



University of St.Gallen

Center for Mobility



Center for Mobility

# Annual Report 2022

# Welcome to the Center for Mobility

Dear Readers

This is the third annual report of the Center for Mobility at the University of St.Gallen (CfM-HSG).

The CfM-HSG was established on January 1, 2020, with the aim of coordinating research on topics related to the field of “management of personal mobility” and its related value creation systems and effects. The center provides a cooperation platform, showcase and interface for this field beyond the various institutes, chairs, and researchers at the University of St.Gallen. It differs from similar centers, for instance at ETHZ and EPFL, primarily in disciplinary terms by adopting a clear social science perspective.

Various challenges and associated opportunities shape this field, such as digitalization, climate change, and future land use and related mobility systems.

- The topic of digitization is particularly concerned with the future development of our work-based economy (stationary vs. online), the associated way of life, new work and related system and business models (including the use of space or the provision of mobility).
- The topic of climate change is primarily concerned with questions of future energy supply for mobility purposes (with a shift from fossil fuels to renewable energy) and the allocation of these energy sources to different forms of mobility and the associated economies.
- The topic of land use and mobility systems primarily concerns questions about models of future use as well as allocation and distribution of the limited resource “land” as well as existing and possibly newly created means of transport.

Four institutes at the University of St.Gallen are currently part of this center:

- Institute for Systemic Management and Public Governance (IMP-HSG) and herein in particular the SBB Lab and the Research Center for Tourism and Transport.
- Institute for Mobility (IMO-HSG)
- Institute for Technology Management (ITEM-HSG)
- Institute for Economy and the Environment (IWÖ-HSG)

Administratively and financially, the Center is supported by the SBB Lab, which is also located at the IMP-HSG.

We are pleased to report briefly on our activities in 2022.



Prof. Dr. Thomas Bieger  
President of the Academic Advisory Board



Prof. Dr. Christian Laesser  
Managing Director

# Institute for Systemic Management and Public Governance

This year, the topic of mobility occupied us not only within the framework of our ongoing activities but also, and especially, because of the remaining pandemic's impact on this domain, along with tourism. The Institute hosts the SBB-Lab. Thanks to this significant support, we could pursue several research projects (see below).

## Projects

Three projects were in the foreground in 2022.

The project *Option Values in Public Transport*, aiming to determine the perceived value of transport options, considering personal characteristics and travel context, has been completed. Theoretical considerations, explorative studies, and market-based instruments such as season tickets and insurance suggest that significant option value also exists in Swiss passenger transport. The dissertation is to be published in 2023.

Further, we are participating in initial conceptual work on the topic of *High-Performance Transportation Systems – Paradigm Shift in the Nature of Governance and Control Needed*. This project is steered by like-minded third parties and within the framework of a loose network and includes colleagues from academia as well as practice.

Finally, we started work within the framework of the Innosuisse Flagship *Resilient Tourism*. In the scope of the CfM, we are developing alternative business models at the interface between tourism and mobility together with various practical partners.

In addition, the institute was involved in many projects in the field of tourism which is impacting personal mobility – also with a special focus on the Corona Crisis and its effects.

## Publications

Among other publications (mostly project related) we have continued to publish the Yearbook of Swiss Transportation and have participated with a paper at this year's Swiss Transport Research Conference.

## Education and training

The course *Transportation Systems* at Master level was held for the 12th time this year. 12 students familiarized themselves with various aspects and perspectives on the topic of “Transportation Systems”, such as demand, supply, impact, policy, governance or management. The institute also is responsible for the course *Aviation Systems* of our colleagues of the Center of Aviation Competence and the introductory course in Management and the Integration Seminar for first year students. Both use several case studies related to transport (e.g., case for Integration Seminar Airport Zurich).

## Various

Our management of the [SBB Research Fund](#) continues to play an important role. This fund supports research on current issues concerning the Swiss transport network that have been neglected in the Swiss or international context. Within the framework of the current funding period (2020–2024), a total of 11 projects could be processed so far. Over the already 13 years of its existence, 36 projects were supported. The SBB Research Fund therefore also plays an important role as a cooperation platform for Swiss research in (rail) transport.

For many years, the general secretariat of the Swiss Society of Transportation Sciences (SVWG; [www.svwg.ch](http://www.svwg.ch)) has been domiciled at our institute. On behalf of this society, we again have organized two forums of Swiss transport. Furthermore, we are, together with ETHZ, EPFL and USI Lugano, member of the organizing committee of the annual Swiss Transport Research Conference (STRC; [www.strc.ch](http://www.strc.ch)).

