

## Frugal Innovation – Auf was es bei der Umsetzung ankommt!

12. Niedersächsischer Außenwirtschaftstag,  
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- **What are Frugal Innovations?**
- **Why Frugal Innovations are Important**
- **Dacia Logan: Frugal Innovation Made in Europe**
- **Lessons Learned: Success Factors of Frugal Innovations**

Frugal Innovations...

- ... offer **great value for money**
- ... target **price sensitive markets**
- ... do **not** aim at **technological superiority** independent of cost/price
- ... are **simple and robust solutions** that deliver what price sensitive customers ask for and not more than that
- ... do **not** offer **bad or shitty quality**. They deliver **exactly the level of quality demanded by customers for an attractive price.**

Other terms: „High Value at Low Cost Innovations“, „Affordable Value Innovations“, “Value-for-Money Innovations”, “Jugaad Innovations”.

# Some Examples of Frugal Innovations



CROP TIGER 30



imagination at work



SIEMENS

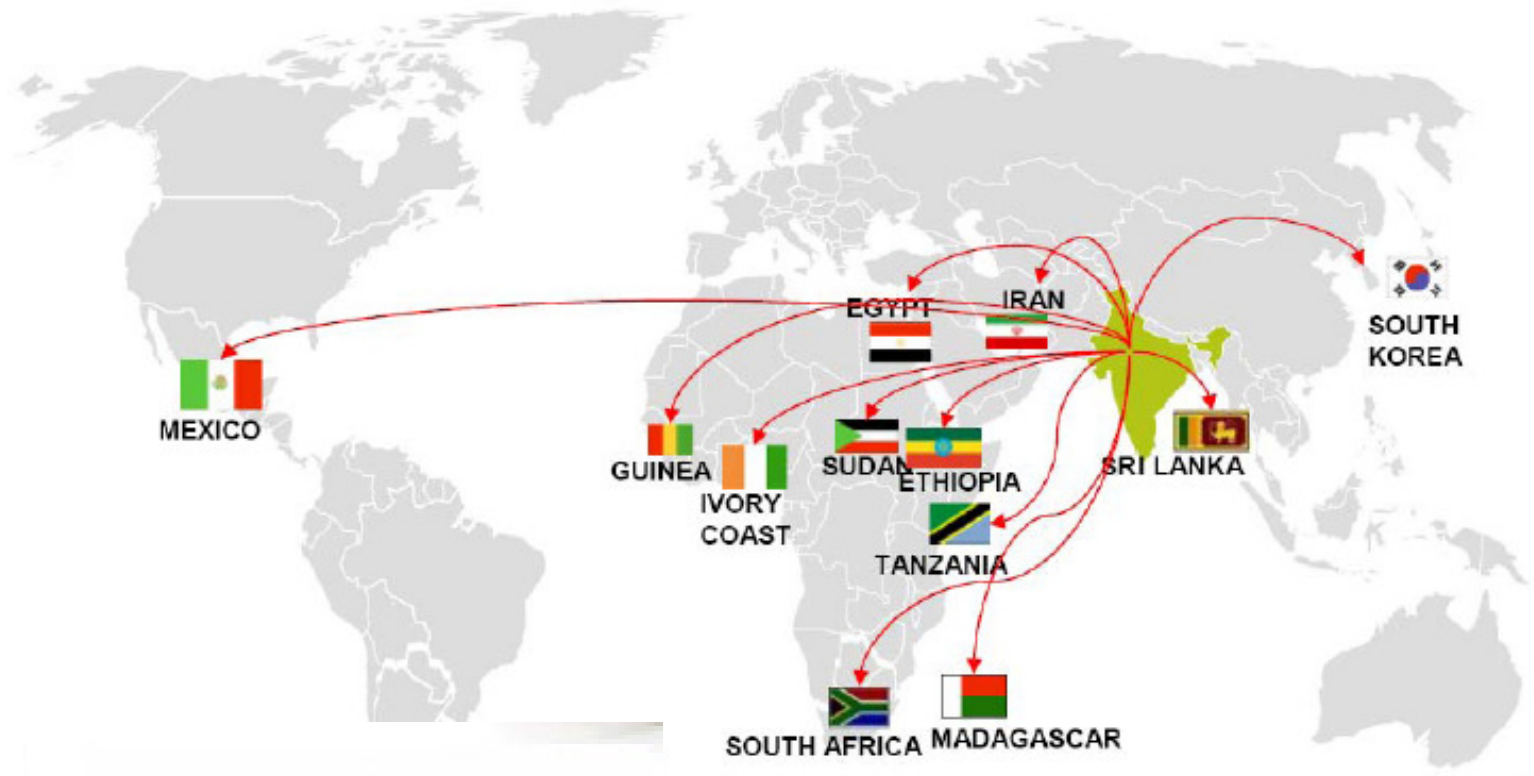


NOKIA  
Connecting People

- **What are Frugal Innovations?**
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- **Lessons Learned: Success Factors of Frugal Innovations**

- 1. Success in price sensitive markets depends on a firm's capability to develop and launch frugal innovations (e.g. Nokia, Claas, Basler). Focus on premium segments and niches is insufficient or even dangerous. Key to success in emerging markets!**
2. Local firms grow in price sensitive markets and become major competitors in price sensitive and later even in medium and high end markets (e.g. SANY, Haier, Yingli Solar, Huawei, ZTE, Alibaba).
3. Frugal Innovations typically come from emerging markets and may find their way into developed markets (reverse innovation); e.g. Siemens, GE, P&G, Renault/Dacia.

