Developing a Base Registry of Sports & Recreation Amenities in Ireland

Pilot Project

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1. Executive Summary

1.1. Background

Sport Ireland commissioned a Feasibility Study into the potential of developing a **National Base Registry (Database) of Sports & Recreation Amenities** in Ireland. The study was funded by Healthy Ireland, carried out by ESRI Ireland, and was completed in July 2019.

The study's report is highly positive about the feasibility of the database and finds that it has the potential to facilitate and transform how recreational amenities are planned, used and managed in Ireland, as well as how the public search and interact with them. Among other benefits to the country and its citizens, this database could:

1. Help to deliver on important **national policies**, covering National Development, Health, Sport, Tourism, Data Management and more, including:
    - National Development Plan 2018-2027
    - Project Ireland 2040
    - Healthy Ireland Framework 2013-2025
    - National Physical Activity Plan
    - National Sport Policy 2018-2027
    - eGovernment Strategy 2017-2020
2. Be an **authoritative source** (base registry) of accurate, up-to-date spatial information on all Sports & Recreation Amenities, from trails and greenways to beaches and parks to swimming pools and sports pitches.
3. Feed an interactive public **one-stop-shop website** and Ordnance Survey Ireland's **GeoHive**, helping:
    - Those looking for recreation opportunities, from families to enthusiasts to those with disabilities, improving the nation's activity rates, health and wellbeing.
    - GPs and other healthcare professionals encouraging lifestyle change and Social Prescribing.
    - Tourists to find activities in less-visited areas, potentially extending their stay.
    - Easily search and combine with other information such as public transport, weather forecast or accommodation to plan days out or holidays.
4. Serve **bodies responsible for sports amenities** in:
    - **Planning and funding** sports infrastructure more effectively, by layering amenity data with information such as population statistics, protected areas and planning zones.
    - Managing amenities, such as trails, parks and playgrounds, by using the database's potential as a comprehensive GIS-based **asset management** system.
    - Carrying out needs analyses and planning for investment in **Sports Programmes** through Local Sports Partnerships and other avenues
    - **Data sharing and collaboration** with other bodies and delivering on national data policies.

The Feasibility Study report recommended:

1. A **Pilot Phase** to build the system's frameworks to demonstrate its capabilities, as well as refining data management and other processes.
2. **Phased implementation** over 3 years, beginning with more readily available data.
3. **Commitment**, possibly mandated, from agencies with data on sports amenities to provide and update the information regularly to agreed standards.

Acting on the recommendations of the Feasibility Study, a Pilot Phase was established, which incorporated a proof-of-concept of the technical aspects of a Sport and Recreation Amenities database and a consultation programme, with the following objectives:

- Carry out a consultation programme with stakeholders
- Gain insights and lessons learnt from similar projects elsewhere
- Develop data provision and management procedures
- Collate as much currently available data on sports and recreational amenities as possible, including the National Trails Register
- Create the pilot database and establish a pilot portal
- Publish the initial database link to GeoHive in liaison with the GeoHive team
- Develop and refine the data collection and management systems and workflows
- Use the collateral to establish and present the potential uses and business case for this initiative
- Use the collateral to build a core working group from interested stakeholders and data providers, and
- Used the knowledge and insights gained from the consultation process to refine the business case.

This document covers the process, findings and outputs from that Pilot Phase.

1.2. Objectives

The objectives from the Pilot Phase and links to the relevant sections of this document for each one is listed in the table below:

Objective	Description	Document Section
Working Group Consultation	Work with stakeholder group to identify suitable data providers and data sets for inclusion in the pilot database, support and assistance required in carrying out the pilot phase, identifying and prioritising use cases for the database, planning for future phases of the project and assistance in identifying other stakeholders and consultees	**Consultation Process**

Objective	Description	Document Section
Pilot Phase Report	Detailed recommendations for the full project on: - System architecture - Technical requirements - Data models - Data provision & management - Data ownership & governance - Functional requirements Organisational requirements - Commitment and resources required for bodies to provide, maintain & update data - Potential provision of resources, mandates and other supports - Potential issues and constraints, and their resolution - Technical & organisational lessons learned from the pilot - Next steps - Any recommendations in the areas of: a. Scope of the project b. Branding / communications c. Further benefits & use cases d. Future project implementation	**Functional Recommendations** **Technical Recommendations** **Data Recommendations** **Management Recommendations**

1.3. Recommendations

A summary of the key recommendations from this pilot study are listed below. Any recommendations from the Feasibility Study that still apply have been retained:

Theme	Recommendation
Full Implementation	Within this Pilot Project an intuitive and engaging online Sports Portal was developed to act as a central online point of access to the National Registry of Sports and Recreational information and its related applications, information, news and user feedback. The term 'Sportal' (Sports + Portal) was created to describe this central focal point for the program. This study should be followed by a full implementation phase to… • Refine the 'Sportal' developed in this Pilot phase into an engaging central point for access to any all applications and data made available to the public. • Engage the services of a User Experience designer to ensure the 'Sportal' is designed with the user in mind and communicates the key messages in a clear, engaging and innovative manner • Draw up Data Supply agreements with Sport's National Governing Bodies, Local Authorities and Local Sports Partnerships and other data suppliers • Facilitate an all-Ireland National Registry of Sports clubs, facilities and amenities data within a common data structure • Develop and refine update processes for trails, sports clubs, sports facilities and amenities. • Publish trails, sports clubs, sports facilities and amenities to GeoHive in phases as each data holding is suitably developed and the update mechanisms are in place • Establish a Data Inventory group to ensure good governance of data management and continued stakeholder buy-in
Project Scope	The scope of the full implementation should be clearly defined to derive the maximum benefit from the priority use cases and to allow suppliers to provide costs that can be compared on a like-by-like basis. A summary of the suggested scope of the full implementation is summarised below… • An engaging 'Sportal' to provide a single point of access to data, applications and supporting information relating to the National register of recreational amenities • A central map viewer to provide access to trails, sports clubs, sports facilities and amenity information to allow users to easily find activities and plan their route to these activities. This central map viewer would be a useful tool in many scenarios, for example in Social Prescribing • A mobile application that also provides access to trails, sports clubs, sports facilities and amenity information. This mobile application would work in synchronisation with the central map viewer to search for facilities and also route the users to the facilities they have selected either from the central map viewer or from the app itself • A set of Open web services published to GeoHive for trails, sports clubs, sports facilities and amenity information. • An Asset Management system that provides the public with the ability to report issues on any sport and recreational amenity such as playgrounds and

	parks and for those issues to be actioned and resolved. The primary use case for asset management should be trail management as it is already at an advanced stage of development and this pattern can then be rolled out and applied to other data holdings within the National registry as they come online.
Asset Management	A consolidated national base registry of sports and recreational amenities will provide benefits in a variety of scenarios that are not currently possible as a definitive source of national information is not being actively managed and maintained. One of the clear points arising from the survey of Local Authorities is that they consider Asset Management as one of the primary benefits of sharing sports and recreational information within the National Registry. This use case should be developed within the full implementation in phases.
Social Prescribing	Social Prescribing was also raised during the Pilot Project as one of the priority use cases. It is recommended that the central map viewer be developed as a tool that General Practitioners could use to 'sign-post' patients to relevant resources and activities in their area. In addition, liaison should continue with developers of Social Prescribing applications to ensure they use services from the National Registry with their applications.
Commitment	A clear commitment of data updates, time and resources is required from each data provider to the Sports & Recreational Amenity database. Formal Data Supply agreements need to be drawn up between Sport Ireland and National Sports Governing Bodies (NGB's), Local Authorities, Central Government agencies and Local Sports Partnerships (LSP's).
Resources	Dedicated resources should be put in place for the full implementation of this initiative as there will be substantial work required to coordinate the provision of data and the implementation of the system. It is recommended that a core team comprising 2-3 resources be established. It would also be extremely beneficial if at least 2 of these resources were full-time for the first 6-9 months of the full implementation. These resources would be a Data Manager, a Solution Architect and a Lead Consultant.
Data Quality	The data provided to the National Registry should be at a consistent level of quality. Clear and concise data specifications need to be defined and communicated to stakeholders. These specifications would include guidance on acceptable data supply formats, frequency of updates and core attributes that need to be present in the data, some examples defined from experience in the pilot project are below… - Data can be supplied in spreadsheet (XLS) or comma-separated value (CSV) format but needs to include either coordinate values OR Eircode so that a definitive location can be derived using the automated coordinate values data import procedures. - If coordinate values are supplied then they need to be coordinate values in Irish Grid (IG), Irish Transverse Mercator (ITM) or LatLong (WGS84) map projection systems. - Data supplied in spreadsheet format should adhere to the common data structure created in this pilot project and described in this report - Data can also be supplied in KML format as long as it contains the same attributes as defined in the common data structure described in this report

	- Spatial data can be supplied as Shapefiles or file-based geodatabases but must contain the same attributes as defined in the common data structure described in this report contains the same attributes as defined in the common data structure described in this report
System Architecture	The existing technical landscape of Esri's ArcGIS Online public cloud platform be used for the extent of the full implementation. This means that a migration to ArcGIS Enterprise is not required, but it would be good practice to implement a backup/restore policy for any data held in ArcGIS Online and review the current user and credit allocation and carry out some capacity planning prior to the full implementation. In addition, ArcGIS Hub Premium is recommended for the full implementation to extend the capabilities for community engagement.
Support Network and Personal Relationships	The success and uptake of this project is primarily down to the quality and accuracy of the data within the National Registry. From discussions with other similar initiatives during this pilot project, one of the most important factors in maintaining good quality data across the country is the development of personal relationships with data suppliers and the establishment of a network of 'champions' throughout the country. These champions would work at a regional level to promote the use of the National Registry, look for new datasets and uses for the data and work with data providers to ensure data supply is maintained. Some of these champions could be high profile sports people within Ireland to support the communications strategy and promote the use of the information within the National Registry to become more active.
Data Management	Data Management processes have been developed during the Pilot phase and these should be extended, refined and put into production in the full implementation. The primary route to consume data from stakeholders should be via web services but when these do not exist data should be supplied from stakeholders in the common data formats defined in this report. This approach should minimise the occurrence of data issues as automated procedures can be implemented to check the common formats being supplied and ensure that any data issues are identified before import into the database and can then be sent back to the data owners to resolve the issues.
Data Scoping and Governance	In the pilot project, care was taken to balance the line between having beneficial data with useful supporting attributes, without trying to store and maintain data that would be difficult to obtain from data suppliers. This approach should continue to be a guiding principle of the full implementation. It is recommended that a Data Governance group be setup to define the criteria for each category of data to be held within the registry and the supporting attributes for that data. This group would also resolve issues such as differences in data content and quality across county boundaries to ensure each dataset has a core set of attributes that are common to all counties.
Data Ownership	It is recommended that the 'ownership' of data within the data supply chain is clearly communicated. In summary, data providers will retain ownership of their data and be responsible for resolving any issues with that data that may prevent it being combined with data from other providers.
Single Source of the Truth	There should be one version of the National Registry of Sports & Recreational Facilities database, but views should be created of that database for specific purposes. Two examples of views of the National Registry that are required are listed below… • An operational view of Trails within the National Registry. This view would be written to directly by Sport Ireland trails management process and be

	made available to stakeholders so they have instant access to updates as they take place. This version of the database would be available to local and central government stakeholders and used for scenarios such as Asset Management of trails and other amenities across agencies. • A publication view of Trails within the National Registry. This would publish a subset of the attributes that are available in the operational database and a link to this database would be made available on GeoHive
Management of Trails Database	At present the trail geometries and attributes are stored and maintained in separate databases. This seems to be primarily to facilitate the supply of trails information to the Sport Ireland website and the storage of attribute information within the web-sites Content Management System. This should be migrated towards a strategy of a single database to store and manage both the trails geometry and the supporting attributes.
System Integration	The publication version of the database should be made available in ways that maximise opportunities for users to discover and use it, for example using truly open data formats and Application Programming Interfaces (API's). The team should continually look for opportunities to innovate and update and share the Sport and Recreational Amenity information in new ways and with new partners
Communication	Develop a communication strategy with a full PR and marketing campaign for the publication of the National Sports and Recreation amenity information. This strategy should run in parallel with each phase of the project implementation. Indeed, the branding of the overall database and main portal can be neutral or branded to reflect the particular portal it is being published on. It would be the intention to publish the data to facilitate its publication on a variety of public portals designed to suit different stakeholders and their target users.
Volunteered Geographic Information	As well as the data supplied by Stakeholders, there should be a capability within the central 'Sportal' to allow the general public to identify new datasets they would like to see within the National Registry or to report on issues with any data held within the Registry. One of the blockers to making data open can be that data owners want to make their data 'perfect' before supplying it to others. We live in a constantly changing world and data will never be perfect, and it has been proved through many open data initiatives that just by making data available and providing a feedback capability can act as another channel to maintain the accuracy and quality of that data.
Collaboration and alignment with similar initiatives	During this pilot project, we engaged with similar programmes within Ireland and the UK. It is recommended that this communication channel be continued and developed during the full implementation as this was such a beneficial activity. In addition, this programme could actively participate in other aligned programmes to gain mutual benefit.
Benefits	In any major initiative like this one it is important to put in place Critical Success Factors that quantify the perceived benefits so that success can be measured and promoted. For example, in order to gauge the success of the full implementation, efforts should be made to create a benchmark of the existing use of Sports and Recreational Facilities in Ireland so that targets can be put in place for their increased usage, and these targets can be assessed at regular points within the programme.
Full Implementation Costs	The **estimated budgetary costs** by phase of the implementation of a National Sport and Recreation base registry are as listed below. These are expanded upon in more detail in Section 6.8. As these costs are for budgetary purposes, the

(Rough Order of Magnitude (ROM))

assumption is that all resources are contracted in and the daily rate is €900 per day.

These costs assume the hosting of the National Registry would be ArcGIS Online.

Phase	Duration	Cost
1	3 months	**€332,000**
2	3 months	**€212,000**
3	3 months	**€162,000**
4	3 months	**€162,000**
5	3 months	**€172,000**
6	3 months	**€152,000**
Total	**18 Months**	**€1,192,000**

1.4. Summary

A summary of the key recommendations, principles and benefits from this document are shown in the figure below.

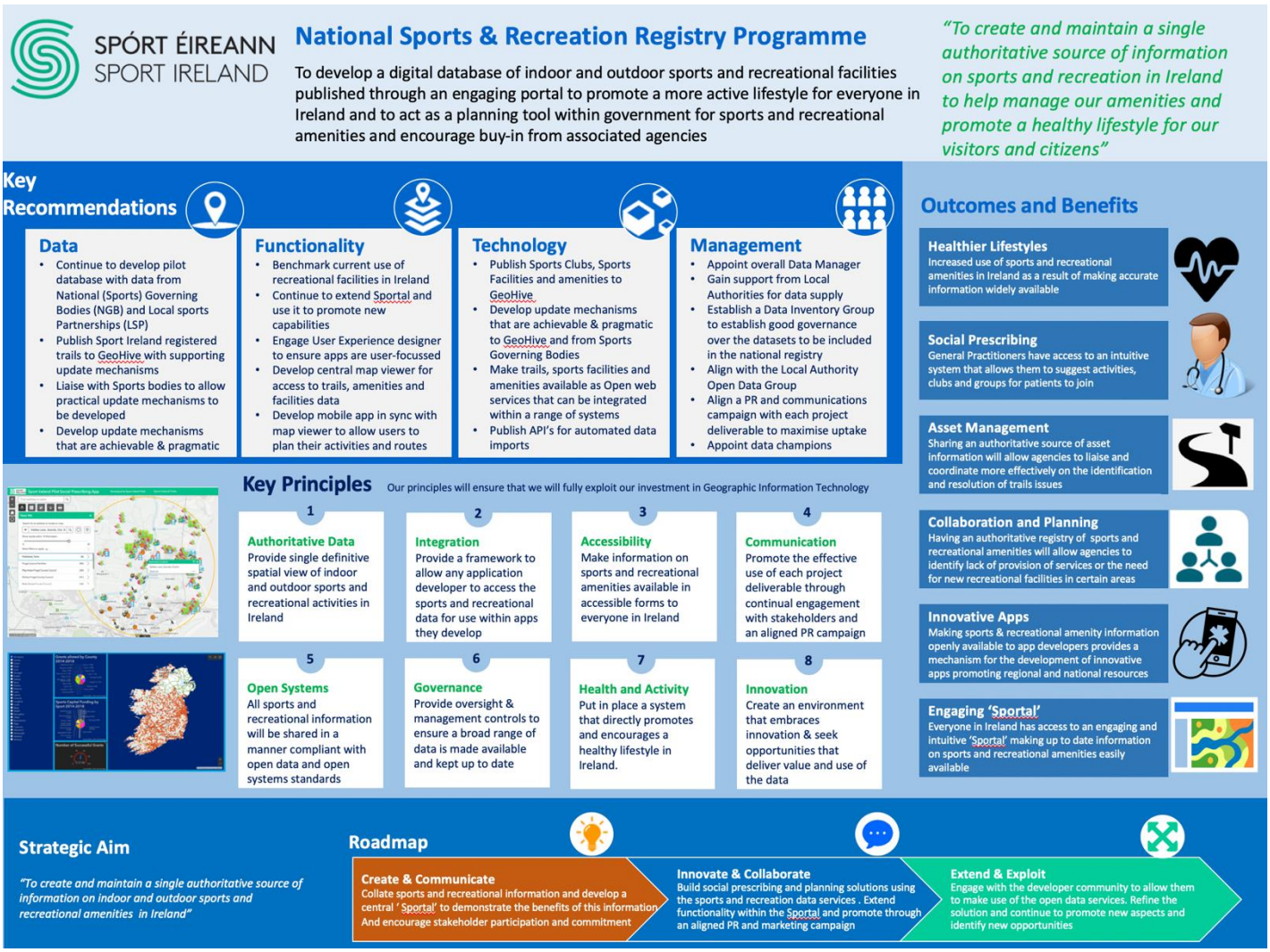


Figure 1: Summary of Full Implementation

The detail to support this overview is included in the sections listed below…

Recommendations	Document Section
Data	Data Recommendations
Functionality	Functional Recommendations
Technology	Technical Recommendations
Management	Management Recommendations

1.5. Roadmap

The diagram below provides a roadmap for the programme that is expanded upon within this document.

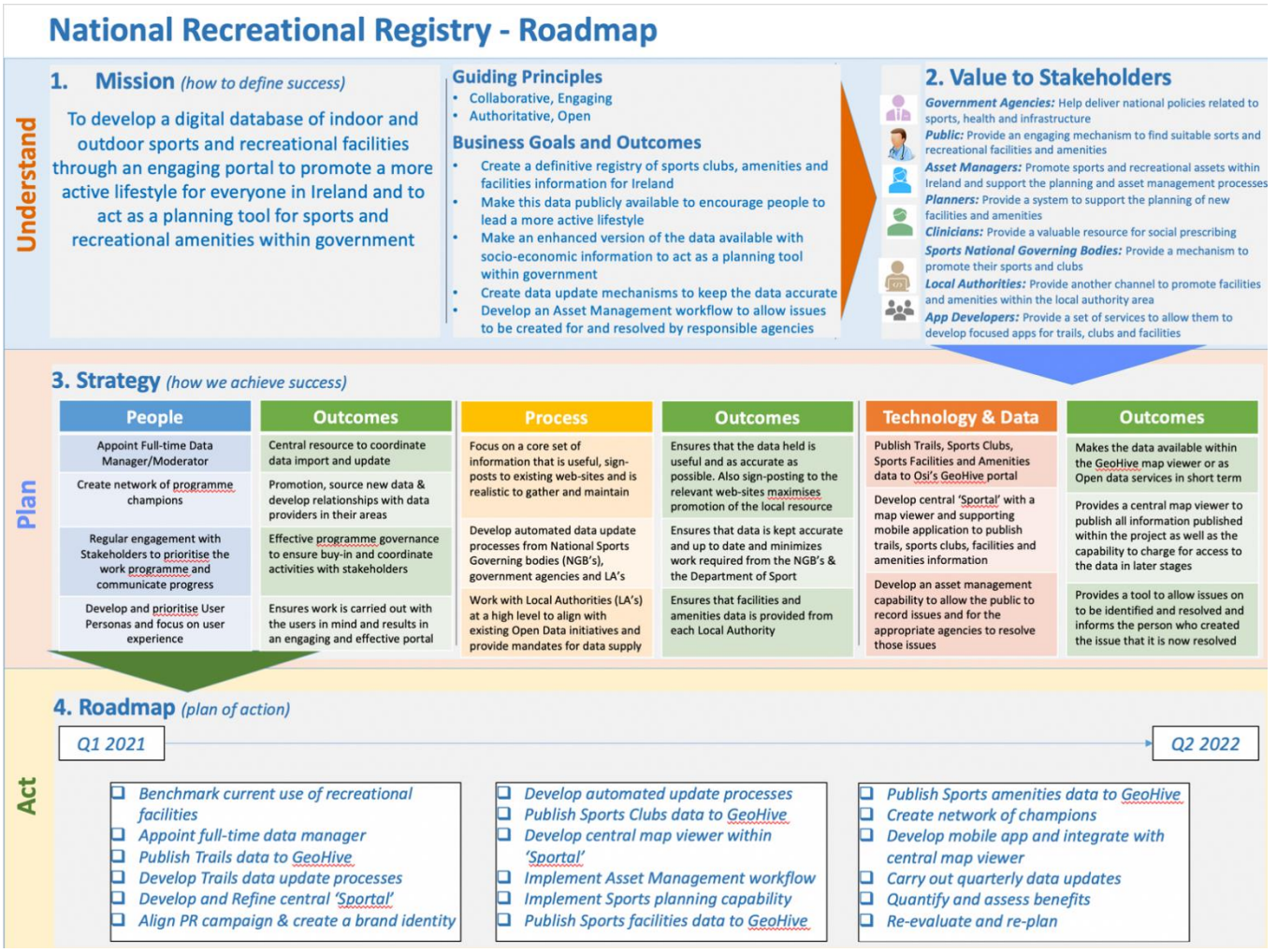


Figure 2: National Registry Roadmap

This roadmap is expanded upon in the high-level plan shown in Figure 3. This plan can be summarised as follows:

Prior to full implementation

- Confirm level of commitment from all Local Authorities to supply data
- Create and sign data supply agreements
- Put funding in place for full implementation
- Publish Trails to GeoHive
- Refine Trails workflow to update one master database in ArcGIS Online
- Web-site developers test using one master trails database for access to trails geometry and attributes
- Create communications pack to promote and communicate project strategy, vision and benefits
- Appoint Data Manager/Data Moderator
- Create Data Templates and send to data providers

- Benchmark current levels of outdoor activity in Ireland
- Benchmark what datasets are currently available at present as open data and their current levels of usage

Full Implementation Phase 1 (3 months)
- Trails website migrates to using one database for Trails geometry and attributes
- Refine Trails workflow to update single master database and automate supply to GeoHive
- Implement ArcGIS Hub Premium
- Engage User Experience designer
- Refine import procedures for Sports Clubs data
- Populate Sports clubs metadata
- Review and refine Sports Clubs data
- Import Sports Clubs data from data providers
- Implement central map viewer
- Refine user interface of 'Sportal'

Full Implementation Phase 2 (3 months)
- Start developing network of champions
- Create Data Inventory and Moderation Group
- Publish Trails data quarterly update to GeoHive
- Publish Sports Clubs data to GeoHive
- Automated supply of Trails to GeoHive begins
- Integrate Sports Clubs data into central map viewer
- Implement facility for public to provide feedback on data
- Launch 'Sportal' with aligned PR campaign

Full Implementation Phase 3 (3 months)
- Develop dashboard to show planning/demographic use case
- Develop dashboard to show sports clubs data and funding for Department of Sport – make it externally available
- Implement Asset Management application with associated dashboards
- Close liaison with, and representation of Local Authority Open Data group
- Automated process for Sports clubs data to GeoHive
- Update published trails on an on-going basis
- Update published Sports Clubs on an on-going basis

Full Implementation Phase 4 (3 months)
- Update published trails on an on-going basis
- Update published Sports Clubs on an on-going basis
- Publish Sports Facilities to GeoHive
- Publish subset of Amenities to GeoHive
- Knowledge sharing webinars
- Engage with developer community on use of data services – facilitate hackathons, competitions, etc
- Automated data update process from Local Authorities
- Develop supporting Mobile App

Full Implementation Phase 5+ (6 months)

- Update published trails on an on-going basis
- Update published Sports Clubs on an on-going basis
- Update published Sports Facilities on an on-going basis
- Publish all Amenities to GeoHive
- PR launch of mobile app
- Measure and quantify benefits
- Re-plan for future work
- GIS As a Service offering to NGB's and LSP's
- Consider migration to revenue generation model

High Level Plan

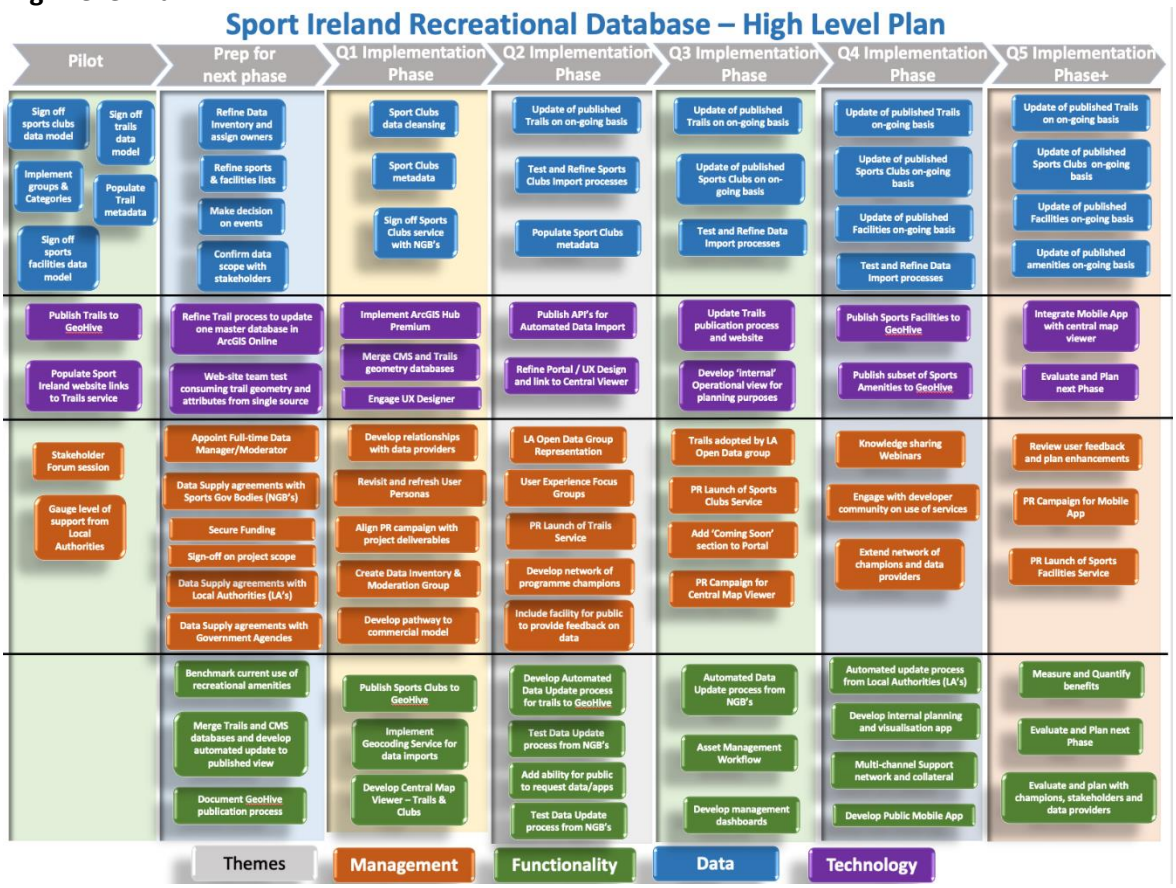


Figure 3: High Level Plan

The diagram in Figure 4 tries to answer the question 'what will we see at each stage in the programme?'

