Latest in Biometric Technology in the Service of Travel Security

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Biography

Prior to joining Hilton College in 2012, taught at Temple University, Kansas State University and University of St. Thomas; work has been funded by regional organizations such as the European Union, state and local destination marketing organizations such as the Lawrence Conventions and Visitors Bureau (Kansas), and universities such as Kansas State University; research has resulted in 40 peer-reviewed publications that include book chapters, journal articles, and conference proceedings, and in journals such as *International Journal of Hospitality Management, Journal of Travel Research, Journal of Hospitality & Tourism Research, Journal of Hospitality Marketing & Management*, and *Journal of Hospitality Information Technology*; recipient of several prestigious academic awards, including the Barbara S. Stowe Endowed Faculty Development Award and Big 12 Faculty Fellowship Award; recognized by the International Council on Hotel, Restaurant and Institutional Education (I-CHRIE) as an outstanding reviewer in the information technology area; presented work at I-CHRIE, the International Federation for Information Technologies in Travel and Tourism, the Travel and Tourism Research Association, and the International Society of Travel and Tourism Educators; and an invited presenter at numerous conferences, colloquia and workshops throughout the United States, Europe and Asia.

Summary

Biometric technology represents one of the most sophisticated, yet secure authentication technologies. It has application in many industries, including medical, legal, law enforcement, general retail, and recently travel. To date, many issues associated with the applicability of biometric technology to specific industrial settings, such as travel, remain, to date, unexplained. Thus, the purpose of this presentation is to review the applicability of biometric technology in travel, emphasizing the manner in which biometrics can be used to address today's security needs of the travel industry. Today's travel security is inherently complex. Increased business and consumer globalization and recent turbulent international events facilitated an increase in traveler flows within, and very importantly, across national borders. Under these circumstances, maintaining a secure travel system has become a critical task for all organizations involved in travel, given the limited resources at the disposal of the organizations within the travel system.

Due to their nature, biometric systems can provide the superior authentication necessary to increase the security of the travel system. There are a number of applications of biometric systems designed for this purpose. Such systems include identity management systems (i.e., U.S. VISIT), secure personal travel documents (i.e., biometric passports), trusted traveler programs (i.e., Global Entry, PreCheck), and access and payment biometric retail systems. All of these systems use one or more biometric modalities, including fingerprinting, iris scans, palm vein geometry, or some other unique authentication methodologies. The advances in biometric technology allow most biometric systems to be improved over previous generations, as they use superior scanning technology and matching algorithms. However, there are still concerns related to biometric technology, mostly arising from individuals' concerns about system/data security, privacy, and fear of physical harm and general user anxiety. Such concerns could be associated with the irrevocable and intimate character of biometric information.

There are a number of recent developments in the area of biometric technology as it relates to travel. One of the most important developments is the integration of biometric technology with other current technologies. For example, biometric technologies can be integrated within mobile or within social networking technologies, to offer consumers precise authentication tools. Another important area of development is represented by multimodal biometrics in travel. Given the differences in accuracy between various biometric modalities, novel systems based on multiple biometric modalities can provide superior authentication, and therefore increase the security of travel.

Even in today's technology-intensive world, one of the most important elements of travel security remains the personal travel document. Such documents can be improved by attaching biometric authentication systems to them. Thus, the security of personal travel documents increases, and helps prevent one of the most common types of fraud, "look-alike"-related fraud. In addition, there are developments of biometrics in sectors that are adjacent and related to travel. Such developments are part of a general trend of expanding the domain of consumer-related biometrics. The adoption of such technologies by consumers and the response of the business sector (i.e., innovative business models) could eventually contribute to the success of the current and future biometric technologies in travel.

There are, however, several potential challenges for the use of biometric systems in travel. The technology can advance only at a certain pace, imposing restrictions on the pace of development and subsequent adoption of biometric technology in travel. Further integrative systems should address the critical problem of matching biometric system technology with general computing technology. Thus, even when developing ambitious expectations of biometric systems, travel decision-makers can make optimal decisions considering the limitations of biometric technology. In addition, even as the systems become more advanced, potential privacy and security concerns may still persist among some consumers.

Today, the development of biometric technology remains accelerated, which may provide substantial benefits to the security of the overall travel system. The integration of biometric systems within the overall systems of technologies that comprise today's travel may lead to an improvement in the security of travel. In addition, there is an increasing research interest, not only toward examining technical aspects of biometrics, but also toward elucidating consumer-related aspects. In conclusion, biometric technology can be thought as a promising piece of the complex system of security of the modern travel.