# Leveraging Frugal Innovations Across Multiple Markets: The Case of Claas



**CROP TIGER 30**



**CROP TIGER 60**



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# Consequences of Missing Frugal Innovations in Important Markets



# SANY

acquires



1998: Market Share in China PM/Schwing = 70%  
SANY: Revenues = 50 Mio. Euro

2004: Market Share in China PM/Schwing < 5%

2006: China accounts for 60% of the world-wide concrete market

2011: Revenues SANY (2011): 13 Bio. US \$



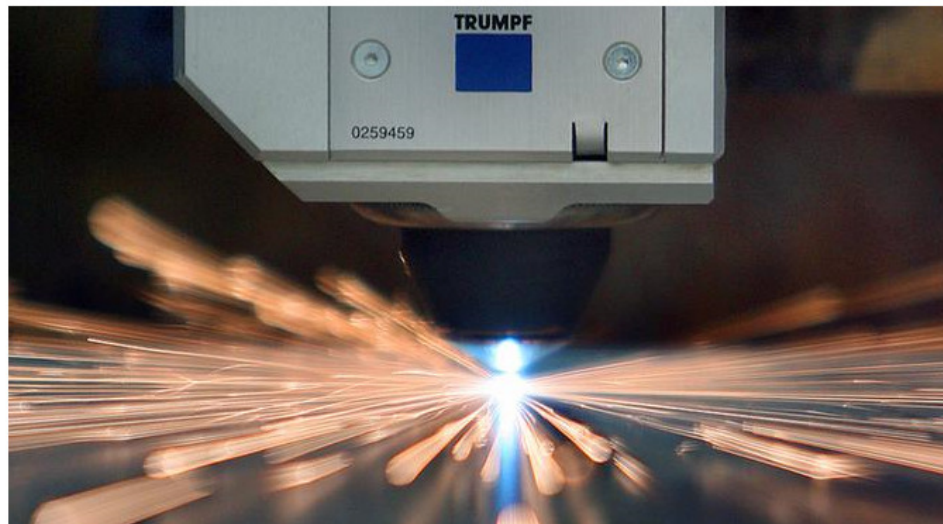
**If you do not win the battle in the largest market,  
it is difficult to be the world market leader!**

# Entering Emerging Markets through Acquisitions - The Case of Trumpf



## Machine tool manufacturer Trumpf acquires Chinese rival JFY

German machine tool maker Trumpf has taken over China's engineering firm Jiangsu Jinfangyuan (JFY). The deal is backed by the government and is a rare case of a German family-owned business buying up its Chinese rival.



Source: <http://www.dw.de/machine-tool-manufacturer-trumpf-acquires-chinese-rival-jfy/a-17162406>

Trumpf had acquired a majority stake of 72 percent in Chinese mechanical engineering group Jiangsu Jinfangyuan (JFY) in an effort to expand its presence in the world's most important engineering market, the medium-sized, family owned manufacturer announced Wednesday.

Trumpf, which is based in Ditzingen, didn't disclose the prize of the acquisition, but said the deal had been two years in the making and was fully backed by authorities in Beijing.

"It is very unusual that a direct investment like this has been made possible for us especially in mechanical engineering, which the Chinese government has classified as a key sector," Trumpf Chairwoman Nicola Leibinger-Kammüller told a news conference.

Leibinger-Kammüller also said that the takeover would give Trumpf access to an extremely dynamic segment of the Chinese market, enabling the firm to accompany customers as they grew.



Jiangsu Jinfangyuan manufactures machine tools for sheet metal processing, and is said to be the Chinese market leader for punching and bending machines. The company, which is based in Yangzhou, was privatized in 1997 and currently employs about 700 people. Sales reached about 70 million

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# Reverse (Frugal) Innovation: “Reversing the Flow of the River Ganges”

