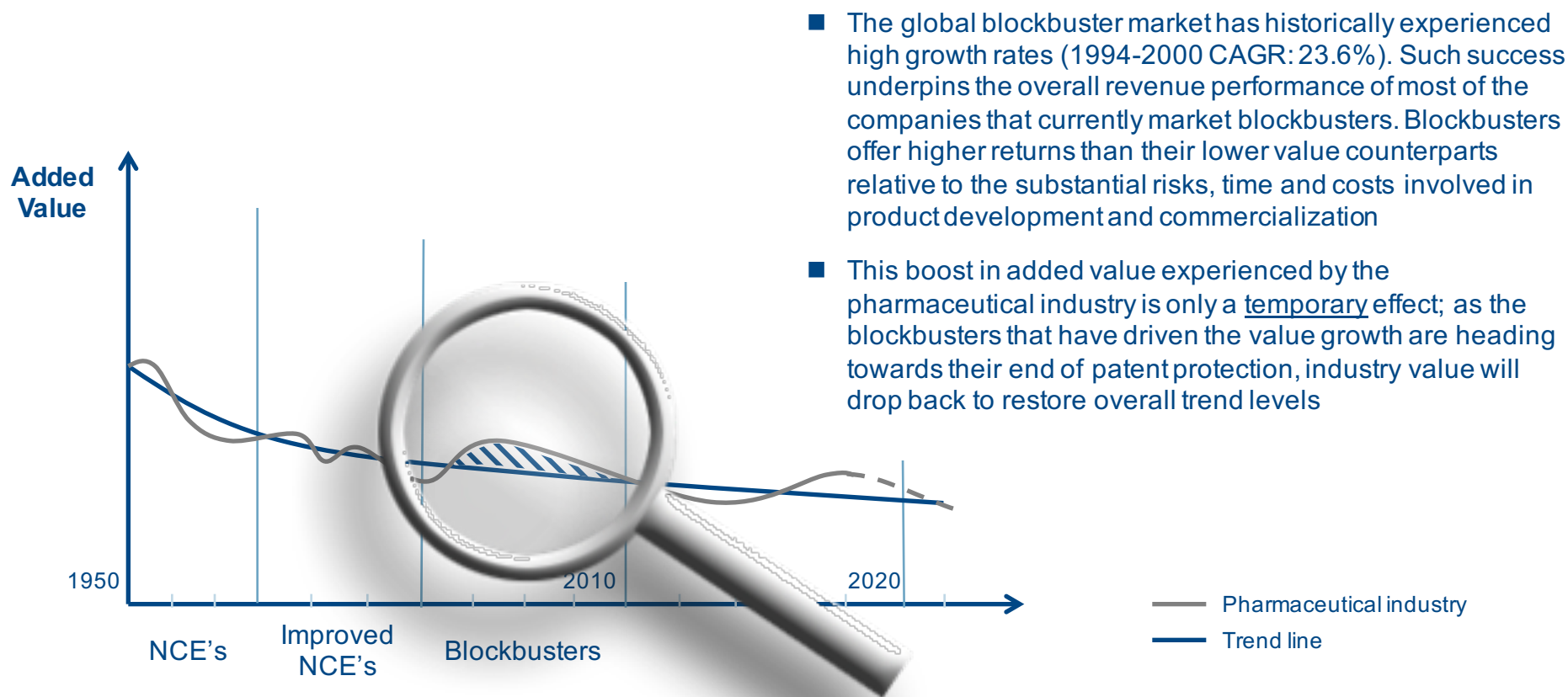


Trends in the pharmaceutical industry

Presentation to I3H ULB
Jan.16

Pharma companies had several periods and adapted the value creation model

The great success of blockbuster model delayed need for cost optimizations



Source: Datamonitor, Arthur D. Little analysis

1 Pharma success – managing the Value chain

Historically, the pharmaceutical industry business models have been largely based on Fully Integrated Pharmaceutical Companies.

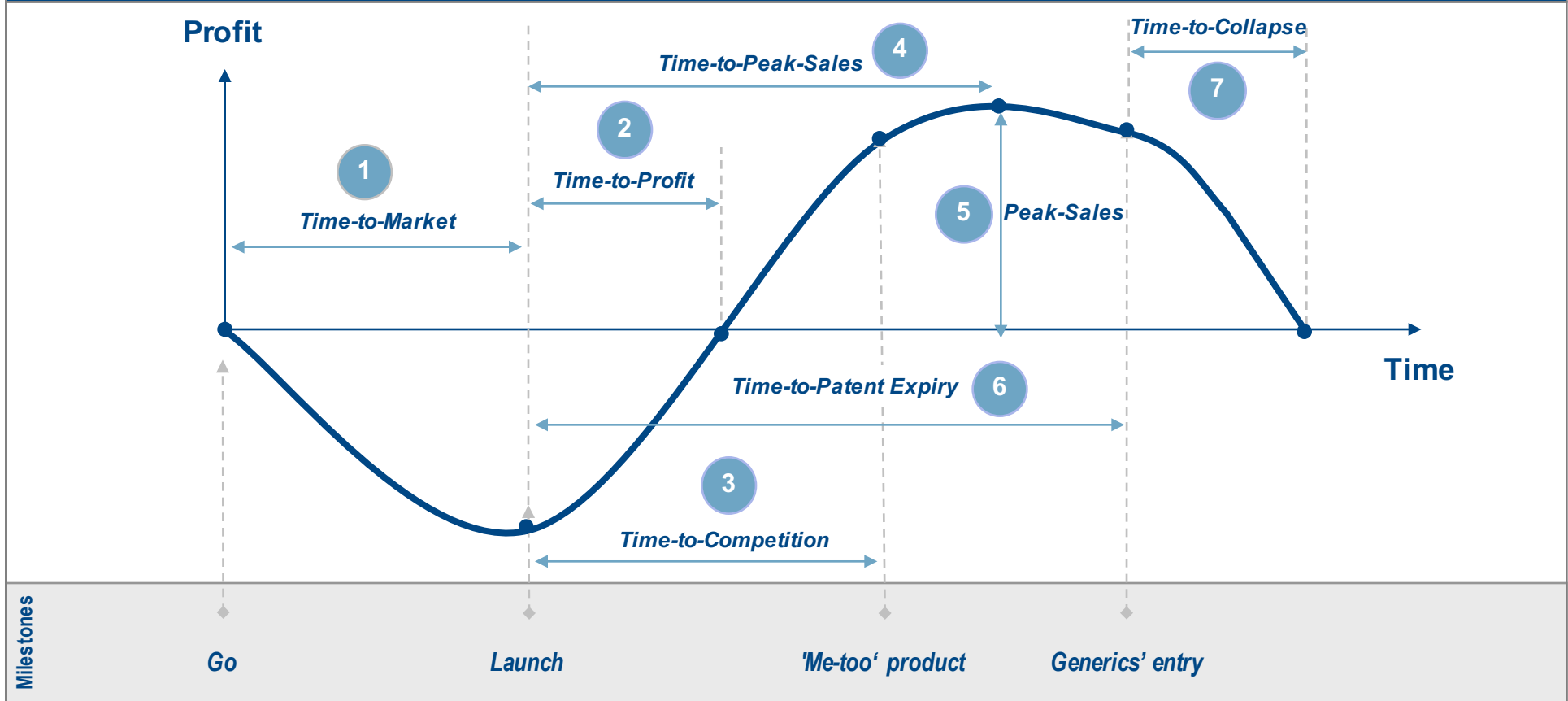
Current positioning of traditional players on the industry value chain



1 Changing business environment – Drug life cycle

Traditional players value creation is based on intellectual property supported by Patents which determined the drugs' life cycle and the key parameters to be optimized...

Major parameters of drug life cycle

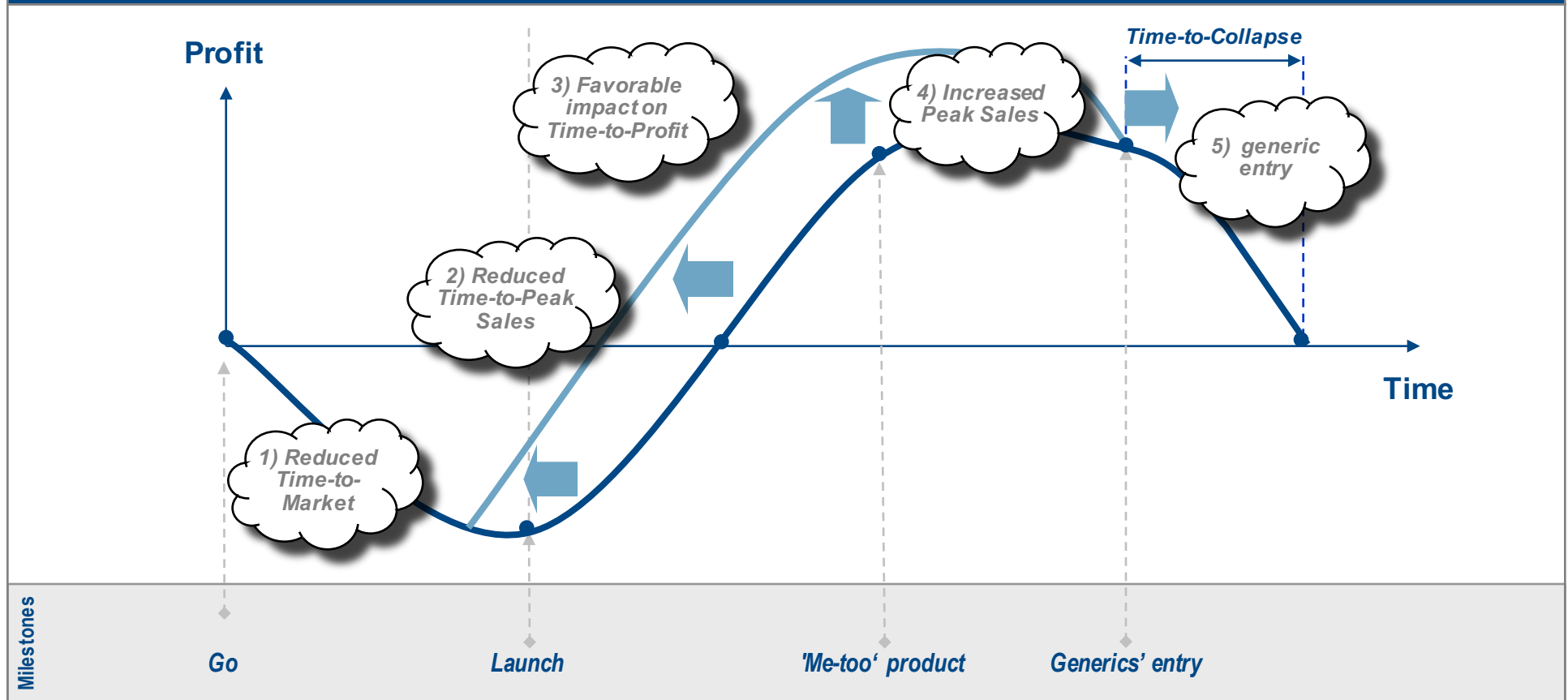


Source: Arthur D. Little

1 Changing business environment – Drug life cycle – How to influence?

...and pharmaceutical companies have managed to optimize the lifecycle!

