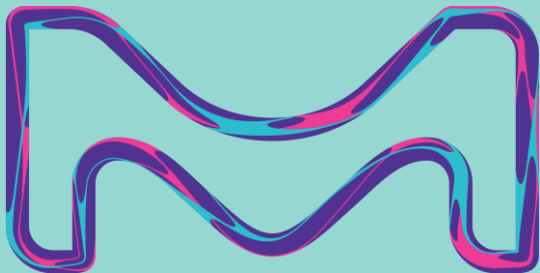


Merck  GaA, Darmstadt,
Germany

Q4 21 Roadshow

Kai Beckmann, CEO Electronics

March  2022



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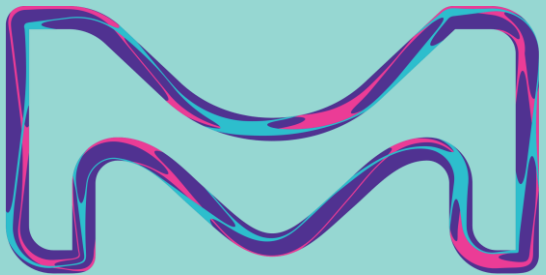


Agenda

- 01** Business overview
- 02** Transforming the company
- 03** Life Science – Rising to new heights
- 04** Healthcare – Focused leadership driving long-term growth
- 05** Electronics – Leveraging portfolio shift
- 06** Sustainability
- 07** Guidance & executive summary



BUSINESS OVERVIEW



Group

Leading positions in fastest growing science & technology markets



Group

Accelerated science & tech leadership driving growth

New Strategic Framework		
Direction	Mobilize for growth in the BIG3	Focus on profitable top line growth in BIG3
Frame	Accelerating science & technology leadership	Innovation as key driver for sustainable growth
Foundation	Focused & disciplined capital allocation	No "coffee for all" disciplined and focused investment in Enterprise Planning Units
Values	Continued long-term orientation & sustainability	Continued long-term focus as part of the DNA further reinforced by significant sustainability effort
Drivers	Agility, Diversity, Cost discipline	Strong, diverse, fast, agile & unbureaucratic; cost discipline in non-focus & support areas

Core pillars

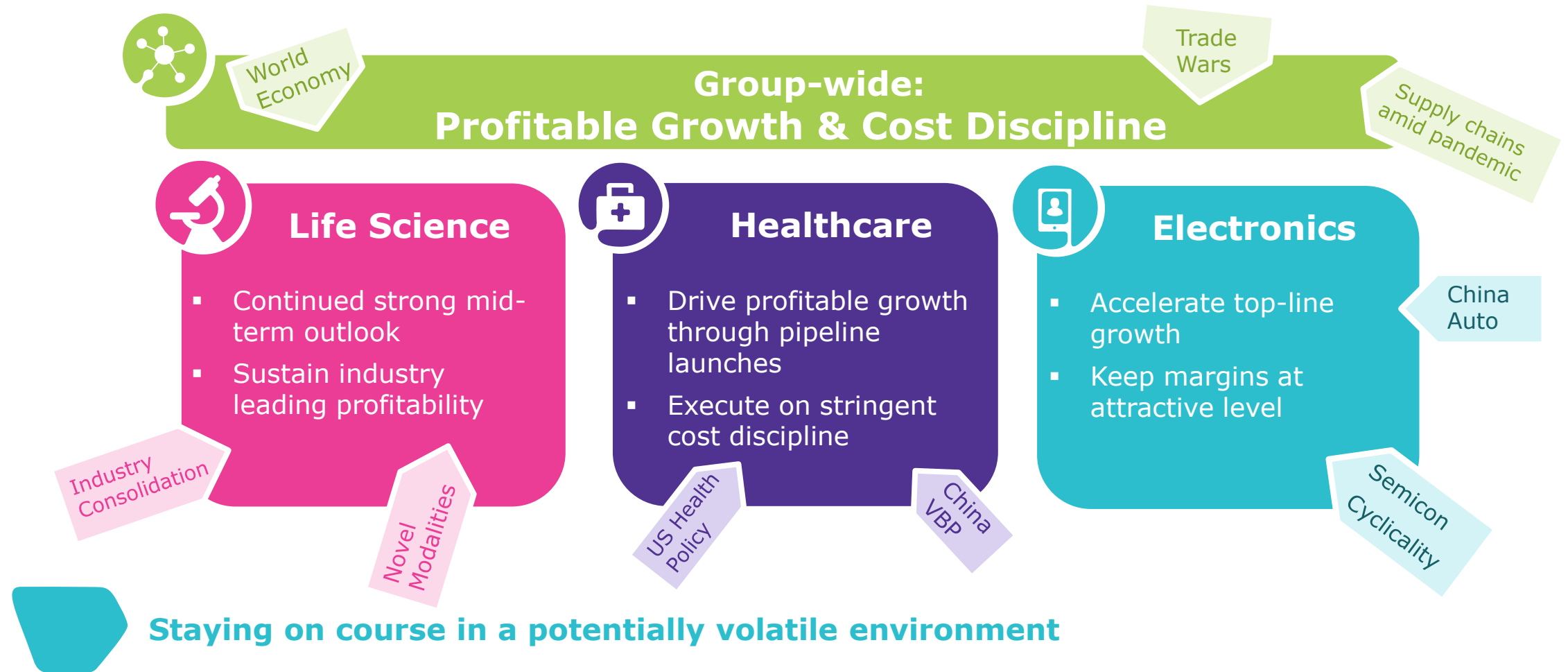
Supporting pillars

company innovation center darmstadt



Group

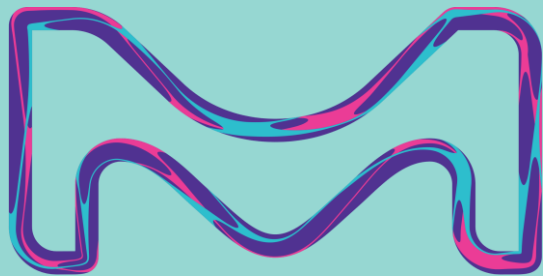
2021 and beyond – poised for growth in a challenging environment



Acronym: VBP = volume based procurement



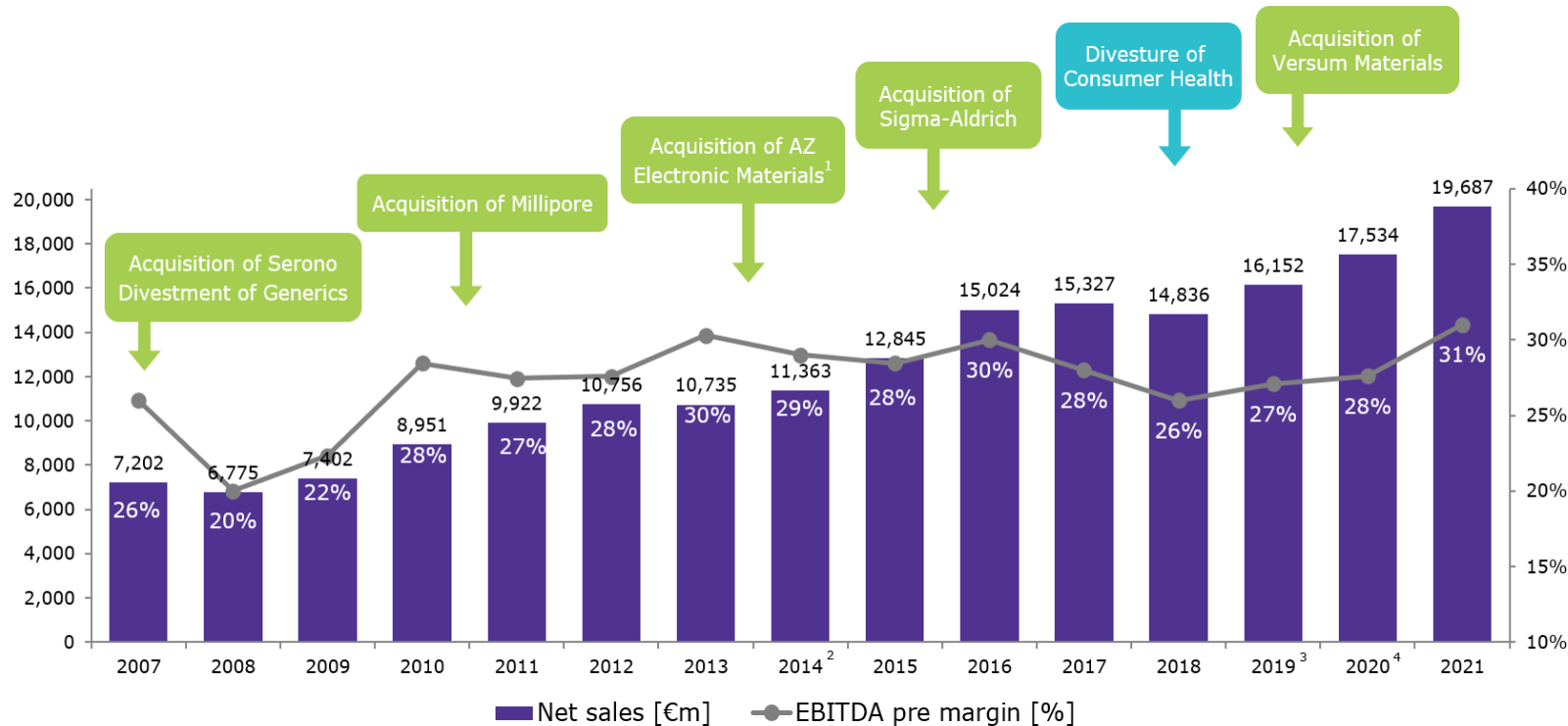
TRANSFORMING the company



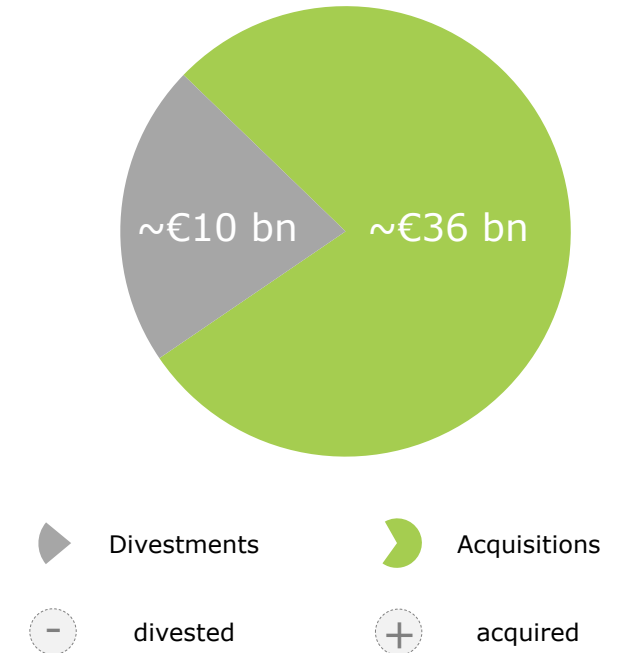
Group

Added scale and strengthened attractiveness of portfolio

Growth trajectory



Transformation volume⁵



¹Included since 2 May 2014; ²2007 and 2014 EBITDA pre margin adjusted for comparability; ³2018 net sales reflect Consumer Health divestiture (reduction of ~€1 bn net sales p.a.)
⁴2020 margin restated for €365 m patent litigation provision release; ⁵ 2007 - 2020



Group

Well positioned to win in high-growth focus areas

Global economy¹



Global GDP
~3% to 4%

End markets¹



Global pharma industry
~4% to 5%



Global life science industry
~5% to 7%



Global electronics industry
~4% to 5%

Focus market areas¹

Oncology ~9% to 12%
Neurology ~3% to 6%

Biologics >10%
Services >10%

Semiconductor materials
~5% to 7%

BIG3

New HC Products

Process Solutions

Semi Solutions

Σ ~4% to 6%

Σ 6% +

Uniquely positioned to address inevitable market trends
Diligent execution of **focused & disciplined investments** plan to **fuel BIG3 growth**

¹ Company estimates of mid-term growth outlook based on industry forecasts and reports from public research institutes (e.g. IMF, IQVIA, EvaluatePharma, Prismark, etc.)

