How AUDI AG is Driving Toward the Sharing Economy

AUDI AG has historically focused on producing and selling premium vehicles but has begun to experiment with providing mobility services, built around car sharing. Its response to the so-called sharing economy addressed strategic and transformational challenges. Strategically, the company pursued additional sources of revenue from targeted, premium mobility services, rather than the less segmented services provided by competitors such as BMW and Zipcar. AUDI AG also transformed its organizational structure, processes and architecture to balance autonomy for innovation and integration for competitiveness.¹

Car Manufacturers, Digitization and the Sharing Economy

Increasing digitization² has brought massive changes for car manufacturers. As the CEO of AUDI AG, Rupert Stadler, put it:

“Never before in nearly 130 years of automotive history has our industry changed as fast and as completely as now: How we engineer our cars, how we produce them, how we present a new model, where we sell it, who we sell our cars to and who we work with in the future.”³

As part of this industry transformation, car manufacturers face competition from multiple types of companies. On the one hand, new entrants like Tesla and technology companies like Google and Apple are working on digitally enhanced, electric or self-driving cars.⁴ On the other hand, popular ride-sharing services such as BlaBlaCar, Lyft and Uber are leveraging the "sharing

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¹ Ping Wang, Hope Koch, Iris Junglas and Arun Sundarajan are the accepting senior editors for this article.
² Throughout this article, digitization means the application of digital technologies to transform how business is being conducted. The term is used synonymously with digitalization.
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The sharing economy is a growing trend that prioritizes mobility over car ownership.

While the first type of competitors attack incumbent car manufacturers on their home turf by providing new types of cars for people to buy, the second type threaten the foundation of the car manufacturing industry by providing customers with a substitute to owning a car in the first place. In response to this threat, premium car manufacturers like Daimler, BMW and AUDI are going beyond using digital technologies to create "smart, connected" cars; they are also starting to develop IT-enabled mobility services, built around car sharing.

This article is based on an in-depth case study of AUDI that included interviews with 11 IT and non-IT executives. It illustrates how this manufacturer of premium cars approached the development of digital mobility services so it could gain a foothold in the growing sharing economy.

The article highlights the two types of challenges faced by product-focused companies that decide to offer sharing economy services: strategic and transformational. AUDI had to find ways to differentiate itself strategically both from the car-sharing services offered by its direct competitors Daimler and BMW, and from sharing economy “pure-players” (i.e., companies that generate most of their revenue from the sharing economy). While many leading players in the sharing economy (Uber, Airbnb, etc.) follow an asset-light approach, AUDI’s approach had to turn owning the cars it produced into an advantage.

Sharing economy business models are very different from AUDI’s traditional and dominant business model (i.e., manufacturing and selling vehicles), so the company also had to make transformational changes in its organizational structure, processes and architectural approach to digitization.

Although it is too early to tell whether AUDI’s approach will ultimately be competitive, this article provides insights into how an incumbent firm is responding both to the disruptive opportunities provided by the sharing economy and to the challenges it poses.

Background on AUDI and its Digitization Efforts

AUDI, whose brands included Audi, Ducati and Lamborghini, is a manufacturer of premium automobiles and motorcycles. The company is headquartered in Ingolstadt, Germany, and sells its products in more than 100 markets worldwide. The company employed roughly 85,000 people in 2015—60,000 of them in Germany—and reported revenues of €58.4 billion ($68.6 billion) and an operating profit of €4.8 billion ($5.6 billion). Between 2005 and 2015, both AUDI’s annual revenues and unit sales had increased by 8% per year, and its pre-tax profit grew by 18% per year to reach €5.3 billion in 2015. Table 1 compares the performance of the Audi brand in 2014 with its direct competitors.

AUDI’s biggest brand is the Audi range of vehicles. The Audi brand is also headquartered in Ingolstadt, and in 2016, Audi operated 11 production facilities around the world.

In 2015, global brand agency Interbrand ranked Audi the 44th most valuable brand worldwide. Audi has also received multiple awards for its innovativeness. In May 2016, in a
competition that considered 1,400 innovations from 20 automobile manufacturers and 50 brands, Audi won the "Most Innovative Premium Brand" main prize.\textsuperscript{13} Six months earlier, Audi was recognized for the third consecutive year as the most successful brand in the Connected Car Award competition organized by German magazines Auto Bild and Computer Bild.\textsuperscript{14} Audi has ambitious innovation targets and has stated that “by 2020, 50% of value creation will be based on mobile applications (apps), software, electronic systems and digital services.”\textsuperscript{15} Audi believes “this will totally change our industry and our offering.”\textsuperscript{16}

Indeed, digitization is the driving force behind numerous significant changes at Audi. In the words of Axel Strotbek, AUDI’s former Chief Financial Officer, “Digitization is an essential key to our success story.”\textsuperscript{17} By 2016, various digitization efforts were in full swing. For example, Audi was:

