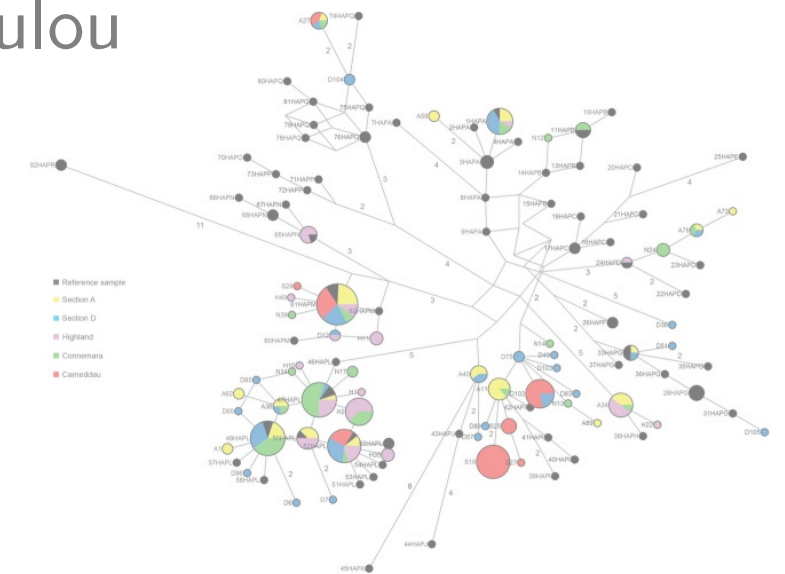
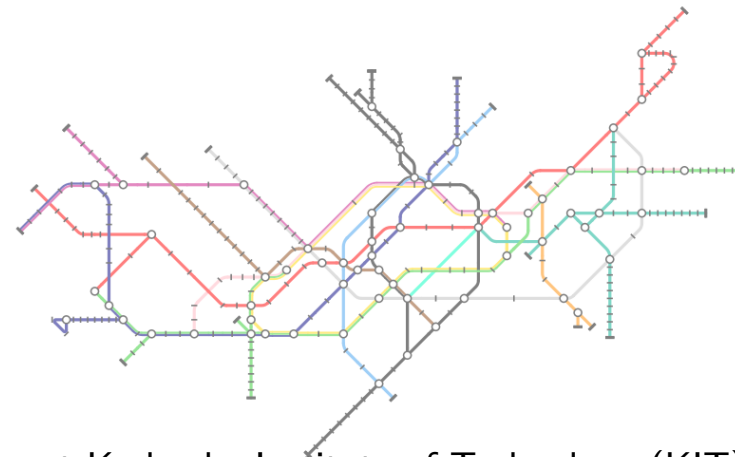
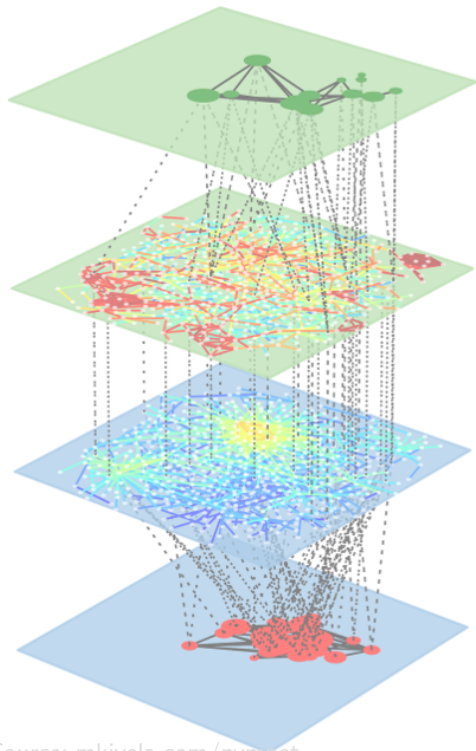


Visualisation of graphs

Introduction Examples

Antonios Symvonis · Chrysanthi Raftopoulou
Fall semester 2020

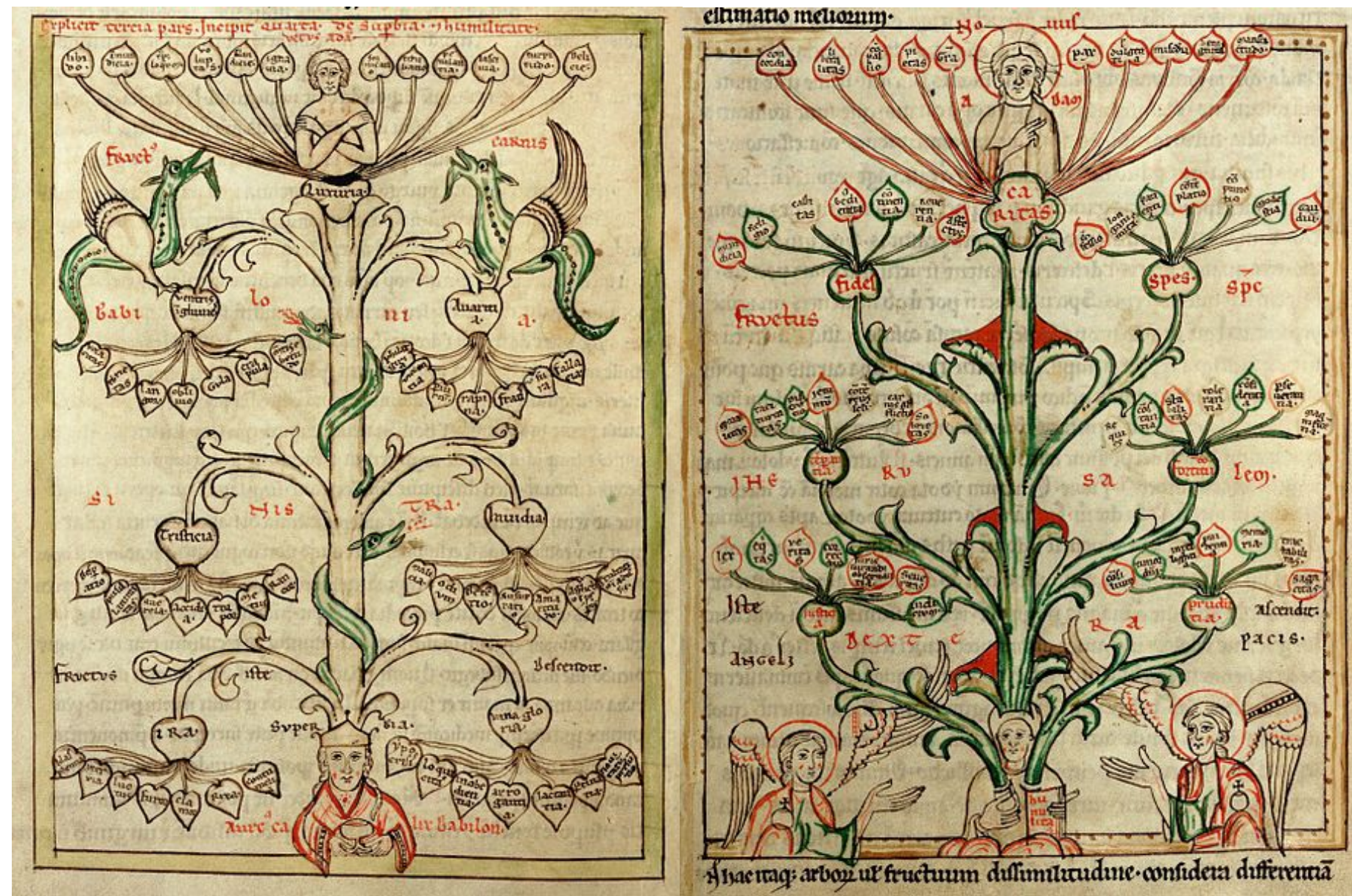


Source: mkivela.com/pynnet

The slides of this presentation were created by researchers at Karlsruhe Institute of Technology (KIT), TU Wien, U Wuerzburg, U Konstanz, ...