Developed markets

Siemens CT scanner  
*SOMATOM Smile*

Microsoft *Windows*  
operating system

Airbus *A320*  
series airplane

P&G washing  
powder, nappies

Renault *Mégane*



Siemens CT scanner  
*SOMATOME motion*

Developed markets

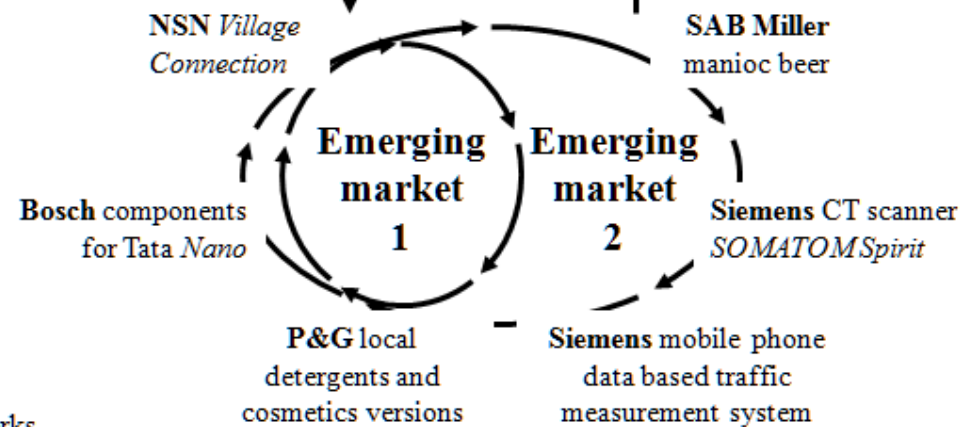


GE *MAC 800*  
electrocardiogram

Dacia *Logan & Sander*

GE pedestrian  
safe bumpers

P&G cough  
syrup



NSN = Nokia Siemens Networks  
P&G = Procter & Gamble  
GE = General Electric

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# The Dacia Product Family: From the Logan to the Lodgy



Logan MCV



Sandero



Logan (2004)



Lodgy



Duster



Dokker



# The Dacia Logan Project: Initial Key Challenges

- Attitudes and mindsets of employees: development of a new simple and robust product vs. development of an established high-tech product
- No experience with low-end, frugal products
- Radical reduction of development costs (target: 3000 Euros)
- No experience with low-end (emerging) markets (no customer insight)
- Cannibalization of existing products
- Brand pollution
- High risks (market, technology, financial, brand)

- Executive support (CEO: Louis Schweitzer)
- Creation/Acquisition of a separate firm/brand (Dacia/Romania)
- Selection of an experienced project leader (Mr. Hurtiger)
- Selection of a cross-functional and autonomous development team
- Partnering with key suppliers with experience in frugal innovation (Siemens/VDO (SMART Initiative), later Continental (Dr. Neumann))
- Strict adherence to cost targets (“design to cost”, “design to build”) during the entire development process and at critical milestones
- Use of existing technology and platforms plus development of new and affordable technical solutions



- Understanding the key functionalities relevant to customers and breaking these down into technical solutions with lowest cost possible (“target costing”)
- Lots of interaction between engineers, designers, marketing, production etc.
- Cost of ownership approach (maintenance, life-cycle of use approach)
- Localizing of value chain (production, suppliers) in low cost countries
- Synergies (dealerships)
- Product family strategy
- 2 brand strategy (varies according to the market; later: “Dacia by Renault”)
- Clear value proposition (smart branding campaign)

# The Dacia has become a Top Brand and is a Major Driver for Renault's Growth in Emerging and Developed Markets!

„Dacias Geschichte ist eine Wundergeschichte, damit hätte niemand gerechnet. Die Konkurrenz will das unbedingt kopieren, egal ob Opel oder Volkswagen.“

(Helmut Becker, ehemalige Chefvolkswirt der BMW AG.)

## Key Figures:

Sales 2013: € 4,5 Billion

Growth New Car Sales

1st 6 months 2014: 36%

Market Share 2014: 3% (Europe)

Market Position Europe 2014: # 15



„Mir ist ein Auto wichtiger als ein Statussymbol“

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1. Change the **corporate mindset** (strategy)
2. Achieve **executive support**
3. Entrepreneurial **project leader** and **dedicated/autonomous cross-functional team**
4. Deliver products/solutions at **dramatically lower price** points
5. Understand your **new customers** (markets)
6. Adopt a '**Gandhian**' **engineering** approach ("design to cost"; "cost of ownership")
7. Relocate **R&D in emerging markets**
8. **Localize** value chains
9. **Partnering** and/or **Mergers & Acquisitions**
10. Do **not** worry about the **brand**
11. Leverage frugal innovations across **multiple markets** (incl. **reverse innovation**)

Frugal innovations...

- ...allow the expansion beyond high-end segments into good-enough and price sensitive segments, esp. in emerging markets (attack local champions on their home turf).
- ... help to access these new and fast growing market segments, esp. in emerging markets.
- ... preempt local champions from attacking leading firms in their home markets based on their frugal (reverse) innovation.

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**Thank you – Questions please!**

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- **Appendix**

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# Changing the Mindset and Strategic Approach to Frugal Innovations: The Case of the S.M.A.R.T. Initiative at Siemens



## Characteristics of SMART products

### Simple

- Limited to basic functionality, but incl. new unique features
- Intuitive usability for less-skilled users

### Maintenance-friendly

- Maintenance interval longer than lifetime

### Affordable

- Suitable price level for customers with low budget

### Reliable

- Robust against increased climate conditions (heat, dust, water, ...)
- Global Siemens quality standard

### Timely-to-market

- Faster innovation cycle
- Higher flexibility / quicker responsiveness to market needs

SMART innovations help to succeed both locally and globally.

# Achieving Dramatically Lower Prices: Bosch and the Tata Nano

## The challenge

Deliver parts (i.e. car electrics, braking systems, fuel injection) for the Tata Nano selling for **1.700 EUR** – the price of an air-conditioning system in a modern German car. The delivered parts have to enable the five-seater to meet high emissions standards taking effect in India in 2010 and have the usual „Bosch quality“.

