

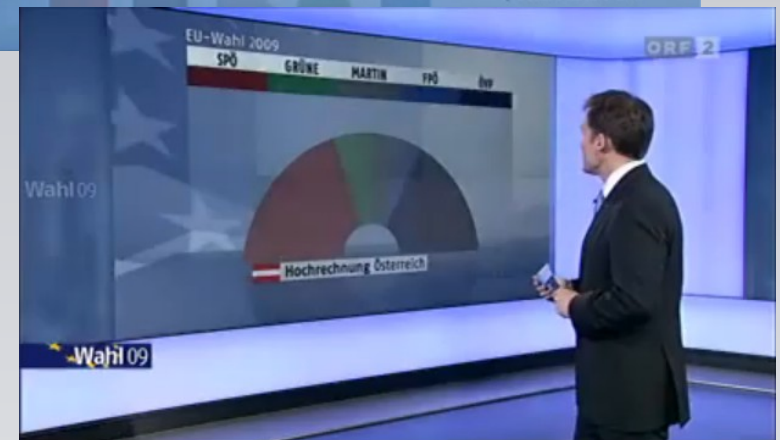
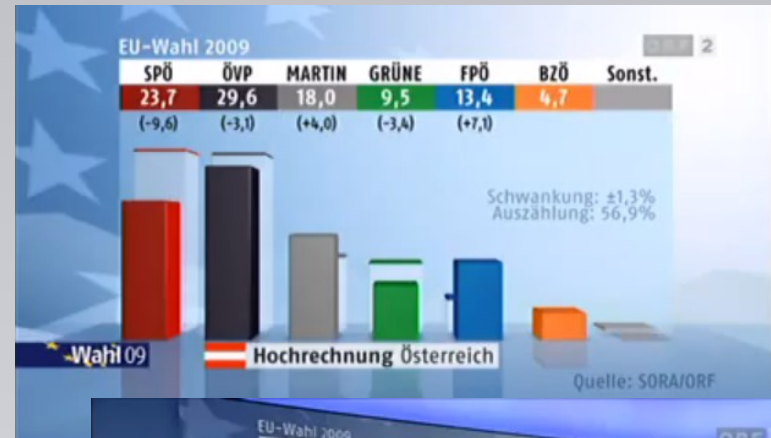
ChartFlight

From Spreadsheets to Computer-Animated Data Flights

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Introduction

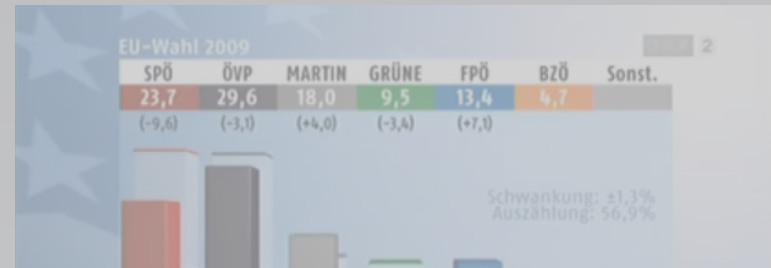
- Professional visualizations
 - Clear presentation of quantitative data
 - News programs on TV
- More mature than spreadsheet applications
- Problems
 - Not available for end-users
 - Expensive
 - Spatially distributed



www.youtube.com/watch?v=Si5Su52_118

Introduction

- Professional visualizations
 - Clear presentation of quantitative data
 - News programs on TV



How to make professional visualizations of spatially distributed data available to the public?

- Problems
 - Not available for end-users
 - Expensive
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www.youtube.com/watch?v=Si5Su52_118

What is ChartFlight?