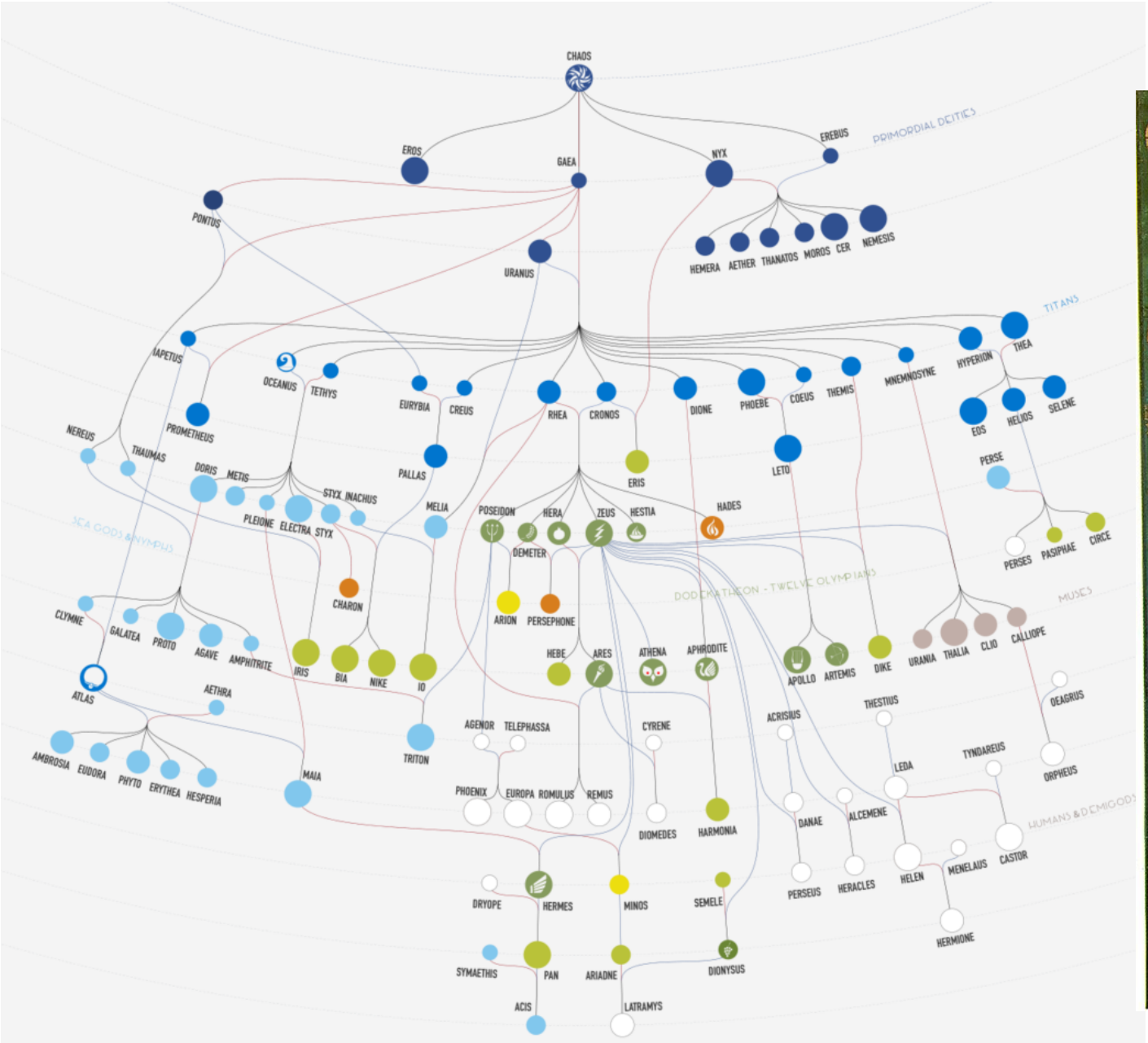
Tree of virtues and tree of vices

ca. 1200

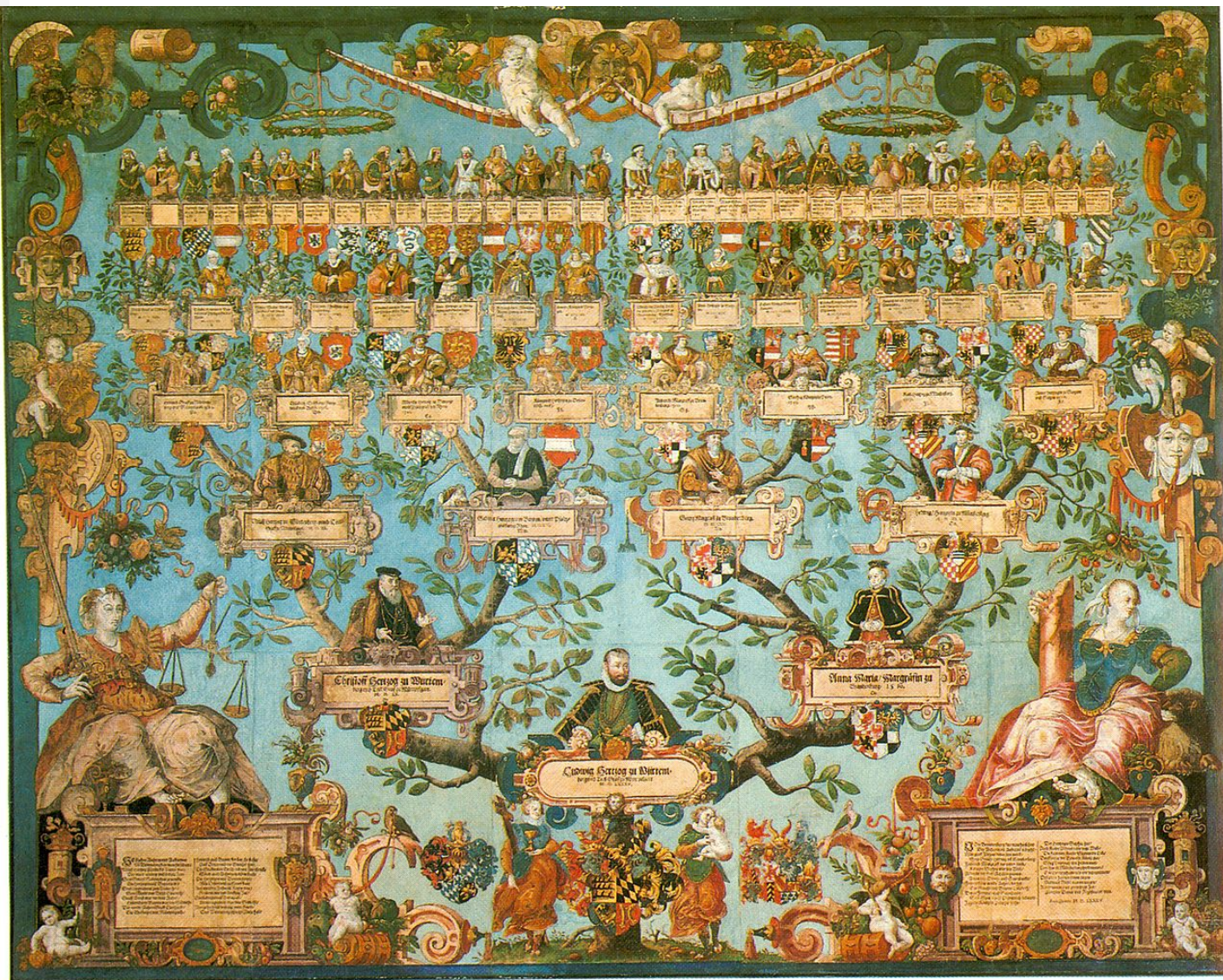


Hac itaq; arbor ul fructuum dissimilitudine considera differentia

Social networks - family trees

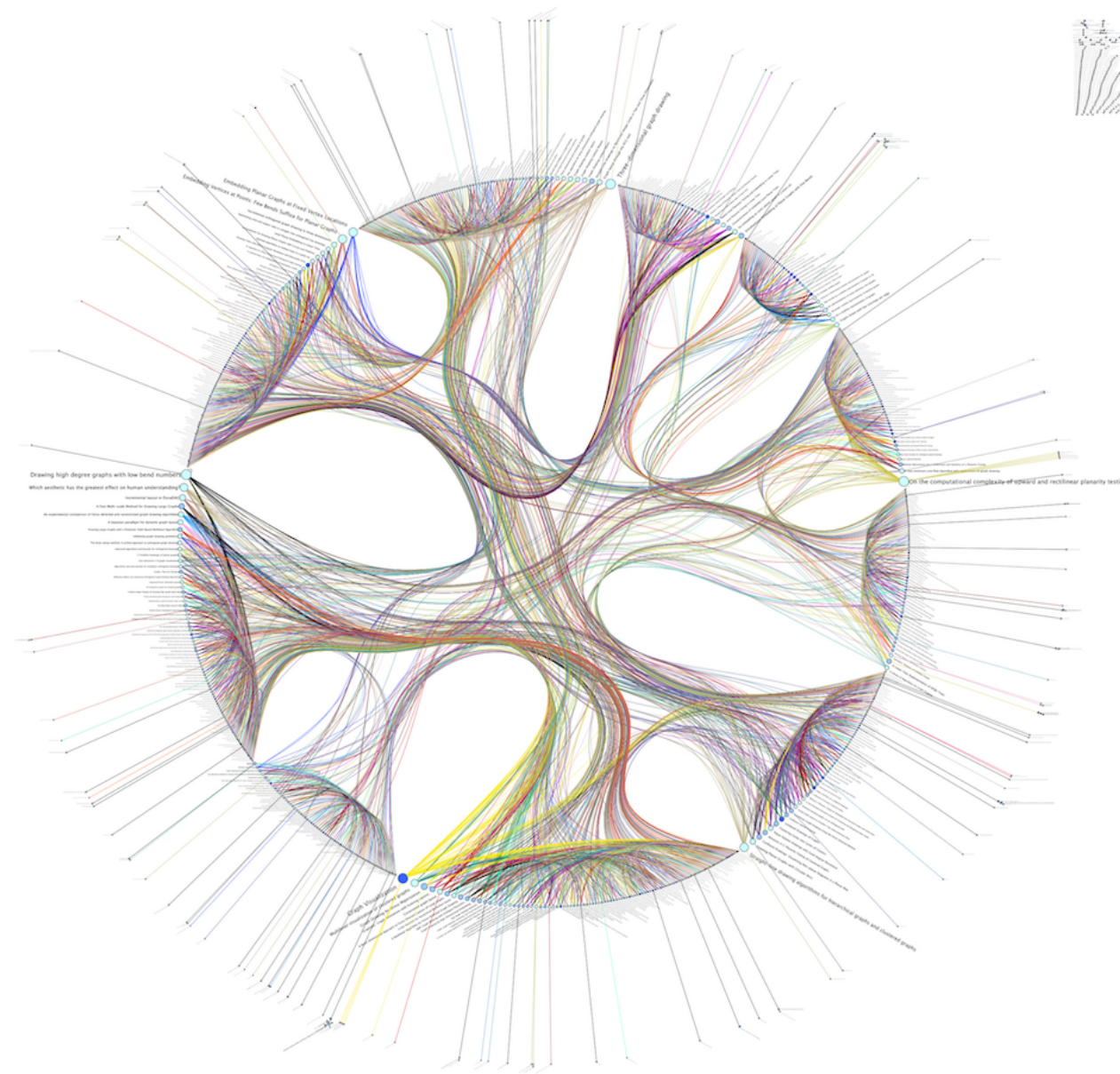


J. Klawitter, T. Mchedlidze, *Link:* go.uni-wue.de/myth-poster



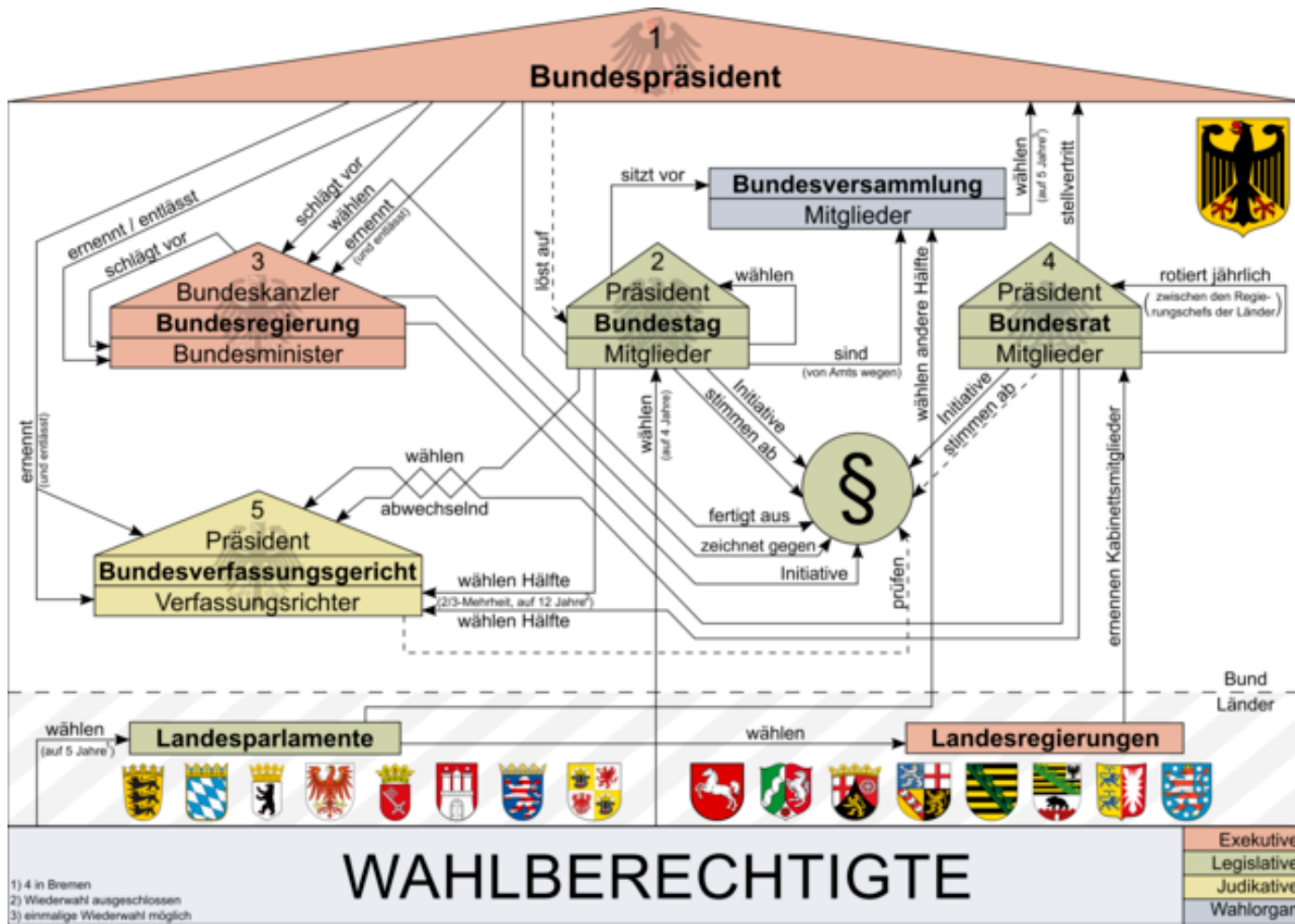
Ahnentafel Herzog Ludwig von Württemberg, 1585

