How NOT to build a National Address Infrastructure
A cautionary tale from the UK

Dr Robert Barr
Manchester Geomatics and University of Manchester
United Kingdom
r.barr@manchester.ac.uk
How NOT to build a National Address Infrastructure
A cautionary tale from the UK

Dr Robert Barr
Manchester Geomatics
and
School of Environment and Development
The University of Manchester
Broad gauge engines scrapped
Infrastructure wars

19th century – Railway Fever
Gauge wars, incompatible and duplicated railway lines built across the UK, and many other countries in pursuit of profit

Inefficiency led to bankruptcies and standardisation
Data Wars

In the early 1990’s a debate was conducted between Nancy Tosta and David Rhind in the pages of GIS World about the potential of ‘data wars’ over geographic information.

This is the sad story of such a war.
Overview

• Postal versus Spatial
• The use case – fitness for purpose
• Definitive addressing
• Public or private?
• Local or National?
• Conclusions
• Postscript
What is an address?

An address is a structured place name which usually identifies a plot of land, a building or a part of a building; relates it to a named street and places it in a locality.

Addresses usually include both text and numbers or alphanumeric codes

The text can be divided into standardised fields but often is not.
Postal versus Spatial

Postal Addressing

– Well standardised
– Effective
– Internationally regulated through - IPU
– Independently standardised – OASIS
– Implicit spatial reference
– Does not need to be complete – extensible
– Availability varies e.g. US versus UK
PAF +

• A world beating product!
• Maintained on a daily basis
• Covers at least 98% of postal delivery points and rising
• Widely available through resellers
• Postcodes small (average 14 properties)
• Postcodes provide a link to road segments
  — 70% one side of a street (in a single block)
  — 25% two sides of a street (two blocks)
PAF -

• Coverage ill defined
  – ‘postal delivery points’
• No history
  – Except for Office for National Statistics postcode Directory
• Inadequate published specification
• IPR and pricing disputes
• Not explicitly geographical
  – Relies on Ordnance Survey (National Mapping Agency) for grid references
• Localities ill defined and sometimes controversial
• Not definitive (except postcode)
Postal versus Spatial

Spatial Addressing

— Generally considered to be geocoding
  • A Postal address plus coordinates of a point
— The Point can be:
  • explicit – within a building or a parcel
  • Implicit – interpolated along a street
— Covers features not included in postal addressing
  • In UK only 60% of Buildings have a postal address
— Can cover features e.g. Dwellings or taxable property not postally addressed
The use case
what are we addressing?

• Delivery point
  • Letter
  • Parcel
  • Large Item – e.g. shed
• Dwelling
• Taxable hereditament
• Property – legal
  – In uniform ownership or tenure
• Property physical
  – Parcel
  – Building
• Utility connection point
• Utility billing address

• Legal sub-parcel
  – Wayleave
• ‘Point of Interest’
• Street furniture
• Advertising location
• Infrastructure
  – Bridge
  – Tunnel
• Emergency services
  – Fire Ambulance Police Motoring organisations

• etc etc ...
Random grid square Central London
Central London Map

• The previous map represents a typical inner city grid square, in this case part of Central London. There are a total of 2782 building features in the square of which 1127 do not have an AddressPoint. Of these 557 are larger than 20 sq metres. A significant number of the larger buildings have over 10 AddressPoints and the three largest exceed 100. Very few AddressPoints in this area fall outside building footprints.
Positional Corrections
Definitive

1: serving to provide a final solution or to end a situation <a definitive victory>
2: authoritative and apparently exhaustive <a definitive edition>
3 a: serving to define or specify precisely <definitive laws> b: serving as a perfect example: QUINTESSENTIAL <a definitive bourgeois>
Approximate timelines

<table>
<thead>
<tr>
<th>UK</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Gazetteer Study</td>
<td>GBF – DIME</td>
</tr>
<tr>
<td>LAMIS</td>
<td>Corbett paper</td>
</tr>
<tr>
<td>PinPoint</td>
<td>GDT Dynamap</td>
</tr>
<tr>
<td>AddressPoint</td>
<td>TIGER</td>
</tr>
<tr>
<td>BS7666</td>
<td>LUCA</td>
</tr>
<tr>
<td>NLPG and NLIS</td>
<td>GARM</td>
</tr>
<tr>
<td>Acacia</td>
<td>MAF</td>
</tr>
<tr>
<td>NSAI</td>
<td>FGDC / URISA standard</td>
</tr>
</tbody>
</table>
The UK Players

• Local Government
  – LGA / I&DeA / LGIH / Intelligent Addressing
• Royal Mail – *Post Office*
• Ordnance Survey – *National Mapping Agency*
• Valuation Office Agency – *National property tax authority*
• Her Majesty’s Land Registry – *Cadastral authority*
The UK Regulators

• Communities and Local Government
  – Formerly DoE DTLR ODPM DCLC
• Cabinet Office
• Treasury

• Postcomm
• Office of the Government Shareholder
• Department for Transport
Statement on the National Spatial Address Infrastructure (NSAI)

Statement by Communities and Local Government on 1 June 2007.

The Department has been considering its role in the proposed National Spatial Address Infrastructure. During last year we consulted government departments on the core specification for addressing and continued to discuss this with Ordnance Survey and the Improvement and Development Agency (IDeA).

The Department has noted that there have continued to be improvements in the main address products produced by the Ordnance Survey and the IDeA and we expect this to continue. We also note that, although there are still challenges posed by addressing, local authorities are able to deliver efficiencies and government departments are able to deliver their business without the NSAI. On balance, considering the competing demands on departmental resources, we have concluded that we should not carry out any further work on the NSAI at this time.

In the meantime we will continue to encourage Ordnance Survey and IDeA to further their improvements, and would support new initiatives to improve addressing infrastructure that might arise through the Transformational Government agenda.
Conclusions...
DON’T...

• Attempt to build a general purpose infrastructure
• Privatise your Post Office without making it give up its Address File
• Expect local government to provide and maintain data for free
• Expect local government to buy back information it has provided
DON’T...

- Attempt to fund your Address Infrastructure out of data sales
- Give exclusive intellectual property rights to definitive data
- Rely on consistent political support
- Expect government (local and national) departments to understand the consequences of (their) bad addressing practices
- Assume that funding will take care of itself
DON’T...

• Allow vested interests (such as a national map agency or a privatised Post Office) to dominate the debate and lobbying
• Expect politicians to understand addressing issues, or be interested
• Expect support from the academy (without funding)
• Assume that the private sector cares about the consequences of bad addressing
DO...

• Make the case for Spatial Address Infrastructure(s) beyond Postal Addressing
• Ensure that the status and ownership of address information is clear
• Identify where definitive addressing is required
• Adopt and produce appropriate standards
• Ensure standard compliance
DO...

- Quality assure your data
- Identify common elements in addresses e.g. Street and Locality names
- Ensure common elements are shared between infrastructures
- Identify, and define, what needs to be addressed
- Identify specific reasons for addressing features – use cases
DO...

- Ensure sustainable funding - preferably based on a charge at the point of change
- Align the requirements of postal, census, cadastral, tax, emergency and navigational use of addresses
- Avoid duplicated and conflicting information
- Change legislation where required
POSTCRIPT

What if......

• There really is no justifiable case for national spatial address infrastructures?
  – There are few good examples and most countries have a weakly developed spatial address infrastructure
  – Dealing with the consequences of poor addressing may be less costly than building an integrated infrastructure
That’s it!

robert.barr@manchester.ac.uk
robert_barr@manchestergeomatics.com