."[114] Although a number of new mobility startups in emerging economies are adopting business models from the US, the team has observed unique innovations from abroad that could work well back home.

One notable example is Ideophone in India. In India, it is common to travel from city to city via train for many hours at a time. However, these trains are notorious for not running according to schedule. As such, passengers often try to sleep on the train, but need to continuously wake up and check their surroundings to ensure that they have not missed their stop. Ideophone solves this problem by providing a wake-up call service to its customers. Ideophone uses train location information to call a user 20-30 minutes before the train will actually reach the user's station. Should the user not answer, Ideophone continues to call their number until they pick up the phone to ensure the user does not miss his or her stop.

Ideophone's seemingly simple yet ingenious innovation could be applied to similar situations in the US. For example, Amtrak train and Greyhound bus services are often taken by individuals needing to travel intermediate distances in which travel time could take many hours. Customers typically sleep during these trips, but might not know when they will arrive. By adopting Ideophone's innovation, transit service provides in the US could significantly enhance the customer experience.

Alternatively, Ideophone's innovation could be slightly adapted to improve the experience of airline passengers in the US. Often, someone flying from one city to another will have a friend or family member to pick him or her up from the airport upon arrival. However, flights can often be delayed due to inclement weather, maintenance problems, or crew shortages, among other causes. Using plane location data, an entrepreneur could create a system that allows passengers to enter their flight number, flight date, and phone number of the person picking up him or her at the airport. The service could then monitor the flight in real-time and call the airline customer's friend or family member 30 minutes before arrival at the airport. Such a system would eliminate the need for a person to constantly check the flight information or waste time waiting at the airport for a flight that will not arrive for hours.

New Mobility Guide

Transportation has historically been built, maintained, and controlled by government agencies, but urbanization, technological innovation, and changing consumer behavior have created infrastructural gaps that startups are beginning to fill. Increasing climate change threats add a sense of urgency to the nascent industry's growth. Few entrepreneurs have the experience or knowledge to take their idea to

completion. The team developed a resource to address these issues. Called *A Guide to Success for New Mobility Startups*, this resource is designed to help early-stage entrepreneurs be more successful in their market(s). To do this, the Guide presents a checklist of twenty questions developed by the project team based on the most common challenges identified through primary and secondary research. Answering these questions will help entrepreneurs think critically through their business strategy. Additional context and explanation for each question is included in the corresponding chapter and section of the Guide. The Guide is meant to be an ongoing resource and the team encourages revisiting the questions regularly – as ideas evolve and expand, answers will change.

This checklist focuses on helping entrepreneurs achieve their version of success, whatever that might be. Success is defined differently depending on context; in Brazil, a majority of entrepreneurs define success as growing their business to make more money, whereas in India a majority of entrepreneurs define success as addressing transportation need(s).[115]

Target Audience

The Guide is targeted to early-stage entrepreneurs in the new mobility sector because this group is an underserved population. Programs and/or resources exist for entrepreneurs in later stages of business development, but few support mechanisms exist for those beginning the startup life cycle.

The entrepreneur life cycle is defined in terms of product stage (e.g.: concept, prototype, finalized product), sales volume, funding sources, and team makeup. The team is defining early-stage entrepreneurs in the following way:

- **Product**: The entrepreneur has developed a minimum viable product that solves a problem or satisfies a need in the market.
- **Sales**: The entrepreneur has not yet started to sell the product but has potentially initiated test market runs to validate target customer selection and/or define product attributes.
- **Funding**: Most funding at this stage comes from friends, family, and early-stage Angel investors.
- **Team**: Startups in this stage typically consist of the entrepreneur (or entrepreneurs) with the original idea plus one or two other individuals with complementary skill sets. This group is often called the Founding Team.

Methodology

The team used a bottom-up approach to create the *Guide*. After defining the purpose and target user group (discussed above), the team analyzed primary data collected in the research countries (Brazil, India, China, and South Africa). The data consisted of more than sixty interviews with entrepreneurs and supporting organizations and in-country transportation experiences. Each interview was coded for characteristics, events, actions, context, strategies, issues, attitudes, beliefs, cultural norms, emotion, impact, omissions, and contradictions. The team then identified relationship(s) between words, phrases, or concepts and created concept maps to represent networks of similar ideas. These similar ideas represented common barriers new mobility entrepreneurs faced. They were grouped into four themed categories that become our chapter headings: "Your Idea", "Your Experience", The Context", and "Putting it Together". See below for details on each chapter.

Entrepreneurs are action-oriented. This *Guide* is therefore written to enable thoughtful, strategic action. The team built out questions that addressed each common barrier identified in the research phase. These questions were vetted with entrepreneurs and experts in the field. The team then built out resource sections for each question to provide greater context and background to help the entrepreneur answer the question(s). These resource sections were written using a combination of primary and secondary research. The Guide is not mean to be an end-all toolkit, but instead a starting point of reference.

Category Details

Your Idea

Every startup begins with an idea. For entrepreneurs in the new mobility space, the genesis is often an unmet need or desire for easier personal travel within an urban environment. Since this is the first step in starting a business, the team made it the first section of the *Guide*. This category walks the entrepreneur through the process of defining their idea in its most simplistic terms, understanding who the direct and indirect competitors are, defining the product's target customer, creating a manufacturing and distribution channel plan, and identifying future funding sources.

Your Experience

New mobility products rely heavily on regulatory and infrastructural components since they must integrate into the existing urban system. This section is intended to help the entrepreneur understand the strengths and weaknesses he/she has based on past experiences, education, and networks. It focuses the entrepreneur on building out an action plan to address skillset and network gaps.

The Context

The social, environmental, political, and regulatory environment in which an entrepreneur works will determine how an entrepreneur defines a problem and the process by which they solve that problem. This is especially true in the new mobility space in which government agencies manage the transportation system. Existing infrastructure (e.g.: roadways, bike/walk lanes, bus systems, subway lines, etc.), the political environment, and cultural norms will affect how entrepreneurs frame the underlying problem and approach the solution. This section is designed to walk the entrepreneur through contextual questions to develop a relevant approach.

Putting It Together

According to Lean Startup guru Steve Blank, startups with a great product, strong team, and supportive environment often fail because they do not execute well. This section is about managing for uncertainty and change. The new mobility sector is changing rapidly as new technologies emerge and new ways of individual transportation are conceived. Entrepreneurs need to plan for dynamic market and customer movement.

Areas for Further Research

Future Development of Guide

While *A Guide to Success for New Mobility Startups* is a valuable tool for entrepreneurs in this space, its current incarnation has limitations. Further development will foster better connections between entrepreneurs, continuous improvement of entrepreneurs' business models, and allow the creation of uniquely tailored iterations of the tool.

The *Guide* can become a launching point for entrepreneurs on UM-SMART's MobiPlatform. The MobiPlatform currently includes MobiNet, which is "a global registry of new mobility enterprises" that allows entrepreneurs to connect with one another.[116] Currently, entrepreneurs can list their start-up, location, website, and brief description into MobiNet. In the future, entrepreneurs could enter their responses to questions in the *Guide* and those responses could then be shared with other entrepreneurs. By opting in to share their information, entrepreneurs will be able to learn from one another's mistakes, offer suggestions to critical challenges, and establish new connections with other budding entrepreneurs who share a similar vision.

As the *Guide* evolves, it can become an assistant to aspiring entrepreneurs. Further iterations could provide feedback to entrepreneurs by rating how they are performing on the various factors at play in establishing a successful start-up. Such ratings would allow a new mobility entrepreneur to see at a glance areas in which they are succeeding and in which they need to improve. Areas that are deemed in need of work could be flagged for the entrepreneur to update in the near future. The tool could conveniently reach out to the entrepreneur via email or text message with a reminder that they need to update their information for a given question. These reminders would serve a key role in ensuring entrepreneurs are staying focused and looking at large, important issues for their start-up, helping to prevent entrepreneurs from being preoccupied with time-sensitive, non-critical tasks.

Additionally, the *Guide* is designed for customization. The challenge in creating a tool for new mobility entrepreneurs all over the world is that each region has its own unique set of circumstances that can change how an entrepreneur approaches his or her idea. The tool can be customized in the future and tailored to each locale's particular environment. The customization could come from incubators or accelerators in specific regions who adapt the tool to meet their needs. Alternatively, the modifications could be crowdsourced from entrepreneurs who are working in the new mobility space and currently utilizing the tool.

Future Research Areas

The team's research has uncovered significant insights regarding the challenges and opportunities presented to new mobility entrepreneurs around the world. However, the research is only the beginning and there exist numerous other areas in this space that warrant further investigation, such as environmental and social impacts of new mobility entrepreneurship and new mobility intrapreneurship.

Limited information about environmental and social impacts harms new mobility entrepreneurs as they cannot readily quantify the benefit their company provides to potential customers or policymakers. The environmental and social impacts of new mobility entrepreneurship could be quite sizable, however

little research has been done in this space. From an environmental perspective, many new mobility ideas have the potential to reduce a population's carbon footprint—by making available lower-carbon transportation options, as bike shares do, or by increasing asset utilization thus reducing the quantity of a physical good that is produced, as car shares do—but there are few studies quantifying these benefits. Positive social impacts of new mobility start-ups can be inferred, but are not well understood. Introducing cheaper or easier methods to get from place to place increase a population's access to mobility, which often is an important social justice issue. For example, introducing a bike share allows lower-income people with access to bicycles that might otherwise be unaffordable, but the exact number of individuals impacted or the economic benefits that could be unlocked are not well studied.

Finally, while the team's research focused on new mobility entrepreneurship, new mobility intrapreneurship is not a well-studied area. Since transportation often can be capital-intensive and require government interaction, some new mobility business models might lend themselves well to intrapreneurship rather than entrepreneurship. Take, for example, recent events in autonomous vehicle technologies, such as Google's driverless car. Developing the software for an autonomous vehicle, working with government regulators to ensure safe on-road testing, and surviving payments for potential liability claims are all challenges in which larger organizations have a clear advantage: developing complex, bug-free software is capital intensive; access to government regulators is exceedingly difficult for small start-ups; one accident in which the company is liable could bankrupt a start-up. Further research into how new mobility intrapreneurship can add the most value is warranted.

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APPENDIX A

A GUIDE TO SUCCESS FOR NEW MOBILITY STARTUPS

INTRODUCTION

Welcome to our Guide! We're glad that you found this resource and are excited to embark on the journey to startup success with you. Before we dive in, we wanted to share a bit about the following document with you.

This guide, organized as a checklist, is designed to help you ask the right questions as you work to implement a new mobility solution. It's not going to give you all the answers, but we hope it will help you start thinking through critical questions as you grow your idea and expand its impact. We've traveled the globe talking with entrepreneurs to figure out what the most common stumbling blocks are and how successful entrepreneurs are avoiding them. This guide is a compilation of what we've learned and is structured as a series of questions designed to help you think strategically about each stage of venture growth. There are no "right" answers, but developing good answers to these questions will help you avoid common pitfalls on your journey.

