



# CMEP Project Research, Design, Build & Internationalisation Methodology



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 821201

# Project Aims and Objectives



This project seeks to increase reuse of construction materials in urban environments by facilitating access to information on what materials are available in the area.

The primary objective was to develop a fully functioning Materials Reuse Portal (MRP) covering London which can be expanded or replicated in other cities.

The MRP aims to increase use and awareness of construction material marketplaces that are already in place in the CIRCuiT cities, rather than setting up as a competitor platform.



The MRP aggregates listings from existing exchange platforms to give users a comprehensive view of the options available. The initial prototype was to be released for London and some of the surrounding areas.

A second objective was to generate insights and data about the types of items that are being exchanged or offered for sale within the city, as well as providing information about the types of materials being searched for on the platform to help evidence demand for reusable material.

Thirdly the platform is to provide general advice and information on construction materials reuse.



# Project Approach and Research Methodology



We wanted to take a user centred approach when researching and developing the MRP. Engaging with stakeholders and potential users early in the project allows better research, grounded in people's actual experiences, and builds buy-in and support for the project. Both of these improve the chances of delivering a successful product.

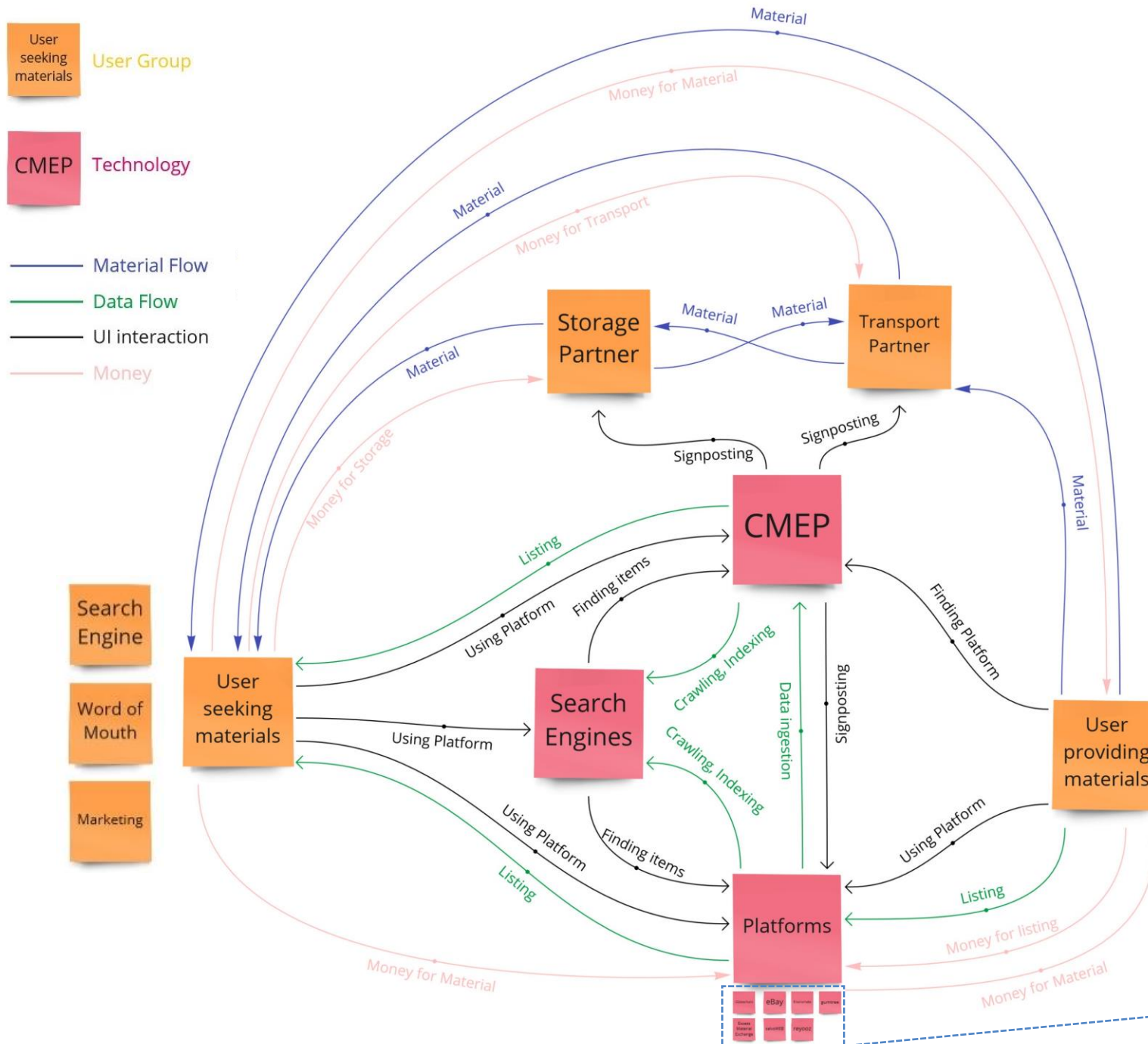
There are a wide range of potential users for the MRP from individuals to commercial businesses, charities and government organisations. Each of these user types have different needs depending on if they are wanting to find materials or list materials.

Other user types we needed to include in our research were the CIRCUIT partners as administrators and managers, and the existing exchange platforms, as integrators.

We used a mixture of stakeholder workshops, usability testing sessions, one-on-one meetings and desk research to build our understanding of user needs and technical requirements.

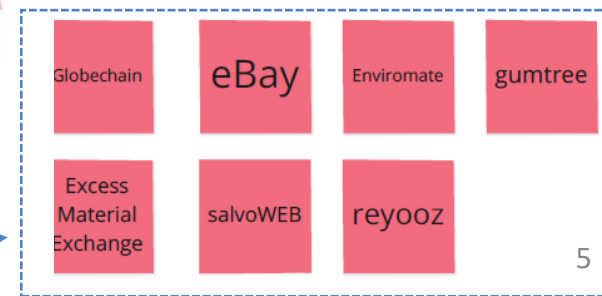
The full report of findings from the stakeholder workshops can be found in the Appendix. The next three diagrams were outputs from the user research.

The interim report (presented at the end of Milestone 3), outlining the build strategy is also included in the Appendix. The information in the body of this report includes updated information on the technical build, decision making and future recommendations.



## Data Ecosystem Map

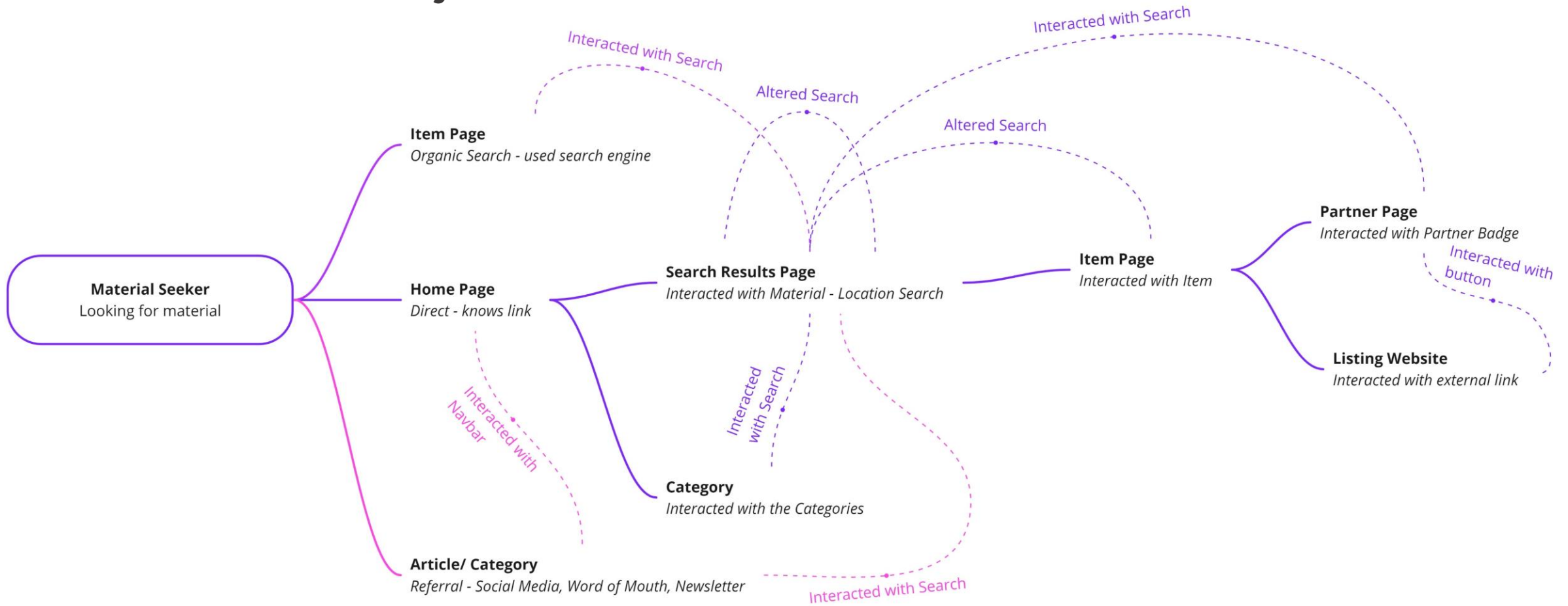
Mapping the users, technologies, interactions and value flows helps to visualise and understand the relationships, opportunities and blockers in an ecosystem.





