

MANMADE

MINUTES

3nd Management Committee Meeting **21th-22nd January 2008** **Collegium Budapest, Hungary**

Present at the meeting were:

David. Arrowsmith (QMUL) (DA)

Flavio Bono (JRC) (FB)

Maria Calzarossa (Science Advisor) (MC)

Rui Carvalho (QMUL) (HT)

Claudia Colicchia (LIUC) (CC)

Imre Kóndor (COLB) (IC)

Eugenio Gutiérrez (JRC) (EG)

Imre Janosi (COLB) (IJ)

Matti Jauhiainen (NESA) (MJ)

Peter Kiss (COLB) (PK)

Ljupco Kocarev (MASA) (LK)

Matteo Manera (LIUC) MM

Zita Marossy (COLB) ZM

Dennis Moynihan (QMUL) (DM)

Carlo Noè (LIUC) (CN)

Gabor Papp (COLB) (GP)

Hannu Sivonen (NESA) (HS)

Fernanda Strozzi (LIUC) (FS)

Mark Szenes (COLB) (MS)

Hugo Touchette (QMUL) (HT)

MMC members absent:

All member institutions represented.

Minutes

21 January

13:45:

- IK welcomed the group and provided background regarding the Collegium.
 - An institute for advanced studies, COLB was created in the 1990s with the support of France, Germany, Austria, Switzerland, and a combination of private and public funding.
 - COLB operates a 10 month long scholarship program.
 - With the evolution of the political context, the initial western economic support has shown a decline as attention to the region has lessened. As a result, COLB has been more competitive in seeking EU funding for research initiatives, with a significant level of success (securing more than 5.5M EUR).
 - This success in securing public funding has, in turn, made the Collegium more attractive to private funding sources.
 - As a result, in the 2007 budget, 20% of COLBs revenue is from the initial western sources while 80% is now attained through research competition and private funding.
 - Consistent with this change in funding sources, COLB is now more focused on applied topics. Specific topical areas include the energy sector (and not just the MANMADE project but work with EON and other main producers). IK hopes that this becomes a major research focus in the future.
- DA:
 - Welcomed the group and welcomed our science advisor, Dr. Calzarossa, to the meeting. DA noted that the other science advisor, Dr. Mario di Bernardo, could not attend due to heavy teaching duties and that he would be presented with the results of this meeting for his review. DA also welcomed our representatives from NESAs, Mr. Jauhainen and Mr. Sivonen (HS).
 - Noted that Alejandro Martin Hobday, our EU Project Officer, has left the project due to workload. Ms. Iliana Nicolova has taken over in this role and DA will be working with her shortly to provide any information she may need.
 - Noted that the intention of this meeting is not just to follow up on administrative issues, but instead to focus on moving the science activities forward. He noted that he has reviewed the minutes of the last meeting and feels that we are on track. Should there be any outstanding issues identified from the previous meeting, he will follow up with the involved individuals personally.

- Introduced the attendees from QMUL, Dr. Carvalho (who is new to the project), Dr. Touchette and Mr. Moynihan.
- EG introduced Mr. Bono and reminded the group that he is responsible for distributing the datasets and for conducting network analysis.
- FS introduced the participants from LIUC and noted the multidisciplinary nature of the LIUC group. In addition to FS, LIUC was represented by Dr. Manera, an economist, Ms. Claudia Colicchia, a PhD student, and Dr. Noè, representing engineering with a supply chain focus.
- The attendees from COLB introduced themselves, including physicists Dr. Janosi, focusing on wind power, and Dr. Papp, working with energy provider EON, as well as PhD students Mr. Peter Kiss, Mr. Mark Szenes, and Ms. Zita Marossy.
- LK introduced himself as the representative of MASA and noted his involvement with work package 6 (WP6) of the MANMADE project.
- HS noted that NESAs role is to connect the project to industry, and noted that NESAs works with about 1,000 companies in Finland across many sectors for national energy system defense.

14:05:

- HT provided the QMUL update, presenting “WP 3.1 Scaling and Correlation in the Nordic Spot Electricity Market Data”. This work summarizes an analysis of the time series data for market pricing using the Hurst coefficient, noting that periodicity is seen in daytime data points but not during the evening, and that the long range correlation of the data shows anti-persistent Hurst characteristics.
- RC introduced himself, noting his background in physics and economics. He is particularly interested in commodity flows. RC presented an analysis of the existing MANMADE datasets, including comments on the literature and recommendations regarding additional datasets that might be of interest, noting for example that Octo Telmetrics has insurance-industry data tracking real time traffic flows for road systems. He provided the additional suggestion that it would be interesting to consider interlinked networks, for example, where the bus, tram, and tube networks share nodes.
- EG noted that he has a contact that can provide additional data on traffic flows. However, some data related to commodities is difficult to obtain because it offers a competitive advantage to the data owners.
- RC will work with FB and others to explore opportunities for additional datasets.