## The solution

- Local development at Bosch's R&D site in Bangalore (costs down, local mentality...)
- Close interaction with the customer (Tata Motors)
- Clearly defined parts' specifications (e.g. fewer injections per cycle accepted)
- No outdated technologies: the market demands a modern, robust and simple solution
- Application of “smart” technological solutions
  - For the gasoline injection system the injection technology for two-wheelers was honed and adapted for use in a car
  - For the diesel engine a tried-and-tested product was simplified
  - The injection pressure is not generated by a high-pressure pump but by a more cost-effective plug-in pump



# Understanding your New Customers: Nokia in Emerging Markets

**Aim:** Make low-cost (frugal) phones for emerging markets

**Situation:**

Finnish engineers trying to design a phone for an illiterate customer on the Indian subcontinent.

**Solution:**

- Listening to customers in China, India and Nepal
- Visits of Nokia's executives in customer's homes in India
- Experience tropical weather conditions
- Visit slums in Kenya

Understanding how illiterate people live in a world full of numbers and letters

Mobiles often the most expensive item customers buy

Moisture resistance, dustproof keypads, special screens more legible in bright sunlight

Learned that people form buying clubs

"Iconic" menu and address book


Phones have to be more durable

Look for new ways of encouraging self-financing



# R&D goes Global: Access to Talent and Closeness to Markets/Customers are the Main Drivers.

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GE imagination at work

**“How to build and manage a global R&D centre –  
The case of GE in India”**

Anna Dubiel

The case study was prepared under the supervision of Prof. Dr. Holger Ernst. The case study was developed solely as the basis for class discussion. It is not intended to serve as an endorsement, source of primary data, or illustration of effective or ineffective management.

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The photo shows the JFWTC, Bangalore. Source: JFWTC, Bangalore.



H. Ernst / A. Dubiel /  
M. Fischer (Hrsg.)

**Industrielle Forschung  
und Entwicklung  
in Emerging Markets**

Motive, Erfolgsfaktoren,  
Best-Practice-Beispiele

GABLER

**Emerging markets usually encompass different market segments with different consumer needs und purchasing power.**

Market segment Criteria	Premium Market	Middle Market („Good-enough- market“)	Commodity Market (“Lower-end Market”)
<b>Product functionality</b>	High-end (many state-of-the-art features)	Key/decisive user features only	Low-end (basic standard user features to meet basic needs; undifferentiated products)
<b>Product price</b>	High (according to status as international brand)	Significantly (ca. 25–40%) below premium segment	Low (typically 40–90% of premium price)
<b>Customers</b>	High purchasing power	Value-seeking with mid-level incomes	Low income
<b>Players/Competitors</b>	Multinationals	Local companies with global ambition and multinationals	Local companies
<b>Market share (% revenues)</b>	Ca. 10–15%	Ca. 60–65%	Ca. 25%
<b>Importance MNCs / MNCs competitive position</b>	Very high / traditionally strong position	Very high / rather weak position	Low / (very) weak position

Source: Adapted and extended from Gadiesh et al. (2007).

Note: MNC = multinational corporation. The segmentation was first developed for consumer markets but it can also be applied to B2B markets. The exemplary market share calculated with regard to the market for TV sets in China.

# IT Industry: How Big Western Firms Struggle in Emerging Markets

IBM's revenues in China fell by 9% in the 3<sup>rd</sup> quarter 2013. Mark Loughridge, IBM's CFO: *"IBM had suffered enormous reductions on a year-to-year basis in a geography we tend to see [high] growth rates."*

Markets are (on average) still growing (demand for IT-Services in China expected to surpass €20billion/\$27billion).

