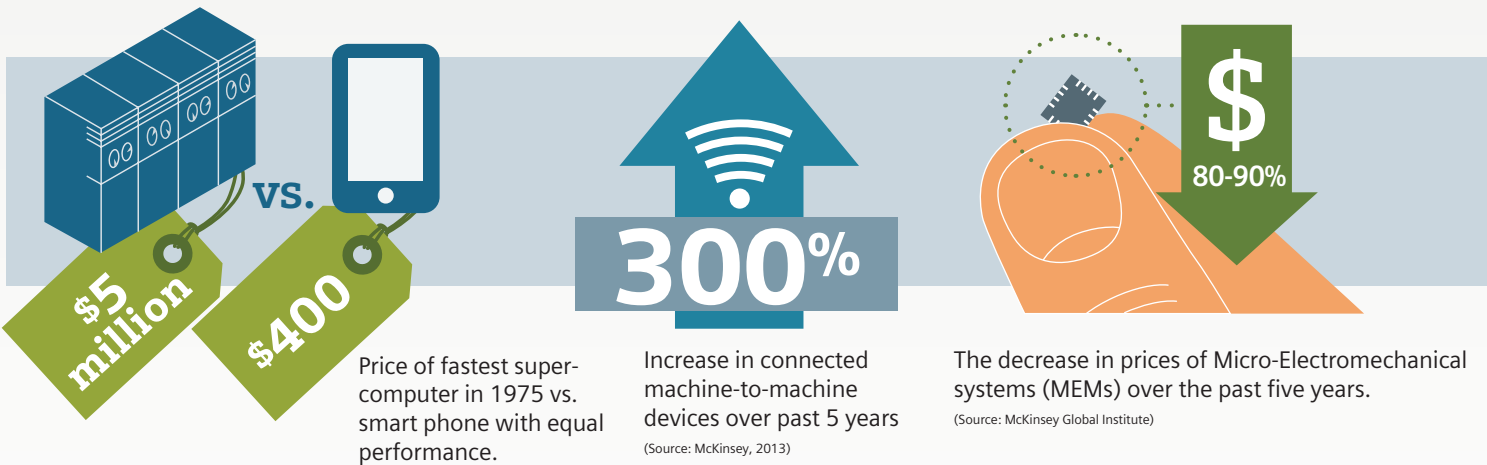**SIEMENS**
Ingenuity for life

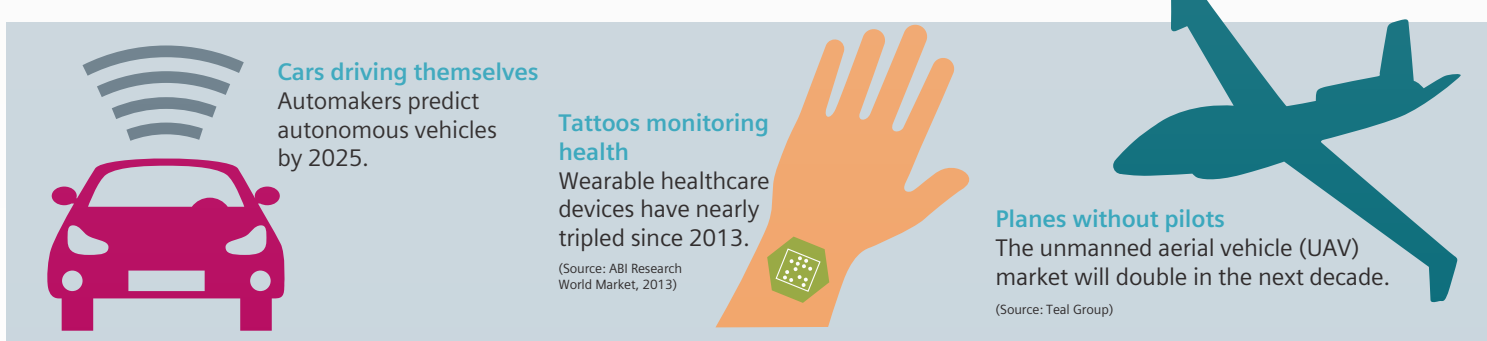# Six keys to smart product