



## Engaging communities to encourage behaviour change Digital Social Market

A SHARING CITIES PLAYBOOK



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Introduction

This playbook is produced by Sharing Cities, a major international smart cities project addressing some of the most pressing urban challenges cities face today across ten replicable solutions.

## WHAT IS THIS PLAYBOOK?

This guide shows how the three Sharing Cities' lighthouse cities applied the digital social market (DSM) in their city context. Milan, Lisbon and London each used DSM as a citizen engagement tool to encourage positive behaviour change. This sums up their experiences so that other cities may employ a similar solution. The playbook will:

- Help you understand what solutions were tested in the Sharing Cities lighthouse cities and what urban challenges they address.
- Help you understand the value proposition of a DSM, in economic, social, environmental, and financial terms.
- Offer practical guidance so city officers have all the information they need to rollout out the solutions in their city, including:
  - 😼 Strategic and technical design
  - Ownership structures
  - & Business models
  - S Financing options and routes to market
  - Stakeholder engagement and communications
  - Now to safeguard citizen interests
  - Monitoring and impact assessment
- Answer common questions and concerns you may have about these solutions.
- Sum up the key challenges, recommendations, and lessons learned from testing these solutions. Other cities can then use these insights to guide their own schemes.

### TOOLS & RESOURCES

In addition, we have collected a range of tools and templates to support your development and delivery plans. If you'd like the source files for these tools, contact Sharing Cities: pmo@sharingcities.eu or Future Cities Catapult at: francesco.marchet@futurecities. catapult.org.uk



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Sharing Cities tested a range of technologies across various sectors, including mobility, data platforms, infrastructure, and energy systems. Many of these technologies complement each other. Some even directly work together to produce better results. This table shows how different Sharing Cities technologies relate. You may find it useful to cross reference materials in other playbooks.

### RELATED TECHNOLOGIES TESTED IN SHARING CITIES

	e-bikes sharing schemes	l   e-Car Sharing 	e-Vehicle Chargers	l   e-Logistics 	l Smart Parking	l Digital Social Market I	   Building Retrofit 	Sustainable Energy Management Systems	   Smart Lampposts 
e-bikes sharing schemes	×		~			✓			
e-Car Sharing		×	✓			$\checkmark$	$\checkmark$		$\checkmark$
e-Vehicle Chargers	$\checkmark$	$\checkmark$	×	$\checkmark$	$\checkmark$		$\checkmark$	$\checkmark$	$\checkmark$
e-Logistics			✓	×	$\checkmark$				
Smart Parking		$\checkmark$	$\checkmark$		×				
Digital Social Market	$\checkmark$	~				×	$\checkmark$	✓	
Building Retrofit		$\checkmark$	$\checkmark$			$\checkmark$	×	$\checkmark$	
Sustainable Energy Management Systems			~				~	×	
Smart Lampposts		~	~						×



## WHO IS THIS GUIDE FOR?

We created this guide with three key audiences in mind:

City officers, governments and public authorities who are considering or are in the early stages of rolling out a Digital Social Market, or similar service. They want to understand the strategic opportunities, business models and governance choices around such a framework.

### LIGHTHOUSE CITIES



Lighthouse city members of Sharing Cities looking for a way to sustain their DSM strategies in the long run.

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Follower cities in the Sharing Cities network who may be in the process of developing their DSM strategies.



## SHARING CITIES: A TESTING GROUND FOR INNOVATION

Sharing Cities aims to change forever how we think about the role of digital technology in our cities. We want to clarify how we all can benefit from and contribute to this transformation process. Led by the Greater London Authority, we have run 10 smart city projects in each of our lighthouse cities of Lisbon, London, and Milan. Our aim is to test how innovative technological solutions can address some of the most pressing urban challenges cities face. These include in mobility, energy efficiency, data management, and citizen engagement.

Our vision is of a more agile and more collaborative smart cities market. This would dramatically increase both the speed and scale at which we can rollout smart solutions across European cities. We wish to engage citizens in new ways too, so they can play an active role in transforming their communities. We want to share solutions, practices, experiences and results, and improve the way we manage city data and infrastructure. By doing so, we will co-create a better living environment and reduce our energy costs.

#### **About Sharing Cities**

<u>The Sharing Cities 'lighthouse' project</u> is a testbed for finding better, common approaches to making smart cities a reality. By fostering international collaboration between industry and cities, it will develop affordable, integrated, commercial-scale smart city solutions with high market potential. Project partners also work closely with the European Innovation Partnership on Smart Cities and Communities (EIP SCC01 – Lighthouse Projects). In addition, Sharing Cities offers a framework for citizen engagement and collaboration at a local level. This strengthens trust between cities and communities. The project draws on €24m in EU funding. It aims to trigger €500m in investment and have a long-term impact on the smart cities' marketplace.

Part of the European Horizon 2020 programme, Sharing Cities includes 34 European partners from across the private, public and academic sectors. Together the group works to deliver near-tomarket solutions, such as:

- Smart lampposts integrated smart lighting with other smart service infrastructures (electric vehicle (EV) charging; smart parking; traffic sensing; flow data; wifi etc).
- **Shared e-mobility** a portfolio of linked initiatives supporting the shift to low carbon shared mobility solutions. Specifically: EV carsharing; e-bikes; EV charging; smart parking; e-logistics.
- **Integrated energy management system** rollout system to integrate and optimise energy from all sources in areas of cities (and interface with the city-wide system). This includes demand response measures.
- Urban sharing platform (USP) a way to manage data from a wide range of sources including both sensors and traditional statistics. The platform uses common principles, open technologies and standards.



- **Digital social market (DSM)** an approach to encourage citizens to engage with and use sustainable smart city services. The aim is to shift perceptions and change behaviours through rewards in exchange for continued and improved citizen engagement.
- Building retrofit install energy efficient measures in existing public, social, and private building stock. This will link to other solutions like the integrated energy management system to optimise energy performance.

#### Packaging tested smart city solutions across Europe

Sharing Cities has captured the experiences from deploying these solutions and lessons learned along the way in a series of playbooks. Our programme partners and other cities can use this research to reduce barriers, speed up processes and ensure a consistent approach.

We want to provide a set of 'packaged' mobility solutions and document the replicable parts of a smart city solution. This will help cities and suppliers better navigate the challenges of delivering fresh, cross-sectoral solutions to improve the urban environment. Making these solutions both cheaper and quicker to come to market will boost the confidence of buyers and investors alike. Our playbooks use the EU Smart Cities Cluster's emerging 'packaging concept'. This captures (I) societal needs (II) technical components (III) business models and financing options. This one is concerned with Digital Social Market.

For more information on the EU Smart Cities Clusters projects, visit EU Smart Cities Information System (<u>SCIS</u>).



# 1 The Digital Social Market: Engaging communities to positively change behaviour

### Challenge

The way we move around and live in cities is changing. Globalisation and climate change are altering our city landscapes. It's becoming vital to have a closer dialogue between city authorities, local businesses and citizens. That way stakeholders can better work together to address these challenges in a joined up fashion. Cities must lead on green issues, but must recognise the role their citizens can play in this too. A sustainability challenge is also a social challenge.

Big changes are needed to solve problems around air quality, material consumption and energy use (to name but a few). To do so, requires an engaged society acting on behalf of all its communities. The DSM model can help you explore and experiment with citizen participation.

City authorities and businesses must recognise this cannot continue. We need to create the conditions for communities to act differently. To There are parts of the western world where we now "use more energy and physical resources in a month than our greatgrandparents used in their whole lifetime." John Thackara, Design Theorist

solve these problems requires a system level change across multiple domains. As such, the onus is on governments and industries to act in these areas. DSM can however support citizens to take part in this journey. This paves the way for both a top down and bottom up approach to urban resilience. In addition, DSM offers a useful means to help improve take up of other smart city services. One way to boost adoption rates is to use incentives to promote and gamify the existing services using a DSM. From the viewpoint of city governments, DSMs can help authorities to promote certain behaviours amongst its citizens. For example, shopping locally, using greener transport and reducing energy use. This approach can also help cities to experiment with their strategy and messaging around sustainable incentivisation.





### DSM – What is it?

The Digital Social Market is a new approach to citizen engagement developed by Sharing Cities' partner, Future Cities Catapult. It aims to shift perceptions and encourage behaviour change by using rewards. Ultimately this will boost uptake of sustainable smart city services.

A DSM is a versatile tool and includes both online and offline components (so online is used to trigger behaviour change offline). Both parts have been developed using a range of service design systems. At its heart, a DSM is a mobile application designed to enable digital and physical interactions between users, services and service providers.

There are many examples of incentive-based digital markets today<sup>1</sup>. However, the Sharing Cities approach is unique as it aims to form a value chain which places social and citizen needs first. The DSM is driven by the city's needs, to foster meaningful connections with citizens and to lead with change, not profit. The end result of this approach is a set of services which support a stronger connection between city and citizen.



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Lisbon's DSM community 'Sharing Lisboa' launched in November 2018. It connects the city with local businesses, citizens, and a third-party beneficiary to address sustainable behaviour change. The beneficiary in this case was a network of schools who use the platform to compete for city funding. This has enabled them to green their school infrastructure.

Three schools competed for a share of a €30,000 prize, and sustainability-focused 'packages' of equipment or services to help improve their energy efficiency.

Lisbon, was the first European capital to subscribe to the new Covenant of Mayors for Energy and Climate. It wants to be a leader in the way in renewable energy production, and is the '2020 European Green Capital'. Lisbon's greenhouse gas reduction targets are far more ambitious than national targets, and the city aims to lead by example. With growing public awareness of these issues, it's the perfect time for Lisbon to develop complementary behaviour change services.







