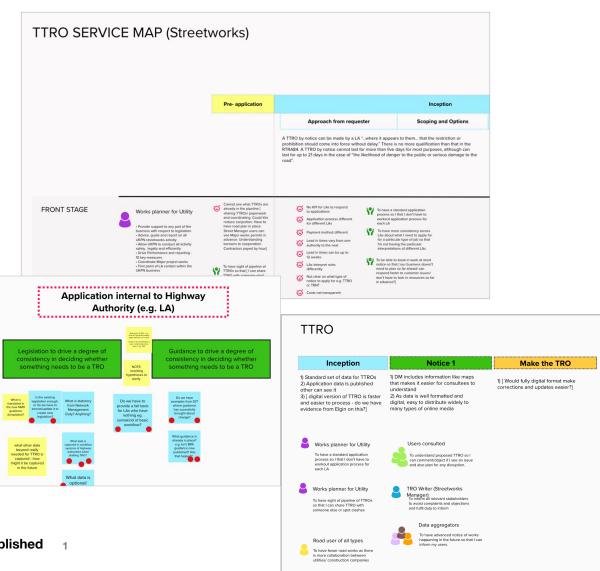
User Research

Approach:

- Reviewed research from Discovery and Policy Alpha and summarised in context of Data Model Alpha
- Defined hypotheses, declared assumptions and identified risky assumptions about users
- We did not attempt to speak with all possible stakeholders.
 That would not have been possible within a single Alpha.
 Instead, we focused on our riskiest assumptions.



TTRO SERVICE MAP (Streetworks)

Pre- application	Inception					
	Approach from reque	ester Scoping and Options				
	A TTRO by notice can be made by a LA "where it appears to them that the restriction or prohibition should come into force without delay." There is no more qualification than that in the RTRA84. A TTRO by notice cannot last for more than five days for most purposes, although can last for up to 21 days in the case of "the likelihood of danger to the public or serious damage to the road".					
Cannot see what TTROs are already in the pipeline [sharing TTROs/ paperwork and coordinating. Could this reduce conjestion. Have to have road plan in place.	No KPI for LAs to respond to applications Application process different for different LAs	To have a standard application process so I that I don't have to workout application process for each LA				
Street Manager users can see Major works permits in advance. Understanding barraers to cooperation. Contractors payed by hour]	Payment method different Lead in times vary from one authority to the next Lead in times can be up to	To have more consistency across LAs about what I need to apply for for a particular type of job so that I'm not having the particular interpretations of different LAs				
To have sight of pipeline of TTROs so that [I can share TTRO with someone else]	12 weeks LAs interpret rules differently Not clear on what type of notice to apply for e.g. TTRO or TRN?	To be able to book in work at short notice so that [our business doesn't need to plan so far ahead/ can respond faster to customer issues/ don't have to lock in resources so far in advance?]				

FRONT STAGE



Works planner for Utility

- · Provide support to any part of the business with respect to legislation
- Advise, guide and report on all UKPN streetworks activity
- · Allow UKPN to conduct all activity safely, legally and efficiently
- · Drive Performance and reporting -10 key measures
- Coordinate Major project works
- · First point of LA contact within the UKPN business

- Costs not transparent

Application internal to Highway Authority (e.g. LA)

Legislation to drive a degree of consistency in deciding whether something needs to be a TRO

Start point of TRO - e.g. how do I go about putting eight ristriction on a road.

want to do something to a road - what needs to be done 7 e.g. TRO

NOTE: rewriting hypotheses to clarify Guidance to drive a degree of consistency in deciding whether something needs to be a TRO

What is mandated in the new NMD guidance (templates)?

what other data

beyond really

needed for TTRO is

captured - how might it be captured in the future

Is the existing legislation enough, or do we have to amend/update it or create new legislation?

What is statutory from Network Management Duty? Anything?

What data is captured in workflow systems of highway authorities when drafting TRO?

What data is optional/

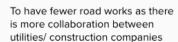
Do we have to provide a fall back for LAs who have nothing eg. somekind of basic workflow? Do we have examples from DfT where guidance has sucessfully brought about change?

What guidance is already in place? e.g. Isn't BPA guidance now published? Has that helped?

