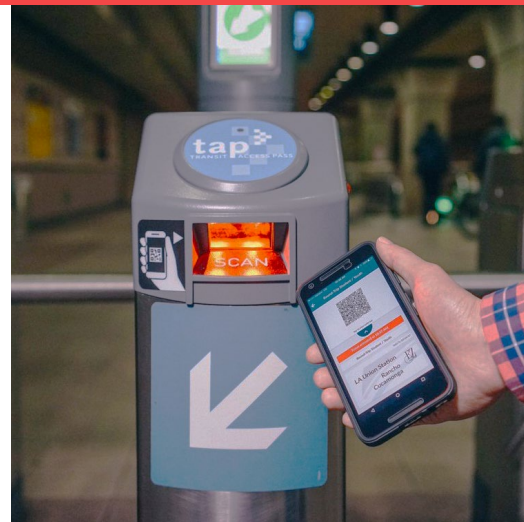


# A Guide to Fare Payments-as-a-Service for Public Transit

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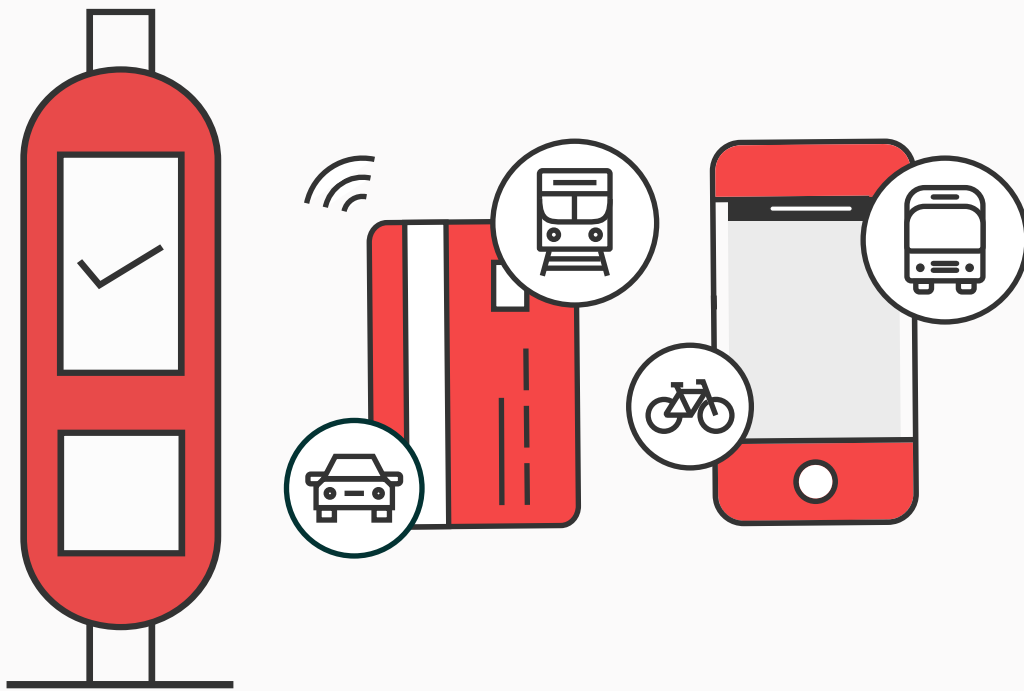
Why Agencies and Operators are Moving to Fare Payments Platforms



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## Selecting the Right System for Your Agency

The Ticketing or Fare Collection industry, has not dramatically changed in decades. Of course, new ticketing channels have come onto the market and had a significant impact, one of these, mobile ticketing, Masabi pioneered. Now we are helping agencies enable Mobility as a Service (MaaS) and moving them to Account-Based Fare Payments, so passengers no longer even need a ticket or to understand fares. Instead, they just tap and ride using a contactless bank card, mobile phone or smartcard.

Around the globe the Software as a Service (SaaS) delivery model has revolutionized industries, bringing leading solutions to companies of all sizes, quickly and cost-effectively. We expect software to be available on a PAYG basis, to update and improve all the time and to have the flexibility to move provider if we are unsatisfied with the service we receive.

