



# QGis as a platform

Transforming the desktop GIS  
for tablet use in Flanders fields

Roel Huybrechts

**REALDOLMEN**



**Vlaanderen**  
is ondergrond

# THANKS

Now you're still here

# ABOUT NERD

- Roel Huybrechts
  - GIS consultant at RealDolmen
    - Primarily working for the Flemish government (DOV)
  - ♥ FOSS GIS
    - PostGIS, Geoserver, Spatialite, QGis, ...
  - ♥ scripting
    - `print("Python")`
    - `console.log("Javascript");`
    - `select 'sql';`
    - `echo "Bash"`
    - `s/^[li]f all else (horribly )?fails$/regex/`
  - ♥ maps
    - because, well.

# AGENDA

What we'll talk about

# AGENDA

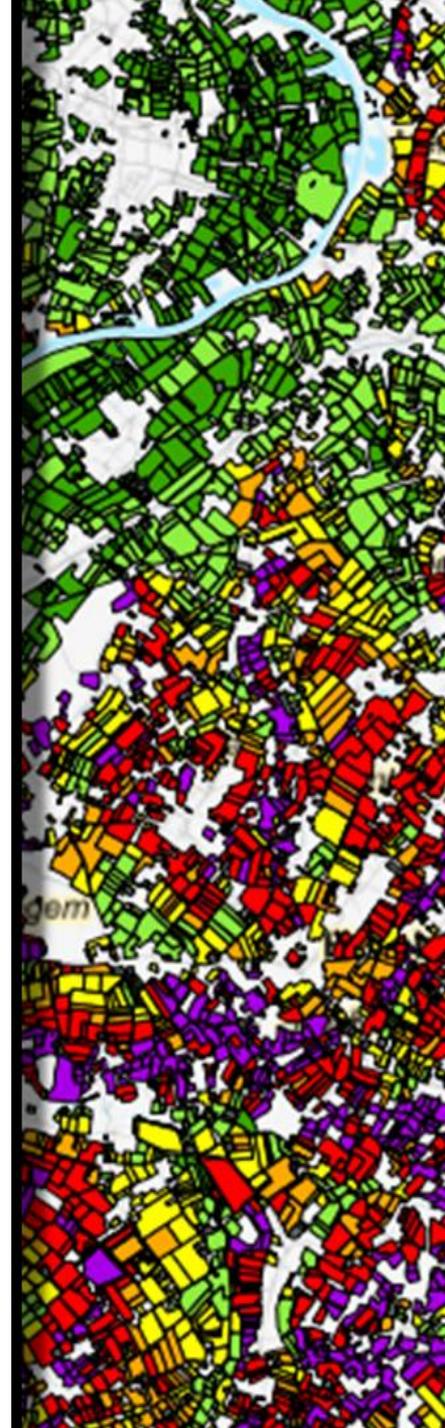
- Intro
  - Soil erosion for dummies
- The cool stuff
  - QGis as a platform
    - From scratch is better, right?
  - Tablet user experience
    - Why our users love their app
  - Datasynchronisation
    - Making it come together
- The proof of the pudding
  - Demo time

# SOIL EROSION

When your field ends up on the road

# THE CASE

- Erosion causes variety of problems
  - Measures to limit soil erosion are necessary
- Flemish government
  - Yearly makes soil erosion map
    - which classifies agricultural plots/parcels
    - based on their potential soil erosion
    - from 'negligible' to 'very high'
  - ~ plot's classification
    - appropriate measures must be performed by farmer
- Farmers can object
  - If they deem a plot was unfairly attributed too high a class
  - Control on the field is necessary to evaluate the legitimacy of these objections



# THAT TABLET THING

No trees were harmed in the process



Digital  
No more wasted resources



Maps and data  
Everything at your fingertips



Camera  
Corroborate your decisions



GPS  
It knows where you are!