TTRO

Inception Notice 1 Make the TRO 1) DM includes information like maps 1) Standard set of data for TTROs 1) [Would fully digital format make that makes it easier for consultees to 2) Application data is published corrections and updates easier?] understand other can see it 2) As data is well formatted and 3) [digital version of TTRO is faster digital, easy to distribute widely to and easier to process - do we have many types of online media evidence from Elgin on this?] Users consulted Works planner for Utility To have a standard application To understand proposed TTRO so I process so I that I don't have to can comment/object if I see an issue workout application process for and also plan for any disruption. each LA Works planner for Utility TRO Writer (Streetworks Manager) To inform all relevant stakeholders To have sight of pipeline of TTROs to avoid complaints and objections so that I can share TTRO with and fulfil duty to inform someone else or spot clashes

Road user of all types



Data aggregators

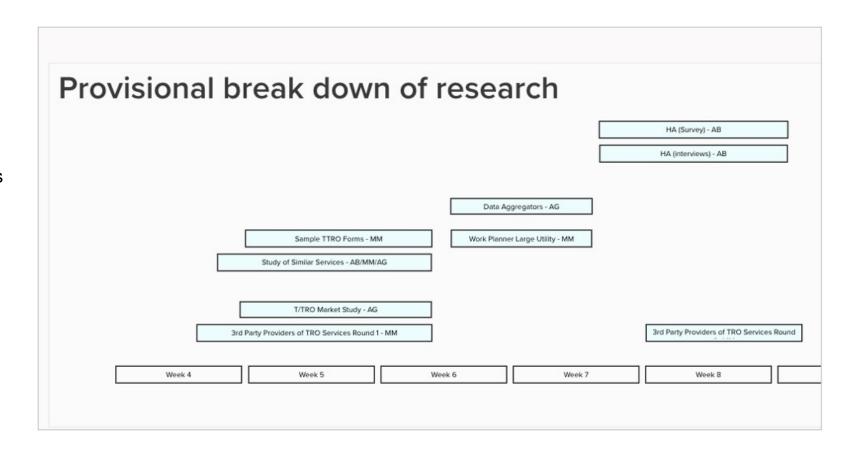
To have advanced notice of works happening in the future so that I can inform my users.



User Research

User groups we spoke with:

- 3rd Party Providers of TRO Services
 - 4 x interviews (two rounds)
- Market of Potential Providers of TRO services
 - 5 x interviews
 - Desk research
- Data Aggregators
 - 10 x interviews (multiple rounds)
- Utilities
 - 5 x interviews
- **Highway Authorities**
 - 14 x interviews
 - Online survey (responses from 80 HAs)
- Study of Similar Services
 - 3 x interviews



Provisional break down of research

HA (Survey) - AB

HA (interviews) - AB

Data Aggregators - AG

Work Planner Large Utility - MM

T/TRO Market Study - AG

Sample TTRO Forms - MM

Study of Similar Services - AB/MM/AG

3rd Party Providers of TRO Services Round 1 - MM

3rd Party Providers of TRO Services Round

Week 4

Week 5

Week 6

Week 7

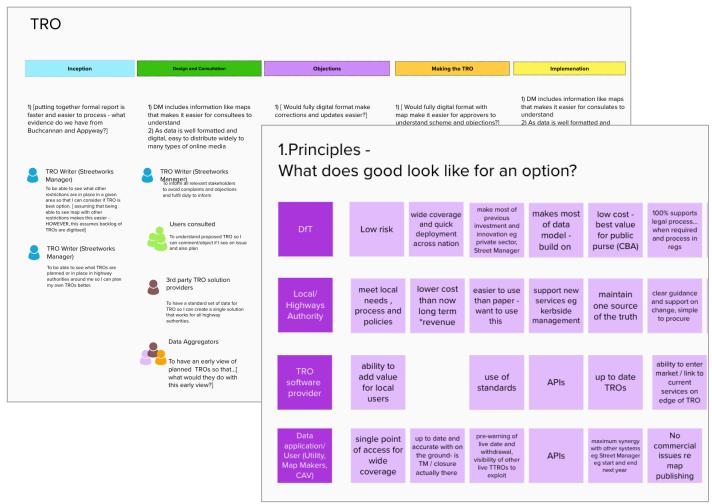
Week 8



Consolidated learning from previous research

From previous rounds of research we constructed a service map and layered users and their assumed needs.