We've broken this guide into four chapters that we think reflect some of the most common areas where new mobility start-ups struggle, but feel free to jump around based on the biggest challenges you're facing at the moment.

Chapter 1: Your Idea

Every startup begins with an idea. For entrepreneurs in the new mobility space, the genesis is often an unmet need or desire for easier personal travel within an urban environment. Since this is the first step in starting a business, the team made it the first section of the *Guide*. This category walks the entrepreneur through the process of defining their idea in its most simplistic terms, understanding who the direct and indirect competitors are, defining the product's target customer, creating a manufacturing and distribution channel plan, and identifying future funding sources.

Chapter 2: Your Experience

New mobility products rely heavily on regulatory and infrastructural components since they must integrate into the existing urban system. This section is intended to help the entrepreneur understand the strengths and weaknesses he/she has based on past experiences, education, and networks. It focuses the entrepreneur on building out an action plan to address skillset and network gaps.

Chapter 3: Your Context

The social, environmental, political, and regulatory environment in which an entrepreneur works will determine how an entrepreneur defines a problem and the process by which they

solve that problem. This is especially true in the new mobility space in which government agencies manage the transportation system. Existing infrastructure (e.g.: roadways, bike/walk lanes, bus systems, subway lines, etc.), the political environment, and cultural norms will affect how entrepreneurs frame the underlying problem and approach the solution. This section is designed to walk the entrepreneur through contextual questions to develop a relevant approach.

Chapter 4: Putting It Together
According to *Lean Startup* guru Steve Blank, startups with a great product, strong team, and supportive environment often fail because they do not execute well. This section is about managing for uncertainty and change. The new mobility sector is changing rapidly as new technologies emerge and new ways of individual transportation are conceived. Entrepreneurs need to plan for dynamic market and customer movement.

We encourage you to revisit the questions regularly – as your idea evolves and expands, your answers to these questions will likely change. Good luck!

FAQ

What do you mean by new mobility?
New mobility is defined as "moving people, moving goods, and moving less in ways that are cleaner, greener, safer, healthier & more equitable" by UM SMART[1]. It is a new sector that focuses on integrating sustainability principles into transportation. This guide focuses on entrepreneurs who are seeking innovative ways to increase mobility of individuals within an urban environment.

I have an idea for how to improve mobility in my city, but I'm not an entrepreneur. Does this guide apply to me?
Absolutely. We define entrepreneur as anyone who sees a need in the market (for us, that's the market of moving people around an urban environment) and fills that need.

How do I use this guide?
The goal of this guide is to help early-stage, new mobility entrepreneurs be more competitive in their chosen geographic market. To do this, the guide offers twenty questions grouped into four categories that entrepreneurs should be asking themselves as they move from idea generation to implementation. The checklist itself is brief. For entrepreneurs who want to dive deeper into each question, we've included additional information and resources grouped into chapters by question. The guide is meant to be an ongoing resource and we encourage revisiting the questions regularly – as ideas evolve and expand, answers will change.

You state that this is for new mobility entrepreneurs with products – what if I have an idea for a new mobility service instead?
Then this Guide still applies to you! We're defining "product" as a good or a service that meets a requirement in the market. Therefore, your idea for a service is included in the definition.

How are you defining "success"?
Success is defined differently around the world. In Brazil, a majority of entrepreneurs define success as growing their business to make more money. In India most entrepreneurs define success as addressing transportation need(s). You therefore need to define success for yourself – **Chapter 4, Part E** will help.

What type of new mobility entrepreneur does this Guide target?
This Guide targets early-stage entrepreneurs[2]. Transportation has historically been built, maintained, and controlled by government agencies, but urbanization, technological innovation, and changing consumer behavior have created infrastructural gaps that startups are beginning to fill. Increasing climate change threats add a sense of urgency to the growth of new mobility businesses. Few entrepreneurs in this space have the experience or knowledge to take their idea to completion so this Guide was written to help those who are just beginning.

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[1] SMART, Sustainable Mobility & Accessibility Research & Transformation, is a project of UMTRI, the University of Michigan Transportation Research Institute and TCAUP, the Taubman College of Architecture and Urban Planning, in Ann Arbor.
[2] We're defining early stage entrepreneurs as those who aren't yet selling their product, receive a majority of their funding from friends, family, and early-stage Angel investors, and have a team of four or fewer.

THE CHECKLIST

Chapter 1: Your Idea

    A. What is your idea? Is it new or has it been done elsewhere?

    B. Who is your target customer? Why? How will you reach them?

    C. Why would someone choose to switch to your product? What are the benefits to them?

    D. How will you make and distribute your product?

    E. How will you fund your idea to get started? What obligations does that money bring?

Chapter 2: Your Experience

    A. What relevant skills do you bring to this venture? Can you describe and find the team you need?

    B. How strong is your network (personal and professional) in the areas that matter most?

Chapter 3: The Context

    A. What transportation services, data, and infrastructure exist in your city? How does your idea fit with what exists? What competition will you face?

    B. What does mobile phone and internet access look like in your city? How can you take advantage of this?

    C. How do you legitimize your idea in the current legal and regulatory system? What steps do you need to take to turn your idea into a legal business entity?

    D. What are the initial political obstacles to implementing your idea and how do you navigate through them?

    E. What environmental challenges does your city face? How does your idea address them?

    F. What cultural norms exist about transportation? Does your idea fit well with the norms?

    G. Who are the key stakeholders and decision makers you need to support your idea?

    H. How does your idea fit with the current policy priorities of your region?

Chapter 4: Putting It Together

    A. What will you charge for your product(s)? Under what conditions will your idea be self-sustaining?

    B. How do you want your idea to change the transportation and social landscape in your city?

    C. How does your business model need to change as you scale? Are your suppliers and distributers ready to scale with you?

    D. How will you monitor changing conditions and stay nimble?

    E. How will you define success? What metrics will help you measure this progress?

CHAPTER 1: YOUR IDEA

A. What is your idea? Is it new or has it been done elsewhere?

It all starts with an idea, a concept, or a desire to make individual transportation easier. From that idea comes a plan, and from the plan emerges a business. The process from idea to business is never clear nor linear. But you need to have a clear understanding of what your idea is and how it fits into the world as it exists today, and the world that will exist in the next three years.

One way to conceptualize the business world is to split it up into two different types of spaces: red oceans and blue oceans. **Red oceans** are industries or markets as they exist today with well-defined, understood, and accepted boundaries. This results in limited demand for the industry's products and each company is therefore trying to steal customers from one another. For the transportation industry, the red ocean space consists of private vehicles, public transportation, and non-motorized travel. **Blue oceans**, on the other hand, represent unknown industries/markets or unknown spaces within existing industries/markets. For the transportation sector, this is the new mobility space, where innovation is eliminating the boundaries between different transportation modes and creating new ways for individuals to move within a city.

Where does your idea fit? Is it a traditional mode that will compete with existing products in the market (i.e.: red ocean)? Or is it something new that will create new demand (i.e.: blue ocean)? Most blue oceans arise from within a red ocean, when one product or company breaks the traditional boundary of an industry.

Zipcar is an example of a blue ocean product. It is a car rental company that offers hour-by-hour pricing and convenient car pickup locations. The rental car industry in the US is a relatively mature one with eight major companies competing aggressively in urban environments to get customers. Zipcar provided something new: a low-cost way for urban individuals to move independently around their city without owning a vehicle.

If your product is a blue ocean product, you might need to educate the customer on how to use it, why it's a useful product, and why they should pay to use it. If your product is a red ocean product, customers will understand how to use it, but you'll need to understand why and how your product is different/unique from other products within the existing market.

Whether your idea falls into an industry's existing boundaries or breaks through and redefines them, you need to be able to explain it clearly and concisely to your customer, your potential investors, and your team.

Example: Mr. Tallis Gomes (Easy Taxi)

Mr. Gomes started Easy Taxi, a taxi hailing app, in 2011 because he was frustrated with rude taxi dispatchers in Rio de Janeiro, Brazil. It could take 30 – 45 minutes from the time he called the taxi company to the time his requested taxi arrived. He theorized that by cutting out the middle man (the taxi dispatchers) and connecting riders directly with drivers via mobile technology, he could decrease wait times, increase rides per taxi, and increase rider willingness to take taxis instead of personal vehicles. For Mr. Gomes' idea to work, all taxi drivers needed smart phones. Initially none of them were willing to invest the money without seeing the idea's benefit. To demonstrate his idea, Mr. Gomes sold his car, bought several smart phones, and gave them to taxi drivers. Easy Taxi is now in all major cities in Brazil and has expanded to Africa.

Additional Resources

- *The Four Steps to the Epiphany* by Steve Blank
- *Blue Ocean Strategy: How to Create Uncontested Market Space and Make Competition Irrelevant* by Kim, W.C. and Mauborgne, R.
- "Blue Ocean Strategy", by W. Chan Kim and Renée Mauborgne: http://hbr.org/2004/10/blue-ocean-strategy/ar/1

B. Who is your target customer? Why? How will you reach them?

Successful start-ups generally identify a niche target customer segment that will be early adopters of their product. A **customer segment** is a group of people who are distinguishable from other people, derive some benefit from your product, and are relatively similar to one another. Marketing research suggests that segments are most useful when they are defined based on product benefits, not demographic characteristics.

Your **target** customer segment is the one you want to buy your product. Targeting a specific group allows a business to make efficient use of its limited marketing resources and build a loyal customer base that understands the benefits that the product offers. For a start-up, it's often wise to focus on a **niche** segment. Niche segments tend to be smaller and highly specialized: your product offers them some benefit that is important to them and hard to find elsewhere in the market. As a result, they may be more loyal or have a higher willingness-to-pay for your product. We know you're worried about missing out on potential customers, but focusing on a well-defined niche segment at first will help you build the base you need to expand in the future. It limits the amount of competition you face and makes your value proposition clear to potential customers.

1. **Identify the customer:** There are many potential target customer groups – each is differentiated by their values, needs, location, and purchasing behavior. You can't be everything to everyone. When you choose a group, make sure that: 1) you can measure what differentiates them from other groups; 2) you can reach that group to advertise and sell your product; 3) that the group places value on your product; and 4) that they are willing to pay for it.

2. **Define the value proposition:** You should be able to clearly articulate why this group of customers will want to use your product. This is known as your product's value proposition. What benefits does your product offer that this group values? How will they use it in a way that is different from other groups? Test this value proposition with a few members of your target segment and see what they say. If it doesn't seem to be resonating, consider reevaluating your first target segment. Pricing is also closely related to the value proposition: generally, customers are only willing to pay for your product if the benefit they receive is greater than the price they pay. For more on value propositions, see **Chapter 1, Part C**. For more on pricing, see **Chapter 4, Part A**.