development with model-based systems engineering
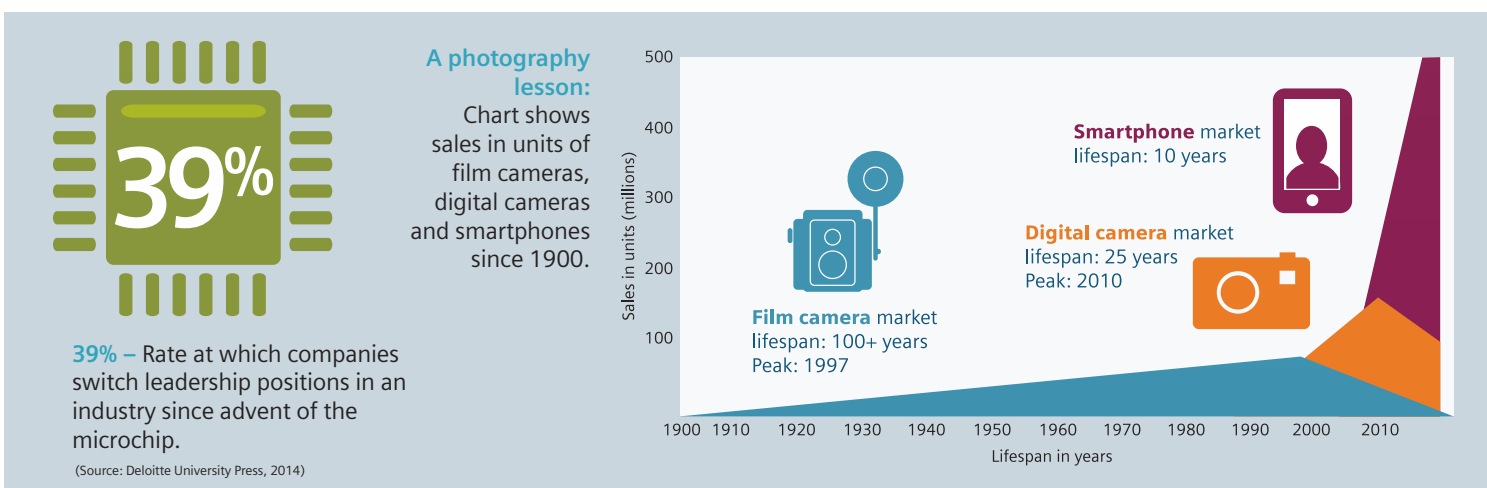
Products are getting smarter and more connected.

