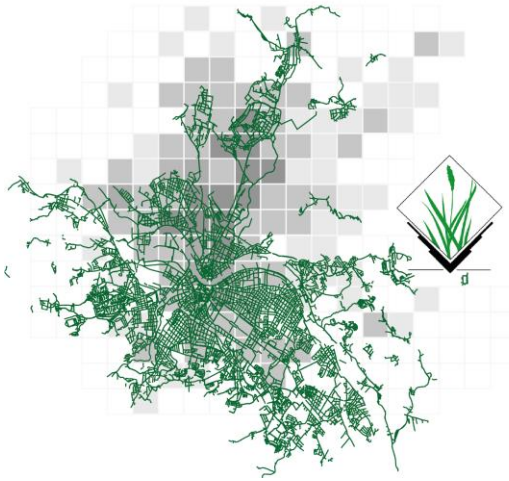
TECHNISCHE UNIVERSITÄT DRESDEN

Faculty of Environmental Sciences, Professorship of Geoinformation Systems

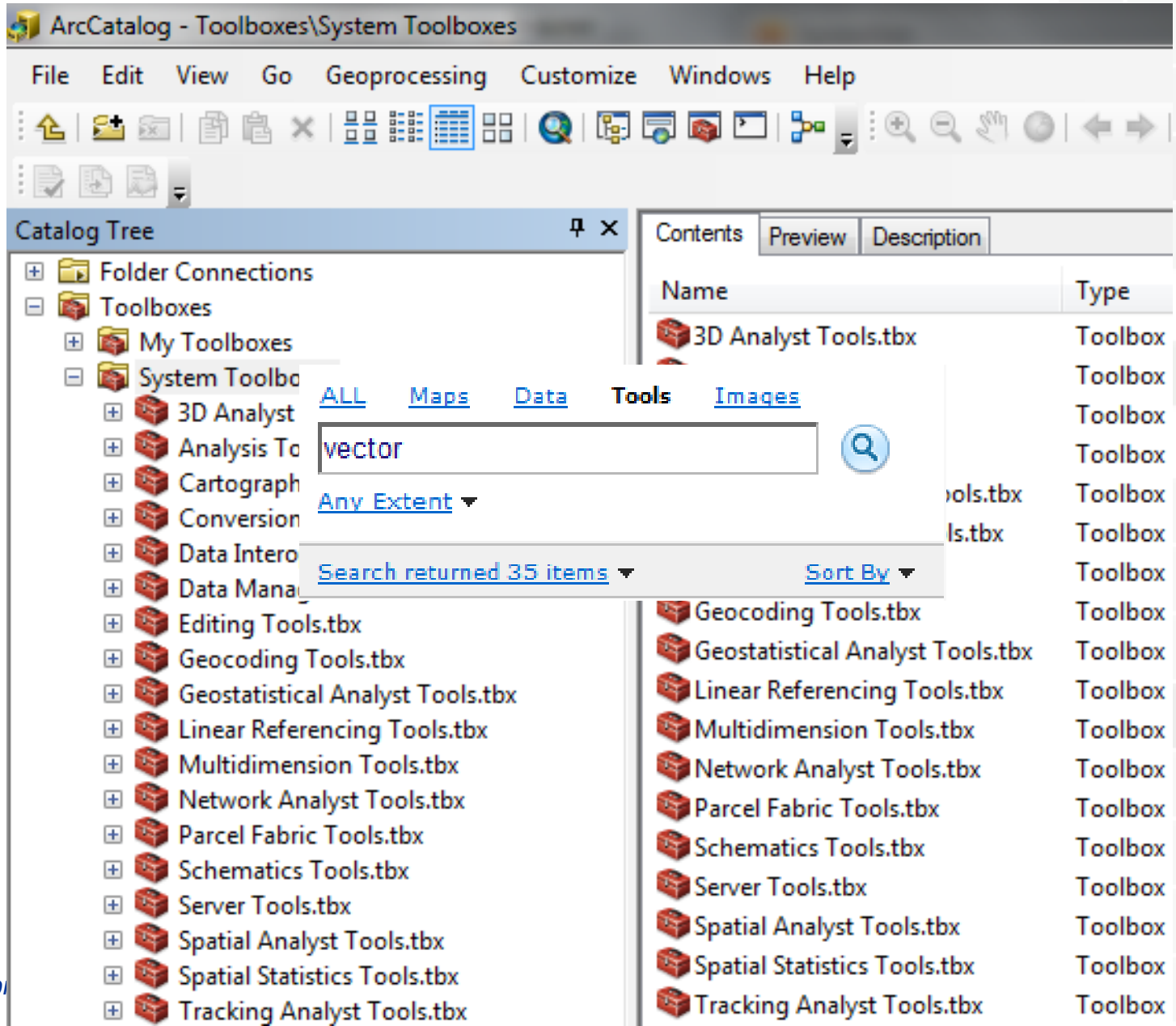
Geoprocessing Community Platform – Geoprocessing Appstore