Social network – citation graph

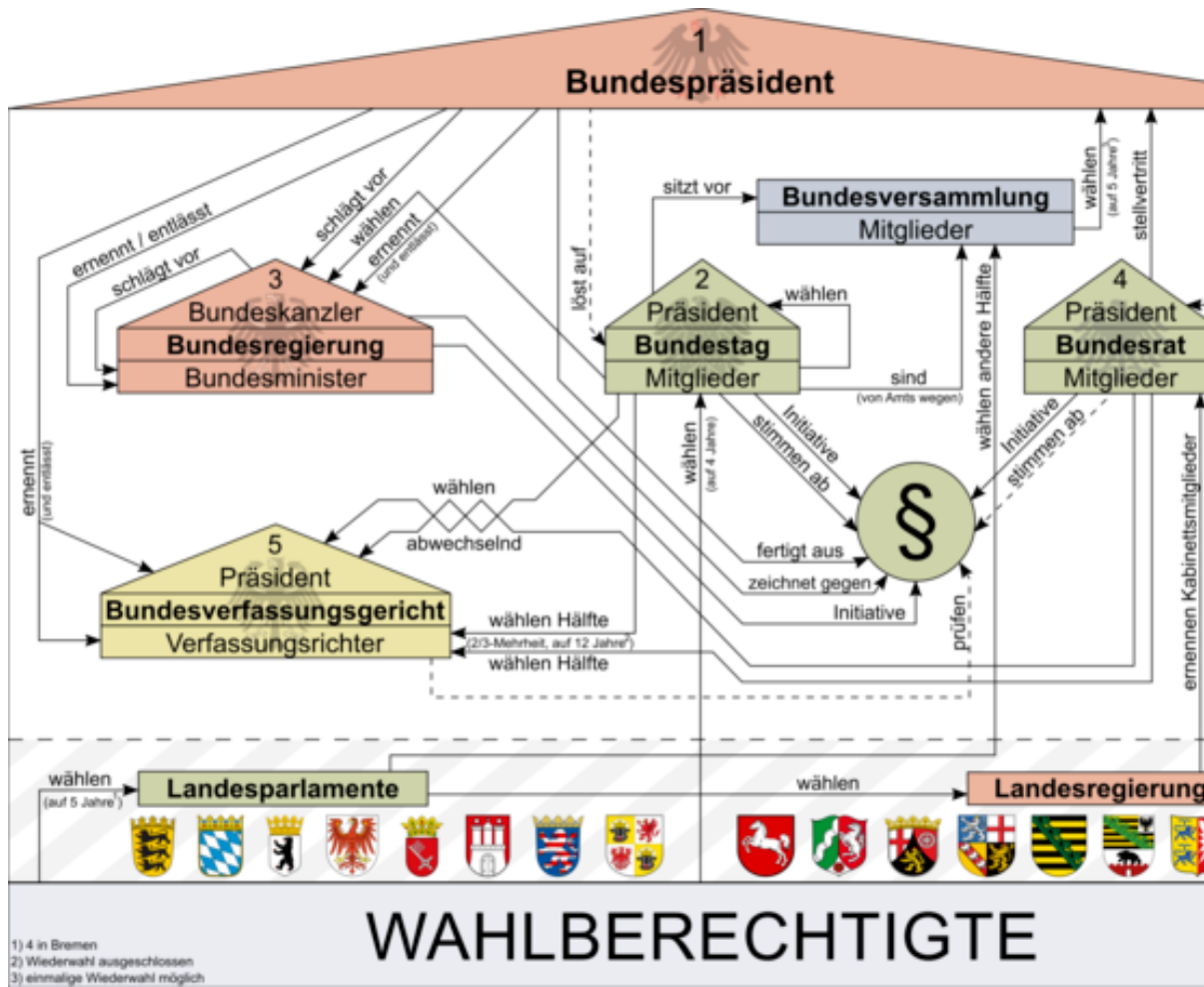


Da Ye, *Link:* <https://go.uniwue.de/citation-graph>

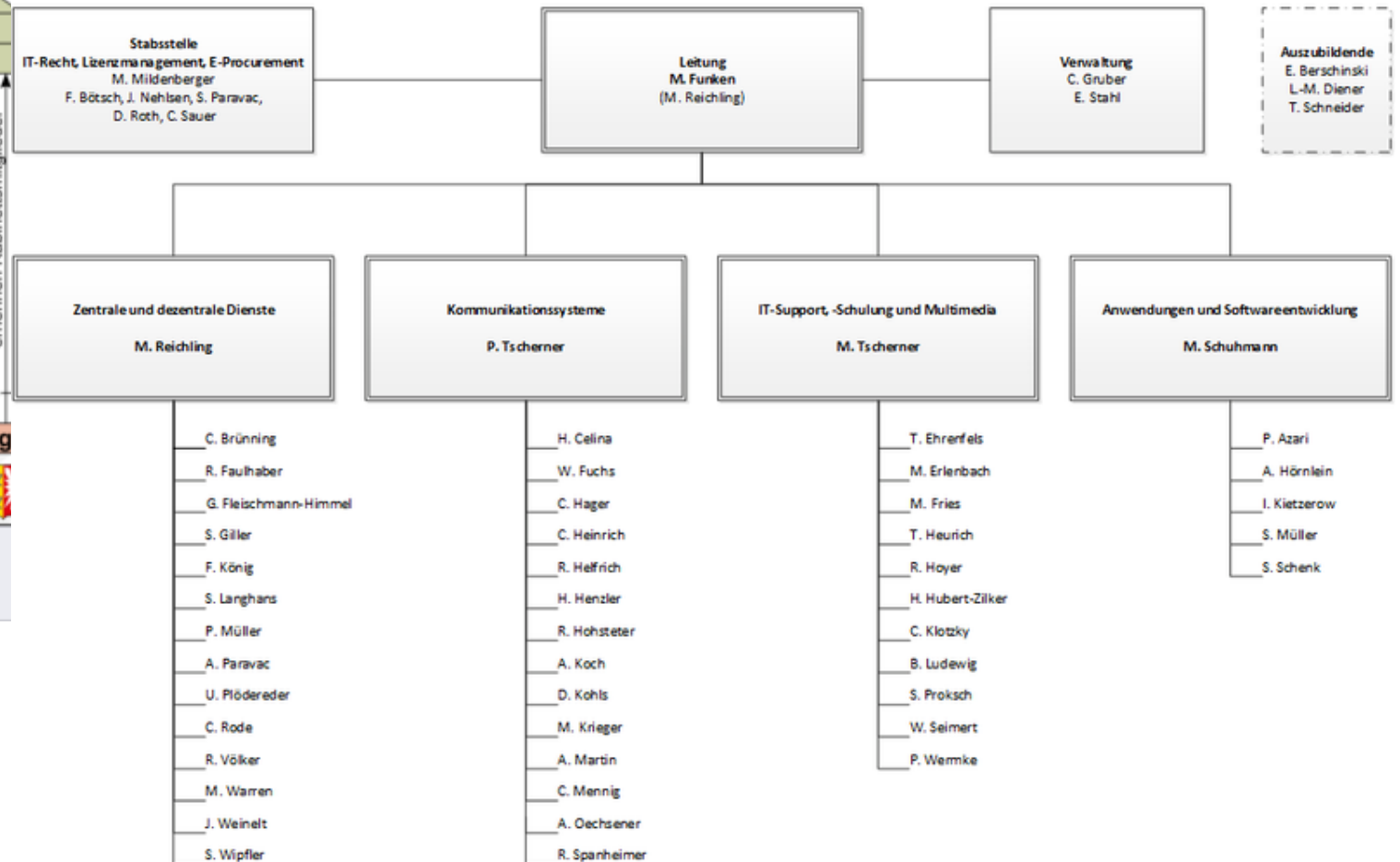
Social network - organisational chart



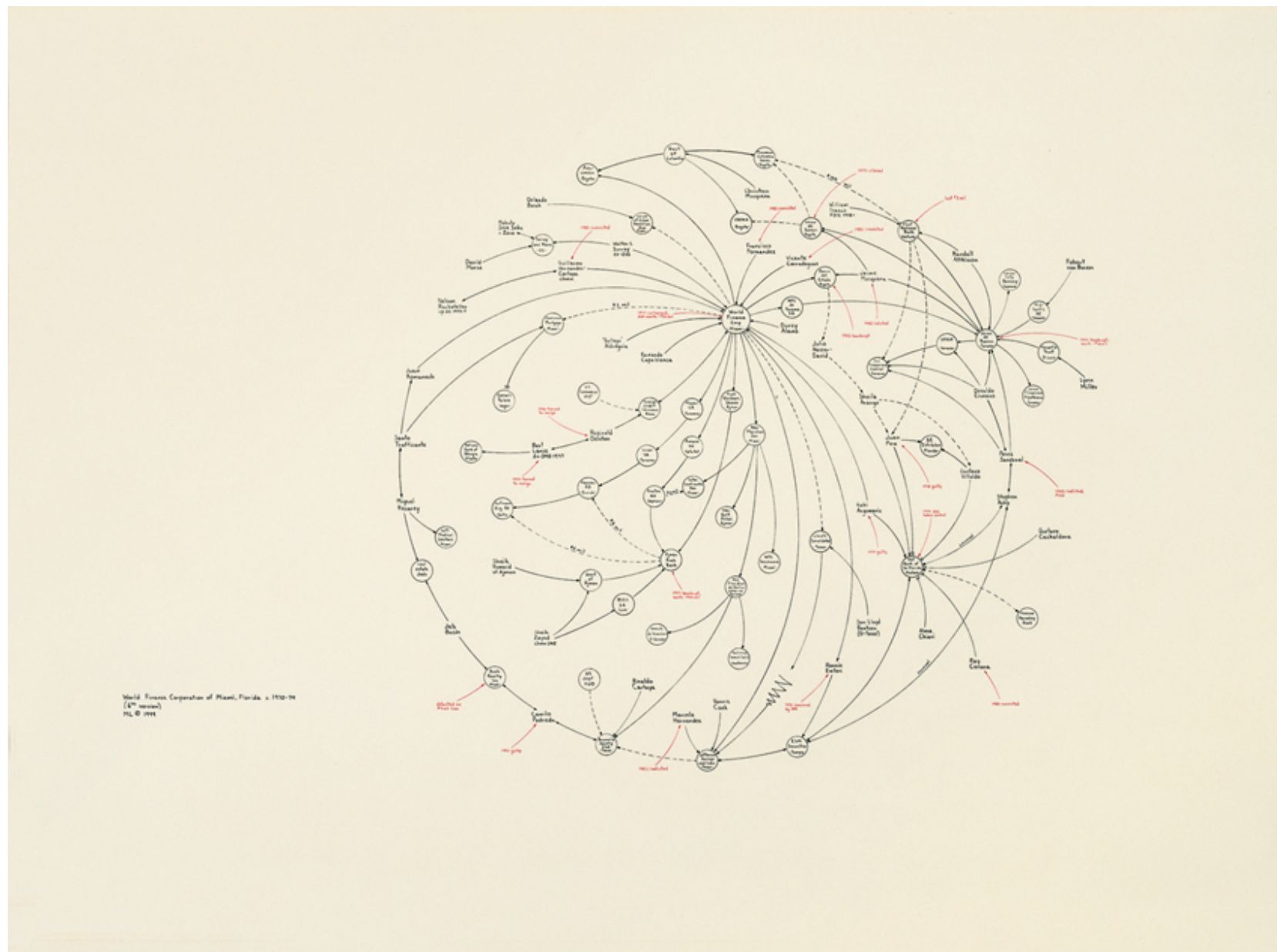
Social network - organisational chart



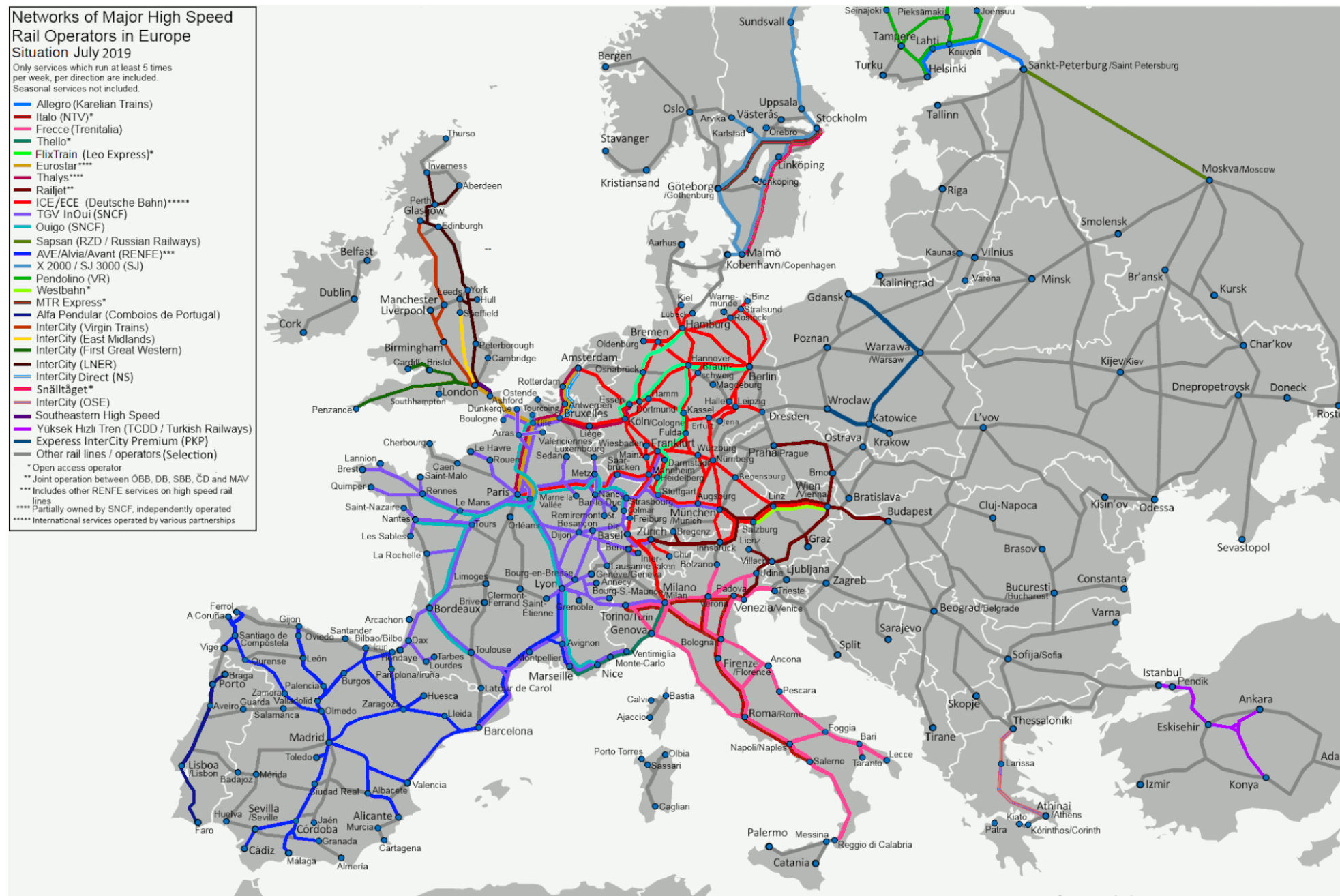
Organigramm des Rechenzentrums der Universität Würzburg
Ab 01.04.2018



Social network - world finance corporation



Transportation network – European high speed railroads



Source: Wiki Commons: Networks of Major High Speed Rail Operators in Europe - CC BY-SA 3.0

