



## Progress in FCH deployment in Europe & the world

Presented by: Dr Henri Winand



# Automotive Fuel Cell



# FCEVs: the ultimate vehicle



World leading power density for series production



Cost-effective, simple, powerful



*Performance*



*Range*



*Refuelling*



*Clean*



# SMILE FC System Corporation

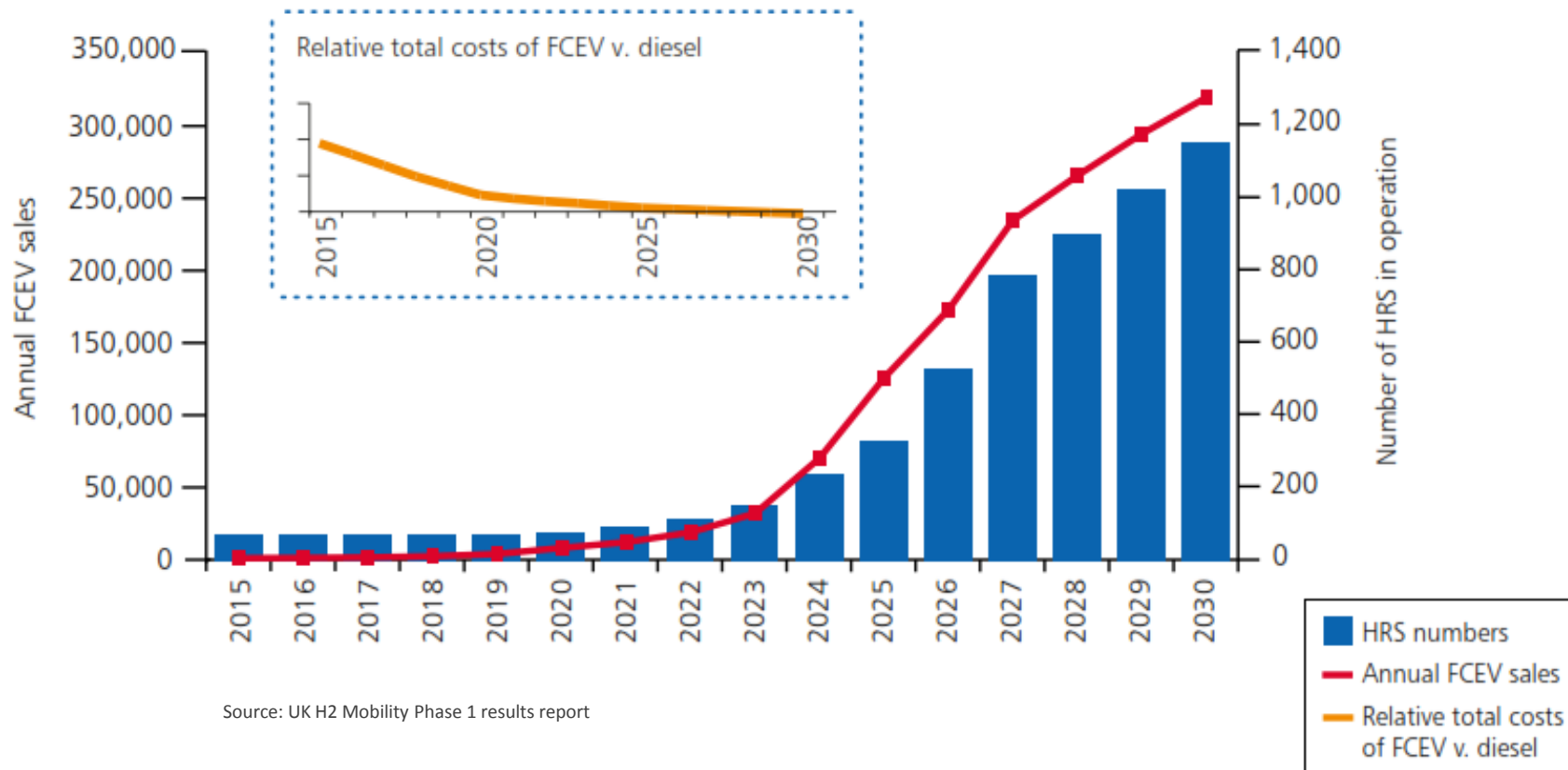
1 year anniversary

SMILE represents the next stage in high volume production of fuel cell systems with associated reduction of manufacturing and assembly costs as well as improved cycle times and enhanced product quality.





