AI-Ready Hospitality and Travel Profile

Overview and Implementation Guide

Decentralized Identity Foundation

Hospitality & Travel Working Group

Originally Published June 2025

v1.1 Revised June 2026

EXECUTIVE SUMMARY

Experts agree that the next generation of travel distribution will feature consumer-facing Artificial Intelligence (AI) applications that will allow consumers to search and book hospitality, travel, and leisure experiences based on their preferences, requirements and identity. Suppliers and intermediaries will be able to respond with personalized, integrated, targeted offers.

Direct digital commerce will occur through interactive information exchanges in an AI-based environment where:

- Consumers can privately, selectively, securely, and (if desired) anonymously express their requirements, preferences, and relevant other information at any point during the search and booking process.
- Suppliers and intermediaries can respond with optimized, personalized offers.
- Consumers, suppliers, and intermediaries can control the sharing of their information, which can be done incrementally and on-demand, minimizing personal data exposure by all parties, compliant with data privacy regulations.
- Suppliers and intermediaries who demonstrate competence in that environment can increase market share, create new markets, and enhance profitability.

Virtually all participants in the hospitality and travel industries will agree on the desirability of this future vision, but few have focused on how to make it happen.

This document explains how emerging technologies are being harnessed to achieve it. It outlines the benefits, technical architecture and *schema* design, and implementation guidance based on available emerging technologies. It is part of an effort by the *Hospitality & Travel Working Group*, under the aegis of the nonprofit, vendor-neutral, open-source consortium (the *Decentralized Identity Foundation*, or DIF). Much of DIF's groundbreaking work has already been adopted into web standards governed by the *World Wide Web Consortium* (W3C). Working group participants include both technical experts and individuals with long and deep executive-level experience in hospitality and travel.

Key aspects of the future digital ecosystem include:

- The continued emergence and enhancement of digital agents that can work at the direction of, and on behalf of, consumers, suppliers, and intermediaries.
- Digital wallets that can store and manage personal information and credentials for travelers, such as the European Union (EU) Digital Wallet now mandated for all EU citizens.
- The ability of suppliers and intermediaries to obtain, verify, and easily secure information needed to deliver truly personalized offers and experiences.
- Secure, trusted digital interactions with businesses and individuals whose identity can be digitally verified whenever needed.
- The ability to share information across supplier categories to facilitate the "connected trip," when authorized by the traveler.

- An open source, industry-driven approach that provides an easy way to share and consume traveler data across suppliers, intermediaries, and solution providers.

This will revolutionize the digital travel marketplace for travelers, suppliers, and intermediaries by:

- Changing how businesses manage personally identifiable information (PII), easing regulatory compliance and substantially reducing cyber insurance costs.
- Giving travelers a simple way to create personal and preference data once, then share it selectively with any supplier or intermediary when needed, and to control their retention of shared data.
- Providing suppliers and intermediaries with more current, accurate, and comprehensive data about their customers than sparse, often-stale loyalty profiles.
- Enabling truly personalized and targeted search results, offers, and service delivery by intermediaries and suppliers who are prepared to deliver them.
- Creating a way to know with certainty the identity of the other party in any digital communication between travelers and travel businesses.

The key elements needed to achieve this vision are:

- A dynamic, comprehensive, traveler-owned and -controlled profile that can be leveraged by any supplier or intermediary and supported by consumer-facing apps (the first version of the *Hospitality and Travel Profile*, specifically the *HATPro Traveler Profile*, is available now).
- A neutral *governance structure*, with participation open to all interested industry players, to manage the structure of the HATPro traveler profile and to facilitate information exchange (part of this effort, but not yet formalized).
- Testing, establishment of migration paths, and adoption by suppliers, intermediaries, and others (numerous pilots were under way as of spring 2026).
- Support of travel technology vendors (established and new, including providers of AI Personal Assistants) through development and integration.

Call to Action

Senior executives at travel suppliers, intermediaries, and technology suppliers who are aligned with this vision can now:

- Determine their desire to realize the benefits and an appropriate timeline for evaluating adoption and migration.
- Share this document with relevant colleagues, including risk managers, information security, marketing and product leaders, and technical staff (a guide to the relevance of sections of this document follows this Executive Summary).
- Consider whether individuals within their organization should participate in the DIF Hospitality and Travel Working Group to better understand the framework and/or to ensure alignment of its efforts with your needs.

FOREWORD

This document is intended for those interested in expanding the evolution of *Artificial Intelligence (AI)* in the provision of hospitality and travel related services, enabling cost-effective, personalized marketing and distribution and reduced regulatory risk from the storage of *personally identifiable information*. The guide below may be useful in identifying which sections of the document are relevant to a specific reader.

Throughout this document, italicized terms are hyperlinked to the *Glossary* in the appendix; some of the more critical ones are also defined in callout boxes where they are first introduced.

GUIDE TO THIS DOCUMENT

Intended Audience	Executive Summary	Strategic Overview	Implementation Guide	Appendix
CEO, Board, Strategic advisors	X			
C-Level Marketing, Finance, Operations	X	X		
Technology Leaders (CIO, CTO)	X	X	X	
Technical Staff, Product Leaders and Consultants			X	X

ABOUT THE AUTHORS AND CONTRIBUTORS

The authors and contributors have hundreds of years of combined senior level experience in the hospitality, travel, and technology industries. Brief bios are included in Section 8.3 of the Appendix. Nearly two years of the work was conducted under the umbrella of the Decentralized Identity Foundation's (DIF) *Hospitality and Travel Special Interest Group*, whose co-chairs are Nick Price and Gene Quinn, and then by its spinoff, the DIF *Hospitality & Travel Working Group*, which is co-chaired by Douglas Rice and Neil Thomson. Primary authors and major contributors were Alex Bainbridge, Bill Carroll, Douglas Rice, and Neil Thomson. Other significant contributors included Buddy Altus, Makki Elfatih, Gee Mann, Will Seggos, Steven Soh, and Aniket Upganlawar.

LICENSING AND COPYRIGHT

Table of Contents

AI-Ready Hospitality & Travel Profile (HATPro Traveler Profile)

Strategic Overview

Hospitality and Travel and the Emergence of AI

The hospitality and travel industries are in the early years of a disruption that many experts expect to be as large or larger than earlier transitions from the telephone to the web (circa 1980-2005) and then to mobile devices (2010-2025). Much of the focus is properly centered on *Artificial Intelligence* (AI) and its role in dreaming, planning, booking, consuming, and memorializing hospitality, travel and leisure experiences.

The emergence of AI is bringing with it the potential to achieve the long-stated goal of reducing dependence of providers and intermediaries on mass marketing, and replacing it with true personalization: constructing and presenting offers that are designed specifically to appeal to the needs, wants, and interests of a specific person or group, that can be communicated to them privately, and that can be redeemed only by them.

Identifying and communicating those needs, wants, and interests is the core objective of this effort. Success to date, using legacy technologies and emerging AI, has been limited, and has stifled innovation and creativity.

- Suppliers and intermediaries struggle to obtain even basic information about prospective customers, and what they do get, quickly becomes dated. They rarely get the rich preference information that is needed for effective personalization.
- Customers must create and provide information to each supplier and intermediary individually, typically by creating a loyalty account and filling out a profile. This is practical only for providers they use frequently, and even then, is usually limited to contact information and basic preferences (window vs. aisle, high floor vs. low floor).
- Prompts for AI-based search engines can provide the most critical requirements for a specific trip or experience, but our preferences are based on a lifetime of discovery that is neither documented anywhere nor (in most cases) available through data enrichment. Some preferences may be specific to one trip or time period, such as an injury that prevents participating in certain activities.
- While AI agents can compose plain-language statements describing what they think consumers want and need, they have no way to communicate this information to legacy booking systems, or to accurately interpret agent-to-agent exchanges based on inconsistent underlying profile models.
- AI agents are prone to hallucinations. When applied to generating a profile of needs and preferences, this could lead to major customer service issues, public relations risks, and even lawsuits. Today, it is impossible or at least impractical for a hospitality or travel provider to verify that the information came from a specific consumer, was not modified, and was fully authorized by them.
- Much consumer information used in travel is sensitive, and privacy regulations in many parts of the world have made it increasingly difficult and risky to store it. The increasing use of AI-based large language models has not only increased these risks but made them harder to detect because the use of data that has been provided in prompts can be almost impossible to track.

- Even where permitted, storing sensitive personal information creates cyber security risks. Cyber insurance costs for many providers who store a lot of personal information have skyrocketed.

Emerging open-standards approaches from several industry associations (many of them loosely aligned with the *World Wide Web Consortium* (W3C) and managed by the Linux Foundation) are providing core technology capabilities to help address the need for a privacy-first, high-security approach to personalizing offers. Some of the major horizontal tech platforms have made major investments in these technologies, either publicly (such as Microsoft) or in development labs.

However, these are industry-agnostic efforts, and there are gaps that need to be addressed to meet the unique needs of hospitality and travel consumers, suppliers, and intermediaries. This document describes some first steps to fill those gaps.

Are You Prepared for the Future?

Well vetted, widely adopted technologies exist today to support secure communication of consumer needs to relevant providers on a permissioned, privacy-first basis. It is possible, using open-source standards, to verify the identity of someone who connects electronically with your systems, to analyze credentials proving key attributes such as age, employment, travel documents, and memberships, to make private, personalized offers to them, and to know that only the intended recipient can redeem the offer.

Many of these technologies are already in use, especially in the retail and financial service sectors. Governments in many parts of the world (including all European Union countries) have also stepped up with digital identity programs. Most of these real-world implementations still use hybrid approaches using both older and newer technologies, but with roadmaps to transition to newer ones as they mature and gain adoption.

The key to protecting your competitive position is to understand and prepare for these future technologies. Based on use across a wide swath of industries, a few key technologies are emerging as foundational for the next generation of e-commerce.

- *Self-sovereign identity* (SSI), in which the consumer owns and controls their own data, stores it on a device or service of their choosing, and determines who they want to share it with, when, and for what purpose. Consumers can, if they wish, do this without using any of the many third parties who currently control much consumer identity data (e.g. Google, Apple, Facebook, Microsoft), who have the power to misuse, sell, or even destroy it without the consumer's consent.

- *Verifiable credentials* (VCs), which can provide cryptographically secure electronic attestations about a consumer or business, proving who they are or what they are entitled to. VCs can be proven to be authentic without the need to check with the authority that issued them (e.g., government agency or company). In the travel and hospitality industry, VCs are already in use by early adopters for passports, driving licenses, boarding passes, and hotel key issuance.

- Trust registries, which securely identify valid issuers of VCs, such as government agencies around the world for drivers' licenses, or verified providers of services like accommodations.

- *Digital wallets*, similar in concept to Apple or Google wallets found on mobile phone, that can create, manage, and store both VCs and detailed information

provided by the consumer, such as contact information, lifestyle, interests, needs, preferences, medical information, and the like.

- Secure communications channels that enable a consumer, business, or other party to establish and maintain private, peer-to-peer, encrypted communications without any third-party involvement (except for a basic Internet service provider). Combined with VCs and trust registries, each party can also verify the identity of the other, reducing or eliminating the risk of spoofing and identity theft.

Why Do We Need a Hospitality and Travel Profile?

Effective personalization requires a wealth of data that can be extremely granular. In digital retail, this often comes from past purchases and analytics. But hospitality and travel are highly personal, the providers are fragmented and difficult to connect, and the resulting usability of the data is quite limited outside of its native environment.

In concept, each hospitality and travel provider can attempt to collect profile information such as preferences from each consumer, but the level of detail consumers will provide to a company they might deal with only once or a few times is very limited. Even elite loyalty members of airline, hotel, and rental car companies typically provide only limited information, most of which is for identification and communication, not for personalization. Efforts to collect more data have mostly failed.

However, if a consumer could create and manage profile information in a single place, likely using a personal digital agent on their mobile device, and then share it (in total or selectively) with any provider, most would likely be willing to say quite a bit more about what they enjoy, need, or want, especially if they understood how it could improve their trip. If AI can assist by asking questions and constructing this data over time, then the barrier to getting good profile information becomes much lower.

AI can play a key role in helping consumers build a profile, but a common, neutral structure for profile information is required for:

- Portability across wallets and agents, enabling consumers to use multiple ones for different purposes, including different vertical markets (e.g. finance, healthcare) that may share some elements with hospitality and travel.
- Supporting the legacy reservation systems that dominate today's hospitality and travel landscape, by enabling AI agents or middleware to ingest identity and preference data and to suggest personalized offers or services that may be constructed by combining services from multiple suppliers or systems.
- Enabling suppliers from different verticals to have a common understanding of the customer, enabling compelling joint offerings (e.g. hotel + local activities + dining).
- Communicating the provenance of data in a consistent way, for example differentiating between data the consumer specifically verified vs. data inferred from past behavior or potentially hallucinated by AI.
- Enabling humans to easily review, enter, or correct data.
- Supporting ingestion of profile data into large language models in a permissioned, regulatory-compliant manner, while also differentiating between verified and unverified data.

Why Support the HATPro Profile?

The *Hospitality and Travel Profile* (HATPro) is designed to support every part of the hospitality, travel, and leisure industry and to enable the many dozens of sub-verticals (airlines, hotels, restaurants, ski operators, golf courses, scuba diving instructors, walking tour operators, and many others) to work together seamlessly to meet the needs, wants, and preferences of the many consumers who are less interested in buying a specific flight or hotel room than they are enjoying a comprehensive experience that has been tailored specifically for them.

Unlike prior profile efforts that were primarily transactional in scope, the HATPro design addresses needs and preferences for every type of service, activity, or experience that fits within the scope of hospitality, travel, and leisure. It captures details that may be critical for certain types of providers, such as medical conditions, allergies, or religious requirements, or skill levels, and enables consumers to share them where they are necessary or useful (and to NOT share them elsewhere).

Some aspects of the profile apply to most providers, others only selectively. An airline may care about your seat and meal preferences and accessibility requirements, but not what sports you like. An event ticketing company, on the other hand, likely does care about your sports preferences, and maybe also your musical tastes so they can suggest local concerts. A golf course operator may want to know your handicap and whether you need left- or right-handed clubs when you rent them.

The HATPro profile has well over 1000 elements already, most of them ones that have never appeared in prior hospitality and travel profiles. But importantly, it is a living profile that is designed to grow, address new sectors and subsectors, and evolve over time. Its structure is extensible and can already accommodate most, perhaps all, sub-vertical markets, including very specific leisure activities. However, many of these will be built out over time based on input and feedback by experts in each sector.

What Can I Do Today to Prepare for the Future?

AI is driving change at an incredible rate. While the hospitality and travel industries have often been technological laggards, other industries are moving quickly into the world of personalization, security, and privacy using the latest technologies. This revolution is quickly starting to change consumer behavior and expectations in all three areas.