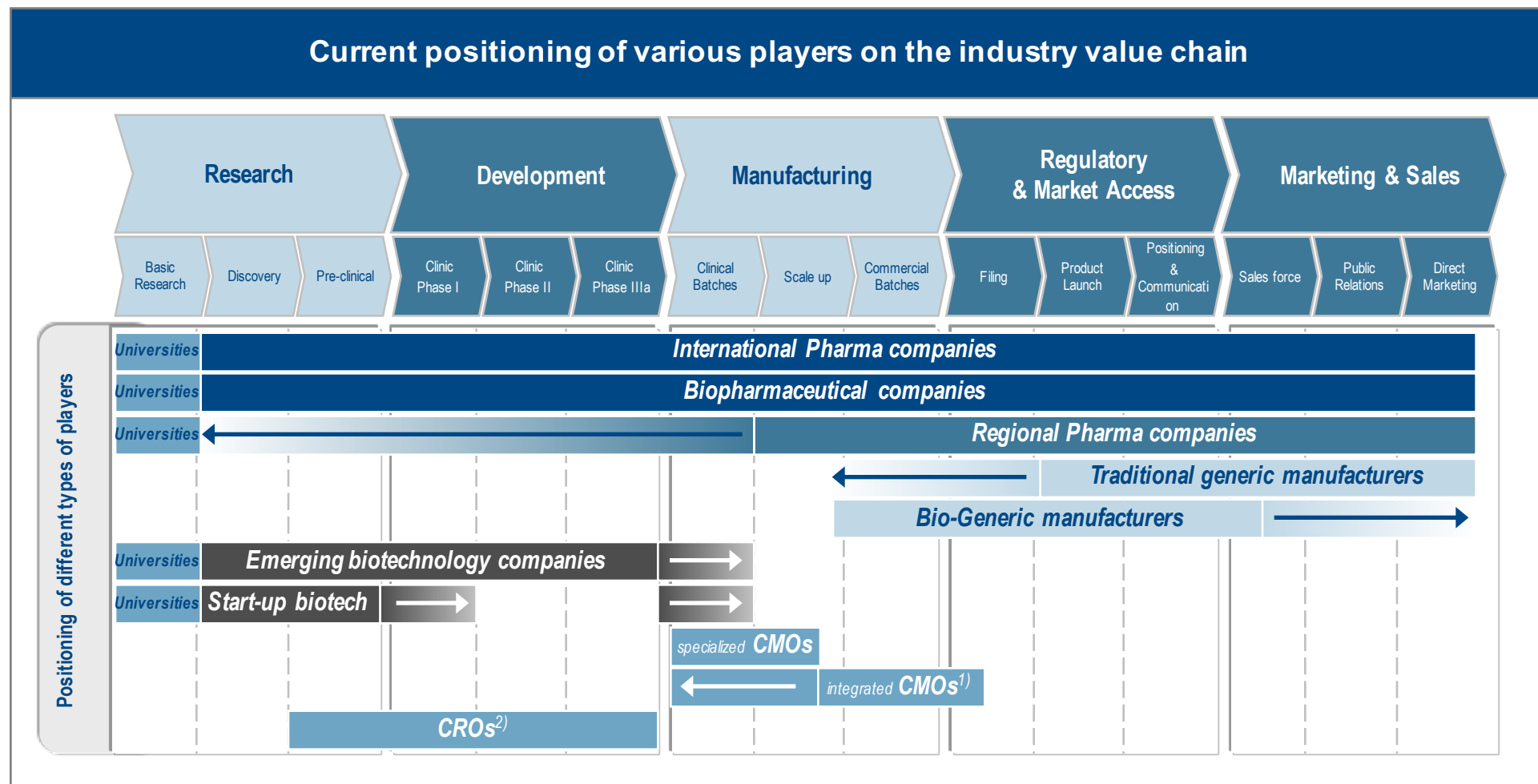
Major parameters of drug life cycle



Source: Arthur D. Little

1 Changing business environment – Value chain

The pharmaceutical industry business models is increasingly modular : specialists capture some of the value



Source: Arthur D. Little

1): CMOs : Contract Manufacturing Organizations, 2): CROs : Contract Research Organizations

The typical economics of a Pharma company

1 SALES : 100%

2 COST OF GOODS : (20-25%)

3 MRKT & SALES: (25-35%)

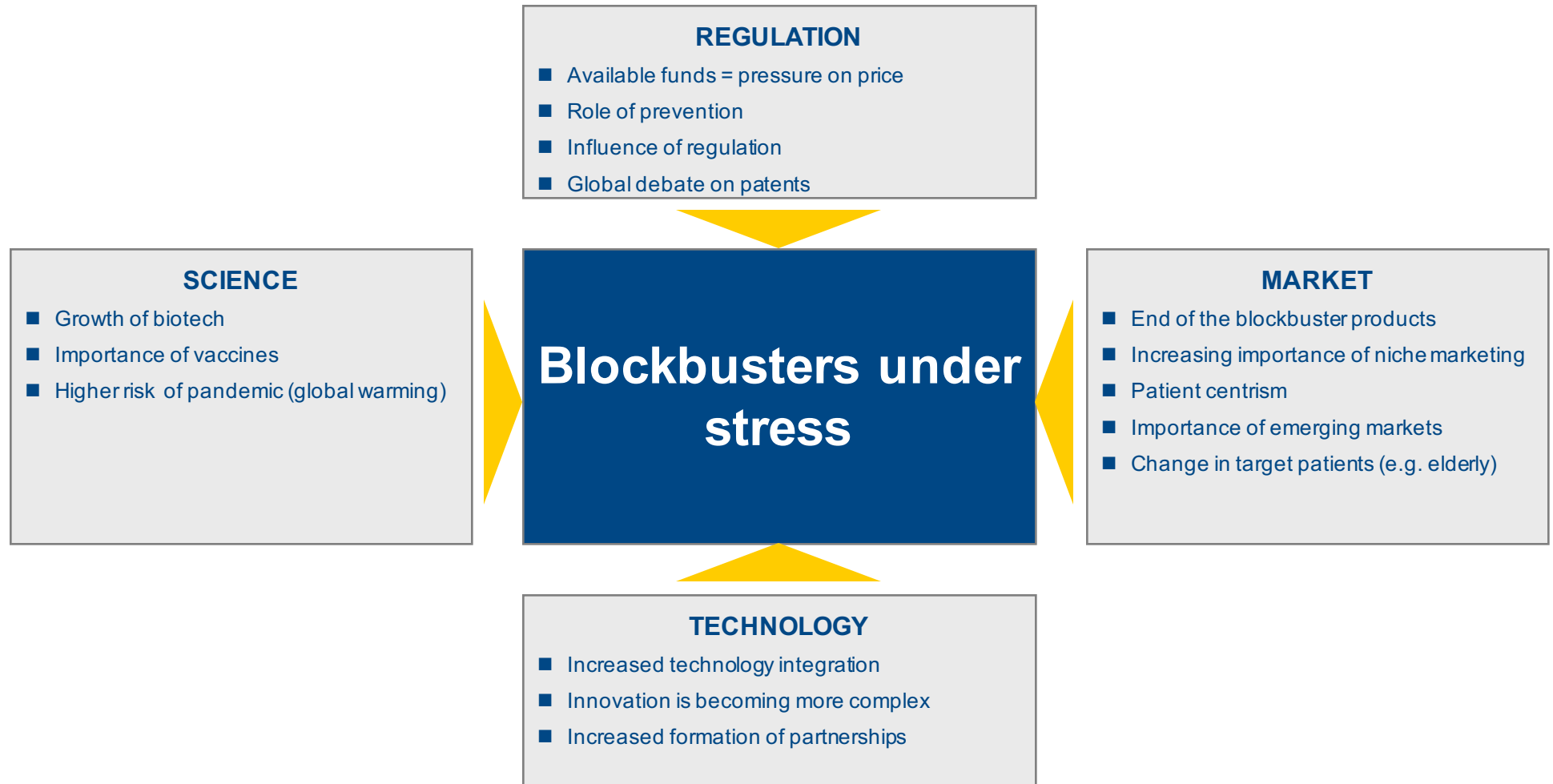
4 R/D (25-20%)

