



Énergie NB Power

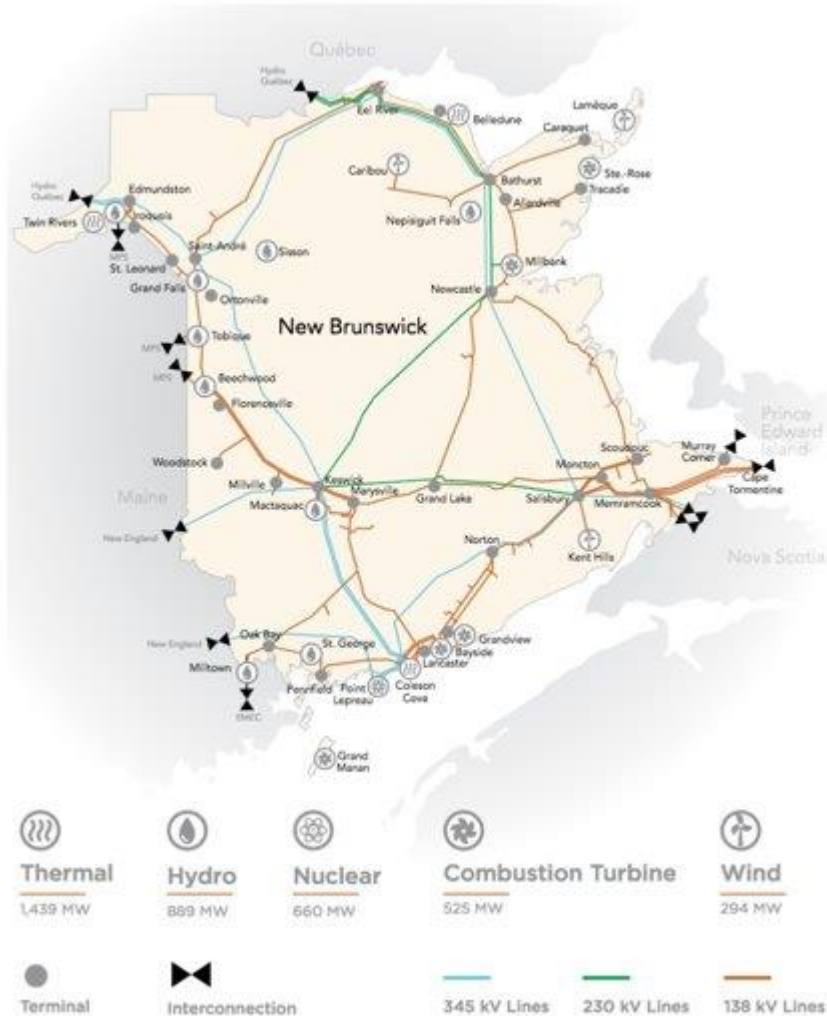
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Grow your own Information Model

