



NESC 2003

The 6th International Conference on New Energy Systems and Conversions

9~13 November, 2003

Busan Exhibition & Convention Center, Busan, KOREA

Go to Where the Market is! Fuel Cells: Unlocking the Potential for Unknown Future Use

Arno A. Evers, Arno A. Evers FAIR-PR, Germany

Go to where the market is! www.fair-pr.com

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The logo for Arno A. Evers, featuring the word "EVERS" in a bold, blue, sans-serif font. The letter "E" is stylized with vertical lines passing through it, creating a grid-like effect.

Go to Where the Market is!

Contents:

- Fuel Cell Applications (Stationary / Mobile / Portable)
- Still on Probation or Ready for Take-Off?
- Implementation Time of New Products
- Not Technical Possibilities but Consumer Demand
- World motor-vehicle production
- Four Steps to an Energy Supply based on H2/FC
- Revolution in the Garage
- Necessary Conditions to the Final Goal: Mass Demand
- Market Outlook: Europe and China
- Go to Where the Market is!

Go to Where the Market is!

Fuel Cell Applications (Stationary/Mobile/Portable)

- Several Fuel Cell companies are supplying their equipment to some Utilities worldwide...
- All car companies are working on vehicles with hydrogen and fuel cell drives...
- All computer manufacturers are working on portable fuel cells. A Toshiba H₂/FC notebook will come on the market in 2004...

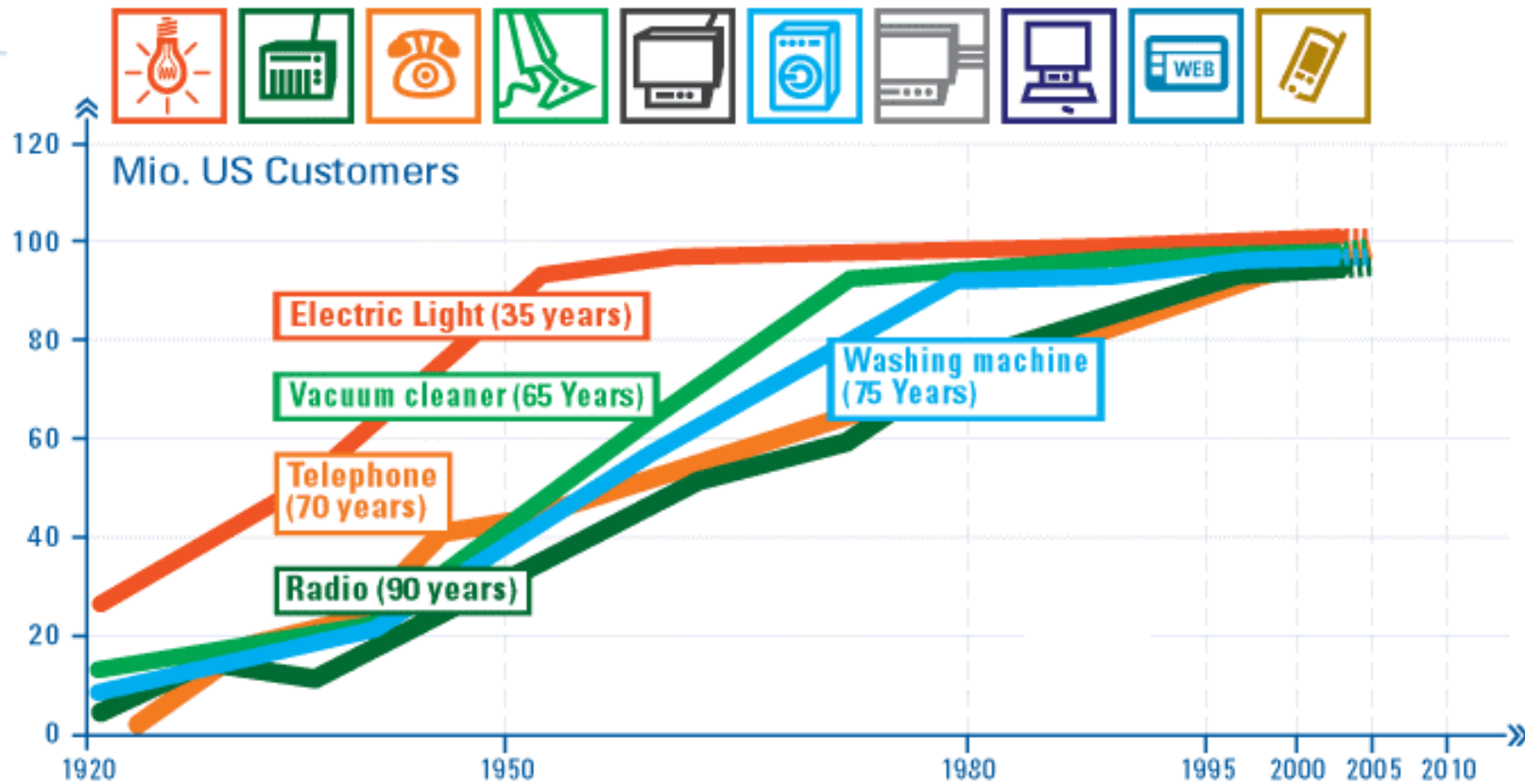
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Still on Probation or Ready for Take-Off ?

- Fuel Cells technology has been on worldwide probation for the last 30 years...
- Billions of US \$ – both from Private finance and Government funds - have already been invested
- Adoption was announced several times but often postponed...
- Critical Issues:
 - How long will it take to be commercial?
 - Will H₂/FC be on probation for another 30

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> Implementation time of new Products