5 ADMINISTRATION: (8-10%)

6 FINANCE: (2-3%)

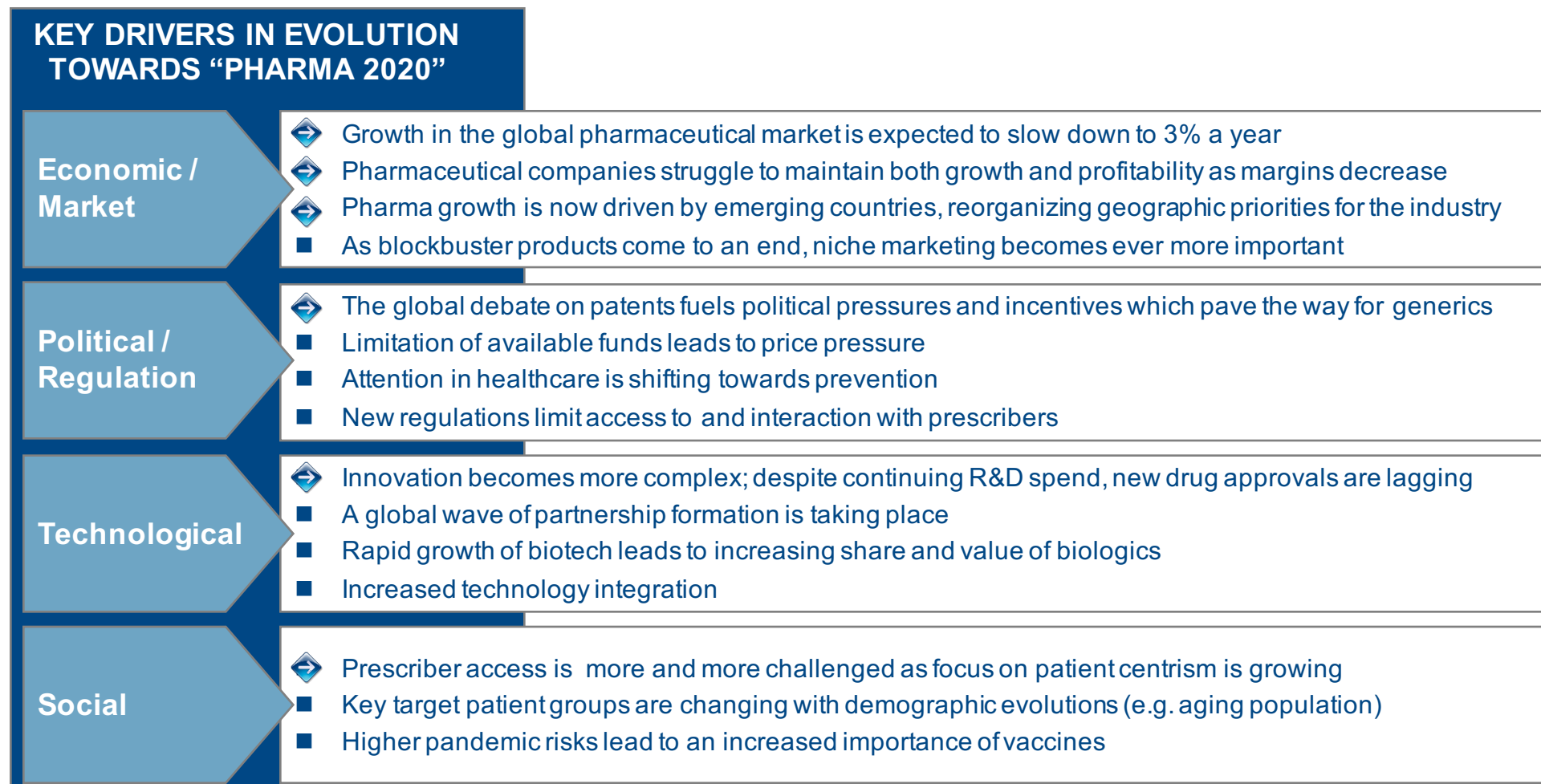
7 PROFIT BT: 20-7%

There are essentially four forces at play impacting value creation



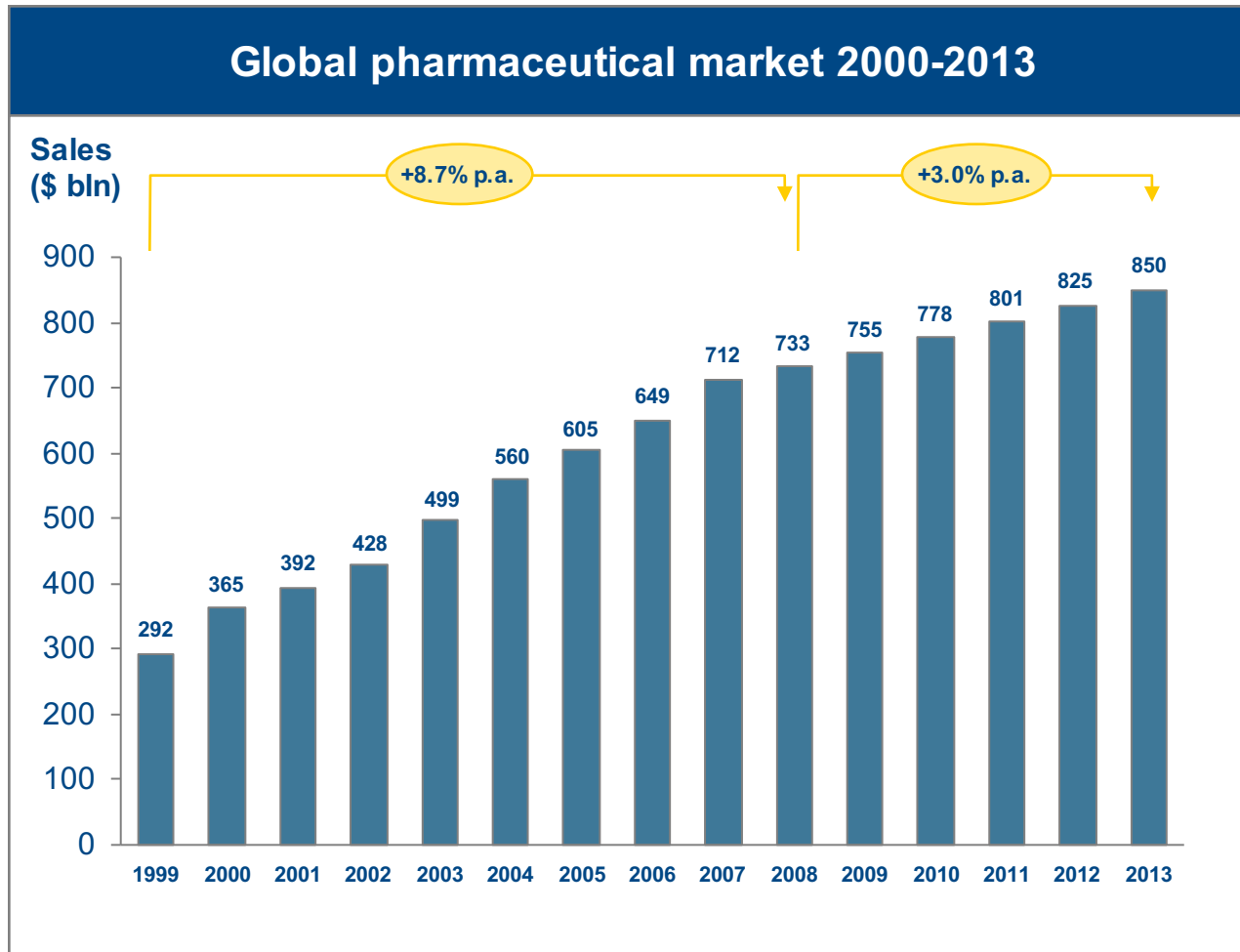
Source: Trends in pharma and prioritization (outlook 2020), Arthur D. Little analysis

The pharmaceutical industry must act against the increased speed and intensity of key drivers



Source: Trends in pharma and prioritization (outlook 2020), Arthur D. Little analysis

Growth in the global pharma market is expected to slow down to 3% a year (2008-2013)



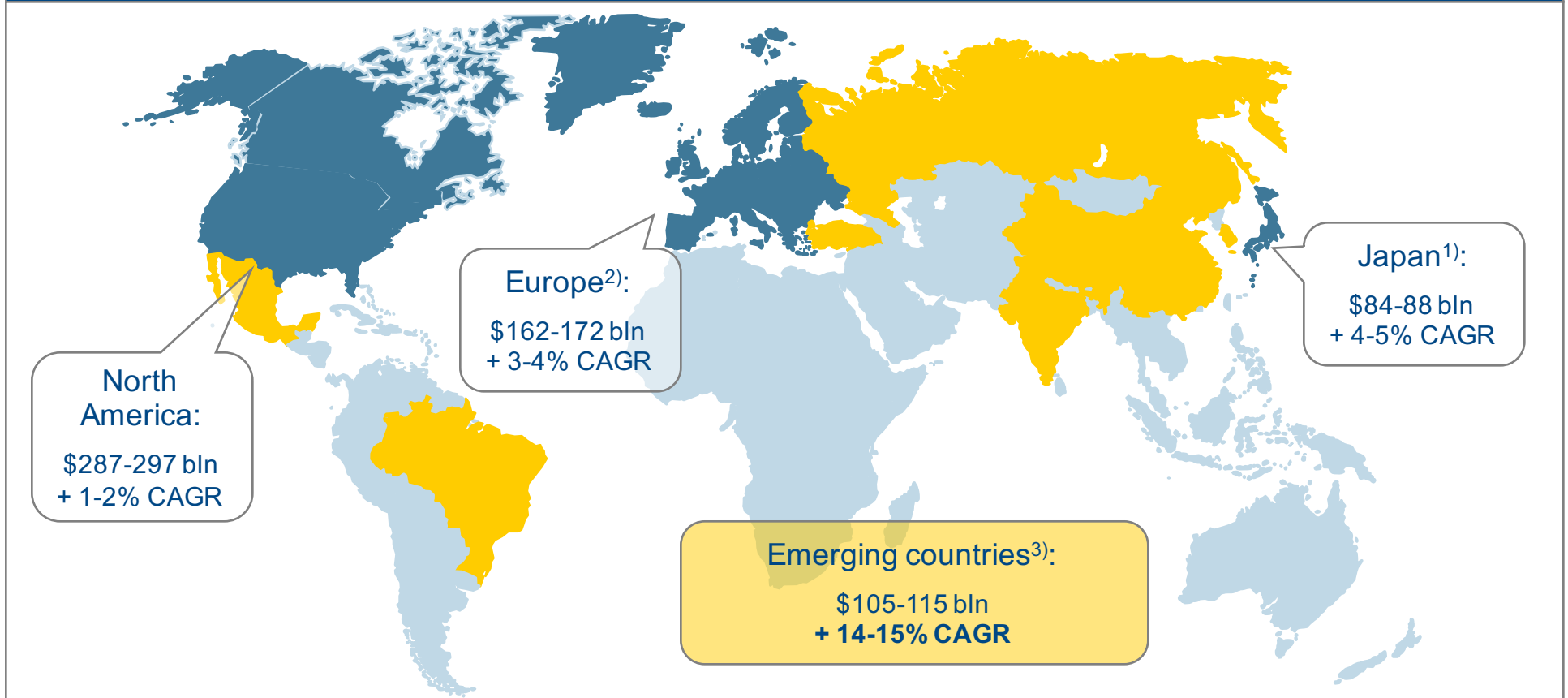
Comments

- In 2008, the global pharmaceutical market was worth \$730 bln
- The US make up almost half of the global pharmaceutical market but its share is declining due to faster growth in the rest of the world
- Due to healthcare cost containment measures in western countries, growth is likely to remain limited over the next years

Source: IMS Health; SG Cowen – Therapeutic categories outlook (2009), Arthur D. Little analysis

Pharmaceutical market growth is now driven by emerging countries, reorganizing geographic priorities for the industry

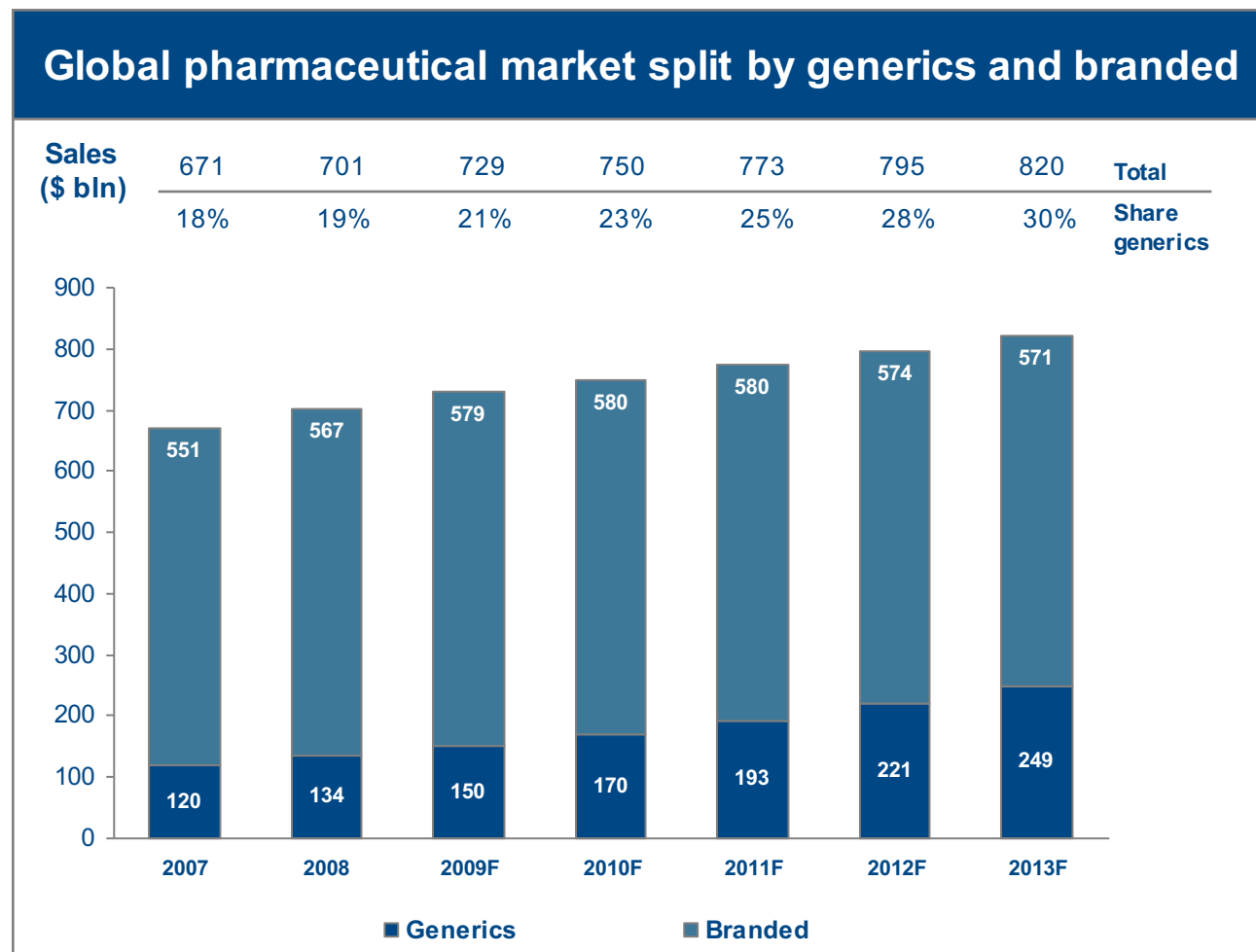
Growth Projections for the Pharmaceutical Industry – bn 820 US dollars for 2009



Source: IMS Health End of November 2008 & Arthur D. Little analysis

1) incl. hospitals; 2) top 5; 3) China, Brazil, India, South Korea, Mexico, Turkey & Russia

The global debate on patents fuels political pressures and incentives which pave the way for generics