SharingMi is a social media platform which brings together Milan citizens who care strongly about sustainability issues. It encourages users to share stories, experiences and ideas with other members to grow awareness and stimulate action around urban challenges. The aim is to inspire citizens to think and act differently. The community seeks to reframe and normalise sustainability and encourage users to reflect on their own behaviour and make changes.

On the platform users can find lots of different ways to get involved, from volunteering to eco events, tips to reduce waste etc. Users can also post questions or direct other members to sustainable projects happening in Milan. They can celebrate their actions with the SharingMi community (for example, they may have repaired something, carpooled, cycled somewhere or saved water too). By self-reporting and sharing solutions, members can help spread knowledge and make behaviour change compelling and fun. In exchange for stories and ideas, users earn 'claps' which are converted into points. These can be redeemed at various local businesses in Milan and global businesses within the app. The app also has 'Reward Partners' offering sustainable goods and services (such as clothing and accessories, fitness and wellbeing classes, groceries, eco holidays, eco cosmetics and cafes and restaurants). Users can boost their points by connecting their SharingMi account to third party apps which measure activities like walking, cycling and inhome energy management.

Finally, the service has a 'challenges' section where citizens can join offline activities designed to stimulate interaction with different users and new environmental opportunities in Milan. The city, can for example, launch a challenge inside the SharingMi community to amplify a sustainable initiative or policy.

### Scarica l'app di greenApes e seleziona Milano



"An online stimulation triggers an offline interaction. You interact through the app, but it encourages you to go to physical places such as events, shops, meetings, screenings and so on." Milan city partner





In London, the DSM was implemented in the Royal Borough of Greenwich. It focused on 'residential demand side response' (DSR) to mitigate electricity disruption and power outages, by reducing peak consumption. It does so by simulating communication between energy producers and networks, and energy consumers (residents), via an aggregator. When network demand is high, consumers are asked to reduce their use for a temporary period of time. This helps to ease demand on producers and reduces strain on the network. In return, consumers are financially compensated. They can choose to keep this for their own use or gift it to local charities and community projects.

Supporting energy networks to smooth the peaks in consumer energy demand offers environmental and economic value. This means that network reinforcements to provide capacity for only the highest peaks can be deferred, as well as reducing the need for more expensive and environmentally damaging peak energy generation. In the longer term, it will enable them to develop predictive modelling capabilities so as to maintain consistent electricity supplies. Currently, to respond to consumer needs, energy producers are required to maintain emergency backup supplies. This is expensive, bad for the environment and costs the UK bill payer around £1bn/year. Approaches such as DSR can help to reduce this.

In Greenwich, local households were invited to join the Greenwich Energy Hero community, community, operated by Kiwi Power. This DSM rewards users who adapt their in-home electricity use when they receive a notification asking them to use less electricity for a short period. Users earn points by changing their habits in the home when they get a notification advising them to use less electricity over a certain period of time, or to postpone using appliances such as washing machines, kettles, or hairdryers. In exchange for their action, users receive which can be converted into a voucher for personal use, or, donate to a charity within the local community. They can also access information on their live energy use, get energy saving tips, and review their 'hero status'. The latter Is a way to track and progress through the platform's point thresholds.

After they sign up to the service, residents are visited by a Groundwork London 'Green Doctor' (a home heating and energy efficiency specialist). They install a small electricity monitoring device (CT clamp) to the resident's electricity meter. A separate wireless module communicates a reading to the household's wifi hub. These devices communicate with the Greenwich Energy Hero app. As the second generation of smart meters becomes common, users should be able to connect through their smart meter removing the need for a separate metering device.



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# 2 How do I know if a DSM is something my city needs?

## DSM as a way to incentivise behaviour change

## From the start, you must ensure that the DSM you are designing is human-centred and inclusive.

The digital divide remains a significant symbol of inequality and often excludes those in greatest need of public services. As such, it's important to consider the ethical direction of your city services before you 'lock in' design and development decisions. Each of our three city DSMs incorporates opportunities to engage with harder to reach groups (such as older people). However, it includes them only as a recipient of the service (for example through reward donations), not as participants. There is a big difference. The potential for exclusion is indeed an unintended side effect in the growth of smart city services. However, we must keep exploring ways to bring 'everyone' along on the journey.

Digital platforms can be blunt instruments for engaging citizens. For instance, energy management services may group users by household or dwelling size when comparing results. But your reward mechanisms must drill further down. A four-bedroom house with five occupants and young children will have very different energy needs to a similar property with one occupant. It's important that we reward people fairly, not just those that can afford expensive technologies for energy management. Additionally, if your service allows competition between different institutions (such as schools), how do you ensure they share the same sociocultural influences? Is one school located in a more affluent area? Can it access better quality services? Does it enjoy better connections with its local community networks? If yes, then it will likely come out on top when pitched against a school from a poorer community. This means that your DSM may amplify the effects of inequality.

#### The gamification of city services and their ability to affect behaviour (in the long term) is a new field

The gamification of city services and their ability to affect behaviour

(in the long term) is a new field. You should consider the counter arguments around how well reward mechanisms and incentives work when developing (and baselining) your intended behaviour changes. A DSM does not rely on incentivising users alone, but it is a key factor in the approach.

"Studies in the last 30 years have conclusively shown that people who expect to receive a reward for completing a task or for doing that task successfully don't do it as well as those who expect no reward at all."<sup>2</sup>



## The rise of so called 'surveillance capitalism' or 'reputational economies' can make city systems more autocratic.

Shoshana Zuboff describes surveillance capitalism as, "a new phase in economic history in which private companies and governments track your every move with the goal of predicting and controlling your behaviour. Under surveillance capitalism you are not the customer or even the product: you are the raw material".

This idea has been discussed widely in the press.<sup>3</sup> Citizens who are not deemed to act on behalf of the 'good' of the city are gradually ostracised from society. This is done through the denial of access to a range of city services such as public toilets, train or air travel

tickets. The risk of this approach is that 'good behaviours' are a subjective and ever-shifting metric. It also has potential to support a completely top-down approach to defining values.

Linked to this, is a risk of misunderstanding the conundrum of personal identity in digital platforms. "The premise being that when interacting with digital social platforms, humans tend to filter their true identify. This can jeopardise their digital credibility amongst peers." Cameron Tonkinwise

Efforts to improve the connection between citizens and 'digital public services' can be viewed broadly as a good thing. But there are a growing number of instances where our public digital participation can come unstuck.

This is particularly if these services are owned or rely on databases within local authority digital boundaries. Sarah Holder explores this idea through the "unsettling rise of urban narc apps".<sup>5</sup> She discusses

'public services apps' like San Francisco's 'Safe Lanes' where citizens can digitally share photos of motor vehicles blocking cycle lanes. The aim is to improve road safety, ensure drivers are fined or have their vehicles removed and publicly shame offenders.

As Holder points out, there are however inherent risks that these services will be linked to other databases. This may lead them to be used to publicly judge citizens in other contexts way beyond that of the initial parking offence, for example:

"...once that information is collected, the layers of power get much more tangled... What if that car blocking the bike lane belongs to someone whose immigration status is uncertain, and their license plate information—and location—is used to speed their deportation?"

Such examples can act as a compass for navigating your strategic objectives and their relationship to power and governance in providing smart city services. It is highly unlikely that city services would be developed intentionally to create civic unrest. However, through data collection, sharing and processing, these services may become removed from their original objectives.

## The DSM approach may be framed as a luxury for cities or a 'nice to have'.

This is because cities are often more focused on direct interventions (for example, "We want to reduce particulate matter by 10% in a year"). Services like the DSM, are seen as being less tangible or focused. As a programme, we will continue to monitor and explore this further over the months ahead.



## **Deploying DSM in the lighthouse cities**

Following the launch of each city's DSM, we reflect on some of the successes, challenges and lessons learned in the last two years. We have grouped these into seven categories: localisation, onboarding, maintenance, business models, governance, city and political mechanism, partner relationships.

#### 1. Strategic approach

You must design a service people will want to use. If you ignore this or assume what your users want or need, you risk undermining your project goals. It's essential to create a narrative around your service "that people can love and get behind". This is a bigger design priority than setting your rewards. Equally, citizens "Whilst the discussion around behaviours is crucial, it's also important to keep the fun factor in mind (remember, you must provide a service that people want to be a part of). Behaviour change is great, but for it to stick, you must create a compelling service around it." Milan project partner

need to understand what impact taking part will have and how it will improve city life. Finally, the service must have a 'fun factor'. If a DSM is too technical, jargonistic or judgmental, users won't like it.

**Keep your proposition and your success metrics simple**. One key challenge we saw in each team was agreeing a definition of the DSM in their city context. By designing for something completely new, it was hard to bring to life. In some cases, the definitions became too abstract to take forward.

#### Co-design can help you define and prioritise your DSM definitions.

You need the time, resources and cross-team alignment to ensure you get the best results and make good progress. Don't be tempted to shorten or bypass this stage, particularly if partners haven't had the chance to fully understand its importance.

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Use and exploit your existing network from the start of your service planning. Your network is your biggest recruitment asset. Split your activities across both digital (social media) and physical recruitment (events). Reach out to local groups and individuals at community level, but also your wider city (and perhaps district-level) organisations.

**Invest time in mapping your network and look for gaps**. How can you make it easier for others to promote your message? Look for complementary services, charities and community groups. Build relationships with them, as they need to know and trust that your service will help people and understand its benefits.

**Budget more than you think you need**. The experience of all our cities shows that finances can be one of the biggest challenges to your project. Don't underestimate the scale of recruitment needed and the expense of retaining resources. Do plan early and consider unforeseen events that might be costly.