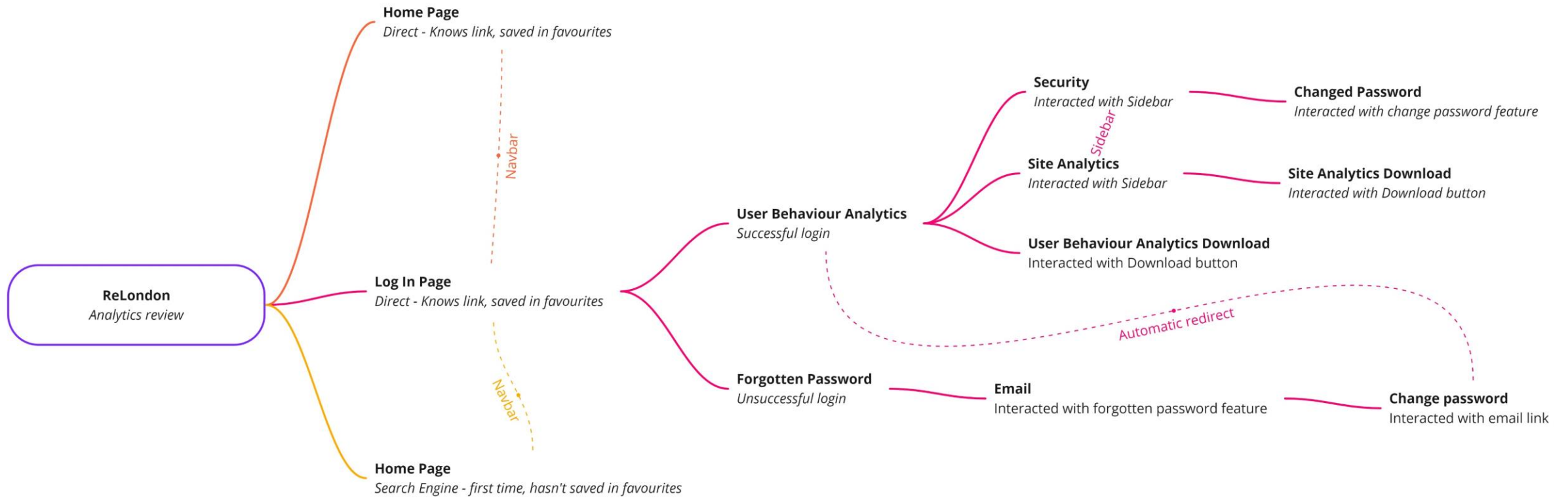
# User Journey Maps

## Material Seeker's Journey





## Admin Analytics Journey





# Integrating with Existing Materials Exchange Platforms



The project aimed to aggregate listings from at least 2 existing platforms. Contact was made with the four platforms that were known to operate in the London area. The technical set up of each platform was unknown at the start of the project (i.e. if they had APIs or other integration options available). In communicating with the existing platforms we took care to make it clear that what we were building was not a competitor and that there was value to be gained for the platforms by integrating with the MRP.

## **Technical Assessment of Existing Platforms**

### Globechain

API openly available. Integration possible.

### Enviromate

Supportive but no API available during project. API released in December. Integration possible.

### Enfield Materials Exchange

No API and showed little interest in integrating.

### SalvoWeb

No API and showed little interest in integrating.

## **Summary:**

Only one platform was capable of integration via API during the project. We therefore researched alternative integration options, detailed on the next page, but ultimately neither of these were felt to be suitable for the project aims.





## Review of Alternative Integration Options



### Manual Data Exchange

*Create templates for downloading and uploading listings data between existing platforms and MRP*

- + Low tech option
- + Quick to produce
- Time intensive to keep updated for ReLondon and platforms
- Listings out of date
- High risk of errors in data

#### **Summary:**

Not a suitable option. Too time consuming and (because of time-critical nature of listings) too slow.



### Web Scraping

*Automated tools to retrieve listing data from targeted websites to populate MRP*

- + Potential to gather high volume of data without API
- Resource intensive to keep updated
- High potential for tech debt
- Listings out of date
- Don't have appropriate permissions

#### **Summary:**

Not a suitable option. Very resources intensive and legally dubious.





## Proposed Build Strategy



Because of the lack of APIs and the issues with the other integration methods our proposed approach was to build the aggregator using API integrations from Globechain (the only platform on the list with an API during the project) and with eBay, arguably one of the world's largest reuse websites.

### API Integrations with:



### Positives

- + Can build API wrapper to integrate with 3 sites (*note enviromate's addition in 2023*)
- + Can build aggregator and test functionality
- + Can add new integrations as other APIs are developed
- + Replicable in other cities

### Negatives

- Only integrating with 2 of the platforms named in ITT
- 5,000 API call limit per day on eBay

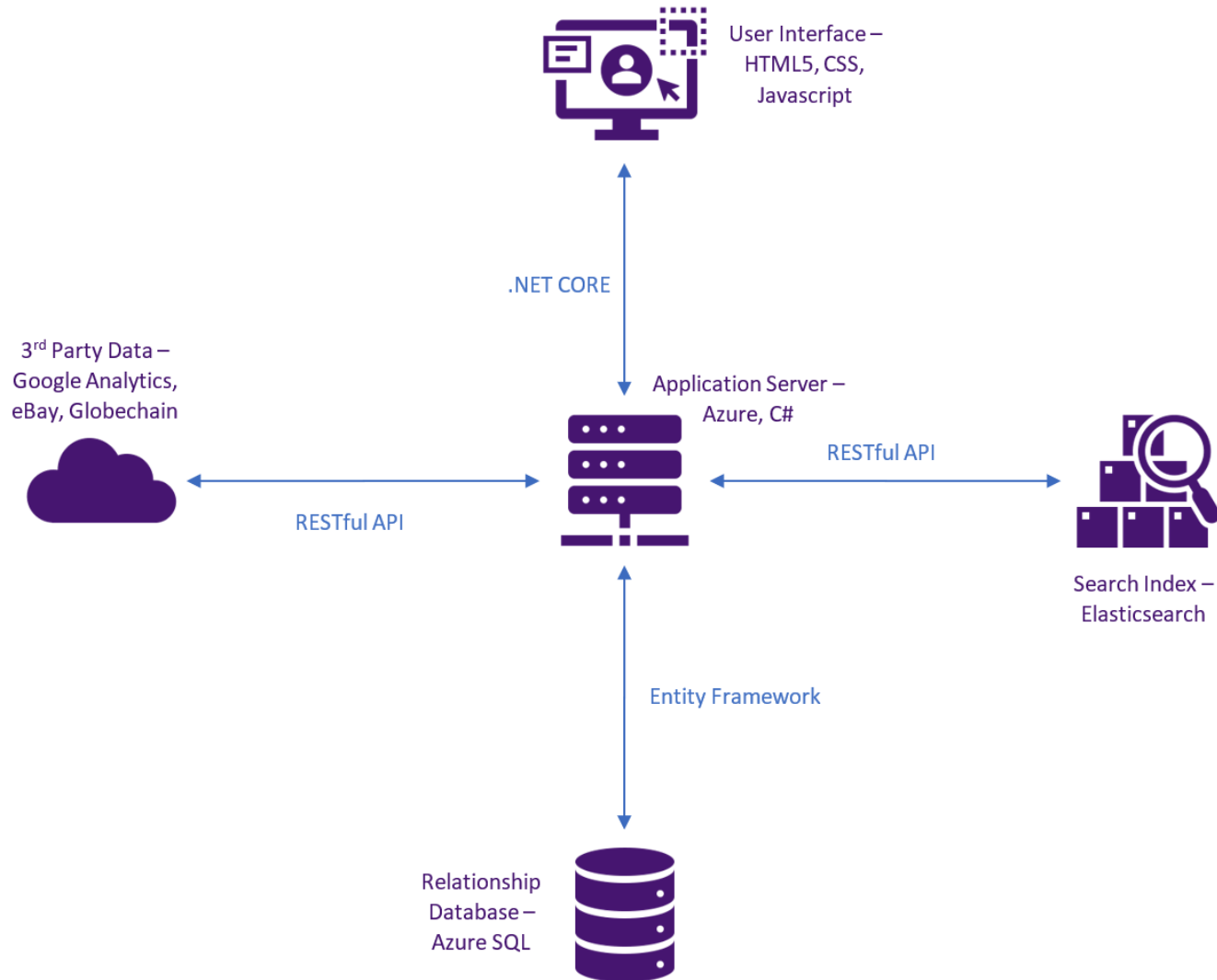
We wanted to encourage more integrations and so we also proposed some additional pages to be added to the MRP build:

### Proposed Additional Pages

- ★ Partner Pages – *to improve SEO and deliver value to existing platforms*
- ★ Guidance on how to maximise reuse in construction – *to help enact change in the sector beyond what is possible with the portal*



# Proposed System Architecture



Our initial thinking was to create a standard web deployment. One application server that is responsible for the work load, while using other services to provide additional functionality. All of which is tightly-coupled with the front-end system.

