

Resolution 480/2018/R/GAS and forecasting



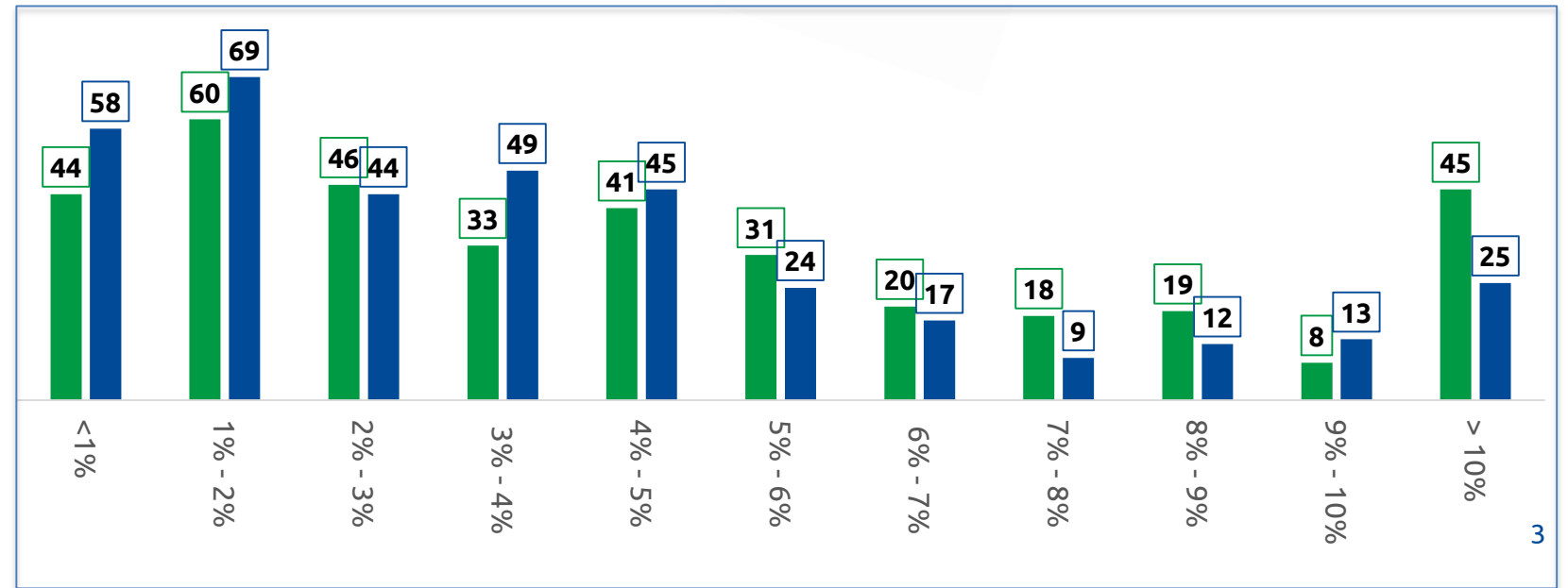
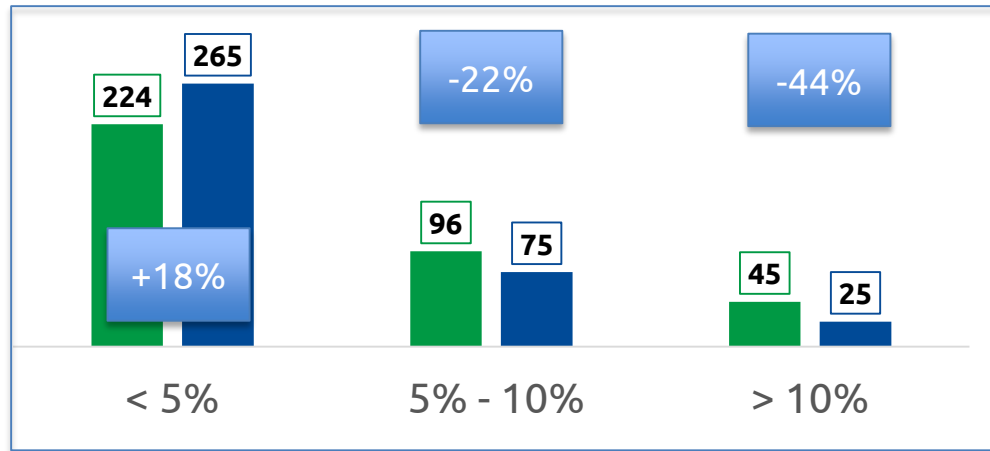
San Donato Milanese, 25/10/2018

Performance p1 T.Y. 2017/2018 (Res. 661/R/GAS/2017)

Gas Demand: definition

Evolution of Gas Demand Forecasting Model: From Cassandra to Dafne

Performance P1: distribution of days per class of error



■ T.Y. 2016/2017 – Cassandra
■ T.Y. 2017/2018 – New Model

Performance p1 T.Y. 2017/2018 (Res. 661/R/GAS/2017)

Gas Demand: definition

Evolution of Gas Demand Forecasting Model: From Cassandra to Dafne

Why Forecasting?