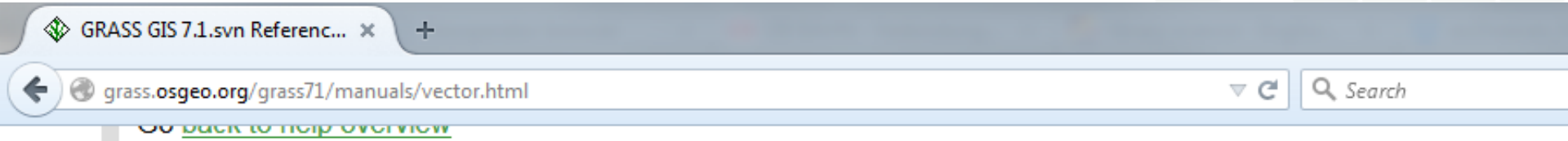
AGILE 2015 workshop
„Geoprocessing on the Web – science-driven and community-driven“

Johannes Brauner
2015-06-09



Motivation / goals





Go back to help overview

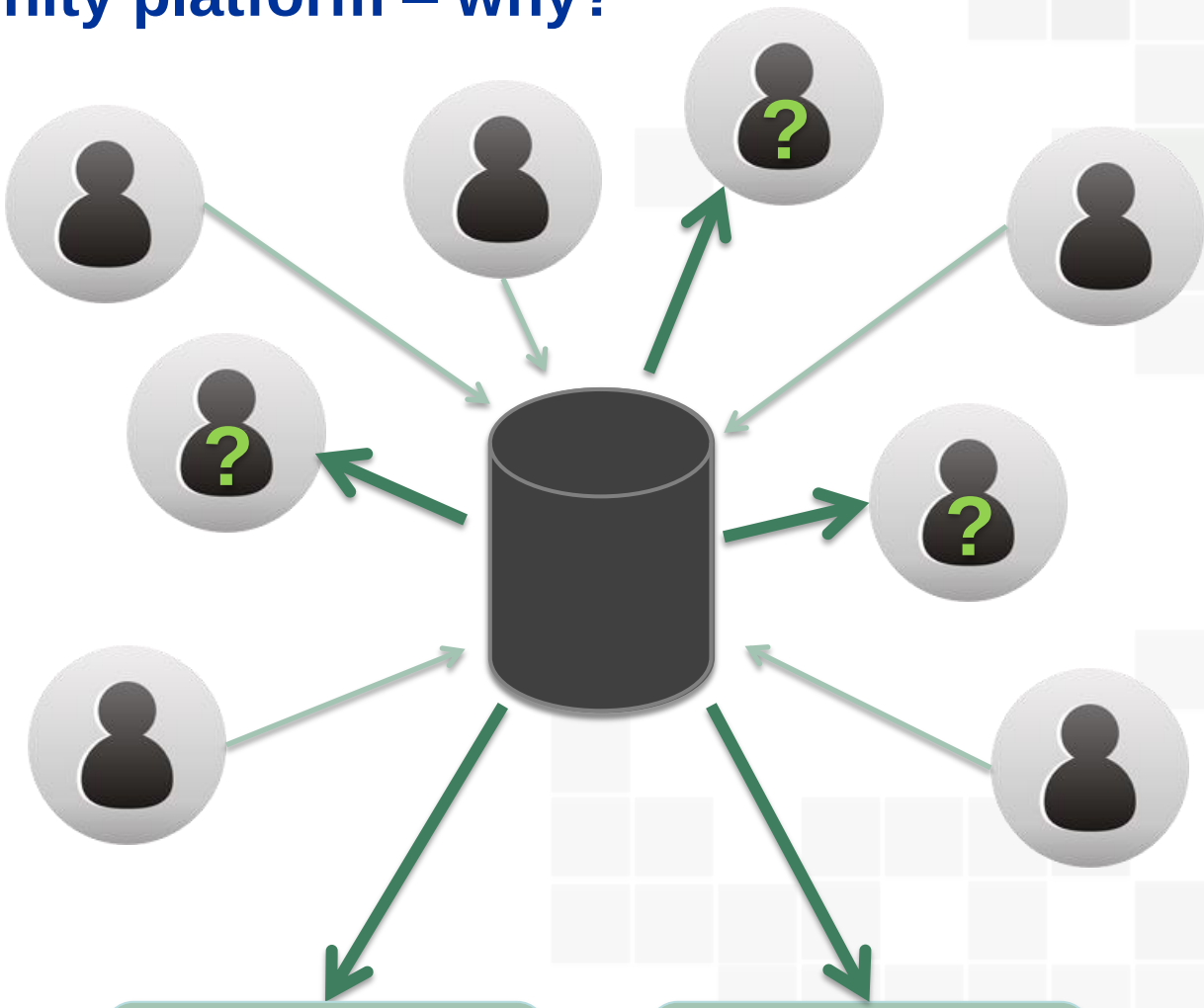
Vector commands:

v.buffer	Creates a buffer around vector features of given type.
v.build.all	Rebuilds topology on all vector maps in the current mapset.
v.build	Creates topology for vector map.
v.build.polylines	Builds polylines from lines or boundaries.
v.category	Attaches, deletes or reports vector categories to map geometry.
v.centroids	Adds missing centroids to closed boundaries.
v.class	Classifies attribute data, e.g. for thematic mapping
v.clean	Toolset for cleaning topology of vector map.
v.cluster	Cluster identification
v.colors	Creates/modifies the color table associated with a vector map.
v.colors.out	Exports the color table associated with a vector map.
v.db.addcolumn	Adds one or more columns to the attribute table connected to a given vector map.
v.db.addtable	Creates and connects a new attribute table to a given layer of an existing vector map.
v.db.connect	Prints/sets DB connection for a vector map to attribute table.
v.db.dropcolumn	Drops a column from the attribute table connected to a given vector map.

Motivation / goals

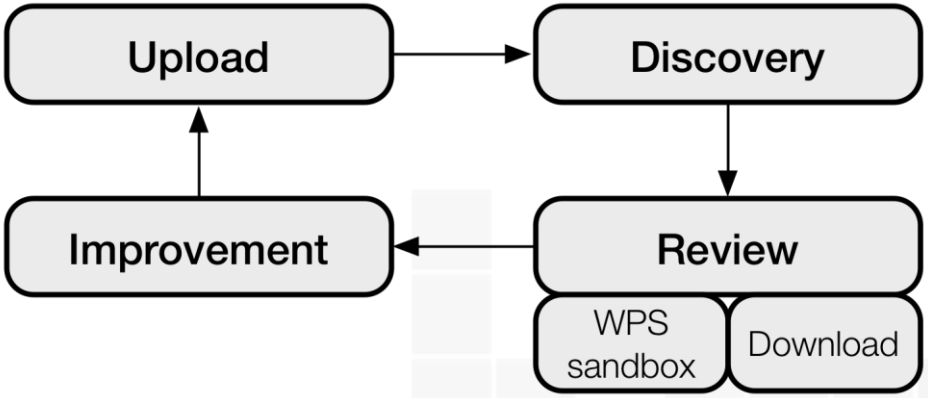
- *Improved discovery* of suitable geoprocessing functionality
- *Sustainable knowledge platform* for geoprocessing functionality
- *Central catalog/repository* for geoprocessing functionality

Community platform – why?



