

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

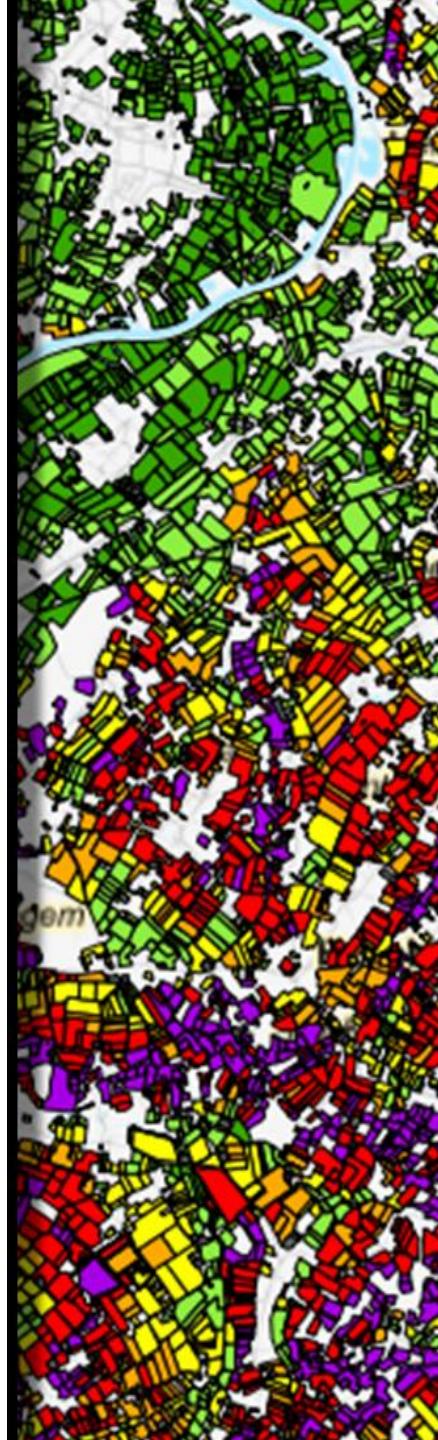
- Intro
 - Soil erosion for dummies
- The cool stuff
 - QGis as a platform
 - From scratch is better, right?
 - Tablet user experience
 - Why our users love their app
 - Datasynchronisation
 - Making it come together
- The proof of the pudding
 - Demo time

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

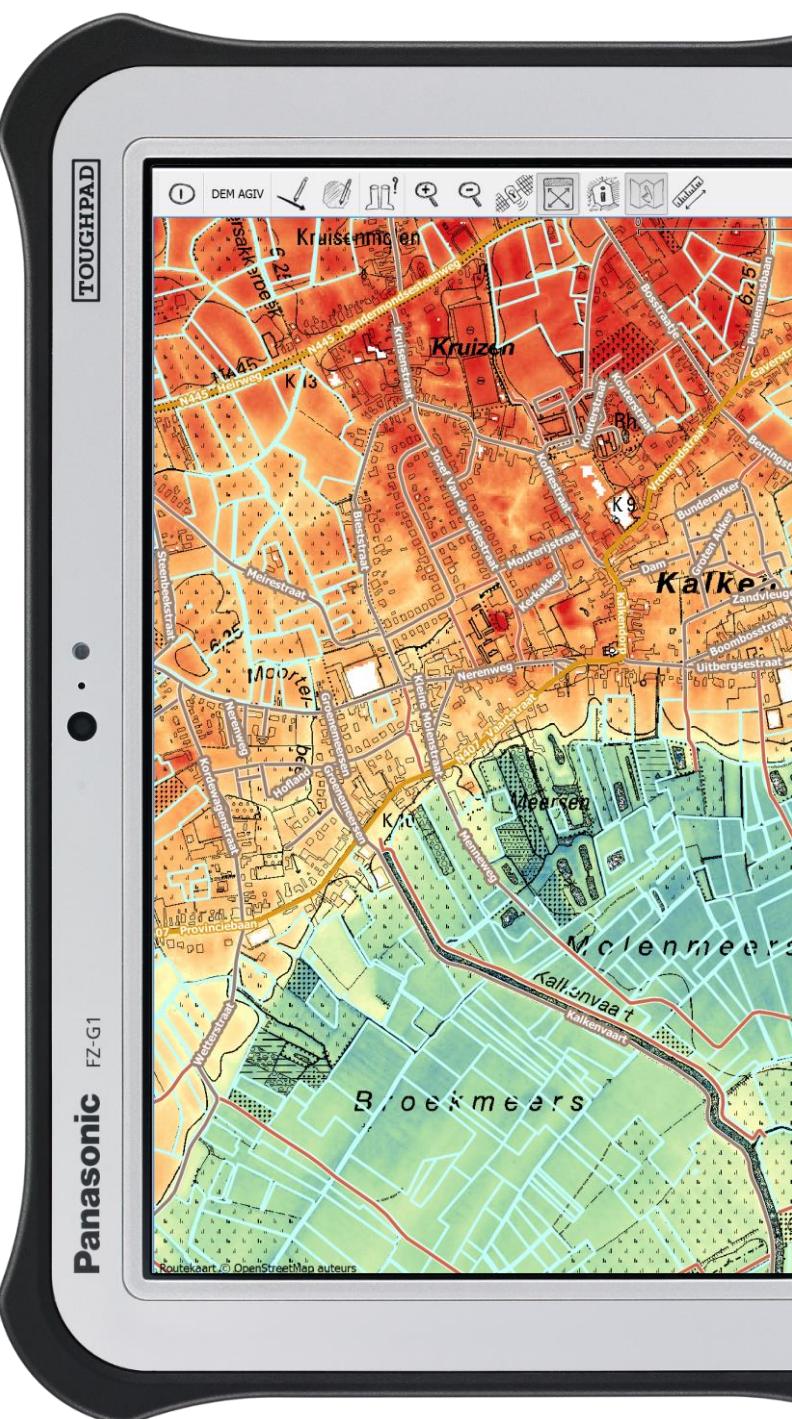
- Perfect starting point for building GIS applications
 - Solid base
 - also available through API
 - Open-Source
 - access to the source code
 - community
 - plugins
 - Collection of tools, languages and toolkits:
 - GDAL, OGR
 - Python
 - Qt
 - Cross platform. For free!
 - Windows, Linux, OS X, (Android)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