3. **Describe the channel:** The channel is the way in which you will reach your customers and is defined as: 1) **advertising channel**; and 2) **sales channel**. Depending on your strategy, these may or may not be the same. How can you easily reach the group you defined in step one so they become familiar with your product ("Advertising Channel")? Focus on maximizing contact with that group and try to limit the number of non-target

customers who see your messaging so that you can make the most effective use of your resources. Once the customer knows about the product, where will they buy it ("Sales Channel")? Is that place somewhere they shop now? If it's an app, what operating systems will you support? If it's a physical product, where will it be purchased – online and/or in retail locations? Try to identify places where your customers are already thinking about something related to your product – that's where they are most likely to buy.

Additional Resources
- *Segment Your Customers*: http://www.infoentrepreneurs.org/en/guides/segment-your-customers/
- *What is Niche Marketing?*: http://www.thedesigntrust.co.uk/what-is-niche-marketing/
- *How to Identify a Target Market and Prepare a Customer Profile*: http://edwardlowe.org/digital-library/how-to-identify-a-target-market-and-prepare-a-customer-profile/

C. Why would someone choose to switch to your product? What are the benefits to them?

Depending where you are located, there are many different ways people can get from point A to point B: walk, bike, take a bus/train, and/or drive, being among the most common. When starting a new mobility company (as you are), these are your **competitors**. They are the transportation modes or services that people can use instead of your solution. As a new company, you need to think about how to convince people to change their current behavior(s) and use your product.

This requires understanding what benefits your product provides when compared with other products. Is it faster, more predictable, cheaper, less polluting, etc.? Whatever the benefits are, collectively they are called your product's **Value Proposition**. A Value Proposition is often a written statement that lays out who your target customer is, the problem your product solves for them, and what makes you so much better than anyone else at solving that problem. It is also sometimes called a "Positioning Statement."

"Ok, cool" (you might be saying). "I get that in theory but how do I figure out what my Value Proposition is?" Great question. Below are some steps to get you started. Keep in mind that this is an ongoing process. The only constant in life is that everything changes. Just as your company will change over the course of a month, three months, six months, so will your competitors and customer needs. You should therefore continue to monitor what customers want, what your competitors are doing, and whether or not new competitors are popping up.

Defining Your Value Proposition:

1. **Who is your target customer?** Know to whom you're selling your product. (See **Chapter 1, Part B** to review target customer identification.)

2. **What problem is your product solving for them?** Be able to explain in simple terms what challenge your product is addressing. (See **Chapter 1, Part A** to review where your idea falls in the Red vs. Blue Ocean concept.)

3. **Is there anyone else providing a similar solution?** This is where you need to do a little research and soul searching. There are direct competitors (companies and products that do exactly what you're doing) and indirect competitors (companies and products that result in the same outcome for a customer even though the actual process is different). Who are the direct competitors for your product and who are the indirect competitors? It's normal to think that your product is special, unique, and unlike anything that's ever been done before. But that's rarely true. Even the iPad, although brilliant in design, user experience, and functionality, was not the first tablet machine. It had multiple direct competitors (e.g.: PalmPilot, Microsoft Tablet PC, and Lenovo ThinkPad), and countless indirect competitors (laptop computers, MP3 players, and books). This step, therefore, requires you to think critically about which other companies and/or products provide a

solution that is a direct or indirect competitor to your own. It is helpful to write these out and categorize them as direct and indirect.

4. **What makes your solution different than the other competitors?** Even though there are other products out there, yours must be better in some way if customers are going to switch to your product. Write down what that difference is.

5. **What will it cost for customers to switch to your product, and will the benefit they gain outweigh this cost?** Convincing customers to change how they travel can be difficult, especially when it means learning a new system. But, if your product provides enough of a benefit, people may be willing to switch to it.

6. **Write out your Value Proposition using the following format:**

*For **[target segment - #1]**, my **[product - #2]** is **[unique differentiator - #4]** because **[cost-benefit reasoning - #5]***

Example Value Propositions:
- **Easy Taxi:** Easy Taxi is the largest taxi-booking app in the world. The ***[application]*** connects ***[taxi drivers and passengers]***, allowing them to experience a ***[fast, convenient and safe ride]***, with ***[just a tap of a button]***.
- **Uber:** By seamlessly connecting ***[riders to drivers]*** through our ***[apps]***, we ***[make cities more accessible]***, opening up ***[more possibilities for riders and more business for drivers]***.

Additional Resources
- *4 Steps To Building A Compelling Value Proposition* by Michael Skok, Forbes, 6/14/2013: http://www.forbes.com/sites/michaelskok/2013/06/14/4-steps-to-building-a-compelling-value-proposition/

D. How will you make and distribute your product?

To get your product into the marketplace, you will need to make it (by writing the code or building the software for something that's online- or app-based, and by manufacturing it (if it's a physical item) and then get it into your customers' hands. The process of getting a product to customers is known as your **distribution**. For an online- or app-based product, an app store or web page will serve as your **distribution platform** (where customers will find it) and you will then need to decide how the customer will download it.

The decision of how to make your product is complicated. There are a couple of key questions you should ask yourself. First, what is your value proposition? See **Chapter 2, Part C** to review this concept. Second, what do you want to make yourself and what do you want to buy from others? This second question can be re-phrased as: What do you want to make in-house and what do you want to outsource?" **Outsourcing** is the process of getting a material you need for your final product from another company. For example, instead of making rubber wheels for the bikes you're selling, you buy them from someone else. The reason you first want to revisit your value proposition is because this determines your strategy for the important "make vs. buy" decision. Your value proposition lays out what differentiates you from competitors, and you should never buy (or outsource) the key thing that is your differentiator. Taking bikes as an example again, if your value proposition is to make light, fold-up bikes that can be easily stored in small apartments, you probably want to make the carbon fiber, multi-joint frame that will be both light and foldable. Is it necessary for you to make the rubber wheels? Probably not. You can buy those.

The "make vs. buy" decision should also be made based on a comparison of costs and a consideration of how time-sensitive the item is for your final product (ie: do you need to be assured that it will arrive at a specific time, or is it ok if it arrives a day or week late?). Cost comparisons should include: how much it would cost you to make the item yourself (including hiring, training, and maintaining a workforce and/or purchasing the server or manufacturing space) versus how much would it cost you to buy the item from someone else (including returning low-quality items and/or any stock-out issues these suppliers might have). Time sensitivity will depend on the item itself: physical items could take a manufacturer time to create and deliver to you while non-physical items could take time to code and design to your specifications.

Distribution is another "make vs. buy" decision. Physical products require physical transportation. Do you want to buy and run your own trucks to transport the product or will you pay another company to transport it for you? Online- or app-based products require a digital platform for delivery. Do you want to build your own website or server to get your product to customers or will you pay for space on another website or an existing app store?

How you make your product and how you get it into your customers hands requires careful consideration of cost/benefit, risk management, quality, and customer demands. Will you make each item yourself? Or will you outsource some pieces? Will you control the entire distribution channel? Or will you pay someone else to use their existing system? These are all questions you should revisit on at least a quarterly basis as your business and the market changes.

Additional Resources
- IDEO Business Model Visualization Tool
- Outsourcing Magazine: http://outsourcemagazine.co.uk/
- *Outsourcing Expands as a Standard Business Strategy for Many Companies* in The Wall Street Journal: http://deloitte.wsj.com/cfo/2012/09/18/outsourcing-becoming-standard-business-strategy-for-many-companies/

E. How will you fund your idea to get started? What obligations does that money bring?

As you've probably figured out, starting a new business costs money. You have to make investments in your product, cover your operating costs (rent, equipment, salaries, and more), and figure out how to market your product before you can start selling it. You'll need money to cover all of these costs. Money also helps you scale your business as you prepare to expand. As the saying goes, money doesn't grow on trees, and the money you accept from others will almost always come with strings attached. Therefore, it's important to be thoughtful about where you're going to get the money you need to operate and grow your business. Entering a financial partnership with your eyes wide open helps you be prepared for the implications that partnership may have down the road.

There are a number of different options for funding your venture. Your strategy will vary depending on how much money you need, your existing network, your past experience, the financial system in your area, institutional support, and your priorities. Funding options include:

- **Second Job:** Taking on a second job or working on your idea as a side project are common ways to fund your idea when you're getting started. It's a relatively easy way to raise money that can be spent however you see fit, but can be quite stressful. Make sure you set financial limits about how much of your own money you're willing to sink into your business. Working two jobs can also be exhausting and you may find you don't have enough time to spend on your new idea.

- **Family and Friends**: Many entrepreneurs borrow money from family or friends. If you have family members or friends with money to invest, this option is worth considering since they're usually willing to give you a better deal than other investors because of your personal relationship. However, you should think about what would happen if the business doesn't work out and discuss that possibility with them before moving forward. Borrowing from family or friends can mean turning a personal relationship into a business transaction.

- **Crowdfunding**: Crowdfunding platforms, which allow entrepreneurs to raise small sums of money from ordinary people via a website, have become increasingly popular in recent years. Examples include Kickstarter, Fundrise, and Indiegogo. If platforms like this exist in your region, you may want to consider using them. Each site varies in how it structures the investment and related fees – some, like Kickstarter, offer products to individuals who give money, while others are more traditional investment mechanisms. These platforms help you access a wider range of investors, but can be time-intensive for the amount of capital you can raise. If you choose this option, make sure you understand the legal structure of the site: what happens if you go out of business? Can

investors come after your personal assets?

- **Institutional Funding**: Institutional funding includes grants and low-interest loans from government, universities, NGOs, incubators, and other organizations interested in supporting entrepreneurs. You may be able to access small amounts of this money through business plan competitions. Larger sums typically require applications – if you pursue this type of money as a major source of funding, you may wish to hire a consultant to help with the applications. Consultants are often paid based on a percentage of the funding they successful secure for you. Keep in mind that money from institutional funders may have strict accountability requirements. Make sure you know what the requirements are and that your business is prepared to handle them.

- **Angel investors**: Angel investors typically invest in very early stage companies. This investment is typically in exchange for a share of the company's equity and decision-making power. Angel investors often have a high level of subject matter expertise: you may benefit from finding one who is knowledgeable about new mobility. As with other types of funding, you should make sure you understand what you are giving up and how your priorities align with the investors' priorities. Ideally, you would only take the money if your priorities are closely aligned, but in reality, you sometimes have to make compromises.

- **Venture capital**: Venture capital (VC) refers to investors who put money into early-stage companies such as yours that are both high-potential and high-risk. The money can come from either independent venture funds or from the strategic venture arm of an established company: about 80% of capital comes from independent funds.[3] As with angel investors, you'll typically give up some ownership and decision-making power when you accept this funding. You should also understand the VC's exit strategy: how soon do they want to see a return on their money? What expectations do they have about returns and how does that impact your revenue requirements?

