TRANSPORTATION DATABASES AND DATA COLLECTION SYSTEMS

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BUDAPESTI MŰSZAKI ÉS GAZDASÁGTUDOMÁNYI EGYETEM
KÖZLEKEDÉSMÉRNÖKI ÉS JÁRMŰMÉRNÖKI KAR

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- History of collecting data on the road transport
- Databases, collecting data nowadays (KARESZ)
- Using data in planning, in dispositions
- Other, subsidiary systems
- Developing facilities

Introduction

- What does traffic technics mean?
  - Maintenance the roads and its infrastructure

    E.g.
    - Changing the traffic signs (new or damaged)
    - Servicing the parking-retardant pillars
    - Programing the traffic lights
    - Etc.
  - Making decisions and dispositions about the traffic order
    - Where might be:
      - Pedestrian crossings, parking lanes or places etc.
      - Cooperates with other companies or government
      - Approve (temporary) traffictechnic-plans

Introduction

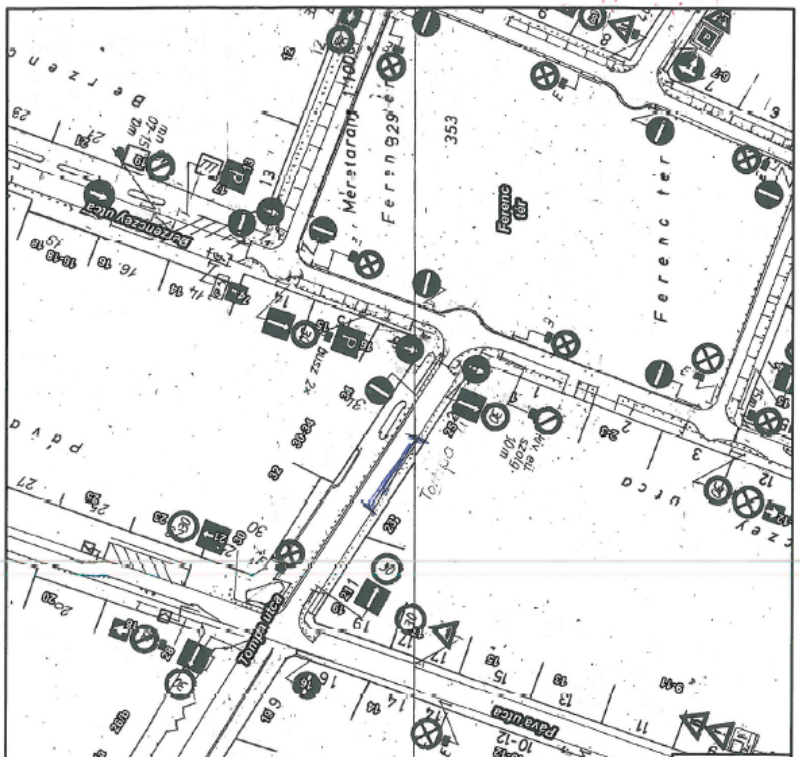
- Traffic technics companies:
  - Owned by the government or the local government (maintenance and making decisions)
  - Private companies
    - Only for planning or
    - Implementing
- Government or local government owned companies:
  - Budapest: Budapest Közút Zrt.
  - Countryside: Magyar Közút Zrt.

Introduction

- Budapest
  - In the past:
    - BKV Rt.
    - FKF (Fővárosi Közterületfenntartó) Rt.
    - BKK Közút Zrt.
  - Nowadays:
    - Budapest Közút Zrt.
- The length of the road network system in Budapest is more than 1000 km.
- To operate it in an optimal level -> datas, databases and data-registering system needed!

History of databases and collecting data

- In the past (and sometimes nowadays), traffic orders were drawn in illustrated maps
  - More than 1000 segments
  - Paper-based
  - Digitalized
    - KANYAR (software)
    - Only for searching
    - E.g. Ferenc tér: Segment 329



History of databases and collecting data

- Plenty of problems:
  - Repairing or changing
    - very difficult
    - Spends a lot of times
  - Demand of time is unpredictable (1 week to 1-2 years!)
  - Not punctual
  - Difficult to measure
  - Data-servicing is difficult (e.g. police department demand)
  - Tracking the changes are impossible
  - Old-fashioned, very old system.
- Development -> solution needed

New database - KARESZ

- Közúti Adatgyűjtő REndSZer
- Operated by Budapest Közút Zrt.
- What is it?
  - Data-registering system
    - Computer-based
    - Might be the solution for the problems (?)
    - Other criterias
      - Up to date
      - Datas can be archived
      - Must be easily maintenanced

KARESZ

- Working method
  1. Collecting data (scanning)
  2. Making a pointcloud
  3. Processing the pointcloud
  4. Using a planning, engineering software (e.g. AutoCAD)
  5. Making feedbacks
  6. Creating the up to dated system