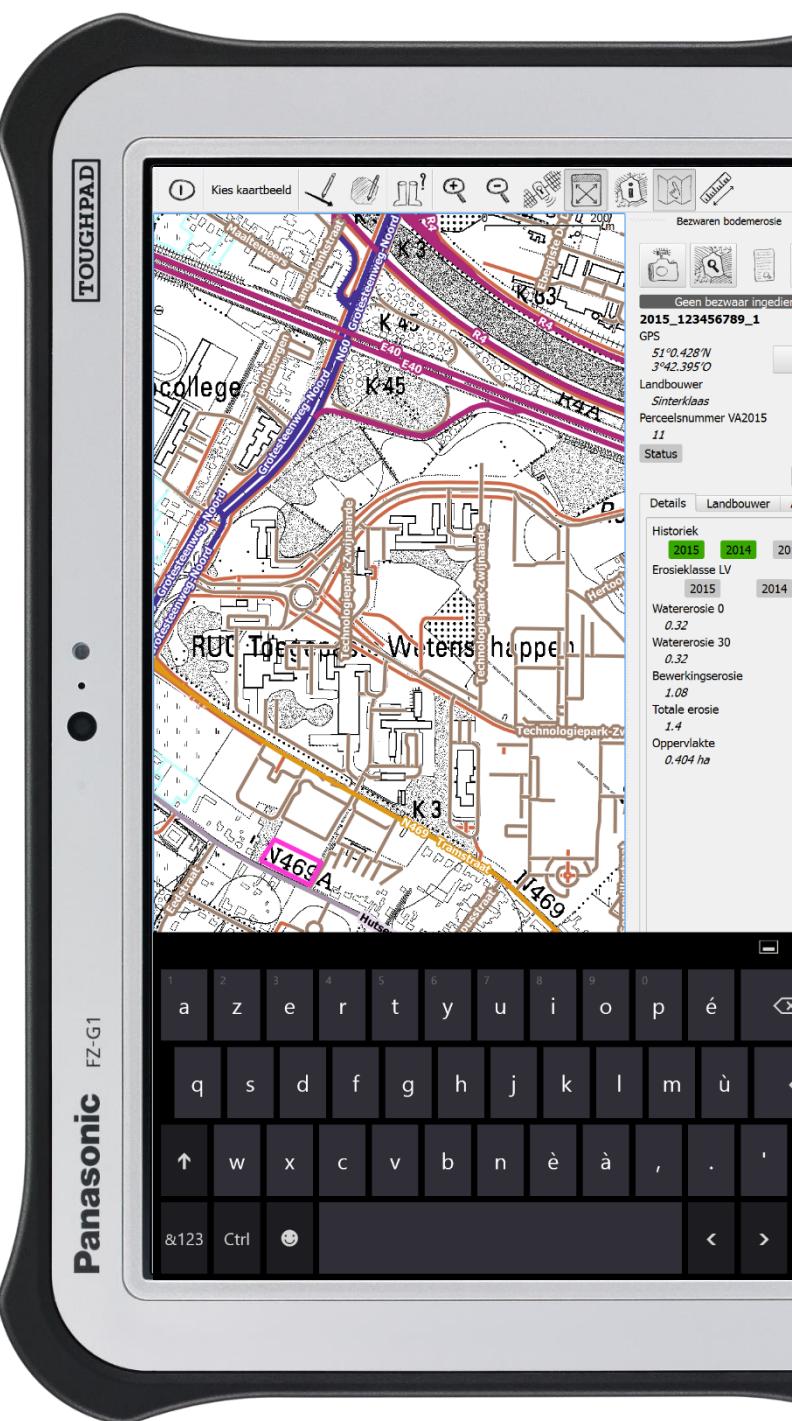
FINGER FRIENDLY

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

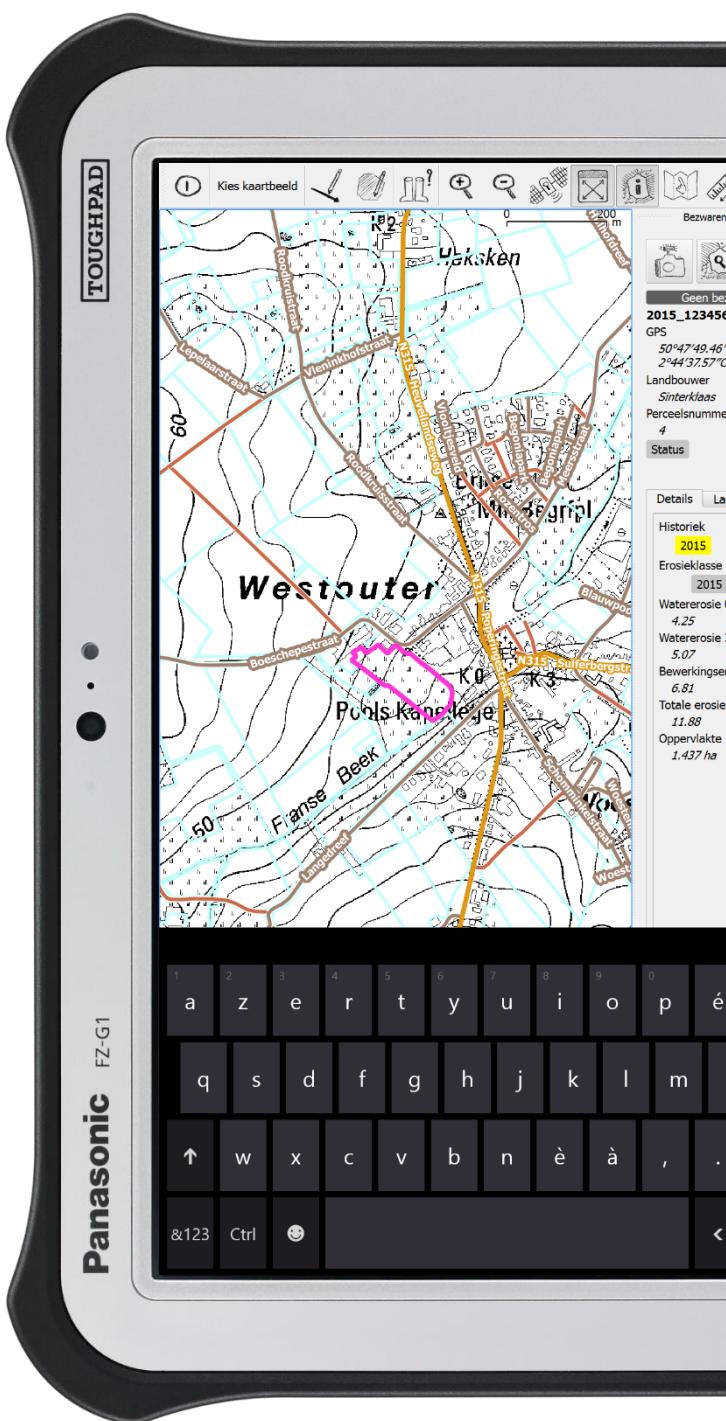
The best user interaction.

