ASML

Business Model and Capital Allocation Strategy

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INVESTOR DAY
ASMLSMALLTALK2018
VELDHOVEN

Business Model and Capital Allocation Strategy
Key messages

Our investments have created significant shareholder value…

- We have **invested substantially into technology leadership** and have thereby created **significant shareholder value**

… our growth continues well into the next decade…

- Our products and services will continue to enable our customers to achieve cost effective shrink, which will continue to fuel a highly profitable industry in innovation and expansion

… creating significant financial opportunity …

- Based on different market scenarios we have an opportunity to grow our annual **revenue for 2025: between 15B€ (low market) – 24B€ (high market)**
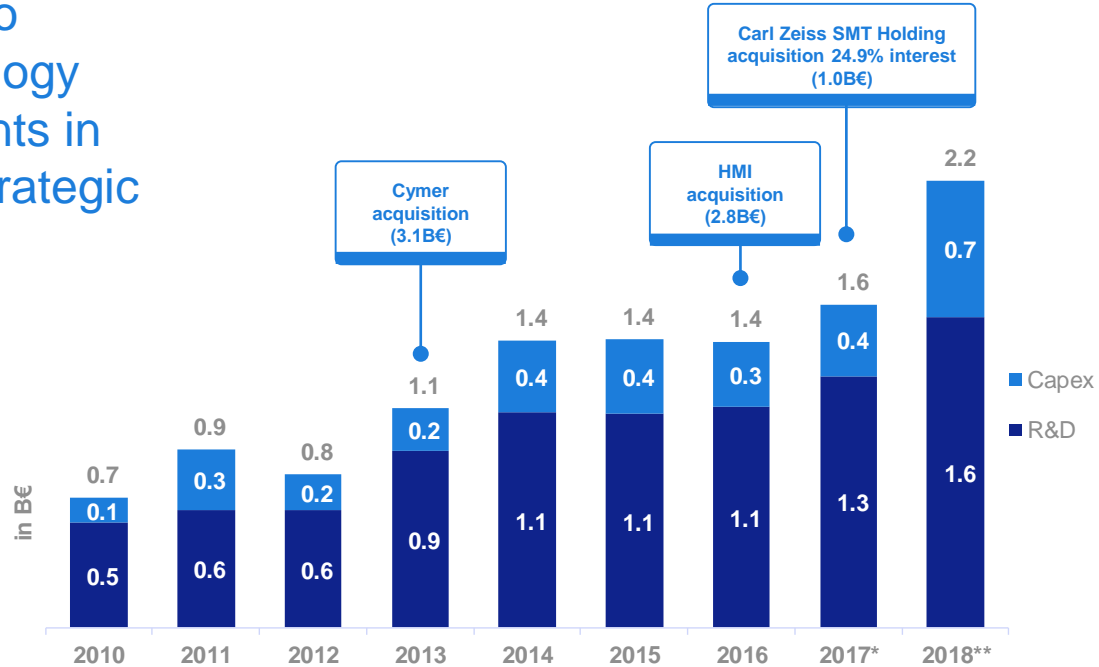
… which continues to deliver strong shareholder value

- We expect to continue to **return significant amounts of cash to our shareholders** through a combination of share buybacks and growing dividends

Historical Shareholder value creation

ASML is the technology leader enabling shrink with resulting cost reduction for our customers

We have invested to become the technology leader by investments in Capex, R&D and strategic M&A

Cymer acquisition (3.1B€)

HMI acquisition (2.8B€)