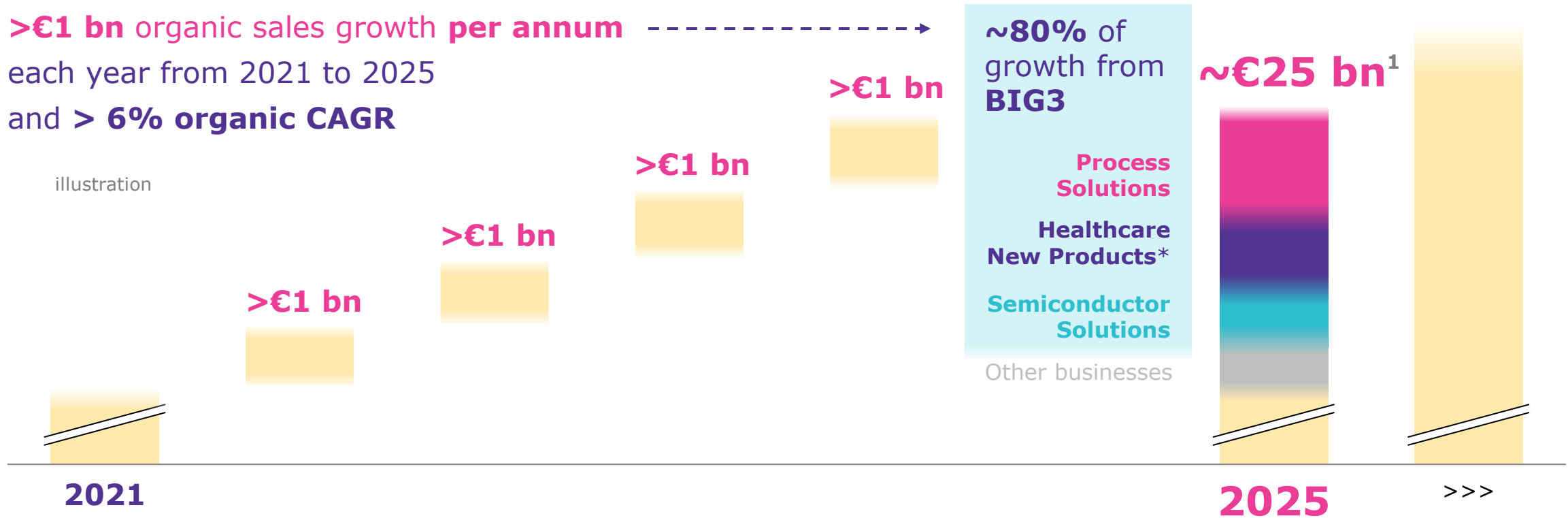


Group

#25by25: delivering €5 bn+ organic additional sales by 2025

>€1 bn organic sales growth per annum
each year from 2021 to 2025
and > 6% organic CAGR

illustration



▶ **Clear commitment to efficient growth**

1) including potential bolt-on M&A

*Updated scope: New Products consist of recent launches (Bavencio®, Mavenclad®, Tepmetko® MET-exon 14) and risk-adjusted launches to come until 2025

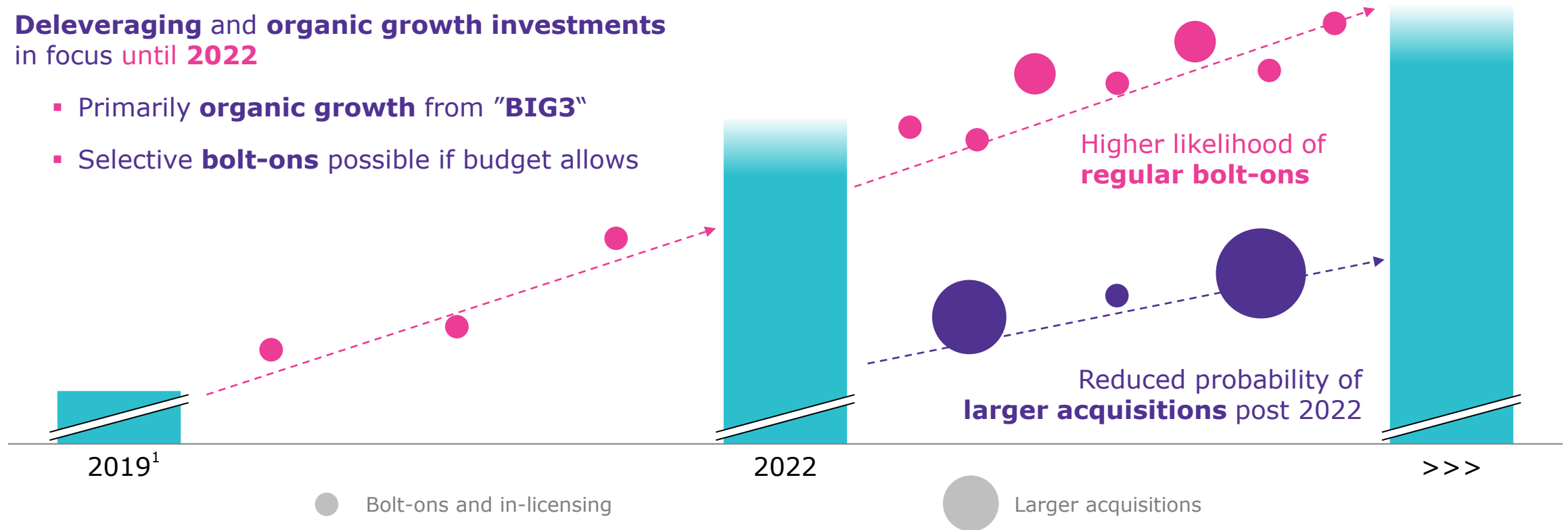


Group

Portfolio strategy – from transformation to evolution

Deleveraging and **organic growth investments**
in focus until **2022**

- Primarily **organic growth** from “**BIG3**”
- Selective **bolt-ons** possible if budget allows



> €1 bn organic sales growth per annum each year from 2021 to 2025

¹ 2019 Group sales of €16.2 bn

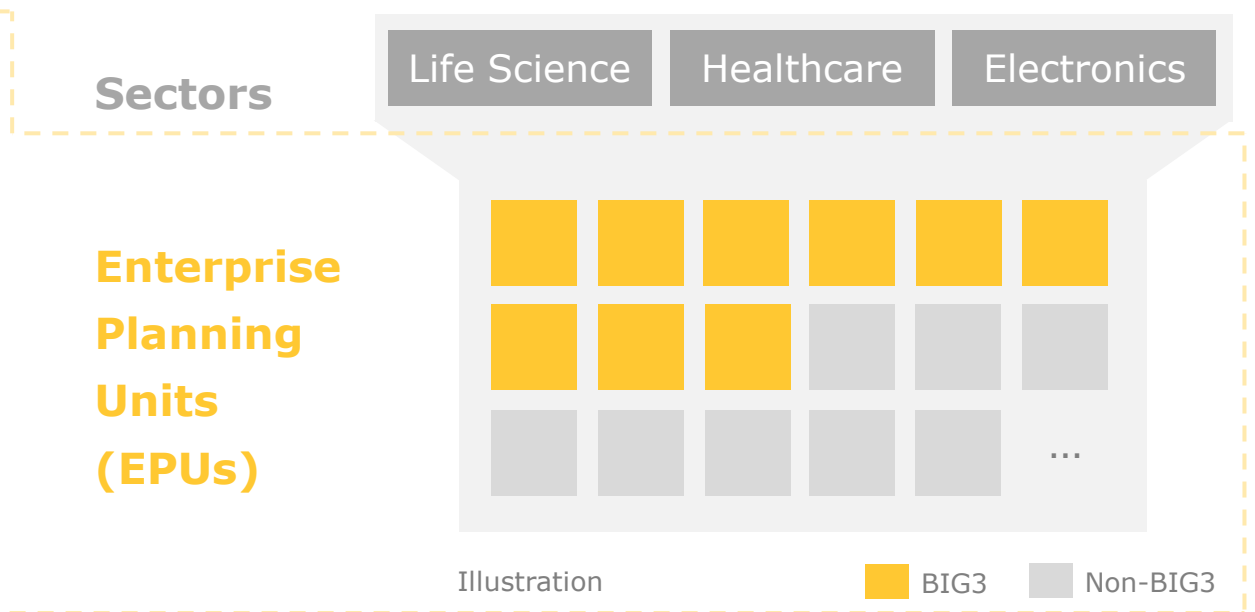
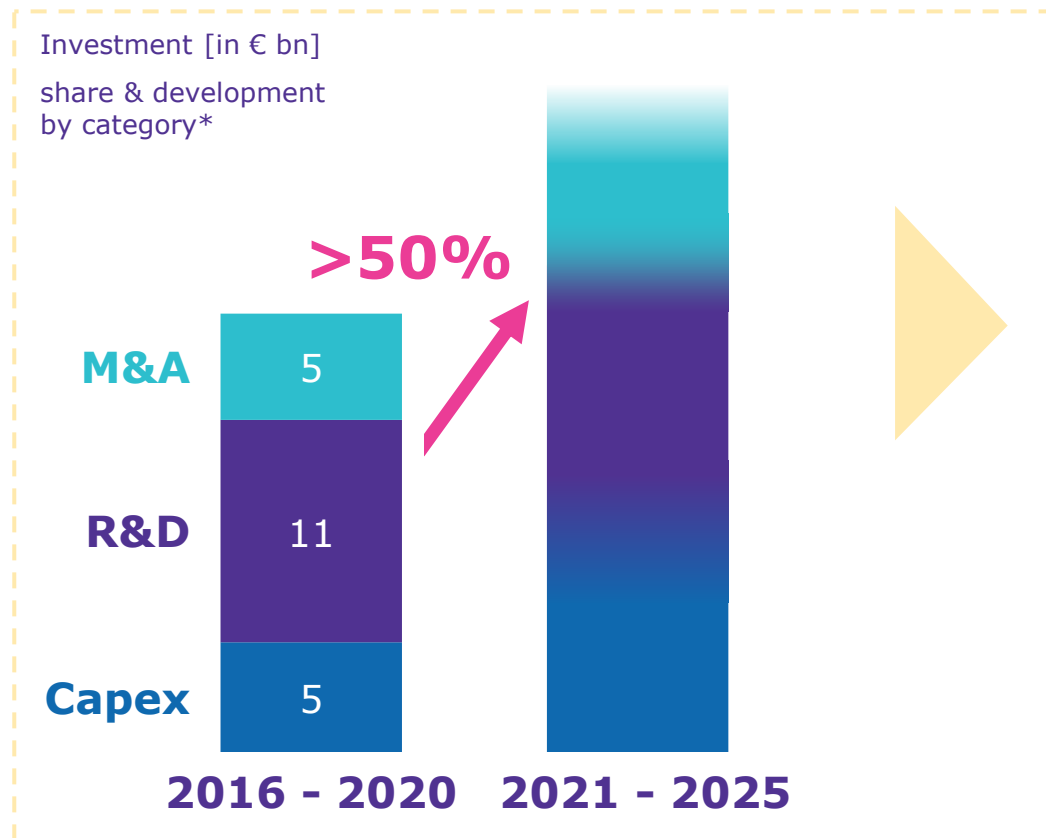


Group

Committing to record investments - targeted @BIG3 growth engines

Leading positions in **growth markets** fuel significant **boost in investment capacity**

Targeted, disciplined & focused capital allocation across **>20 enterprise planning units**



BIG3 consist of ~10 planning units with a **capital allocation target of >70%** between 2021 and 2025

* future M&A purely illustrative as it is deal-dependent

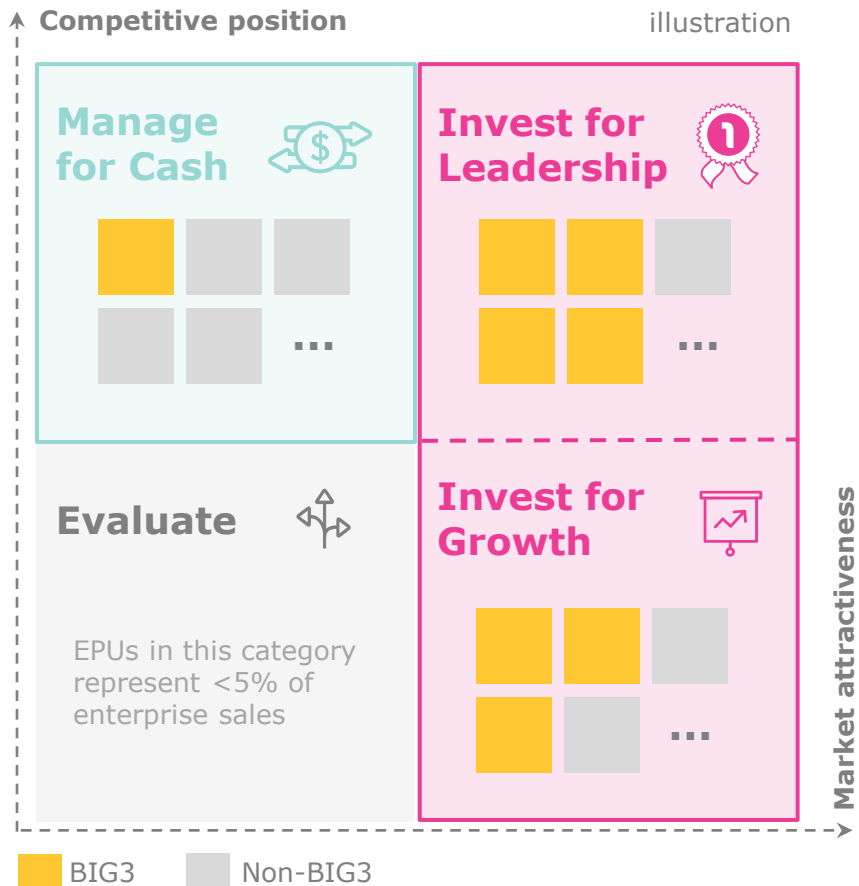


Group

Optimized capital allocation through distinct portfolio roles

Roles determined by **thorough analysis** of **markets** and **competitive positions**

Investment focus on businesses with **greatest strengths** and **attractive opportunities**