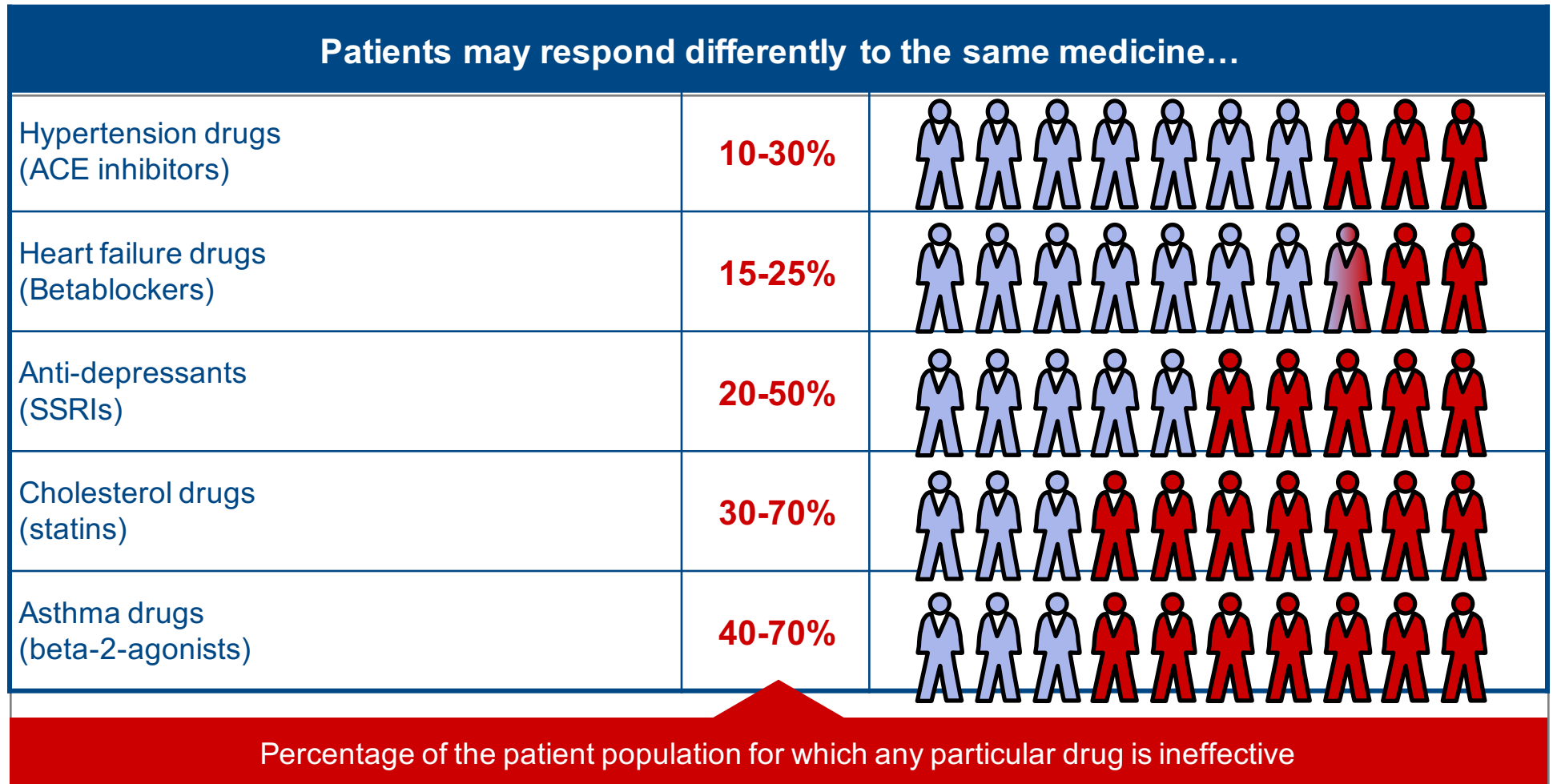
Comments

- The global generics market was worth approximately \$120 billion in 2007, corresponding to 18% of the total market
- Generics is expected to grow with 13% annually, 2007-2013
- Main growth drivers:
 - healthcare cost containment, where generics have the advantage of low cost
 - blockbuster drugs approaching patent expiry

Source: IMS Health; Datamonitor (2008); Arthur D. Little analysis

1 Changing business environment – Changes to the business models

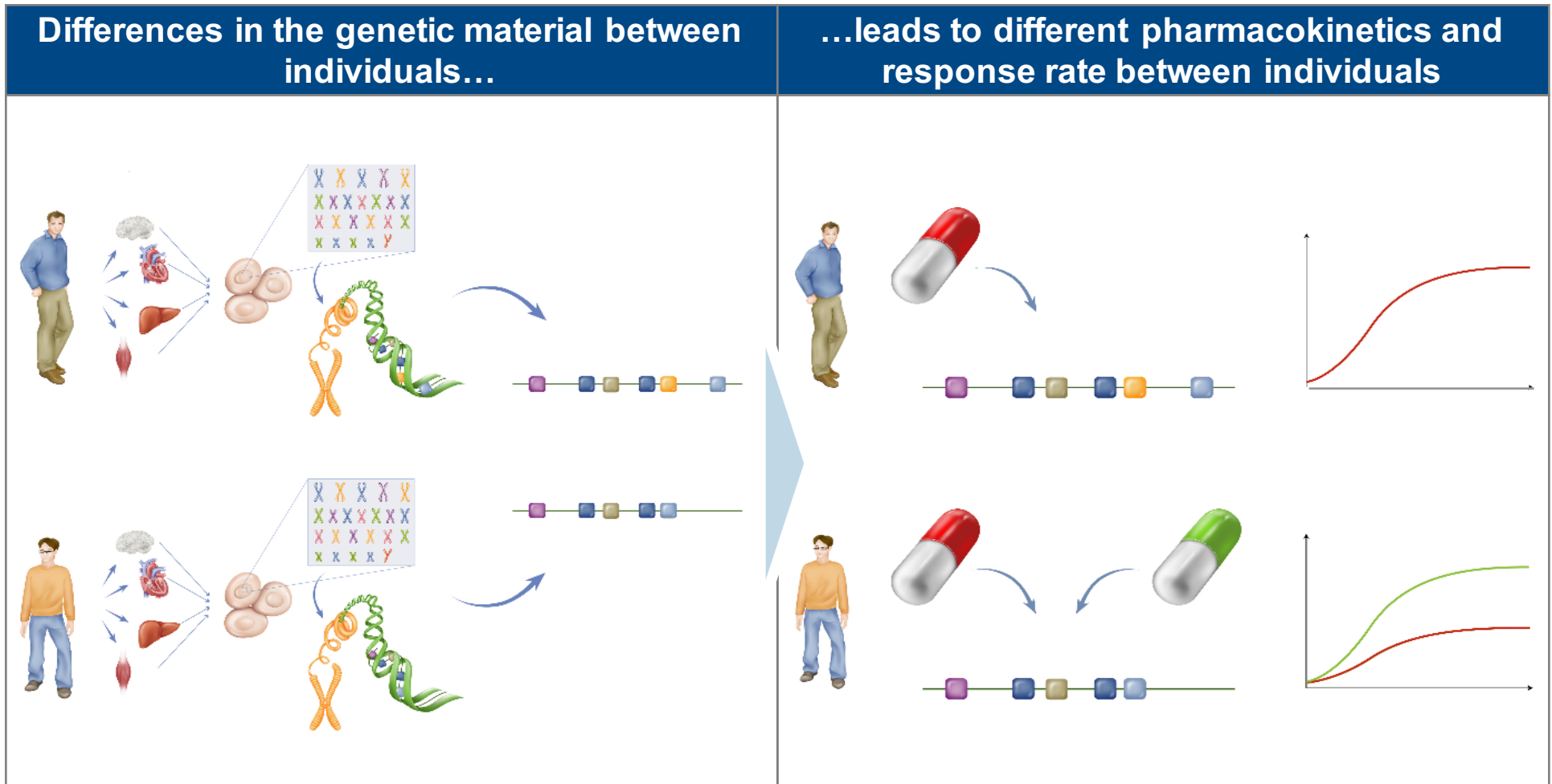
There is another reason for changing the current blockbuster model: individual response rate to existing medicines is not totally satisfactory today



Source: The case for personalized medicine, Personalized medicine coalition, November 2006 - Arthur D. Little analysis

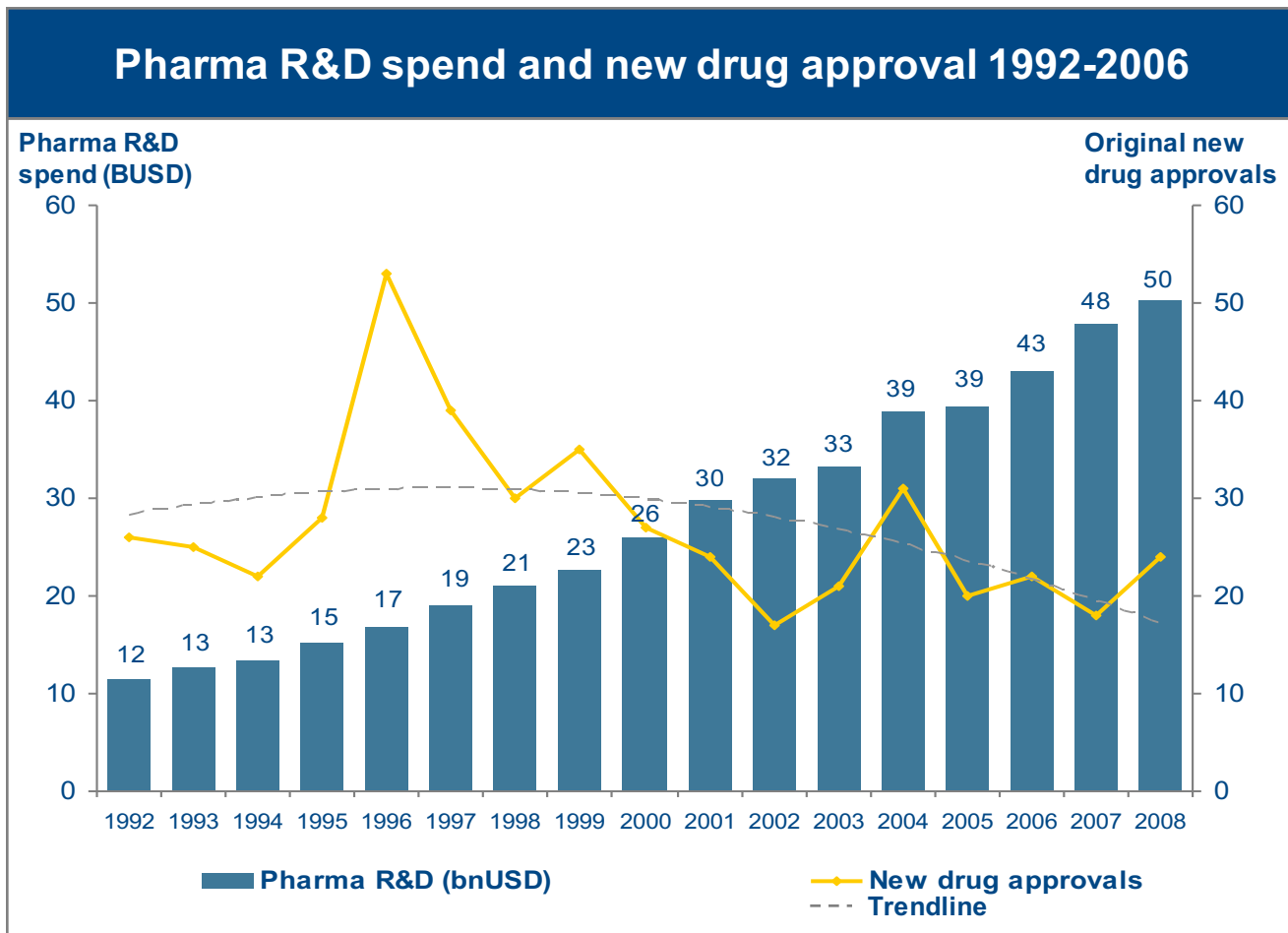
1 Changing business environment – Changes to the business models

Patient sub-groups can optimize treatment response and side-effects management... and restore innovation premium: personalized medicine.