October 2, 2019

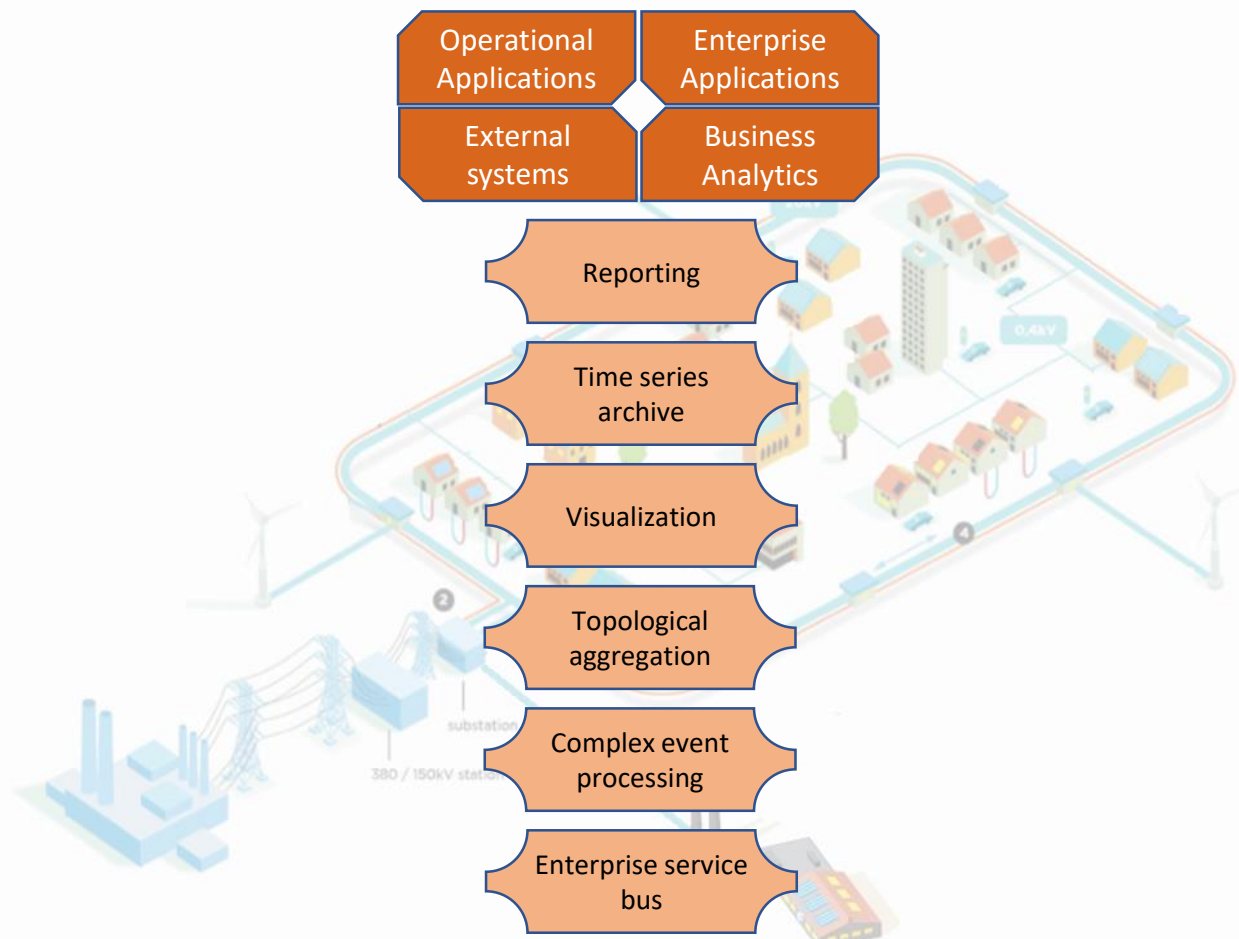
SETTING THE SCENE



- Largest electric utility in Atlantic Canada
- Responsible for the generation, transmission and distribution of electricity throughout New Brunswick
- As a provincial Crown Corporation, the Government of New Brunswick is the owner and sole shareholder of NB Power
- 2,500 + employees
- 400,000 + direct and indirect customers

On track to have 40% of our energy from renewable sources and 74% non-emitting when combined with nuclear power by 2020.

