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Siksnans, J.; Pirupshvarre, H. R.; Lind, M.; Mioc, Darka; Anton, François

Publication date:
2012

Document Version
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

Citation (APA):
Siksnans, J. (Author), Pirupshvarre, H. R. (Author), Lind, M. (Author), Mioc, D. (Author), & Anton, F. (Author). (2012). *Towards introducing a geocoding information system for Greenland.* Sound/Visual production (digital), DTU Space.

Towards introducing a geocoding information system for Greenland

Janis Siksnans^ Hans R. Pirupshvarre*, Morten Lind**, Darka Mioc^, François Anton^
^ DTU, Denmark; * ASIAQ, Greenland;
** MBBL, Denmark

Background – The Issue (1/5)

Greenland Police department

Ambiguity in referencing the location leads to a situation where the incident had not been handled.
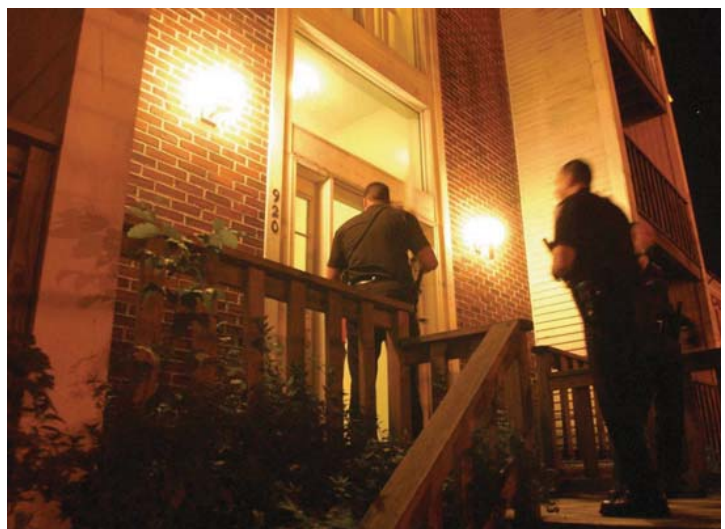

Figure Ref: [1]

Background – **Physical Addresses** (2/5)

In Greenland, there are **several names for the same place**:
- According to the historical function – this is very common in Greenland.
  Example Ref [2]:
    - Tuapannguit 7-104;
    - Tuapannguit (7), former block Q.

Figure Ref: [3]

- Some of the former Danish road names are still used (Jagtvej).
- It is usually pointed out, that certain buildings or functions are next to the address in question:
  Example:
    - Next to the former KNR (Greenlandic Broadcasting Channel).

Background –
Land And Area Allotments (3/5)

- In Greenland, the land is not owned by anyone. Instead, a citizen, the municipality, or a company can apply for an area allotment for their property.
- The registry for all area allotments is called NIN and this register is separate from the register for building number registry (B-number registry).

Figure Ref: [4]

Background – **Buildings** (4/5)

In Greenland, you can own buildings and other property. For object identification they have:

- Buildning numbers (equivalent to title numbers, B-numbers).

There is no official Greenlandic dwelling register. Data can be retrieved from Danish personal identification registry (CPR).

Data should be systematized and combined.

Figure Ref: [4]

Background – **Roads** (5/5)