Regardless of where you get your money from and how carefully you think things through before accepting the money, you'll probably encounter a situation in which your priorities and your investors' priorities are in conflict. For example, you may want to maximize long-term customer value, while the investor is more concerned about short-term revenue and your company's valuation. If this happens, take time to collect your thoughts, and then address the situation through compromise and open communication. If the situation deteriorates further, consider finding a way to buy out that investor.

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[3] http://www.strategicventureassociation.com/about/

Additional Resources

- Khan Academy: Raising money for a startup: https://www.khanacademy.org/economics-finance-domain/core-finance/stock-and-bonds/venture-capital-and-capital-markets/v/raising-money-for-a-startup
- Inc: How to raise startup capital: http://www.inc.com/guides/finance/20797.html
- Fundable: Crowdfunding for small business: http://www.fundable.com/
- Skift: The first 50 travel startups publicly raising money on AngelList: http://skift.com/2013/09/24/the-first-50-travel-startups-publicly-raising-money-on-angellist/
- EquityNet: Startup valuation calculator: https://www.equitynet.com/crowdfunding-tools/startup-valuation-calculator.aspx

CHAPTER 2: YOUR EXPERIENCE

A. What relevant skills do you bring to this venture? Can you describe and find the team you need?

Successful companies don't start with a 100-person team; they start with a small group of people called the founding team. There's no "right" number of **founding team** members, but two – four seems ideal for most companies. These individuals have complementary skills, knowledge, and experiences that when combined provide a strong foundation for the startup. Some founding team members will have more than one skill (example: you as the entrepreneur with the idea could also have software development skills), but no one will have all four skills most companies need to grow in their first few months. Those four skills are depicted below in terms of personalities: **The Hacker**, **The Hustler**, **The Designer**, and **The Visionary**.

The Hacker
Someone with technology (software, hardware, app development, etc.) skills

The Hustler
Someone with business (finance, marketing, sales, etc.) and networking skills

The Designer
Someone who can build the user-facing design

The Visionary
Someone with a vision for the product/market who acts as a binding force to keep the team together

After you've built your founding team with these four skills, your next step is to find the rest of your team. Your first ten hires (after the founding team) are vital to the success of your company. They need to have the skills, experience, and abilities your company needs to grow and they need to fit into the culture of the company you want to build. This cultural piece is something only you and your founding team can know. Keep in mind the type of person, working environment, and personality types you want to work with over the next few months and years. We can't tell you what company culture you want to build, but we can provide guidance on the skills you should be looking for in those first ten hires. Here are some steps to follow when you're considering bringing on new employees.

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1. **Identify:** Identify the skills you need to take your idea from vision to execution. For a mobile-based product, this could include software development and software design. For physical products, this could include engineering and operations. Other positions for both mobile and physical products could include operations (see **Chapter 1, Part D** for a review of making and distributing your product), finance/accounting (see **Chapter, Part E** for a review of funding your idea), account management, and/or administration. Be honest with yourself about the skills you and your founding team have, and those you don't.

2. **Confirm:** Confirm that those are indeed the right skills you need for the product you're planning to make. Talk with other entrepreneurs, industry experts, and/or investors to make sure your list is accurate and comprehensive. Consider that as your company (likely) grows, changes, and improves, to what degree will this team have the flexibility of skills to grow and change with it?

3. **Prioritize:** Prioritize the top ten people (i.e.: skills) you need to hire first. Most companies start with business and product development. Business hires include people with finance/accounting and/or sales skills. Finance/Accounting people can create cash flow projections, determine burn rate, and track revenue expenses. Sales people can bring customers into the pipeline. Product development hires include people with software and/or design skills. These are the people who will be building prototypes of your product from the conceptual idea. In summation, you can't hire everyone at once. Determine who your first wave of hires will be and who can wait until later.

Additional Resources
- "Building Great Founding Teams" by Steve Blank
- *Upstart Start-Ups!* by Ron Liebe
- Joshua Steimle, "How to Build Your Startup Team from Scratch". Forbes.com. http://www.forbes.com/sites/joshsteimle/2014/01/14/how-to-build-your-startup-team-from-scratch/)
- "The 30 Best Pieces of Advice for Entrepreneurs in 2013", by Camille Ricketts
- http://steveblank.com/2011/12/13/the-startup-team/
- http://blog.dweek.ly/four-startup-archetypes-hacker-hustler-designer-operator/
- http://www.businessweek.com/stories/2007-11-18/you-say-guanxi-i-say-schmoozing

B. How strong is your network (personal and professional) in the areas that matter most?

Your **network** is one of the most valuable assets you have as an entrepreneur. It includes all of the people you have come to know in both your personal and professional life, as well as their connections. Your network can help you accomplish a number of activities that are critical to taking your business from idea to execution. To name a few, networks help you find talented employees, navigate bureaucracy, find customers, get feedback on your product, and stay motivated. As you get started, take some time to assess the current state of your network and develop a plan to address any weaknesses you find.

There are three types of networks: clique, entrepreneurial, and rainmaker. A **clique** network is one with many strong connections between its members: think about a close-knit group of friends or co-workers. It leads high levels of trust, is cohesive, and allows its members to quickly reach consensus, but can be insular and susceptible to groupthink. An **entrepreneurial** network is a looser set of connections spanning many diverse groups: think about a set of varied acquaintances. It provides you with diverse information and talent, access to unique opportunities, and can give you a high degree of informal power. However, people with this type of network may find themselves lacking in support and struggling to build consensus. The **rainmaker** network combines the clique and entrepreneurial networks: clique network components help keep relationships strong, while entrepreneurial components bring access to information, new ideas, and influence. Ideally, you want your network to look like the rainmaker network so that you're able to effectively launch your idea. For tools that can help you map your network, see the additional resources list at the end of this section.

Clique	Entrepreneurial	Rainmaker
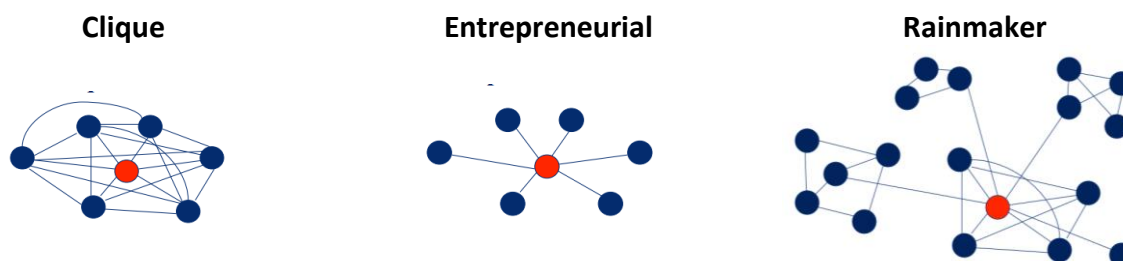
Once you've mapped out your network, think critically about what gaps there are in your network. Are there connections that would make it easier for you to promote your idea or gain access to resources? If so, take steps to address those gaps, but make sure you do it in a way that seems genuine. No one likes being taken advantage of, and most people can tell if you're only approaching them because you need something. Taking time to develop your network before you move forward with your idea helps make requests for help feel more natural: wouldn't you rather help out your close friend than someone you just met a few hours ago?

If you're like us, going out with the intention of "networking" probably isn't your favorite thing to do, but it really is important. Try to find ways to reframe it so it feels less transactional and

more engaging. If you do find that you need to expand your network, there are several approaches you can use. Keep in mind that norms around networking vary significantly across cultures: make sure you understand and adjust for your culture.

- **Your existing network**: Don't be afraid to ask people in your network for help connecting with new people. A personal introduction gives you credibility and increases the willingness of the person you're meeting to hear what you have to say: after all, someone they trust has vouched for you by introducing you.

- **Online resources:** The Internet has removed many barriers for building a network. Professional associations, MeetUp groups, Facebook, LinkedIn and other online platforms can connect you with people that you would likely have never met before. If you can't find a relevant group, consider creating one — chances are there are other people that share your interests.

- **In-person events:** Given the local nature of transportation, it's important to connect with people through conferences, advocacy events, social gatherings, and other events. If you are new to the new mobility scene in your city, search for people mentioned in articles and reach out to them. They can then connect you with other people doing similar work, and soon enough, you'll have built a vast network.

As you move forward with your idea, remember to rely on your network. You will encounter many problems that you don't have the answer to; chances are there's someone in your network who has dealt with a similar issue before. Don't be afraid to ask for help and don't try to reinvent the wheel every time you need something. That being said, you don't want to be the person who is always asking for help and never returns the favor: look for opportunities to help others within your network. Your network is also there to provide emotional support – we know how important this idea is to you, but it's also important to remember to take breaks and recharge your energy. Rely on the people you're close with in your network for support and encouragement when you need it and celebrate your victories with them.

Additional Resources
- NodeXL provides a template for analyzing your network: http://nodexl.codeplex.com/
- Maximize Your Social Capital: http://www.chicagobooth.edu/capideas/fall97/Burt.htm
- The Uses (and Abuses) of Influence: http://hbr.org/2013/07/the-uses-and-abuses-of-influence/ar/1
- How to Master Non-awkward, Effective, In-person Networking: http://blog.hubspot.com/marketing/the-ultimate-guide-to-non_awkward-effective-networking
- HBR: 5 steps to building your network: http://blogs.hbr.org/2011/04/five-steps-to-building-your-ne/

- LinkedIn: Building your network: 3 things to do everyday: https://www.linkedin.com/today/post/article/20130524133536-45185363-building-your-network-3-things-to-do-everyday
- Lifehacker: Five best mindmapping tools: http://lifehacker.com/five-best-mind-mapping-tools-476534555
- MeetUp: www.meetup.com

CHAPTER 3: THE CONTEXT

A. What transportation services, data, and infrastructure exist in your city? How does your idea fit with what exists? What competition will you face?

Your product will need to fit within the existing transportation landscape of your city/region/nation, so understanding that landscape in terms of physical infrastructure and services can make or break your business. **Transportation services and infrastructure** include a city's bus, rail, taxi, road, and pedestrian walkway system as well as any car- or bike-sharing program(s). **Transportation data** includes information on locations and types of services available, maps of roads and railway systems, and data on traffic and congestion. In some countries, real-time traffic data, which shows changing congestion levels street-by-street as they occur, is publicly available through services like Google Maps. Researching the goods and services already provided by governments, companies, and other entrepreneurs will help you explore how your idea fits into the greater whole, and can even help you identify unaddressed customer needs.

As discussed in the Guide's introduction section, **new mobility** is defined as "moving people, moving goods, and moving less in ways that are cleaner, greener, safer, healthier & more equitable" by Sue Zielinski, Managing Director of UM SMART[4]. As a new mobility entrepreneur, your goals revolve around moving people or stuff, so you need to consider the other goods or services that also move people or stuff. For example, if your idea is to start a bike sharing program, think about the road system(s). Is it safe for people to ride bikes on the sidewalk or streets? Are there bike paths? Do other biking programs already exist and you would therefore be directly competing with them?