Demand forecasting is one of the parameter in the **SAS Calculation**

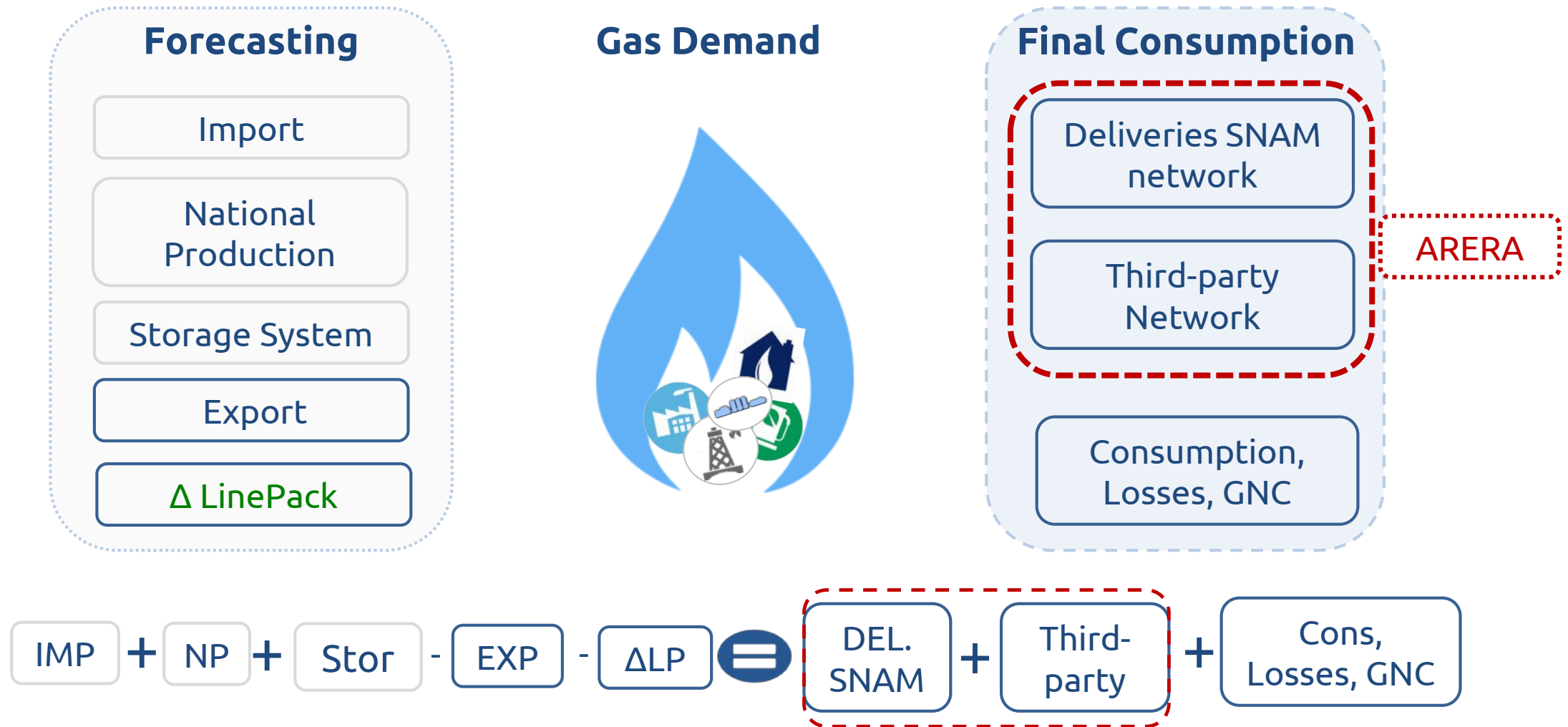


$$\text{SAS} = \text{ENTRY} - \text{Demand Forecasting} - \text{EXP} - \text{DLP} - \text{STORAGE}$$