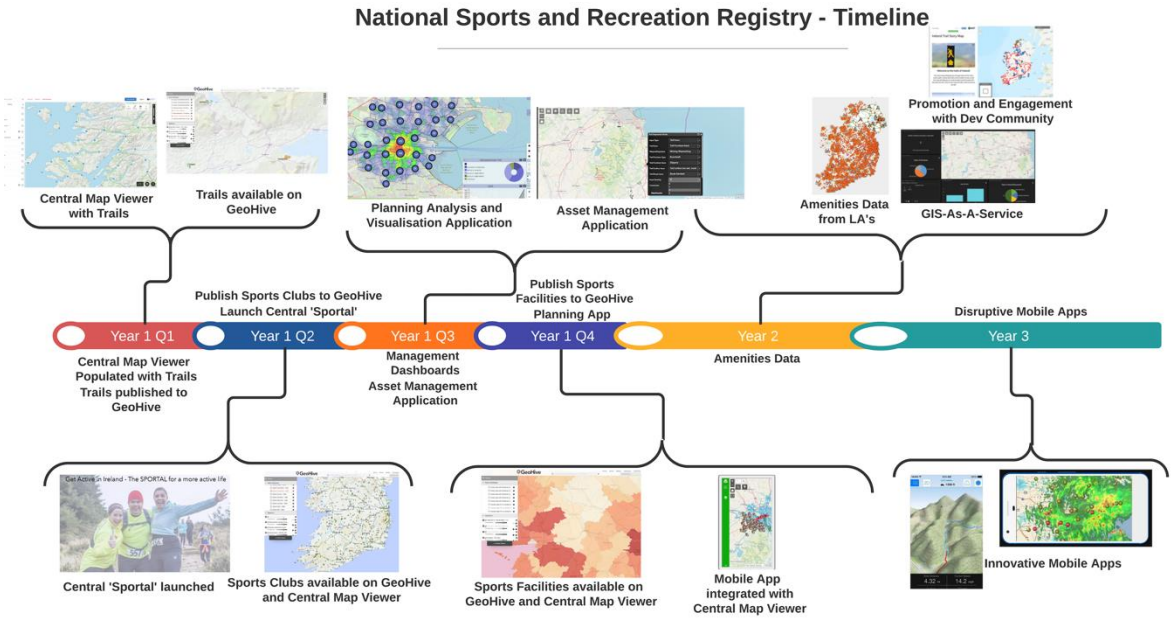


Figure 4: Programme Timeline

Acknowledgements

Sport Ireland would like to acknowledge and thank the Department of Health (Healthy Ireland) for funding this Pilot Study.

Sport Ireland and Esri Ireland would also like to acknowledge the time and commitment given to us by all the consultee organisations that contributed to this project (Ref: Appendix A). Their input was invaluable, and we are very appreciative of their involvement and participation.

Esri Ireland would like to acknowledge the input of staff within Sport Ireland that worked on this project and staff within Ordnance Survey Ireland for their support and input throughout.

2. Consultation Process

2.1. How the pilot phase was carried out

The pilot project kicked off on Wednesday 25th March 2020, and by this time a national lockdown due to the Covid19 crisis had been put in place across Ireland. Due to this fundamental change in circumstances, the workshops with consultees that were originally planned were just not possible. For this reason, the original approach to the project was changed and this change is summarised in Figure 5. In summary, it was agreed to carry out three initial sprints of technical work, followed by a focused stakeholder session to present the developments and take feedback. We then continued to develop a range of collateral to show the scope and potential of the system, with particular emphasis on the key use cases highlighted by the stakeholder group, and incorporating key consultations as required. In essence, the range and depth of consultations originally planned was not possible due to the pandemic, but the team was able to focus more on developing the technical aspects of the project, and demonstrating the potential of the system and using spatial data for planning, analysis and other business intelligence.

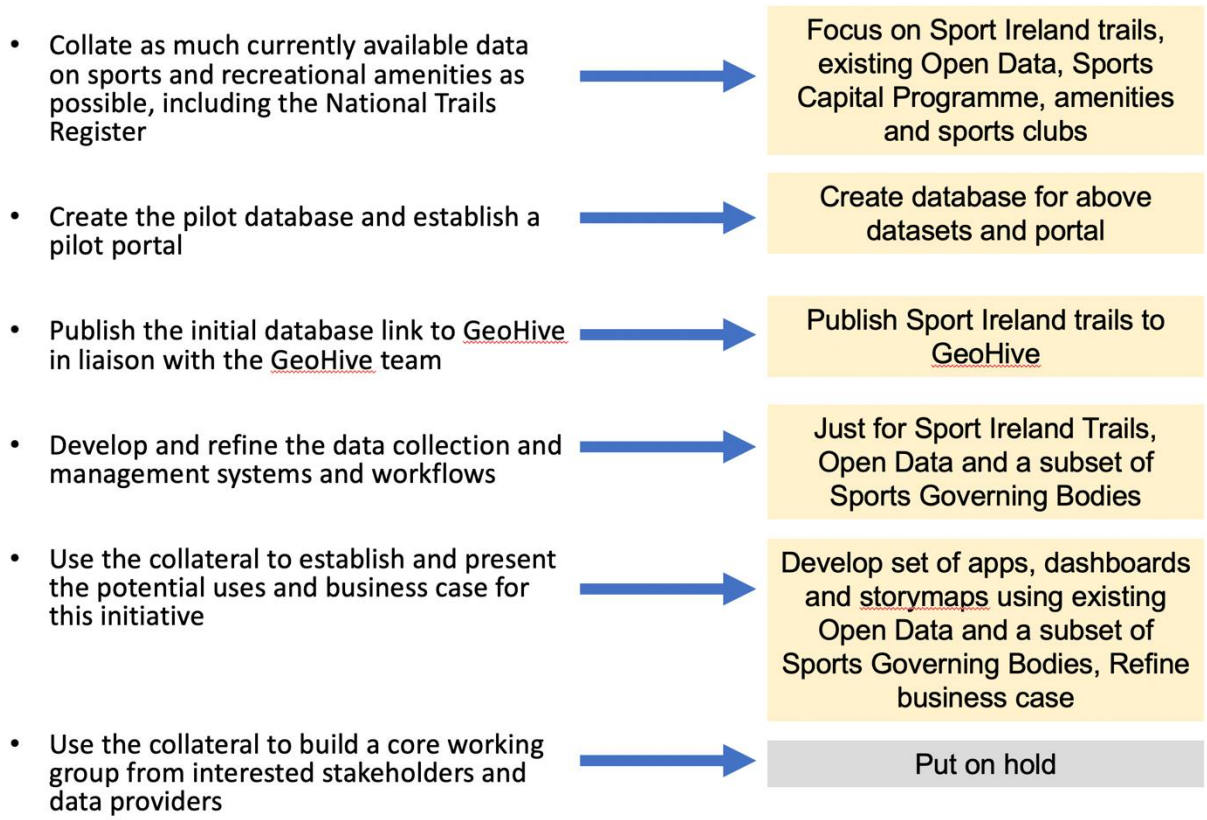


Figure 5: Pilot Project Refined Scope

Figure 6 illustrates the original concept of a set of focussed sprints with demonstrations and feedback to stakeholders after each sprint. The refined project approach is illustrated in Figure 7 which reflects the decision to proceed with three sprints and agree the content of each sprint before initiation with Sport Ireland. In summary, this work involved collating and importing data, developing data import procedures, developing a set of apps and dashboards to show how the data

could be used and finally to produce a central portal to bring apps, data, dashboards and communications together.

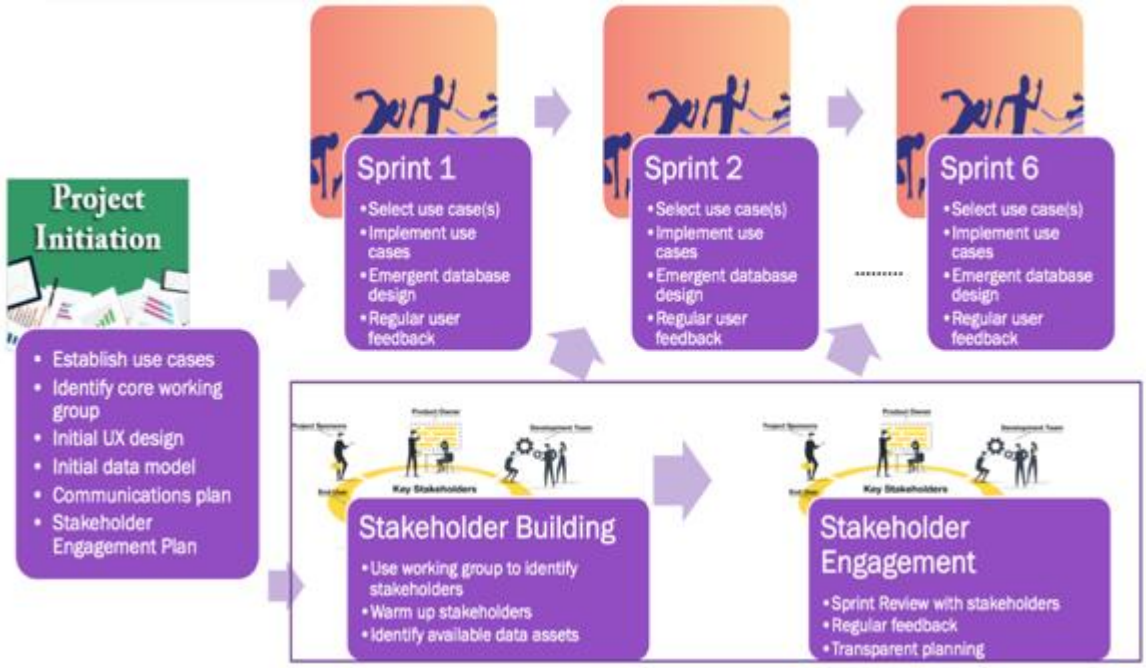


Figure 6: Initial Project Approach

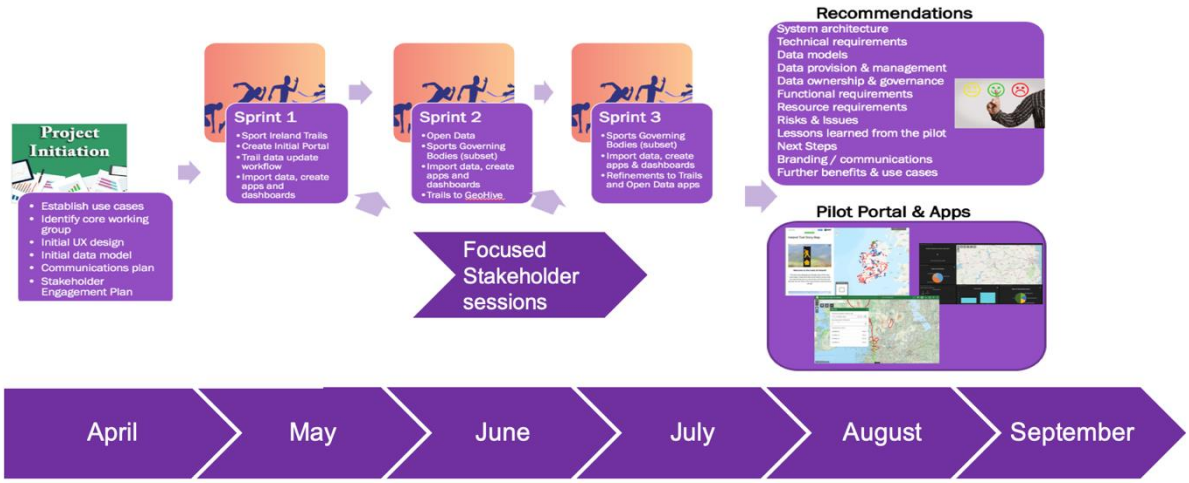


Figure 7: Refined Project Approach

In addition, the project plan is shown in Figure 8 and this illustrates in detail the refined approach to the project.

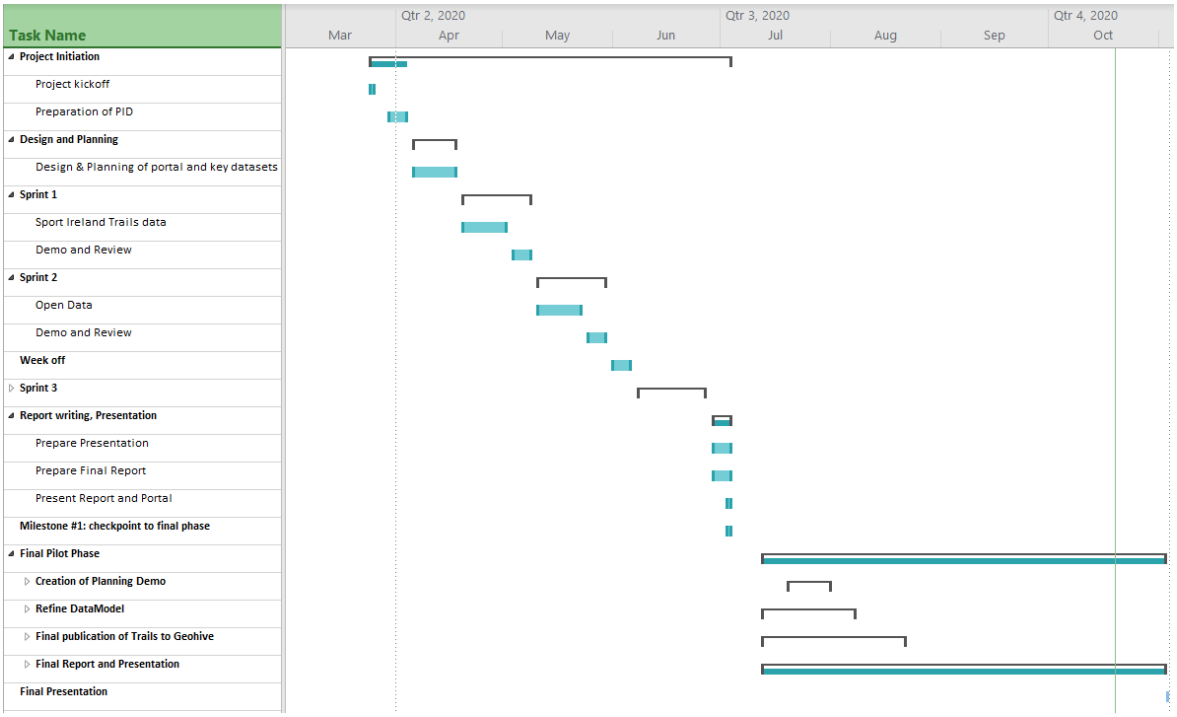


Figure 8: Project Plan

2.2. Summary of Learnings

The details of consultations with various stakeholders and consultees is in Appendix B: Summary of Consultations of this document. A high-level summary of those consultations is listed in the table below:

Consultee Group	Main Outputs
Project Steering Group	General agreement on the direction of the project and approval on the progress with data, apps and dashboards. Department of Sport offered to provide data on sports clubs from their sports capital fund on a regular basis and also extend what they currently capture to align with this programme
Local Authorities	Discussions with Dominic Byrne, Gay Byrne and Sean Garvey regarding the Local Authority Open Data Strategy and the need to align with the Open Data Group regarding the supply of data from the Local Authorities and the fact that standardised data models and schemas need to be defined, developed and committed to supply. General agreement that the work needed to be mandated at a high level within local authorities to ensure a regular supply of data.
Sport's National Governing Bodies	Various Sports National Governing Bodies assisted with consultation on their club's data. In addition, they helped us to develop the most appropriate approach to scope, data supply and management.
GeoHive Team	Technical discussions around the publication of Trails data to GeoHive and the high-level plan for future datasets to be published, specifically sports clubs, facilities and amenities

Ordnance Survey Great Britain	Useful discussions on their OSMaps programme. They aim to be sustainable by charging a subscription and guarantee data supply by paying royalties to data providers. They have a robust model comprising a very engaging and interactive portal, central map viewer and mobile app and are currently developing a set of innovative mobile apps
Outdoor Recreation Northern Ireland	Useful discussions around the supply of data and features that greatly enhanced the usability of their website. Their comms strategy is to keep the web-site simple and support that with initiatives via Social Media.
Department of Health	Discussions around the fact that the timing of this programme is very timely as Ireland recovers from the Covid crisis and many months of lockdown. During these months people have become more active and the Department are very keen to maintain that momentum by providing information on how to get active in your own area and beyond
Dublin Culture Company	Useful experiences from a similar initiative in Dublin. They created a Data Inventory group to clearly define which category each data item should be within and ensure that data was kept up to date. They operate a 'Lonely Planet' strategy for data updates – they have a full-time resource responsible for keeping data accurate and that person rotates around each of the data themes to update them. They also rely heavily on personal relationships with data providers and champions who look for new channels for data provision.
Social Prescribing	Engaged with Dr Noel McCaffrey and Ronan Rooney who have a social enterprise that is developing a social prescribing application. They made the point that there are lots of databases with relevant information but very few of them are kept up to date. Their view was that our sweet spot was in providing an application to sign-post GP's and their patients to suitable activities in their areas.

3. Functional Recommendations

This section describes the work completed and recommendations from a functional perspective from the pilot project. It also lays out the recommended next steps by listing the follow-on actions for each recommendation.

3.1. Work Completed

The work completed from a functional perspective in the pilot project was as follows:

- Developed a central 'Sportal' i.e. a portal site that was used to publish all of the apps and dashboards developed in the project
- Developed a dashboard to show Department of Sport funding by sport and locality
- Developed a dashboard to summarise Sports Clubs data received from National Governing Bodies
- Developed a sample 'Social Prescribing' app that allowed the user to select an area and identify sports clubs and facilities within a distance they define
- Developed an app to show the location and profile of trails as well as the supporting information about them
- Developed an app to show trails in 3D
- Developed a Survey form to allow people to volunteer in their chosen sport to illustrate how rapidly these forms can be implemented and published
- Developed a Survey form to gauge the level of support to supply Sports facilities and amenities data from Local Authorities.

3.2. Priority Use Cases

The feasibility study found that a **National Database of Sport & Recreation Amenities** has the potential to benefit many different user groups, including:

User Group	Sample Use of Database	Benefits
1. General Public	Find sports amenities for the family and plan a full day out by adding layers for other facilities, such as restaurants.	More active on a regular basis. Kids enjoy exploring new areas and activities.
2. Doctor / Healthcare Professional	Identify suitable social and recreational opportunities for patients as part of Social Prescribing.	Improve overall wellbeing and rely less on medication alone.
3. Planner	Overlay data on existing recreational amenities with population projections and conservation areas to plan development of facilities, green spaces and trails.	More integrated and effective spatial and investment planning. Improved data sharing and collaboration between government bodies.
4. Asset Manager	When issues are identified at a recreational facility such as a playground, beach or	Effective asset management, demonstrating on-going

	walking trail by staff or public, they are recorded and managed on the system. The issue would be assigned to the responsible agency and track progress.	monitoring and resolution of issues.
5. Overseas Tourist	Plan a trip better by combining information on long-distance walks, festivals, weather, transport and accommodation in one place.	More likely to stay longer and visit less-frequented areas.
6. Emergency Services	See data that is not published to the public, such as all access points to amenities. On a greenway or walking trail for example, this can save a lot of time.	Save lives by arriving more quickly at emergencies.
7. Person with Disability	One-stop shop for information on suitable amenities throughout the country, as well as details on parking and access.	More inclusion and wider opportunities to be active.
8. App Developer	Access open data to build cutting-edge applications using the latest technology and trends.	Ensure data remains widely available in the most relevant formats, allowing for future developments.

This section will look in some detail at the two clear priority use cases identified during the Pilot Project; asset management and social prescribing.

3.2.1. Asset Management

A consolidated national base registry of sports and recreational amenities will provide benefits in a variety of scenarios that are not currently possible as a definitive source of national information is not being actively managed and maintained. One of the clear points arising from the survey of Local Authorities is that they consider the Asset Management of sports and recreational facilities and amenities as one of the primary benefits of bringing this information together into an authoritative National Registry. Development of an asset management workflow for trails is now well advanced within Sport Ireland and this pattern can be re-used and refined for other amenities such as playgrounds, beaches and parks.

The following screenshots illustrate the system developed within Sport Ireland to asset manage the trails. Dashboards have also been developed to provide business intelligence on the trail management process.

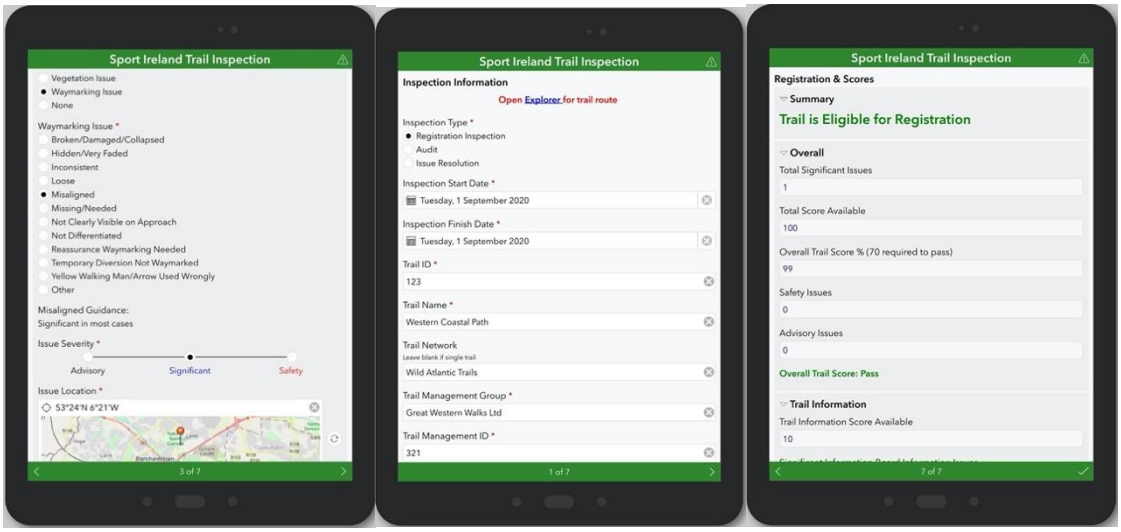
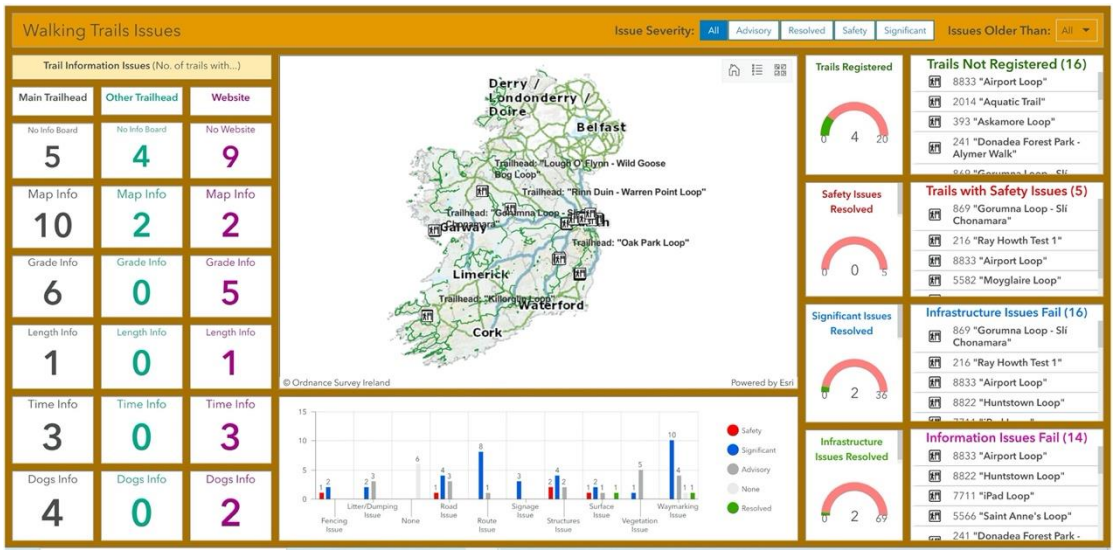
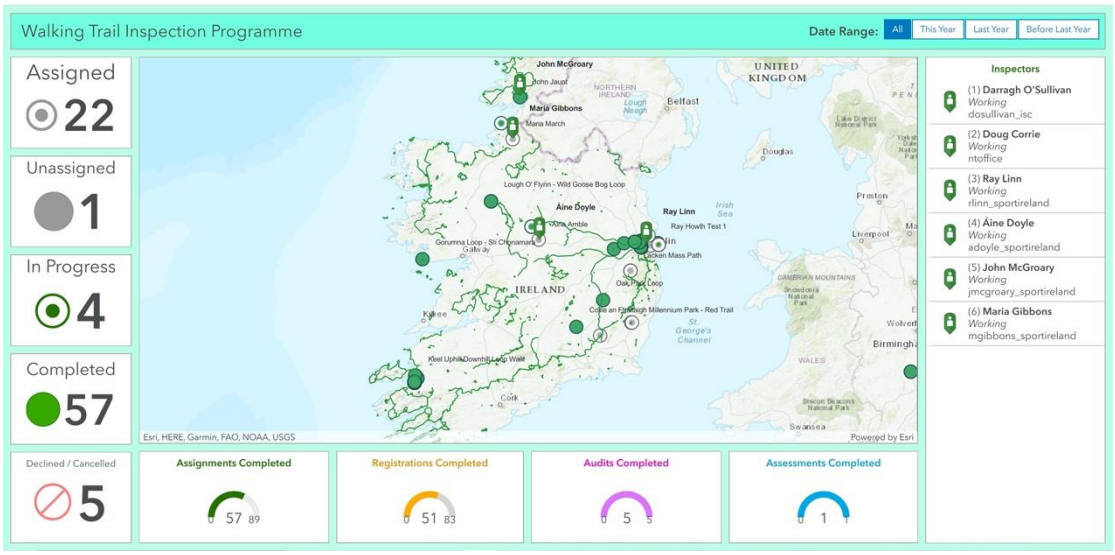


Figure 9: Trails Asset Management Mobile App





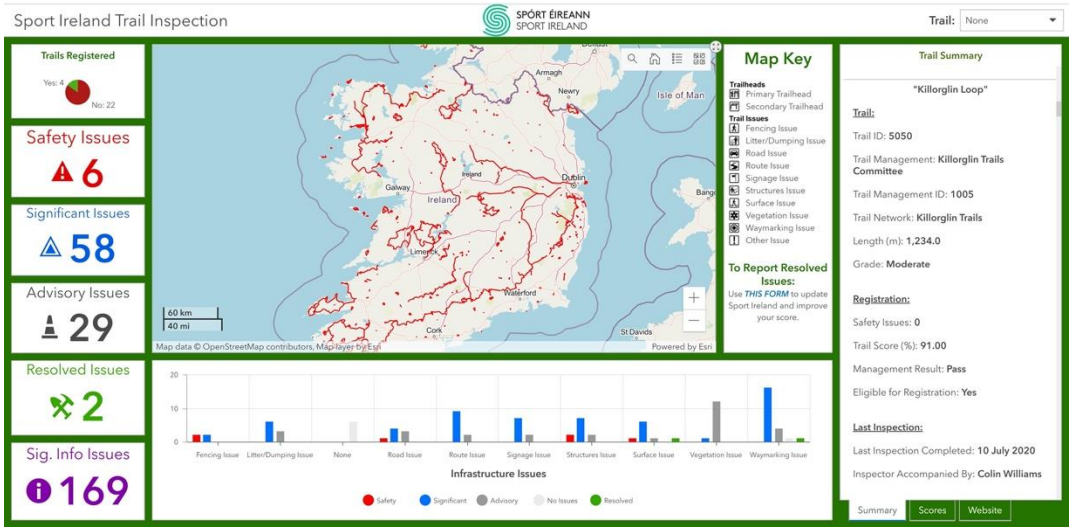


Figure 10: Trails Asset Management Dashboards

This asset management workflow for trails (in which Trail Inspectors add issues) could be extended to provide the ability for the general public to add issues relating to any sports or recreational facility or amenity. This capability could be achieved through a range of channels such as mobile devices or the central map viewer. The responsible agency would be able to visualise and resolve the issue. Once the issue had been resolved, the status of the issue could be updated to ensure all stakeholders, as well as the user who originally logged the issue, are informed.