# QGIS TO BUILD UPON

Standing on the shoulders

# QGIS AS A PLATFORM

- Perfect starting point for building GIS applications
  - Solid base
    - also available through API
  - Open-Source
    - access to the source code
    - community
    - plugins
  - Collection of tools, languages and toolkits:
    - GDAL, OGR
    - Python
    - Qt
  - Cross platform. For free!
    - Windows, Linux, OS X, (Android)
    - *'Runs on QGis 2.14'*

DATA. DATA. DATA.

The devil is in the data

# THE MAP

- Of the utmost importance!
  - OpenStreetMap
    - Toponyms, administrative borders, roads, street names
  - Topographic map NGI
  - Orthophotos
  - Soil map
  - Water run-off map
  - Potential soil erosion map per plot 2016, 2015, 2014, 2013
  - Base grids soil erosion
  - DEMs
  - Agricultural plots with objections
- Raster. Shape. Spatialite.

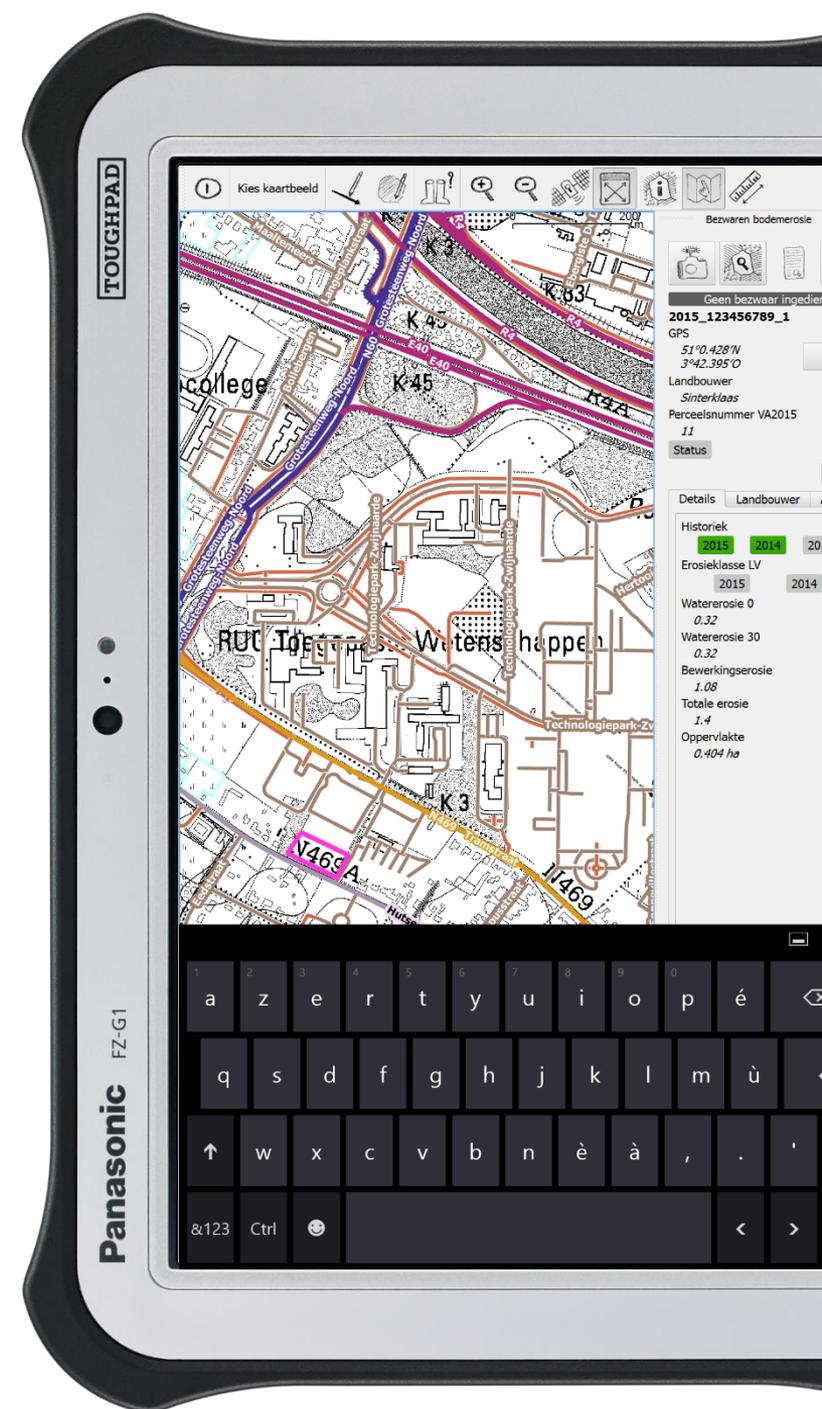


# FINGER FRIENDLY

Nobody wants a stylus

# FINGER FRIENDLY

- Theory
  - Less
  - Bigger
- Practice
  - Remove (parts of) toolbars
  - Remove panels
  - Remove statusbar
  - Increase font size
  - Increase icon size
  - Add custom components
  - Make it fullscreen



# USER EXPERIENCE

The best user interaction.

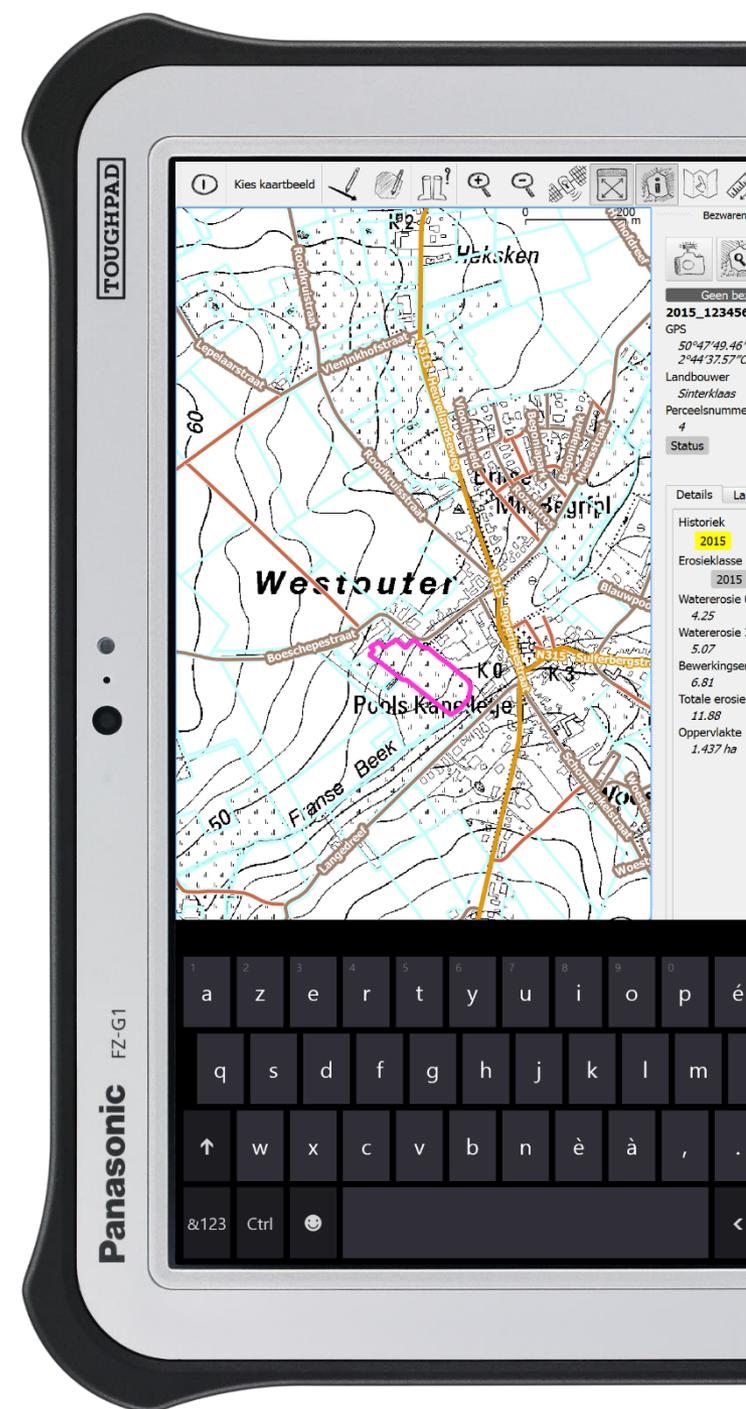


No user interaction.