Gas Demand: Definition



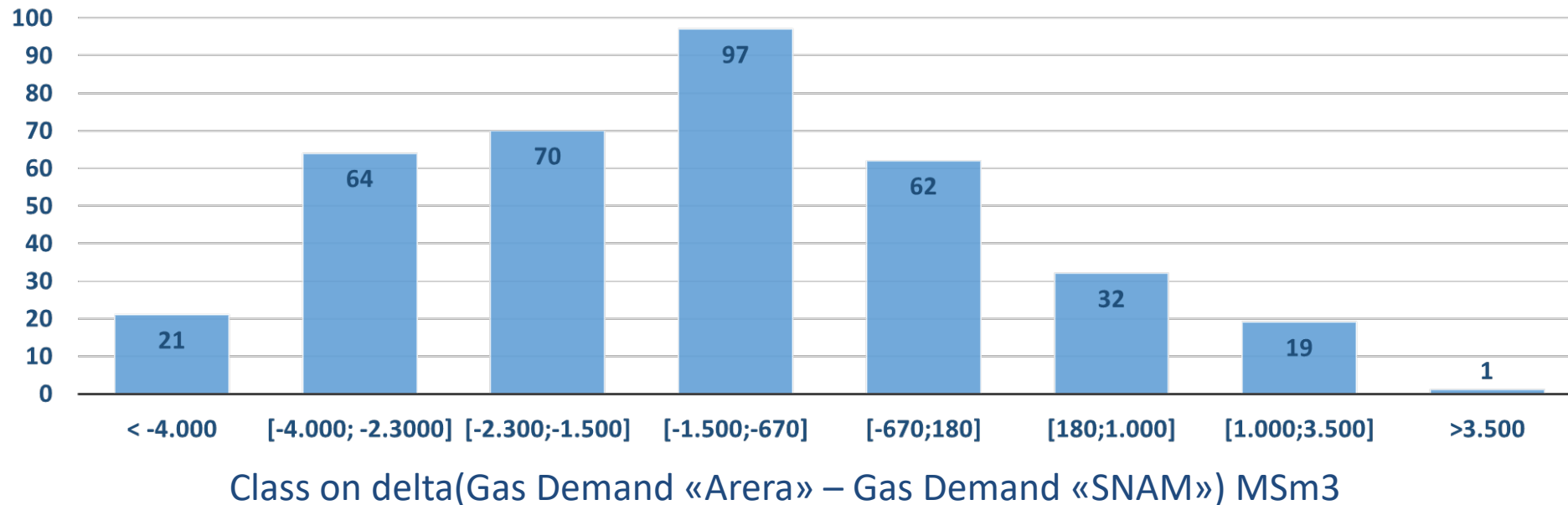
Gas Demand: why does definition is important?



Gas Demand: why does definition is important?



Distribution* of Number of days
per Class on delta(Gas Demand «Arera» – Gas Demand «SNAM»)



Gas Demand: why does definition is important?



GAS DEMAND_{SNAM} = IMP + NP+STOR- EXP - DLP



SAS



GAS DEMAND_{ARERA} = Shipper's Deliv (SNAM + other TSO)Network



SAS



Performance of gas demand forecasting are **monitored** by ARERA
(Res. 480/R/GAS/2018)

Performance p1 T.Y. 2017/2018 (Res. 661/R/GAS/2017)