In addition, dashboards that could be developed using the data to look at trends and patterns of issues on trails and these insights could be used to develop evidence-based policy regarding

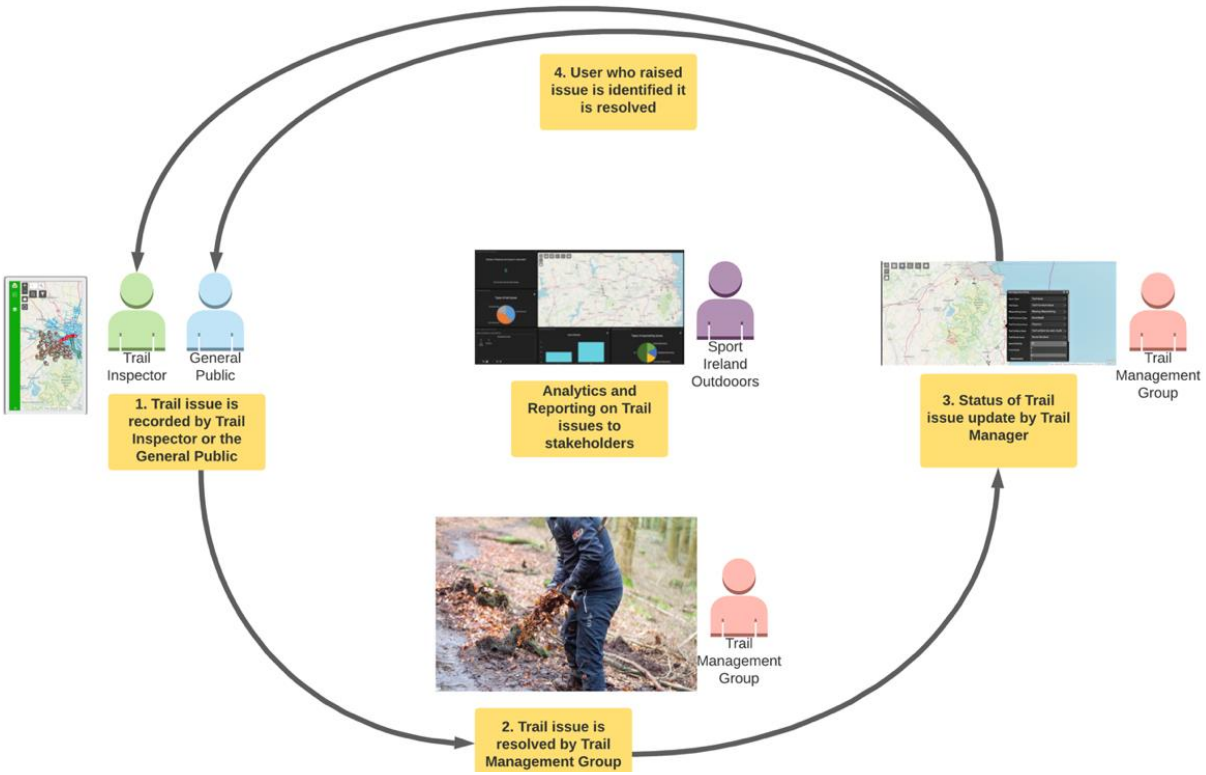


Figure 11: Asset Management Workflow

common issues and their resolution on trails. Some examples of typical dashboards that could be developed are shown in section 3.5 .

3.2.2. Social Prescribing

According to Healthy Ireland, 61% of all adults and 25% of 3-year-olds in Ireland are overweight or obese; 26% of 9-year-olds have a body mass index outside the healthy range. Physical inactivity is a demonstrated clear risk to health and wellbeing in Ireland, whereas an active lifestyle helps to prevent many diseases and promotes health and wellbeing throughout the life cycle.

The Healthy Ireland Framework identifies the need to "increase the proportion of population undertaking regular physical activity – across each life stage", while removing the barriers that may impede people's ability to make healthy choices.

One such barrier is accurate, up-to-date information on the opportunities for sport and recreation in all its forms. Whether someone is looking for somewhere to walk or cycle, join a sailing club or try rock climbing, the lack of easy-to-find information can prevent them from taking part, and mean reverting to more sedentary behaviours.

Having an accurate, regularly updated and localised understanding of what exists in the community is a critical foundation stone of social prescribing. Accurate and engaging digital information on sport and recreational amenities could directly support citizens in their social prescribing journey whether for weight loss, increased exercise, managing diet, lower level mental health issues such as mild anxiety, sleeplessness, even social isolation. In addition, this would relieve some burden existing healthcare services. To support this, government agencies have identified the need for a single national source of information relating to recreation amenities and to support this the National Physical Activity Plan includes an objective to "develop a publicly accessible national sports/ recreation facilities and amenities directory." This directory could be accessed either directly by the public or by healthcare professionals as one of the elements of an all-Ireland Social Prescribing Network.

Social Prescribing was reiterated during the Pilot Project as one of the priority use cases among the stakeholder group. Social prescribing, sometimes referred to as community referral, is a means of enabling GPs, nurses and other primary care professionals to refer people to a range of local, non-clinical services. It aims to address people's needs in a holistic way that allows them to take greater control of their own health. Social prescribing is designed to support people with a wide range of social, emotional or practical needs, and many schemes are focused on improving mental health and physical well-being. Those who could benefit from social prescribing schemes include people with mild or long-term mental health problems, vulnerable groups, people who are socially isolated, and those who frequently attend either primary or secondary health care.

To address this, it is recommended that the National Sports and Recreation Registry is made available to General Practitioners, Occupational Therapists, Psychologists and other primary healthcare professionals. This will require active engagement with the Department of Health to identify innovative ways the data could be used in Social Prescribing, and how it could be most effectively promoted and adopted by primary healthcare professionals, for example potential integration with existing GP systems. One of the primary ways to achieve this would be by making the central map viewer available and raising awareness of its ability to 'sign-post' patients to relevant resources and activities in their area.

In addition to this, active liaison should continue with developers of Social Prescribing and Healthcare-related applications to support them in using the Open Data services from the National Registry within their applications.

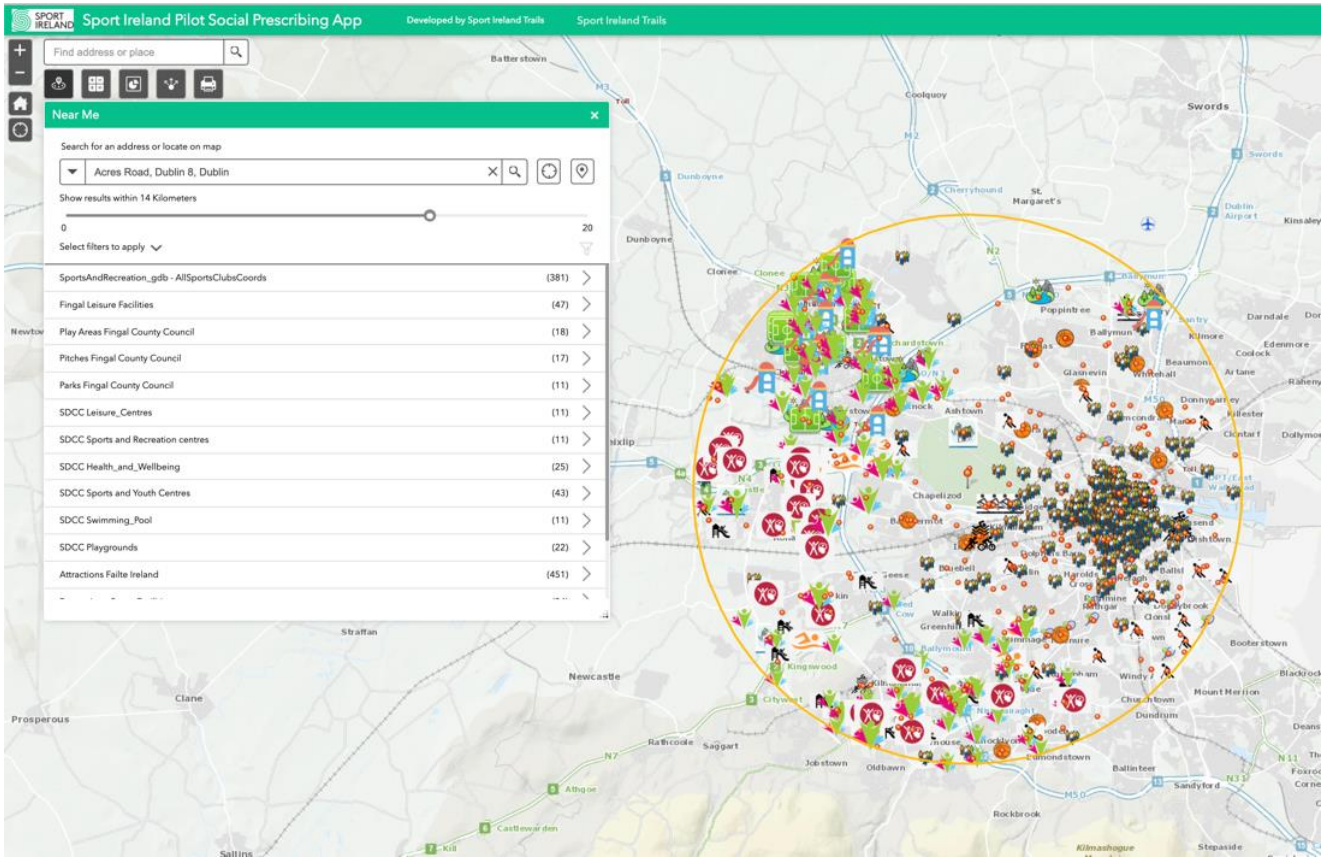


Figure 12: Example of how the Amenity data could be used by GP's

Recommendation 1:

It is a recommendation of this report that the priority use cases of Asset Management and Social Prescribing be developed within the full implementation. Additional asset management workflows should be implemented as additional data holdings are brought into the National Registry such as beaches, parks and playgrounds.

Proposed Action 1.

Develop Asset Management workflow for trails within the full implementation. Incorporate the ability to identify an issue on a trail within the mobile app and develop supporting dashboards to monitor trail issues and identify patterns and trends

Proposed Action 2.

Liaise with developers of Social Prescribing applications to promote the use of data within the National Registry in their applications and use the central map viewer as a tool for GP's to sign-post patients to resources in their area

Proposed Action 3.

Subsequent asset management workflows should be rolled out in phases as additional data holdings are brought into the National Registry such as beaches, parks and playgrounds.

3.3. Portal

A web portal, named the Sportal for the purposes of the pilot project was developed as shown in the screenshots in the figures below. This portal was developed to show how a portal can provide a focal point and act as a one-stop-shop to access the data stored with the National Registry as well as related apps and dashboards that consume that data. It was developed to make it intuitive and engaging, illustrating the art of the possible for the full implementation. Some important elements of the Sportal are described below.

3.3.1. Engaging Images

The images used on the Sportal were carefully selected to ensure they are engaging and inclusive. One of the main messages the portal should convey is the fact that anyone can participate in physical activity; it is safe, fun and people should be able to easily find facilities and amenities near them that they can use.

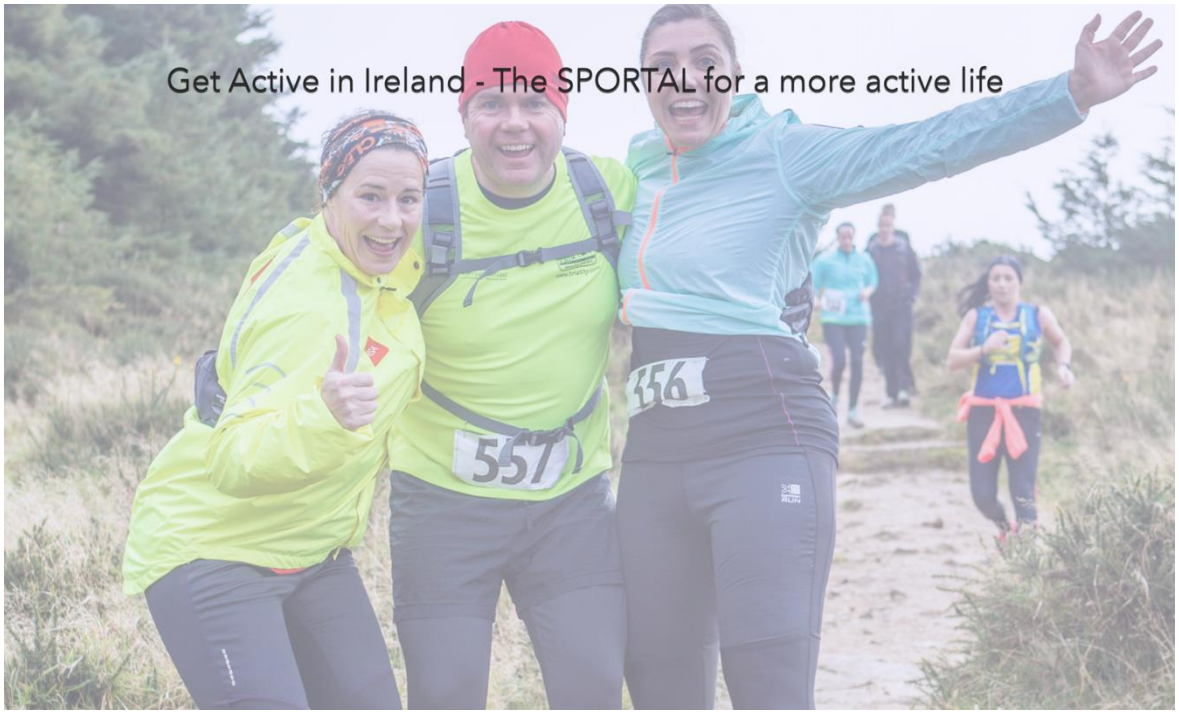


Figure 13: Sportal Impactful Home Page

3.3.2. Application Gallery

The Sportal should provide a central gateway to any apps developed to harness the power of the National Sports and Recreation registry. The app gallery developed within the Pilot project is illustrated in the figure below.

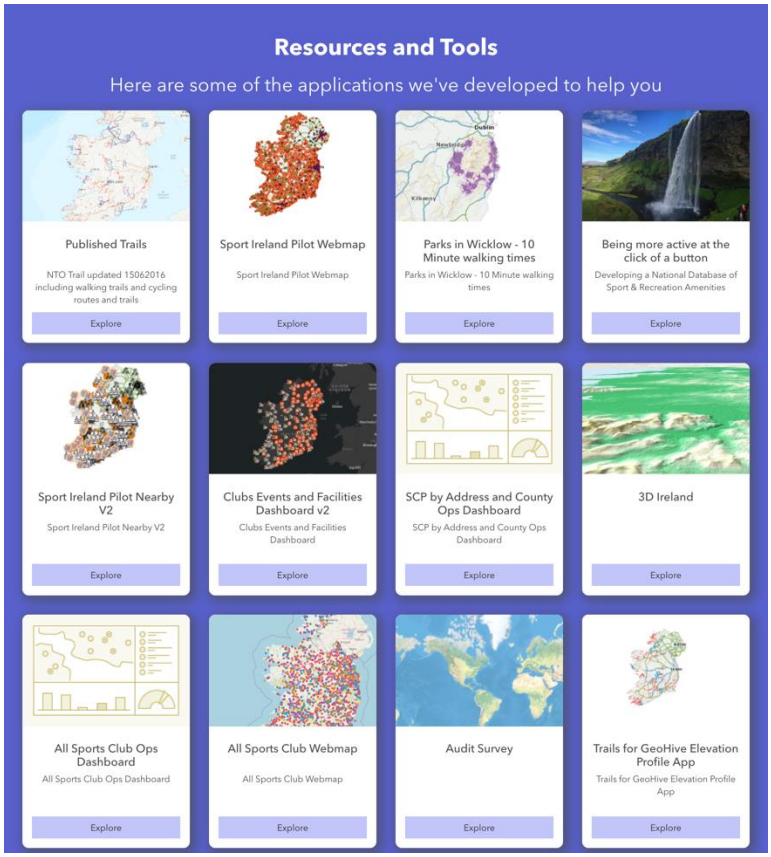


Figure 14: Sportal App Gallery

3.3.3. Signposting to Sports Clubs and Activities

The Sportal should also provide the user with easy access to sports clubs and activities information. This aspect of the Sportal developed within the Pilot project is illustrated in Figure 15.

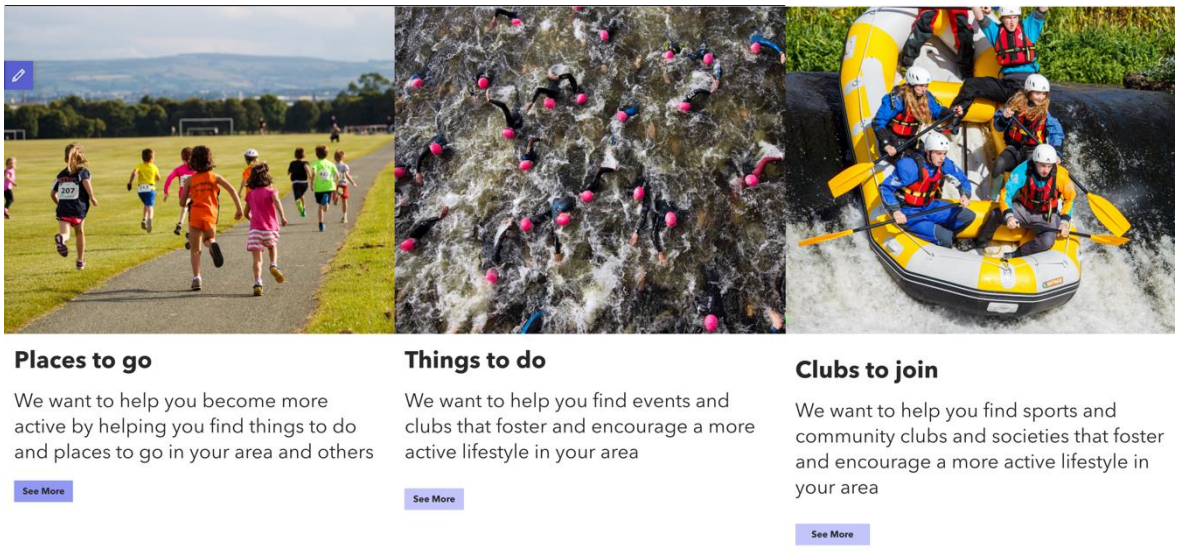


Figure 15: Sportal Links to Clubs and Activities

Recommendation 2:

It is a recommendation of this report that an intuitive and engaging portal is developed and used as a focus to promote and provide access to the data, apps, latest news and other communications relating to the National Registry of Sports and Recreational Facilities.

Proposed Action 4.

Development on this portal started in the pilot project and it should be refined and extended in the full implementation. In particular, it will benefit from the input of a user experience designer

Proposed Action 5.

The ArcGIS Hub environment platform that was used for the portal is a good environment to continue to use as it integrates seamlessly with the ArcGIS Online platform on which the data for the national Registry is hosted. However, this capability should be further extended (see recommendation 7).

Proposed Action 6.

This portal should be aligned with the PR and Communications Strategy and be used as the focal point for all news and information about the project. It should also include an ability for the public to provide feedback on data within the registry or suggest new datasets that should be published to the registry

3.4. Applications

A range of map viewer applications were developed during the project and used to demonstrate to the Steering Group to get their feedback and refine the scope of what the pilot project would deliver. These are illustrated in the following figures.

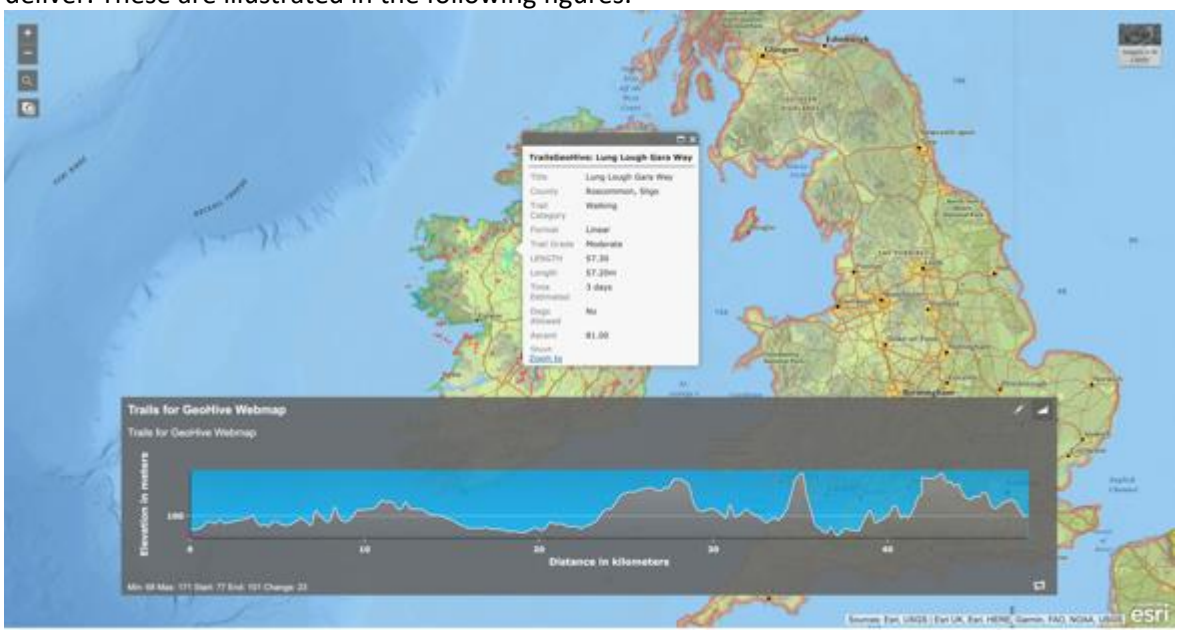


Figure 16: Trails 3D Profile App

Figure 17: Trails 3D App

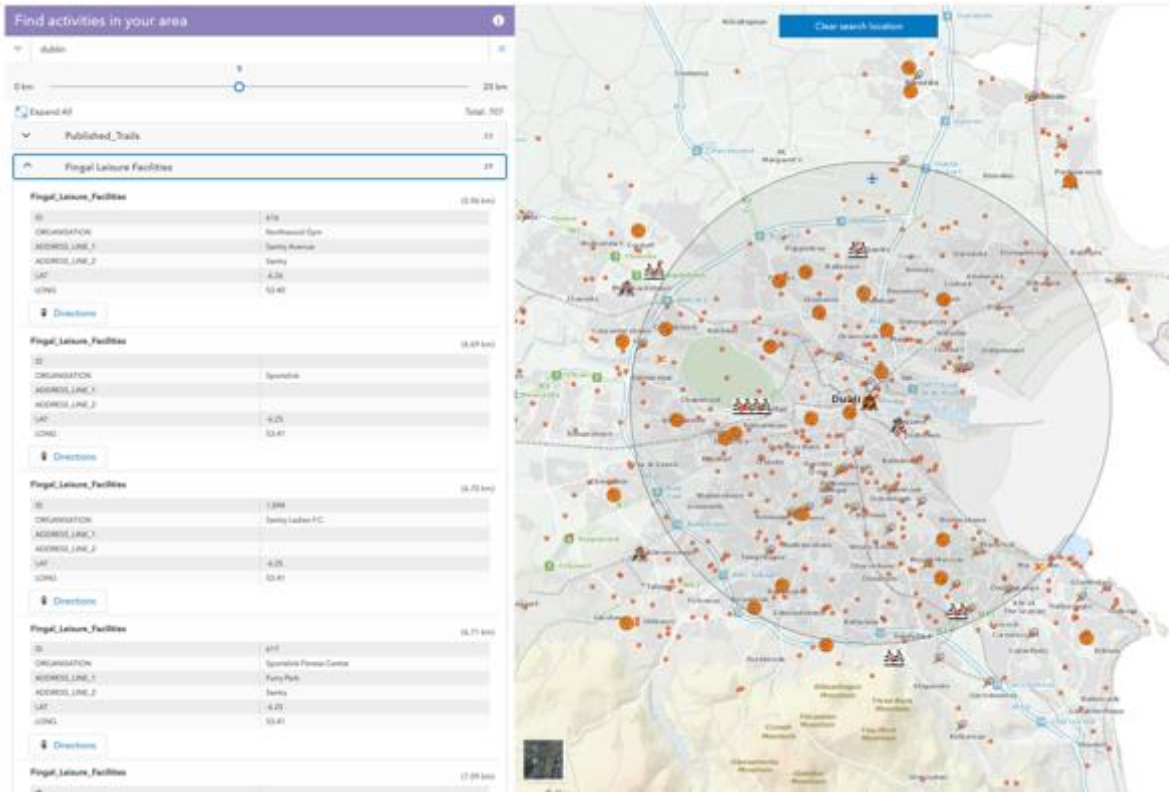


Figure 18: Social Prescribing App

Recommendation 3:

It is a recommendation of this report that a central map viewer application be developed to provide intuitive access to all of the data within the National Registry. This application should also be mobile responsive, so it works well on tablet devices and phones. This map viewer should also be branded with a distinctive name in line with the PR and Communications strategy

Proposed Action 7.

Development of a central map viewer application to provide easy access to the data within the National Registry

Proposed Action 8.

This map viewer should be branded with a distinctive and recognisable name that promotes its objectives of getting more people to go outside more often

Proposed Action 9.

The map viewer should be made available on the central portal

An example of an intuitive and engaging map viewer is the Ordnance Survey of Great Britain's OS Maps application as shown below. This application is very easy to use, has a focussed set of outdoor activities and amenities that can be added to the map as well as the ability for users to create their own routes and download these to mobile devices.