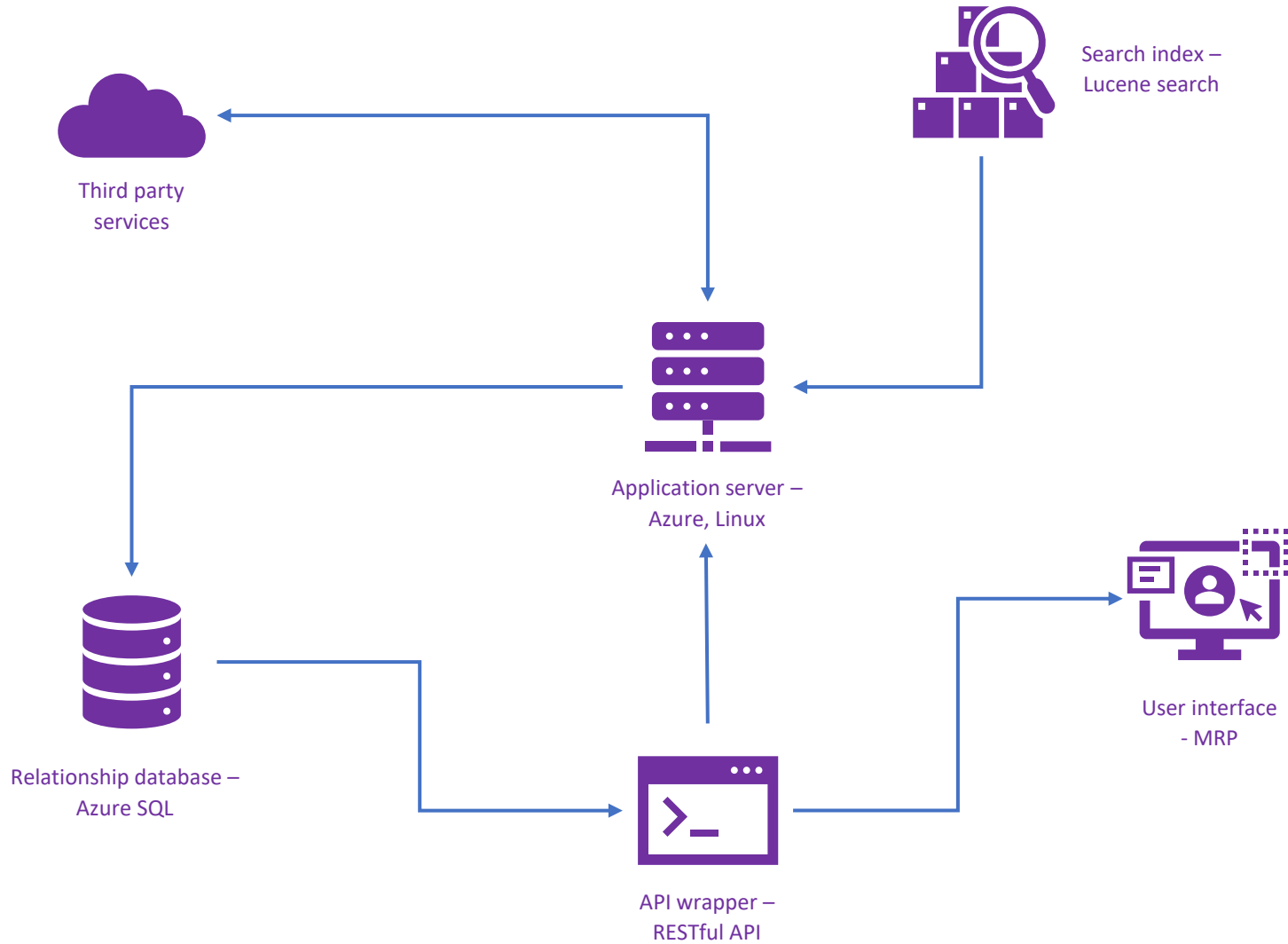
The majority of platforms are built to this architecture because until recently there has been no viable second option. This is know as “monolithic architecture”.

It’s relatively quick and easy to build and everything is contained in one server.

Whilst carrying out the development work we made a few minor changes to the architecture. On the next page there is a diagram of the implemented architecture, followed by details about why these decisions were made.



# Implemented System Architecture



Front-end	HTML, SCSS, JavaScript
Back-end	.NET 6, C#
Indexing	Lucene Search
Database	Azure SQL Server
Application	Azure Linux
Third party services	eBay, Globechain, Google Analytics, Swagger, Uptime



# Architecture Decisions

## Why Proto-microservice and NOT Monolithic?

During user discovery it became evident that the MRP had scope to evolve and morph to provide many solutions to an array of stakeholders. With this in mind we made the decision to decouple the front-end user interface from the back-end server – this is known as “microservice architecture”.

It is “Proto-microservice” because the business logic and the user interface are currently located on the same service. These can be easily separated at a later point, and was chosen to keep ongoing costs lower.

## Why use .NET 6 and not .NET Framework

- .NET 6 is a more modern framework that is built with performance and scalability in mind, therefore it is quicker to build with and maintain.
- It runs quickly.
- It is popular with API based architectures.

## Why use an API wrapper

- This provides the access point for data to be taken into the system.
- It allows for multiple applications to be easily built onto the same data.
- This could provide third party providers options to build technology on top of the MRPs database.

## Why use Lucene and not Elasticsearch

- Lucene is a free open-source search engine and therefore free to implement.
- It runs on the same instance as the web app and therefore accumulates less costs in terms of infrastructure.
- Elasticsearch is a commercial product built on top of Lucene.



# High-level Approach to Integrating with APIs

To integrate and aggregate the listings from Globechain and eBay we needed to go through a number of steps to consume their APIs and return meaningful results to those using the MRP.

## Application Architecture

- De-coupled back-end and business logic from front-end (UI).
- User accounts with different roles and access rights.

## Provider's Endpoints

- API endpoints have been implemented to consume each providers' API.
- Providers' datasets get transformed in accordance to the agreed MRP Standard and then stored in the database.
- Providers' endpoints are being consumed at regular intervals via [CRON](#) jobs so that listings are regularly updated.

## Application Endpoints

- The web app consumes a main API endpoint which is responsible for searching, filtering and sorting all listings available, across all providers.
- It's a public endpoint that can be easily re-used by any 3<sup>rd</sup> party application.

## Not all APIs are created equal

There were a number of differences between the Globechain API and the eBay API.

Types of material listed – eBay has thousands of listing types, most of which were not relevant to us so we needed to ensure we were only returning useful results. We did this by limiting to category Building Materials & Supplies (ID: 41498) and setting condition to Seller refurbished, Used, For parts or not working.

Listing details – The details for a listing are also very different on different platforms so we needed to transform the data so it was normalised.

Limits to API calls – eBay limits the number of calls that can be made in a day so we chose to request as much data per call as possible in as few calls as possible.

Balancing speed and timeliness – The processing required to fetch thousands of results, transform them and then return relevant results was affecting the MRP's performance (which is bad for user experience and bad for SEO). To address this we scheduled a repeating function to create a local cache of results.



# Onboarding New Providers

The basic process for onboarding or integrating with new providers is laid out below. Depending on if they have an endpoint or not there are two options for gathering the data.

We were unable to develop a full suite of endpoints to provide custom integration for providers because of timescale and budget. This would have also required third-party marketplaces to use the endpoints to provide the data. This would have slowed down development time. Once the appetite of the services has been determined, providing this suite of tools is a possibility.

## Providers with API

- Research API documentation.
- Mapping between provider data structure and CMEP standard (if necessary).
- API consumption strategy; e.g., frequency, response limits or filters.
- Implement internal endpoints with the required functionality and add them to the scheduler.
- Store listings to the database.
- Index listings once stored successfully.
- Once indexed, results show up in the portal search results.

