



Towards a new paradigm of Open Business Dynamics – implications for Climate-Progressive change

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Agenda

- The Industry-bounded strategy paradigm and its decreasing relevance
- Elements of an Open Business dynamics paradigm – in particular convergence and divergence.
- Sustainable innovation in need of open business strategies



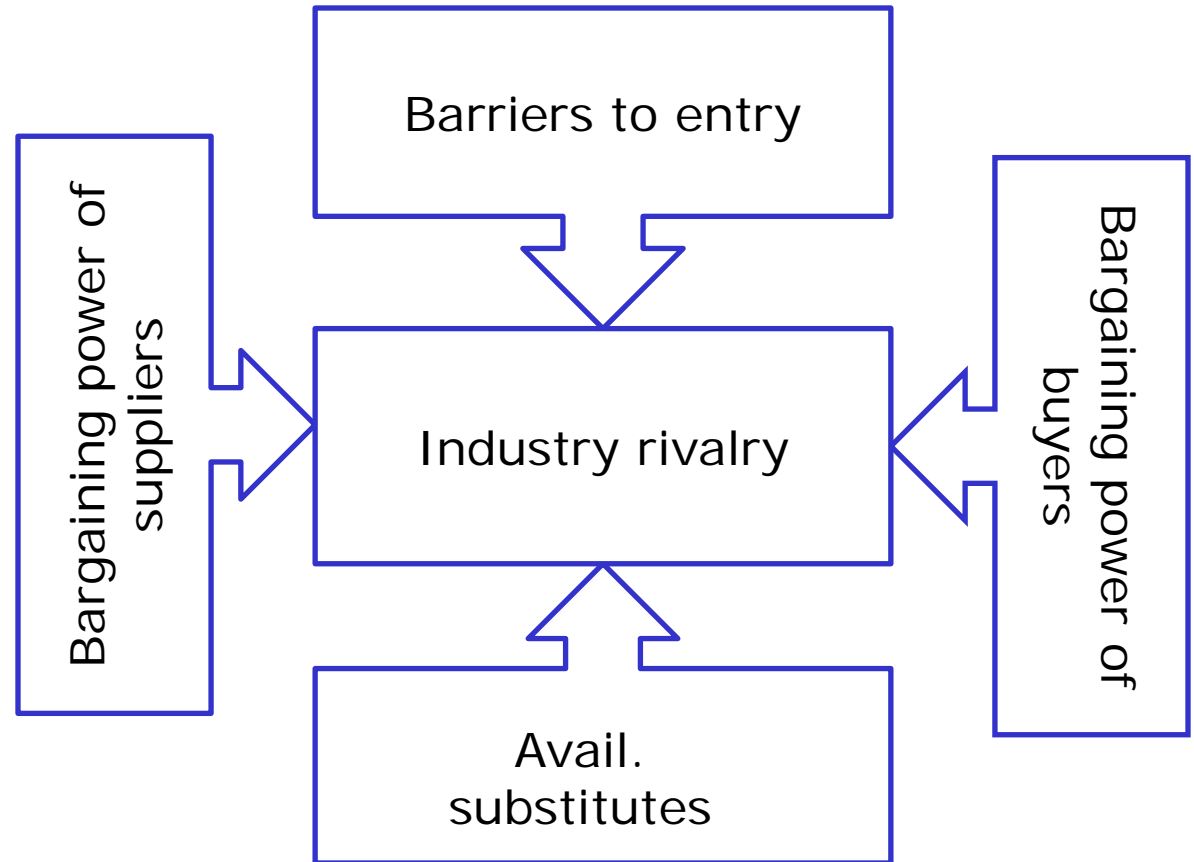
The industry-bounded strategy paradigm integrates three frameworks

- Five Forces (Porter) – the industry's competitive forces
- The Product Life Cycle (PLC) – the changing industry structure
- Innovation Life Cycle (ILC) – the changing innovation focus over the PLC