Source: Siemens AG

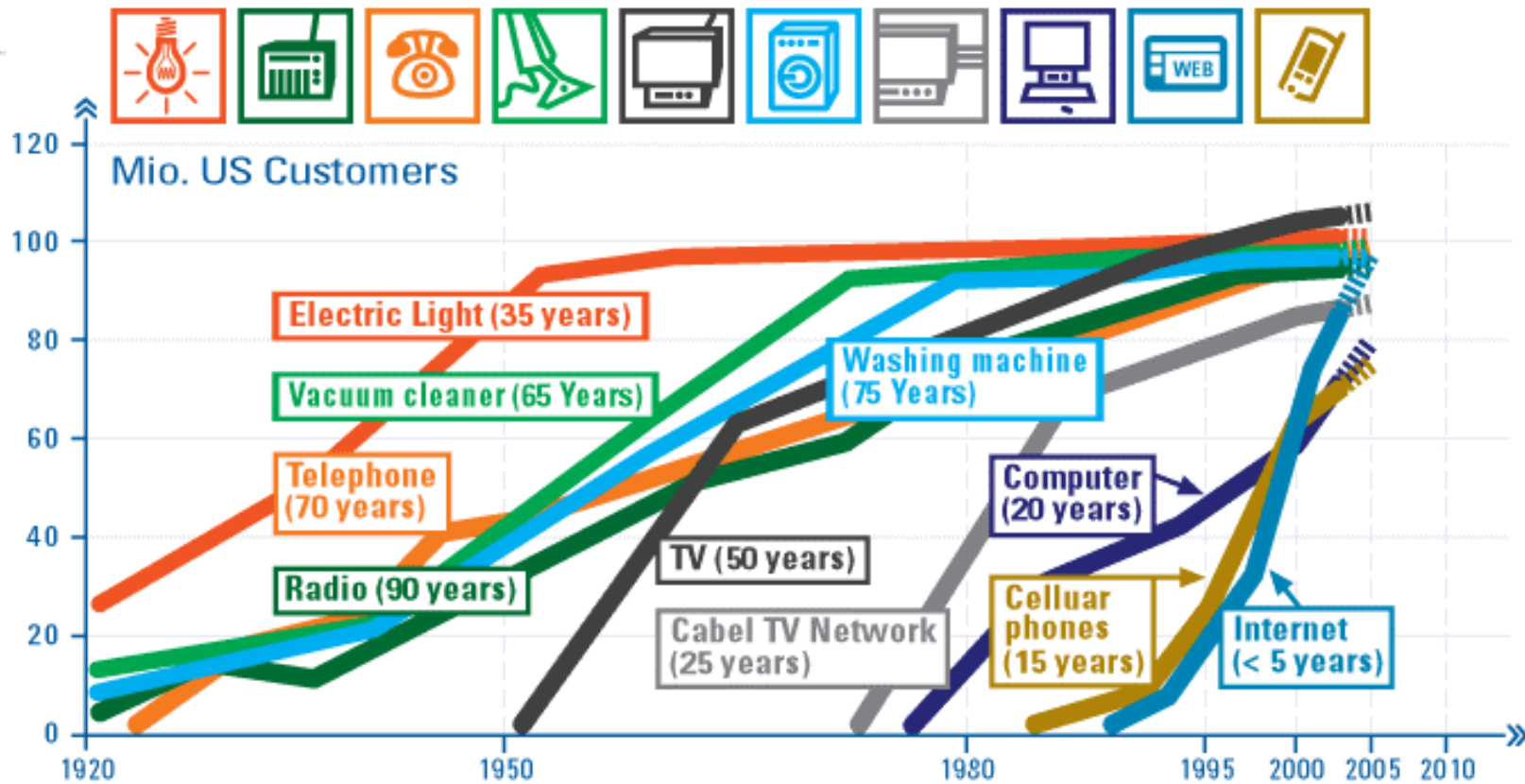
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> Implementation time of new Products



Source: Siemens AG

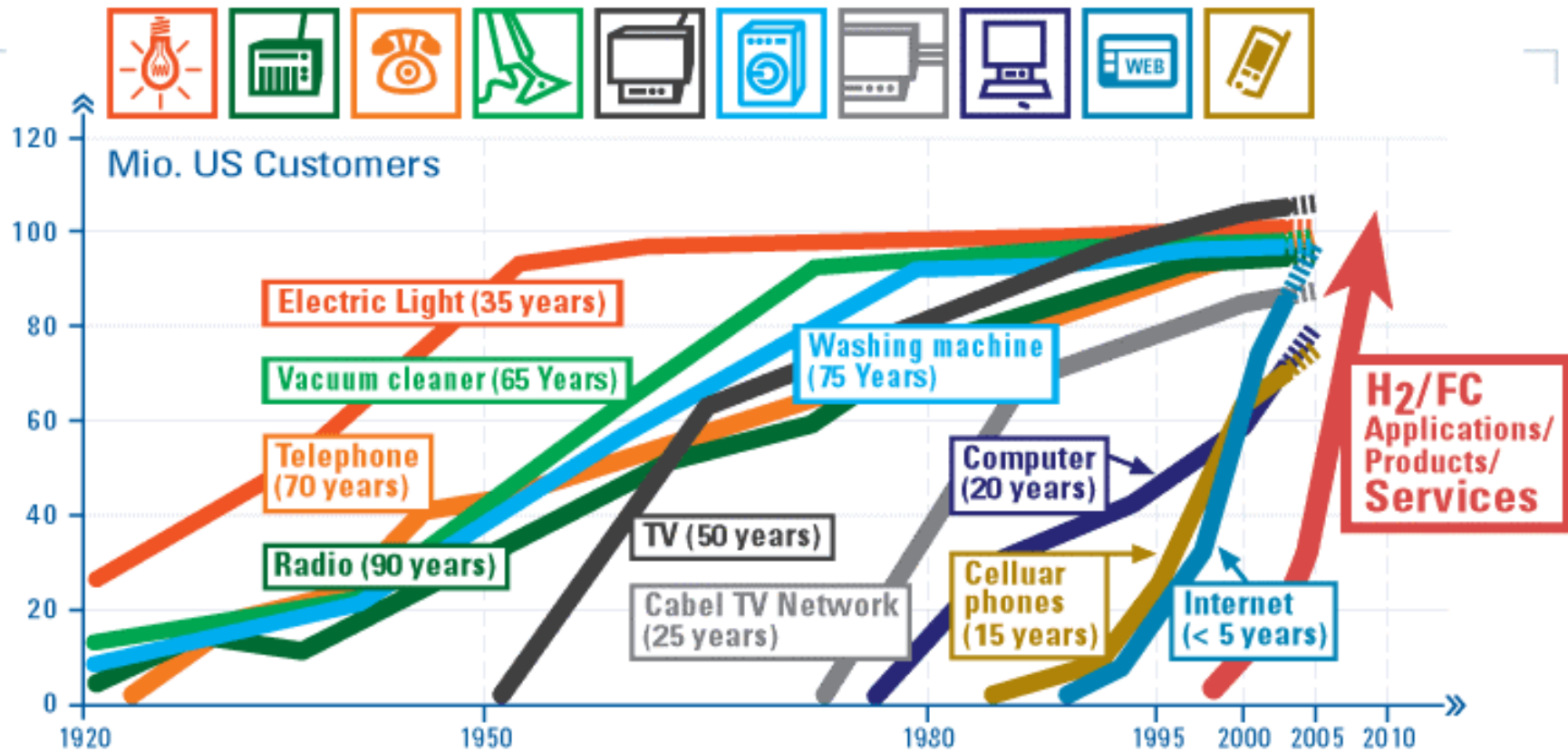
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> Implementation time of new Products



Source: Siemens AG

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Not Technical Possibilities but Consumer Demand

- The future of an H2/FC economy will not be dependent on the replacement of existing energy-powered products, but rather in products and/or services unknown today which will benefit our daily life tomorrow...
- Because of the “added value” benefits of these new products and/or services, this development is going to happen...
...sooner than many “experts” are thinking today!

