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Hydrogen
+Fuel Cells
Implementing new Ideas!

15th World Hydrogen Energy Conference
世界水素エネルギー会議
Science, Technology and Exhibition
New Trend in Fuel Cell and Hydrogen
Yokohama, Japan June 27 - July 2, 2004

Fueling Our Future: Setting the Stage for the Coming Hydrogen Economy

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

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Contents:

- Still on Probation or Ready for Take-Off?
- The Customer can Decide
- Implementation Time of New Products
- Not Technical Possibilities but Consumer Demand
- Evolution of the Cellular Phone / Aircraft Industry
- World Motor Vehicle Production incl. P.R. China
- Necessary Conditions to the Final Goal:
  Mass Demand will drive Mass Production
- Market Outlook: China
- Go to Where the Market is!

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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 years?

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The customer can decide

Fuel Cell Car and Experiment Kit

- 30 distinct experiments
- Uses solar power, and a fuel cell to separate water into hydrogen and oxygen by electrolysis
- Ages 12 and up
- 5 1/2" H x 5" W x 8" L, 1 lb (0,45 kg)
  14 cm H x 13 cm W x 20 cm L

Source: SkyMall, Spring 2004

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The customer can decide

>>zooma>> 350 Watt Electric Scooter

- Steel & aluminum construction
- 15 mph (24 km/h), up to 20 mile (32 km) range
- Front drum & rear disc brakes
- 225 lb (102 kg) capacity
- Rechargeable battery included

Source: Kragen Auto Parts 05/2004

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The customer can decide

What to do next?

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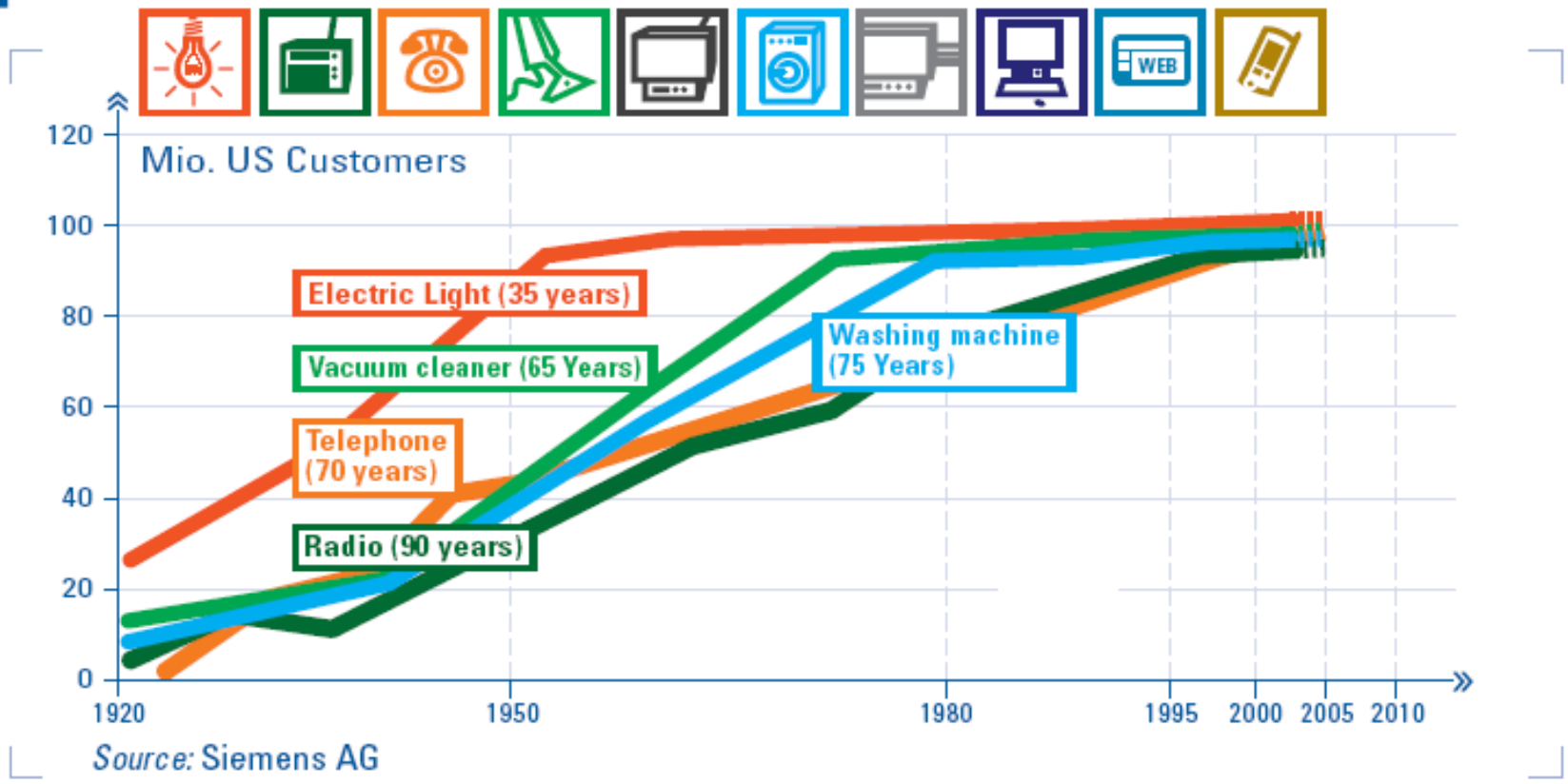
Implementation time of new Products