## Providers with flat files

- The flat file importer has not been built yet.
- There will be a dashboard where authenticated users can upload flat files based on a pre-defined template (spreadsheet).
- The imported listings will (ideally) be in a pending state, until they undergo manual review.
- Once reviewed, listings get transformed from a flat structure, in line with the CMEP standard.
- Store listings to the database.
- Index listings once stored successfully.
- Once indexed, results show up in the portal search results.

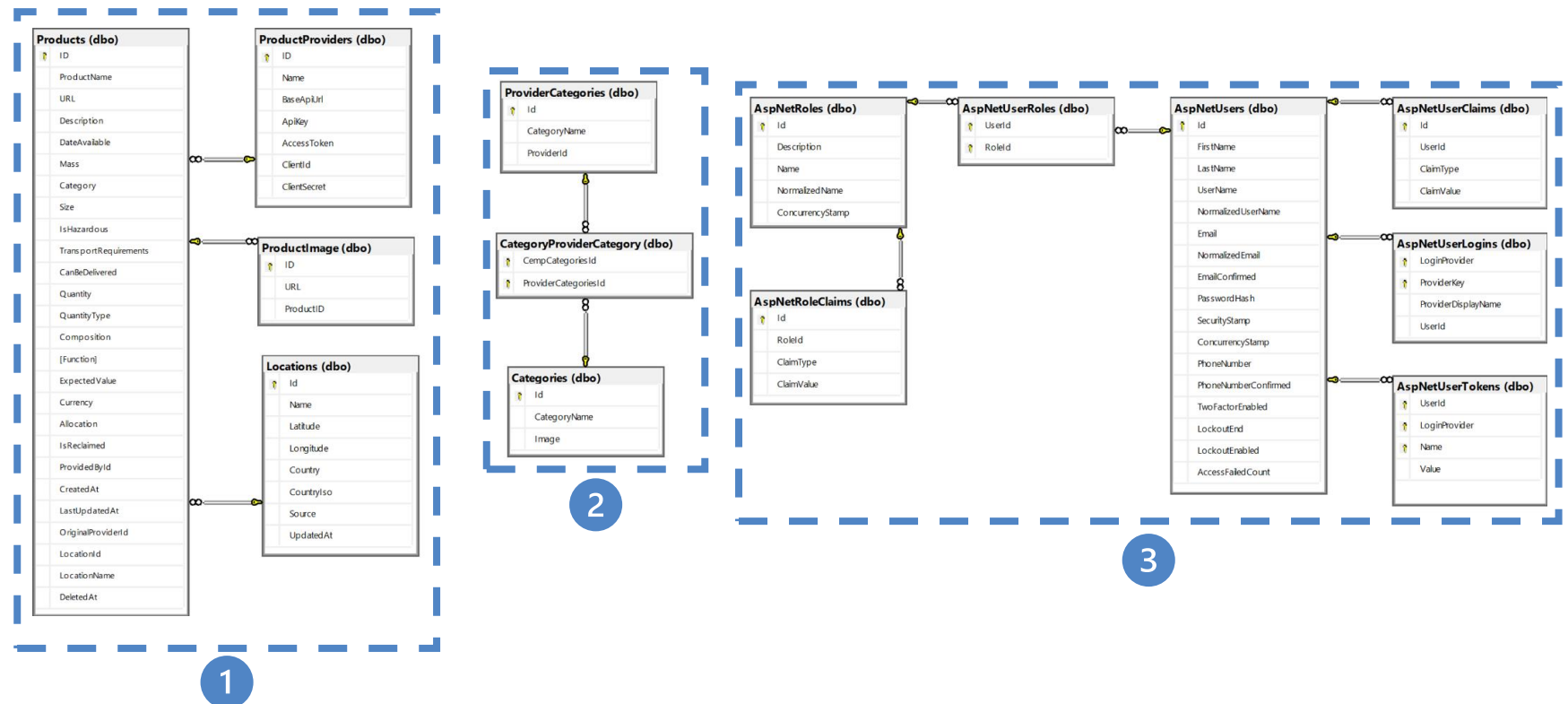


# Database Diagram

The database architecture is following good practice guidelines for relationship database management system. It follows fourth normal form (4NF) database normalisation. This allows for fast storage, analysis and retrieval of data. Because there is no standardisation in terms of what fields are collected by the different platforms we needed to carry out a data mapping exercise between the MRP categories and the provider categories.

There are three main schemas within the database.

- 1) Products – these are the tables of items that have been provided by the external marketplaces.
- 2) Categories – this is the mapping tables so that marketplace categories can be mapped to the MRP categories.
- 3) Users – tables holding data regarding users accessing the system.





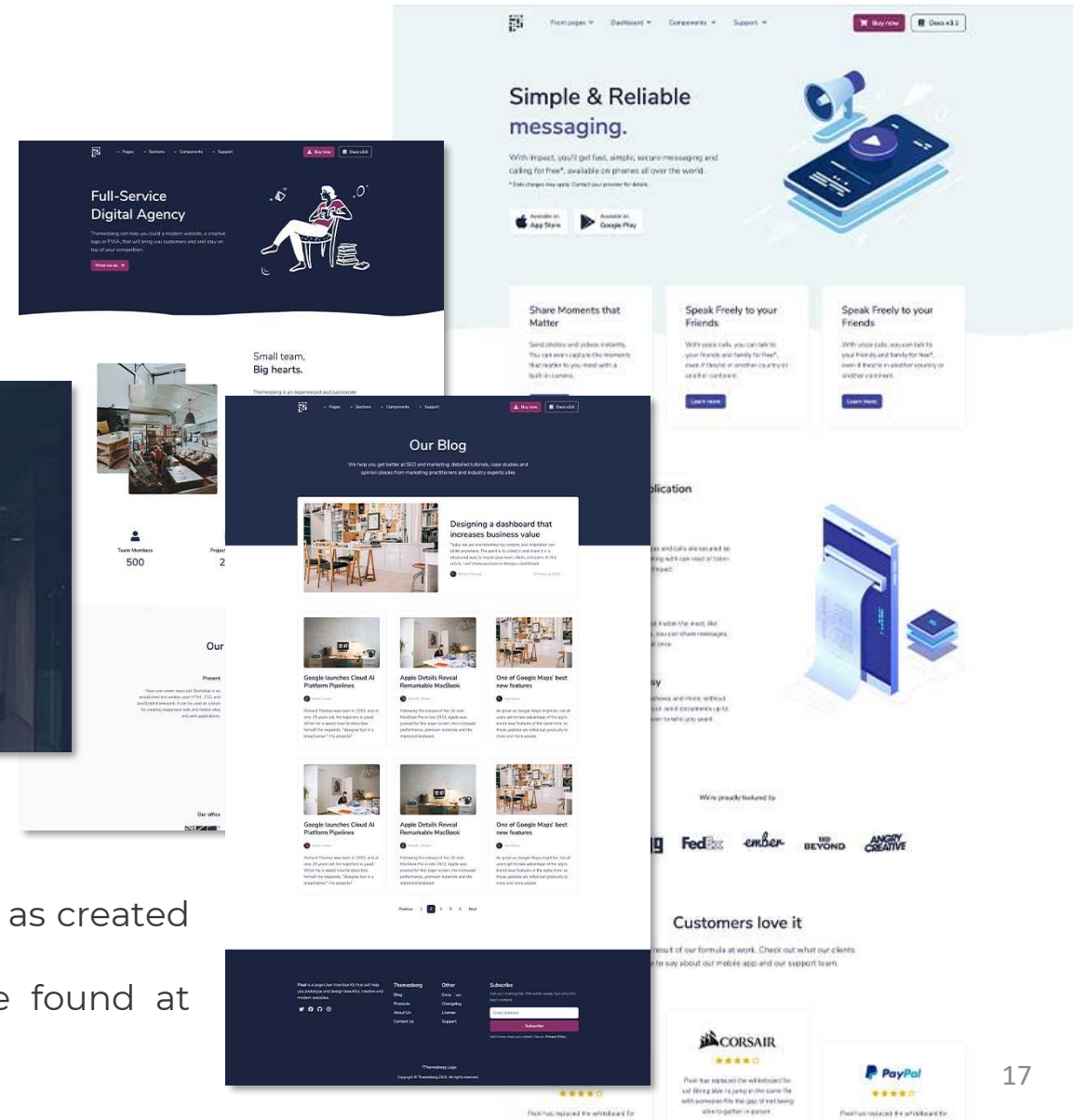
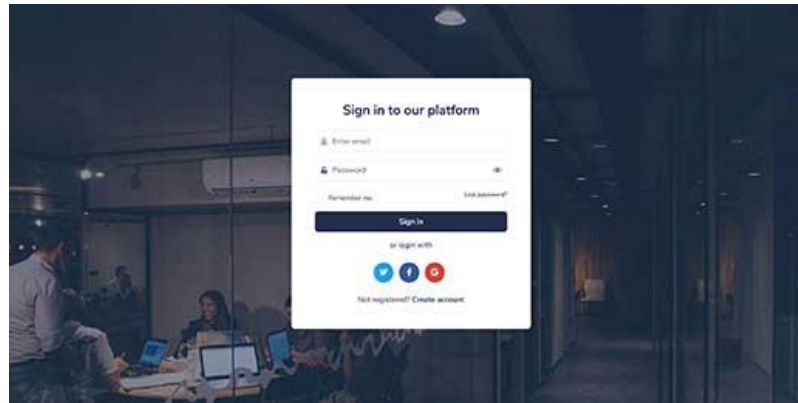


To speed up development we wanted to use a UI Kit. This saves valuable time as there is no need to design and build the different front end elements. Instead a kit provides a wide variety of elements to choose from which can be quickly implemented.