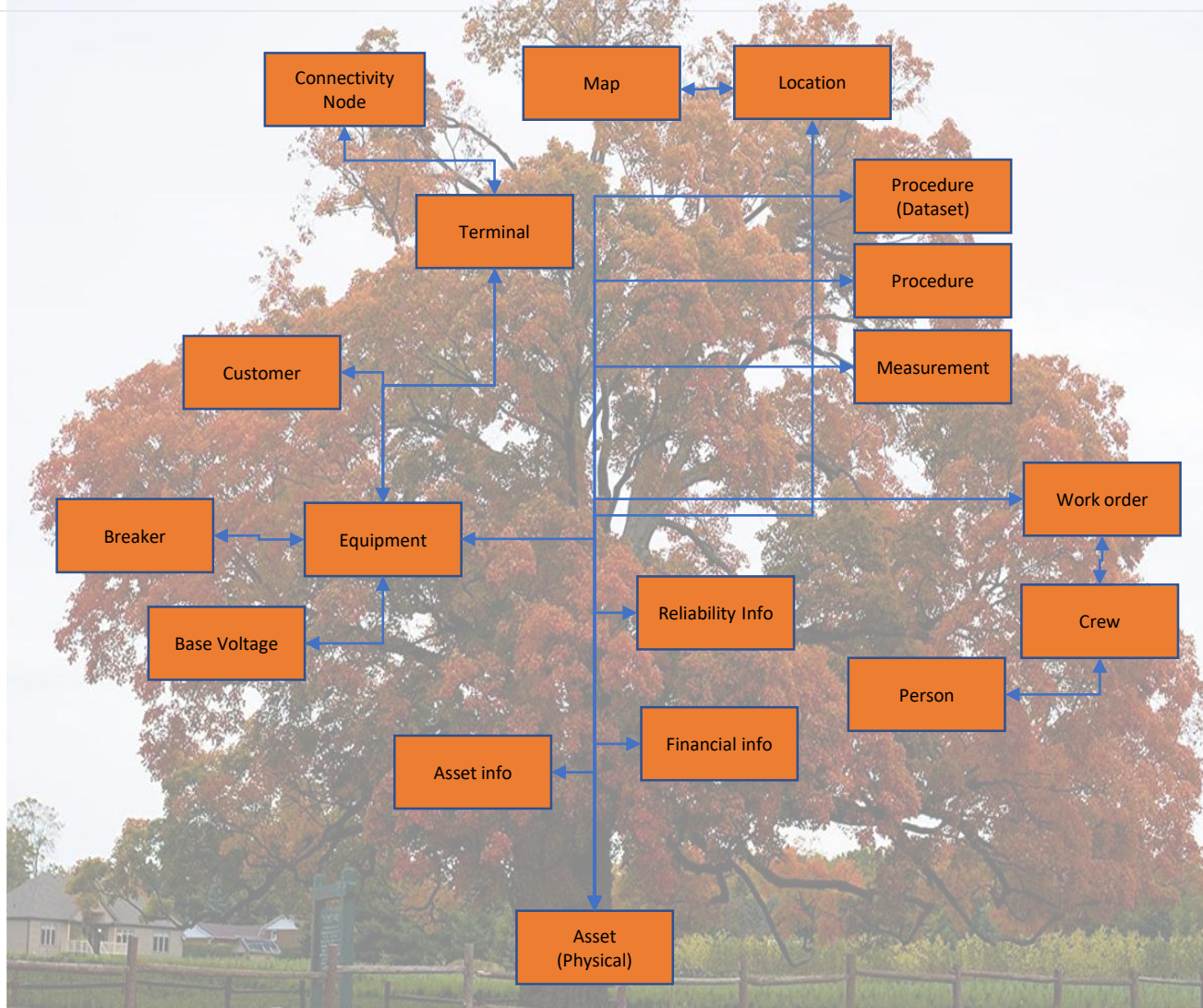
THE SMART GRID BACKBONE



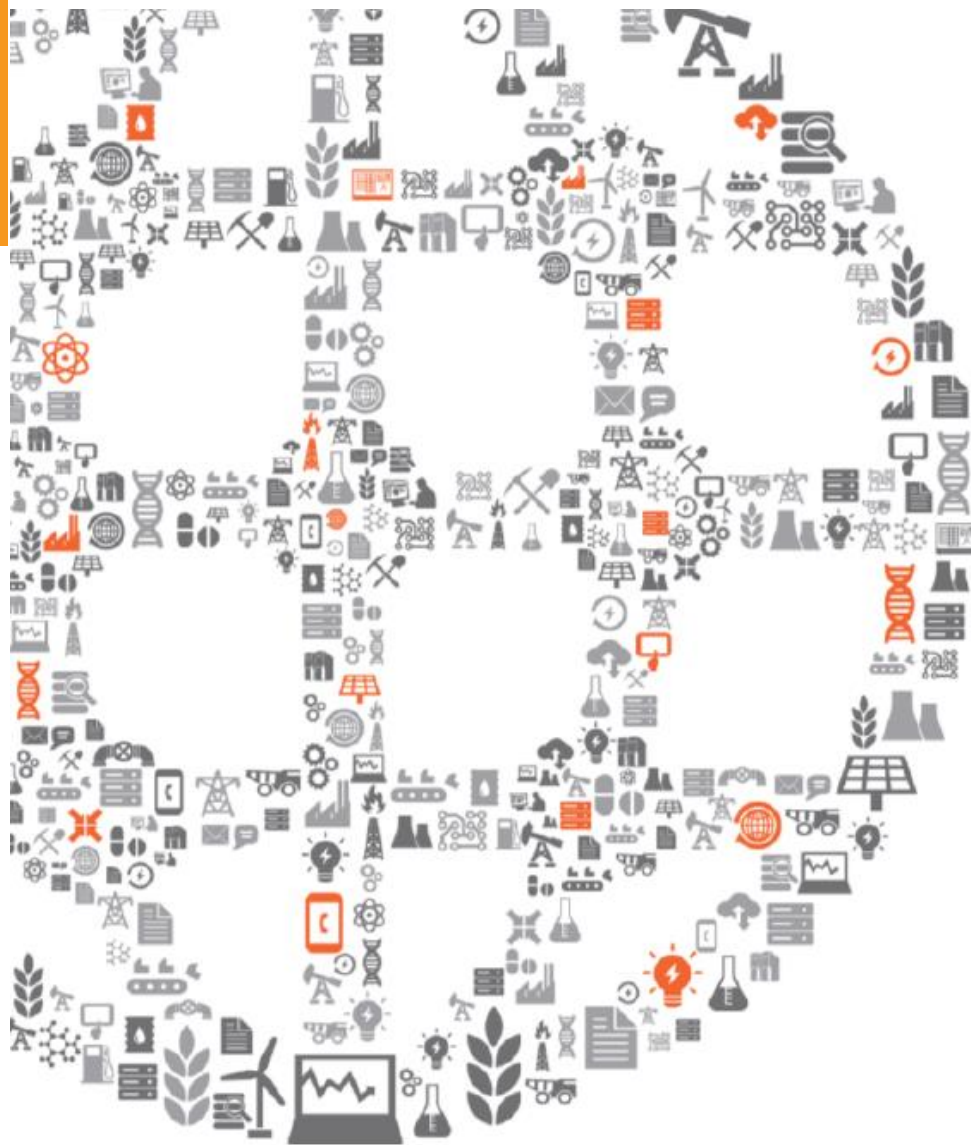
Face the challenges the energy transition imposes