# Consumer Demand for FCEVs





# H<sub>2</sub> Mobility Initiative

~ 400

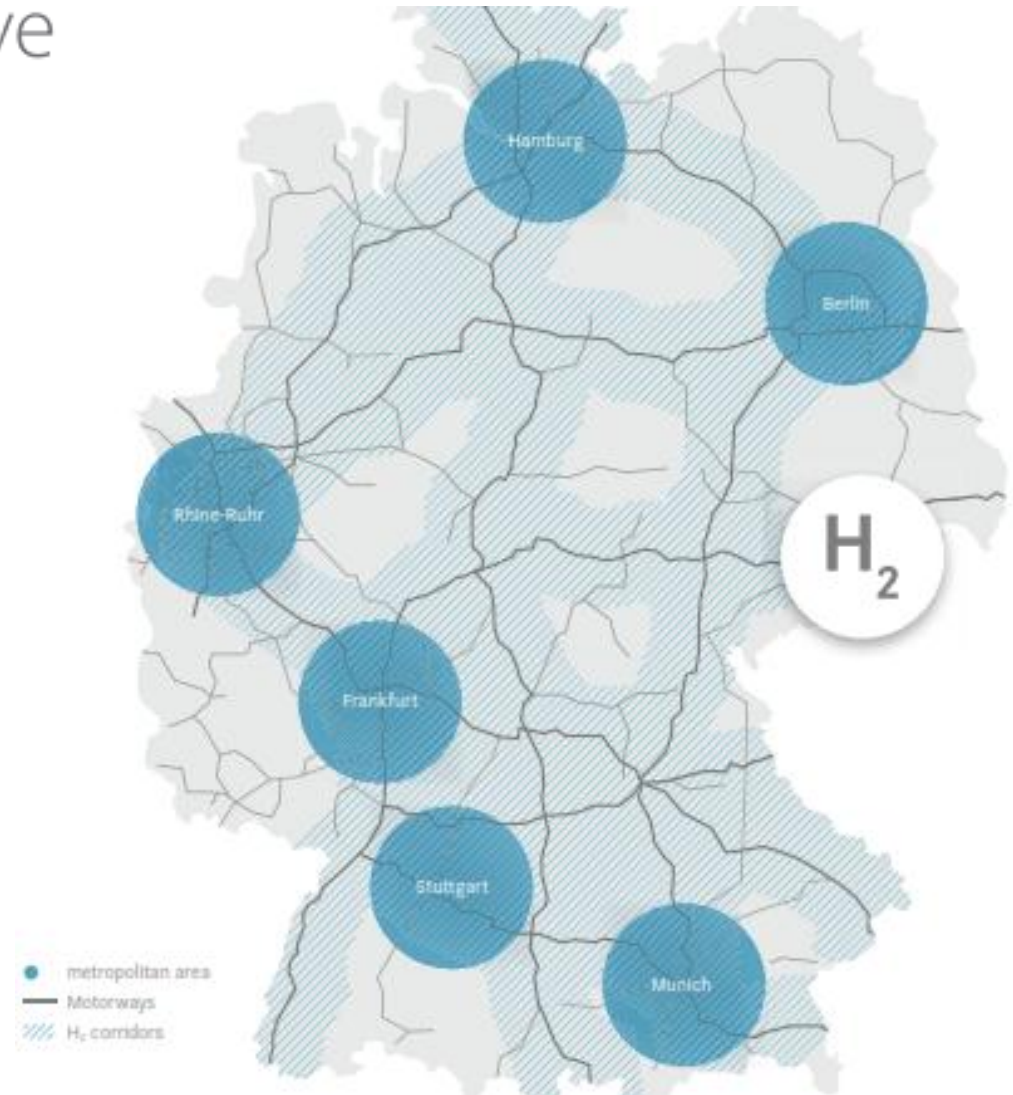
Stations  
will Germany's public hydrogen refueling network cover by 2023.