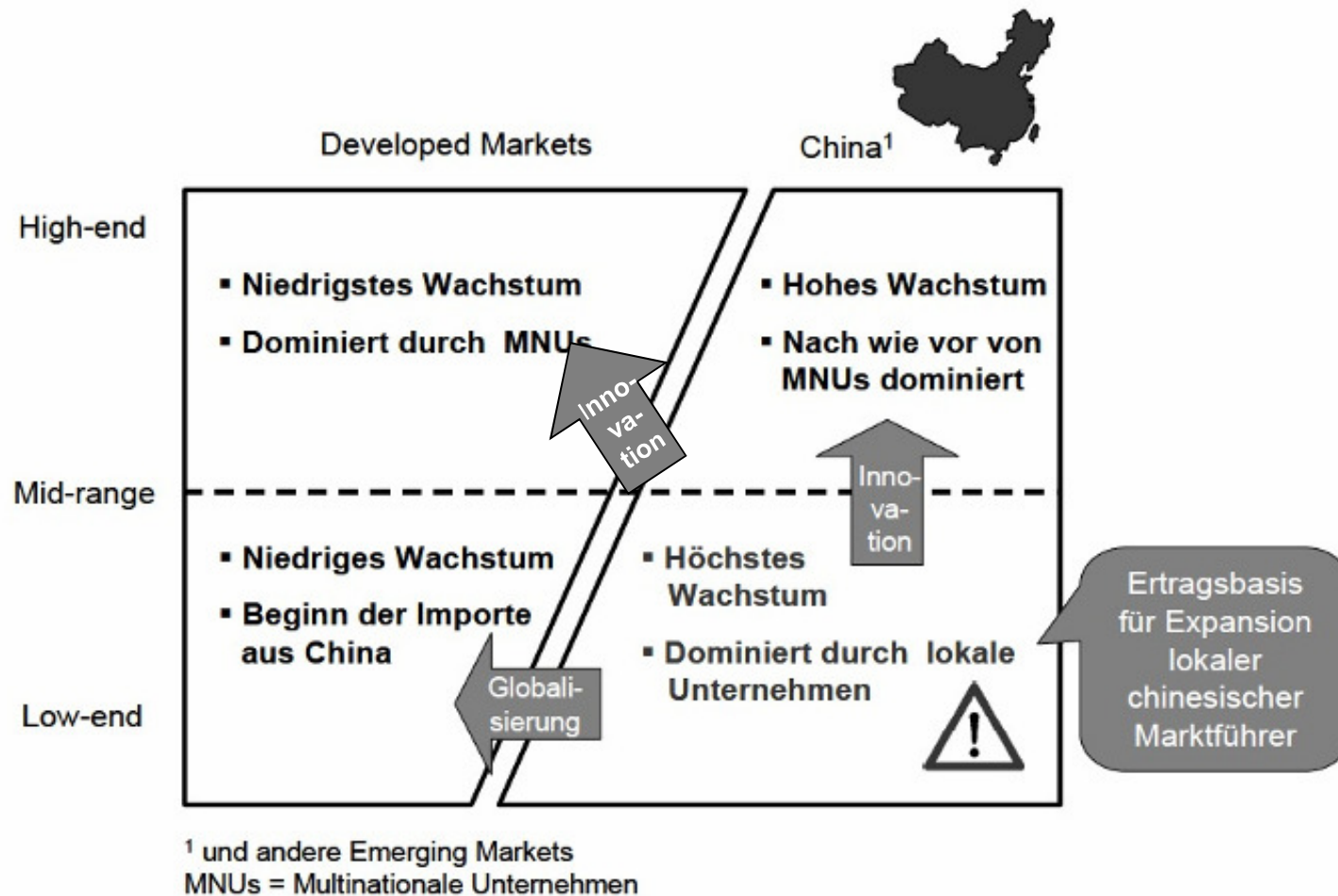
Customers tend more and more to local suppliers (fast to market and to adopt to changing local customer preferences).

Services of western companies like IBM, HP or SAP have the following problems:

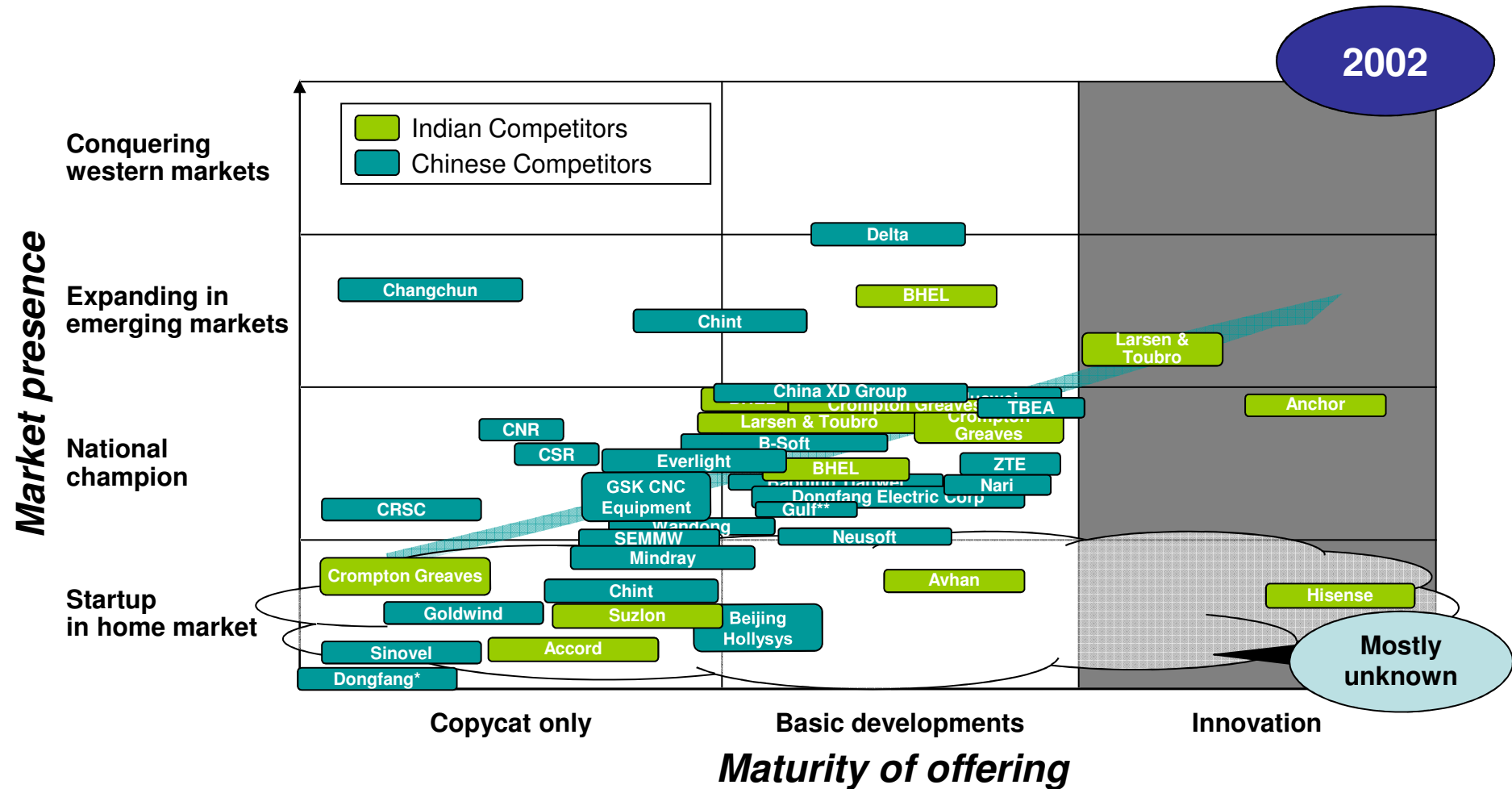
- Do not adopt to local markets – "just transport" their traditional business models to developing countries"
- "Too much of everything"
- Too expensive
- Often perceived by locals as "overblown" or "over-engineered" solutions
- Arrogance