Collecting data

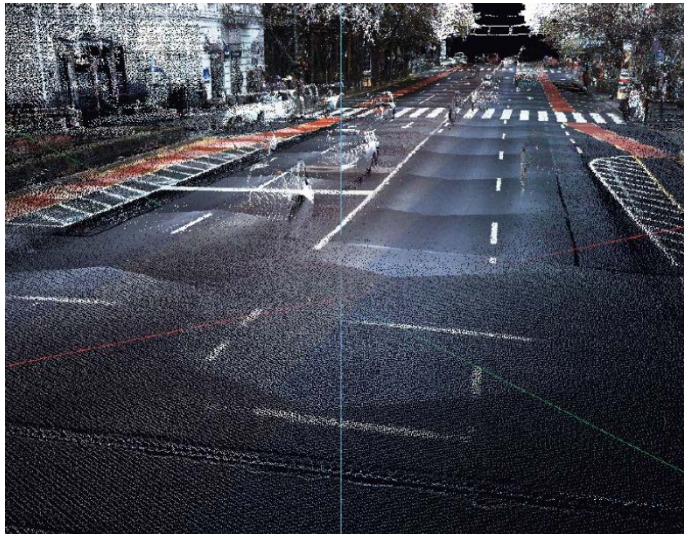
- Elements:
  - Laser scanner
  - Vehichle
- Method:
  - Examing the roads with the elements
- Application:
  - Not only on the roads by car
  - By foot, bicycle or ship (e.g. examing the quay)
- Collected datas:
  - The elements of the traffic technics (traffic and road signs etc.)
  - The infrastructural elements (buildings, pillars etc.)
  - Nature (trees, plants etc.)

Collecting data

- Collected data is not only for transport.
- It is also can be used for determine:
  - Public utility (e.g. canal caps)
  - The borders of the roads
  - The owning borders of the infrastructure
  - Natural items (for horticultural companies)
  - Etc.

Making and processing the pointcloud

- Directly from the scanning
- Convert to an AutoCAD file
  - Manually and automatically too
- Manually:
  - Check all of the signs
  - It there is a fail, correct
- Automatically
  - E.g. the side of the road