Here are some examples of ways to think about how your idea fits into the existing transportation services, data, and infrastructure in your city:

- **Car-Related Idea**: What are the road systems like? Is congestion a problem in your city? And would that congestion then limit a customer's interest in sitting in a car? Are there any restrictions on where you can drive? Do other car-related ideas, such as car-shares, already exist?
- **Bus-Related Idea**: Is there a current bus system? Does it serve every area of the city, including your target group of customers? Are there any areas it doesn't serve that it should? How easy is it for people to use the bus? Is there real-time data available for

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[4] SMART, Sustainable Mobility & Accessibility Research & Transformation, is a project of UMTRI, the University of Michigan Transportation Research Institute and TCAUP, the Taubman College of Architecture and Urban Planning, in Ann Arbor. (http://um-smart.org/)

people to know when the bus(es) will arrive?

- **Walking-Related Idea**: Is it easy and safe for people to walk around your city? Are there pedestrian walkways? Where do people live in relation to where they work and play? How do people now travel between home, work, and play? Do other walking-related programs already exist?
- **Data-Related Idea**: Does your idea rely on access to certain data, such as bus, bike, vehicle, or parking locations? If so, do you own that information, will you need to acquire it, or will you need to create it in order to bring your idea to life? Do other real-time data products already exist?

By the way, if you answered "Yes" to the question "Do other [bike, car, bus, walking, data] programs already exist?" jump down to **Chapter 4, Part A** to read up on differentiating yourself from direct and indirect competitors.

Additional Resources
- United States Bureau of Transportation Statistics: https://www.rita.dot.gov/bts/data_and_statistics/index.html
- World Bank indicators, Infrastructure section: http://data.worldbank.org/indicator

B. What does mobile phone and internet access look like in your city? How can you take advantage of this?

Over the past two decades, mobile phone and internet access have reshaped almost every aspect of modern life and the transportation sector is no exception. As a new mobility entrepreneur, you can use the tools offered by this progress to your advantage. In many ways the rise of entrepreneurship in the new mobility space is linked to the rise of these technologies: they provide opportunities that didn't previously exist. Increasing availability of mobile phones allows new mobility entrepreneurs to utilize users' technology in ways previously unimaginable. To maximize your chance of success, your idea should take full advantage of the internet and mobile phone technologies your target customers have access to. This is true even if technology isn't at the center of your idea.

First, develop an understanding of what internet access and mobile phone usage looks like among your target customer segment (for more on target customers, see **Chapter 1, Part B**). Do they have access to high-speed internet or only a slower connection? Do they have smartphones or feature phones? Is mobile data service constrained or widely available and inexpensive? What websites, social networking services, and apps do they use on a regular basis?

Once you've developed an understanding of the mobile and internet landscape in your city, you need to think about how your idea interacts with it. If your idea is app- or website-based, this connection should be fairly obvious. Your goal is to minimize barriers to usage by managing costs and providing a product that works via the level of technology your customers currently have. Think about what operating systems they use and how fast their connection is likely to be when they're accessing your product. Even if your idea isn't centered on mobile or internet technology, chances are there are ways in which mobile and internet technology can help you promote your business. Consider whether social networks can increase the effectiveness of your marketing or if developing an app would encourage more people to use your product. Don't forget to consider ways in which mobile and internet technology can help improve your internal operations as well!

Example: Mr. Sundar Lakshmanan (Ideophone)

In India, it is common travel from city to city via train for many hours at a time. However, these trains are notorious for not running according to schedule. Passengers often try to sleep on the train, but need to continuously wake up and check their surroundings to ensure that they have not missed their stop. Ideophone's founders wanted to solve this problem by using train location information to notify a user 20-30 minutes before the train will actually reach the user's station. However, since smartphone usage was not ubiquitous at the time, the founders could not use a smartphone application to accomplish this goal; they needed to work within the confines of India's mobile technology. This limited notifications to either calls or SMS. Ideophone's founders solved this problem by providing a wake-up call service to its customers. Should the user not answer, Ideophone continues to call their number until they pick up the phone to ensure the user does not miss his or her stop.

Additional Resources

- StatCounter: Statistics on operating system usage by country: http://gs.statcounter.com/
- mobiThinking: Worldwide mobile device trends: http://mobithinking.com/mobile-marketing-tools/latest-mobile-stats

C. How do you legitimize your idea in the current legal and regulatory system? What steps do you need to take to turn your idea into a legal business entity?

What does it mean to be a "legitimate" or "legal" business entity? Being a legal business entity means that you are formally recognized by your region's governing body as a company and are allowed to sell your product. Most countries require specific documentation and a formal registration process for companies before they can become legal business entities. Formally registering your business provides access to certain resources, services, and legal protection that you wouldn't have otherwise.

We also recognize that some countries do not have formal processes for company registration, or do not police the process that is in place. It is therefore possible to do business without filing any paperwork. The global marketplace is making this less and less common, so we are going to focus on formal processes governments require to start a business here in this Guide. However, it is important to know the requirements in your country: does most business happen formally or informally? This knowledge will help you build out your company in a way that fosters long-term sustainability.

Each country, and even some municipalities, has different requirements for this process. The World Bank uses the number of procedures, number of days, and filing fees to calculate how easy/difficult it is to start a business in different countries. For example, before becoming a legal business in China, an entrepreneur must complete thirteen different procedures that take 33 days, pay fees of up to 2% of his/her annual income, and deposit paid-in capital[5] of up to 78% of annual income. In contrast, South African entrepreneurs only need to complete five different procedures over the course of nineteen days, pay 0.3% of annual income in fees. There are no paid-in capital requirements.

See below for a direct comparison of the requirements of starting a business in China, South Africa, India, and Brazil:

Indicator	Procedures (number)	Time (days)	Cost (% of income per capita)	Paid-in Min. Capital (% of income per capita)
South Africa	5	19.0	0.3	0.0
India	12	27.0	47.3	124.4
China	13	33.0	2.0	78.2
Brazil	13	107.5	4.6	0.0

Source: http://www.doingbusiness.org/data/exploretopics/starting-a-business

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[5] **Paid-In Capital** is defined as "the amount that the entrepreneur needs to deposit in a bank or with a notary before registration and up to 3 months following incorporation and is recorded as a percentage of the economy's income per capita" by The World Bank (*Doing Business Index: Measure Business Regulations*, "Methodology for Starting a Business"). In other words, it is the amount a company needs to put in a bank account for payment later in the life of the company.

A good resource for starting out is The World Bank's "Doing Business Index" found at http://www.doingbusiness.org/rankings. This provides a good overview to help you understand your country's requirements and how they compare to other countries in the region. From here, talk to other startup founders, angel investors or other venture funders, accelerators, incubators, and banks to learn about specific requirements for your region/municipality. This will help you navigate the process.

You should also think about the benefits of structuring your company as a for-profit entity versus a not-for-profit. Both have different benefits, registration processes, and levels of protection depending on where you are around the world. For-profit companies allow you to access equity funding and/or different types of investors. Not-for-profit companies can have easier registration processes (or not, again, it depends on where you are in the world and the requirements in your country), can provide access to grant and foundation funding, and can protect you against taxation requirements. Think about the pros and cons for you and your product based on the regulations in your country before you decide on a specific company structure.

Additional Resources
- The World Bank "Doing Business Index: Measuring Business Regulations"
- Global Entrepreneurship Monitor (GEM) 2013 Global Report: http://www.gemconsortium.org/docs/3106/gem-2013-global-report

D. What are initial political obstacles to implementing your idea and how do you navigate through them?

When you're starting a new business, you can face obstacles from many angles, including formal channel political obstacles, informal channel political obstacles, and opposition from entrenched interests. Thinking about what these challenges might be and developing a strategy to navigate them increases your ability to deal with them calmly and effectively when they do arise. **Formal channels** include trade regulations, multi-year economic plans that generate unfavorable Key Performance Indicators, and taxation. **Informal channels** include corruption, bribery, and back-channel dealings. **Entrenched interests** cover a wide range of groups, ranging from existing transportation businesses to trade associations to special interest groups. In other words, they are groups that already exist, hold significant power in the market, and often have political or regulatory backing. These obstacles can be **general**, meaning everyone in the field already faces them, or **targeted**, meaning they arise in response to your idea.

Formal Channels: Formal channels can be found and understood via public filings, reports, and articles, but they can change quickly. Companies who are just getting started tend to be more affected by these fluctuations than established companies. In addition, there can be a big difference between what formal channels say and actual practices on the ground. What are the current regulations on paper? What do you know about the reality on the ground based on your experiences? Can you learn more by talking to others about their experience?

Informal Channels: Informal channels can be difficult to understand and therefore plan for. However, by talking to other new mobility entrepreneurs and thinking about who stands to benefit, you can mitigate the risk. In countries where bribery is part of doing business, think about how you want to respond if a bribe is requested or expected.

Entrenched Interests: Understanding what challenges you will face from entrenched interests requires you to think about who your competitors are and what the existing transportation landscape looks like (see **Chapter 1, Part C** and **Chapter 3, Part A** for more on this). These groups likely feel threatened by your idea and may try to use their influence to create obstacles. Think about who they are and what sort of obstacles they might be able to throw at you.

Now that you've figured out what obstacles you might face, it's time to come up with a plan to address them. Think about whether there are ways to use a public relations campaign to gain favorable press that undercuts your opposition's attack. Alternatively, you might be able to structure your business to take advantage of a gray area in the legal system. For example, in the US, companies such as Lyft and Sidecar structured their business as facilitating ridesharing in exchange for voluntary donations rather than as a taxi service with mandatory payment. This allowed them to claim that they did not need taxi licenses for their drivers and were not subject

to regulation by taxi commissions. This route can be risky – you'll likely face legal action down the road, so set aside some money for that – but it also allows you to generate customer support before you have to face that challenge. As you think about how to navigate the obstacles, be creative: look for ways to go around the roadblock instead of trying to dismantle it and go straight through.

Additional Resources

- Transparency International: The Global Coalition Against Corruption: http://www.transparency.org/
- The World Bank "Doing Business Index: Measuring Business Regulations"
- Global Entrepreneurship Monitor (GEM) 2013 Global Report: www.gemconsortium.org/docs/3106/gem-2013-global-report

E. What environmental challenges does your city face? How does your idea address them?

Policy makers are increasingly seeking out innovative solutions to address the complex environmental and public health challenges they face. Similarly, customers are increasingly seeking out ways to minimize the environmental impact of their mobility and purchase decisions. As a result, funding through grants, government programs, and/or tax credits is often available for ideas that address these challenges. If you can position your idea to fit with the goals of these challenges, you may be able to secure this money.