Do more  
by touching less.

# MINIMIZE ANNOYANCE

- Everything offline
  - Wireless will fail at the worst moment
  - All data + editing
- Map view ~ zoomlevel
  - For clearness and performance
- Auto-save edits
  - Because when you changed it, you want it to be changed
- Get information with one touch
  - Join, group and combine
- Think as a pro user



# ADDING THE MAGIC

Bring in the design department



No.



Better.



Better.

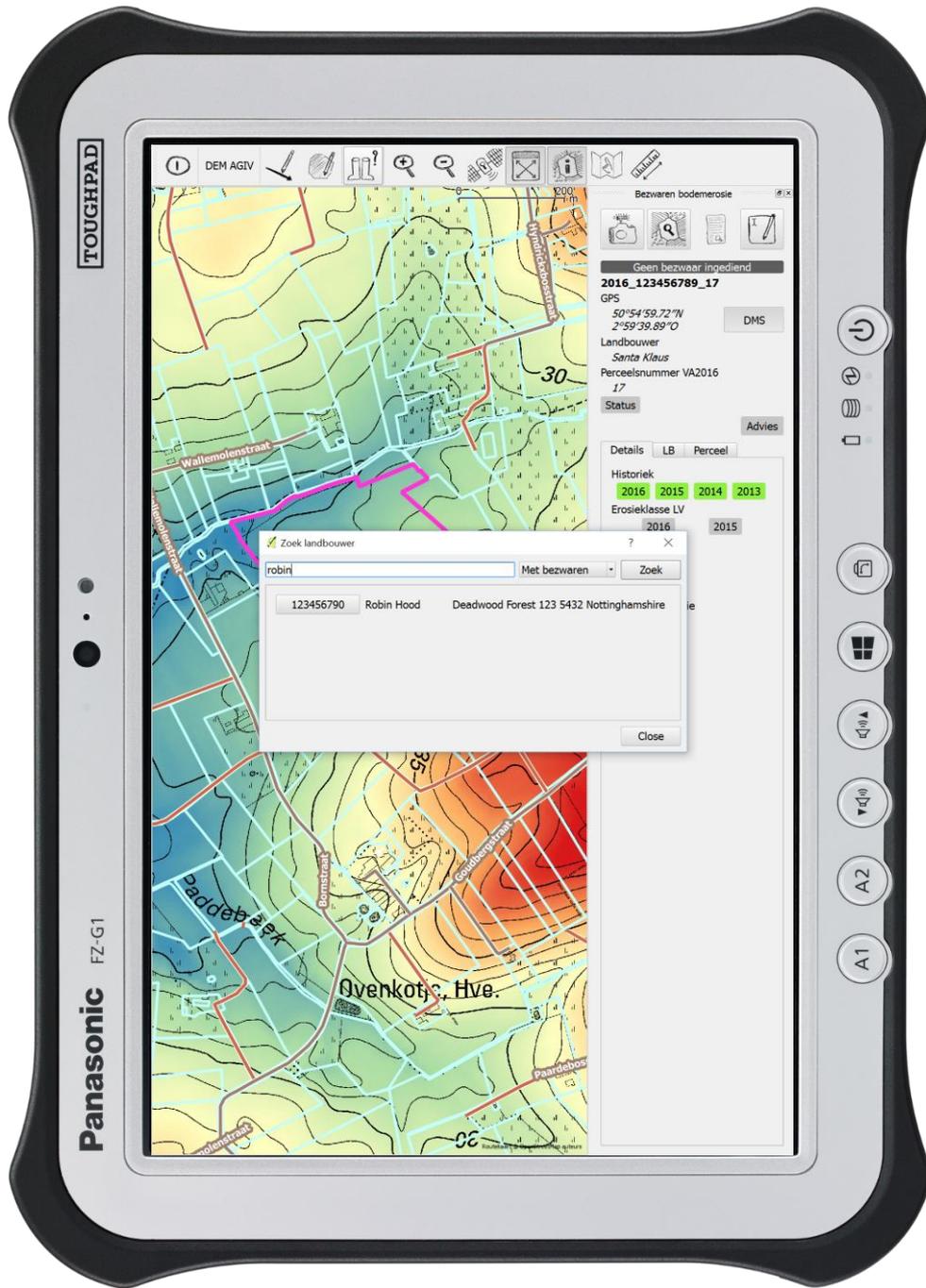


Good.



Magic.