Web Service

- <http://chartflight.uni-trier.de>
 - Standard web forms
 - Upload user data
 - Customize presentation
- 3D scene is generated
 - Including animations
 - Rendered video

ChartFlight is a web service that helps you to visualize your own data in 3D on a given map. All you have to do is simply provide such a map or, generally, any kind of image, a set of locations restricted to that image, which define where to visualize data, and the data for every location itself. Combining these information ChartFlight is able to generate an animated flight across the map that visualizes the given data. For a flexible use of such visualizations ChartFlight is set up to render videos, which can be downloaded after they have been processed and easily added to presentation slides or web pages. Besides classic diagram types like pie or bar charts ChartFlight provides different options to customize such a video. For this purpose you can either configure every single detail of the generated flight or use the predefined settings, which already provide good looking results. As you see creating such a job takes exactly the time you want to spend for it.

If you want you can first watch several sample videos which have been created using ChartFlight. Especially for that purpose we created some kind of election website where you can find visualisations of different German elections. The following link directs you to this website:

» [Go to election videos](#)

ChartFlight - Bundestagswahlen 2005/2009

Party	2009 (%)
SPD	25.6
CDU/CSU	32.2
GRÜNE	10.1
FDP	11.7
Die Linke.	8.5
Sonstige	3.8