# International Expansion Strategies of Emerging National Champions.

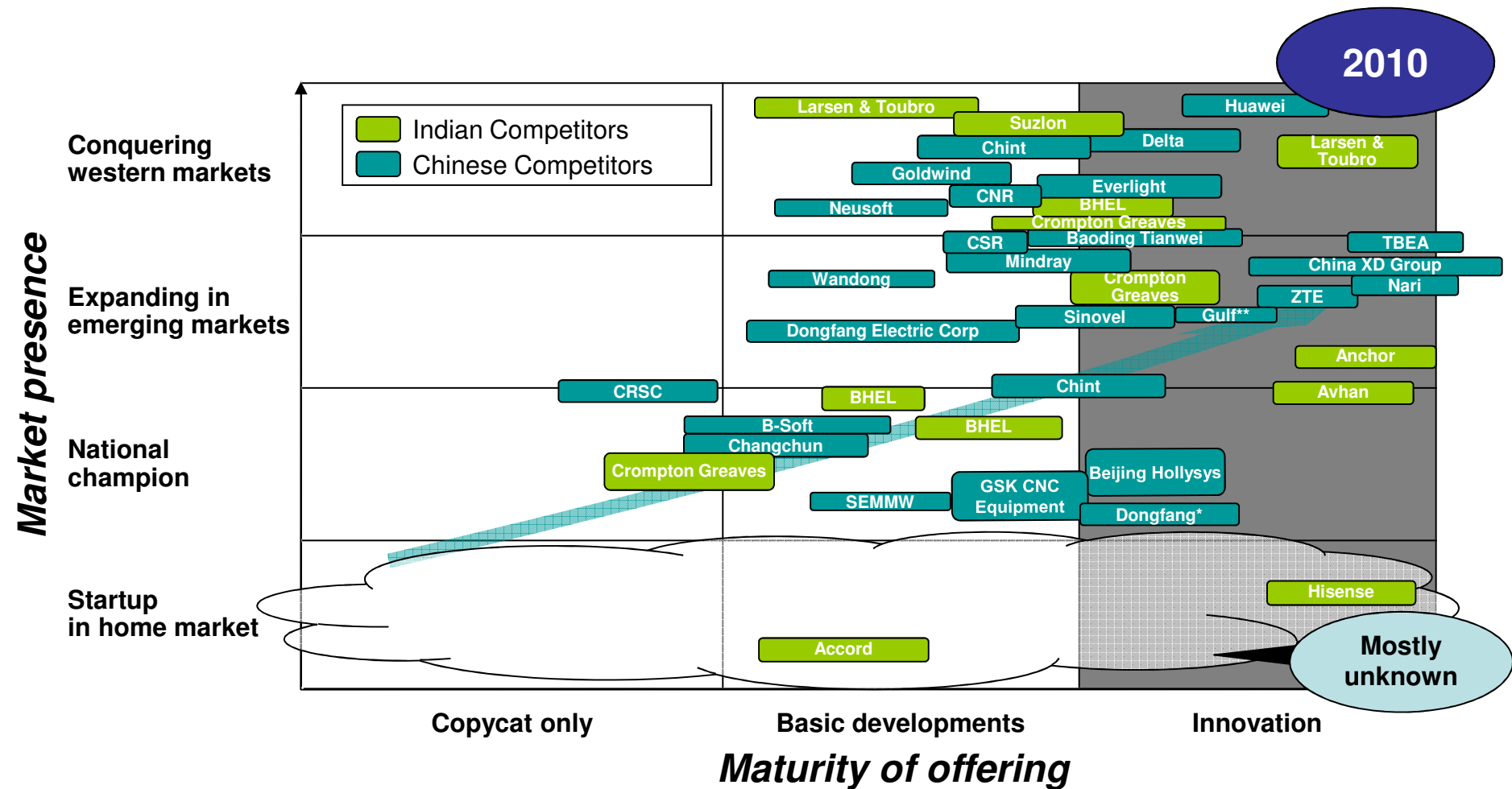


# Eight years ago: Few innovators in Asia Today: Asian firms in our home markets



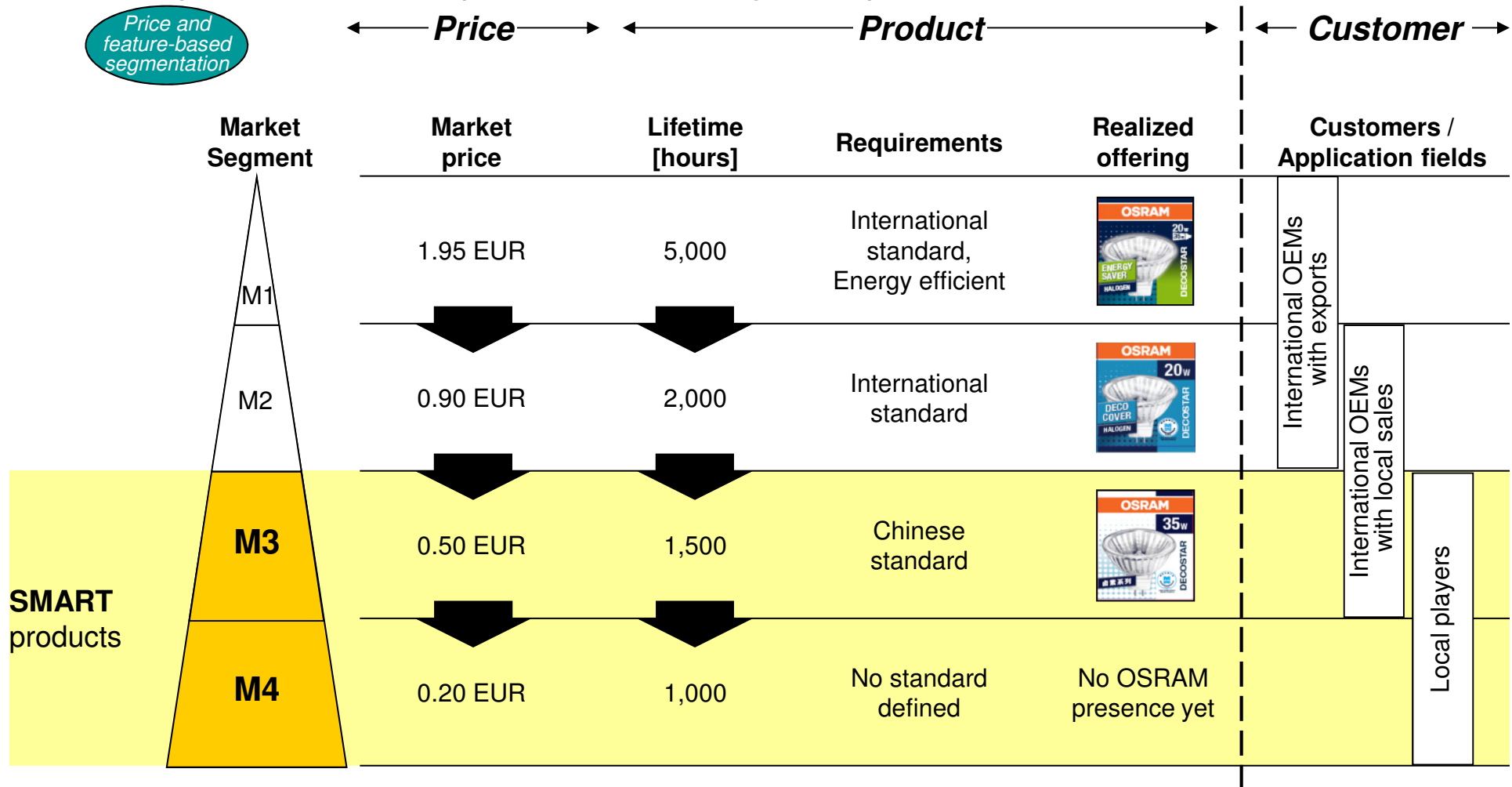


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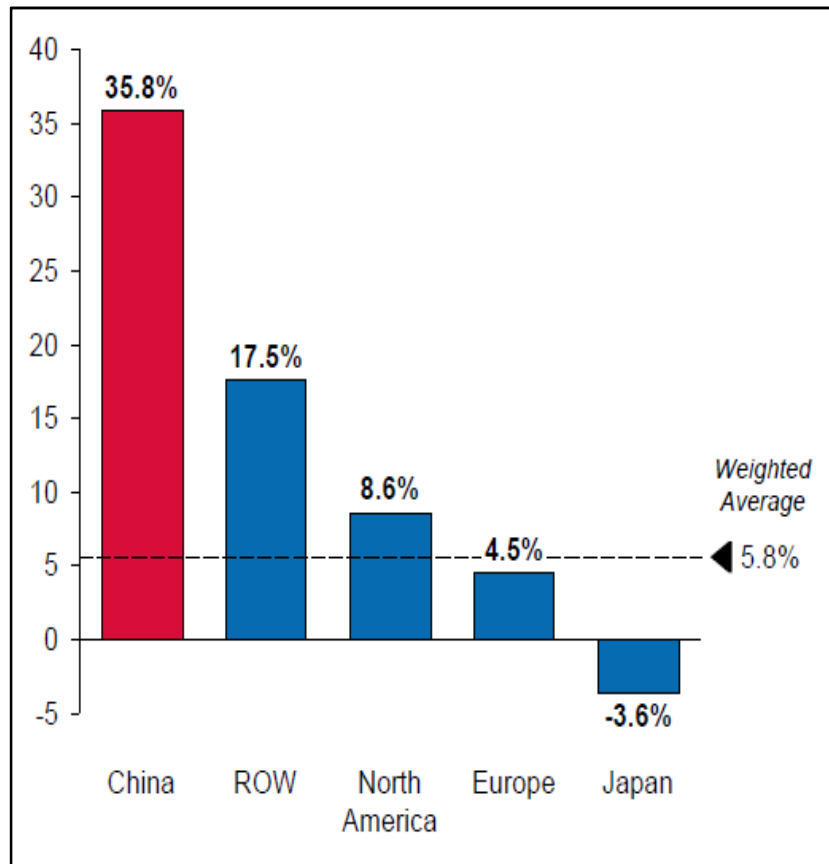