All assuming that industries are robust, arenas for competition and for strategy



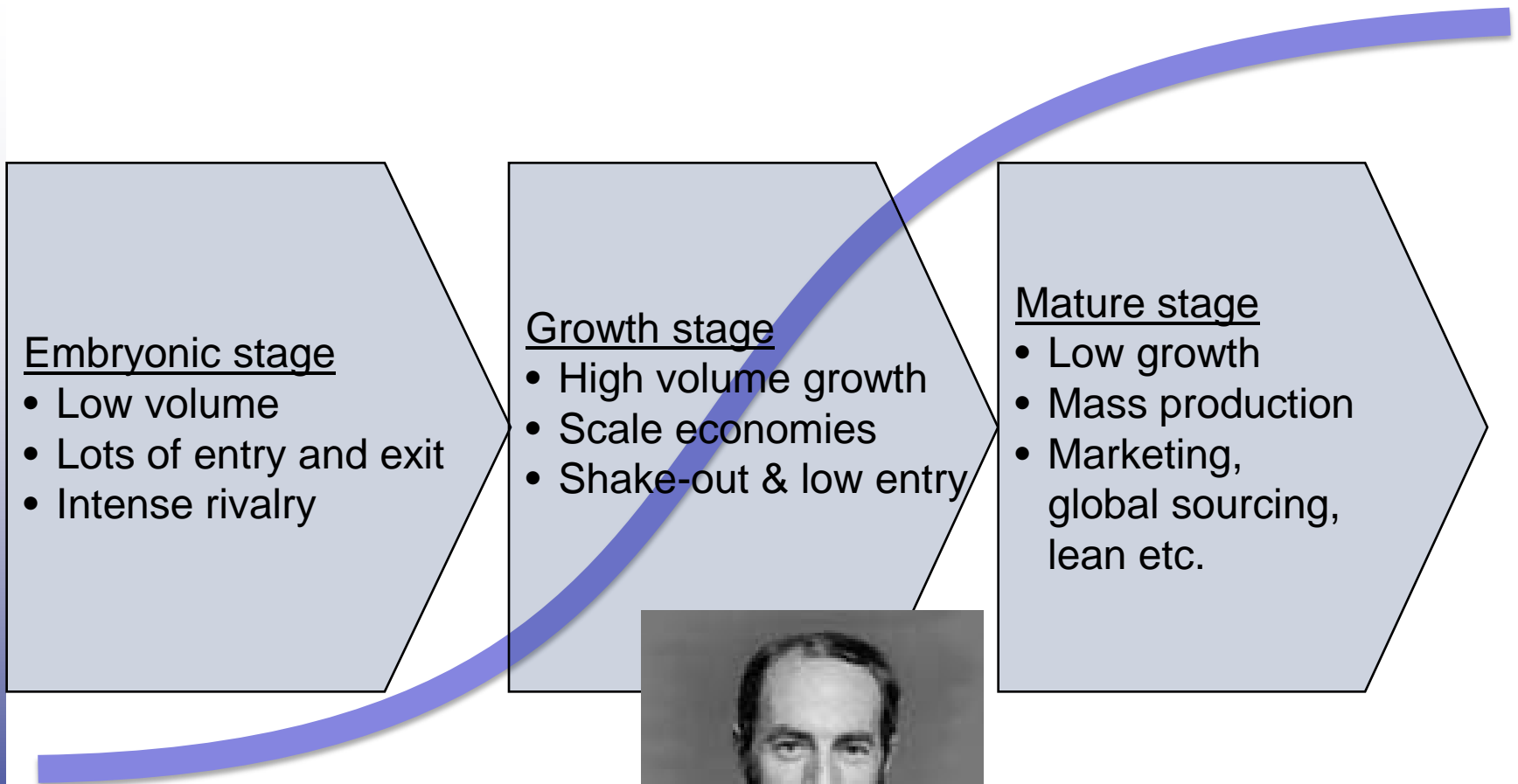
Porter's five forces



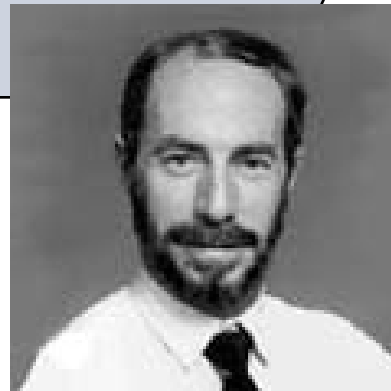
Porter (1980)