Transportation network - London Underground

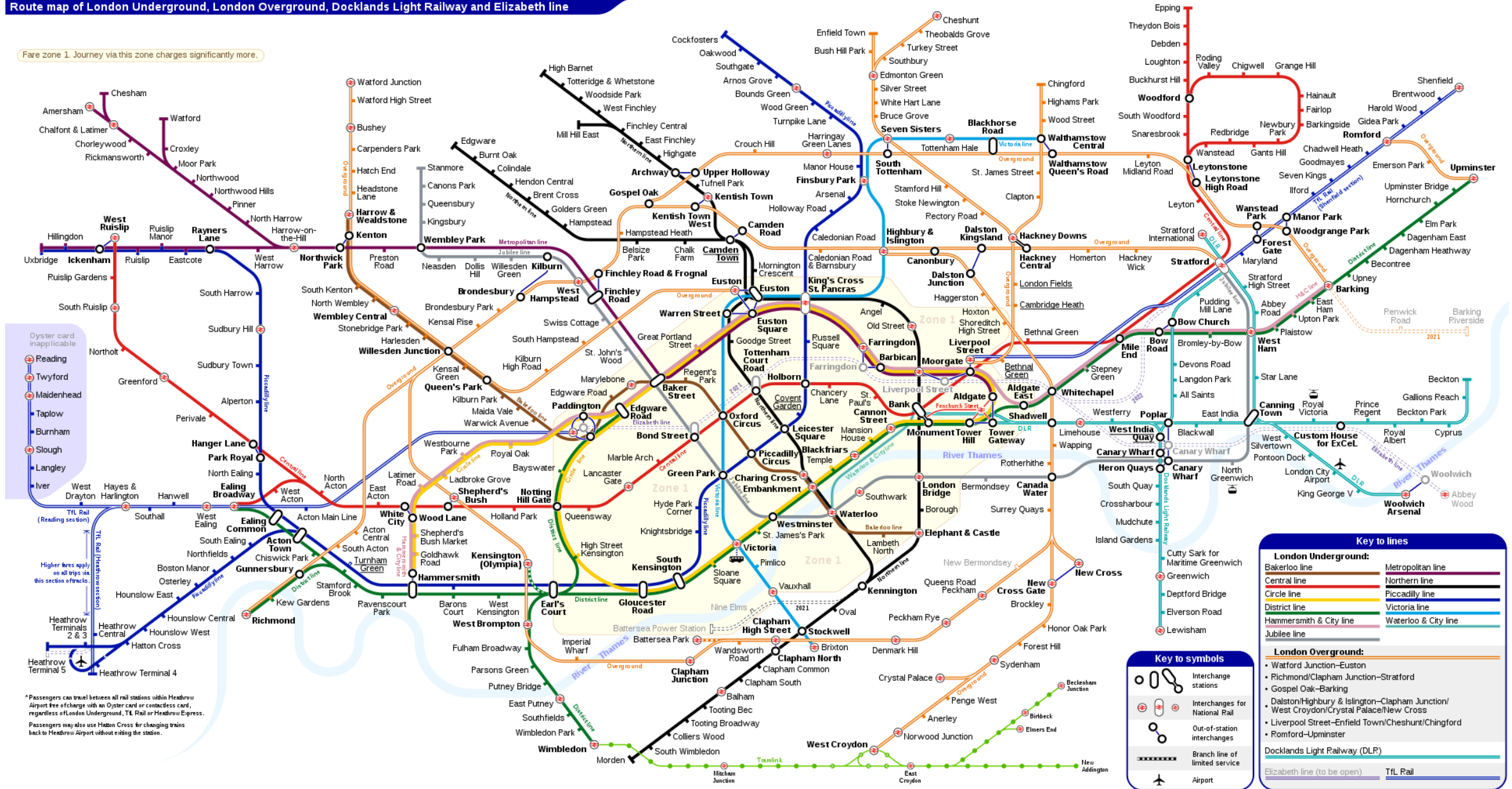


Source: Wiki Commons: London Underground full map - CC BY-SA 3.0

Transportation network - London Underground

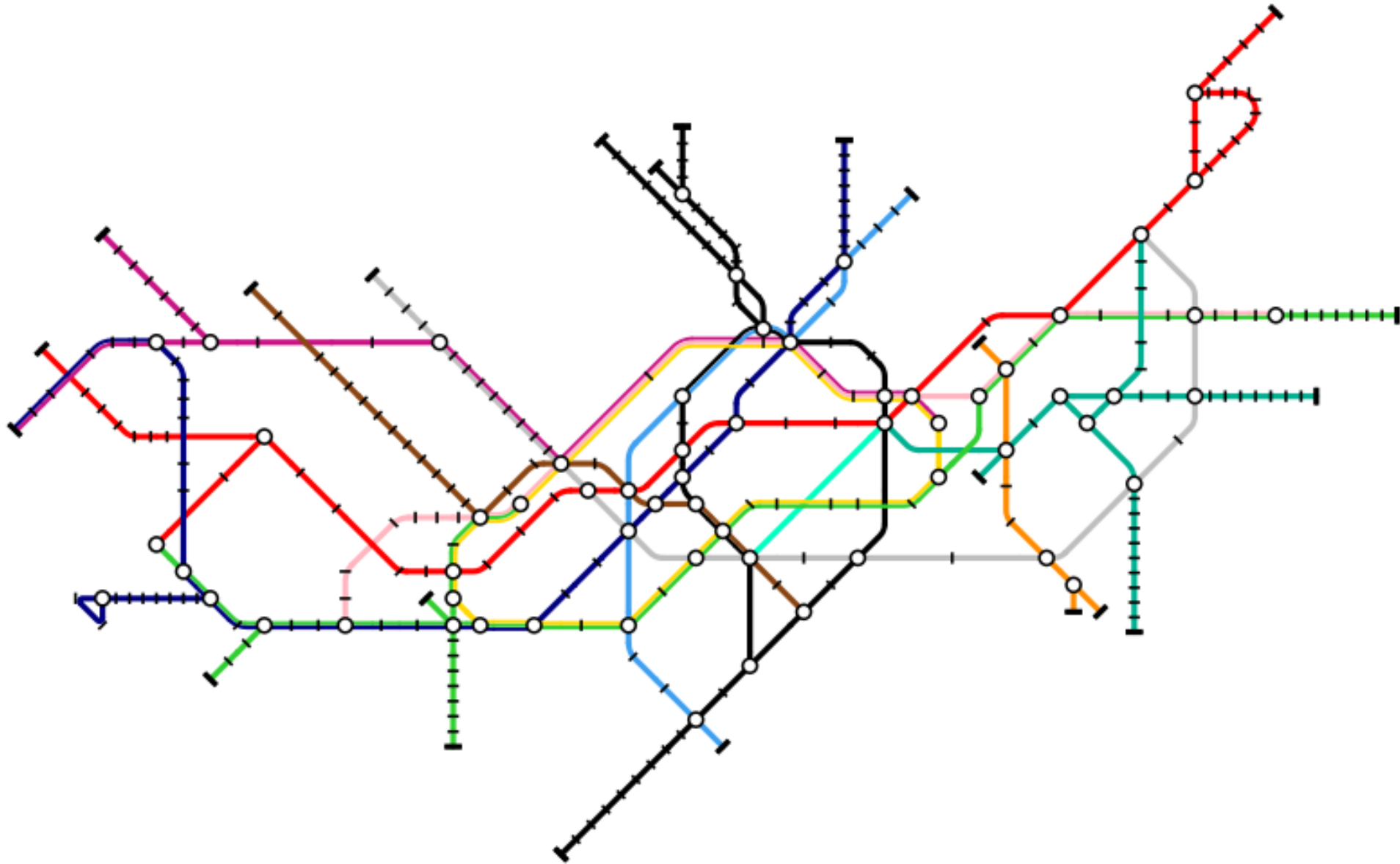
Route map of London Underground, London Overground, Docklands Light Railway and Elizabeth line

Fare zone 1. Journey via this zone charges significantly more.

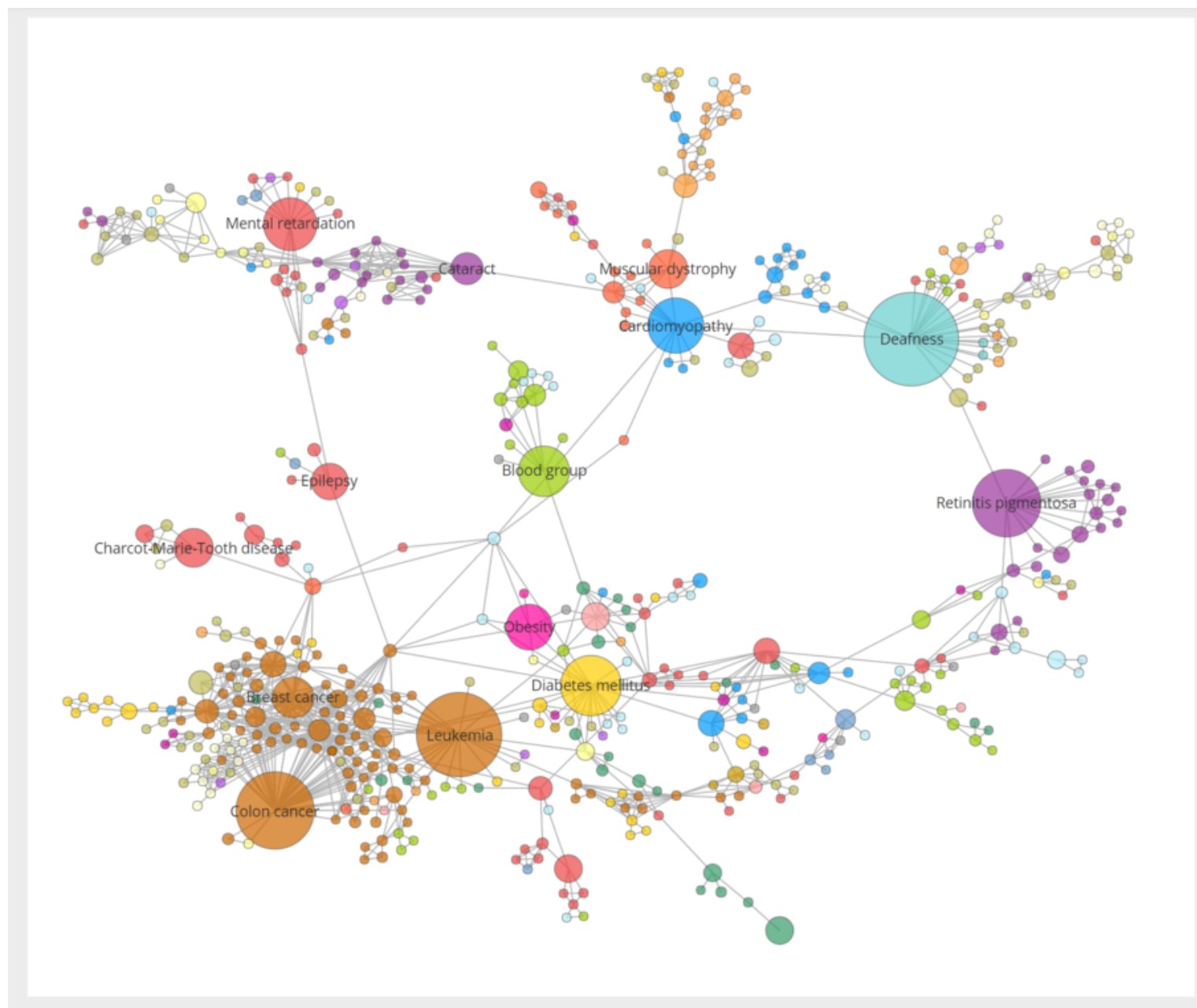


* Passengers can travel between all rail stations within Heathrow Airport free of charge with an Oyster card or contactless card, regardless of London Underground, TfL Rail or Heathrow Express. Passengers may also use Hatton Cross for changing trains back to Heathrow Airport without exiting the station.

Transportation network - London Underground

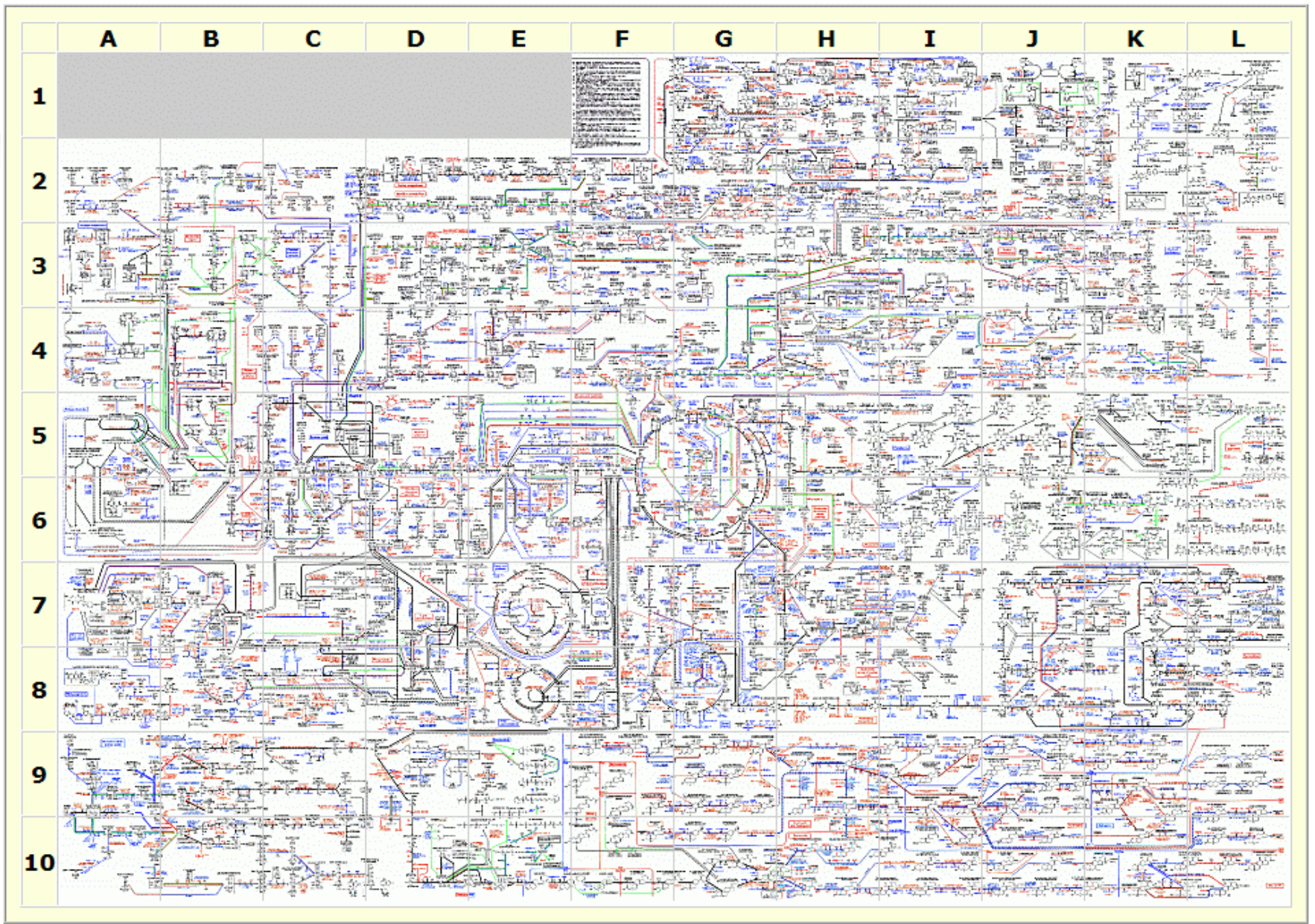
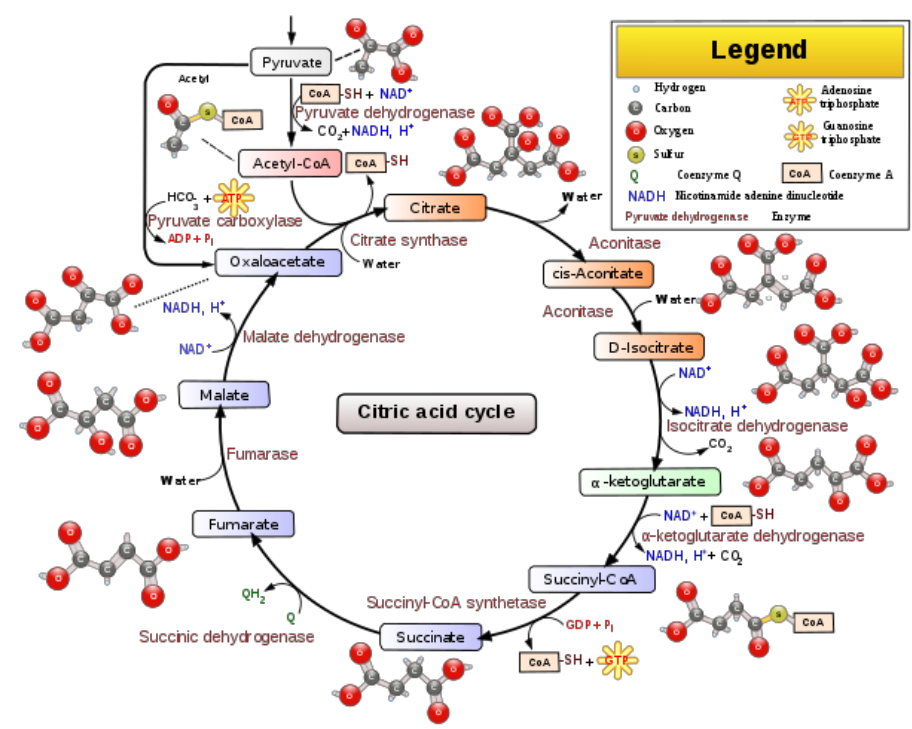