Source: Genomic Vision

Innovation becomes more complex; despite continuing R&D spend, new drug approvals are lagging

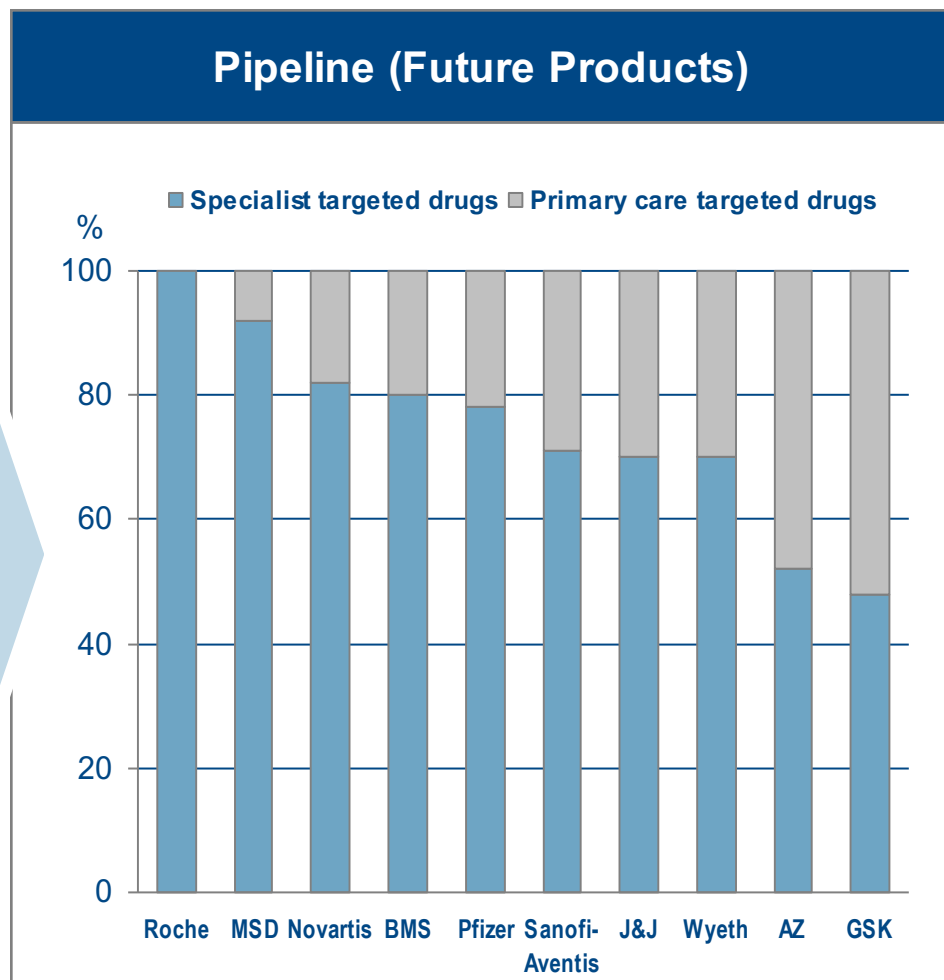
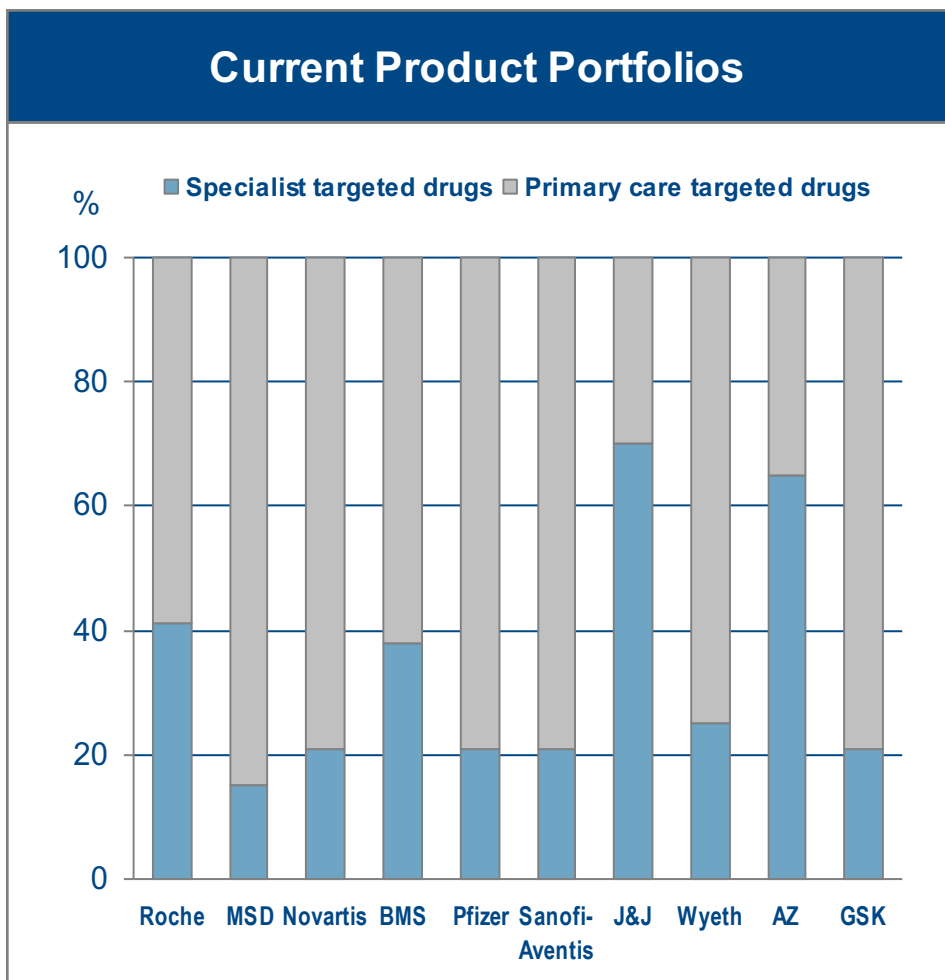


- #### Comments
- The spending on R&D has almost doubled over the last 8 years
 - CAGR of 8,5% 2000-2008
 - Even though spending has increased over the last two decades, the number of original new drug approvals has been rather stable
 - A large number of late stage clinical compounds are generated from biotech ventures
 - Indication that venture backed companies are efficient in R&D

Note: R&D spending figures for PhRMA (The Pharmaceutical Research and Manufacturers of America) which includes over 75% of total pharmaceutical R&D spend
 Source: PhRMA (2009), Wall Street Journal (2009), Burrill & Co (2007)

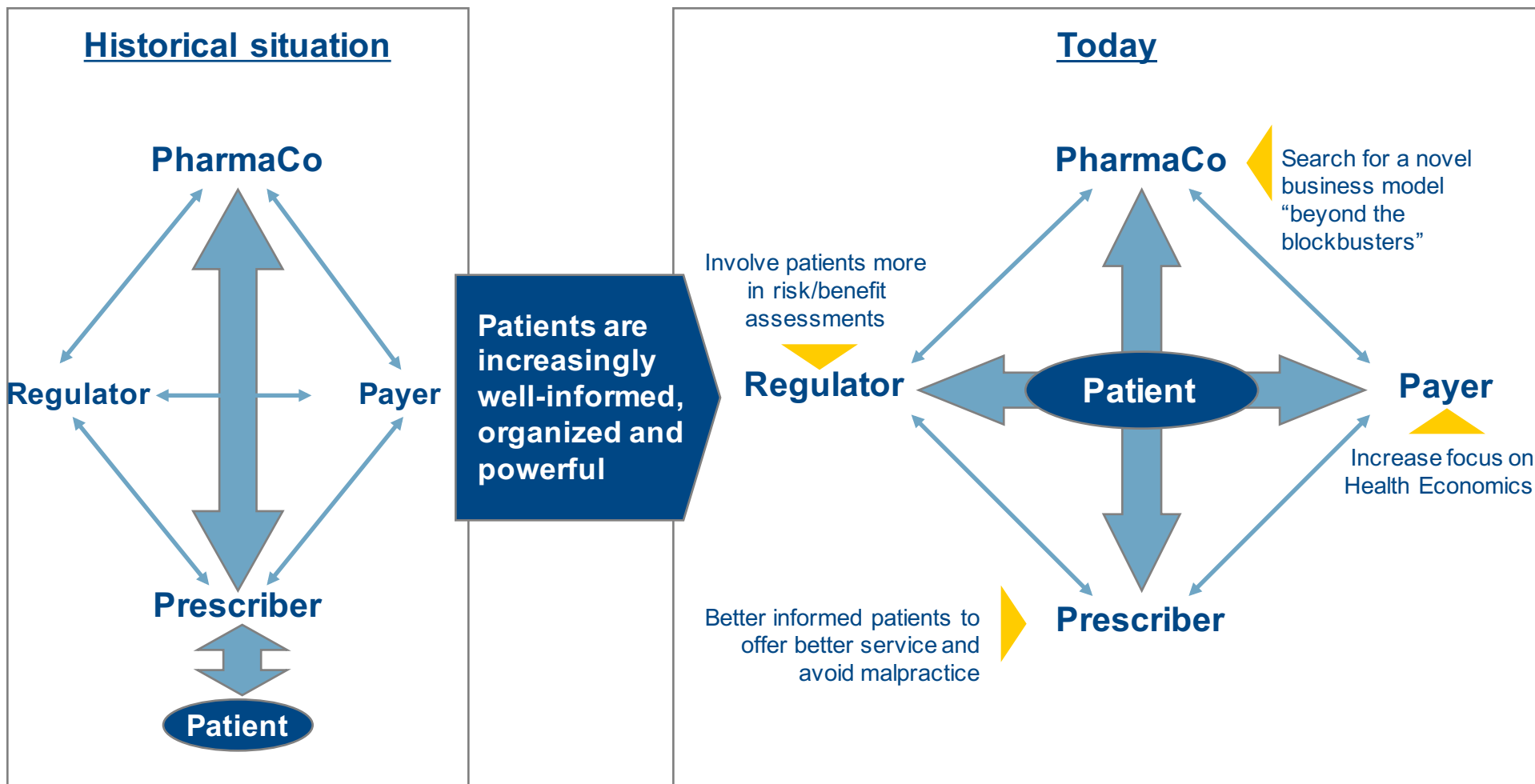
1 Changing business environment – Pipelines & portfolios

As a direct consequence, product pipelines of the major players turned to specialized products targeted at complex diseases and hospital care while trying to achieve high prices

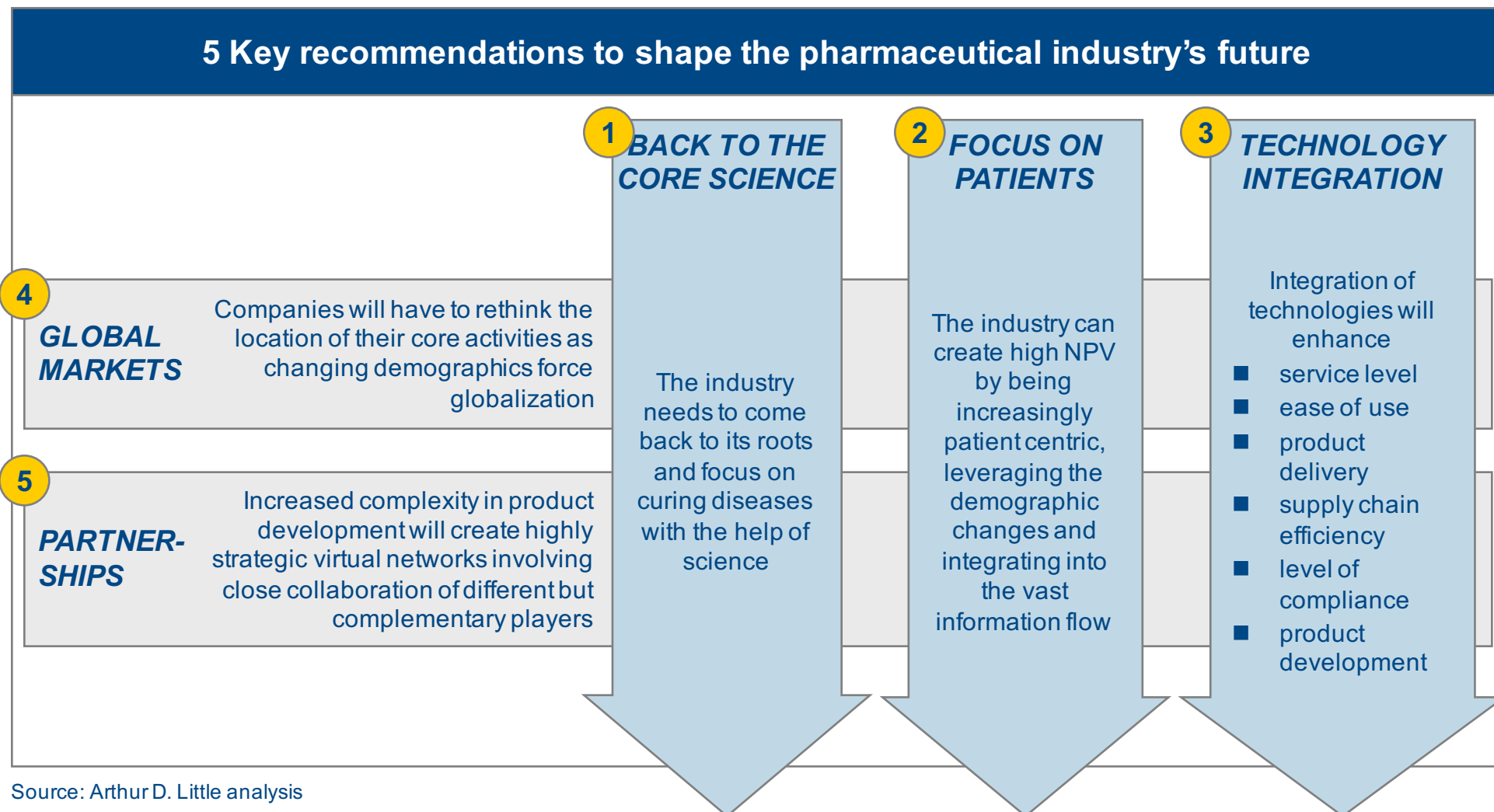


Sources: Étude Eurostaf sur la visite médicale 2007, IMS Health, Arthur D. Little analysis