#### 2. Onboarding

All teams faced challenges linked to preconceived ideas of the

**service**. In Greenwich, participants felt that the service was "too new and something that I won't understand". This was despite efforts to ensure ease of access and simplicity during co-design work. This feedback highlights the value of ensuring that project partners

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appreciate how complex new services can be for their users. This is particularly the case for groups like older people, and those with a disability such as visual impairment. We must experiment with messaging to better engage vulnerable and excluded user groups.

**Consider the range of services which may be available for inclusion into a DSM platform**. If there are only one or two (like bike sharing or EV hire), think about adding further services later. These could include water, waste or energy management, or access to public transport. The broader the service offering, the more likely it will appeal to users.

**Each city found recruitment a challenge**. This may be linked to local resources being spread too thinly to balance all the recruitment activities. Examples include running social media, attending events and exhibitions, managing the technical and delivery needs of the services.

Including reward mechanisms and partners is a way to engage and should be a key part of the offer. Firstly, it's vital to stay focused on the service's key target user groups. You must ensure any shops recruited into the service reflect users' aspirations and desires. Secondly, aim for a balanced distribution of rewards across the city or demonstrator area. If rewards are too far apart, they're unlikely to be fully used. This will in turn frustrate the reward partners in the service. Thirdly, consider the rewards on offer. For example, 10% off a cup of coffee won't appeal to users who must travel out of their way to claim it. By contrast, a 10% discount on a holiday or experience, may prove more attractive.

Don't surreptitiously promote or increase environment harm through a DSM reward. You must consider these from an ecologically and socially responsible position.

#### 3. Assets: digital and physical

Assets can be anything from flyers or websites to promote a service with end users. They are a key part of bringing internal teams and sponsors on board with your goals and the 'look and feel' of your offer.

Having tools, samples, diagrams and prototypes people can hold, see and critique is vital to service development. Wherever possible, always be prototyping and have designers on hand in meetings and workshops. Tools and props can be a great way to gain support.

It's important to get your messaging right. Leading with negativity or abstract themes like CO2 emissions or planetary boundaries will just make people anxious and defensive. Instead, lead with a positive message which reinforces the 'power of small actions'. Equally,

"When we first presented the explainer video to people, the feedback was great. People wanted to know why it hadn't happened sooner." Lisbon project partner

as our previous research shows, you shouldn't just share information or statistics with people. Try and make your content interactive or future focused.

Social media may be more effort than it's worth, but if done well, the benefits can be huge. Each of our partner cities struggled to make social media work for them. Despite having assets, multiple accounts, video content, case studies, boosted posts etc, impact and conversion rates to services were relatively low. It's worth questioning whether the team has the time or network connections to justify all the effort it takes. See these platforms as tools to raise awareness, rather than recruitment tools. Use them to gain your citizens' attention and build trust with your community.



#### 4. Maintenance

**Digital platforms can have high drop-out rates**. As such, it's vital to invest resources in developing organic growth across the network. Try to make sure your service promotes and enables some form of peer-to-peer connection. It may not be appropriate for your service to connect users directly. However, when deployed with the right purpose, social media is a great way for users to share views, ideas or concerns with others. You should also moderate important posts.

**Don't limit a service to digital interactions**. It must exist and function 'beyond the app'. Use online triggers to encourage offline interactions. The app can encourage users to go to physical places, events, shops, meetings and screenings. Having a greater face-to-face capacity will also enable service providers to speak to their users, to hear their ideas and frustrations first-hand. Finally, it's important to acknowledge that the platform should never stop evolving – it must develop or risk failure.

## Financing and managing digital platforms will incur continuing costs.

Just as mobility or energy infrastructure requires continued investment, so do digital engagement services. This is especially if they are easing network pressure elsewhere in the system (for example by reducing congestion or energy use). "Co-design never stops. Once you deliver a service to citizens, you must be there. You have to listen, you have to improve, you have to match citizens' expectations. Technology in cities is changing rapidly. A service that was innovative in year one will be outdated in year three if it isn't refreshed." Milan project partner

#### **5.** Technical successes and troubleshooting:

**Challenges have emerged where there have been data requests between different teams and organisations.** In some cases, these were technical barriers, but in others the cause has been security and GDPR legislation. The result is a delayed recruitment process and a drop in service quality. You should test your service with users well before you launch. This will help you build a better picture of how it works and create some technical fixes. Introduction

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#### 6. City and political mechanisms

Get every city body and organisation involved from the start so they understand the DSM is not the responsibility of one department. Rather, a DSM is a matter for everyone - for example, air quality, communications, waste, water, economics etc. Think about how best to get their support. Remember, that not all teams will be as prepared as others. Work with them from the start to gain their buy-in. Equally, once you have the city's full support, ask senior people to speak to others at the same level. This will reduce delays.

Many partners don't want to provide data and there's little a city can do to compel them. For a DSM platform to scale, review how contracts are awarded and managed in your city. As several examples found, to encourage use of the DSM, it would have been helpful to have datasets from private sector city suppliers. This problem is compounded by the length of these contracts and legacy systems which may be incompatible with new technologies. To fix this issue, the way city service contracts are set up needs to work differently.

Having a city's name on the service can give newer services authenticity and assurance. However, it can also cause challenges. It may for example leave the service exposed to certain events in

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political cycles (such as the pre-election period). This can restrict the city's ability to promote services due to regulations around impartiality. In addition, each of our cities faced bureaucratic processes and slow decision-making which caused delays. This risks users leaving the service due to a lack of new content. Make sure your PR and communications teams factor such events in when planning your service delivery. That way you won't try and launch or share important changes or information at these times.

#### 7. Partner relationships:

**Trusted partners: You must build the correct project teams from the start**. It's important to identify the key roles and responsibilities, as well as the boundaries of these roles, to everyone on the team. Where possible, you should also try to work with partners that share your sense of civic responsibility. The aim of your DSM, above all, is to support and improve the lives of your citizens. If your partners share this sentiment, it will make design and delivery much easier.

**Clear communication and decision-making chains**. It's important to maintain a strong working relationship across project partners and delivery teams. This is most relevant where different organisations are responsible for different things (for example, user research, app development, PR and communications). Additionally, how long design and deployment takes will evolve over time. This means that individuals within teams may come and go or new organisations may be brought in. Invest time in managing these relationships and ensure that partners stay in touch.

**Spend time developing the dynamic between all team members, to keep all aspects of the service development and delivery connected.** When different teams look after different aspects of delivery, timeframes can often change, and interdependencies can be missed. For example, if app development decisions are made in isolation from the wider service, there will be gaps and misalignments between the two. The result may be tensions between teams which impact the service for end users. This is often related to a misunderstanding of the roles and responsibilities and decision-making trees amongst the teams.

#### LONDON

In Greenwich, we learned that not all properties were suitable to take part in the pilot. In many flats, but in particular in new build flats, distances or dense concrete interrupted the signal between the electricity meter and the loT devices broadcasting a data signal. In some cases, a participant's wireless network name was too long, stopping the equipment from syncing properly. In others, the electricity mains cable (required for installation) was inaccessible. This has led to installations being abandoned and stopped households from participating. The team felt it would be too much to ask for photos of electricity meters before installation. Instead, new build properties have been excluded.

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## 3 What is the value of a DSM service? Understanding the benefits and impact

The Digital Social Market is a way to engage with and encourage citizens to use sustainable smart city services. The aim is to shift perceptions and change behaviour by offering rewards in exchange for citizen participation.

What values and benefits the DSM will bring, depends on how it is applied and the city-context. There are two areas where the DSM can add value to the 'vision and mission' of city authorities:

#### 1. Activation and integration are key to this approach.

The DSM can be a key enabler of other smart city services like cycling and EV use. It has potential to raise awareness and speed up the rate

at which citizens adopt these services. It can also help industry and business reconsider their role and market proposition in the 'city' and 'community' context. This can encourage them to think and act in a more socially and environmentally responsible way. Life in cities is changing fast. The DSM offers a means to experiment with how we engage around these changes.

"There has to be a cultural shift in lifestyles and what is meaningful as a person and as part of a community. That means taking care of your environment at a local level and a global level. It's good if the city understands this topic to raise a deeper sense of awareness and cause a cultural shift in social norms." Milan project partner

### 2. For cities to secure a sustainable and inclusive future, city authorities must lead on green issues.

Our lighthouse city partners' experiences shows citizens can be relied upon to participate and there is a motivated critical mass ready to contribute. They just need to know how and where to focus their energy, and see the impact of taking part. The DSM is a powerful tool to harness and steer this commitment.

The DSM is a citizen engagement tool designed to encourage behaviour change and support a city to achieve its broader goals. These depend

on the nature of the challenges your city is trying to address, and will differ from city to city. Impact mapping (see Implementation Toolkit – Exploring Opportunity) is how you identify the potential economic, environmental and social impacts of a project or intervention. It allows stakeholders to define what problems a city is trying to solve and why. It's also a chance to detail how key activities will lead to the desired impacts – both short and long term. The main parts of an impact map will link with the development of a city's business model and governance structure.

"The SharingMi community empowers citizens to have a voice across a city-wide platform connected to the municipality. Users can share experiences and ideas to stimulate positive social and environmental behaviours – without these communities it would be hard to have this interaction." Roberto Nocerino, Sharing Cities project manager, Comune di Milano

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The impact mapping process will allow you to build a list of benefits from the viewpoint of all the stakeholders involved. When you create a logic model (see *Implementation Toolkit – Exploring Opportunity*), consider citizens first in terms of benefits, as the DSM is a citizen-centred approach. This does not however exclude the benefits to other stakeholders, which indirectly benefit citizens. For example, a more effective and efficient public health campaign run on a DSM could save taxpayers' money.

