Management of Farmers’ and Farmland Information: A Case Study in Turkey

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EU Common Agricultural Policy (CAP)
The Rationale for the Project

• Integrated Administration and Control System (IACS)
• Land Parcel Identification System (LPIS)
  - Different Spatial References (Land Parcels)
  - Different Land Use / Cover Classes
  - Different Agricultural Product Classifications
  - Different National Needs (The basic reason for the Project)
**Spatial Reference System**

**Sub-Parcel Data Structure**

- Based on Cadastral Land Parcels

(a) and (d): Non Agricultural Area
(b): Planted Agricultural Field
(c): Cultivated Agricultural Field

● Cadastre Parcel Corner Point
● : Sub Parcel Corner Point

**Cadastre Parcel**: The area composed of connecting Cadastre Parcel Corner Points.

**Sub Parcel**: Each area composed of connecting Cadastre Parcel Corner Points and/or Sub Parcel Corner Points. The total area of sub parcels equals to the area of the cadastre parcel.

* Parcels are defined by boundaries, which are specified by connecting corner points.

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**Study Area (approx. 4000 ha total area)**

**Three Rural Districts in Kayseri Province**

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Data Model Development (Beginning)
Basic Properties (some examples)

- The model spatially represent different land use/cover classes within a land parcel.
- Temporal changes should be traced and necessary update operations should be carried out.
- Data redundancy should not be caused for cadastral land parcels including only one land use/cover class.
- Farmer declarations should, spatially, be managed in sub-parcel level which reveals undeclared land.
- Land use rights should be managed as declarations. Harsh/rigid legal checking procedures should be removed. Inquiries should be done only when it is necessary. So, informal land use rights should be considered in some cases.
- Land use/cover and agricultural product classification information should be shared in different generalised classes.

Data Model Implementation

Data Sets

- Satellite Imagery (VHR)
- Land Registry Data
- Cadastre Data (parcel boundaries)
- Farmers Declarations Data
- Address Data (administrative)
- Address Data (spatial)
- Land Use/Cover (sub-parcel) Data
Implementation (Sample Applications)
Association between Declarations and Sub-Parcels

**Declaration**
- Farmland, Declaration (Yes)
- Farmland, Declaration (No)

**Usage**
- Farmland, Unclear
- Farmland, Partial
- Farmland, All

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**Sample Applications**
Association between Declarations and Sub-Parcels

**Second Production**
- Farmland, Second Production (No)
- Farmland, Second Production (Yes)

**Declaration Analyses**
- Declaration (No), Non-Farm
- Declaration (No), Farmland
- Declaration (No), Abandoned_Farmland
- Declaration (No), Settlement
Implementation (Sample Applications)
Association between Declarations, and Land Use/Cover and Agricultural Product Classification

CPA 2008 Agricultural Product Classes

CORINE Land Cover Classes

Presentation of different land use/cover classes (In the form of agricultural land or not):
http://cbs.kayseri.bel.tr/proje/Tarim_Potansiyeli.html
Implementation (Sample Applications) 
Towards Web Services for Different Foundations

- Presentation of different product classes (field crops, horticultural crops, forage crops):
  
  http://cbs.kayseri.bel.tr/proje/Urun_Sinifi.html

- Presentation of declaration has already made on or not based on cadastral parcels:
  
  http://cbs.kayseri.bel.tr/proje/Beyan.html
Results

- The project (data model) is basically focused on an integrated approach in order to meet similar yet different needs of different institutions/foundations.
- Implementation of data model is in its initial phase.
- The model will include/represent all natural relations among farmer, farm land (agricultural field classification in sub parcel level) and agricultural product classification data in very well defined hierarchical data levels (detailed + generalised ones).
- A full implementation will not possible in terms of complex natural relations and ever changing/developing data sources.