Prescriber access is more and more challenged as focus on patient centricism is growing

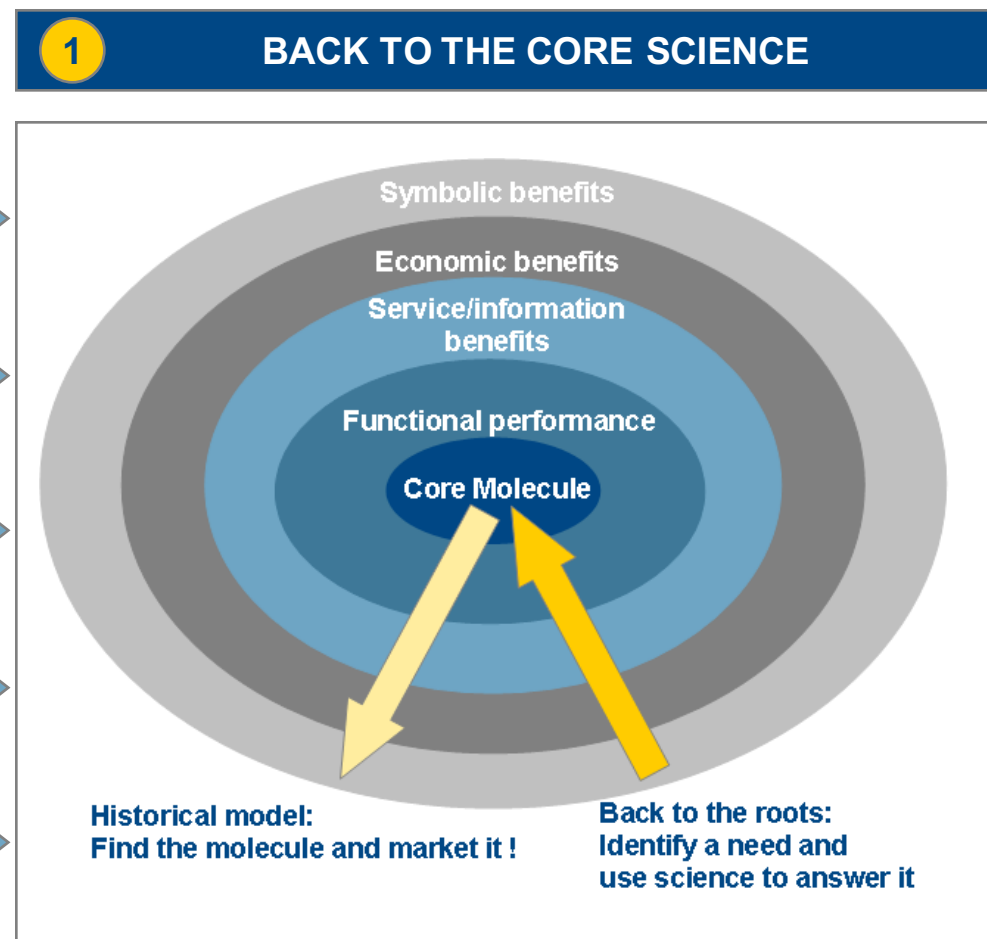
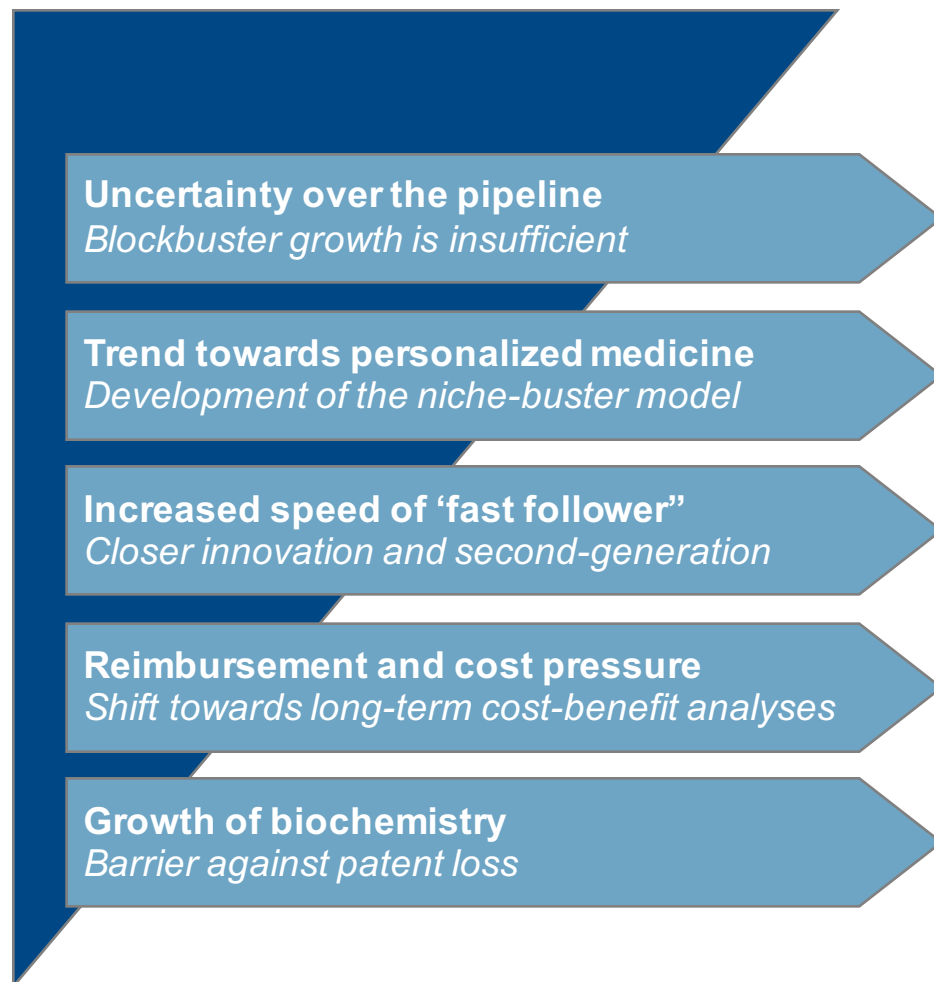


After the success of the blockbusters, the pharmaceutical industry must refocus on 5 key steps to shape its future



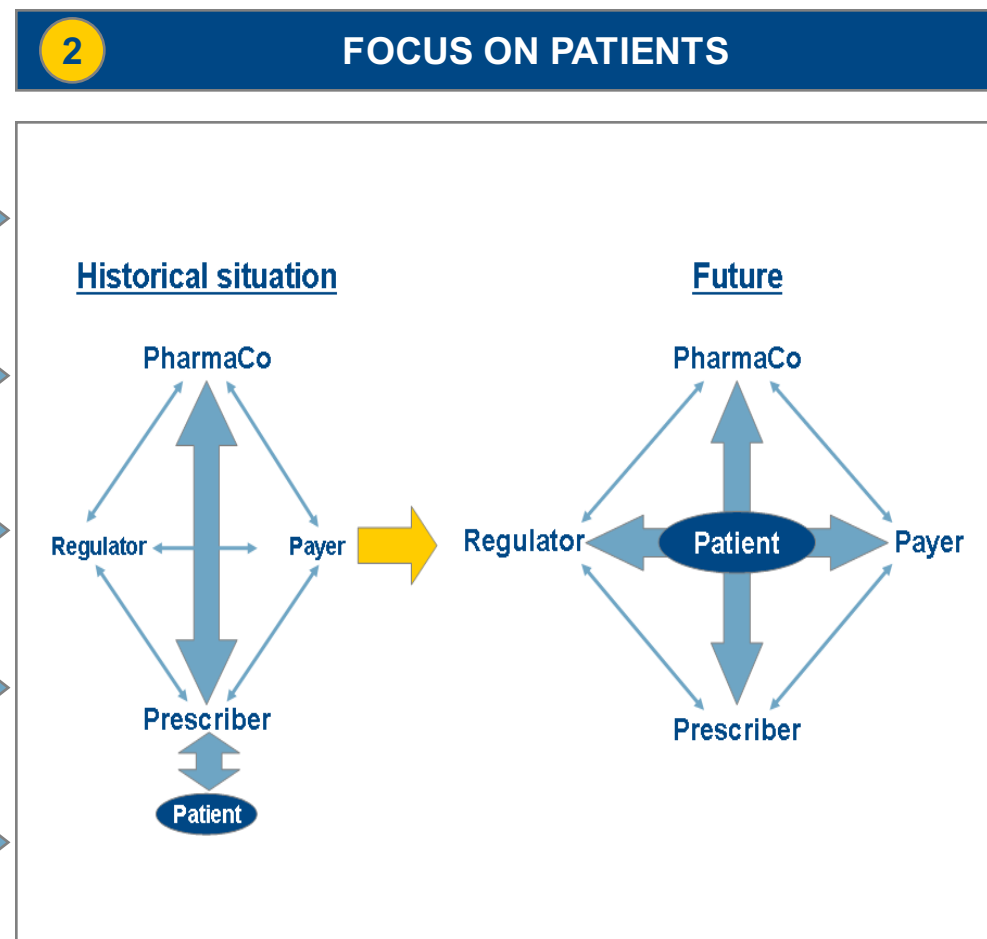
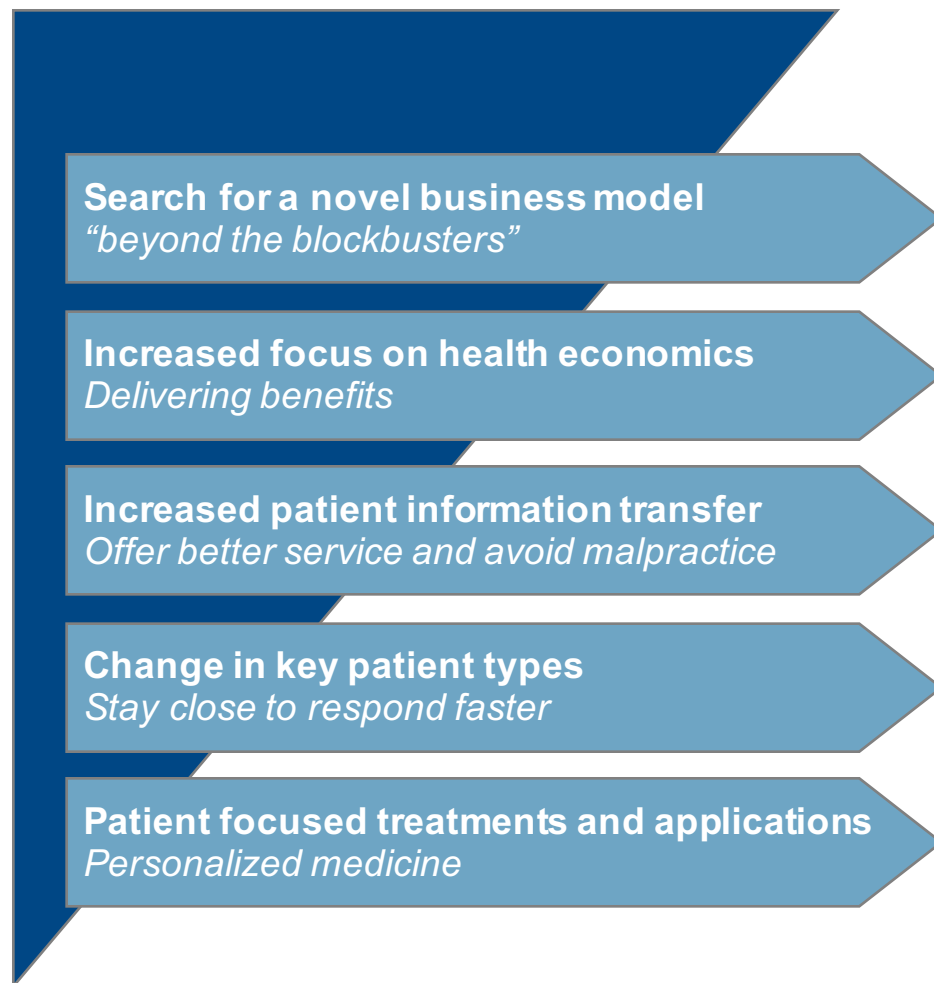
Source: Arthur D. Little analysis