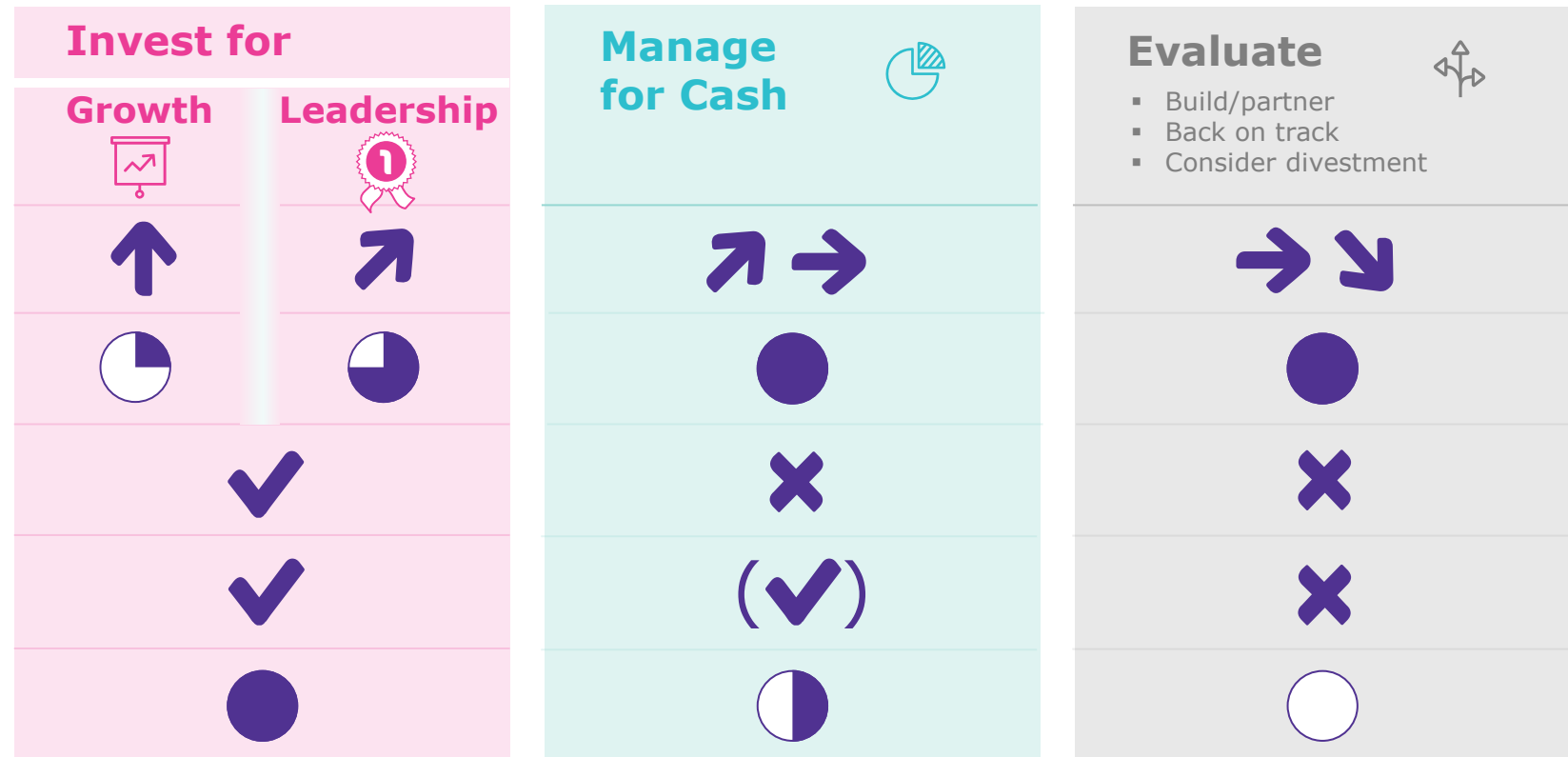
- Segmentation in planning units allows **right level of granularity** in market & competitive analysis (vs. sector level or product level)
- **Enterprise Portfolio Units (EPUs) with different roles** drive balance between **strong cash generation & targeted capital allocation**

- ✓ **Strong, well-positioned portfolio**
- ✓ Enterprise setup allows **boosted investment capacity and optionality** that would be unattainable to 3 standalone businesses
- ✓ **No need for further diversification** (within or across sectors) or target sector ratios

Group

Portfolio roles provide clear guidance to resource allocation

Simplified portfolio unit life cycle



● High importance ○ Low importance



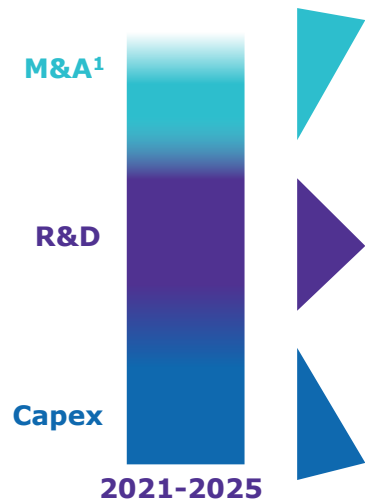
Group

Financial flexibility fueling investment capacity

Accelerated deleveraging to <2x net debt to EBITDA pre ratio enables **unprecedented financial flexibility**

>50% higher investment*
with BIG3 capital allocation target of >70%

Investment € bn share illustration



* future M&A purely illustrative as it is deal-dependent

¹ M&A: Mergers and Acquisitions

Abundant growth opportunities make **strategic capital allocation** more important than ever

M&A

- **Strong operating cash flow & increased debt capacity**
- **High single-digit C bn financial flexibility by end of 2022**
- Continued higher likelihood of **bolt-on** vs. large transformational deals

R&D

Clear focus on **innovation** & further development of **pipeline productivity**

- **Life Science:** accelerating targeted R&D scale-up to capture trends & strengthen portfolio
- **Electronics:** continuous alignment with customer technology roadmaps incl. new R&D labs
- **Healthcare:** driving "R&D productivity" to benchmark levels with focused leadership

CAPEX

More **complex & multifaceted** CAPEX decisions requiring **discipline**

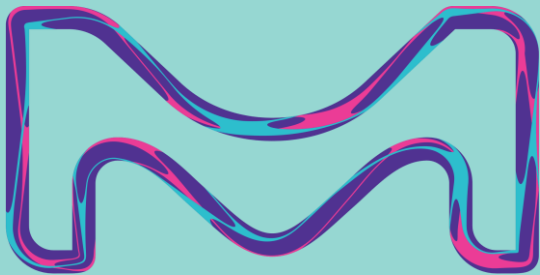
Rich growth opportunities driven by demand step changes, e.g.

- Process Solutions **capacity & network expansion**, targeted scaling of **high value CDMO/CTO services** across traditional & novel modalities
- Semi capacity expansion in line with customer demand & smart localization

▶ **Annual capex guidance: from ~€1.5 bn in 2021 to ~€2 bn by 2023**

Life science

Rising to new heights

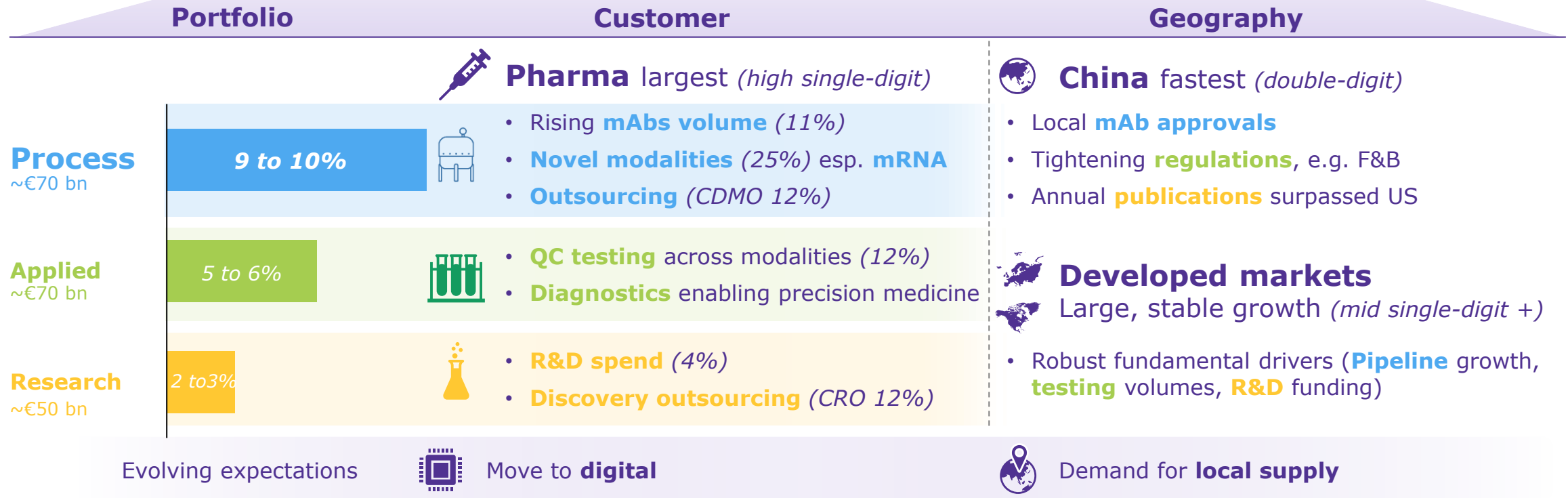


Life Science Market

Attractive secular drivers across segments create opportunities

Life Science market¹

2021: ~€190 bn ex COVID, growing 5 to 7%



 We continuously pursue key growth trends as a **leading diversified life science player**

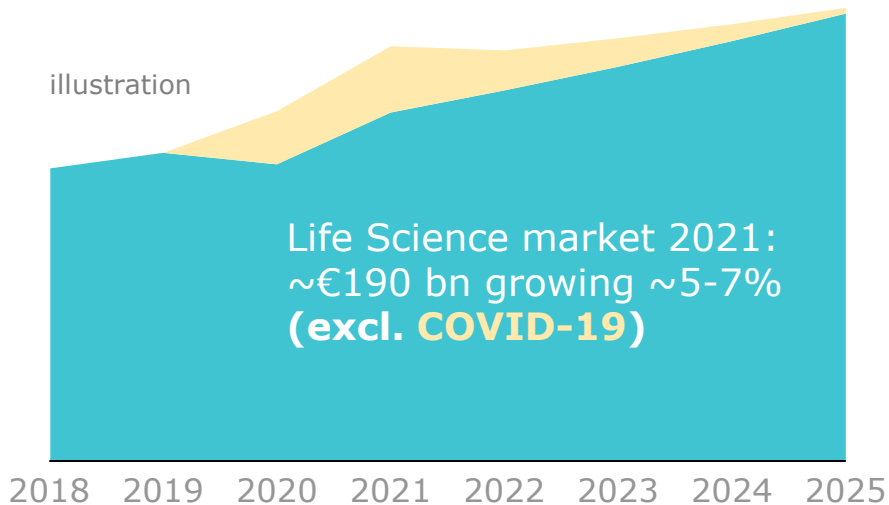
¹ Company estimate based on industry forecast over 5-year horizon for the markets we operate in with all *growth rates* indicating 2021-25 CAGRs; Acronyms: mAbs = Monoclonal Antibodies; mRNA = Messenger Ribonucleic Acid; CRO = Contract Research Organization; CDMO = Contract Development Manufacturing Organization; F&B = Food & Beverage



Life Science

Driving growth and expanding leadership in Process Solutions

Robust market with diverse growth pockets, **elevated during pandemic**



- Attractive **base market**, on slightly higher growth trajectory post 2021
- Significant **demand from COVID-19**, expected to decline as pandemic recedes

Life Science will be fully equipped to capture growth opportunities with a **focus on Process Solutions**

- Major **capacity and network expansion** to fuel growth of key product portfolios, **especially bioprocessing**
- Targeted scaling of **high value CDMO/CTO services** across traditional and novel modalities
- **Relevant and diversified** portfolio in **Research and Applied**, not only for cash and resilience, more importantly for **innovation and trend scouting**
- Programmatic **bolt-on M&A** plus rising focus on **China/APAC, innovation, and digital**

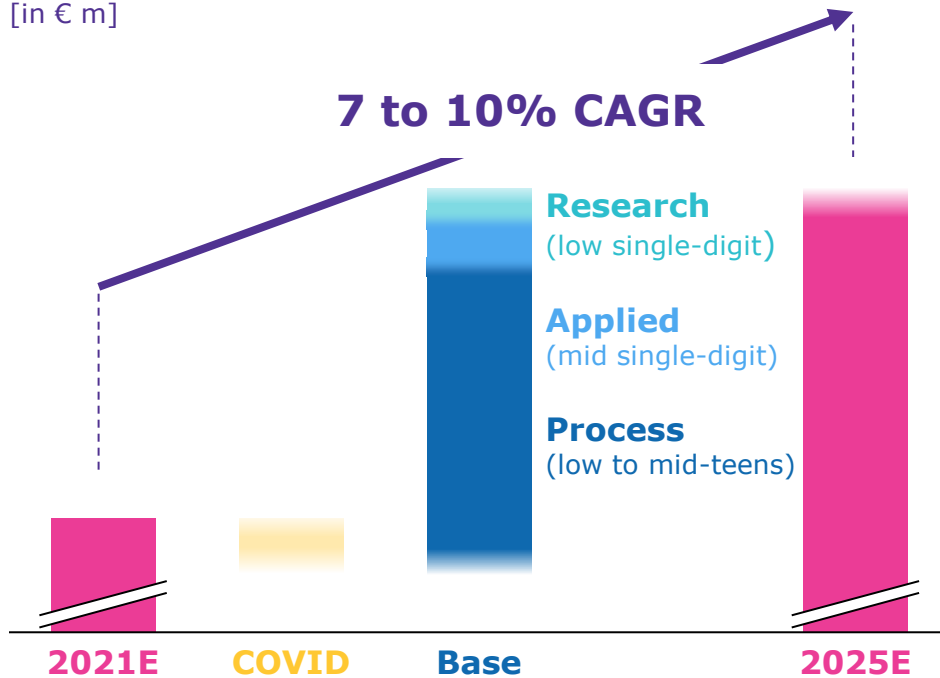
➤ **Upgrading** mid-term financial ambition to **7-10% org. sales CAGR** (incl. fading COVID business)

Life Science

Strong growth and improved mid-term outlook

Life Science mid-term sales outlook

[in € m]