- In Greenland, not all the roads have been digitalized. Some roads do not have a name. Road features have a simpler structure than in DK (road name = point).
  - Worth to notice that cities and settlements are not interconnected by roads.
- Missing roads should be digitized.
- Road names are barely labels placed on fixed points on the roads. They should be attributes of road segments or composite features composed of one or more base features.
- Electronically manageable road infrastructure would help in:
  - Waste management,
  - Street lighting,
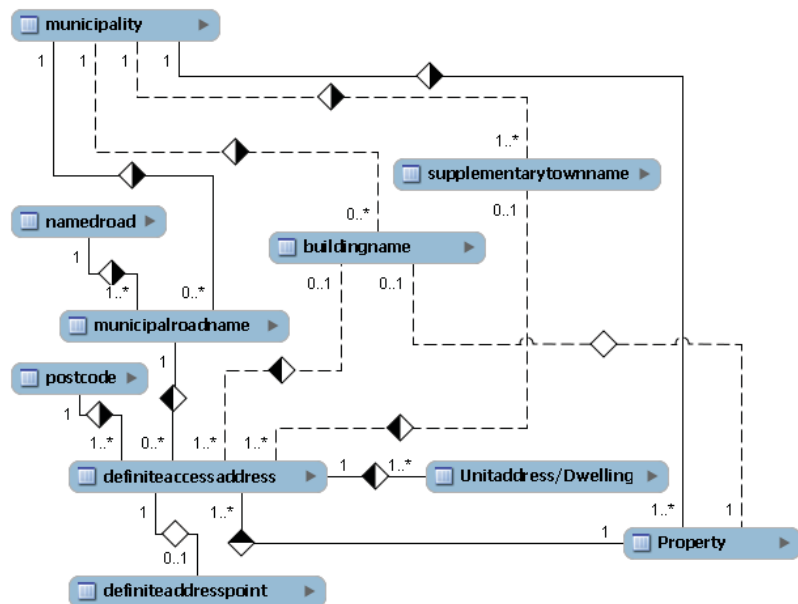 - Snow removal, street cleaning.

Resemblance with Danish addressing system

Similar due to historical reasons
*   Post code area, Municipal area

Practices to follow from DK addressing system
*   Building numeration by road arc length
*   Dwelling numeration

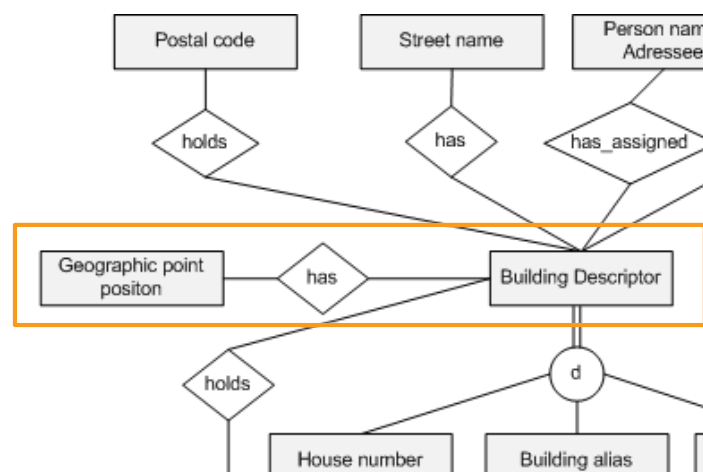Modified entity relationship diagram of Danish addressing system Ref: [5]

Formalizing model of Greenland's addressing system

The paper includes (first iteration)
*   Ontology shared vocabulary and taxonomy
*   Ontology chart (concept dependency diagram)
*   Logical model (EERD)

Ontology chart (concept dependency diagram)
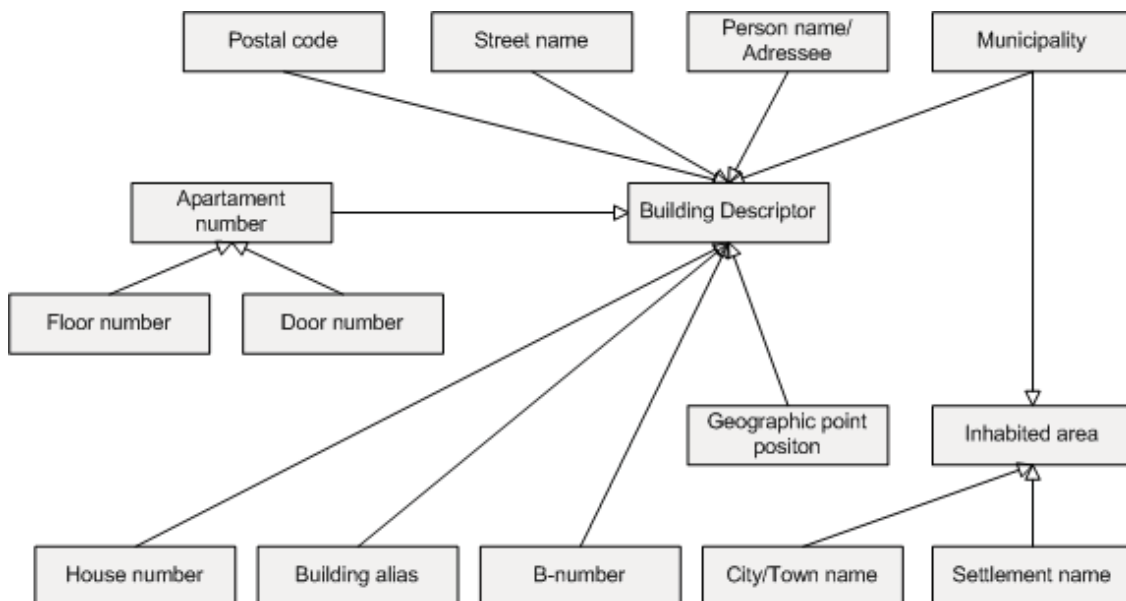
Some modifications regards dependencies have been made.