The industry needs to come back to its roots and focus on curing diseases with the help of science

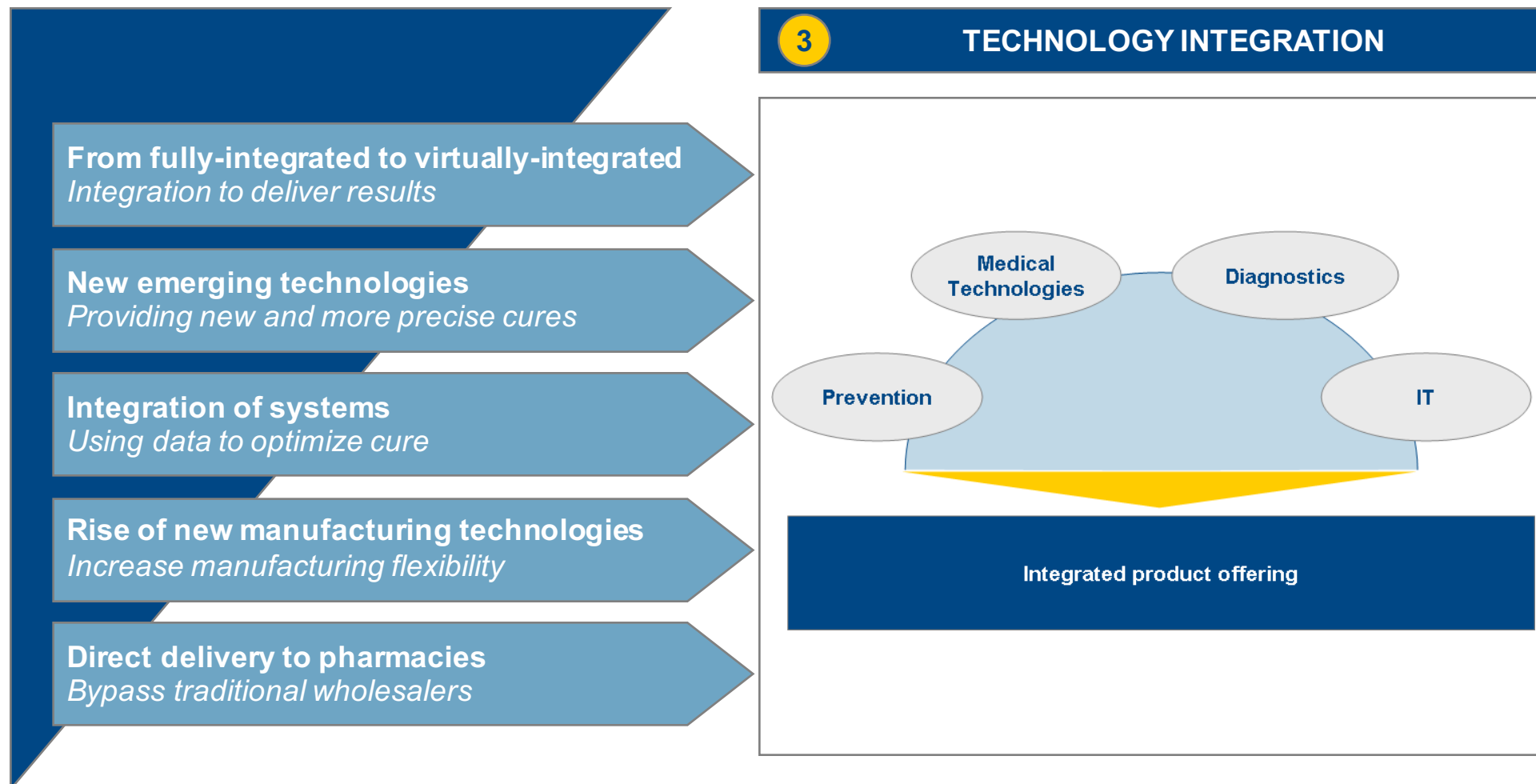


Source: Adapted from Simon & Kotler, 'Building global biobrand', Arthur D. Little analysis

The industry can create high Net Present Value by being increasingly patient centric, leveraging the demographic changes and integrating into the vast information flow



Integration of technologies will enhance the service level, the ease of use, the product delivery, the supply chain efficiency, the level of compliance and the product development



Source: Arthur D. Little analysis

Companies will have to rethink the location of their core activities as changing demographics force globalization

Steep rise of disposable incomes and the number of middle-class households

Expansion of medical infrastructure
Market expansion

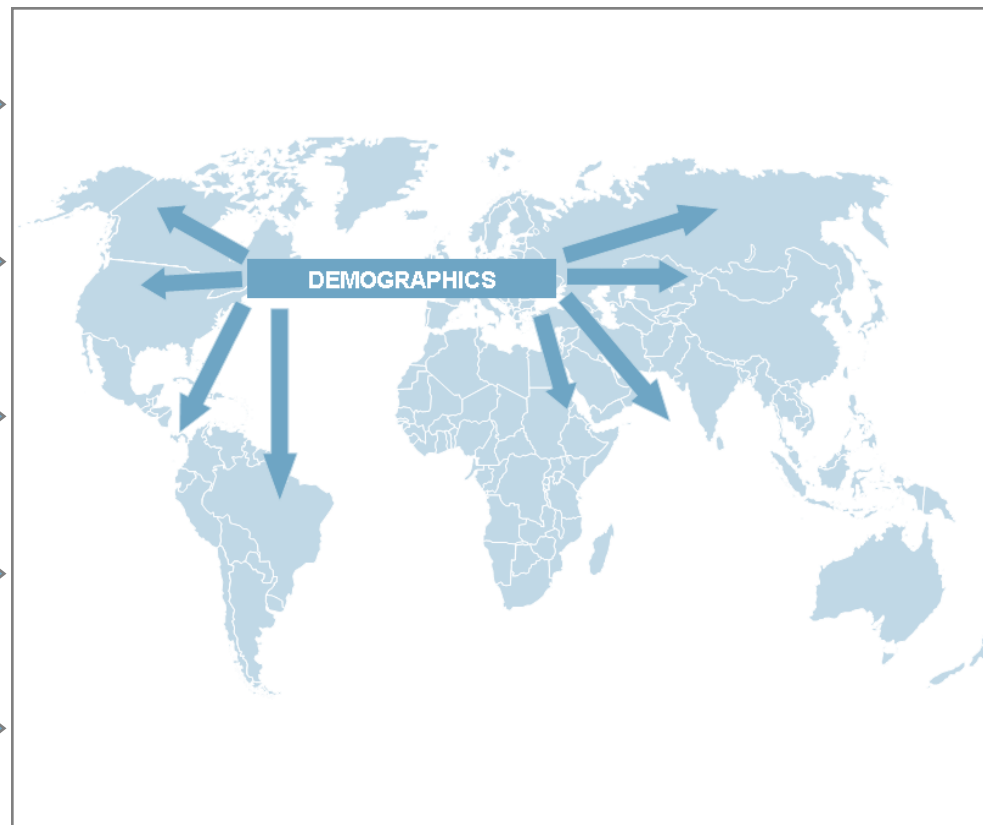
Greater penetration of health insurance
Market expansion

Shift in disease patterns
Rising prevalence of chronic diseases

Adoption of product patents
IP protection

4

GLOBAL MARKETS



Increased complexity in product development will create highly strategic virtual networks involving close collaboration of different but complementary players

Lack of skills

Increase reliance on outsourcing

Need for increased production flexibility

Use of toll specialist manufacturers

Collaboration with close-to-patient personnel

Offer tailor-made solutions

Collaboration with IT driven integration

Virtual global organizations for direct delivery

Collaboration with governments and payers

Ease the development process

5

PARTNERSHIPS

Bayer and Tsinghua University establish joint research centre in China

TUESDAY, MAY 26, 2009

Bayer Schering
next five year:
change with th

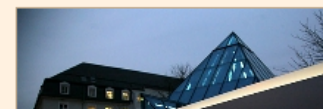
GSK and Pfizer's HIV Joint Venture: Why It's a Path Forward

Real innovation in dealmaking, like



Merck et AstraZeneca s'associent contre le cancer

Les groupes pharmaceutiques américain Merck et britannique AstraZeneca vont collaborer pour élaborer un nouveau traitement contre le cancer, associant deux de leurs plus grands experts. Ils ont annoncé...



Jubilant Organosys and Lilly to Form Drug Development Joint Venture

Posted October 7, 2008

Jubilant Organosys and Lilly to Form Drug Development Joint Venture

The future of pharma holds significant challenges, which can all be converted into new opportunities for the industry

Levers for success in the new healthcare landscape

1

Focus on a strong medical science basis

2

Put the patient at the centre of product development and its full life cycle

3

Integrate technologies to supply better treatments faster

4

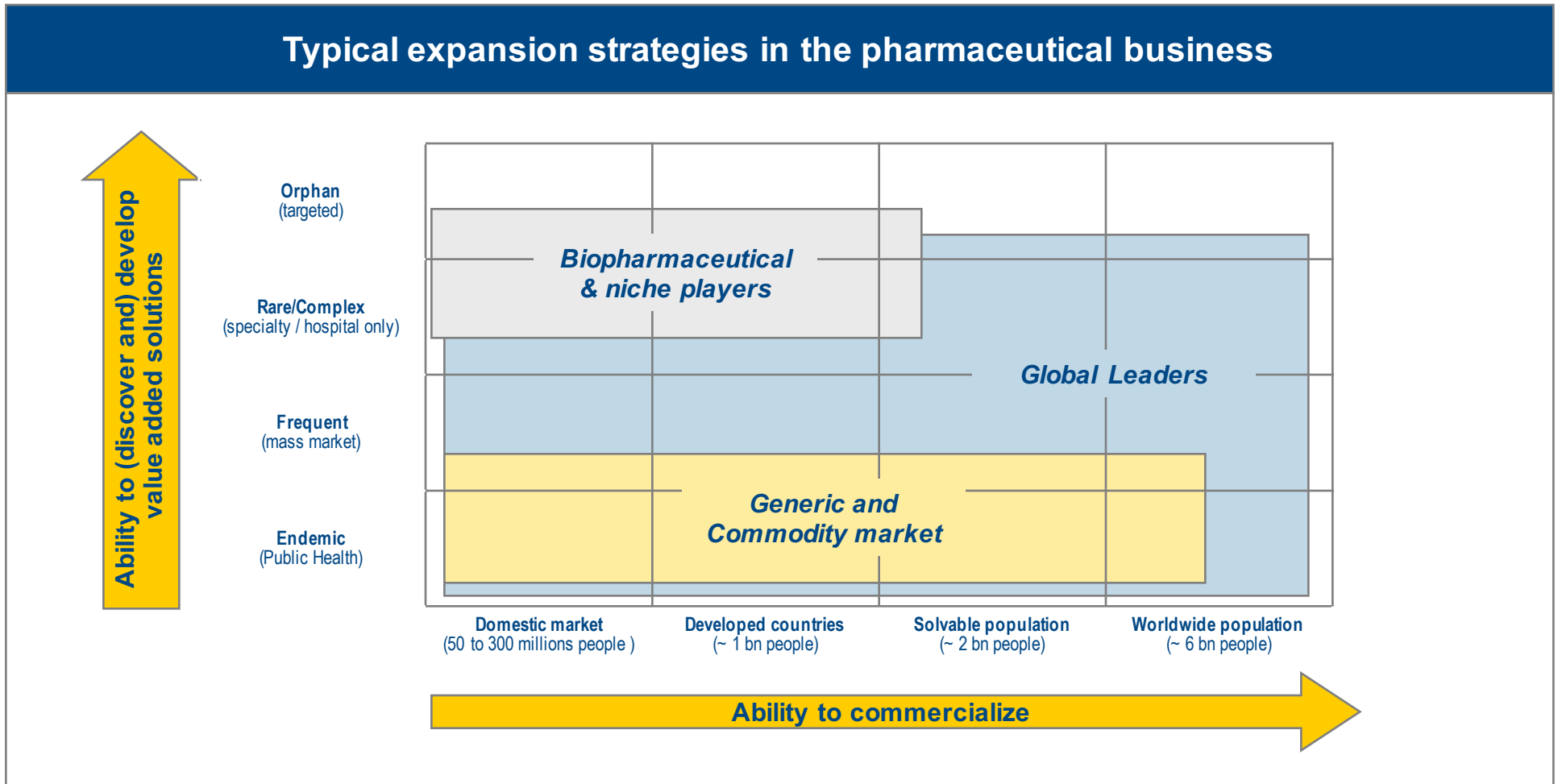
Be ready to use the new global market and global resources

