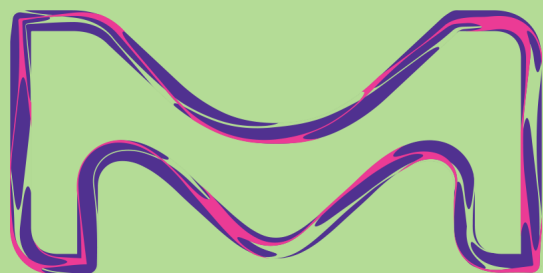


capital Markets Day 2019

Meet Management

Stefan Oschmann, CEO
Marcus Kuhnert, CFO

Darmstadt – September 11, 2019





Disclaimer

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This communication may include “forward-looking statements.” Statements that include words such as “anticipate,” “expect,” “should,” “would,” “intend,” “plan,” “project,” “seek,” “believe,” “will,” and other words of similar meaning in connection with future events or future operating or financial performance are often used to identify forward-looking statements. All statements in this communication, other than those relating to historical information or current conditions, are forward-looking statements. We intend these forward-looking statements to be covered by the safe harbor provisions for forward-looking statements in the Private Securities Litigation Reform Act of 1995. These forward-looking statements are subject to a number of risks and uncertainties, many of which are beyond control of Merck KGaA, Darmstadt, Germany, which could cause actual results to differ materially from such statements.

Risks and uncertainties include, but are not limited to: the risks of more restrictive regulatory requirements regarding drug pricing, reimbursement and approval; the risk of stricter regulations for the manufacture, testing and marketing of products; the risk of destabilization of political systems and the establishment of trade barriers; the risk of a changing marketing environment for multiple sclerosis products in the European Union; the risk of greater competitive pressure due to biosimilars; the risks of research and development; the risks of discontinuing development projects and regulatory approval of developed medicines; the risk of a temporary ban on products/production facilities or of non-registration of products due to non-compliance with quality standards; the risk of an import ban on products to the United States due to an FDA warning letter; the risks of dependency on suppliers; risks due to product-related crime and espionage; risks in relation to the use of financial instruments; liquidity risks; counterparty risks; market risks; risks of impairment on balance sheet items; risks from pension obligations; risks from product-related and patent law disputes; risks from antitrust law proceedings; risks from drug pricing by the divested Generics Group; risks in human resources; risks from e-crime and cyber attacks; risks due to failure of business-critical information technology applications or to failure of data center capacity; environmental and safety risks; unanticipated contract or regulatory issues; a potential downgrade in the rating of the indebtedness of Merck KGaA, Darmstadt, Germany; downward pressure on the common stock price of Merck KGaA, Darmstadt, Germany and its impact on goodwill impairment evaluations as well as the impact of future regulatory or legislative actions.

The foregoing review of important factors should not be construed as exhaustive and should be read in conjunction with the other cautionary statements that are included elsewhere, including the Report on Risks and Opportunities Section of the most recent annual report and quarterly report of Merck KGaA, Darmstadt, Germany. Any forward-looking statements made in this communication are qualified in their entirety by these cautionary statements, and there can be no assurance that the actual results or developments anticipated by us will be realized or, even if substantially realized, that they will have the expected consequences to, or effects on, us or our business or operations. Except to the extent required by applicable law, we undertake no obligation to update publicly or revise any forward-looking statement, whether as a result of new information, future developments or otherwise.

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Agenda

1

Group

Entering the Growth & Expansion Phase

2

Healthcare

Fully leveraging pipeline potential

3

Life Science

Sustaining profitable above-market growth

4

Performance Materials

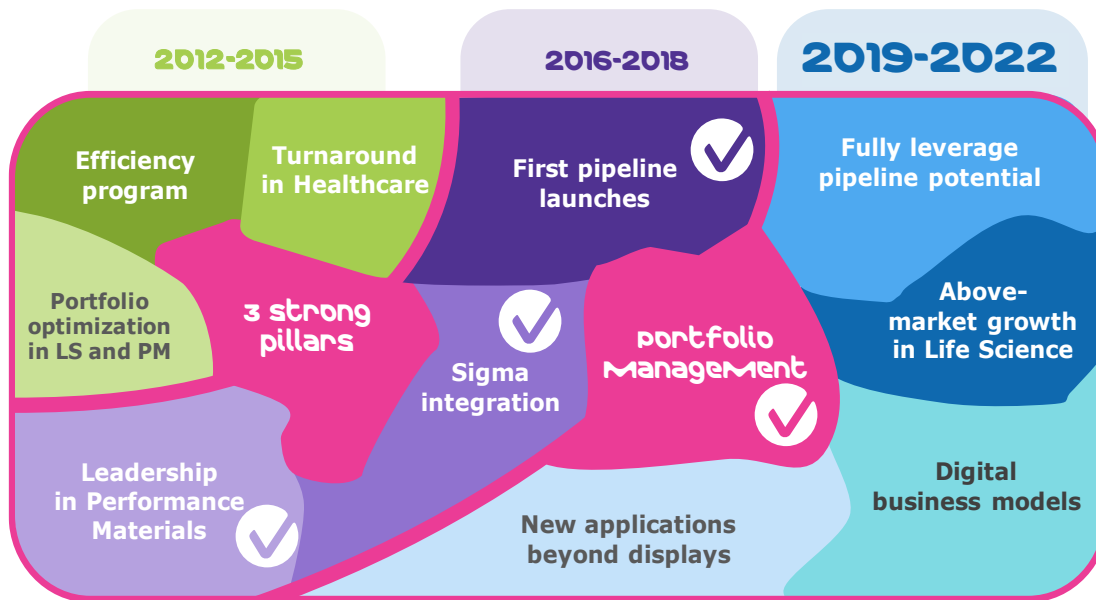
On track towards a Bright Future

5

Conclusions and Take-aways

Group

Entering the Growth & Expansion Phase



Group:

Sustainable profitable growth and regular portfolio evaluation



Healthcare:

Fully leveraging pipeline potential



Life science:

Sustaining above-market growth



Performance Materials:

On track towards a Bright Future



On track to deliver on the growth phase of the 2016-2022 strategic agenda

Group

2019 – Delivering on the commitment to quality growth¹



Group

Net sales:

Organic +3% to +5% YoY
FX ~ 0% to +2% YoY
~ € 15.3 – 15.9 bn

EBITDA pre:

Organic +10% to +13% YoY²
FX 0% to +2% YoY
~ € 4,150 – 4,350 m³

EPS pre:

~ € 5.30 – 5.65



Healthcare

- Solid organic growth of +4% to +6%
- Base business at least stable organically
- Strong contributions from launches including Mavenclad[®]



Life Science

- Organic growth +7% to +8%, above expected market growth
- Main growth driver Process Solutions but all businesses contributing



Performance Materials

- Organic decline -4% to -7%
- LC resuming decline, following temporary capacity ramp-up in China
- Economic environment may lead to moderate decline in Semiconductor, return to growth in 2020

Group

2020 and beyond – Growth amid a challenging macro-economic environment





Agenda

- 1 Group**
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- 2 Healthcare**
Fully leveraging pipeline potential
- 3 Life Science**
Sustaining profitable above-market growth
- 4 Performance Materials**
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Healthcare – Fully leveraging pipeline potential

Delivering on key strategic priorities for 2019 and beyond

Presented at
CMD 2018



Transition from investment to earnings phase by 2019



Deliver on ambition to keep core business at least stable until 2022



Foster successful Bavencio[®] and Mavenclad[®] ramp up



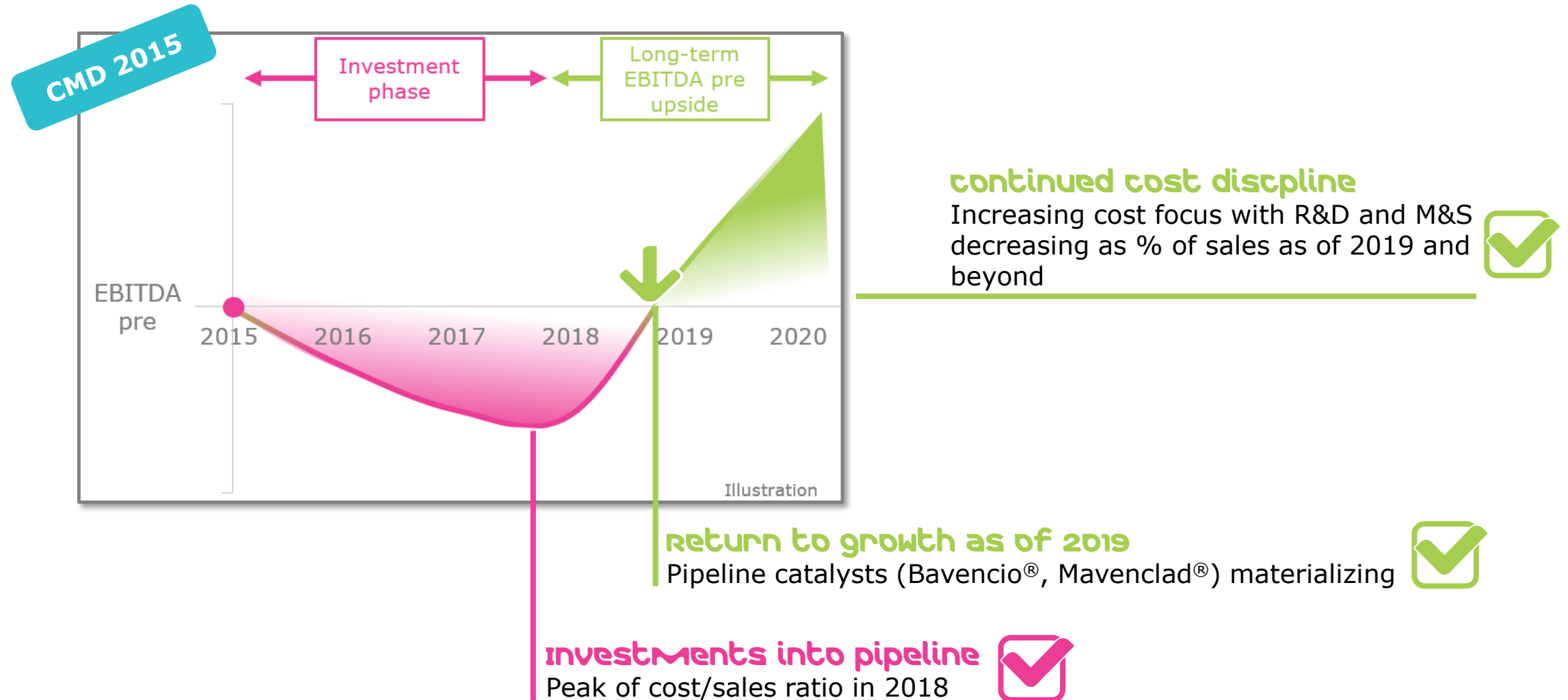
Follow stringent pipeline execution



Stay on track for €2 bn pipeline sales ambition



2019 – Starting to reap the fruit of the investment phase



Healthcare

Geographical expansion & life cycle management driving sustainable and profitable growth of General Medicine and Fertility business