Carl Zeiss SMT Holding acquisition 24.9% interest (1.0B€)

in B€

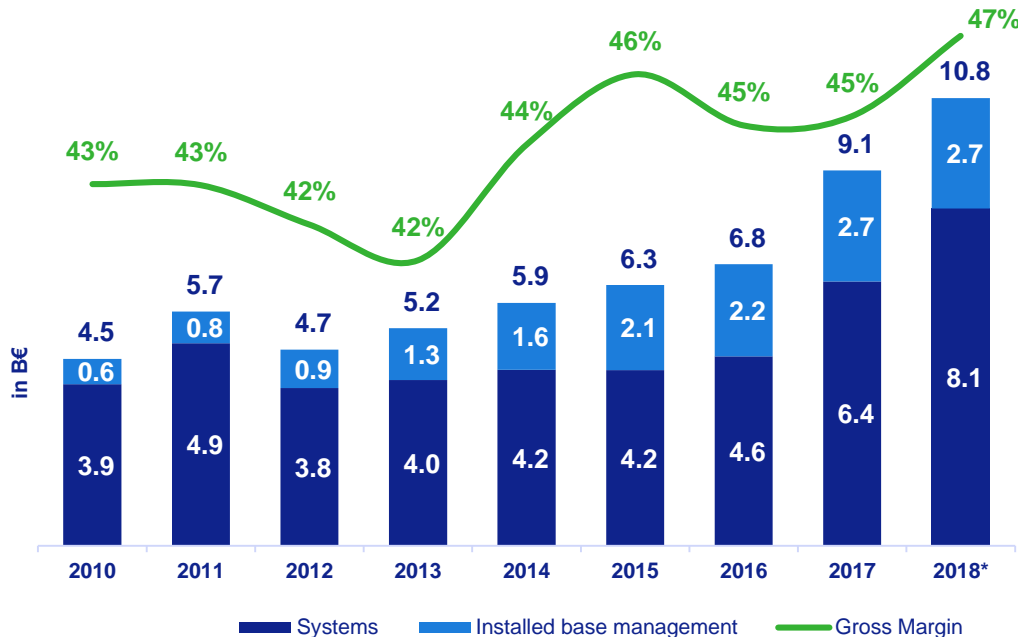| Year	R&D	Capex	Total
2010	0.5	0.1	0.7
2011	0.6	0.3	0.9
2012	0.6	0.2	0.8
2013	0.9	0.2	1.1
2014	1.1	0.4	1.4
2015	1.1	0.4	1.4
2016	1.1	0.3	1.4
2017*	1.3	0.4	1.6
2018**	1.6	0.7	2.2

■ Capex
■ R&D

* ASML contribution Zeiss SMT capex included as of 2017
** 2018 capex and R&D consists of YTD Q3 actuals and Q4 estimate

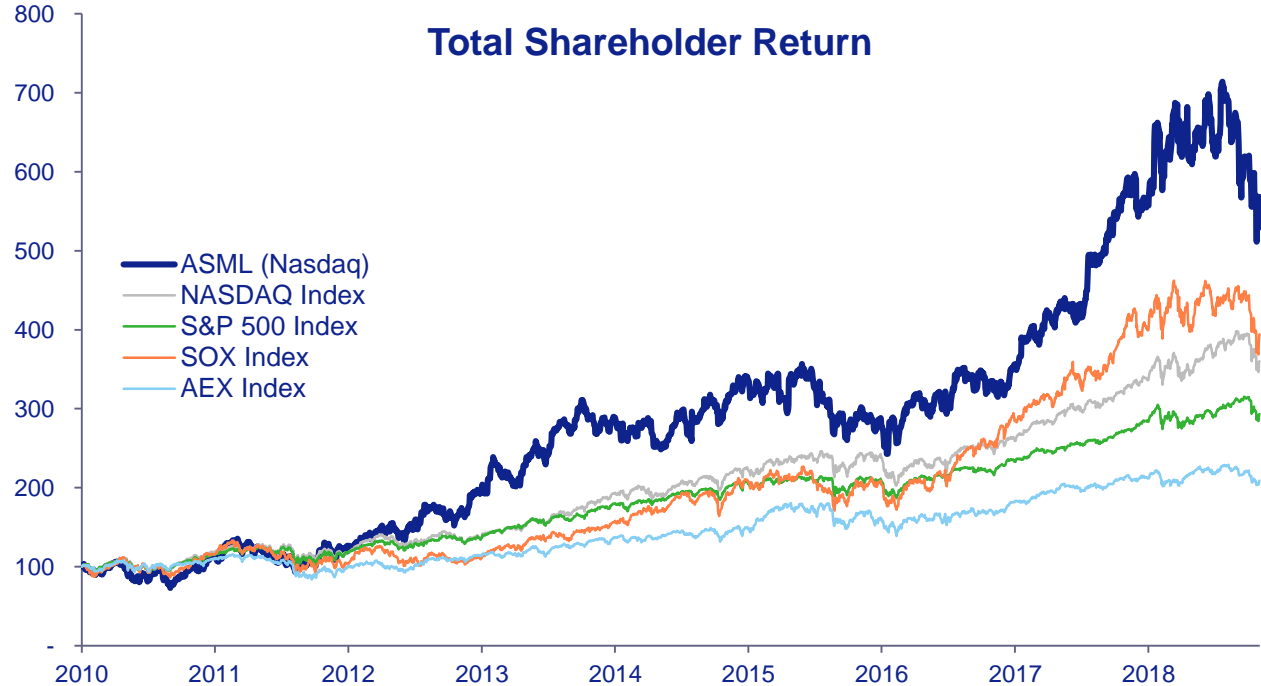# ASML total revenues grew at a CAGR of 12% since 2010