~ 90

Kilometers  
lie between the H<sub>2</sub> filling stations on the motorways around the metropolitan areas by 2023

>10

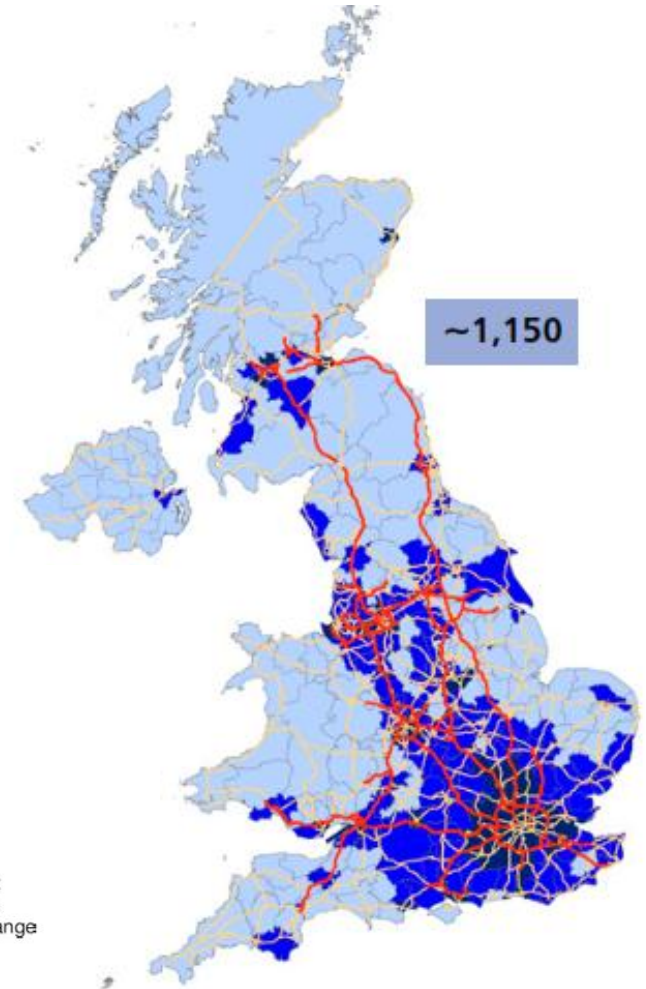
H<sub>2</sub> Filling Stations  
will be available in each metropolitan area from 2023





# UK H<sub>2</sub> Mobility

Full Population Coverage by 2030



Source: UK H2 Mobility Phase 1 results report



DAIMLER



TOYOTA

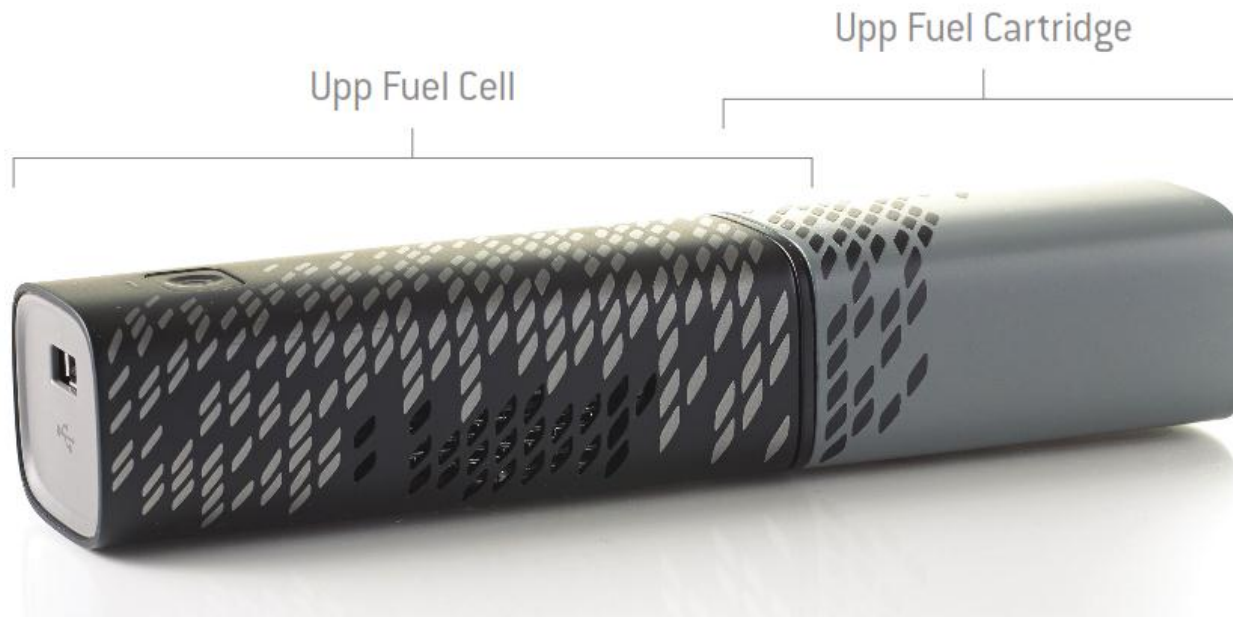


# Consumer Electronics





# Upp<sup>TM</sup>



**BEUPP.COM**

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Launched Cape Town 12th Nov Africa Com