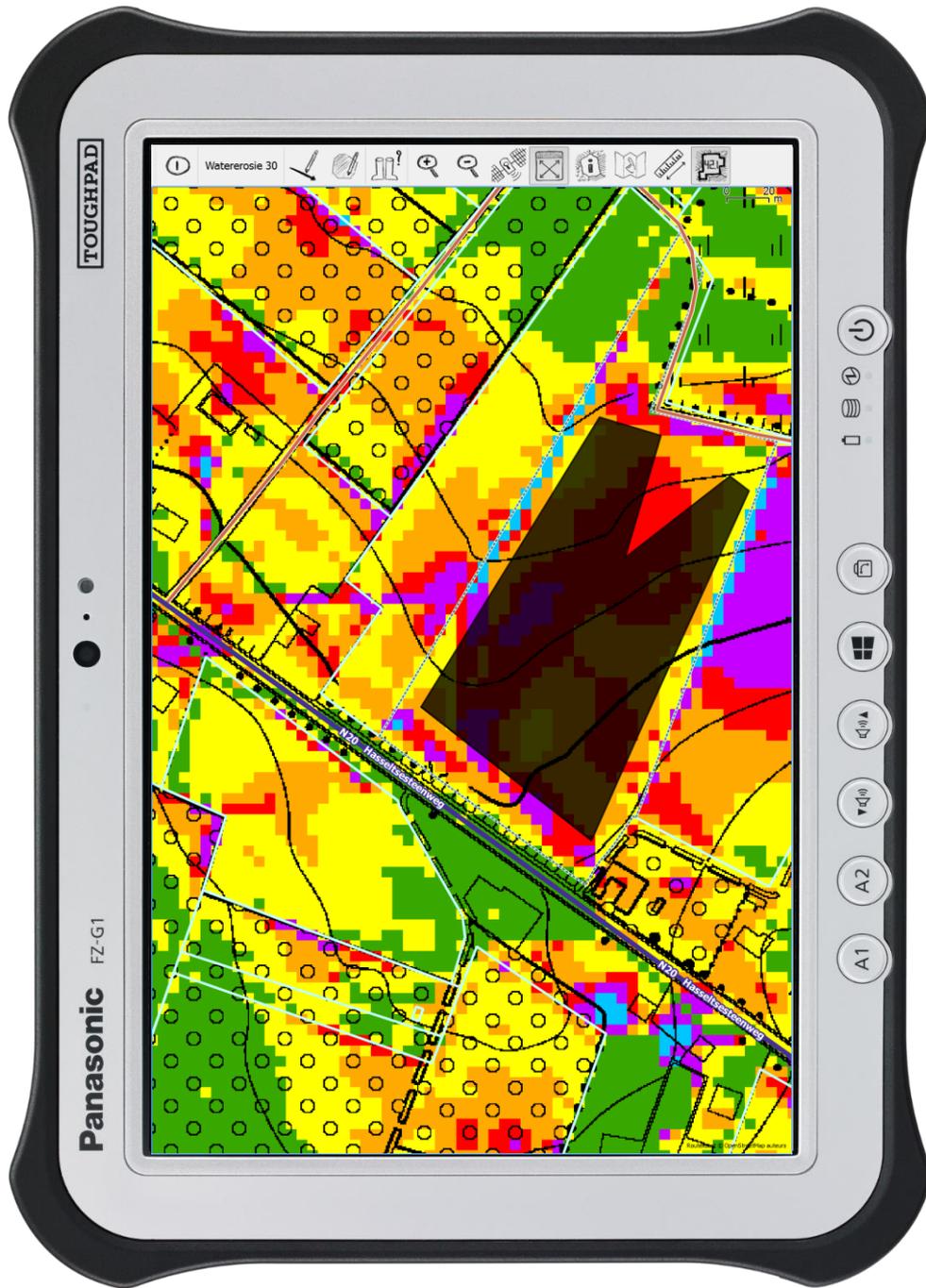




