



Considerations for Lowering the **COST** of MEMS TESTING

Speaker: Susan

Who is SPEA

Facts

Established	1976
Headquarters	Turin, Italy

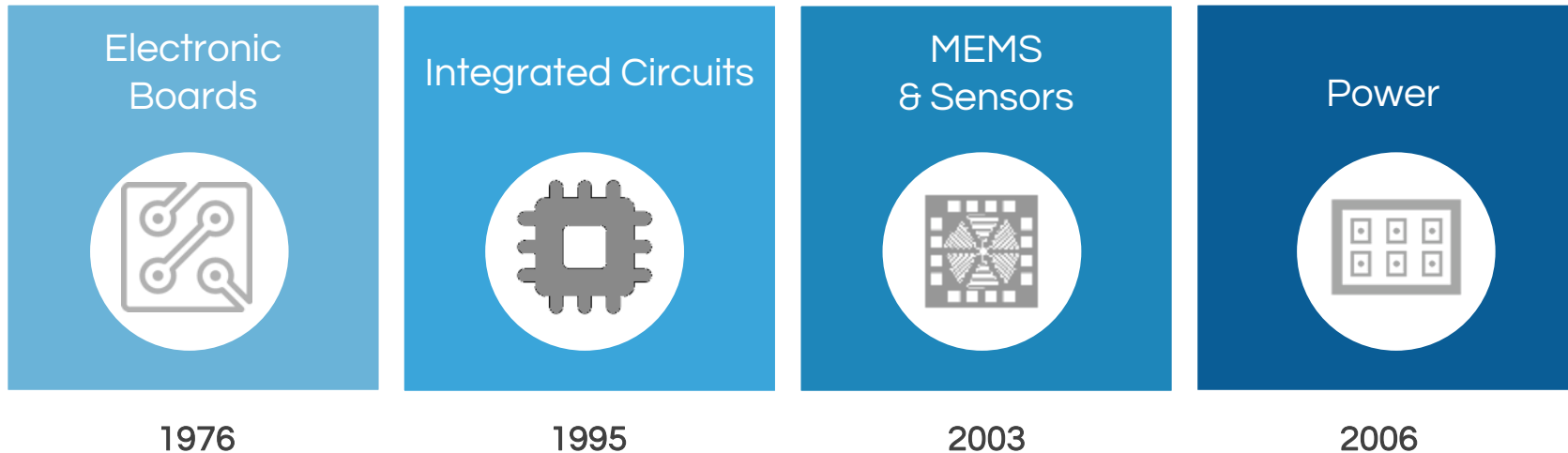


Leader in MEMS Testing

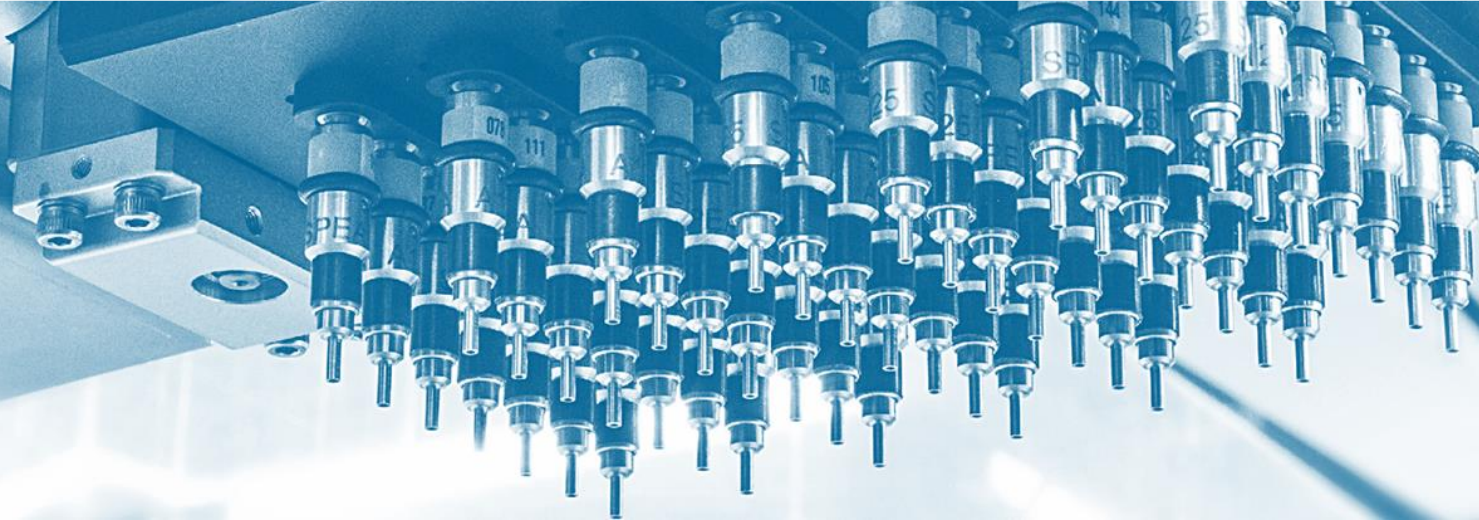
First MEMS Test equipment introduced in 2003: accelerometer MEMS testing was a challenge from our partner STMicroelectronics