Be able to grasp the opportunities a smart grid has to offer

STARTING WITH CIM COMPONENTS



BUILDING THE NB POWER IM



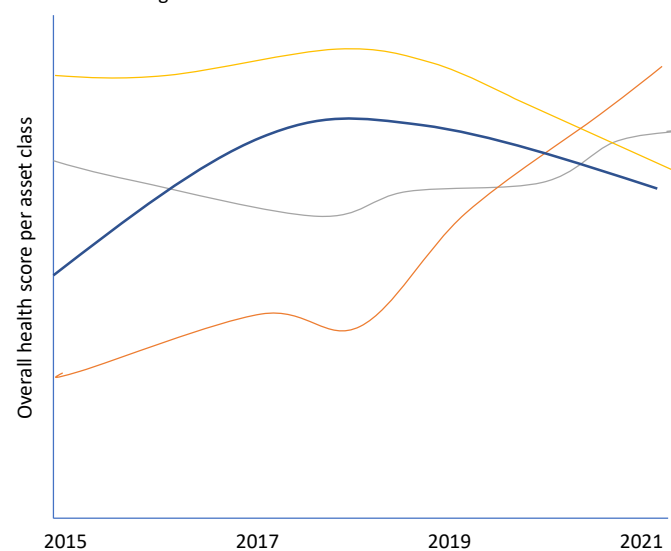
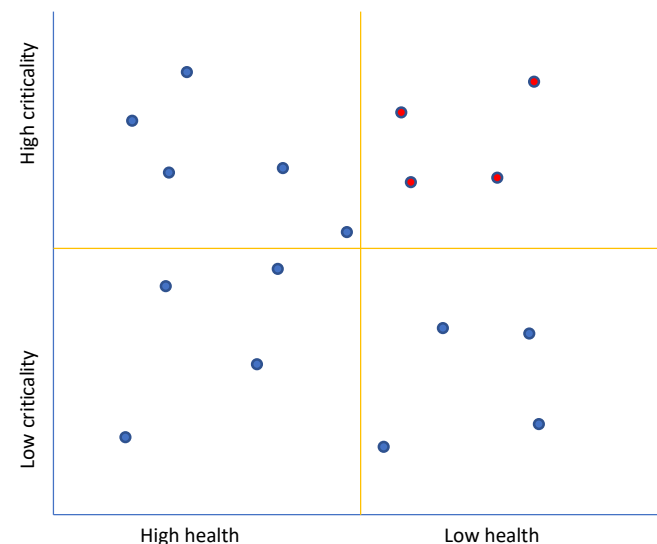
Filling the NB Power Information Model is a tremendous effort. There is an enormous amount of all sorts of data produced within NB Power, data that is essential for running our business. The best way to approach such an effort is to do it step by step.

A capability in special need for data is the capability of analytics. Analyzing data and using it to give us deeper insight in our business, our processes and our future will help us to cope with challenges that face us now and will face us in the future. Analytics nowadays generally ignore boundaries of a specific business unit or department or company.