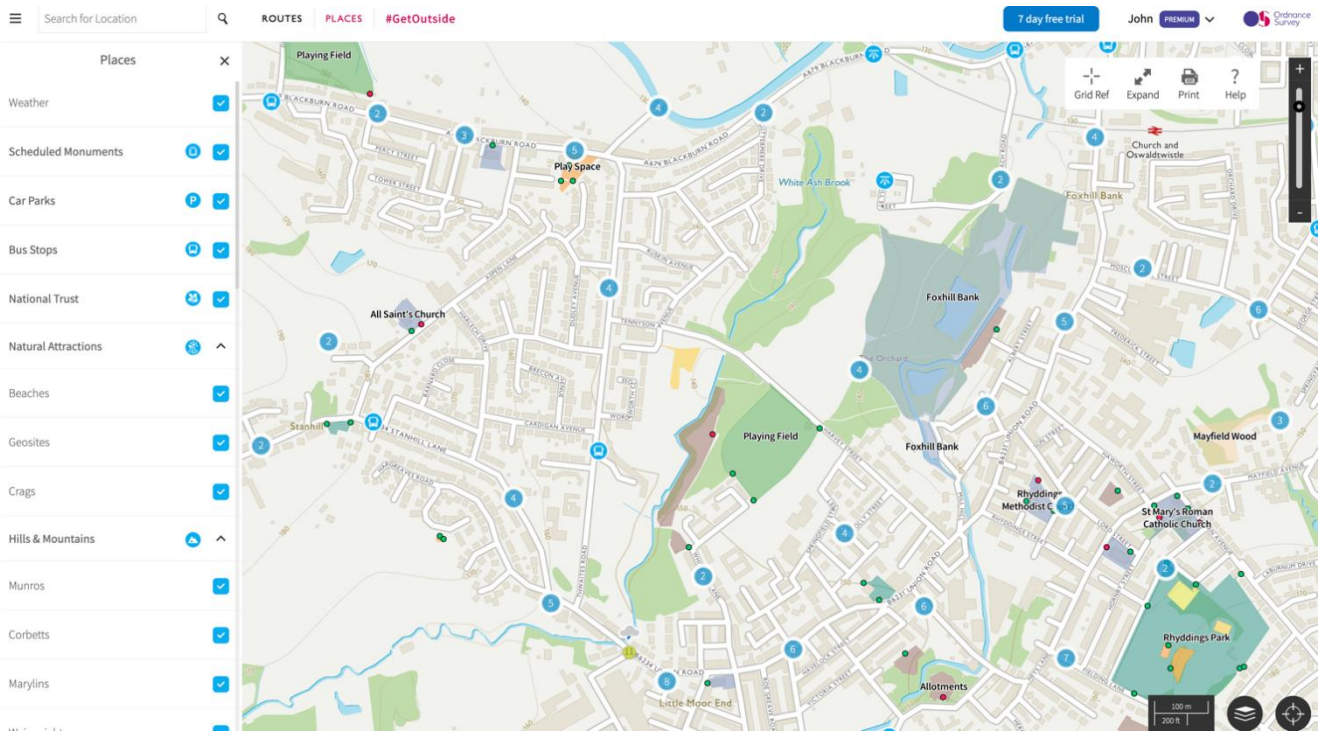


Figure 19: OSMaps App

3.5. Business Intelligence

A range of dashboards were developed during the Pilot project and used to demonstrate the range of analytics and business intelligence that can be produced as a result of having a single authoritative source of sports and recreational data. These demonstrations, to the Steering Group,

were used to generate feedback and further ideas for the use of the data within each of the stakeholder's business areas and refine the scope of what the pilot project would deliver.

This work really illustrated the new insights and analytics that the National Registry could provide. Dashboards were developed using the direct amenities data for planning/gap analysis and an example is shown in Figure 20. This dashboard shows the service areas within a 20-minute walking time of public parks in the area north of Dublin. This is a very effective technique to look at the area currently serviced as well as the areas that are now as accessible to an area of green space.

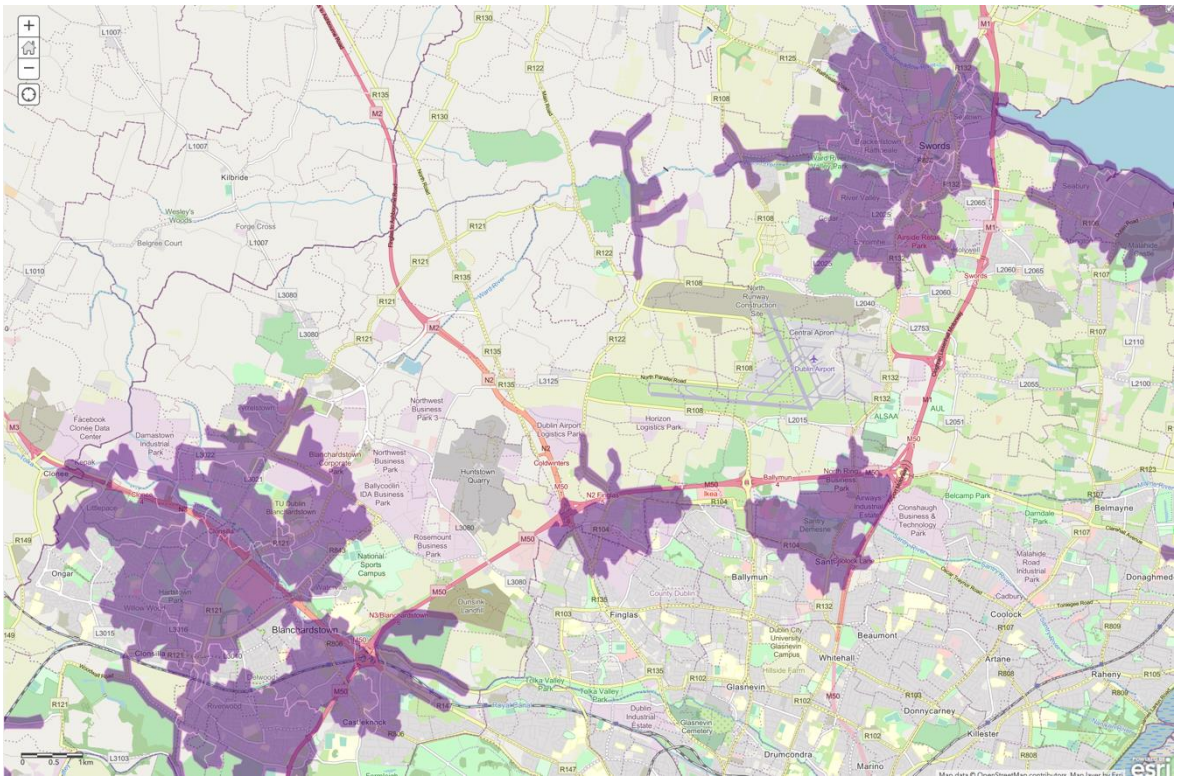


Figure 20: Map showing 20 minutes walking time from public parks North of Dublin

Another example of the power of the business intelligence behind sports and recreational data is a dashboard that was developed using Local Sports Partnership data on their public programmes. This dashboard is illustrated in Figure 22 and also uses demographic data from the Central Statistics Office to show areas of poor health and socio-economic class. While most of the data used in this case would not be published in the public portal, it demonstrates the potential for data suppliers to use internal layers of the system for powerful business intelligence. It is possible for data to be incorporated for an agency's own use, or shared with other bodies, but not available to the public.

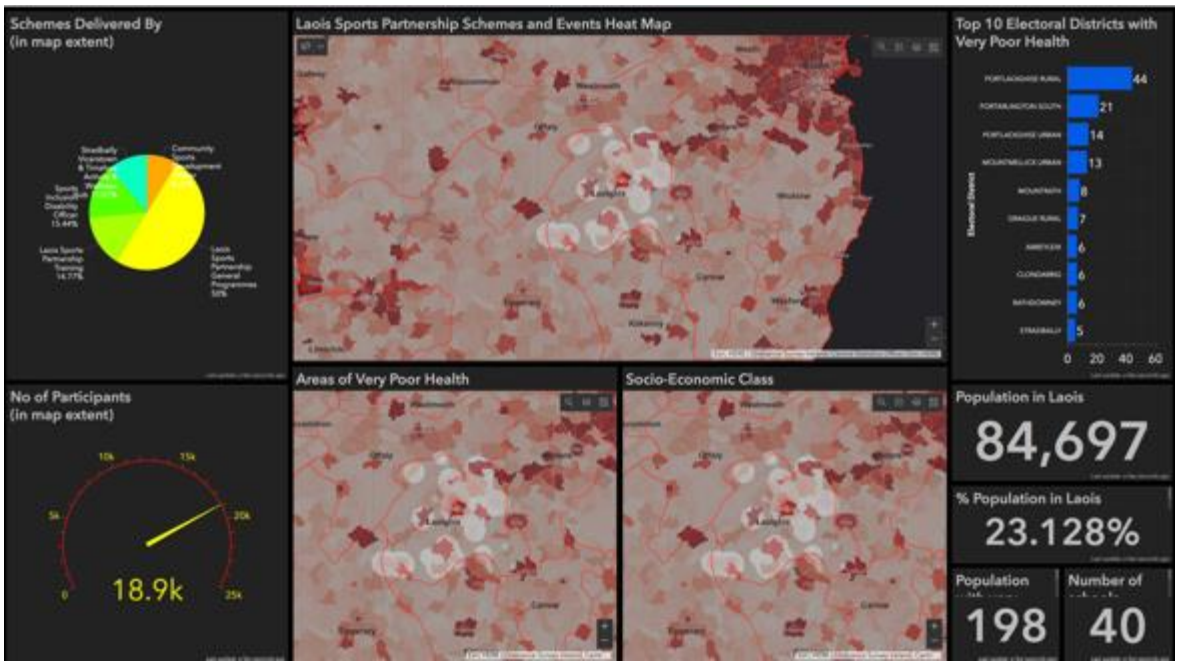


Figure 21: Demographics/Planning Dashboard

A dashboard was also developed to show the breadth of sports club information that was collated within the Pilot project. A common data model was created for this Sports clubs data and the data collated was loaded into this central schema. The result illustrated the benefits of bringing this data into one definitive source very clearly as it was possible to look for areas where sports were under-represented. This dashboard is illustrated in Figure 22.

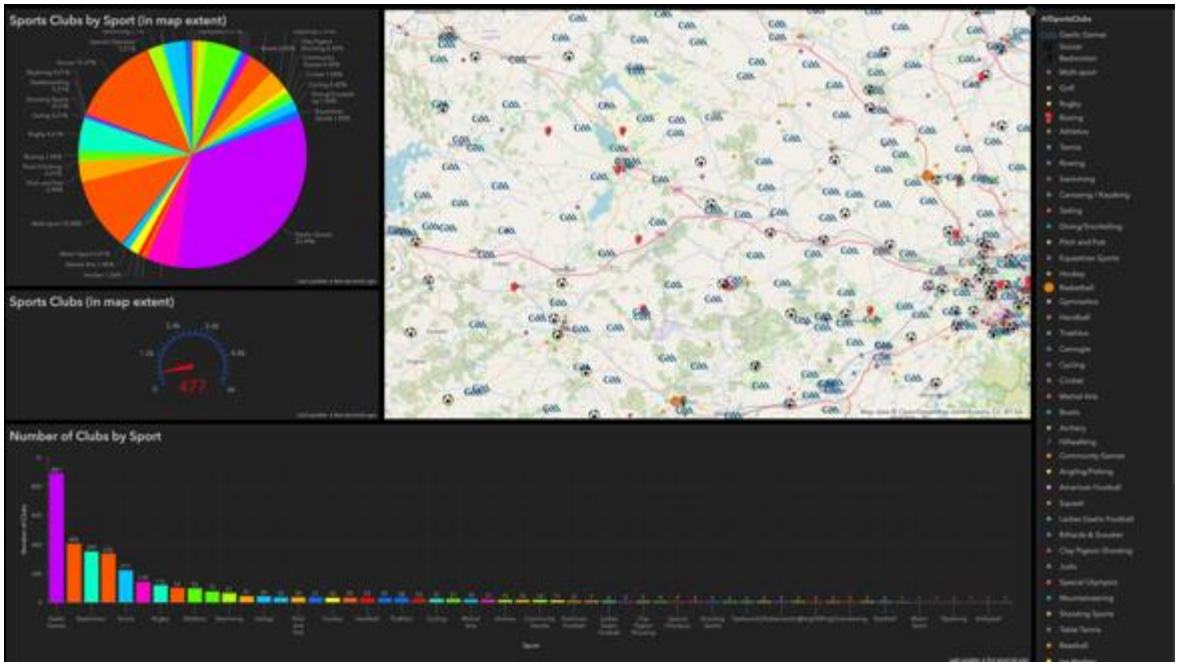


Figure 22: Sports Clubs dashboard

Another example was the use of the Department of Sport Capital funding information to show which sports and sports clubs have been funded, by how much and where they are located. This dashboard is illustrated in Figure 23.

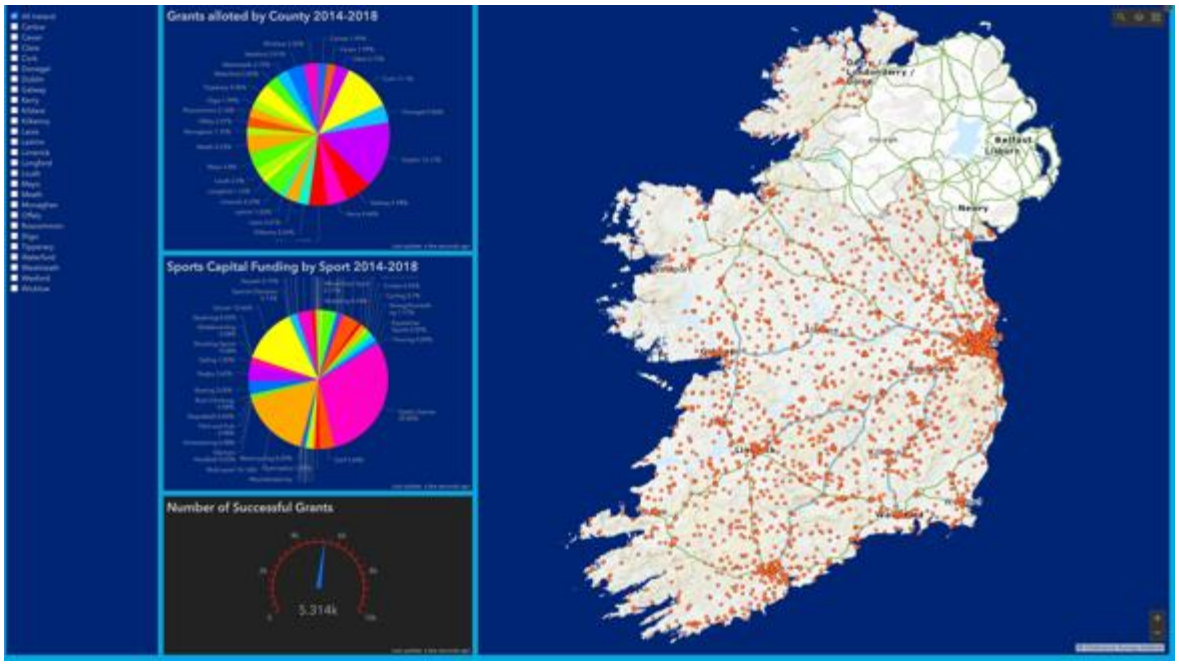


Figure 23: Department of Sport Capital Funding dashboard

While that single source of authoritative sports and recreation data to drive these dashboards does not yet exist, these dashboards clearly illustrate the potential power of harnessing that data to provide new insights, knowledge and evidence-based policy.

Recommendation 4:

It is a recommendation of this report that a set of dashboards be created to complement the data within the National Registry and demonstrate the analytical power of the data within it. This could potentially become a Data Science service provided to stakeholders and may even provide a revenue stream to fund future development of the Registry

Proposed Action 10.

Development of a demographic/planning dashboard for Local Sports Partnerships (LSP's). Those LSP's that use SalesForce could provide data in a common format.

Proposed Action 11.

Development of a Sports Capital funding dashboard for the Department of Sport

Proposed Action 12.

Development of a dashboard for Sports NGB's to clearly show location of their facilities and help identify any areas for development. This need was illustrated during the Pilot project through discussions with NGB's

3.6. Mobile

From the consultation within this pilot project on similar projects, there are two main things that concern people when walking or hiking is that they will get lost or sustain an injury. These factors can act as a barrier to people becoming more active and this information was gathered from an extensive survey carried out by Ordnance Survey of Great Britain. For this reason, it is recommended that a mobile app be developed to work in-sync with the central map viewer to allow users to find and download a route to their mobile device and identify issues that they encounter on a trail.

In addition, mobile apps could support the supply of data through the use of interactive forms. This capability is already built into the ArcGIS Online platform that the portal is built on so these forms could be rapidly developed. Another major advantage with this rapid development of forms is that comprehensive validation can be built into each data item to vastly reduce the time involved in resolved errors and maintaining data integrity. An example of one of these forms developed during the pilot project is shown in Figure 24 below. The form illustrated was used to show how forms could be developed for NGB's to get people to sign up as volunteers and services like this could be potentially be provided by Sport Ireland to generate revenue.

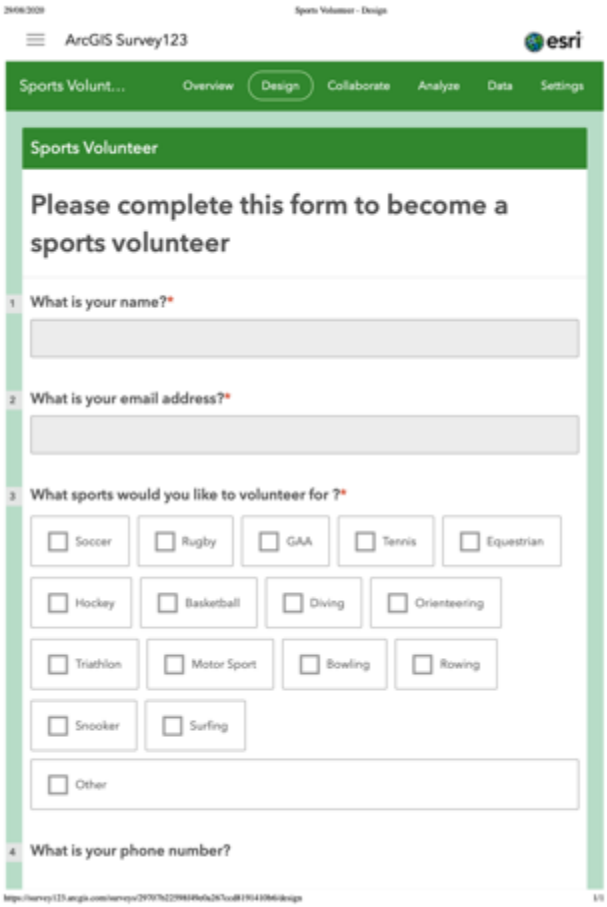


Figure 24: Sports Volunteer Survey123 Form

Recommendation 5:

It is a recommendation of this report that a mobile app be developed to work in sync with the central map viewer. User should be able to find an activity and download a route from the central map viewer to the mobile device. The mobile device would then be able to ensure they remain on the correct route at their selected location. The mobile app should be branded in the same way as the portal and website.

Proposed Action 13.

Development of a mobile app to allow users to select and download a route from the central map viewer to their mobile device

Proposed Action 14.

The mobile app should have the ability for a user to identify an issue on a trail, categorise this issue and upload supporting photographs.

Proposed Action 15.

Mobile users should be able to save their route and the base mapping to their device, so they do not need network coverage at their chosen location to access the route

Proposed Action 16.

It should also be possible for mobile app users to create their own routes and upload these for access on the mobile device or the central map viewer. Users should be able to share these routes or keep them private

3.7. User Experience

User Experience (or 'UX' for short) is a person's emotions about using a particular product, system or service. In our case, it represents the overall experience when interacting with the system. A good user experience can be the difference between a system being used or not and it is for that reason that it is included as a separate recommendation.

User experience (UX) focuses on having a deep understanding of users, what they need, what they value, their abilities, and also their limitations. It also takes into account the business goals and objectives of the group managing the project. Therefore, it is recommended that time is spent on assessing exactly what functionality is important to your target users and making those functions simple, intuitive and easy to use. Figure 25 shows the elements that represent a good user experience and you will notice that even includes the information architecture i.e. how your information is structured and how easy it is to find will have a big impact on the usability of the system. It is for that reason that the Dublin Culture Company invested time to define the groupings of each data element within their site and this contributed to making their site simple to use and enjoyable to interact with.

Figure 25: Elements of a good User Experience

Recommendation 6:

It is a recommendation of this report that a user-centric design approach should be applied to the design and development of the portal, map viewer and mobile app to provide an excellent user experience.

Proposed Action 17.

The Information Architecture of the system should be designed to ensure information is easy to find and clear boundaries should be defined to reflect which data items sit within each group

Proposed Action 18.

The functionality that is most important to target users should be identified and designed so that these functions are easy and enjoyable to use

Proposed Action 19.

The overall presentation of the portal and map viewer should be simple yet beautiful

Proposed Action 20.

Every element of the system should be designed from a 'user first' perspective

3.8. Trail Audit and Registration

The National Trails Register, managed by Sport Ireland, required trails to be regularly inspected to confirm they continue to meet the criteria. The work during this phase assisted in:

1. Developing an efficient GIS-based inspection and reporting system which in future could be housed within the National Registry and developed for use with other assets such as beaches, playgrounds and public parks.
2. Developing and streamlining the schemas and workflows for the trails data in preparation for it being stored within the National Registry in future.
3. Publication of the trails data to GeoHive, and improved publication to Sport Ireland's website.

During the Pilot project, AS-IS and TO-BE processes were developed for the Trail Audit and Registration processes and these are illustrated in this section of the document.

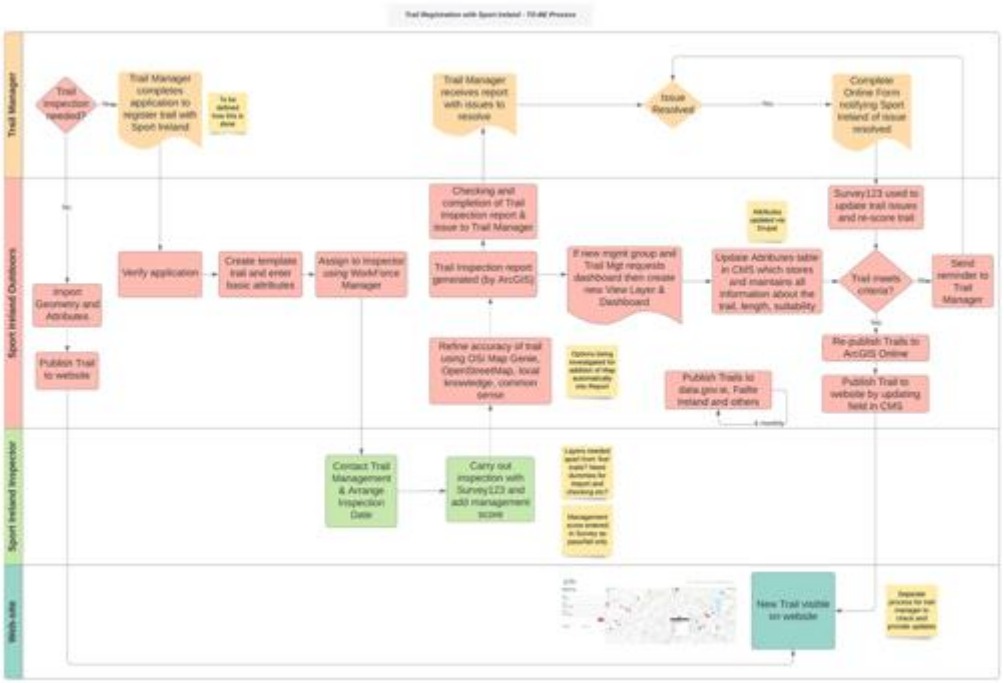


Figure 26: Trail Registration TO-BE Process

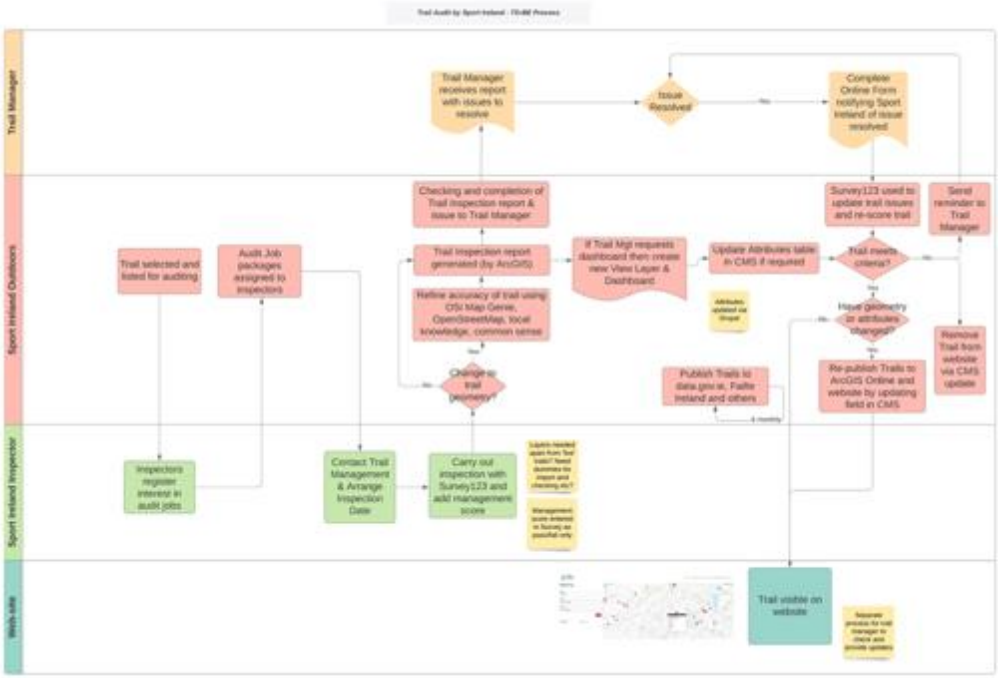


Figure 27: Trail Audit TO-BE Process

Some points to make about these processes are as follows…

- The process has been stream-lined through the use of Survey123 and the subsequent automated calculations to produce a management score
- There will be the capability to produce a specific management dashboard for each Trail Manager but to implement this with user identity (as opposed to a general hyperlink that anyone can access) it would require an upgrade to ArcGIS Hub Premium.
- The publication process to the website has been stream-lined but this could be further enhanced by merging the trails geometry and attributes databases.

4. Technical Recommendations

This section will describe the work completed and recommendations from a technical perspective from the pilot project. It will also lay out the recommended next steps by listing the follow-on actions for each recommendation.