Product Life Cycle

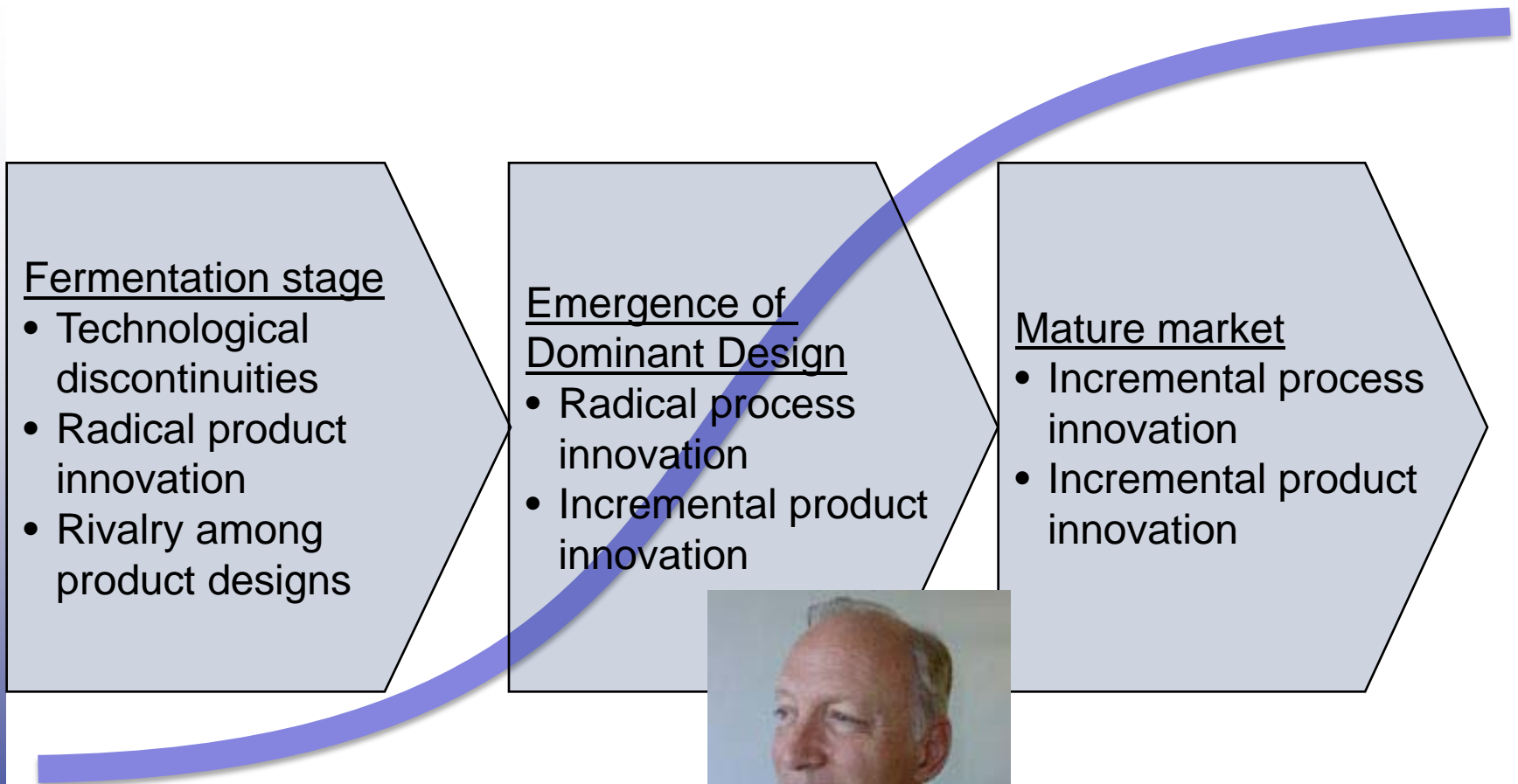


Gort and Klepper (1982)





Innovation Life Cycle



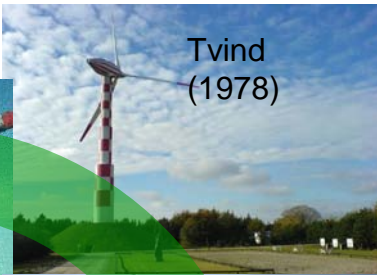
Abernathy & Utterback (1978)



NASA/DOE 7.5 MW
(1981)



Tvind
(1978)



USA 1980's



Riisager
(1976)



Dominant design
(2008)



2030?

