



Hydrogen for CO2 emission free rail traffic

Erik Geensen, October 3rd 2017

Alstom is offering a full range of products and services for the growing rail market

32,000 employees working on **105 sites** in **60 countries** serving **200 customers**

Trains



Systems



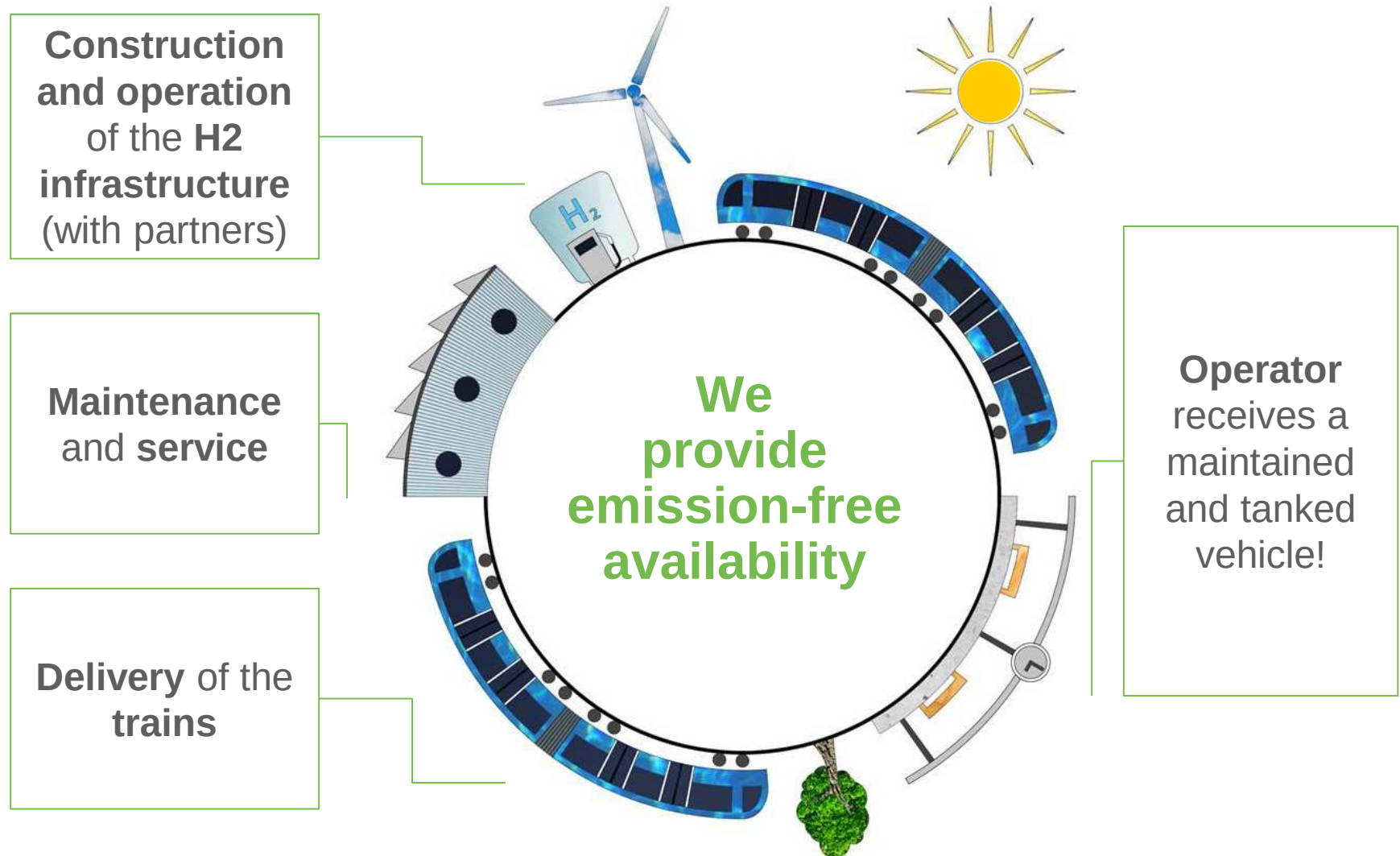
Services



Signalling



The vision: Our customers receive emission-free train availability

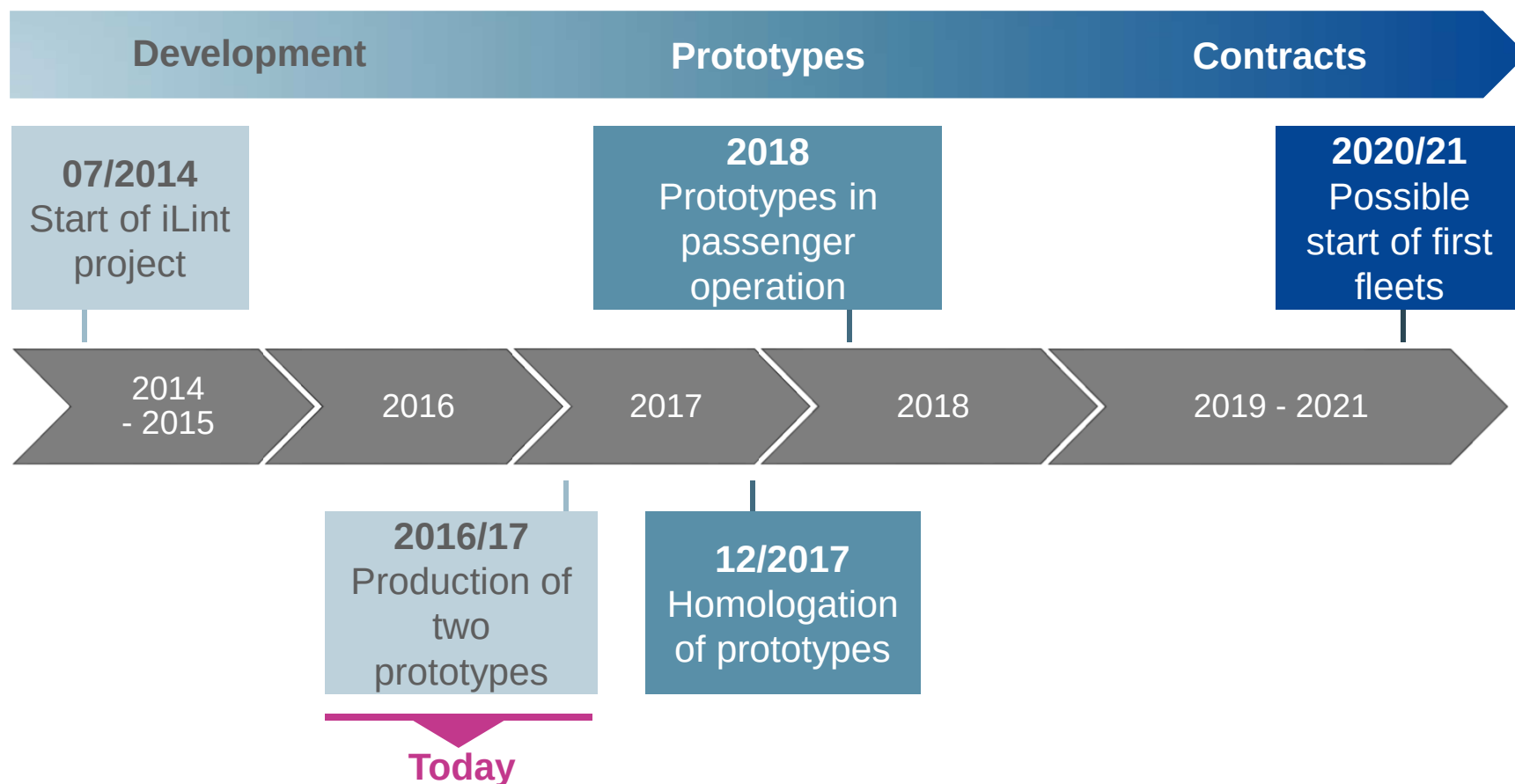


First prototype of Coradia iLint was presented to the public at InnoTrans in Berlin in September 2016