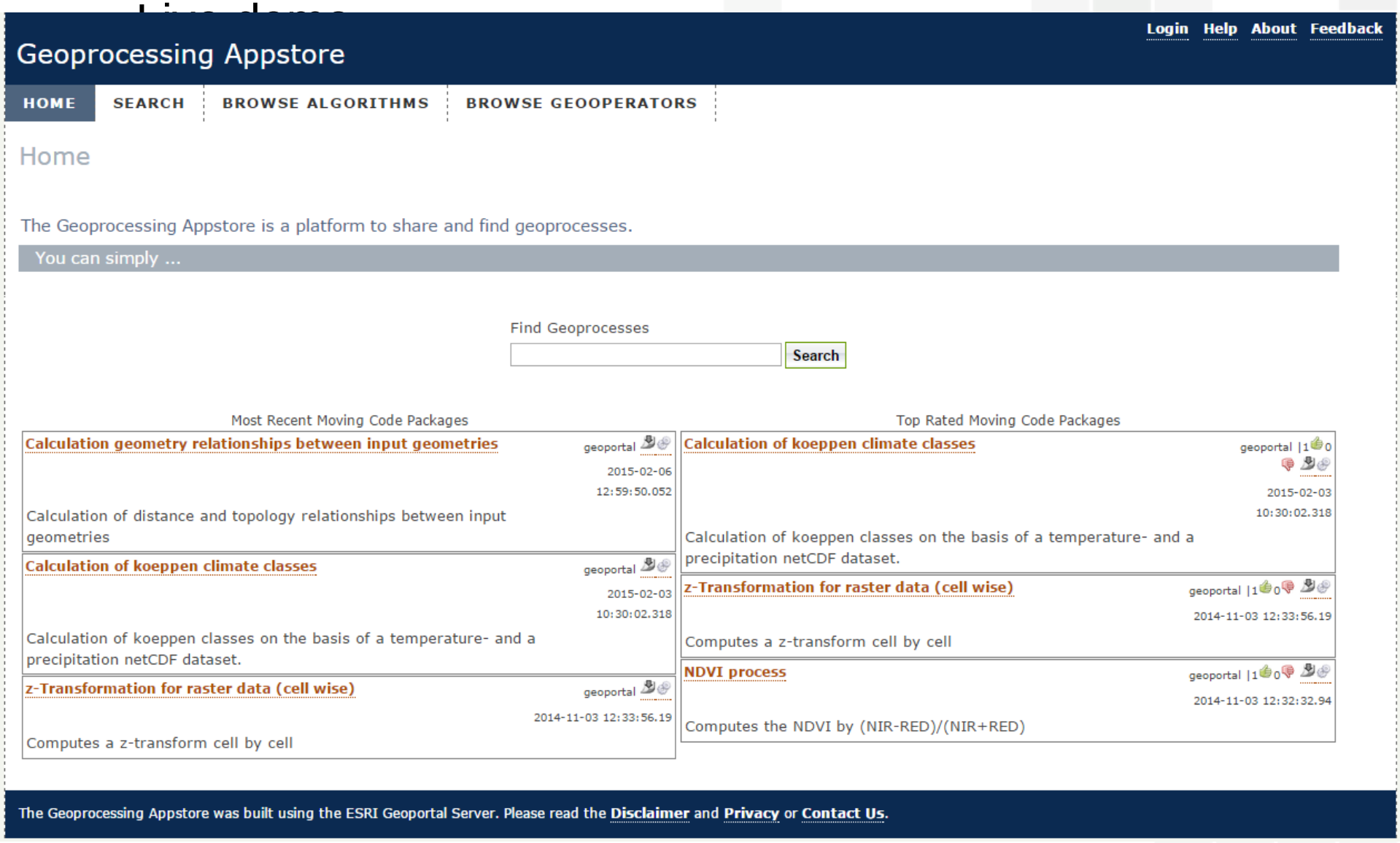
Geoprocessing Appstore – main features

- Algorithms:
  - Defined and described runtime environment
  - Powered by moving code



