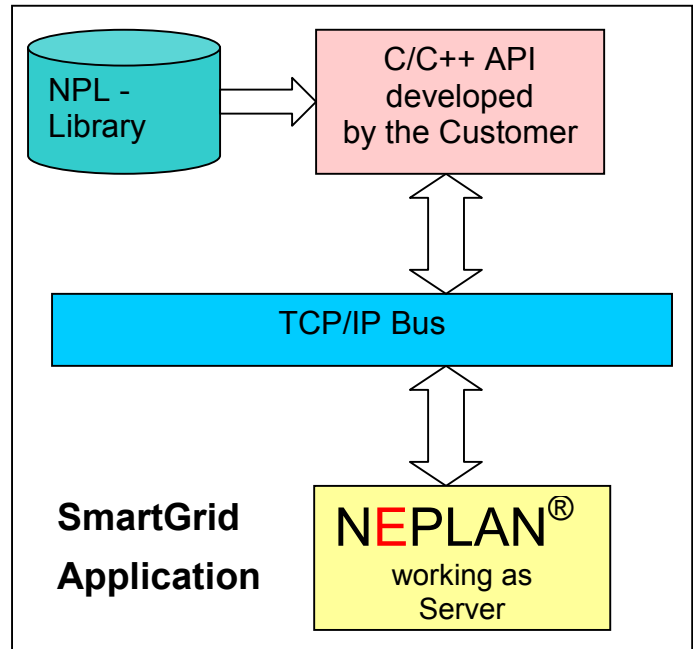


## NPL - NEPLAN Programming Library

The NPL – NEPLAN Programming Library is a C/C++ API library, which includes functions to access NEPLAN data and calculation algorithms through a C/C++ user written program. Functions included among others are:

- Access any variable of any component
- Change any variable of any component
- Execute any analysis/calculation function
- Retrieve the calculation results
- Add new components to the network
- Delete components from the network
- Add and change the graphical information (x, y coordinates, symbols, etc.) of any component



## NPL - Applications

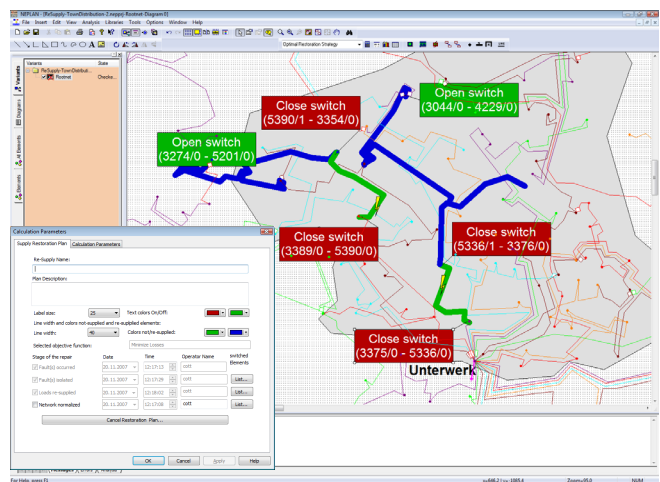
Many customized applications are possible:

- Implement NEPLAN with a NPL application in a SmartGrid environment
- Use NEPLAN in batch mode (e.g. running several load flows and short circuit calculations cases)
- Build customized interfaces (e.g. GIS, SCADA/DMS, DACF, CIM, etc.)
- Develop a network master controller with events (such as “if u < 90% switch on reserve generator”) and run the application in a quasi stationary mode
- Checking protection behavior under various network conditions
- Use NEPLAN as server and connect NEPLAN to a TCP/IP bus. The client may send any NPL command to the NEPLAN server (e.g. run load flow, open switch, change load, etc)
- Use NEPLAN as On-line system and build a DMS application using the NEPLAN graphic editor and the analysis tools
- Researchers may even develop their own calculation algorithms (e.g. OPF, reliability, capacitor placement etc.)
- ..... and much, much more.....

### NPL – C++ Program example

```
//C ++ NPL Programm
void RunTestNPL()
{
    //Open a NEPLAN project file
    OpenNeplanProject(_T("NeplanDemoProject.nepprj"));
    //run initial load flow
    RunAnalysisLF();
    //change the line length of line 'Line-1' to 0.5 km
    unsigned long ElementID=0;
    GetElementByName(_T("LINE"),_T("Line-1"), ElementID);
    if (ElementID > 0)
        SetParameterDouble(ElementID,_T("Length"), 0.5);
    //run load flow with changed line length
    RunAnalysisLF();
}

This colour means these are C++ NPL library functions
```



On-line DMS application: Optimal restorations after a fault