- **Systems revenue** grew at a 10% CAGR since 2010

- **Installed base management**
  - 20% CAGR since 2010 driven by holistic lithography, upgrades and growing installed base
  - Now approximately one quarter of our total revenue

- **Gross Margin trend** reflecting the strength of our DUV and Applications business and progress in EUV profitability

Legend: ■ Systems ■ Installed base management ── Gross Margin

Year	Systems	Installed base management	Total	Gross Margin
2010	3.9	0.6	4.5	43%
2011	4.9	0.8	5.7	43%
2012	3.8	0.9	4.7	42%
2013	4.0	1.3	5.2	42%
2014	4.2	1.6	5.9	44%
2015	4.2	2.1	6.3	46%
2016	4.6	2.2	6.8	45%
2017	6.4	2.7	9.1	45%
2018*	8.1	2.7	10.8	47%

in B€

* 2018 includes Q4 estimate

ASML created significant shareholder value over the past 8 years….

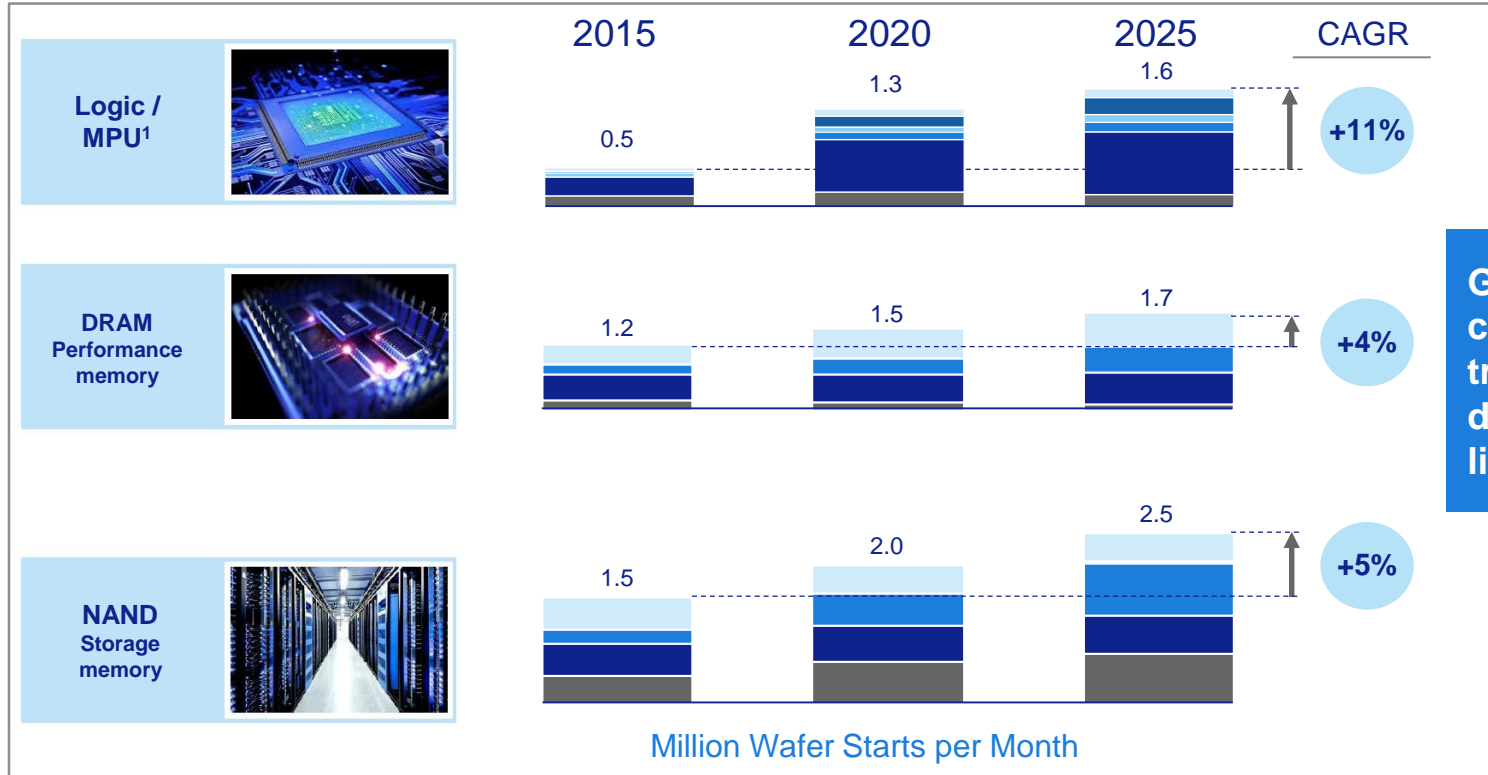**ASML (Nasdaq) Total Shareholder Return** CAGR 22% versus **NASDAQ** at 16%