Bioinformatics – disease interaction



Source: Wiki Commons: Human disease network - CC BY-SA 4.0

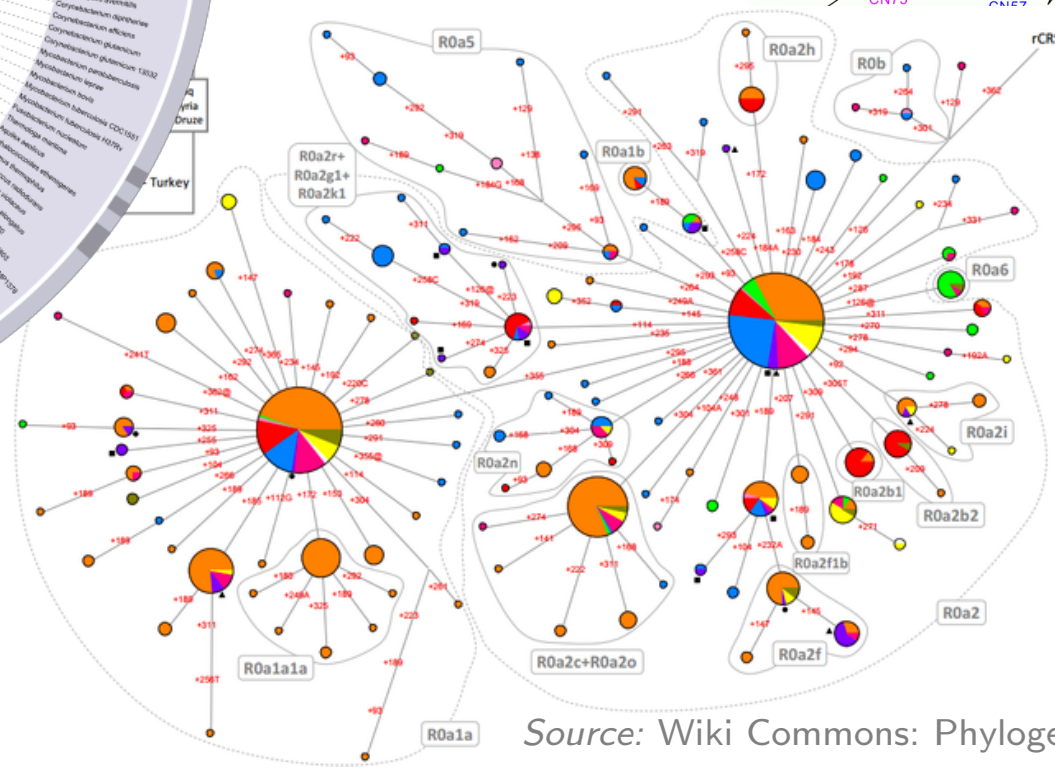
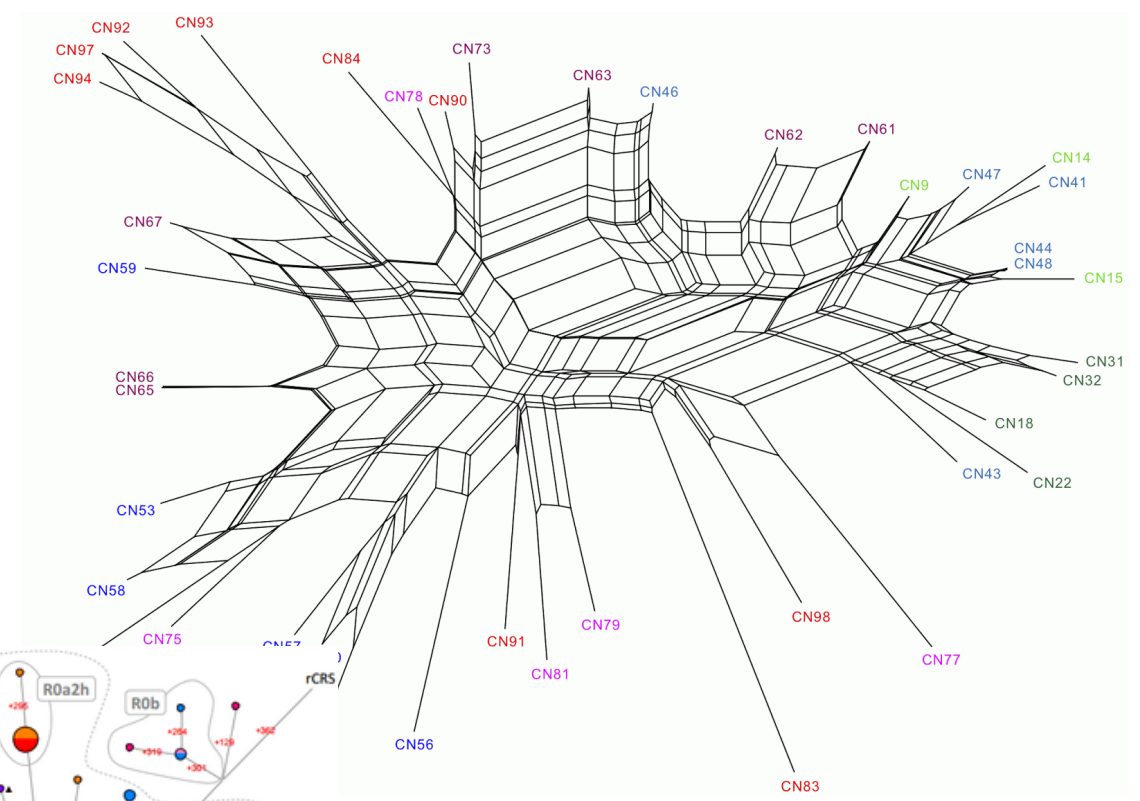
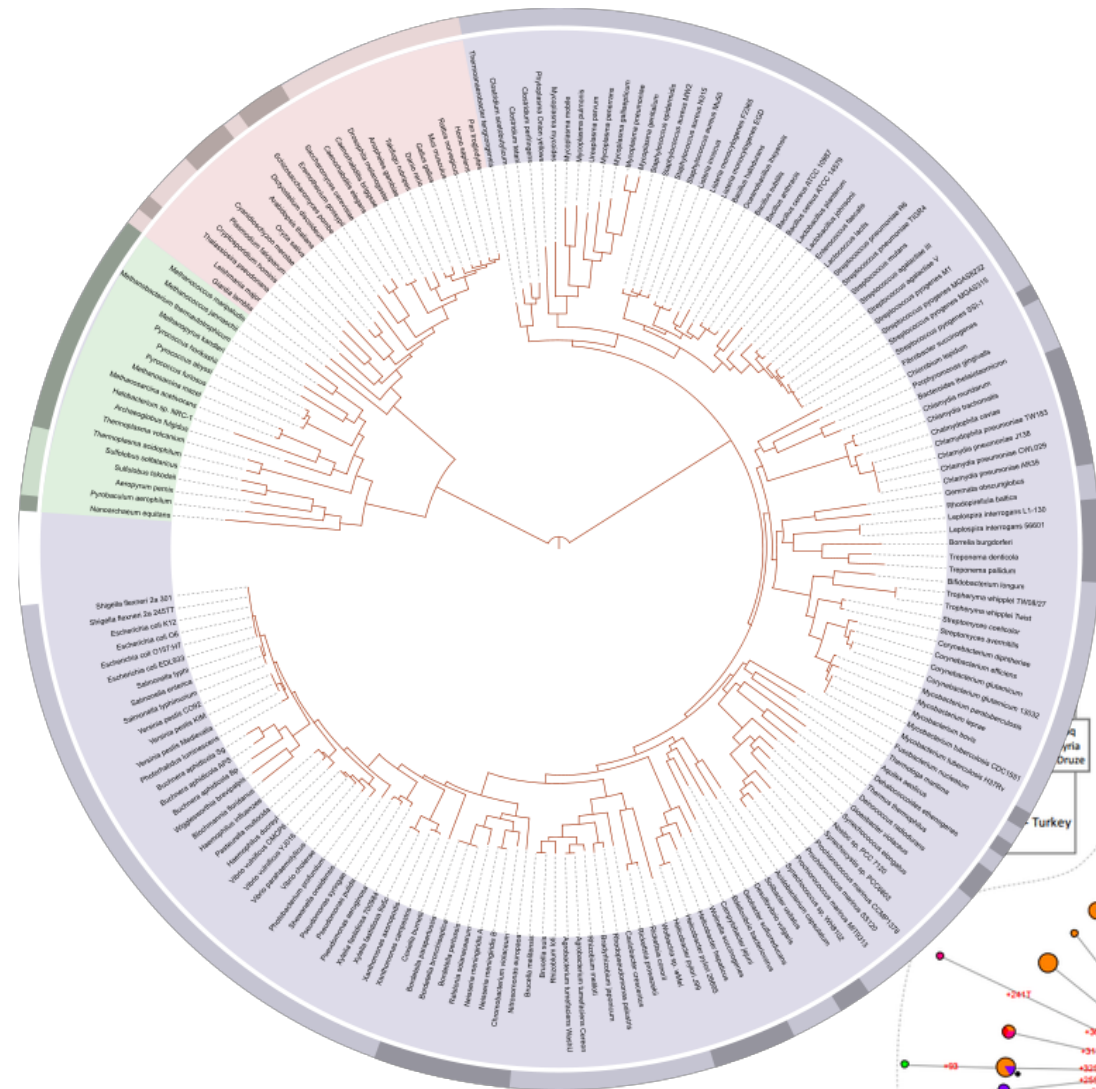
Bioinformatics – molecular metabolic network



Source: Wiki Commons: Citric acid cycle with aconitate 2 - CC BY-SA 3.0

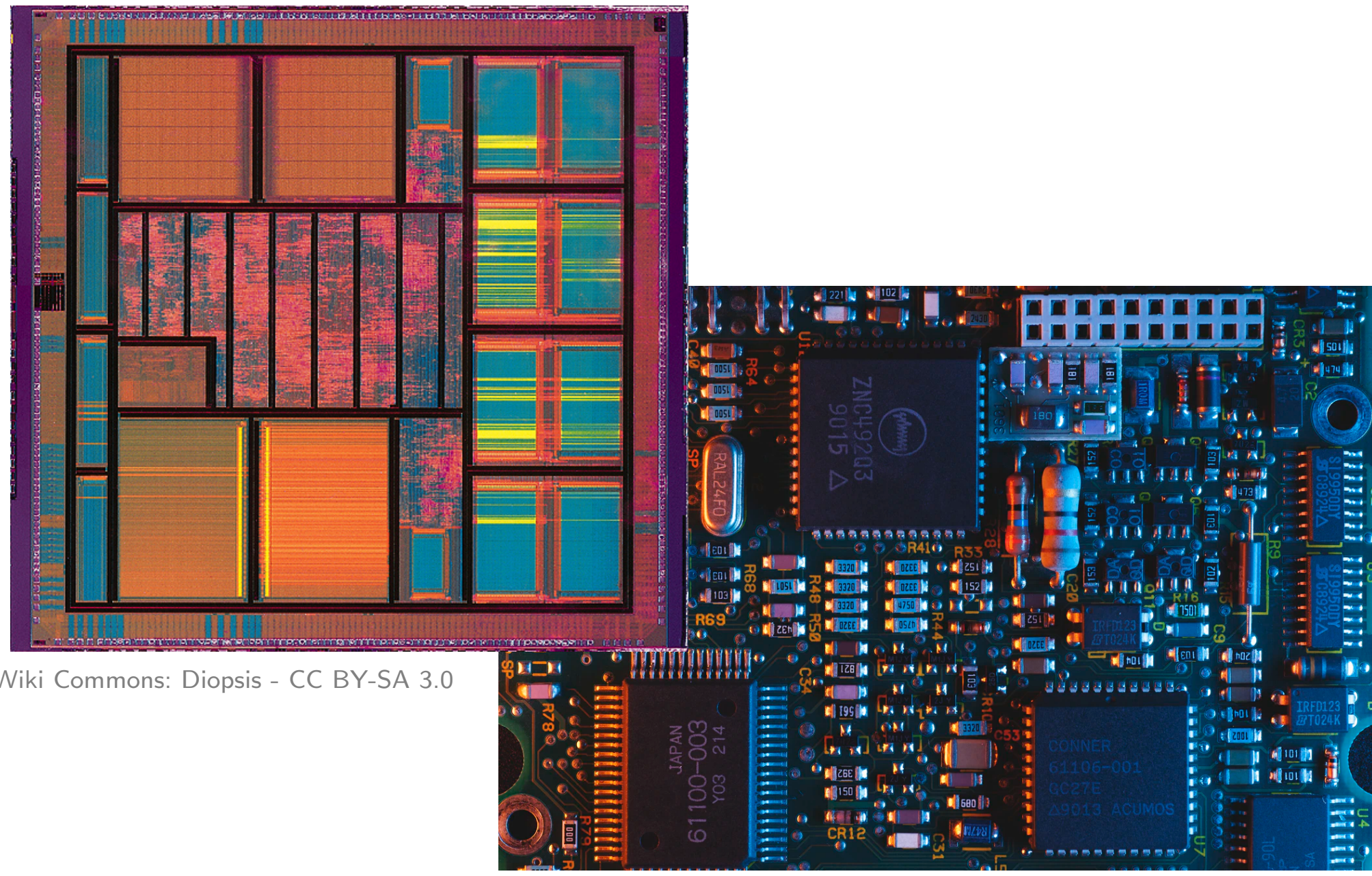
Source: Thiele et al., Nature Biotechnology 31, 419–425 (2013)