Source: Siemens AG

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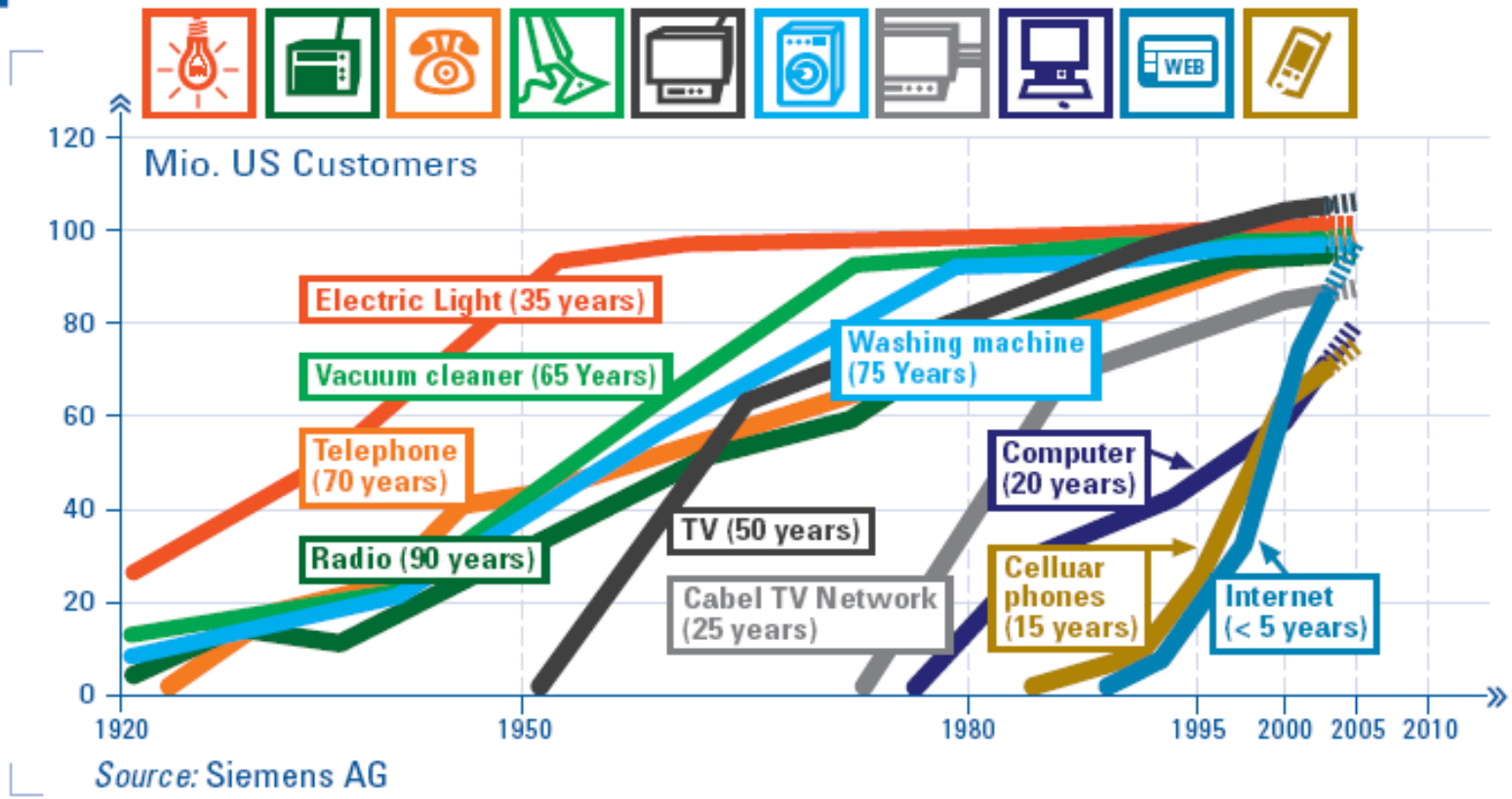
Implementation time of new Products