We chose a theme which had elements which suited a directory style site, like the MRP.

It included all the necessary pages, including:

- homepage
- search
- search results
- individual listings
- partner pages
- about us
- contact us
- FAQs
- login



The theme we chose was the Pixel Pro - Premium Bootstrap 5 UI KIT as created by Themesberg (Crafty Dwarf LLC) - <https://themesberg.com/>  
We have a "Company License". The licensing information can be found at <https://themesberg.com/licensing>.



# Reporting Requirements

There are two ways we track these measures. The ones around user behaviour analytics are via Google Analytics which provide an off the shelf dashboard to track and measure user behaviour metrics. The onsite analytics are tracked through the platform itself. The below were agreed to be the relevant measures to track.

## User Behaviour Analysis

- What is the traffic source? (e.g. Search Engine, Direct, Social)
- Which queries in search engines are resulting in a land to the MRP?
- Which pages are users landing on?
- Which pages are users navigating to?
- How many users are visiting the site?
- How many of those users are new visitors?
- How many of those users are returning visitors?
- What device types are users using?
- What are the broad demographics of the users?

## Onsite Analysis

- How many items are on the CMEP?
- Which partners are providing which items?
- Which exchange platforms do users navigate to?
- Which search queries do users use on the CMEP?

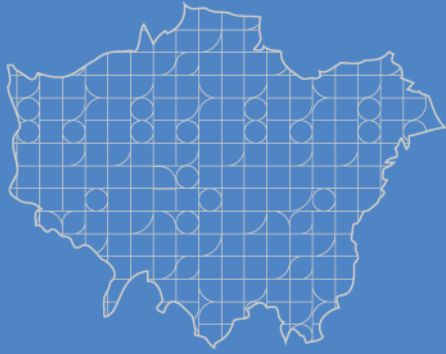
## An unexpected challenge

We found out that Google is turning off the older version, Universal Analytics (UA), on the 1<sup>st</sup> July 2023. The new version Google Analytics 4 (GA4) is leaner and no doubt will be better, but some features don't exist yet or are in 'beta'. What that meant in practise was that some of the functionality we were expecting to use was not an option – namely embedding dashboards/reports.

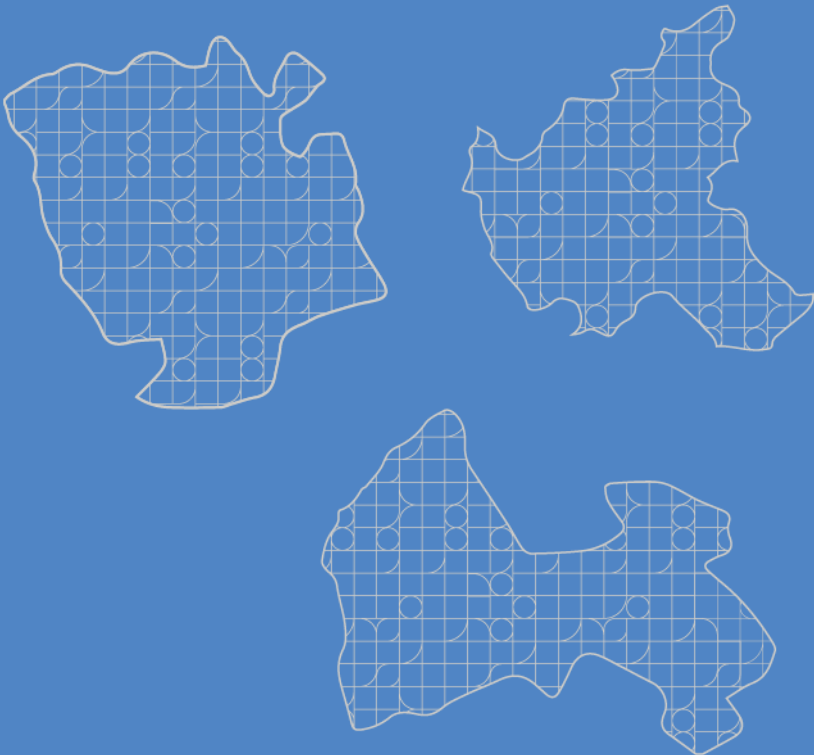
We considered three different options:

1. Use UA, knowing it would be obsolete by July 2023.
2. Try to implement both so that some reports can be shown on the MRP, this would need updating when UA is taken offline.
3. Use GA4 and where it's not possible to show the reports on the MRP admin area then admin users would need to view this in the Google Analytics platform.

We chose option 3. Primarily because although using new tech has issues (learning curve, challenged assumptions) these will be overcome with time and knowledge. Whereas using near obsolete tech (though quicker and easier for us), would have meant that the MRP would be launched with "tech debt". If this project is to create a prototype and to pass on the learnings to other cities, then there is no value in using soon to be obsolete tech and burdening the MRP with tech debt from the start.



# Internationalisation



The service has been built with internationalisation in mind, but some tweaks will have to be made to incorporate other countries' data.

## **Locations**

We need a table of locations within a country to map the location data to. Because of the different ways that different marketplaces provide geolocation data we need to provide a standard list within the database for the system to use. This data needs to be appended to the locations table.

## **Language**

A translation service may be required to translate the pages in to different languages or alternatively pages could be translated manually and language identifiers added to the HTML to provide users with the correct page based on their browser settings.

## **Local Norms**

Culturally or regionally specific attributes would need to be taken into account. Different areas have different expectations on information that should be associated with items – either for cultural reasons, or regulatory requirements. Further user research or local knowledge would be needed to ensure the platform performed well in new locations.



## Future Improvements and Recommendations

### **Development Recommendations:**

#### SendGrid integration

Fully hooking up the MRP with a cloud-based SMTP provider wasn't implemented at this stage as the functionality to send transaction emails to users wasn't required.

#### Split the API wrapper and UI onto different application servers

This would provide a fully headless, microservice approach. This is beneficial for many reasons:

- 1) It allows for quicker iteration. One area can be focused on, developed and tested without impacting other services.
- 2) Individual services can be scaled up, down, out and back based on the demand for that specific service – reducing overhead.
- 3) Individual services can be tuned to better fit the nature of the work load.

#### Add provider specific endpoints in the API wrapper

This would allow providers to build their own software using the MRP API and could lead to more innovation.

### **Non-Development Recommendations:**

Working with users and platform providers to agree an open standard for listings data would make integrating and aggregating much easier. It would also provide users with a more streamlined experience as there would be more continuity across platforms.



**Report written by:**

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**Completed January 2023**

**Additional support and user research report prepared by:** Carla Worth, Resource Futures



# Appendix 1

## *User Research Report*



# Creating a Sustainable World

Certified



Corporation



# Stakeholder Workshop Findings

## Circular Construction In Regenerative Cities (CIRCult)

### Materials Exchange Platform

August 2022



**Carla Worth**  
**Senior Consultant**

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**Head of UK Policy**

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# Contents

This report presents the findings from the CIRCuIT Material Exchange Platform workshops. The report has been organised into the below sections.

- [Participation](#)
- [Key Findings](#)
- [Challenges identified](#)
- [Solutions proposed](#)
- [User Stories](#)

## Appendices

[Appendix 1 – Miro Workshop Frames](#)

*Stakeholder Engagement Plan provided separately*



MULTIPLE DATES

### New Materials Exchange Portal in London - Have your say!

by Resource Futures

Follow

#### Location

Online event

Are you a builder, designer, architect, or just fancy a good bit of DIY?  
Interested in reuse and sustainability? We want to hear from you!

# Participation

## Workshops summary

Resource Futures and Dposal held a total of three workshops between July 18 and July 26, 2022. The workshops were organised via Eventbrite to facilitate easy sharing of the event, as well as management of the attendee list. The event can be viewed online [here](#). A Stakeholder Management Plan (provided separately) was prepared to encourage maximum engagement and participation in the workshops.

The workshops were each two hours in length and were held in MS Teams. Miro was used as the online platform to present and engage participants, given previous experience and success in similar online workshops. Appendix 1 provides snapshots of the Miro 'frames'.