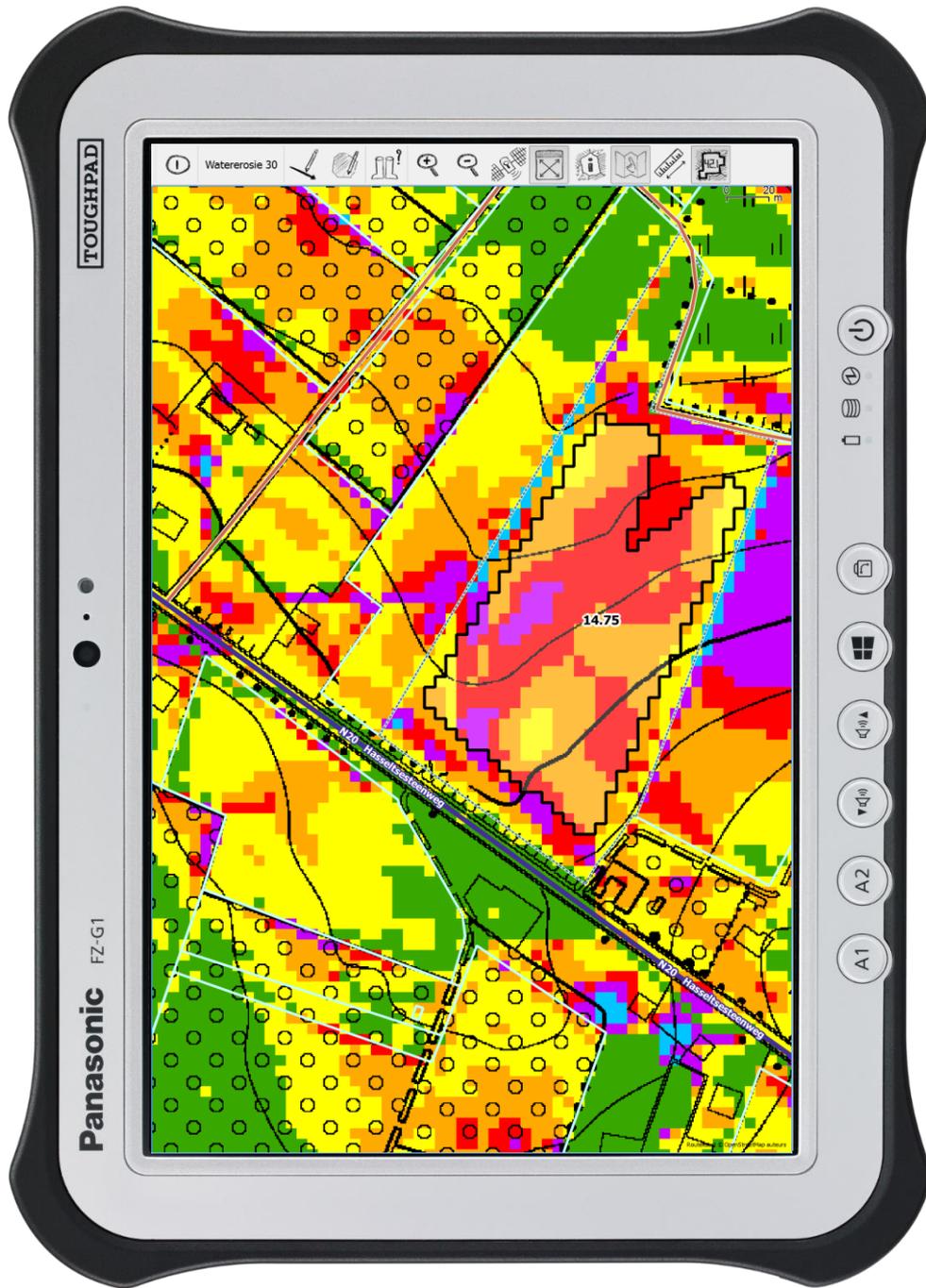
Magic.