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## Contact



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# Institute for Mobility

The Institute for Mobility (IMO-HSG) looks back on an intense and exciting year 2022. In its only second year since its foundation, the IMO was able to successfully expand its activities in research and education.

## Projects

*Micromobility.* IMO-HSG and Boston Consulting Group (BCG), one of the world's leading management consulting firms, teamed up to shed light on the potential of micromobility for traffic-choked cities and tackle the question of whether micromobility can go from fad to fixture. In May 2022, the two project partners published an article (see below) covering the results of a survey with over 11'000 consumers in ten countries and more than 20 cities worldwide. The IMO-HSG additionally investigated the use of micromobility in the city of St.Gallen in more detail and presented the results in early 2023.

*Swiss Mobility Monitor 2023.* The IMO-HSG is part of a project team led by the University of Lucerne that has developed the Swiss Mobility Monitor, a representative annual panel survey aiming at identifying the psychological barriers to adoption of mobility innovations. The results of the annual Swiss Mobility Monitor are usually published in February–March each year.

*PwC Lab for Smart Mobility.* In October 2022, PwC Germany and IMO-HSG have launched the “PwC Lab for Smart Mobility” headed by Felix Kuhnert and Prof. Dr. Andreas Herrmann. The new think tank will explore connected and sustainable mobility models of the future and investigate their impact on the behavior of users. Furthermore, the Lab aims to address where the future mobility industry is heading and what solutions it will need to offer.

*Mobility in Urban Quarters.* The research project “Development of Mobility in Cities and Urban Quarters” is a cooperation between Toyota Financial Services & KINTO, the London School of Economics (LSE Cities), and the Institute of Mobility at the University of St.Gallen. The project outlines learnings from relevant literature, the stakeholders and the residents' behavior and needs in nascent urban quarters. It aims to identify measures and implications to establish sustainable mobility concepts with reduced motorized individual traffic.

*The Future Mobility Lab.* In December 2021, the IMO-HSG launched the “Future Mobility Lab” together with fischerAppelt and Systemiq. Today, the Future Mobility Lab is a consortium with more than 20 mobility players with the goal to study and implement holistic sustainable mobility solutions. As a first, joint research project, 20 households in 4 cities in 2 countries were accompanied over a period of 4 months, realizing their personal mobility transformation. The results will be published in March 2023.

*Shared Mobility.* In a joint research project with the global rental and shared mobility company Sixt SE, the ecological advantages and disadvantages of shared mobility offerings are being investigated and compared to classic ownership-oriented models. Furthermore, it will be examined how shared mobility offers affect mobility behavior under ecological aspects and how these offers can be optimized in such a way that users adapt their mobility behavior in the long term.

*Social Mobility.* In a joint research project with the Institute for Business Ethics (IWE-HSG), the potential of shared mobility to foster social mobility (i.e., the socioeconomic enhancement of currently weak positioned milieu) is being investigated. Focus is set on the willingness to use shared mobility, key usage barriers as well as the effect on the perceived access to important sociocultural and socio-economic assets as antecedent of social mobility. Methods of milieu research (a.o.) are exploited for this investigation.

### **Education & Training**

For the first time, the highly interactive seminar *Smart Mobility Marketing* at Bachelor level was held this year. Around 50 students, organized into groups of five to seven, had the chance to develop a smart mobility concept for one out of eight different Swiss regions based on an individual status-quo assessment. The groups were individually supervised by the researchers of the IMO-HSG. Prof. Dr. Andreas Herrmann and Prof. Dr. Torsten Tomczak introduced the students to the theoretical fundamentals. Three guest lecturers also reported from practice.

The Institute of Mobility launched the CAS Smart Mobility Management program in September 2020. Since then, three classes have received their diplomas. In total 88 alumni graduated from the executive program. In March 2023 a new class with 30 participants will start along with the first Smart Mobility Expedition to Tel Aviv. All activities are organized in a tailor-made online platform which serves as home base for our growing Smart Mobility Movement.

### **Education & Training**

On September 16th, 2022, the IMO-HSG successfully carried out its "1st Smart Mobility Summit". For one day, up to 150 executives from the international and national mobility industry met in Munich to discuss and shape the future of mobility in lectures, panel discussions, and breakout sessions with high-ranking speakers. The "2nd Smart Mobility Summit" is scheduled to take place in mid-2023 and will once again address central and cutting-edge mobility issues.