Studies show 2GW of reliable demand side response (DSR) participants could have reduced the wholesale cost of electricity by £30m in 2015 if called upon for the top 100 half-hourly periods of greatest electricity demand on the grid.<sup>3</sup> London, Greenwich

Citizens	European Commission	Cities	Industry partners
<ul> <li>Increased positive behaviours.</li> <li>Support behavioural change.</li> <li>Economic benefits - such as lower energy bills.</li> <li>Social benefits - such as increased community interaction.</li> <li>Health benefits - such as more active travel.</li> <li>Environmental benefits - such as better air quality due to reduction in more polluting activities.</li> <li>Improved inclusion by information sharing - such as. increased knowledge of local activities.</li> </ul>	<ul> <li>Produce a consistent set of lessons learned from rolling out these measures so they can be replicated more quickly next time.</li> <li>More consistency and reliability of solutions in the broader market.</li> <li>A way to secure our ambitious strategic goals, including to trigger €500m in smart city investment.</li> <li>A common language and platform for collaboration and capacity building within Sharing Cities, SCC01 and beyond.</li> <li>A greater return on investment of programme funding.</li> </ul>	<ul> <li>Can meet local strategic goals quicker, cheaper and more efficiently using evidence-based service design.</li> <li>Better outcomes for citizens including cleaner air, more efficient homes and more integrated, low carbon mobility options.</li> <li>Enables business model innovation in the city.</li> <li>Attracts investment to scale up projects.</li> <li>Lower purchase price via economies of scale.</li> <li>More confidence in solutions as a result of testing and comparing (consistency, quality, reliability).</li> <li>Improved access to market, particularly for smaller cities.</li> <li>Continued learning and interaction with other cities.</li> </ul>	<ul> <li>Free and effective marketing of partner products to the marketplace, in a consistent and high-quality way through packaging.</li> <li>Faster and more effective sales cycles, as other cities feel more confident in taking up these solutions.</li> <li>Expands the potential market through scaling-up.</li> <li>Greater consistency and reliability of solutions through comparison and monitoring.</li> <li>Potential for meaningful corporate social responsibility (CSR) actions.</li> </ul>

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What is the

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## 4 How to deploy a DSM

eventually abandoned?

This section details everything you need to think about when designing and deploying a DSM. For a detailed step-by-step guide, please see: Digital social market set-up guide. Get in touch with Sharing Cities: **pmo@sharingcities.eu** or Future Cities Catapult at **Francesco.Marchet@futurecities.catapult.org.uk** to find out more.



## **Exploring opportunity**

#### Impact mapping

This is a collaborative process that brings together assessors, developers, project staff, stakeholders and end users. You can produce different logic models to reflect different stakeholders' perspectives and likely impacts of a project. These can be created for the whole project, or individual parts with specific aims and targets.

## When should you begin impact mapping?

Ideally, you should start this process as early as you can. However, it can be useful at any stage in the project lifecycle (before, during or after deployment). Impact mapping combines developers, stakeholders and end users' views with data about the current context, lessons learned from similar case studies, and relevant research.

#### What should you do first?

Before you build the logic model, you should go through the following steps together with our chosen platform stakeholders.

## 1. Define the proposed DSM and its context, including economic, environmental and social factors

You must understand the objectives and approaches to the DSM in simple terms. This can be done by reviewing existing research and consulting with stakeholders involved in planning, development or deployment. The city should assume the perspective of an 'interested outsider' or member of the public to consider potential unforeseen or unintended consequences. To do this, you must consider several key questions and express the results in a non-technical way.

- What problem or problems is the DSM trying to solve?
- What is the overall aim or objective of building and rolling out a DSM?
- How will it be designed, delivered and deployed?
- What will success look like from the stakeholders' point of view? Think about what success would be for the city, and for citizens. Or if there is a specific focus on another stakeholder, such as businesses, what would it be for them?

The following activities can lead to insights that address the questions above:

- Review DSM planning documents and the local situation.
- Research and describe the project's context the story of the place and community.
- Produce a social profile of users (age, gender, ethnicity), and describe the environment and local economy of the setting.

#### 2. Identify and involve stakeholders

Consider all individuals and groups involved in the project or affected by its rollout. These could be key organisations or people with a stake in the DSM. Examples include funders, policymakers, developers or staff, those involved in managing and delivery, users or their representatives.

After collecting stakeholders' views on project impacts, city leaders may wish to carry out a detailed and structured stakeholder analysis and management plan<sup>7</sup>. This will help to better understand stakeholders' objectives, interests and needs. It will also illuminate the relationship dynamics (such as conflicts of interests, power influences) that exist between them.<sup>8</sup>

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Taking this approach means asking a few key questions:

- Who's been involved in conception and development? Who will be involved in the rollout (this may include commercial partners and local authorities)?
- Who will or might be affected?
- Who will access and use the DSM? All people in a defined geographical area? Only a specific sub-group such as users of a certain road, or a local amenity? Or perhaps just those who use a service?

We recommend the following activities in this context:

- List all the project stakeholders.
- Consider vulnerable stakeholders. The project might have potential negative impacts on some groups of people (women, young people, older people, low income families). Or perhaps the DSM may not be accessible to harder to reach groups.

- Narrow the list to focus on the more relevant and significant groups of stakeholders. Consider the impact of anticipated changes on their experience.
- Engage with stakeholders through focus groups, interviews or observation methods. This will promote greater understanding of your project and encourage them to engage with the planned DSM in their turn.

#### 3. Prepare to develop the DSM logic model

The logic model aims to develop the logic or theory behind the DSM. How will rolling it out lead to outputs, and how will outcomes then lead to the intended impacts.

There is no 'correct' logic model for a given project. It is a map, an abstract representation designed to help us find our way. It is not a detailed representation of reality.

The key is to ensure the logical flow is credible, intuitively correct, and meaningful to the main project stakeholders. Don't worry if causality cannot be proven at each step. The flow should cover all the mechanisms which connect outputs to impacts. You can use theory and research on the topic to sustain those links<sup>9</sup>.

#### 4. Draw up the DSM logic model

To develop the DSM logic model, invite key stakeholders to a workshop. The goal of this meeting should be to draw up a model of how the DSM will work. This in turn will help you to design an effective evaluation strategy.

The logic model (see *next page*) template overleaf encourages project leaders to consider how the DSM will address a problem or gap in the market. How does this rationale then link to economic, social and environmental outcomes? These can be split into immediate, medium and long-term outcomes. The inputs and outputs are the key activities of the DSM which will produce and lead to the outcomes. Challenge & Solution

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Consider the following questions when completing this impact mapping exercise:

#### 1. Rationale

- Issue and context What activity is being proposed? How often? From a high-level, what market gap will the DSM address?
- **Aims** What are the ultimate quantifiable objectives? What barriers is the activity meant to address?
- Why it should exist What are the key reasons the DSM should be set-up or continue to operate?

#### 2. Inputs

- Activities What will happen and how? Why are those activities key to the DSM?
- **Timeframe** How long will it take to achieve short, medium, and long-term outcomes?
- Who are the stakeholders Who is carrying out the key activities?

- Resources What physical, financial, intellectual and human resources are needed?
- 3. Outputs
- Beneficiaries/users Who will be impacted by the DSM?
- Product/services What are the key products made or services offered?
- 4. Outcomes
- What are the expected outcomes in terms of economic, social and environmental factors, from short through to longer term?
- **Short term** What immediate outcomes or benefits are there?
- **Medium term** What outcomes will take a few months to realise and measure?
- Long term Which impacts will be measured over years, or hard to measure in the shorter term (but linked to metrics that measure these outcomes)?





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#### Logic Model Tool





#### 3. OUTPUTS

Output products / services		Short term	Medium term	Long term
	Output products / services	Output products / services	Output products / services  Short term Immediate	Output products / services     Short term     Medium term       Immediate

4. OUTCOMES (ECONOMIC, SOCIAL AND ENVIRONMENTAL)

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### Audience engagement and technical design

The DSM aims to influence behaviour change by engaging citizens on issues that are relevant to them. As such, the technical design cannot be separated from audience engagement – co-design is a fundamental principle in a DSM.

Audience & Tech Design

#### Service planning

The DSM framework was developed in 2017. It was shaped to respond to various local contexts and urban challenges identified in each city. Each location focuses on a different local thematic area. (Please note that the DSM model is not restricted to these thematic areas and can be applied to a broad range of city contexts):

Lighthouse city	Challenge area
<b>LONDON</b> (Greenwich Energy Hero)	Domestic energy management through 'Demand Side Response' – this is a way to mitigate demand on the electricity grid during peak times.
<b>LISBON</b> (Sharing Lisboa)	Sustainable mobility, local commerce, community cohesion and building retrofit.
<b>MILAN</b> (SharingMi)	Range of sustainability themes including mobility, food waste and plastic waste, energy reduction, community cohesion.

Local user research and design sprints enabled cities to find out which areas to focus on. To do so, each city explored and assessed a range of objectives within these contexts:

- Tailoring local scope: Identify key stakeholders (for example end users, reward sharing businesses and charities). Define their pro-environmental behaviours in relation to city challenges. And, for example in Lisbon's case, choose the schools which form the social part of their service.
- Technical requirements: Establish the technical feasibility and needs of each service ecosystem. Are datasets available for comparison and point scoring within the apps? This includes identifying their preferred method of technical and service rollout, for example, via in-house development, subcontracting or a partnership.
- Local resources, roles and responsibilities: Identify the skills, organisations, activities and responsibilities required to deliver the DSM. Take this message to other teams and city departments to generate interest.