- Streamlining its manufacturing process with “smart” technologies, such as an electronic vehicle tracking card
- Encouraging and facilitating employee collaboration through internal social computing platforms in its “Enterprise 2.0” initiative
- Improving and personalizing the sales experience with the “Audi City”\textsuperscript{18} cyber-physical vehicle configurator
- Incorporating digital services into cars through “Audi connect.”\textsuperscript{19}

All of these digitization efforts were supported by Audi’s IT unit. Audi IT\textsuperscript{20} is led by Mattias Ulbrich, who became AUDI’s CIO and Head of IT and Organization in 2012. In 2015, Audi IT employed about 950 full-time employees. It supports all IT functions within AUDI, its fully owned subsidiaries and its national sales companies worldwide. Audi IT also services and supports a select number of capabilities (e.g., in-car IT) for other VW Group brands.

### AUDI’s Sharing Economy Mobility Services

By 2016, AUDI was exploring new sources of revenue based on the sharing economy. These new sources derive from mobility services that help people get from one place to another, whether they own a car or not. However, if these mobility services became successful they would potentially threaten AUDI’s traditional business model, as customers might switch from owning Audi vehicles to becoming subscribers of AUDI mobility services.

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\textsuperscript{15} Automotive News, op. cit., May 26, 2015.

\textsuperscript{16} Ibid.


\textsuperscript{18} A digital-physical environment featuring multi-touch displays for configuring an Audi vehicle from millions of possible combinations.

\textsuperscript{19} For a more in-depth description of these digital innovations at Audi, see Fonstad, N. O. and Mocker, M. Expanding Digital Innovation at Audi, MIT CISR Working Paper No. 415a, October 2016.

\textsuperscript{20} The IT unit is referred to within the company as “Audi IT” and is the IT unit for the Audi brand.
Within AUDI, Audi Business Innovation GmbH (ABI) was exploring and piloting a variety of mobility services. At the end of 2014, for example, ABI launched "Audi unite" in Stockholm, Sweden. This mobility service allowed a group of up to five people to share a premium car for two years. Each driver used a mobile app to check the shared car’s location and to reserve it for future use. Data collected about each individual’s use of the car enabled the group to split the monthly cost, which included maintenance and cleaning, based on actual use. The company also launched in 2014 a program called "Audi select." This mobility service is available in Berlin and offers customers the opportunity to drive three different used Audi vehicles over the course of a year.

In April 2015, ABI launched "Audi on demand," a service that allows customers to use a mobile app to rent an Audi car for a daily fee. Unlike other car rental services, an Audi concierge would bring the car to the customer’s location at the start of the rental period and pick it up from any location at the end. The service was available initially in San Francisco, followed by Munich, and will likely be rolled out in other national markets as well.

"Audi at home" is another mobility service that was launched in San Francisco and Miami in November 2015. In these markets, Audi collaborated with select luxury residences to offer a shared pool of Audi cars, conveniently parked in the properties’ garages. Residents can use a mobile app to reserve cars for personal use.

Finally, at the end of 2014, AUDI launched "Audi shared fleet." This mobility service is available in Germany and is targeted at corporate customers. ABI provides companies with a car fleet and charges them on a pay-per-use basis. Customers’ employees can use an Audi-operated website or mobile app to reserve a car from the corporate fleet. Employees who chose to use the cars for private use are charged on a per-use basis as well.

Mobility Services and Strategy

Offering mobility services presented AUDI with a fundamental strategic challenge: the company had to differentiate its mobility services from those of its direct competitors (specifically Daimler and BMW), as well as from native sharing economy companies (such as Uber and Zipcar).

Differentiating Through Premium Mobility Services

Daimler and BMW had introduced their car2go and DriveNow car sharing programs in 2008 and 2011, respectively, several years before AUDI began to launch its own mobility services (Table 2 provides an overview of both these services).

Given car2go’s dominance, offering a similar service would likely lead AUDI into either an “arms race” for coverage with number of available vehicles or a price war, both of which were undesirable. Moreover, by mid-2017, Daimler and BMW were reported to be in advanced talks about merging car2go and DriveNow. Hence, being late to the market of mobility services, AUDI needed to determine how to position itself strategically to differentiate itself from these offerings. While both BMW and Daimler are positioned in the premium car manufacturing segment, they used their respective entry models (mostly Minis and 1 Series BMWs, and Smart and Mercedes A- and B-class cars, respectively) to offer mobility services that were differentiated from those of their direct competitors.

21 Although ABI’s focus was on mobility services, it was also working in other areas, such as analytics services. For a description of ABI’s analytics services capabilities, see Dremel C., Herterich, M., Wulf, J., Waizmann, J.-C. and Brenner, W. “How AUDI AG Established Big Data Analytics in Its Digital Transformation,” MIS Quarterly Executive (16:2), June 2017, pp. 81-100. That article also describes the process of figuring out how best to integrate ABI with the rest of the firm without jeopardizing ABI’s independence.


services to a relatively unsegmented target audience.