Overall, 21 people attended the workshops. The attendees represented a wide mix of individuals, from highly experienced with material exchange platforms (MEPs), to those with no experience whatsoever. There was also a good mix of people who were positive and negative toward the project objectives and feasibility of reuse in the construction sector. It is also worth noting that the first two workshops took place in the hottest heatwave in UK history, which may have discouraged those who originally signed up to the workshop from attending.

The stated objectives of the workshop were to: 1) Establish users' understanding of MEPs, 2) introduce the objective of the new MEP project, and 3) understand users' priorities and preferences for buying and selling materials online.

## Workshops detail

### Workshop 1

Monday July 18  
16:30-18:30

- 17 total orders through Eventbrite page
- 5 attendees

### Workshop 2

Thursday July 21  
13:00-15:00

- 9 total orders through Eventbrite page
- 3 attendees

### Workshop 3

Tuesday July 26  
10:30-12:30

- 14 total orders through Eventbrite page
- 13 attendees



# Key Findings



While each workshop varied in its discussions and solutions proposed, the below key findings were shared across all workshops, and thus merit particular attention as the main takeaways from the sessions.

## **Practical and logistical issues related to reuse in construction inhibit the uptake and success of MEPs**

It was overwhelmingly agreed by participants that for any MEP to have wider uptake, we must first find ways to solve the practical and logistical issues related to reuse in construction. While an online platform for materials exchange is welcomed, the platform cannot work if it is not linked with the physical space for storing the goods that are listed. Often the window for pick up of items is so small that items are not posted online. Other challenges with pick up include lack of transport networks, and health and safety issues of individuals coming on site.

## **Lack of consistency in product specifications and data standards makes searching for and using secondhand materials difficult for construction projects.**

The level of product details/attributes that MEP users require varies, e.g. professionals in the commercial sector require detailed product specifications and certifications.

Currently, MEP platforms do not require detailed specifications for listings, which excludes professionals from being able to use the platform for their projects.

## **There is great opportunity for the MEP aggregator to support the move towards 'deconstruction'**

The industry is increasingly talking about 'deconstruction' instead of demolition. There is great opportunity for the MEP aggregator to play a role in this trend, facilitating deconstruction through reuse of materials, and should thus plan for how it could support these practices.

## **Website functionality**

In addition to the contextual and wider discussions around reuse in construction, and how an MEP can fit into this challenging space, participants also discussed their preferences around website functionality. It was overwhelmingly agreed that users do not like to create profiles or input login information, as this was seen as an additional barrier to using the website. Participants were also greatly interested in additional functionality that the aggregator website could provide, such as carbon and cost savings of buying secondhand as opposed to buying new.

# Challenges Identified

The main challenges identified can be summarised as issues relating to scale in the reuse sector, standardisation of data across products listed, issues in supply and demand, and website functionality.

## Issues of scale

- Sourcing second-hand materials for large scale projects typically has not been done or considered widely; large contractors and developers will be less likely to take on liability of using second-hand materials due to expiration of certifications.
- Existing MEPs are too broad; many times users will be looking for a specific item, so more specialist sites are more useful (e.g. for marble).
- Confusion over who would be the end users of the MEP. Individuals and DIYers don't typically use because MEPs sell large quantities of items (e.g. in pallets). However, professionals also don't use because materials don't have detailed enough specifications, or they don't want to take on liability/risk.

## Issues with standardisation of data

- Certification of materials is necessary if reusing in a commercial context. At a minimum, materials should include the manufacturer name, so the material seeker can go back to the manufacturer for re-certification.
- Need to define what the minimum product information requirements are. There must be some standardisation of these data requirements, otherwise the MEP aggregator could become the "wild west", aggregating anything and everything.

## Issues of supply and demand

- Big gap in priorities between designers/architects and demolition workers. Product attributes are easily defined when they are still viewed as 'materials', but lose all value when they are considered 'waste', as demolition workers don't have any incentive to preserve and carefully remove materials for resale.
- Sellers are often not available when material seekers need them, and vice-versa. The window of time can be very short (e.g. sometimes a matter of hours), and thus matching supply and demand is very challenging. Storage and delivery of materials is needed to solve this.

- MEPs currently don't offer a reliable and consistent supply of materials. Professional material seekers require more consistency and advance planning by those selling materials, (e.g. advance documenting and posting of available materials) so that they have time to plan/reserve those items to use for upcoming projects.

## Issues with website functionality

- It was felt that people don't currently use existing MEPs very much, so aggregating their listings may not be very useful.
- There was near unanimous dislike of creating profiles, usernames/passwords, and receiving email notifications. This was seen as creating an initial barrier that can put people off using MEPs.



# Solutions proposed

A well-functioning MEP aggregator could demonstrate that there is a market for second-hand materials, which is sorely needed. Below we present various solutions proposed throughout the workshops to enable this.

## Supply and Demand:

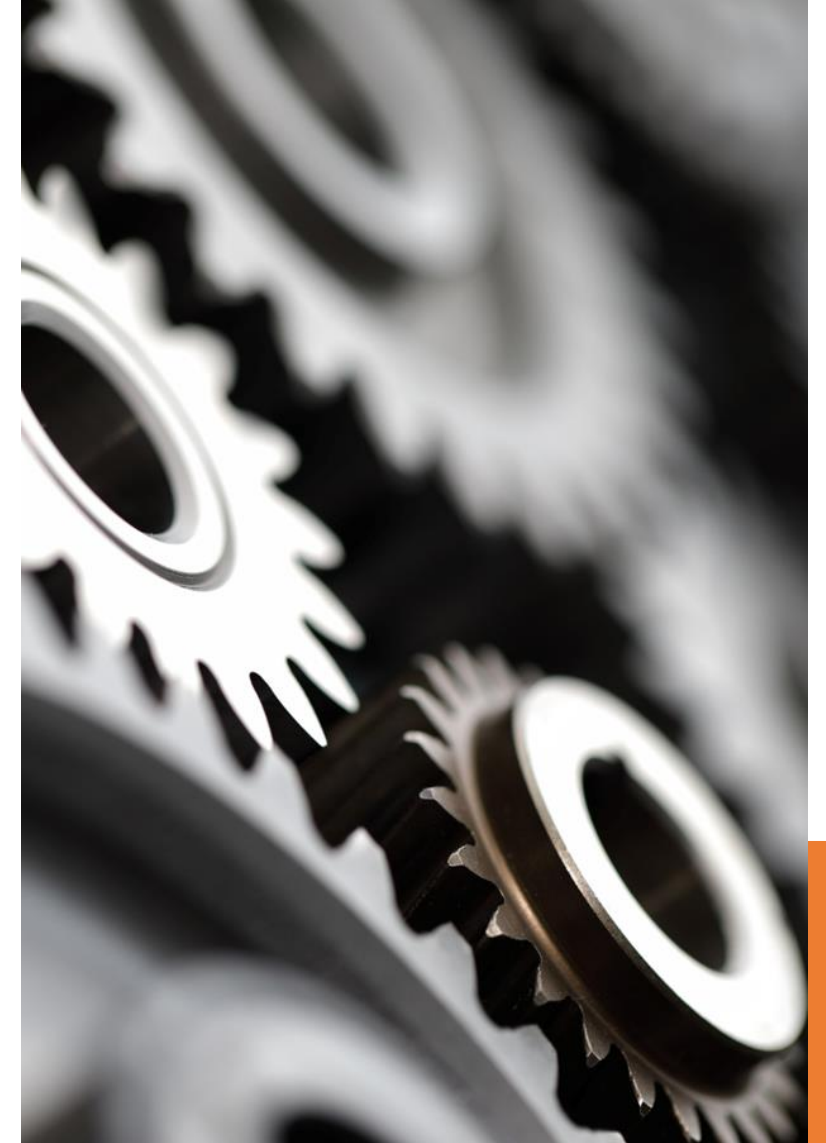
- Pre-demolition audits could be linked with the MEP aggregator platform to provide advance listings of materials. Auditors will have a good understanding of the quality, provenance, and other relevant attributes/properties of materials to improve the quality of the listings. This rich information coupled with advance planning will allow for designers and architects to use second-hand materials.

## Data:

- Developing data standards, potentially based on pre-demolition audits, and integrating existing material standards (e.g. for wood, steel etc) would improve the quality of listings and increase reuse. Creating website functionality so that users could easily show/hide detailed specifications would cater to both professional users and members of the public.