Drivers of strong mid-term outlook

- **LS-wide: Above-market performance** with continued positive YoY growth rates **despite expected fading COVID-19 demand**¹
- **Process: Driving ~80% growth** based on three main pillars
 - Capitalizing on strong demand for **products for traditional modalities** via network / capacity expansion and innovation (e.g. BioPharma 4.0)
 - Building scale in **services for all modalities** with a focus on mAbs, hp-APIs, ADCs, viral vectors and mRNA
 - Templating **products for novel modalities**
- **Applied and Research:** Building on strong positions with continued **robust growth** in line with historical trends



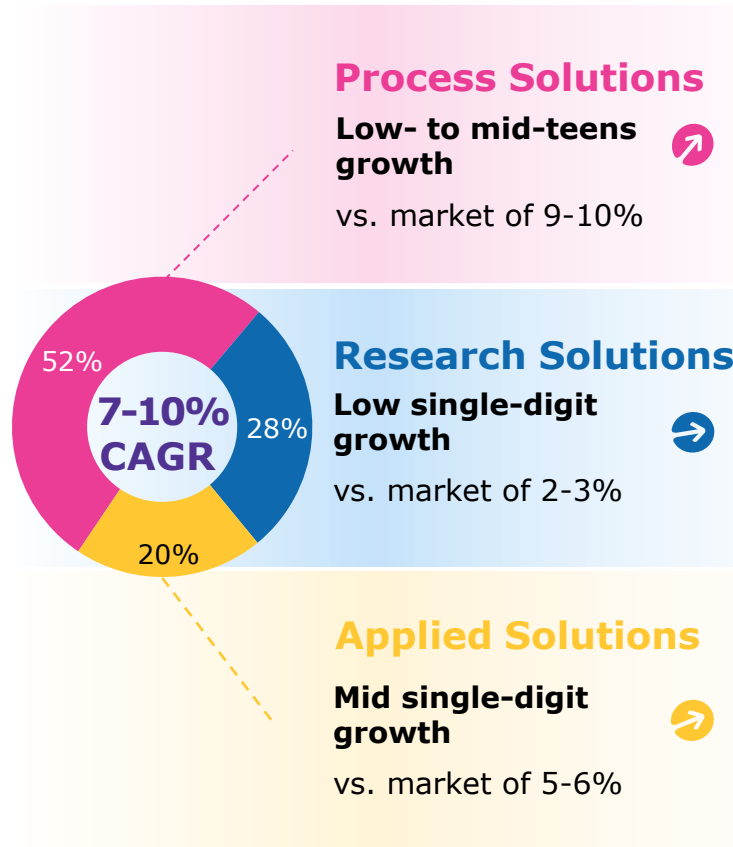
Confident to deliver above-market growth despite expected fading COVID-19 business

¹Mid-term organic sales outlook of 7 to 10% CAGR assumes fading COVID-19 related business between two scenarios: A) zero COVID-19 related business in 2025 [implied CAGR of 6 to 9%] and B) COVID-19 related business in 2025 on 2021 level [implied CAGR of 8 to 11%]

Life Science

All business units contributing to strong mid-term outlook

Sales split¹



Mid-term outlook²

Process Solutions

Low- to mid-teens growth ↗
vs. market of 9-10%

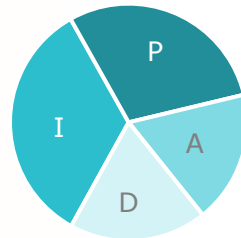
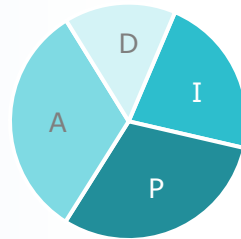
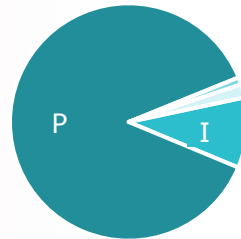
Research Solutions

Low single-digit growth →
vs. market of 2-3%

Applied Solutions

Mid single-digit growth ↘
vs. market of 5-6%

Customer Split³



Fundamental growth drivers

- **Biologics:** rising mAbs volume (11% CAGR⁴), growing adoption of single use, and shift to next-gen bioprocessing (intensified, digitized)
- **Novel modalities:** cell & gene therapies, ADCs, and mRNA inflection driving strong growth (25% CAGR⁴) and need for templated processes
- **Outsourcing:** increased role of emerging biotechs contributing to outsourcing in development & manufacturing (CDMO with 12% CAGR⁴)
- **Research activity:** >9,000 pre-clinical projects in research pipelines⁵; rising number of experiments backs healthy growth in biotechs/CROs
- **Public and private funding:** availability, access and predictability drive demand from academia and emerging biotechs
- **Emerging technologies:** high growth technologies for drug discovery and development, e.g. advanced cell culture and AI drug discovery
- **Regulation:** rise in quality standards and increasing demand for testing across customer segments
- **Population and economic growth:** demand for access to more sophisticated products and services rises, e.g. in emerging markets
- **Speed:** need for fast testing results raises requirements for Applied customers, esp. in clinical testing and food & beverage testing

Customer Segments: P Pharma and Biotech I Industrial and Testing A Academia D Diagnostics

¹ Based on H1 2021, CAGR is organic mid-term ambition including anticipated fading of COVID contribution; ² market growth rates are excluding COVID effects; ³ indicative only; ⁴ Source: company estimate of market growth based on industry forecast over 5-year horizon; ⁵ Source: statista; Acronyms: mAbs = Monoclonal Antibodies; ADCs = Antibody Drug Conjugates; mRNA = Messenger Ribonucleic Acid, CDMO = Contract Development Manufacturing Organization; CRO = Contract Research Organization; AI = Artificial Intelligence

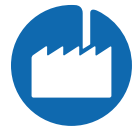


Life Science Strategy

Focus on strengthening the core and expanding in high-growth areas



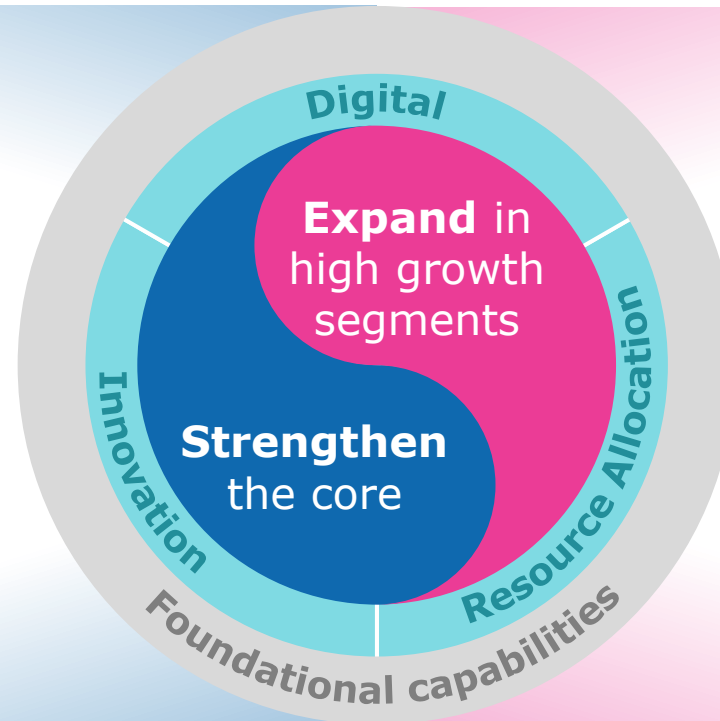
Productivity Gains



Network & Capacity Expansion



Go-To-Market Optimization



New Business Models



Holistic Offering



Emerging Regions



eCommerce • Digital Solutions • Data • R&D • Partnerships • Bolt-on M&A • CAPEX

Regulatory & Quality • Supply Network • People • Culture & Diversity • Sustainability • One Company



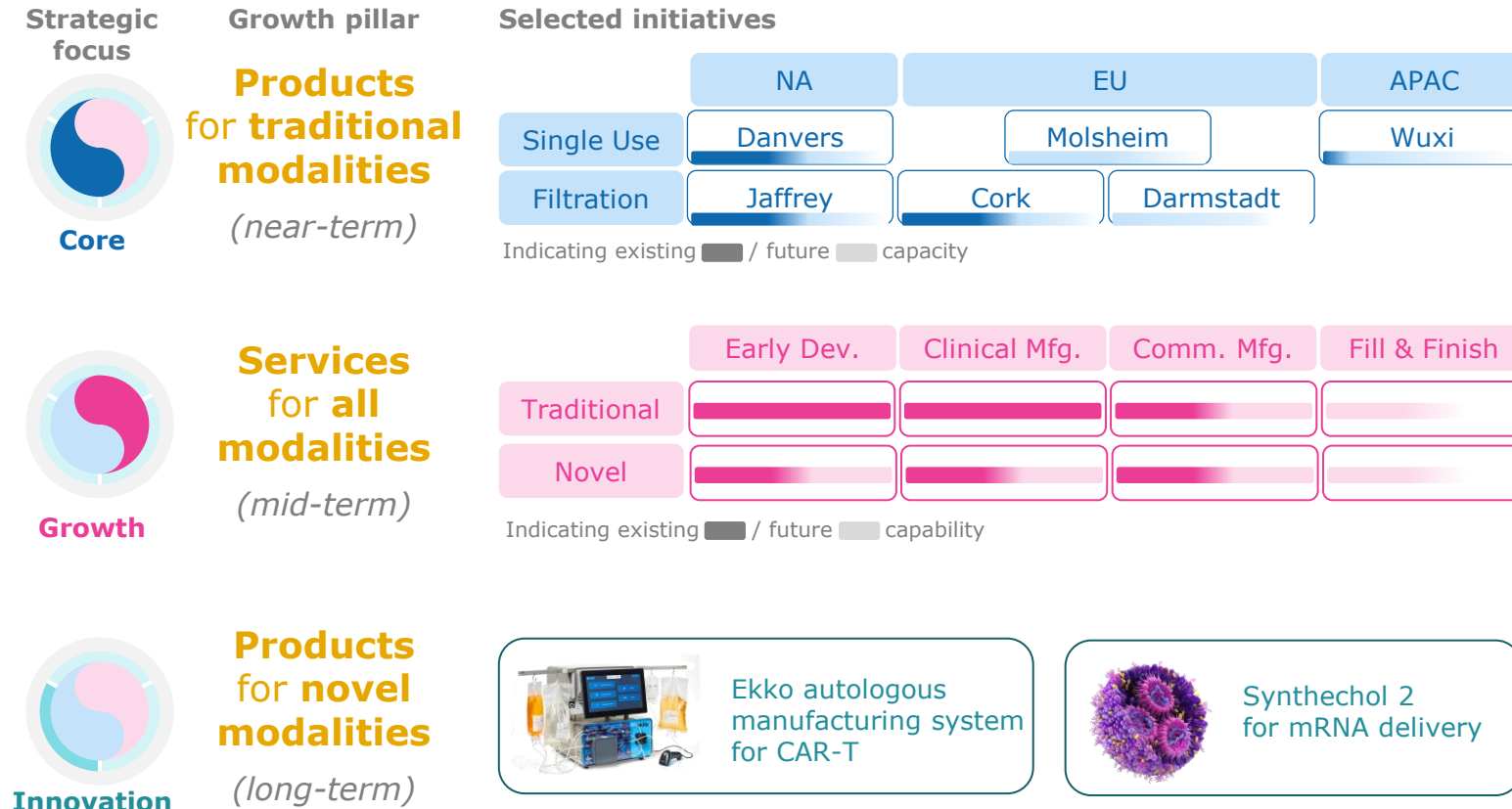
Stringent execution of strategic priorities driving sustained sales & earnings growth; upgrading mid-term outlook to 7 to 10% org. sales CAGR (incl. fading COVID business¹)

¹Mid-term organic sales outlook of 7-10% CAGR assumes fading of COVID-19 related business between two scenarios: A) zero COVID-19 related business in 2025 [implied CAGR of 6 to 9%] and B) COVID-19 related business in 2025 on 2021 level [implied CAGR of 8 to 11%]



Process Solutions – the largest of the BIG3

Fueling the growth engine to accelerate further in a dynamic market



- Proactive **capacity expansions**
- **Regionalization**
- Driving **next gen bioprocessing** (BioContinuum™)
- **Multimodality scale up:** mAbs (single use), viral vectors, ADCs, HP-APIs
- **Venturing** into mRNA (AmpTec, Exelead)
- **Developing** robust tools for cell, viral and gene therapy
- **Enhancing** lipids portfolio for nonviral delivery

Robust supply enabling attractive base growth, services and innovation as accelerators

Acronyms: mAbs = Monoclonal Antibodies; HP-APIs = High Potency Active Pharmaceutical Ingredients; ADCs = Antibody Drug Conjugates; mRNA = Messenger Ribonucleic Acid



Leveraging strong positions for durable growth in robust markets

Selected initiatives **Research Solutions**



- ✓ Building on strengths in **research chemistry**
- ✓ Capitalizing on evolving **CRO market**

Strategic focus



Core



Growth



Digital

Selected initiatives **Applied Solutions**

- ✓ **Lab Water** instrument platform innovation
- ✓ Expanding **Pharma QC testing** (biologics & novels)



- ✓ Enhancing **custom services for diagnostics**
- ✓ Expanding further in **China/APAC**



