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# A general approach to addressing

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## Abstract

The first question to be asked in any consideration of addressing is what are the types of object for which addresses are being provided? The most common form of an address is the postal address. In this case, the "addressable object" is the postal delivery point. This address is frequently used as a synonym for the building, be it residential, commercial or public, and for referencing purposes beyond the delivery of mail. The address is usually built around a property identifier (e.g. building number or name), street name, and a sequence of geographic areas (town, county, country etc). However, there is no reason why addresses should be restricted to buildings. This paper discusses the requirement for addresses, how addresses can be created for a range of classes of addressable object, and outlines a definitive address infrastructure.

## 1. Introduction

An address is a label used to reference a geographical object such as a property, for the purpose of identification and location, through the use of identifiable real-world objects. Addresses are widely used in government, commerce and everyday life as descriptions of where places are, and people are often referenced by their home address. The most common form of address is the postal address, used for the delivery of mail, where the address is essentially a routing instruction leading to the property. However, addresses do not need to be restricted to properties that receive deliveries of mail. They can be created for a range of geographic objects. We use the term 'addressable object' for these objects that have a fixed location and may be identified and referenced by means of one or more addresses.

In the UK, there are a number of national address datasets. The main ones are the Royal Mail Postcode Address File (PAF), Ordnance Survey's Address Layer 2 and the National Land and Property Gazetteer (NLPG). The Acacia programme was a collaborative project, run by a partnership of government agencies, which investigated and defined the requirements for a single national infrastructure of joined-up, consistent, high-quality well-maintained addresses and property information, during the period 2002-2004.

## 2. Users and uses of addresses

Addresses are used by a wide range of organisations and people, for a range of purposes, including the following:

- Delivery organisations, to identify delivery points;
- Other service organisations, to identify the location of service delivery points;
- People, to uniquely identify themselves via their place of residence;
- Governments, to identify where people live and work, for planning public services;
- Taxation authorities, to levy taxes on people and organisations;
- Emergency services, for deployment and contingency planning;
- Land authorities, for property registration and transactions;

- Commercial organisations, to identify customers and potential customers.

The commonly used types of addressable object are as follows:

- Domestic properties;
- Commercial properties;
- Industrial premises;
- Public buildings (offices, schools, hospitals, prisons, halls, leisure facilities, public toilets etc);
- Other buildings (churches, monuments etc);
- Places where events take place (sports fields, parks etc).

Whilst some of these objects have postal addresses, many do not, if they do not receive deliveries of mail. However, they do have to be identified and accessed for a range of purposes.

## 3. A general address structure

Addresses generally follow a simple structure incorporating the names or numbers of a nested set of spatial units:

- The name or number of a sub-unit within a building or property;
- The name or number of a building or property within a street;
- The name of a street;
- The name of (one or more) geographic areas (locality, town, county etc);
- The name of a country.

Part of such an address is often abbreviated by a code (e.g. a postcode or area code). The exact definition of each of these levels in an address usually varies from country to country, and are often defined in national standards. (e.g. BS 7666 in the UK).

## 4. Address creation and maintenance

The life-cycle of an address is complicated, and related to the life-cycle of the addressable object. Addresses often need to be created before the addressable object itself is created. For example, in new developments, temporary addresses are often allocated during the planning or construction phase. It is important that the roles and responsibilities of those empowered to create and change addresses are formalised. These should include the following functions:

- Property naming and numbering;
- Street naming;
- Address allocation;
- Address changes;
- Choices of definitive sets of allowable values for the names of the geographic areas used in addresses.

Change to addresses can occur in many ways. These changes might be:

- Extension of a property;
- Merging of two or more properties;

- Subdivision of a property
- Demolition of a property;
- Change of property number or name;
- Change of occupancy, use or classification (e.g. from commercial to residential);
- Change of areas or names of areas used in the address (for example due to administrative area reorganisation).

## 5. Address datasets

The issue of addressing is more than just one of data formats. What users require is a definitive dataset of addressable objects of particular types. This definitive dataset must include all objects within scope. This is termed a definitive address infrastructure. The dataset needs to be kept up-to-date, with a maintenance regime that ensures that all real-world change is identified and replicated in the dataset in a timely manner. This needs to be within days or weeks of the change occurring rather than months, as is often currently the case – a major challenge for most custodians of address datasets.

The range of things (addressable objects) that could be included in a national address infrastructure is potentially unlimited. However, in establishing a definitive address infrastructure, it is essential to limit its scope initially to the important categories of object that are of greatest interest and in most widespread use.

The high-level categories of objects for inclusion are as follows:

- Residential buildings (separately identifiable physical structures such as houses, self-contained flats etc);
- Residential sub-units (individual households within a physical structure, such as bed-sits, rooms in hostels);
- Commercial buildings;
- Commercial units;
- Industrial premises (factories and operational sites such as yards);
- Public buildings and facilities;
- Land ownership parcels (these are often coincident with other properties);
- Land parcels of particular interest (such as sites of events);
- Specific taxable items that are items of land and property (for example car parks).

These objects may overlap, i.e. one might include another.

The following data should be recorded about each Addressable Object:

- Its category (i.e. what it is);
- Its address, or addresses (how to find it);
- A point coordinate (to position it);
- Metadata about how the record was created and amended (when, by whom, etc).

Note that it is not essential to describe addressable objects by polygons, although it may be required for some applications such as land registration. Indeed in some cases (e.g. commercial enterprises sharing common facilities, and premises on multiple vertical levels with different footprints) it is not possible to do this.

## 6. Multiple occupancy

A major issue concerning addressable objects is the granularity of property units. Many buildings are complex, and can incorporate several addressable objects within a single physical structure. Such multple-occupancy properties include:

- Bed-sits with shared bathrooms and/or kitchen facilities;
- Shared houses;
- Student and worker accommodation;
- Residential care homes for the aged and disabled;
- Flats with third party access to the inside of the property for delivery purposes;
- Flats where there is a single point of delivery for all residents;
- Business premises with residential owners, managers or staff;
- Shared business properties with no particular differentiation (normally companies that are associated companies);
- Businesses, each with their own private area, but shared reception and toilet facilities;
- Self-contained businesses with one shared entrance.

Clear rules need to be established to define at what level of granularity, the addressable objects should be recorded.

## 7. Common addressing problems and issues

There are a range of potential problems that can arise with maintaining an address dataset. Those that we have come across in the UK include:

- Changing names of houses or businesses, where these are the only identifier of a building;
- Various address versions held and used by citizens;
- Resistance from residents to naming streets, numbering of properties and designated addresses;
- Lack of street names in some rural areas;
- Inconsistent interpretation of objects without postal addresses, particularly land parcels remote from conventionally addressed properties;
- Incomplete and not up-to-date address datasets;
- Occupant names used to identify premises;
- Multi-occupancy premises.

## 8. Conclusions

1. Addresses can be created for a range of addressable objects, not just those that receive mail deliveries.
2. The issues of addressing are about data management, not data formats.

3. The primary standards requirement is a definitive dataset of addressable objects of particular types;
4. Maintenance of a standard address dataset requires:
    - Definition of categories of addressable objects;
    - Adoption of core address components;
    - A clear address lifecycle;
    - A rule base to manage other aspects;
    - Data management and quality management.
5. Rules are required for property naming and numbering, street naming and the names of areas used for the geographic areas used in addressing.

## References

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