14:40:

- FB provided an update from the JRC. Commenting on WP2 (data collection), FB summarized the status of building and making available datasets. He noted that:
 - timeseries datasets are available addressing
 - electricity grid disruptions

- the electricity market pricing
- topological datasets are available addressing:
 - Electricity grid networks
 - Gas pipeline networks
 - Urban street and transport networks
- FB noted that significant work has continued to improve the quality of the datasets, including network corrections, elimination of minor grids, addressing topological discrepancies, generating adjacency matrices, and identifying relationships of interconnected networks. FB noted that the datasets are available to team members on the team FTP site hosted by the JRC.
- EG noted that the datasets are now more accurate than the originally distributed versions and that team members are welcome to review the improved datasets. He also called upon team members to consider and communicate their needs for additional datasets.
- FB then continued with the presentation “Synthesis of D1.3: Network analysis of interaction between consortium members and MANMADE forum”. This analysis considered the social network comprised of the project team members and illustrated by the internet-based communication forum used to support the project. This analysis considered the network evolution and analyzed k-cores, cliques, and cohesiveness.

15:35:

- FS provided an update on LIUC activities with the presentation “WP5 Dynamics of supply-chain and market volatility of networks”. She presented the following status update on WP5:
 - D5.1. Report on supply-chain logical model by means of the Petri nets formalism (M12), **completed**.
 - D5.2. Report on market dynamics model (M12), **completed**.
 - D5.3. Report (paper) on Cross Recurrence Quantification Analysis between markets volatility and the dynamics of power systems dynamic (M24), **50% Done**
 - D5.4. Report (paper) on coupled market dynamics - power systems- supply chains (M30)
 - D5.5. Report on early warning detection algorithm and suggestions on how implement it in real systems (M36)
 - EWDS developed for a one level supply-chain.
- CN presented the detailed findings on WP5 D5.1 with the presentation “WP5 D5.1: Logical framework of the impact of the electric power supply on a logistic-production system”.
- MM presented “WP5 D5.2: Modeling Electricity Prices: from the State of the Art to a Draft of a New Proposal”. This presentation summarizes interesting characteristics of electricity markets, reviews relevant literature, and advocates the adoption of a new methodological framework based on Dynamic Factor Models.

16:15:

- LK provided the MASA project update with "WP6 Vulnerability of Interconnected Networks Review and Planned activities". In this presentation, LK discussed the nature of "infrastructures" and infrastructure interdependency modeling, highlighted dependency matrices (including highlighting the concepts presented previously by HS of NESAs), and described various influence models. LK listed the following planned areas of research for WP6:
 1. Compute influence matrix for several infrastructures, and apply influence model within an infrastructure and between infrastructures
 2. How does spread of failures depend on the network topology? How does the behavior of the evil-rain model depend on the network topology?
 3. Given a graph, how to compute the influence matrix?
 4. Optimization problem for infrastructures

17:00:

- PK of COLB presented "WP4: Assessment Report on the Wind Energy Potential over Europe. Part II. Wind Power Networks". In this research, PK assessed proposed network models which utilize large scale (pan-European) integration to achieve performance objectives in the context of high variability of wind energy availability.
- ZM and MS of COLB presented "Analysis of day-ahead electricity data" which, like the presentation of HT, assessed periodicity and Hurst coefficient aspects of electricity spot market data. IK and EG noted that there is a conflict in the results between the Hurst exponent findings of COLB and QMUL. All agreed that LUIC, COLB, and QMUL would collaborate to investigate these results in more detail [with a further discussion conducted on 22 January].
- EG asked if the COLB price data can be shared with the team. IK noted that he would have to review this request with the data providers to identify any restrictions on the data.
- EG noted that there is discussion and debate, politically, regarding any linkage between electricity blackouts and the liberalization of electricity markets. EG noted that any findings regarding this topic would be of broad interest.
- EG also noted that the datasets would be updated for month 18.

Feedback

17:45:

The team asked HS to provide his comments and feedback from the NESAs partner perspective.

