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# Transforming Swedish Geoinfo

Simon Ahlberg

Swedish Defence Research Agency, FOI

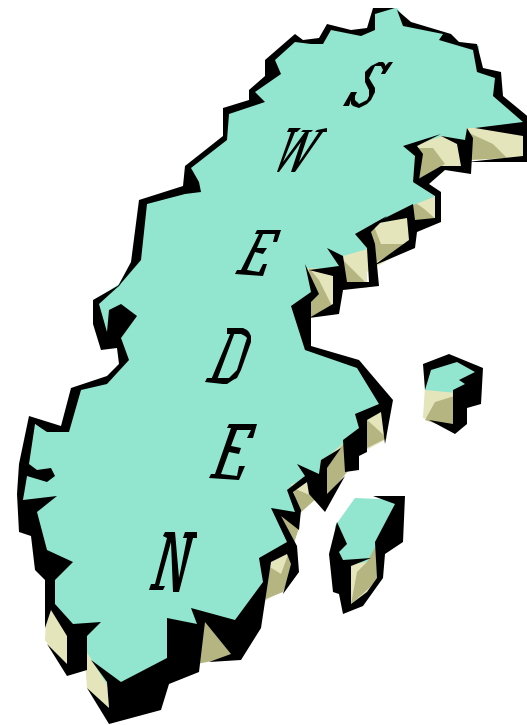
Susanne Astell

Swedish Defence Materiel Administration, FMV



# Swedish Tradition

- Swedish Land Survey – since 1628
- Proprietary formats and systems
- GeoSE (Armed Forces Support Organisation for Geographic Information)
- Limited interdisciplinary interchange of data



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# International trends – impact on Sweden

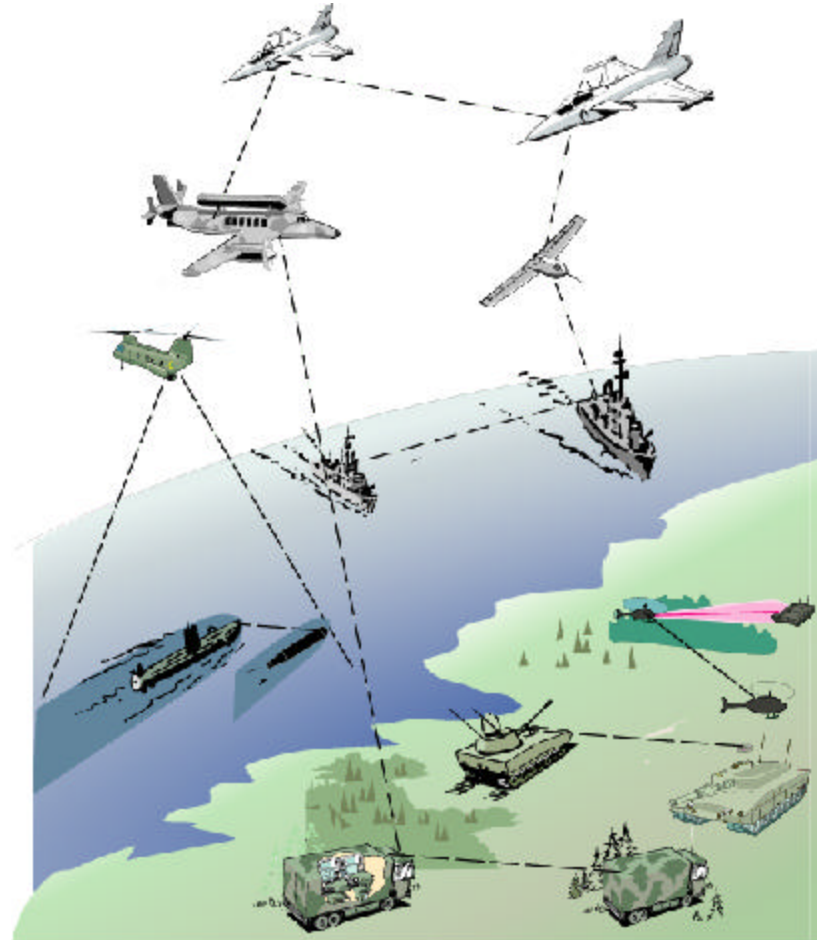
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- From national to international joint & combined operations and exercises
- Interchange of data, nationally and internationally
- Interoperability, national and international
- Live/virtual/constructive