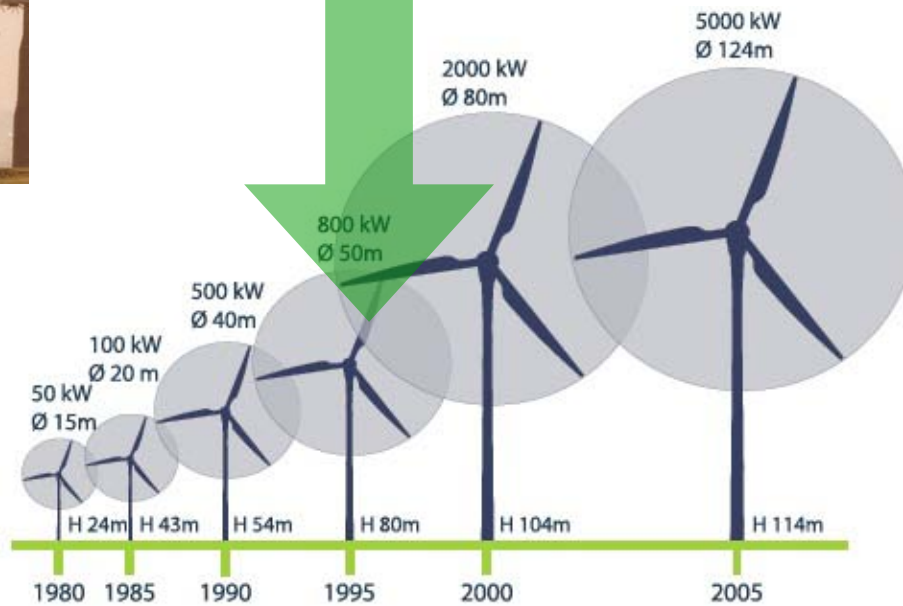
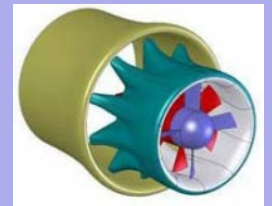
Urban
windpower



Off-shore
giants
(9MW)



High-speed
turbines





Horns Rev 2 – the world's largest off-shore wind farm under construction





Not all product markets and industries fit the PLC/ILC model...

- Continue to have high entry and exit
 - Biotechnology
 - Lasers
 - Semiconductors
 - Software
- Renewed growth cycles
 - Gas turbines
 - Batteries
 - Micro breweries
- Convergence and divergence



Convergence and Divergence

- **Convergence:** Changes in product market and industry boundaries leading to the formation of new integrated product markets.
- **Divergence:** Disintegration of one product market or industry into one or more submarkets.



The decreasing relevance of the industry-bounded paradigm

- Firm-environment relationship increasingly characterized by coordination/collaboration – not only competition as assumed in Five Forces.
- Business dynamics are increasingly driven by convergence and divergence - not reflected in the PLC model.
- Convergence/divergence are driven by systemic and open innovation - not reflected in the ILC model



Three elements of an "Open Business Dynamics" paradigm

1. From an industry-confined to a differentiated conception of the business environment
2. From PLC/ILC to convergence and divergence dynamics
3. From closed to open and systemic innovation



1st element:

From industry-confined to a differentiated conception of the business environment

- Emergent (specialized) **product markets** – arena for competition – often dominated by small firms
- Emergent **ecosystems** – arenas for coordination, convergence/divergence and open innovation
- Established **industries** - arenas for both competition and coordination/collusion – dominated by large incumbents – locus of established platforms.



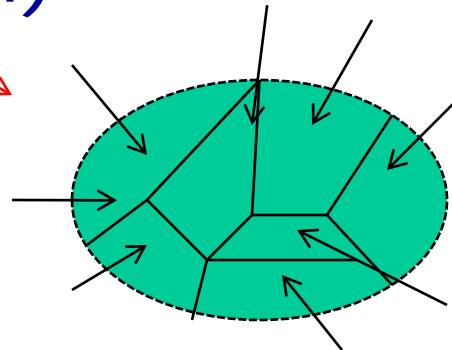
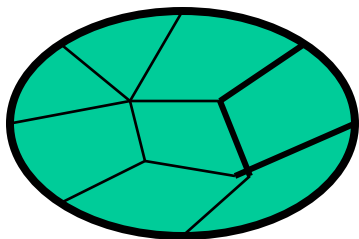
2nd element of Open Business dynamics

Convergence and divergence



Two forms of convergence

- Product bundling (making two or more specialized products into a converged product)
- Platform embedding (embedding specialized products/functionalities into one platform)





Product bundling convergence is not a new phenomenon



An old-style radio and gramophone both include an audio amplifier and loudspeakers. By building both devices into one cabinet and sharing the audio amplifier and loudspeakers, the result is a **radiogram**, a successful converged device of the 1950s.



The Camera Phone – a converged device of today



LG KC910: An all-in-one multimedia phone, sporting 8-megapixel camera, Dolby sound for music, and DivX and XviD support for video playback.



Platform-embedded convergence

- Embedding Internet browser, word processing, firewalls and antivirus into Windows/Vista platforms
- Embedding navigation tools into PDA or smartphones platforms



Limits to convergence?

iPod chief, **Jon Rubinstein:**

"Is there a toaster that can also brew coffee?".

Rubinstein explains that no such device exists because it would not provide any benefits over an individual toaster and coffee machine.

"Many companies believe in [convergence theory], but I personally do not...It's important to have specialized devices."