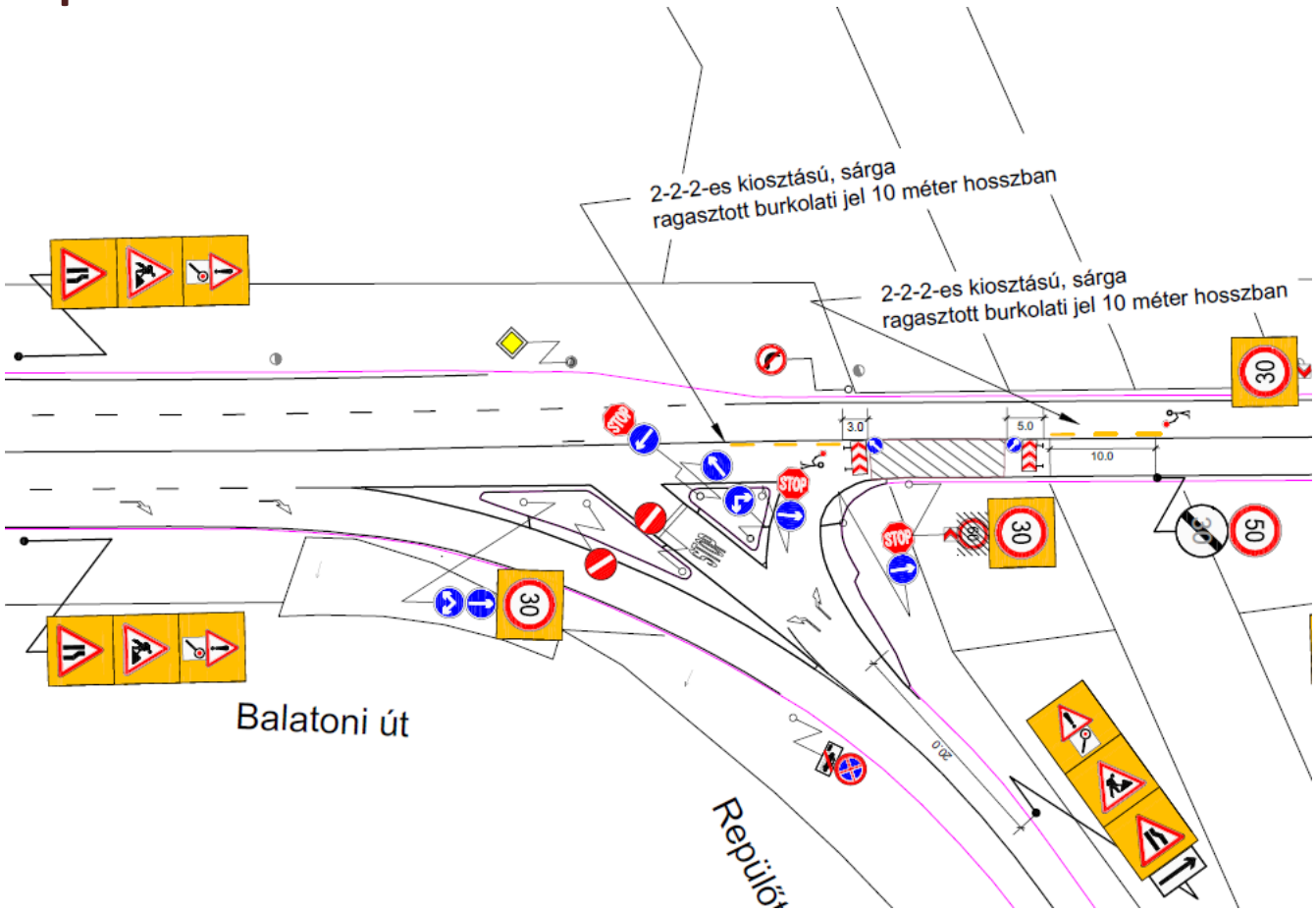


Using data in planning, in dispositions

- Software: AutoCAD
  - Well-known
  - Not so difficult to use
- File containes:
  - The elements of the traffic technics (traffic and road signs etc.)
  - The infrastructural elements (buildings, pillars etc.)
  - Nature (trees, plants etc.)
- Using different layers for
  - Each elements
  - Each states (current, proposed)
  - Each types of plans (temporary, constant)

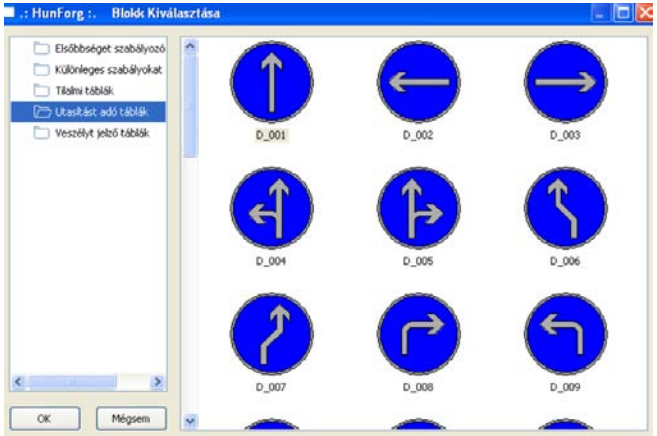
Using data in planning, in dispositions

- Example



Using data in planning, in dispositions

- Hunforg: Database of the traffic signs
  - Contains all traffic signs, used in Budapest
  - Can be developed in AutoCAD
    - Very structured (use correct layers and colours)
    - Creating new signs, tables
  - Easy to use: just choose the sign from the database the pop-up window



Using data in planning, in dispositions

- Advantages
  - Contains updated data
  - Easy to refresh, update the database (basically automatized)
  - Computer-based, digital
  - Very punctual (milimetres)
  - Easy to measure punctually (e.g. 3,715 metres)
  - The datas have coordinates
  - Zoom in or zoom out increases the visuality -> not looks so complicated

Using data in planning, in dispositions

- Disadvantages
  - Malfunctions require technical support (takes a lot of time) E.g. fatal error
  - The software is very structured
  - Not compatible with other engineering companies' AutoCAD files (layers are different!)
  - Requires hardware with high capacity (e.g. processor, video card, memory etc.)

Other, subsidiary systems

- Working procedure – Mérnöki Modul software
  1. Search and select the wanted address/road/field
  2. Download the selected item in AutoCAD format
  3. Make changes
  4. Upload the file (which contains the changes)
  5. The database is up to date
- It
  - Is full automatic
  - Is fast – waste time is minimal
  - Contains no old data – easy to update
  - Guarantees feedbacks
  - Has a lot of other functions (owner of the infrastructure, etc.)

Summary

- KARESZ is the solution for all the problems?
  - Repairing or changing ✓
    - very difficult
    - Spends a lot of times
  - Demand of time is unpredictable (1 week to 1-2 years!) ✓
  - Not punctual ✓
  - Difficult to measure ✓
  - Data-servicing is difficult – archived data ✗
  - Tracking the changes are impossible ✓
  - Old-fashioned, very old system. ✓

✓ - solved ✗ - not solved

Developing facilities

- Archiving files is very important
  - Easy to research what was the traffic order in a chosen date (e.g. 2014.03.15.)
  - Might be useful for data-servicing
  - In case of change, it might contains the name of the project, the decider etc.
    - Who?
    - Why?
    - When?
- Should guarantee a free version for the other engineer companies to use this system

THANK YOU FOR YOUR ATTENTION!

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