While your company may have some time to adapt, it will be much less than the 25 years you had for digital commerce and the 15 years for mobile commerce. Whether it is two years or five years, no one can say, but the time to start strategizing is now.

This implementation guide is a first step to helping your organization understand the challenge and identify baby steps that you can take to prepare. Beyond the guide and other material linked from this document, you should consider whether to task key people within your organization to get involved in contributing to and refining the HATPro profile, adding new sections, or working with other early adopters to test new ideas that may cross traditional barriers.

Get more information, including updates, at *https://htwg.identity.foundation*. This site was launched in June 2025 and new content is being added regularly.

AI-Ready Hospitality & Travel Profile (HATPro Traveler Profile)

Implementation Guide

1. INTRODUCTION

This document and the underlying *schema* were developed by the *Hospitality and Travel Working Group* within the *Decentralized Identity Foundation (DIF)*. DIF is a global nonprofit organization that coordinates the interests of the decentralized identity community, including performing research and development to advance early technical foundations towards established interoperable global standards.

The Hospitality and Travel Working Group (H&T Working Group) was established as an outgrowth of the *Hospitality and Travel Special Interest Group (H&T SIG)* within DIF. The H&T SIG was established in 2021 as a community of interest, free and open to all. The H&T Working Group was established in 2025 as an offshoot of the SIG to leverage DIF's processes for establishing and maintaining open standards. The working group is open to all but, unlike the SIG, requires membership in DIF, in part to ensure compliance with DIF's intellectual property policies and ensure that released standards are usable royalty-free.

The proposed Hospitality and Travel Profile for travelers (*HATPro Traveler Profile*) is freely licensable under open-source terms and conditions[1]. It is designed so that a traveler or other hospitality or leisure consumer can digitally present *self-attested* information that is solely under their control.

> **Self-Attested:** Information or content that a person or entity (such as a traveler) provides about themselves, verified by their cryptographic signature. Examples include dietary preferences (e.g. vegetarian), seat preferences, and other concepts for which third-party verification is typically not relevant or required.

It can also be combined with *third-party attestations* (such as for passports, reservations, or tickets), which are typically presented as *Verifiable Credentials (VCs).* VCs are an established standard of the *World Wide Web Consortium (W3C)* and are not covered in detail here, but are important to the overall picture.

> **Verifiable Credential:** An attestation to specific claims about a person, entity, or thing, made and verifiably cryptographically signed by a third party. Examples include passports, which can be verifiably traced as having been authorized by the appropriate governmental authority, or employment or membership credentials issued by a company or other organization.

A HATPro *Profile Presentation* of a consumer's identity and preferences may also be presented as a *Verifiable Document*, digitally signed by the consumer, although this is

[1] Code is licensed under Apache 2 terms and conditions. *Worldwide Web Consortium (W3C)* terms govern intellectual property rights, and content is available via Creative Commons 4 attribution.

not a requirement for all use cases. Additional technical information on verifiable data can be found in a companion document (see Section 8.7).

> **Profile Presentation:** Delivery of standardized, detailed set of information describing a traveler's identity, requirements, and preferences applicable in a specific context and at a particular point in time, to a hospitality or travel supplier, intermediary, or other entity, to support identification, personalization, and service delivery.

The HATPro Traveler Profile applies to anyone who is considering, planning or consuming any hospitality, travel, or leisure experience. In comparison to common usage, the word *traveler* in this document has an expanded meaning, in that it applies not just to someone traveling away from home, but to someone planning activities that may be experienced close to home, such as a restaurant meal or museum visit. If something can be suggested as a thing to do outside the home, or if the packaging or delivery can be personalized, then the HATPro Traveler Profile may be useful.

> **Traveler:** A consumer who is considering, planning, experiencing, or memorializing any experience that involves hospitality (such as hotels, vacation rentals, restaurants, or catered events), travel (whether by air, car, ferry, rail, cruise ship, taxi, or other), or things to do (active or spectator sports, city tours, museums, sightseeing, etc.)

The HATPro Traveler Profile presentation schema is intended as a starting point for a future industry standard. However, it will first be refined based on expert input from various travel sectors and will be subject to future updates as needs evolve.

Future deliverables on the H&T Working Group's roadmap include a HATPro Provider Profile presentation standard, which will describe the identity, capabilities, policies, and similar information for travel suppliers and intermediaries; a HATPro Traveler *Profile Request* standard (enabling suppliers and intermediaries to request all or portions of a traveler's profile); and other standards to be determined.

The HATPro Traveler Profile presentation schema is extensible, enabling it to meet additional or future needs. However, because it is designed to facilitate the exchange of information between parties who may have no prior business relationship, developers are cautioned against using extensions where consistent interoperability matters. The working group also encourages users of the HATPro Traveler Profile presentation schema to propose additions and changes through the governance process, so that today's necessary but undesirable extensions can become tomorrow's standard.

Consumer profiles have existed in many industries, including travel, for a long time. The value and use of consumer profiles in travel can be substantially enhanced by this evolution. However, there needs to be a way to accommodate a more secure, privacy-centric, consumer-managed approach to profile development in an AI-enabled digital marketplace. The approach allows travel suppliers and intermediaries to maintain their current profile concepts, while providing access to deeper personal information on a permissioned basis. Such an approach can reduce corporate risk, make consumer

engagement more seamless, increase personalization, and accelerate technical innovation.

Major enabling components of the HATPro approach are the development and use of *Decentralized IDentifiers* (DIDs) and *self-attested* consumer profiles based on *Self-Sovereign Identity (SSI)*. DIDs and SSI are evolving but no longer new; major parts have been adopted into the global standards maintained by the *World Wide Web Consortium (W3C)*.

> **Decentralized Identifier (DID):** A unique alphanumeric sequence, similar in concept to an email address or phone number, that is used by a traveler, supplier, or intermediary to authenticate themselves and to sign digital documents. The holder of a DID can prove they own and control it. The DID is built on principles such as user empowerment, security, privacy, and decentralization. The structure of DIDs is specified by the *World Wide Web Consortium (W3C)*.

> **Self-Sovereign Identity (SSI):** Refers to a digital identity framework where individuals have complete ownership and control over their personal data. Instead of relying on third-party entities like governments, corporations, or institutions to manage or authenticate their identities, SSI allows individuals to independently verify and share their credentials.

The focus of the HATPro development effort is to enable travelers to present their identity, requirements and preferences to suppliers and intermediaries in a self-sovereign environment. The effort supports not only legacy technologies (such as to enhance data in a loyalty or customer relationship management system), but also more effective integration of emerging technologies, including *Artificial Intelligence (AI).*

The technical components of the *HATPro Traveler Profile schema* are designed as the basis for data exchange between parties (or their software agents) when there is no prior or ongoing relationship. However the profile data may be stored, the schema ensures that any traveler using an application that supports the schema can communicate effectively with any supplier or intermediary that also does.

The HATPro Traveler Profile presentation schema represents profile information that has been constructed for a particular point in time and use case (for example, to plan and book a trip). It does not specify how profiles should be stored, created, or maintained. These aspects have little need for standardization and many opportunities for innovation. It is likely that individuals will want to create multiple profiles to be used in different contexts, and that they will be able to recall a stored profile and modify it as needed for a particular situation.

Traveler profiles will also evolve over time based on changes in preferences and requirements, or the addition of more detailed information. However, the HATPro Traveler Profile abstracts from these issues by focusing on the presentation of those portions of one or more stored profile that are relevant in a particular context. User apps, websites, and emerging *personal service assistants* will be responsible for obtaining,

managing, organizing, and storing the underlying data, and assembling the "right" subset for presentation, at which point the HATPro Traveler Profile schema can be used to facilitate communication to suppliers or intermediaries.

> **Personal Service Assistant:** A multi-purpose digital application that functions as a personal information manager, assisting the user in interacting with agents, including the user's and those of other entities. Frequently includes AI capabilities so that it may act independently based on parameters set by the traveler and interact with the traveler in plain language.

The HATPro Traveler Profile schema may stand alone in some use cases. For example, a hotel that has been booked but that wants to request more information about the traveler's needs and preferences can use the profile presentation to get all the information in the profile that the guest is willing to share.

But in many use cases, additional information and/or credentials will be necessary. Specifically, travel planning and delivery requires information about what an individual wishes to do ("I want to take a beach vacation in March with my spouse, and two children") or proof of documents necessary for travel (e.g., a passport or ticket) or for access to specific activities or rates (e.g., proof of employment by a company with a contracted hotel rate, or certification for a scuba experience).

While such additional elements are necessary for many use cases, much work is already being done by commercial entities, governments, and standards organizations (including W3C, DIF, the *Internet Engineering Task Force* (IETF), and the *OpenID Connect Foundation* (OIDF)), to facilitate these aspects. The HATPro Traveler Profile schema therefore does not address these issues but rather fills the gap by enabling reliable, standardized exchange of a traveler's self-attested identity, requirements and preferences.

2. OBJECTIVES AND RATIONALE

The proposed approach enables a traveler to create *Traveler Profiles* that can be presented in whole or in part to any market participant, but most importantly to suppliers and intermediaries who offer travel services and *experiences*. The traveler is freed from having to enter and maintain separate profiles for potentially dozens or even hundreds of airlines, hotel and rental car companies, intermediaries, travel insurance companies, experience operators, and other suppliers.

Because a single profile controlled by the traveler supports all suppliers and intermediaries, the data in the profile is likely to be more extensive and current. Select information can be made available even during anonymous shopping. Any or all details can also be provided by consumers to suppliers and intermediaries with whom they have never created a profile.

The *HATPro Traveler Profile* also incorporates privacy-by-design principles to protect consumer information. Suppliers and intermediaries can know that the presented identity, travel requirements and preference information are valid for a specific (potentially anonymous) traveler. In conjunction with *verifiable credentials,* they can also

collect proof of eligibility for specific rates (e.g. qualified rates) or services (such as ones with age restrictions). This is possible even with anonymous shopping requests and does not require divulging sensitive information. Where identity information is required (such as when confirming a booking), the consumer can consent to incrementally providing whatever details are needed, and the HATPro Traveler Profile can communicate them.

While many hospitality and travel industry firms have existing consumer profiles, this approach offers additional features, notably more access to current, first-party data; greater detail on needs and preferences (presumably a customer that can enter information once and use it many times will be likely to provide more detail than for a one-time use), and standardization. System developers, by expanding, adopting, and/or adapting common elements of the HATPro Traveler Profile schema, can create efficiencies (and cost savings) for data exchanges and interactions among other industry firms, and also with applications that support (or are embedded within) traveler *digital wallets* that collect, organize, store, and manage permission to share the traveler's personal information.

> **Digital Wallet:** An electronic device, online service, app, and/or software program that allows electronic transactions with others. It can establish digital identity and trust and supports interactions between parties and secure data storage for information about the person or entity. Apple and Google wallets are examples that perform many of these tasks today.

This approach reduces the reputational and financial risks for industry firms holding *personally identifiable information (PII)*. Consumers own and control the storage of their information, providing permissioned access to hospitality and travel companies for a defined period of time, such as for one trip, for one year, permanently, or until revoked. Those companies can access the information from the consumer's secured, Internet-accessible storage location at any time, until consent is revoked.

This approach can vastly limit the amount of personal data that companies need to store, with concurrent reductions in *PII risk* and cyber insurance premiums. Credit card numbers, passport numbers, health conditions, and religious requirements all carry risks – and with this approach, there is typically no need to store them. The approach provides access to consumer data in ways that are natively consistent with regulations such as the European Union's *General Data Protection Regulation (GDPR)*.

Suppliers and intermediaries may still need to retain copies of certain information to facilitate service delivery and related business processes, but this can be very limited; a hotel will still want to store a copy of a guest's name so that they can locate the reservation for a manual check-in, but very little other PII needs to be stored if it is available on demand. Similar to payment card data, which is commonly stored using tokens rather than actual card numbers, the SSI framework allows PII such as passport numbers to be collected and passed on to government authorities without having to be stored by an airline or hotel. First-person marketing data, which already requires consent under most privacy laws, can be obtained or refreshed in real time rather than stored by the supplier or intermediary.

3. HATPRO EVOLUTION AND GOVERNANCE

The *HATPro Traveler Profile* presentation schema is designed to be a living standard that can evolve to meet both current and future needs of the hospitality and travel industries (and other industries that may benefit from portions of the profile contents). It must support both large-scale changes that require cross-schema coordination, and narrower changes and extensions that may be proposed by relevant groups of domain experts (such as preferences for walking tours or scuba diving) and that do not impact the rest of the profile schema.

As an open-source project, contributions from all are welcome. There will be one or more feedback cycles for the current release before it is finalized for publication (although parties are welcome to implement using draft versions if they choose). During this time, the *H&T Working Group* invites feedback from all relevant parties, including but not limited to:

- Suppliers and intermediaries who sell hospitality and travel related products and services.
- Existing standards bodies whose domain overlaps with that covered by the HATPro schema.
- Experts in any sector of hospitality and travel, who can help fill in any gaps or correct any misconceptions the Working Group may have had.
- Experts in sectors of hospitality and travel that are NOT covered by the HATPro Traveler Profile, or that are covered only at a skeletal level (examples: skiing, snowboarding, scuba diving, golf, spa, gambling, …).
- Software companies who are using or intend to use the HATPro Traveler Profile.

Feedback, suggestions, and ideas can be contributed by submitting *this online form* (link). While many suggestions will simply be reviewed and actioned by the working group, others that may carry intellectual property risk may require additional paperwork to ensure that the specification remains open source and not subject to avoidable IP claims.

The technical artifacts describing the schema are stored in a public *version control system* (currently GitHub); these will include specifications, UML diagrams, JSON schemas, and other artifacts. One or more forks will be created to capture changes from the initial feedback round. The HATPro Traveler Profile presentation schema has been designed for extensibility, so that adding new details or even entirely new categories of suppliers will normally be straightforward.

Once initial feedback round(s) are complete and the HATPro Traveler Profile has been formally released, a governance process will be finalized. Conceptually, there will be a governing board appointed to review proposed changes. These may be accepted, rejected, or sent back for clarification, rework, or refinement. Proposed updates will be cumulated into release candidates, which can then be published as version updates.

The process for selecting members of the governance board has not yet been determined; it will conform with DIF's overall governance approach and incorporate an appropriate level of industry expertise, technical knowledge, and neutrality. At the outset, the governance board will likely consist of Working Group participants familiar with the

HATPro Traveler Profile presentation schema, and representatives of one or more standards organizations involved in hospitality and travel.

Proposed changes to the final published HATPro Traveler Profile will require an advocate who is a member of the DIF Hospitality & Travel Working Group (membership in the Working Group is open to any DIF member). Until final release, the Working Group as a whole (or a designated subcommittee) will review all submitted proposals from the general public, with or without an advocate.