→ 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

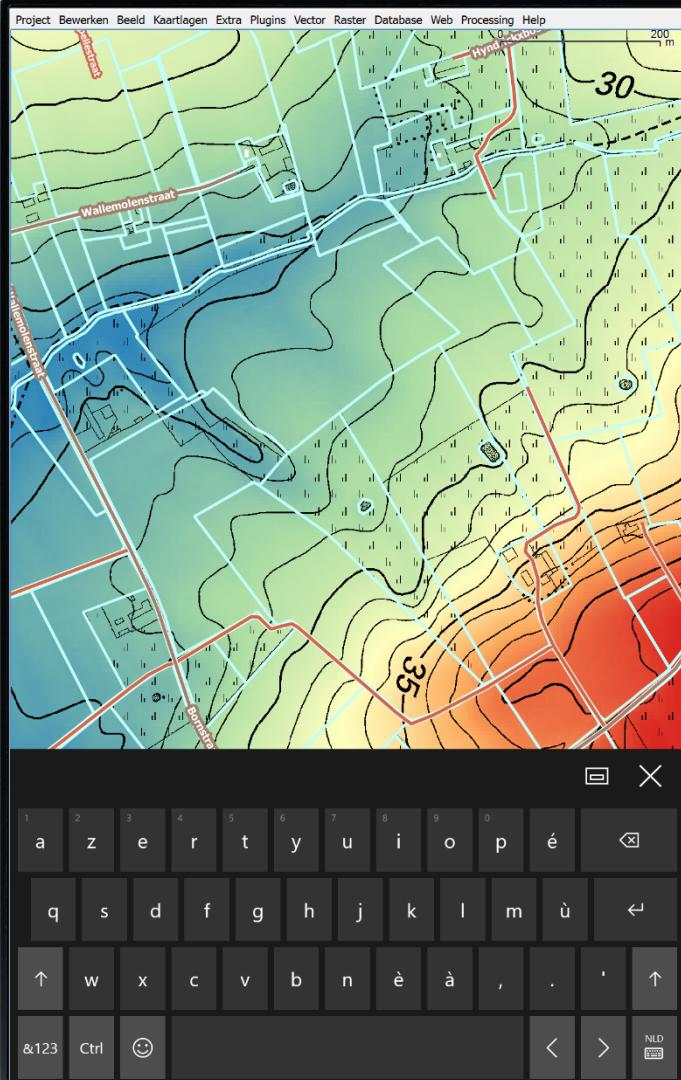


No.

Panasonic

FZ-G1

TOUGH PAD



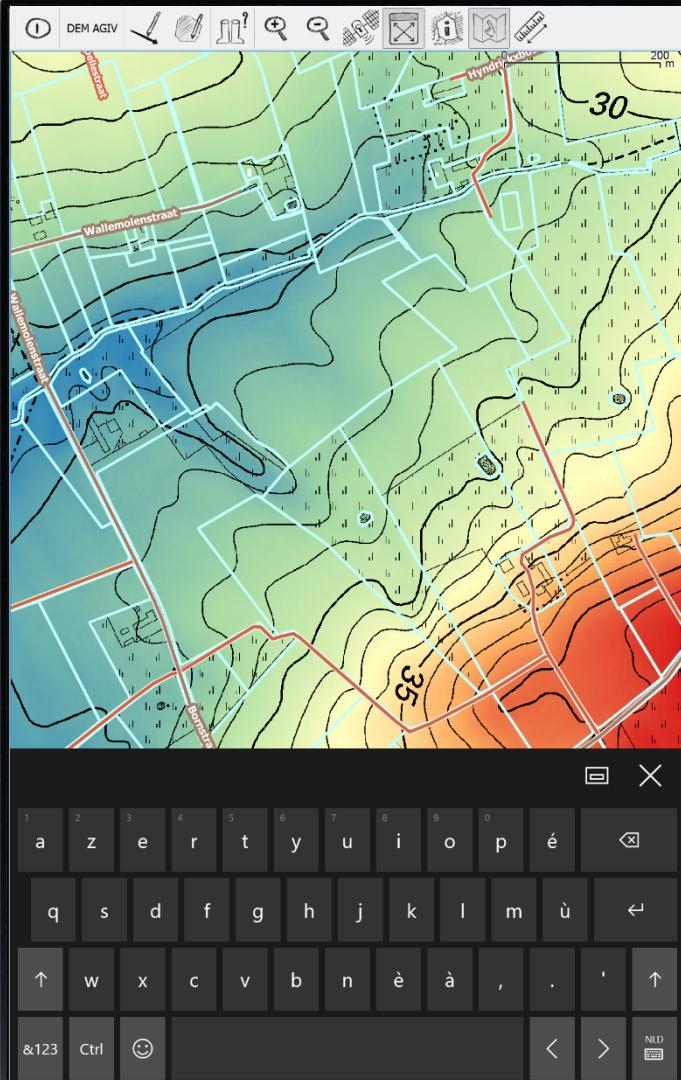
Better.