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> Why do Customers buy new Products?



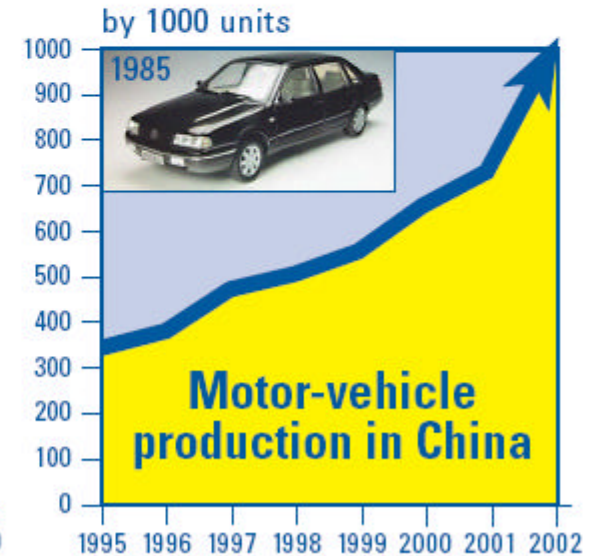
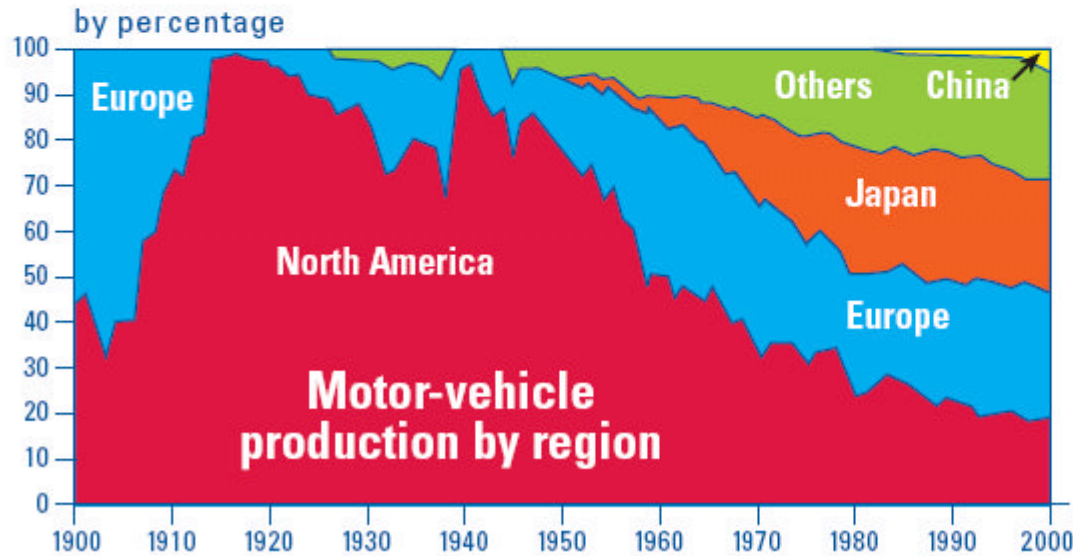
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> World motor-vehicle production



Source: Altshuter et al

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Four steps to a new reliable, cleaner and decentralized Energy Supply based on Hydrogen + Fuel Cells

www.PersonalPowerCar.com



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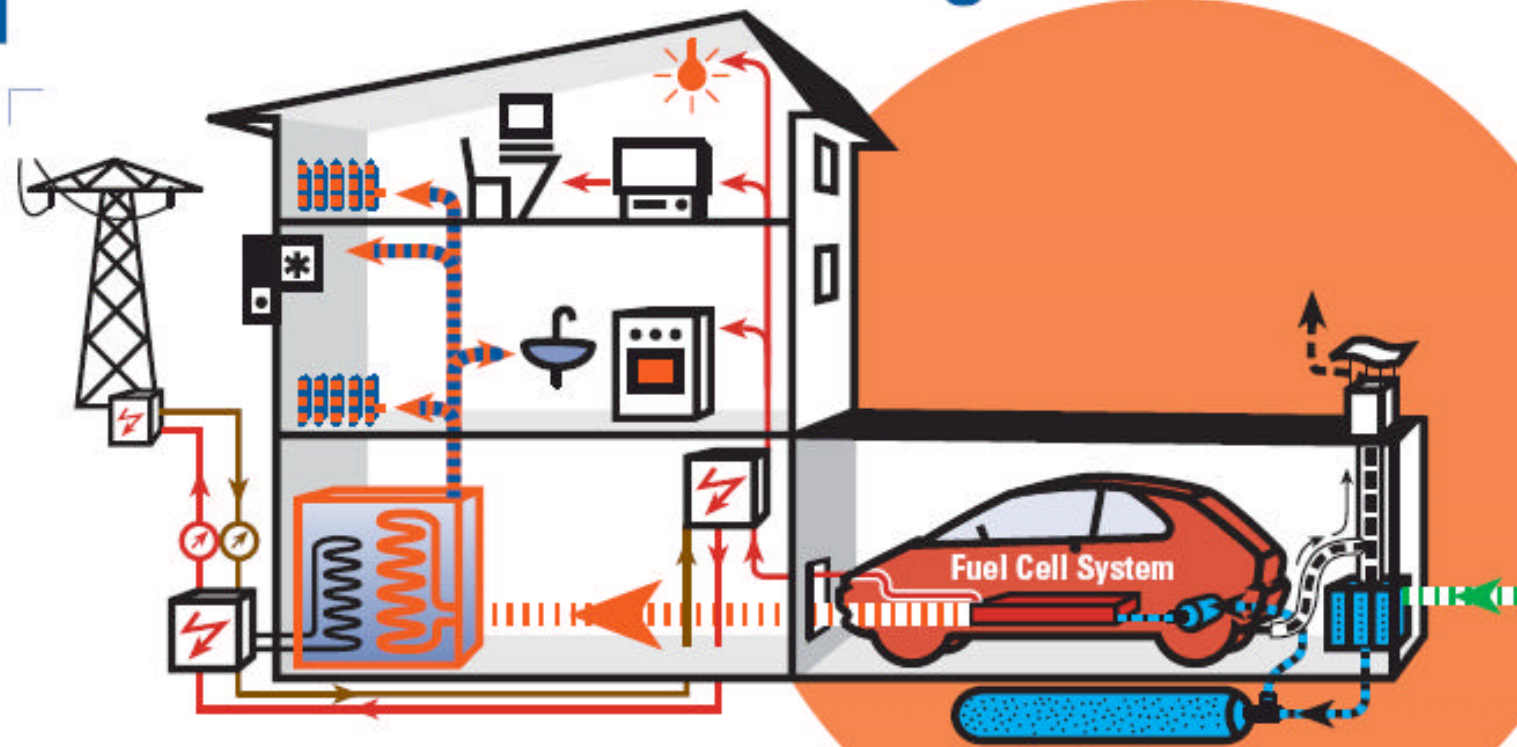
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> Revolution in the Garage