Magic.



Magic.



Magic.

# TOOLBAR TRICKS

- Access global app functionality



# TOOLBAR TRICKS

- Access global app functionality



- Uniform design

- Hand drawn icons increase the uniform 'app' feeling
- Use what's available, but make it look like you made it



# CUSTOM COMPONENTS

- Information panel
  - Replaces object identification
    - Always the correct layer
    - Groups relevant info in one view
  - Designed to be vertical
    - Maximum height, minimal width
    - Tablets are mostly used in portrait mode
    - Tabs to save space on the screen
  - Buttons for plot level actions
    - Taking photos
    - Zoom to plot
    - Show filed objection
    - Open edit window to enter evaluation

Bezwaren bodemerrosie



**2015\_987654321\_1**  
GPS  
51°3'29.95"N  
3°54'1.73"E

DMS

Landbouwer  
Robin Hoet  
Perceelsnummer VA2015  
1

Te behandelen

Advies

Details Landbouwer Advies

Historiek

2015 2014 2013

Erosieklasse LV

2015 2014

Watererosie 0  
0.9

Watererosie 30  
0.89

Bewerkingserosie  
6.31

Totale erosie  
7.2

Oppervlakte  
0.858 ha

Datum bezwaar  
1/3/1247

# CUSTOM COMPONENTS

- Edit window

**Bewerk advies 2016\_123456789\_17**  
van Santa Klaus

**Bewerk advies**

Datum: 20/08/2016 (Vandaag)

Behandeld door: Jan Vermang

Advies: [dropdown]

Advies erosiegevoeligheid: Verwaarloosbaar, Zeer laag, Laag, Medium, Hoog, Zeer hoog, Niet van toepassing

Varia: Jaarl. herber.: Ja, Landb. aanw.: Nee

Observaties watererosie: [text area]

Opmerkingen veldbezoek: [text area]

Opslaan Annuleren

**Details**

Geen bezwaar ingediend

**2016\_123456789\_17**  
Landbouwer: Santa Klaus  
Perceelsnummer VA2016 17

Details LB Perceel

Historiek: 2016, 2015, 2014, 2013

Erosieklasse LV: 2016, 2015

Watererosie 0: 3.06  
Watererosie 30: 3.11  
Bewerkingserosie: 3.3  
Totale erosie: 6.4