We also agreed on a set of principles that should be used to shape the service.



TRO

	Inception	Design and Consultation	Objections	Making the TRO	Implemenation	
faster a eviden	ing together formal report is and easier to process - what ce do we have from annan and Appyway?]	1) DM includes information like maps that makes it easier for consultees to understand 2) As data is well formatted and digital, easy to distribute widely to many types of online media	1) [Would fully digital format make corrections and updates easier?]	1) [Would fully digital format with map make it easier for approvers to understand scheme and objections?]	1) DM includes information like maps that makes it easier for consulates to understand 2) As data is well formatted and digital, easy to distribute widely to many types of online media	
	TRO Writer (Streetworks Manager) To be able to see what other estrictions are in place in a given area so that I can consider if TRO is best option. [assuming that being able to see map with other estrictions makes this easier - HOWEVER, this assumes backlog of TROs are digitised] TRO Writer (Streetworks Manager)	TRO Writer (Streetworks Manager) To inform all relevant stakeholders to avoid complaints and objections and fulfil duty to inform Users consulted To understand proposed TRO so I can comment/object if I see an issue and also plan	TRO Writer (Streetworks Manager) To be able to see what other restrictions are in place in a given area so that I can consider if TRO is best option in light of objections. [assuming that being able to see map with other restrictions makes this easier - HOWEVER, this assumes backlog of TROs are digitised]	Approvers	Data aggregators To know about restrictions on roads so that I can advise users of my system of the best route and parking ristrictions. Road user of all types To have advanced notice of road works so I can plan journey and know of parking ristrictions.	
!	To be able to see what TROs are planned or in place in highway authorities around me so I can plan my own TROs better.	3rd party TRO solution providers To have a standard set of data for TRO so I can create a single solution that works for all highway authorities. Data Aggregators To have an early view of planned TROs so that[what would they do with this early view?]				

1.Principles - What does good look like for an option?

	•							
DfT	Low risk	wide coverage and quick deployment across nation	make most of previous investment and innovation eg private sector, Street Manager	makes most of data model - build on	low cost - best value for public purse (CBA)	100% supports legal process when required and process in regs		
Local/ Highways Authority	meet local needs , process and policies	lower cost than now long term *revenue	easier to use than paper - want to use this	support new services eg kerbside management	maintain one source of the truth	clear guidance and support on change, simple to procure		
TRO software provider	ability to add value for local users		use of standards	APIs	up to date TROs	ability to enter market / link to current services on edge of TRO		
Data application/ User (Utility, Map Makers, CAV)	single point of access for wide coverage	up to date and accurate with on the ground- is TM / closure actually there	pre-warning of live date and withdrawal, visibility of other live TTROs to exploit	APIs	maximum synergy with other systems eg Street Manager eg start and end next year	No commercial issues re map publishing		

Experimenting with different models

We looked at different models and considered how well the met user needs and agreed with our set of principles.

1. Mandate only Set out standards of what data needs to be collected, to what quality and how it should be made available to others. i.e. publish data model, API standards etc Support HAs with toolkits for custom development, grants, community of practice, negotiating discounts with ABE etc 2. Build 'keystone' parts of the service 3. Build a light weight case management tool Build the data pool and mandate that mandate that HAs have to publish to this data pool. This way standards can be policed and quality This assumes the market is unable to provide a service that is appropriate or affordable for HAs. The stratgey here is to build just enough of system to shape the wider system that will be developed by the HAs themselves. It is therefor necessary for DfT to commision the development of a TRO service which may include some or all types of TROs Data made melostic LA systems (including ABE modules) LA WEESTE - OTHER MEDIA

LA system (no system)

Publish final doc)

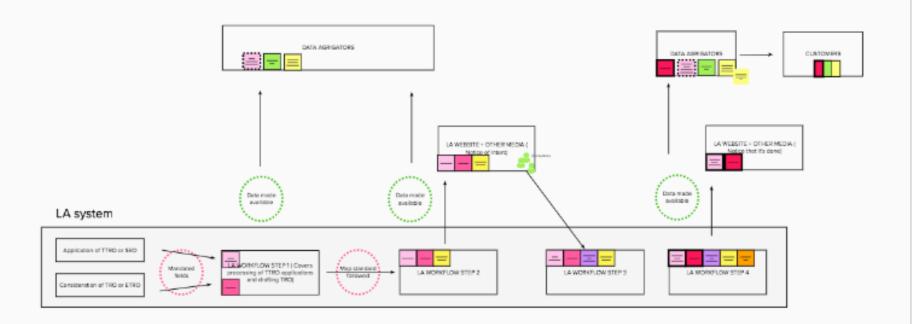
managed.