Gas Demand: definition

Evolution of Gas Demand Forecasting Model: From Cassandra to Dafne

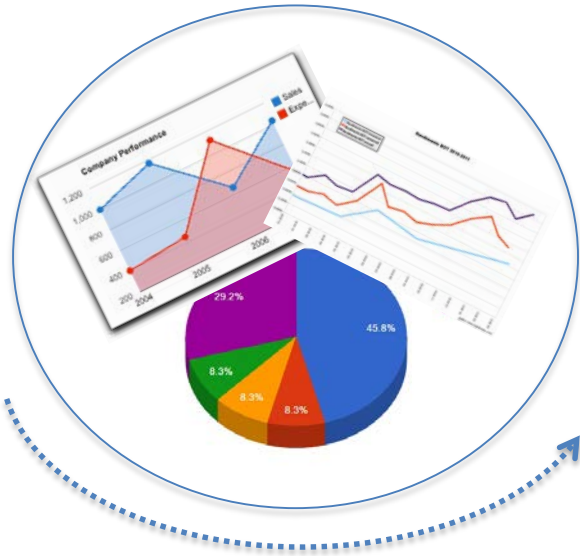
Evolution of Snam's Forecasting Models



Classical statistics

ARIMA

Linear AutoRegressive Model



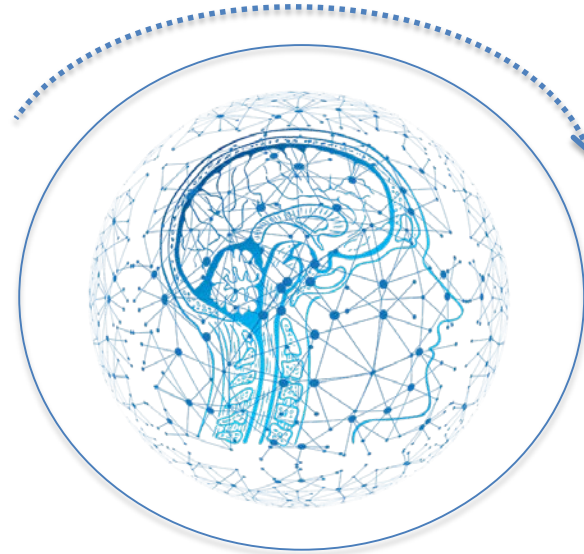
CASSANDRA

(Computer Aided Sales Series Analysis Nullifying Daily Residuals Autocorrelation)