AUDI decided to offer services that differed from those of its competitors by seeking to transfer its positioning in the premium car segment into the mobility services space. As Marcus Keith, Director Development Operating Systems, Audi connect, put it: “The question is, what is the definition of premium in [a more digitized world]? Is it time? Is it features in the car? Is it convenience?”

AUDI sought to answer these kinds of questions by experimenting with different mobility services. All of the experiments involved combining mobility services with up-market Audi models. Audi at home collaborated with developers, property managers and residents of luxury residences to develop mobility services (e.g., the residential community LUMINA advertises the “exclusive” service as a benefit of being a resident). Audi on demand offers a concierge service that brings the car to the user instead of the user having to collect the car. Audi unite makes driving a premium car available to a broader audience. Indeed, many Audi select customers choose three high-end models for different seasons, such as a convertible for the summer, a four wheel drive SUV in the winter and a luxury limousine for the remaining time.

**Differentiating Through Integration**

Finding ways to stand out against other premium car manufacturers would not be enough, though. AUDI’s mobility services also compete with other sharing economy companies, such as Uber and Zipcar, although, as of yet, none of these competitors focuses on the premium segment. But AUDI identified another source of differentiation. Unlike pure mobility services companies, all of AUDI’s mobility services use cars equipped with Audi connect, and these cars are manufactured and owned by AUDI. Although sharing economy companies like Uber and Airbnb are often envied for their asset-light business models (Uber does not own cars, Airbnb does not own residences), AUDI was convinced that the connection between mobility services and a car manufacturer presented a potential source of competitive advantage against non-integrated providers of mobility services.

“The USP [unique selling proposition] will be at the connection between the car and the [connected car] IT platform. We can use data from the car no one else is able to get, because we have this [trusting relationship] with AUDI AG.” Felix Breitstadt, Manager

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28 In early 2017, car2go added the smaller Mercedes CLA and GLA models to the “tiny, twin-seat Smart cars” to “make cars available at a reasonable price to people for occasional use”—see Woodyard, C. “Car sharing goes upscale as Car2go sports Mercedes-Benz,” USA Today, January 20, 2017, available at www.usatoday.com/story/money/cars/2017/01/30/car-sharing-goes-upscale-car2go-sports-mercedes-benz/97257174/. With this addition, the previous “car2go black” service that had used black Mercedes B class models and targeted business customers was merged with the regular car2go service. In April 2016, BMW started to offer its 328xi and 330xi models via its newly founded ReachNow service in the U.S.


Cooperations and Long-term Strategy, Audi Mobility

For example, one crucial requirement of AUDI’s mobility services was to find a secure way to open and start luxury cars with a “digital key” on a smartphone without requiring a physical key to be left in the car.³¹ Audi developed a digital key solution for ABI that met this requirement—a feat that companies like Zipcar would find difficult to replicate, given the many different car brands it uses.

“When we talk about the digital key, there’s no safer way than ... the standard 100% integrated solution. We can share an A8 or R8 because we don’t run the risk of losing the car to theft. [A car sharing competitor] did some testing with premium cars, but the cars were stolen right away. So they stopped that. [Our intimate relation with Audi] will allow us to [use] luxury cars and [follow a] premium approach.” Felix Breitstadt, Manager Cooperations and Long-term Strategy, Audi Mobility

Developing the digital key was a prerequisite to moving car sharing services into the premium segment. However, it was questionable whether this alone would be sufficient to enable AUDI to compete successfully with mobility services in the long run. Hence, AUDI also explored services that target different segments than its competitors.

Differentiating Through Segmenting the Sharing Users

Another way AUDI sought to differentiate itself was through segmenting the users who would share an asset. The different mobility services AUDI experimented with addressed different groups or segments of car sharing users: With Audi unite, a closed group of family members, friends or neighbors was able to share a car; with Audi at home, all tenants of a specific building share cars; and with Audi shared fleet, the employees of one company share cars. The question AUDI was trying to answer was “what are appropriate groups of people willing to share and able to benefit from sharing a car?” Although AUDI hasn’t yet found a definitive answer to this question, experimenting with different groups has helped the company to get a better understanding of car sharing market segments. So far, popular car sharing services have mostly addressed an unsegmented market or segments based on service/price (Uber Black vs. Uber X; different types of cars to rent via Zipcar). They have not addressed subgroups, such as people in the same residence, people from the same company or groups of friends and family.³²

Table 3 summarizes how AUDI strategically differentiates its mobility services from those of competitors.

Mobility Services and Digital Transformation

Developing mobility services was not just another digitization project at AUDI because, unlike other innovations, the services targeted a new set of customers: car users, not car owners. AUDI would be providing services to these users, not products. But providing services meant that, suddenly, AUDI had to deal with an ongoing customer relationship instead of a transactional relationship.