Total Shareholder Return

- ASML (Nasdaq)
- NASDAQ Index
- S&P 500 Index
- SOX Index
- AEX Index

Source: Bloomberg (Total Shareholder Return: index = 2010)

Continuing growth

Expected content and unit growth of semiconductor end markets translates into growth of wafer demand in all segments

Legend: ■ PCs and laptops ■ Smartphones and tablets ■ Servers ■ Automotive ■ Consumer incl. wearables ■ Other

	2015	2020	2025	CAGR
Logic / MPU[1]	0.5	1.3	1.6	+11%
DRAM Performance memory	1.2	1.5	1.7	+4%
NAND Storage memory	1.5	2.0	2.5	+5%

Million Wafer Starts per Month

Growing fab capacity and node transitions drive demand for our litho systems

[1] Advanced Logic and MPU nodes only ≤ 32 nm
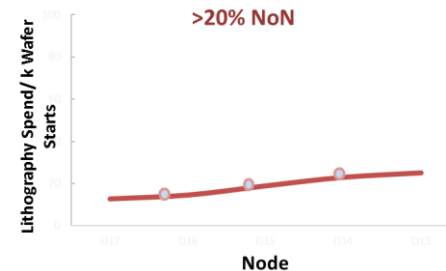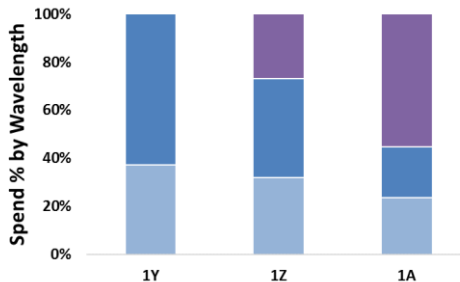Source: Gartner device units 2017-2022; ASML model extrapolated through 2025

