

Using Semantic Technologies to Create Virtual Families from Historical Vital Records

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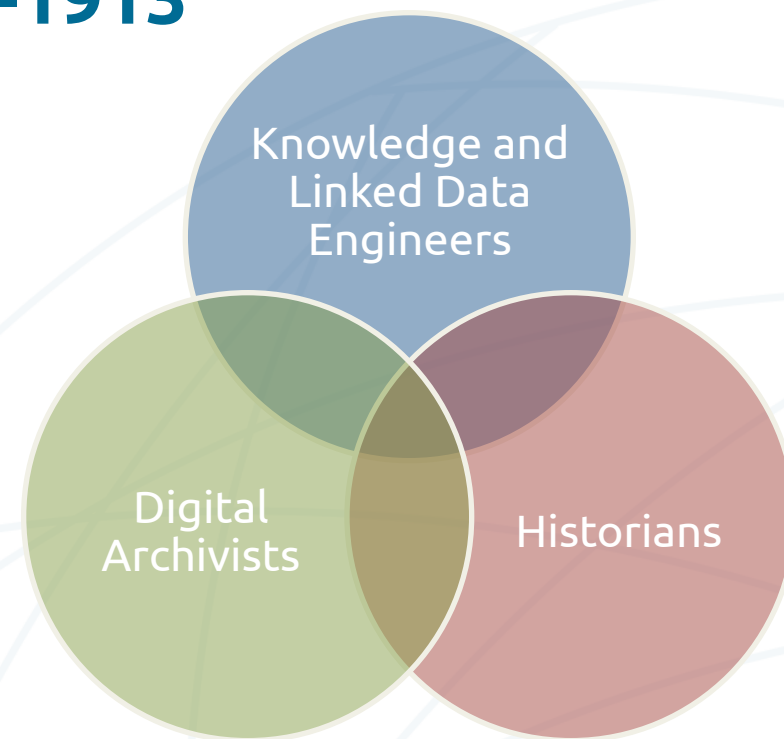
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Irish Record Linkage, 1864-1913

Developing a platform applying semantic technologies to historical birth-, death and marriage certificates.

Answering questions such as: “How accurate are historic maternal mortality rates (MMR) and infant mortality rates (IMR) for Dublin?”

Team consists of researchers (historians), digital archivists, and knowledge engineers.



General Records Office

- Vital registration data
 - Birth-certificates
 - Death-certificates
 - Marriage records
- Digitised TIFF images of hardcopy indexes and registers.
- 2 TB of data
- Database describing the digitised records allowing searches on some fields.

First Page. [Please note that all Copies made on this Page should be certified at foot.] 04556605

Superintendent Registrar's District Brimm Registrar's District Brimm

19 15 DEATHS Registered in the District of Brimm in the Union of Brimm
in the County of Brimm

No. (1)	Date and Time of Death (2)	Name and Surname (3)	Sex (4)	Condition (5)	Age last birthday (6)	Rank, Profession, or Occupation (7)	Residence, Qualification, and Influence of Informant (8)	When Registered (9)	Signature of Registrar (10)
15	9/10	John Spittle	Male	10	Child of Joseph Spittle	3 Days	Infant	20/10/19	
16	9/10	John Spittle	Male	10	Child of Joseph Spittle	3 Days	Infant	20/10/19	
17	9/10	John Spittle	Male	10	Child of Joseph Spittle	3 Days	Infant	20/10/19	
18	9/10	John Spittle	Male	10	Child of Joseph Spittle	3 Days	Infant	20/10/19	
19	9/10	John Spittle	Male	10	Child of Joseph Spittle	3 Days	Infant	20/10/19	
20	9/10	John Spittle	Male	10	Child of Joseph Spittle	3 Days	Infant	20/10/19	
21	9/10	John Spittle	Male	10	Child of Joseph Spittle	3 Days	Infant	20/10/19	
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26	9/10	John Spittle	Male	10	Child of Joseph Spittle	3 Days	Infant	20/10/19	
27	9/10	John Spittle	Male	10	Child of Joseph Spittle	3 Days	Infant	20/10/19	
28	9/10	John Spittle	Male	10	Child of Joseph Spittle	3 Days	Infant	20/10/19	
29	9/10	John Spittle	Male	10	Child of Joseph Spittle	3 Days	Infant	20/10/19	
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72	9/10	John Spittle	Male	10	Child of Joseph Spittle	3 Days	Infant	20/10/19	

I, John Spittle, Registrar, do hereby certify that this is a true and correct copy of the original Register of Deaths within the said District, from the Entry of the Death of John Spittle on the 10 day of September 1915.

Witness my hand, this 10 day of September 1915.

I, John Spittle, Registrar, do hereby certify that this is a true and correct copy of the original Register of Deaths within the said District, from the Entry of the Death of John Spittle on the 10 day of September 1915.

Witness my hand, this 10 day of September 1915.

Superintendent Registrar.