The GitHub repository is readable by the public and editable by governance committee members. It is organized along logical industry segment boundaries and provides coordination for tagging issues, additions, change requests, and review by interested parties, as well as publication.

This approach supports both large-scale changes that require cross-schema and profile coordination and narrower changes and extensions that can be proposed and published by relevant groups of domain experts (e.g., preferences for walking tours or scuba diving) without impacting the rest of the profile.

The HATPro Traveler Profile presentation schema is anchored to an individual traveler and limited in scope as detailed in Section 7. Potential future extensions that would address requirements not covered by the presentation schema are identified in that section.

4. ARCHITECTURE FOR PRIVACY-FIRST, AI-READY PERSONALIZATION

The HATPro approach to the customer profile is built on the foundation of *Self-Sovereign Identity (SSI)*. This choice enables suppliers and intermediaries to more easily and meaningfully personalize offers and deliver hospitality, travel and leisure experiences, while reducing the need to store *personally identifiable information (PII)*, and reducing the burden of complying with privacy regulations such as the European Union's *General Data Protection Regulation (GDPR)*.

The HATPro Traveler Profile, when presented to a supplier or intermediary, contains three types of information: identifying information, such as name and contact details; requirements (non-negotiable items, such as wheelchair accessibility); and preferences (what the traveler likes or dislikes).

While the profile presentation can stand alone, it is built to be used in an SSI architecture, in which case it will typically be (a) packaged in the form of a self-asserted *Verifiable Document*; digitally signed by the traveler; (b) combined with *Verifiable Credentials (VCs)*, such as a government-issued identity document or company-certified proof of employment; (c) presented by a cryptographically secured service that is discoverable through a *Decentralized IDentifier (DID)*, and (d) communicated over the standard SSI messaging channel *Decentralized Identity Communication (DIDComm)*.

DIDComm: A protocol for secure and private communication between entities (people, organizations, or devices) that use Decentralized Identifiers (DIDs). It enables these entities to exchange messages and data in a way that is cryptographically verifiable, tamper-proof, and independent of centralized systems. DIDComm is managed and developed through the Decentralized Identity Foundation.

The HATPro Traveler Profile can stand alone and can be used with any messaging protocol, but it is most powerful when it leverages key capabilities of the SSI architecture. Key benefits include:

- **Trusted communication:** It ensures that communication can occur between trusted parties. The level of trust required can vary and is ultimately a decision of each party to the communication. In hospitality and travel, many shopping inquiries are typically anonymous, in which case the level of required trust may be low but still useful in some use cases, such as to limit the visibility of negotiated rates to anonymous or identified consumers only if they can prove their eligibility. Higher trust by both parties is often needed for bookings: the travel company wants to know they are dealing with a real person, and the consumer wants to be sure they are dealing with a legitimate supplier or intermediary.
- **Consumer control over privacy:** It gives consumers total control over the data they share: what, how much, with whom, for how long, and how they may use it, all of which facilitate regulatory compliance with businesses.
- **Sequential and selective disclosure.** During the search and booking process, the consumer may choose to remain anonymous, while still providing proof of age, travel credentials, drivers' license, activity certifications, corporate affiliations, memberships, and the like. This is impossible with legacy approaches. It benefits both consumer privacy and the ability of travel providers to make private offers based on the presented credentials, with the assurance that they cannot be used by anyone other than the intended recipient. As the journey progresses to booking and service delivery, additional information can be provided at each step, for example a name (at the least) will be required for most bookings.
- **Proof without exposing extraneous details:** Many data breaches occur (or have more serious consequences) because documents that are provided for one purpose may include extraneous information. A bar bouncer needs to know that you are old enough to drink, but does not need your name, address, or even your specific age (all of which is included on legacy documents that are presented). SSI supports the ability to prove that you are of age (based on a Verified Credential you hold from a governmental authority, for example) without presenting the entire document. The proof level can also be much stronger: unlike a physical drivers' license that are often forged, SSI can verify that it was in fact issued by the trusted government authority.

The SSI ecosystem is still evolving, and not all elements will be universally adopted. However, there is a high degree of interoperability between SSI solutions and other

leading-edge approaches for identity management, secure communication, and handling of specialized activities such as payment processing.

A consumer's preferences, as expressed in a HATPro Traveler Profile presentation, may include ones that are explicitly entered by the consumer, ones that are observed or inferred by a *digital agent* acting on the consumer's behalf and authorized by the consumer (explicitly or thru delegation to an AI agent), and potentially even ones that are observed by a supplier or intermediary and suggested to and approved by the traveler or their digital agent.

> **Digital Agent:** A software program (possibly AI-powered) that serves as a authorized representative to act on behalf on another party. A digital agent is distinguished from human *agents* that are common in the travel industry.

A digital agent might, for example, note that a traveler always requests a high floor and suggest that the traveler make that a default preference. If the traveler has authorized the digital agent to make such changes autonomously, this may happen behind the scenes, or as the result of a short clarification dialog. This would likely happen in an app and be stored in the consumer's permanent *data store*, then used when the app or digital agent constructs the HATPro Traveler Profile for presentation in a specific situation.

> **Data Store:** A system capable of storing personal information with encryption keys that ensure that (a) only the identity subject can make or authorize changes; and (b) the identity subject can provide encryption keys to specific parties enabling to access selected information on demand; and (c) the subject can revoke these keys. A data store may exist in a cloud service, on a mobile or other personal device, but most commonly is managed by a wallet on a mobile device but replicated on the cloud.

Suppliers may still (as today) choose to supplement the traveler's preferences with additional attributes based on their observations from prior visits, with demographic and psychographic information, and any other relevant data sources.

A key assumption (intuitive, but not yet proven) is that travelers will be more willing to provide current, detailed information if they can enter it once, and then share it selectively with any supplier or intermediary with whom they do business (potentially beyond hospitality and travel, such as for financial services and health care). This contrasts with the current process by which consumers must update potentially dozens of profiles held by different companies with which they do business (a practice that essentially guarantees that the information held by each company is both sparse and quickly outdated). Any changes (contact information, allergies, accessibility requirements, etc.) can also be entered just once and shared with whichever companies the traveler authorizes.

Suppliers and intermediaries will also typically have access to a much larger amount of permissioned information for their customers. And of course, a traveler can provide any trip-specific differences as overrides to a stored profile as needed.

The Role of Digital Wallets for AI Enablement of Travel Ecosystems

The presentation of the HATPro Traveler Profile and related information will occur within an ecosystem in which travelers, intermediaries, and suppliers, as well as *digital agents* for any of these, interact via *digital wallets*. The role of digital wallets in that ecosystem is not specific to the travel industry. Rather, it is generally recognized as the modern generation digital platform for consumer service interaction. The broad contours of consumer service interaction in this ecosystem are understood today, but specifics are continuing to evolve. They are likely to differ from one industry sector (e.g., medical, financial, etc.) to another.

The ways in which digital wallets interact with AI agents is evolving quickly. It is likely that AI agents sitting within or available to digital wallets will supervise interactions between consumers or suppliers and their wallets, for example based on rules established by the wallet owner. In many cases, AI agents working on behalf of their owners may provide most of the interactions with other systems, or (more likely) their own AI agents. While it is possible to envision a world where AI agents handle all interactions, the first step will likely be for users to interact with their wallets directly to create, manage, and share profile data, perhaps with large language models enabling users to use plain language rather than a traditional user interface. Over time, AI agents will likely be able to intuit, learn, verify with the user (where necessary), and share information semi- or fully autonomously.

The hospitality and travel profile components of such an ecosystem can be used very effectively with travel industry legacy applications. However, the real power is unleashed when it is combined with digital wallets and *verifiable credentials*. Digital wallets enable a traveler, or a *personal service assistant* acting on their behalf, to manage their profile and to control with which parties it is shared, selectively or completely. When combined with the credential verification, they become the linchpin for accommodating a new era in effective AI-driven, digital travel commerce.

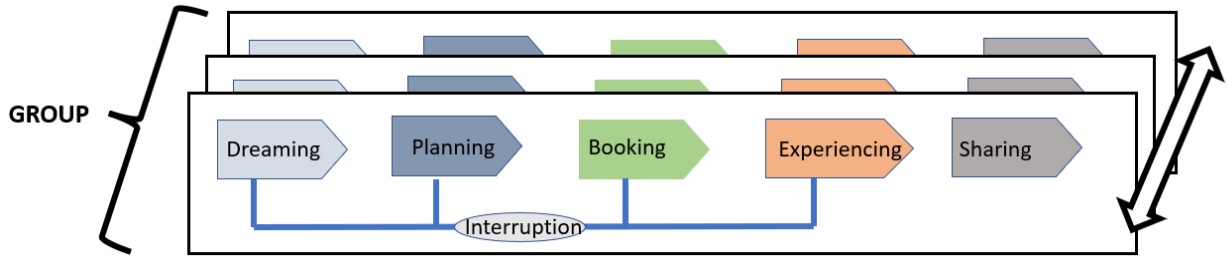
Appendix 8.4 details and illustrates how travel applications and profiles might operate within such an ecosystem.

Application Across the Hospitality and Travel Lifecycle

Travelers want seamless hospitality, travel and leisure experiences across multiple components of a trip, such as air travel, lodging, and destination services. Demand occurs in multiple stages: dreaming, planning, booking, experiencing, and sharing. Personalization works differently at different stages of the journey, as summarized in the table in Section 8.5.

Interchanges among travelers, suppliers, and intermediaries during these stages are complicated by both multi-traveler demand (individual, family, group, event, etc.) and the purpose of travel (business, leisure, or both). In effect, a traveler can have multiple profiles individually, through groups, and for alternate purposes. Even a single trip by a lone traveler may require multiple profiles, for example if it has both business and leisure components. Demand can be further complicated by travel interruption. Some of the variations are illustrated in Figure 4.1 below.

Figure 4.1: Profile Variations Based on Stage of Travel



In an evolving AI-enabled hospitality and travel economic digital ecosystem, travelers' demands for personalized, seamless, and integrated experiences will be expressed in the form of self-sovereign profiles that include, among other things, identity, preferences, and requirements. Some profile elements are expressed as self-attested (e.g., food preferences or mobility requirements), some are third-party verifiable through governments (e.g., passport, driver's license) or other parties, and some will need verification by trust agents in the hospitality and travel digital interchange ecosystem.

In the **dreaming** and **planning** phases, the approach enables both targeted marketing (to customers who have shared profile information with a supplier or intermediary) and the sharing of information relevant to discovery; for example, preferences for beach versus adventure vacations; accessibility requirements that may rule out certain destinations or facilities; or cuisine preferences for selecting a restaurant. At the same time, a guest may choose to remain anonymous during this phase, and the approach fully supports that option.

In the **booking** phase, the traveler can provide additional profile information to help personalize the product offering and confirm the booking, such as name, contact details, seat preference, room types, packages, and add-ons. Additionally, the profile, when presented with third-party attestations, can provide necessary information required for regulatory or policy compliance, such as proof of name, residence, citizenship, or to verify eligibility for special rates (such as senior discounts or corporate rates).

Profile information also enables better personalization of service delivery in the **experiencing** phase. For example, a restaurant that obtains dietary preferences can filter a digital menu to exclude dishes that are inconsistent with preferences or allergies (or even entire categories, such as alcohol) or could prompt the server to suggest options that best fit the diner's needs.

Profile information also enhances the value of travel memorialization via **sharing** (e.g. reviews, social media interactions, etc.). After their trip or experience, the traveler may selectively disclose their identity, preferences, original requirements, and experience details, such as on social postings or with suppliers or intermediaries. *Verifiable credentials* confirming that the traveler used a particular supplier or intermediary could also support verified reviews, independent of booking channel.

The architecture of the profile is designed so that the sovereignty and privacy of consumer data and content is protected in all phases of travel content exchanges: dreaming, planning, booking, experiencing, and sharing. It supports the ability of the consumer and/or his *digital agent* to specify acceptable uses of disclosed data. It is

ultimately the responsibility of implementers, should they choose to retain copies of personal data, to address specific storage-related considerations, such as the “right to be forgotten” and the use, processing, and sharing of data with other parties. However, because consumer data is available on demand to permissioned suppliers and intermediaries, their need to store such data and manage compliance with privacy regulations is greatly reduced.

The types of profile data required across the various stages of travel are summarized in Section 8.5.

Compatibility with Legacy and Future Systems

As noted above, the *HATPro Traveler Profile* is designed to support the rapidly evolving worlds of Self-Sovereign Identity and Artificial Intelligence. However, at its core it is simply a set of data in a defined message format that can be exchanged in any manner. Existing Application Programming Interfaces (APIs) or web hooks can receive a profile presentation, map the fields they need to their internal fields, and ignore any they are unprepared to handle. The same process can be found today in interfaces between reservation systems and loyalty or customer relationship management (CRM) systems and the analogy is similar.

As for the technical environment, while the profile is intended for the type of peer-to-peer messaging that is common with SSI (specifically, *DIDComm*), it can just as easily be delivered via TCP/IP, FTP, or even serial interfaces that still exist in some parts of the industry. As such, it can be consumed by an API and used by a legacy system. Systems that do not support extended Unicode characters will, however, need to convert, translate, or reject strings sent by other systems that use them (although today, this is quite uncommon).

Similarly, there are few aspects of the profile that are not reasonably future-proof. While the profile schema is provided in JavaScript Object Notation (JSON), one of the most common schema formats in use today, the underlying Unified Modeling Language (UML) schema can easily be translated into other formats. Supported character encoding schemas cover all major ones in use globally today (specifically, the four-byte version of UTF-8, which also supports two- and three-byte Unicode characters and strings in a compatible way), The schema can be adapted to future schema formats or character encoding standards if required.

Migration for Legacy Systems

While reservation and other systems that are designed for SSI will be able to leverage the maximum benefits from the HATPro Traveler Profile, replacing these systems can be expensive and/or impractical. However, it should not be necessary in most cases to replace the entire reservation system. Most systems designed in the past 30 years (and some even older than that) will have just a one or a few sections of code that are used to retrieve traveler data, often from a loyalty profile or CRM system.

In a pilot phase, the customer base can be segregated into a small subset that will use the SSI-based profile, while other customers continue to use their existing profile. The procedure that retrieves traveler data can be rewritten to (a) determine whether the requested data is for a customer participating in the pilot or not; (b) if they are not, run the code that retrieves the data from the legacy data store; or (c) if they are, then request the profile from the traveler’s SSI data store, and perform any necessary data conversions.

When the pilot has been successfully completed, the company can begin to migrate other customers.