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Panasonic

FZ-G1

TOUGH PAD



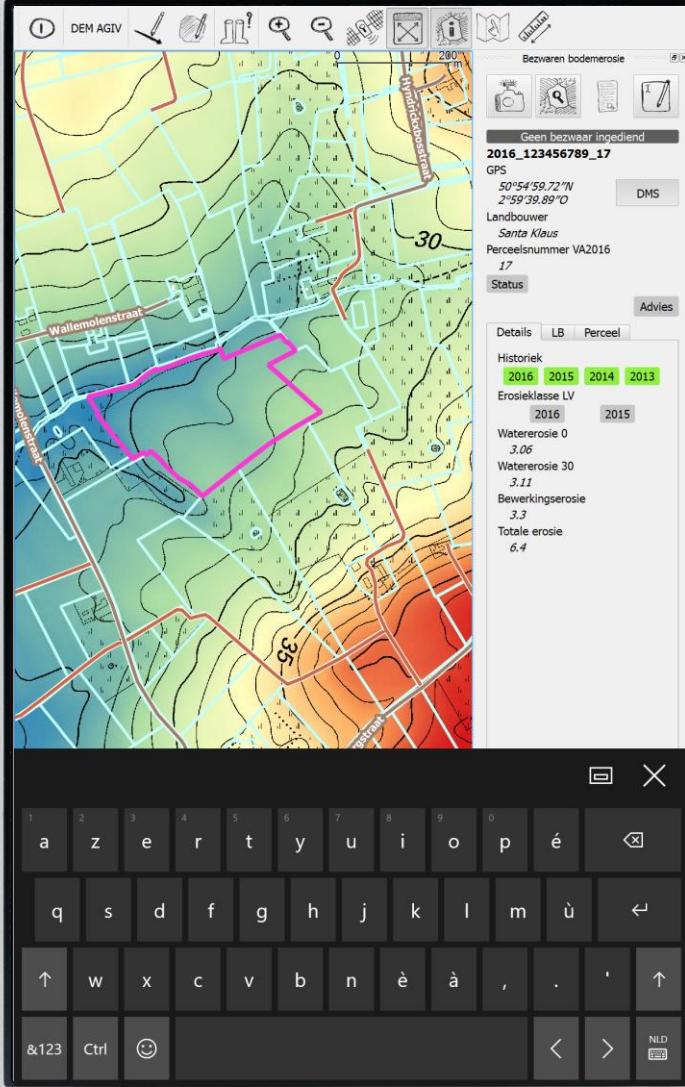
Better.

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TOUGH PAD

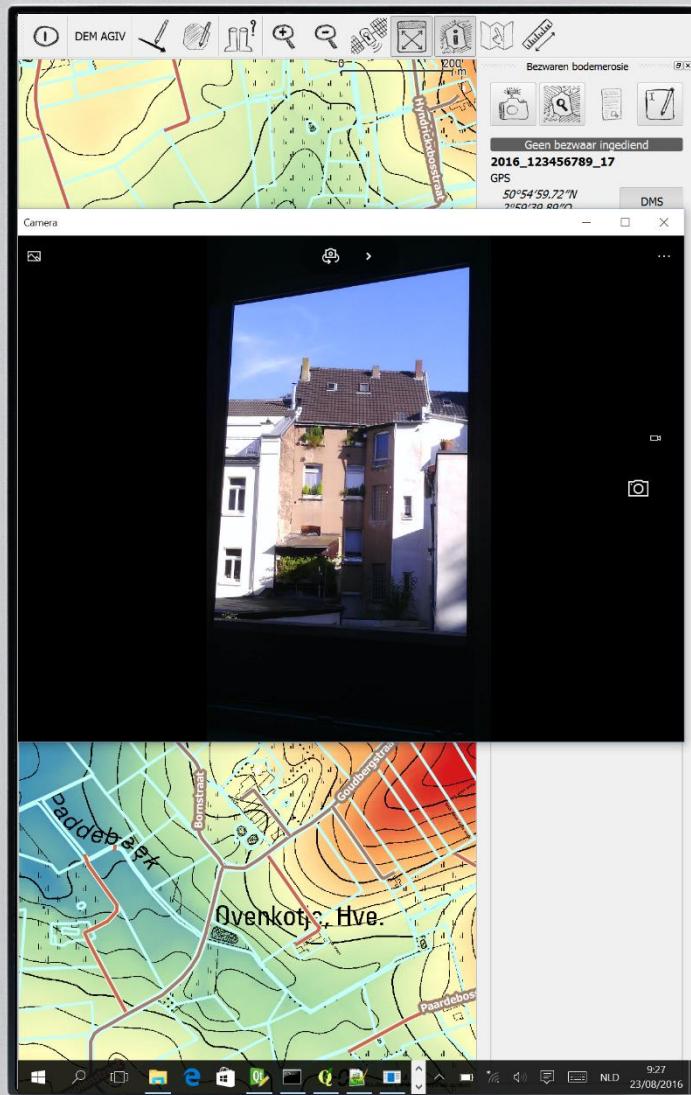


Good.