The first step is to identify the environmental or public health problems your city is facing and then consider how your idea is addressing them. Globally, transportation currently accounts for 13.5% of greenhouse gas emissions. In many countries (China, India, and Brazil to name only a few), congestion from increased cars and trucks on the road is causing a rapid increase in pollution in urban environments and a corresponding decline in air quality. In other countries, new road and highway construction has resulted in ecosystem destruction and a decline in the availability of fresh water. Think about the biggest environmental pain points in your city and think about how your idea addresses one or more of these problems.

The next step is to research how different funding bodies, including your city's government, are responding to those challenges. In 2011, China announced its 12th Five-Year Plan (2011 – 2015), which instituted policy to support more sustainable cities. This resulted in a surge of government funding available to entrepreneurs and others who had ideas for greener transportation options. Research and understand your city's environmental **key performance indicators** ("KPIs"), or metrics, to see if your idea meets any of them. If so, you might be able to access KPI-related government support or money. Along with funding, an environmental angle can also help you secure new customers through positive press coverage. If you pursue the media angle, make sure your target customer values the environmental benefit you're highlighting.

Currently, the demand for greener, more sustainable, and less polluting transportation options is growing. You may be able to benefit from this trend by demonstrating the environmental benefit of your idea. Here are some questions to begin exploring how your idea could address your city's environmental issues and potentially help you access new funding sources or customer support.

Environmental Questions to Ask Yourself
- Does your product reduce necessary trips in a day or improve the efficiency or capacity of transportation modes?
- Does your product promote the use of cleaner fuel sources?
- Does your product reduce the amount of needed water or materials in producing vehicle parts?

- Does your product encourage users to think more carefully about the impacts of what they are doing, where they are going, and how they are getting there?
- How are environmental benefits priced or otherwise valued in your city? Does your product add to this value?

Example: Mr. Amiene van der Merwe, Green Cabs

Green Cabs is a cab company directed by Amiene van der Merwe in Cape Town, South Africa. They provide biofuel-powered taxi rides and are certified as an emissions neutral company by a third party. By focusing on the environmental benefits of carbon-neutral transportation, the company has been able to secure contracts with environmental organizations such as the World Wildlife Fund and large environmental conferences, such as the United Nations Framework Convention on Climate Change Conference of Parties (the setting of international climate negotiations. These large contracts help them to sustain their business as they look to expand into additional markets.

Additional Resources
- NASA Earth Observations: http://neo.sci.gsfc.nasa.gov/
- Environmental Performance Index: http://epi.yale.edu/epi
- United Nations Environmental Programme Urban Air Quality Management Toolkit: See Management Strategies for Air Pollution Management due to Transit: http://www.unep.org/urban_environment/PDFs/toolkit.pdf
- Siemens Green City Index: http://www.siemens.com/entry/cc/en/greencityindex.htm
- United Nations Environmental Programme Awards: http://www.unep.org/awards/

F. What cultural norms exist about transportation? Does your idea fit well with the norms?

How people move from one place to another is often deeply rooted in culture and identity. The mode of transportation you choose can lead people to draw conclusions about what type of person you are based on the culture you live in. As you launch your new mobility idea, you need to figure out whether your idea requires an **incremental** or **disruptive** shift in people's behavior. Incremental shifts typically focus on improving how people interact with transportation: examples include real-time bus data and taxi hailing apps. Disruptive shifts require a shift in people's perceptions of what mode of transportation is preferable: examples include starting a bikesharing company in a city without a biking culture. Trying to change cultural norms can be extremely challenging, so it is important to understand what those norms are and whether your idea requires changing them before getting started.

The following table is based on our first-hand research in four countries and is included to give you a sense of how much attitudes towards different modes of transportation vary by geography. Don't panic if your country isn't included – use your knowledge of and personal experiences with the culture around you to figure out what the norms are around transportation and go from there. You can also supplement your understanding through surveys and/or focus groups.

TABLE 1: TRANSPORTATION NORMS IN SELECTED COUNTRIES

	Attribute	Brazil	China	India	South Africa
Modes	**Who bikes?**	Men, who risk the danger Not children Some corporate employees	Students People who can't afford cars	People who can't afford motorcycles or autorickshaw rides	Hipsters Fitness seekers Children
	Cars are a…	Status symbol Personal possession Guarantee of safety	Status symbol	Sign that I've made it!	Castle where I don't have to interact with the rest of the world
	Walking is…	Dangerous	Necessary	Part of daily life	Not something I do
	Public transit is…	Unreliable Crowded Dangerous Expensive	Cheap Reliable Convenient Faster than other ways	Crowded and never on time	Dangerous Limited
	What do you hate about taxis?	Trying to get one	Government controls pricing	Over paying Feeling unsafe	Trying to get one Feeling unsafe

How is the problem framed?	You must solve the problems that the government will not	We need to come up with a faster, easier, and more sustainable way of getting from point A to point B	We can make this better…and make some money along the way.	We need to address the social and environmental challenges our country faces.
How do you approach a solution?	Find connections to the members of the municipality that must sign off as soon as possible	Find a city with sustainable transit KPIs and partner with the municipality	Start piloting some ideas until you fail or bureaucrats make you stop, then find a way around those hurdles.	Start a project you're passionate about, not necessarily as a business
Where does money come from?	Friends and family Environmental grants	Government grants Incubator/accelerator Family and friends VC and Angel investors	Friends and family Government grants	Friends and family My day job Structuring company as a non-profit
Failing is…	Fine. Pitching new ideas and getting funded is the problem	Taboo, although becoming slightly more acceptable to take risks	Part of doing business; it's what you do after failing that matters	Socially risky - nobody wants to fail after spending life savings

(Left margin vertical label: **Entrepreneurship**)

Once you understand the norms, think about how your idea fits with them. If your idea is an incremental innovation, you're probably not looking at a fundamental cultural shift. You should still evaluate whether the culture supports the technological interaction your idea before moving forward. For more on how to assess mobile and IT conditions, see **Chapter 3, Part B**.

If your idea is more disruptive, then addressing the current cultural norms will play a key role in determining the success of your business. If norms are beginning to shift and you can help create the supporting infrastructure needed to accelerate these shifts, now may be the perfect time to launch your idea. Helping to shift norms can mean your name and business become synonymous with the shift. If you believe you can and want to promote this change, go for it! Promoting a shift in cultural norms isn't easy, so make sure your heart is really in it before choosing this route. Sometimes the change your idea requires is simply too big to occur in a reasonable timeframe for your idea to make sense now or your heart isn't in promoting change. If this is the case, you'll probably want to reframe your idea to require a smaller shift in norms or return to it at a later date when norms have changed and are more supportive of your original idea, rather than fighting an uphill battle.

Additional Resources
- Meek, W.R., et al., The impact of social norms on entrepreneurial action: Evidence from the environmental entrepreneurship context, J. Bus. Venturing (2009), doi:10.1016/j.jbusvent.2009.09.007

G. Who are the key stakeholders and decision makers you need to support your idea?

Often, transportation infrastructure is expensive: it requires large capital investments and multi-party cooperation. As a result, the industry has traditionally been highly regulated.

However, that has started to change in recent years due to the rise of smartphone technology and entrepreneurship. Despite these changes, you still need to know who make decisions on permitting, strategic planning, and project approval and how to influence them to be successful in this space. There may also be non-governmental stakeholders that you should engage with when moving your idea forward – think broadly about who will benefit from your idea and who may feel threatened by it.

1. **Identify:** The first step is identifying the key stakeholders and decision-makers for your specific idea. Be sure to think about competitors, existing transportation services, regulatory bodies, planning commissions, and non-profits that advocate for various groups. Once you know what organizations you need to get on your side, start thinking about what those organizations care about, your connections to the organizations, and how your idea could benefit those organizations.

2. **Pitch:** Once you've identified the key players, it's all about getting out there and selling your idea. Find out if there are any networking events for transportation in your area and start going to them. Take advantage of opportunities to meet new contacts and reach out to your existing network to start winning people over (for more on this, see **Chapter 2, Part B**). If it makes sense, engage in a media campaign to get the public on your side and head off potential opposition. The strategy for getting people on board is going to be as varied as the groups you might need to engage. By thinking about their motivations and framing your work in terms that resonate with them, you'll increase your likelihood of success. As they say, chance favors the prepared, so go do your homework!

If decision makers simply don't support your idea and you can't win them over, you may be able to work around them, especially if you don't need new infrastructure or regulatory approval. If decision makers see your idea as opposed to their strategy for the city, you're in for a bigger challenge. Think about what opposition you will face and whether there are any approvals you absolutely must have before deciding whether to move forward with your idea in its current form or revamp your approach. It's also worth considering why decision makers are opposing your idea – it's possible that one of you is missing something that the other sees.

Additional Resources
- Stakeholder Analysis: http://www.mindtools.com/pages/article/newPPM_07.htm
- *Stakeholder Engagement: A Practical Guide*: http://www.theguardian.com/sustainable-business/stakeholder-engagement-practical-guide

H. How does your idea fit with the current policy priorities of your region?
Increasingly, cities and countries have environmental goals, development plans, and integrated transportation plans. While getting a handle on all of these different priorities can be intimidating, finding ways to align your idea with existing policy priorities can go a long way

toward helping you succeed. It can increase your access to funding through grants or loans, enable you to participate in training sessions, and help you secure the necessary government support, and much more.

Start out by getting a sense of what priorities are in place. Transportation policy and plans are a great place to start, but don't limit yourself to those. You should also think about economic development plans, environmental goals, climate mitigation and adaptation plans, urban planning, public health efforts, and any performance metrics set for the region. Consider city, regional, and national policies.

Once you know what the policies are, start thinking about how your idea could help the city realize its priorities. Don't be afraid to get creative: a bike business might help reduce congestion, increase economic opportunity, decrease carbon dioxide emissions, support tourism, or increase fitness. Finding many framings for the value of your business can help you secure multiple sources of funding, garner support from disparate stakeholder groups, and otherwise gain access to resources that will help you succeed.

As you're doing this, you do need to be careful that messages to your customers remain clear and focused on benefits that customers value: as we discussed in **Chapter 1, Part B**, trying to be everything to everyone is a recipe for disaster.

There's always a chance that your idea doesn't align with any of the current policy priorities in your city. If you can't gain access to the resources you need without alignment, consider how you can adjust your idea to align with the existing priorities or look for other locations that have more supportive policies. If you truly believe your idea would benefit the region and you want government support, consider lobbying key policy makers to include language that supports your idea in the next version of their policy.

Example: Mr. Fan Li (Hangzhou Chuan Xiao E-Commerce Co., Ltd.)