Bioinformatics - phylogenetic trees & networks



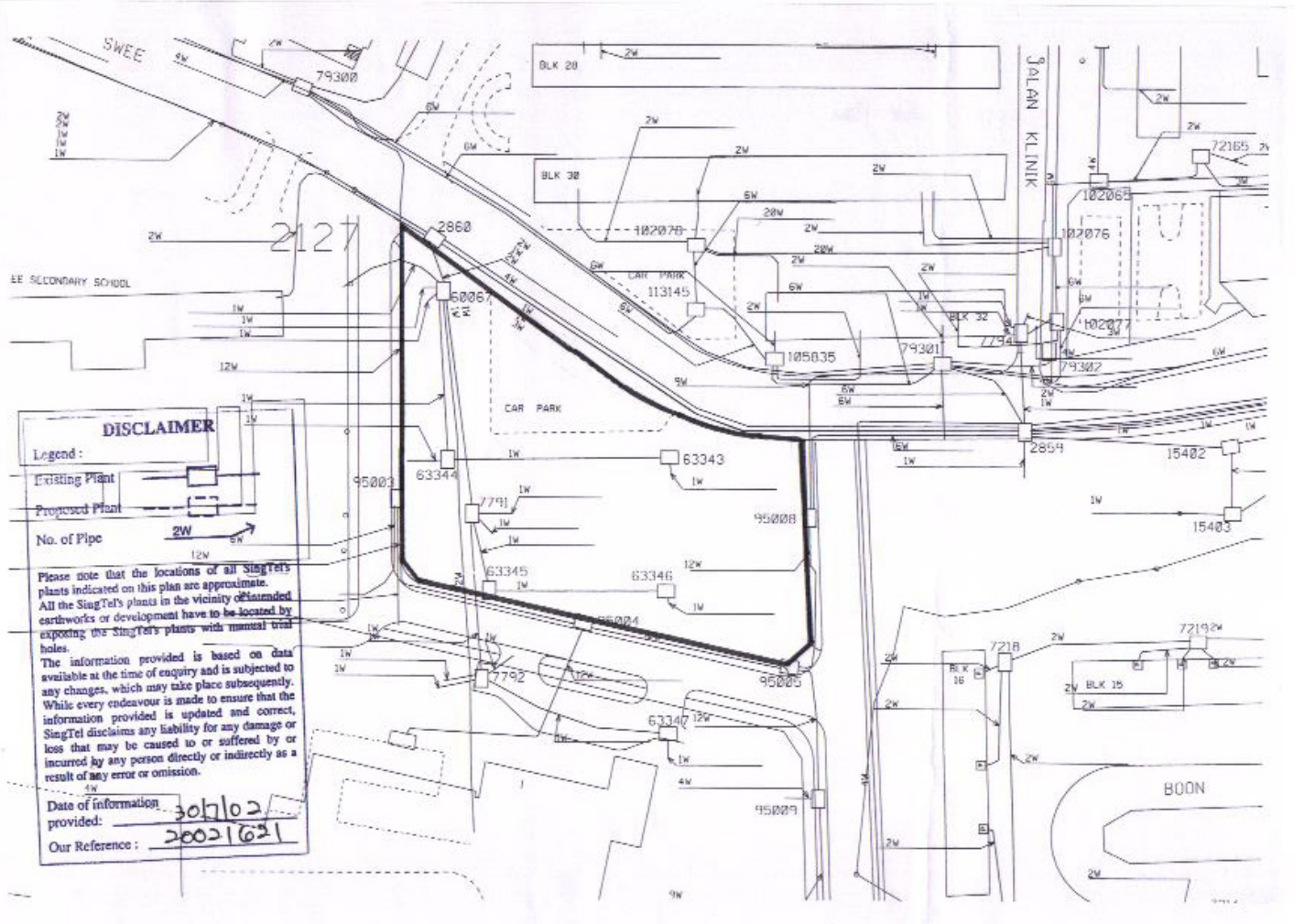
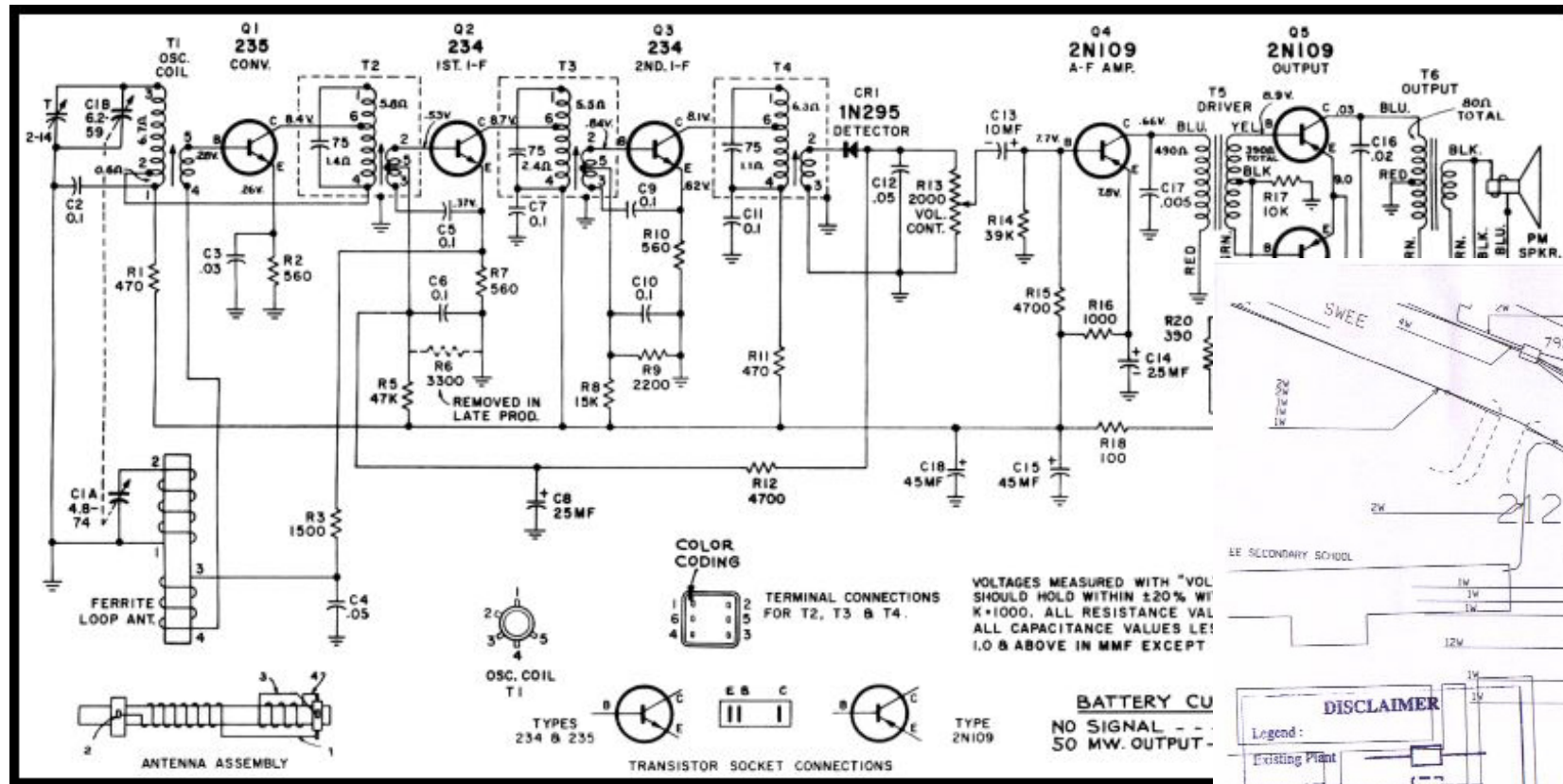
Source: Wiki Commons: Phylogenetic network of HVS-I variation - CC BY 4.0

Technical network - very large-scale integration (VLSI)