- Geoprocessing knowledge base
  - Geooperator thesaurus
  - Geooperator browser
- Central geoprocessing catalog

http://apps1.glues.geo.tu-dresden.de:8080/appstore/



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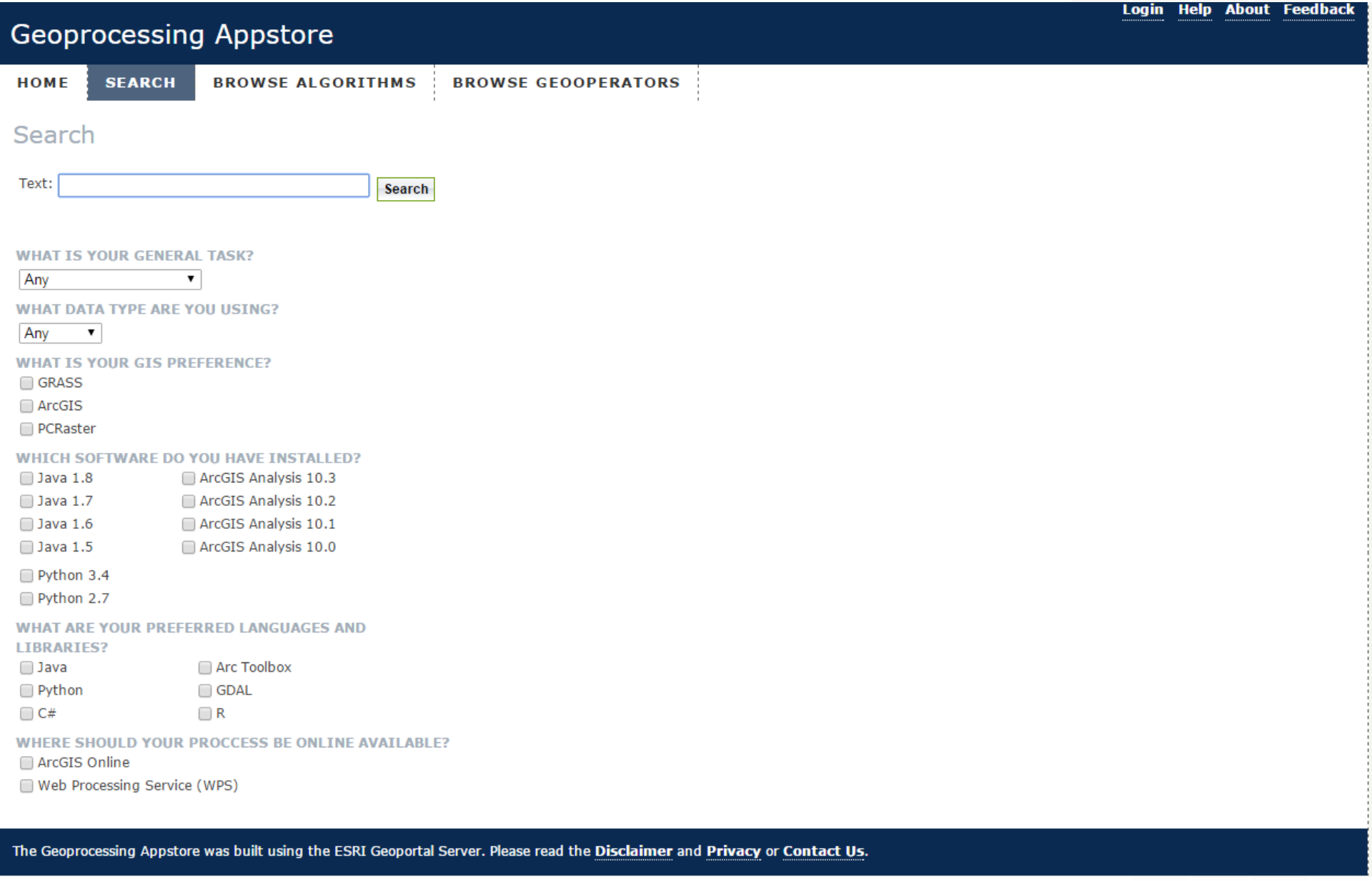