Mr. Fan is the founder of Hangzhou Chuan Xiao E-Commerce Co., Ltd., a shared parking company that helps drivers find available parking spots using a mobile app. The company has been able to implement their idea in two cities in China, Xiamen and Hangzhou by developing an understanding of the key performance indicators the national government has set for various cities and focusing solely on cities that have KPIs that the business can help the city achieve. These KPIs stem from China's 12th 5 Year Plan that calls for investment in sustainable urban infrastructure. For example, Xiamen's economy relies on tourism, and in 2013 the city had only 160,000 parking spaces for over 1M vehicles coming in and out daily. The city government knew that they could resolve some of their congestion issues, improve the tourist experience, and hit their KPIs by improving the parking situation. Mr. Fan, who is originally from Hangzhou, had friends in the Xiamen government and learned of this desire. Xiamen was his first market, and after proving the impact of his business, was able to pitch the idea to Hangzhou's government right when municipal policy makers started to move towards hitting their own KPIs.

Additional Resources

Visit websites for relevant government agencies to identify existing plans. This information varies by region and can change rapidly, so we can't offer you any specific resources on this topic.

CHAPTER 4: PUTTING IT TOGETHER

A. What will you charge for your product(s)? Under what conditions will your idea be self-sustaining?

The money customers give you in exchange for your product is called **revenue**. That can come in the form of a direct payment in-person or online, a **subscription payment** (when customers pay a set price per week, month, or year for a specified number or type of product(s)), or a credit payment (when customers are charged at a later date for the product(s) they receive). There are also some cases that require you to give your product away to attract investor or bank funding. This is seen often in China where entrepreneurs need to prove that their product has a certain market size before investors are willing to fund them. However you structure your **revenue generating model** (or strategy for getting money in exchange for your product), getting to a point where your revenue covers your costs means that you won't need additional funding to sustain your business. You can then focus your time, energy, and efforts on your business. For not-for-profit companies, this also means freedom from grant-writing and fundraising.

The person who pays for your product is not always the person who will use your product. For example, a company developing an app for real-time bus data can sell that information to the government to improve the city's public transportation network. The target customer is therefore the government, since they're the ones who are paying, but the end users are the citizens in the city since they'll be the ones using the app.

There are many different models for pricing a product, but the five most common ones in the startup world are **Competitive Pricing**, **Cost-Plus Pricing**, **Value-Based Pricing**, **Free Advertising-Based Pricing**, and **"Freemium" Pricing**.

1. **Competitive Pricing**: This method is the easiest to do, but often results in the lowest profits. It's when you set your product's price to whatever the direct or indirect competitor price is and adjust it as they adjust theirs (see **Chapter 1, Part C** to review direct and indirect competitors). Although this method helps you research and learn more about your competitors, it could also be forcing you to set your price too low to cover your costs over the long term.

2. **Cost-Plus Pricing**: This method provides the same percent profit for every product you sell. To figure out what that price will be, first calculate what your product costs to make. Then set a percent profit you want to make on top of that and charge the sum of those two. For example, if it costs you $10 to make your product and you want to make 10% profit, you'll price your product at $11.

3. **Value-Based Pricing**: This method sets a price at what you think the customer is willing to pay for the benefit they receive for the product. Although slightly more complicated to calculate, it usually provides the highest profit. First, think about the benefits your product provides to the customer (see **Chapter 1, Part C** to review value propositions).

Then place a dollar value on that benefit. Again, this is a tricky calculation because it requires some guess work and some research. You need to figure out what the customer is paying for a similar value elsewhere, whether or not they'll be saving money by using your product, whether they'll gain personal satisfaction from using your product, and/or whether they'll gain prestige from using your product. If any of these are true, then you need to figure out how much the customers would be willing to pay for those benefits.

4. **Free Advertising-Based Pricing**: This model is based on the idea that advertising dollars will follow a critical mass of people. If the product gets a large enough following, other companies will pay to use the product as an advertising or mass market outreach platform. This is a common practice in China and has proven successful at well-known startups like Facebook, Twitter, and Instagram. Companies that go this route usually have an alternative source of funding to keep them afloat as they grow their customer base.

5. **"Freemium" Pricing**: Under this model, a basic product is free to purchase or download, but customers pay more if they want a more premium product. LinkedIn has used this successfully. Similar to relying on ads and critical mass, however, the freemium pricing model often requires another revenue source to survive long enough to gain a large customer base. This method also still requires you to figure out how to price the premium version of your product.

The first step before you decide on a pricing model is to think about your business goals. Do you want to simply cover your costs or are you looking to make a profit and grow your company? Next, you need to think about your target customer and what the value of the product is to them. Finally, it is important to calculate your costs and burn rate. **Burn rate** is a calculation of how quickly you're spending money to produce your product. There are a number of online tools that can help you determine your burn rate. Finally, think through the different pricing models and choose the one that makes the most sense for you. It is important to revisit your pricing strategy as conditions change (see **Chapter 4, Part D** to learn about staying nimble).

Additional Resources
- Inc. com: *How to Price Your Products*: http://www.inc.com/guides/price-your-products.html
- StartUp Nation: Pricing strategy for a startup business: http://www.startupnation.com/articles/pricing-strategy-for-a-startup-business/
- Entrepreneur: Determining a plan to set prices: http://www.entrepreneur.com/article/82730
- Small Business Association: Understanding gross margin: http://www.sba.gov/community/blogs/community-blogs/small-business-cents/understanding-gross-margin-and-how-it-can-make-

B. How do you want your idea change the transportation and social landscape in your city?

This may seem like a lofty question to be asking when you're just getting started with a new idea, but we've found that entrepreneurs who have a clear vision and goal behind their efforts are better able to weather storms and overcome obstacles. Additionally, thinking about how you want to change the system helps you develop a better understanding of how the system currently operates and what elements your idea will need to address to be a success. Thinking about transportation and society as an interconnected whole may be intimidating at first, but we promise it's worth it.

First, think about what inspired you to undertake this effort. What problem did you see that you believed you could address? On the transportation side, think about how addressing that problem will change the way existing modes of transportation interact, and whether it creates opportunities for new modes. On the social side, think about how your idea will change people's lives: will they be able to get to more places? Spend less time in traffic? Spend less of their income on transportation? Experience greater economic mobility? Be healthier? Know their city better? All of these have social implications that it's important to consider as you move forward with your idea. Thinking through these implications before you start will help you be better prepared for resistance you might encounter and will help you make decisions when you come to a crossroads: having a clear goal makes it much easier to keep moving towards that goal.

It's also important to think about how your idea interacts with and changes the existing landscape so you can be confident that the solution you're proposing isn't going to make things worse. Unintended consequences are common in a space as complex as new mobility, so it's important to think about both direct and indirect effects of your action. What ripples will your idea create? Thinking through not just the initial impacts of your idea, but also how those impacts will change as your idea spreads and becomes more widely adopted helps you be better prepared for the future.

One technique that can be helpful as you try to get to the ultimate answer of how you want your idea to change the landscape is the "5 Whys," which come from the Lean continuous improvement methodology. Lean is a practice that originated in the manufacturing sector and focuses on minimizing waste while maximizing customer value. The 5 Whys technique prompts you to ask why five times before you are satisfied that you have found the root cause of the issue.

Applying 5 Whys to New Mobility

Q: How do you want your idea to change the transportation and social landscape?
A: I want to make it easier for people to bike.

Q: Why do you want to make it easier to bike? (1)
A: Because I don't think enough people currently bike.

Q: Why don't enough people currently bike? (2)

A: Because they think it's inconvenient.

Q: Why do they think it's inconvenient? (3)
A: Because they don't own a bike.

Q: Why don't they own a bike? (4)
A: Because they don't have space to store it.

Q: Why don't they have space to store it? (5)
A: Because they live in high density apartment buildings

The example above would probably lead you to think about either sharing solutions, a new bike design that is easier to store in small spaces, or a creative storage system for bikes. It's easy to see how a different answer to any of the whys would lead to a completely different set of solutions. That's why it's so important to make sure you truly understand the root cause of the change you are trying to enact.

Example: Mr. Andrew Wheeldon, Bicycling Empowerment Network

Mr. Wheelon is the Managing Director of the Bicycling Empowerment Network (BEN), a non-profit in South Africa. Since 2002, BEN has worked to increase access to affordable bikes, teach people bike safety and repair skills, and promote the development of bicycle lanes and infrastructure to cities, municipalities, and provinces. By identifying the key barriers that were limiting bike adoption (lack of suitable bikes, safety concerns, cultural norms), BEN was able to develop a strategy that systematically chipped away at these barriers and shifted behavior. The success of the organization is closely linked to their ability to develop a detailed understanding of the root causes of the problem they were trying to address.

Additional Resources
- *The Five Whys for Startups*, Harvard Business Review: http://blogs.hbr.org/2010/04/the-five-whys-for-startups/
- NHS Institute for Innovation and Improvement: http://www.institute.nhs.uk/quality_and_service_improvement_tools/quality_and_service_improvement_tools/identifying_problems_-_root_cause_analysis_using5_whys.html

C. How does your business model need to change as you scale? Are your suppliers and distributers ready to scale with you?

The process of growing a business involves increasing the number of employees, increasing the number of products you make and sell, and increasing your place in the market. This is also known as **scaling**. As a company grows, it's processes and systems must change. The question is, what should change and how should that change happen?

Before thinking through the what and the how, first ask yourself if you even want to scale. Here are some steps to help you do this:

1. Evaluate your motives/goals for starting the company in the first place. What do you want to accomplish? Are you hoping to expand internationally, or are you just interested in helping people in your city get around more easily? These motivations will help you figure out how you want to scale.

2. Evaluate your transportation, IT infrastructure, and political environment to help you figure out the environment in which you'll be operation. Will the existing transportation structure allow for you to grow larger than you are? Will the IT infrastructure be able to support a larger customer base? Will government regulations limit your ability to scale?

3. Evaluate the cultural norms in your city. Will your customers embrace a larger company selling at a larger scale? Is your customer base large enough to support you as you grow or will you need to seek out a new target customer?

The above three steps will help you decide if you really want and are able to scale given your personal motivations, the business environment in which you're operating, and the cultural norms of your area. If you decide that you do want to scale, continue reading. If not, you're done! Take a breather and move on to the next question.

Once you've decided that you want to scale, think about how big you want to get. Are you interested in growing so that everyone in your city uses your product? Or are you interested in expanding to new cities, new regions, or even new countries?

Think about your operations and consider whether or not they're able to grow as you grow. For example, services such as Amazon Web Services or Microsoft Azure allow you to rent out server space to build web-based products. If you want to grow, these services allow you to do so with minimal cost, time, and effort on your part. Other operational components include your suppliers, manufacturing process, and distribution channel. See **Chapter 1, Part D** to revisit how to make and distribute your product.