1980s – 30 sept 2017

Machine Learning

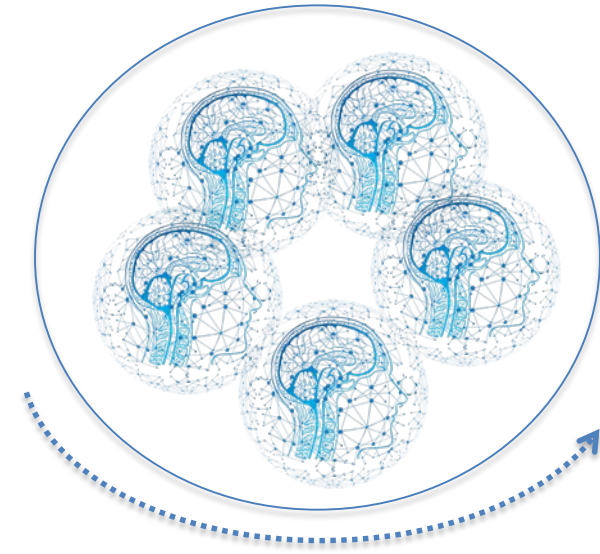
NEURAL NETWORK



NEW MODEL

1 Oct 2017 – 30 sept 2018

NEURAL NETWORK ENSEMBLE

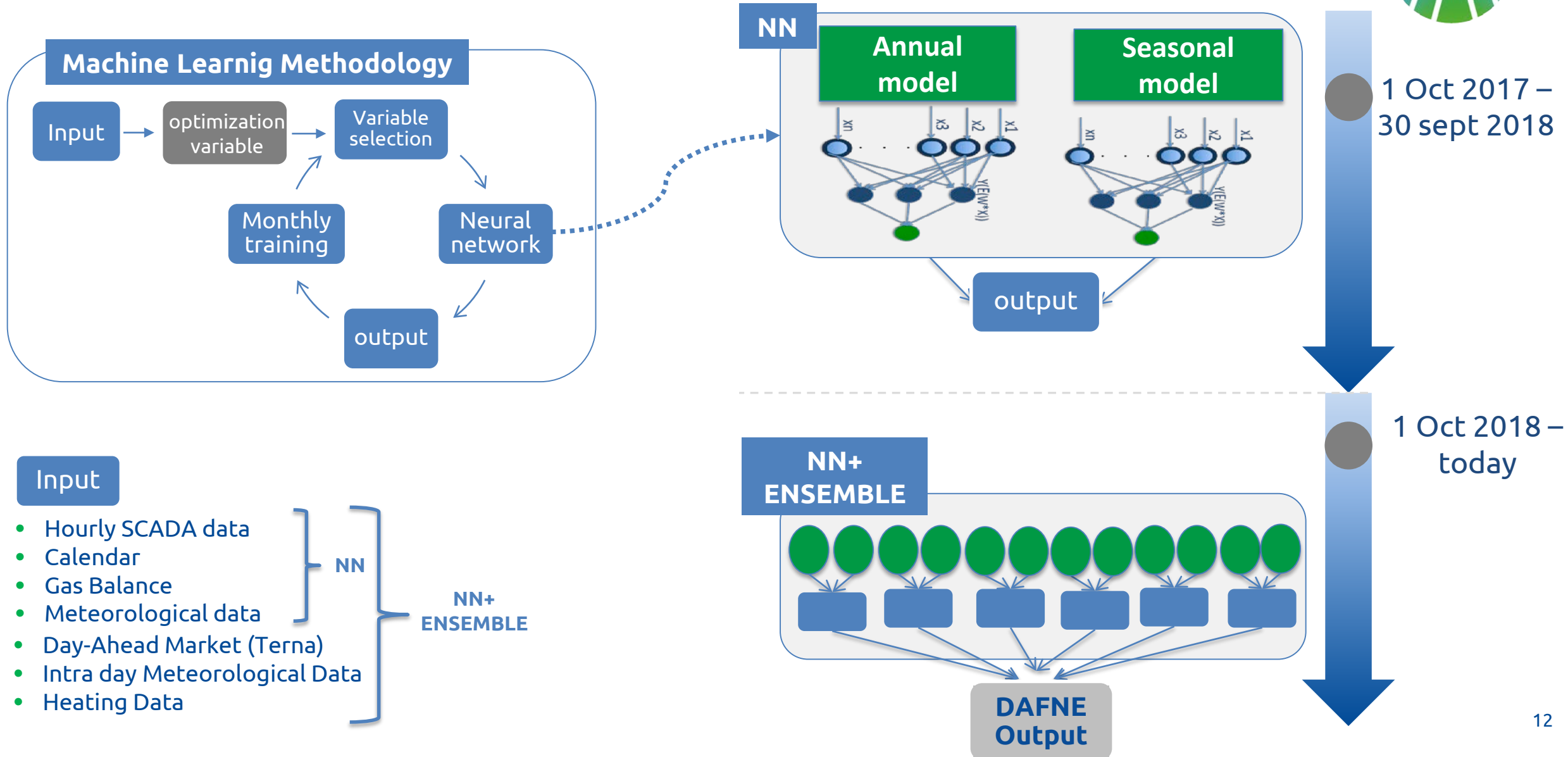


DAFNE

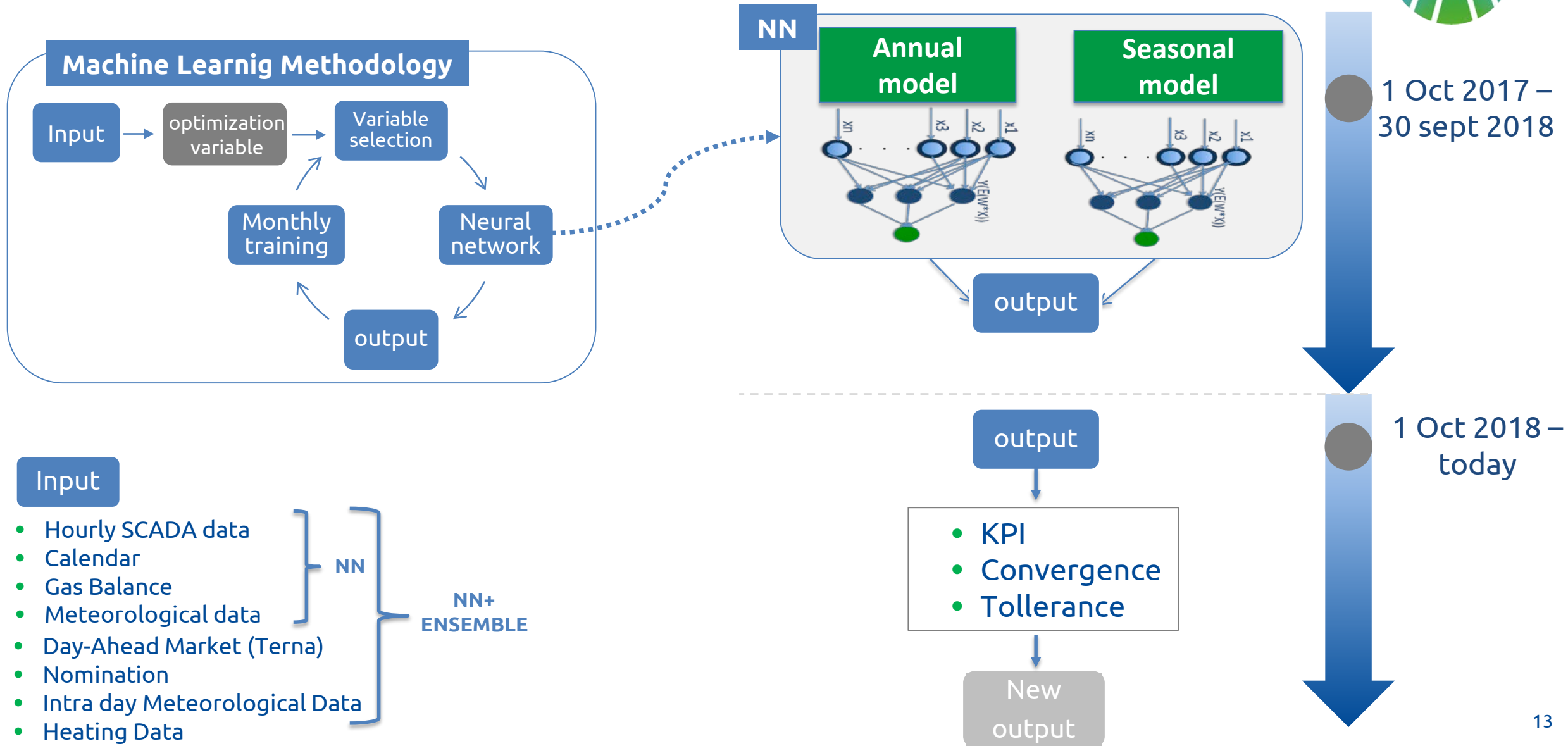
(Dynamic Adjusted Forecasting Neural Ensemble)