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# Personal Energy



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# Distributed Power



Over 400K Telecom Towers in India

1 Million Sites by 2025

70% Sites >8hrs Run Time

2 Billion Litres of Diesel per Year

10 Million Tonnes of CO<sub>2</sub> per Year

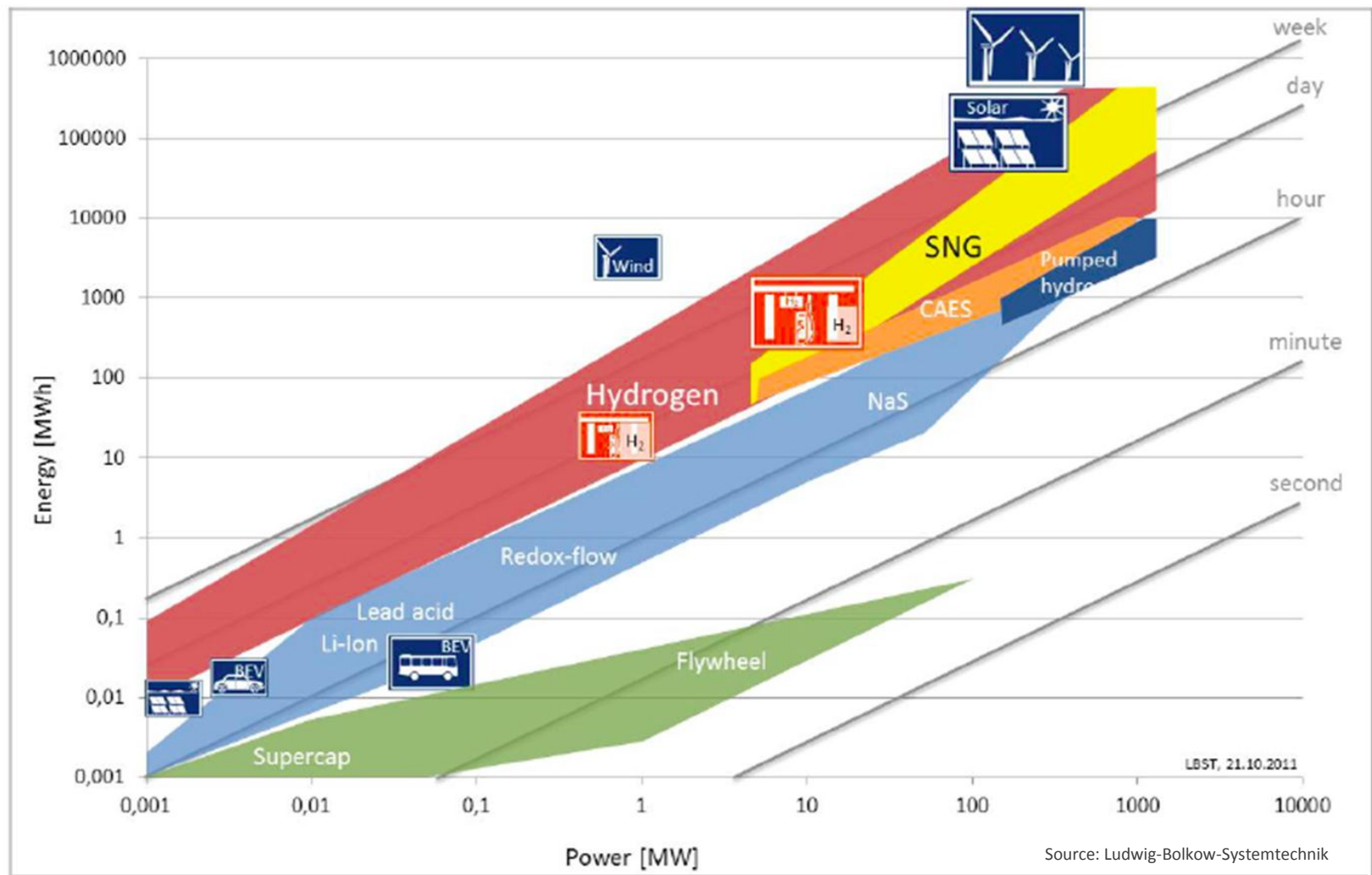
Intelligent Energy poised to provide  
an alternative