Additional Resources

- Ten Tips for Building the Most Scalable Startup:
http://www.forbes.com/sites/martinzwilling/2013/09/06/10-tips-for-building-the-most-scalable-startup/
- Adopt the New Startup Model: Nail It Then Scale It:
http://www.forbes.com/sites/martinzwilling/2011/09/18/adopt-the-new-startup-model-nail-it-then-scale-it/
- 3 Fundamental Shifts You Need to Make to Scale Your Business:
http://www.inc.com/les-mckeown/three-fundamental-shifts-you-need-to-make-to-scale-your-business.html
- How to Scale Your Start-up: http://www.inc.com/karl-and-bill/how-to-scale-your-start-up.html

D. How will you monitor changing conditions and stay nimble?

The new mobility sector is changing rapidly and is highly dependent on infrastructural, policy, and economic factors. We know we're repeating ourselves with this quote but the only constant in life is that everything changes. Change is the name of the game for entrepreneurs. You are an instrumental part of the change sweeping the transportation sector. As an entrepreneur, you have an advantage by being able to change quickly as the sector changes. This allows you to move faster than large companies and stay relevant to your customers. Unfortunately, this means that you are, and will continue to be, operating in a dynamic, fast-paced, and ever shifting environment. Get used to it! Or, better yet, embrace it and plan for it.

Now, we recognize that change can be difficult. It can feel like failure or selling out. But it's actually a sign of growth and progress. You start out with an idea about a solution. No matter how good that idea is, it can always be made better with research, analysis, and testing. There's no such thing as "getting it right the first time" in a startup. You might have some **initial traction in the market**, with high customer interest, purchases, and even funding. But at some point, you'll need to take a step back and re-evaluate to continue that success. In the new mobility space, this requires keeping an eye on the market, regulatory decisions, and infrastructure changes. As they change, consider changing your strategy.

What, you may be asking, do we mean by "strategy"? Great question. **Strategy** is a catch-all phrase for every decision you make regarding your product's marketing, operations, financing, and research and development ("R&D"). It's what you have control over.

- **Marketing**: This includes your actual product (the look, feel, and software/hardware backbone), the price you charge for it, the customer group you're targeting for it, the place where it can be purchased, and the way in which customers find out about your product. In traditional marketing terms, these are known as the 4 P's: **P**roduct, **P**rice, **P**lace, and **P**romotion. (See **Chapter 1, Parts A, B, and C** for a review of these concepts.)

- **Operations**: This is the process by which you make and distribute your product. For online- or mobile-based products, operational decisions include the operating system you'll build on, the programming language you'll use, and the computing power customers need to use the product. For physical goods, operations includes where you will manufacture the product, if you'll buy or lease/rent the space, and if you'll hire on any new employees to run the manufacturing line. (See **Chapter 1, Part D** for a review of making and distributing your product.)

- **Financing**: This includes from whom you'll receive funding and the strings that come along with that funding. Debt financing comes from banking institutions and requires interest payments and a final principal payment. Equity financing comes with the loss of

company ownership and some decision-making capabilities. (See **Chapter 1, Part E** to review funding concepts.)

- **R&D**: One strategic decision is whether or not you'll funnel resources from actually selling or building your existing product, which is called your **ongoing operations**, to researching other product ideas.

The next step is to figure out when a change is happening and what that change is so you can adjust your strategy. This requires keeping up-to-date information on customer preferences, competitor movements, and regulatory decisions. The traditional way to monitor customer preferences is to talk to customers. This works, to an extent. Unfortunately, it's a well-researched, and well-understood, fact that humans do not always do what they say. This is especially evident in the differences between purchase intent and actual purchases. Someone might express an interest, or **intent**, to purchase a particular item, but might hesitate when it comes to actually spending money on it.

This is the beauty of **data analytics** – instead of asking people what they would do in a given situation, you can observe what they actually do. Terabytes of information are created daily from customer mobile phone usage, car traffic patterns, online purchases, etc. If you have mobile- or internet-based sales channels, you can monitor what customers click on, the number of customers visiting your site and actually purchasing, you can track their actual purchases, etc. All this is possible through different open-source, online programs such as Google Analytics, Wildfire Social Media Monitoring, and AdBeat. These allow you to measure and analyze website traffic, social media performance, and competitor advertising. This also works for understanding competitor movements (see **Chapter 4, Part A** to direct and indirect competition).

Data analytics are useful for monitoring shifts within your market. To monitor changes that occur outside of your market, called **external market shifts**, you need to use your network and stay informed through news and media channels (See **Chapter 2, Part B** to review networks). An example of an external market shift occurred in 2008 when the US stock market fell and led to a global recession that affected access to funding for companies around the world for years. It's important to stay informed of both internal and external market shifts so you can pivot your own plans quickly.

Example: Mr. and Mrs. Chris and Florence Trees (Treecycle)
Treecycle is a high-end tricycle design and manufacturing company in Shanghai, China. It has no control over municipal regulations but it does control where it sells its products. Shanghai has banned three-wheeled vehicles (i.e.: tricycles) from public streets, but other municipalities have not. Treecycle's strategy should therefore be to sell its tricycles in these other regions, prove that the concept improves urban mobility and is highly sustainable, and be ready to move into Shanghai when (if) regulations change. They should monitor Shanghai regulations by attending relevant conferences, setting up daily web alerts to crawl the internet and surface relevant press releases and news articles, and making connections with municipal transportation and sustainability representatives.
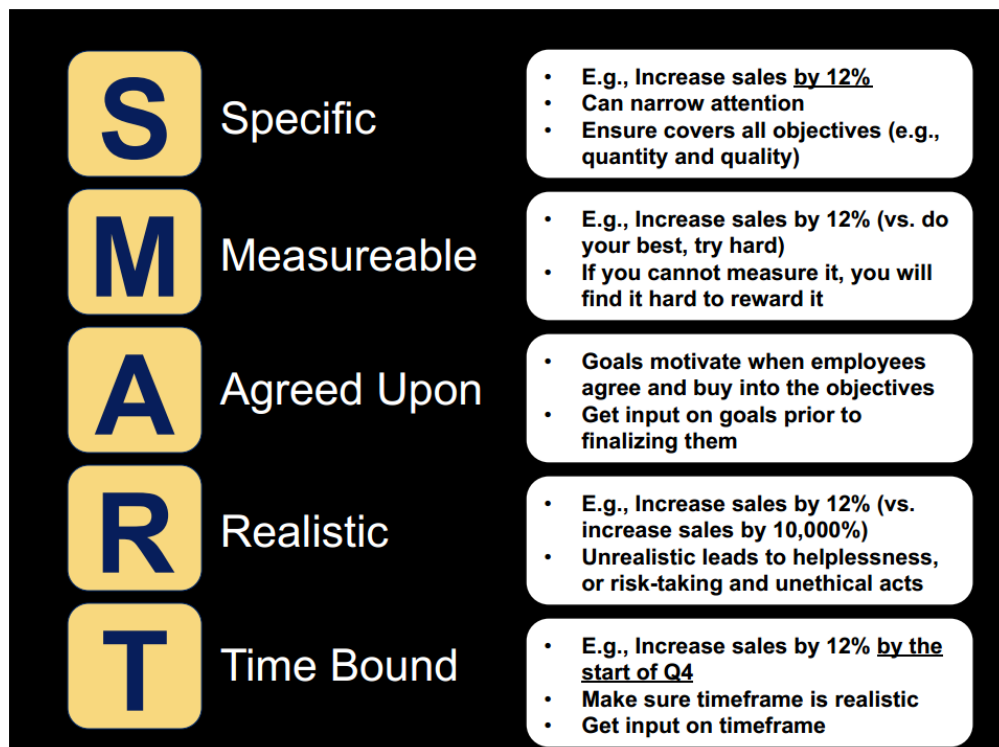
Additional Resources
- *The Lean Startup* by Eric Ries
- Google Analytics: http://www.google.com/analytics/
- Wildfire Social Media Monitoring: https://monitor.wildfireapp.com
- AdBeat: https://www.adbeat.com/

E. How will you define success? What metrics will help you measure this progress?

Success means different things for different people: it can be measured based on number of customers, profitability, environmental impact, or employee satisfaction, to name just a few. As you start and grow your business, you will inevitably face situations where you need to make tradeoffs across these different aspects of success. Taking time now, as you're just getting started, to think about what those priorities are and how you will define success for each attribute that matters to you will help you navigate those tough decisions when the time comes.

The first time you try to answer the question "What will success look like for this idea" you'll probably end up with a pretty fuzzy answer. You can refine this idea some by thinking about what is most important to you and why you wanted to pursue this idea, but don't panic if things are still vague. It's completely natural to think in broad brush terms. However, attaching the right **metrics** to those big picture ideas is extremely useful in helping you track whether you're truly realizing your goals and can provide an early warning system if something is veering away from your initial definition of success. Metrics are quantitative, or measurable, indicators that help assess performance. Metrics are closely linked to goals. In order to be effective, goals should be SMART: **S**pecific, **M**easurable, **A**greed Upon, **R**ealistic, and **T**ime Bound. You'll want to choose your metrics and goals carefully, making sure they're truly aligned with the definition of success you're trying to promote. Misaligned metrics is one of the quickest ways to send your business off in the wrong direction, so choose wisely.

S Specific	• E.g., Increase sales <u>by 12%</u> • Can narrow attention • Ensure covers all objectives (e.g., quantity and quality)	
M Measureable	• E.g., Increase sales by 12% (vs. do your best, try hard) • If you cannot measure it, you will find it hard to reward it	
A Agreed Upon	• Goals motivate when employees agree and buy into the objectives • Get input on goals prior to finalizing them	
R Realistic	• E.g., Increase sales by 12% (vs. increase sales by 10,000%) • Unrealistic leads to helplessness, or risk-taking and unethical acts	
T Time Bound	• E.g., Increase sales by 12% <u>by the start of Q4</u> • Make sure timeframe is realistic • Get input on timeframe	

Once you've chosen your definition of success and developed metrics, you'll also want to think about the relative priority of those metrics. If you have to make a choice between employee satisfaction and profitability, which option will you choose? Knowing what component of your definition of success matters more helps make those tough choices easier: you and your team will have a framework to rely on for guidance.

Now that you've got metrics and priorities, start tracking your progress. The ideal frequency depends on the metric and your business, but as a general rule of thumb, you should check in on your progress at least once a quarter. If your performance on a metric is different than the target you set, evaluate why that is: has something gone wrong, or is performance changing because your definition of success has evolved with your understanding of the market? Changing your definition of success isn't a bad thing, as long as you're thoughtful about why it is changing. All of this metrics tracking may seem like a pain, but there's truth in the saying that you can't manage what you don't measure. Take a step back, collect some metrics, and respond intentionally to the outcomes.

Additional Resources
- *On the Folly of Rewarding A, While Hoping for B*: http://www.ou.edu/russell/UGcomp/Kerr.pdf
- *How to Set Business Goals*: http://www.inc.com/guides/2010/06/setting-business-goals.html
- Lean Startup Innovation Accounting

CONCLUSION

Good luck! We hope this Guide has been helpful. Remember to revisit the questions and your answers frequently in years to come. As your environment changes, your answers will likely change as well. Staying ahead of those changes will help you navigate them and remain competitive.