## Website functionality:

- The MEP aggregator could become more of a host/enabler, providing links and information about others in the logistics chain (e.g. storage partners, delivery partners, etc) to facilitate reuse.
- The MEP aggregator could provide a circular economy 'story' for materials reused. Participants in the workshops mentioned that material sellers may be interested in creating a circular economy success story about the materials they have passed on for reuse. The platform could also provide some sort of 'certification' that the item has been reused for sellers to provide BREEAM (or other certification scheme) scores.
- Participants expressed general interest in understanding the carbon and cost savings for buying second-hand over buying new. If the MEP aggregator provided this information, it could serve as an additional incentive to buy second-hand, particularly if they can count this carbon saving within their own businesses.
- Participants liked the idea of the MEP aggregator providing them 'similar' items, if the search term they used did not provide any results. By seeing items that are similar, this reduces frustrations and they may wish to revise their search terms.





# User Stories

After the workshops ended, and as part of the analysis and synthesis of the workshops, Resource Futures designed 'User Stories' from the main findings of the workshops. These User Stories are important firstly to understand users' needs and priorities, but also to build user support and to design a viable website in the long term. Having sight of users' priorities, and how they will engage with the website ensures resilience in the tool with invested signatories.

User Stories are developed in software engineering and Agile development. They are structured as follows: ". "As a <type of user> , I want <some goal> so that <some reason>". Here we have developed user stories for material seekers, material sellers, existing MEP platforms, and logistics operators.



## As a material seeker...

- I want up to date listings so that I know what is and isn't available to buy, and by when it needs to be sold/collected.
- I want highly detailed product specs so that I can determine whether they are suitable for my project.
- I want to be able to search/filter by location so that I can see only those listings in my area.
- I want to compare similar items by certain criteria, e.g. price, so that I can know and choose the best item available for me.
- I want good quality photos of the items so that I can determine whether they are suitable for my project.
- I want to be given suggestions if I don't find anything straight away, so that I can see similar items I may not have thought of.
- I want a streamlined display with standardised information, so that I can easily understand listings.

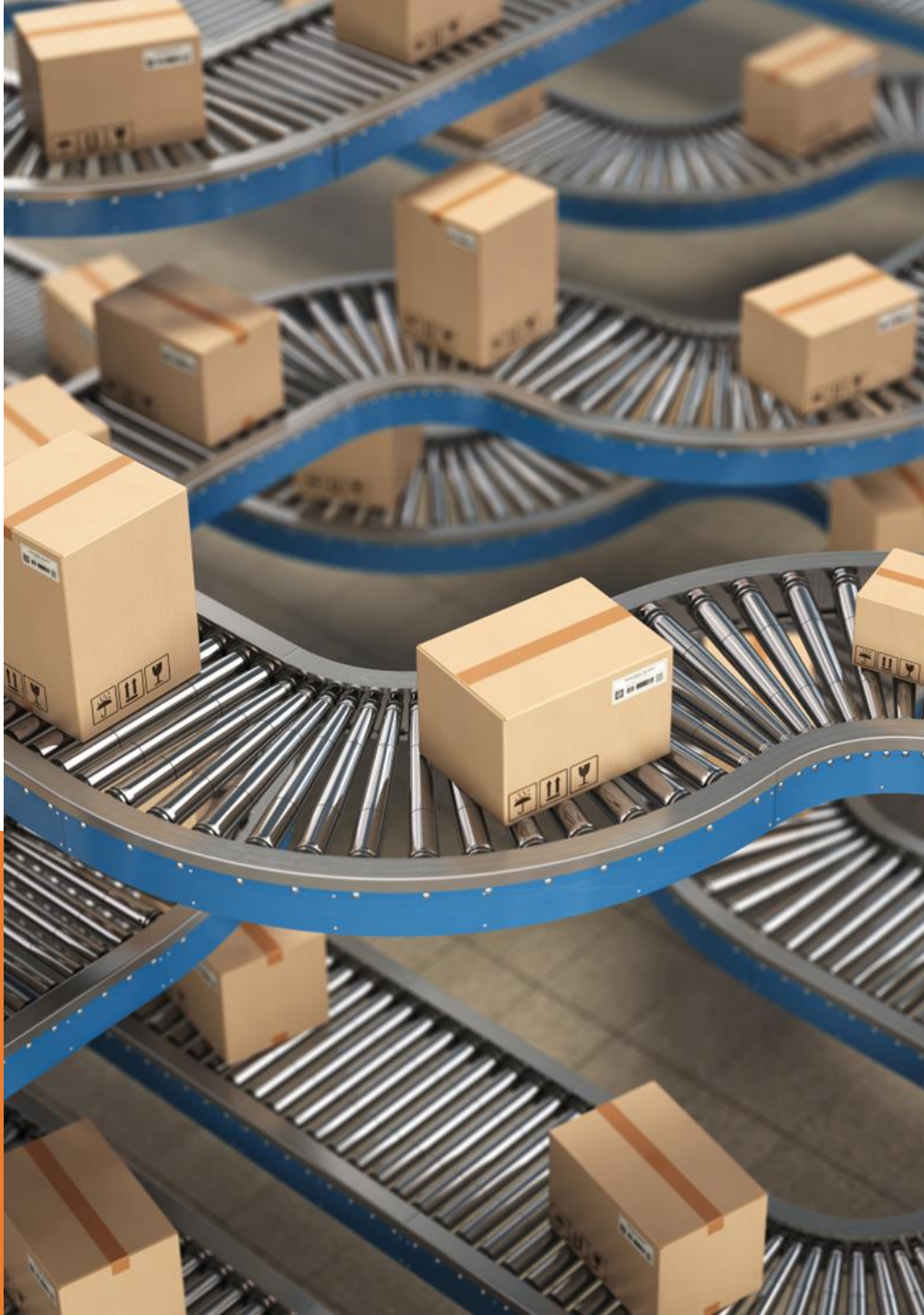




# User Stories

## As a material seller...

- I want to use an MEP to sell excess materials so that I can avoid fees associated with disposal.
- I want to be able to quickly and efficiently list my available materials so that I can minimise effort required on site.
- I want to be able to store my available materials offsite so that I can ensure they are reused.
- I want to be able to sell excess materials without having untrained individuals turning up on site so that I can adhere to my health & safety protocols and procedures.
- I want to know whether my listed item was sold, and how much embodied carbon I have saved, so that I can demonstrate circular economy efforts.
- I want to know what the top sold items are so that I can align my available material to demand.



# User Stories

## As a Materials Exchange Platform...

- I want to grow my user base so that I can have a successful business.
- I want to be featured on the MEP aggregator website so that I can increase my business and facilitate reuse.

## As a logistics business operator...

- I want to know pickup/drop-off conditions on site so that I can provide a speedy service to my customers.
- I want to be featured on the MEP aggregator website so that I can increase my business and facilitate reuse.

# **Appendix: Consolidated Workshop Frames**

# Material Exchange Platforms

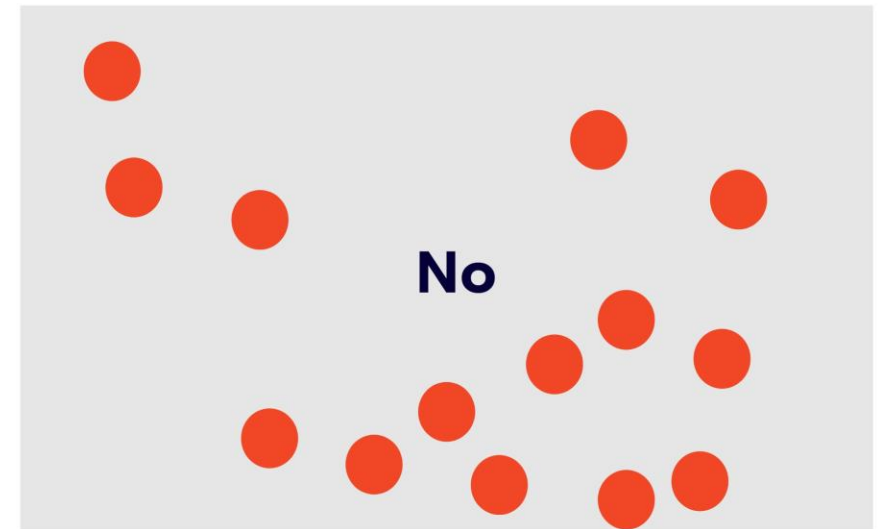
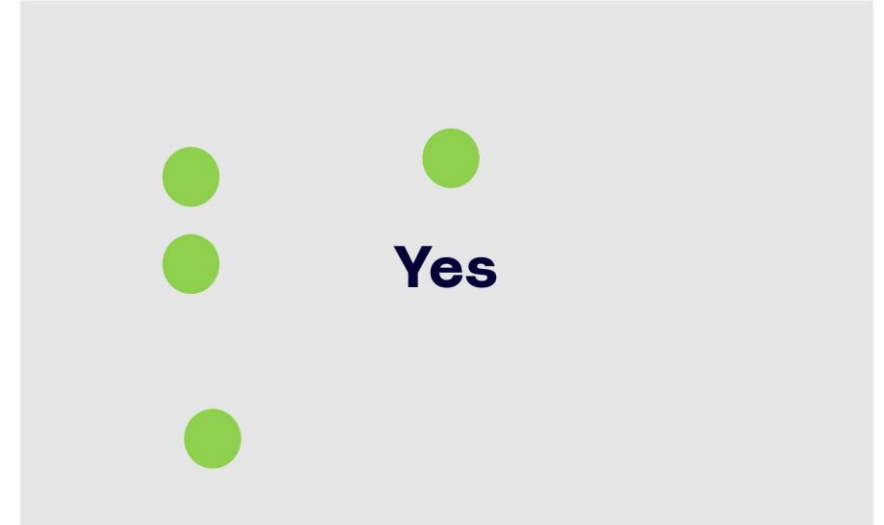
There are several MEPs that exist in London already.

