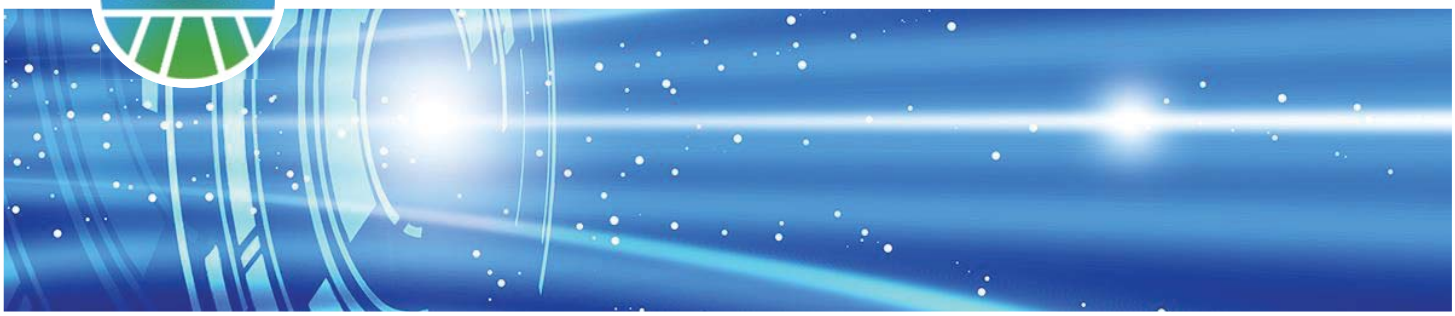
# Ruolo della Digital Transformation in SNAM all'interno di TEC (Tomorrow's Energy Company)



*Luigi De Bortoli*

Assomineraria Workshop - Trasformazione digitale: Opportunità e strumenti

*November 30th 2018*

## SNAM: Europe's largest gas infrastructure player

**€ 20.3 bn**
Regulated Asset Base in Italy. High-pressure transport network, storage sites and LNG terminals

**€ 22.5 bn**
RAB including associates

**Consolidated experience**
in developing and managing complex projects

**€ 5.2 bn**
CAPEX in large-scale and long-term projects in the period 2017-2021

**Presence throughout Europe with our associates**

TERĒGA
TAG Trans Austria Gasleitung
GAS CONNECT AUSTRIA
Energy everywhere.
Interconnector
Trans Adriatic Pipeline
DESFA*

* transaction to be concluded by the end of the year

With a market capitalization of **€ ~13 bn** and an EV of **€ ~24 bn**, Snam is one of Europe's main energy players

# SNAM TEC: Investing in the future of gas & sustainability

## Natural gas advantages

### Availability
- Abundance of resources
- Well developed gas infrastructure

### Environmental sustainability
- The quickest and cheapest route to decarbonisation
- The quickest and cheapest route to reducing urban pollution

### Efficiency
- Limited additional infrastructure requirements

## Technological developments supporting its adoption

- **CNG vehicles** (compressed natural gas) as immediate available solution to reduce urban pollution
- Growth expected in Italy following adoption of the **DAFI** (EU Directive on Alternative Fuels)

- **Small Scale LNG** (small-scale liquefied natural gas) as efficient and cheap solution to reduce emissions in the maritime sector and in heavy-duty transportation and to replace more polluting fuels
- Compliant with DAFI and IMO regulations

- **Biomethane** as $CO_2$ neutral renewable source, using existing infrastructures

- **Energy efficiency** for enterprises, public administrations and private buildings
- **Gas Heat Pumps (GHP)** aimed at increasing efficiency and promote the use of renewables in air conditioning



# Why focus on digital and why now?

# TEN – Key Projects: Smart Gas

Snam's asset management system (Smart Gas) integrates in a single platform all operations processes required throughout the entire assets life cycle

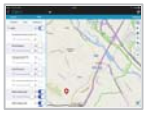
***Increase of efficiency***

***Innovation of the way of working***

***Digitalization of processes for a safer network***

**Work order assignment**
also in real time if necessary


**From home to the plants**
Mobile device usage allows the workers to go straight from home to the plants



**Cartography**
Display assets on cartography and navigation system
Information sharing during emergencies

**Regulation, safety norms and training material**
Examination of regulations, safety requirements, etc.

**Social functions (e-mail/ etc.)**
Access to e-mail and internet to enable instant messaging and video conference

**Connection to on-field equipment**
Use of mobile applications to connect and receive data from on-field assets

**Augmented reality and 3D functionality**
Display the 3D pipelines paths and the location of other relevant assets

**Field data collection and failures/ anomalies reporting**
Input of the Engineering of Maintenance



# TEN – Key Projects: Dafne

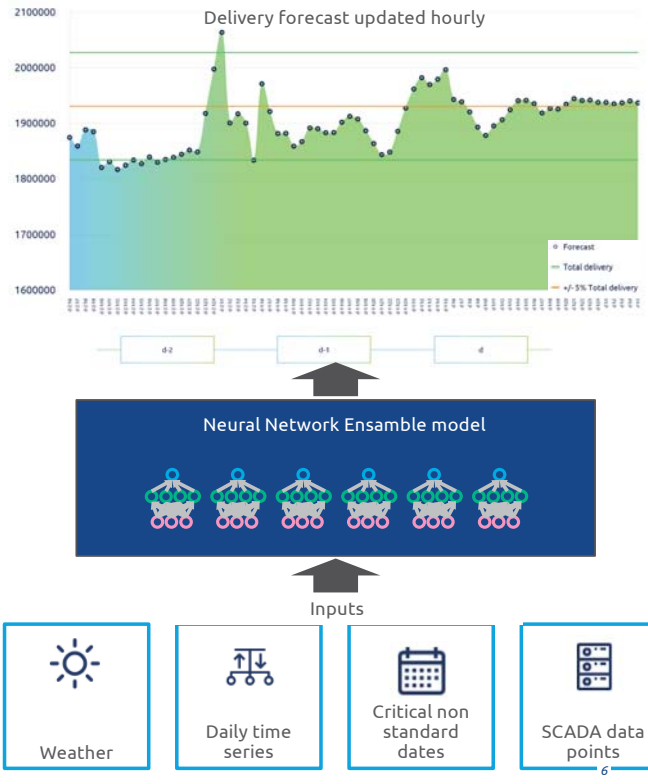
In order to **capture new regulatory incentives**, Snam applied state-of-the-art AI and machine learning techniques to forecast gas delivery

Key new model features: Machine Learning & Neural Networks

- More than 2.500 variables are taken as input
- 6 different neural network characterized by different input variables & network structures
- Forecasting model is a dynamic ensamble of all different neural networks

Key results

- >20% improvement in Mean Absolute Percentage Error on thermic year 2017-2018
- 5 M € incentives earned



# *TEN - Key Projects: David*

One single dashboard to monitor turbocharger state, key technical parameters, deep-dive on historical trends and real time alerts

Reduction of emissions and fuel gas consumed by TCs

- Minimize future $CO_2$ emission costs

Asset preservation and maintenance cost reduction

- Reduction of start/stop cycles and operations outside optimal conditions
- Reduction of un-planned maintenance costs and downtime periods