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Panasonic FZ-G1

TOUGH PAD

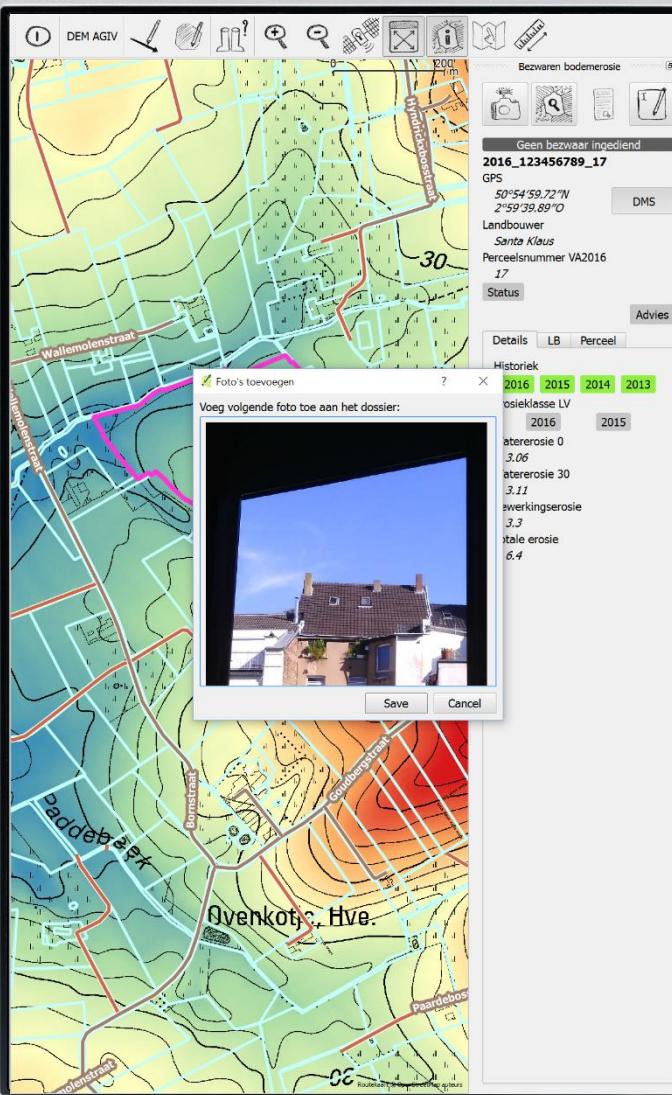


Magic.

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Panasonic FZ-G1

TOUGH PAD

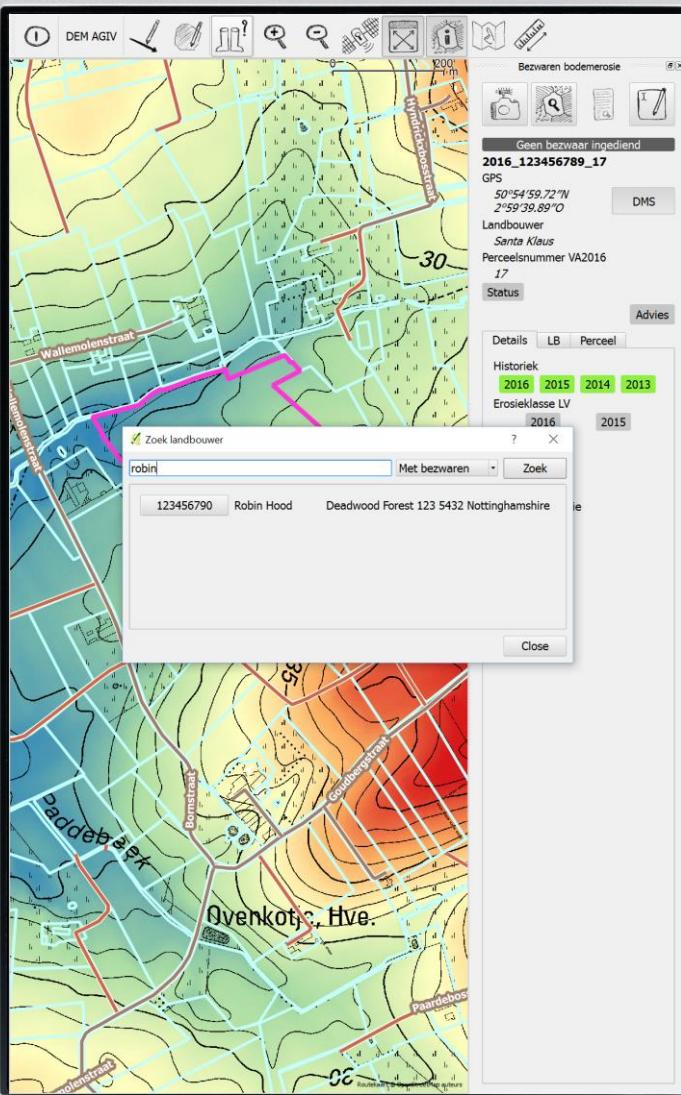


Magic.