However, this trend has not taken hold in the Fare Collection industry (mobile ticketing aside), which is still dominated by Automated Fare Collection (AFC) providers offering bespoke and customized solutions which agencies purchase and are stuck with for years (sometimes decades) using a Design, Build, Operate, Maintain (DBOM) model.

There are now multiple ways agencies can deliver fare collection technology. These factors are rarely discussed, as until recently there was not really the option to deliver core ticketing services via a Fare Payments platform. However, today this is no longer the case, so it's important to understand the different ways technology can be delivered to agencies, as well as the benefits and drawbacks these bring.

# Design Build Operate Maintain (DBOM) Automated Fare Collection Deployments

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A Design Build Operate Maintain approach to delivering a new fare collection system to an agency does exactly what it says on the tin. Each agency has to invest time and money developing what they need, and engage a supplier to build a system for them, in order to meet strict and detailed specifications set out in the agencies RFP. Then the system needs to be operated and maintained usually for a significant amount of time.

With a Design Build Operate Maintain model for system delivery, each agency purchases its own solution to fit bespoke specifications, often using bespoke software and hardware. As a result, these systems are expensive to build, maintain and update. This model comes with characteristics which we believe are no longer necessary.



## Bespoke Technology

Agencies pay more for their own bespoke system that is required due to the way it is procured. As a result, it's expensive to maintain and update.



## Lock-in

With DBOM Bespoke AFC systems you have a solution which is extremely expensive to deliver forcing agencies to use it for years, effectively trapping them until the contract is over (or even longer than that).



## Legacy Procurement

Complex, detailed and prescriptive procurements result in a bespoke and complex solution which is harder and more expensive to set up, operate and maintain.



## High Risk

Building a new system every time is far riskier than using code that is already proven and works.

These bespoke AFC projects deliver systems that become outdated far too quickly. There are a number of problems agencies face when purchasing and procuring systems this way. These include;



## Expense

Agencies are overpaying unnecessarily for fare collection by buying bespoke technology. They are expensive to set up, maintain and update. For agencies around the globe it is common for 10-25 pence of every pound spent on a ticket to go into paying for the ticketing system.



### **Slow to Deploy**

Fare collection deployments using bespoke technology can take years (and sometimes never even go live), meaning new ticketing technology for passengers takes far too long to get into people's hands.



### **No Updates**

When you have your own bespoke system, whether that be using infrastructure which is hosted on-premise or via an AFC provider, the software stays the same and doesn't benefit from regular updates, unless a significant amount of time and money is spent upgrading it, as each legacy deployment is its own instance.



### **Closed Solutions**

Bespoke systems tend to be closed in nature and unable to link with new systems and services (without incurring expense). This locks out agencies from new innovations and services for riders.



### **Not MaaS Ready**

Without serious investment, these systems are not able to enable MaaS for public transport through Practical MaaS or Account-Based MaaS.

# Subscribe and Go Fare Payments-as-a-Service (FPaaS) Deployments

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The ticketing industry is changing as more agencies move away from physically needing to issue tickets, to the convenience of using mobile phones and contactless bank cards, allowing riders to simply tap and ride. The future of ticketing is not about tickets anymore, it's about fares and payments using an account-based back office and the fare payments movement is leading this change.

Fare Payments-as-a-Service (FPaaS) offers a better approach to providing fare payment services for agencies. Instead of needing to run a DBOM project, agencies and operators can sign up to a Fare Payments platform and pay for services on a pay as you go/subscription basis. This enables agencies to deliver the latest 'tap and ride' innovations to riders extremely quickly and grow capabilities as they get released onto the platform. There are a number of Fare Payments platform characteristics which are important to mention;



## Subscribe, Go and Grow

Agencies can subscribe to a fare payments platform taking the complexity out of buying, managing and updating their fare collection system. Agencies can be live with a proven platform in weeks and grow capabilities as the service expands.



## Software as a Service Platform

Each agency uses the same platform configured in different ways for different agencies needs, meaning the system is far more cost-effective, as well as being quick to deploy and constantly being updated.



## Reduced Risk

When deploying a platform you know it will work as the code is proven and the infrastructure delivered through world class cloud-native suppliers.