- Tendering and contracts: Complete tenders and contract arrangements between local partners will help deliver and maintain the DSM.
- Interdependencies: Link up with other work packages (such as WP4, Urban Sharing Platform) to progress connected activities and complementary needs.



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We used the following tools to align and prioritise the efforts needed to launch and establish the DSM in each city:

#### **Proposition definition tool**

You can use this mapping tool to define and test-check each service and its strategic direction in more detail. It encourages participants to consider their service (and any subsequent gaps) from four main perspectives:

- **Proposition definition**: What is the service? What are its key characteristics and potential impact?
- **Problem definition**: What city problem (including its broader contexts) will the service solve and what evidence is there to support this view?
- User segments: Who are the target users of your service and what are their defining characteristics? What might they be trying to achieve?
- Organisational resources: Who are the supporting partners or organisations delivering your service and who do they rely upon?

#### Service blueprint

This is a way to map or review how a service exists in time and space and through how its stakeholders interact. It can reveal gaps and opportunities in a service, and enables participants to assign responsibilities and timeframes to the opportunities that emerge.

#### **KPI** setting

You can use this to establish what needs to be measured within a service so you can test its value proposition. It is a useful way to check the progress and results of the project against its original objectives. While hard to predict and define at the start of delivery, building in these questions will help keep your developmental ideas on solid ground.

#### Onboarding

The DSM cannot exist without its users (citizens, businesses and their broader ecosystem of charities and/or reward partners). Therefore, you should explore and respond to a range of questions around the purpose and offering of the DSM. This will help you to define your overall narrative and ensure your DSM can attract users. Over time, you can move them along a journey from knowing nothing about the service, to becoming active participants. These community members may then go on to become champions and influence others.

The 'service journey' underpins all this work, and provides a map of the service from start to finish. It shows each of the main 'touchpoints' (places where users interact with the service) before arriving at our intended impact. It is a key development tool because:

- it enables us to see our service in a macro context, from end-to-end. This can help expose any gaps in the service (in terms of infrastructure and understanding).
- it encourages us to see our service in time. This is important as time affects how our users respond to our service.
   (For example, a service about domestic heating costs will be more popular in winter. This may impact our messaging or delivery timeline).
- you need a joined-up approach to deployment. Otherwise the delivery team will likely (albeit unintentionally) be aiming for different goals. This can lead to a negative user experience.
- it means that key stakeholders are considered throughout the process

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• it ensures you design the right recruitment assets in order to maximise take-up and retention of users.

#### London service prototype user testing

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#### Milan service journey mapping



These activities provide a firm footing to create a detailed service journey. This will also inform the development of many technical aspects of delivery (such as the apps). In addition, it will help you develop the brand and communication strategy. Where possible, we tested these phases with citizens to further refine and optimise the final offering. These tools and approaches are:

#### Service development

- **Stakeholder mapping**: This is a way to co-define the scale and relationships of a network or system. It is an ideal tool to reveal gaps or test new organisations or people, as well as traditional connections.
- **Expert interviews:** This can help you gain deeper knowledge and insight around a specific subject. Expert interviews are brilliant for testing or critiquing new service propositions.
- Qualitative research: Work with end users or key stakeholders to better understand people's perceptions, emotions and motivations in relation to different contexts. User research can take the form of interviews, surveys or focus groups.

- Desk research: Carrying out desk research, such as literature reviews and exploring themes can help inform your work.
- Service journey mapping: Map the desired end-to-end story of your service. This will provide a macro picture of a proposition and roadmap by which to plan rollout.
- Citizen co-design workshops: You can use participatory user research to establish challenge areas, run ideation exercises and design and critique service journeys.
- Service prototypes: By focusing on specific service touchpoints, you can create mock-ups and potential scenarios that your users will interact with. These are great for testing ideas and gaining stakeholder buy-in.

#### **Technical development**

App development: This is the process of creating software applications. It can include user interface (UI) design, "back-end" programming, alpha and beta testing and deployment with users. Introduction

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 UX/UI Testing: User experience (UX) and user interface (UI) testing is a way to consider what it is you want users to feel, think and do. It is also a chance to consider the design of artefacts and objects that will stimulate these experiences. It means you can couple the 'look and feel' of digital services with the wider experience.

#### Communication

- Copywriting: You need to create compelling and behaviour-change focused content to use across all your DSM services.
- **Branding and visual identity**: You need to build a physical, digital and visual narrative for your services. This process isn't just about logos, it's about creating the conditions for users to embody and promote the values of each service.
- **Point of sale materials**: You can use these for the retail aspects of your service – examples include shop stickers, posters, leaflets etc.
- **Visual design support**: You will need an ever-changing and detailed library of visual assets (icons, logos, diagrams and colour pallets). These files are the basis for all comms and PR tools.

#### UX/UI design development, tested with end-users









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• Recruitment design and strategic

**support**: You need assets such as flyers, business pitch kits, websites, explainer videos and how-to-guides (to name but a few). PR and social media support are vital (a social media guide and planning tools to help partners consider their PR strategy ahead of time).

• **Event design support:** This includes defining event objectives, schedules and creating assets that are important to the running of the event.

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#### Website, explainer video, social media posts and printed assets to help promote the service





#### Scarica l'app di greenApes e seleziona Milano







#### $\bigcirc \bigcirc \bigcirc \blacksquare$

18 likes sharingmik @aivearchedcesi the hive that says year it is the project that combines local producers and conscious community promoting a new way to account the products frain, we have the local producers sign us to the portal and pinn in a hiver, selling their products frain, vegetables, most chearease. Seand your #Bankolvids for a good seandring of the value of its enurs for a first obnomino for the value of its enurs for a first obnomino



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#### Maintenance

Once you've launched the DSM, you need to focus on keeping key stakeholders (like citizens, businesses and beneficiaries) engaged over time. Research shows that digital platforms have high drop-out rates. To counter this, keep exploring and refining the services so they stay fresh and relevant.

It is also crucial to continue to engage new users and consider the emotions (or 'stages of change') reached by established stakeholders. People see new experiences and services in different ways. You should acknowledge this in your messaging. The following diagram helps visualise the 'stages of change' people can go through when changing their behaviour.

People do sometimes abandon or 'relapse' from habits without warning. This is normal. To address this, try and create the right conditions to carry on engaging them and make interaction as easy as possible. People will leave the DSM. The question is how will you inspire them to return? How can you encourage them to do more in the service?

#### **Stages of Change diagram**



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We developed a set of 'Maintenance Strategy Guides' to help the three lighthouse cities retain users and grow their platform. Each solution was tailored to the individual lighthouse city's DSM. The guides offer useful insights around retention, focusing your DSM, new service features, app developments, users and comms.

We also developed a 'challenge mapping methodology' to help the lighthouse cities design, plan and launch new challenges, features or 'missions' on their DSMs.

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**Retention rates in digital platforms** 

's never too early to starting thinking about how ou're going to continue increasing and maintaining our audience and impact in the future.

ersion 1, July 2019 Future Cities Catapult 2019

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### **Business models and finance**

#### **Business models**

A simple way to understand the DSM business model is to ask what happens after the government funding period ends. Who is going to pay for, or invest in this service, and who will benefit from it?

A business model is a high-level strategy to determine commercial viability. The key part of this is the value proposition. The first DSM was supported by H2020 and local co-funding with organised ownership run via a consortium of stakeholders. Follower cities will likely use similar arrangements to build their DSM.

#### Business model canvas

The 'business model canvas', gives teams the chance to develop a critical overview of their DSM. It shows the activities, value propositions, revenue streams and expertise (to name but a few) which sit behind the platform. It captures those vital parts, without which, the DSM could not function. The tool is a snapshot of now. But business models are rarely fixed for long, so it's also a chance to reflect upon and review the proposition. The business model canvas is a common framework for this purpose.

#### Lisbon's completed 'business model canvas' tool



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## Business model evaluation – comparing two or more models

Once you've finished the business model canvas for your DSM you can use the 'business model evaluation' tool<sup>10</sup> to compare with a different business model. You could benchmark it against one that your city already uses. The methodology is flexible. This means you can make quick decisions on areas where your business model needs improving. Screenshots of the tool are shown here.

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Questions are asked about each area of the business model canvas and assigned negative or positive points. Totals are then added for each area and the following formula applied:

Value of the business model = (cost structure + revenue streams – social and environmental costs +social and environmental benefits + value proposition) x customer segments

#### Snapshot of the 'business model evaluation' tool



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By using this formula, you can generate a score for the value of your business model. You can also visualise it by plotting points on a radar chart. For more insights, repeat the exercise with business models which compete with the DSM business model framework.

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#### Example radar chart output from the business model evaluation tool



The radar chart visualises different parts of the business model. If revenue streams are low but cost structures are high, this could indicate an issue that needs further investigation. If both social and environmental benefits and costs are high, it may raise concerns over whether the net value of the impact is worth it. If the cost structure is high but the value proposition is also high the model may still be viable.

#### Revenue streams and cost structure

Within the business model canvas, the revenue stream asks questions linked to how key activities and or resources can be paid for. It also asks what customers are willing to pay for and how much they will pay.

You need to think about your strategic objectives and ownership model when deciding upon revenue and cost structure. Understanding the pros and cons of organisational structure will help guide your plans for revenue and costs. Challenge & Solution

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#### Revenue and costs within the business model canvas

Revenue streams and the cost structure are steps 4 and 7 in this process. They show the sources of business income and how much it must pay to cover operations, service provision, and other fixed costs. Revenue streams include asking questions about how income can be received or generated and who will pay it.