# Network Centric Warfare in Sweden

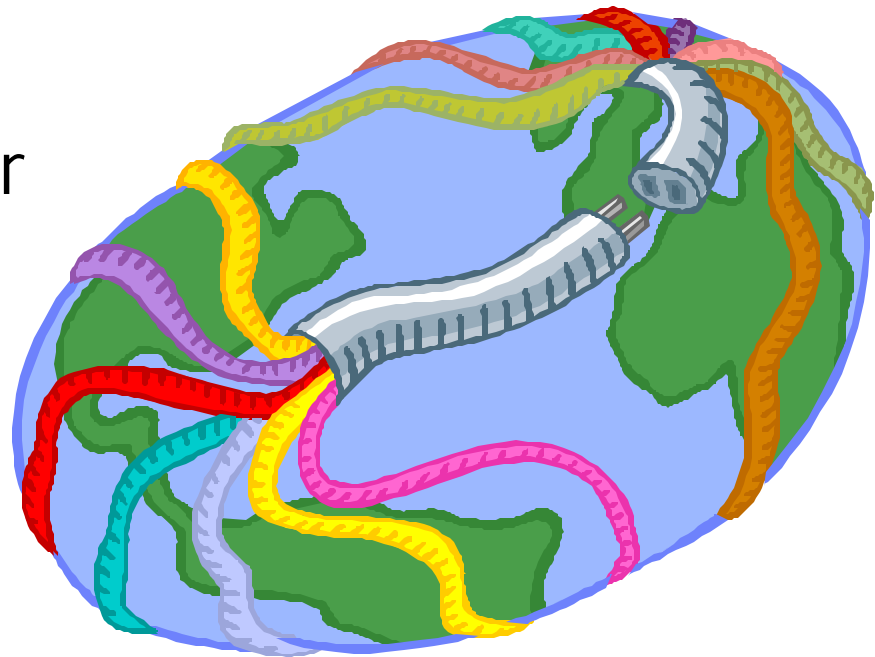
- Sensor networks
- Platforms/soldiers as sensors
- Rapid data collection
- Continuous data distribution

Need for a common and consistent environment description



# A Solution?

- Use of an international and established system for environment description
- FACC?
- SEDRIS?



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# An Approach

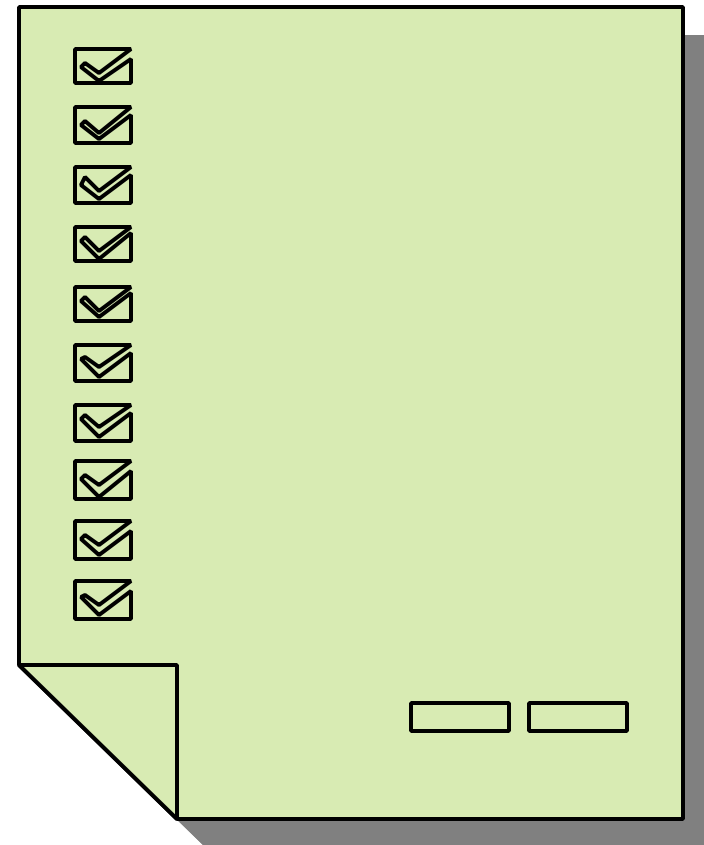
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- Joint FMV/FOI/GeoSE project
- User survey to determine future needs for geographic and environmental information
- Mapping specification
  - GSD -> FACC
- Mapping specification
  - GSD -> EDCS
- Tool tests



# Synthetic Environment Survey

- Location
- Functional description
- Type of application / domain
- Geographic extents
- Resolution
- Spatial Reference Frame
- Source data provider
- Source data quality, if applicable
- Owner / releasability
- Future needs and expectations
- (...)



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# Survey results and trends

- As expected
  - Need for more data
  - “Better” data
  - New data sources
  - Towards distributed simulations
  - International exercises and cooperation





# Impact on geographic info

- Need for international adaptation
- Need for a common terminology (dictionary)
- Mapping / Translation



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# A Mapping for the Future?