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## Contact



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# Institute of Technology Management

In the research area of Prof. Dr. Oliver Gassmann at the Institute of Technology Management we had several mobility projects in 2022. Our leading research questions are mostly around the perspective of new business models. We are interested in the question of how to create and capture value around mobility.

In 2022, our Energy Innovation Lab became the Sustainability Innovation Lab to better reflect our growing focus on sustainability topics beyond “pure” energy issues. While its name has changed, the Lab, headed by Prof. Dr. Maximilian Palmié, maintained its focus on the questions of how organizations can progress towards social, environmental, and economic sustainability, how they can utilize digital technologies to do so, and how they can scale sustainable technologies. After our EU-Horizon 2020 project Smarter Together finally ended in late 2021, we continued our work on the remaining projects, notably the NRP 77 one on the replication and upscaling of Smart City solutions funded by the Swiss National Science Foundation and the one on sustainable, multi-modal mobility in rural areas funded by the Swiss Federal Office of Energy. Moreover, we devoted significant effort to the acquisition of a follow-up project to Smarter Together. Fortunately, a Horizon Europe proposal on positive energy districts was approved and will commence in early 2023. Last but not least, we were again able to publish insights from our efforts in several leading academic journals, for instance in the “Financial Times 50” outlet Organization Studies.

Headed by Dr. Wolfgang Bronner (Executive Director Bosch) and Prof. Dr. Felix Wortmann (Scientific Director), the Bosch IoT Lab investigates business model innovation in the Internet of Things (IoT). In addition, the Bosch IoT Lab explores disruptive IoT products and services. In 2022 the lab developed the Platform Navigator that helps companies to design, implement and scale platform business models. In addition, core activities were centered around how to scale product-as-a-service business models that facilitate recurring revenue. Finally, the work was geared towards digital trust and how to establish a fundamental basis for digital business. Within its IoT technology exploitation domain, the lab investigates new opportunities in the realm of caring car (in-vehicle hypoglycemia and drunk driving detection) as well as sustainable energy (heat pump optimization). Research results were published in renowned journals like MIS Quarterly Executive and Information Systems Research.

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Institute of Techno-  
logy Management

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## Contact



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# Institute for Economy and the Environment

The Chair of Renewable Energy Management at the Institute for Economy and the Environment (IWÖ-HSG) has continued to extend its activities at the intersection of renewable energy and electric mobility in 2022.

The 12th edition of our annual consumer barometer of renewable energies ([www.kuba.iwoe.unisg.ch](http://www.kuba.iwoe.unisg.ch)), supported by Raiffeisen, AMAG and EnergieSchweiz, highlighted Swiss consumers' preferences in light of the energy crisis, and how it impacts their willingness to adopt electric vehicles, solar photovoltaics and other clean energy technologies. The results show that 38% of Swiss homeowners want to invest in solar PV in the next three years, 16% of which wish to do so in the next 12 months. 17% of all respondents say they want to buy an electric car in the next three years. The main drivers to invest in solar PV, heat pumps, and electric cars are climate protection and a desire for independence. 87% of "Early Electrifiers" state that most people in their social circles have a positive attitude towards these technologies, underscoring the importance of peer effects in adoption decisions. 74% of EV owners have their own charging station at home. Emotions play a key role in the decision to acquire energy technologies at home. With regard to solar PV and other technologies, positive emotions prevail, but a small group of respondents expresses negative emotions about EVs, with 11% saying they perceive fear, and 12% being angry at electric cars.

The convergence of solar PV, electric vehicles and storage will be further investigated in 2023 as part of our contribution to the SWEET EDGE project, exploring fully renewable energy futures for Switzerland, and funded by the Swiss Federal Office of Energy.

Two workshops at the annual St.Gallen Forum for Management of Renewable Energies ([www.remforum.ch](http://www.remforum.ch)) addressed the topics of solar mobility and electrifying agricultural transport.

As part of the Innosuisse-funded project on circular economy solutions for automotive batteries (CircuBAT), a team led by Prof. Merla Kubli collaborates with Empa to identify successful business models for second life batteries.

Mobility also plays a role in various IWÖ-HSG courses and in the continuing education course CAS Renewable Energy Management. Three courses in the Master of International Affairs (MIA) touch upon mobility issues, including the course "The Political Economy of the Car" and the Consultancy Project on marketing for night trains in cooperation with ÖBB. These are also elective courses for the certificate program Managing Climate Solutions (MaCS-HSG, [www.macs.unisg.ch](http://www.macs.unisg.ch)).