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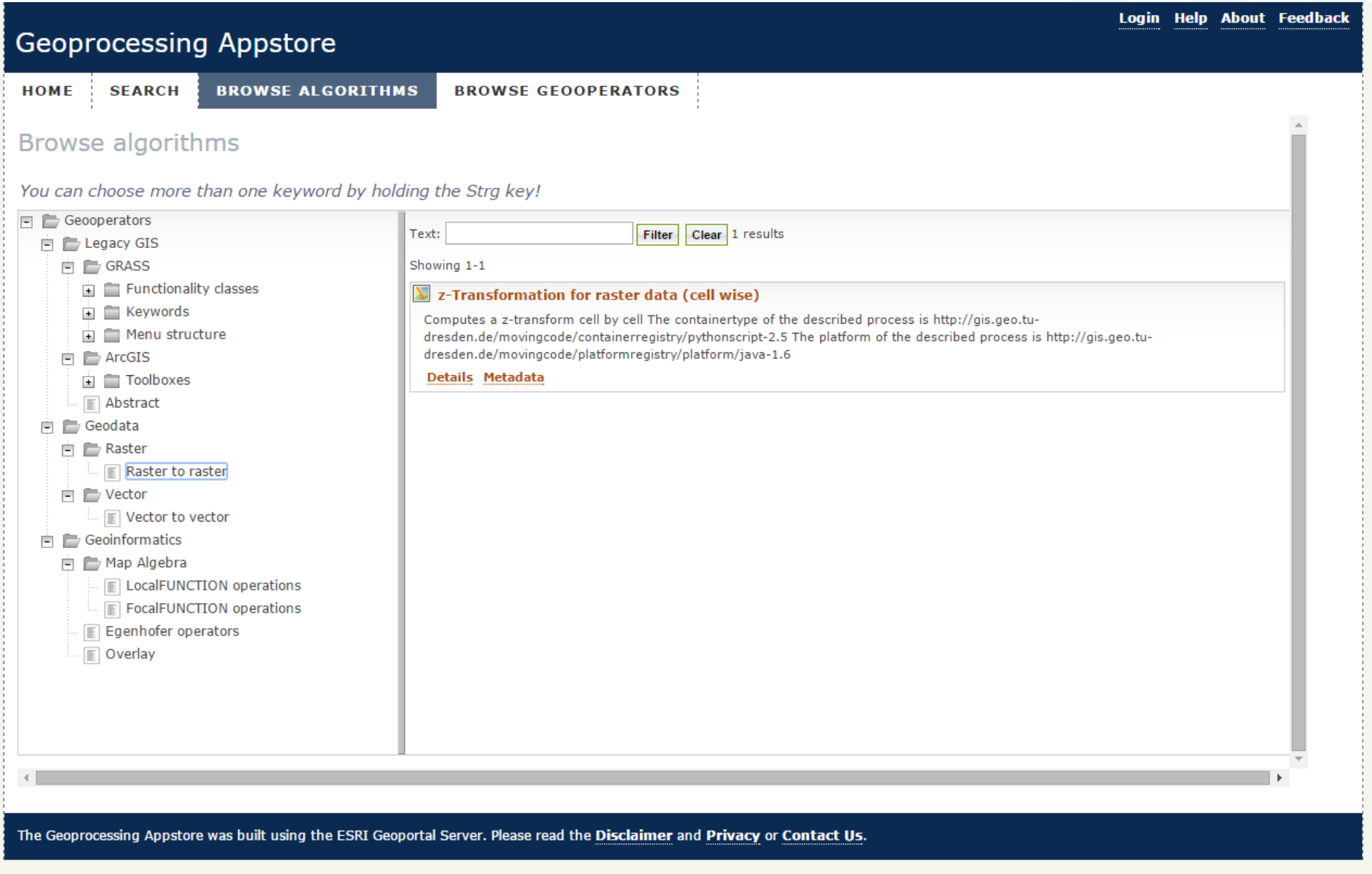

Capabilities

ALL AVAILABLE PROCESSES

org.n52.wps.server.algorithm.JTSConvexHullAlgorithm

Show Description

data* asReference

application/wkt

output_result request this output asReference

application/wkt

Execute

Title	52°North WPS 3.3.2-SNAPSHOT
Abstract	Service based on the 52°North implementation of WPS 1.0.0
Keywords	WPS geospatial geoprocessing
Type	WPS
Version	1.0.0
Fees	NONE
Access constraints	NONE
Provider name	52North
Provider site	http://www.52north.org/