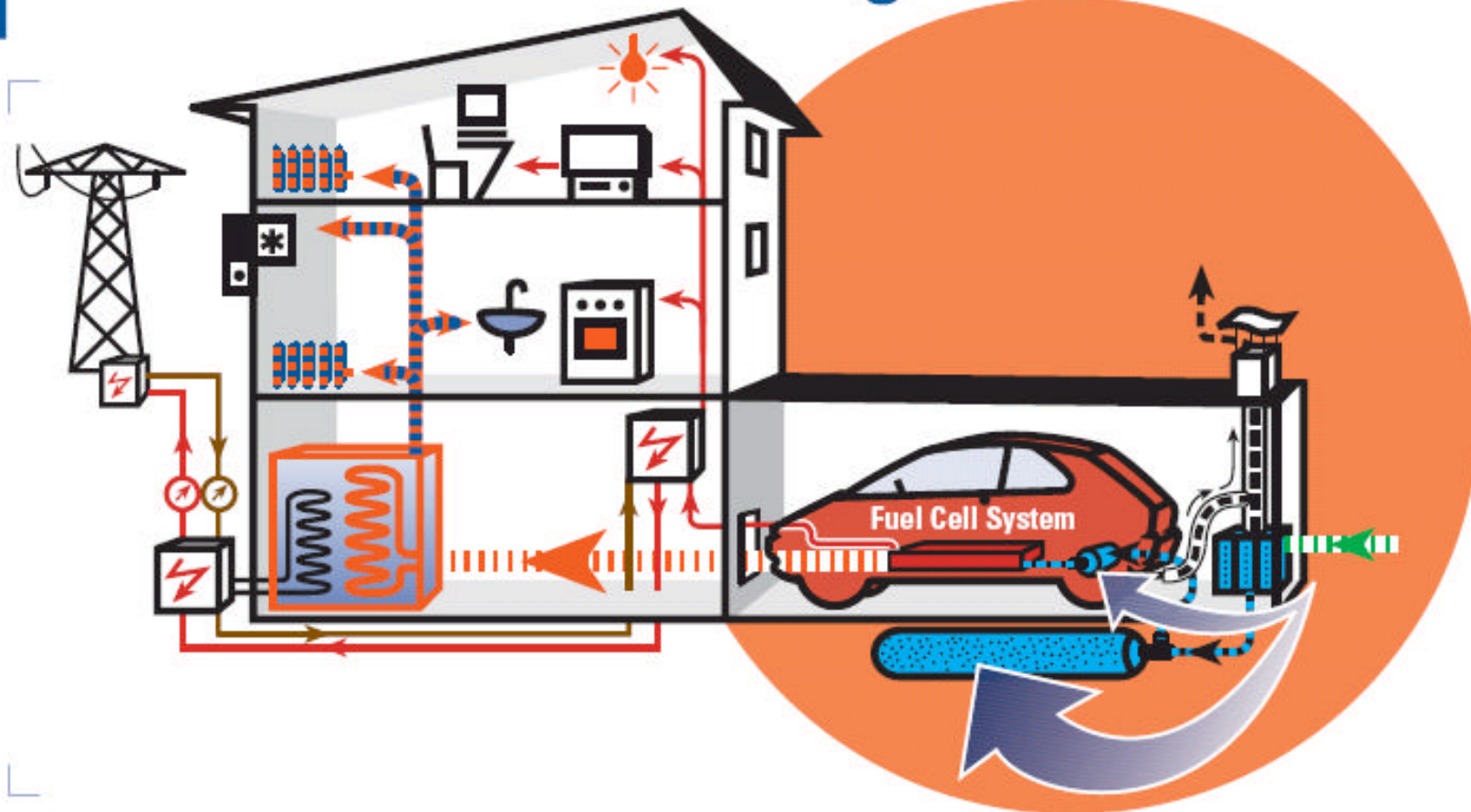
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> Revolution in the Garage