#### Revenue streams within the business model canvas



## Understanding the paying customer: business to customers (B2C) and business to business (B2B)

When planning activities for revenue streams you need to understand both citizens (or consumers) and businesses as buyers. Ask: **what is the service offering and who would be willing to pay for this?** The added complexity of the DSM is that the end-user (citizen) may not be the person who pays for the service. Thus knowing these relationships and who makes payments (if any) is key to developing a clear revenue strategy.

You should also define the language between the different target audiences. For example, a target business audience could pay for the service or pay for access to the consumers.

#### Understanding the citizen as the end-user and buyer

Every market has buyers and sellers. In the DSM, it means the exchange of goods and services through the 'shopfront' of subscribing local businesses and the technical platform provider/s. The table below shows the different 'desires' or needs to be met in 'buying' or using the service.

DSM end user desires					
Citizen	Wants better quality of life, improved access to info around sustainability, greener goods and services				
Businesses (local)	Want to provide better goods and services in exchange for profit				
Businesses (technical platform)	Want to provide a technical platform supplying a DSM in exchange for profit				
City (municipality)	Wants DSM to enable behaviour change in a cost- effective way				



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Both the subscribing local businesses and technical platform provider businesses are 'sellers'. As such, they must consider who their 'target audience' is, what they will buy and how much they will pay. In particular, the technical platform provider needs to think of their target audience as the immediate buyer, local businesses, and the citizen as end buyer.

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## Understanding the businesses which are intermediary 'buyers'

Each DSM business model needs to understand the customer part of the intermediary service buyers. These people are vital as they will be making a regular 'payment' and will ensure the DSM is commercially viable.

#### Potential revenue streams

Within the DSM framework, the main stakeholders are:

- DSM consortium: technical and/or strategic partner and city
- Big businesses: potential buyers of the service who want to increase their CSR (corporate social responsibility)
- Oversight committee: independent board to review ethics and operations, discussed further in the Governance section below
- Disseminators: local businesses who offer rewards to citizens via DSM service or app
- Citizens: local people who use the DSM app and service to collect points and redeem them from participating local businesses
- Beneficiaries: charities, schools, community organisations, NGOs or public bodies who gain a reward.

It should be noted that not all entities must feature in the framework to run the service. The main stakeholders are always a government body, technical partner and citizens.

The diagram on the next page shows how these entities could provide a revenue stream. Each stakeholder is asked: what value is there to you participating in the DSM, or why would you pay for a DSM service or access to the service? Each € sign represents different reasons why that stakeholder may pay for the service. Underneath, a value proposition is given to each. It is unlikely they would all operate together. They would do so either on their own or alongside one or two other revenue stream options.



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#### DSM framework and potential entities operating within the market, showing potential future revenue streams for the DSM platform operator





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**Business Models** 

The potential revenue streams in the diagram are summarised as follows:

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Entity	Description	Potential revenue stream
DSM consortium	Technical and/or strategic partner and city	Technical: Could pay the city to gain access to residents and businesses City: Could pay technical partner to access the platform and skills
Big businesses	Potential buyers of the service to increase CSR	Could pay DSM consortium to access the network, gain brand exposure, CSR credibility and increase revenue
Disseminators	Local businesses who provide rewards to citizens through DSM or app	Could pay, if a high number of users and reward partners are using the service, to access customers
Citizens	Local people who use the DSM app and service to collect points and redeem them from local businesses	Could pay on a subscription basis, perhaps for premium access

#### Funding, monetising (earning revenue), and finance

The income models used by the three lighthouse city DSMs combine features of both public funding and private finance. A DSM may be funded by two or a mix of all three options at different stages of its lifecycle. In the early stages, public funding may support the project. Later, private financing and generating revenue through the service may become more important and ensure the DSM's future. Regardless of the stage, you should map and explore these options as soon as possible in the project.





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#### **Public funding sources**

All three lighthouse cities were co-financed via public sources under the European Commission H2020 funding. Thus, you could use public funding from similar sources in the short-medium term. This report doesn't detail the full range of public funding sources as they differ between cities. Here are some useful links on public funding and innovation:

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- <u>Funding innovation: A practice guide</u> by Sellick, V, Solder A, & Roberts, I, 2018, Nesta.Understand the financial tools available and which are most relevant to innovation.
- <u>Funding for innovation: European</u> <u>Commission website</u>, 2019. Lists all possible funding schemes and how you can access finance in Europe.
- <u>General Directorate for Enterprise in</u> <u>France website</u>, 2019 (French and English translations available). Official portal for France, detailing types of public funding for innovative companies.
- <u>The Green Book: Central Government</u> <u>Guidance on Appraisal and Evaluation</u> by HM Treasury, 2018. Useful for developing business cases and understanding costbenefit analyses

#### Earning revenue

If you want your DSM to take a more commercially viable route for service provision, think about monetising it. This may be more in line with a private ownership structure. But even public bodies can incorporate types of monetisation. To do so, you must understand how the service (or in some cases goods) provides value to a customer. We know that customers are willing to pay for services that create value. If the DSM can provide this for citizens, you may be able to raise funds through subscriptions. However, it could take time for the DSM to mature enough to support a sophisticated app and service.

Below are the different ways money can be exchanged for the services provided in the DSM.

#### Freemium

This is where a company offers basic free services and charges other users for premium content or services.<sup>11</sup> Businesses can register for the basic services, and then upgrade to a paid model to access more services. An example is a fitness app which allows users to track and analyse their cycling and running. They can also share their times, connect with others, explore new routes and join competitions. Finally, they can sign up for free and trial premium services first, before deciding whether to pay for them.<sup>12</sup>

For the DSM, you need to choose what services or access to offer freely to which customers and what to include for payment. For example, in Milan, businesses could trial the premium service and access the user network so they could provide discounts or offers.

#### Transactional or affiliate

The transactional model supports transactions, and an in-built fee creates revenue for the platform.<sup>13</sup> Companies using model include eBay and Groupon. The affiliate model also generates revenue but does so by providing leads rather than enabling a transaction. However, both share the same core concept of paying to connect a business and customer.

In terms of your city's DSM, you need to determine if they enable a transaction between citizen and business. For example, in Milan, businesses may sell products on the DSM, while users could buy products (or gain points) through the app. This would then generate a fee payment to the DSM owner.



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An example is 'MiReward'. This Miconnex brand, powered by Mastercard, rewards points to customers for shopping locally. Every time they make a purchase, a percentage is charged to the retail outlet. This is used to finance the customer rewards within the scheme. Shops pay a fee in return for increased customer footfall.

#### Subscription

To promote their businesses, DSM users could pay a subscription fee. Like Freemium, this would include a periodic payment and may have various offers at a range of prices. Many new platforms are offering subscription services. How easy it is to use these services is key. For example, Whim,<sup>14</sup> provides multi-modal travel passes. Users pay monthly for a pass to use transport throughout the city, including buses and trains, plus car, bicycle and scooter hire. These services are being bundled with other household services in rental packages so landlords can provide more attractive offers for new tenants.

#### Advertising

Local businesses could advertise on the DSM. This could be highly targeted to platform users. However, you must understand this revenue option in the context of the governance and ethics of the DSM and city. You would need certain safeguards in place to ensure that businesses who pay for advertising meet a minimum CSR level.

#### Licensing

A simple one-off or annual fee could be another revenue option for the DSM. This could be most useful if a large city or government would like to use the DSM to nudge behaviours.

Another option is for the platform to be licensed to companies that want to use the infrastructure for workplace CSR. However, any such model would need to think about what guiding principles will be a requirement of licensing. For instance, governance principles around how personal data is used.

#### Pay as you go

This is a charged fee either just before or just after a period of service. For example, mobile phone billing where the user pays per call and minutes used over one month. For the DSM, this could be proportional depending on how many challenges or campaigns you wish to run. An example would be a new business partnering with a cycling company, wanting to incentivise employees in a three month cycle-to-work campaign. They could use the platform for this period and decide after whether to continue.

#### Other factors to consider when determining your revenue structure Target audience

Understanding your target audience and their characteristics will refine your key objectives and aims when considering a financial exchange. Is the transaction business-to-business or is the transaction business-to-consumer? Businesses may pay for a service, but consumers are less likely to pay for a digital social market service, when similar media is largely 'free'.<sup>15</sup>

#### Audience size, reach and adoption

When identifying revenue streams, also consider the reach or number of people who access and continue to adopt the DSM. This is most important in the early stages. It may not just be about the quantity of users you have. You also need to understand whether 'buyers' of the service can access the specific groups of people they want to.<sup>16</sup> The more users you have, the more businesses may want to use the platform to increase or generate a customer base. Introduction

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#### Willingness-to-pay

Understanding how much consumers will pay based on the value perceived is important within the 'free' social media culture. There needs to be a clear value added to businesses or consumers, and you must communicate this in a brief and effective way. Doing user and market research can help you work out the correct rate.

#### **Payment method**

You must also consider the way in which businesses pay. This will differ depending on the revenue stream. For example, a monthly subscription may be paid via direct debit. However, if it is a one-off payment for service, you may prefer credit card payment. Another option may be to pay by phone via the DSM app. This option could track user purchases, and local businesses could be charged for the successful referral.



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### **Ownership structures and governance**

#### **Ownership structures**

Here's an overview of the key structures to consider, their strengths and weaknesses and questions to ask before you decide.

When you launch a DSM, as the name suggests, you create a market. As with any emerging markets, but particularly digital, technologies are often ahead of policymakers' ability to legislate. That's why it's vital to choose the right ownership structure to ensure the public interest is protected. A DSM might not be considered a 'public good' mainly because it may use a payment gateway.<sup>17</sup> However, the platform could be used to trade merit goods.<sup>18</sup> These are defined as something the public may underuse which government should subsidise. That way consumption does not mainly depend on being able to pay for use of the platform.