4.1. Work Completed

The work completed from a technical perspective in the pilot project was as follows:

- Provided recommendations for Sport Ireland to migrate their existing ArcGIS Online site from HTTP to HTTPS
- Provided support to allow access to OSi MapGenie base mapping service within Sport Ireland's ArcGIS Online site
- Provided technical support to help refine the TO-BE trails registration, audit and inspection processes
- Published feature services for each stakeholder group to the ArcGIS Online site
- Established a group within the ArcGIS Online site specifically for the pilot project
- Setup data categories on the ArcGIS Online site and assigned them to each content item to make navigation of the Pilot Project area of the site easy
- Carried out database joins to merge the trails geometry with the data extracted from the CMS database and published those as draft feature services for GeoHive
- Developed Python scripts to automatically import data from Sports Clubs

4.2. Recommendations

The first recommendation in this technical section deals with the technical architecture behind the National Registry. It was initially the view that the architectural runway would need to be migrated from Esri's ArcGIS Online public cloud platform to their ArcGIS Enterprise private cloud platform but after quite a bit of work to assess this within the pilot project, the technical teams view is that this is no longer the case and that ArcGIS Online can be used throughout the full implementation.

Recommendation 7:

It is a recommendation of this report that the existing technical landscape of Esri's ArcGIS Online public cloud platform be used for the extent of the full implementation (if the National Registry is to be hosted by Sport Ireland). This means that a migration to ArcGIS Enterprise is not required, but it would be good practice to implement a backup/restore policy for any data held in ArcGIS Online and review the current user and credit allocation and carry out some capacity planning prior to the full implementation.

Proposed Action 21.

Carry out a capacity planning exercise to estimate the user numbers and credits required for full implementation

Proposed Action 22.

Implement a backup/restore policy for any data held in ArcGIS Online

Proposed Action 23.

Sport Ireland should create a new EU-based ArcGIS Online organisation site so that their data is hosted within the EU rather than in the US

During the Pilot project two requirements were discussed that would be accommodated by extending one of the Esri capabilities within Sport Ireland ArcGIS Online site. These are:

- The ability for Trail Managers to have their own dashboards for the specific trails they manage
- The ability for the public to provide volunteered geographic information to Sport Ireland
- The ability to set up initiatives and allow external stakeholders to join the core team to update the initiative.

These requirements would dictate the need to migrate from ArcGIS Hub to ArcGIS Hub Premium.

An extension of the current architecture to include ArcGIS Hub Premium would be recommended as it will vastly extend the capability for community engagement. ArcGIS Hub premium would allow Sport Ireland not only to create a Site (as was demonstrated during the Pilot project), but to create Initiatives. An Initiative includes a site, a core team, and the ability to send emails and content to specific audiences, including the public. For example, there could be an initiative for Local Sports Partnerships, Asset Management and Social Prescribing. With ArcGIS Hub Premium, you can create a template of the initiative, which can easily be reused to create new initiatives with the same look and feel.

ArcGIS Hub Premium would provide opportunities to reach out to communities and focus group to get them fully involved in initiatives. ArcGIS Hub Premium includes a new 'community organisation'. This is basically an additional subscription to ArcGIS Online, for managing community accounts and content. You can assign different permissions and credit limits to community users, where appropriate. This means you can add both internal (Sport Ireland) and external (e.g. NGB) Stakeholders into the 'core group' for an initiative. The core group can collaborate/update the initiative as required, depending on the permissions you grant them. Community users can log into to access applications that aren't shared with the public. You can enable public account creation, so that members of the public can sign up for a community account that's free to them and follow your initiative for email updates.

ArcGIS Hub Premium would also allow the public to provide feedback about issues on Trails and other amenities such as beaches and would therefore be fundamental to the Asset Management workflow and would also provide the capability for Trail Managers to have secured access to their own focussed dashboards on their trails.

Recommendation 8:

It is a recommendation of this report that ArcGIS Hub is upgraded within Sport Ireland's existing ArcGIS Online site to ArcGIS Hub Premium to facilitate users

Proposed Action 24.

Implement ArcGIS Hub Premium within the existing Sport Ireland ArcGIS Online organisation account

Proposed Action 25.

Setup initiatives using ArcGIS Hub Premium for Asset Management, Local Sports Partnerships and Social Prescribing.

During the Pilot phase, time was spent analysing the existing trails audit and registration processes and supporting the provision of TO-BE workflows for these processes. One of the technical recommendations from this work was to merge the existing trails geometry with the supporting attributes held within the CMS. This merged database would then represent a single version of the truth for trails and views of that data could be published for internal and external publication.

Recommendation 9:

It is a recommendation of this report that the existing trails geometry database and the supporting attributes held within the Content Management System database are merged to form one single database for Trails. This single master Trail database should be stored and maintained within ArcGIS Online and would not require a Relational Database Management System (RDBMS). Views of this database can then be published with different attributes available and access rights to accommodate both internal maintenance and external publication.

Proposed Action 26.

Carry out an impact assessment of merging the trails geometry and attributes databases and produce a TO-BE workflow diagram

Proposed Action 27.

Test the impact of merging the databases with Sport Ireland's web development team in advance of the actual merging. Document the results of this test and take any remedial actions required

Proposed Action 28.

Implement a phased approach to the merging of these databases as follows.
(i) Initially, a master trail database should be implemented within ArcGIS Online holding only the trail geometry
(ii) Implement an automated process to periodically join this data with the attribute data and create a publication database from the result
(iii) Merge the trails geometry and attributes databases to create a single master trails database
(iv) Create views of the master trails database for maintaining the trails and the supply of the trails to GeoHive or the Asset Management system. These views would have different levels of user access control and attributes available.

The phased process of merging the trails geometry and attributes databases is illustrated in Figure 28. The top half of this diagram shows the first step towards the creation of a single master trails database by implementing a separate publication database that is periodically updated from the trail geometry and the associated attributes. The bottom half shows the changes that merging the trails geometry and attributes databases would have i.e. a single master database that supplies data into each workflow via a series of views.

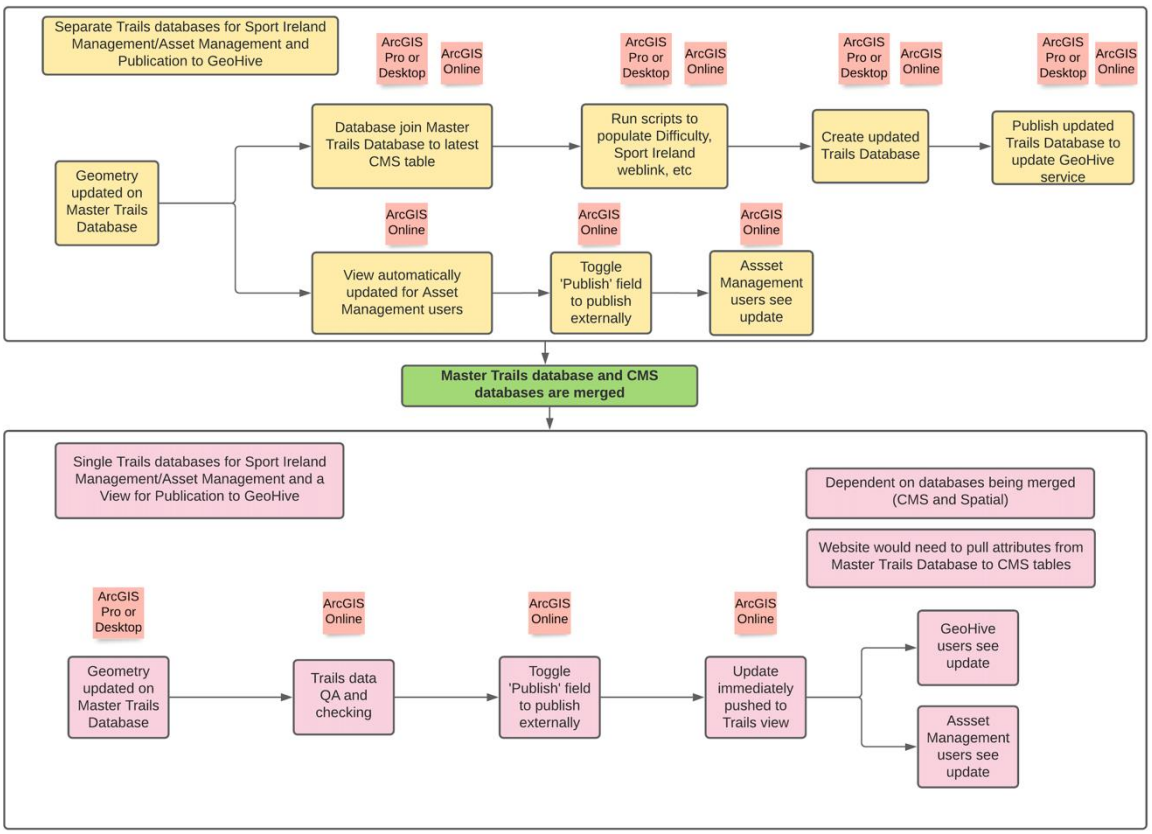


Figure 28: Phased Approach of merging Trails and CMS Databases

5. Data Recommendations

This section will describe the work completed and recommendations from a data perspective from the pilot project. It will also lay out the recommended next steps by listing the follow-on actions for each recommendation.

5.1. Work Completed

The work completed from a data perspective in the pilot project was as follows…

- Imported data from 9 local authorities
- Imported data from Dept of Sport (3,400 clubs)
- Imported data from 15 Sport's National Governing Bodies
- Created merged clubs' database (5,096 clubs)
- Created and refined Trails data model
- Created and refined Sports & Recreation data model
- Identified attributes to publish to GeoHive
- Created draft Trails GeoHive service
- Developed automated data import procedures for Sports Clubs data

5.2. Value

An interesting observation was made in the early stages of collecting data from the Sports Clubs. A comparison was carried out between the data we were receiving from Sports Clubs and equivalent data in Google Maps and this is illustrated in Figure 29.
The map on the left shows what you get from Google Maps if you search for 'basketball in Ireland' (about 20 locations), while the map on the right shows the basketball data supplied Basketball Ireland (235 locations) and imported into our central repository for the Pilot project. This shows clearly the value of this project and answers the question 'Why not just use Google Maps'.

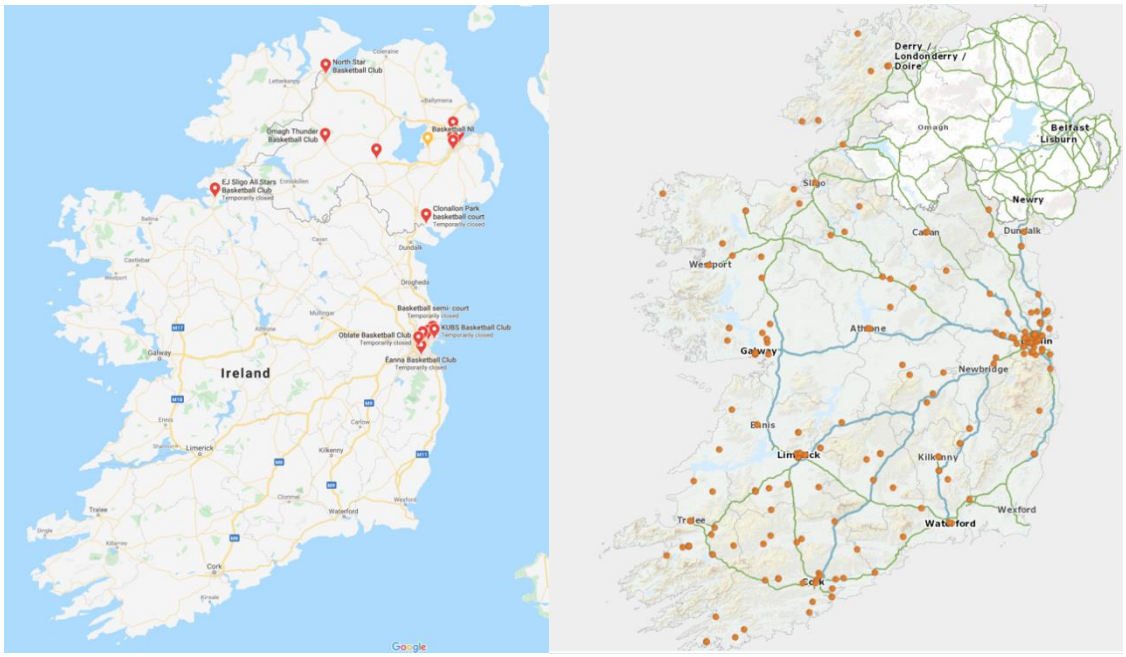


Figure 29: Comparison of basketball clubs' data from NGB's and Google Maps

5.3. Guiding Principles

The data aspect of this initiative is the most important one as the National Registry will only be used if its data is of good quality, accurate, and updated on a regular basis. For that reason, a set of fundamental principles have been defined and these represent the first recommendation in this area.

Recommendation 10:

It is a recommendation of this report that the following set of guiding principles are adopted to maintain the integrity and efficacy of the data available from the National Registry.

Proposed Action 29.

The preferred method for making data available from the National Registry should be as direct web services or interfaces from the data providers themselves. In the cases where this mechanism of access is not possible, the data should be physically imported into the National Registry.

Proposed Action 30.

The National Registry should only hold data that is practical and feasible to maintain. In general, a core set of useful attributes should be maintained for each data element and the user should be sign-posted to further information via links to the appropriate websites

Proposed Action 31.

Information on events is considered too difficult to maintain and keep up to date and is considered outside of the scope of the National Registry

Proposed Action 32.

A set of guidelines should be developed for the publication of data to GeoHive on a regular basis. The publication of Trails information from the Registry should be followed in a phased manner with Sports Clubs, Facilities and Amenities web services.

Proposed Action 33.

The data within the National Registry should be made available as Open web services. Engagement should be carried out with the developer community to assist with guides on how to connect to National Registry services to promote the development of focussed apps using the data

Proposed Action 34.

The ability to store approximate locations should exist within the National Registry as some of the data, for example the locations of small clubs and societies, will be individuals' private residences and this policy retains the flexibility to obfuscate these locations if required

Proposed Action 35.

In general, any new data item should be held as points instead of polygons. This directs the user to the desired location while also keeping the data collection task simple.

Proposed Action 36.

For Sports Clubs data, the audit carried out by the Department of Sport provides an excellent starting point. Import this data and then apply an update policy from each National Governing Body that archives the Department of Sport data and adds their own data as well. In this way, no data is deleted from the Registry and an audit trail of updates is retained.

Proposed Action 37.

Work with the Department of Sport as they have kindly offered to make changes to their application process for funding to align with the data required by this programme. This would be a vital and effective way of collecting this data at source and this alignment should be implemented.

5.4. Data Themes

The data to be available from within the National Registry was initially defined using the conceptual data model that divided the Registry into separate and distinct themes of information. This is something that was initially developed in the Feasibility Study and was continually refined during the consultation process. The current conceptual model is illustrated in Figure 30 and each of the conceptual classes or themes are described in Figure 31.

Figure 30: National Registry Conceptual Data Model

Theme	Description	Sample Types	Example
Public Places *Primary source –* ***Local Authorities, Coillte, NPWS***	"Public place" means any place to which the public or a substantial group of the public has access and, in this context, constitutes places in which sport and recreational activities can be carried out or on which recreational facilities are located.	Beaches, forest parks, tourist attractions, nature reserves, play parks, playgrounds, lakes, rivers, heritage sites.	
Recreation *Primary source –* ***Local Authorities, National Governing Bodies***	A place, installation, building or construction in a public place where sports and recreational activities are carried out.	Sports Clubs, Cycle paths, angling sites, sports pitches, orienteering courses, surfing locations	

Amenities *Primary source –* ***Local Authorities, Coillte, NPWS***	Elements at a public place or recreational facility that improve the comfort and convenience of the site	Parking, picnic spots, toilets, bike hire locations, outdoor exercise equipment	
Trails *Primary source –* ***Sport Ireland, Coillte, Waterways Ireland***	A marked or established path or route especially through a forest or mountainous region	Sport Ireland Trails Register, Greenways, Trail access points, Blueway's	

Figure 31: Description of Data Themes

Recommendation 11:

It is a recommendation of this report that a Data Inventory Group be created to manage the process of on-boarding data to the National Registry. This group should assign each new data element to the relevant category and continually review the definition of and content within each theme

Proposed Action 38.

Create Data Inventory Group chaired by Data Manager to govern and oversee the on-boarding of data into the Registry, assign it to the relevant themes, identify data owners and setup data supply agreements.

5.5. Logical Data Models

This section shows the logical data models created for each theme within the National Registry. The data models created for Trails, Sports Clubs, Sports Facilities and Amenities are shown in Figure 32, Figure 33 and Figure 34. They show the attributes within each data element as well as the possible values of each code list. This work is important as it defines the exact content of the data to be held within the Registry.

Recommendation 12:

It is a recommendation of this report that the data models developed for Trails, Sports Clubs and Sports Facilities be adopted and used for the supply of data to the National Registry. In this way, data updates can be provided from organisations such as National Governing Bodies in consistent formats and with a common central set of core attributes.

Proposed Action 39.

Supply the data model to data providers so that data updates can be provided in a consistent format with a core set of attributes that can be provided by all organisations

Proposed Action 40.

For any data stored within the National Registry, adopt a principle of storing a core set of useful attributes on each data item and sign-posting the user to the relevant

organisation's websites for further information. This policy minimises the risk of data becoming out of date, in particular data that is difficult to maintain such as event information.

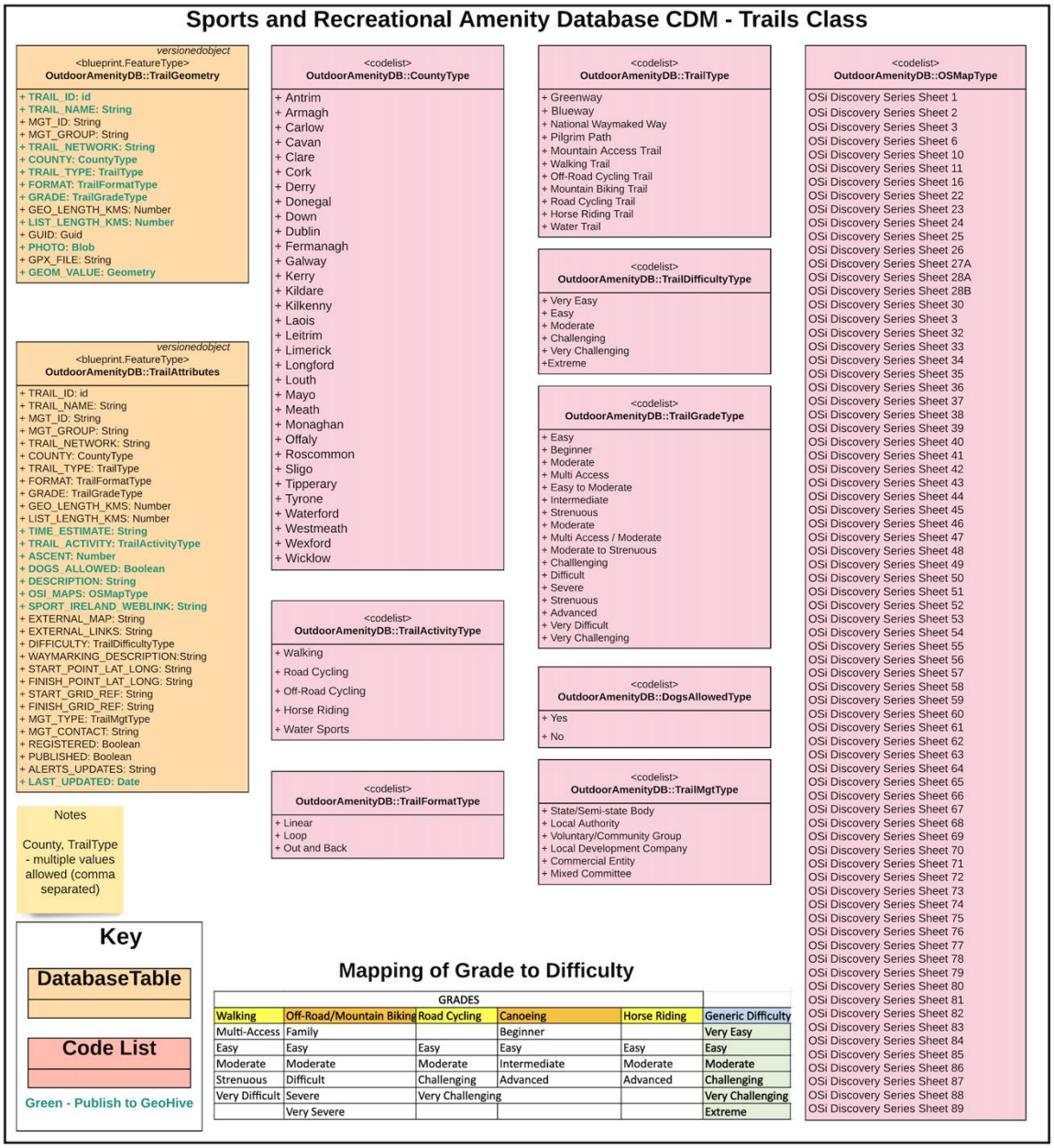


Figure 32: Trails Data Model

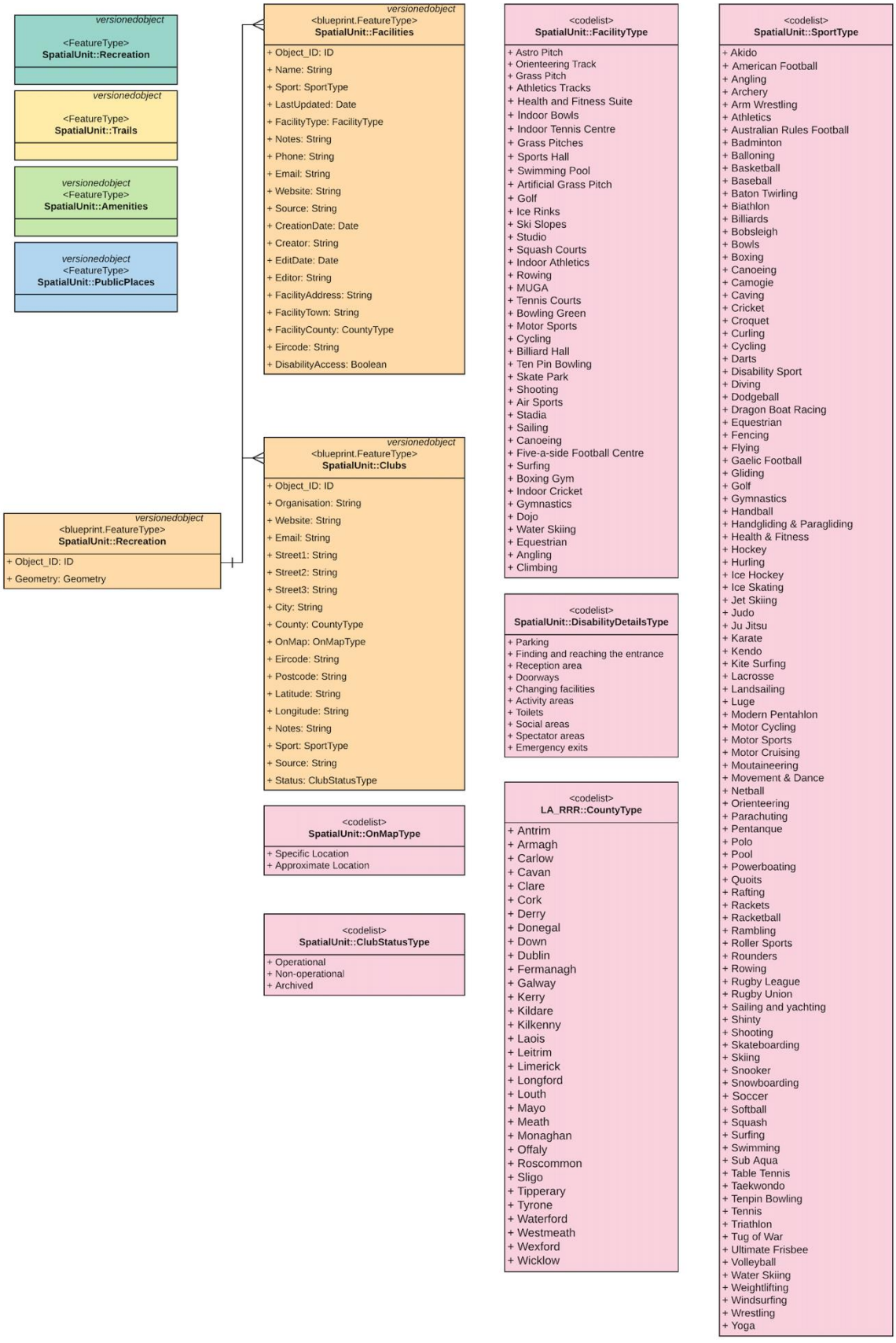


Figure 33: Sports Clubs and Facilities Data Models

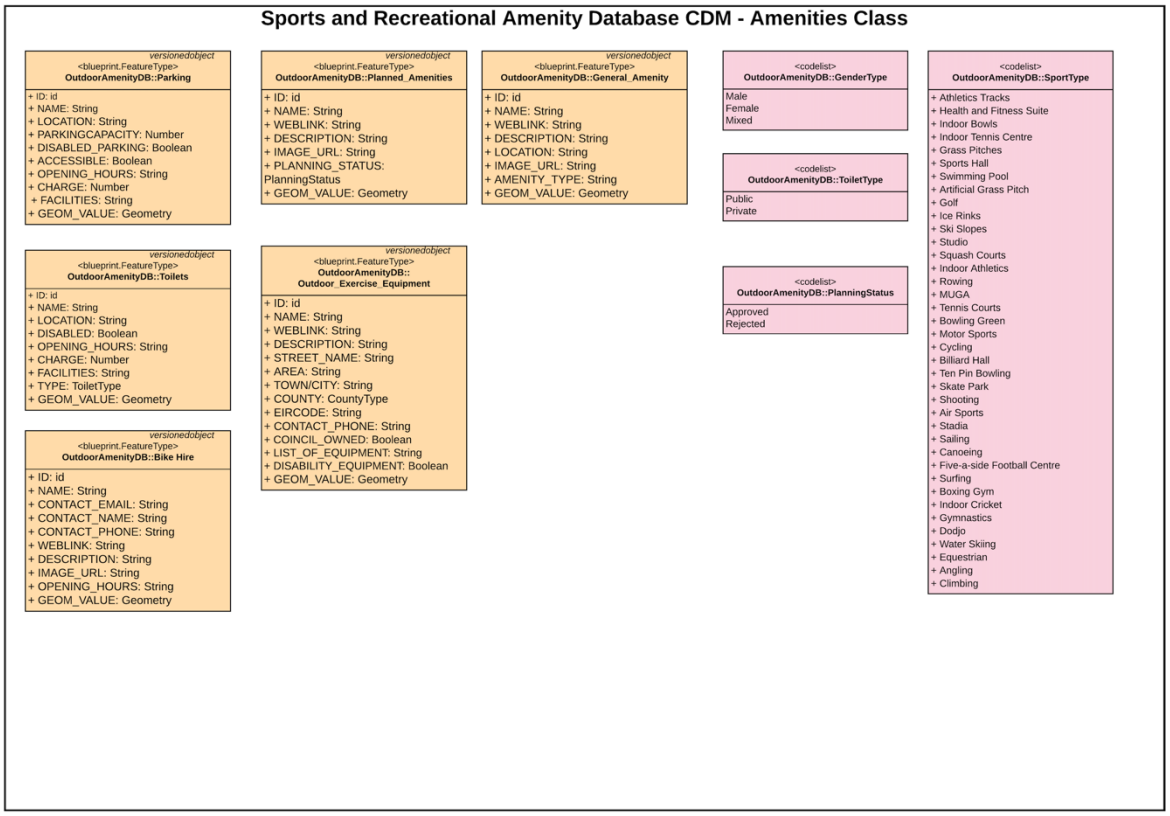


Figure 34: Sports and Recreational Amenities Data Model

5.6. Data Supply

The data provided to the National Registry should be at a consistent level of quality. This section deals with the format of data supplied to the National Registry and makes recommendations to ensure it is consistent, of good quality and updated regularly.