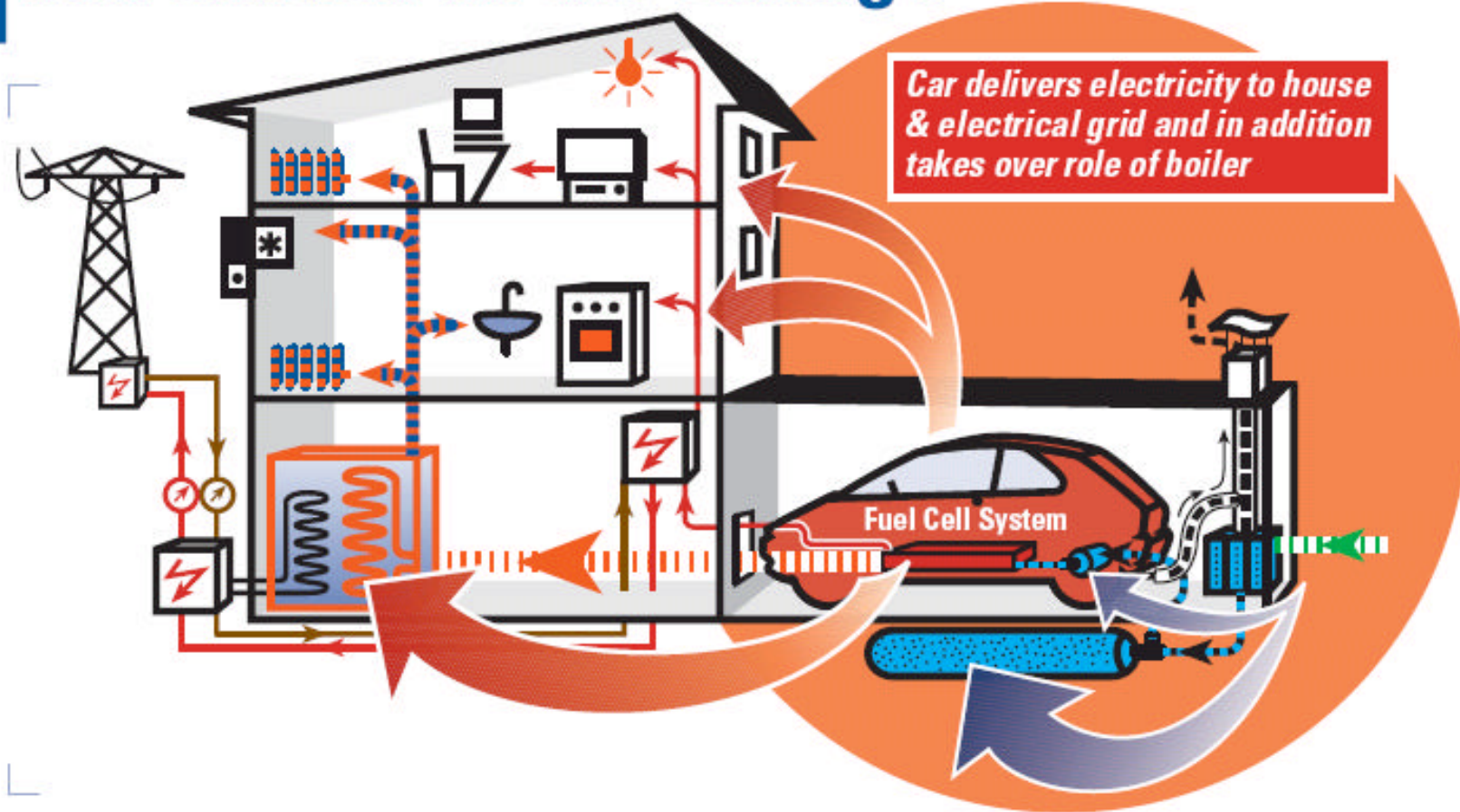
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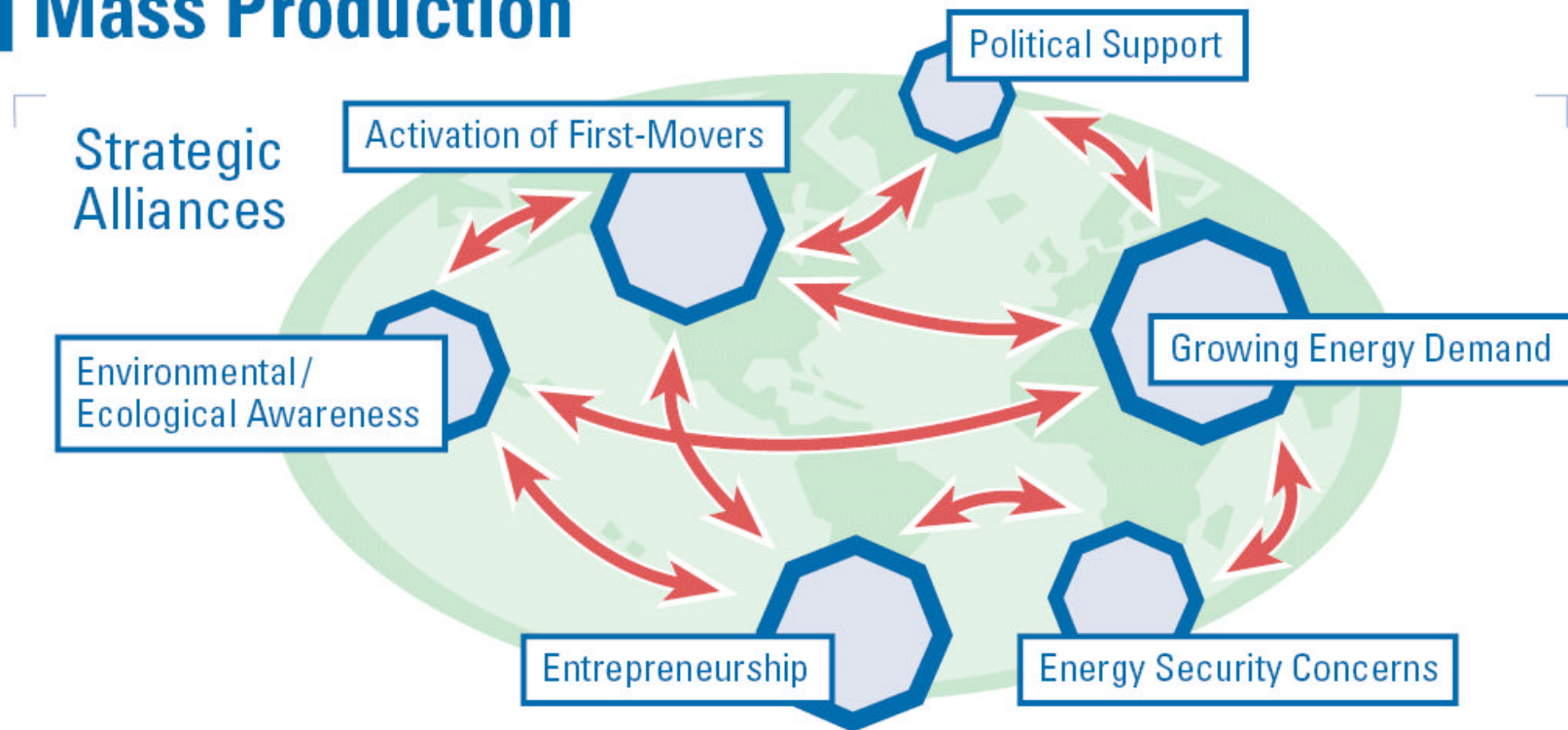
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Necessary Conditions to reach the final Goal: Mass Demand will drive Mass Production

- Many circumstances have to be added:
Which one is most important?
 - Activation of First-Movers
 - Growing Energy Demand
 - Environmental / Ecological Awareness
 - (Private) Entrepreneurship
 - Energy Security Concerns
 - and (less, please!!!) Political Support