#### Different organisational structures

Here is an overview of some organisational structures. Do note this is not a legal framework. To get a more detailed understanding of legal entities, you would need to consider the local jurisdiction. Some of these structures may in practice overlap. For example, a government-owned company may be partly government and partly private sector owned.

#### **MILAN**

The city sub-contracted technical development (the app), user engagement and project management to a local consortium. This was done through a tender process for each activity. The city does not 'own' the platform, but can access the data for the period of contract.

#### **Traditional organisational structures matrix**



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A short description of each of these:

Department	Sector of government, usually headed by a responsible minister
Government- owned company	Company set up by government to carry out certain activities
Public company	Company with public shareholders (listed on a stock exchange)
Private company	Company with private shareholders (not listed on a stock exchange)
Community enterprise	Community group providing local services
Club	Membership based organisation
Co-operative	Organisation with strong membership focus, profits distributed to members
Social enterprise	Organisation with a social mission that trades in the market

Some characteristics which determine an organisation type could include:<sup>19</sup>

Corporate status	Unincorporated or incorporated?
Governing document	Deed, partnership agreement, constitution?
Management structure	Single tier, two-tier (board and membership), multi-tier?
Membership	Individuals or organisations, both?
Specific governing legislation	Parliamentary Acts referring to companies or charities?
Charitable status	Yes or No?
Profit distribution	No. Yes as an option. Yes as a necessity?

LONDON

Like Lisbon, Greenwich's local team worked to develop and deliver their platform. They worked in partnership with Sharing Cities programme partner Kiwi Power, an energy aggregator in order to build their technical offering.

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## Strengths and weaknesses of different ownership structures

This section looks at the strengths and weaknesses of different ownership structures. It is intended as a general guide only. Different ownership options will suit different cities depending on local regulations. For example, some cities may have strict governing rules in place for government-owned-corporations, while others may be less restrictive.

#### LISBON

In contrast to Milan, the Lisbon municipality has assembled it's own internal team to develop the DSM service. It has partnered with local tech company, Altice Labs, to develop and deploy the technical aspects of the platform.



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### Understanding the options between a private and a publicly owned service

Changing from a public or government-owned service to a private or non-government service could lead to unwanted consequences.

Each city has different market, historical, legal and cultural characteristics to consider. What may work in one city, will not in another. Consult with legal, business and organisation experts before deciding on the final ownership structure for the DSM. For an overview of practices, see the OECD report Ownership and Governance of State-Owned Enterprises.<sup>20</sup>

"We wanted to keep the

development and ownership

would help to establish trust

with our users - it gave the

platform credibility. It also

contracts."

Lisbon city lead

helped avoid difficulties with

David Cunha, Sharing Cities,

of the platform within the

municipality. We felt this

Privatisation can boost efficiency, increase competition, improve shareholder perks and lessen political interference. However, you must consider these benefits alongside potential risks and whether you can mitigate them.

What follows are some questions to ask. If you answer yes to any of them, your city should work to overcome the challenge using qualified judgement and reasoning.

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#### 1. Would privatisation of a DSM create a monopoly?

A natural monopoly may result if a city hands over the technological and intellectual rights of the DSM to a single private enterprise.

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Natural monopolies are usually due to high fixed costs, but may also occur if intellectual property is not freely available. Governments should create an ecosystem of healthy competition to ensure fair pricing for citizens and businesses. Further, where large amounts of personal data are concerned, a private monopoly may misuse this information. This risk needs mitigating. If the DSM is privately owned and the city is the sole user, 'vendor lock in' may be a risk. This could result in high switch costs, if the city decides to procure a different service or use a different platform.

Recently the UK government announced its regulator Competition and Markets Authority would carry out a study into the digital advertising sector.<sup>21</sup> Similar regulators exist around the world. They act as an independent reviewer and complaints body to ensure fair competition practices in different sectors. We explore this further in the next section.

#### 2. Does the DSM hold a public interest to be protected?

Public services exist for the citizen. The role of government is to protect the public interest, from healthcare to education to public transport. More and more private organisations are improving their CSR. However, their primary objective remains to make a profit for their shareholders. Privatisation then raises questions as to whether the business will continue to protect the public interest. CEOs may be altruistic, but companies answer to shareholders.

In Toronto, there's been a public backlash following reports of poor government management of a smart city redevelopment headed by Sidewalk Labs. Citizens have complained the lack of transparency has increased suspicion that these efforts are driven by corporate greed rather than public good. The lesson is that any more towards privatisation, should be transparent and involve community stakeholders.

Certain public interests need to be protected. When there are private market failures, governments can be slow to respond. There are various ways to safeguard these interests in a more privatised structure. You could for example use performance-based contracts to ensure a private company achieves pre-determined objectives of the DSM and city.

## 3. Will it be hard to regulate a private DSM in the current legal system?

It's challenging for policymakers to keep pace with technological change. When public authorities suddenly decide to regulate, it can cause confusion and uncertainty for companies. This was shown when TfL denied Uber a licence in London citing public safety concerns and poor employment conditions for drivers.<sup>22</sup> While these concerns may have needed addressing, Uber had operated there for years and had a

large workforce depending on income.

We discuss this in more in the next section on governance and the regulatory environment.

## 4. Will privatising parts of the DSM fragment the industry or sector?

The DSM is not a single entity. Instead it contains a range of operating systems and functions that work together. "The energy sector market can change greatly in terms of both pricing and regulation. As a business, we need lots of different market propositions, so we can adapt to these changes. The DSM model is a way to democratise the energy market. This is important for SMEs seeking to disrupt the sector."

London project partner



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Any fragmentation of the digital services industry can cause confusion when understanding who is responsible for certain activities. If some services are owned by government, but others privately, you must clearly set out responsibility. Overcharging can happen when parts of the process are packaged and repackaged. For example, part of the service may start with one organisation, but then move on to another. To avoid this, you need to put certain governance mechanisms and structures in place.

## Common tools to understand preferred ownership structures:

#### 1. SWOT analysis

Assess strengths and weaknesses within your strategic context. Carry out cost-benefit and SWOT analyses of the DSM with different ownership structures

#### 2. Conflicts of interest register

Identify and manage potential conflicts of interest early. Use a register to disclose all possible conflicts of interest for DSM stakeholders (whether financial or strategic). If a city already has a conflict of interest register, use this as the basis. The register can be created, maintained and reviewed by the HR or finance team lead. Each new stakeholder involved in the DSM should lodge their declaration of interest. The onus is then placed on the individual to update the register if their situation changes.

#### 3. Adhere to regional standards and roll out city-wide standards

This will ensure your ecosystem sustains a healthy regulatory process. There are various standards, but each DSM should state which they will adhere to. These should be followed alongside their guiding principles during rollout and running of the DSM service. This is closely linked with the governance section – see below.

#### Governance and regulatory environment

Governance means different things in different contexts. In this guide, governance describes the ethical and legal considerations and mechanisms involved in setting up a DSM.

#### External and internal mechanisms

- External regulatory or legal environment: The external mechanisms that the group or consortium operates within. These may be specific to the digital industry, such as existing legislation or codes of conduct.
- Internal governance structure: This guides the DSM's operations from within, considering an ethical, legal or governmental perspective. For example, a new ethical board set up to review the DSM or an existing city board made responsible for overseeing the project.

Analyse how strong the DSM's external regulatory and legal environment is before deciding which internal mechanisms to use. After, check if there are any existing internal mechanisms within the consortium group through which to review the DSM. The extent of gaps in purpose and function of existing structures will determine what is required.

#### External regulatory governance examples

A UK government-led review on Digital Competition recommended setting up a digital markets unit.<sup>23</sup> This unit would develop a code of competitive conduct, enable greater personal data mobility and encourage open standards to make data more open. Social questions

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are not its focus. However, the report states: 'it is clear that wellfunctioning competitive digital markets have the potential to develop new solutions and increased choice for consumers.'<sup>24</sup>

#### Governance overview – structure of hierarchy

The below diagram shows a structure of hierarchy from a legal point of view and groups both external and internal mechanisms.



This simplified model is a good foundation to understand how it works.

#### Establishing an independent, standards and ethics board

DSM operators may choose instead to set-up an oversight committee, such as an independent standards and ethics board. Ideally, this would be made up of stakeholder representatives. For example, from community groups, legal, businesses, technology experts and government. This board could review certain proposals, resolve disputes or complaints, and help create principles and ethics to guide the platform's operation.

#### Creating standards as an internal mechanism

As a part of internal governance, a DSM operator will need to create certain sets of standards. This may form part of the oversight committee functions, or be among different stakeholders working within the DSM.

#### Standards for privacy management

Controls for privacy management should be at the heart of any internal standards and governance processes. You should refer to ISO 27701:2019, to show you comply with global privacy regulations. It has guidance on the protection of privacy, including how organisations should manage personal information.

ISO 37106:2018 is also relevant. It describes a 'citizen centric trust model'. This customer service model for identity management puts people directly in control of their own data. That means they manage their own data relationship with the city (with visible controls). These include:

- Consent: no one can use my data without my consent.
- Checkability: I can check who uses my data.
- Choice: I can choose from different identity management options.
- Control: I can manage my own data, or choose someone to do it for me.
- Convenience: I find it easy to do.

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• Content: I see personal benefit in exchange for consent to data sharing.