Interview in *Berline Online*



Well – here it is: Three-in-One Breakfast Toaster Coffee Machine Egg Boiler





Convergence requires

- The adoption of knowledge of core technologies and product functionalities from complementary products
- The shaping of interface technologies and standards to provide effective interaction



A contingency theory of convergence

A convergence trajectory will be triggered when prospects for econ. of scope and synergies from aligning product markets are higher than prospects for econ. of scale and improved product performance within product markets.



Three factors sustain tendency for convergence (rather than PLC)

- No/low opportunities for econ. of scale via process innovation in software and many services.
- Advancements of ICT and the ubiquity of digitization makes interlinking of products easier (interface technology).
- Improved markets for technology and M&As make access to complementary core technologies and product functionalities easier.



A contingency theory of divergence

A divergence trajectory will be triggered when prospects for specialization economies (incl. scale advantages) are perceived as higher within component submarkets than scope economies across components.

Navigation systems – a case of convergence and divergence

- First embedded in proprietary auto platforms
- Then integrated in PDAs
- TomTom: divergence into a stand-alone portable device
- Recently integrated in smart phones



**Hence:
Convergence
and divergence
may co-exist**



IT security – a case of Open Business Dynamics

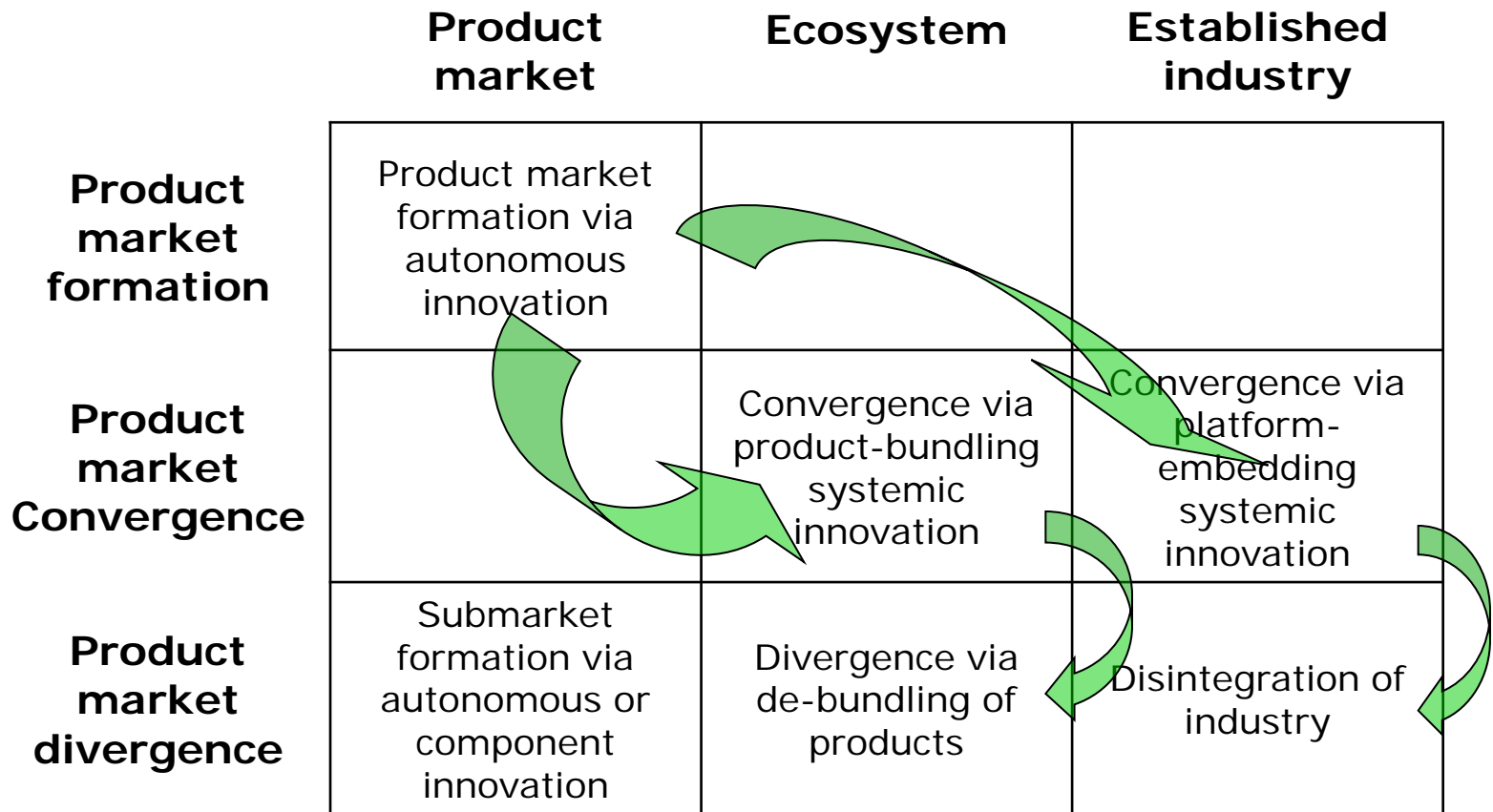
comprising security software, hardware and services