“It’s not only getting the users registered, it’s also always animating them every day, every month to use your service. Otherwise, you will not have the traffic or utilization. And utilization is key for the business success of a service.” Felix Breitstadt, Manager

³¹ In 2017, most car sharing services still had physical keys in the shared car, which made it relatively easy to steal the car. Indeed, theft of luxury shared cars was reported as a real problem for sharing economy companies. For example, in 2015, Zipcar was reported to have had 20 luxury cars stolen in New York and 76 in San Francisco. See Feis, A. and Fasick, K. “Thieves are stealing Zipcars across the city,” New York Post, March 9, 2015. HiGear, a “peer-to-peer car-sharing service focused on luxury vehicles” shut down because of theft issues. See Perez, S. “Luxury Car-Sharing Service HiGear Shuts Down Due To Theft,” TechCrunch, January 1, 2012, available at https://techcrunch.com/2012/01/01/luxury-car-sharing-service-higear-shuts-down-due-to-theft/.

³² Similarly, in home sharing, incumbent AccorHotels recognized that sharing-economy pure-plays like Airbnb did not segment the market. In response, AccorHotels acquired Onefinestay for $170 million. Onefinestay concentrates on sharing luxury apartments, adding services such as a personal greeter, a local iPhone and other services the targeted clientele might expect. See Dillet, R. “AccorHotels acquires Onefinestay for $170 million,” TechCrunch, April 4, 2016, available at https://techcrunch.com/2016/04/04/accorhotels-acquires-onefinestay-for-170-million/; and Wright, C. L. “Suite Surrender,” Wall Street Journal, June 24-25, 2017.
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Cooperations and Long-term Strategy, Audi Mobility

The different target customer group required a radical shift in perspective from AUDI that wasn’t easy to accomplish.

“You need to start thinking from the customer perspective. But for over 100 years, automotive companies traditionally started from the [perspective of the] car. So that shift in thinking has a potential for conflict. ... Everyone here is in love with the car, so showing pictures where the car isn’t in the center is like an earthquake for an automotive company.” Sven Schuwirth, Head of Brand and Sales Development

The shift in perspective triggered a need for transformation in the organizational structure, development processes and the role of IT platforms.

Transforming the Organizational Structure: Balancing Separation and Integration

Mobility service innovations are now executed by a separate company: Audi Business Innovation GmbH (ABI), which was founded in 2012 and is wholly owned by AUDI. Prior to that, mobility services projects had been managed within Audi for about 18 months. ABI manages its own profit and loss statement and, with headquarters in Munich, is geographically separated from AUDI headquarters. AUDI had learned that mobility services require approaches that are very different from what the rest of AUDI does.

“The idea was to install a disruptive topic within the organization. But you get all these limitations once you are in the [big] organization [of AUDI]; it limits you and slows you down. The board was clear that we needed to find a new way to approach that [disruptive topic] and separate it from the [rest of the] organization. Because there are so many new things to experiment with, it would be really difficult within [AUDI]. The requirements we have, the knowledge we need, are in a lot of ways different. And as we started from scratch, we didn’t need a transformation.” Felix Breitstadt, Manager Cooperations and Long-term Strategy, Audi Mobility

In early 2016, ABI employed 75 people, many of them new to the overall Audi brand. The ABI IT group included roughly eight IT project leaders and 25 software engineers. Often relying on design thinking approaches, ABI’s employees were technically savvy and worked in roles, such as sales, service design and managing partnerships with other service providers.

Table 3: Differences Between AUDI’s Mobility Services and Those of Traditional and Sharing Economy Competitors

<table>
<thead>
<tr>
<th>Models available</th>
<th>car2go/DriveNow</th>
<th>Zipcar</th>
<th>AUDI’s Mobility Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Models available</td>
<td>Mostly entry class models: Smart, and A and B class. As of 2017, also CLA, GLA, Mini, i3, X1, 1 Series.</td>
<td>Diverse set of models. Theft issues reported on luxury models.</td>
<td>Focus on luxury models, including top-end A8, R8. Integration of ABI with AUDI helps to address theft issue (digital key).</td>
</tr>
<tr>
<td>Basis of competition and segment focus</td>
<td>Competition on price, availability, broad focus with little segmentation (make cars available for everyone at reasonable price). “car2go black” that previously focused on business customers closed down.</td>
<td>Competition on price, availability, some segmentation by type of vehicle and location.</td>
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“For example, we have our own car technology guys. It really helps us when we get in contact with [AUDI’s] technical [engineering] department. Normally when you are in the sales department, people know a little bit about technology, but not that deep. But we have guys who come, for example from Zipcar, and have worked on onboard communication units. They really know how car sharing technology works. So we talk at the same level with [the technical department]. It’s also a very crucial point for our positioning internally.”

Felix Breitstadt,
Manager Cooperations and Long-term Strategy, Audi Mobility

ABI’s shorter innovation cycles, flat organizational structure and startup culture facilitates faster decision making. Thus, while some of the service features developed by ABI could in the future be leveraged by AUDI’s traditional business model (e.g., integrating usage-tracking capabilities), this isn’t yet the focus.