## Needs/Outcome-based Procurement

By buying technology based on the outcomes not prescribing the solution or asking transit agencies to be a system designer, you can leave this to the vendor and purchase technology that helps you achieve the results you are after, holding vendors to outcomes using KPIs.



## Off the Shelf

By using off the shelf hardware agencies are able to operate a rip and replace maintenance model which means validation purchase and maintenance costs are reduced.

Fare Payments-as-a-Service holds a number of significant benefits for cities and agencies, these include:



### **Cost-effective**

Agencies are able to reduce the overall cost of fare collection as the cost of supplying the service are less as everyone is on the same platform. Services are usually available on a percentage of ticket sales basis with reduced capital, maintenance and update costs.



### **Speedy**

Once functionality is added to a Fare Payments platform, existing subscribers can use it after their next update. It also means new deployments or significant capability module improvements can be live in weeks instead of years.



### **Constant Updates**

With a Fare Payments platform, new updates are delivered regularly, meaning all agencies on the platform get shiny new functionality enabling them to keep up with the pace of technology change.



### **Mobility as a Service Enabled**

Fare Payments platforms help enable Mobility as a Service (MaaS) for public transit through SDKs and APIs linking tickets, fares and payments with other best-of-breed MaaS services. Agencies can also deploy Account-Based MaaS via Account-Based Ticketing capabilities. This enables passengers to use a stored value account, or contactless bank card, to tap across multiple operators with passengers charged 'best fare' after their journeys.



### **Open Integrations**

An open API centric architecture means Fare Payments platforms can link to existing (or new) systems and connect with other best of breed services. This helps make deploying FPaaS easier and allows the platform to connect with existing or new services, as required.



### **Future-Proof Roadmap**

With a roadmap of new features and capabilities a platform approach removes complexity and allows the Fare Payments experts to guide agencies on their ticketing journey, allowing them to concentrate on what they do best, providing safe, reliable and convenient journeys for riders.



### **Dematerialization**

Fare Payments platforms help move agencies away from legacy hardware and proprietary ticket issuance and riders from cash to digital channels using a mobile phone and contactless bank card, helping to reduce costs and increase convenience.



### **Cash Digitization**

Making sure passengers can easily exchange cash for digital credit is a crucial requirement for agencies. This can be achieved in a cost-effective way using a digital-first philosophy. For example; retail outlets can be enabled to turn cash into digital credit allowing riders to tap their tokens and travel around a transport network.



## Community Connections

Riders who pay for fares are only one section of a city's ridership. A Fare Payments platform helps enable all citizens to travel by facilitating entitlements and corporate programs, but doing this with a digital-first philosophy.



## Account-based Tap and Ride experiences

Fare Payments platforms deliver tickets to riders but they also facilitate the latest innovations for agencies by enabling account-based ticketing using mobile phones, smartcards or contactless bank cards - meaning riders no longer need to buy a ticket or understand fares to travel. The ultimate convenient passenger experience.



## World-Class Change Management, Support and Staff Services

All agencies have access to the following market-leading services teams to ensure successful deployment, support and growth of the platform: Onboarding Project Management, Staff Training, Account Management, Platform Support and Marketing.



## System Scalability

A Fare Payments platform grows with the agency, giving them all the sales capacity needed to meet rider demand. The service automatically scales up and down as required. If agencies see large peaks in demand, cloud-native platforms can handle the load as there is no requirement to add new physical servers as this is handled by the cloud provider. Instead, these are spun up automatically using tools such as AWS tools, Auto Scaling, and Elastic Load Balancing.



## System Uptime, Reliability and Redundancy

Cloud Providers (like AWS) have huge global coverage and a giant team of tech experts that allows them to build world-class server infrastructure that is proven to be both dependable and reliable. Fare Payments Platforms being fully hosted in the cloud are able to benefit from this. When deploying this way agencies get the advantage of world-class time, reliability and redundancy with the use of multiple data centres within each supported region.