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the Environment

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# CfM-HSG Academic Advisory Board and Management

The governance of the CfM-HSG consists of a Advisory Board and the Management.  
For the term of office 2020–2022 the following persons hold these positions.

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Academic Advisory  
Board and  
Management

## Academic Advisory Board



Prof. Dr.  
Thomas Bieger,  
President



Prof. Dr.  
Oliver Gassmann,  
Member



Prof. Dr.  
Andreas Herrmann,  
Member



Prof. Dr.  
Rolf Wüstenhagen,  
Member

## Management



Prof. Dr.  
Christian Laesser,  
Managing Director

## Collaborators



Dr. Daniel Bazzi,  
Project Manager



Simon Kuster, M.A.,  
Research Associate



Barbara Bieger,  
Secretariat

# Projects

(in parentheses: funding and principal investigators; list in alphabetical order of titles)

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CircuBAT: Swiss circular economy model for automotive lithium batteries (Innosuisse Flagship project; PI: Merla Kubli)

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Connected Business and IoT Performance Management (Bosch; PI: Felix Wortmann)

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Consumer barometer of renewable energy 2022 (Raiffeisen Switzerland, AMAG, EnergieSchweiz; PI: Rolf Wüstenhagen)

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Investigation Success Factors of Micromobility (Cooperation Project with BCG and Stadt St.Gallen; PI: Michael Hohenreuther, Philipp Scharfenberger, Andreas Herrmann)

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IoT Platform Economy (Bosch; PI: Felix Wortmann)

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Mobility in Urban Quarters. (Research Cooperation with Toyota Financial Services & KINTO and the London School of Economics; PI: Michael Semmer, Andreas Herrmann)

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Option Values in Public Transport (SBB Lab; PI: Simon Kuster, Christian Laesser)

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Potential Ecological Advantages of Shared Mobility (Cooperation with Sixt SE; PI: Andreas Collet, Philipp Scharfenberger, Andreas Herrmann)

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PwC Lab for Smart Mobility (Research Cooperation with PwC; PI: Marvin Greifenstein, Philipp Scharfenberger, Andreas Herrmann)

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Scaling Smart City Projects – from Individual Pilots towards a Common Strategy of Industry Emergence (SNF; PI: Maximilian Palmié)

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Studie zu alternativen Antriebstechnologien (CNG Mobility, GFF; PI: Maximilian Palmié)

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Sustainable Multimodal Mobility in Toggenburg (Bundesamt für Energie; PI: Maximilian Palmié)

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SWEET EDGE: Integration of decentralized supply of renewable energy into the Swiss energy system (Funding: Swiss Federal Office of Energy (SFOE); PI: Rolf Wüstenhagen)

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The Future Mobility Lab (Consortium with various partners; PI: Jannis Linke, Philipp Scharfenberger)

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The politics of overcoming carbon lock-in: Managing decline and transition in the automotive industry (Research Commission of the University of St.Gallen (GFF); PI: Adrian Rinscheid)

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The Socioeconomics of Shared Micromobility (GFF, PI: Philipp Silvestri, Philipp Scharfenberger, Andreas Herrmann)

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The Swiss Mobility Monitor (Consortium with various partners; PI: Marvin Greifenstein, Andreas Herrmann, Reto Hofstetter and his team at the University of Lucerne)

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## Contact



To get in touch with any of the above investigators, contact them by e-mail at [firstname.lastname@unisg.ch](mailto:firstname.lastname@unisg.ch)

# Consecutive and executive education at UNISG

## Consecutive education

### Master Level

#### **Aviation Systems**

Andreas Wittmer

#### **Business Innovation I: Geschäftsmodelle entwickeln**

Oliver Gassmann

#### **Clean Energy Marketing**

Rolf Wüstenhagen

#### **Climate Change and the Psychology of Decision-Making**

Karoline Gamma

#### **Climate Solutions I01**

Rolf Wüstenhagen and Merla Kubli

#### **Energy and Climate Governance**

Adrian Rinscheid

#### **Innovationsmanagement für Smart Cities**

Maximilian Palmié

#### **MIA Consultancy Project: The future of night trains**

Rolf Wüstenhagen and Nina Hampl

#### **Social acceptance of sustainability innovations**

Merla Kubli and Emmanuelle Reuter from the University of Neuchatel

#### **The Political Economy of the Car**

Adrian Rinscheid

#### **Transportation Systems**

Christian Laesser

### Bachelor Level

#### **Businesspläne entwickeln und analysieren**

Thomas Bieger and Christian Laesser

#### **Capstone Project: Operations and Innovation Management**

Maximilian Palmié

#### **Smart Mobility Marketing**

Andreas Herrmann and Torsten Tomczak

## Executive education

#### **CAS Renewable Energy Management (REM-HSG)**

[www.es.unisg.ch/rem](http://www.es.unisg.ch/rem)

Rolf Wüstenhagen et al.