- ✓ Driving **digital solutions**



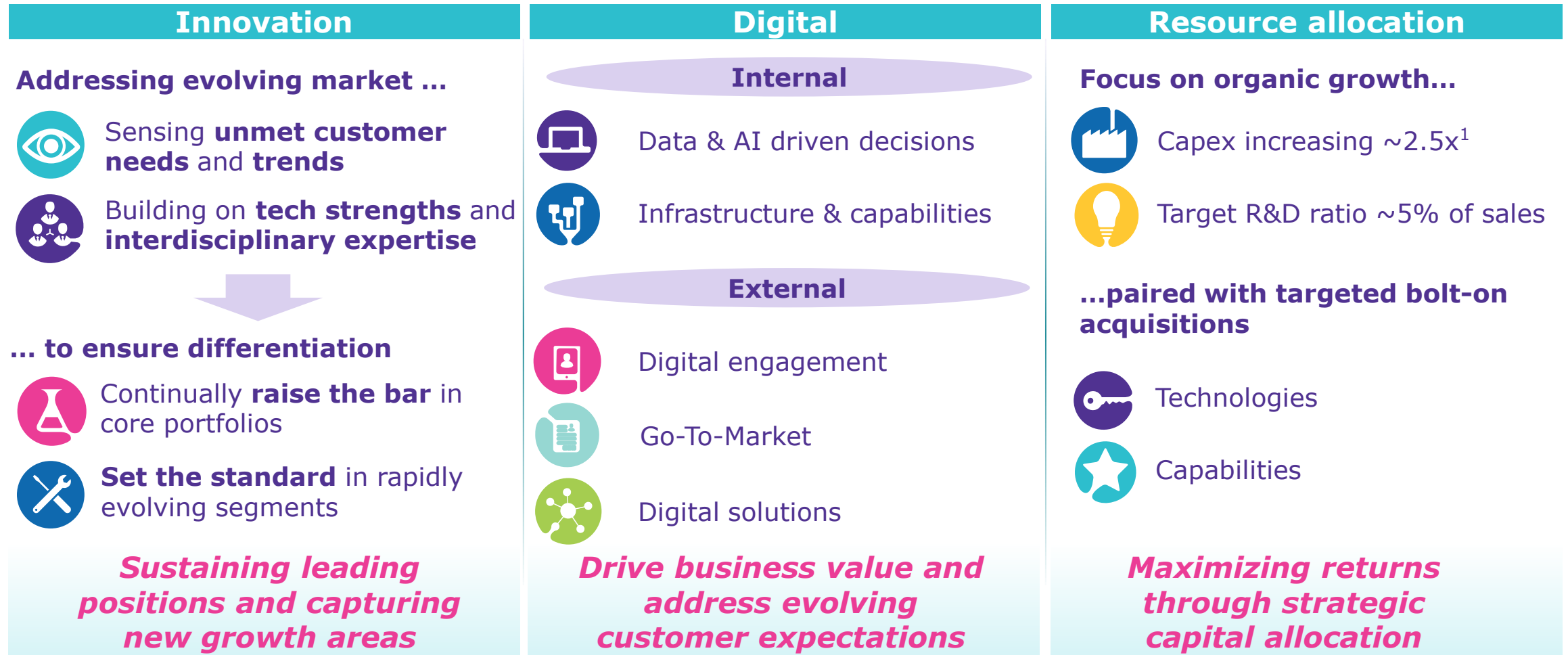
- ✓ Leveraging **upgraded eCommerce platform**



Strategic focus on **sustaining core positions** and capturing **higher growth segments**

Innovation, digital and portfolio

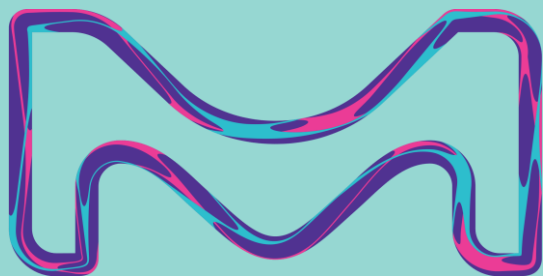
Key supporting pillars of strategy for value creation



¹Comparing average capex spend p.a. over the period 2016-20 with the period 2021-25

Healthcare

Focused leadership driving long-term growth








Healthcare

Well positioned in a dynamic environment, focused leadership in R&D




Existing market trends unchanged...

- High growth in largest TA Oncology
- Precision medicines to further increase share
- Cost pressure and pricing volatility growing

... well positioned to grow further

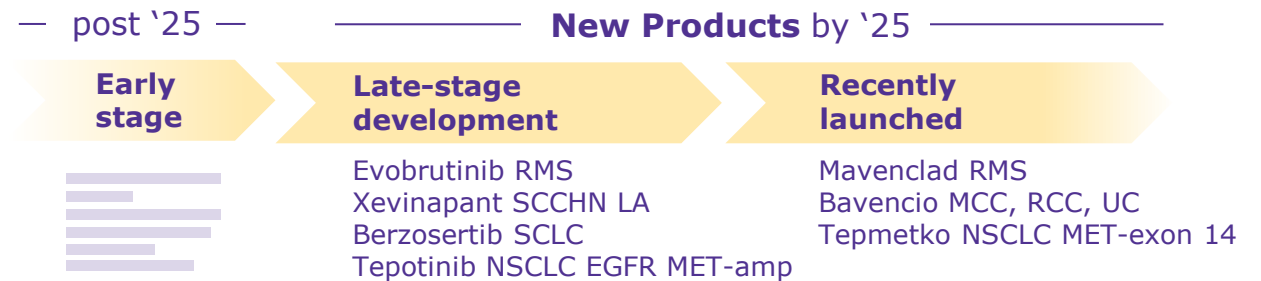
-  Long-term Oncology strategy with diversified clinical portfolio
-  Innovative models of treatment personalization, e.g. in Fertility
-  Diversified geographical sales footprint, lower exposure to potential U.S. pricing reforms
-  Global while local - 18 manufacturing sites and 4 R&D hubs across the globe
-  Broad spectrum of payer types due to TA and geographical variety

Focused leadership in R&D driven by recent launches & pipeline

-  SCCHN
-  Bladder cancer
-  MET driven tumors
-  ...

✓ From correlated to distinct uncorrelated risks

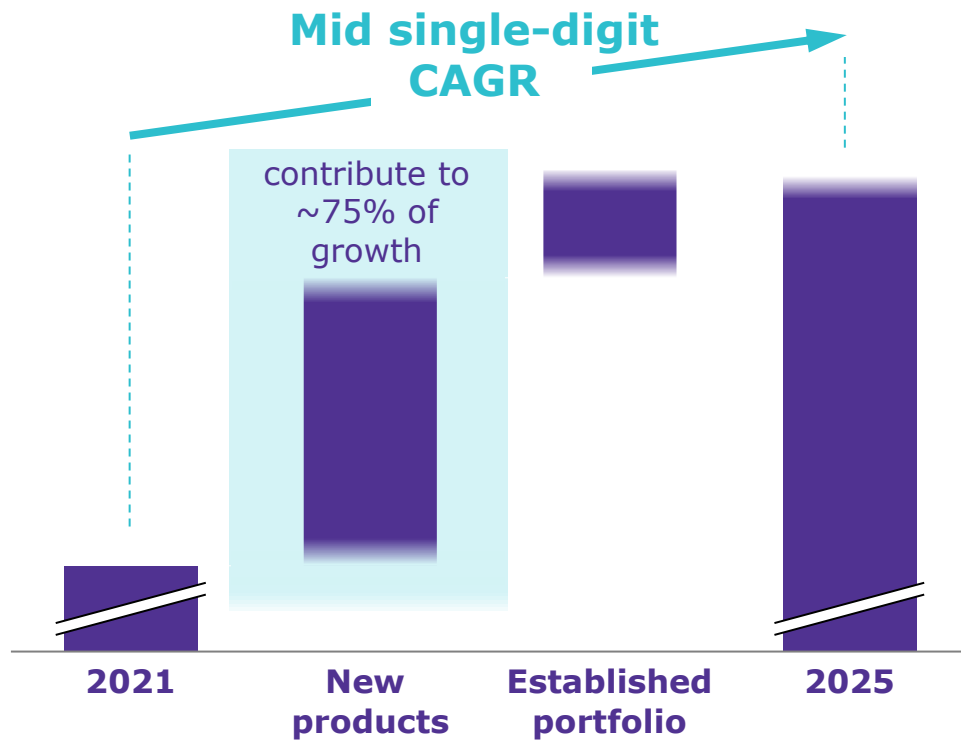
✓ Variety of pathways supported by new modalities e.g. ADCs, Oral ATRi, TIGIT...



Introducing mid-term financial ambition of mid single-digit org. sales CAGR

Healthcare

Growth driven primarily by innovation, augmenting a solid established portfolio foundation



Risk-adjusted illustration

Positioned to accelerate science & technology leadership



Profitable sales growth above global pharmaceutical market (4.6% across TAs until 2025)¹



New products

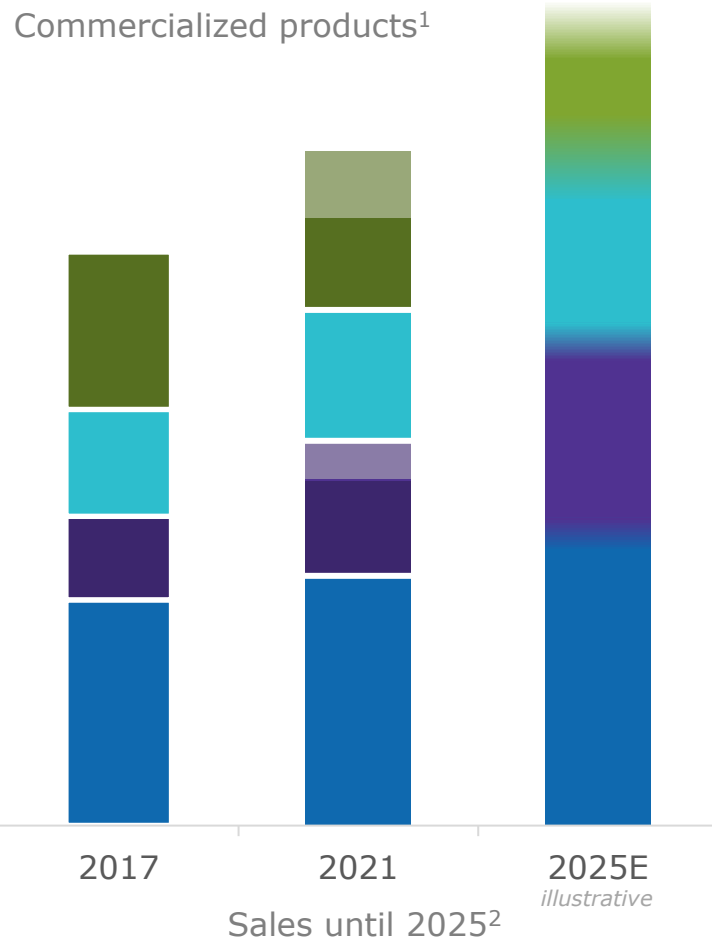
- Evobrutinib (BTKi) to strengthen our leadership position in Multiple Sclerosis
- Multiple assets within our targeted Oncology TA focus
- Committed to drive our recent launches Bavencio, Mavenclad[®] and Tepmetko[®]



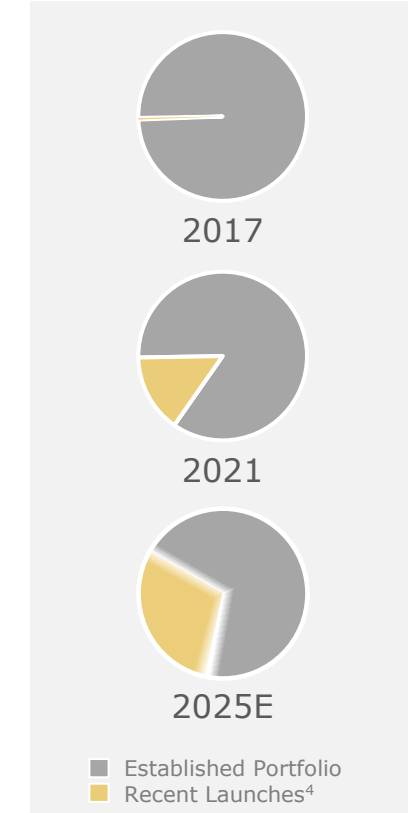
Sustainable long-term growth for Healthcare beyond 2025

¹ Company estimates of mid-term growth outlook based on industry forecasts and reports from public research institutes (e.g. IQVIA Global Medicine Trend Report from April '21)

Today's commercialized products foundation for growth until 2025, fueled by recent launches; not yet reflecting further pipeline potential



N&I		
Mavenclad® MS	▶	▪ On its way to become a blockbuster product. In the short-term, headwind as suppressed dynamic market
Rebif® MS	▶	▪ Decline in line with interferon market
fertility	▶	▪ Mid single-digit growth, capitalizing on increasing awareness and access to treatment
oncology		
Bavencio® UC, RCC, MCC	▶	▪ Strong growth driven by mUC 1L
Tepmetko® METex14 NSCLC	▶	▪ Targeted launch in niche indication
Erbix® mCRC, SCCHN	▶	▪ Stable outlook ³ , leading in mCRC continuum of care
CM&E	▶	▪ Mid single-digit growth ▪ Increasing prevalence of diabetes and cardiovascular diseases ▪ Mitigate VBP pressure in China through EM growth, life cycle management and portfolio expansion