Org. YoY +27% 

- **Increasing prevalence of diabetes** (x2 in last 30 years)¹
- **Continuous roll-out of pre-diabetes** (50 approvals)



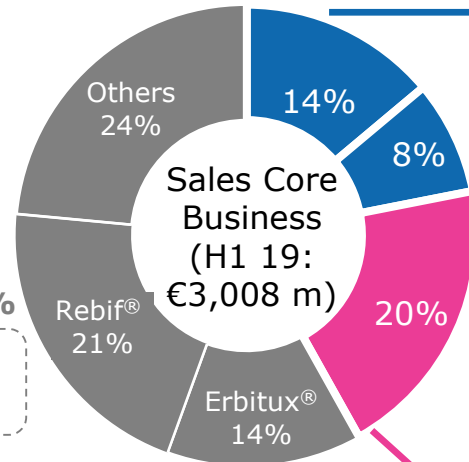
Org. YoY: +10% 

- Cardiovascular diseases **# 1 cause of death**²
- **Increasing prevalence of hypertension**³
- **Continuous roll-out of Concor® AM**



Org. YoY: +6% **Fertility portfolio**

- **Growth across all geographies and products** (Cycles 2017-2023: +~10% CAGR⁴)
- **Sustainable growth through innovation** (e.g. Pergoveris® pen) and 360 degree portfolio



Org. YoY: +4%

Stable to slightly growing

Mid to high-single digit growth (incl. other⁵ GM&E products)

Mid-single digit growth

Org. YoY: -16%

Decline in line with interferon market

Expected development until 2022

Healthcare Mavenclad® continuing to make launch progress in 69 countries



Ex-USA

- **Approved in 69 countries** (reimbursed in ~50%)
- **Continuous improvement of clinical perception**¹
- **Increasing share of high-efficacy dynamic patients (new + switch) in major launch markets vs LY**
 - Germany: from 9% to 14% (Q1/18 vs Q1/19)²
 - UK: from 8% to 20% (Q1/18 vs Q1/19)³
- **Increasing use in earlier lines of therapy**



USA

Approved on March 29, 2019

- **Positive, early payer acceptance:**

~190M lives with no
NDC block

100% = total
USA population

- **Leading share of voice**⁴
- **~ 86% of neurologists willing to prescribe**⁵
- **Broad spectrum of early adopters**⁶
- **Mavenclad® with ~ 7% of high efficacy dynamic share**⁷ (new + switch, RRMS and active SPMS, May to July)



On track for up to mid-triple digit €m sales in 2019

Healthcare IO –TKI rapidly being established as standard of care in advanced RCC



Regulatory Achievements



Approved by **US FDA** for 1L treatment of advanced Renal Cell Carcinoma (RCC) on May 15, 2019



Submitted to **Japanese authorities** in January 2019

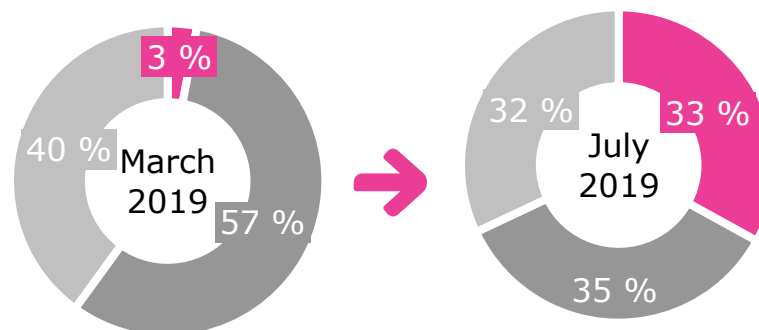


Validated by **EMA** in March 2019



USA – Commercial Update¹

1L New Patient Share¹:



- **Leveraging Pfizer's heritage and commercial strength** in advanced RCC
- **IO-TKI established as the leading class** in 1L mRCC, with all other classes declining¹
- **Bavencio®-Inlyta®** establishing itself with **~13% share** of growing IO-TKI class²