Full capabilities

Geooperators Browser

Toggle wizard mode

Search by keyword

Geodata

- Geodata (40)
  - Vector (24)
    - Vector to vector (21)
    - Vector to attribute table (2)
    - Vector to raster (1)
  - Raster (13)
    - Raster to raster (11)
    - Raster 3D to raster 3D (1)
    - Raster to vector (1)
  - Attribute table (3)
  - Raster_3D (1)

Legacy GIS

- Legacy GIS (40)
  - ArcGIS (24)
    - *Toolboxes* (24)
      - Analysis toolbox (17)
        - Proximity toolset (7)
        - Overlay toolset (5)
        - Statistics toolset (3)
        - Extract toolset (2)
      - Spatial analyst toolbox (4)
        - Distance toolset (2)
        - Map Algebra toolset (1)
        - Reclass toolset (1)
      - Conversion toolbox (2)
        - From raster toolset (1)
        - To raster toolset (1)
      - Data management toolbox (1)
        - Projections and transformations toolset (1)
  - GRASS (15)
    - *Functionality classes* (15)
      - Vector - functionality class (7)

40 Geooperators

Name	Description	Categories	Related geooperator(s)
Buffer	Creates buffer polygons around input features to a specified distance.	Analysis toolbox, ArcGIS, Modeling suitability, movement, and interaction, Legacy GIS, Formal, Vector to vector, Technical, Pragmatic, Modeling paths, Vector, Geodata, Unary, Available in operating system, Available online, Windows, Proximity toolset, Transport route planning, and OGC Web Processing Service	Multiple ring buffer, v.buffer, v.parallel
Clip	Extracts input features that overlay the clip features.	Legacy GIS, Vector, Windows, ArcGIS online, Geodata, ArcGIS, Available online, Modeling suitability, movement, and interaction, Available in operating system, Pragmatic, Analysis toolbox, Transport route planning, Vector to vector, Modeling paths, and Technical	v.select, v.extract, v.overlay
Cost distance	Calculates the least accumulative cost distance for each cell to the nearest source over a cost surface.	Modeling suitability, movement, and interaction, Legacy GIS, ArcGIS, Pragmatic, Geodata, Distance toolset, Modeling paths, Transport route planning, Spatial analyst toolbox, Raster to raster, and Raster	Cost path
Cost path	Calculates the least-cost path from a source to a destination.	Pragmatic, Modeling paths, Spatial analyst toolbox, ArcGIS, Distance toolset, Raster to raster, Transport route planning, Legacy GIS, Geodata, Raster, and Modeling suitability, movement, and interaction	Cost distance
Create Thiessen polygons	Creates Thiessen polygons from point features. Each Thiessen polygon contains only a single point input feature. Any location within a Thiessen polygon is closer to its associated point than to any other point input feature.	Vector, Analysis toolbox, ArcGIS, Proximity toolset, Geodata, Vector to vector, and Legacy GIS	v.voronoi
db.univar	Calculates univariate statistics on selected table column.	Statistics - keywords, Attribute table - keywords, Legacy GIS, Geodata, Database - functionality class, Attribute table, GRASS, and Database - keywords	Summary statistics

Integration of content into the Geoprocessing Appstore

- Motivation
  - How can the community best be involved?
- Community portal requirements
  - Which functionality is required in general?
- What is missing from the Appstore to support the community process?
- Integration of content requires *formalized* metadata:
  - Hierarchical WPS Profiles (WPS 2.0)
  - Geooperator thesaurus (SKOS/RDF)

Thank you!

- Remaining schedule:
  - (Hierarchical) WPS Profiles in WPS 2.0
    (Barbara Hofer)
  - Geooperators
    (Johannes Brauner)
  - Lunch break
  - Geoprocessing for data fusion
    (Introduction from Stefan Wiemann)
  - Hands-on WPS Profiles / geooperators / community building
    (Break-out teams)
  - Wrap-up