Recommendation 13:

It is a recommendation of this report that clear and concise data specifications need to be defined and communicated to stakeholders. These specifications would include guidance on acceptable data supply formats, frequency of updates and core attributes that need to be present in the data

Proposed Action 41.

Draw up data supply specifications with data providers and include information on the data standards to be adhered to.

Proposed Action 42.

Supply templates to data provides to supply their data in

The data standards to be adhered to include:

- Data can be supplied in spreadsheet (XLS) or comma-separated value (CSV) format but needs to include either coordinate values OR Eircode so that a definitive location can be derived using the automated coordinate values data import procedures (note that when this location needs to be anonymised then that capability should exist within the Registry).

- If coordinate values are supplied then they need to be coordinate values in Irish Grid (IG), Irish Transverse Mercator (ITM) or LatLong (WGS84) map projection systems.
- Data supplied in spreadsheet format should adhere to the common data structure created in this pilot project and described in this report
- Data can also be supplied in KML format as long as it contains the same attributes as defined in the common data structure described in this report
- Spatial data can be supplied as Shapefiles or file-based geodatabases but must contain the same attributes as defined in the common data structure described in this report

6. Management Recommendations

This section will describe the work completed and recommendations from a management perspective from the pilot project. It will also lay out the recommended next steps by listing the follow-on actions for each recommendation.

6.1. Work Completed

The work completed from a management perspective in the pilot project was as follows:

- Liaised with Dublin Culture Company on experiences from their Culture map initiative
- Liaised with Local Authorities via Dominic Byrne (Fingal), Gay Byrne (South Dublin) and Sean Garvey (Roscommon) as they are all facilitators and active members of the Open Data Group
- Liaised with WalkNI/OutdoorNI on experiences with their similar initiatives
- Liaised with Ordnance Survey of Great Britain on experiences from their OS Maps programme
- Discussed data, management and supply with various Sport's National Governing Bodies
- Liaised with Social Prescribing app developers on alignment with Social Prescribing
- Developed demonstrations and presented to Stakeholder group
- Held focused demonstrations and session with the Department of Health, HSE and the Department of Sport

6.2. Strategy and Vision

For any initiative of this nature, involving a considerable number of stakeholders, it is important to create and communicate a clear strategy and vision. An example of this is in our consultation with Ordnance Survey of Great Britain. Their strategy is clear and simple; they want more people to get outside more often. Everything they do is focussed on that one clear goal and message.

It is recommended that a communications pack be put together prior to the full implementation to summarise clearly and concisely the project strategy, goals, benefits and roadmap to deliver these goals. An initial draft of this was developed during the Pilot Project and is shown in Figure 35.

Recommendation 14:

It is a recommendation of this report that a communications pack be put together prior to the full implementation to summarise clearly and concisely the project strategy, goals, benefits and roadmap to deliver these goals

Proposed Action 43.

Create communications pack that clearly states the problem this initiative wants to solve and how it will solve it a pack be put together prior to the full implementation to summarise clearly and concisely the project strategy, goals and roadmap to deliver these goals

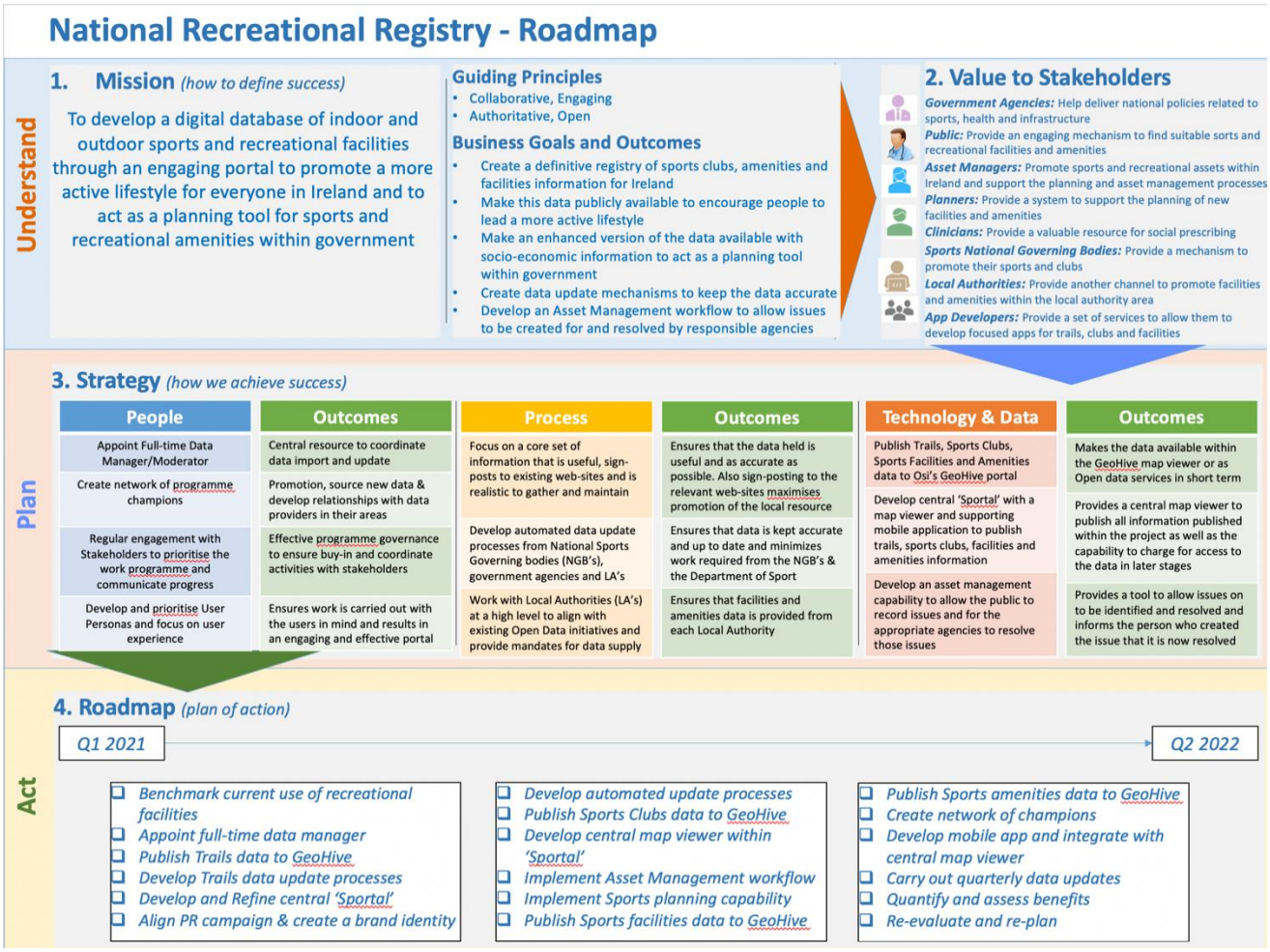


Figure 35: National Registry Strategy and Vision

6.3. Commitment from Data Providers

One of the most important aspects of this initiative is the commitment from data providers to supply data. To confirm this commitment and place it on a formal level, it is recommended that data supply agreements be put together and formally signed off with each data provider. These agreements should state the data to be provided, the frequency of updates, the constraints of data usage, the metadata and resolution paths in the event of feedback or data issues.

Recommendation 15:

It is a recommendation of this report that Data Supply Agreements be formally signed with each data provider to provide a solid commitment to supply data to the National Registry

Proposed Action 44.

Draw up a Data Supply Agreement Template and distribute to data providers

Proposed Action 45.

Formally sign off Data Supply Agreements with each data provider

In the Pilot Project, this process was started by constructing a form that was distributed to every Local Authority as shown in Figure 36.

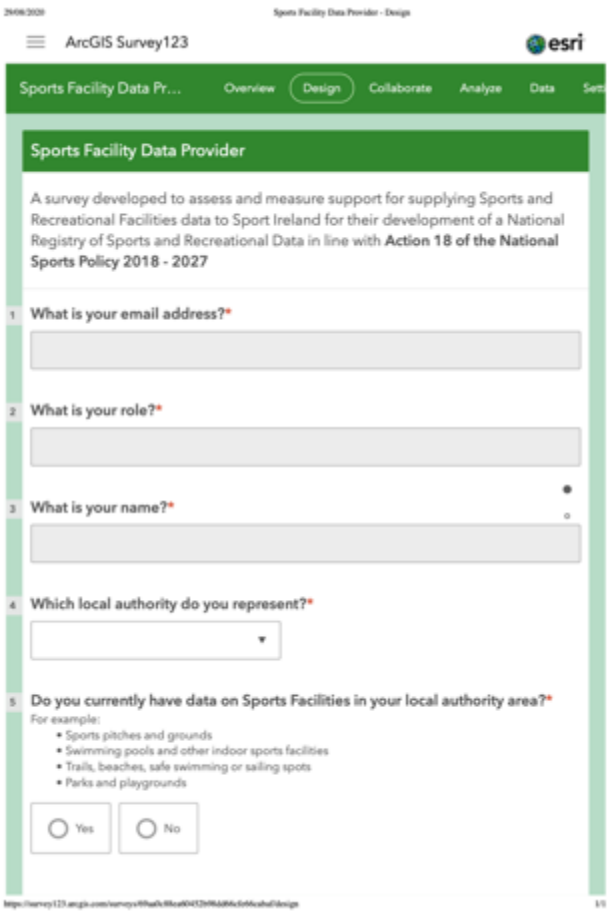


Figure 36: Data Provider Survey123 Form

The results of this survey at the time of writing this report is summarised in Appendix D. In summary, the Local Authorities that have responded would be willing to provide sports facilities and amenities data to the National Registry at least annually. The responses to this survey need to be increased to gain commitment from at least 75% of the local authorities before proceeding to full implementation.

Recommendation 16:

At least 75% of the local authorities need to commit to provide facilities and amenities data before proceeding to full implementation and it is vital to closely align with the Local Authority Open Data Group regarding common data schemas and the supply of data to the National Registry.

Proposed Action 46.

Chase up responses to the survey to at least get a response from every local authority

Proposed Action 47.

Produce a plan for local authority areas that cannot provide data, or do not have that data yet.

Proposed Action 48.

Closely align with the Local Authority Open Data Group regarding the creation of common data schemas and the supply of data to the National Registry.

6.4. Roles and Resources

We will begin with the perceived roles and resources for the full implementation as a result of the work carried out in the Pilot Project.

Recommendation 17:

It is a recommendation of this report that a dedicated Data Manager/Data Moderator be assigned to the full implementation to manage the processes of on-boarding data into the National Registry and the on-going maintenance of that data. This role should be supported by a GIS Consultant to implement the technical work involved. Supporting roles will also be required to manage the overall initiative and provide technical governance and assurance on the overall solution architecture.

Proposed Action 49.

Appoint dedicated Data Manager/Data Moderator responsible for the day to day running of the full implementation

Proposed Action 50.

The Data Manager should be responsible for drawing up and agreeing Data Supply Agreements with data providers to gain commitment and define quality standards for data provision

Proposed Action 51.

The Data Manager should build personal relationships with data providers and actively seek out new channels for data supply

Proposed Action 52.

The Data Manager should work with data providers on any data issues and their resolution

6.4.1. Data Manager

The Data Manager would be responsible for the day to day running of the project and the resultant system. They would be the main point of contact for each of the data providers and would manage any issues with data provision. In the early stages, the data manager's main responsibility would be to sign up data providers, put data supply agreements in place and refine the specification of supplied data. The Data Manager would also lead on implementing the database design itself and lead on any data model changes required during the implementation. The Data Manager would also have a direct link to any external suppliers brought in to implement the overall project. The Data Manager would manage the development of the data governance and QA process and be responsible for the overall quality and integrity of the database. The Data Manager would liaise with Ordnance Survey Ireland and data.gov.ie to manage the provision of the data into these portals.

6.4.2. Lead GIS Consultant

The Lead GIS Consultant would be responsible for the technical development and support of the overall solution. They would liaise with the technical staff in each data provider organisation to assist directly with any issues in data supply. The Lead Consultant would also be responsible for the support of the portal and map viewers developed to publish and update the data. The Lead Consultant would work closely with any external stakeholders or IT companies to whom some or all of the project implementation is sub-contracted. The Lead Consultant would promote the use of the web services and APIs developed for the project implementation to ensure they are used and well supported.

6.5. PR and Communications

One of the key aspects to the uptake and use of the Recreational Amenity database will be a communication strategy to raise awareness on the initiative itself and the variety of ways in which the data will be made available. This communication strategy needs to be multi-channel to factor in TV, radio, print and social media to ensure it reaches as many people within the target audience as possible. For example, one of the target areas for the strategy will be GP practices to use the information as part of their social prescribing. This strategy will also factor in the developer community to ensure the data is used within new apps for the public to use and enjoy recreational amenities.

The breakdown of this strategy will be as follows (the **costs are budgetary** and were based on consultation with PR and Marketing professionals):

- Branding, logo and web development (€30k)
- Advertising agency for newspaper and radio campaigns (€50k)
- Social media campaigns (€20k)
- TV (€50k)
- Continued maintenance in parallel with project implementation (€50k)

Recommendation 18:

It is a recommendation of this report that a PR and Communications Strategy run in parallel to the full project implementation

Proposed Action 53.

Develop an appropriate name for the initiative (e.g. www.getoutside.ie) and create common branding that is applied to the Portal website and mobile app.

Proposed Action 54.

Align the comms to the full implementation to promote new datasets, apps or capabilities as they become available

6.6. Support Network

From our consultations within the Pilot project with similar initiatives and programmes one of the most prominent and effective strategies is to create a support network of champions who operate at a regional or sectoral level to promote the use of the National Registry, look for new datasets and uses for the data and work with data providers to ensure data supply is maintained. Some of these champions could be high profile sports people within Ireland to support the communications strategy and promote the use of the information within the National Registry to become more active.

Recommendation 19:

It is a recommendation of this report that a network of 'champions' be developed to operate at a regional or sectoral level to promote the use of the National Registry, look for new datasets and uses for the data and work with data providers to ensure data supply is maintained

Proposed Action 55.

Appoint network of champions to promote the National Registry at a regional or sectoral level

Proposed Action 56.

Aim to appoint some high-profile athletes, sports stars or celebrities as champions to promote the benefits of activity and how the National Registry can support a more active lifestyle

6.7. High Level Plan for Full Implementation

A high-level plan for the full implementation is shown in Figure 37. It can be summarised as follows:

Prior to full implementation

- Confirm level of commitment from all Local Authorities to supply data
- Create and sign data supply agreements
- Put funding in place for full implementation
- Publish Trails to GeoHive
- Refine Trails workflow to update one master database in ArcGIS Online
- Web-site developers test using one master trails database for access to trails geometry and attributes
- Create communications pack to promote and communicate project strategy, vision and benefits
- Appoint Data Manager/Data Moderator
- Create Data Templates and send to data providers
- Benchmark current levels of outdoor activity in Ireland
- Benchmark what datasets are currently available at present as open data and their current levels of usage

Full Implementation Phase 1 (3 months)

- Trails website migrates to using one database for Trails geometry and attributes
- Refine Trails workflow to update single master database and automate supply to GeoHive
- Implement ArcGIS Hub Premium
- Engage User Experience designer
- Refine import procedures for Sports Clubs data
- Populate Sports clubs metadata
- Review and refine Sports Clubs data
- Import Sports Clubs data from data providers
- Implement central map viewer
- Refine user interface of 'Sportal'

Full Implementation Phase 2 (3 months)

- Start developing network of champions
- Create Data Inventory and Moderation Group
- Publish Trails data quarterly update to GeoHive
- Publish Sports Clubs data to GeoHive
- Automated supply of Trails to GeoHive begins
- Integrate Sports Clubs data into central map viewer
- Implement facility for public to provide feedback on data
- Launch 'Sportal' with aligned PR campaign

Full Implementation Phase 3 (3 months)

- Develop dashboard to show planning/demographic use case
- Develop dashboard to show sports clubs data and funding for Department of Sport – make it externally available
- Implement Asset Management application with associated dashboards
- Close liaison with, and representation of Local Authority Open Data group
- Automated process for Sports clubs data to GeoHive
- Update published trails on an on-going basis
- Update published Sports Clubs on an on-going basis

Full Implementation Phase 4 (3 months)

- Update published trails on an on-going basis
- Update published Sports Clubs on an on-going basis
- Publish Sports Facilities to GeoHive
- Publish subset of Amenities to GeoHive
- Knowledge sharing webinars
- Engage with developer community on use of data services – facilitate hackathons, competitions, etc
- Automated data update process from Local Authorities
- Develop supporting Mobile App

Full Implementation Phase 5+ (6 months)

- Update published trails on an on-going basis
- Update published Sports Clubs on an on-going basis
- Update published Sports Facilities on an on-going basis
- Publish all Amenities to GeoHive
- PR launch of mobile app
- Measure and quantify benefits
- Re-plan for future work
- GIS As a Service offering to NGB's and LSP's
- Consider migration to revenue generation model

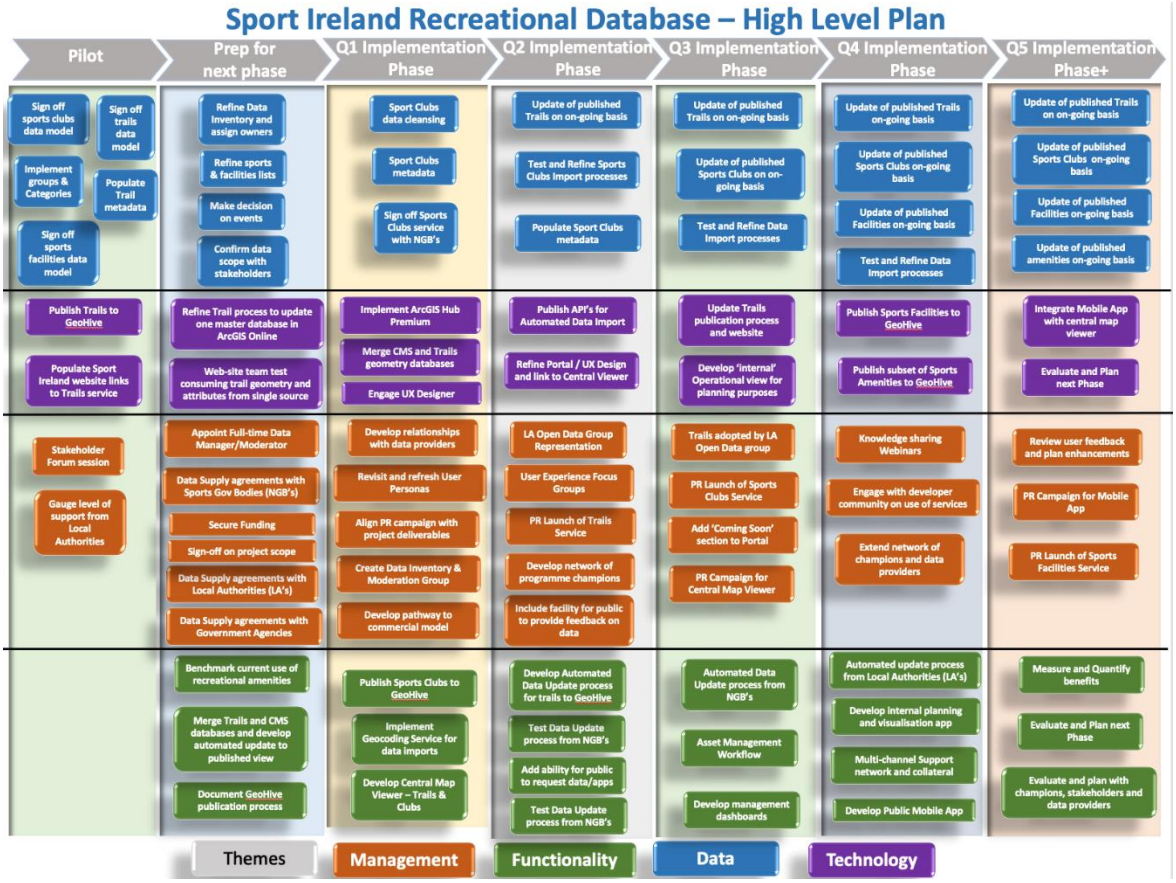


Figure 37: High Level Plan

The high-level plan is supported by the timeline diagram in Figure 38 that illustrates what the users will see after each stage in the process. This is summarised as follows:

- Year 1 Quarter 1 – Portal and Central Map Viewer, trails on GeoHive
- Year 1 Quarter 2 – Central portal with sports clubs and trails data, sports clubs on GeoHive
- Year 1 Quarter 3 – Management Dashboards, automated data import procedures
- Year 1 Quarter 4 – Mobile App, amenities on GeoHive
- Year 2+ - quantify benefits, re-plan future work, migration to revenue-based model, trails, clubs, facilities and amenities on GeoHive, Asset Management workflows, Innovative Mobile Apps

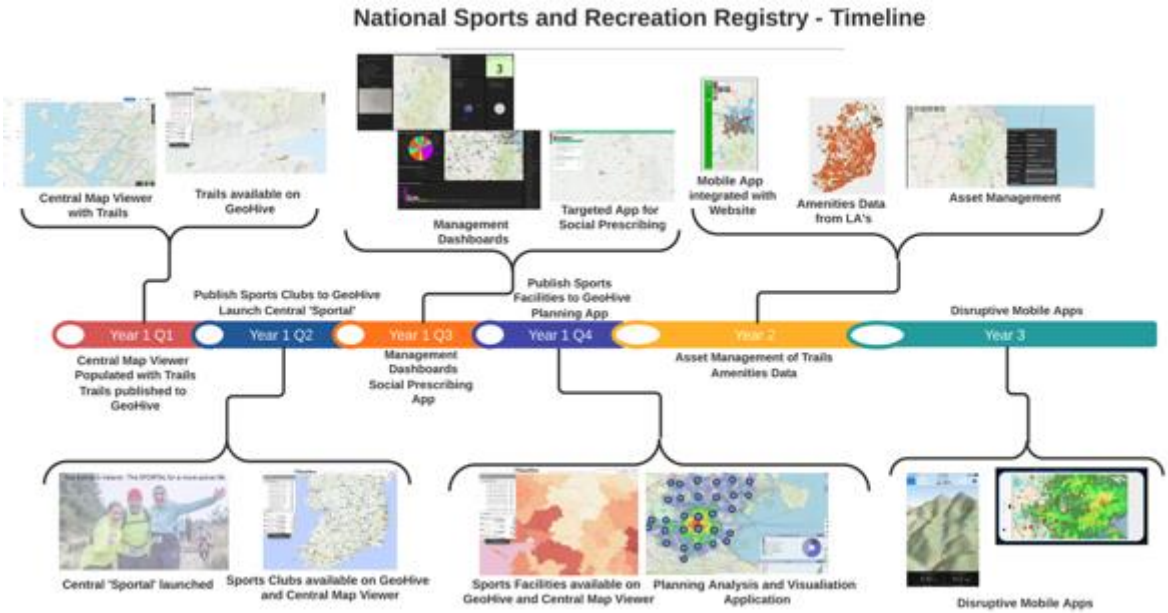


Figure 38: Programme Timeline

6.8. Estimated Budgetary Cost of Full Implementation

One of the key aspects to managing the cost of this work will be to carry out the implementation in a set of small programme increments that deliver benefits at each stage. The high-level plan has been described in the previous section; this section provides a broad budgetary estimate of the cost of each phase based on the recommended resource profile. These estimates are for **budgetary purposes** and assumes that resources are all contracted in. The costs could be reduced by using Sport Ireland staff rather than contracting in services and the daily rate assumed is €900 per day. In addition, one of the most important contributing factors to the overall success and uptake of the initiative is a communication strategy.

Table 1: Summary of costs by Phase

Phase	Duration	Cost
1	3 months	**€332,000**
2	3 months	**€212,000**
3	3 months	**€162,000**
4	3 months	**€162,000**
5	3 months	**€172,000**
6	3 months	**€152,000**
Total		**€1,192,000**

Table 2: Detailed Cost Breakdown by Phase

Phase	Duration	Resources required	Estimated Costs (€)
1	3 months	1 full-time Data Manager	€54,000
		1 full-time Lead Consultant	€54,000

Phase	Duration	Resources required	Estimated Costs (€)
		1 part-time Solution Architect (assumes 2 days/week)	€22,000
		1 part-time User Experience Designer	€10,000
		1 part-time Project Manager (assumes 2 days/week)	€22,000
		Communication Strategy – Development and Implementation - Branding, logo and web development (€30k) - Advertising agency for newspaper and radio campaigns (€50k) - Social media campaigns (€20k) - TV (€50k)	€150,000
		ArcGIS Hub Premium in Sport Ireland ArcGIS Online Organisational account with 2000 users - Year 1	€20,000
		Phase 1 Total	**€332,000**
2	3 months	1 full-time Data Manager	€54,000
		1 full-time Lead Consultant	€54,000
		1 part-time Solution Architect (assumes 2 days/week)	€22,000
		1 part-time Project Manager (assumes 2 days/week)	€22,000
		1 part-time User Experience Designer	€10,000
		Communication Strategy – Implementation & maintenance of multi-channel strategy	€50,000
		Phase 2 Total	**€212,000**
3	3 months	1 full-time Data Manager	€54,000
		1 full-time Lead Consultant	€54,000
		1 part-time Solution Architect (assumes 2 days/week)	€22,000
		1 part-time Project Manager (assumes 2 days/week)	€22,000
		1 part-time User Experience Designer	€10,000
		Phase 3 Total	**€162,000**
4	3 months	1 full-time Data Manager	€54,000
		1 full-time Lead Consultant	€54,000
		1 part-time Solution Architect (assumes 2 days/week)	€22,000
		1 part-time Project Manager (assumes 2 days/week)	€22,000

Phase	Duration	Resources required	Estimated Costs (€)
		1 part-time User Experience Designer	€10,000
		Phase 4 Total	**€162,000**
5	3 months	1 full-time Data Manager	€54,000
		1 full-time Lead Consultant	€54,000
		1 part-time Solution Architect (assumes 2 days/week)	€22,000
		1 part-time Project Manager (assumes 2 days/week)	€22,000
		ArcGIS Hub Premium in Sport Ireland ArcGIS Online Organisational account with 2000 users – Year 2	€20,000
		Phase 5 Total	**€172,000**
6	3 months	1 full-time Data Manager	€54,000
		1 full-time Lead Consultant	€54,000
		1 part-time Solution Architect (assumes 2 days/week)	€22,000
		1 part-time Project Manager (assumes 2 days/week)	€22,000
		Phase 6 Total	**€152,000**
Grand Total			**€1,192,000**

The table below breaks the costs down by year and operating expenditure versus capital expenditure.