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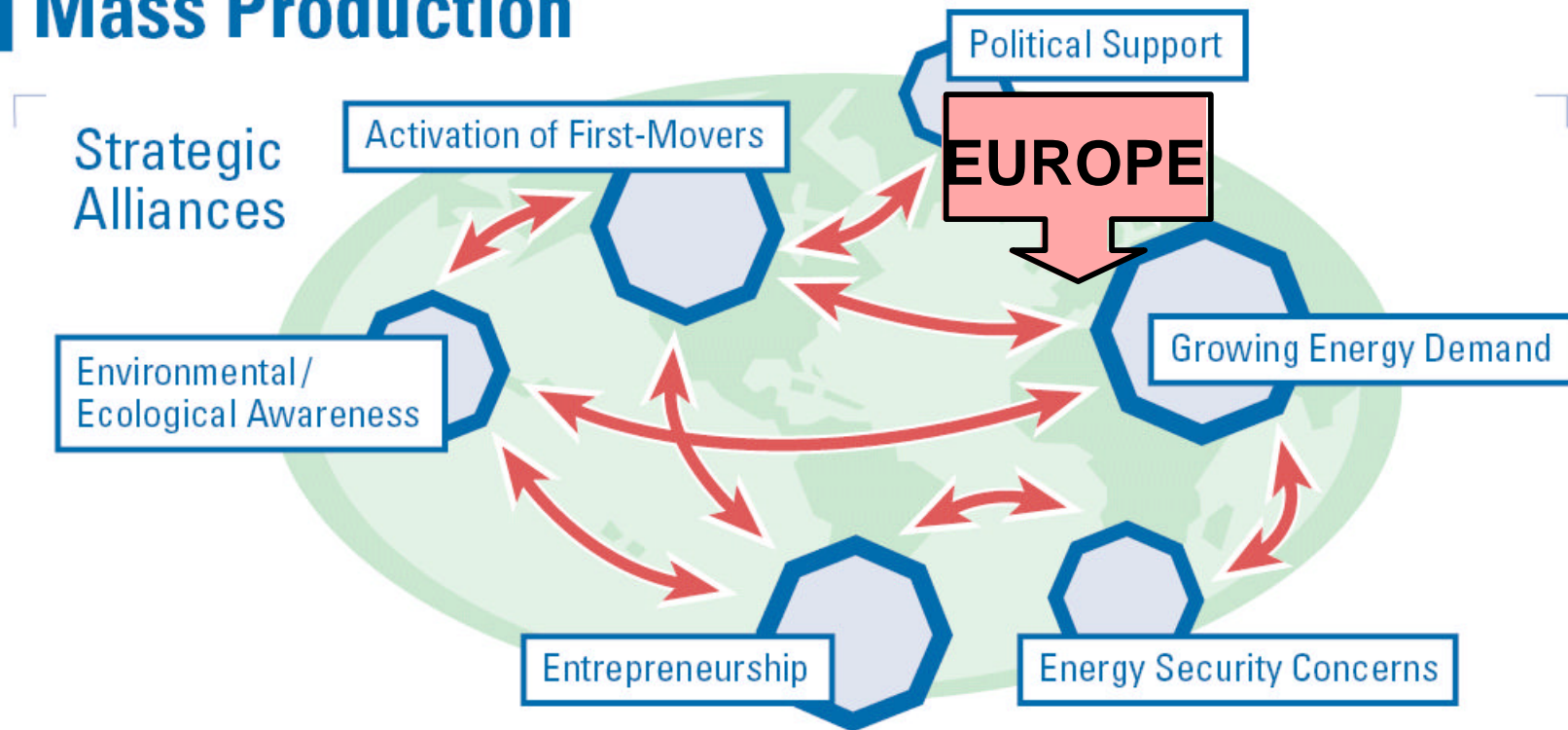
> Necessary Conditions to the final Goal: Mass Production



Commercial products for worldwide commercial markets!

Go to Where the Market is!

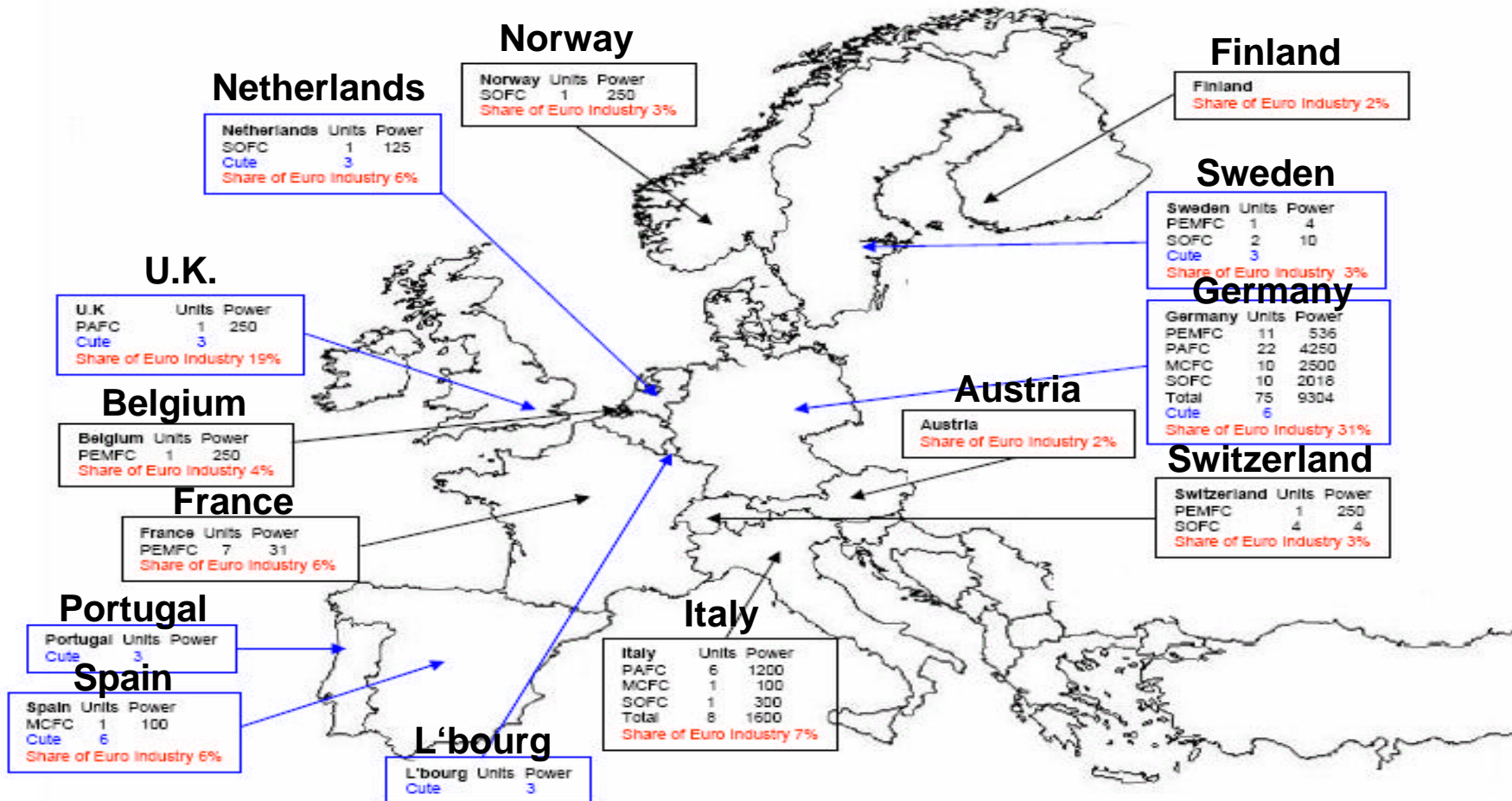
> Necessary Conditions to the final Goal: Mass Production



Commercial products for worldwide commercial markets!

Go to Where the Market is!