Our System

1. Mandate only

Set out standards of what data needs to be collected, to what quality and how it should be made available to others. i.e. publish data model, API standards etc

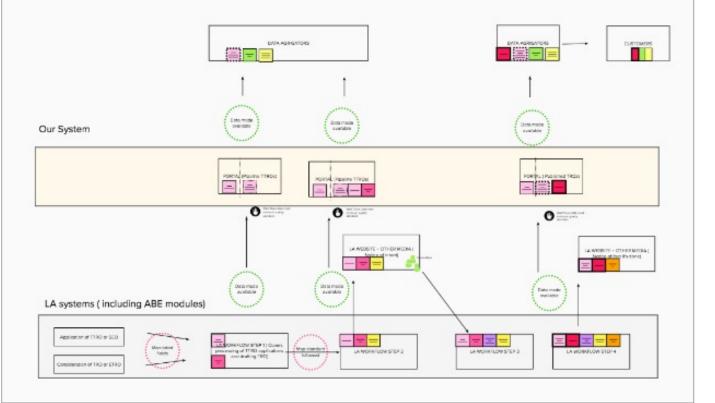
Support HAs with toolkits for custom development, grants, community of practice, negotiating discounts with ABE etc



2. Build 'keystone' parts of the service

Build the data pool and mandate that mandate that HAs have to publish to this data pool. This way standards can be policed and quality managed.

The stratgey here is to build just enough of system to shape the wider system that will be developed by the HAs themselves.

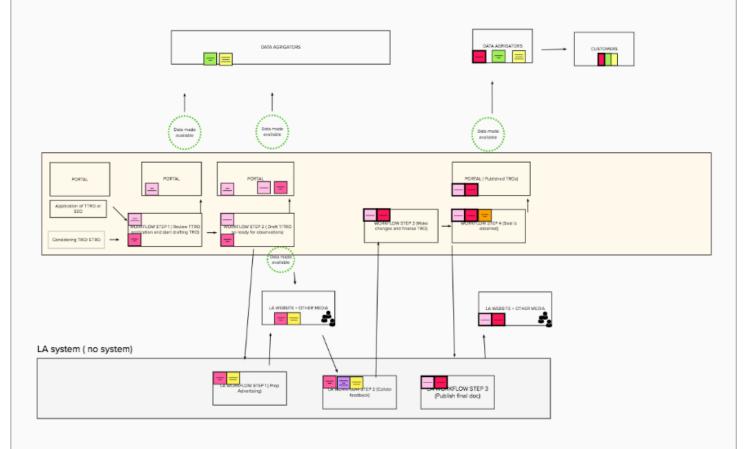




3. Build a light weight case management tool

This assumes the market is unable to provide a service that is appropriate or affordable for HAs.

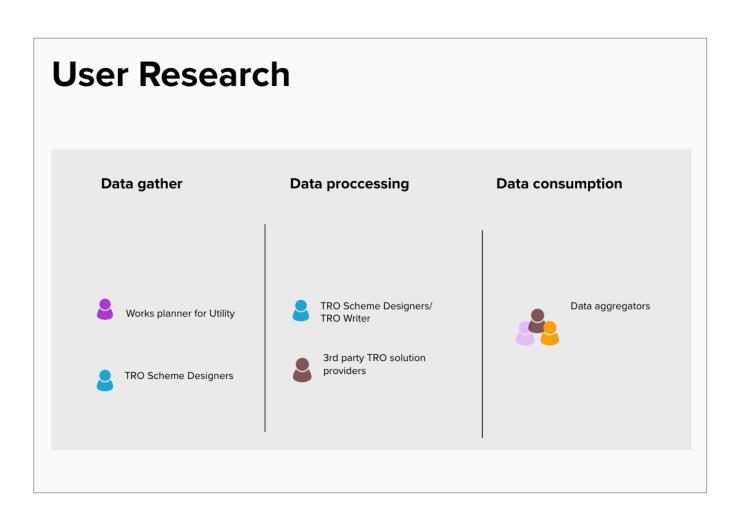
It is therefor necessary for DfT to commision the development of a TRO service which may include some or all types of TROs