■ IO-TKI ■ Others ■ IO-IO



Remaining Phase III Trials³

2019

November:
Gastric 1L

2020

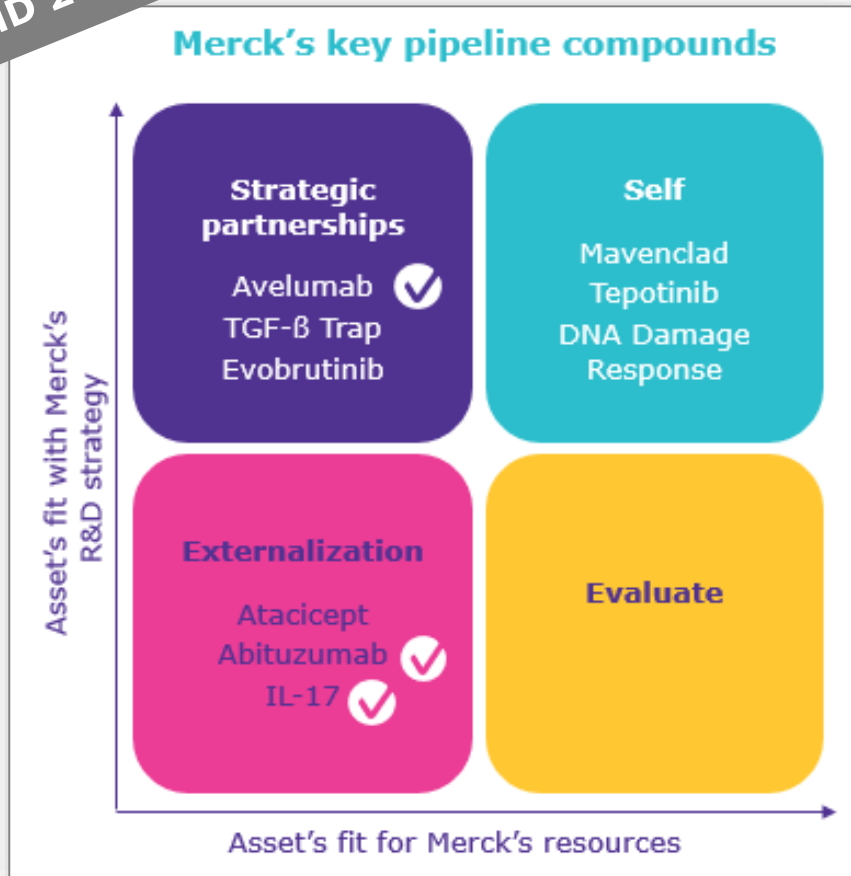
June:
Urothelial 1L
NSCLC 1L

2021

Locally advanced head & neck

Delivering on pipeline strategy for value maximization

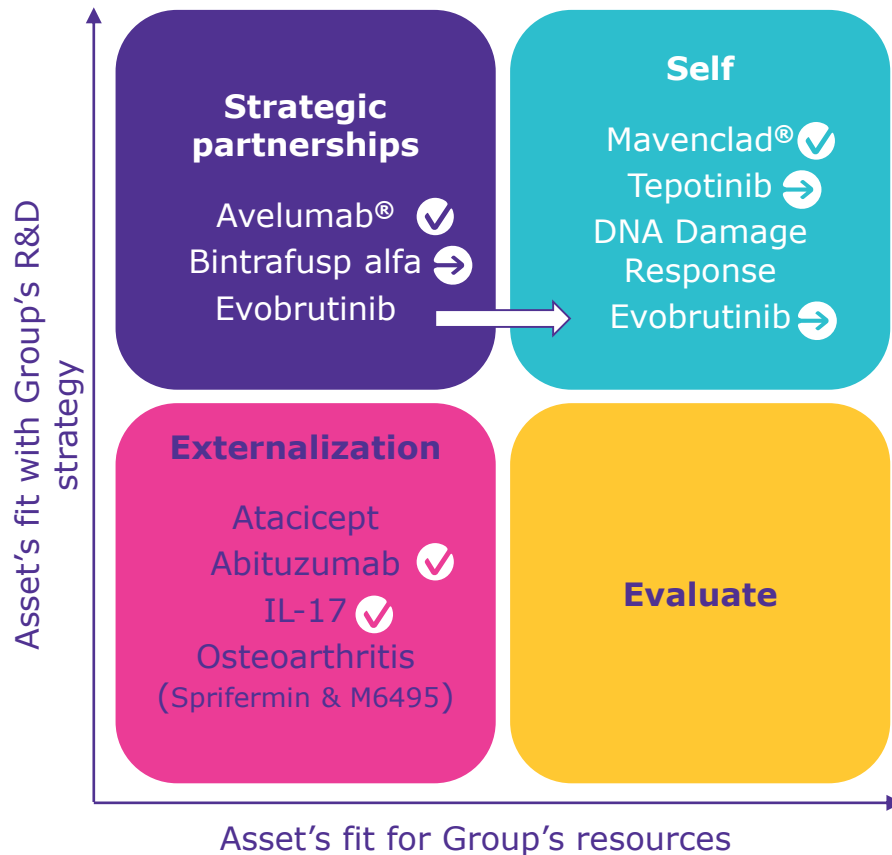
CMD 2018



Delivering on pipeline strategy for value maximization

2019 UPDATE

Merck KGaA, Darmstadt, Germany's key pipeline compounds



- ✓ Approved/launched OR successfully externalized
- Significant progress

Progress – Past 12 months



Strategic Partnerships

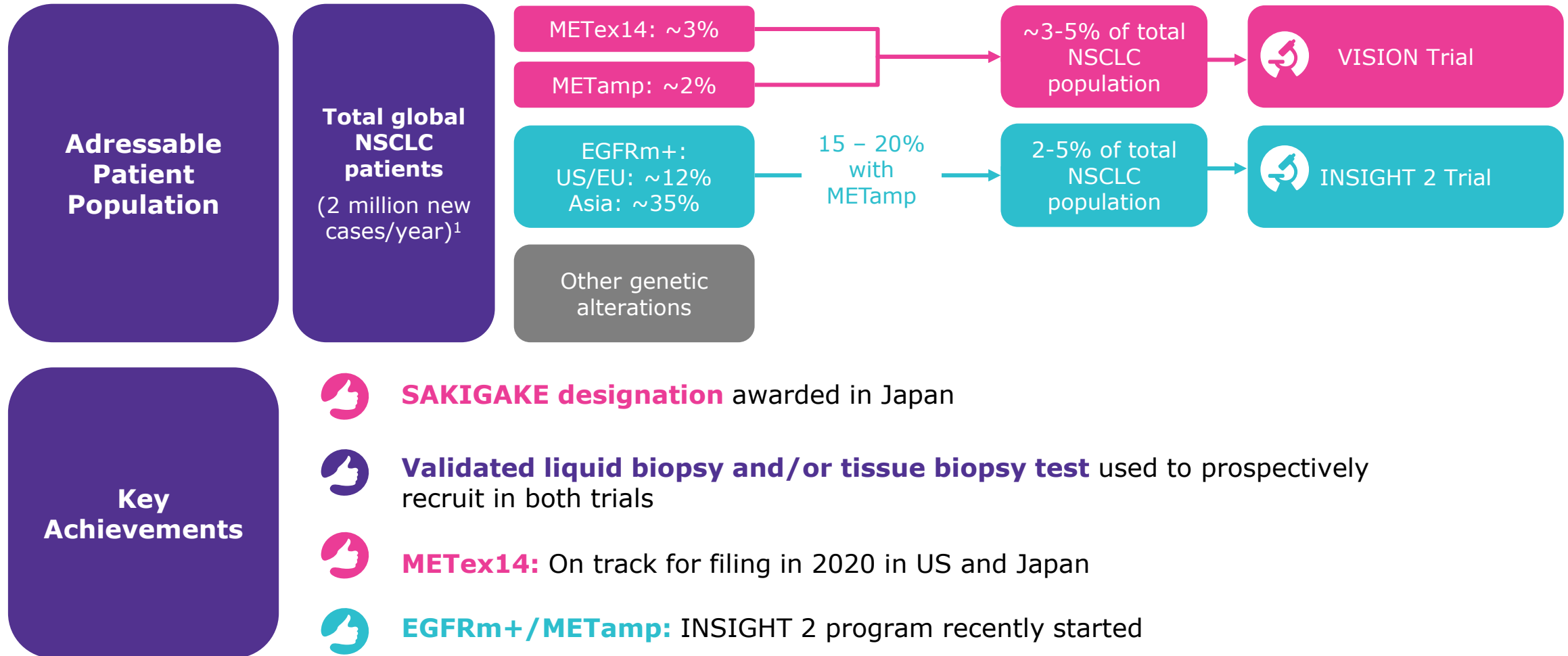
- **Avelumab®:** Approved for treatment of **advanced RCC**
- **Bintrafusp alfa:** **Global strategic alliance with GlaxoSmithKline** announced on February 5, 2019



Self

- **Mavenclad®:** **Approved and launched** in the USA
- **Tepotinib:** **Filing as of 2020** in Japan and USA
- **Evobrutinib:** Progressed to **Phase III (MS)**

Tepotinib - Significant developmental progress over past months



Bintrafusp alfa - Driving a paradigm shift in the treatment of cancer

strong partner

Alliance with
GlaxoSmithKline
announced on
February 5, 2019



Attractive deal terms

- Total deal value of €3.7 bn
- Upfront payment of €300 m



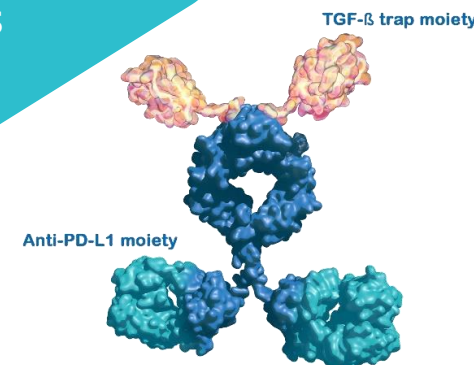
First-in-class bi-functional
fusion protein **leading the TGF- β**
immuno-oncology field



Great excitement in IO
community about bintrafusp alfa
uniquely addressing TGF- β biology
widely accepted as key resistance
factor for anti-PDx therapies

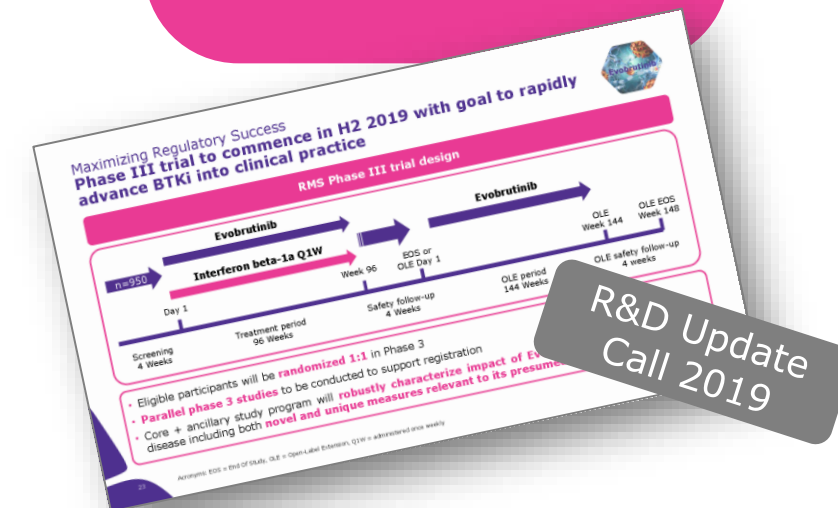
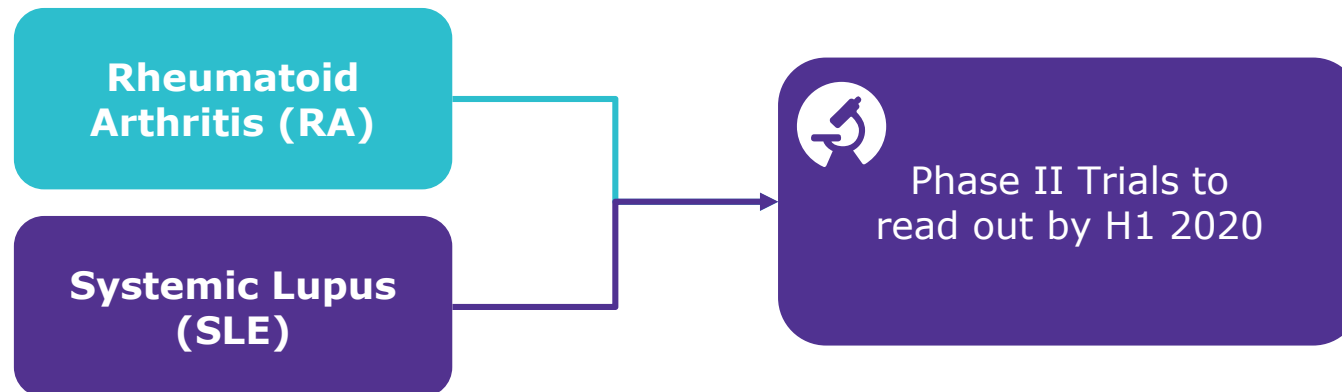
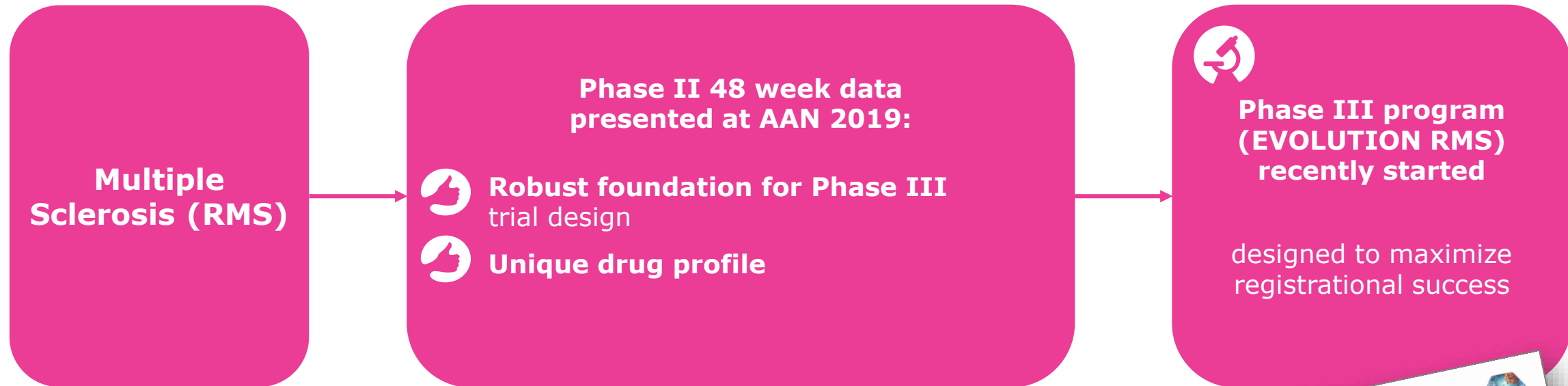
comprehensive clinical program

- **Orphan Drug Designation**
granted for Biliary Tract
Cancer (BTC) in late 2018
- **Four Phase II studies**
successfully initiated, and
**1L BTC study recently
posted**
- Additional studies to be
announced in upcoming
months



Healthcare Evobrutinib – First BTK-inhibitor to show clinical proof-of-concept in RMS¹

 Follow stringent
pipeline execution



Mavenclad® and Bavencio® launches on track for €2 bn ambition

ILLUSTRATIVE
Not to scale

€2 bn in 2022



Tepotinib • Filing in Japan and USA as of 2020

- FY2019E: high double digit €m (H1 2019: €45 m)
- Approved for aRCC (USA), mMCC (50 countries incl. USA and EU), and UC 2L (USA, Canada, Israel)
- Several Phase III trial read outs remaining¹

Bavencio®

- Approved in 69 countries, including USA, EU, Canada and Australia
- FY2019E: up to mid-triple digit €m (H1 2019: €105 m)