“Fill the need” resulted in the integrated test cells: One piece of optimized equipment with modular parts

Leadership in testing



MEMS Test Challenges



TECHNOLOGY TRENDS

MARKET TRENDS

1

Different functions,
Different
requirements

2

Package
miniaturization

3

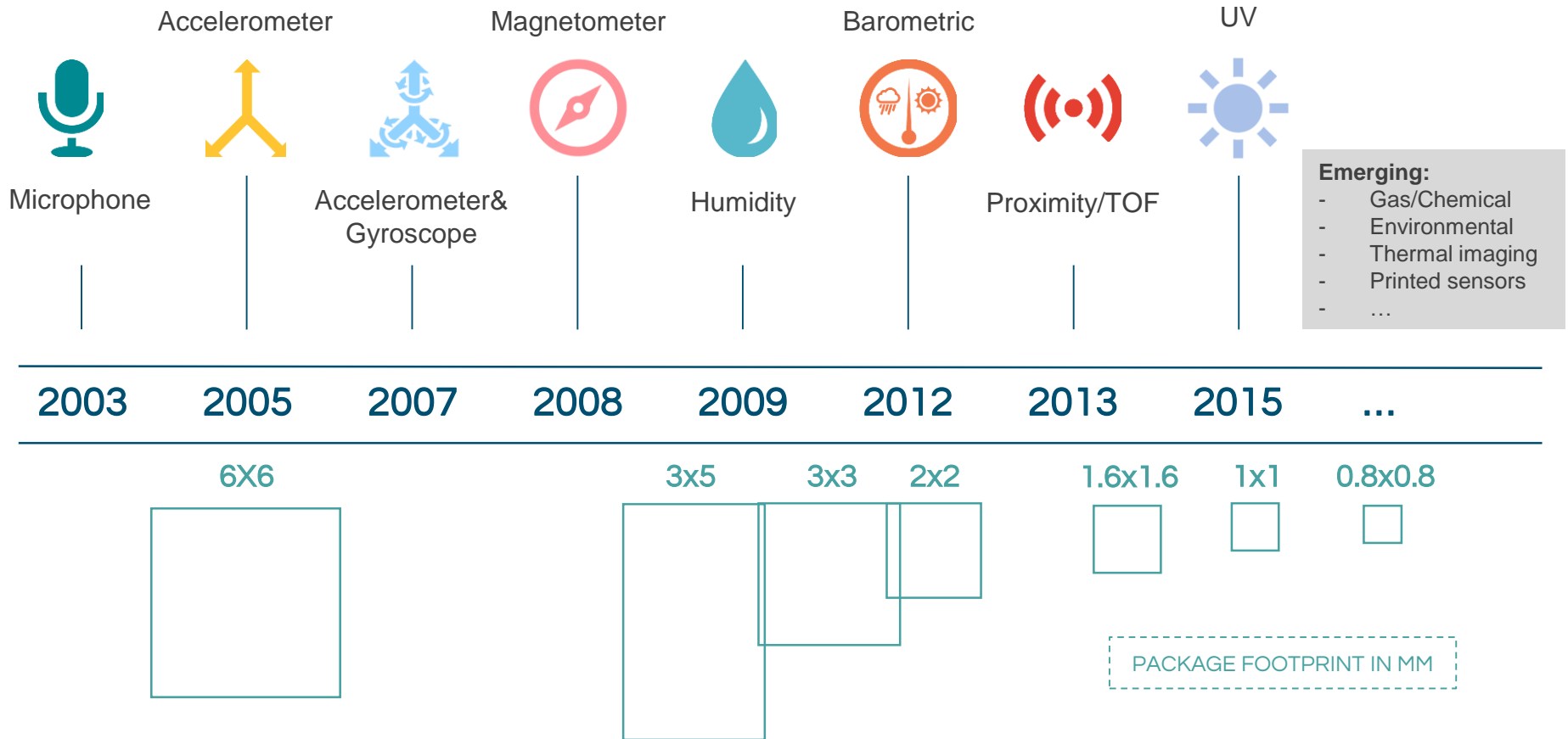
ASP decrease

4

Volumes increase

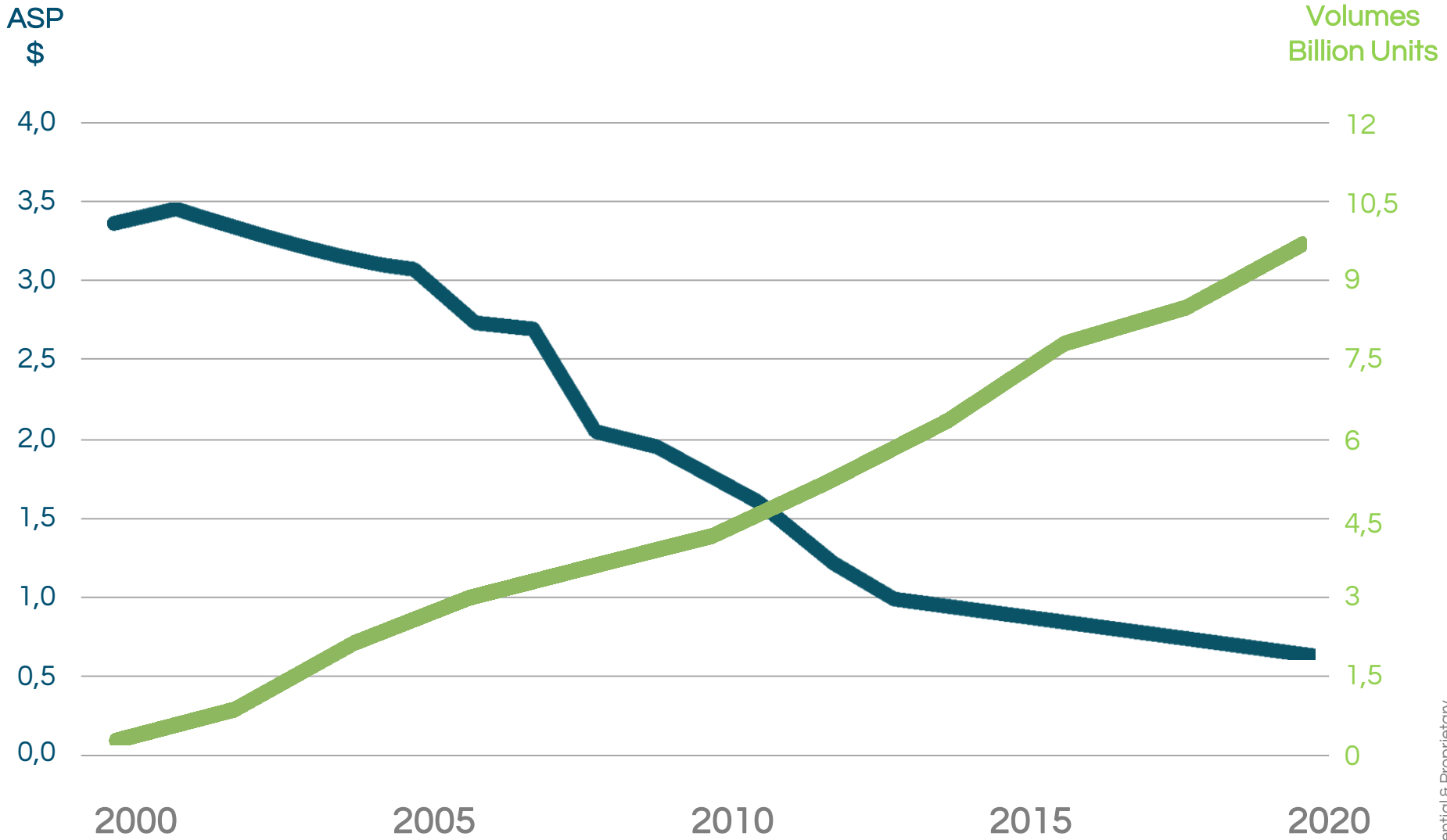
Technology Trends

MEMS market entry: Products releases examples

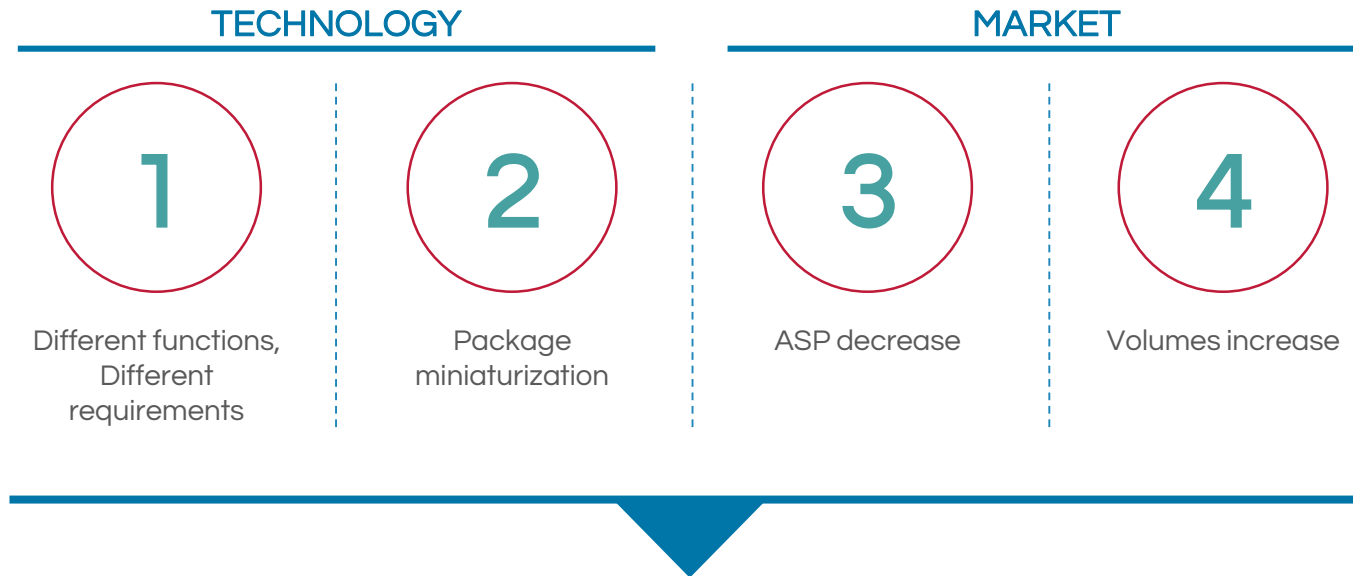


Example of MEMS Package evolution: Accelerometers

Market Trends



The Challenge



How to depreciate your investment through time?

Test equipment must guarantee:

- Reconfigurability of I/O media
- Reconfigurability of MEMS stimulus
- High productivity
- Quality: continuous performance through time

MEMS Testing

What equipment?





SPEA MEMS TEST CELLS

A single equipment for testing your MEMS devices



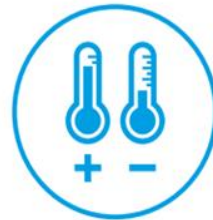
Handler



Tester



Stimulus



3temp



Software



Contacting

FOR THE FOLLOWING TYPES OF MEMS



INERTIAL

- Low g accelerometers
- Medium & High g accelerometer
- Gyroscope



PROXIMITY

- Proximity sensors



ENVIROMENTAL

- Barometric pressure
- Humidity
- Temperature
- Gas



MAGNETIC

- Compass
- Hall effect
- Angular



ACUSTIC

- Microphone
- Speaker



PRESSURE

- Medium & High pressure
- TPMS
- Force



LIGHT

- UV
- IR
- IMAGE

SPEA Italy Headquarters Via Torino, 16 - 10088 Volpiano (TO) - ITALY | Phone: +39 011 98 25 400

