A Postcode not for Post

Emergent Research Forum paper

Peter Keenan
University College Dublin
Peter.Keenan@ucd.ie

Gianluca Miscione
University College Dublin
Gianluca.Miscione@ucd.ie

Andrea Berger
University College Dublin, Earth Institute
Andrea.Berger@ucd.ie

Abstract

Postcodes are some of the best established pieces of national spatial data infrastructures. Originally they were designed to facilitate postal delivery, but through the decades more and more organizational functions have been integrating postcodes as unique spatial identifiers. State organizations may use postcodes to classify areas under their jurisdictions for monitoring and service delivery purposes. Private organizations may rely on postcodes to integrate spatial analyses into their business functions. For several reasons, the Republic of Ireland does not have a full-fledged postcode and it is now in the process of implementing what is allegedly the most advanced postcode of the world. The postcode has an unheard of level of granularity: each letterbox will have its own unique identifier. The object of this study is the long process that is leading to this outcome, and it identifies the main stakeholders involved and their different interests in the process.

Keywords

Spatial Data Infrastructures, postcode, decision-making

Introduction

The power of spatial techniques can only be realized in business and IS applications if the spatial position of the objects of interest is known. While there are many recent developments in spatial data capture, including voluntary geographic information, augmented reality, and crowdsourcing; the geocoding of existing business address databases remains an important approach. The success of this technique relies on the structure and integrity of addresses; in many countries the traditional hierarchical address has been augmented by a postcode. National postcodes were introduced in the 1960s owing to increasing mail volumes and mechanization. In 1962, West Germany introduced a 4 digit code and in 1963 the US introduced the 5 digit ZIP code, subsequently most developed countries introduced similar schemes (Oppermann 1990). Having been designed and introduced for postal delivery purposes, postcodes have then been used as a structuring mechanism for wide variety of spatial data, purposes not envisaged when the postcodes were conceived (Grubesic 2008). Consequently, postal delivery is not the only motivation for the introduction of a postcode.

There has been little study in how the postcode design is affected by the perception and understanding of the technical possibilities available at any given time and context. Also, historical studies on standardization in various domains have shown that an inferior solution may win at the expense of a better one. This indicates the importance of understanding the actual processes of negotiation and conflict among stakeholders. At present, a new Irish postcode is being introduced, and this is an unusual opportunity to move beyond retrospective interpretations, as its development and deployment are in the making now and the research can be conducted concurrently.

Consequently, our research on the introduction of an Irish postcode system aims at explaining events, actors and their behaviors. Our research focuses on the events before and around the launch, but also sums up the history of the idea. Further, we aim for a longitudinal observation that tracks the adaptation of the information system after its implementation. Our data collection relies on first and second hand
materials and applies mixture of methods in relation to the forms of material: Problem-centered interviews (Witzel 2000) with stakeholders and experts center the contextualization of the case from the interviewees’ perspectives; and a documentary analysis of official documents, as well as grey literature, further focusses on the evolution of the outcome-model by following the available design options on the political stage. It is envisaged that the category-building follows an inductive approach, though possible categories appearing from research literature will be kept in mind and tested on the data.

**Background for the new Irish postcode**

Traditional postcodes generally encode the routing information in the address in a more compact way. The original 1960s designs generally numbered the delivery office, then multiple areas within this delivery office area, but not unique addresses. Consequently, postcodes predefined a group of addresses and this predefined grouping was used for spatial purposes, for instance in the preparation of marketing databases. Postcodes were often hierarchical, in that early digits used alone identified a large area. These larger areas were usually areas served by a large sorting office and may not correspond with other administrative regions for which data is normally collected. This hierarchical structure meant that a manual postal sorter could parse the first two or three characters of a postcode and send it to the appropriate region for further sorting based on the last part of postcode.

There have been two influences on coding space since the first postcodes were introduced. One is the extension of postcodes to provide greater detail, a trend illustrated by the US ZIP+4 extension of the postcode to 9 digits and subsequently to 11 digits, or the extension of the Singapore postcode from 4 to 6 digits. These extensions can provide codes with detail down to individual delivery locations, while the retained first digits of the code have the same hierarchical structure as before. The second alternative to coding space is the geocode, which represents the coordinates of the location in a compact form. Such a code can be provided for any location, not just postal delivery points. Two such codes were proposed in Ireland and the Loc8 code\(^1\) has achieved some use.