Source: Siemens AG

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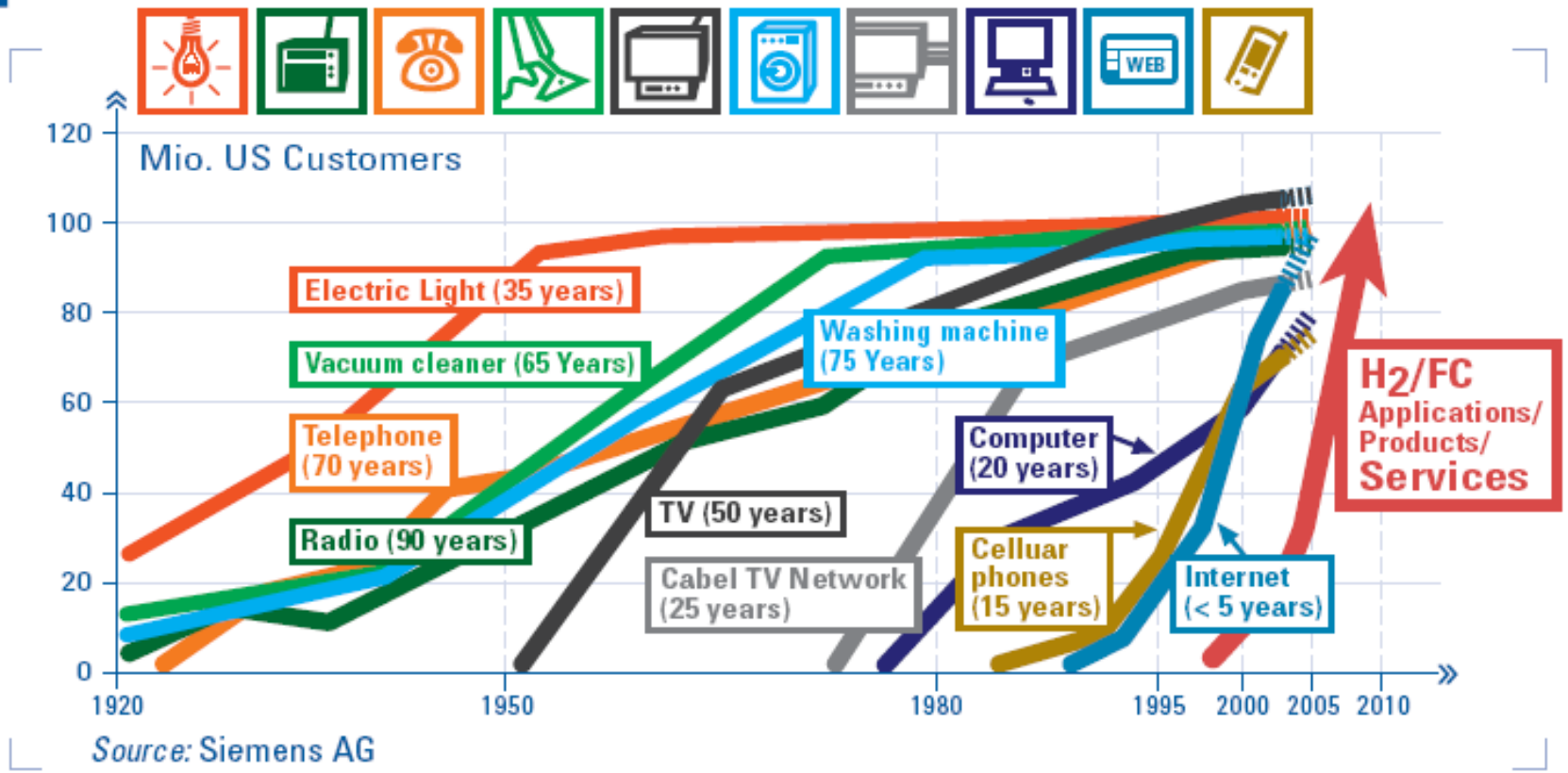
Implementation time of new Products



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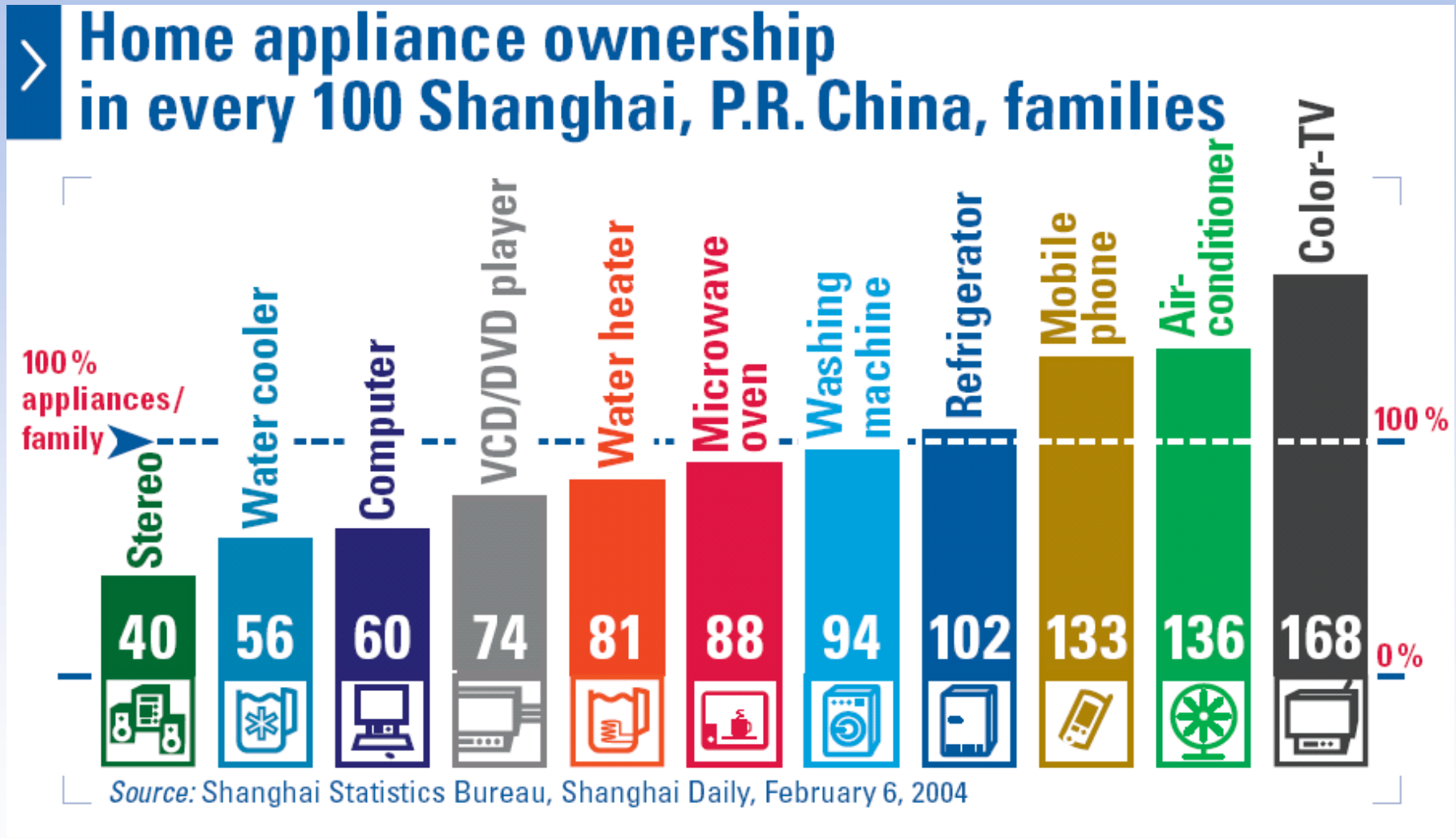