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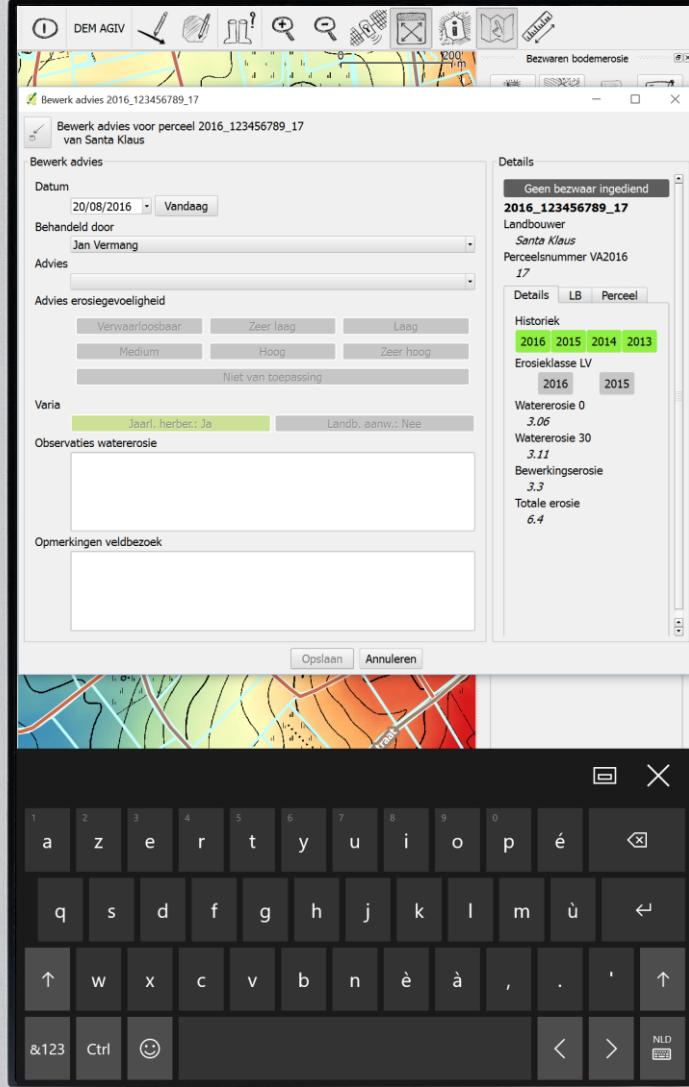
Magic.

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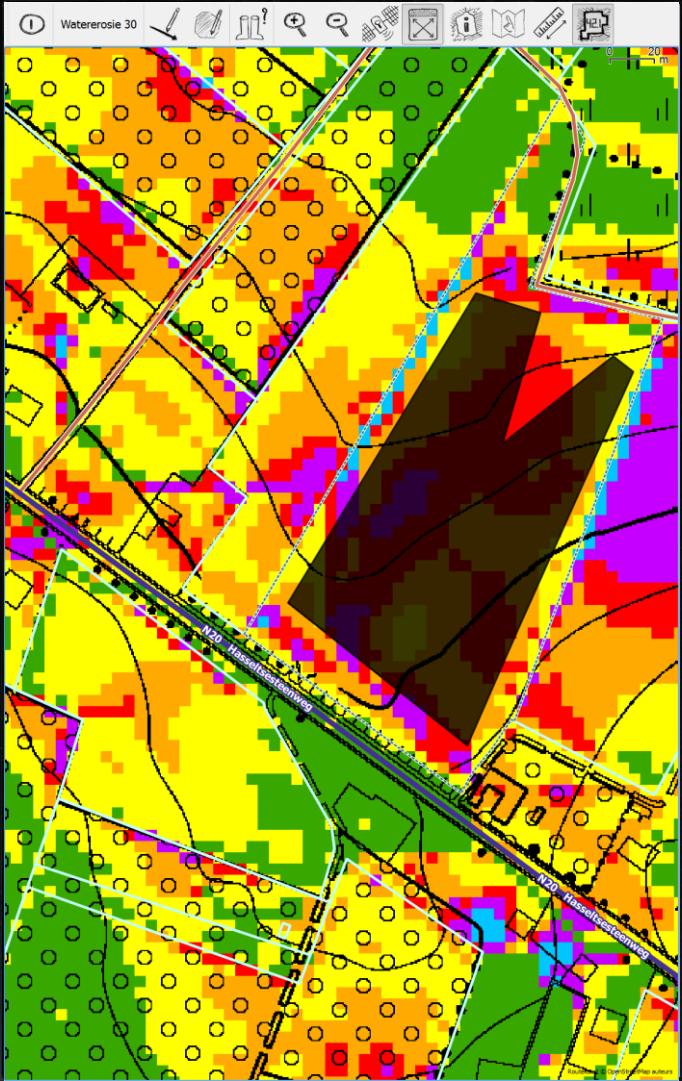
TOUGH PAD



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TOUGH PAD

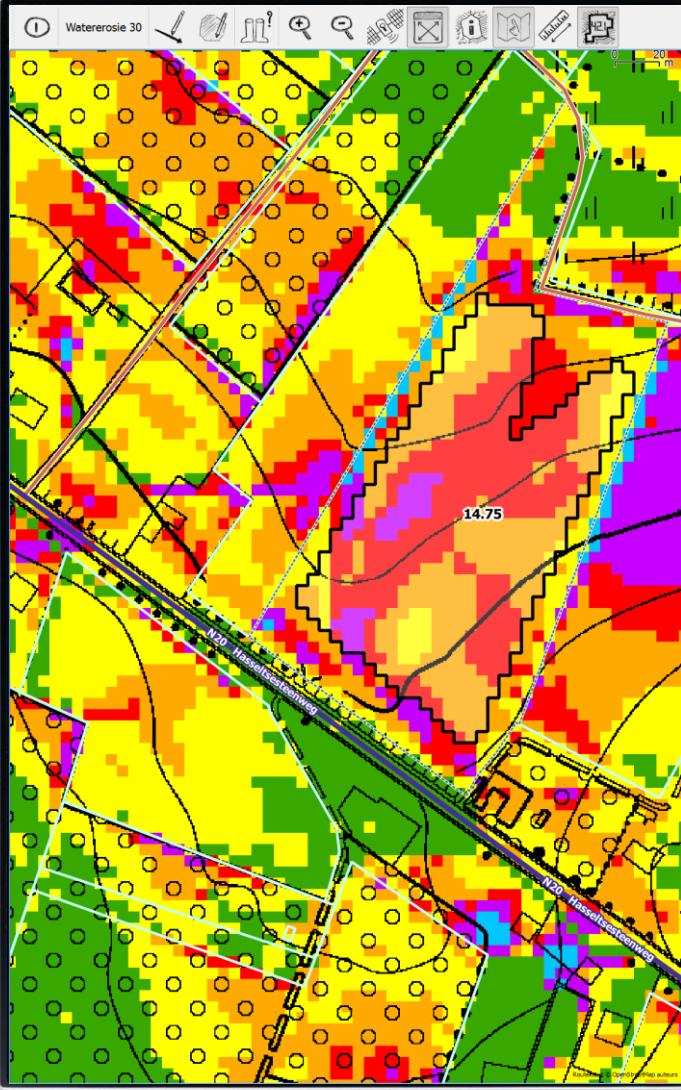


Magic.