**Need for a postcode?**

In the Republic of Ireland, mail volumes were less than in larger countries and a postcode was not introduced in the first generation. It was then proposed to introduce a postcode, based on experiences in other administrations, when the postal sorting network was redesigned and increasingly mechanized in the early 1990s. However, the Irish postal service (An Post) realized at that time that the addition of the postcode to the address did not greatly increase the success of the optical character recognition (OCR) based equipment in reading the address. With this mechanized sorting equipment, coupled with the postmen’s detailed local knowledge, An Post saw little advantage in introducing a postcode. Indeed they saw disadvantages, as they felt that a postcode might be more useful to rival courier and delivery companies without both the sophisticated equipment and local knowledge, than An Post itself. The challenge to these competitors is increased by the lack of unique addresses outside urban areas, with up to 35% of Irish addresses not being unique.

Therefore, Ireland is the only OECD country that does not have its whole territory classified according to a national postcode. The wider constituency of possible postcode users meant the lack of a postcode remained identified as an issue, even if not a problem for simple postal delivery. At present, after a number of false starts, a project is underway to design and implement a postcode to be known as Eircode\(^2\). Unlike the first generation of postcodes, this project is not informed primarily by the needs of postal delivery, but considers the wider constituency of spatial data users. Reflecting the needs of this broader group, the new postcode has an unheard of level of granularity: each letterbox will have its own postcode. The design, development and implementation of this 21\(^{st}\) century code have been sourced to a private company.

Consequently, the design and delivery of this proposed postcode raise a number of important issues of interest to researchers and this project aims to identify these issues as the process develops.

\(^1\) [http://www.myloc8ion.com](http://www.myloc8ion.com)

\(^2\) [http://www.eircode.ie/](http://www.eircode.ie/)
• What contestations over decades have consolidated the situation as it is now? Why did Ireland only implement post codes so late compared to other European countries? Were there alternative classifications of territory in place?

• Which socio-cultural, economic, technical or informational changes are to be discussed in the process of the introduction of a postcode system in Ireland? How do the actors involved bring these “strings” into the political process and play them out?

• In return, how can we best describe the role Eircode itself takes in this spatial infrastructural change in a longitudinal perspective?

The Irish Postcode project

The current postcode initiative has its origins in a symposium held by the communication regulator (ComReg) in 2003. This organization has responsibility for regulating the postal market, both An Post and any private competitors, and sees its role as facilitating fair competition. This process led to a 2005 report (ComReg 2005). While this discussed the issue of non-unique addresses, it did not directly address this problem and proposed a postcode identifying small regions, similar to postcodes introduced previously in other countries. A 2006 report (NPP 2006) recognized that the unique address problem could be mitigated by a geocode approach or the encoding of individual delivery points, but cited data protection concerns as a reason for not going in this direction. Indeed, the Data Protection Commission signaled that a one-to-one link between codes and dwellings would have made it personal data, therefore subject to the more stringent regulation on privacy.

The Data Protection Commission’s concerns remained unchanged over time (Hawkes 2013), but they do not appear in other stakeholders’ main concerns. All interviewees refer to some lack of transparency in the policy making process. Some point to competing types of postcodes, others to the sudden economic crisis that pushed policy-makers attention to more pressing issues. Through this unclear process, the proposal changed from a district postcode to one identifying individual points. The current proposal envisages not only the one-to-one link with buildings, but a one-to-one link with delivery points (Table 1). A geocode approach would not identify individual apartments in a multi-occupancy building, but the current proposal gives each postbox a unique postcode.

With the use of postcodes as surrogate spatial units, a variety of problems have arisen across the world. Postcode districts may have diverse characteristics, yet they are used for such things as pricing insurance, resulting in pricing disadvantages for some residents. Other problems arise because of change, postcodes need to be reorganized as new development takes place. Randomization also places the contractor in a gateway position, as a postcode is uninformative without their database.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>First generation postcode e.g. US Zip-5</th>
<th>Proposed Irish postcode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Granularity</td>
<td>Identified delivery offices only, not addresses</td>
<td>Unique postcode for each address including apartments, etc.</td>
</tr>
<tr>
<td>Hierarchy</td>
<td>Hierarchical structure</td>
<td>Only partial hierarchical structure for legacy Dublin postal districts</td>
</tr>
<tr>
<td>Continuity</td>
<td>Neighboring districts with similar postcode</td>
<td>Neighboring addresses with completely different postcode</td>
</tr>
</tbody>
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Table 1. The current Irish postcode proposal
This new design reflects two influences: one looking more at the technical aspects of the postcode, one more on the socio-organizational ones. Technically, many of the constraints that directly and indirectly influenced earlier generations of postcodes have disappeared. The escalation of data production increases the demands for some sort of standardization and adoption of databases, which offer greater data consistency and on-demand availability. These reasons combined with a growing concern for privacy and possibly the contractor’s interest in having businesses using its look-up database, have pushed for a design of the code in which the non-routing digits are randomized. This implies that human-readability of codes, which allows anyone to infer an address solely looking at the code, is abandoned. This trade-off between readability and privacy is being hotly debated, a highly sophisticated code is made possible by modern IT, but this complexity may not be desirable and may advantage some types of users over others.