5

Create strategic partnerships to accelerate success

3 Business models to answer the change – Traditional business models









Today, expansion strategies in pharma are mostly driven by traditional ways of thinking leading to three business models: global players, low cost manufacturers and niche players



Source: Arthur D. Little, Life Sciences Practice Institute

3 Business models to answer the change – Traditional business models

Moreover, most of the leading players now consider 'health' as more than traditional prescription medicines based on small molecules

	Traditional Rx small molecules	Biologics	Vaccines	OTC /OTX ⁽¹⁾	Generics	Animal Health	Medical Devices & IVD
	☆☆☆	☆☆	☆☆☆	☆	☆	☆☆	
	☆☆☆	☆☆		☆☆☆			☆☆☆
	☆☆☆	☆☆	☆☆	☆	☆	☆☆☆	
	☆☆☆	☆☆	☆☆☆	☆☆			
	☆☆☆	☆	☆	☆☆	☆☆☆	☆	☆
	☆☆☆	☆☆☆					☆☆☆
	☆☆☆	☆					
	☆☆☆	☆	☆☆☆	☆		☆☆☆	

Sources: Based on sanofi-aventis, General Assembly, April 11th 2009, Arthur D. Little

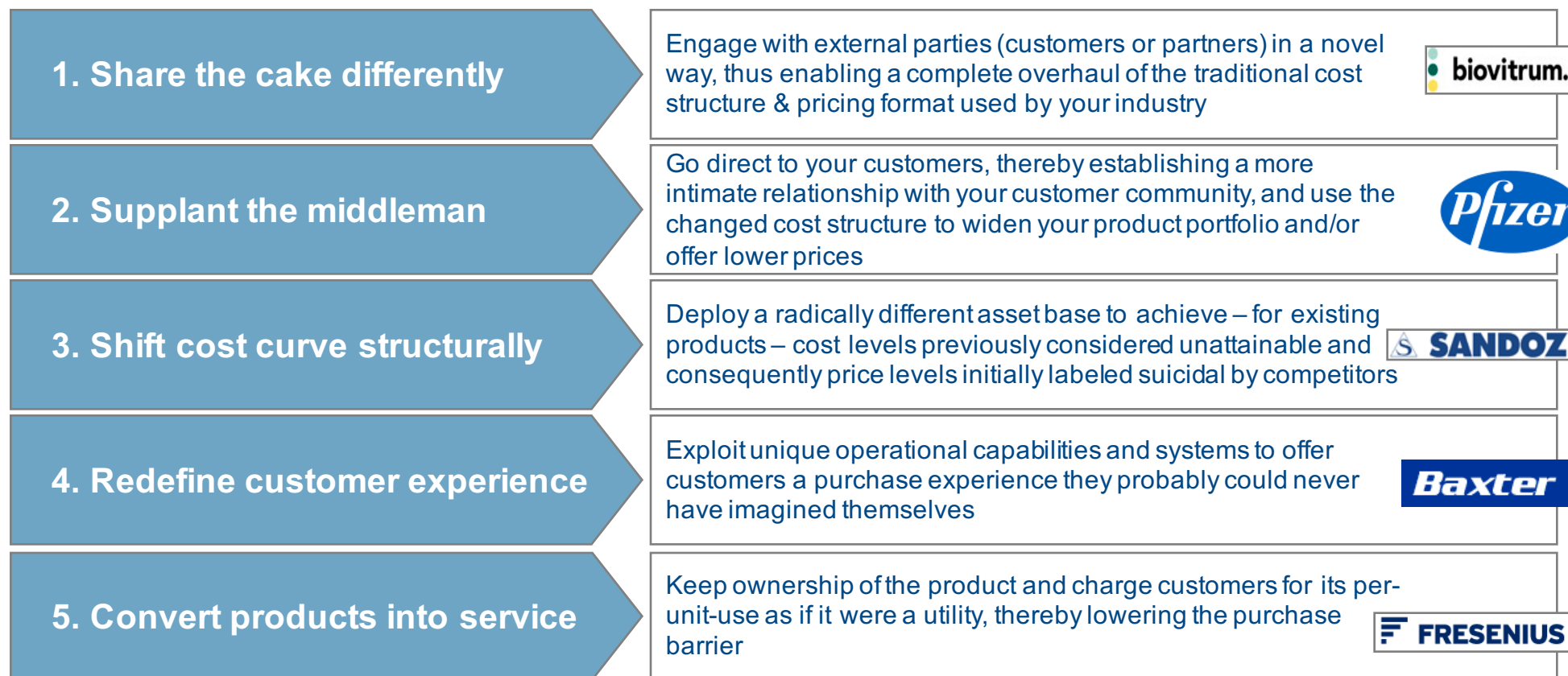
¹⁾ : OTX : combination of over-the-counter (OTC) and prescription

(Rx), corresponds mainly to prescription-free medicines sold in pharmacies and relying on clinical trials

²⁾ : Pro forma

Five “Step Change” business model archetypes can be tailored and combined to best address the changing business environment and to implement the five identified

Five “Step Change” business model archetypes



Source: “Bringing business models down to earth” (Arthur D. Little, 2008)

We believe that a combination of the first three “step change” business models is best suited to guide the ambition of an ideal competitor in the “Greatest challenge of change” scenario

Priority “Step Change” business model archetypes

1. Share the cake differently



JCDecaux



2. Supplant the middleman

amazon.com

ING DIRECT
Save Your Money



3. Shift cost curve structurally

RYANAIR.COM



SANDOZ

NUCOR



4. Redefine customer experience



INDITEX



Baxter

5. Convert product into service



CINTAS
THE SERVICE PROFESSIONALS

salesforce.com
Success On Demand

FRESENIUS

Priority „step change“ business models suited for scenario „challenge of change“

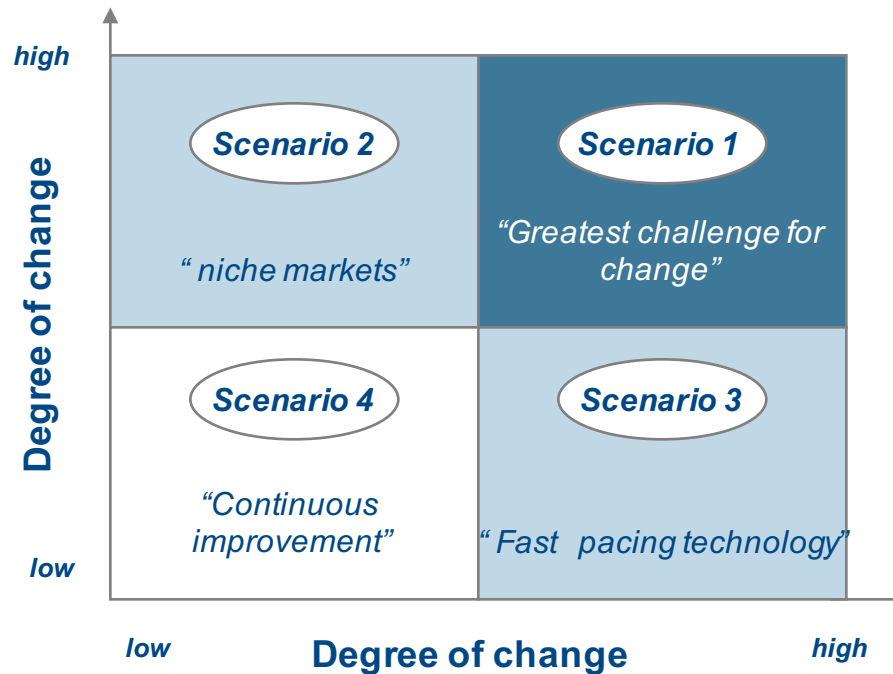
We anticipate four general scenarios for the pharma industry 2020

Illustrative

General scenarios pharma industry 2020

Markets / Regulation

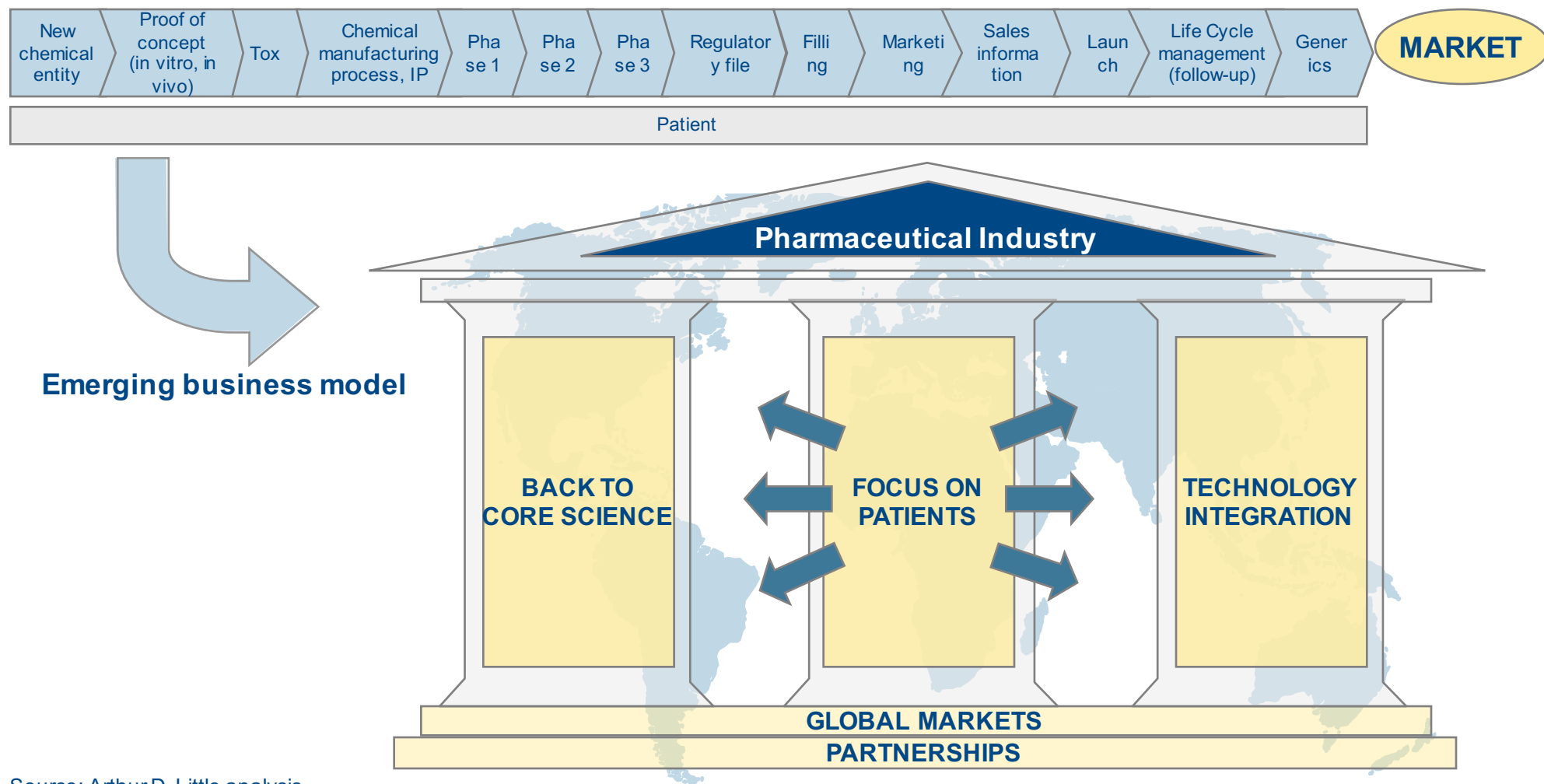
- 1. End of blockbusters
- 2. Patient centricity
- 3. Increasing importance of emerging markets
- 4. Change in target patients
- 5. Collaboration
- 10. Funds available
- 11. Prevention
- 12. Regulation



- 6. Increased Integration
- 7. Increased IT/IS
- 8. Growth of biotech
- 9. Innovation

Science / Technology

The pharmaceutical industry will continue to strive to success, focusing on patients throughout an open-minded system



Source: Arthur D. Little analysis