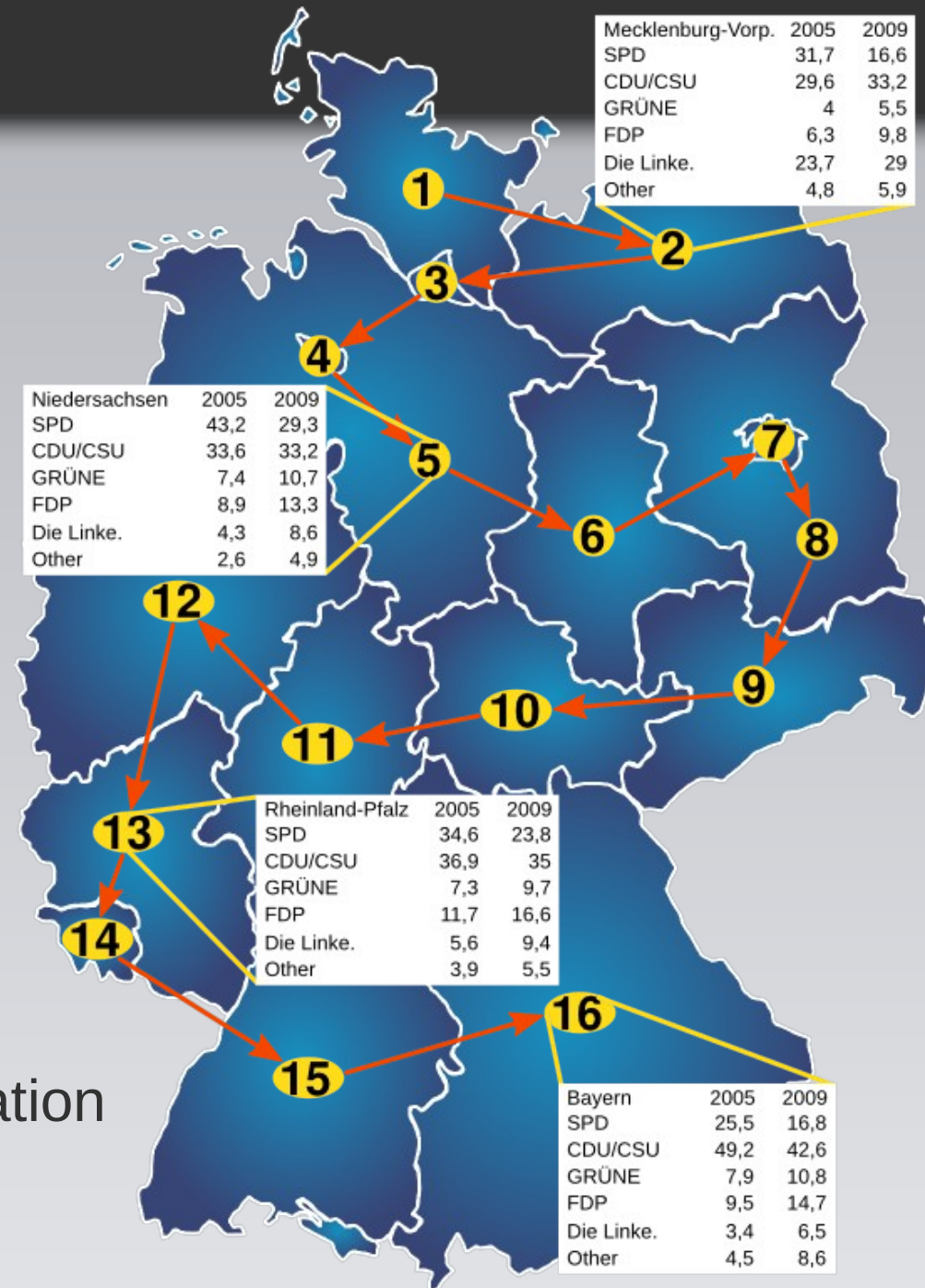
05:52 vimeo

Hamburg
SPD
CDU/CSU
GRÜNE
FDP
Die Linke
Sonstige

Bundestagswahlen
2002
2005

A Generic Model

- Chart flight
 - Camera movement along a given path
 - Visit animated diagrams
 - Inputs
 - Image file
 - ground plane
 - Ordered set of locations
 - path
 - Data set (CSV file)
 - separate table per location