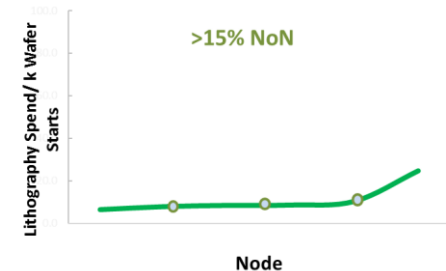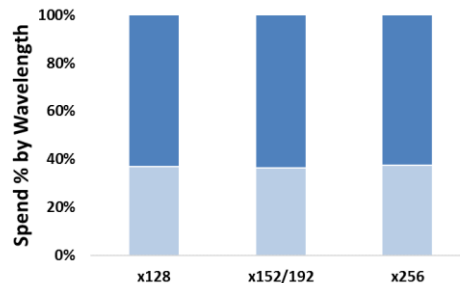# Lithography spend increasing on future nodes

¹ NoN: Node on Node
High NA   EUV   ArFi   Dry

Model assumptions based on latest insights (2020)

	Logic / MPU	Performance Memory	Storage Memory
	Market share assumptions: EUV 100%, **ArFi 90%, Dry 60%**		
General	• EUV insertion **2019** • 3 year cadence	• EUV insertion **2020**	• EUV in storage class memory **after 2025** • 3D NAND: stack of stacks

Market (Low/High)	• Reference 16/14nm, 270 kwspm[1]
	• Node on node (reduction):
	  Low: -20%
	  High: 0%
		• Bit growth:
		  Low: 15%
		  High: 25%
			• Bit growth:
			  Low: 35%
			  High: 45%

EUV Insertion (Low/High)	• EUV initial layer range:
	  Low: 5-7 **for smaller 'test' node**
	  High: 10-14 for larger HVM[2] nodes
		• EUV initial layer range:
		  Low: 1
		  High: 2
		• Growing at subsequent nodes	

[1] kwspm: 1000 wafer starts per month - [2] HVM: High Volume Manufacturing

Our updated model supports revenue in a moderate market scenario of ~13 B€ in 2020

ASML modeled Sales in 2020
(in B€)

Market demand
based on mid EUV insertion

High demand

Worldwide units		Systems / Installed Base Management	Sales
EUV	35	Systems	11.0
ArFi	90	Installed Base	3.7
Dry	220	Management	
Total	345	Total	14.7

Low demand

Worldwide units		Systems / Service & Options	Sales
EUV	20	Systems	6.5
ArFi	44	Service & Options	3.6
Dry	140		
Total	204	Total	10.1

unlikely

EUV insertion
based on moderate market

High insertion

Worldwide units		Systems / Installed Base Management	Sales
EUV	33	Systems	9.2
ArFi	60	Installed Base	3.7
Dry	180	Management	
Total	273	Total	12.9

Low insertion

Worldwide units		Systems / Service & Options	Sales
EUV	20	Systems	8.2
ArFi	75	Service & Options	3.6
Dry	180		
Total	275	Total	11.8

unlikely

Model assumptions 2025

Logic / MPU	Performance Memory	Storage Memory
Market share assumptions: EUV 100%, ArFi 90%, Dry 60%		

	Logic / MPU	Performance Memory	Storage Memory
General	• EUV High NA high volume from 2024 • 3 year cadence	• EUV High NA modelled as upside	• EUV in storage class memory after 2025 • 3D NAND: stack of stacks

Market (Low/High)	• Reference 16/14nm, 270 kwspm[1]
	• Node on node (reduction):
	  Low: -20%
	  High: 0%
		• Bit growth:
		  Low: 10%
		  High: 20%
			• Bit growth:
			  Low: 25%
			  High: 35%

EUV Insertion (Low/High)	• 20-30 EUV exposures • First EUV High NA node ~ 5-10 exposures	• 80-90% of wafer capacity converted to nodes with 1-5 exposures of EUV	

[1] kwspm: 1000 wafer starts per month

Our simulation model supports revenue between 15 B€ (Low Market) – 24 B€ (High Market)

ASML modeled Sales in 2025
(in B€)

Market demand
based on mid EUV insertion

High demand

Worldwide units		Sales
High NA	9	Systems	17.9
EUV	55	Installed Base	6.4
ArFi	60	management	
Dry	200		
Total	324	Total	24.3