Year	*Capital Expenditure*	*Operating Expenditure*
Year 1	**€20,000**	**€848,000**
Year 2	**€20,000**	**€304,000**
Totals	**€40,000**	**€1,152,000**

These costs assume the hosting of the Sport & Recreational Amenity database, central map viewer and portal would be within the ArcGIS Online environment and a link to the Publication database would be published on GeoHive. Indicative costs have also been included for ArcGIS Hub Premium and additional users and credits for Sport Ireland's ArcGIS Online Organisational account, this is a yearly subscription cost.

6.9. Revenue Generation

It is recommended that consideration be given to revenue-generation within this initiative. It became clear during the pilot project that the possibility of revenue generation exists in two main areas:

- GIS Consultancy services to National Governing Bodies and Local Sports Partnerships – the fact that their data is being imported into a Geographic Information System presents opportunities for analysis and visualisation that most of these organisations have not previously been aware of, and that is also of considerable business value to them. The opportunity exists to provide paid-for GIS consultancy services to these organisations to help fund the overall initiative
- Access to data and premium services – through the development of a central map viewer and mobile app, the opportunity also exists to implement levels of usage and access. This would start at the free level with options for various monthly subscription levels with access to more data and dashboards to present that data. Some examples of premium trails features that would be available for an additional subscription would be a dashboard for hill walkers to summarise their activities within a period, trails being supplemented with story maps about interesting features along the route or 3d fly-throughs.
- The provision of Asset Management workflows to other agencies is also a potential route for generating additional revenues.

Recommendation 20:

It is a recommendation of this report that the opportunity to provide revenue bearing services within this programme be considered and a policy developed

Proposed Action 57.

Develop policy on the potential revenue bearing services that exist within this programme

7. Risks and Issues

Some potential issues, risks and constraints identified by consultees throughout the consultation process are listed below along with suggested mitigating factors.

Risk Issue Constraint	Description	Mitigating Factors
Risk	The full implementation may not receive the initial or on-going funding it requires	Ensure the scope and aims are aligned with National Policies to deliver clear value to the country
Issue	Data from various sources is not standardised.	Implement common schema for each data holding within the National Registry and have it reviewed and ratified by the Local Authority Open Data Group. Aim to maintain a core set of attributes that are common to all data providers
Risk	The maintenance of the data is a concern and a risk. There have been similar projects, and some have failed as a result of data-providers not maintaining or updating the data	This project depends on data providers keeping their data updated. Ask data providers to commit to data supply agreements and ensure the supply process is as similar as possible to their existing open data supply processes to minimise the amount of additional work required from them. A mandate to data providers to provide their data on a regular basis should be a dependency on initiating this implementation.
Constraint	The key success factor for projects like this are to start small and expand, i.e. small schema first and then grow	Phase 1 recommended scope is to focus on trails and include other datasets that already exist as open data
Constraint	Different councils or departments will have different levels of funding for GIS so certain places will have more features mapped than others	Consolidating amenity information across Ireland will help with identifying gaps in coverage and addressing them
Issue	Information will be collected to a variety of data capture standards and accuracies across data providers. Would be good to have an authoritative geometry / agreed digitising standard for routes – OSi could define this. Good for routes that go through different counties and types of land.	Develop a data capture standard specification as part of the project implementation

Risk	Consistency of features such as trails that cross-county boundaries	Definitely an issue, especially when geometries are captured to largely different accuracies. Analysis should be carried out as the data is collated on the quality across county boundaries and collaboration would be required with neighbouring local authorities to address issues.
Risk	Local gov working group and GIS user group – enthusiastic about sharing data but operational needs and staffing etc can prevent this.	Funding for this project will put the data management processes in place, but time and resources will still be required from local authority staff to keep data updated
Risk	Change in staff at Local Authority, may result in problems getting data if new GIS officer is not on board	Data Supply Agreements
Risk	Loss or corruption of data mastered in the cloud	Should ensure backup and restore policy is put in place for all data being mastered in ArcGIS Online.
Risk	Ensuring the portal is the authoritative source for general public and that it has good uptake once it goes live.	Need to use effective branding and PR and good UX will help.
Risk	There is a dependency on Sport Ireland's website providers to integrate CMS with ArcGIS Online to pull attributes	An impact assessment of this change needs to be carried out

8. Summary

8.1. Summary

A summary of the recommendations within this document is listed below:

Recommendation Number	Recommendation
1	It is a recommendation of this report that the priority use cases of Asset Management and Social Prescribing be developed within the full implementation. Additional asset management workflows should be implemented as additional data holdings are brought into the National Registry such as beaches, parks and playgrounds.
2	It is a recommendation of this report that an intuitive and engaging portal is developed and used as a focus to promote and provide access to the data, apps, latest news and other communications relating to the National Registry of Sports and Recreational Facilities.
3	It is a recommendation of this report that a central map viewer application be developed to provide intuitive access to all of the data within the National Registry. This application should also be mobile responsive, so it works well on tablet devices and phones. This map viewer should also be branded with a distinctive name in line with the PR and Communications strategy
4	It is a recommendation of this report that a set of dashboards be created to complement the data within the National Registry and demonstrate the analytical power of the data within it. This could potentially become a Data Science service provided to stakeholders and may even provide a revenue stream to fund future development of the Registry
5	It is a recommendation of this report that a mobile app be developed to work in sync with the central map viewer. User should be able to find an activity and download a route from the central map viewer to the mobile device. The mobile device would then be able to ensure they remain on the correct route at their selected location. The mobile app should be branded in the same way as the portal and website.
6	It is a recommendation of this report that a user-centric design approach should be applied to the design and development of the portal, map viewer and mobile app to provide an excellent user experience.
7	It is a recommendation of this report that the existing technical landscape of Esri's ArcGIS Online public cloud platform be used for the extent of the full implementation. This means that a migration to ArcGIS Enterprise is not required, but it would be good practice to implement a backup/restore policy for any data held in ArcGIS Online and review the current user and credit allocation and carry out some capacity planning prior to the full implementation.
8	It is a recommendation of this report that ArcGIS Hub is upgraded within Sport Ireland's existing ArcGIS Online site to ArcGIS Hub Premium to facilitate users and collaboration.
9	It is a recommendation of this report that the existing trails geometry database and the supporting attributes held within the Content Management System

Recommendation Number	Recommendation
	database are merged to form one single database for Trails. This single master Trail database should be stored and maintained within ArcGIS Online and would not require a Relational Database Management System (RDBMS). Views of this database can then be published with different attributes available and access rights to accommodate both internal maintenance and external publication.
10	It is a recommendation of this report that a set of guiding principles are adopted to maintain the integrity and efficacy of the data available from the National Registry.
11	It is a recommendation of this report that a Data Inventory Group be created to manage the process of on-boarding data to the National Registry. This group should assign each new data element to the relevant category and continually review the definition of and content within each theme
12	It is a recommendation of this report that the data models developed for Trails, Sports Clubs and Sports Facilities be adopted and used for the supply of data to the National Registry. In this way, data updates can be provided from organisations such as National Governing Bodies in consistent formats and with a common central set of core attributes.
13	It is a recommendation of this report that clear and concise data specifications need to be defined and communicated to stakeholders. These specifications would include guidance on acceptable data supply formats, frequency of updates and core attributes that need to be present in the data
14	It is a recommendation of this report that a communications pack be put together prior to the full implementation to summarise clearly and concisely the project strategy, goals, benefits and roadmap to deliver these goals
15	It is a recommendation of this report that Data Supply Agreements be formally signed with each data provider to provide a solid commitment to supply data to the National Registry
16	At least 75% of the local authorities need to commit to provide facilities and amenities data before proceeding to full implementation and it is vital to closely align with the Local Authority Open Data Group regarding common data schemas and the supply of data to the National Registry.
17	It is a recommendation of this report that a dedicated Data Manager/Data Moderator be assigned to the full implementation to manage the processes of on-boarding data into the National Registry and the on-going maintenance of that data. This role should be supported by a GIS Consultant to implement the technical work involved. Supporting roles will also be required to manage the overall initiative and provide technical governance and assurance on the overall solution architecture.
18	It is a recommendation of this report that a PR and Communications Strategy run in parallel to the full project implementation
19	It is a recommendation of this report that a network of 'champions' be developed to operate at a regional or sectoral level to promote the use of the National Registry, look for new datasets and uses for the data and work with data providers to ensure data supply is maintained
20	It is a recommendation of this report that the opportunity to provide revenue bearing services within this programme be considered and a policy developed

Appendix A: Consultees

Organisation	Person	Role
Active School Flag Programme	Karen Cotter	National Co-ordinator
Age & Opportunity	Sue Gildea	Active Programme Manager
Basketball Ireland	Conor Meany	Commercial Manager
Bowling League of Ireland	Charlie Lynch	Hon Secretary
Bowling League of Ireland	Mike Brophy	Web Administrator
Coillte	Mary O'Brien	Recreation Manager
Department of Culture, Heritage and the Gaeltacht	Gareth John	GIS Manager
Department of Rural & Community Development	JP Mulherin	Rural Programmes
Department of Rural and Community Development	Leon Fox	Outdoor Recreation Policy
Department of Transport, Tourism & Sport	James Lavelle	Sports Policy
Department of Transport, Tourism & Sport	Ian Smith	Sports Policy
Department of Transport, Tourism & Sport	Stephen Finn	Sports Policy
Department of Transport, Tourism & Sport	Donal Hannigan	Sports Capital Programmes
Department of Transport, Tourism & Sport	Noel Sheahan	Sports Capital Programmes
Department of Transport, Tourism & Sport	Vivienne Malone	Tourism Industry and Product Development Division
Dublin City Council Culture Company	Iseult Byrne	Project Lead
Dublin City Council Culture Company	Annette Nugent	Technical Coordinator
Esri Ireland	John Hewitt	GIS Consultant
Esri Ireland	Katie McFarland	Solution Architect
Esri Ireland	Patricia Cleary	Customer Success Manager
Fingal County Council	Dominic Byrne	Head of I.T. & Chair of Local Authorities Open Data Group
Healthy Ireland	Fiona Mansergh	Assistant Principal, Health and Wellbeing Programme
Healthy Ireland	Greg Straton	Health and Wellbeing Programme
Hockey Ireland	Kenny Carroll	Database Manager
Horse Sport Ireland	Triona Connors	Data Manager
Horse Sport Ireland	Laura Skelton	Head of Corporate Affairs
HSE	Sarah O'Brien	National Lead: Healthy Eating and Active Living Programme
Irish Orienteering Association	John McCullough	Vice Chair
Irish Orienteering Association	Aine Joyce	Data Manager

Laois Local Sports Partnership	Caroline Myers	Partnership Coordinator
Laois Local Sports Partnership	Roisín Lawlor	SalesForce Administrator
Mountaineering Ireland	Helen Lawless	Access & Conservation Officer
Ordnance Survey Ireland	Lauren Lucas	GIS Specialist / GeoHive Support
Ordnance Survey Ireland	Tony Murphy	Business & Marketing Manager
Ordnance Survey UK	Lee Newton	Head of Consumer Operations
Outdoor Recreation Northern Ireland	Aideen Martin	Head of Marketing and Participation
Roscommon County Council	Sean Garvey	GIS Analyst
South Dublin County Council	Gay Byrne	GIS Manager
Social Prescribing	Dr. Noel McCaffrey	Medical Doctor
Social Prescribing	Ronan Rooney	Octagon Innovation
Sport Ireland	Dr. Una May	Director of Participation and Ethics
Sport Ireland	Emma-Jane Clarke	Director of Partnership and Governance
Sport Ireland	Ciara Munnelly	Sport Ireland Outdoors Manager
Sport Ireland	Darragh O'Sullivan	Project Lead
Sport Ireland	Doug Corrie	Sport Ireland Outdoors Project Manager
Sport Ireland	Jeremy Smith	GIS Administrator
Sport Ireland	Benny Cullen	Partnership and Governance Manager, Participation and Ethics Unit
Sport Ireland	Cormac MacDonnell	Innovation and European Funding Manager
Sport Ireland	Anne McCarthy	Marketing & Brand Manager
Sport Ireland	Shane Califf	National Governing Bodies of Sport Manager
Sport Ireland	Melanie Lettis	NGB Executive
Sport Ireland	Michael Fitzgerald	IT Projects Supervisor
Swim Ireland	Mary McMurrow	Operations Director
Triathlon Ireland	Darren Coombes	Operations Director
Triathlon Ireland	Michael Collins	Project Executive

Appendix B: Summary of Consultations

Dublin Culture Company

Consulted: Iseult Byrne, Annette Nugent

General Points

- They have been asked several times to expand to other areas/nationwide. They are happy to help others to do so, but would prefer to go bigger with this, as they see the huge value. They loved the potential of tying in with us and would be happy to present/lobby if needed. As their department is one, we haven't really tied in with yet, maybe we should pursue through them.
- They stressed the importance of 'human relationships' in collecting and maintaining data and can't see that ever being taken out of the equation. They did agree that mandating or making a condition for funding could help to remove a lot of manual work.
- They reckon if they expanded nationwide, they could keep data current with a small team of checkers/moderators.
- My understanding was that Category and Group were the other way around (one category per listing for clean data but could be in several groups for user search) but could be wrong and either way it's the same principle and very impressive how they went about it.
- They stressed the importance of knowing 'Who is it for?'. In their case, this helped them to make hard decisions, be 'stubborn and contrary' and stick to the vision when under pressure from stakeholders. To get this answered will be a key point in our project: our wide scope is a huge positive, but we have to accept that we can't be all things to everyone either, so at some point will have to clearly define the scope.

Data

- they created a 'Data Inventory Group' to define what data and attributes to collect
- they spent the first 6-12 months defining the scope of the data and sourcing that data
- to enable a flexible search, they decided to hold various location information for each item - coordinates, census small area, neighbourhood, electoral area, area name and Eircode
- they defined a set of categories and each data item could be in multiple categories e.g. architecture, urban planning
- they defined a set of groups and each item could only be in one group e.g. heritage, creativity - the groups were used to provide a simple and effective user experience (see screenshots below)
- They hold a NACE code for each data item, mainly for trend analysis. NACE code is an EU classification system for classifying business activities. The full list can be found at http://www.export.gov.il/files/EEN/ListNACEcodes.pdf

Scope

- The Dublin Culture map project was originally tasked by Dublin City Council to create a Sports Facility map of Dublin, but they changed the scope to become a Culture Map of Dublin
- they aligned with existing systems e.g. the existing council GIS system
- they decided not to hold polygons, they would just hold points for simplicity
- in their view, events were too difficult to keep up to date, so they purposely did not hold events
- they also decided not to hold any information that Failte Ireland currently hold as this was being done elsewhere
- their strategy was to hold a small amount of information on each item and signpost the user to the relevant website for each one (with event information etc)
- they decided not to hold things like the opening hours of each site as it was too difficult to gather and maintain

- one of their criteria was that items had to be publicly available. For example, they don't hold schools' pitches

Process

- they have a nightly update process that updates the central database
- their central database feeds the council GIS system and their public facing website
- they spent time clearly defining each data category and their update staff still refer to these descriptions as there are regularly items that could be in multiple groups. For example, pastimes don't involve learning a new skill
- their data is used within three distinct applications - council GIS systems, public website and a feature analyser used for planning purposes
- they currently employ one person 2 days/week to keep the data up to date
- their process for data updates is in a rolling cycle e.g. one month they update sports sites, the next month they update arts sites, etc
- they are appointing data champions for each of their data groups, and their data moderator will meet regularly with these champions to get updates
- they also have capability for the public to notify them of missing facilities as they assume, they won't capture everything
- they hold an attribute to dictate if an item should be displayed on the map - this was for clubs/societies that have their address as someone's private residence

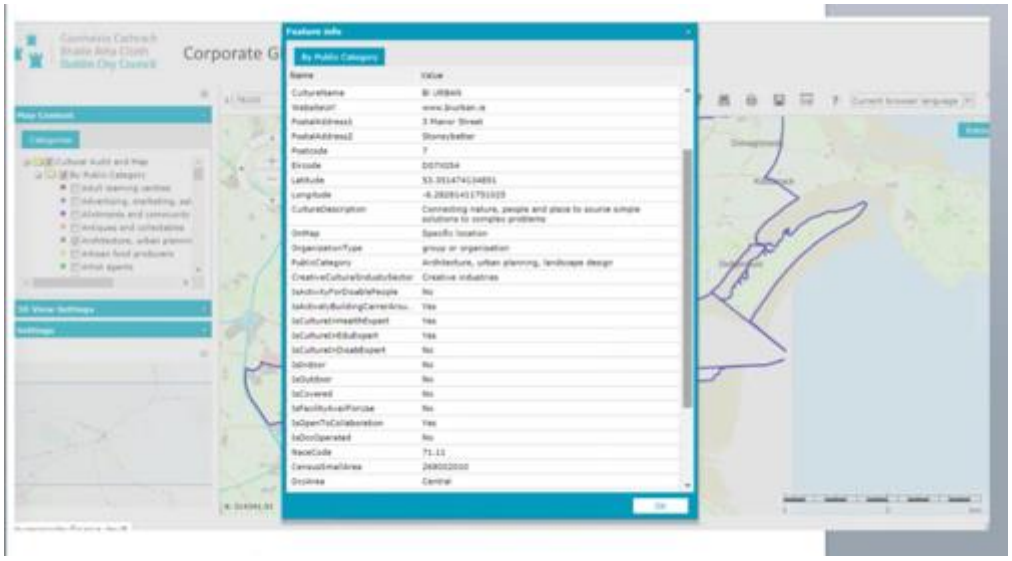
User Experience

- On the public website, they don't start with a map, they start with asking the user what interests them (the groups)
- They present a one-line description for each data item and they have a 'Find out more' that sends the user to the appropriate website
- They contracted a user experience design company to ensure the experience was refined and effective

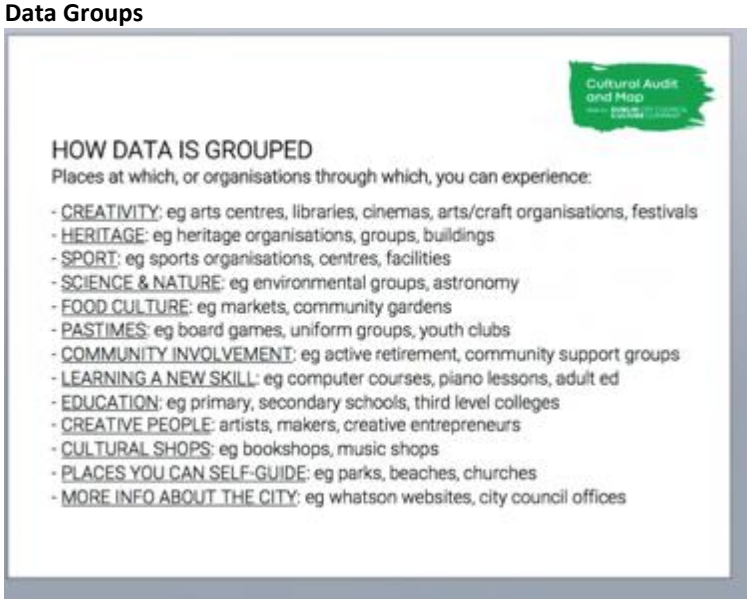
Next steps

- The project is complete but is not yet launched due to Covid-19, it was due to be launched in March 2020
- They will launch in the next few months
- They are being asked for advice from local authorities interested in replicating their initiative and their process
- We should stay aligned with them

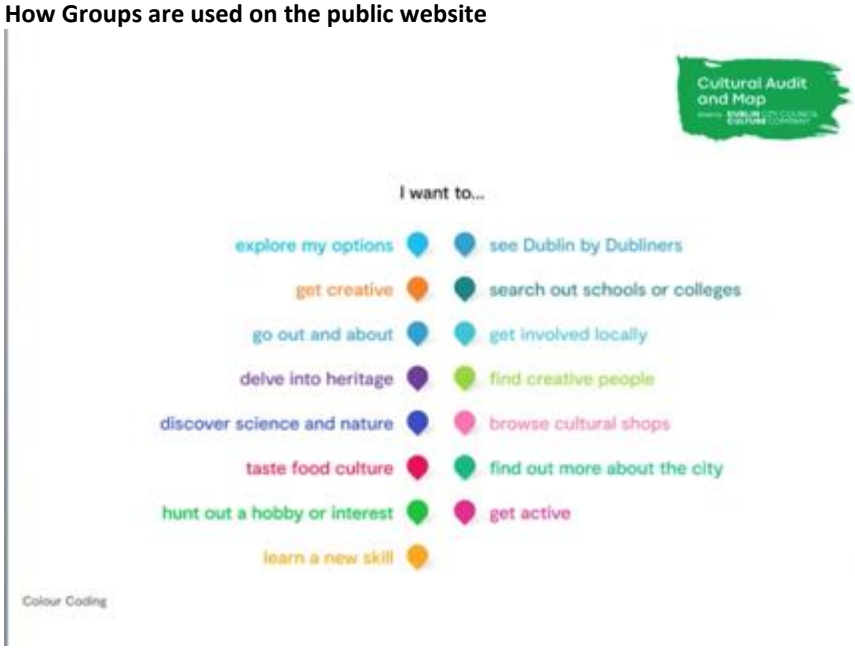
Data Attributes for each item



Data Groups



How Groups are used on the public website



Healthy Ireland and HSE

Consulted: Fiona Mansergh, Greg Straton, Fiona O'Brien

General Points

- Social Prescribing very important
- Current situation/new normal – search by distance from home
- Include disability amenities, public toilets and other to facilitate inclusion
- Include opening times and busy times (perhaps even live 'busy-ness' gauge)

GeoHive sessions

Consulted: Lauren Lucas, Tony Murphy

- The short-term objective is to provide OSi with a link to the Sport Ireland trails as a feature service for publication within GeoHive
- The presentation of the trails data in GeoHive should be carefully considered by Sport Ireland e.g. what information should appear on pop-ups, how the data will be symbolised and how users will find the data i.e. what categories it should be in
- The GeoHive infrastructure will be updated later this year but there is no reason to align the publication of Sport Ireland trails to GeoHive with these timelines
- Lauren to come back with metadata requirements, standards to be adhered to for the Sport Ireland trails service in GeoHive
- The Sport Ireland trails data model published to GeoHive should include attributes recommended by the OSi team to improve the publication process
- It was agreed that a follow-up session with Lauren to discuss the overall data model would be very useful to get an insight from the GeoHive perspective
- Tony and Lauren made the point that the marketing and promotion of the Sport Ireland datasets within GeoHive is vital to their uptake and use. They suggested a PR/marketing campaign aligned to each new dataset in GeoHive
- There was some discussion of the sports clubs and events data currently being collated and considered. On this, the point was made that data published to GeoHive needs to be authoritative and exist on an all-Ireland basis;
- The GeoHive Memorandum of Understanding will be signed by Sport Ireland as a priority
- Data to GeoHive normally goes through a pre-test that takes 2-4 weeks and this should be allowed for.
- Data currency is important and where possible they link to authoritative websites (e.g. tide tables) for temporal data.
- Data update intervals to be decided and set.
- Initially, we confirmed that the mechanism of publication to GeoHive will be the provision of a URL to a REST endpoint to OSi (and not the provision of physical data to be hosted by OSi)
- Metadata required is service-level metadata on the Web Service (summary, description, terms of use and credits)
- The metadata should be in plain language as much as possible and avoid too much technical jargon
- A thumbnail for the service should also be provided and this should be emailed (JPG or PNG format, minimum size 600X400 pixels)
- Some useful information on creating thumbnails can be found at https://www.esri.com/arcgis-blog/products/arcgis-online/data-management/put-your-best-thumbnail-forward/
- It would be useful to add additional information about the trails data in the Metadata, for example more information on what the trail categories mean
- It would be very useful to publish the weblink to each trail onto the geometry (Lauren may be able to provide some additional information on techniques for achieving this)
- A guide to the overall accuracy of the trails would be useful on the metadata
- It would make sense to complete the digitisation programme of the trails before publication to GeoHive
- A test trails web service could be published in advance of the digitisation programme completing. This would be a useful exercise as there is a considerable amount of work involved in the creation, refinement and publication of this service
- An internal session is required in Sport Ireland to confirm the attributes to publish to GeoHive - it will be a combination of the existing attributes on the trails geometry plus some attributes from the Content Management System (maintained separately)
- The update frequency would be useful to put on the metadata and it was agreed that quarterly would be acceptable, at least to begin with
- The popups on the trails data will not be configured or filtered within GeoHive so these need to be refined within the feature service (by the Sport Ireland team) so they appear as required
    - Confirmed that popups can be configured at the data level and retained in the feature service

- We discussed the plan for data publication as it was agreed that it would be trails initially, with potentially sports club's data after that
- All data should be in the Irish Transverse Mercator (ITM) project system (EPSG 2157)
- The information to be supplied to the OSi GeoHive team is as follows:
    - Hyperlink for the feature service (with metadata)
    - Hyperlink for the content
    - Image for the thumbnail (ideally PNG)
    - Contact details for two Sport Ireland staff members
- As a general recommendation any datasets published to GeoHive should include OSi GUID's on geometry and Eircodes on buildings
- The appearance of the data (i.e. the symbology) should be carried out by Sport Ireland on the feature service
- The themes & categories in GeoHive will change and may be aligned with the themes/categories in data.gov.ie
- There is a limit of 1000 points/features in any map view within GeoHive
- It would also be useful to publish the trail heads either as a separate feature service, or within the same feature service
- Alias names on the data get used for popup names, so Sport Ireland should ensure these alias names are populated and appropriate
- It would be useful if there was a capture data and a currency date on each trail

Department of Transport Tourism & Sport

Consulted: Donal Hannigan, James Lavelle, Vivienne Malone

General Points

- Lots of data from Sports Capital Programme (circa 6100 clubs)
- Happy to provide data and amend funding applications to suit the needs of this initiative
- Dashboards/business intelligence tools valuable
- Integrate ways to track Value for Money on facilities, e.g. Greenways
- Surveys/feedback in portal can be valuable

Session with Outdoor Recreation Northern Ireland

Consulted: Aideen Martin

Main points

- Aideen has developed OutdoorNI, WalkNI and CycleNI
- In her experience there has to be a legal mandate to supply the data or else it will not happen
- OutdoorNI made a conscious decision not to hold events as they felt it was too difficult to maintain.
- OutdoorNI links to individual clubs' websites to get more detailed information from them such as events
- Data can't be used for planning purposes unless it is of sufficient quality
- A small list of attributes is important to ensure the data is as easy as possible to maintain. There is no point holding an attribute in your database that you can't maintain
- In their case the trails do not record difficulty as it is too subjective
- OutdoorNI have taken the approach of keeping their web-site simple, it provides an easy way to view and find resources and then sign-posts off to appropriate websites. For anything more involved or sophisticated It would be they use social media at their main channel.