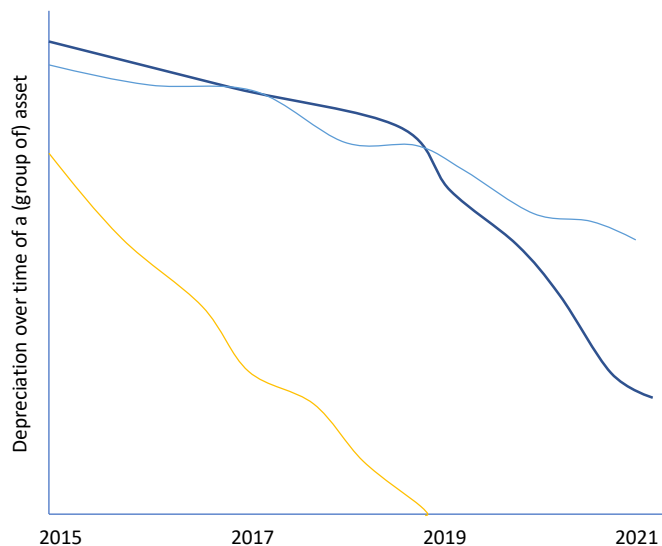
We will develop the analytic capability within NB Power, a capability we do not have right now. We will develop this capability by fulfilling analytic use cases, defined by the business. These analytic use cases have one thing in common: they require data. By addressing the analytic use cases, we will be building the analytics capability within NB Power. And by making sure that the data used in those analytics become part of the NB Power Information model, we will build that model. Step by step.

ASSET ANALYTIC USE CASE 1

| | |
|-----------------------------|---|
| Name: | Health and Criticality of Assets |
| Description: | <p>Decisions to repair or replace an assets at this point do not take the information available about health and criticality of the asset into account in a formalized or standard way. The data is available but not for analytic. By giving insight in the health and criticality of assets and by comparing them within asset classes, decisions to repair or replace can become standardized and dispassionate. By creating the possibility for more advanced analytics on asset health and criticality, unusual aviation can be found and acted upon</p> |
| Value to business: | <p>Involving health and criticality measures in the maintenance plan will ensure that the limited resources for maintenance will be assigned to those assets with the highest risk. By doing so, more risk will be mitigated with the same amount of resources in a given year. Involving health and criticality analytics in the replacement process creates a more effective investment rationale and a lower CapEx.</p> |
| NB Power Information Model: | <p>Creating this analytic will create (or need) a common understanding of:</p> <ul style="list-style-type: none"> - Assets - Detail of assets - Work orders (related to assets) - Procedure dataset (related to assets) |



ASSET ANALYTIC USE CASE 2



| | |
|----------------------------|--|
| Name: | Expected useful life of equipment |
| Description: | Asset Management needs to be able to analyze the total cost of ownership for different assets across different vendors under different conditions. It is there to better plan capital reinvestment and to have a better understanding how long a certain piece of equipment will last under specific conditions. |
| Value to business: | For different equipment types and different vendors it would be helpful to have insight in the average useful life of the equipment and of the deterioration over time, given its finances. It can be used as an input for the capital reinvestment plans and to have a more proactive approach in reducing costs. |
| NBPower Information Model: | Creating this analytic will create (or need) a common understanding of: <ul style="list-style-type: none"> - Asset detail (finances) |

ASSET ANALYTIC USE CASE 3

| | |
|----------------------------|--|
| Name: | Lifecycle cost of equipment |
| Description: | <ul style="list-style-type: none"> - analytics to determine the economic end of life for asset classes - Determine the dollar contribution from each maintenance procedure for the life cycle costs - analytics for maintenance procedures completed and issues found |
| Value to business: | Minimize the Total Cost of Ownership of equipment by optimizing investment cost, expected useful life and maintenance cost, both of new apparatus and of apparatus already in place. |
| NBPower Information Model: | Creating this analytic will create (or need) a common understanding of: <ul style="list-style-type: none"> - Work order costs - Outages |