- An evolving **ecosystem** of myriads of specialized **product markets** undergoing convergence and divergence
- Stages since the 1980s:
 1. product market formation (antivirus, firewall, VPN, IDS, spyware, etc.) by startups
 2. Product bundling across product markets (product suites) by integrator firms (e.g. Symantec, McAfee, ISS)
 3. Platform-embedding convergence into higher-order platforms (networks, operative systems) by incumbents of established **industries** (Cisco, Microsoft, IBM).
 4. Concurrent tendencies for divergence.

The convergence cycle of open business dynamics

Unit of analysis of business environment

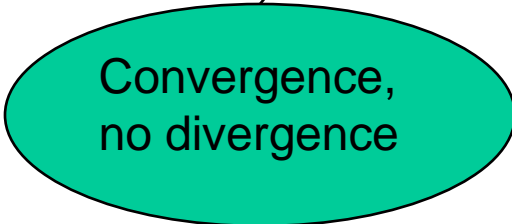
Stages of the cycle






The organization of interface standards/technologies determines the scope for convergence and divergence

	Integral (idiosyncratic) interfaces	Modular/standard interfaces
Closed (proprietary) interfaces	Proprietary/integral interface technology/standards	Proprietary/modular interface technology/standards
Open interfaces	n.a.	Open Innovation and modular interface technology/standards



Convergence,
no divergence



Convergence and
divergence



The organization of interfaces and the significance of convergence and divergence

- Convergence may result in integral interface technology when converged technologies are new and uncertain.
- Divergence is made possible as interfaces become standardized/modular *and* open. Two ways:
- Non-voluntary "natural" process of standardization, simplification and diffusion (slow)
- Upfront concerted strategy to go modular and open when high levels of systemic and technological change are anticipated (e.g. telecom, Internet, GPS)
- This makes possible combined convergence and divergence implying radical technological change and rapid diffusion.

3rd element of Open Business dynamics: From Closed to (more) Open Innovation





Institutional drivers for Open Innovation since 1980s

- Global expansion of large new markets (BRIC, Eastern Europe, Asian tigers, etc)
- Expansion of a globally distributed science-technology base
- Improved market institutions for knowledge (IPR, venture capital and, standards institutions)
- Digitization/the Internet makes large-scale global knowledge exchange possible
- Increased tendencies for convergence/divergence
- **The climate challenge**



Stern-review 2006



- Climate change represents the greatest and widest-ranging market failure ever seen.
- Spending large sums of money now on measures to reduce carbon emissions will bring dividends on a colossal scale. It would be wholly irrational, therefore, not to spend this money.



My suggestion is that sustainable innovation is...

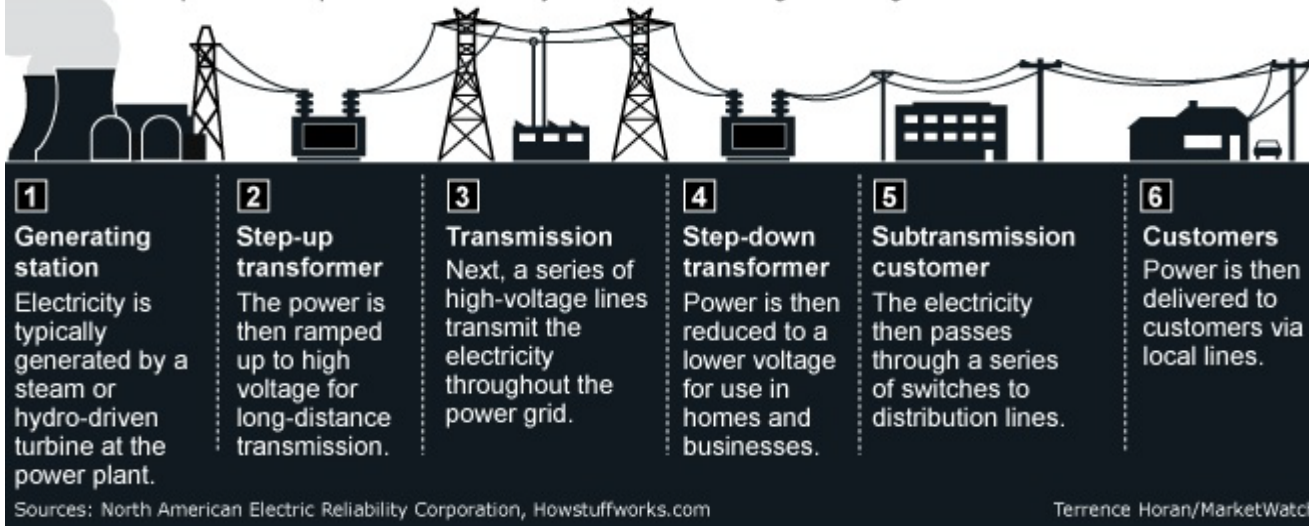
- Highly systemic
- Involves enormous prospects for convergence, divergence, platform creation, and technical change
- Require strong elements of coordination and collaboration between many stakeholders.