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Not Technical Possibilities but Consumer Demand

- 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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Evolution of the Cellular Phone 1983 – 2004

Then: 1983		Now: 2004
Dynatac	MODEL	Samsung A 500
1,36 kg / 3 lbs	WEIGHT	3,6 oz / 102 g
$ 3,000	PRICE	$ 299
None	VISUALS	Color LCD display
»Internet… what?«	INTERNET	High-speed connection

Source: Time Inc. Home Entertainment / Innovation in Our Time

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Evolution in the Aircraft Industry 1903 – 2005

Orville and Wilbur Wright's Flyer

First powered flight:
at a beach in Kitty Hawk, N.C.
December 17, 1903

Flight Distance: 882 ft / 269 m
Flight Time: 57 seconds
Passengers: 0

1903

Source: Time Inc. Home Entertainment / Innovation in Our Time

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Evolution in the Aircraft Industry 1903 – 2005

In commercial service: 2006
– starting with 11 Airlines
First flight: April 2005

Range _____: 8.000 nm / 15.000 km
Wingspan ____: 261 ft / 79,5 m
Passengers __: 555

Source: Airbus Industrie, Toulouse, France

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Evolution in the Aircraft Industry 1903 – 2005

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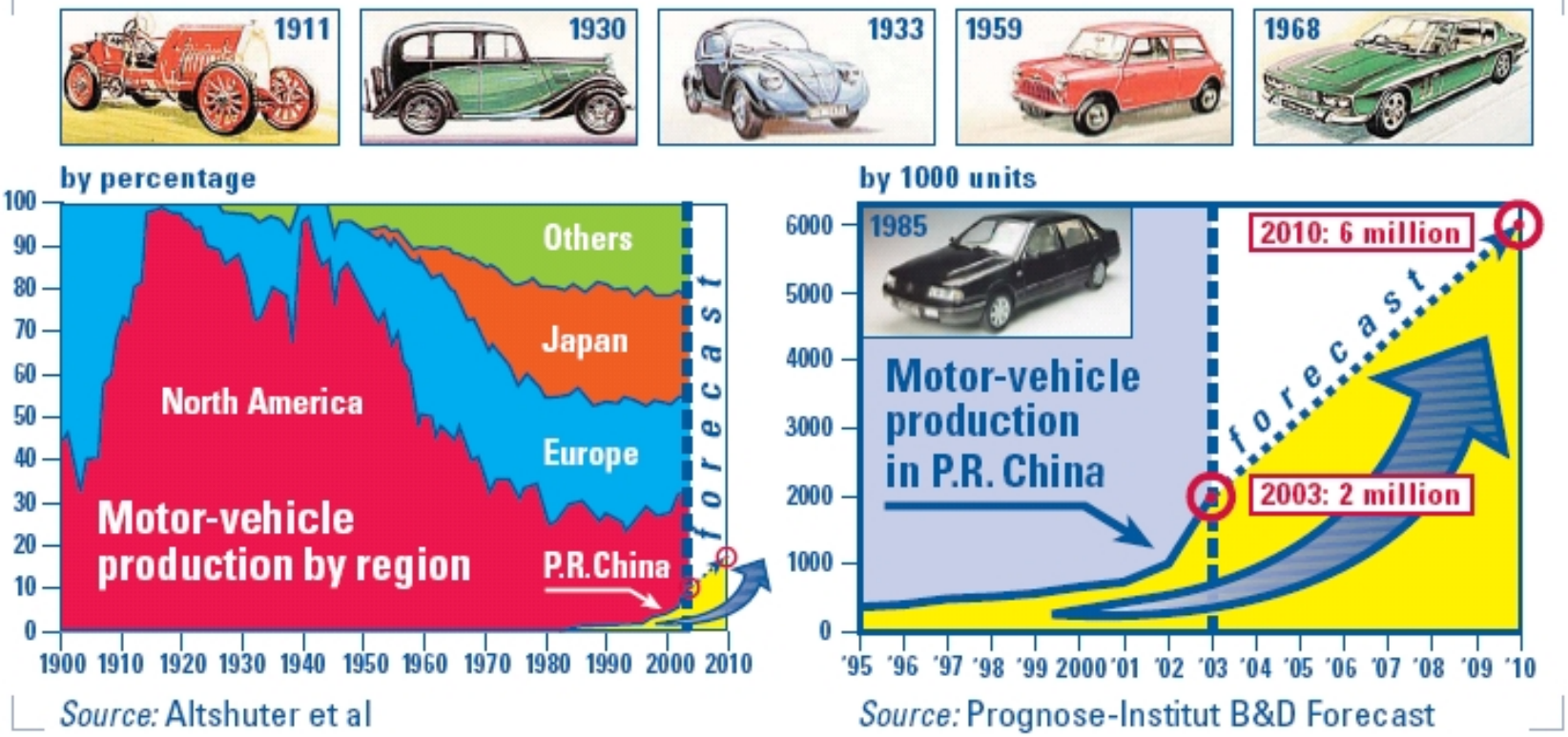
World motor-vehicle production incl. P.R. China 1900 – 2010