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LATEST IN BIOMETRIC TECHNOLOGY IN THE SERVICE OF TRAVEL SECURITY

Presented By:
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- Research has resulted in 40 peer-reviewed publications that include book chapters, journal articles, and conference proceedings
- Recipient of several prestigious academic awards, including the Barbara S. Stowe Endowed Faculty Development Award and Big 12 Faculty Fellowship Award
- Continues to conduct research in information technology in hospitality/travel and biometric system adoption

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OVERVIEW

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- Contemporary travel context
- Overview of biometrics
- Biometrics and travel security
- Concerns
- Recent developments
- Potential challenges
- Conclusions

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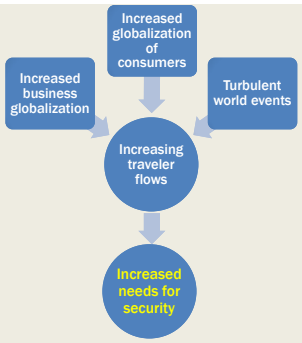
CONTEMPORARY TRAVEL CONTEXT



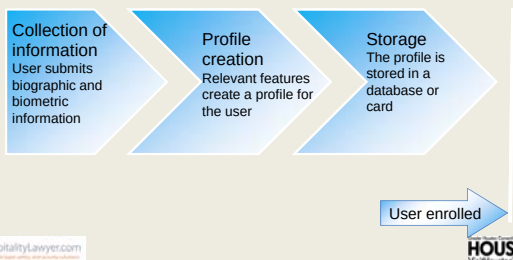
CONTEMPORARY TRAVEL CONTEXT

- Solution to security needs: better authentication using biometric systems
  - Biometric systems: computerized authentication systems based on biometrics
  - Biometrics: characteristics of humans that hardly change

Physiological (not controllable)	Behavioral (controllable)
Fingerprint	Voice
Iris	Speech
Retina	Gait
Palm shape	
Vascular patterns	

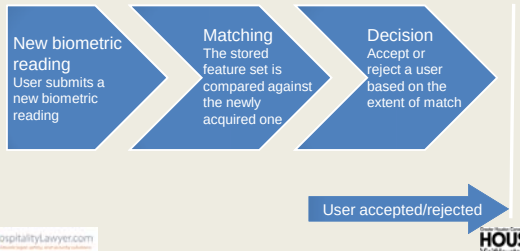
OVERVIEW OF BIOMETRICS

Biometric system architecture: enrollment



OVERVIEW OF BIOMETRICS

Biometric system architecture: authentication



BIOMETRICS AND TRAVEL SECURITY

- Identity management systems
- Trusted traveler programs
- Biometric travel documents
- Access systems in hospitality
- Time and attendance management
- Payment/retail systems

BIOMETRICS AND TRAVEL SECURITY

- Identity management systems
  - U.S. Visit in the U.S.
  - Similar programs around the world

BIOMETRICS AND TRAVEL SECURITY

- Trusted traveler programs
  - Global Entry
  - Nexus
  - PreCheck
  - Similar systems in other countries

BIOMETRICS AND TRAVEL SECURITY

- Biometric travel documents
  - U.S. biometric passports
  - Global adoption of biometric passports
  - Identity management and personal travel documents

BIOMETRICS AND TRAVEL SECURITY

- Access systems in hospitality
  - Theme park ticket systems
  - Hotel secure door locks
  - Consumer payment systems

BIOMETRICS AND TRAVEL SECURITY

- Time and attendance management
  - Biometric time and attendance systems
  - Identity management
- Payment/retail systems

CONCERNS

- System and data security
- Privacy – data irrevocability
- Fear of physical harm and general user anxiety

RECENT DEVELOPMENTS

- North America: leader in the biometric technology market
- Biometric system integration
  - Biometrics and mobile technology
  - Integration between biometrics and consumer technology applications (social networking)

RECENT DEVELOPMENTS

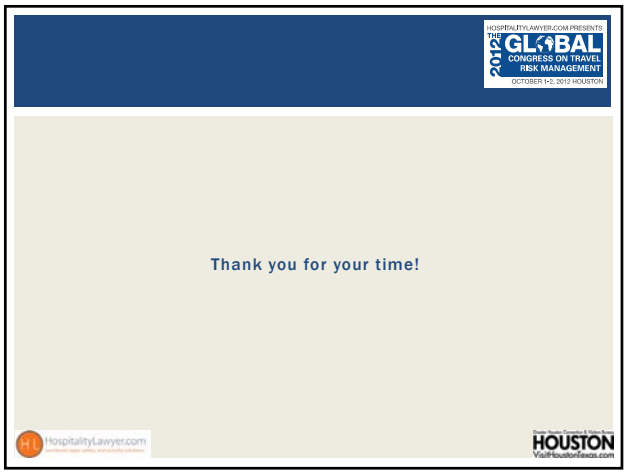
- Multimodal biometrics in travel
- Improvement of the biometric travel document systems
- Biometric applications in sectors adjacent to travel
- Expansion of consumer-related biometrics
- Innovative business models

POTENTIAL CHALLENGES

- Technology restrictions
- Matching contemporary biometric with general computing technology
- Expectations of biometrics
- Traveler flow management
- Privacy

CONCLUSIONS

- Technology development remains accelerated.
- Integration allows for improvement in the use of biometric systems.
- There is Increasing research examining adoption of biometrics.
- Biometric technology remains promising in travel.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