Over time, capabilities of the reservation system can be upgraded or augmented to support personalized, private offers based on internal parameters (rates, inventory, revenue management analytics, etc.) and the new, richer customer profile.

5. BENEFICIARIES

The intended beneficiaries of this effort include travelers, travel service suppliers, digital agents serving consumers, intermediaries, and destination service suppliers (e.g., hotels, vacation rentals, attractions, restaurants, etc.), plus the entities (such as software providers) that enable them. They also include hospitality providers that cater principally to local markets, such as restaurants, nightclubs, and event venues, if they have digital interactions with customers (such as through reservations, online ordering, or ticketing).

The characteristics of companies that can benefit the most include

- ones that want to incorporate traveler information, requirements, and preferences into solutions that address dreaming, planning, booking, experiencing, and sharing of travel experiences
- ones that want to deliver truly personalized offers to improve conversion rates and upsell potential, and
- ones that want to reduce the cyber risk of storing and managing personally identifiable information.

6. PRINCIPLES

The *HATPro Traveler Profile schema* for data presentation and exchange is designed to enhance personalization in travel, hospitality, and tourism.

It is built on the foundational work of leading global standards organizations, including *W3C*, *DIF*, *ToIP*, and the *Open Wallet Foundation*, and is aligned with key regulatory frameworks including *GDPR* and *eIDAS*. Specifically, it incorporates their work on digital identity, verifiable data and credentials, consumer-controlled data privacy, consent, selective disclosure, and *digital wallets*. A key focus is interoperability, *personal service assistants*, and cybersecurity.

The HATPro Traveler Profile is an *extensible data structure* that lays out both essential profile elements and nuanced preferences and needs that can help to tailor enriched travel, hospitality, and leisure experiences. It provides self-attested and self-managed traveler identity, preferences and requirements. Major principles underlying the HATPro Traveler Profile include:

1) **Open Source:** The profile data structure and exchange protocols are publicly accessible and freely licensable, allowing proprietary implementations and including a mechanism for incorporating ongoing extensions and changes.
2) **Verifiable Trust Ecosystem**: The travel profile is designed to be used in a standards-based framework that enables both senders and receivers (which may be individuals, organizations, services, or AI agents) to exchange digital credentials sufficient to establish whatever level of identity verification they require before

exchanging data or conducting transactions. Each party can present digital credentials from third parties (such as governmental agencies, industry associations, or certification organizations) that the other party (B2B, B2C, C2B) can verify independently, in real-time, and without connecting to the issuer. For example, where required, travelers can verify that another party is an accredited travel supplier or intermediary and not a phishing site, while a travel supplier can verify the identity and age of a booker.

3) **Interoperability:** The travel profile uses a defined schema and industry standard approaches for preparation and encoding of data. This includes character sets, language, locale, geocoding, and similar items. The approach is designed to facilitate interoperability within and among parties who may be from different cultures or countries or who may use different languages. The objective is that any consumer, using an app or digital agent of their choosing that supports the standard, should be able to effectively transact business with any travel supplier or intermediary (or agent acting on their behalf) that also supports the standard.

4) **Data Exchange:** The focus is on the presentation of a standard data structure for exchange between parties to a travel or hospitality transaction. It leverages existing standards for verifiable credential presentation, exchange protocols, and the principles of verifiable data, and is extensible by design. The presentation and structure are independent of the underlying data storage and management implementation, enabling both innovation and the support of legacy systems for profile management.

5) **Data Privacy:** The travel profile incorporates privacy by design. It supports deep personalization, while minimizing the need for travel suppliers and intermediaries to retain and secure personal data beyond that required for operational or regulatory requirements. Unlike legacy practices for customer data management, any current data can be requested from travelers as needed, any time, on demand, subject only to the traveler's consent (whether previously granted or granted at the time of the request).

6) **User-Controlled Data Disclosure:** The schema anticipates the ability of travel providers to obtain all necessary profile data in a request (the request protocol is a planned future project), while also indicating additional data that is desirable but not essential (which may be useful for personalization). At the same time, the consumer (or their digital agent) must consent to sharing any data. Not sharing data that is required by a provider would, as today, result in a failed transaction (for example, most providers will not confirm a booking without a name), while not sharing optional data will still allow the transaction to proceed.

7) **Progressive Disclosure:** As appropriate, a traveler may remain anonymous during the dreaming and planning phases but disclose additional information (such as their name) later in the process, such as to complete a booking or to customize the service delivery. It is assumed that *personal service assistants* may be tasked by consumers to manage this process according to rules set by the consumer. The ecosystem supports active traveler consent and selective disclosure.

8) **Digital Empowerment:** Consumers will generally have user-friendly applications (via personal service assistants and/or *digital agents*) that are accessible on mobile or other devices. These applications are not just for storage of profile(s) but are active platforms for data management, reflecting user consent and preferences. They can

facilitate the creation and exchange of profile information, ensuring a tailored experience across various services, including travel, finance, and healthcare.

9) **Seamless Interaction:** The presentation and protocols will facilitate seamless interactions of travelers with all kinds of suppliers and intermediaries via standardized interfaces. These interfaces use *Self-Sovereign Identity (SSI)* principles, ensuring that travelers can manage their preferences and privacy with confidence. These interfaces and interactions include but are not limited *to digital wallets*, *personal service assistants*, and *digital agents* used by suppliers and intermediaries. The nature and structure of these user interfaces are out of scope.

10) **Regulatory Considerations:** The data structure and exchange protocol are consistent with regulatory requirements like *General Data Protection Regulation (GDPR)* and *eIDAS* (both applying across the European Union). It is the responsibility of implementers to address specific storage-related considerations for retained data, such as the "right to be forgotten" and the use, processing, and sharing of data with other parties. However, the availability of permissioned data "on demand" directly from the traveler can vastly reduce the amount of data that must be stored.

11) **Interaction with Other Industries:** While designed to meet the needs of the hospitality and travel industry, some of the HATPro Traveler Profile's content will overlap customer profiles used in other industries, such as healthcare, finance, or retail. The schema structure has been designed to support this in the future if appropriate, including the addition of entire sections that may be specific to another industry. Overlap in efforts may evolve over time; for example, a traveler's claim of a health condition may ultimately become verifiable by a healthcare entity that has joined the framework.

7. SCOPE

To keep the effort to develop a *profile presentation* well-bounded and manageable, the scope has been carefully constrained. This section outlines the boundaries of the effort to date, identifies pre-existing work that covers (or is expected to cover) certain aspects that are often present in legacy profiles, and catalogs potential future efforts that may be undertaken by the DIF *Hospitality & Travel Working Group* or others.

In short, the scope of the profile presentation is limited to information about a single traveler that is to be sent to one or more suppliers, intermediaries, or other party in the context of a trip, *activity*, or *experience* that is contemplated, planned, or in process. In this context, a trip, activity, or experience may range from a simple walk to a nearby restaurant for a meal, to a complex international *itinerary* with multiple flights, hotels, rental cars, restaurant reservations, tours, activities, and other aspects.

While there are many potential uses a supplier or intermediary may make of the information, the common ones are to provide a (potentially personalized) response and offer for travel and hospitality experience(s), or to gather information to personalize the service delivery itself.

7.1 Overview of Profile Presentation

A profile may be presented digitally at any phase: during dreaming, planning, booking, registration, service delivery, or post-travel reviews and other sharing activities. The

HATPro Traveler Profile does not define which elements of the profile may be required or optional at each phase, but suppliers and intermediaries may (as they do today) require certain information to be provided at different points in the process. Typically, only minimal information is required during dreaming and planning (which are often conducted anonymously). Additional information (such as name and contact information) is often required at booking, registration, or during service delivery.

A profile may be presented proactively (through a *personal service assistant*) by a traveler who wants to engage with one or more suppliers or intermediaries, or in response to a *profile request* (a future standards effort) by a supplier or intermediary. In each case, a supplier or intermediary may require certain profile fields and request others, but the traveler (through their personal service assistant) must consent to any sharing. Conversations between a traveler's personal software assistant and a supplier or intermediary may be iterative; for example, as an anonymous traveler moves from the dreaming or planning phase to the booking phase with a particular provider, that provider might require or request additional information that it may need to construct the most appropriate offers or to complete the booking.

There may be negotiation as to what information is to be provided. A supplier or intermediary can require specific fields. A traveler (or their agent) is free to consent to providing those fields, or not. However, a traveler who declines consent for a required field should expect that the supplier or intermediary will be unable to respond with more than an error result. This mirrors the analog process in which (for example) a name must be provided at the time of an airline booking, but a frequent flyer number is optional. The traveler may refuse to provide their name, but if they do, the airline will not confirm the booking. On the other hand, the traveler can decline to provide a frequent flyer number (even if they have one), and unless the airline has an unusual business model that requires one, the booking can still be made.

7.2 Information Excluded from the HATPro Profile Presentation

Not all information about a traveler that is necessary to support dreaming, planning, booking, or delivery of travel and tourism services is included in the *profile presentation*. Rather, it broadly covers identifying information, communication preferences, characteristics (such as willingness to undertake certain kinds of activities, or lifestyle attributes), specific requirements (such as accessibility or dietary), and preferences (such as for specific foods or activities). All information in the HATPro Traveler Profile is *self-attested*, meaning that it has been stated by the traveler but not verified by anyone else (see below for how *third-party attestations* are supported).

In many cases, a traveler will also need to specify when and where they want to travel, what they want to do, and other requirements. Such information will generally limit the scope of suppliers or intermediaries queried (e.g., to airlines or hotels serving a particular market); it will also enable the traveler's personal service assistant to filter results. This type of information is excluded from the profile presentation but may be communicated in tandem with it (the HATPro Traveler Profile does not attempt to define how this is done). The information in the profile is intended to help suppliers and intermediaries who meet the basic requirements (such as hotels in a destination city) to personalize offers made in response, and/or to provide a better experience during the service delivery phase.

The profile also excludes information that may require verification or proof, such as passports, visas, credit card numbers, memberships, certifications, and affiliations.

These may determine eligibility for certain travel experiences and/or qualify the traveler for special rates, packages, or privileges. In the self-sovereign identity framework, these are more properly presented as *verifiable credentials (VCs).* This effort assumes that where required, the appropriate VCs are delivered in tandem with the profile. The profile is therefore limited to information where the traveler's self-attestation is sufficient.

For interoperability with legacy systems used by suppliers, intermediaries, and third parties, extensions may be needed to provide transitional support for supplying information that would otherwise be covered by VCs. These extensions, to the extent they are deemed necessary, will be defined at a future date based on industry feedback. For example, a supplier may require a credit card to confirm a booking. If either the issuing bank or a supplier or intermediary cannot support the use of a VC (or similar digital credential) rather than a traditional payment card presentation, then the credit card would need to be presented in legacy form. How this would be done is yet to be determined and (because of security requirements) may well be vendor-specific.

7.3 Supported Supplier Categories

The *profile presentation* is intended to be applicable to any hospitality, travel, tourism, or leisure experience supplier. The more common ones have been built out already by identifying and codifying the specific requirements, preferences, and characteristics that they typically require or request during the booking or service delivery process. However, many specialized ones (notably for activities like skiing, golf, fishing, skydiving, etc.) are contemplated but have yet to be built, or have been specified only in part, due to lack of adequate expertise within the Working Group. The intention is to engage experts in each area to build out additional details over time.

Supplier categories supported in the initial version of the profile presentation include:

- Air travel
- Lodging
- Car rental
- Train travel
- Bus travel
- Ferry travel
- Cruises
- Taxis and transportation network providers e.g. Uber, Lyft, Grab
- Autonomous vehicle travel
- Vehicle-based sightseeing
- Recreational vehicle and boat rental
- Attractions
- Restaurants and venues such as events, bars, nightclubs

The project has defined an umbrella category, "*Activities*," which covers everything a person might do while away from home, from passive ("reading a book") to physically demanding, high-risk activities ("climbing the Matterhorn"). When one or more activities are organized by a third party, they become HATPro "*Experiences*." For example, running is an activity (you can do it on your own, but a hotel might want to personalize a suggested route for you). But it can also be an experience (such as running the Berlin Marathon).

Activities are the basic building block for “things to do” in the HATPro schema, but any activity is conceptually extensible into an *experience*, typically by adding attributes that would be important to an operator of the experience (such as physical capabilities or limitations or skill levels). Simple experiences can also be packaged together into complex experiences. A consumer may like art, but does that mean they want to visit an art museum on their own (an activity) or that they would enjoy attending an art lecture or a painting class (experiences), or both? HATPro enables a stored preference that is granular enough to answer the question.

The activity structure is a category/sub-category (graph) structure, which provides for increasingly specialized activities. An example of the hierarchy might be Sports, Active Sports, Skiing, Alpine Skiing. At any level, a traveler can state preferences and needs; and, where relevant, specify additional information such as experience or capabilities. Activities also have tags, which may indicate such things as context or important characteristics. For example, tags may be used to specify that a particular activity involves heights, occurs primarily during certain seasons or times of day, or is strenuous or sedentary. These tags can help match a traveler’s preferences and style to activities and experiences that may be of interest to them.

Each type of experience can have custom attributes that operators may want or need to know, such as skill level, certifications, equipment requirements and sizes, and the like. The schema will require input from experts in each category to fully meet the needs of the operators. Specialized needs and preferences will be required for many categories, for example Alpine Skiing might have preferences for ski length, boot size, and an altitude and temperature ranges that you are willing to tolerate. Some of these (e.g. altitude tolerance) might be specified in and inherited from other categories, e.g. Health and Fitness. While the structure has been designed to support all of these use cases, the exact implementations for each experience will require input from operators.

It should be noted that artificial intelligence is leading to a kind of merger of the tourism and leisure industries. Whereas tourism always involves travel, leisure activities occur both while traveling and at home. The HATPro profile was designed to support the travel and tourism industry, but because it includes all the leisure elements as well, it should support at-home leisure activities equally well.

7.4 Modeling of Needs and Preferences

7.4.1 Approach: Needs and preferences can be positive (I want this, I need this) or negative (I do not want this, I must avoid this). In between, they operate on a continuous scale. The schema design supports an unlimited number of items to which needs and preferences can be assigned.

Already deployed is a rich set of more than 1,000 food and beverage types, since eating is (a) a part of many travel and hospitality experiences, and (b) people have strong food preferences, likes, dislikes, allergies, or religious requirements that restaurants and other food providers may wish or need to respect. The schema structure also supports rich preferences for activities and experiences, although much of this remains to be built out based on industry input.

7.4.2 Need and Preference Modeling: In general, needs and preferences combine an item (such as a type of food or activity or an accessibility requirement) with a score from -100 to 100. A preference score of 100 indicates a requirement (or a very strong preference), while a score of -100 indicates a prohibition (or very strong aversion). A traveler who is confined to a wheelchair would likely set their preference for wheelchair accessibility to 100, because it is an absolute requirement. Similarly, someone with a serious nut allergy might set their nut preference to -100, indicating that they must absolutely avoid nuts. Someone who is indifferent might leave these preferences blank or set it to 0.