“The rule [at ABI] is “don’t wait [for AUDI]—just do it.””

Michael Faulbacher,
Head of Vehicle IT

Both of AUDI’s two main incumbent competitors, Daimler and BMW, have also created separate legal entities for their mobility services, partly because they are run with partners: BMW owns 50% of DriveNow, which is a joint venture with SIXT. Daimler Mobility Services owns 75% of car2go.

Despite its organizational and geographic separation, ABI has been selectively integrated with AUDI. Every innovation on which ABI has worked has been conceived and presented as a business case by AUDI’s sales strategy team. Once a business case has been approved by AUDI, the innovation is transferred to ABI for design, implementation and piloting.

However, the requirement for business cases was regarded as a double-edged sword. On the one hand, having to generate a business case relatively early was seen as contradicting the exploratory and iterative mode of experiments ABI was running. How can you come up with a business case when it isn’t clear what the service would look like? On the other hand, the business case requirement helped AUDI to make sure ABI was focusing resources on projects that at least had the potential to generate business opportunities at scale and that were consistent with AUDI’s premium mobility service provider strategy. The business cases gave AUDI a say in resource allocation decisions at the otherwise relatively separate ABI and thus helped the integration of ABI and AUDI. The preparation of business cases also forced AUDI and ABI to think through the financial aspects of sharing economy business models:

“The business case [requirement] does not fit the normal startup world. So it’s a challenge. Sometimes we would love to have more flexibility and not focus on the business case right from the beginning, because it is somehow limiting innovation. But I think it’s still good, because it helps us learn ... where the money is in mobility services.”

Felix Breitstadt, Manager Cooperations and Long-term Strategy, Audi Mobility

Another way that ABI is integrated into AUDI is by having AUDI’s CIO, Matthias Ulbrich, as a member of ABI’s management board. Moreover, ABI’s managing director, Bettina Bernhardt, is also AUDI’s head of mobility.

Transforming the Development Process: Using Agile Methods

Unlike customers of AUDI’s manufacturing businesses, mobile services customers are often exposed to new services before they are fully developed. By using a minimum viable product (MVP), \[^{33}\] ABI can gauge market interest with a baseline product that includes only essential features. Feedback from tracking and monitoring customer use and experience of the baseline product provides ABI with information that informs future product design and functionality. This flexible approach is not possible in traditional car manufacturing, where innovation cycles take up to five years. For mobility services, ABI aims at innovation cycles of two years or less.

ABI relies exclusively on the agile Scrum development methodology for all mobility services projects. Because mobility services were new for AUDI, and the technical requirements as

[^{33}]: A minimum viable product (MVP) is an early-stage product with only essential features released to early adopters. Customer feedback gleaned from MVPs helps businesses understand how customers use (or want to use) their products and informs future product iterations.
well as the service features were often unclear, the ABI IT group works very closely with employees with expertise from other areas, as well as with end users, prototyping iteratively.

For example, in the first prototype iteration of Audi unite, ABI worked with an external digital agency company in Stockholm to identify seven groups of two to three users who would each share a vehicle. Other than the car, this first prototype was not branded as an Audi service. Feedback from the users—for example, on ease of use of the app for splitting the costs for car usage—was integrated into the next iteration of the minimum viable product, which began using the Audi brand.

With Audi select, close collaboration between the ABI team and customers—not just in the creation of the product, but also during operations—made the project team aware of the need to handle previously unrecognized incidents. For example, when one shared car was leaking oil onto a user’s driveway, the Audi unite team jumped in and had the customers’ property cleaned. ABI learned that processes (and IT-enabled communication channels) for handling these types of incidents needed to become part of service operations if AUDI was to deliver the premium experience users of the services would expect.

Transforming the Role of IT: Platforms and Architecting

At the core of all of ABI’s digital mobility services is a single digitized platform called the Mobility Service Infrastructure (MSI). Using Amazon Web Services as the foundation, the MSI provides a growing number of shared services on which most of ABI’s mobility applications rely. These services include user authentication, payments and the management of fleets of individual cars. Each mobility service has a unique front end, such as an app or website, but shares or re-uses back-end service components, such as payments functionality. The MSI platform has facilitated ABI’s experimentation with different types of mobility services, such as Audi at home and Audi on demand, by allowing those services to re-use encapsulated “fleet management” functionality. ABI benefits from the continued re-use of these shared back-end services.

“When we started two-and-a-half years ago, we decided we want[ed] to have one back-end solution to give us scalability and synergies. Though re-use slowed us down a little bit, and we have to defend this idea on the cost side, because it’s an investment in the beginning, it will pay off in the next years.”