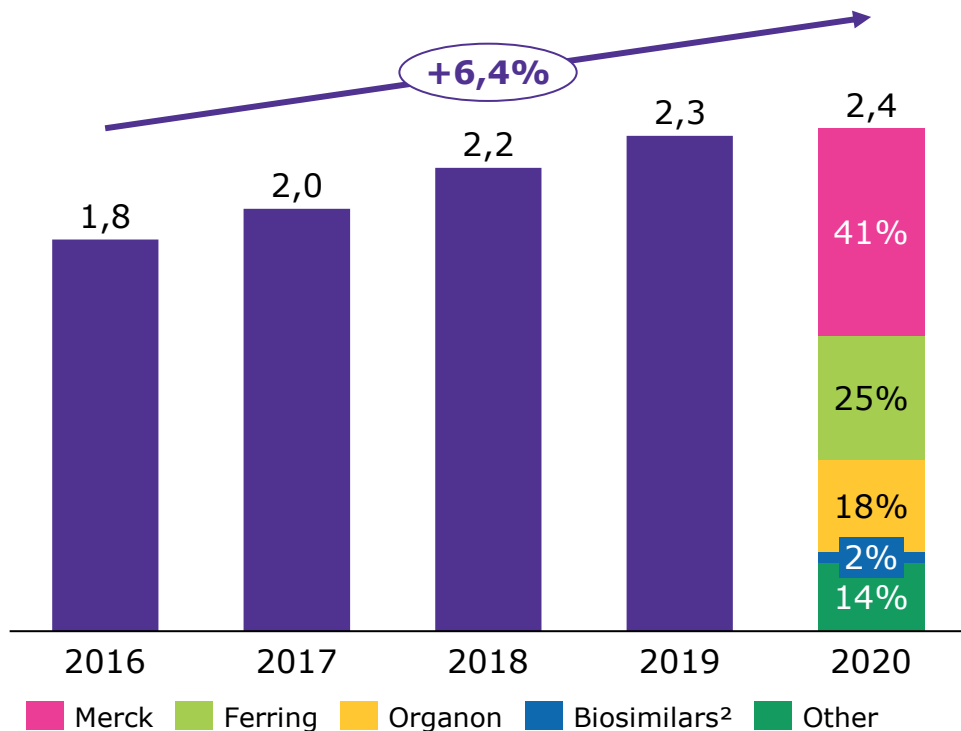
¹ Commercialized products = Established Portfolio + Recent Launches, excludes future launches/indications until 2025; ² Graph excludes Consumer Health Business, Biosimilars Business and others; ³ Sales in 2021 fueled by €59 m due to Eli Lilly supply agreement; ⁴ Includes Bavencio® (UC, RCC, MCC), Mavenclad®, and Tepmetko® METex14



Healthcare

Strengthening our leadership in Fertility

Global Gonadotropin market in € bn¹



Strategies to expand our leadership position

GONAL-f The world's most prescribed r-hFSH treatment³

- Growing prevalence of infertility driven by delayed parenthood and lifestyle habits
- Increasing awareness and access to treatment

Pergoveris: Only recombinant FSH + LH product in the market

- Doubling sales and market share since 2017
- Strong growth potential by geographical expansion

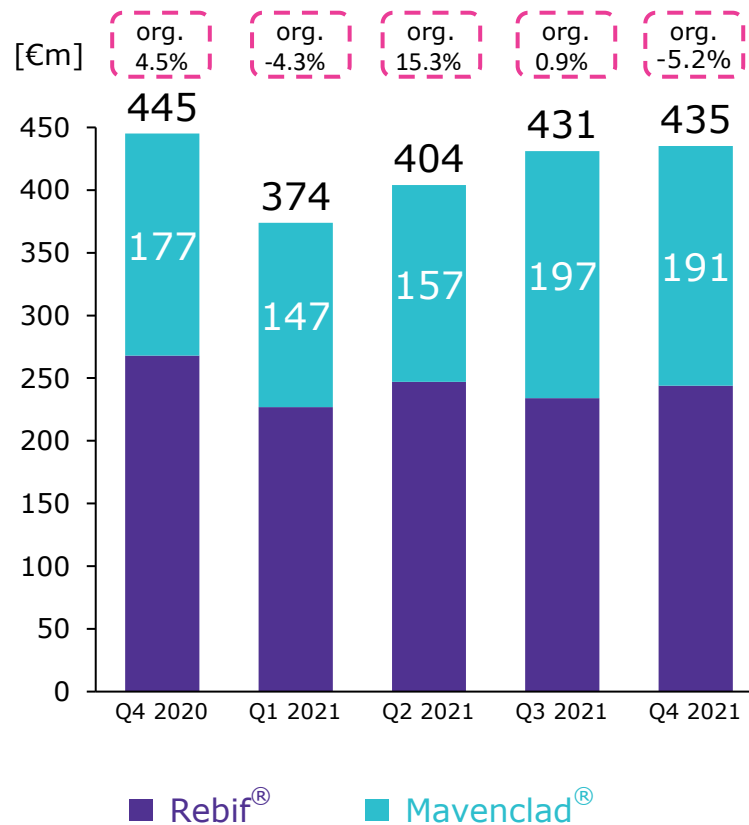
Innovations & digital solutions (e.g. Philips partnership)

- Better treatment insights & improved convenience
- Contributing to higher live birth rates

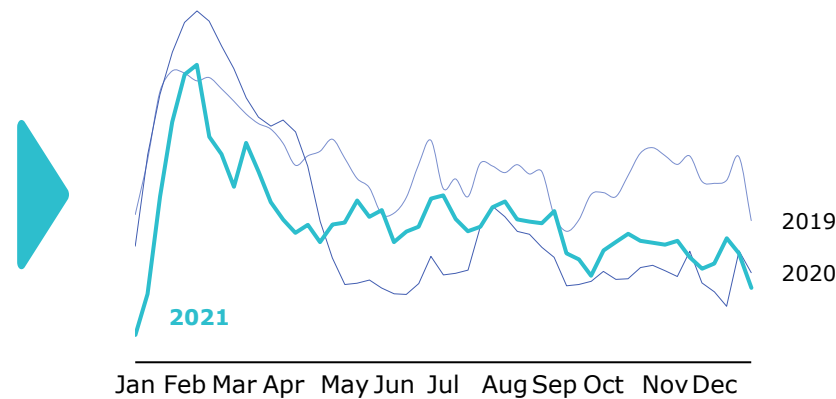


Neurology & Immunology: FY Mavenclad[®] sales up +33% organically, dynamic market volume remains challenging

Sales development N&I, [€m]

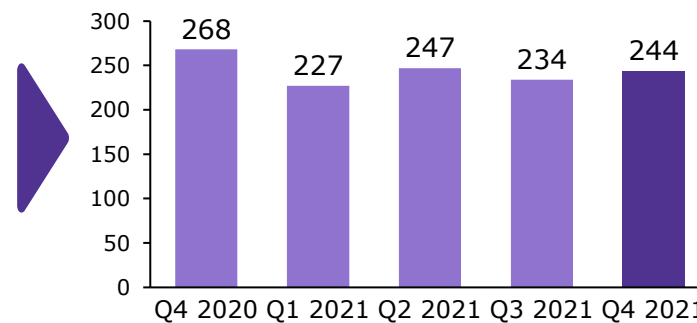


Dynamic market volume [R3W]¹



- U.S. dynamic market further suppressed as COVID 19 Omicron wave soaring
- Mavenclad[®] sales flat QoQ when excl. Q3 accrual impact
- Mavenclad[®] share remains stable within the HE market

Rebif[®] net sales, [€m]

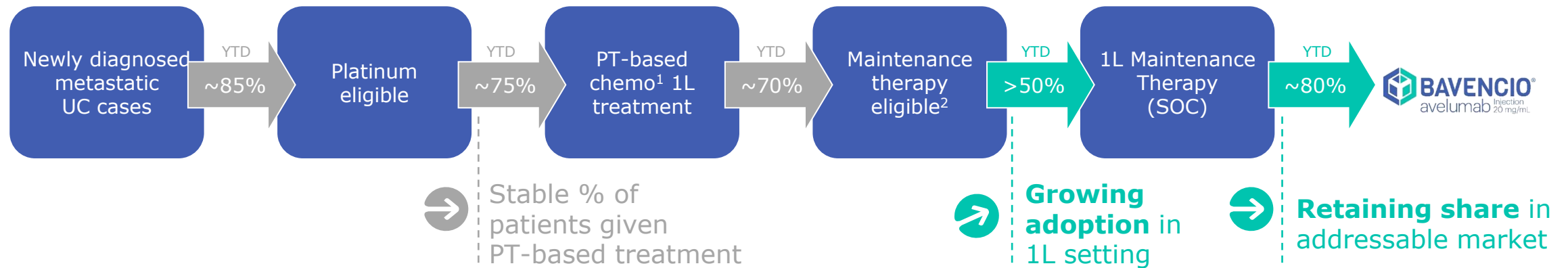


- Stable N&I franchise for FY and QoQ (+1% org.)
- Rebif[®] decline in line with U.S. interferon market trend



Bavencio® UC 1L launch: Adoption of BAVENCIO in 1L maintenance continues to grow in both U.S. and ex-U.S.

 **U.S. – > 1.5 years into launch, adoption of BAVENCIO in 1L maintenance still increases:**



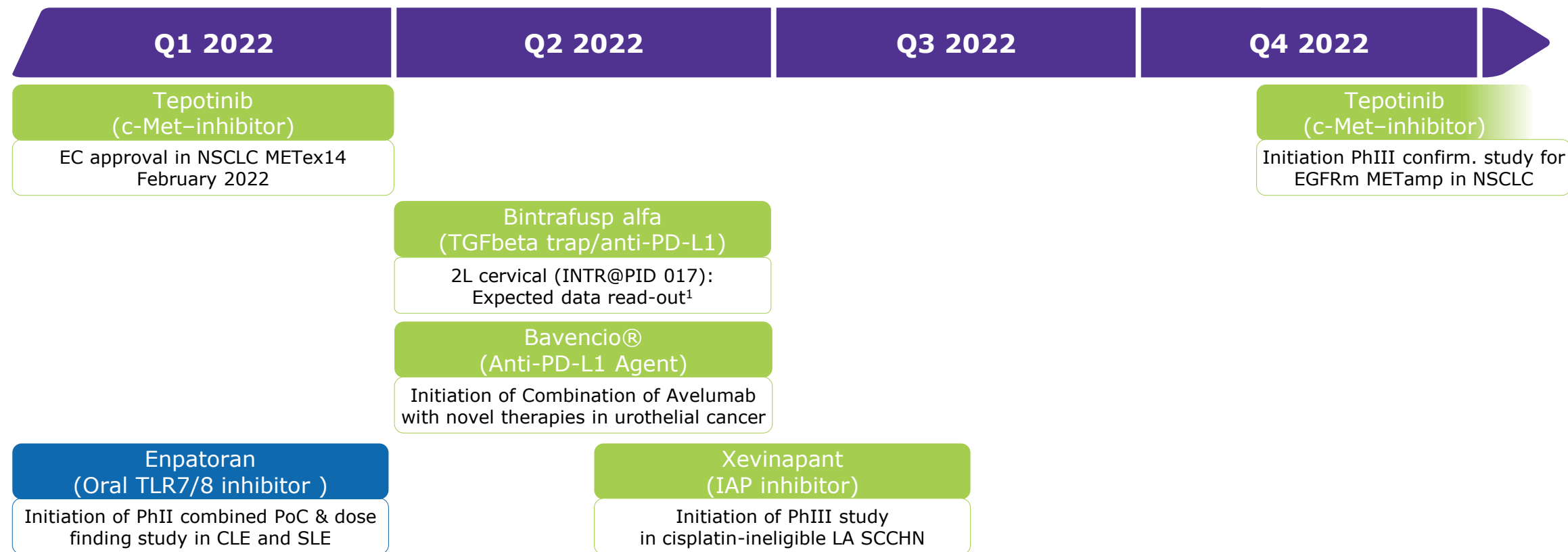
  **Europe & Japan – Almost a year into launch, BAVENCIO already standard of care in key markets**

- Now **approved in 55 markets** and **reimbursed in ~1/3** globally with further reimbursement decisions to support growth
- **Strong adoption of BAVENCIO** in 1L maintenance in key markets (e.g. Japan, France, Germany) supported by treatment **guideline recommendations** and **KOL support**

1: Carboplatin or Cisplatin, 2: Complete / partial response or stable disease based on clinical trial data; Acronyms: PT = Platinum, SOC = Standard of care



Healthcare catalysts



■ Oncology ■ Immunology

Acronyms: EMA = European Medicines Agency, LA = locally advanced, SCCHN = Squamous cell carcinoma of the head and neck, NSCLC = Non-small cell lung cancer, TLR = Toll-like receptor, 1: Clinical timelines are event-driven and may be subject to change



Pipeline with uncorrelated risk and significant potential to drive topline growth from 2025

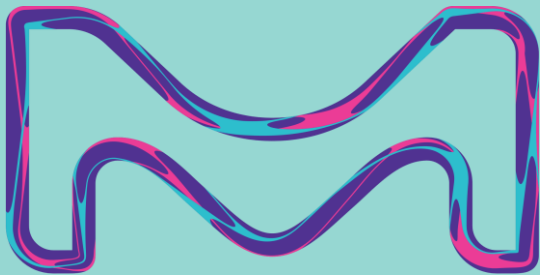
	PROMISE	INDICATION	EARLIEST SUBMISSION	
Tepotinib (MET inhibitor)	Overcoming resistance of Osimertinib (third gen. EGFR inhibitor)	2L EGFR+ NSCLC post Tagrisso	2023	Timeline visibility
Evobrutinib (BTK inhibitor)	Addressing chronic inflammation and progression between relapses, in addition to reducing acute inflammation with BIC ARR	RMS	2024	
Xevinapant (IAP inhibitor)	Transformative benefit – Maximizing chances for Cure for patients with locally advanced SCCHN	Cis-fit LA SCCHN Cis-unfit LA SCCHN	2025 ≥ 2027¹	
Berzosertib (ATR inhibitor)	Blocking ATR “aster regulator” of DNA repair to enhance efficacy of TOP I inhibitors for patients with few treatment options	rSCLC	2024	
M1231 MUC1/EGFR bi-specific ADC	Next generation “Triple Innovation” ADC for patients with solid tumors, aiming for effective delivery of potent chemotherapy payload with reduced in & off target toxicity	NSCLC ESCC	2025 2025	
Enpatoran TLR7/8 inhibitor	Small molecule for targeted inhibition of important lupus mediator TLR7/8, aiming for improved efficacy with low infection risk	CLE SLE	2026 2027	