From an organizational perspective, the new Irish postcode presents a peculiar public-private partnership insofar as it is a basic piece of national information infrastructure being sourced to a foreign multinational company that is not specialized in geo-spatial information. Financially, it is noteworthy that bidders had to have turnover of at least €40 million and that budget is around €25m for this project. This requirement, which left several Irish bidders out, is being currently investigated by the European Union.

**Postcode users**

**Transportation**

The broad transportation sector concerned with delivering and collecting goods appreciates the benefit of unique addresses and coordinates for each address provided by Eircode. However, they are concerned that only certain types of locations have an address, as deliveries take place at other locations also. They are also concerned at the lack of geographic similarity in the proposed code, which means that electronic access to the database is needed for grouping of orders.

Emergency response appreciates the unique address and coordinates, but shares the concern about locations which are not addresses, e.g. road accidents. There are also concerns about the random nature of code, as this means that if someone makes a mistake in one character of the location the address could be in an entirely different place.

**Public administration**

According to interviews and grey literature, the public administration has been playing an interesting role in the repeated attempts to introduce a postcode. Most remarkable is the role of the Central Statistical Office (CSO) which oversees national matters like economic activities, public health as well as social and general activities and conditions of the country. To do that, it collects, compiles, extracts and disseminates statistical data from and for public authorities and citizenry. CSO data then forms the basis of other public planning, for instance for health and education. The diverse variety of policies, programs, businesses, campaigns, etc. requires more standardization to harmonize public service information and facilitate its integration. Difficulties and unintended consequences of those efforts are well known.

The new postcode as a tool for large scale information management is not unique. Indeed, together with the PPS number (for individuals resident in the country) and business registry, it is the third leg of a stool for “seeing like a state”. This view, sensitive to privacy concerns, can be credited because of cases like the recent introduction of property tax and water charges.

**Private Business**

While one stated objective of Eircode is to provide new types of “geographic” services, its greatest use may be in more mundane address matching applications. Fraud detection is a concern of both public and private organizations and effective address matching is needed for this. Geo-marketing applications could exploit the postcode, but arguably its random nature means that for use in GIS it isn’t significantly more effective than the existing Irish Geodirectory database. Finally, possibly because the postcode is not going to be compulsory, public opinion has not yet shown much awareness of this endeavor.
Preliminary conclusions

Postcodes are considered part of basic spatial data infrastructure of a country. Because of this, there is always tension between public and private interests as for any infrastructure of national relevance. This tension has a peculiar manifestation in the Irish postcode case because it has been sourced to a foreign company. This situation makes the definition of an appropriate balance between public and private control of spatial data an interesting instance of public-private-partnership (PPP).

Even though this research is at a very early stage, some early conclusions can be drawn together with prospects for further research. Firstly, it is apparent that the postal service is not central in this project, other motives seem to better explain its modes of design and implementation. One may say that this is the latest wave of incremental innovation of a spatial classification system which is several decades old and which remains relevant for its role in a variety of other organizational processes. This, paired with the difficulty of enforcing the use of a service provided by a private company, suggests that this postcode is more likely to become a back office technology rather than something that people are fully aware of.

Even though we cannot answer our research questions yet, we can link back our data to the initial focus on information systems applications of spatial data. Three areas have been addressed:

- What has changed? Certainly the context, especially technological, within which the new postcode has been developed. Easy availability of connectivity and computing power allow for a non-human-readable postcode that might responds to a broader variety of interests and usages than the traditional postcodes of 1960s and 1970s.

- What processes? Even though not all processes are public, nor particularly transparent, it is possible to see how accommodation of state (spending reduction, integration of government databases, directives) and private (revenue generation, freer competition) interests took place. Citizens do not figure prominently in this process.

- What do organizations want? A common denominator does not seem to have been yet found. The spectrum of stances varies from complete opposition to any postcode to the opposite extreme of the finest granularity postcode on Earth; from public solutions (from state agencies or citizenry like the Openpostcode\(^3\) to profit driven initiatives).

Time will tell where this is going.

REFERENCES


\(^3\) [http://www.openpostcode.org/](http://www.openpostcode.org/).