Felix Breitstadt, Manager Cooperations and Long-term Strategy, Audi Mobility

ABI’s MSI also relies on the functionality offered by Audi’s connected car platform, which handles the secure connection to Internet-enabled Audi cars. This functionality enables MSI-based apps to leverage the car-related data required to deliver mobility services. For example, the MSI can request the locations of all nearby available cars within a fleet for display in ABI’s mobility service apps. The MSI is quickly becoming VW Group’s standard for building mobility services.

The outcome of the three areas of digital transformation described above is summarized in Figure 1. The figure shows how AUDI and ABI balance integration and separation and how the approach to development and architecture helps ABI to speed up innovation and achieve synergies with AUDI. The use of agile processes provides speed during the development of each mobility service. The re-use of common components in the MSI saves time compared to reinventing the same component for each mobility service. Synergies between ABI and AUDI are achieved through ABI influencing the development of Audi’s connected car platform.

Lessons for Incumbent Firms Entering the Sharing Economy

Although it is too early to tell whether AUDI’s approach to the sharing economy will ultimately be competitive, its experiences thus far provide insights into how an incumbent, product-centric company can respond both to the opportunities provided by and disruption challenges posed by the sharing economy. While we are not suggesting that incumbent companies that have decided to enter the sharing economy should slavishly copy AUDI’s approach, they will need to answer two questions that AUDI addressed: (1) How can you

34 Called MBB, an abbreviation of “Mobiler Backend Baukasten,” which translates to Mobile Backend Toolkit.
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Figure 1: How ABI’s Architecture and Development Processes Help Foster Speed of Innovation and Synergies with AUDI

- Despite separate legal entities and geographic locations, integration through 100% ownership and shared executives
- Integration through joint discussion of business cases
- Speed up innovation through development of services using iterative/agile methods, focusing on minimum viable products (ABI) vs. stage-gated product development (Audi connected cars)
- Speed up innovation of different mobility services through re-use of common components in the MSI platform instead of continuously re-developing the same functionality
- Integration through use of MBB connected car functionality by MSI, but at the same time, ability to influence MBB features to better fit ABI requirements

How Can You Compete In the Sharing Economy?

1. Who Are Your Competitors in the Sharing Economy? Even though car manufacturers are facing some new competitors, such as Tesla (in the area of electrical vehicles) and Google (in the area of autonomous vehicles), their main competitors are a relatively homogenous group. In the area of sharing economy services, AUDI is competing with offerings from its traditional competitors (i.e., BMW’s DriveNow and Daimler’s car2go) and from companies like Zipcar and Uber. That meant Audi had to answer the question “What is our competitive advantage?” for each of these two types of competitors. Incumbents who enter the sharing economy market will have to recognize the need to compete with different types of competitors.

2. What Is the Scope of Your Target Market for Sharing Economy Services? Users of sharing economy services are often perceived as a single unsegmented mass. Services like Airbnb, Uber and Zipcar do not focus on highly specific customer groups but try to appeal to very broad segments (e.g., professionals who work and live in a city). While promising scale, this broad market definition
leaves opportunities for segmentation by identifying users who are willing to share a valuable asset (such as a premium car) and to provide segment-specific services that meet their needs better than an unsegmented service could. AUDI has experimented with several specific segments (e.g., family members and friends, employees of a company, tenants of a building) to learn about their different requirements.

When incumbent firms are responding to digital disruption initiatives launched by...
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their traditional competitors, they should consider how they can segment the market for new sharing economy services. As Bughin and van Zeebroeck have pointed out, “the proliferation of digital ventures launched by incumbents increases the competitive pressure on emerging mobility models and compromises their profitability.”35 Segmenting the target market helps to avoid unprofitable arms races or price wars.

3. **How Can You Leverage Existing Capabilities to Gain Competitive Advantage?** Audi’s competitive position in the automotive industry is largely based on offering a premium product. Audi therefore had to define what premium means in the sharing economy. Is it features or speed or convenience? Moreover, as an asset-heavy company, AUDI had to figure out how to leverage that characteristic to compete against asset-light sharing economy companies. Tesla has also been pondering this issue. It is reported to be working on a feature to enable Tesla owners to share their cars with other people.36 In fact, some Tesla owners have shared their cars to help earn back the purchase price. In this case, and others, the installed base of incumbent products that could be potentially shared, and the incumbents’ brand, could serve as a potential source of advantage over startups.37

Incumbent firms will have to re-use their existing capabilities to gain advantage over sharing economy startups. AUDI suspects the key to doing this is the exclusive relationship between ABI and AUDI. This relationship makes it possible, for example, to transfer the car sharing model to the premium car segment in a theft-proof way and to obtain data from the shared resource that non-integrated players would not be able to access. While it remains to be seen whether AUDI’s approach is the right answer, incumbents entering the sharing economy market will have to find their own answers to the question of how best to leverage their existing capabilities.

4. **How Will You Make Money in the Sharing Economy?** As of 2016, AUDI hadn’t found the “killer” business model for the sharing economy. But neither were other automotive industry incumbents’ sharing economy services—although growing—yet profitable.38 That is why AUDI experimented with a variety of business models—essentially, AUDI was “buying options” that helped reserve the right to play in different potential futures.39 Incumbent firms will need to find ways to deal with the fundamental uncertainty of how to make money in the sharing economy.

