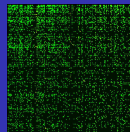


New tools and algorithms for directed network analysis

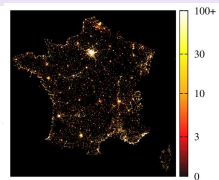
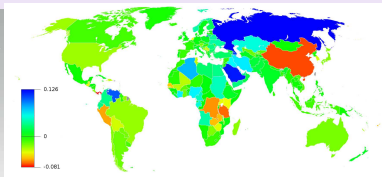
Dima Shepelyansky (CNRS, Toulouse)

www.quantware.ups-tlse.fr/dima



FET Open NADINE project No 288956 (4 partners) =>

<http://www.quantware.ups-tlse.fr/FETNADINE/>



- * excellence of scientific partners => excellence of scientific results
- * highlights of world press NY Times, Guardian, EC CORDIS ...
- * extendend project DINAPLI HAD BEEN REJECTED
- * we wait results of FAPLIDIN submitted March 2015
- * various new applications proposed
- * accumulated expertise allows to handle World Bank Web proposed to be created at NADINE presentation in Brussels 2012

http://videolectures.net/dima_shepelyansky/

Monitoring of grids and networks

Any large network requires monitoring ...



NOAA satellite imagery one day before and the night of the blackout.

Example of Northeast blackout of electrical power grid, Aug 14, 2003.
Wikipedia article “Northeast blackout of 2003”

- ==> Analysis of network flows:
- ==> World Wide Web with $\sim 10^{11}$ sites
- ==> project launched at CENR by Tim Berners-Lee, 1991
- ==> World Bank Web exists (SWIFT ...)

WBW: Towards bank financial network ranking

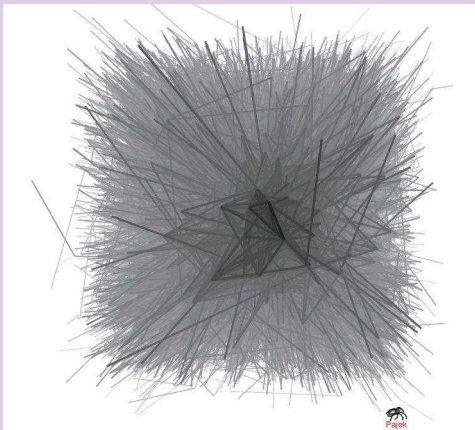


Fig. 1. Fedwire interbank payment network. First day of Sample. 6600 nodes and over 70,000 undirected links [39].

K.Soramäki *et al.*, *The topology of interbank payment flows*, *Physica A* **379**, 317 (2007); R.Garratt *et al.* WP 2008-42, Bank of Canada, WP 413 Bank of England (2011); B.Craig, G. von Peter N 12/2010 Deutsche Bundesbank (2010) => total WBW size $N < 50000$