1 What is it

The system draws line and point information maps based on vector maps or images and a topology database using UTM-coordinates. The maps are shown with html og java-applets

The applications are 2 different maps systems in operation : uninett a load network map, norgeskartet a gegraphic home-page lookup for research institutions (http:/drift.uninett.no/kart).

Maps are mainly geograpical(geo), but may also be topological(topo) so that you can see all links contained within one map by moving stretching shorter links and keeping a semi-geographic outline.

The principle is to draw the network on a ready-made background map in gif,png or ps. Coordinates are in UTM.

2 Installation overview

You need perl with the GD graphics library, ghostcript and pnmtools.

Untar the system in a suitable place and establish a */kart* symbolic link to it - all scripts contains absolute references to it.

You would like to customize texts in the /kart/bin/kartmap and /kart/kartg/last to local lingo for the webpages(yes it should have been separated ;-).

You will probably make a directory hierarchy */kart/yournet* and */kart/www/yournet* cloned to look like */kart/uninett/* and */kart/www/uninett.no*. See *README/LESMEG* for a description of the system directories.

2.0.1 Httpd/apache config for the scripts:

    ScriptAlias /kartg /kart/kartg

You would probably remake some of the static html parts entirely on you own

    Alias /kart /kart/html

2.0.2 To get going

You essentially need to

1. make a topology database

2. collect maps

3. make coordinate files

4. install and tailor scripts

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2.1 Topology and coordinates

The topology is described in coordinate files (.ko). These can be made from rfc822-style file by *drskoord*. These records can be seen i a .ko. Coordinates are given with the triplet : zone north east. North is meters north of equator and east is meters east of the zone meridian. The zones covered by Norway are 32,33,34.

> PUNKT type id zone north east (name)

type - any alphanumeric classification like (backbone, regional ...) - used for selection

id - alphanumeric the id of the point to combine with links and statistics

name - the name that will appear on the map (~id)

LINJE type name point1 point2

type - any alphanumeric classification (backbone, regional, ...)

name - the id for combining with statistics and url, will show on the map

point1/2 - the end point id's. Define direction like (out from the center)

2.2 Maps

Get the maps in ps, gif or png. Ps scales nicely. Note the UTM coordinates for the south west and north east corners. Be sure that a sensible Datum for the map (WGS-84 in Norway).

Make a /kart/mynet/conf/geo.omriss file that have lines that look like.

> kartid, grunnkart, type, velg, layout, priority, sone, nord1, øst1, nord2, øst2, gifstørrelse, kartniv, randtykkelse%, navn

kartid - alphameric id to be used for reference and naming when zooming

grunnkart - name/none of background map database if made from vector maps

type - type of map : gif/sosi

velg - for sosi - config for map elements to include (none)

layout - for sosi - config for map elements layout

prioritet - for sosi - config for map elements order

sone - utm zone (32-34 for norway)

nord1,øst1 - utm north and east for south-west corner

nord2,øst2 - utm north and east for north-east corner

gifstørrelse - gif size x'x'y (ex 640x480)

kartniv - zoom level of the map (0-10)

randtykkelse - for sosi - size of the rim i % to add to a map for space surrounding points(0)

navn - name of the map to be displayed

Example

> norden,none,gif,none,none,none,33,6113551,-655649,9053569,1249351,382x562,0,0,Norden

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The ps-files contains as comments the corners and translation info to image coordinates. This is used by subsequent programs to draw and make html. Can be dummy file with just this.

```
%Skalering: 200
%Giftrans: 0.07286
% gif-x = (UTM-øst - UTM-area-øst) / Skalering * Giftrans
% gif-y = (UTM-area-height - (UTM-nord - UTM-area-nord)) / Skalering * Giftrans
%Size: 500 615
%Area: 6319707.25,-169829.70,8009455.75,1202611.70
```

Skalering is a factor that UTM-values is divided by in order to fit the postscript coordinates

Giftrans is the factor that ps-coordinates are scaled to get image-coordinates

Size is the images size

Areas is the UTM rectangle (SW,NE)

2.3 Coordinate files

To extract coordinates for a specific map use *kartluk* (luk=weed out). It may throw away links that are shorter than a fraction of the diagonal and define sub-maps for those.

Give a collection of coordinates for your network - mynet.ko and a mynet.omriss with two maps mynet and myregion you can then extract coordinates for the top level map weeding out links that are shorter that 1/20 of the diagonal :

```
kartluk -minste 20 -omrade mynet -omriss mynet.omriss mynet.ko > mynet.ko.luk
```

or a smaller cutout : pick all the coordinates for myregion :

```
kartluk -omrade region1 - omriss mynet.omriss mynet.ko > myregion.ko
```

and weed out the shortest lines :

```
kartluk -minste 20 -omrade myregion - omriss mynet.omriss mynet.ko > myregion.ko.luk
```

This is done recursively by lag-kart-luk when you have automatic map generation (from sosi).

Draw the maps

```
kartpng -kart mynet.ps -image mynet.png -koord mynet.ko.luk > mynet.png
kartpng -kart myregion.ps -image myregion.png -koord myregion.ko.luk > mynet.png
```

Make the html that will zoom back and forth

```
kartmap -kart mynet.ps -id mynet -tittel 'My kingdom -omriss mynet.omriss > mynet.html
kartmap -kart myregion.ps -id myregion -tittel 'My province -omriss mynet.omriss >
myregion.html
```

2.3.1   Adding link load

Link load data is collected from the files of the zino link statistics package.Translate a file with load info to colors - where name is in column 0, in and out kbps in 2,3 and the capacity in 4. The mapping to colors in the config file.

> kartlastgif -konf /kart/lib/conf/kartlast.konf -kolonner 0,2,3,4 load.kbps> lasten.maks

draw with load

> kartpng -kart mynet.ps -image mynet.png -koord mynet.ko.luk -last lasten.maks > mynet-maks.png

Making of link-load files is done by hentlast for 5min, hentdag for day stats and hentuke for weeks.

2.4   URL input files

The format of the URL files is quite simple with 3 directives for menu links and points. The URL-files are fed to kartmap that generates html for them.

> INFO menu-text

- define the common menu text shown for this collection of URL's

> LINJE id URL|menu-detail
> PUNKT id URL|menu-detail
> **id** is id of link of point as defined in coordinate-file
> **URL** is a url without pipe-sign
> **|menu-detail** - give additional detailed text for menu like link-name may be omitted

example for link urls :

> INFO Kbps week
> LINJE trd-oslo http://drift.uninett.no/stat-q/plot-all/trd-oslo,2004–41,hr,traffic-kbit

The URL files can be generated with *karturl from RFC-822 database dumps and mass generation of urls is done by lag-url-kind-mal.*

2.5   the essential data

Running the cgi.script *last* for dynamic maps will require the following files to be present.

- All url-files are concatenated into one that is collected by the cgi-script last at /kart/mynet/drs/url.mynet and an example mass

- The base maps are in .png format in /kart/mynet/geo/grunnlag.

- The map lists should be in /kart/mynet/conf/geo.omriss and /kart/mynet/geo/ko/geo.omriss.

- The coordinate files are in /kart/mynet/geo/ko

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