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#### Standards for information security

You should consider appropriate security controls based on risks to the DSM. Refer to ISO27001 for an approach to this. Pay attention to ISO /IEC 27017:2015: Code of practice for information security controls based on ISO/IEC 27002 for cloud services. A further supporting standard is ISO/IEC 27018:2019. This is a code of practice to protect personally identifiable information (PII) in public clouds.

#### Anti-bribery and corruption

Where legal sources identify this as a risk to the DMS, this can be mitigated through ISO 37001:2016. It will help you set up an organisational management system to prevent, detect and respond to bribery and comply with anti-bribery laws.

#### Web analytics

You can manage the use of web analytics through the digital social market (cookies, page impressions etc) with reference to ISO 19731:2017. This standard applies to digital and web analysis research activities such as:

• understanding the use of websites through cookies, page impressions and

other means, navigation across sites, time spent by visitors and their actions

- online metered panels, for example measuring web visits via meters installed on panellists' desktop, mobile or tablet devices
- tag-based solutions to measure online use at universe level. This can be integrated with metered panel data to give a hybrid measurement
- social media analytics which collect, aggregate and analyse online comments, and user-generated content like blogs, forums and comments on news or other sites.

#### Use of open standards

Using open standards for data interoperability supports personal data mobility and enables competition and consumer choice. See <u>UK Cabinet Office</u> <u>outlines Standards principles</u>.<sup>25</sup>

To contact Sharing Cities email: pmo@sharingcities.eu or Future Cities Catapult at francesco.marchet@future cities.catapult.org.uk to find out more

#### Contractual or relational mechanisms

Further governance can be understood in contractual or relational terms. This can be defined as:

- Contractual governance: These are formal legal documents with safeguards to mitigate opportunistic behaviour and reduce uncertainty in exchanges. They do so by setting out what is and what is not allowed in a certain relationship.<sup>26</sup> For example, terms and conditions which state the operations of the platform.
- Relational governance: This is the role of 'trust in achieving mutually successful' outcomes. It uses norms and social processes to encourage flexibility, and informal safeguards, but may also help with more formal obligations.27 For instance, ethical policies for staff when carrying out business development activities.

#### **Governance profiling tool**

This tool allows DSM operators to visualise how their market currently operates and how platform operators do their business transactions. The aim is to identify potential risks or weak spots, or areas that lack mechanisms, and need strengthening. Introduction

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For example, if a country lacks digital social media market legislation,

a DSM operator can do little about this in the short term. Instead, the DSM may need to build in more internal mechanisms to strengthen governance. Conversely, in a country with strict rules around operations, a DSM operator may ask if this is positive, and whether it can be changed.

#### Constraints of the DSM governance profile



Below is a screenshot example of the Governance Profile Evaluation Tool adapted by Connected Places Catapult.<sup>28</sup> For the source Excel Sheet, please contact FCC.

sharingelfies	Governance Profile Evaluation Tool							
	How clear is the law in your country regarding digital social market platforms?	-2 For very unclear, -1 For slightly unclear, 0 For networ clear nor unclear, 1 For slightly unclear, 0 For -2 For very unclear, -1 For slightly unclear, 0 For networ clear nor unclear, 1 For slightly direar, 2 For -2 For very direct to enforce, -1 For slightly difficult to enforce, 0 For non known or netword filter to enforce for slightly easily on enforce. 2 For very easy to enforce	-3/ -1/ 0/ +1/ +3					
	How clear is the law in your city regarding digital social market platforms?		-3/-1/0/+1/+3					
External mechanisms	How enforceable is the law pertaining to a digital social platform in your country?		-3/-1/0/+1/+3					
	How enforceable is the law perfaining to a digital social platform in your city?	-2 For very difficult to enforce, -1 For slightly difficult to enforce, 0 For non known or neither difficult or easy, 1 For slightly easy to enforce, 2 For very easy to enforce	-3/-1/0/+1/+3					
	Do you have a mission statement for your DSM platform?	-2 No. +2 Yes	-2/+2					
	Has your DSM mission statement been communicated with your staff and users of the platform?	-2 N0, +2 Yes	-2/+2					
	Has your DSM mission statement been communicated with a wider group of stakeholders?	-2 No. +2 Yes	-2/+2					
iternal mechanisms	Have you established a code of ethics and standards for operation and use of DSM platform?	-2 No, +2 Yes	-2/+2					
	Have you communicated this code of ethics and standards with your staff and users of the platform?	-2 No. +2 Yes	-2/+2					
	Do you have an accountability mechanism is in place for a breach of ethics?	-2 No. +2 Yes	-2/+2					



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This graph shows the results from the Governance Profile Evaluation Tool in a radar chart. In this example, the DSM has weaker external mechanisms, and stronger internal mechanisms. The latter may be a response to the weaker external legal environment. Relational mechanisms are slightly weaker than contractual mechanisms. This may be because of the strong contracts already in place.

#### Example of radar chart output from governance profile tool results



This tool is useful in understanding the DSM's current position. However, you may want to run the exercise with key representatives from within the DSM ecosystem to consider different perspectives.

Other useful points of reference for governance include:

- Digital Inclusion for a better EU society Digital Single Market, ٠ **European Commission**
- Digital Privacy by Digital Single Market, European Commission •
- 12 Principles of Good Governance and European Label of • Governance Excellence by Council of Europe
- Advice and guidance by UK National Cyber Security Centre •

Please note, this is only a guide. If you are planning to build a DSM, you should consult with legal and financial experts as this is a complex area to navigate.



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### Monitoring and sharing

You should have a good monitoring framework in place at the start of rollout. This will help ensure the scheme continues to provide value through its operation phase. It will also enable you to understand, quantify and evaluate the impacts of specific measures. This will in turn inform performance and areas for improvement.

Data sources that can be used to monitor DSM performance include both app related metrics and connected measure metrics. App metrics capture what users do in the digital environment. The connected measure metrics establish how this translates into realworld actions and behaviour.

The connected measure, can be eMobility or mobility as a service scheme, or even a permanent installation like retrofit. This (hopefully) should perform differently when the DSM has been used to encourage certain behaviour than when it operates in isolation. To accurately measure this variation, you require both app and connected measure metric. However, either type of monitoring can on its own offer insight into DSM performance.

#### Common monitoring framework

A common monitoring framework allows you to compare metrics with similar schemes globally, and identify where performance can be improved. At Sharing Cities, we monitor the performance of each connected measure. We also use a common monitoring framework focusing on app performance. The framework is looking at five themes:

- Technical characteristics focus on the level of app use and DSM operation. This can be measured in terms of:
  - numbers of enrolled and active users
  - incentivisation level and type

• award points collected per user.

Technical characteristics metrics are collected automatically via the app. Heatmaps and most frequently visited pages also sheds light on user engagement, and enable design improvements.

- User and citizen attitudes and behaviours are very dynamic in a city environment and evolve as citizens engage with new urban services. This category aims to identify how citizen and user attitudes and behaviours towards sustainable living change through interaction with the DSM. The app provides good insights, including analysis around what users tend to interact with, and how they redeem collected awards. However, the best way to assess this is through citizen surveys and questionnaires.
- Wider systemic and economic impacts focus on analysing a scheme's performance in terms of financial viability, energy efficiency, travel congestion and air pollution. It is uncommon for a DSM scheme to monitor such impacts. Instead, this is usually done in partnership with other city functions.
- Institutional and social inclusion impacts are increasingly significant for cities. You can monitor these by comparing users (or level of use) of the scheme to socioeconomic indicators like individual or household income. These statistics are usually available at borough level, so your data should reflect this.
- Other independent variables may influence the DSM scheme's operation and performance too. These include the local climate, social norms and attitudes towards sustainable living and participation in the sharing economy. As such, it's useful to keep track of these as they may explain citizen/user participation and behaviour patterns.



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#### Data collection and analysis

There are several ways to collect data to create a baseline and monitor DSM performance:

- In app surveys before/during sign up (use this to baseline against future surveys).
- Where in-home visits are needed (in London's case), use this to run baselining surveys with participants.
- Post-launch surveys (with all stakeholders) encouraging respondents to reflect on their own activities.
- O Post-launch focus group with active and non-active participants.
- In some cases: it may be possible to get information about specific activities (like cycling) from smartphone apps connected to the greenApes app. Such data would work well with a before-and-after survey for new users.

#### Key metrics for DSM scheme

When setting your goals and establishing the monitoring framework, it's important to also manage expectations around success. Remember, you don't need everyone to participate, just a critical mass. It will take time for the number of DSM users to grow organically. As such, fixed metrics like a "10% reduction in particulate matter by month" may not be the best way to measure success. Instead use metrics such as:

- o events hosted
- community orgs taking part

- O active users vs downloads
- O challenges run
- money diverted into community projects.

Another idea to explore in relation to impact modelling is a DSM Happiness Index. Here are some questions you could ask users to measure success:

- Do you feel that the reward points you've gained have been invested in fair and ethical ways? Yes or No
- Do you feel that your local authority /city can be trusted to operate your DSM?
- Do you feel supported by your peers within your DSM's community?

A DSM can play a big role in encouraging people to sustainable living. However, it can also be used to influence societal attitudes and societal norms on a grander scale. You can evaluate these parameters by asking survey questions on:

- O attitudes towards environment and technology
- o societal subjective norms
- o social influence.

To contact Sharing Cities email:**pmo@sharingcities.eu** or Future Cities Catapult at **francesco.marchet@futurecities.catapult.org.uk** to find out more. Reach out to us on Twitter **@CitiesSharing** for blank templates or more information about this tool. Introduction

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18 Merit goods have a partial or delayed full realisation of their benefit. This means at the time they are 'consumed', or in the case of the DSM 'used', only part of their benefit is realised. This characteristic is cited as the need for government intervention. A good example is education or healthcare.

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