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TOUGH PAD

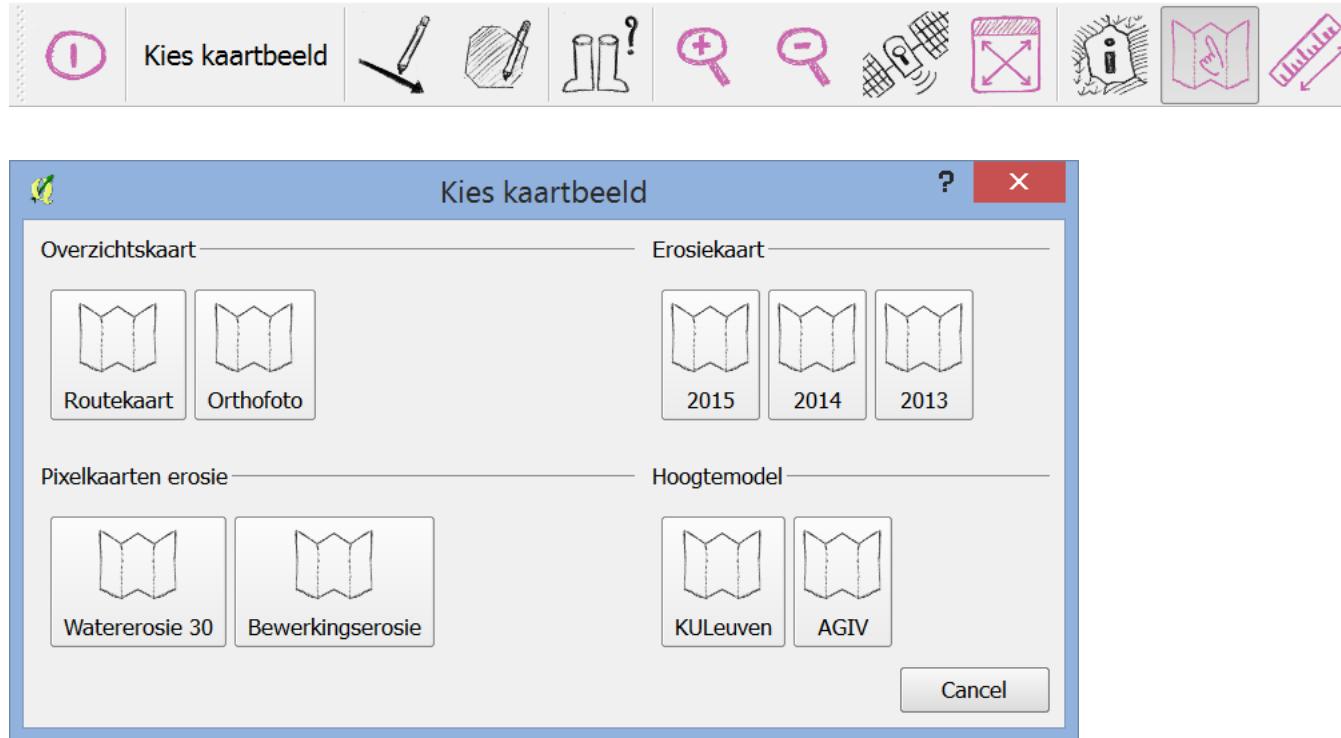


Magic.