Plot of a Video

- Video: Parliamentary Elections of Germany

①

Parliamentary Elections of Germany

A comparison of election results from 2005 and 2009

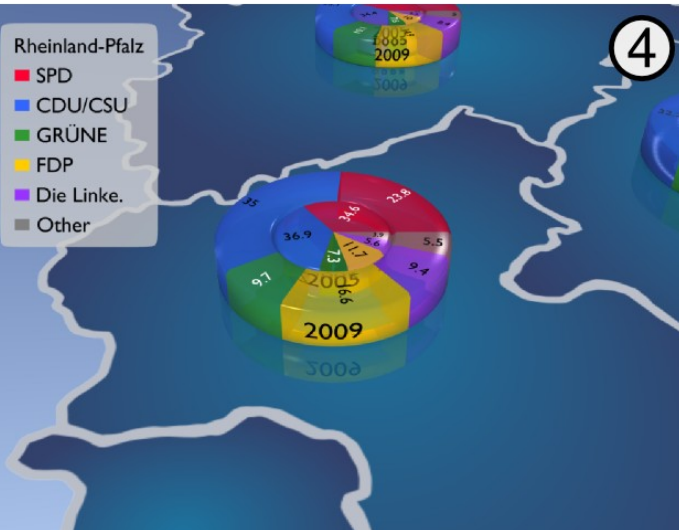
Rainer Lutz

22nd April 2010

Source: www.bundeswahlleiter.de

④

Rheinland-Pfalz
■ SPD
■ CDU/CSU
■ GRÜNE
■ FDP
■ Die Linke.
■ Other

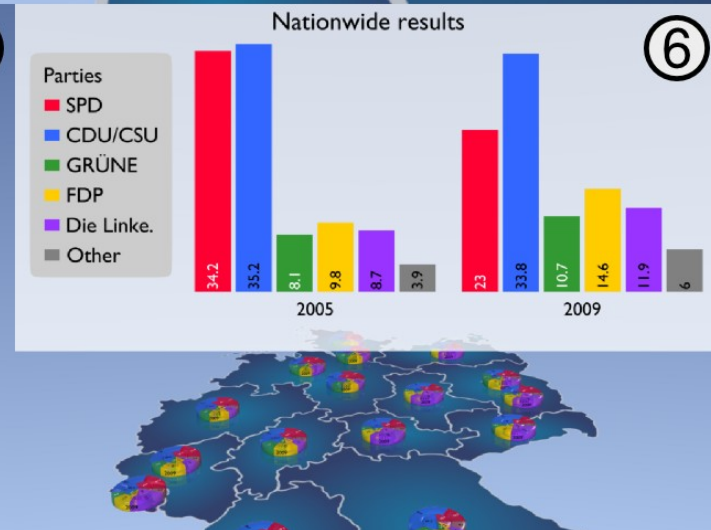


②



③

⑤



⑥

User Interface

Web Frontend

Title type*

Title*

Subtitle

Author*

Date*

Footer

Animation type*

Hide charts

Text color*

Background color*

Title animation*

Title layout*

Upload background image

Display time of title (?)	--	-	200	+	++	» 8s
Display time of intro (?)	--	-	75	+	++	» 3s
Flying time to the map (?)	--	-	75	+	++	» 3s
Flying time back to the overview (?)	--	-	75	+	++	» 3s
Display time of Outro (?)	--	-	75	+	++	» 3s
Camera flight time (frames/BU) (?)	--	-	10	+	++	» 0.4s
Waiting time before diagram animation (?)	--	-	10	+	++	» 0.4s
Animation length of a single element (?)	--	-	25	+	++	» 1s
Waiting time after element animation (?)	--	-	5	+	++	» 0.2s
Waiting time after partial chart (?)	--	-	20	+	++	» 0.8s
Waiting time after entire diagram (?)	--	-	20	+	++	» 0.8s

Map, image file, maximum 5 MByte

Diagram data, text file, maximum 128 KByte

Currently uploaded files:

Map: uploaded

Diagram data: not uploaded

Diagram type*

Diagram colors*

Color 1*

Color 2*

Color 3*

Color 4*

Color 5*

Color 6*

Color 7*

Color 8*

Show numerical values

Text color*

Background color*

Activate summary chart

Type*

Diagrammtyp*

Colors of summary chart*

Show numerical values

Title of the summary chart

Your image has the following dimensions:

Map: 2084 x 2909 Pixel

Recommended video size » 800 x 600 Pixel

Resolution* 800 x 600

Video file format*

Email address*

Email address (Confirm)*

Material*

Diagram size*

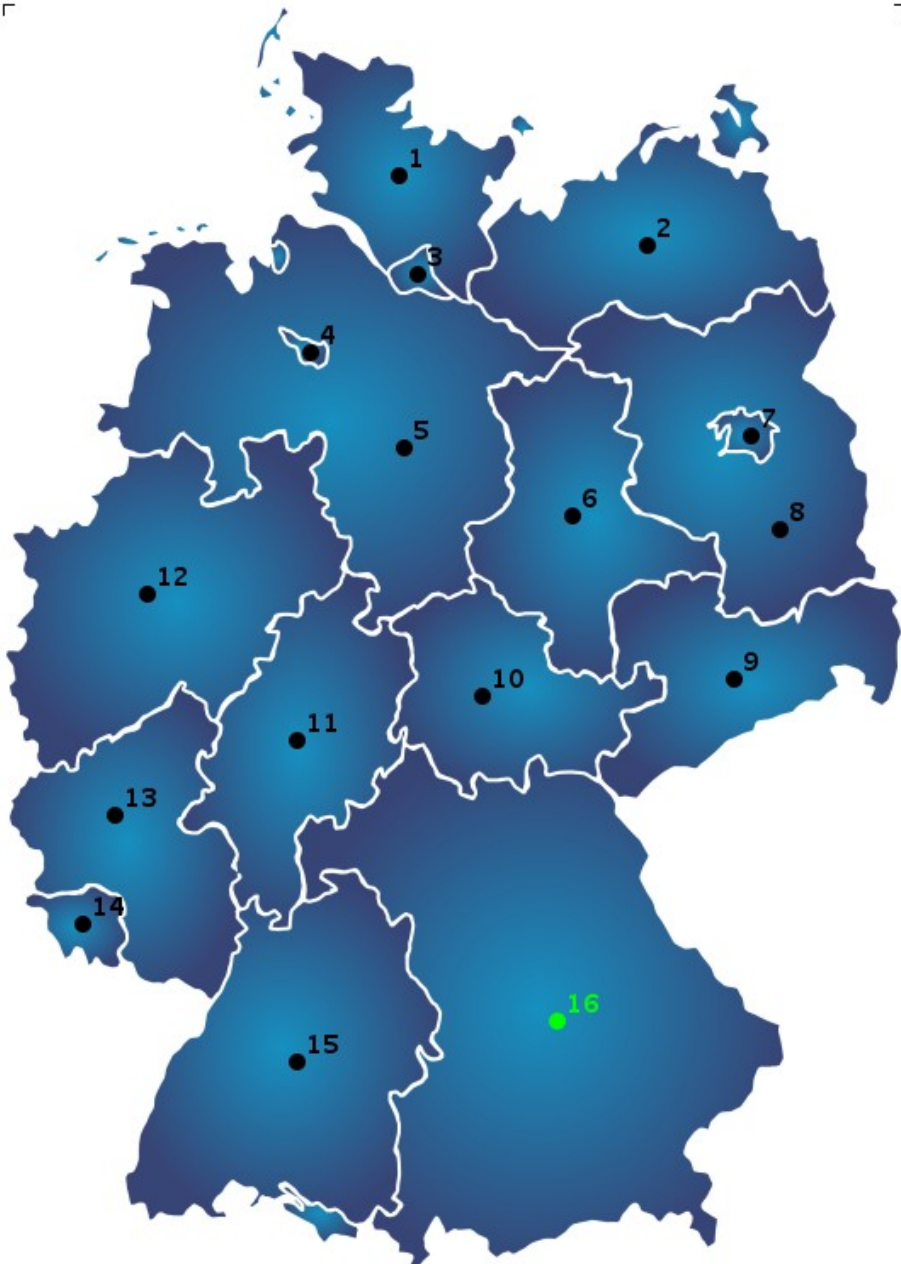
Text mode*

Use map's alpha channel (Alpha Mapping)

Flying time to summary chart (?)	--	-	50	+	++	» 2s
Animation length of summary chart (?)	--	-	75	+	++	» 3s
Display time of summary chart (?)	--	-	100	+	++	» 4s

Title	completed	» Link
Appearance	completed	» Link
Animation	completed	» Link
Summary chart	completed	» Link
Uploads	completed	» Link
Diagram locations	completed	» Link
Miscellaneous	completed	» Link

Applet



Switch color Delete points

Save

Current state
→ not saved

Remaining points: 0
x: 1.2208 y: 0.7714

← → Page 2/2

Point 11:	0.3271	0.5789
Point 12:	0.1607	0.4639
Point 13:	0.1252	0.6377
Point 14:	0.0879	0.7233
Point 15:	0.3271	0.8316
Point 16:	0.615	0.7995

x: y:

Set value

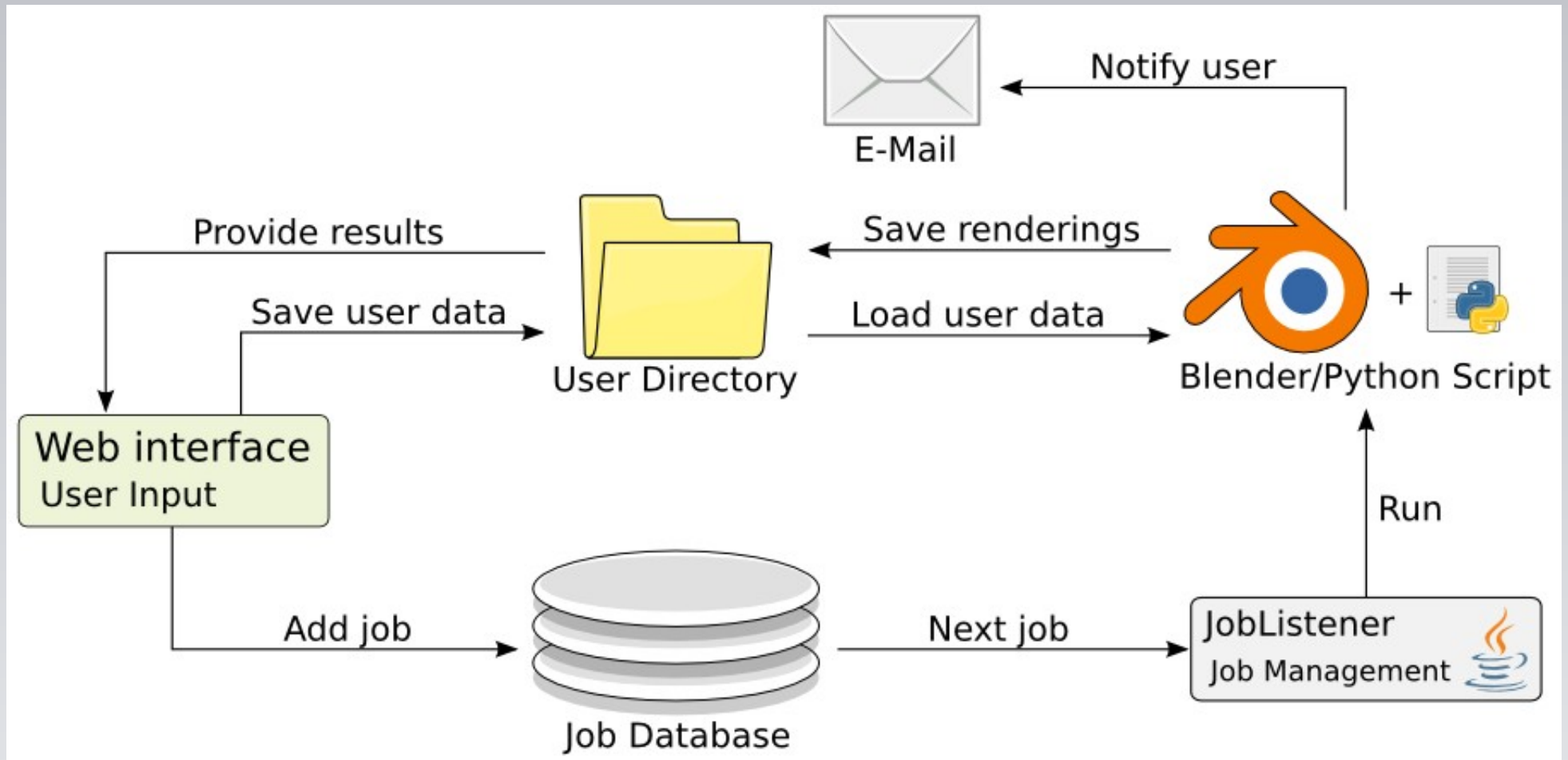
Controls

- Left Mouse Button
 - Select point (click)
 - Move point (press)
- Middle Mouse Button
 - Selected point to cursor
- Right Mouse Button
 - Add point
- Mouse Wheel
 - Resize points