Scores between the two extremes allow ranking and gradation, as in “I like Thai cuisine” (score of 60) but I like Japanese better (score of 70). This approach allows AI agents an intermediaries to help recommend restaurants: if there are similarly rated Thai and Japanese restaurants in the area, they might preference the Japanese one, but if there was only a Thai restaurant (or the Japanese one rated poorly on other aspects), they would know that is likely the better choice. The choice of scale with 100 positive and 100 negative values enables very granular ranking but would most likely be populated that way either by an AI agent autonomously, or through a user interface with a “slider” to indicate the magnitude of a preference.

Similarly, ranking allows an airline customer to indicate how strongly they prefer or dislike certain seat types, for example allowing for someone to say “I prefer a window but aisle is okay” or, alternatively, “I prefer a window and nothing else is acceptable.”

Keywords have also been mapped to specific values, such as “REQUIRED” (100) and “PROHIBITED” (-100) and will likely be added for intermediate values as well, for the benefit of adopters who do not need granular ranking.

7.4.3 Domain Modeling: Needs and preferences are applied across multiple domains within HATPro. The two most extensive ones are foods and beverages on the one hand (around 1200 items already built out as a starting point), and *activities* and *experiences* on the other. The working group has identified hundreds of activity and experience types but has only prototyped a limited number to date.

Both of these domains are represented in acyclic graph models, which support hierarchies but also allows a single item to have multiple parents; for example, “Butter” has both “Dairy Products” and “Fats and Oils” as parents**.**

This approach was chosen so that needs and preferences can be set at the macro level (for example, someone with dairy intolerance might set the “Dairy Products” preference to a high negative number) or at the micro level (for example, if they strongly dislike sour cream). The inheritance specified within the acyclic graph model ensures that macro preferences are inherited by their children unless specifically overridden.

Needs and preferences scores are also applicable other domains that are (or will in the future be) supported by the schema, such as airline seat preferences, hotel room preferences, accessibility needs and preferences, lifestyle preferences, brand preferences, and many others.

7.4.4 Tags: The schema design supports definition of tags that enable arbitrary groupings of specific elements. These will initially be used primarily for activities and experiences. Examples where tags might be used include “Winter Activities,” which might be applied to a number of activities like skiing, snowboarding, bobsledding, or ice fishing; or “Adventurous” or “Involves Heights,” both of which might be used for hang gliding, parasailing, rock climbing, or bungee jumping. Preferences applied to tags can be used to help evaluate whether a traveler might enjoy an activity or experience that they have not rated independently.

7.4.5 Contexts: For activities and experiences, the schema design also supports defining context-related variables. These were still being defined as this document was written but are expected to include aspects such as acceptable group size and composition for an activity (as in, I like food tours, but not if the group is more than 8 or includes children); temperature restrictions (as in, I like skiing, but not below -20°C or in the rain); or ways in which an experience is delivered (e.g. bus tour vs. walking tour).

7.5 Scope Limitations

The HATPro Traveler Profile presentation is just one part of a larger ecosystem; it does not stand alone. It is, however, a key element that can only work if it is a widely recognized standard. Because it is designed to allow a traveler to communicate information about their identity, their requirements, and their preferences to any supplier or intermediary, every supplier and intermediary must be able to interpret it (hence the need for a standard). However, it is critical to recognize other parts of the ecosystem, which are in varying degrees being developed by private companies and standards groups, as well as potential future efforts of the H&T Working Group.

To reuse prior work and to keep the task manageable, the following capabilities and ecosystem components were determined to be out of scope for this effort.

7.5.1 Identity Resolution: Standards created by the *Decentralized Identity Foundation (DIF)* are assumed to provide secure communications between travelers, suppliers, and intermediaries (including the presentation of profiles). Another consortium, *Trust over Internet Protocol (ToIP)*, which is closely aligned with DIF, has been delivering standardized approaches to enable each party in a communication to establish trust in the other party that is sufficient for the context of the communication. The global association *Ayra* (formerly GAN) is also creating a registry of registries that can be used to validate key business credentials (for example, whether the party on the other end of a communication is a legitimate hotel or airline, vs. an impostor).

Each party to a digital communication in the SSI ecosystem is identified by a *Decentralized IDentifier (DID)*, which (depending on context) may be permanent, persistent, or transitory (one-time use). The traveler has the option to acquire DIDs from any of numerous readily available and typically free sources. But rather than the DID (and its associated identity) being controlled by the issuing source (as is the case with email, social logins, and the like), the traveler holds the cryptographic keys needed to use their DID. This ensures that the traveler has full control over their own data, and also enables suppliers and intermediaries know (to the extent needed by the context) that the party they are communicating with is the intended one and not an impostor. Similarly, suppliers and intermediaries can be securely identified by travelers or their agents, vastly reducing the likelihood that a traveler will book through a sham organization posing as a legitimate supplier.

7.5.2 Digital Wallet: *Profile presentations* connect a traveler's app with provider systems to exchange data. The interaction between the traveler and their profile occurs through an app (typically on a mobile device) that is commonly (if informally) referred to in the SSI community as a *digital wallet*. In this context, a traveler creates and maintains their profile through such an application. The digital wallet manages stored profile(s) and provides the logic that enables the traveler to interact with those stored profiles in an intuitive way. It allows the traveler to select specific profile elements that are needed for a particular interaction with a supplier or intermediary; to request any missing elements; and it requests and manages consent to share profile elements with third parties (generically or specifically). It manages all stored information securely, ensures the validity of changes, and manages any necessary archiving or data retrieval capabilities.

Numerous private companies and some governments have created or adopted early versions of digital wallets, and the European Union has mandated that all member countries support at least one digital wallet by November 2026. While details vary, digital wallets are typically designed to store underlying profile data, to construct a profile for presentation when required, to package it with other information (such as third-party attestations of identity, affiliation, or credentials), to select and verify the identity of parties to which the profile will be presented, and to manage the communications between the traveler and those parties. Specifications for digital wallets are outside the scope of this effort.

Section 8.4 in the Appendix further extends and defines the role and concept wallet in an evolving digital travel ecosystem that includes travelers, supplier and intermediaries.

7.5.3 Multiple Profiles: It is assumed that a traveler may want to maintain different profiles for different trip purposes or contexts (such as business vs. leisure travel). These are outside the scope because the HATPro Traveler Profile is always presented for a specific trip purpose or context; the choice of profile will already have been made before the profile presentation is constructed. Most likely these will be organized by a digital wallet or companion software in some sort of hierarchical data structure, with top-level information that is identical across all profiles, but variations in lower-level information based on factors like business versus leisure, traveling alone versus with family, and the like. It is assumed that the digital wallet will manage the underlying data structure and the different profiles, selecting, adapting, and presenting the one that is most appropriate to the context.

7.5.4 Profile Request*:* In some cases, a *profile presentation* may be made by a traveler to a supplier or intermediary as part of a *travel request*, presented to suppliers and/or intermediaries in order to receive proposals (trip elements, price, etc.). But in others, the supplier or intermediary may need to make a request to the traveler's wallet for profile data. For example, a traveler may make a trip request anonymously without providing a profile (or only a very limited one). When they receive a quote and decide to book, the supplier or intermediary will need additional profile information. The profile request will enable them to identify fields that are required to proceed (such as name and contact details) and other fields that they would like to have but that are not required (such as food preferences). The Profile Request is part of the architecture of the HATPro design but represents a future project.

7.5.5 Travel Request: While the HATPro Traveler Profile provides static information about a traveler, their requirements, and preferences, the data structure is independent of any specific trip. For this, a *travel request* will be needed, specifying what travel services are required, dates, and other specific requirements. The HATPro Traveler

Profile may be packaged with a travel request so that suppliers and intermediaries have key information (such as travel dates) necessary for a response. The travel request will typically help to determine which suppliers and intermediaries should be contacted for which element(s) of the trip, although the profile may also play a role (for example, by expressing preferences for specific suppliers or their capabilities).

7.5.6 *Travel Itinerary*: As elements of a trip are booked, they become part of an *itinerary* that may include one or many different elements (e.g., air, hotel, activities). These elements are often interconnected both in the planning phase (an arriving hotel guest may have an airline flight and ground transfer to get to the hotel from their home city) and in the delivery phase (if the airline flight is late, the ground transfer and hotel arrival time may need to be adjusted). The Travel Itinerary enables these elements to be managed, while the wallet may manage real-time communications when trip disruptions occur. The Travel Itinerary will be essential to delivering on the industry goal of the "connected trip."

7.5.7 Payment: Many hospitality and travel use cases require payment, or at least a guarantee of payment, for service delivery. Because payment is not specific to travel but applies to most other sectors, and because much work has already been undertaken by leading financial companies to support digital payments in SSI ecosystems, payments have been excluded from this effort. The best way to handle payment is through intermediary processing (for immediate payment without touching payment card data) or payment guarantees (provable attestations from a financial institution that essentially guarantee payment in the future). Today that is typically done by users providing payment card information directly to service providers. However, the emerging payment mechanisms use a payment app/agent/service as an intermediary between the traveler and the service provider, eliminating risks that payment card information may be stolen from the provider in a data breach. This effort assumes that the latter approach (or something similar) will dominate in the longer term but also recognizes that an interim approach for handling payment card information will be needed until that happens. However, specifications for the interim approach have been deferred pending initial feedback from implementers.

7.5.8 Groups Traveling Together: The HATPro Traveler Profile describes the identity, needs, and preferences of one traveler. Groups of travelers add significant complexity, such as agency and guardianship (for example a parent controlling what a child can do), resolving conflicting requirements or preferences within a group, or trips where a group may split up on some elements (different hotel rooms, different day tours, one person departing early, etc.). Groups were excluded from the scope of the initial effort but are a likely area of future ones.

7..9 Accompanying Objects: Since self-sovereign identity can apply to objects as well as people, there may also need to be consideration of luggage, assistive devices, pets, child seats, or service animals traveling with a person or group, or of equipment that may be rented for a portion of a trip. For example, an airline might want to request a profile for each checked bag, both to uniquely identify it and to allow entry of a physical description to be used if it is lost. These use cases have not been addressed as yet, but may be addressed with groups, or as a separate effort.

7.4.10 Profile Updates: The HATPro Traveler Profile presents a traveler's needs and preferences at a point in time. However, needs, preferences, and even identity information (such as email addresses) constantly change. In some cases, the traveler will identify the need for and initiate a change, for example updating their dietary

preferences to reflect a new allergy, using their digital wallet. However, the digital wallet itself may detect that a traveler's behavior is inconsistent with their stated preference and may suggest (or even action, if it is authorized to do so) an updated need or preference. Finally, suppliers and intermediaries may identify information that is missing from or inconsistent with the profile they were provided and may propose updates (through the digital wallet) for the traveler to review and approve or reject them. Similarly, to support certain use cases, digital wallets may choose to make aspects of stored profiles time-specific, for example retaining maiden names or former addresses. However, since the profile presentation is always made in a specific context and at a specific point in time, it does not support date sensitivity. It does, however, support multiple versions of name and address when required by the context; for example, a legal name as on a passport, vs. a stage name for a musician or actor, since some providers will need or want one, the other, or both.

7.6 Presentation and Exchange Principles

Storage format (and interfaces) can be designed by *digital wallets* and other entities (suppliers, intermediaries, agents, etc.) in ways that support the HATPro Traveler Profile schema, but the specifics of these are left open to implementers and innovation. The HATPro Traveler Profile schema is intended to provide an exchange format that can be used to deliver traveler information in a neutral, standard format. The schema provides no guidance as to how or where underlying profile information should be structured or stored.

At the storage layer, many platforms will likely offer support for multiple profiles for different purposes. They may specify a default profile, parts of which may be overridden to create secondary profiles. They may (at the request of the traveler or their *personal service assistant)* have certain fields that are only specified at the time the profile presentation is constructed, based on requirements or preferences that are specific to one trip.

Not wishing to restrict innovation in this regard, this schema addresses only the profile that is presented at a point in time, not how or when it is stored or constructed (such as by a personal software agent interacting with the traveler). If a traveler or agent updates profile elements after booking or during a trip, a profile exchange service of the digital wallet can notify suppliers and intermediaries of the change. The implementation of profile exchange services is outside the scope of this effort. The schema does provide limited support for profile exchange in addition to presentation, but key aspects (such as the simultaneous exchange of multiple profiles) will require additional future work.

7.7 Presentation of Related Information

The HATPro Traveler Profile contains data that enables personalization in travel planning, purchasing, and consumption. Digital wallets can package the profile with other information needed for various use cases.

The profile can be created, viewed, and updated by the traveler and may, with the traveler's consent, be accessed by suppliers or intermediaries (or their *agents* or services) to enable personalized offers.

In addition to the travel profile, other data and documents may be included as part of a *travel portfolio*. A travel portfolio, depending on the use case, may also include digital versions of items such as:

- Tickets and boarding passes
- Desired itineraries (travel requests)
- Confirmed and unconfirmed reservations
- Receipts
- Travel-specific required tasks and questionnaires
- Travel-related Verifiable Credentials (passport(s), visas, health certifications, proof of eligibility for restricted rates, etc.)
- Travel history
- Payment methods, such as credit/debit cards, buy-now-pay-later, direct bill arrangements, loyalty points, and digital payments

While much work has been done by the World Wide Web Consortium (W3C), DIF, and ToIP on exactly how such information should be packaged and communicated, as of 2026, multiple approaches were still competing for dominance. Similarly, there was much discussion about how best to communicate information that has not yet transitioned to verifiable credentials, such as drivers' licenses from jurisdictions that do not yet support SSI-compatible digital versions. The travel profile is designed to be usable with any current or future approach for processing transactions that require other wallet-resident data, documents, credentials, etc.

Common data structures for travel profiles will likely evolve based on data from common travel, hospitality, and experience use cases such as searching, booking, itinerary, and travel history. The travel profile is designed to be an element of any such data structure to the extent required (selective or comprehensive) for the use case. Both the HATPro Traveler Profile and *traveler portfolios* are suitable for various end-user interfaces, including traditional web search and booking sites and plain-language requests that may be interpreted by artificial intelligence.

A traveler portfolio may be presented by the traveler as part of the dreaming, planning or booking process, or may be provided in response to a request by a supplier or intermediary. For example, a restaurant may, after confirming a booking, request the traveler portfolio to see if the diners have theater tickets immediately after.

The consumer's digital wallet and/or personal service assistants are responsible for assembling both the profile and the other elements of travel and non-travel-specific data and documents as required by the use case. If elements of a profile need to be overridden in a specific use case, these applications and agents may augment the information before assembling it for presentation in a profile.