## System Security

Agencies get access to world-class system security provided by cloud providers. They have built-in firewall, multi-factor access control and audit trail systems that are easy to configure correctly across all servers. Encrypted data storage capabilities ensure all data is encrypted in transit and at rest, ensuring compliance with data protection legislation. Extensive automation support allows the creation, configuration, running and tear down of servers to be fully scripted - which ensures that all security policies are set correctly every time, greatly reducing the opportunity for human error. Security assessment tools are enabled for rapidly spotting any vulnerabilities in deployed infrastructure so that they can be closed quickly.

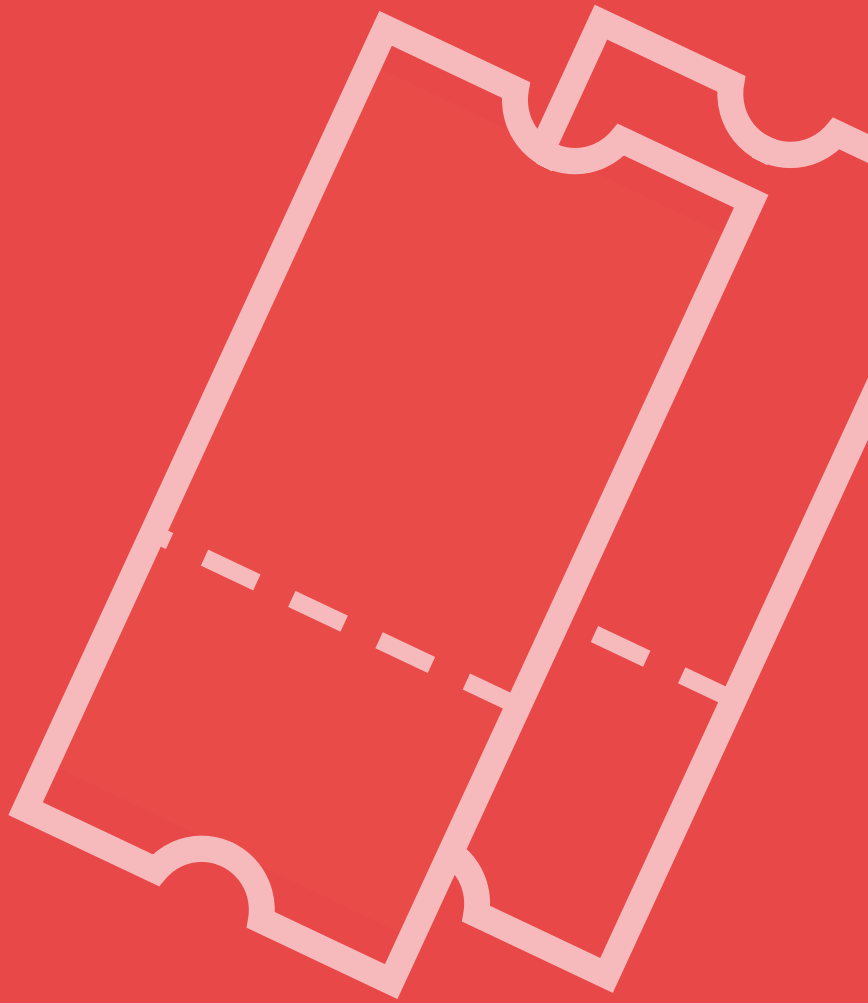


## Validation Comparison Table

| Taxonomy              | Bespoke AFC DBOM   | Fare Payments as a Service   |
|-----------------------|--|--|
| Industry              | Fare Collection/Ticketing/AFC  | Fare Payments  |
| Offering              | AFC Solution   | FPaaS Platform   |
| System Model          | Design Build Operate Maintain  | <b>Subscribe, Go and Grow</b>  |
| Technology Delivered  | Bespoke Solution   | <b>Platform</b> (configured in different ways for everyone).   |
| System Infrastructure | On-Premise (own system and servers) Cloud Hosted (own instance (system) hosted on cloud-based servers) | <b>Cloud-Native</b> (One platform, multiple instances, fully supplied by a cloud provider like AWS)  |
| Procurement           | Prescriptive / Solution-Oriented   | <b>Need / Outcome-Based Procurement</b>  |
| Updates               | Rarely - and come with costs   | Regular (as often as required or desired)  |
| Risk                  | High risk - due to Design Build Operate Maintain model - Each deployment is a new bespoke system       | Low risk- System ready live and proven with other agencies   |
| Cost                  | High upfront, high to maintain and high to update  | Pay as you go - lower up front, maintenance and update costs   |
| Change Orders         | Required to enable new 'functionality' and make money  | Required for large capability module enhancements otherwise you can grow with the platform (enabled by the right procurement and contract) |
| Product Diversity     | We do everything but nothing 'the best'  | Specialist and 'Best of breed' services, able to link to other best of breed services  |
| MaaS                  | Not MaaS enabled   | We connect with other best of breed services in a seamless and convenient way (Practical MaaS and Account Based MaaS)                      |