# Bulk Energy Storage



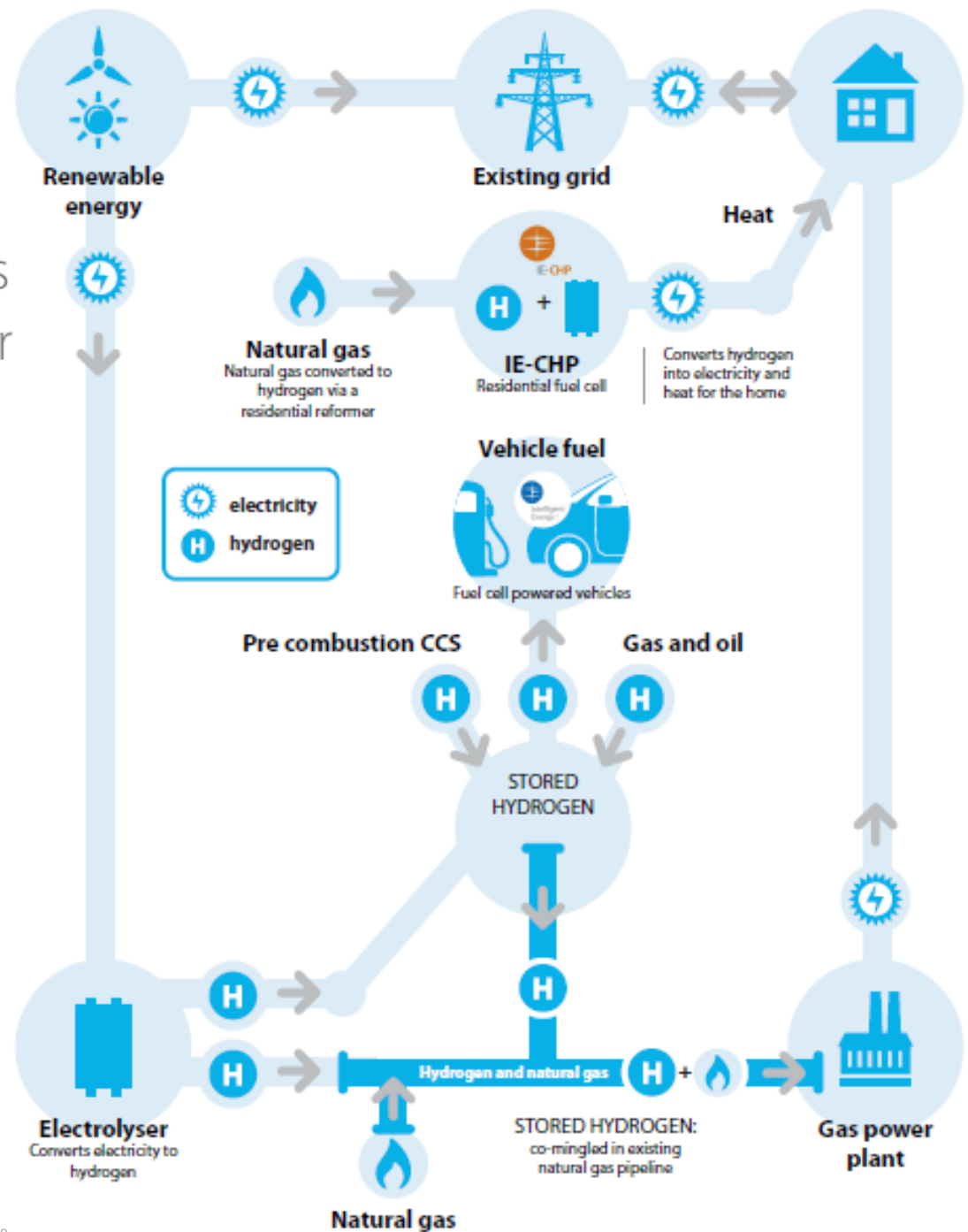
# Energy Storage Methods



Legend BEV = Battery Electric Vehicle CAES = Compressed Air Energy Storage H<sub>2</sub> = Hydrogen  
NaS = Sodium Sulphur battery SNG = Synthesised Natural Gas



Renewable energy solutions increase the requirement for grid scale energy storage





Thank you



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