8. APPENDIX

8.1 Technical Artifacts

Current versions of the following artifacts can be found the DIF GitHub repository for the Hospitality and Travel Working Group at *https://github.com/decentralized-identity/ht-travel-profile*

- UML models (PlantUML)
- JSON Schemas, JSON (enum files, etc.)
- This document (Implementation Guide) and supporting documents

Planned future artifacts include:

- Source code
- Schema verification tools
- HATPro TPQL (Travel Profile Query Language)
- Technical Guides & Specifications (Markdown)

Anyone can view the artifacts, with or without a GitHub login. Additional capabilities are available to members of the *Hospitality & Travel Working Group* who have GitHub logins.

The schema is designed to support the use of overlays, some of which are already contemplated and others of which will be added over time. Overlays will be used, for example, to allow field names to be customized to various languages, and also to indicate the provenance of specific profile elements (e.g., whether the consumer provided the information directly vs. an agent projecting it based on other information; when the information was last updated, and the like). Additional details on overlay design will be provided with future versions.

Readers who are familiar with GitHub are welcome to add comments or raise issues in the repository. Alternatively, you can send queries, comments, or suggestions by email to *ht-governance@identity.foundation*. This email is monitored by volunteers who will endeavor to at least acknowledge submissions as quickly as possible and, where appropriate, provide an estimated time frame for a full response. Technical suggestions will, where appropriate, be added to the GitHub repository by working group members.

8.2 Glossary

Activity – A pursuit that can be undertaken by a lone traveler or by members of a group traveling together, without the involvement of any other person or entity. Examples include skiing, swimming, running, and museum visits.

Agent – A person, company, or software application that is authorized to act for an individual (traveler), group of travelers, businesses, or governments. In the case of a software application, this may take the form of a *Personal Service Assistant*. An Agent may assist in maintaining data (such as the traveler's profile), make recommendations for travel services, coordinate various services, book them, and suggest or make changes in cases of trip disruptions.

Artificial Intelligence (AI) – The ability of a machine to perform tasks that were historically associated with human intelligence, such as learning, reasoning, and making decisions.

Authoritative Issuer – A Verifiable Credential is a Verifiable Document which has been "issued" by a third party about a subject/primary party. An Authoritative Issuer is an Entity (typically an organization) which is recognized by a higher authority (e.g. government) as Authorized to issue specific Verifiable Credentials. Examples: an organization (authorized by government corporate registrar) as issuer of an Employment Record, a government as an issuer of a Passport (e.g. authorized by ICAO).

Data Store – In the context of a secure, travel-centric digital wallet, a system capable of storing personal information for interactions with and via those wallets. A data store may exist in a cloud service, on a mobile or other personal device, but most commonly is managed by a wallet on a mobile device and replicated in the cloud. A secure data store has encryption keys that ensure that (a) only the identity subject can make or authorize changes; and (b) the subject can authorize encryption keys for specific parties enabling them to access selected information on demand; and (c) the subject can revoke these keys.

Decentralized Identifier (DID) – A unique alphanumeric sequence, similar in concept to an email address or phone number, that is used by a traveler, supplier, or intermediary to communicate information without relying on a central authority. It is built on principles such as user empowerment, security, and decentralization. The structure of DIDs is specified by the *World Wide Web Consortium (W3C)*.

Decentralized Identity Communication (DIDComm) – A protocol for secure and private communication between entities (people, organizations, or devices) that use Decentralized Identifiers (DIDs). It enables these entities to exchange messages and data in a way that is cryptographically verifiable, tamper-proof, and independent of centralized systems. The DIDComm protocol standard is managed by the Decentralized Identity Foundation.

Decentralized Identity Foundation (DIF) - An engineering-driven not-for-profit organization focused on developing the foundational elements necessary to establish an open ecosystem for decentralized identity and to ensure interoperability between all participants. DIF is the sponsor of this effort and is the authoritative source for such elements for the World Wide Web Consortium (W3C). See *https://identity.foundation/*

DID – see *Decentralized Identifier*.

DIDComm – see *Decentralized Identity Communication.*

DIF – see *Decentralized Identity Foundation*.

Digital Agent – An *agent* (see above) that is a software application (as distinguished from a traditional travel agent, for example).

Digital Ecosystem – A network of interconnected and interoperable digital hospitality and travel entities, including travelers, suppliers, intermediaries, applications, data services, and platforms, that work together to create value and to achieve common goals within a digital space. Section 8.4.2 of the appendix describes such a digital ecosystem as is used in the HATPro effort.

Digital Identity – A cryptographically secured method for an entity that is communicating via the Internet to prove that they are who they say they are. This works both for

consumers (so businesses know who they are dealing with) and for consumers (to know that they are dealing with legitimate businesses).

Digital Wallet – An electronic device, online service, app, and/or software program that allows one party to make electronic transactions with another party. It enables the establishment of digital identity and trust, supports interactions between parties, and includes secure data storage for information about a person (including digital credentials such as identity documents or membership cards) or entity (such as a supplier, intermediary, or agent credentials).

eIDAS – A European Union regulation (electronic IDentification, Authentication and trust Services) that establishes a framework for digital identity and authentication. The acronym references Electronic Identification, Authentication and trust Services. See *https://digital-strategy.ec.europa.eu/en/policies/eidas-regulation*. The HATPro Traveler Profile approach is consistent with the eIDAS regulation.

EU Digital Identity Wallet – An application framework, protocols, and data stores designed to provide personal identification, authentication, and authorization. Every European Union member state is required by 2026 to provide at least one wallet to all its citizens, residents, and businesses allowing them to prove who they are and to safely store, share and sign digital documents, especially across borders.

Experience – One or more *activities*, travel services, or travel products that are organized by a third party (person, company, or software). Most activities can become experiences, for example running is an activity, but participating in a marathon is an experience. Experiences may consist of a single activity or may combine multiple activities; they may also include more traditional package elements such as air and hotel.

Extensible Data Structure - A data architecture that is designed to support the addition of new structural elements and revisions of existing ones without breaking the existing model. Such structures allow organizations to adapt to changing requirements, such as new regulations, market conditions, or acquisitions.

General Data Protection Regulation (GDPR) - A European framework and standard that defines how parties must protect personal information, giving consumers more visibility over the data being stored and the purposes. It also provides consumers with limited control, such as the right to request corrections or deletion of data about them that is held by organizations. See *https://gdpr-info.eu/*

Governance Structure – In the context of this document, a set of processes and practices, to be established by DIF, through which HATPro-related technologies, processes, and data will be managed and regulated. Such a structure would maintain, enhance and implement the HATPro Traveler Profile schema for the industry.

H&T SIG – see *Hospitality and Travel Special Interest Group*.

H&T Working Group – see *Hospitality and Travel Working Group*.

HATPro Traveler Profile – The first HATPro technical deliverable, enabling a traveler to provide their identity, needs and preferences to another party with whom they have no preexisting connectivity.

HATPro Traveler Profile Schema – The *schema* defined by this document, encompassing a consumer's *profile* information as presented to a supplier, intermediary, or other party to facilitate hospitality and travel.

Hospitality and Travel Profile (HATPro) – A data structure that describes a traveler's (or other hospitality consumer's) identity, needs, preferences, and characteristics, or the identity, capabilities, policies, and other relevant information for a supplier or intermediary. It represents self-attested data that may be presented in conjunction with *verifiable credentials*, in support of secure, personalized and transactions or experiences.

Hospitality and Travel Special Interest Group (H&T SIG) – An open-to-all community of interest within the *Decentralized Identity Foundation*, consisting of professionals focused on digital identity and privacy within the hospitality and travel industry. See *https://identity.foundation/Hospitality-and-Travel-SIG/*

Hospitality and Travel Working Group (H&T WG) – A working group established by the Decentralized Identity Foundation to publish, oversee, and maintain standards necessary for the hospitality and travel industries to migrate to self-sovereign identity concepts. The HATPro schema and supporting documentation were prepared and published by this working group. *https://identity.foundation/special-interest-groups/hospitality-travel*

IETF - see *Internet Engineering Task Force*

Internet Engineering Task Force - The IETF is an open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture. It develops and promotes voluntary technical standards, such as protocols and best practices that underpin core internet operations, including transport, routing, and security. See *https://www.ietf.org/*

Itinerary – A customer-centric, time-ordered set of one or more travel and hospitality components, activities, and/or events that occur during a trip away from home. It may be high-level at the dreaming or planning phases, such as a general travel request, or it may be a detailed set of booked or planned elements. It can include supporting information as needed, such as desired destinations, activities, flight details and tickets, and accommodations.

Linux Foundation - A non-profit organization that provides a neutral, trusted hub for developers and organizations to code, manage, and scale open technology. (*https://www.linuxfoundation.org/*). Linux Foundation manages major open-source initiatives including the *World Wide Web Consortium*, the Linux operating system, the *Open Wallet Foundation*, the *Decentralized Identity Foundation*, and *Trust over Internet Protocol*.

OIDF – see OpenID Connect Foundation

OpenID Connect Foundation - The OpenID Foundation is a non-profit international standards body focused on digital identity and trust frameworks. It develops and maintains OpenID Connect and related protocols used globally for secure, interoperable identity verification across web and mobile platforms. See *https://openid.net/foundation/*

Open Wallet Foundation - A consortium of companies and non-profit organizations collaborating to drive global adoption of open, secure and interoperable *digital wallet* solutions. See *https://openwallet.foundation/*

Personal Service Assistant – A multi-purpose digital application that functions as a personal information manager, assisting the user in interacting with *agents*, including the user's and those of other entities. Frequently includes AI capabilities so that it may act independently based on parameters set by the traveler and interact with the traveler in plain language.

Personally Identifiable Information (PII) – Stored data that is or may be personally sensitive to a consumer, and that is potentially abusable by a third party to cause harm. Information such as health information, religion, financial records, travel history, and credit card numbers are common examples.

PII Risk - The risk of potential unauthorized access to *Personally Identifiable Information*, which can lead to significant harm to individuals and organizations including identity theft, data breach, reputational damage, regulatory fines, and increased cyber insurance costs.

Profile – A collection of *self-attested* personal information expressing identity, characteristics, preferences, and other aspects of an individual.

Profile Presentation – Delivery of standardized, detailed set of information describing a traveler's identity, requirements, and preferences applicable in a specific context and at a particular point in time, to a hospitality or travel supplier, intermediary, or other entity, to support identification, personalization, and service delivery.

Profile Request – A structured message soliciting information about a consumer. In a travel context, this would typically be made by a supplier, intermediary or other entity to collect personal information that is required or desired to support a hospitality or travel experience.

Schema – A formalized description of data, data types, and data structures or frameworks, ideally widely agreed as a standard, that organizes information and knowledge in order to facilitate its retrieval and exchange across a diverse set of parties or systems.

Self-Attested – Information or content that a person or entity (such as a traveler) provides about themselves, verified by their cryptographic signature. Examples include dietary preferences (e.g. vegetarian), seat preferences, and other concepts for which third-party verification is typically not relevant or required.

Self-Sovereign – A descriptor for information that is completely under the control of a person or entity, without the need for involvement of a third party (such as a centralized data storage service).

Self-Sovereign Identity (SSI) – Refers to a digital identity framework where individuals have complete ownership and control over their personal identifiers. Instead of relying on third-party entities like governments, corporations, or institutions to manage or authenticate their identities, SSI allows individuals to independently verify and share their credentials.

SSI – see Self-Sovereign Identity

Third-Party Attestation – A statement about a traveler that has been digitally certified by a third party, such as a government, company, or membership or loyalty program. In SSI implementations, such attestations are typically presented as a *Verifiable Credential* (see below).

Traveler – A consumer who is considering, planning, experiencing, or memorializing any experience that involves hospitality (such as hotels, vacation rentals, restaurants, or catered events), travel (whether by air, car, ferry, rail, cruise ship, taxi, or other), or things to do (active or spectator sports, city tours, museums, sightseeing, etc.)

Traveler Portfolio – Broadly defined, this includes self-attested identity, the *HATPro traveler profile* (including preferences and requirements), *verifiable credentials* (e.g., passport, drivers license for a traveler, travel purpose, dates and destinations of travel and/or other information that may be requested by suppliers and intermediaries.

Traveler Profile – see *HATPro*.

Travel Request – A digital set of information defining a consumer's needs and wants for a particular hospitality or travel experience or trip (or portion thereof), such as a two-week sightseeing trip to Italy over specific dates. Travel Requests are out of scope of this effort.

Trust over Internet Protocol (ToIP) – A non-profit organization hosted within the *Linux Foundation* umbrella, working with pan-industry support from leading organizations around the world. ToIP's mission is to provide a robust, common standard, architecture and governance for Internet-scale digital trust within and across ecosystems. See *https://trustoverip.org/*

Verifiable Credential (VC) – An attestation to specific claims about a person, entity, or thing, made and verifiably cryptographically signed by an authoritative third party. Examples include passports, which can be verifiably traced as having been authorized by the appropriate governmental authority, or employment or membership credentials issued by a company or other organization. More information can be found at *https://www.w3.org/TR/vc-data-model-2.0/*. A Verifiable Credential is a more specialized version of a Verifiable Document, which is signed by an *Authoritative Issuer*.

Verifiable Document – A document containing digital content that is cryptographically signed by an individual or entity. The signer of the document can be verified, as well as whether the content has been tampered with. For more information, please see the companion document referenced in Section 8.7.

Version Control System – A mechanism for tracking and managing changes made to software code, schemas, and other digital files. It is closely related to source code and document management. It enables contributors to work in distributed and asynchronous environments, to manage changes and versions of code and artifacts, and to resolve and merge conflicts and related anomalies.

W3C – See *World Wide Web Consortium*.

Wallet – See *Digital Wallet.*

World Wide Web Consortium (W3C) - The W3C is an international community that works together for the long-term growth of the Web. W3C's goal is to create technical standards and guidelines for web technologies worldwide. These standards are intended to keep a consistent level of technical quality and compatibility concerning the World

Wide Web. Certain aspects of the ecosystem used by the HATPro profile, such as Verifiable Credentials, are under the aegis of W3C. See *https://www.w3.org/*

8.3 Authors and Contributors

Buddy Altus leads Bridgton Advisors, which offers consulting on travel technology, strategy, product development, and distribution. At Avis Budget Group, Buddy was VP Innovation Customer & Partner E-commerce. His digital identity and connected travel journey began while leading the Avis integration with TripIt. The next stop on this journey was a second Concur collaboration, which used the Concur profile identity details to enable enrollment into the Avis loyalty program. Buddy also was a board member and Vice-Chair of the OpenTravel Alliance. He has been a contributor to the Hospitality & Travel SIG for several years.