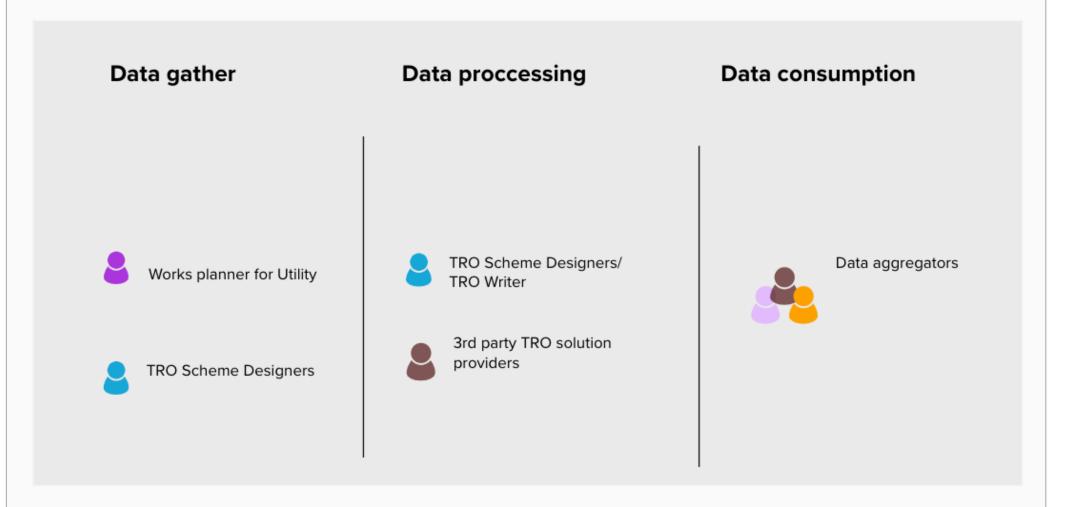


Learned more about user needs

Our user research helped us test the assumed needs we had defined earlier in the project and reconsider the service design.

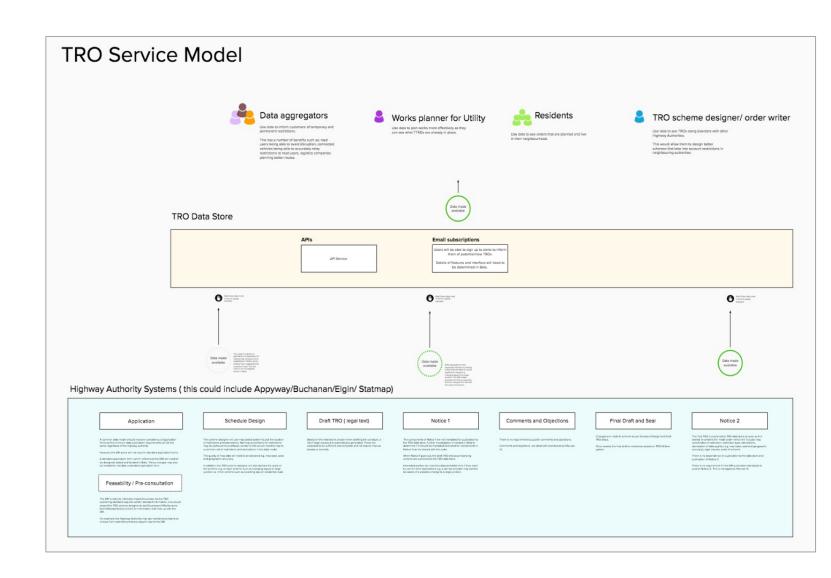


User Research



Experimenting with different models

The service model evolved into a design that we believe strikes the right balance of enabling the market to develop new and better services and supporting highway authorities to meet their responsibilities.



TRO Service Model



permanent restrictions.

This has a number of benefits such as; road users being able to evoid disruption, connected vehicles being able to accurately relay restrictions to road users, logistics companies planning better routes.