# DATA SYNCHRONISATION

Avoiding obvious chaos

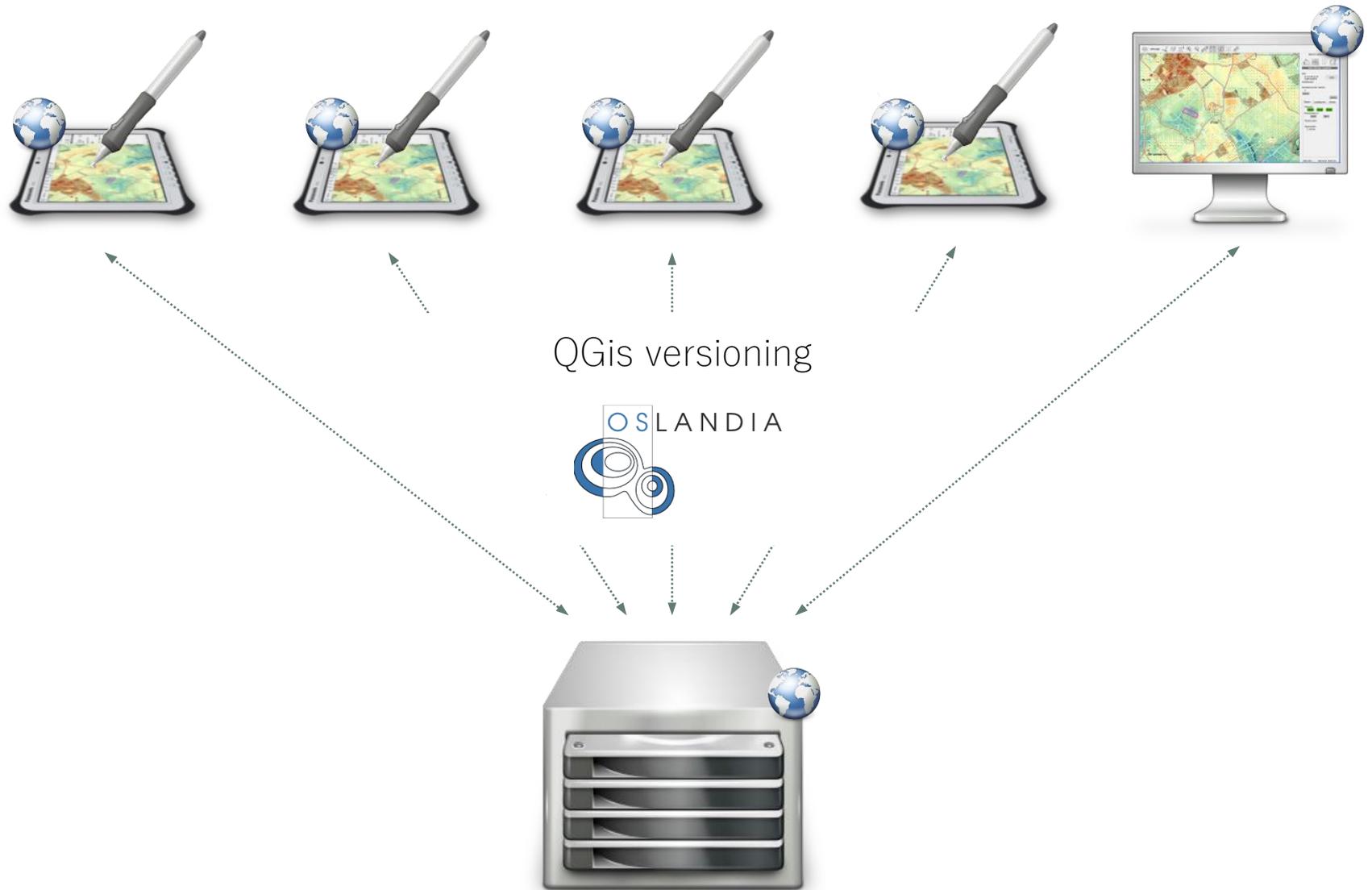


## Multiple users

- 4 agents on the ground to process objections
- 1 person in the office for postprocessing

## Offline data and editing

If you're not getting nervous,  
something is wrong.



# SINGLE POINT OF TRUTH

- QGis versioning plugin by Oslandia

- Master table in PostGIS on the server
- Spatialite working copies on the clients



- Advantages

- No extra software or configuration required serverside
- Working copy is a QGis native format, no import/export required
- Only diffs are being transferred, so fairly efficient

- Clients can be tablets or ordinary pcs

- This way changes made by colleagues end up on your tablet too
- And at the office, ready for postprocessing

- Free bonus

- The full history is available. At plot level.
- Perfect for blaming.

# DEMO TIME

This is where things tend to go wrong

# THANKS!

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# QUESTIONS?

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