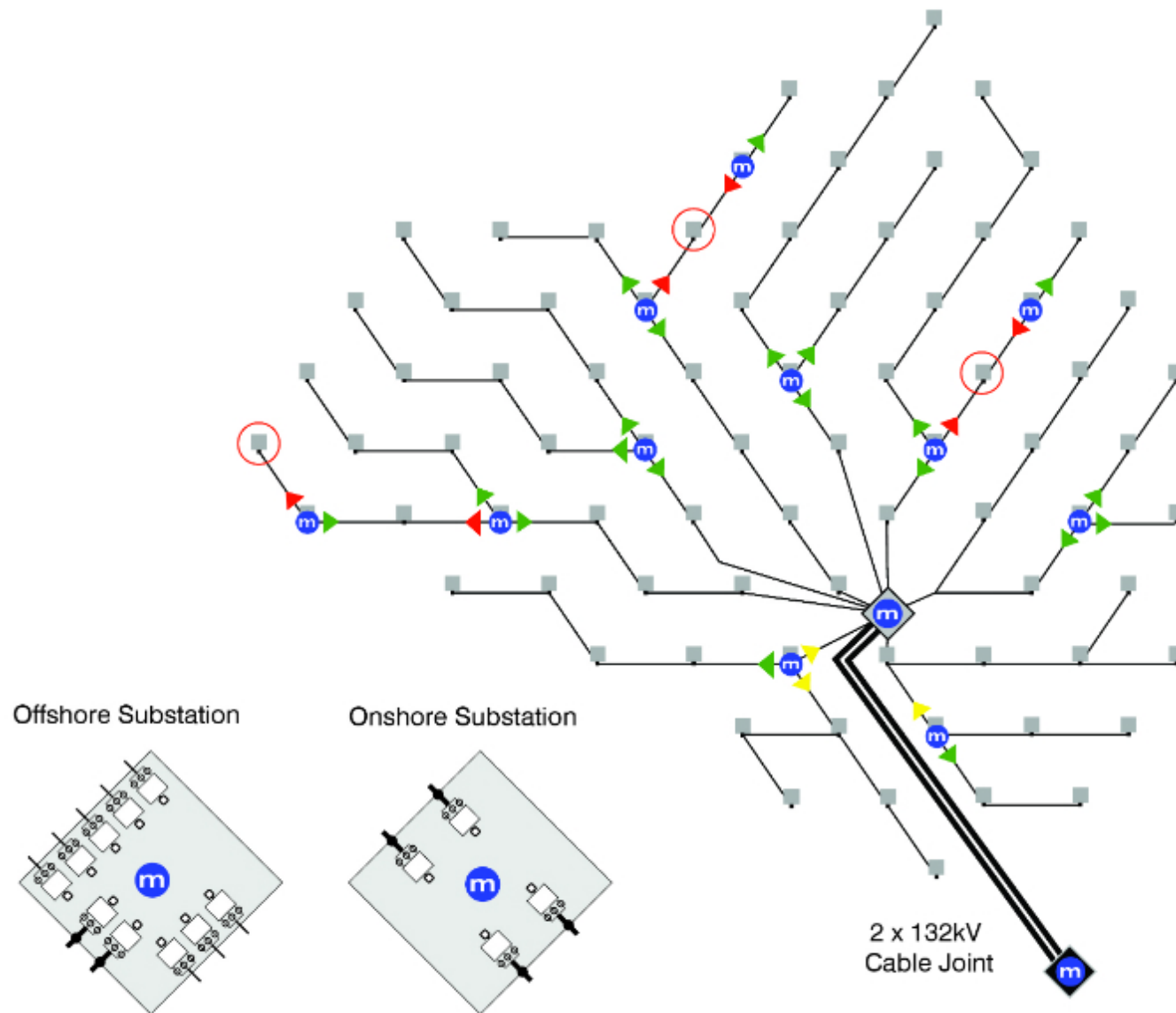


Source: Wiki Commons: Diopsis - CC BY-SA 3.0

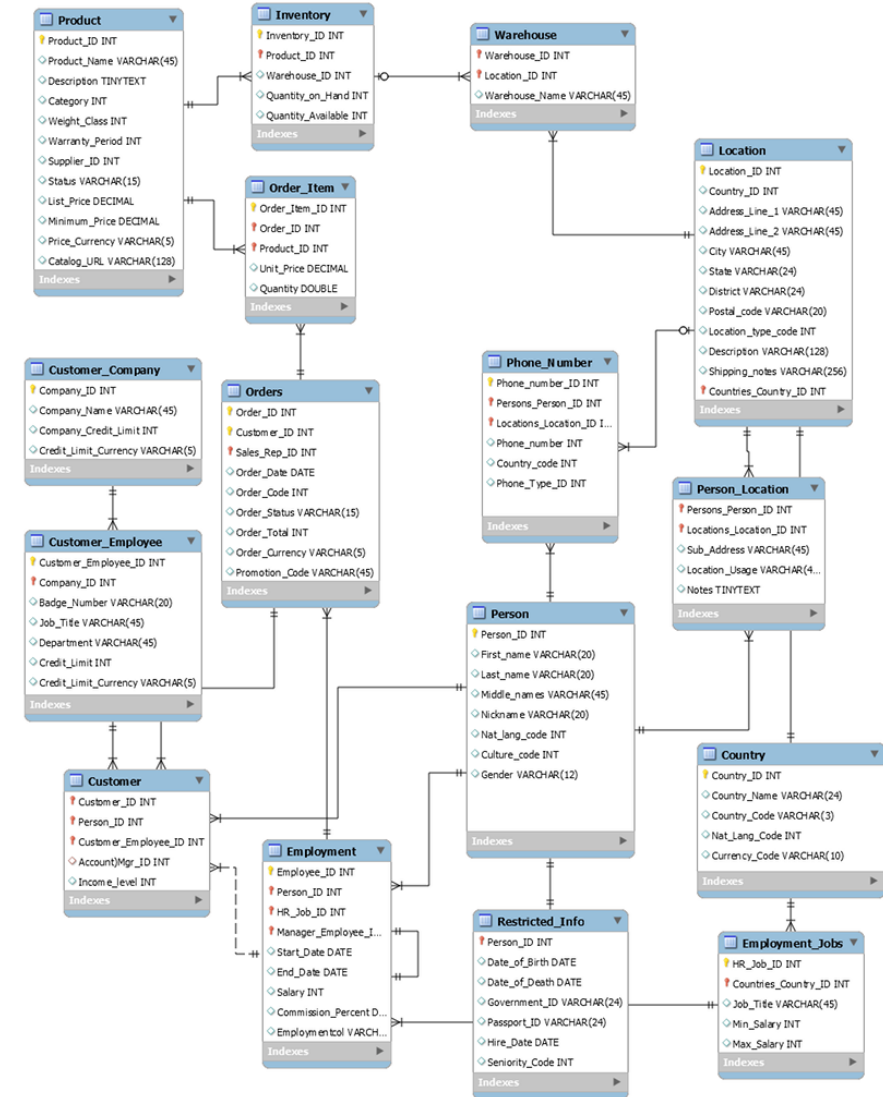
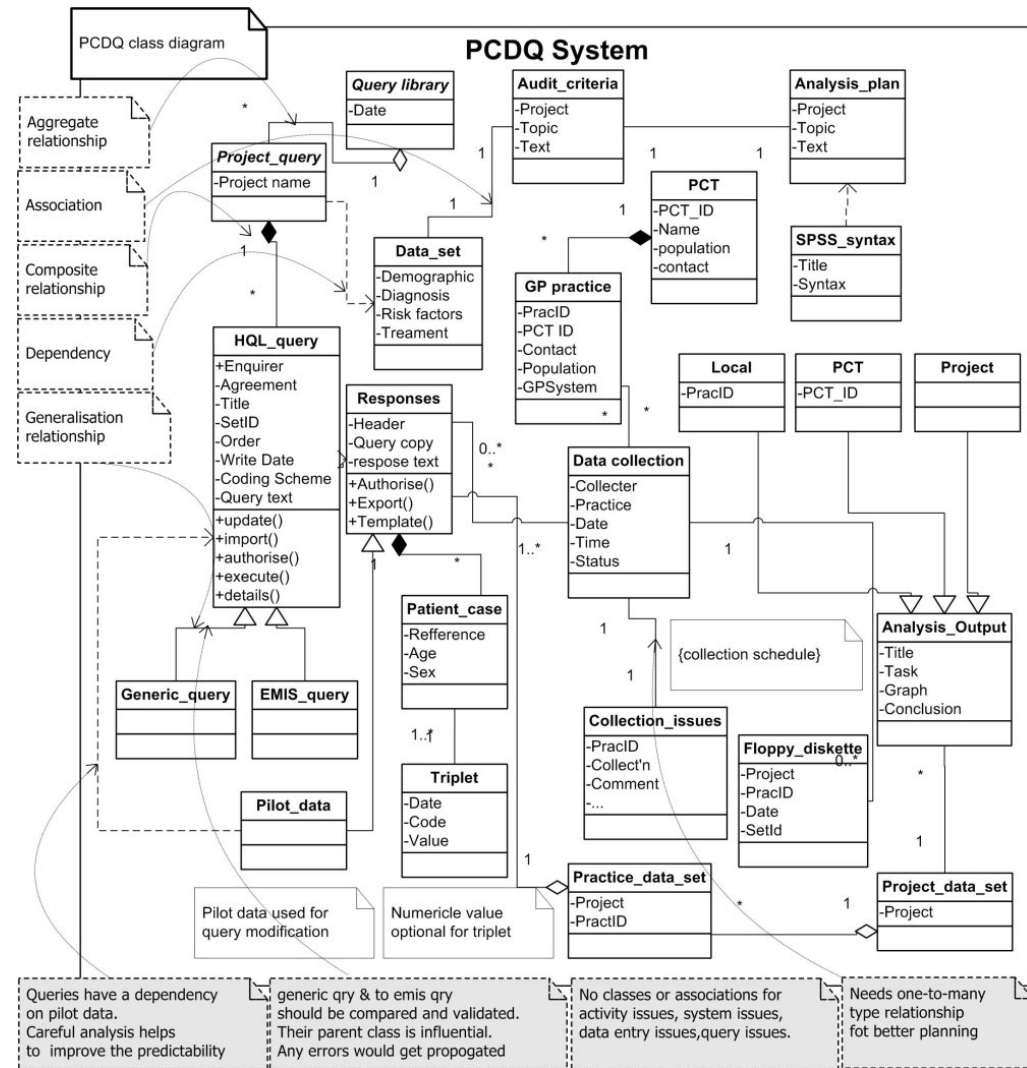
Technical network – transistor diagram, wiring



Technical networks – offshore wind farms



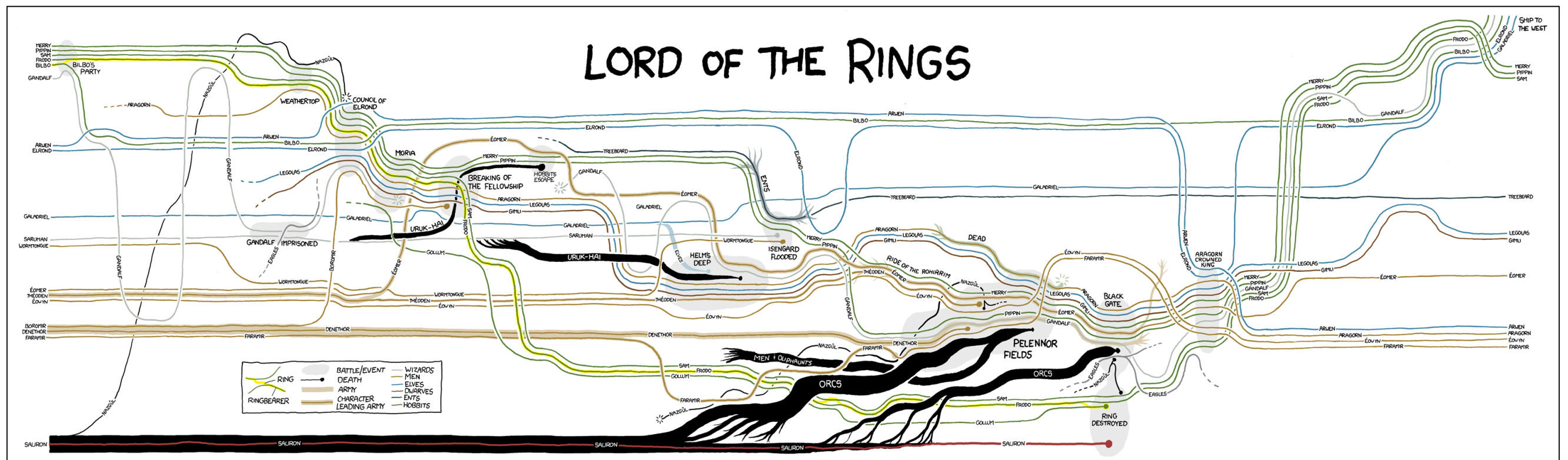
Technical network – UML diagram



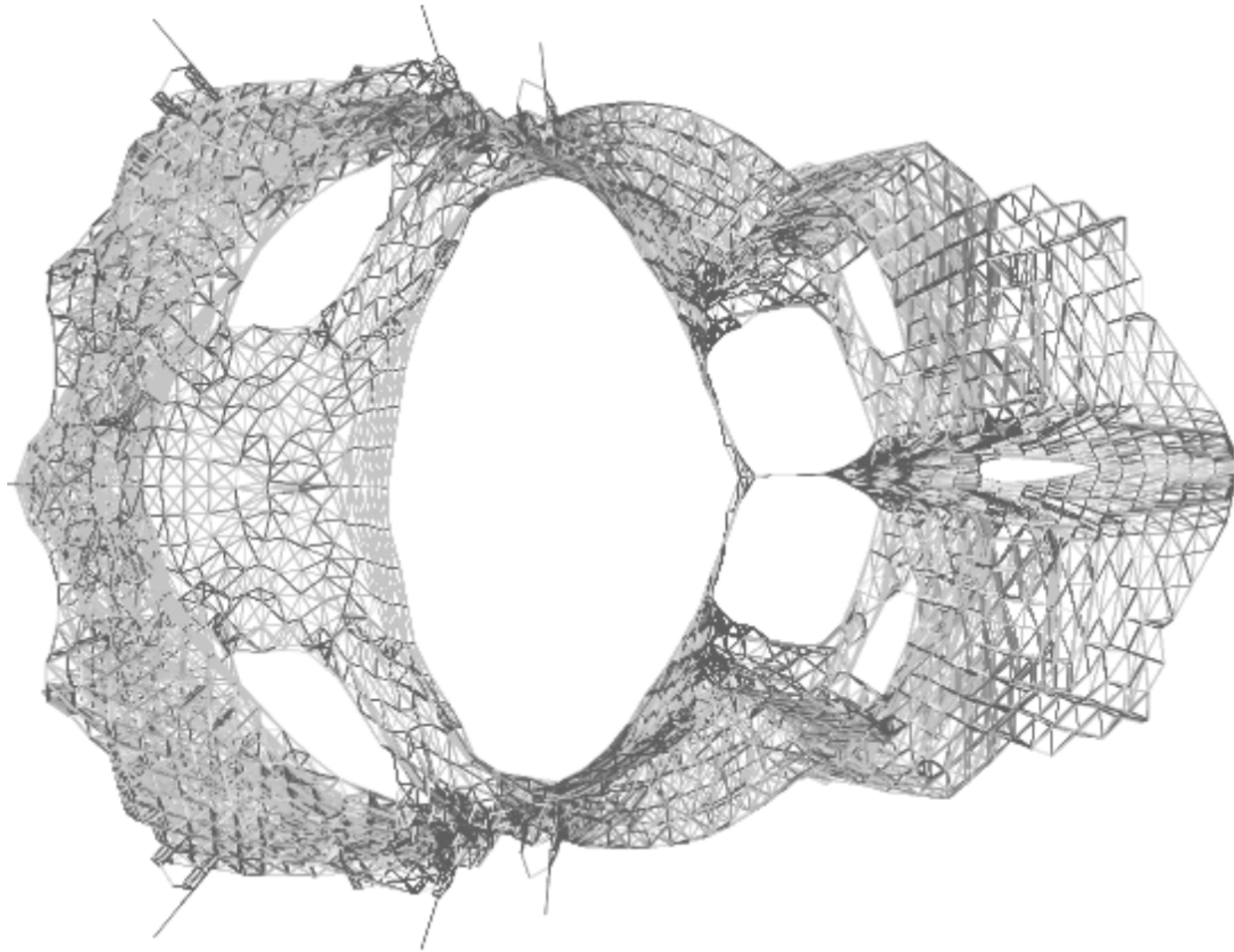
Temporal graph layout – storylines

THESE CHARTS SHOW MOVIE CHARACTER INTERACTIONS. THE HORIZONTAL AXIS IS TIME. THE VERTICAL GROUPING OF THE LINES INDICATES WHICH CHARACTERS ARE TOGETHER AT A GIVEN TIME.