European Map: 12MW Stationary, 27 Buses



Source: Phil Doran, Core Technology Ventures LLP

CORE TECHNOLOGY VENTURES LLP

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EUROPE: Some EU policy actions

- Action Plan on energy efficiency
 - Improving Energy Efficiency: +18% from 1995 to 2010
 - Increasing the Share of Co-generation: 12% of EU-15 electricity by 2010
- White Paper on Renewable Energies
 - Doubling the Share of Renewable Energies from 6 to 12% of final energy
- Communication on Alternative Fuels
 - Hydrogen: 5% of road transport fuel by 2020
visit http://europa.eu.int/comm/energy_transport/en/ga_en.html

Source: Dr. William Borthwick, DG Research – Energy Production and Distribution



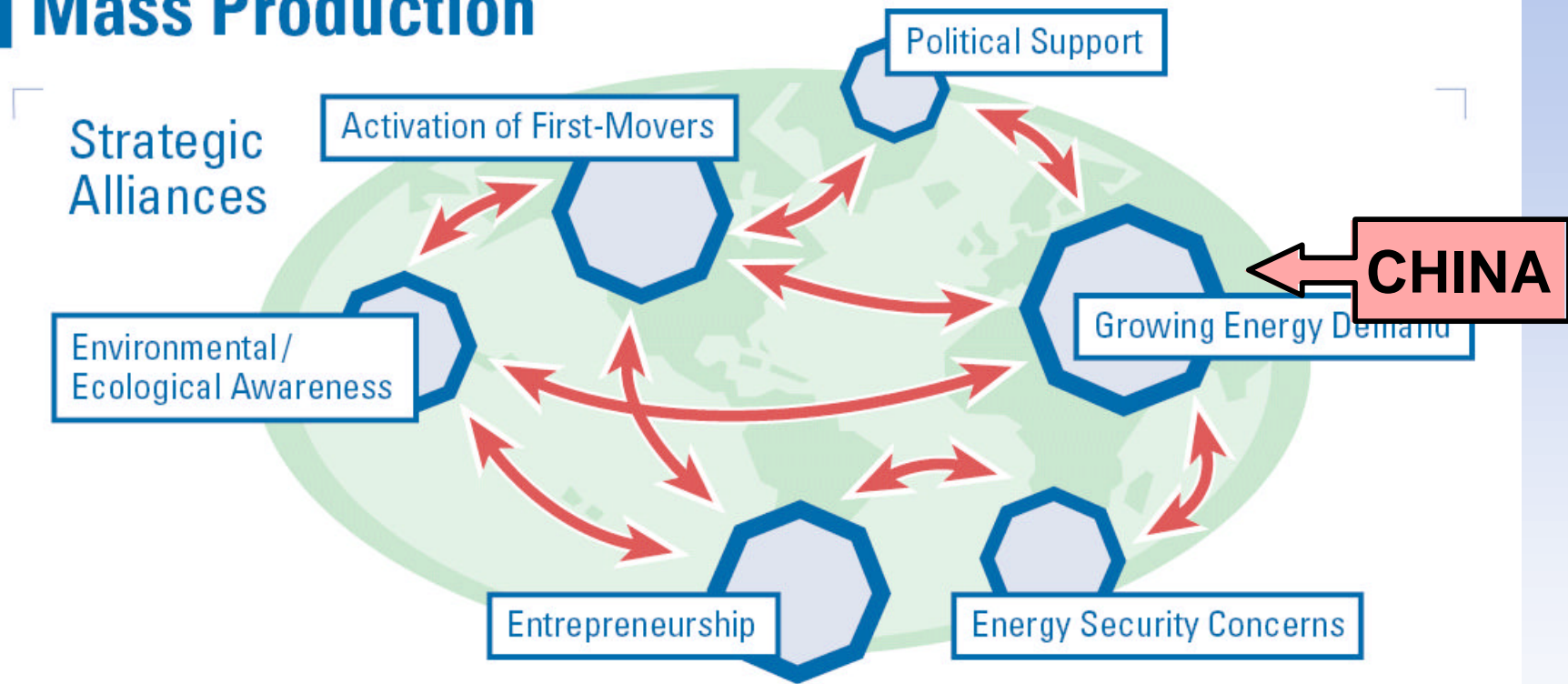
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> Necessary Conditions to the final Goal: Mass Production



Commercial products for worldwide commercial markets!

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CHINA: Scientific Research Foundation

- National Natural Scientific Foundation (NSFC)
 - Fundamental Research
- “863 High Technology Research and Development”
 - High Technology Project with Commercial Potential
- “973 Project”
 - High Technology Fundamental Research
- Chinese Academy of Sciences, Ministry of Education
 - Fundamental and Applied Fundamental Research
- Industry
 - Applied Fundamental Research

Source: Dr. Honymei Yu, Dalian Institute of Chemical Physics, Chinese Academy of Sciences



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CHINA: 10th Five-Year Plan (2001-2005)

- “863 High Technology Project”
 - Key Project
 - ✍ Fuel Cell Vehicle for Car and Bus
 - ✍ 33 million EURO
 - Fuel Cell Key Material Project
 - ✍ Membrane, Bipolar Plate
 - Future Energy Project
 - ✍ DMFC, MCFC and SOFC

Source: Dr. Honymei Yu, Dalian Institute of Chemical Physics, Chinese Academy of Sciences



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CHINA: 10th Five-Year Plan (2001-2005)

- “973 Project”
 - Hydrogen Energy (including Fuel Cells)
- National Natural Scientific Foundation (NSFC)
 - New Material, New Concept in Fuel Cells
- Chinese Academy of Sciences Key Project
 - Fuel Cell Engine and Hydrogen Technology
- Industry
 - Hydrogen Production from Natural Gas, Methanol and Gasoline

Source: Dr. Honymei Yu, Dalian Institute of Chemical Physics, Chinese Academy of Sciences