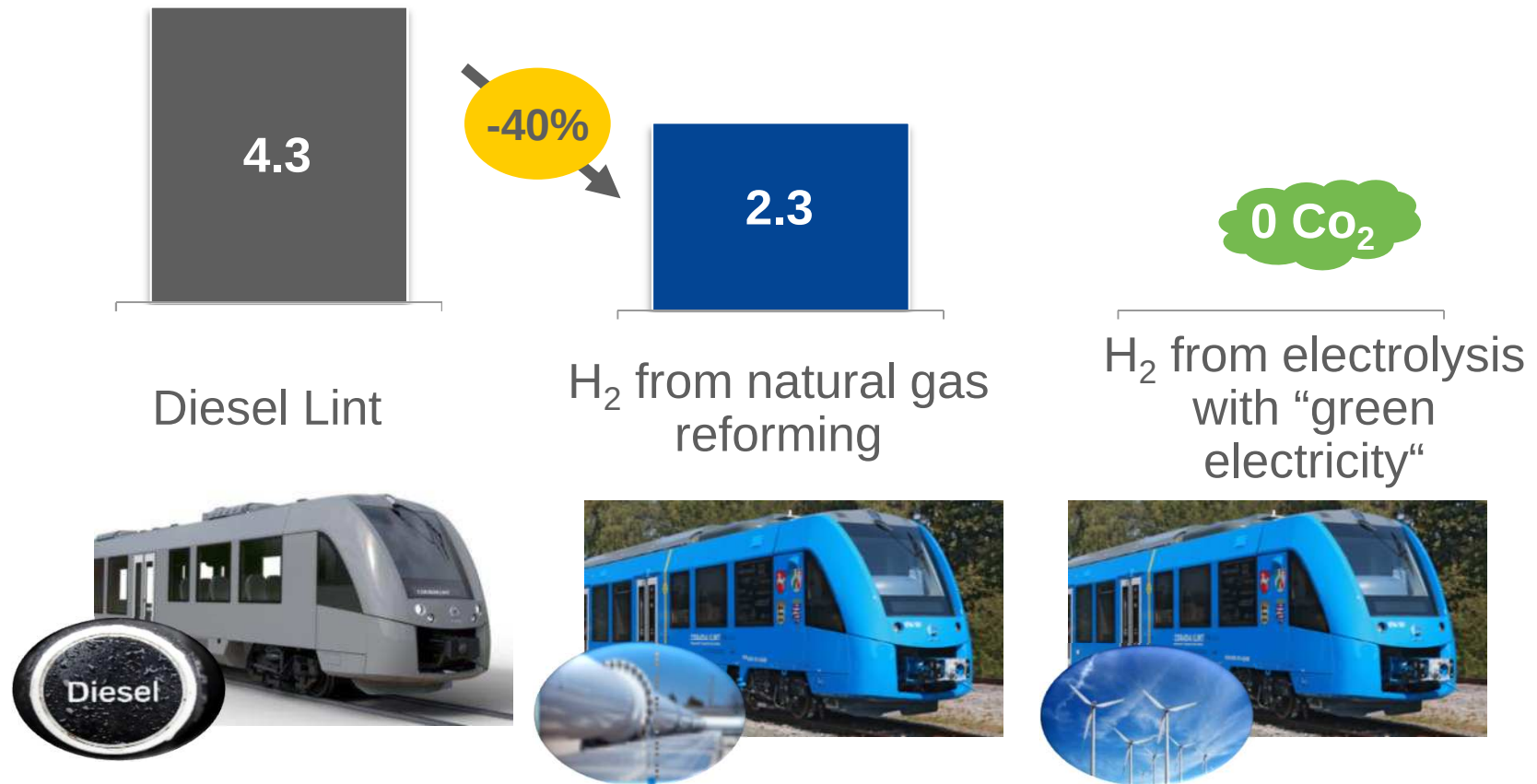
https://youtu.be/xoknkAu_RLc

First two prototypes in test-operation by the end of this year



First steps towards zero emission with „grey“ hydrogen – future solutions have to rely in „green“ hydrogen“

CO₂ emission per vehicle km (in kg)



With green hydrogen, one iLint saves about ~700t of CO₂ per year, a typical fleet of 15 trains more than 11.000t



minus
700t CO₂
per year...



...corresponds to the
annual output of
400 cars



Saving per iLint



minus
11,000t CO₂
per year...



...corresponds to the
annual output of
6,000 cars



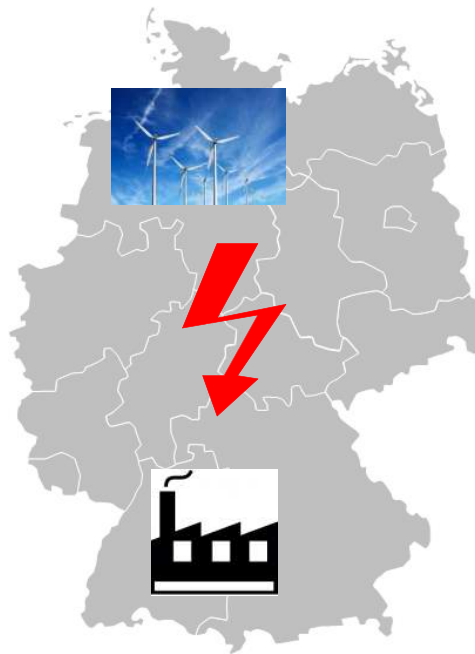
Saving per iLint fleet

Local usage of wind energy provides solution to increasingly overloaded electricity grids

As **capacity** of renewable energy **grows...**



... **electricity grids** are increasingly **under stress**.