In other words, is in need of Open, Systemic and Modular strategies – sustained by public regulation and competition policy

The traditional power grid – one vertical industry

The power grid

Below is a simplified example of how electricity is distributed throughout the grid.

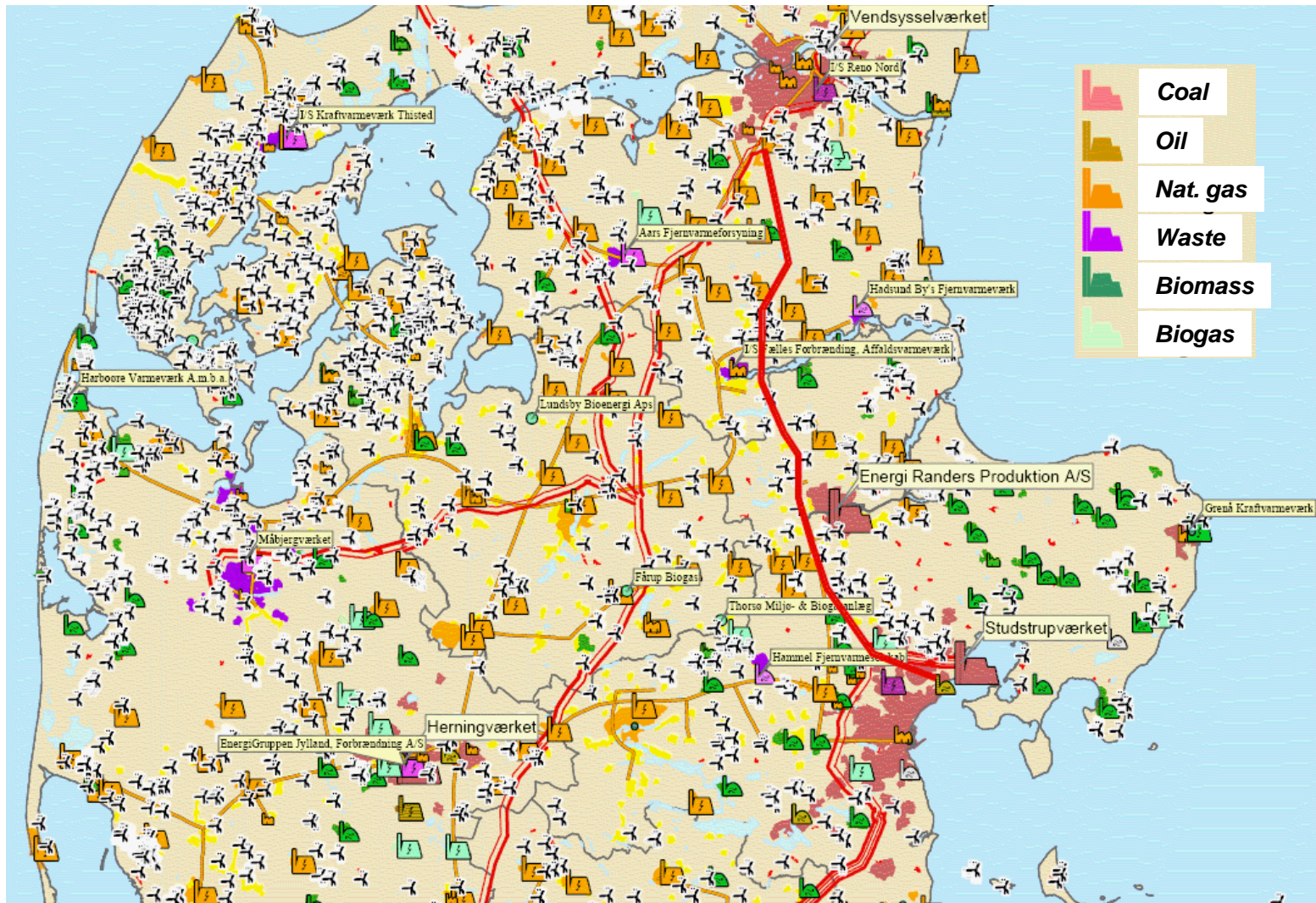




Smart grids replacing the 'dumb' power grids to

- Reduce waste
- Replace dirty sources with green power sources
- Create effective demand response (throttle back consumption in peak hours)
- Reduce background capacity

The Danish Electricity System





The Smart Grid: a new technical platform

- Integrating sensors, meters and routers into a communication network akin to the Internet
- Integrating a diversity of sustainable sources (wind and wave power, solar panels, biogas, etc.)