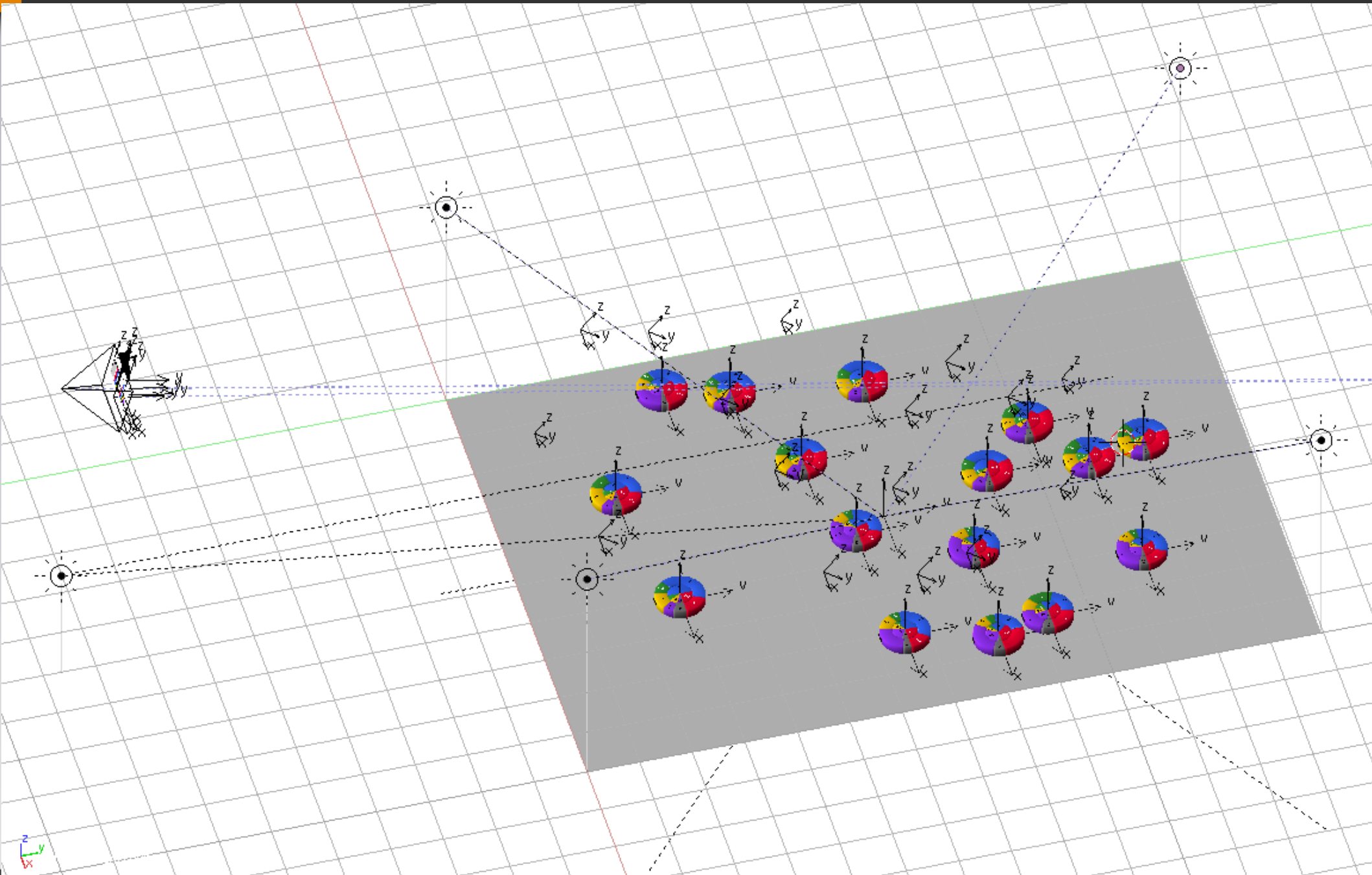
Architecture

Architecture

- 3 different components
 - Web interface, JobListener, Blender + Python



Generating Videos with Blender



Conclusion

- Web service
 - Visualization of spatially distributed data
- Generic model → chart flight
- User interface
- Architecture
 - Blender (Generation, Rendering)
- Output: Video
 - Presentations, Web, Mobile Devices, ...
- **Video: Cancer Incidence Statistics**

Questions?