- HS noted that he had reviewed the papers published by the team to date and compared this to the objectives of the projects. He made several observations:

- The publications are tested against real world data, but there should be increased focus on understanding the connection between the work and real world data (as mentioned in the objectives);
- Electricity blackouts are a topic of interest, and HS noted that when blackouts occur the network is both repaired and enhanced with the goal of reducing future risks. With this in mind, HS hopes that the project research might give more deep insights into blackouts. He concurred with EG in noting that there is an interest in any links between blackouts and marketing pricing.
- He asked if there could be a chart on the project website that shows how the papers work towards the project objectives (that is, the flow of papers in the “big picture”).
- He suggested that the papers’ conclusions could include more “layman” feedback. In other words, where do these conclusions fit in a larger and more practical context?
- IK noted that this project consists of different groups joined together, and as such the groups need to continue to develop coherence, interconnections, and working relationships. The presentation made by MS and ZM, and the fact that it contradicts the findings presented by HT, showed that there is a need for more collaboration. IK noted that at this stage of the project we are still far from meeting HS concerns. However, DA noted that we do seem to be on the right track in terms of building better team collaboration.
- DA noted that he will give more info to HS with comments on the project’s progress.

The team asked MC to provide her feedback regarding the presentations and project. While suggesting that she would like to take some additional time to reflect, she did offer the following comments:

- She found the presentations to be useful and felt they provided a good overview of the project.
- She has a very positive impression, complimenting the group and noting that the science is good as well as the list of papers generated to date.
- Collaboration to date seems to be quite good, but this is an area where we need to reinforce our efforts.
- She noted that she didn’t see any references to other European or national initiatives, and hasn’t seen any linkages with these. This would be very useful for the project and should be reinforced.
- Consistent with this, the “critical infrastructure protection program” of the EU could benefit from the project work. She noted that we should be reaching out to that initiative.
- The project does seem to be stand alone and not adequately looking outside. With this in mind, she asked about our efforts to increase visibility, particularly with policy makers and stakeholders.

- When considering outreach, we should think of European technology platforms, for example, smartgrids, etc.
- At the same time, she noted that the project has good scientific visibility so far because of the papers that have been produced.
- She recommended that we should be able to mention how we are working with the EU when we do our formal presentation(s)/reports on project status.

The team responded to these comments:

- DA noted that we should be thinking about the next meeting in June, and should consider Helsinki. An effort should be made to use this as a forum for broader outreach.
- EG noted that the points raised by HS and MC are very important. He noted:
 - We do plan on additional joint work with other groups and policy makers, and that while we have begun these efforts, we will focus on doing more.
 - We can try to leverage the JRC and other Directorate Generals, and that we will take this as an action item.
- DA made the point that in terms of dissemination, our efforts to date had been to build collaboration within the team, and now that this is underway we have more opportunity to collaborate with outside individuals and organizations.
- DA noted that it had been difficult at times to recruit staff but it is continuing well now at this point.
- IK noted that within Hungary, he has made efforts to integrate this with other official support research of the country. He also noted that COLB has been working with EON and the firm that operates the country's sole nuclear plant.
- IJ suggested that we need to publish an abstract of our work for policy makers.
- EG summarized by noted that we are doing a good job at this point working towards these outreach goals while supporting the concept of doing even more in this area.

DA closed the session by proposing a window for the next team meeting, suggestion sometime during June from perhaps the 9th to the 13th. The team discussed individual availability for such a meeting.

END OF DAY 1

22 January

DA opened the session by summarizing work of the previous day, and emphasizing MC's feedback. Specifically he noted:

- Integration and collaboration within Manmade has to continue to improve

- Outreach research activity has to improve
- Infiltration into other EU complexity groupings has to be transparent
- Web information has to reflect these efforts
- We need to prepare for the audit at month 18
 - Deliverables have to be there
 - Financial audit will be scrutinized by QMUL Finance Department
 - Clear progress on M24 items have to be transparent by June.
- Next meeting: during the week beginning Monday, June 9.

The team then moved to focused breakout sessions to collaborate on specific joint topics and to plan for ongoing collaborative work efforts. These breakout sessions included:

1. Bono, Carvalho, Sivonen, Jauhiainen

- (i) Particular emphasis on spot electricity market data (supplier customer network data)
- (ii) Urban data – multi-levels of transport tube/bus/road
- (iii) EU commodity data (Carvalho)

2. Gutiérrez, Jánosi, Kiss, Bono

Integration of wind maps with the HV grid topology

3. Strozzi, Kocarev, Noé, Arrowsmith, Gutierrez

General opportunities for collaboration

1-2 Touchette, Marosi, Szenes, Kondor, Arrowsmith

Inconsistencies in Hurst parameter data. What actions are we going to take. Actions (may involve Erzgraber (formerly QMUL) in managing data)

2. Strozzi, Noe, Sivonen, Jauhiainen

Risk-ranking model