#### **CAS Smart Mobility Management**

[www.es.unisg.ch/de/programme/cas-smart-mobility-management](http://www.es.unisg.ch/de/programme/cas-smart-mobility-management)

Andreas Herrmann, Karolin Frankenberger, Oliver Gassmann, Marco Leimeister  
(Programmleitung: Hans-Peter Kleebinder)

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executive education  
at UNISG

# Conferences

## ESEIA International Conference

2nd–3rd November 2022 in Cyprus

**Listen to the residents! How to develop successful and sustainable urban mobility concepts**

Presentation by Semmer, M., Jordan, P. & Rickert, A.

## The Smart Mobility Summit

16th September 2022 in Munich

**Summit for Mobility Executives carried out by the Institute for Mobility**

## #REMforum 12th St.Gallen Forum for Management of Renewable Energies

23rd –24th June 2022

**Further info:** <https://www.remforum.ch/reviews/2022>

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# Publications

Chng, S., Plananska, J. & Cheah, L. (2022). Comparison of travel attitude study methods using online tools: The case of understanding public acceptance of autonomous vehicles. Paper Presentation, Panel: Emerging Research. *Bridging Transportation Research (BTR) Conference*, August 2022.

Côté E, Petrovich, B. & Wüstenhagen R. (2022). *12th Consumer Barometer of Renewable Energies*. [www.kuba.iwoe.unisg.ch](http://www.kuba.iwoe.unisg.ch)

Herrmann, A., Kleebinder, H., Lang, N., Schmid, L. & Silvestri, P. (2022). Why Only Collaboration Can Push Mobility as a Service to the Next Level. St.Gallen: *St.Gallen Symposium*, BCG & University of St.Gallen.

Hohenreuther, M. & Herrmann, A. (2022). Mikromobilität: So ist die Schweiz unterwegs. *Die Volkswirtschaft*, 21. Oktober 2022.

Kubli, M. (2022). EV drivers' willingness to accept smart charging: Measuring preferences of potential adopters. In press at *Transportation Research Part D: Transport and Environment*

Laesser, Ch., Axhausen, K. & Bieger, Th. (Eds; 2021). *Jahrbuch der Schweizerischen Verkehrswirtschaft*. St.Gallen: IMP-HSG und SVWG

Lang, N. & Herrmann, A. (2022). Micromobility is clean and quiet – how can it be widely used? *World Economic Forum*: BCG & University of St.Gallen.

Lang, N., Herrmann, A. & Pensado, P. G. (2022). How Mobility Shapes Inclusion and Sustainable Growth in Global Cities. *World Economic Forum*, BCG & University of St.Gallen.

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Miehé, L., Palmié, M., & Oghazi, P. (2022). Connection successfully established: How complementors use connectivity technologies to join existing ecosystems – Four archetype strategies from the mobility sector. *Technovation*, 102660.

Plananska, J. (2022). Are Singaporeans open to autonomous public transit? September 2022, *NextTrends Asia*.

Plananska, J., & Gamma, K. (2022). Product bundling for accelerating electric vehicle adoption: A mixed-method empirical analysis of Swiss customers. *Renewable & Sustainable Energy Reviews*, 154, 111760.

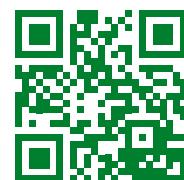
Richter, M., Lang, N., Herrmann, A. & Johnson, M. D. (2022). Whose Disruptions are Winning the Autonomous Driving Race? *California Management Review*.

Rohlfen, Felicia, Hofstetter, Reto, Finken, David, Ilg, Lena, Herger, Philipp, de Carvalho, Daniel & Herrmann, Andreas (2022). *Swiss Mobility Monitor 2022*.

Scharfenberger, P. (2022). The Desire to Arrive, *Motion Magazin* (1)22, Berlin, Germany.

Scharfenberger, P., Krause, F. & Greifenstein, M. (2022). Weniger, aber besser – Hedonismus und nachhaltiger Konsum, *GfM-Forschungsreihe* (6)22, Zurich, Switzerland.

## Accreditation



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*Design:*  
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# From insight to impact.



CFM-HSG: Managing personal mobility  
from a social science perspective.