Alex Bainbridge is a digital sightseeing entrepreneur and software developer. He founded TourCMS, the first SaaS reservation technology platform for tours and activities and played a key role in early cross-industry connectivity projects for sightseeing distribution. Today, he leads Autoura, a Digital Experience Platform (DXP) that delivers personalised hospitality and tourism experiences using AI tour guides and autonomous vehicles. His motivation for the HATPro project stems from the challenges of delivering a truly connected trip, where in-destination experiences span multiple legal entities - making a decentralised preferences profile critical for seamless, privacy-respecting personalisation.

Bill Carroll, Ph.D. has held a variety of academic and corporate positions in the travel industry. He is currently a Senior Analyst with Phocuswright, a firm proving research, reports and conferences for global online travel industry. He retired in 2015 as a clinical professor of marketing at the Cornell School of Hotel Administration. He taught courses in economics, digital media marketing, pricing, marketing distribution and revenue management. For over 25 years Carroll held a variety of senior positions in the travel industry including Division Vice President for Global Marketing Planning at Hertz, where he was responsible for global pricing, revenue management, marketing information systems, and counter sales.

Makki Elfatih is a leader in the management consulting industry, which he has been associated with for more than a decade. He holds different leadership positions in world-class organizations and with strategic focus on public service and non-profit initiatives. As Founder and CEO of Hkdolts, he leads the co-creation of impactful outcomes with his clientele, contributing to driving their businesses forward, enabled by an in-depth knowledge, expertise, and insights about the state of their and world business affairs. A Marquis Who's Who in America listee Makki is deeply committed to co-building robust ecosystems, while constantly looking for ways to unlock human potential, and augment their ways of work using disruptive yet highly valuable technologies and techniques, including in the Hospitality and Travel sector.

Gee Mann is the founder of Travlr ID and Qurious AI, with over a decade of experience in large data, decentralised identity and AI-driven infrastructure. An innovation award winner and recognised by KPMG as one of the Top 100 Asians in UK Tech, Gee brings credibility and vision to building user-centric, privacy-preserving systems. He has led initiatives across enterprise and public sectors. Gee actively contributes to global discussions on trusted data exchange and AI interoperability.

Douglas Rice is an industry leader in the global hospitality technology industry and co-chairs the DIF Hospitality & Travel Working Group. He currently serves on several technology company boards and advisory boards, writes and speaks extensively on technology innovation, and is involved in several nonprofit and mentoring projects. He was a founder of Hospitality Technology Next Generation (HTNG) and served as its first chief executive from 2004 to 2015. Douglas was the 2012 inductee into HFTP's International Hospitality Technology Hall of Fame, and 2024 inductee into the China Hospitality Technology Alliance Innovation Hall of Fame.

Will Seggos was the former Technology & Digital Strategy Director for View Hotels Group in Australia, where he led a multimillion-dollar digital transportation initiative through a major refurbishment of the portfolio. He gained exposure to the world of digital identity working in Australia where major government efforts were underway to digitize services around identity. Will is based in Park City, Utah, where he advocates for the adoption of SEDI (State Endorsed Decentralized Identity) across various travel and government use cases.

Neil Thomson, co-founder of QueryVision, is an independent software architect specializing in Digital Identity Management and Verifiable Data (since 2016) and co-Chair of the DIF Hospitality & Travel Work Group; previously a Data Analytics and Metadata Architect (1996-2015). His contributions include data schema strategy & design for data exchange between travel-centric Digital Wallets. Neil co-chairs the DIF Hospitality & Travel Working Group and is a contributing member of Open ID Connect, DIF, MyData Global, and Trust over IP (ToiP), where he is a member of the ToIP Steering Committee, Co-Chair of the Data Modelling Working Group, and a member of the AI Task Force (AIM-TF).

Aniket Upganlawar is a co-founder of VARANK Tech Pvt Ltd and has over 20 years of experience in the travel technology industry, building innovative solutions across various travel segments, including online travel agencies, leisure, B2B aggregation, and more. He is now focused on seamlessly integrating AI into the travel ecosystem, making it both ubiquitous and effortless.

8.4 Role of Digital Wallets in an AI-Enabled Travel Ecosystem

The presentation of a travel profile or traveler portfolio will occur within an AI-Enabling ecosystem in which travelers, intermediaries, and suppliers (and *digital agents* for any of these) interact via *digital wallets*. The role of a digital wallet is not specific to the travel industry; rather, it is generally recognized as the next generation platform for consumer service interaction.

The diagrams shown below are not intended to be comprehensive, but instead illustrative of how travel applications and profiles might operate within a digital wallet. The broad contours of these interactions are understood today, but specifics are continuing to evolve and may differ from sector to sector. This section describes, in general terms, the key elements of, and interactions within, that ecosystem as it existed in mid-2025.

The HATPro Traveler Profile is one component of the SSI ecosystem, and while it can be used very effectively with legacy applications, its real power is unveiled when it is combined with digital wallets and *verifiable credentials*. Digital wallets enable a traveler, or an AI agent acting on their behalf, to manage their profile and to control with which parties it is shared, selectively or completely. Verifiable credentials are non-tamperable

attestations from a trusted party stating something about the traveler, such as proof of identity (passport, driver's license or similar) or proof of membership. A unique aspect of verifiable credentials is that they can be used to prove things (such as proof the traveler is of adult age) without disclosing unnecessary details (such as their date of birth).

8.4.1 SSI-based Digital Wallets

The *digital wallet*, in the context of hospitality and travel, provides the next-generation orchestration platform of AI-assisted *personal service assistants* and native consumer/service interactions, featuring tightly integrated secure peer-to-peer traveler-to-service and service-to-service transactions, data exchange, and notification between parties.

Most consumers have experience with digital wallets offered by major mobile device ecosystems, such as Apple Wallet and Google Wallet. While these are not SSI-enabled and lack some of the features being developed for hospitality and travel by companies focused on that market, they do serve as a relevant and useful starting point for understanding the capabilities of digital wallets in an SSI ecosystem.

The digital wallet also serves as a container for relevant data about travelers or suppliers, including preferences, credentials, real-time trip *itinerary* and history, payment methods, user-generated content such as reviews, and other elements.

Digital wallets are not necessary in order to use the HATPro Traveler Profile, but are useful for many of the more common use cases, in particular where third-party attestations are needed (such as proof of identity or membership) or where an identity will also be used for authentication or access control. However, the profile can be used without a wallet if the need is simply to exchange the information it contains in non-SSI environments. The implementation of the HATPro Traveler Profile is JSON.

Consistent with decentralized SSI ecosystems, however, every customer and every supplier will primarily interact via digital wallets, which may be deployed as apps, as functionality within apps, as services on a supplier's or intermediary's cloud, or otherwise. The digital wallet is, in effect, an AI agent operating system for SSI interactions.

Benefits include:

- **Convenience:** Guests can make quick, contactless payments for bookings, services, and products directly from any device, reducing the need for physical cards or cash.
- **Enhanced Customer Experience:** Digital wallets can provide traveler profile information, including special needs and preferences, and digital storage for room and rental car keys, boarding passes, and event tickets, making the travel experience seamless and more personalized.
- **Loyalty Integration:** Wallets can house loyalty memberships, rewards, and related travel history, making it easier for guests to accumulate and redeem points and easier for suppliers to support and reinforce cross-program promotions and benefits.

- **Targeted Advertising and Offers:** Digital wallets provide the ability to target ads and offers based on travel history, preferences, demographics, itinerary and other information voluntarily provided by the traveler.
- **Privacy-First Cookie Alternative:** Digital wallets act as a persistent consumer-controlled access to the consumer profile (and in the future, potentially travel history), offering the potential of replacing this function of browser cookies. They are also usable to present a profile in the real world, as in dining at a new restaurant (or in other non-browser contexts).
- **Security:** Digital wallets are becoming the leading mechanism for secure storage and decentralized peer-to-peer communication, incorporating identity and personal data protection and support for selective disclosure. They manage the use of personal data for the traveler and reduce *PII risk* for suppliers and intermediaries.
- **Reduced Cyber Liability:** The HATPro Traveler Profile introduces on-demand sharing of only immediately needed PII information, greatly reducing the need for intermediaries and suppliers to bulk-request and store sensitive personal data (such as payment card information).
- **Service Wallets:** Hospitality and travel service providers and intermediaries benefit from leveraging the digital wallet approach to interact with travelers, enabling decentralized services in a peer-to-peer network, which can work side by side with existing networks and applications.
- **Data Insights:** Digital wallets offer valuable analytics on customer preferences as well as actual hospitality and travel choices.
- **Peer to Peer/Interoperability -** For travel suppliers and intermediaries, the wallet enables **decentralized** peer-to-peer networking via next-generation secure protocols, and seamless and connected travel throughout the traveler's *itinerary*.

By adopting digital wallet technology, the hospitality and travel industry can continue to drive progress towards meeting the evolving expectations of travelers for personalization. They can also leverage the strong drive toward consumer wallets in other aspects of daily life.

8.4.2 Framework of the SSI Hospitality and Travel Digital Ecosystem

Figure 8.3.2.1 below describes how travelers (through their *personal service assistants*) interact with travel suppliers and intermediaries, and how these entities interact with each other. A critical difference from legacy approaches is that these communications are decentralized interactions among travelers, suppliers, and intermediaries. These interactions occur without the need for logins onto secure websites, the main purpose of which in legacy environments is to ensure that both parties have assurance as to each other's identity.

This ecosystem supports both current and legacy travel discovery and booking approaches (potentially with middleware support), and also self-sovereign identity-based approaches. In the pre-SSI environment, intermediaries were often necessary for connectivity between travelers and suppliers, as well as for content, transaction services, and other purposes. Suppliers and intermediaries in this environment were subject to

financial risks of holding personal information without the permission or consent of travelers, and potentially misusing it or having it stolen by malicious actors.

In a decentralized SSI ecosystem (Figure 8.1 below), peer-to-peer communication will dominate. Intermediaries are no longer required for connectivity but may still perform their other roles. Travelers (and services) can locate services using a combination of service registries, search tools, and introduction services (a form of intermediary).

Figure 8.1: Traveler/Travel Service Interaction Mesh

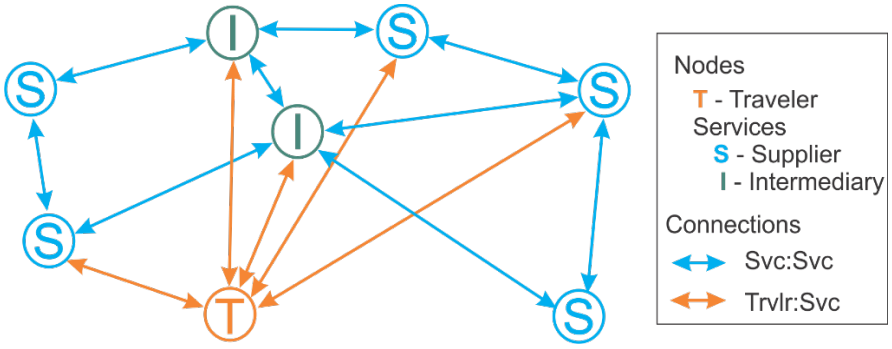
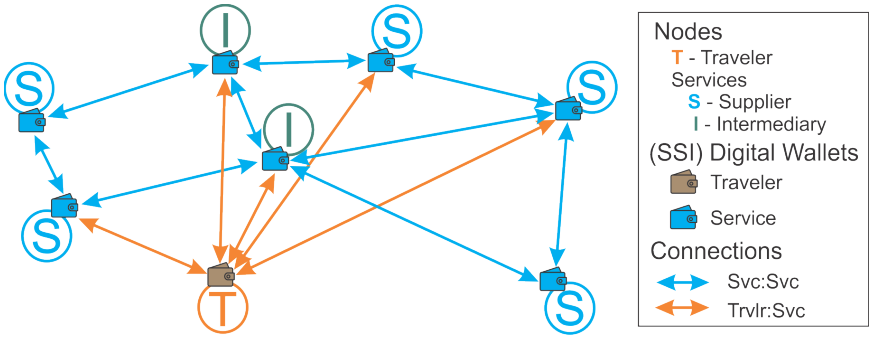


Figure 8.1 above shows just connectivity. Travelers' interactions with travel and other services in an SSI-centric approach are detailed in Figure 8.2 below, which depicts and highlights the role of the SSI wallet.

Figure 8.2: SSI Wallet-based Service Mesh

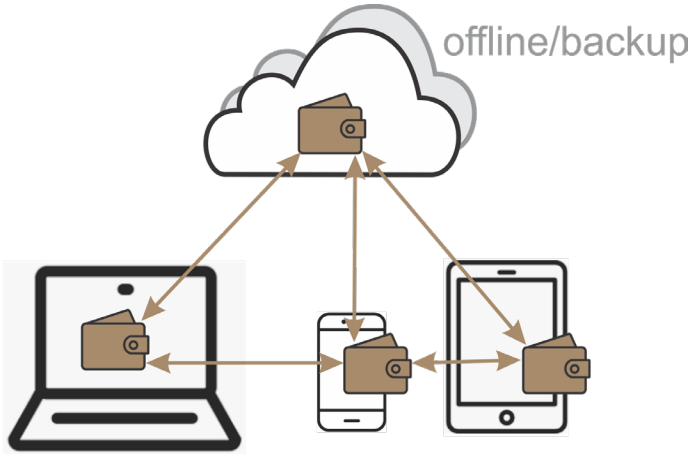


Digital wallets perform several roles and act as digital *agents* for the traveler, travel service, or intermediary. At a minimum, digital wallets must be prepared to send and receive messages between parties, but in various use cases they may also add other layers of functionality as required by the SSI ecosystem, such as payment services. Digital wallets have been produced by mobile device manufacturers like Apple and Google, by governments, by commercial enterprises, and others. Portability of personal information and services, plus interoperability between wallets, is critical to widespread adoption. It is being heavily driven by standards efforts such as the European Union's *eIDAS* wallet and the *Open Wallet Foundation*.

Conceptually, a traveler's digital wallet has functionality that sits on a traveler's phone or other personal device (accessed by or incorporated into one or more apps), interacts on behalf of the traveler with other people and services, stores and manages personal information, and supports synchronization across a traveler's devices as shown in Figure

8.3: Distributed Traveler Wallet below. Digital wallets primarily serve as the communication layer and personal data storage manager, but they may also incorporate functionality such as AI-based *personal service assistants* to interact at the application level.