FURTHER USE CASES AND THE NBPIM

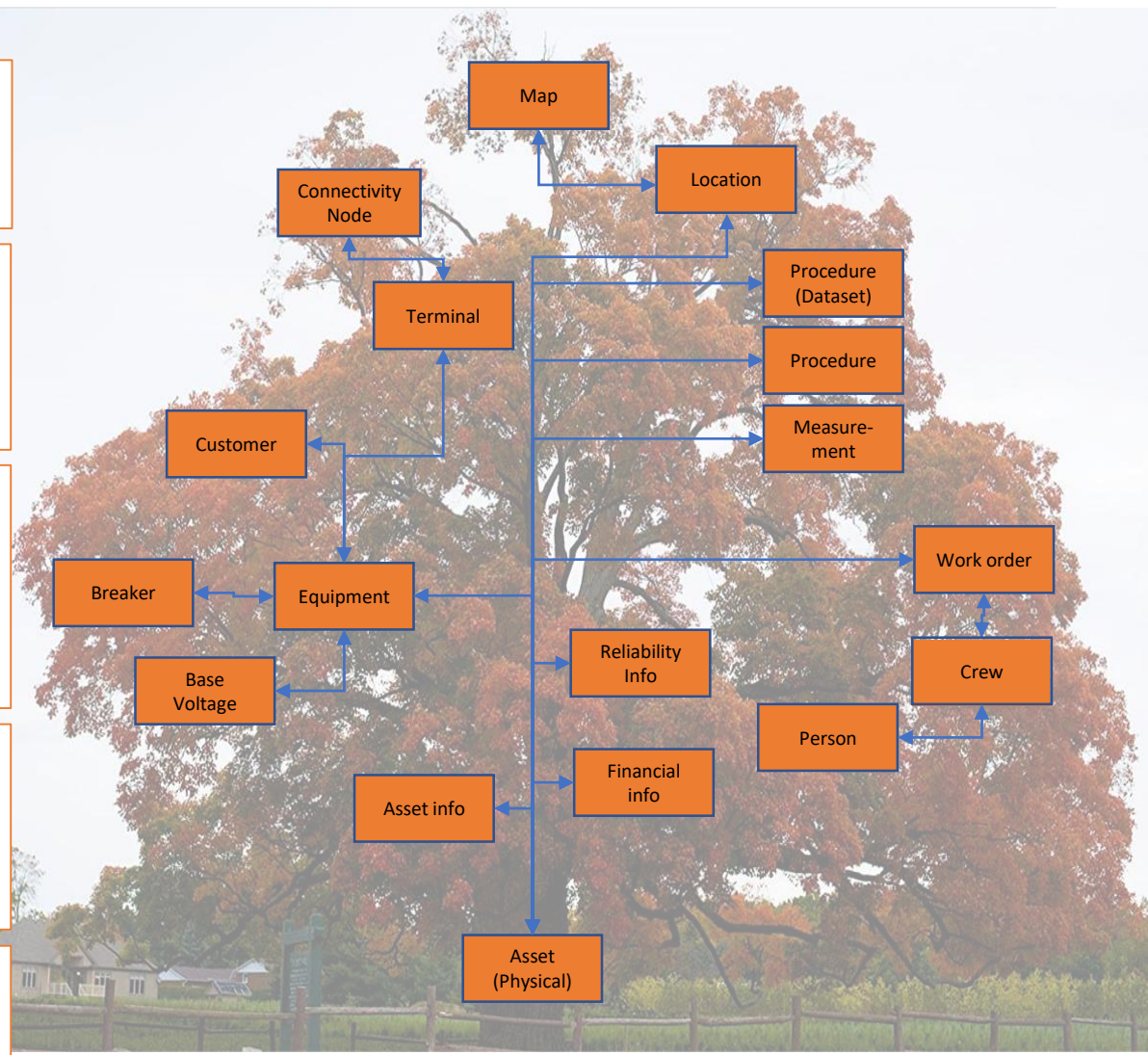
UC4 is about giving insight in the overall effect of capital investment. It can be delivered without bringing additional modules online.

UC5 and 6 want to give insight in the reliability of the distribution grid and the transmission grid. It depends heavily on network connectivity, to identify reliability of grid segments.

UC7 and UC8 needs to create insight in the necessary hours per maintenance job and in the total maintenance work at hand. To deliver it, we will need to have data on the crews, the persons in them, and the location of them and the assets.

UC9 investigates predictive maintenance: can we (only) do maintenance the day before an outage occurs? It has a need for lots of info on the surroundings of an asset as well, like weather data, landscape, etc.

UC10 will consume that information to optimize the vegetation work. It has not need for additional data to become available.



LIFE AFTER ASSET ANALYTICS