- Their site is aimed to local participation of people who are currently sedentary
- They have a sliding scale for distance that has received good user experience feedback
- Their site also has a very good search capability
- OSGB have teams that record trails information and Aideen put us in touch with Lee Newton in OSGB as they have lots of experience in this area

Session with Ordnance Survey GB

Consulted: Lee Newton

Main points

Web-sites - https://osmaps.ordnancesurvey.co.uk/ and https://getoutside.ordnancesurvey.co.uk/adventures/

- Accuracy of data is key – without good data you have nothing
- Their mission is clear and simple – to get more people outside more often
- There are so many benefits to being more active – lower rates of diabetes, less hospital admissions, better mental health
- OSGB have a network of 100 champions, some of these are celebrities – they cover all socio-economic groups
- Common concerns they find are that people want to be safe on trails and not get lost, so they focus on these areas.
- They have a main website with access to the data and an accompany app that a user can download their trail route to – the mobile device buzzes when you go off-piste
- From their research, the biggest reason people go outside is fitness, so they created an ability to record walking distances with a dashboard
- They are currently developing a range of innovative apps:
    - **GetOutside app** – for people who don't know where to go, mostly families. It shows free things you can do in your area e.g. fly a kite, walk (Easing people in gently is key)
    - **Secret stories app** – Get outside but not just for a walk, learn something as well e.g. what flowers are in the area. App brings to life stories around you e.g. a hangman's tree. The stories may not all be true, but they are interesting and engaging
    - **Gamification** - Aimed at getting kids out in a Pokemon style app. The user can go outside and be entertained.
- OSGB pay royalty fees to data providers for the data they are provided with. They also have the ability to take data offline quickly, for example if it is out of date or if the data provider goes bust
- They have the ability to select which datasets get used within each market or app
- They will also host data for others, and they are currently working on importing some data that has global coverage
- Lee recommended not taking a long time to perfect something and get it out, but instead just badge it as beta or test and get it out for feedback
- They align user feedback to new work areas. They are also always looking to broaden key areas, for example opening their data out to Business Intelligence or data scientists to analyse.
- Their focus was to develop a sustainable system that could pay back the original investment.
- Need evidence that it is working, for example measure how many people get outside now
- There is a getoutside champion group website
- They have events information, but it is provided by private events companies
- The ability for people to upload their own routes is good and they can make those routes public or private

Sport Ireland Communications

Consulted: Anne McCarthy

General Points

- Portal should be bilingual
- Accessibility re font size etc
- Consider mobile platforms
- 3 clicks to find information
- Not everyone comfortable with maps
- Needs upfront UX/UI research/design
- Social media and video important

Local Authorities

Consulted: Dominic Byrne (Fingal CC), Gay Byrne (South Dublin CC), Sean Garvey (Roscommon CC)

General Points

- Standardised data models/schemas critical
- Introduce for trails first (adopted by Open Data Group) and then others

Local Sports Partnerships (Sport Ireland & Laois LSP)

Consulted: Roisin Lawlor (Laois LSP), Benny Cullen, Caroline Myers

General Points

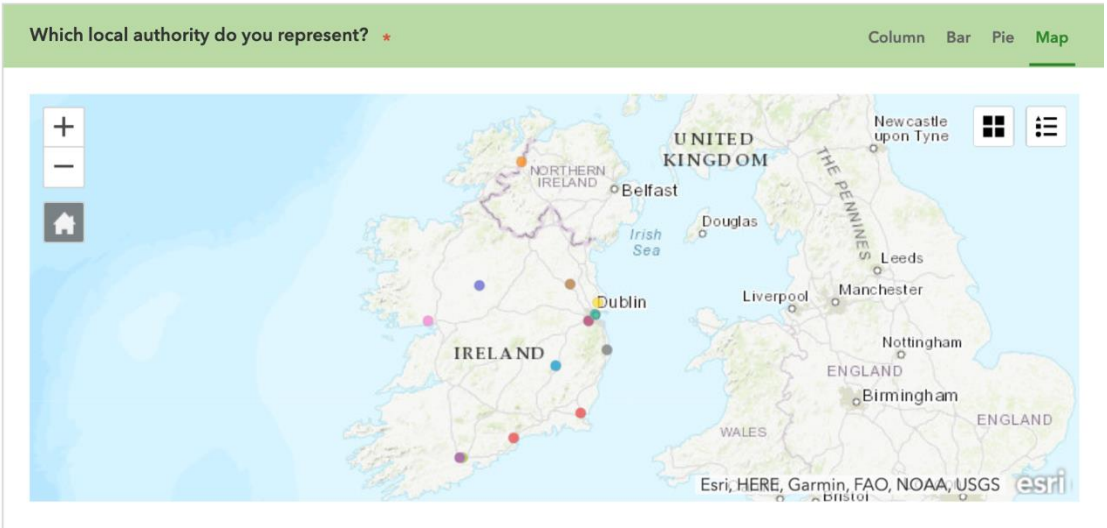
- Spatial data for planning & investment management
- Identify double-funding / identify gaps with geo-location
- Use internal parts of database, non-public data e.g. SalesForce data for programmes to analyse if targeting right areas

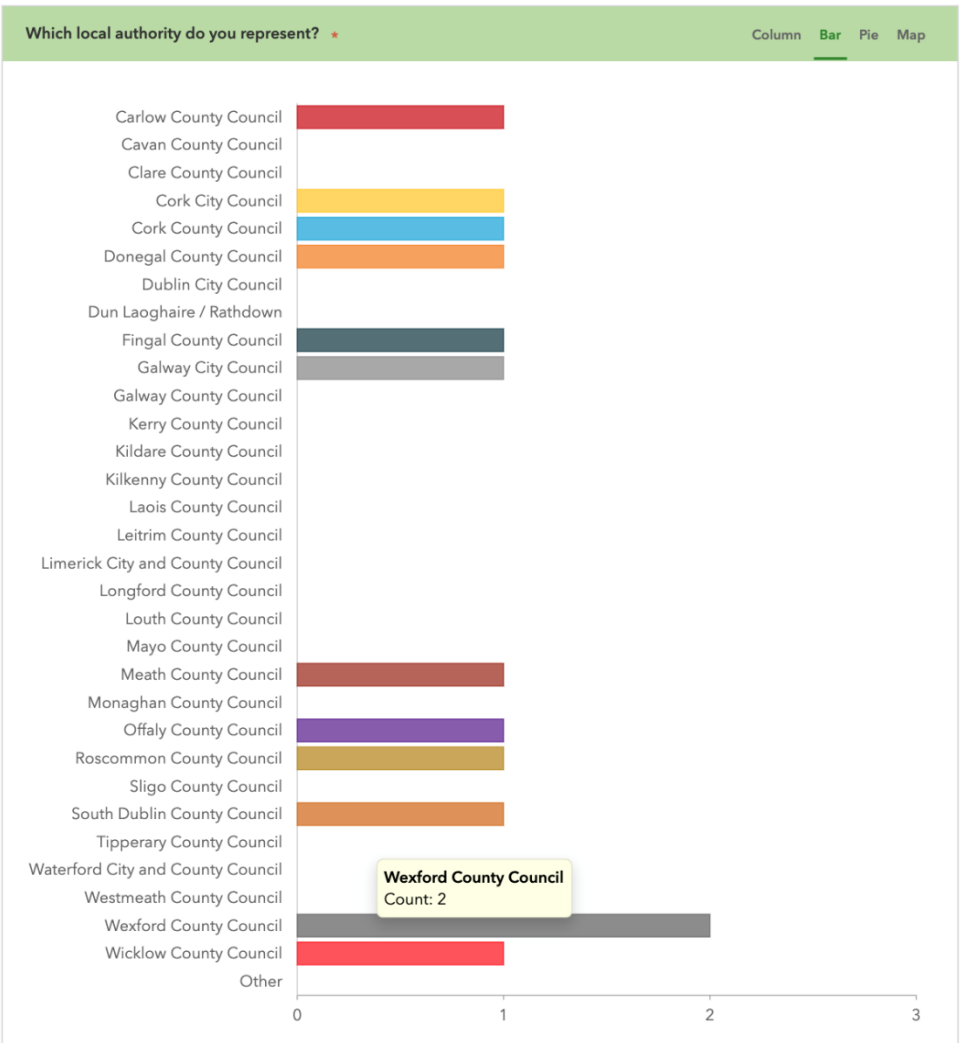
Appendix C: Data Inventory

Item	Dataset	Data Owner/ Provider	Update frequency
1	Play pitches, Disabled parking spaces, leisure facilities, heritage venues, beaches, Tourist information points, parks, play areas	Fingal County Council	Irregular
2	National Parks, Trails around national parks and nature reserves	NPWS	Tbc
3	Blueways, Activities on Water	Waterways Ireland	Tbc
4	Playing pitches, Sports and Recreation Clubs, accessible parking, health and well-being, pavilions, outdoor exercise equipment, heritage walk stops, leisure centres, hiking trails and fit walk circuits, swimming pools, playgrounds, parks and open spaces	South Dublin County Council	Irregular
5	Trails GIS data – currently being re-digitised based on OSi prime 2	Sport Ireland	Quarterly or Annually
6	Route of the Waterford Greenway and associated facilities around that e.g. cycle hire and amenities.	Waterford County Council	Annually
7	Ordnance Survey Ireland base-mapping	Ordnance Survey Ireland	Quarterly
8	Beaches	EPA	Annually
9	Swimming places	Swim Ireland	Annually
10	Walk Dublin Wayfinding Points, Dublin Bikes, Playing Pitches	Dublin City Council	Irregular
11	Get Ireland Active – Active Places data	Get Ireland Active	Annually
12	Orienteering courses (grid references for existing permanent courses), information on events	Orienteering Ireland	Annual or Biannual
13	Trails, Conditions, counters to know number of people on the trails, GPS tracks.	Clare Local Development Company	Quarterly
14	Trails, Conditions, counters to know number of people on the trails, GPS tracks.	South Kerry Partnership	Quarterly
15	Facilities, activities and events	Failte Ireland	Quarterly
16	Sports Clubs (national audit)	Department of Sport	Annually
17	Tennis Clubs	Tennis Ireland	Annual or Biannual
18	Basketball Clubs	Basketball Ireland	Annual or Biannual
19	Triathlon Clubs	Triathlon Ireland	Annual or Biannual

Item	Dataset	Data Owner/ Provider	Update frequency
20	Swimming Pools	Swim Ireland	Annual or Biannual
21	Rowing Clubs	Rowing Ireland	Annual or Biannual
22	Motor Racing Circuits	MotorSport Ireland	Annual or Biannual
23	Orienteering Clubs	Orienteering Ireland	Annual or Biannual
24	Laois LSP Events and programmes	Laois Local Sports Partnership	Annual or Biannual
25	Hockey Clubs	Hockey Ireland	Annual or Biannual
26	Hockey Pitches	Hockey Ireland	Annual or Biannual
27	Surf Schools	Surfing Ireland	Annual or Biannual
28	Playgrounds	Longford County Council	Annual or Biannual
29	Recreational Areas	Kildare County Council	Annual or Biannual
30	Tennis Courts	Galway City Council	Annual or Biannual
31	Cycle Lanes	Galway City Council	Annual or Biannual
32	Public Sports Facilities	Galway City Council	Annual or Biannual
33	Parks	Galway City Council	Annual or Biannual
34	Playgrounds	Galway City Council	Annual or Biannual
35	Beaches	Galway City Council	Annual or Biannual
36	Scenic Amenities	Donegal County Council	Annual or Biannual
37	Wild Atlantic Way	Donegal County Council	Annual or Biannual
38	Dublin Bikes	Dublin City Council	Annual or Biannual
39	Sports Pitches	Dun Laoghoire Rathdown Council	Annual or Biannual
40	Community Parks	Roscommon County Council	Annual or Biannual
41	Public Parks	Roscommon County Council	Annual or Biannual
42	Angling Stands	Roscommon County Council	Annual or Biannual
43	Playgrounds	Roscommon County Council	Annual or Biannual
44	Sports Facilities	Roscommon County Council	Annual or Biannual
45	Tourism Attractions	Roscommon County Council	Annual or Biannual
46	Baton Twirling	Baton Twirling Ireland	Annual or Biannual
47	Lawn Bowling	Lawn Bowling Association of Ireland	Annual or Biannual
48	Snooker clubs	RIBSA	Annual or Biannual
49	Squash	Squash Ireland	Annual or Biannual
50	Walking Groups	Get Ireland Walking	Annual or Biannual
51	Blueways	Waterways Ireland	Annual or Biannual
52	Walking Trails	Wexford County Council	Annual or Biannual
53	Playgrounds	Wicklow County Council	Annual or Biannual
54	Designated Areas	National Parks and Wildlife Service	Annual or Biannual

Appendix D: Results of Data Provision Survey

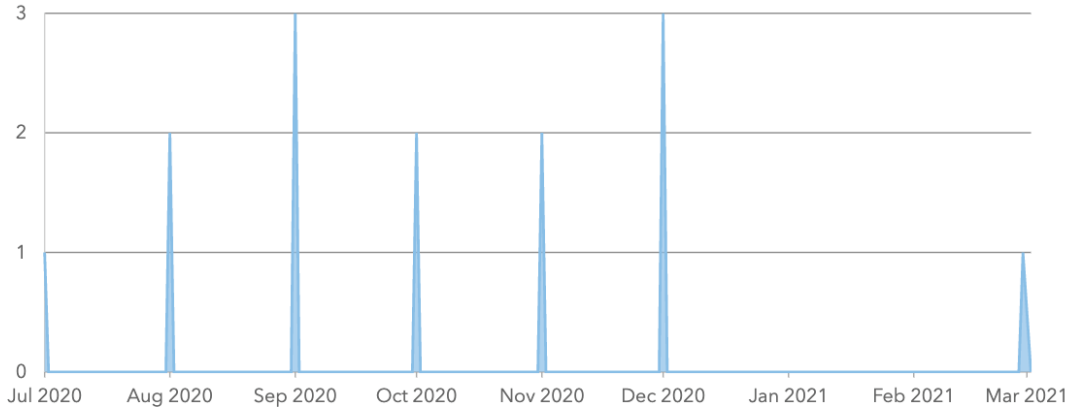




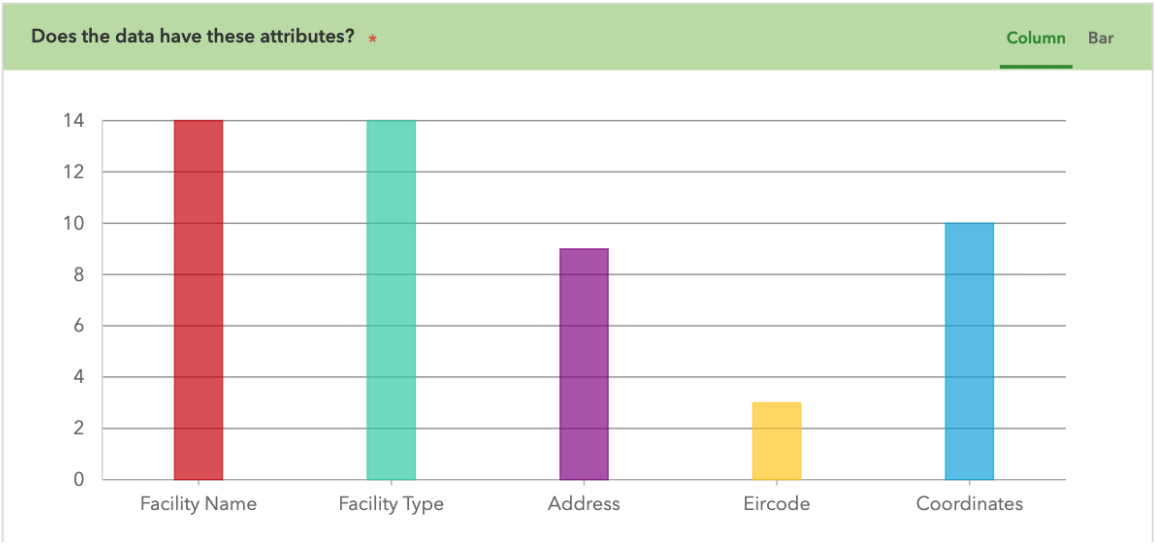
Is your sports facilities data currently available as Open Data? Column Bar Pie Map

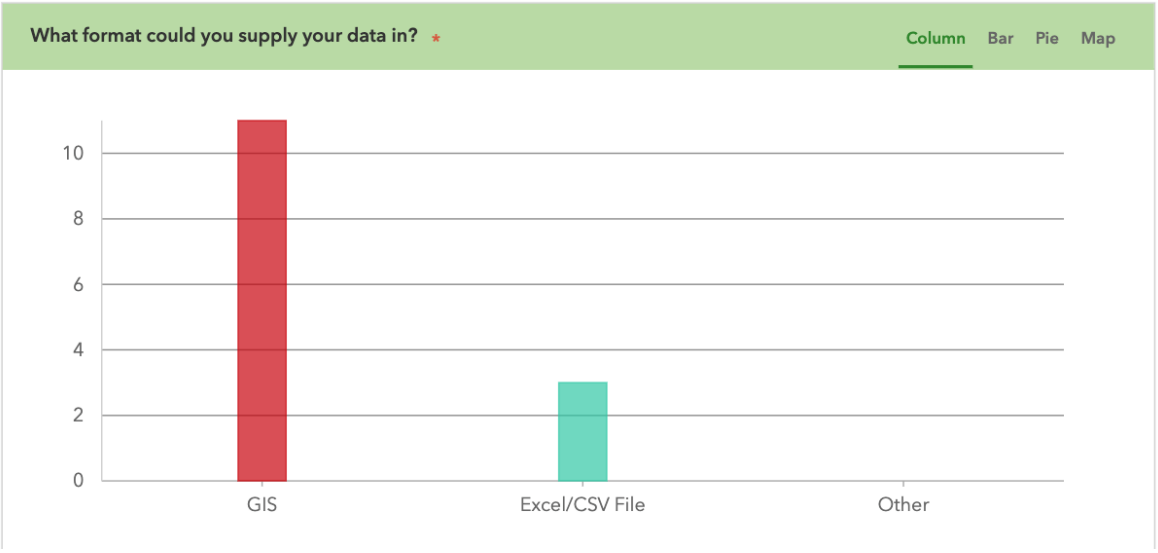
When would you be in a position to start supply data? * Histogram

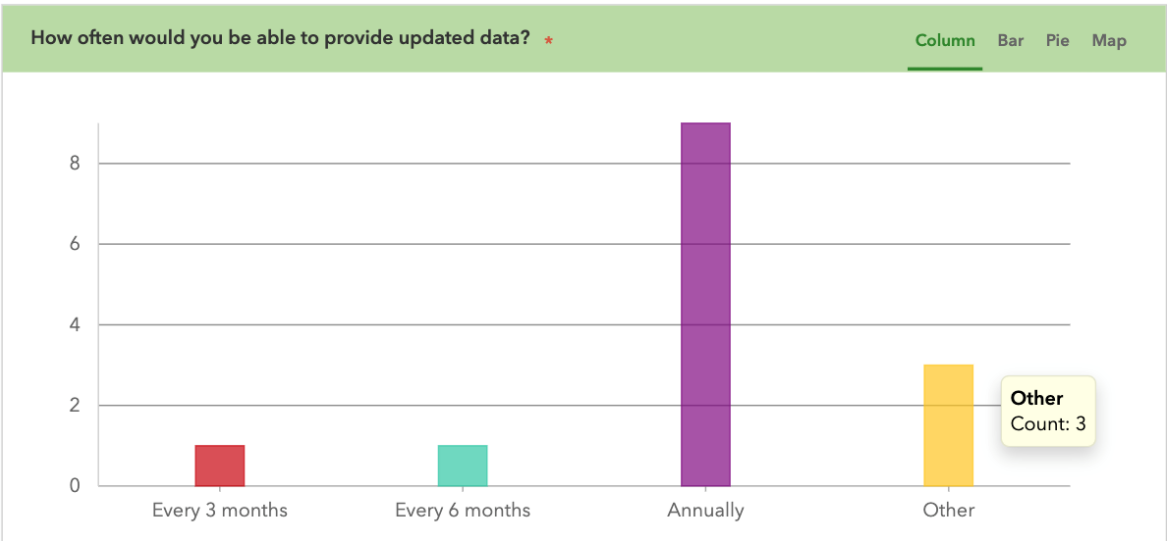
Tip: Drag on the chart to zoom in the data. Reset



Is your sports facilities data currently available as Open Data? Column Bar Pie Map

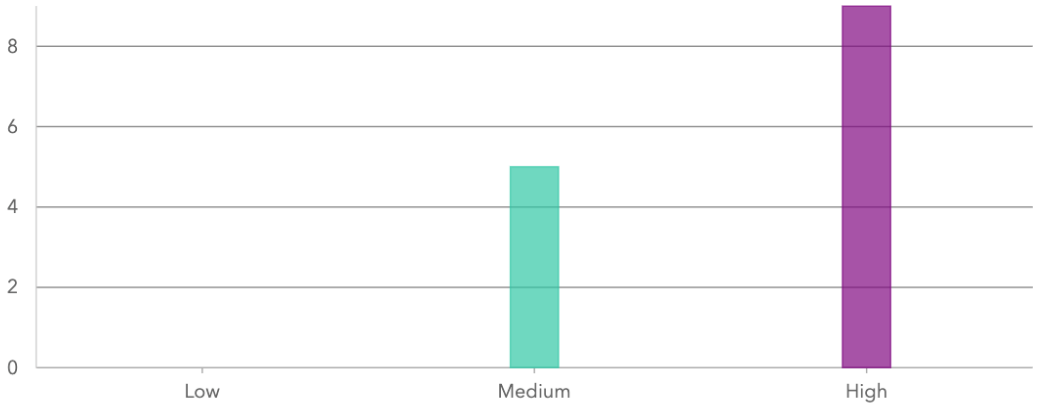

Does the data have these attributes? *
Column
Bar
14
12
10
8
6
4
2
0
Facility Name
Facility Type
Address
Eircode
Coordinates


What format could you supply your data in? *
Column
Bar
Pie
Map
10
8
6
4
2
0
GIS
Excel/CSV File
Other

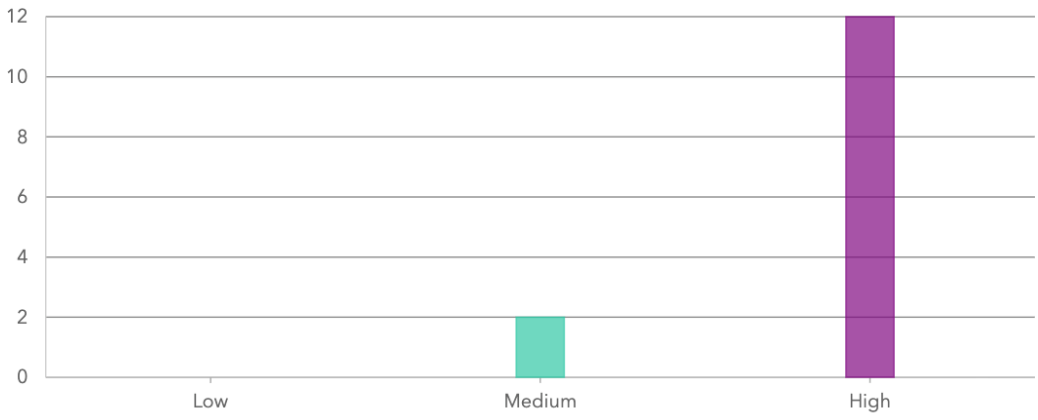

How often would you be able to provide updated data? *
Column
Bar
Pie
Map
8
6
4
2
0
Every 3 months
Every 6 months
Annually
Other
Other
Count: 3

Would you be willing to provide sports facilities data to Sport Ireland in line with Action 18 of t... Column Bar Pie Map

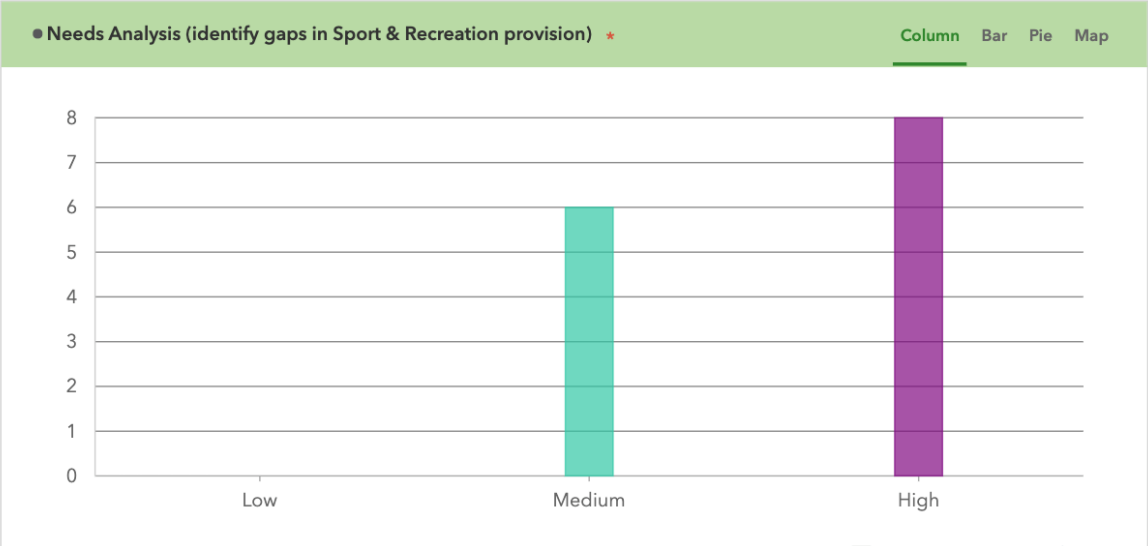
Data Sharing (in line with national Open Data requirements & policies) * Column Bar Pie Map

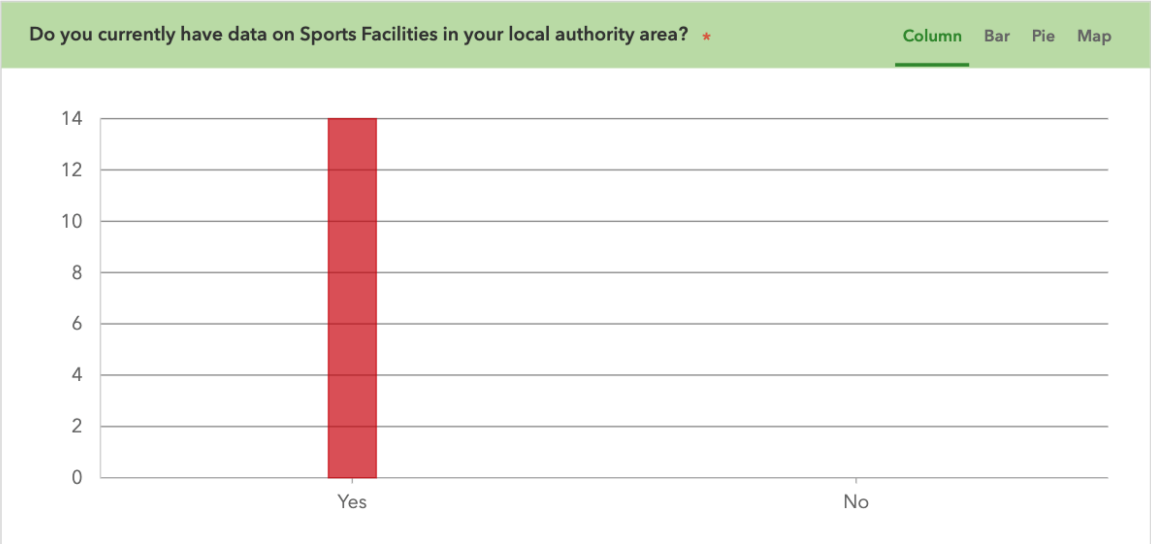


Asset Management (database system can provide digital condition surveys on trails, playgrou... Column Bar Pie Map



How would your LA rate the value of a national database of Sports & Recreation Facilities in assisting in the following areas





Appendix E: Contact Details

The primary contact details for all queries relating to this document are:

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