Figure 8.3: Distributed Traveler Wallet



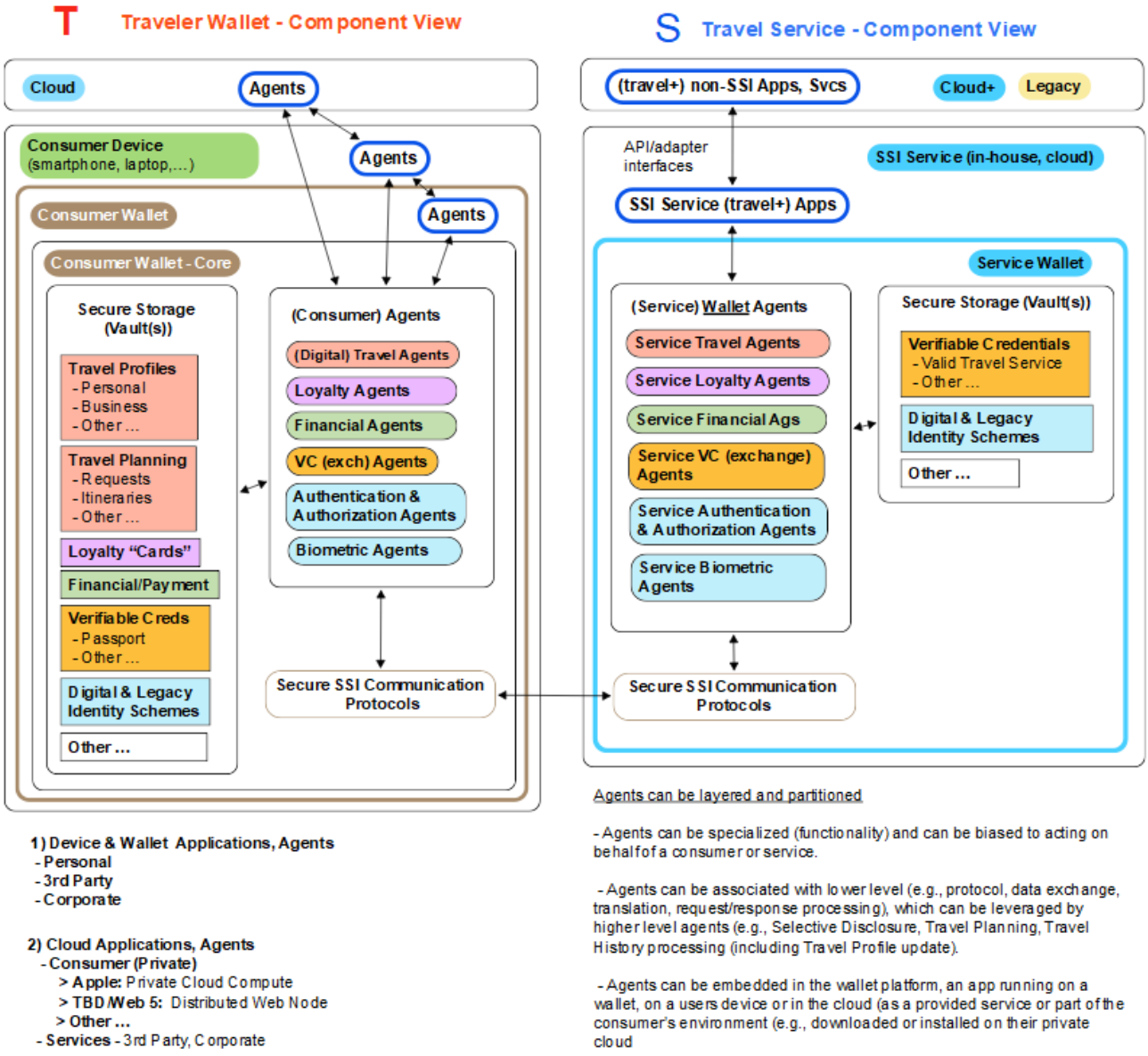
Suppliers and intermediaries will also have digital wallets, which may well be custom applications running in the cloud and interacting with various transactional services (including legacy), data stores, and other elements.

The core of an SSI digital wallet supports three key classes of components:

1. Secure storage (data vaults)
2. Secure two-way communication protocols, such as *verifiable credentials* exchange, *DIDComm*, and *Trust over IP's* Trust Spanning Protocol
3. Communications and data management agents and managers (including AI agents), which manage (a) interactions of travelers, suppliers, and intermediaries with data in the traveler's secure storage; (b) SSI protocols for packaging requests for, and managing responses of, traveler data; and (c) consent to share information, broadly or selectively.

Figure 8.4 below shows how various components of the traveler and travel service AI-enabled ecosystem are conceptually organized, and the role of digital wallets. The wallet design is generic but has been extended to support specific hospitality and travel use cases. The diagram reflects approaches already in broad use by emerging companies that are embracing the SSI model, including ongoing commercial wallet competitions being funded by the European Union and targeted for 2026 or earlier. These initiatives indicate significant market traction around wallet models such as shown below.

Figure 8.4: Consumer and Travel Service Wallets-Conceptual Design



Travel and hospitality related applications can operate within a traveler's digital wallet, as an application on a traveler's device, or from within a traveler's private cloud. In each case, interactions with suppliers and intermediary services are managed by the digital wallet. Suppliers and intermediaries have their own digital wallets that can interact with both the traveler's digital wallet and those of other suppliers and intermediaries.

The traveler's digital wallet is responsible for several key functions related to the traveler profile:

- Collecting and updating information about the traveler, whether directly from a user interface or through interactions with other applications, services, agents, or data stores

- Organizing and storing information, for example by remembering which profile values the traveler prefers to use in different travel contexts (business, leisure, alone, with family, etc.), enabling journey-specific overrides as needed, and requesting from the user any necessary information not already in the profile
- Assembling the *HATPro Traveler Profile* presentation for a specific interaction with a supplier or intermediary by extracting and organizing the elements and stored values appropriate to the use case, context, and other factors
- Obtaining the traveler's consent to share specific information with other parties, whether generically or individually (including selective disclosure, such as verifying that a customer meets age requirements without disclosing their date of birth or other unnecessary information)
- Various functions related to regulatory requirements, such as secure data storage and retaining a record of information that has been shared with other parties
- Responding to on-demand requests from suppliers or intermediaries for additional profile information or updates to existing information; and
- Responding to requests from suppliers or intermediaries to subscribe to ongoing updates to profile information.

The digital wallet service for a supplier or intermediary provides complementary components for a supplier or intermediary interacting with a traveler and their digital wallet (whether through a user interface, a *personal service assistant*, or through a human *agent*), as well as other services.

The exchange of data and credentials is used to establish trust between travelers and services, or between services and other services. This trust enables a traveler to know that a supplier or intermediary service is sufficiently legitimate and verifiable. It likewise enables suppliers and intermediaries to know that they are dealing with a sufficiently legitimate and verifiable traveler. "Sufficiency" in each case is determined by the participating parties in the specific context and may range from minimal to extensive depending on the use case.

Similarly, supplier and intermediary service wallets will include service agents that manage the traditional message flow and transactions for all aspects of travel, from dreaming and planning through booking, service delivery, and post-service feedback.

From a practical standpoint, key characteristics of digital wallets that contrast with traditional approaches (e.g., websites, mobile apps, mobile wallets, and physical wallets) include:

- Replacement of identity, entitlement, and payment credentials with digital, verifiable equivalents (*Verifiable Credentials*), stored in a data vault under the traveler's control (in a wallet and/or cloud location) and shared with their permission as needed.
- Replacement of the authentication and authorization processes from centralized and insecure approaches (e.g., user ID and password) with verifiable decentralized identity and verifiable data (e.g., *DID*s, *verifiable credentials*, profiles).

- Reuse of profile data across all participating suppliers and intermediaries, eliminating the need for the consumer to enter new or to update outdated information for each one individually; this should lead to lower friction and greater willingness of the traveler to provide more information, and should eliminate stale data held in provider profiles

- Enabling providers and intermediaries to avoid retaining most sensitive personal data, as they can obtain it on demand without storing it.

The wallet approach outlined above enables the traveler, supplier, or intermediary to prove their legitimacy as an actual person or company, and to provide not only self-attested information (such as in a traveler profile), but proofs that they hold required identity documents, memberships, licenses, certifications, payment methods, and the like.

A significant benefit is that payment credentials can be stored in a wallet, in which case they can also potentially provide direct financial settlement, without the need for suppliers or intermediaries to request (or to touch or store) sensitive payment information during the purchase transaction.

8.4.3 Requests for Profile Information

This document describes how a traveler (or a traveler's *personal service assistant*) constructs and presents their profile during a travel dreaming, planning, or booking transaction. This section briefly covers the important but not-yet-addressed process by which a travel supplier or intermediary would request information from a profile, either as part of an initial conversation or as a subsequent request for additional information.

Suppliers and intermediaries will use a *profile request* to ask for whatever information they would like. The HATPro profile request is a future project of the DIF Hospitality & Travel Working Group. In any case, the traveler (or their *personal service assistant*) will always control third-party access to profile information.

The profile request is intended to be used to obtain *self-attested* personal information, requirements, and preferences for travel. It may be used in conjunction with a request for other elements of the *traveler portfolio*, including verifiable documents and credentials such as passport or proof of employment.

Communications between travelers (or their agents) and suppliers and intermediaries (or their agents) are expected to be multidirectional. For example, a traveler may provide certain elements of their profile (along with other elements of a travel portfolio) during a booking request, and a supplier who is able to fulfill that booking request may respond with a request for additional information that may be needed to complete the booking and/or to personalize the experience. The traveler (or their agent) could respond with additional information, which may or may not meet the supplier's requirements. A back-and-forth can continue until both parties are satisfied or until one decides to terminate the communication.

A proposal for a "profile exchange protocol" (travel profile request/response) is a future deliverable of the HATPro project. The plan is for the protocol to build on existing and emerging standards for Verifiable Credential exchange protocols. The two leading candidates are:

- The *World Wide Web Consortium (W3C)*) Verifiable Credentials API v0.7

- The *OpenID Connect 4 for Verifiable Credentials Data Credentials Query Language (DACL)*

8.4.4 Profile Data Storage

The data model is adaptable to currently common database structures (e.g., relational, graph, etc.) for storage and will be expressed for presentation using JSON, with extensions (metadata overlays) for locale/internationalization; data privacy; sources, recency, and reliability of data; flagging of sensitive data; and support for selective disclosure of data via the travel profile presentation protocol and/or future extensions to the schema.

Storage and maintenance of travel profile data are outside of the scope of this document. The mapping of data to and from the storage schema and technology is the responsibility of wallet services and/or storage implementers. Maintenance requirements include support for portability of profile data across platforms. The exchange protocol is also outside the scope of this document.

8.4.5 Extensions

The travel profile is designed to support backward compatibility as well as extensions, such as adding additional personal data, travel requirements, or preferences including new categories, sub-categories, and possible preference values. However, implementers are encouraged to use and extend the existing schema and structure, as opposed to developing independent schemas, wherever possible. Proposed changes to the schema can be submitted using the process described in Section 8.1.

8.5 Application of Personal Information across Stages of Travel

Travelers want seamless hospitality and travel experiences across multiple components of a trip, such as air travel, lodging, and destination services. Demand occurs in multiple stages: dreaming, planning, booking, experiencing, and sharing.

Further to the summary discussion in Section 4 on how the profile works across the stages of travel, Table 8.5.1 shows the typical requirements for profile information in each stage, based on typical (but not universal) practices and requirements..

Table 8.5.1: Profile Elements vs. Travel Stages

Stage of Travel	Identity Info Needed	Preferences & Requirements	Verification Level	Typical Use Cases
Dreaming	None or minimal	Self-attested (e.g., mobility needs, dietary preferences)	None	Inspiration tailored to personal needs, accessibility filters
Planning	Anonymous, pseudonymous, or partial	Detailed preferences (e.g., aisle seat, hotel room near lift)	Low to medium	Comparing options, shortlisting based on needs

Stage of Travel	Identity Info Needed	Preferences & Requirements	Verification Level	Typical Use Cases
Booking	Full identity	Confirmed preferences (room type, flight seat)	High – verified ID & payment	Secure transactions, cross-provider coordination
Experiencing	Varies by supplier type	Real-time needs (e.g., accessibility, dietary, service links)	Medium to high	Service delivery, continuity across suppliers
Sharing	Optional or anonymized	Preferences & experience feedback	None, or verified purchase	Social proof, helps others with similar profiles

8.6 Sample Use Cases

The DIF Hospitality & Travel Special Interest Group developed and published several use cases between 2020 and 2024 that were designed to illustrate the potential value of SSI solutions for hospitality and travel. While some were written on the assumption of SSI concepts that have continued to evolve, and they have not been updated, they remain largely relevant in 2025. A summary of available use cases can be found in Section 8.7 below.

8.6.1 Discount Entitlement

This use case shows how a traveler that holds multiple affiliations or attributes (memberships, employment, student or senior status, etc.) can present credentials at the when requesting a hotel booking quotation, to ensure that they can get the best possible rate. It also illustrates how the hotel need not consult any third party or manually verify proof of age or membership, while still being able to verify the traveler's eligibility for fenced rates.

8.6.2 Travel Change and Disruption

This use case describes how a traveler who has multiple consecutive bookings can coordinate recovery when one of them results in an unexpected delay (e.g., flight delay) that then requires changes to others (e.g., hotel and restaurant reservations)

8.6.3 Verified Stay

This use case captures verified folio activity resulting from a hotel booking. It can be used by employers or travel management companies with proof of actual stays and amounts spent; it can also be used by social media (review) sites to verify that a review has been submitted by a verified customer.

8.6.4 Share Profile Elements

This foundational use case shows how a traveler can share selected elements of their profile with travel suppliers or intermediaries on a permissioned basis, both on an ad-hoc basis (push data to suppliers or intermediaries) or on an event-driven one (where suppliers or intermediaries have permission to receive ongoing updates).

8.6.5 Car Rental

This use case reimagines the rental car experience from booking all the way through to expense reconciliation, using SSI.

8.6.6 Bag Pickup and Delivery

This use case illustrates how SSI can be used to link a traveler to luggage that may be picked up at the origin city and delivered to a hotel in the destination city. While in draft form, it illustrates coordination of travel across multiple categories of suppliers, including airlines, hotels, and pickup/delivery services.

8.6.7 Future Vision for Travel Generative AI

This 2024 use cases illustrates how SSI can interact with agentic AI and large language models to deliver more personalized experiences.

8.7 Companion Documents

The SSI ecosystem is a rich and complex one, and it would be impossible to provide in this document all of the background material that may be useful to implementers. The DIF Hospitality & Travel Working Group has drafted several companion documents that may be useful, and expects to continue doing so. Some of these are relatively complete and mature, while others are in early draft form.

Additionally, certain documents published by other organizations may be very useful.

Because the documents are evolving and being updated, they are referenced and linked on the working group's website rather than listed here. You can find them at *https://htwg.identity.foundation*.