Solution: **Local usage** of green electricity for **electrolysis**



10 MW of wind power are necessary to power a 4MW electrolysis plant for 15 iLints

About **10 MW** of wind power necessary...



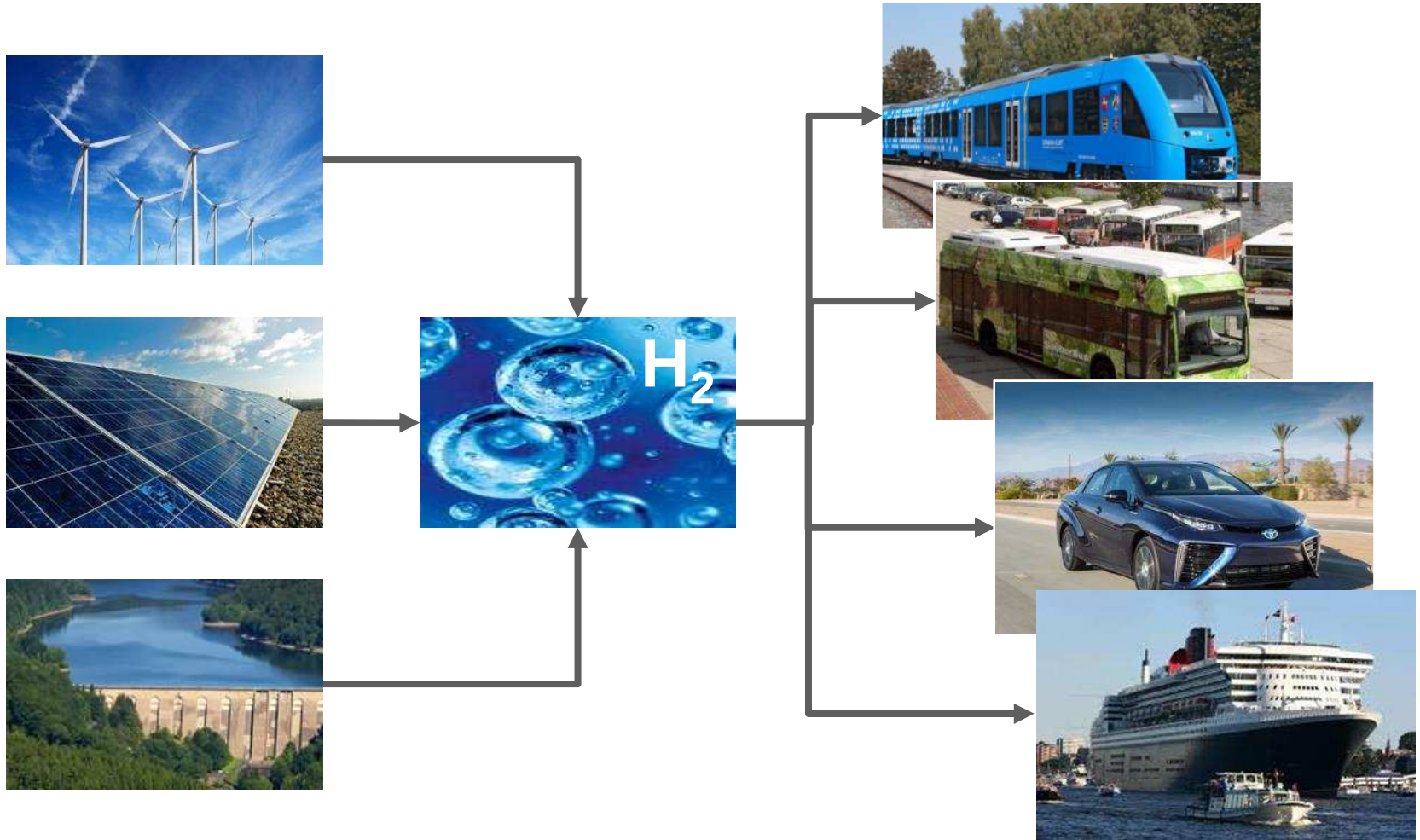
...to power a **4 MW** electrolysis plant...



...to run a fleet of **15 iLints!**



Green hydrogen as a basis for further environmentally friendly transport solutions



Substantial and growing market potential in several European countries

Characteristics of target markets:

- Ambitious climate protection goals
- Trendsetting traffic management
- High potential in energy generation
- Local hydrogen production