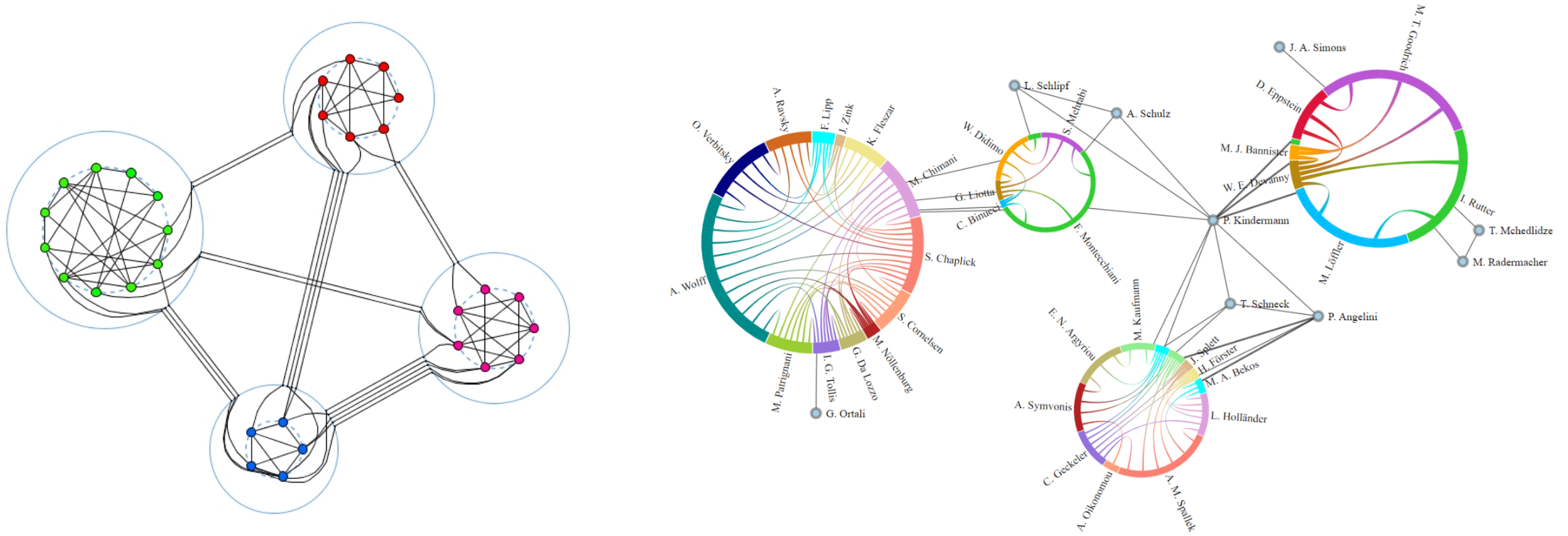
LORD OF THE RINGS



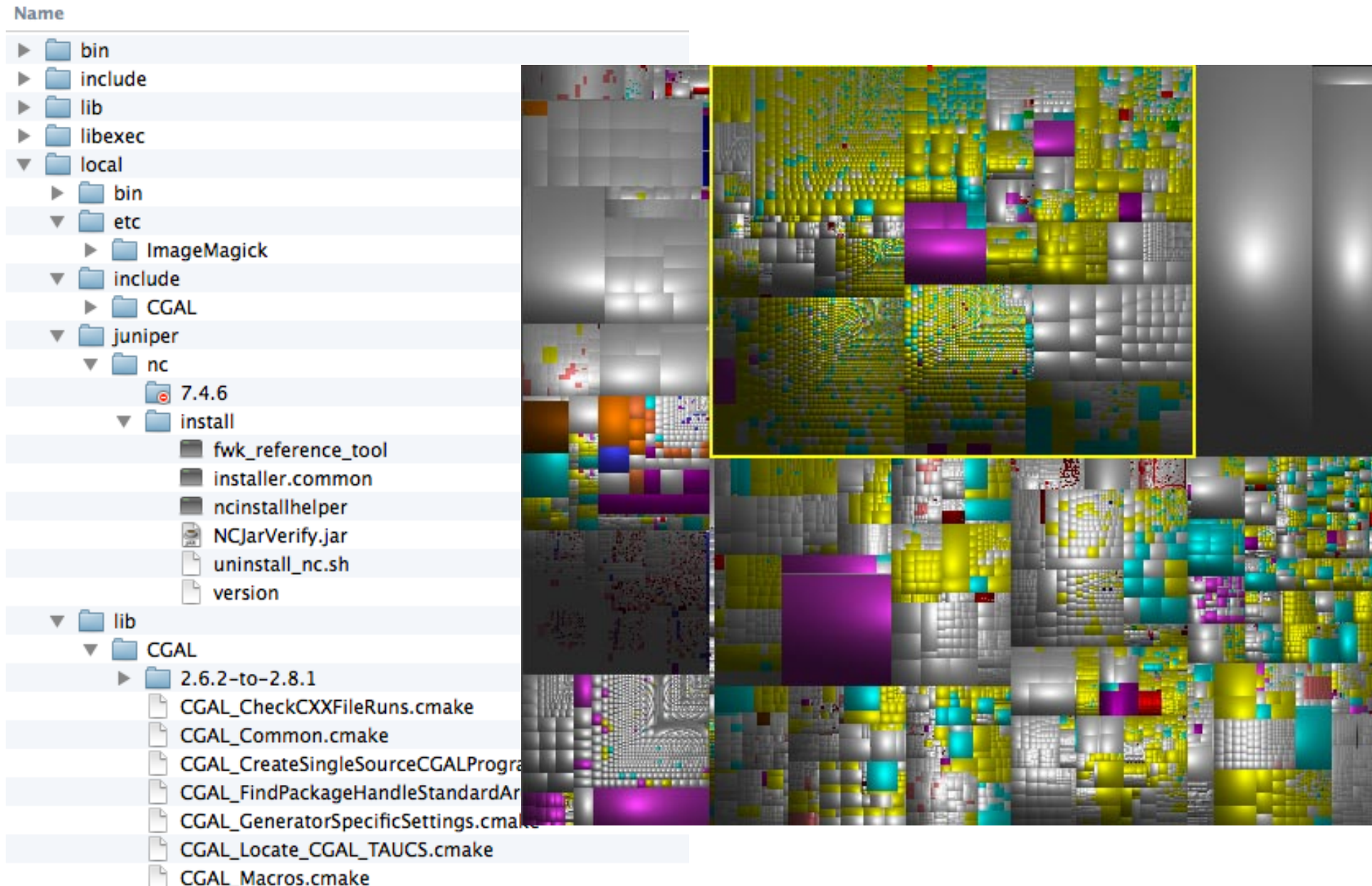
Large graphs – object mesh



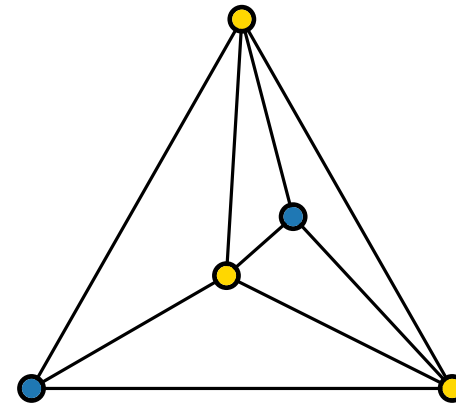
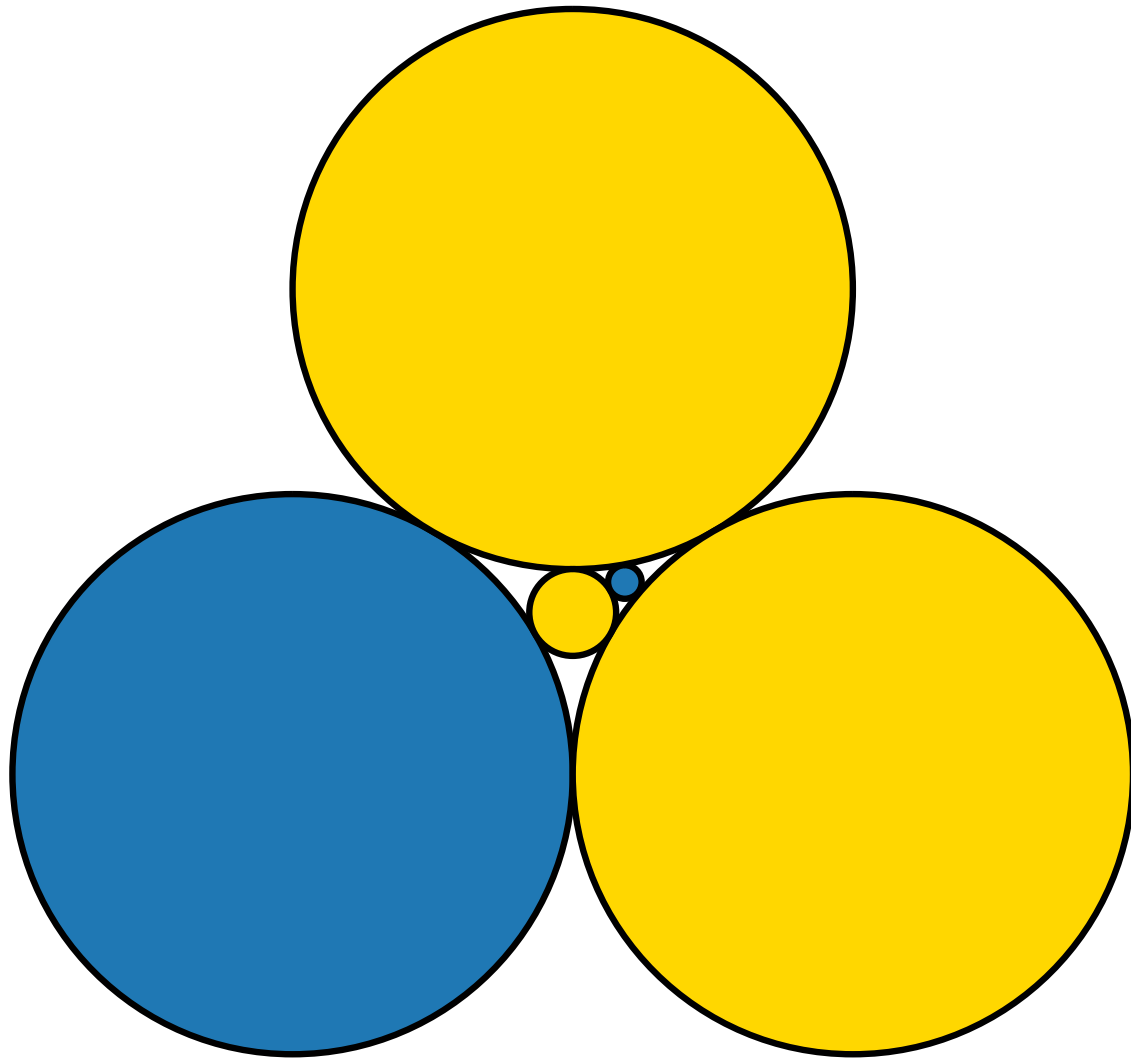
General graphs – micro-macro layout



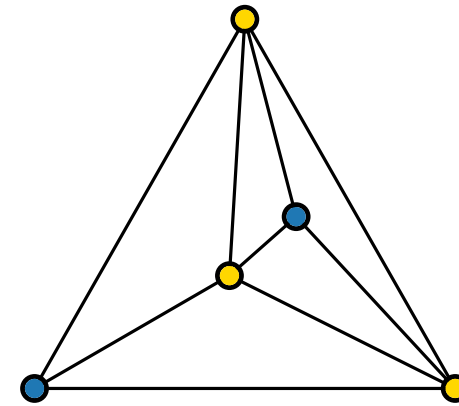
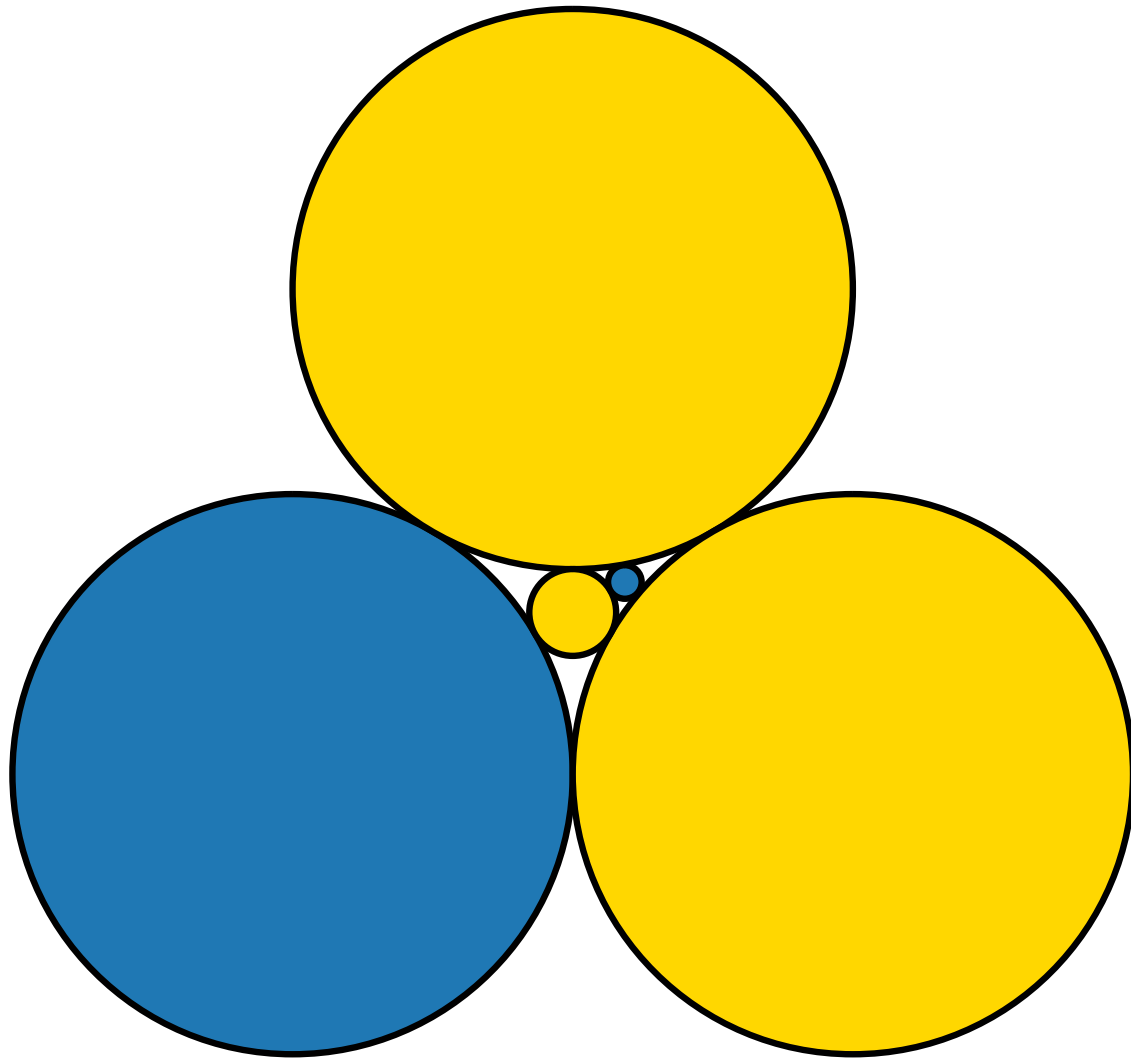
Alternative representations – treemap



Alternative representations – contact graphs



Alternative representations – contact graphs



- For more examples see visualcomplexity.com