The new portal will not compete with active platforms, such as Globechain, Enviromate, Enfield Excess Material Exchange...

Instead, it will act as an 'aggregator' and compile all listings, linking to the existing platforms and thereby increasing visibility of listings and activity in the secondhand market.

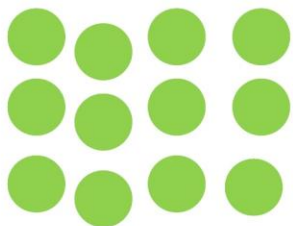
## Have you used an MEP before?

If yes, click and drag one of the **green dots to the YES** space to the right. If no, click and drag one of the **red dots to the NO** space.

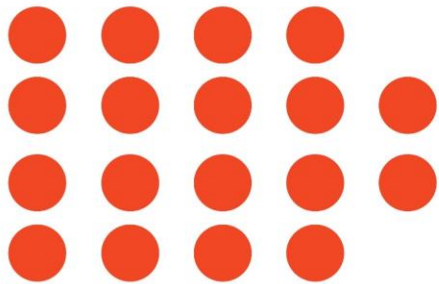




# What do you like about the websites?



# What do you dislike?



Click and drag the green and red dots to vote. Double click a sticky note and type your own reasons - don't forget to add a red or green 'dot' after

## Functions

Provide delivery service options / partners

Give a carbon/circular/sustainability info against each item

Ability to review seller profiles (like Amazon and Trust Pilot)

Compare characteristics of items from different websites

Find the best price for an item

Reach the greatest amount of prospective buyers

Enter items for disposal/sale

Add location/quantity/time scale

Quality/photo

## Search capability

Compare similar items

Getting accurate results

Filter for specific items

Use the search bar to search for specific items

get an idea of prices quickly

Filter by region (location-based search function)

All items available in one place

## Login/Account

Create a username and password to allow me to create a profile

Receive email notifications about items I am interested in

Too many advertising emails

## Layout/Look

Clear homepage with the main function being a search bar & location

Easy to access from a mobile

easy to read - clear text and obvious place to click to get more info

Consistency of graphics makes searching easier

Getting a quick overview of all the key information

## Other

Carbon values should be provided with equivalent familiar figures (eg/ same amount of CO2e as heating 100 homes) to give context to large numbers

Include embodied carbon saving quantity next to material to help influence material decisions

Loading screens

Showcase organisations being aggregated

only have to put info in once to access multiple site

Trust and security. For instance, prefer to speak to a person/agent

see score reviews of products/providers

Easy way of contacting sellers

# MATERIAL SEEKERS

What are some key words that people searching for materials might use?

What sort of attributes (information, data) are you looking for in the materials you would buy?

How would you likely access the MEP?  
(Please use the dots to vote)

RICS New Rules of Measurement (NRM)	Georgian double doors	mid-century	Reuse/RFO/How to reduce embodied carbon
raw materials	'Fire' Rated 'IP65' light fitting	second hand	Material type e.g. steel, concrete, timber
Salvaged	Type of use (structural/non-structural, interior/external, environmental conditions, etc)	Reused	Reclaimed materials
Service life	Reuse/recycling potential	Sector it came from (e.g. Construction, fit out)	

Quality/condition	Application	quantity (m2, tonnes, m3, unit of items)	Information needs to be specific, pure volumes are no use, taking the example of steel beams you'd want to know individual lengths/size
Age (stylistic period)	Location	Name of manufacturer (if known)	Contaminants
Provenance	Certification	Material-specific dimensions	EPDs if known/established products
Colour	Use history (contamination, damage, etc)	Location - can it be delivered, when is it available	is there a clear classification of 'wear & tear' eg materials to be used where they will be seen vs aesthetics required if being used unseen - such as Rebuild project classification
Maintenance approaches			



At home	In the office	On site
On a desktop computer	On a mobile phone	



# MATERIAL SELLERS

What are the most important factors when choosing where to list materials?

What sort of attributes (information, data) do you have available about the materials you would sell?

How would you likely access the MEP?  
(Please use the dots to vote)

Ease of use	likelihood of a successful transaction (e.g. a more reliable audience)	Cost e.g. a free platform	Customer reach
Reach a wider audience	Location it serves	Quantity	Integrity of site
Option to attach pics	Insurance	Reliability of platform	Can you get any data back about your listed products?
Logistical capabilities	Ability to forecast	number of companies/people registered (exposure to potential customers)	Integration with Excel/csv file

Date by which it needs to be picked up	Dimension/quantity	Current application	Volume/mass
Location	ESG data	Concrete cement ratio	Comparison to cost of new
Associated carbon cost	Manufacture, Product Codes	EPD	Load carrying capacity
Expected service life remaining			

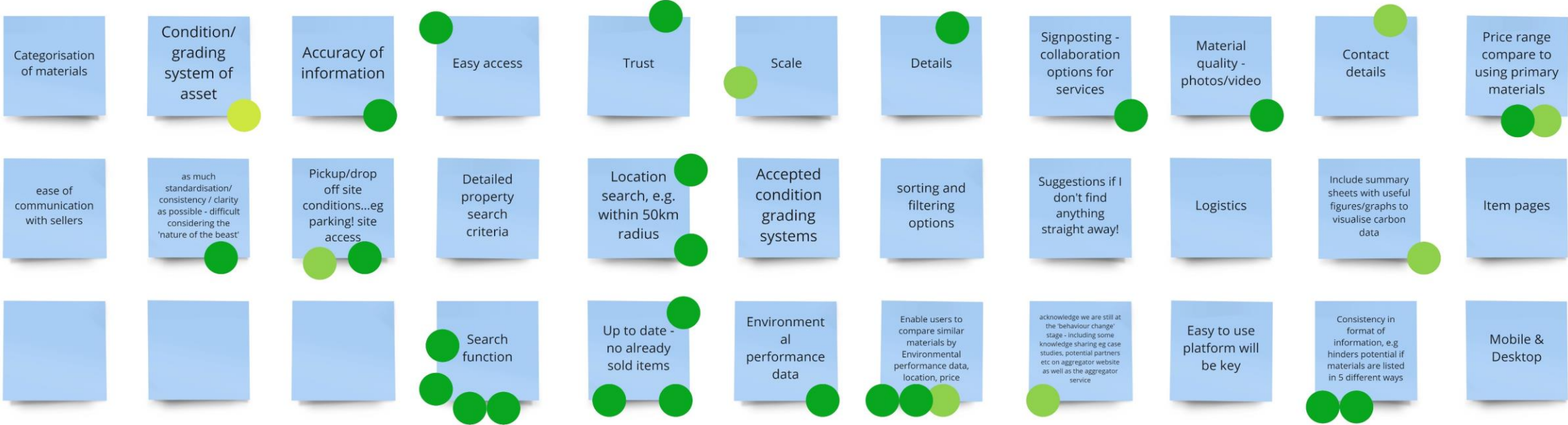
○ ○ ○ ○ ○ ○ ○

○ ○ ○ ○

At home	In the office	On site
○	○ ○ ○	○ ○
On a desktop computer	On a mobile phone	
○ ○	○ ○ ○	



# How might we best design the MEP for success? What should we include?



## Voting



# Next Steps: Starting to build the Materials Exchange Platform

- ✓ Design User Journey Maps
- ✓ Begin technical research to integrate with existing portals
- ✓ Design wireframes for the platform
- ✓ Usability testing of wireframes

Would you be interested in testing the wireframe design of the new platform?

Jason  
(Tracouk)

Ben  
Gur

Phil  
(simple  
works)

Maria

A  
Mansouri

Andrew  
(tracouk)

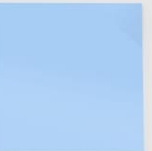
Purva  
Tavri

Flavie

Adam

Wei  
Lee

Morgan





# Appendix 2

## *Useful Links*



## Useful Links

Link to Figma wireframes:

<https://www.figma.com/proto/VYpnrqTUO3Btad0cUtSS3z5/CMEP?node-id=4:1485&scaling=min-zoom&page-id=0:1&starting-point-node-id=0:3>

Link to MRP:

<https://materialreuseportal.com/>