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TOOLBAR TRICKS

- Access global app functionality



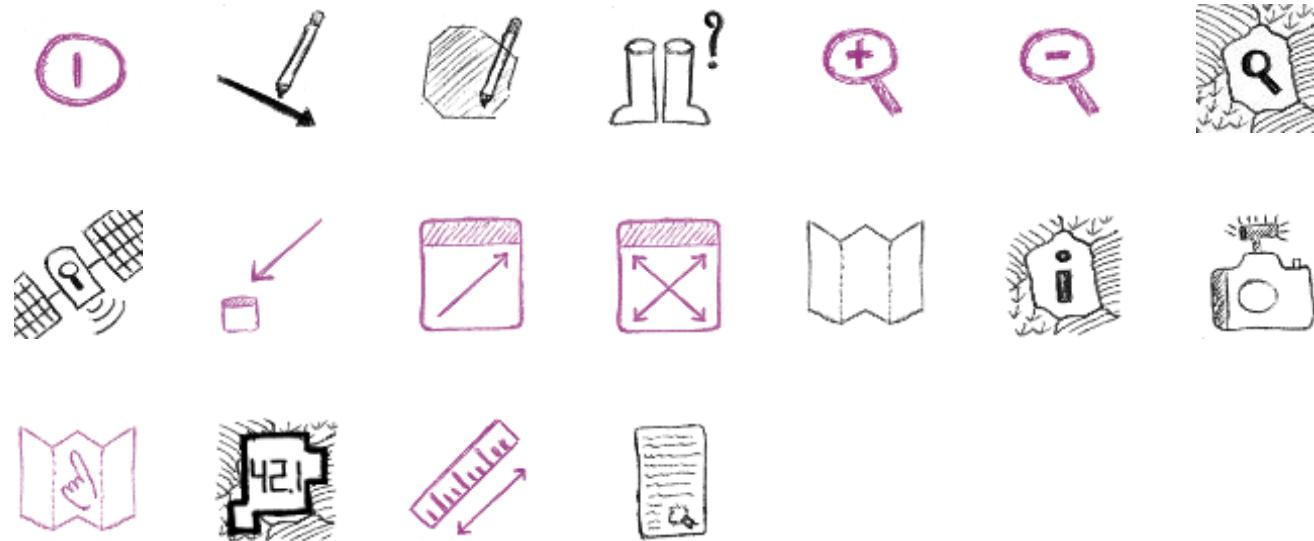
TOOLBAR TRICKS

- 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

The screenshot shows a mobile application interface for soil erosion reporting. At the top right are icons for camera, search, notes, and edit. Below them is the identifier **2015_987654321_1**. The **GPS** coordinates are listed as **51°3'29.95"N** and **3°54'1.73"E**. A **DMS** button is on the right. The **Landbouwer** section includes the name **Robin Hoet** and the **Perceelsnummer VA2015**. Below that is a number **1** and a button labeled **Te behandelen**. On the far right is a **Advies** tab. The main content area has tabs for **Details**, **Landbouwer** (which is selected), and **Advies**. Under **Landbouwer**, there are sections for **Historiek** (with tabs for 2015, 2014, and 2013, where 2015 is highlighted), **Erosieklaasse LV** (with tabs for 2015 and 2014, where 2015 is highlighted), **Watererosie 0** (value 0.9), **Watererosie 30** (value 0.89), **Bewerkingserosie** (value 6.31), **Totale erosie** (value 7.2), **Oppervlakte** (value 0.858 ha), and **Datum bezwaar** (value 1/3/1247).

Historiek	2015	2014	2013
Erosieklaasse 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

Bewerk advies voor perceel 2016_123456789_17
van Santa Klaus

Bewerk advies

Datum
20/08/2016

Behandeld door
Jan Vermang

Advies

Advies erosiegevoeligheid

Verwaarloosbaar Zeer laag Laag
Medium Hoog Zeer hoog
Niet van toepassing

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

Observaties watererosie

Opmerkingen veldbezoek

Details

Geen bezwaar ingediend
2016_123456789_17
Landbouwer
Santa Klaus
Perceelsnummer VA2016
17

Details LB Perceel

Historiek
2016 2015 2014 2013

Erosieklaasse LV
2016 2015

Watererosie 0
3.06

Watererosie 30
3.11

Bewerkingserosie
3.3

Totale erosie
6.4

DATA SYNCHRONISATION

Avoiding obvious chaos

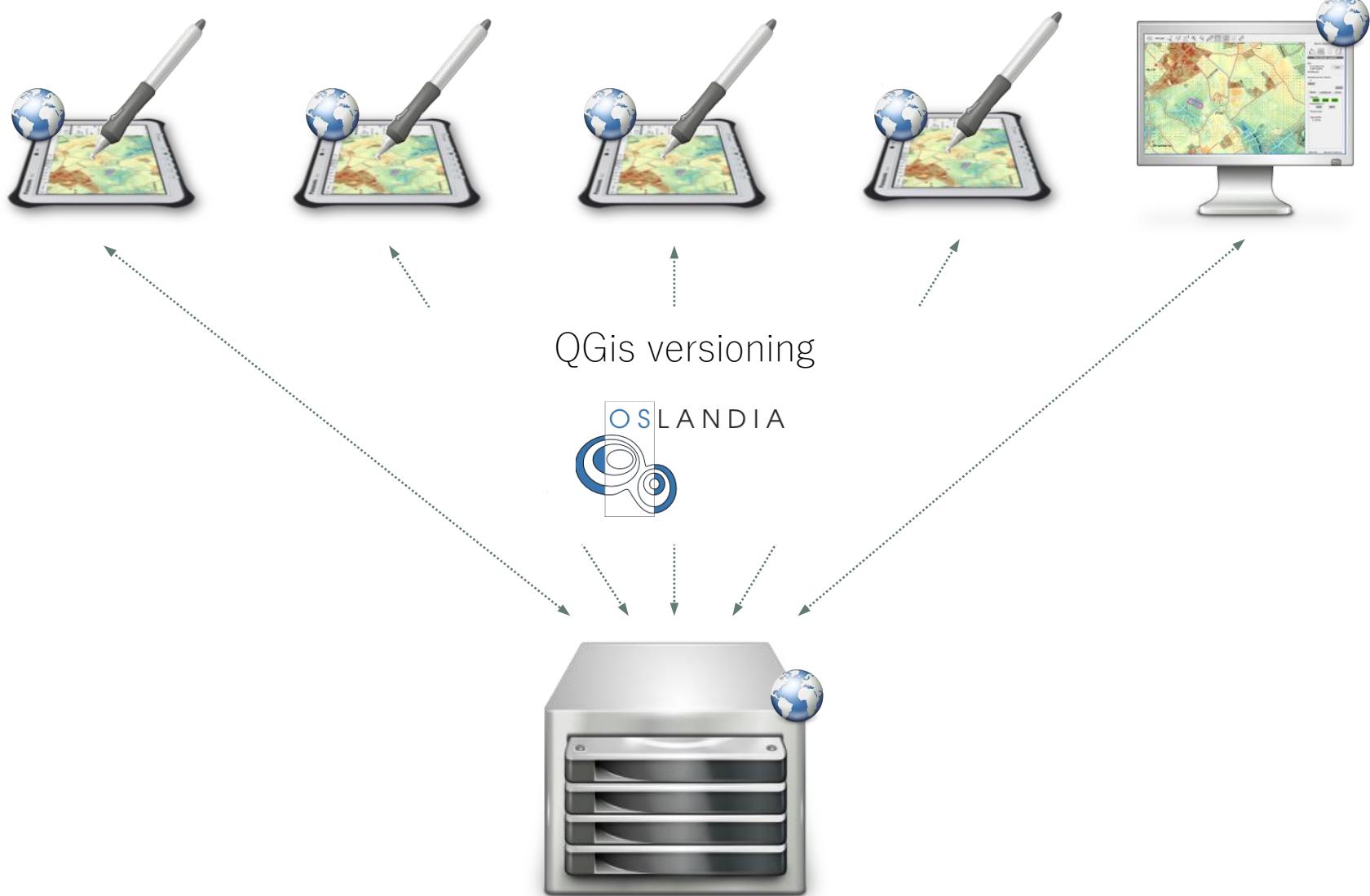


Multiple users

- 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.



Icons by the GNOME project.

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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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