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VISUALIZING FOODMC COST NETWORK, GRAPH DATABASE AND VISUALIZATION WEB TOOL

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Database management systems, Research network, Social network, Graph database.

ABSTRACT

The European Cooperation in Science and Technology (COST) is an intergovernmental initiative for European cooperation in scientific and technological research. COST is first and foremost an instrument of networking for initiating research collaborations across Europe, in particular it encourages transnational collaboration and new interdisciplinary research streams. FoodMC is a good example; since 2016 it has provided opportunities to intermingle for scientists from various areas of food science and computer science field. A COST action typically counts around a hundred or more occasional participants; the number of regular participants is limited. It is difficult to keep track of all these COST participants using tabular data and charts in a way that could encourage the networking and the research collaboration.

Network science has been proved particularly relevant for analyzing social network, because it provides techniques to visualize and to measure structural features of the relations

amongst a corpus of individuals. Network science is also used for building science maps of different components of the research, research areas, experts, institution, grants... It holds value for helping researchers or stakeholders to find potential collaborators (Börner et al., 2012). Similarly, information about the participants of a COST action form a network that can be captured and visualized as a graph.

With this aim in mind, we designed a web application called netviz4j to capture basic information about the participants of a COST action as a graph database using Neo4j (see figure). Information includes name of the participant, role in the action e.g. member of the management committee, links to a list of publications and to a personal website, affiliation information and information regarding expertise. We strive for using lists of terms in lieu of open fields to favor the co-occurrence of information amongst the members. Important information of the database can be displayed as a graph. Each registered participant can access own profile to update data via a personal account.

The running test case is a graph with information about 53 FoodMC members. The independent assessment of netviz4j by 8 members of the FoodMC core group was clearly positive with a score of 4 over 5 on average for general assessment and for functionality.

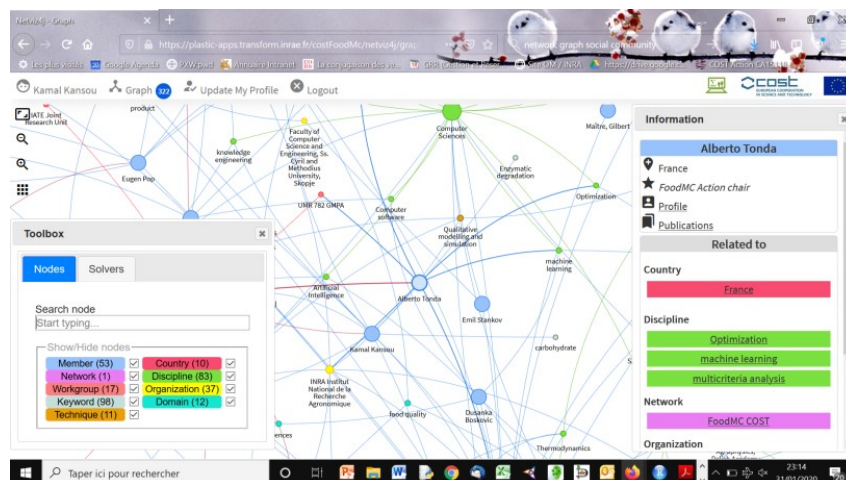


Figure 1: Screenshot of the graph window of netviz4j. Here the node of a member of FoodMC is selected, the information related to the node are displayed in a pop-up window (on the right). A toolbox window (bottom left) allows the user to search for a node and to display only certain types of node.

REFERENCES

Börner K, Klavans R, Patek M, Zoss AM, Biberstine JR, et al. (2012) Design and Update of a Classification System: The UCSD Map of Science. PLoS ONE 7(7)

WEB REFERENCES

<https://plastic-apps.transform.inrae.fr/costFoodMc/netviz4j/>
<https://www6.inrae.fr/foodmc>