Mavenclad®

- Global peak sales: €1–1.4 bn



Agenda

- 1** **Group**
Entering the Growth & Expansion Phase
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- 3** **Life Science**
Sustaining profitable above-market growth
- 4** **Performance Materials**
On track towards a Bright Future
- 5** **Conclusions and Take-aways**

Life Science - Sustaining profitable above-market growth

Delivering on key strategic priorities for 2019 and beyond

**Presented at
CMD 2018**



Maintain consistent above-market growth trajectory and superior profitability



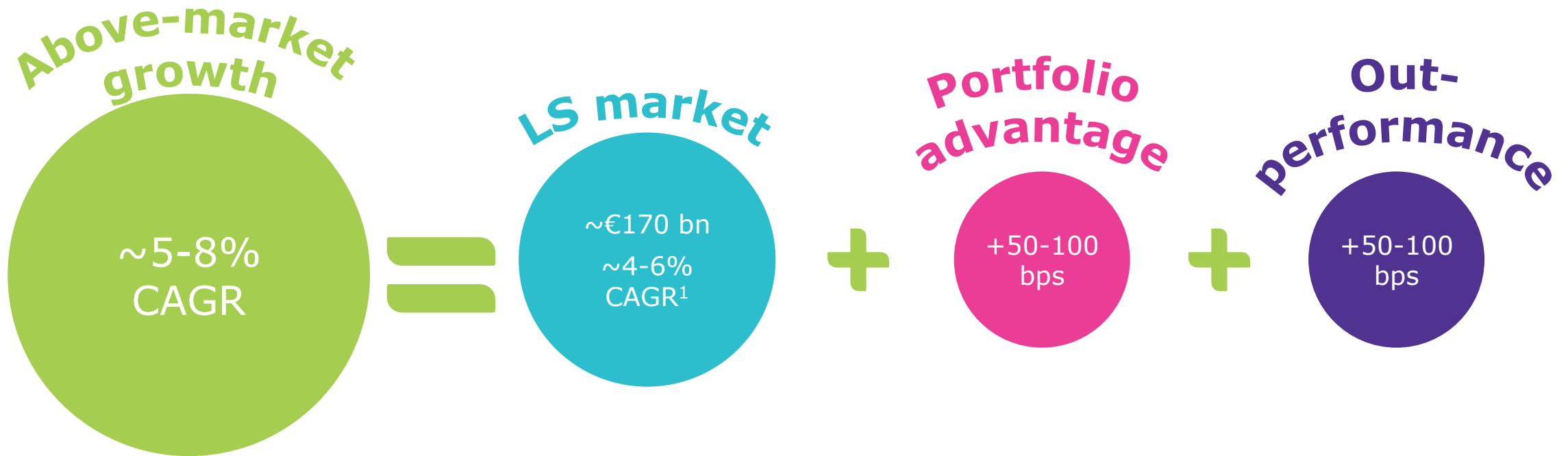
Strengthen position as differentiated player in a highly attractive market



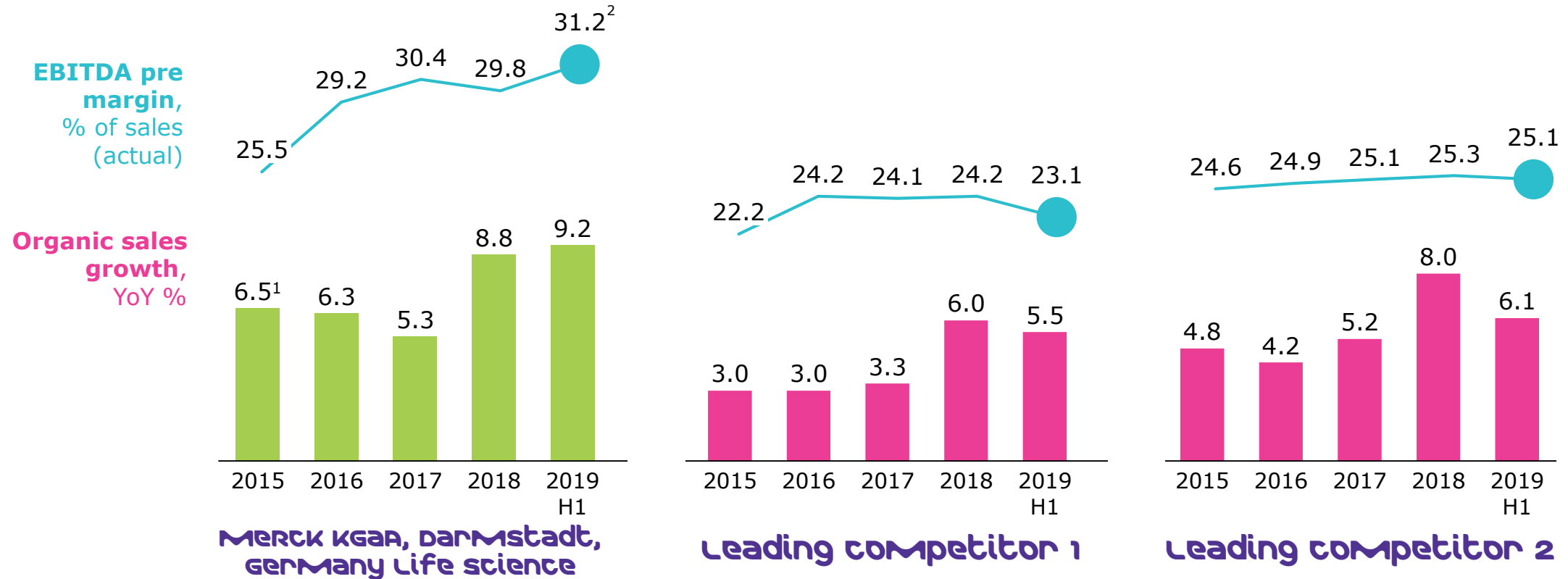
Implement dynamic strategy for future profitable growth



Above-market growth continues to be driven by portfolio focus



We continue to set the benchmark for industry performance



Objective

- ➔ Grow **above market**
- ➔ Maintain **industry-leading profitability** with 20-30 bps underlying margin progression
- ➔ Sustain **leading market position**

The Life Science market is driven by distinct sustainable trends

- Increase in **NIH Funding and Pharma R&D**^{1,2}
- Increase in **novel technologies**³
- Increase in **research outsourcing**⁴
- Increase in **biologics pipeline**⁵
- More **novel modalities** (>30% CAGR)
- Greater **production outsourcing**⁶
- Higher **Drug standards** (e.g. in China)⁷
- Tighter **F&B regulations** (e.g. US FSMA⁸)
- More **novel assays/diagnostics**



Research

~€45-50 bn
~2-3% CAGR⁹



Process

~€55-60 bn
~8% CAGR⁹



Applied

~€60-65 bn
~4-5% CAGR⁹



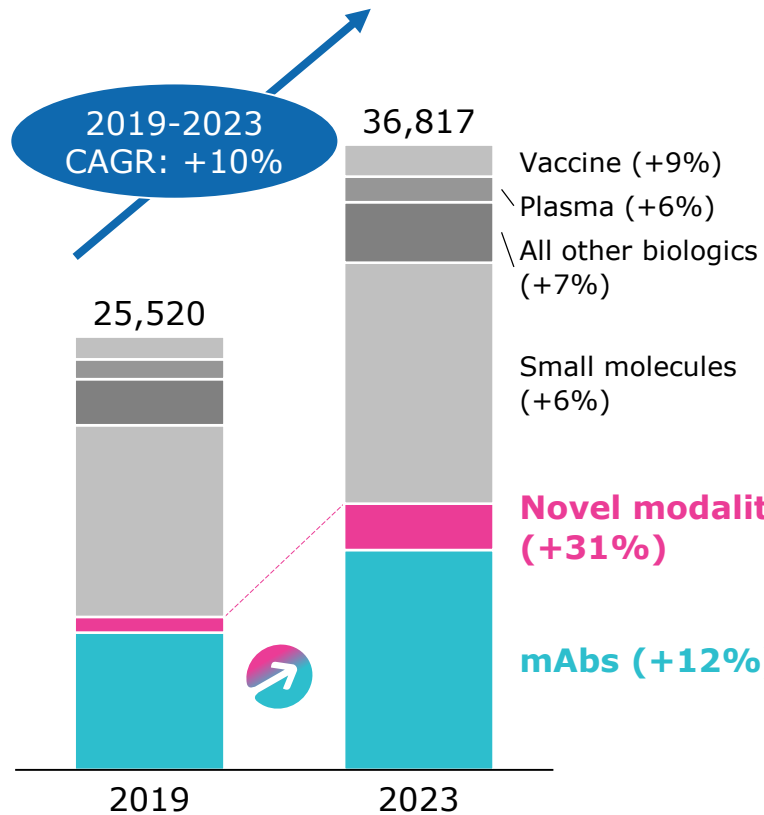
Life Science market

~€170 bn, ~4-6% CAGR¹⁰

Process Solutions: Growth opportunities beyond mAbs

Strengthen position as differentiated player in a highly attractive market

Growth potential by segment Accessible market [€m], 2019-2023 CAGR¹



- **Diversifying products and services** in line with the new modalities coming to the market: fusion biologics, viral and gene therapies, cellular therapies
- **Leading technologies:** investments over 15 years, 20 granted CRISPR patents
- **Services:** investments in CDMO capacity for Viral Vector Manufacturing, and HP-API
- **Leading technologies:** Single Use and BioContinuum™ for intensified and continuous bioprocessing
- **Services:** Contract manufacturing for biotechs at 3 global sites

Growth market - China



- **Half of world-wide early stage mAb market** by 2022
- **A leading country** in clinical trials
- **Increased investments** into Nantong and Wuxi manufacturing sites
- **China's first BioReliance® End-to-End Biodevelopment Center** opened in Shanghai in 2017

Life Science

Investing into innovation for future profitable growth

New product sales doubled in the past 5 years



External recognition



2018: Excellence in innovation Parateck® MXP Excipient & modified amino acid



2019: Exhibitor Award for Best New Product (Pellicon® Capsule with Ultracel® Membrane)

2018: Exhibitor Award for Best Technological Innovation (Millistak+® HC Pro portfolio)



2018: BioReliance® Viral & Gene Therapy Assay Portfolio & Proxy-CRISPR Technology

2018: Corporate Social Responsibility

2017: Sanger Arrayed Lentiviral CRISPR Libraries

Life Science

Leveraging both organic and inorganic levers for growth

Organic – Global capacity expansion

Asia: e.g. manufacturing and distribution centers in South Korea, China and India (2018)

North America: e.g. BioReliance® End-to-End Biodevelopment Center in Burlington, USA (2018)

Europe: e.g. M Lab™ Collaboration Center in Molsheim, France (2019)



Inorganic – Transformative M&As and bolt-ons for strategic growth

2010: **Millipore** (US\$7 bn)

2015: **Sigma-Aldrich** (US\$17 bn)

2017: **BioControl** – Food Safety Testing

...