| <b>Taxonomy</b>                              | <b>Bespoke AFC DBOM</b>  | <b>Fare Payments as a Service</b>  |
|--|--|--|
| Contracts                                    | Long with systems live for years or decades                          | Short and flexible   |
| Integrations                                 | Closed (to 3rd party systems, apps and closed validation technology) | Open to integrate with 3rd party systems/apps and open validation infrastructure (Open API Architecture)   |
| Hardware                                     | Bespoke  | Off the shelf  |
| Maintenance                                  | Bespoke - requires specialist knowledge                              | Rip and replace  |
| Ticketing/Capability Roadmap                 | Capital dependant: none or client lead features and capabilities     | Roadmap of new features and capabilities for everyone  |
| Change Management Support and Staff Services | Depends on the vendor, contract and support infrastructure           | Market leading services teams for platform support, onboarding, staff training, account management, fare collection expertise and marketing                                  |
| System Scalability                           | Depends on the vendor and contract                                   | World class system scalability provided through cloud providers and available through running a fully cloud-native service   |
| System Uptime, Reliability and Redundancy    | Depends on the vendor and contract                                   | World class system uptime, reliability and redundancy provided through cloud providers and available through running a fully cloud-native service with what we have - proven |
| System Security                              | Depends on the vendor and contract                                   | World class system security provided through cloud providers and available through running a fully cloud-native service  |

| Taxonomy                               | Bespoke AFC DBOM   | Fare Payments as a Service  |
|--|--|---|
| Community Connections                  | The majority promote bespoke hardware and proprietary ticket issuance, preferring to issue smartcards and paper tickets. Available if purchased via a DBOM model | FPaaS helps enable all citizens to travel by facilitating entitlements and corporate programs, but doing this with a digital-first philosophy   |
| Account-Based Tap and Ride Experiences | Account Based Ticketing is available if purchased via a DBOM model   | Fare Payment platforms deliver tickets to riders but they also provide agencies with access to the latest innovations by enabling account-based ticketing using mobile phones, smartcards or contactless bank cards     |
| Dematerialization                      | The majority promote bespoke hardware and proprietary ticket issuance  | Moving agencies away from bespoke hardware and proprietary ticket issuance and riders from cash to digital channels using a mobile phone and contactless bank card, helping to reduce costs and increase convenience    |
| Cash Digitization                      | The majority promote bespoke hardware and proprietary ticket issuance  | Achieved in a cost-effective way using a digital-first philosophy. For example; retail outlets can be enabled to turn cash into digital credit allowing riders to tap their token and travel around a transport network |
| Modularization                         |  | Fare Payment platforms provide a back office that can be extended or purchased in a modular way connecting best of-breed services while enabling the benefits of a platform approach.                                   |



# Conclusion

DBOM bespoke fare collection systems are no longer necessary to deliver core ticketing services to riders. Instead agencies can choose a new way, one that focuses on providing the latest passenger experiences, reduces costs and can keep up with the pace of technology change.

DBOM bespoke fare collection solutions will still be highly attractive to agencies who have the capacity, both in expertise and funding, to deliver services to riders using this approach, but we strongly believe underserved agencies around the globe will see the benefits of moving to Fare Payments as a Service and utilising a Fare Payments platform.

From mobile to Account-Based Ticketing and enabling MaaS for public transport, Fare Payments as a Service will help increase public transit usage through improved accessibility, discoverability and convenience of services. We believe this, together with enabling more money to be put back into running transit services and increasing data insights, will help agencies attract more people to ride public transit, helping to reduce congestion, making our cities better places to live, work and visit.