Use data to plan works more effectively as they can see what TTROs are already in place.



Use data to see orders that are planned and live



TRO scheme designer/ order writer

Use data to see TROs along boarders with other Highway Authorities.

This would allow them to design better schemes that take into account restrictions in neighbouring authorities.

TRO Data Store



API Service

Email subscriptions

Users will be able to sign up to alerts to inform them of potentialinew TROs.

Details of features and interface will need to

Staff time date over control of the staff time date of the staff tim



Will Date last results of the second second

Highway Authority Systems (this could include Appyway/Buchanan/Elgin/ Statmap)

Application

A common data model should improve consistency of applicatio forms as the minimum data publication requirements will be the same regardies of the highway sufficials.

However, the EM alone with not result in standard approach forms. A standard application form (which references the DN) will need to be designed, selded and Revised in Bital. Pating changes may also be needed to a mediate a standard application form.

Feasability / Pre-consultation

The DM is likely to indirectly impact this phase. As the TRO publishing standard requires certain standard information, one would expect the TRO scheme designer to eak Developens' Maintenance to are Standards Coursellants for Internation that I ries up with the

For example, the Highway Authority may ask maintenance team

Schedule Design

The achieve designer will use map based system to plot the location of next indoors and exemptions. Naming conventions for next indoors may be particular to a software vendor or HA but will need to map to a software vendor or HA but will need to map to a software set of restrictions and sear-given in the data needs.

The quality of map data will need to be declared e.g. map been used and geographic accuracy.

in addition, the TRO scheme designer will also designe the scale the scheme, e.g. a major scheme such as changing layout of larg

Draft TRO (legal text)

Speed on the restrictions chosen when drefting the schedule list of legal clauses are sufornationly generated. These are expected to be sufficient and complete and not require men.

Notice 1

The components of Natice II are not mandated for publication to the TRO data store. Further investigation is needed in Beta to determine if it should be mandated and whether components in factor time the should be translated and whether components in factor time showed with the shales.

hen Nation I goes out, the draft TRD and accompanying

Interested parties can view this data and determine if they want to use till their applications e.g. a set not provider may want to

Comments and Objections

There is no requirement to publish comments and objections.

Comments and objections are dealt with and stored as HAs see

Final Draft and Seal

Changes are made to scheme as per Schedule Design and Draft TRD steps.

Once sealed, the final draft is marked as sealed on TEO lithters system.

Notice 2

The first TRO is published to TRO data store as soon as it is saided. It contains the 'made order which will include, map coordinates of matriction, nestrotion type, exemptions, declaration of data quality (e.g. map base used and garagnaphic

There is no dependence on publication to the data store and

There is no requirement for the EM publication standards to publish Notice 2. This is managed as title see ft.

Technical Architecture - Solution Architecture Overview

TRO Alpha – Service Option 3 – Centralised Data Store Provision and Maintain Web enabled versions of: 1. ADM Data Model (Updated & Enhanced TRO-D) 2. ADM XML/XSD Schema (Updated & Enhanced TRO-D) 3. NAP Data Exchange Metadata Specifications Department • (Including ADM to TN-ITS; ADM to DATEX; ADM to Street Manager Link, et al) for Transport 4. TRO Data Quality Rules TRO Team 5. Submitting to NAP Guidance 6. Make ADM Licence Available to all Mandated TRO Data Contributors APP appyway Department **Statutory Consultees TRO Email Subscription Utility Companies** one.network **TRO Data** Department for Transport Store Department for Transport Vehicle Makers & Service Providers Department for Transport for Transport BUCHANAN TRO Data Input and Update APIs for Transport TRO Data Extraction APIS **Geospatial Data** to enable TRO Data Providers to Input and Update ADM formatted TRO Data **Providers** to gather and publish TRO Data in DfT Central TRO datastore from distributed datastores (formatted and filtered by user TRO Data Catalogue Descriptions of Datasets & Links to Locally Provisioned Data Stores **New Mobility** StatMap Services Submit & Maintain TRO Innovative Kerbside NAP Metadata Services LAs with TRO Applicatio Department for Transport. NAP Submit & Maintain Permi Department LAs withOUT TRO Applications NAP Metadata for Transport **UK Traffic Data sets** "Data Store"



TRO Alpha – Service Option 3 – Centralised Data Store