¹ depending on trial design



electronics

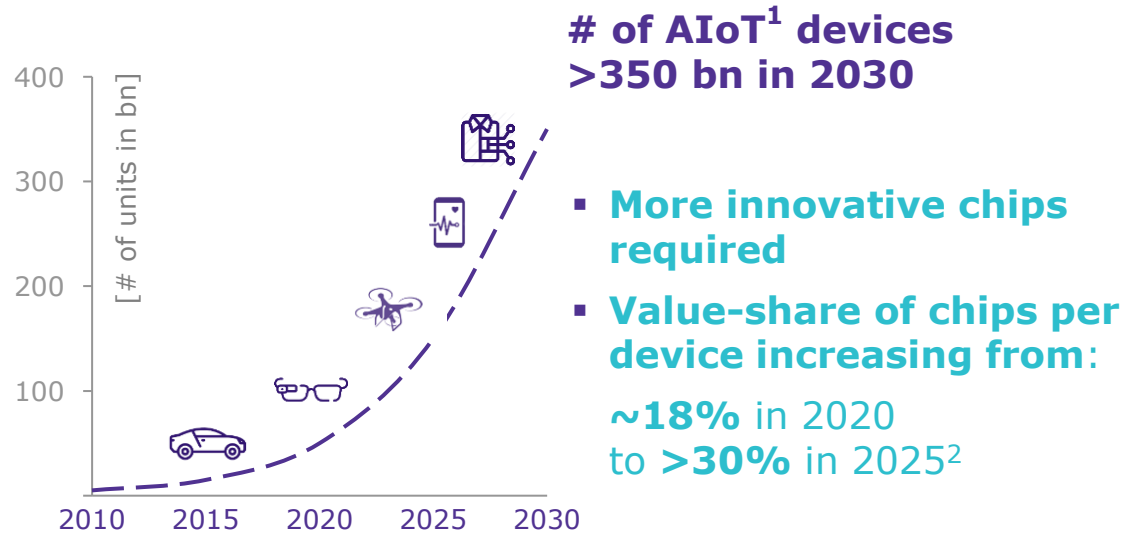
Shifting gears to growth execution



Electronics industry has clear roadmaps with vast market potential and substantial need for materials innovation

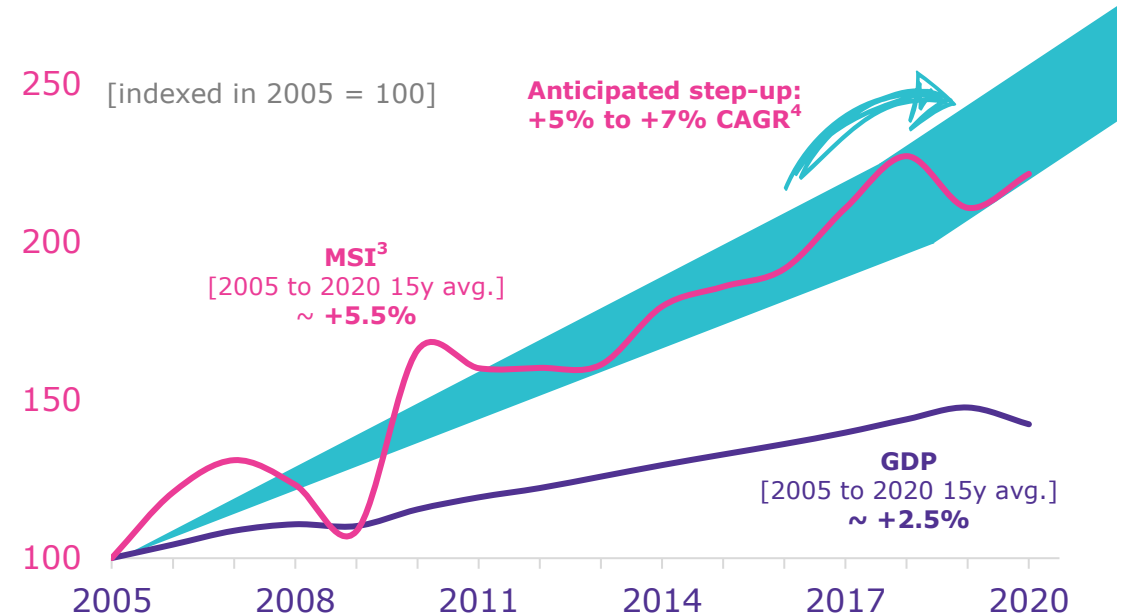
More applications than ever before to fuel Semiconductor growth

- 12% Automotive
- 7% Server / Storage / Communication infrastructure (5G)
- 6% Consumer (wearables/IoT)
- 5% Industrial/Medical/Military/Aviation
- 4% PC/Computing
- 4% Mobile phones / tablets



Growth expected to accelerate...

...with reduced upward cyclicality



- Diverse end applications & higher capital discipline expected to reduce future cyclicality
- Semiconductor **Materials** show **lower cyclicality than Semiconductor market**

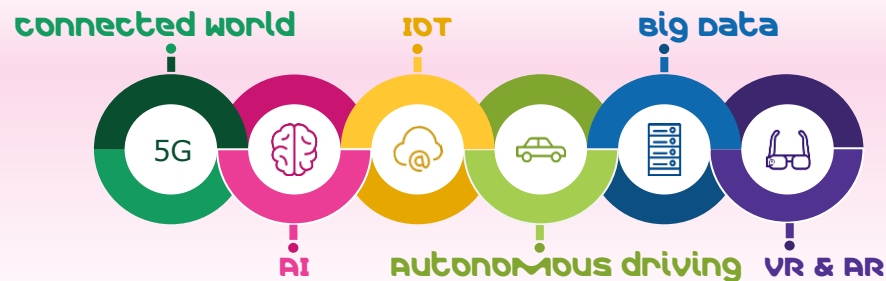
1) AIoT = Artificial Intelligence + Internet of Things; 2) McClean, Prismark Semiconductor and packaging report Q4 2020; 3) Million Square Inch of silicon wafers; 4) Company estimate based on industry forecasts



Electronics

Building on leading positions in semiconductor materials

External trends drive strong demand



Tech trends inevitably drive exponential data growth requiring semiconductors and displays in virtually all data applications

- Customers & governments significantly **accelerating semi capacity expansions**
- **Semiconductor materials market** expected to **accelerate growth** based on **broader demand**

Electronics well positioned to capture it

- ✓ **One of the strongest portfolios** – providing solutions necessary to **enable industry growth**
- ✓ **Enabling breakthrough technologies**, in **high value areas** of wafer processing & display innovation
- ✓ **Pioneering in high-throughput experimentation** and **Big Data & AI projects** with key customers
- ✓ **Shift to executing growth** accelerating **investment and innovation in sync** with customer plans

Further upgrading mid-term financial ambition **to 3 to 6% org. sales CAGR**

Abbreviations: AI = Artificial Intelligence; IoT= Internet of Things; VR = Virtual Reality ; AR = Augmented Reality

Electronics

Shifting gears from transformation to growth execution

From building a platform...

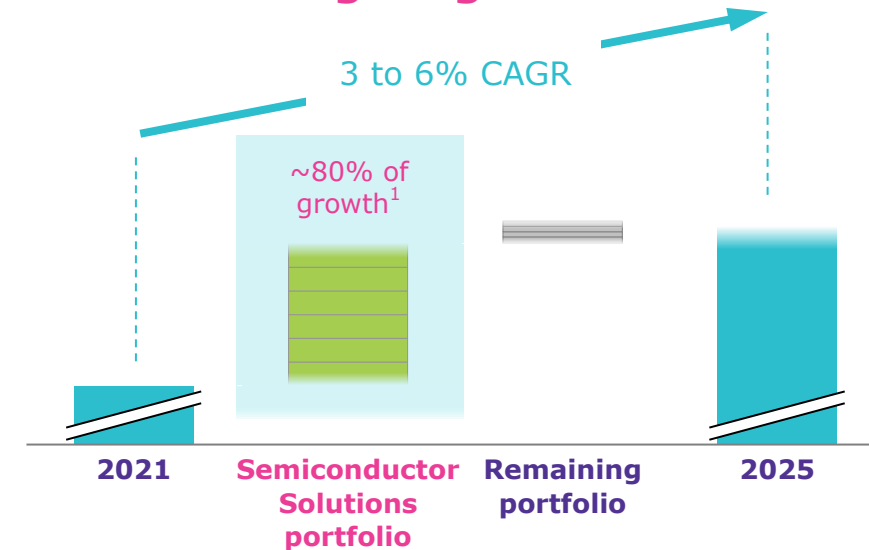
Successful "Bright Future" transformation

- **Superior business composition**
 - ~10 equally sized, differentiated tech platforms
 - Wider customer base than ever before
 - Balanced presence in all major customer hubs
- Clear **focus on Semi & innovation**

Significantly higher Versum synergies

- **Accelerated capex** investment plan
 - Smart localization
 - Global presence & local proximity
- **Display & Surface well managed** according to Enterprise Planning Unit role

...to executing on growth



- **Semiconductor Solutions:** to grow **200 to 300bps²** above faster underlying market of 5% to 7%
- **Display Solutions:** low-single digit decline in the coming years expected to return to growth until 2025
- **Surface Solution:** low single-digit growth post COVID-19 turnaround

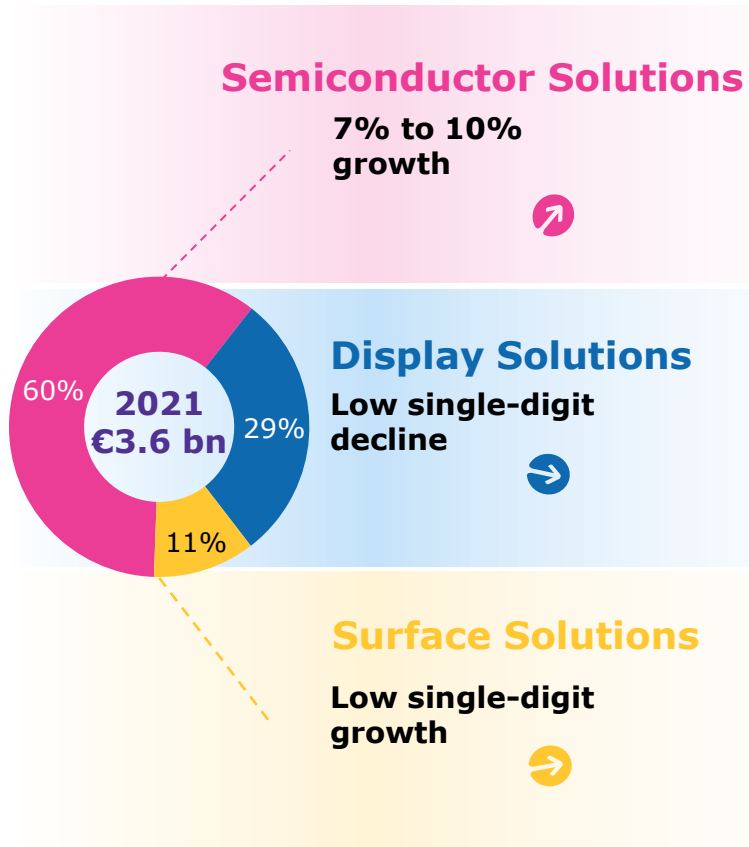
1) illustrative split by semiconductor solutions technology platform

2) „Basis points”

Electronics

Portfolio refocus drives mid-term guidance upgrade to 3 to 6% CAGR

Sales split¹



Mid-term outlook²

Semiconductor Solutions

7% to 10% growth



Display Solutions

Low single-digit decline

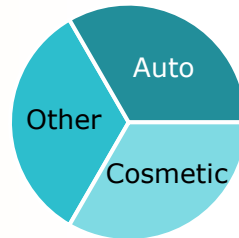
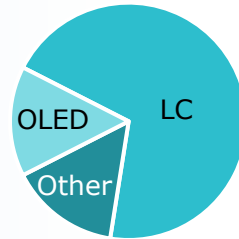
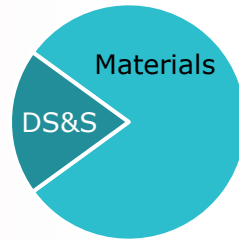


Surface Solutions

Low single-digit growth



Business Split³



Fundamental growth drivers

- Continued market growth due to technological advances (Artificial intelligence, 5G, Big Data and cloud, Internet of Things) serving customers in **Logic, Memory, Packaging and others**
- 5 to 7% market growth⁴
- 200 to 300bps above-market growth from share gains & better portfolio (incl. 100 to 150bps additional growth from integration top-line synergies)
- Driven by trend to **bigger TV size, higher resolutions, more mobile devices**
- 3 to 4% growth of total LCD m² area⁵, while price pressure continues
- 18 to 22% growth of total OLED m² area⁵ with slight to moderate market share gains
- OLED material market to exceed LC material market by 2021⁶
- Well balanced exposure to **automotive** and **cosmetics** end market
- Drivers: rising living standards, higher disposable income in growing markets & higher demand for high value products at reasonable prices
- Light vehicle production and relevant cosmetics end markets returning to growth in 2021 and reaching 2019 levels by 2022 and beyond⁷