Source: Altshuter et al

Source: Prognose-Institut B&D Forecast

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New Players on the Chinese Automotive Market

- **AUX Group Co., Ltd.**
  Ningbo, Zhejiang Province
- **Lifan Group Incorporated**
  Shangqiao, Chongqing Province
- **Ningbo Bird Co., Ltd**
  Zhejiang
- **China National Bluestar (Group) Corporation**
  Beijing
- **Wulianye Distillery Yibin**
  Yibin City, Sichuan Province

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New Players on the Chinese Automotive Market

- **AUX Group Co., Ltd.**
  Plans to invest 8 Billion Yuan (USD$ 966 million) to produce cars over the next 4 years
- **Lifan Group Incorporated**
  Plans to invest 500 Million Yuan (USD$ 60.4 million) for initial manufacturing capacity- 50,000 cars & 50,000 engines
- **Ningbo Bird Co., Ltd**
  Plans to produce cars in a base neighbouring Jiangsu Province end 2004
- **China National Bluestar (Group) Corporation**
  Signed Letter of Intent with UK automaker Manganese Bronze Holdings to joint venture to make taxis
- **Wulianye Distillery Yibin**
  Plans to invest in car manufacturing

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New Players on the Chinese Automotive Market

- AUX Group Co., Ltd.
  Privately-owned Home Appliance maker
- Lifan Group Incorporated
  China's largest private Motorcycle producer
- Ningbo Bird Co., Ltd
  Manufacturer of Electronic communications (mobiles)
- China National Bluestar (Group) Corporation
  State-owned conglomerate
- Wulianye Distillery Yibin
  Alcohol producer

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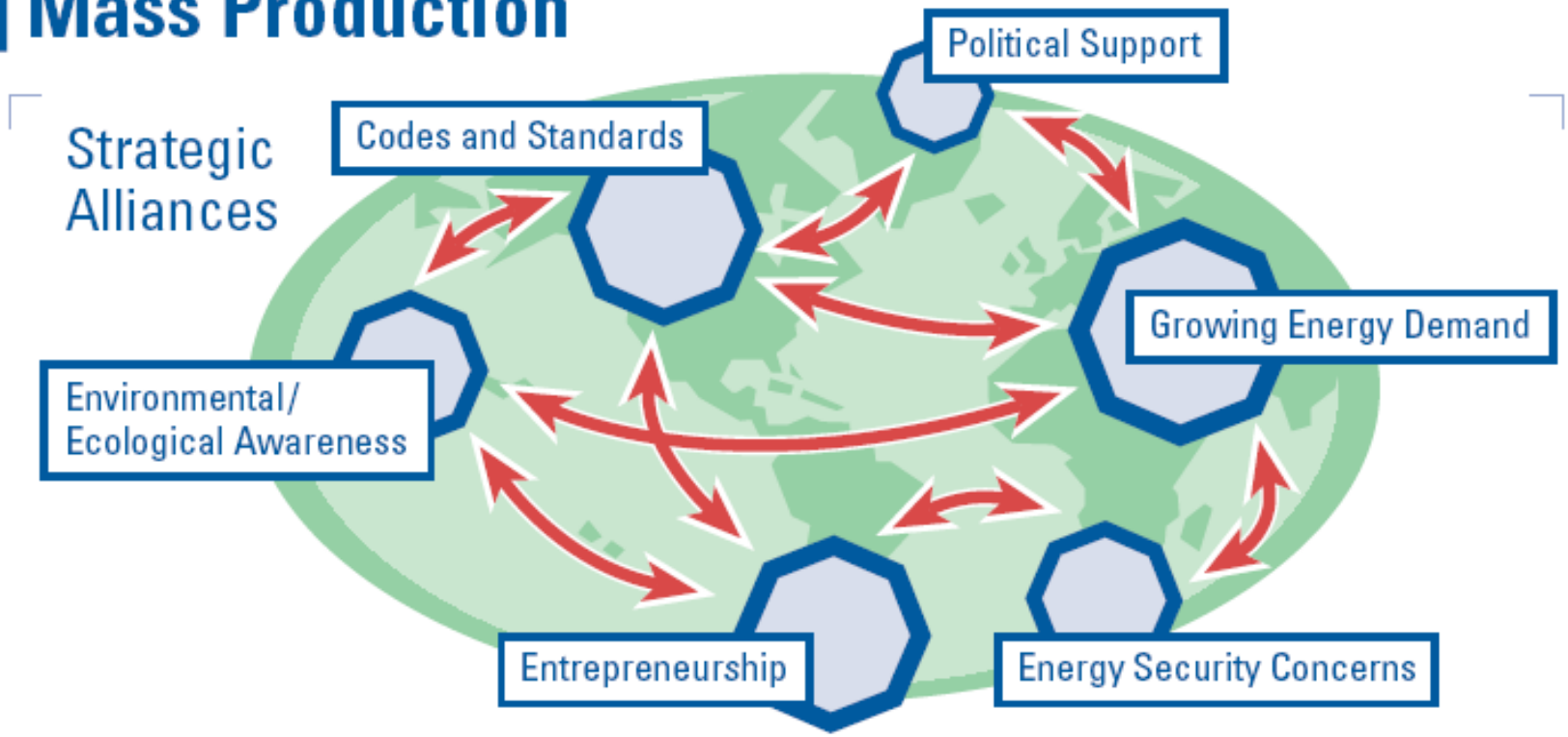
Necessary Conditions to the final Goal: Mass Production



Commercial products for worldwide commercial markets!