- Making dynamic pricing possible (to create incentives to save in peak hours)



The Smart Grid is also an emergent business ecosystem

(\$ 20 billion to day, \$100 billion in 2030)

- Emergent product markets (smart meters, metering systems, use/price management). Venture-based startups
- Emergent interface standards and technologies (metering infrastructure, communication network, home area network)
- Incumbents and public authorities as systems integrators (utilities, Cisco, IBM, Siemens, etc)

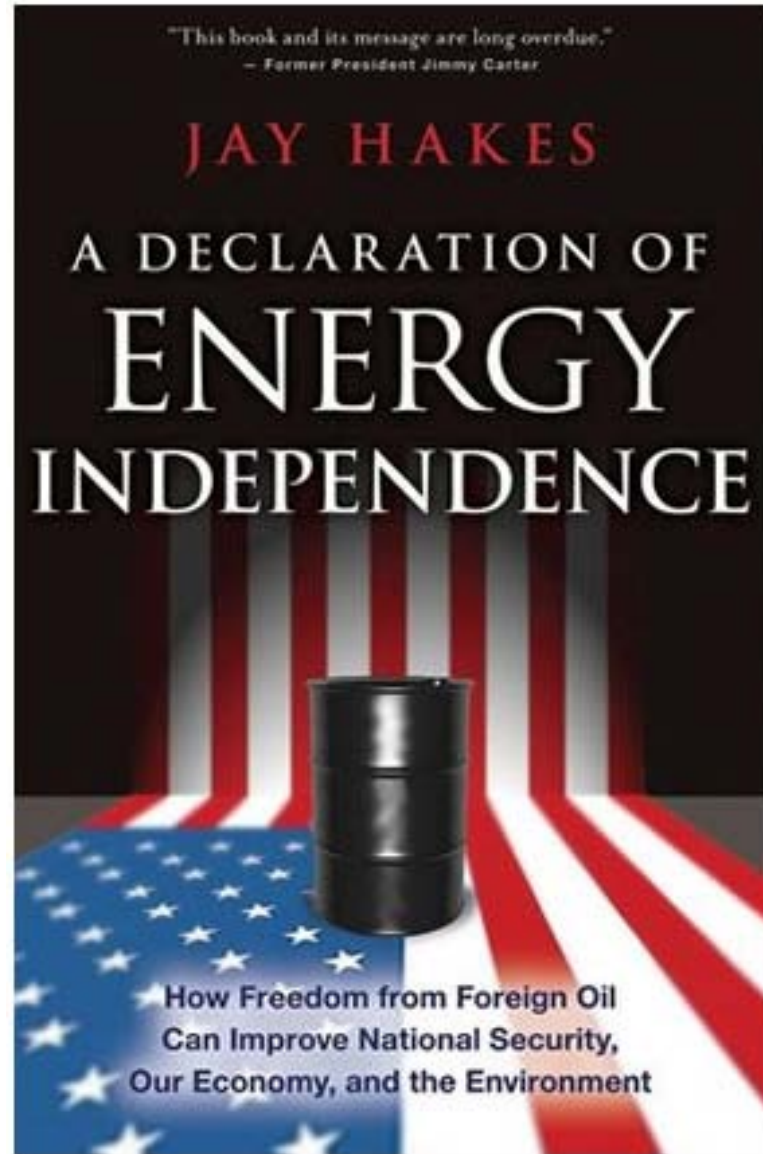


Critical success factors

- The development of core technologies
- The enhancement of modular standard interfaces
- A commitment to make these interfaces open
- A commitment to global collaboration and open innovation



Not only to secure your National Future



But also the future
of the rest of us



Thank You for
your attention!