Strategic alliances – Exploring novel growth opportunities

- **Broad Institute (MIT and Harvard)** (2019) – accelerating access to CRISPR intellectual property for research
- **TRANSVAC2 (part of EU's Horizon 2020)** (2019) – advancing vaccine development and manufacturing
- **GenScript** (2019) – accelerating Cell and Gene Therapy industrialization in China

Life Science

Strengthening the #1 eCommerce site in Life Science through increased agility and greater customer-centricity





Implement dynamic strategy for future profitable growth



Best-in-class
eCommerce



Continued enhancements driven by focus on ...

-  **Content** – Informative content with easy access
-  **Geographic fit** – Tailored to local preferences
-  **Scalability** – Best-in-class site
-  **Connectivity** – Enabling dialogue within the scientific community

Leading
Life Science
website



- >€1.5 bn sales
- >420 million annual page views
- Rated **#1 website for traffic**¹



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Performance Materials - On track towards a Bright Future

Delivering on key strategic priorities for 2019 and beyond

Presented at
CMD 2018



Deliver on growth ambition of 2-3% CAGR



Ensure efficient resource allocation to reach financial ambition of ~30% margin



Implement 5-year transformation program



To complete the acquisition of Versum Materials

UPDATE



Performance Materials

Back to growth as a leader in electronic materials

Portfolio management driving capital allocation

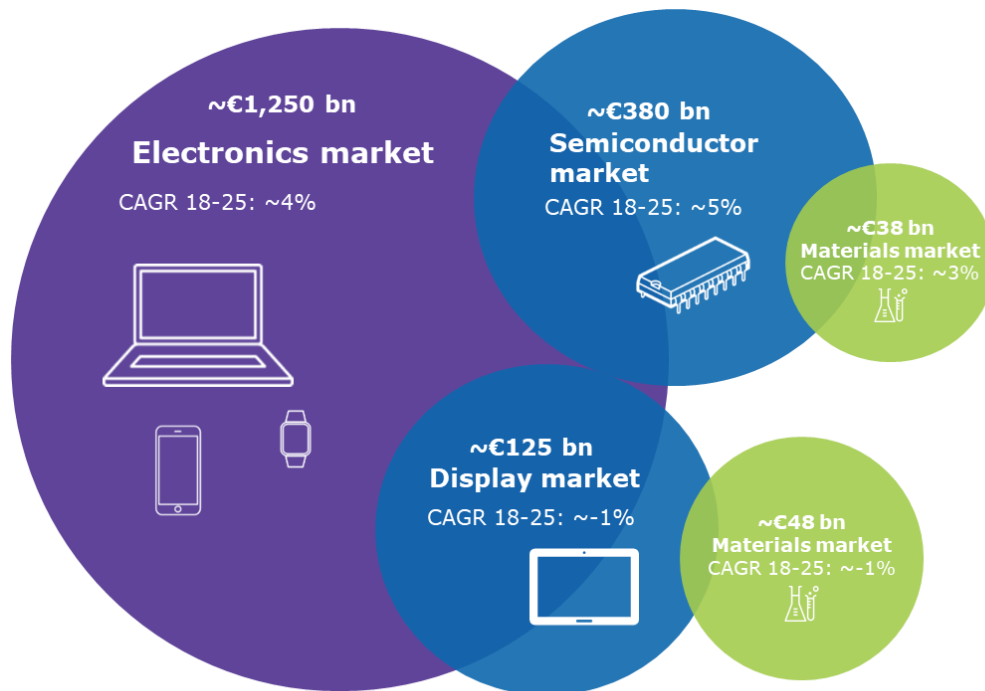
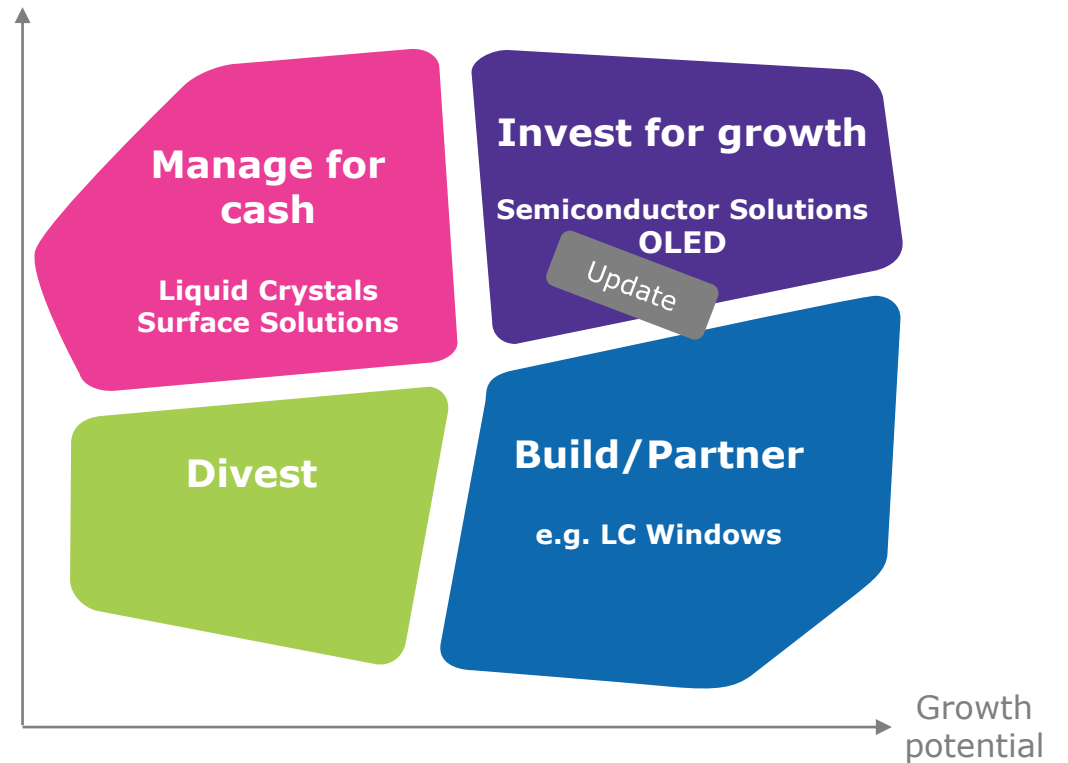