Low demand

Worldwide units		Sales
High NA	5	Systems	10.2
EUV	32	Installed Base	4.8
ArFi	35	management	
Dry	140		
Total	212	Total	15.0

EUV insertion
based on moderate market

High insertion

Worldwide units		Sales
High NA	7	Systems	13.4
EUV	43	Installed Base	5.9
ArFi	40	management	
Dry	150		
Total	240	Total	19.3

Low insertion

Worldwide units		Sales
High NA	3	Systems	12.7
EUV	45	Installed Base	5.8
ArFi	40	management	
Dry	150		
Total	238	Total	18.5

ASML updated Financial Model

	2017 (Actual)	2018 (Guidance)	2020 (CMD 2016)	2020 (Scenario) (Moderate market)	2025 (Scenarios)
Total Sales	9.1B€	~11B€	~11B€	~13B€	~15 - 24B€
Gross margin %	45.0%	~47%	>50%	>50%	>>50%
R&D % sales	14%	~14%	~13%	~14%	~13%
SG&A % sales	5%	~5%	~4%	~4%	~4%
Capex % sales	4%	~6%	~4%	~4%	~3%
Cash Conversion Cycle	224 days	~210 days	<200 days	<200 days	<200 days
Effective Tax Rate	13%	~14%	~14%	~14%	~14%

Our flexible operating model can deal with the industry volatility and uncertainties

Flexible workforce
Employees, x 1000

Additional flexibility through the hour bank and other measures

- 14%
- 86%

2018

- Flexworkers
- Own personnel
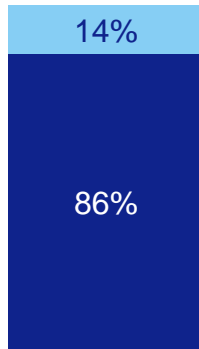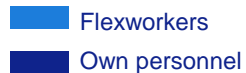
100% = 23,000

Outsourced R&D
R&D spend, B€

- 33%
- 67%

2018

- D&E Flex labor and farm-out
- D&E Fix labor and other costs
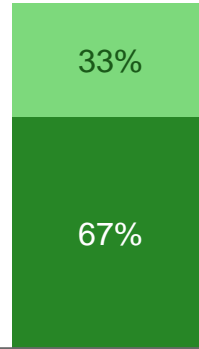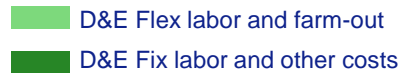
100% = ~1.55 B€

Systems COG[1] at Standard, composition

Majority of systems COG is externally sourced
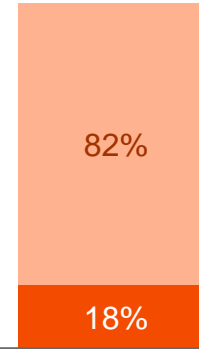
- 82%
- 18%

2018

- Materials
- Labor

[1] COG: Cost of Goods

Continued shareholder value creation..

ASML's capital allocation policy

Focused investment in our business through R&D, Capex and strategic M&A

Carl Zeiss SMT Holding acquisition 24.9% interest (1.0B€)

HMI acquisition (2.8B€)

Cymer acquisition (3.0B€)