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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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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.
- 116 Exhibitors and Forum Participants from 24 countries showed their latest developments in 2004
- HANNOVER FAIR 2004, April 19-24 celebrated our 10th anniversary

Go to www.fair-pr.com to check out all the onsite activities, photos and statements

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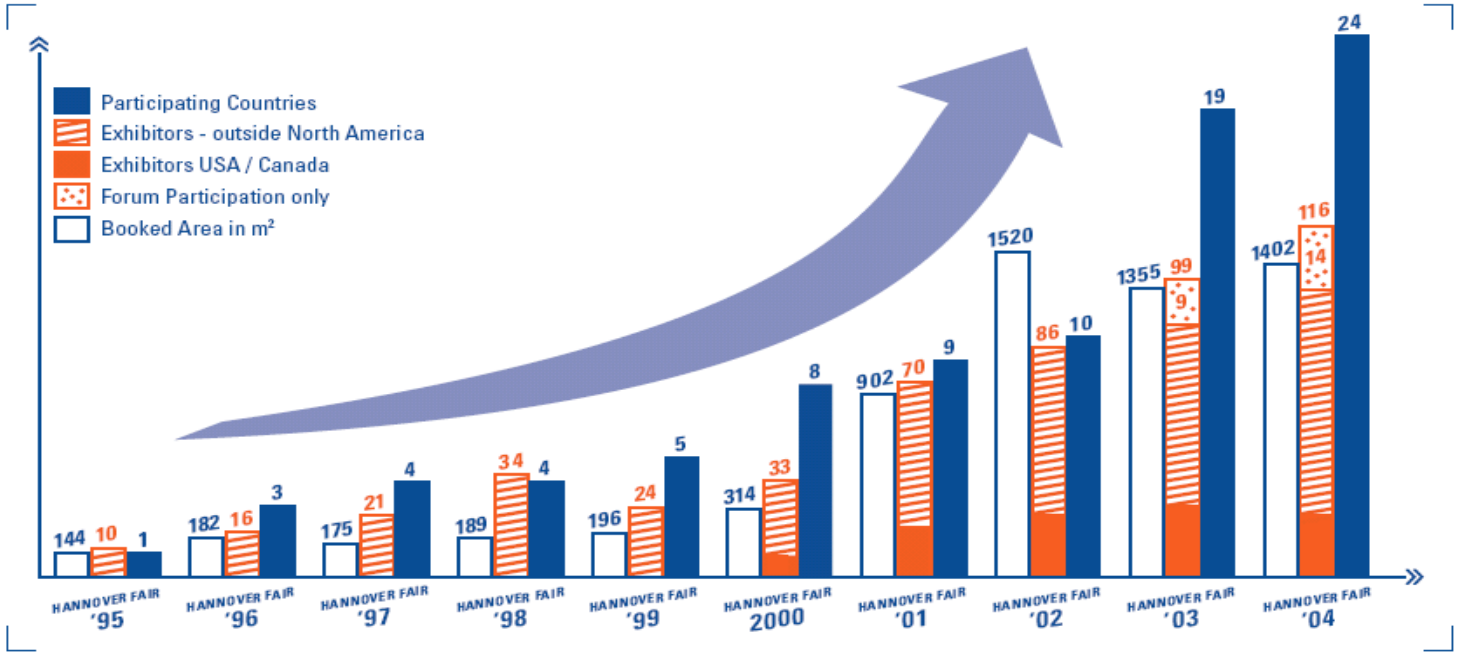
Group Exhibits on Hydrogen + Fuel Cells

at the HANNOVER FAIR 1995 – 2004 ... more to come ...



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We invite you to attend our upcoming Hydrogen and Fuel Cells Group Events…

Our #1 Event in China!

MEETING POINT with Conference

Renewable Energies China

incl. Hydrogen + Fuel Cells

SHANGHAI INTERNAT. INDUSTRY FAIR

Nov. 4 – 9, 2004 *www.fair-pr.com*

Annually since 1995

GROUP EXHIBIT

Hydrogen + Fuel Cells

HANNOVER FAIR '05, **April 11 –15**

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Arno A. Evers FAIR-PR
Achheimstrasse 3
82319 Starnberg, Germany
Tel.: +49-(0)8151-99892-3
Fax: +49-(0)8151-99892-43
E-mail: arno@fair-pr.com

Visit our web site: www.fair-pr.com

See you in Shanghai ‘04 and/or Hannover ‘05!