- Facilitating a transition in geoinfo handling
- Authoritative
- Using international standards



# Swedish geoinfo vs. EDCS

- Different classification paradigms
  - Attributes in codes vs. classes with attributes
  - One specific numeric code per feature



*Betula pubescens*

***Fjällbjörk***

*Downy birch /  
Mountain birch*

# Representing Environmental Data the Swedish Way

- GSD (Geografiska Sverigedata)
- Single code per feature
- Entity based – no actual “hierarchy” of feature classes

| Code | Description    |
|------|----------------|
| 1    | Water surface  |
| 4    | Farmland       |
| 737  | Castle         |
| 5022 | Road, class I  |
| 5025 | Road, class II |

# Mapping - purpose

- Eliminate “hey, as long as it works” solutions (more known as “local variations”)
  - Avoid inconsistency and future interoperability issues
  - Avoid “monolithic” simulation solutions
  - Aiming for better cost-efficiency
- One and only one **authoritative** mapping alternative
  - How to translate “Public Road, Class II”?
  - ECC\_ROAD - OK, but attributes?
    - EAC\_TOTAL\_USABLE\_WIDTH = x? -or-
    - EAC\_TRAVELLED\_WAY\_WIDTH = x?

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# Mapping - purpose

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- Education during transition
  - New ways of seeing environmental information, not just for GIS purposes
- Taking care of the legacy
  - Still lots of “old” geoinfo in use and in stock



# Mapping GSD onto EDCS

Draft

| Skikt | Kkod | Sw. Def            | Name   | EG          | EC   | EA                         | EE  |
|-------|------|--------------------|--------|-------------|--|----------------------------|---|
| my_xx | 2    | Skog, barr o bland | Forest | EG 33 Plant | EC 391<br>FOREST Def. A <REGION> of <LAND> containing a substantial number of closely spaced <TREE>; a forest. | EA 1298<br>Vegetation Type | EE 47 Mixed Trees<br>Def. Contains both evergreen coniferous and deciduous <TREE>s in proportions varying between 40 and 60 percent.              |
| my_xx | 19   | Skog, löv          | Forest | EG 33 Plant | EC 391<br>FOREST   | EA 1298<br>Vegetation Type | EE 23 Deciduous Unspecified<br>Def. An unspecified type of <TREE>, which sheds its foliage for part of the year (generally in winter); deciduous. |
| my_xx | 10   | Skog, fjällbjörk   | Forest | EG 33 Plant | EC 391<br>FOREST   | EA 1298<br>Vegetation Type | EE 8001<br>Mountain Birch   |
| my_xx | 6    | Hygge              | Forest | EG 33 Plant | EC 391<br>FOREST   | EA 1298<br>Vegetation Type | EE 30<br>Forest Clearing  |