In B€

	2010	2011	2012	2013	2014	2015	2016	2017*	2018**
Total	0.7	0.9	0.8	1.1	1.4	1.4	1.4	1.6	2.2
Capex	0.1	0.3	0.2	0.2	0.4	0.4	0.3	0.4	0.7
R&D	0.5	0.6	0.6	0.9	1.1	1.1	1.1	1.3	1.6
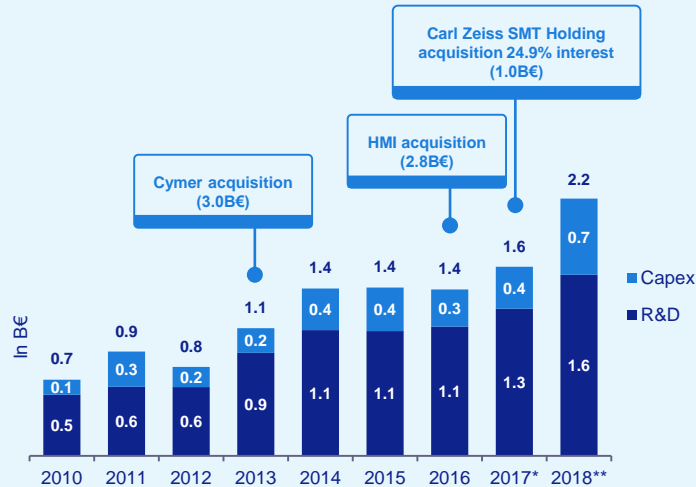
■ Capex
■ R&D

Distribute excess cash to shareholders through a combination of share buybacks and growing dividends

In B€

	Up to 2010	2011	2012	2013	2014	2015	2016	2017	YTD 2018
Total	2.4	3.3	4.0	4.5	5.5	6.4	7.2	8.2	9.6
Cumulative dividend	0.3	0.5	0.6	0.9	1.1	1.4	1.9	2.4	3.0
Cumulative share buybacks	2.1	2.8	3.4	3.7	4.4	4.9	5.3	5.8	6.6

■ Cumulative dividend
■ Cumulative share buybacks
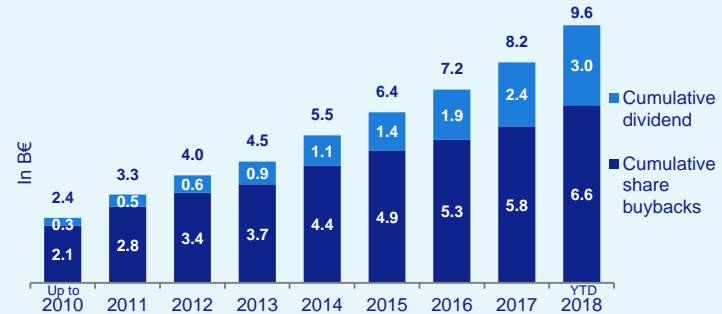
Maintain a strong and flexible balance sheet

* ASML contribution for Zeiss SMT capex included as of 2018
** 2018 estimate for capex and R&D consists of year to date Q3 actuals and Q4 guidance

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Summary

Our investments have created significant shareholder value…

- We have **invested substantially into technology leadership** and have thereby created **significant shareholder value**

… our growth continues well into the next decade…

- Our products and services will continue to enable our customers to achieve cost effective shrink, which will continue to fuel a highly profitable industry in innovation and expansion

… creating significant financial opportunity …

- Based on different market scenarios we have an opportunity to grow our annual **revenue for 2025: between 15B€ (low market) – 24B€ (high market)**

… which continues to deliver strong shareholder value

- We expect to continue to **return significant amounts of cash to our shareholders** through a combination of share buybacks and growing dividends

