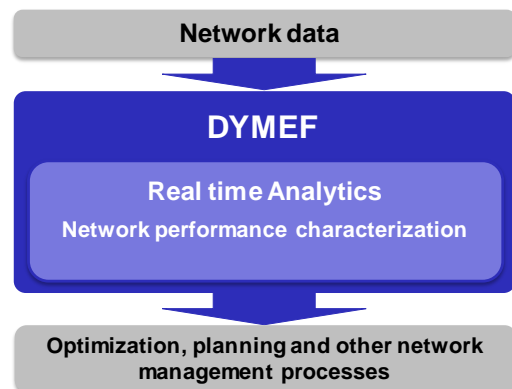


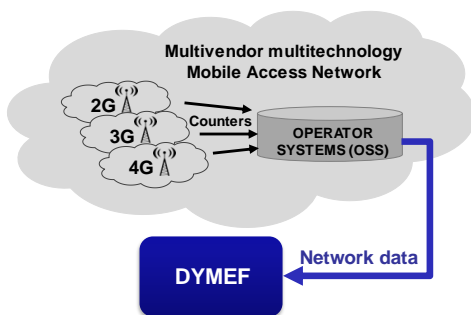
## TELCONOMICS DYMEF

Real time Analytics applied to a Mobile Data Access Network to determine network performance on an empirical and statistical basis.

DYMEF is a platform designed to characterize the performance of a radio access mobile data network, so optimization and planning actions can be defined from it. Mobile data technologies are far from being deterministic in its performance, therefore it is not possible to assure in advance the radio access network performance offered to its users but it is to determine it by empirical statistical processes which, in turn, allows for elaboration of what if scenarios, so network performance can be continuously improved to match real demand and eventually to anticipate to expected or desired demand.



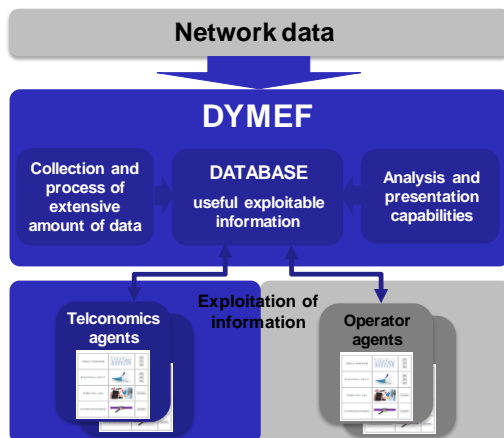
The core of DYMEF is a data platform based on Telconomics expertise on mobile access technologies and a number of processes to convert an extensive amount of data into useful exploitable information allowing for real time analytics.



DYMEF is fed with information from the access network; each node (cell) of the network generates an extensive amount of data on a periodical basis which are collected upstream in one or more systems within the Operator structure, i.e., an OSS system. From there, DYMEF extract specific information, which is processed, debugged and stored in a database. Determining which specific data is required and where and how to collect it, is Operator dependant, therefore, customization is required. Once it is implemented, the whole process of keeping the platform updated and

ready to exploitation is done fully automatically on a nonstop basis and without any impact to the network nor any action required form the Operator. On top, there is no practical limitation to the amount of information to be stored on DYMEF Platform.

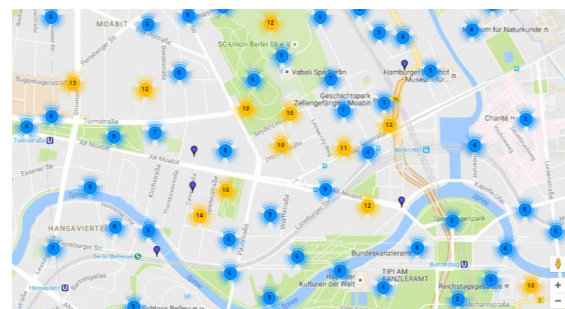
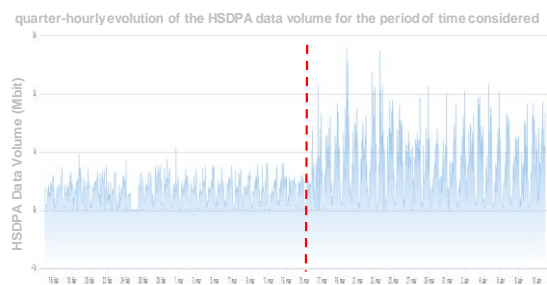
Telconomics DYMEF allows the Operator to determine the performance of the mobile data network based on detailed real time analytics. Analysis can be done on a single cell, time spam and technology as well as on any aggregation level up to the entire network for the whole spam of time for which there are historical data available. It allows the Operator to obtain very specific pictures as well as long time trends and evolutions of the network. It also allows for real time detection of abnormal performances, follow up of the effects of done actions, etc. Additionally, projections on performance can be elaborated based on given scenarios. DYMEF works with all technologies coexisting in a real network (2G, 3G and 4G), which makes it useful for refarming proposes. At the end of the day, DYMEF will help the Operator to align investment to real and desired network performance.



DYMEF counts on inbuilt capabilities allowing agents to address queries to the database and get reports in real time in form of visual and interactive lists, graphs and maps that can also be exported. Agents can be Telconomics' (exploitation as a service) or Operator's (exploitation as a product) or a mix.

Access to information and exportation capabilities are adequately managed and secured, allowing for different profiles of exploitation. Once into DYMEF, agents will make use of friendly menus. There is no practical limit to the number of agents.

There is an unlimited potential of exploiting DYMEF, not only because of the usefulness of the available data but also because of the flexibility in defining queries and presenting results, which will be very much based on Operator needs and processes. A specific consult is defined by a number of input conditions that can be filled or selected from pop-up possibilities. Agent will define which technical parameter or set of technical parameters to analyse where, for how long and with which time granularity. For example, a graphical representation of the quarter-hourly evolution of the HSDPA data volume of a given cell for two weeks before and after a given actuation on the cell. Or the position in the map of those cells in a certain region which HSDPA data volume has exceed a given threshold in the last week which a given time persistence.



- ✓ **Agnostic to technology**
- ✓ **Scalable**
- ✓ **Non intrusive**
- ✓ **Flexible exploitation**
- ✓ **Cost efficient**
- ✓ **Easy of use**
- ✓ **Multifunctional operation**
  - **Performance analytics**
  - **Multiparameter analytics**
  - **Network metrics supervision**
  - **Out of range early warnings**

It is also possible to define and program repetitive consults or reports, so they are executed from one-click buttons or even automatically. For example, a weekly report on the top underperforming cells by a given criterion, automatically generated every Monday morning. It is Early warnings to alert in real time of those cells behaving above or below a defined criterion can as well be programmed.

DYMEF allows the operator to understand the real performance of the mobile data access network, facilitating its technical management.

An over the shelf version of Telconomics DYMEF specially intended for short time to operation and very friendly use is available.

**TELCONOMICS DYMEF**  
**Real time Analytics applied to a Mobile Data Access Network**