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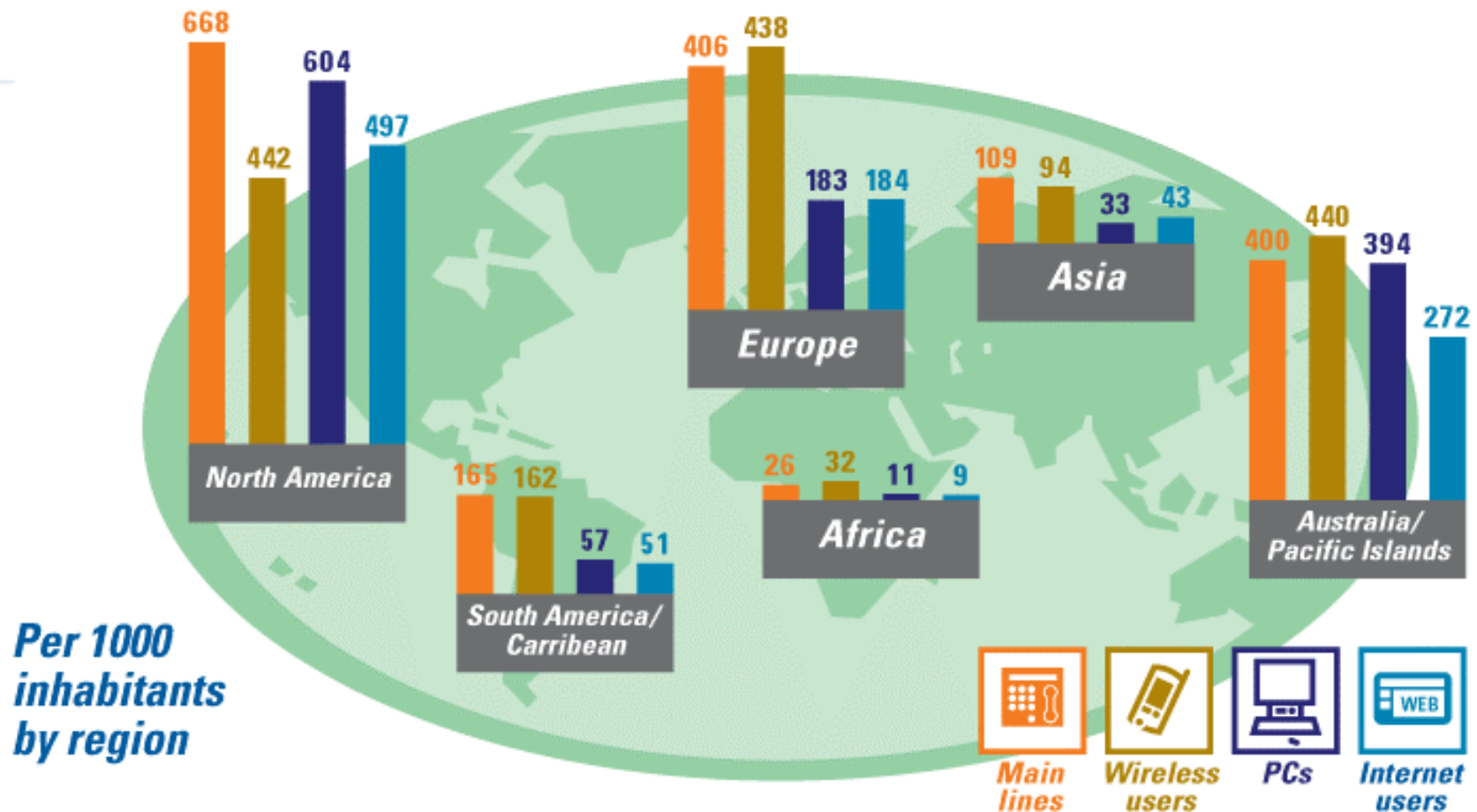
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> Telecommunications, Media and Usage by region



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Group Exhibit Hydrogen + Fuel Cells HANNOVER FAIR

- The annual Group Exhibit has developed to be the biggest of its kind in the world since 1995.
- 90 companies from 19 countries showed their latest developments in 2003
- HANNOVER FAIR 2004, April 19-24 celebrating our 10th anniversary

You are all welcome to attend...

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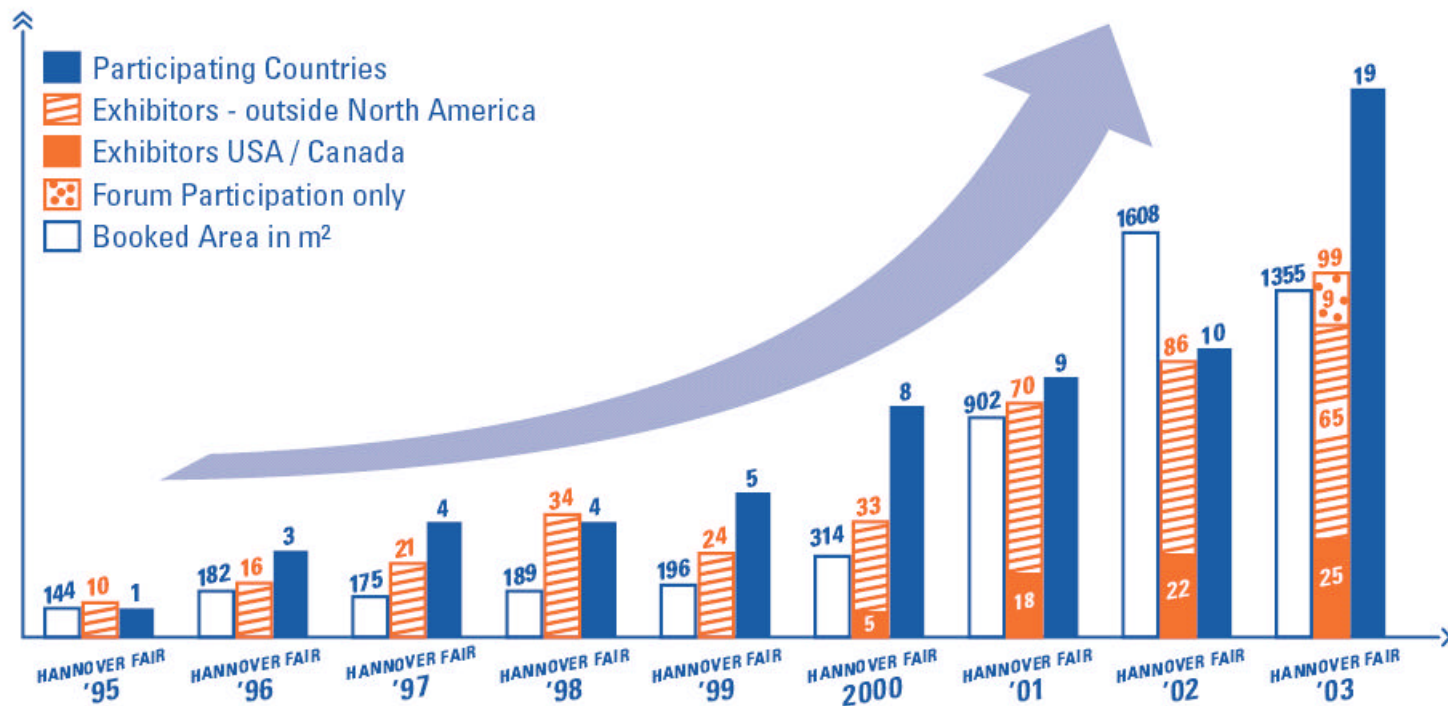
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> Group Exhibits on Hydrogen + Fuel Cells

at the HANNOVER FAIR 1995 – 2003 ... more to come ...



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picture shows **HANNOVER FAIR 2003**

Welcome to the Group Exhibit
Hydrogen + Fuel Cells
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HANNOVER FAIR

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