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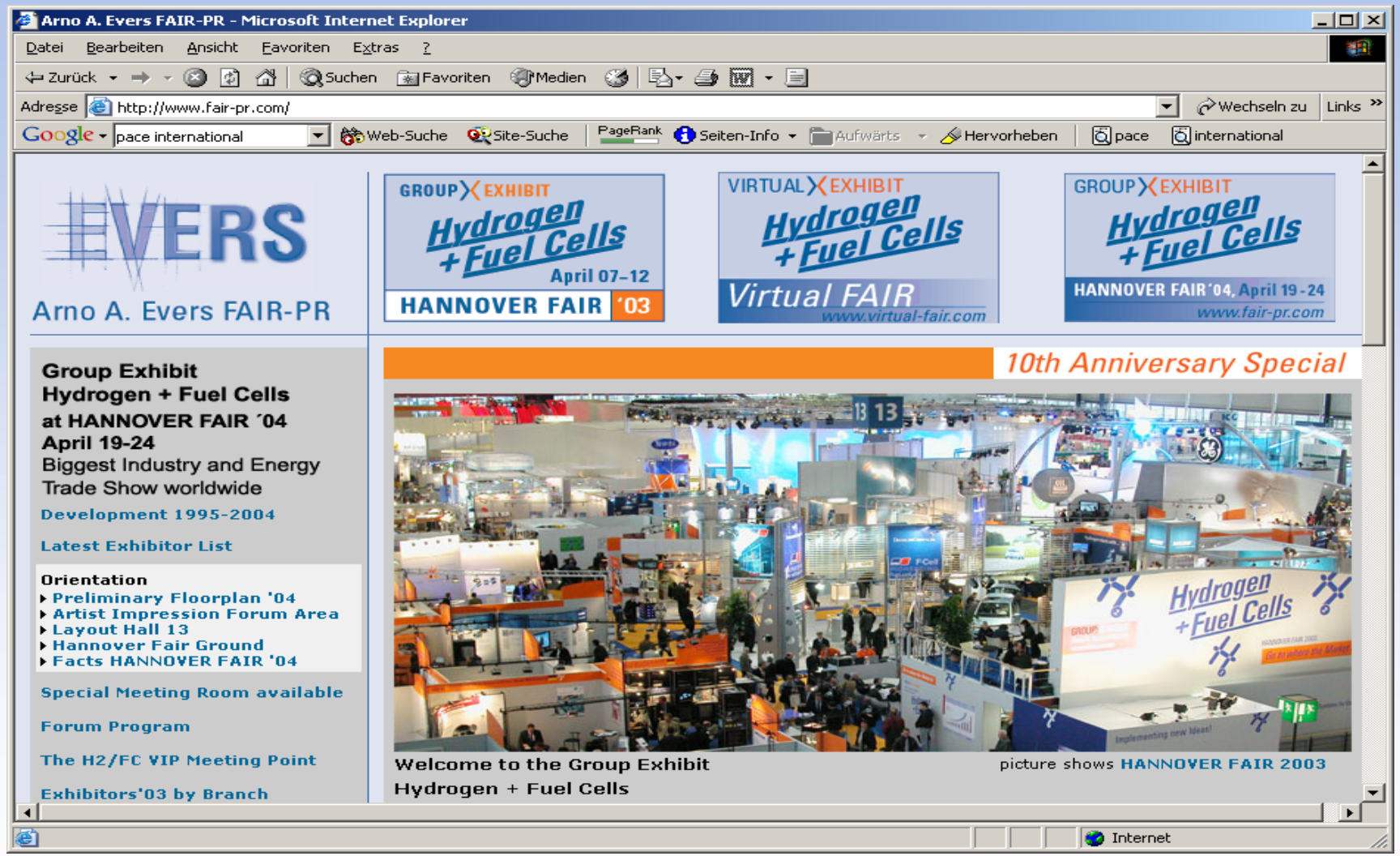

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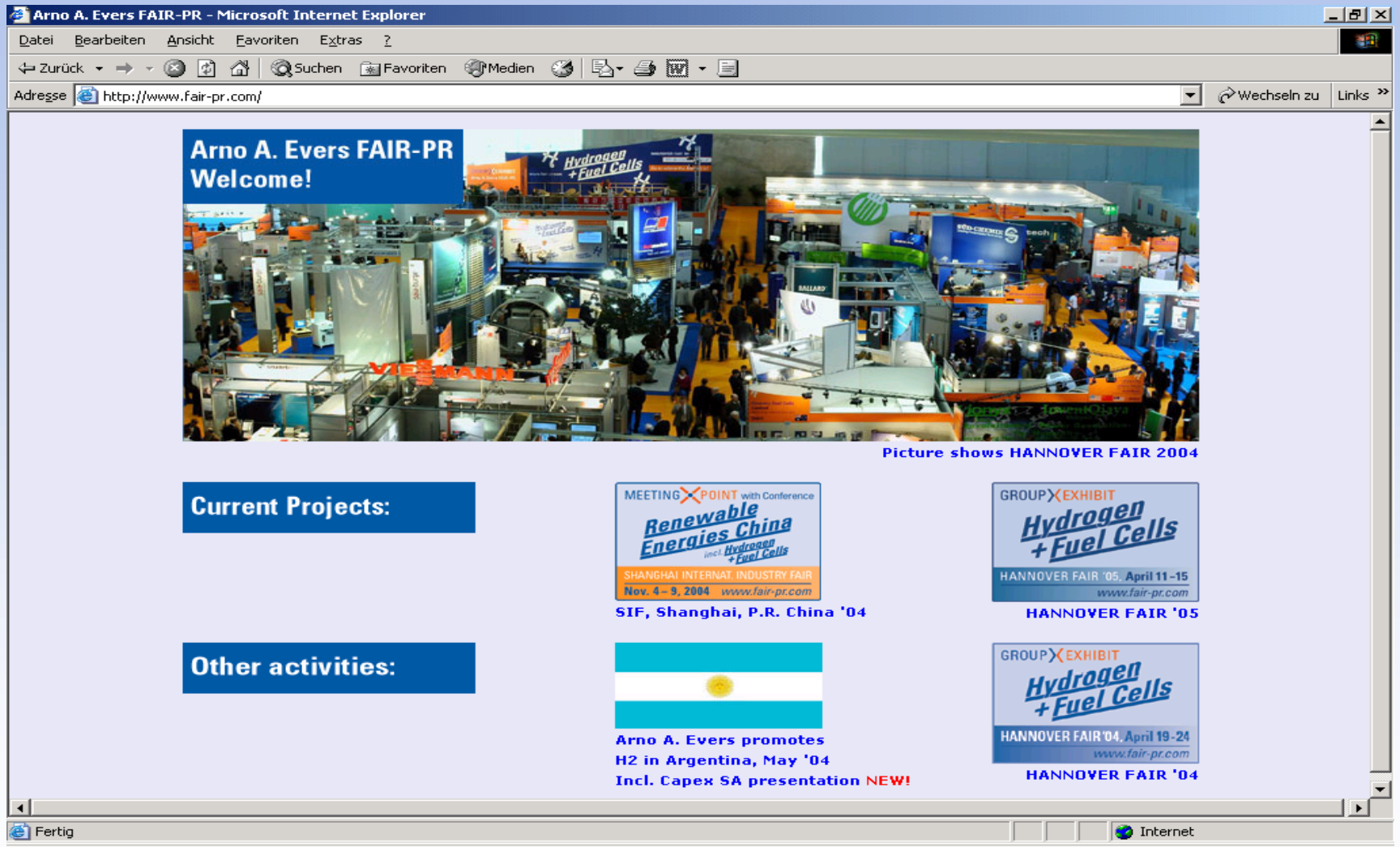