Illustration of the electronics market and thereof its selected sub markets

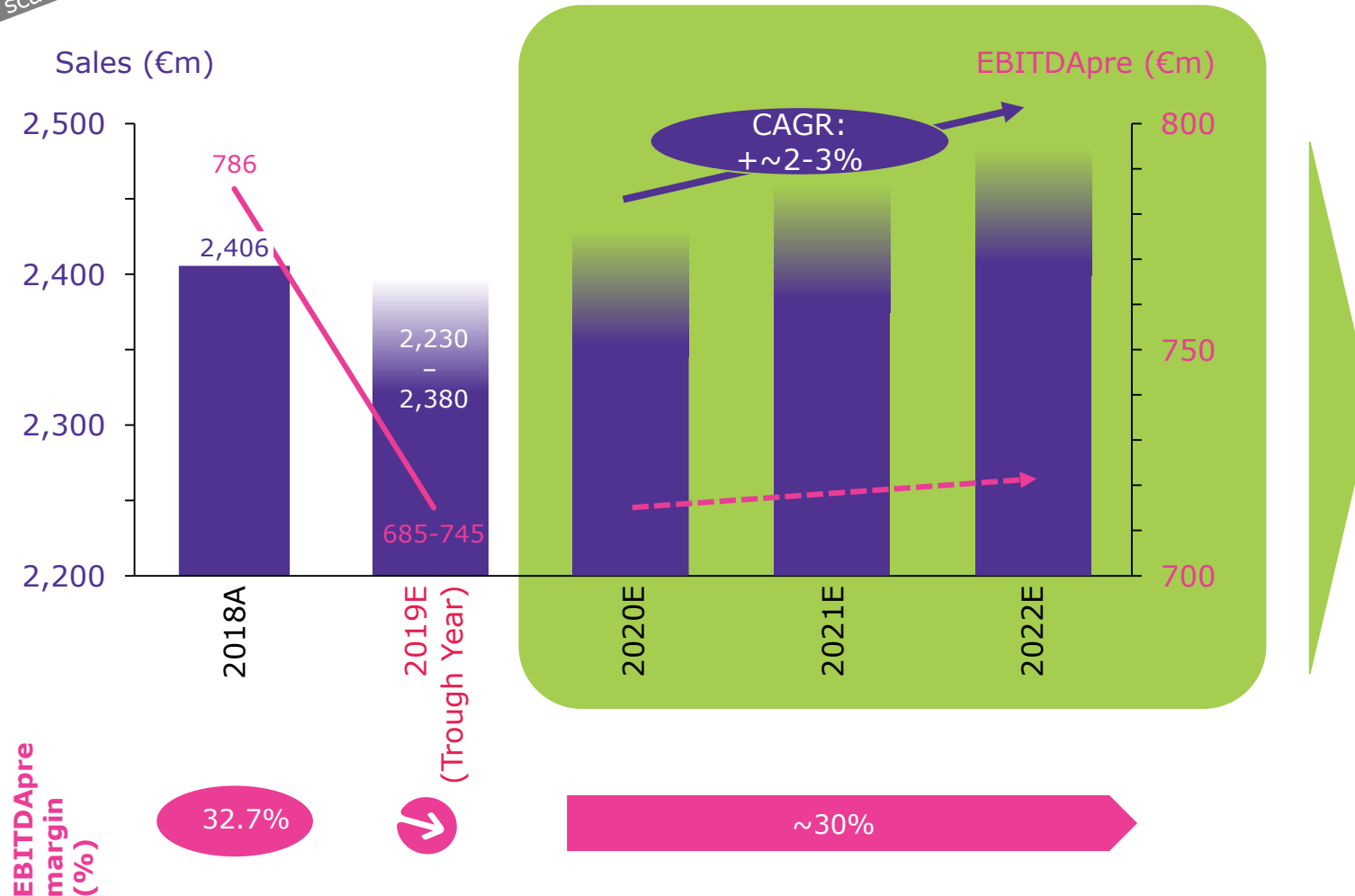
Profitability



Performance Materials

We expect the business to return to organic growth as of 2020

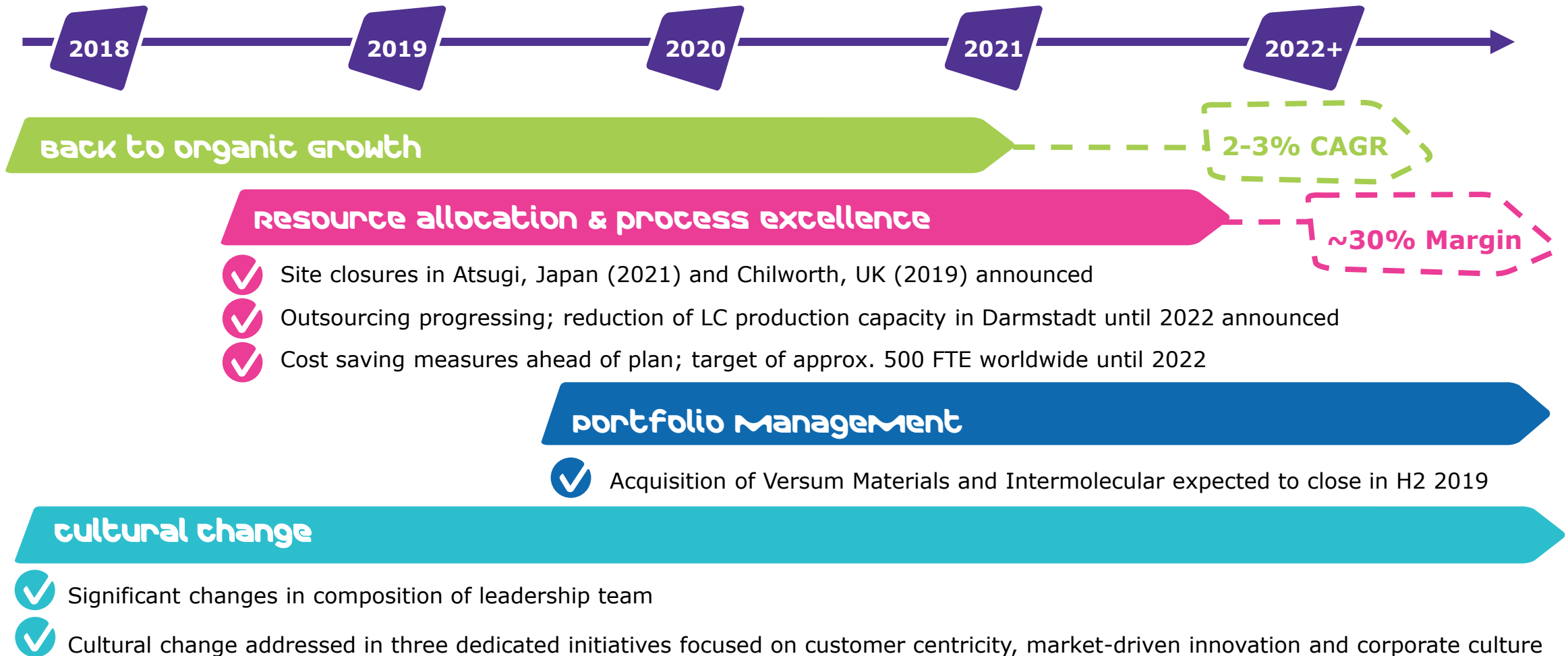
ILLUSTRATIVE
Not to scale



Contribution by business

- Semiconductor Solutions**
Mid- to high-single digit growth
- Surface Solutions**
Low single digit growth
- Display Solutions**
Low single digit decline
 - OLED ↗
 - LC ↘

Performance Materials 5-year transformation program Bright Future is well on track

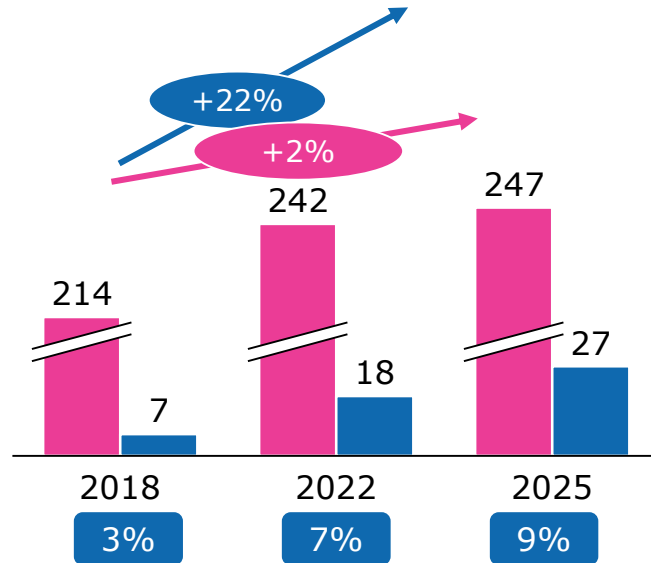


Performance Materials

Display Solutions - OLED material market to exceed LC material market by 2022

■ Liquid Crystals ■ OLED

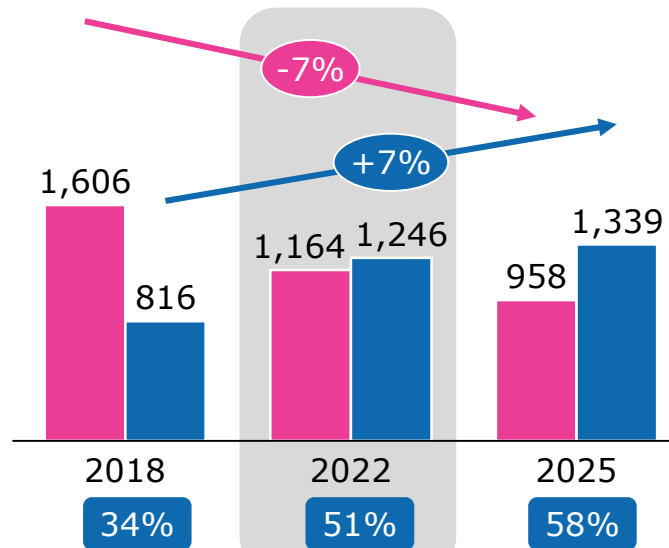
Display shipment area¹
[km²]



- **Continued growth** across all technologies
- **OLED growing faster than LCD**, but **LCD to command 90+% area share** for foreseeable future

x% OLED shipment area / addressable material market [in % of total]

Addressable material market²
[€m]



- **Material value** per OLED display **higher** than in LCD
- **OLED material market to exceed LC material market by 2022**, but market split between **many more players**

Portfolio Role

Manage for cash

Liquid Crystals
Surface Solutions



Invest for growth

Semiconductor Solutions
OLED

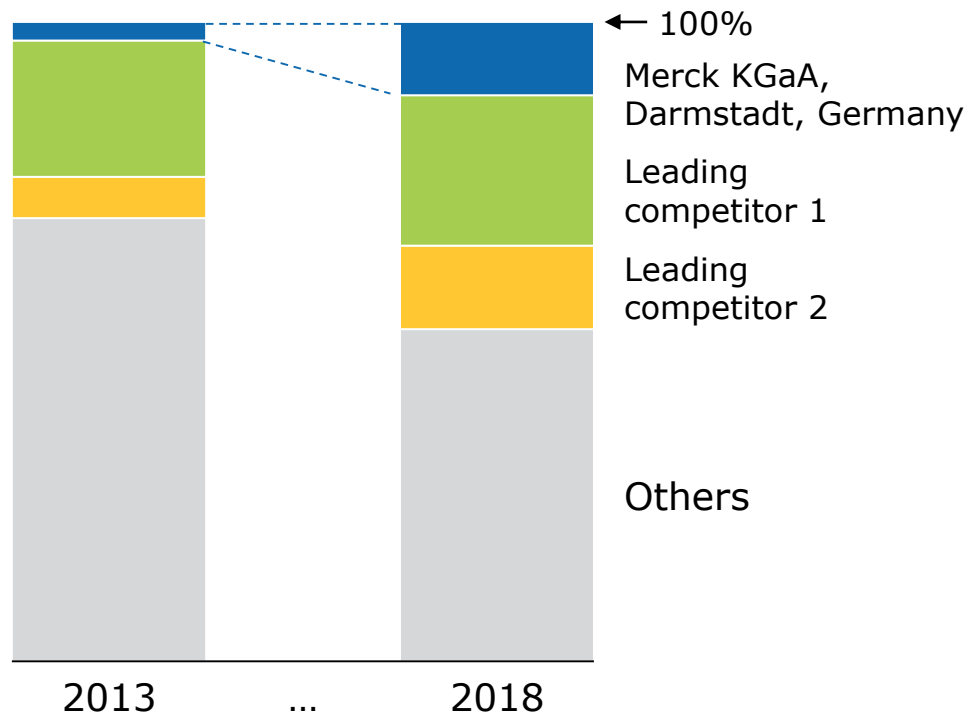


Performance Materials

OLED – A major driver of topline growth with significant potential

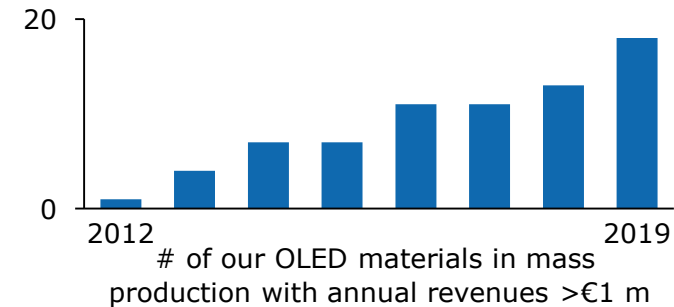


Market share (value) nearly quadrupled in 5 years¹



Maintaining global top 3 position through ...