Forward Looking Statements

This document contains statements relating to certain projections, business trends and other matters that are forward-looking, including statements with respect to expected trends and outlook, strategy, bookings, expected financial results and trends, including expected sales, EUV revenue, gross margin, capital expenditures, R&D and SG&A expenses, cash conversion cycle, and target effective annualized tax rate, and expected financial results and trends for the rest of 2018 and 2019, expected revenue growth and demand for ASML's products in logic and memory, expected annual revenue opportunity in 2020 and for 2025 and expected EPS potential in 2020 with significant growth in 2025, expected trends in the lithography system market, fab capacity by segment, the automotive and artificial intelligence industries, connectivity, semiconductor end markets and new semiconductor nodes, expected acceleration of chipmakers' performance for the next decade, expected EUV insertion and transistor density growth, trends in DUV systems revenue and Holistic Lithography and installed based management revenues, statements with respect to expectations regarding future DUV sales, including composition, margins, improvement of operations and performance, DUV product roadmaps, expected benefits of the holistic productivity approach, including in terms of wafers per year, expected industry trends and expected trends in the business environment, statements with respect to customer demand and the commitment of customers to High NA machines and to insert EUV into volume manufacturing by ordering systems, expected future operation of the High NA joint lab, statements with respect to holistic lithography roadmaps and roadmap acceleration, including the introduction of higher productivity systems in 2019 (including the expected shipment of NXE:3400C and expected timing thereof) and the expected benefits, ASML's commitment to volume manufacturing and related expected plans until 2030, ASML's commitment to secure system performance, shipments, and support for volume manufacturing, including availability, timing of and progress supporting EUV ramp and improving consistency, productivity, throughput, and production and service capability enabling required volume as planned, including expected shipments, statements with respect to growth of fab capacity driving demand in lithography systems, planned customer fabs for 200 systems and expected first output in 2019, expected EUV value increase and increase in EUV margins and ASML's expectation of EUV profitability at the DUV level, expected installed base of EUV systems, expected customer buildout of capacity for EUV systems, EUV estimated demand by market, expected increase in lithography intensity, statements with respect to the expected benefits of EUV, including year-on-year cost reduction and system performance, and of the introduction of the new DUV system and expected demand for such system, the expected benefits of HMI's e-beam metrology capabilities, including the expansion of ASML's integrated Holistic Lithography solutions through the introduction of a new class of pattern fidelity control, the extension of EUV to enable cost effective single patterning shrink with EUV, statements with respect to ASML's applications business, including statements with respect to expected results in 2018, expected growth of the applications business and expected drivers of growth, expected growth in margins, continued shrink and drivers, and expected accuracy, defect control and performance improvements, shrink being a key driver supporting innovation and providing long-term industry growth, lithography enabling affordable shrink and delivering value to customers, DUV, Holistic Lithography and EUV providing unique value drivers for ASML and its customers, expected industry innovation, the expected continuation of Moore's law and that EUV will continue to enable Moore's law and drive long term value for ASML beyond the next decade, intention to return excess cash to shareholders through stable or growing dividends and regularly timed share buybacks in line with ASML's policy, statements with respect to the expectation to continue to return cash to shareholders through dividends and share buybacks, and statements with respect to the expected impact of accounting standards. You can generally identify these statements by the use of words like "may", "will", "could", "should", "project", "believe", "anticipate", "expect", "plan", "estimate", "forecast", "potential", "intend", "continue", "targets", "commits to secure" and variations of these words or comparable words. These statements are not historical facts, but rather are based on current expectations, estimates, assumptions and projections about the business and our future financial results and readers should not place undue reliance on them.

Forward-looking statements do not guarantee future performance and involve risks and uncertainties. These risks and uncertainties include, without limitation, economic conditions, product demand and semiconductor equipment industry capacity, worldwide demand and manufacturing capacity utilization for semiconductors, including the impact of general economic conditions on consumer confidence and demand for our customers' products, competitive products and pricing, the impact of any manufacturing efficiencies and capacity constraints, performance of our systems, the continuing success of technology advances and the related pace of new product development and customer acceptance of and demand for new products including EUV and DUV, the number and timing of EUV and DUV systems shipped and recognized in revenue, timing of EUV orders and the risk of order cancellation or push out, EUV production capacity, delays in EUV systems production and development and volume production by customers, including meeting development requirements for volume production, demand for EUV systems being sufficient to result in utilization of EUV facilities in which ASML has made significant investments, potential inability to successfully integrate acquired businesses to create value for our customers, our ability to enforce patents and protect intellectual property rights, the outcome of intellectual property litigation, availability of raw materials, critical manufacturing equipment and qualified employees, trade environment, changes in exchange rates, changes in tax rates, available cash and liquidity, our ability to refinance our indebtedness, distributable reserves for dividend payments and share repurchases, results of the share repurchase plan and other risks indicated in the risk factors included in ASML's Annual Report on Form 20-F and other filings with the US Securities and Exchange Commission. These forward-looking statements are made only as of the date of this document. We do not undertake to update or revise the forward-looking statements, whether as a result of new information, future events or otherwise.