5. **How Should You Transform in Response to the Sharing Economy?**

5. **Will the New Business(es) Be Integrated or Separated?** AUDI established a new business (ABI) to target the sharing economy and, because ABI would have a very different speed, way of working and mindset, separated it organizationally and geographically from the main business. Even so, ABI saw its connection with AUDI as a potential source of competitive advantage, and leveraging that advantage required some degree of integration—for example, by having key AUDI leaders on the ABI board. Similarly, Daimler has established a separate entity for its car2go business but integrates it via its Daimler Financial Services business

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38 While DriveNow’s business had been reported as profitable, other sources have pointed out that this was only because of heavy subsidizing by the parent. See Pander, J. and Tatje, C. “Teile und verliere [Share and lose],” *Die Zeit* (37), September 15, 2016, available at: http://www.zeit.de/2016/37/carsharing-daimler-bmw-car2go-staatliche-foerderung.
39 The notion of strategic uncertainty at the corporate strategy level and the need to generate options to address these uncertainties is addressed by, for example, Raynor M. E. *The strategy paradox: Why committing to success leads to failure (and what to do about it).* Crown Business, 2007.
unit. In general, companies have a set of organizational design levers at their disposal, among them structure, people, incentive systems and processes. To balance the competing requirements of integration and separation, companies will have to decide which levers will help to integrate and which will help to separate the business they set up to develop and operate their sharing economy services.

6. **How Will You Manage Uncertainty?** As outlined above, incumbent companies need to deal with the uncertainty inherent in entering the sharing economy. AUDI dealt with the uncertainty by experimenting and learning from these experiments. However, companies need to build capabilities to experiment strategically. For example, ABI built the MSI platform that allowed it to quickly experiment with different business models. ABI also dealt with the uncertainties associated with developing individual services by using an iterative, agile approach where services are shared early with customers. Feedback from customers helps ABI to learn. Furthermore, ABI has to develop business cases for its experiments, and doing this helps AUDI to better understand the economic aspects of the sharing economy. Learning also happened at the organizational level when AUDI changed how it organized its mobility services. Initially, these services were integrated in the main business, but after 18 months, the company established ABI because there were too many problems. In summary, incumbents entering the sharing economy need to be willing and ready to experiment and learn at various levels, including strategy, organization and service development.

7. **What Are the Roles of IT and the CIO?** Building IT systems for mobility services is vastly different from building IT applications that support processes through ERP and CRM systems—both in terms of development process (e.g., agile vs. waterfall) and technology (e.g., cloud vs. traditional client-server models). That is why ABI had dedicated IT people who were separate from AUDI’s central IT group. Nonetheless, there are plenty of learnings that can be transferred from traditional IT units. IT architects have learned over several decades about the benefit of building re-usable, digitized process platforms. When building a new IT-based business, there simply isn’t time to go through that learning curve again. At AUDI, ABI architected the MSI platform. While building this platform was an upfront effort, without it ABI would have had to build the services for each new business model from scratch. The platform enables ABI to experiment with different business models for mobility services.

A critical role for IT people is to apply architectural thinking to the new businesses being set up to exploit the sharing economy. Architects are needed to build new platforms of re-usable components and ensure that sharing economy innovations connect with existing platforms. In this way, new sharing economy businesses can leverage

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40 This approach has been referred to as business architecture—see Mocker, M., Ross, J. W. and Hopkins, C. “How USAA Architected its Business for Life Event Integration,” *MIS Quarterly Executive* (14:4), 2015, pp. 137-150.

41 A company’s ability to balance the requirements of “exploiting” the existing business and “exploring” new businesses has been referred to as “ambidexterity”—see O’Reilly, C. A. and Tushman, M. L. “The ambidextrous organization,” *Harvard Business Review* (82:4), April 2004, pp.74-81. The need to both “forget” practices from the core company as well as to “borrow” from (or link to) it has been discussed using the example of New York Times Digital by Govindarajan, V. and Trimble, C. “Organizational DNA for strategic innovation,” *California Management Review* (47:3), Spring 2005, pp. 47-76.

42 The need for incumbents to “experiment aggressively with new consumption models” has been highlighted by sharing economy expert Arun Sundararajan—see Anderson, R. *How some big firms are learning to share as well as sell*, BBC News, April 27, 2016, available at http://www.bbc.com/news/business-35362199.

43 Previously, digital innovations in large companies have been described as either “platform exploitation” or “greenfield exploration”—see, for example, Westerman, G. “Meeting the Challenge of Innovation,” *MIT CISR Research Briefing* (8:2), 2008.