Challenges

- **With respect to requirements**
 - Identifying certified causes of death that can be attributed to maternal death.
 - Death certificates with no corresponding birth certificate
 - Terminology used pre-1900.
 - Capturing the socio-economical status of the families via, for instance, the professions, ranks of fathers.
 - ...
- **With respect to the platform**
 - Data protection
 - Records vs. Knowledge
 - Provenance vs. Interpretation



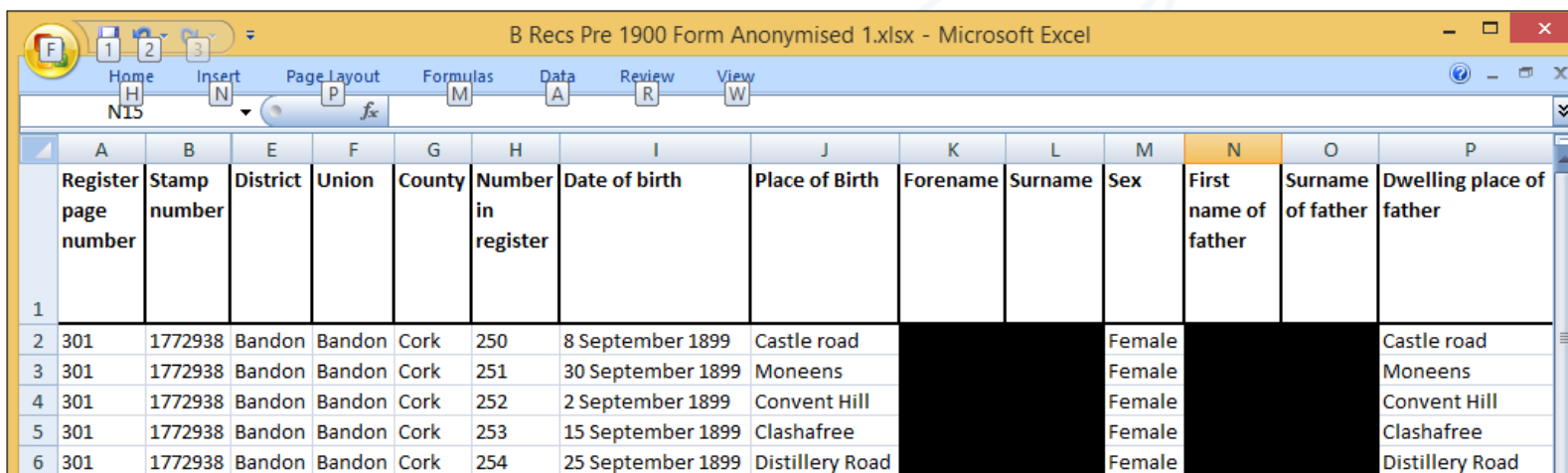
Development of 2 ontologies

- 2 ontologies were developed – separation of concerns
- First ontology for describing the contents of records
 - OWL 2 shallow, “flat ontology”
 - Created by “lifting” the structure of the vital records
 - (Marriage) Record, (Birth|Death) Certificate, Return
- Second ontology for data analysis
 - OWL 2 + Rules to capture background and domain knowledge
 - Created by means of Competency Questions (Grüniger and Fox)
 - Person, Birth, Marriage, Death, withChild, motherOf, ...

Grüniger, M., Fox, M.S.: The role of competency questions in enterprise engineering. In: Benchmarking Theory and Practice, pp. 22-31. Springer (1995)

Tool for the Digital Archivist

- Records are encoded using spreadsheets – a tool the digital archivist is familiar with



	A	B	E	F	G	H	I	J	K	L	M	N	O	P
	Register page number	Stamp number	District	Union	County	Number in register	Date of birth	Place of Birth	Forename	Surname	Sex	First name of father	Surname of father	Dwelling place of father
1														
2	301	1772938	Bandon	Bandon	Cork	250	8 September 1899	Castle road			Female			Castle road
3	301	1772938	Bandon	Bandon	Cork	251	30 September 1899	Moneens			Female			Moneens
4	301	1772938	Bandon	Bandon	Cork	252	2 September 1899	Convent Hill			Female			Convent Hill
5	301	1772938	Bandon	Bandon	Cork	253	15 September 1899	Clashafree			Female			Clashafree
6	301	1772938	Bandon	Bandon	Cork	254	25 September 1899	Distillery Road			Female			Distillery Road

- RDF-to-RDF mapping files were defined to generate RDF from the in-memory databases created for each spreadsheet.

Next steps

- Encoding a significant amount of vital records in the excel files
 - To create the first triplestore; and
 - To obtain a dataset for validating the transformations; and
 - By consequence, validating the second ontology.
- To investigate proper interaction with the data for the historians.
- Linking the data with additional context; i.e., Linked Logainm
 - <http://data.logainm.ie/>
 - Nuno Lopes, Rebecca Grant, Brian Ó Raghallaigh, Eoghan Ó Carragáin, Sandra Collins, Stefan Decker: Linked Logainm: Enhancing Library Metadata Using Linked Data of Irish Place Names. TPDFL Workshops 2013: 65-76

More information

- @IRL_Project
- Project website <http://irishrecordlinkage.wordpress.com/>
- In partnership with



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Taisclann Dhigiteach na hÉireann