# Segmentation and pricing: The Example of a Osram halogen lamp market segmentation (developed and emerging markets)

Market segmentation – Example of OSRAM halogen lamps in China

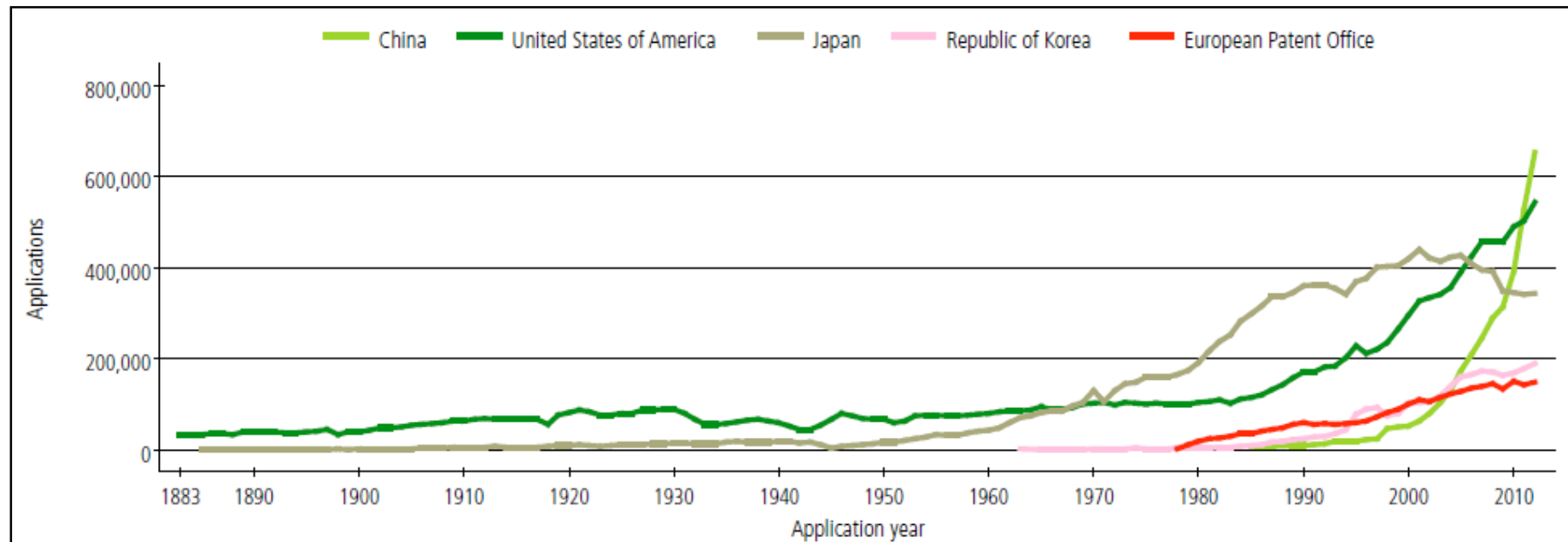


# Recent changes in R&D spending by region, 2012-2013



- China increased R&D spending by 35.8 % in 2013
- The biggest absolute gains were in North America
- R&D spending in ROW is going up too
- Japan reduced R&D expenditures

# Trend in patent applications for the top 5 regions



# Patent applications for the top 10 patent offices in 2012