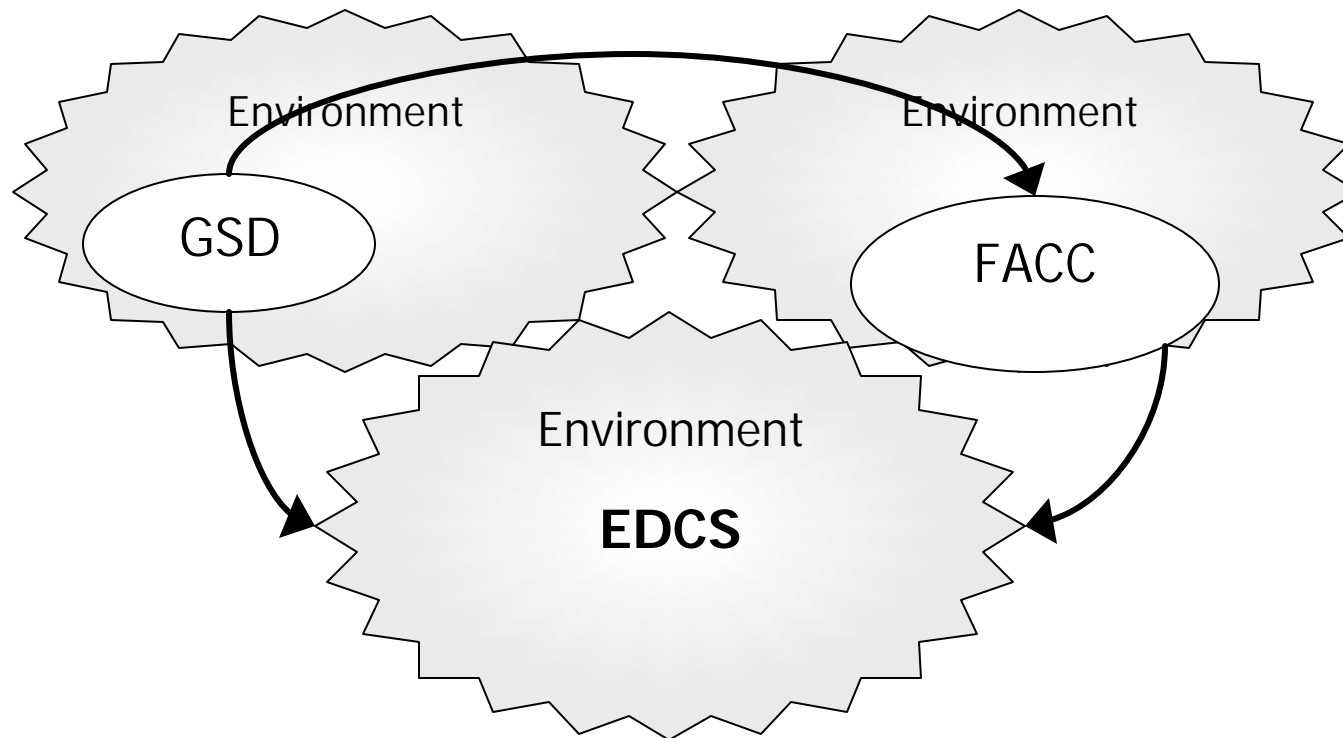
Not a complete mapping



STC2004



# Different ways of mapping



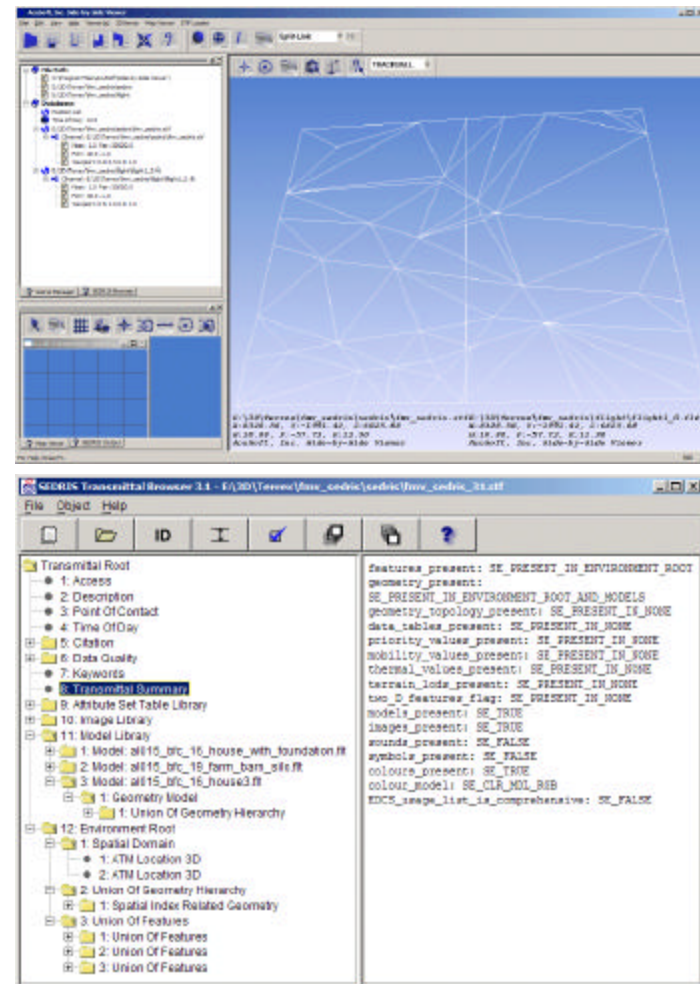
Using SEDRIS tools to see if

$(\text{GSD} \rightarrow \text{FACC} \rightarrow \text{EDCS}) == (\text{GSD} \rightarrow \text{EDCS})$



# Test results

- A matter of input
  - Given correctly mapped data, it is of course possible to generate the expected output
  - ...provided that the tools work as intended
- Does not affect modelling process
  - Just another output pass



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# Way ahead

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- Given the current level of SEDRIS knowledge:
  - Need for education
    - Producers, consumers AND managers
    - Need for a consistent way of describing the environment
    - Access to a broader base of source data
    - Re-use of models and data
    - Cost reduction

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# Need for education

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- “Transparent” to the producers and consumers of geographic information and environment models
  - Another way of transmitting information
  - Need for a conversion mechanism
  - Mapping specifications
  - Functionality provided with COTS tools
  - Does not affect modelling process

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# Way ahead

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- Need for an organisation for handling and maintaining environmental data (not just geographic information)
  - Logistics
  - Re-use
  - New sensor data
  - Continuous updates
  - Distribution of data
- Does SEDRIS facilitate these?

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# End

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Thank you for your attention

[simon.ahlberg@foi.se](mailto:simon.ahlberg@foi.se)



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