Continuous portfolio development:



Strategic partnerships:



Proximity to the customer:

- 2015: Opening of **OLED development center Korea**
- 2018: Opening of **OLED technology center China**
- 2018: Strategic cooperation with **important Chinese customer**

Performance Materials

Investing for Growth – Acquisitions of Versum Materials and InterMolecular expected to close in H2 2019



**Regulatory
clearances on
track**



- Merger clearances received¹:

- Further required regulatory clearances ongoing and **on track**



**Financing
secured**



- All cash proposal at US\$ 53 per Versum Materials share, 13.7x2019 E EV/EBITDA multiple
- **Fully financed**: Term loan, Hybrid bond, EUR bond



**Day 1
readiness
ensured**



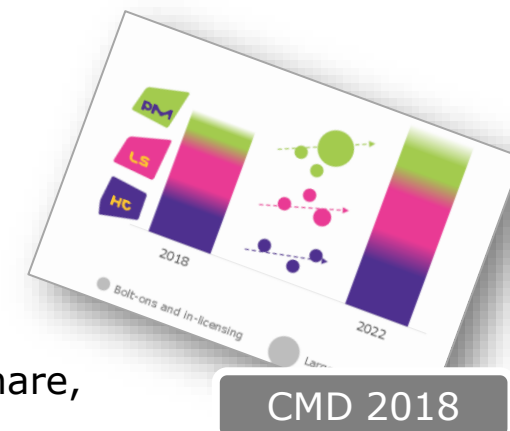
- **Integration planning** (incl. Announcement of Integration Planning Organization) kicked off shortly after signing, and **on track**
- Various town halls held by Performance Materials CEO across Versum sites in the USA
- Post-close L1 structure defined and announced



**M&A with
strategic fit**



- A **leading position in advanced materials innovation**
- Acquisition to strengthen semiconductor technology offering
- Application specific **materials expertise that perfectly complement** our business and technology portfolio
- Regulatory clearance ongoing and **on track**



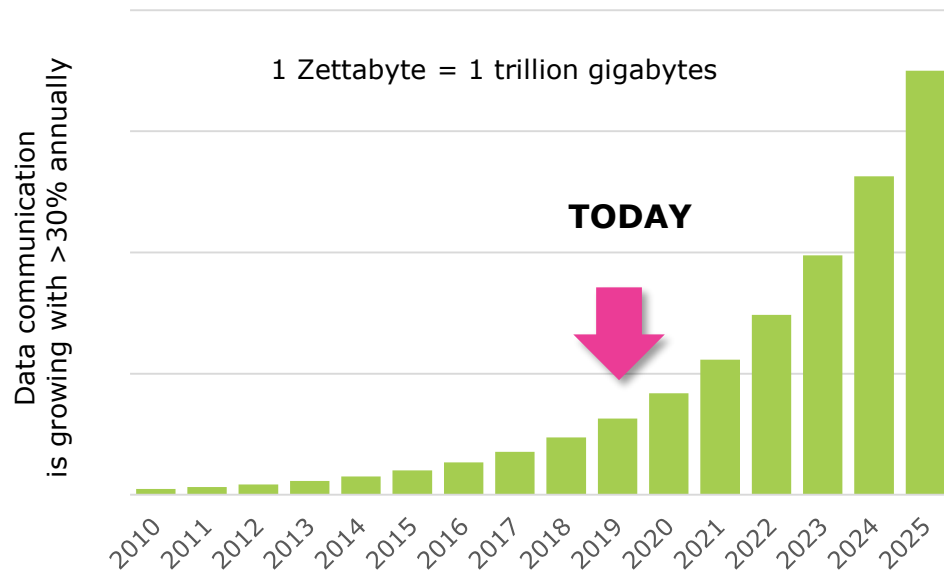
INTERMOLECULAR®

Performance Materials

Semiconductor Solutions – Data explosion driving secular growth

End-market – Data driving growth of electronics industry¹

Size of global data sphere in zettabytes¹



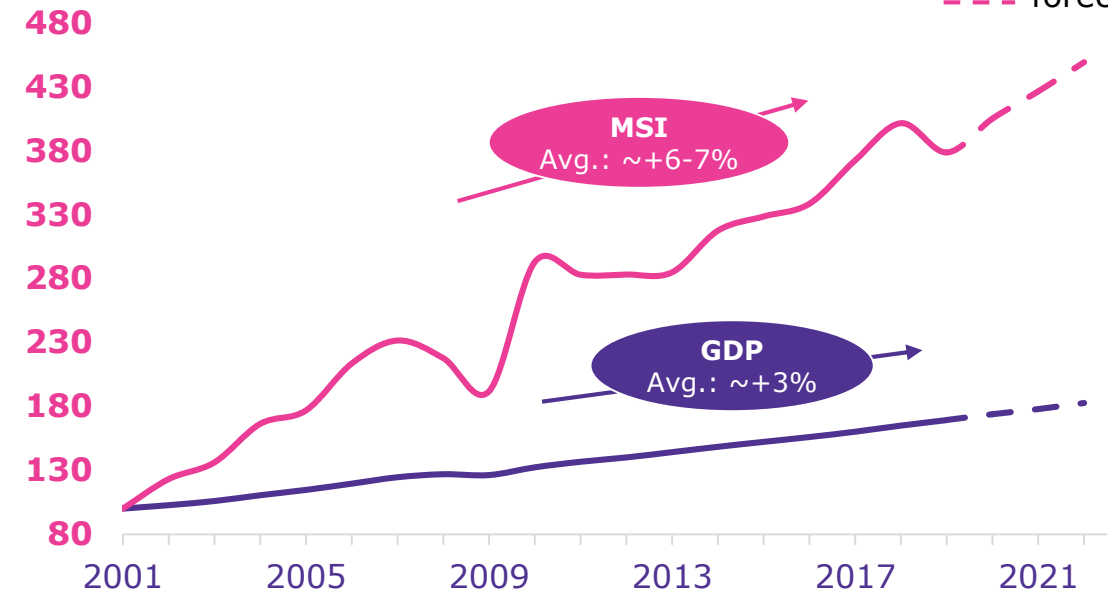
- Data **volumes growing at >30% annually**
- **Driving the digital revolution** as semiconductors are required for data processing and storage

Silicon wafer area shipments– Sustainable long-term growth²

Silicon wafer area shipments (MSI) growth
[indexed in 2001 = 100]

GDP growth
[indexed in 2001 = 100]

--- forecast



- Silicon wafer area shipments (MSI) **strongly correlated with semiconductor market growth**
- **MSI expected to return to growth as of 2020**



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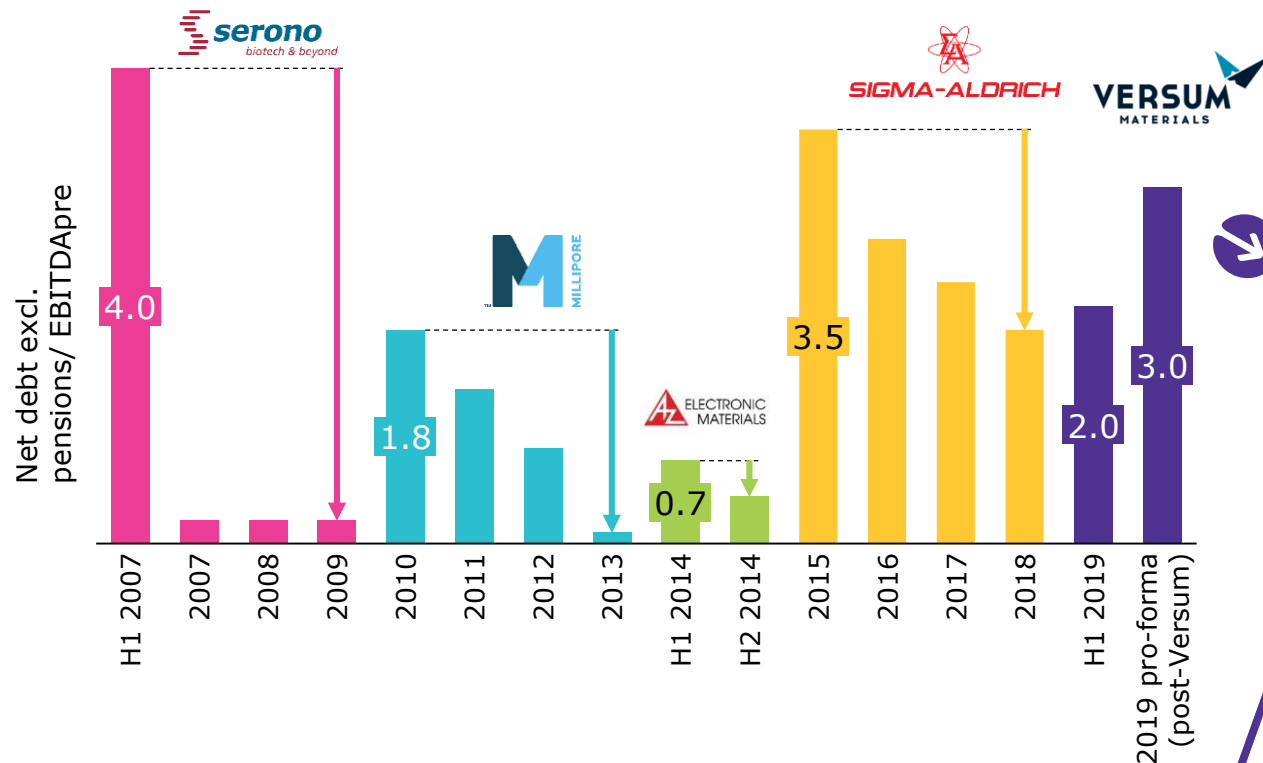
On track towards a Bright Future