SPEA China Suzhou No. 5 Xing Han Street, Blk A#04-11/12 - Suzhou, 215021, China | Phone: +86 512 675 001 83

WWW.SPEA.COM

Integrated Test Cell Benefits



One piece of
Equipment



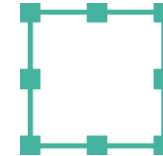
Optimized
Hardware



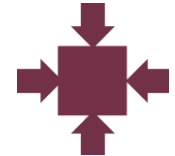
Single Vendor
Solution



Lower Overall
Price



Open and
modular design



Compact
Footprint

BENEFITS



Best technical
performance



High
throughput



Lower
investment



One-shot
factory
integration



Short
lead time



Complete
support from
manufacturer

Future of Integrated Test Cell for MEMS

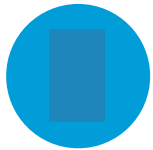
PRODUCTIVITY

Parallel handling

Parallel contacting and testing

RECONFIGURABLE I/O MEDIA

INPUT



Tray

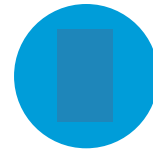


Bowl Feeder



Film frame/
Wafer loader

OUTPUT



Tray



Box



Tape Reel

MEMS STIMULUS



Accelerometer
&
Gyroscope



Accelerometer



Barometric



Humidity



Magnetometer



Proximity



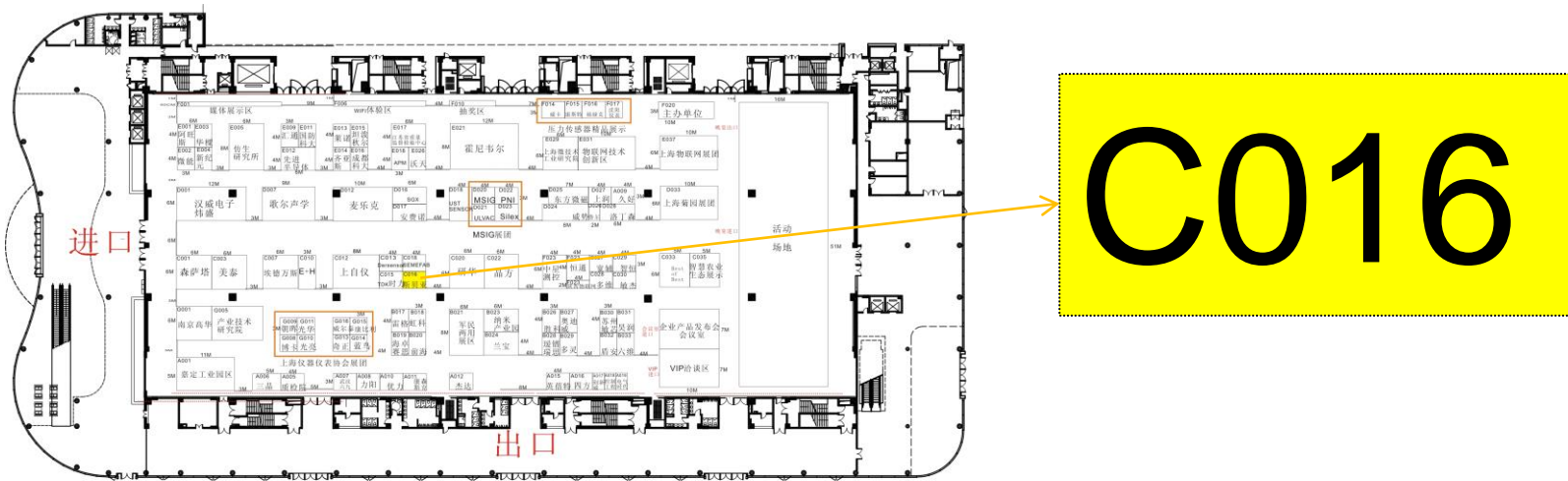
UV



Microphone

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一楼展厅

www.spea.com