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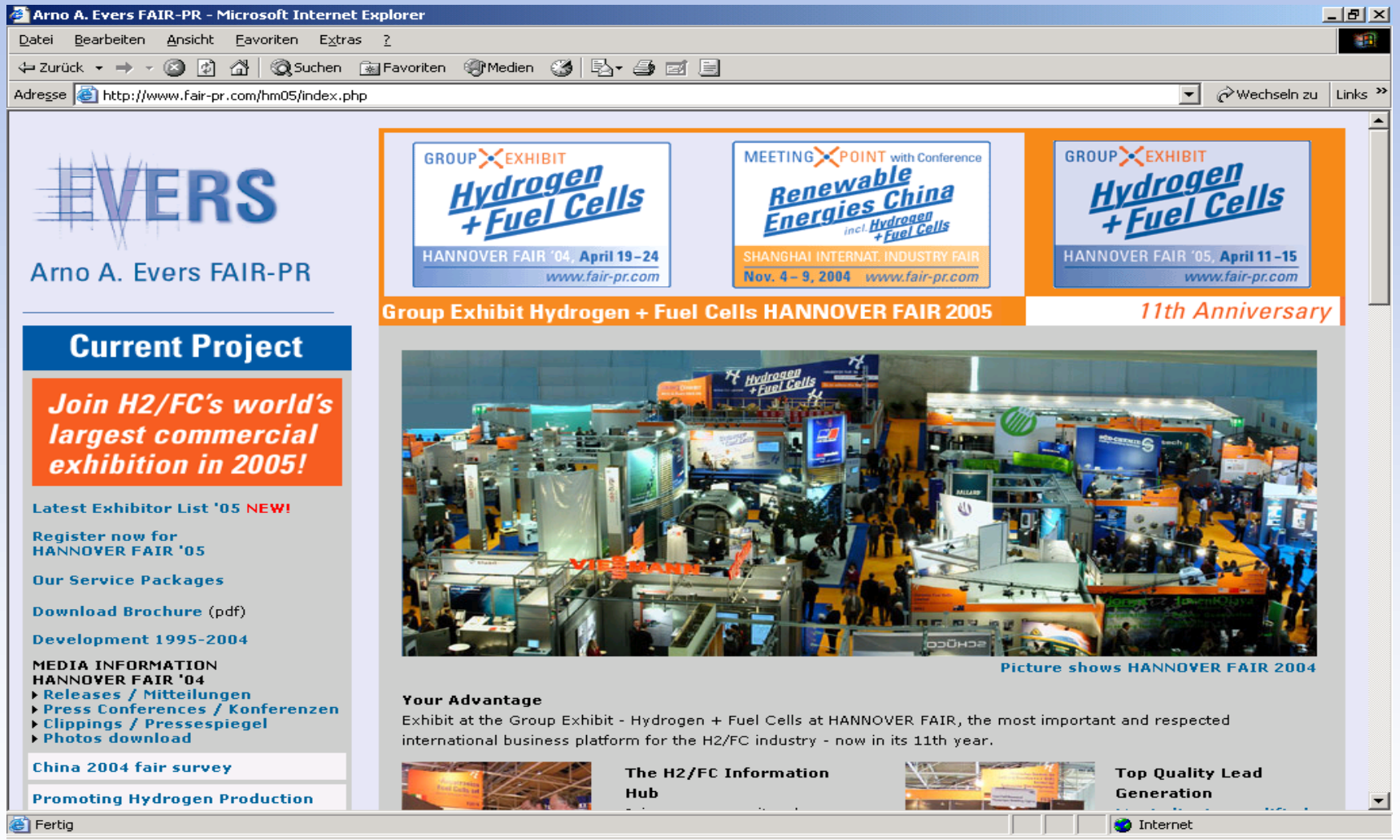

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