10 Oct 2018 – today

Machine Learning: Gas Demand Forecasting D+1

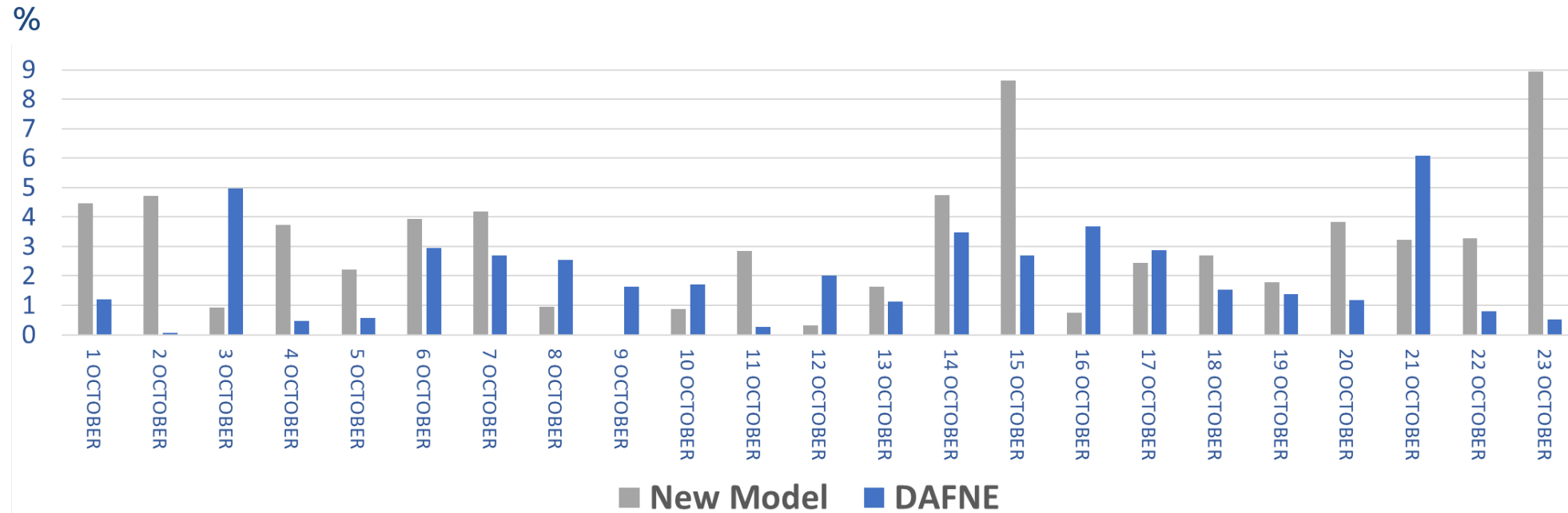


Machine Learning: Gas Demand Forecasting D





New Model (T.Y. 2017/2018) Vs DAFNE (T.Y.2018/2019)



MAPE New Model = 3,09%

MAPE DAFNE = 2,02%

35% improvement