$5 million vs. **$400**
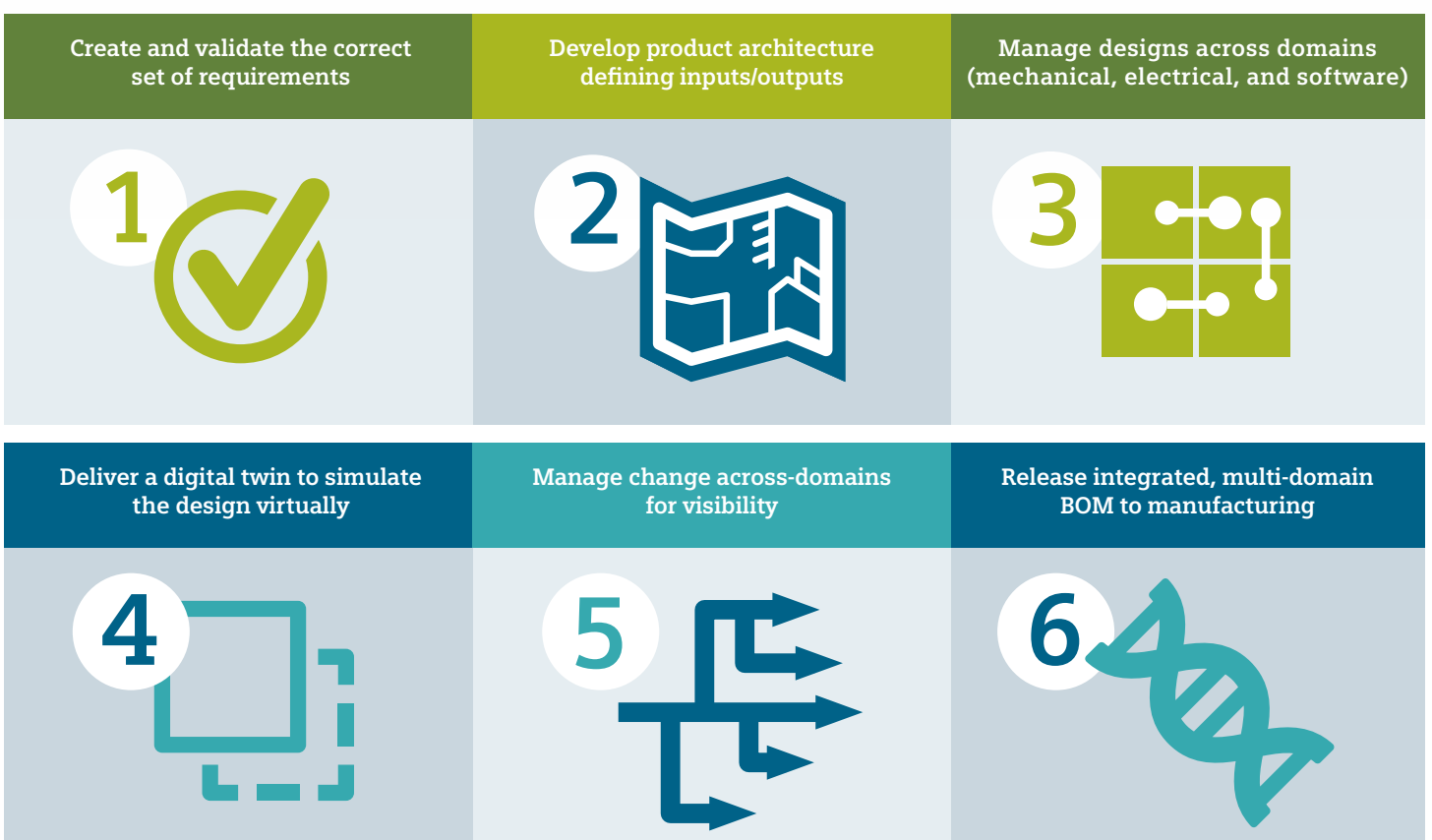
Price of fastest super-computer in 1975 vs. smart phone with equal performance.

300%

Increase in connected machine-to-machine devices over past 5 years
(Source: McKinsey, 2013)

$ 80-90%

The decrease in prices of Micro-Electromechanical systems (MEMs) over the past five years.
(Source: McKinsey Global Institute)

Smart innovations are emerging in every industry.

Cars driving themselves
Automakers predict autonomous vehicles by 2025.

Tattoos monitoring health
Wearable healthcare devices have nearly tripled since 2013.
(Source: ABI Research World Market, 2013)

Planes without pilots
The unmanned aerial vehicle (UAV) market will double in the next decade.
(Source: Teal Group)

Smart products go beyond incremental to transformational innovation.

39%

39% – Rate at which companies switch leadership positions in an industry since advent of the microchip.
(Source: Deloitte University Press, 2014)

A photography lesson:
Chart shows sales in units of film cameras, digital cameras and smartphones since 1900.

Sales in units (millions)

500
400
300
200
100

Smartphone market lifespan: 10 years

Digital camera market lifespan: 25 years
Peak: 2010

Film camera market lifespan: 100+ years
Peak: 1997

1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010
Lifespan in years

Six steps to compete in the new age of smart innovation

Create and validate the correct set of requirements

1

Develop product architecture defining inputs/outputs

2

Manage designs across domains (mechanical, electrical, and software)

3

Deliver a digital twin to simulate the design virtually

4

Manage change across-domains for visibility

5

Release integrated, multi-domain BOM to manufacturing

6

> Take lessons and repeat