44 For more on the need to experiment at an organizational level when incumbent companies introduce new business models, see Sund, K. J., Bogers, M., Villarroel, J. A. and Foss, N. “Managing tensions between new and existing business models,” *MIT Sloan Management Review*, (57:4) May 13, 2016, pp.8-10.

the advantage of being integrated with an incumbent (see Figure 1). With its insights of enterprise architecture gained from supporting processes through ERP and CRM systems, this is the IT unit’s chance to get it right from the beginning—this time for the company’s service offerings rather than for its processes. The IT unit can also help to transfer expertise in using agile development methodologies like Scrum to the non-IT parts of the business set up to develop digital products like sharing economy services.

When AUDI established ABI, the role of AUDI’s CIO (Mattias Ulbrich) expanded to include more of a general management role. He is a member of the management board at ABI and reported that—given the importance of digital technologies for the services ABI offers—the business and IT aspects of his role at ABI were much more blurred than in the traditional business. If CIOs at incumbent companies entering the sharing economy don’t prepare for this extended role they could find themselves relegated to the back-office.

However, whether the CIO’s role will expand is a controversial topic. Companies such as GE have a CIO to support operational excellence and a chief digital officer (CDO) for digital offerings.46 Companies setting up businesses to focus on delivering sharing economy services will have to decide how they coordinate and transfer learnings from traditional IT units and enable different approaches to IT development and operations.

**Concluding Comments**

Based on the experience of AUDI, this article has highlighted the challenges incumbents face in making the strategic decisions on how to deal with sharing economy threats and opportunities and then ensuring the company is transforming to support the strategy. Companies need to address two key questions: 1) How can you compete in the sharing economy? and 2) How should you transform in response to the sharing economy? The lessons from the AUDI case will help companies answer these questions. Whatever the answers, IT will play a pivotal role in delivering sharing economy services. For those involved in IT, entering the sharing economy is arguably the most exciting chance since the dot.com boom (and bust!) to demonstrate the value of IT.

**Appendix: Research Methodology**

The research for this article is based on an in-depth case study at AUDI. We interviewed 11 people from the IT and non-IT sides of the business in 13 interviews. In total, the interviews lasted 575 minutes. Face-to-face interviews took place in October 2015 during a visit to AUDI’s headquarters in Ingolstadt and were followed by telephone interviews in January 2016. The following table provides an overview of the interviewees.

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<th>Interviewee</th>
<th>Role</th>
<th>Notes</th>
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All interviews were transcribed and coded, and a case study was written up by the two authors of this article. The content and all quotes of the case study were verified for correctness by the respective interviewees before publication as an MIT CISR case study.

Data about other companies was obtained from public sources, including the companies’ annual reports and websites as well as news reports.

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46 During a panel discussion at the MIT CIO event in May 2017, GE’s CIO, Jim Fowler, said he sees the role of the CDO as focusing on digital or digitized commercial products. See also Sparapani, J. “CIO doesn’t play chief digital officer role at GE,” TotalCIO Blog, May 26, 2017, available at http://searchcio.techtarget.com/blog/TotalCIO/CIO-doesnt-play-chief-digital-officer-role-at-GE.
### Overview of Interviews with AUDI Personnel

<table>
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<tr>
<th>Interviewee</th>
<th>Role</th>
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<tbody>
<tr>
<td>Matthias Müller</td>
<td>IT Infrastructure Expert</td>
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<tr>
<td>Marcus Keith</td>
<td>Director Development Operating Systems, Audi connect, Head of Vehicle</td>
</tr>
<tr>
<td>Michael Faulbacher</td>
<td>Head of Vehicle</td>
</tr>
<tr>
<td>Felix Breitstadt</td>
<td>Manager Cooperations and Long-term Strategy, Audi Mobility</td>
</tr>
<tr>
<td>Hans Thurner</td>
<td>Head of Digital Retail</td>
</tr>
<tr>
<td>Sven Schuwirth</td>
<td>Head of Brand and Sales Development</td>
</tr>
<tr>
<td>Christian Gloger</td>
<td>Director IT Production</td>
</tr>
<tr>
<td>Dr. Siegfried Schmidtner</td>
<td>Head of Manufacturing A3/Q2</td>
</tr>
<tr>
<td>Dr. Michael Wadosch, Holger Kleck</td>
<td>Project Manager Enterprise 2.0, Head of IT Steering and Supporting Processes</td>
</tr>
<tr>
<td>Mattias Ulbrich</td>
<td>CIO</td>
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Nils Fonstad (nilsfonstad@mit.edu) is a research scientist at the MIT Sloan School’s Center for Information Systems Research (CISR) and is currently researching competitive digital innovation. Drawing on both in-depth qualitative data and survey data, he studies what investments and innovation practices distinguish the most competitive firms. He has also studied how organizations define, access and foster new skills and leaders for operating and innovating digitally. In 2010, he co-founded with CIONET the annual European CIO of the Year Awards to raise awareness of the expanding strategic roles of digital leaders. He earned his Ph.D. degree from MIT Sloan School of Management.