Logical model (EERD)
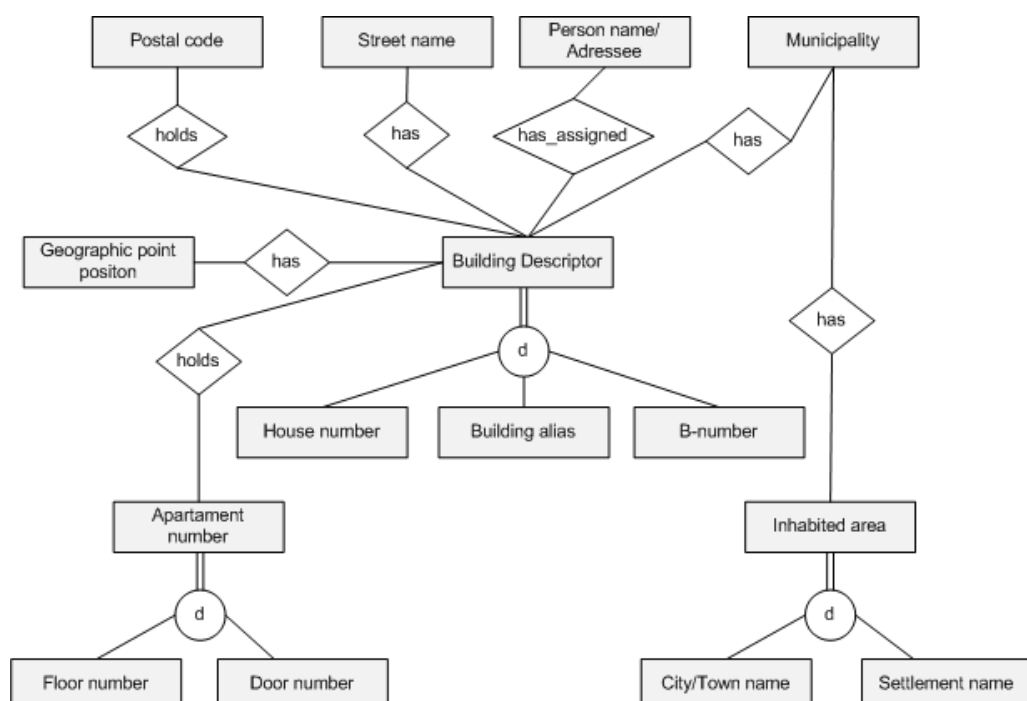
Benefits in the future

With an electronic address system the possibilities are numerous:

- The Greenlandic Emergency Management:
  - Police, Ambulance, Fire brigade
- Management
  - Construction planning
  - Maintenance/Supplies (road, building, sewage, water, heating)
  - Waste management
- Statistics:
  - Demography
  - Migration
  - Health

Conclusions and further work

- Use of Danish addressing model as practice example
- Formalization of Greenland's addressing model
  - Geographic point introduction

- Road digitizing plan?
- How to efficiently re-use and interconnect currently available data sets?
  - Interconnection with Danish CPR registry?
  - NIN (land allotment register), GER (company register)
- Extendable model for future?
- Further user requirement engineering?
- Implementation possibilities?

References

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5. Lind, M., May 2011. Draft description of the address system in Denmark, v2.0a pp. 5–21.

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