5

Conclusions and Take-aways

Group

Continued focus on deleveraging post major M&A activity



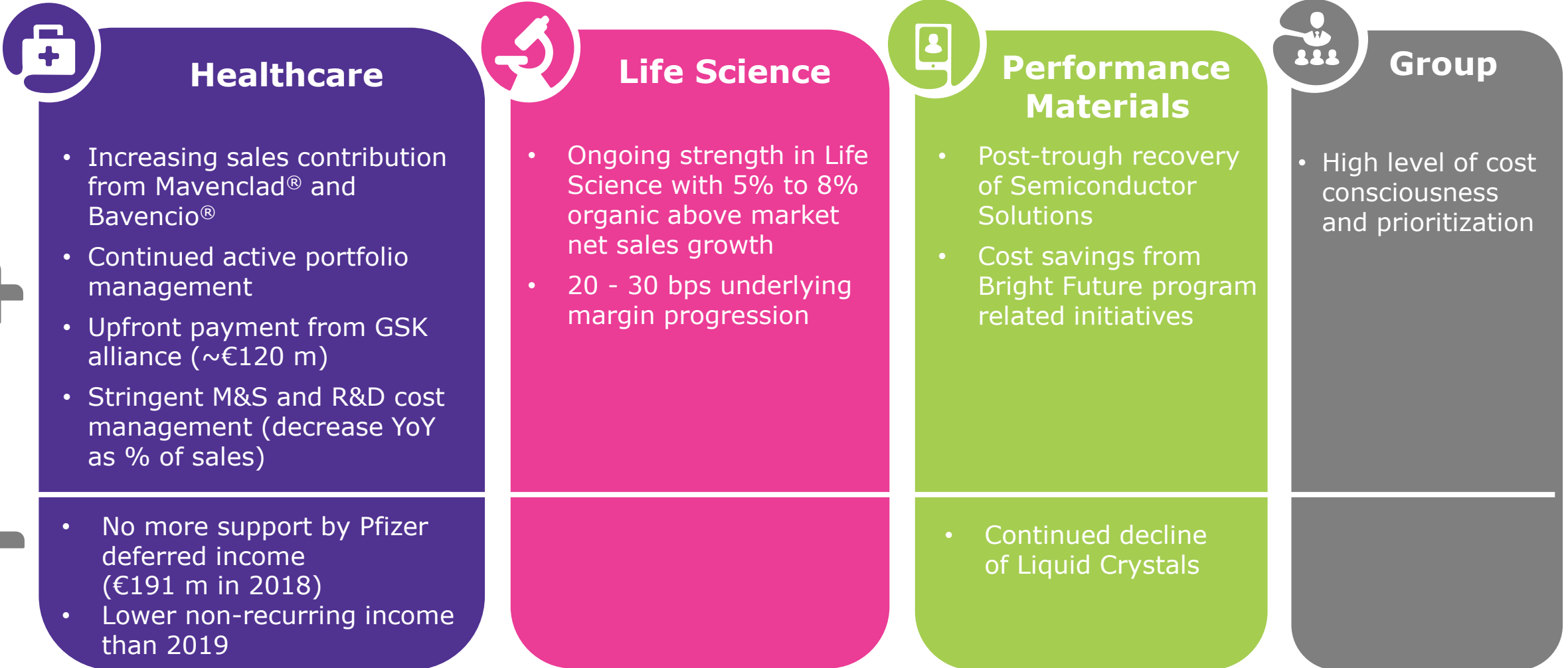
Strong track record of swift deleveraging after major acquisitions

Future cash-generation will drive deleveraging going forward:

- **EBITDA progression:**
 - **HC:** New products & increased cost focus
 - **LS:** Continued growth & margin progression
 - **PM:** Return to growth with leaner cost base
- **Capex discipline**
(mid-term ceiling at €1.2 bn)
- **Continued working capital management**
- **Increasing level of scrutiny on cash-outs from exceptionals**

Group

Key earnings drivers (EBITDApre) to remember for 2020



Group Executive Summary



Group:

Entering the **profitable growth and expansion phase** of our 2016 – 2022 strategic agenda



Healthcare:

Reaping the **fruit of the investment phase**, while keeping the base business at least stable, driving growth and managing costs



Life science:

Sustaining **profitable above-market growth** strategy through portfolio focus, customer-centric services and innovation



Performance Materials:

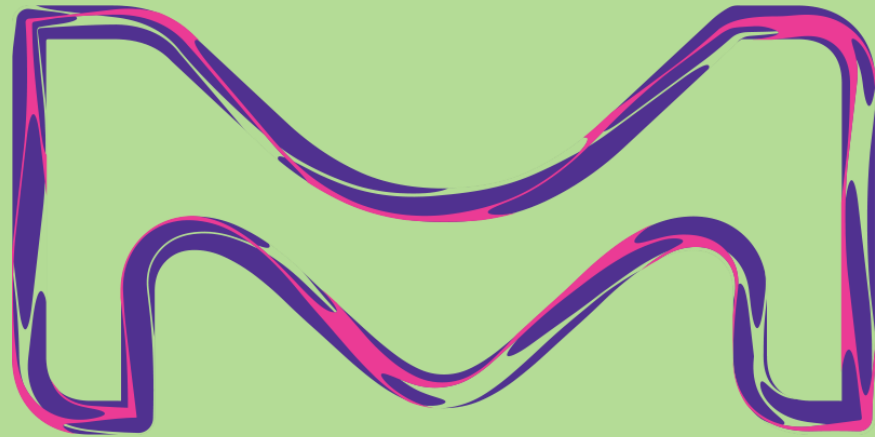
Transitioning from trough-year to **mid-term growth trajectory** supported by roll-out of Bright Future program



MERCK KGAA, DARMSTADT, GERMANY –
steady earnings growth at high
margins and a low risk profile



Q&A





References & Footnotes

References and footnotes

Slide 5:

1: Merck KGaA, Darmstadt, Germany stand-alone, i.e. without acquisition of Versum Materials and Intermolecular Inc.; 2: Incl. ~€130 m YoY contribution from adoption of IFRS 16 (Healthcare ~40%, Life Science ~40%, PM ~10%, CO ~10%); 3: CO guidance 2019: -€420 m to -€480 m (assuming FX adjusted CO costs -€390 m to -€400m); Acronyms: LC = Liquid Crystals

Slide 10:

1: IDF Diabetes Atlas, 8th Edition; 2: [https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-\(cvds\)](https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds)); 3: Journal of American College of Cardiology (JACC): confirming the increased prevalence of hypertension; 4: Allied Market Report 2018; 5: Others = Euthyrox® and Saizen®, part of GM&E business; Acronyms = GM&E = General Medicine & Endocrinology

Slide 11:

1: Global MAVENCLAD ATU; 2: IQVIA LRx data, consolidated retail + hospital data; 3: IQVIA HMSL data; 4: IQVIA/BrandImpactRx Report, rolling 3 months end July 2019; 5: Spherix Global Insights RealTime Dynamix – MS Q2/19; 6: MSLifelines Service Request Forms, IQVIA Claims data, Global ATU Q2, 2019; 7: Source: IQVIA/BrandImpactRx Report, rolling 3 months end July 2019, 17 weeks post approval; Acronyms: HE = High Efficacy, NDC = National Drug Code, RRMS = Relapsing-Remitting Multiple Sclerosis, SPMS = Secondary Progressive MS

Slide 12:

1: BrandImpact Rx - 1L New Patient Start Share, Rolling 3 Months Ending July 2019, decline since Q1 2019 (VEGF mono, IO-IO); 2: BrandImpact Rx – 1L New Patient Share Monthly, Rolling 8 Weeks; 3: Dates shown refer to estimated primary completion date as per www.clinicaltrials.gov; Acronyms: EMA = European Medicines Agency, FDA = Food and Drug Administration; IO = Immuno-Oncology, mRCC = Metastatic Renal Cell Carcinoma, TKI = Tyrosine Kinase Inhibitor, VEGF = Vascular Endothelial Growth Factor

Slide 14:

Acronyms: MS = Multiple Sclerosis, RCC = Renal Cell Carcinoma

Slide 15:

1: Bray F, et al. CA Cancer J Clin. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. 2018;68(6):394–424. <https://doi.org/10.3322/caac.21492> PMID:30207593; Acronyms: EGFR =Epidermal Growth Factor Receptor, METamp = MET-amplified, NSCLC = Non-Squamous Non-Small Cell Lung Cancer

Slide 16:

Acronyms: TNBC = Triple-Negative Breast Cancer

References and footnotes

Slide 17:

1: Motalban et al., "Efficacy and Safety of the Bruton's Tyrosine Kinase Inhibitor Evobrutinib (M2951) in Patients with Relapsing Multiple Sclerosis over 48 Weeks", presented at AAN 2019; Acronyms: AAN = American Academy of Neurology; BTK = Bruton's Tyrosine Kinase; RMS = Relapsing Multiple Sclerosis

Slide 18:

Acronyms: aRCC = advanced Renal Cell Carcinoma, mMCC = metastatic Merkel Cell Carcinoma; UC = Urothelial Carcinoma; JP = Japan; 1: Dates shown refer to estimated primary completion date as per www.clinicaltrials.gov

Slide 21:

1: Company estimate based on industry forecast over 5 year horizon

Slide 22:

1: 6.5% for EMD Millipore; 6.0% for SIAL calculated from first 9 months of 2015; 2: excl. CO

Slide 23:

1: CAGR 2015-2019; 2: PhRMA members, CAGR 2013-2017; 3: CAGR 2014-2018 VC investment into platform technologies; 4: CAGR 2015-2022. Discovery outsourcing market; 5: CAGR through 2020, 6. CAGR 2016-2020; 7: International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use, 8: Food Safety Modernization Act implementation through 2024; 9: Total market CAGR; 10: Company estimate based on industry forecast over 5 year horizon; Acronyms: NIH = National Institutes of Health, US FSMA = FDA Food Safety Modernization Act

Slide 24:

1: Evaluate Pharma market research; Novel modalities include VGT, Cell Therapy and Stem Therapy; Acronyms: CDMO = Contract Development and Manufacturing Organization, CRISPR = Clustered Regularly Interspaced Short Palindromic Repeats, HP-API = Highly Potent Active Pharmaceutical Ingredients

Slide 25:

1: Launches from last 4+1 years excluding sales of year of launch

Slide 27:

1: Rated by external service SimilarWeb

Slide 31:

2019E bar height based on guidance mid-point

Slide 32:

Acronyms: LC = Liquid Crystals

References and footnotes

Slide 33:

1: IHS long term demand forecast Q1 2019; 2: Internal Business Intelligence; Acronyms: LCD = Liquid-Crystal Display, OLED = Organic Light Emitting Diode

Slide 34:

1: 2013 UBI Research, 2018 Internal business intelligence, Uncertainty Merck KGaA, Darmstadt, Germany Market Share: +-2%; Acronyms: OLED = Organic Light Emitting Diode

Slide 35:

1: In some countries, we have not received formal clearance but the waiting period has expired, satisfying the closing condition

Slide 36:

1: IDC DataAge 2025 Whitepaper; 2: SEMI Silicon Manufacturers Group; Semi.org; ESF July 2019; Prismark; Linx June/July 2019, Silicon wafer area shipments are for semiconductor applications only and do not include solar applications; Acronyms: GDP = Gross Domestic Product, MSI = Million of Square Inches