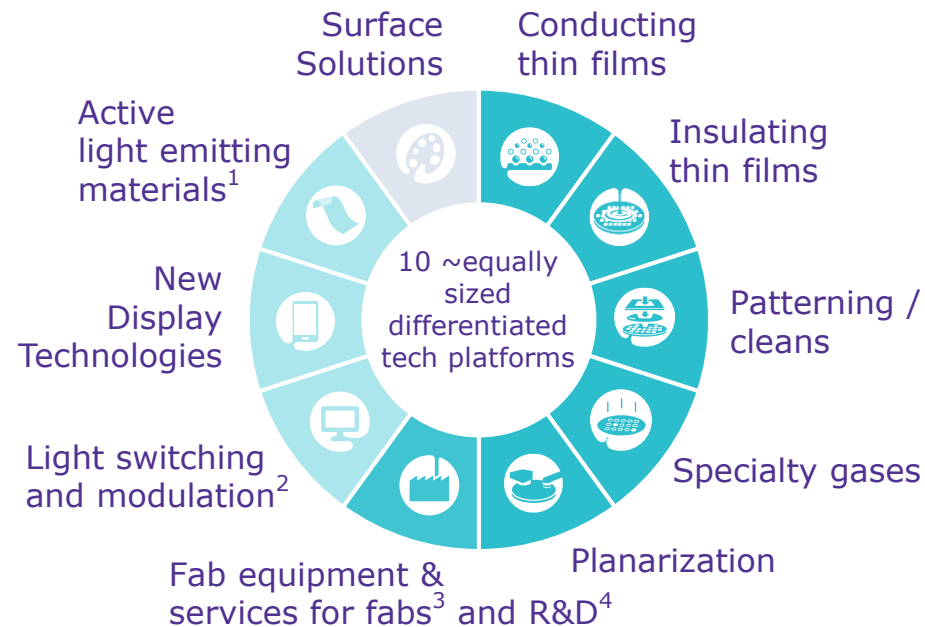
¹ Based on FY 2020, CAGR is organic mid-term ambition; ² growth rates are organic CAGRs; ³ indicative only

⁴ Source: Merck KGaA, Darmstadt, Germany estimate based on industry forecasts; ⁵ Source: Omdia Display Market Outlook, Q1 2020; ⁶ Internal Business Intelligence; ⁷ Sources: LMC Automotive Light Vehicles Forecast, Aug 2020 & Euromonitor BPC (Beauty & Personal Care) Aug 2020



Electronics: Successful transformation, ready for accelerated growth

An integrated electronics innovation leader with one of strongest industry portfolios



1) Incl. materials for OLED displays 2) Incl. liquid crystal displays
3) Delivery Systems & Services 4) Intermolecular

Delivering on promises and above

- ✓ **Bright Future program**
key deliverables & savings
- ✓ **€3.3 bn sales with ~90% of sales focused on electronics**
- ✓ **Successful integration of Versum**
- ✓ **Attractive, stable EBITDA pre margins**
- ✓ **Display & Surface well managed**
according to Enterprise Planning Unit role
- ✓ **Upgraded mid-term guidance of 3% to 6% sales CAGR**

Everything in place to gain further speed as vital growth engine for Group



“Level Up” - Shifting gears from transformation to growth execution

Level up **scale**

- **Capacity investments** synchronized to **customers’ expansion plans**
- Ability to **tackle industry challenges** & supply reliability
- Continue **localizing footprint** close to customers in **Korea, Taiwan, China, and U.S.**

Level up **portfolio**

- Commitment to **relevant portfolio breadth** in **high growth areas**
- Diligent **bolt-on** acquisitions
- Targeted expansion of **portfolio**

**Enabling ambition
of 3 to 6% org. CAGR
2021 to 2025+**



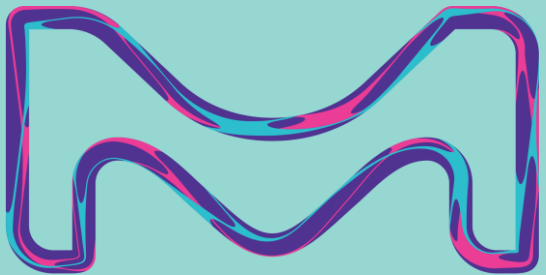
Level up **tech**

- Further sharpen **focus on profitable innovation**, addressing key inflection points
- Address **sustainable innovation**
- **Expand R&D** and keep one of the highest **R&D rates in the industry**

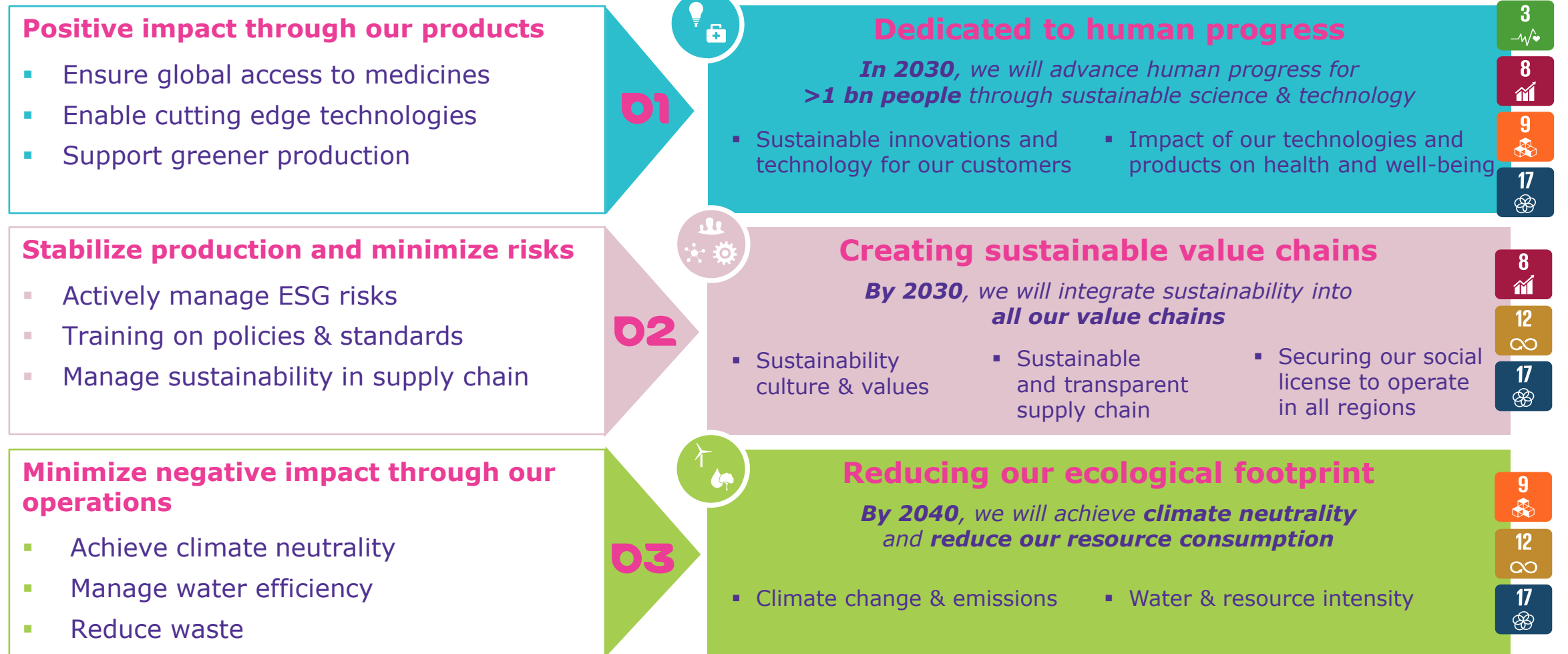
Level up **people & capabilities**

- **Attractive** employer for **NextGen talents**
- Drive **safety, quality & sustainability**
- Drive **data analytics & digital transformation**

sustainability



Boundaries of human progress today will become reality tomorrow: Our sustainability goals



Clear Metrics to drive execution and progress towards 2030 ambition

Goal	Metric	2021 (2020)	Target
1	Percentage of newly published patent families with positive sustainability impact	from 2022	n.a.
	People treated with our Healthcare products*	2021 (April)	1 bn people ambition ¹ : HC
2	Percentage of women in leadership positions	36% (35%)	Gender parity by 2030 ²
	Percentage of employees trained on sustainability	from 2022	n.a.
	Percentage of relevant suppliers covered by valid sustainability assessment*	21% ^{3a} /65% ^{3b} (n.a.)	visible increase until 2024 ³
	Environment, Health and Safety (EHS) Incident Rate	3.9 (3.4) ⁴	As low as possible
	Violations of Global Social and Labor Standards Policy	41 (29) ⁵	n.a.
	Lost Time Injury Rate (LTIR)	1.2 (1.3)	<1.0 by 2025 ⁶
3	Greenhouse gas emissions Scope 1+2*	1,843 kt (2,028 kt)	-50% by 2030 ⁷
	Greenhouse gas emissions Scope 3	5,716 kt (5,030 kt)	-1,500 kt CO ₂ e by 2030 ⁸
	Percentage of purchased electricity from renewable resources	30% (27%)	80% by 2030
	Company Waste Score (WS)	2021 (April)	-5% by 2025 ⁹
	Company Water Intensity Score (WIS)	from 2022	-10% by 2025 ¹⁰
	Wastewater quality: no harmful emission residues	from 2022	100% completion by 2030 ¹¹

*LTIP relevant

¹92 mio HC + 90.5 mio Prazi in 2020
²considers room for non-binary people
³by a)number, b)purchase volume
⁴incidents + severity vs. man-hours
⁵confirmed violations

⁶accidents with min. 1 day of missed work per 1 mio. man-hours
⁷vs. 2020 ~2,100 kt CO₂e
⁸to be updated after validation of new SBTi commitment

⁹vs. 2016 WS 443
¹⁰vs. 2020 (updated) WIS considering local availability of water and no. of man-hours
¹¹below scientifically defined threshold



Group





Diverse human capital: Thinking, talking, and leading differently

Focus areas	Indicator	Status 2021 (2020)	Aspirations
Gender	Percentage of women in leadership globally	36% (35%)	Gender parity until 2030
Culture & Ethnicity	Percentage of underrepresented ethnic colleagues in US leadership	21% (20%)	Increase to 30% until 2030
	Percentage of nationals from Asia, Latin America, Middle East & Africa in leadership	16% (16%)	Increase to 30% until 2030
Inclusion	Inclusive Leadership Programs and participation of leaders across all business	37%	Participation of all leaders by 2026

The **uniqueness** of our people brings our **curiosity** to life. It contributes to our success in **science & technology**.

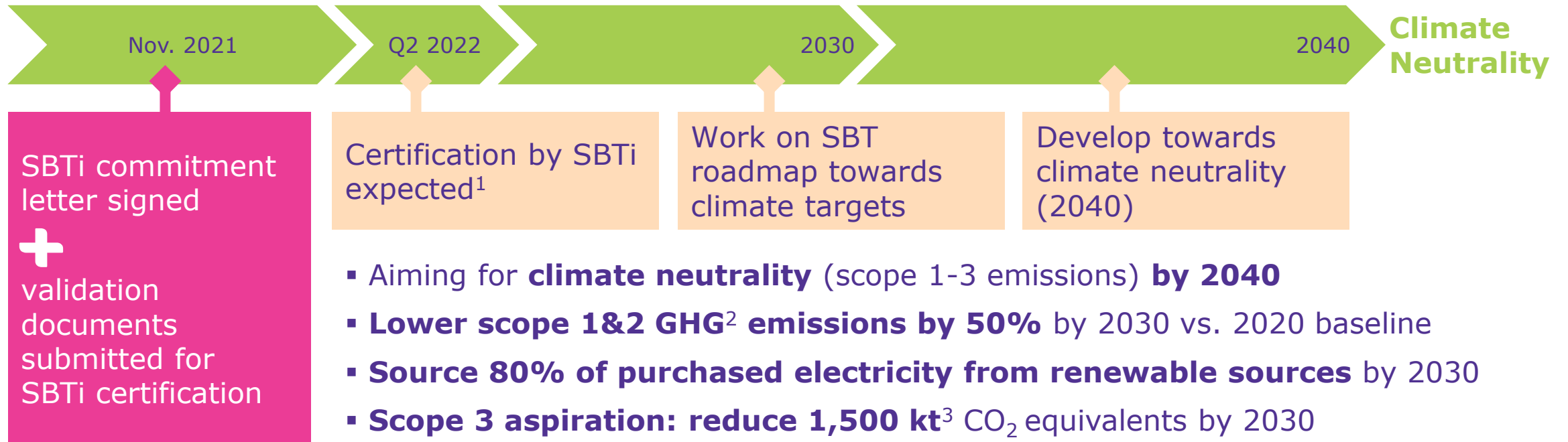


Reduce our environmental footprint: Emissions, Water and Waste

Goal 3	 Climate neutrality by 2040	 Enhance water efficiency & purity	 Reduce waste impact
Target	<ul style="list-style-type: none"> Lower scope 1+2 GHG³ emissions by -50% source 80% of purchased electricity from renewable sources until 2030⁴ Absolute reduction of -1,500 kt⁵ scope 3 CO₂ equivalents by 2030 	<ul style="list-style-type: none"> Enhancing water efficiency: improve Company water intensity score by -10% by 2025² Harmful emission residues should be lowered below a scientifically defined threshold by 2030 	<ul style="list-style-type: none"> Based on the Company Waste Score, we have set ourselves the goal of reducing the environmental impact of our waste by -5% by 2025 compared to 2016
Status	<ul style="list-style-type: none"> ➤ Scope 1+2: 1,843 kt¹ (2,028 kt²) ➤ Renewable energy: 30%¹ (27%²) ➤ Scope 3: 5,716 kt¹ (5,030 kt²) ➤ Committed to  SCIENCE BASED TARGETS 	<ul style="list-style-type: none"> ➤ 2025 target achievement will be reported from fiscal year 2022 onwards ➤ 2020 target of -10% has been overachieved: -27% 	<ul style="list-style-type: none"> ➤ Reduction of waste impact (Company Waste Score): -4,6% in 2020 (2021 will be published in April (sustainability report))



Outlook: On the path towards climate neutrality 2040

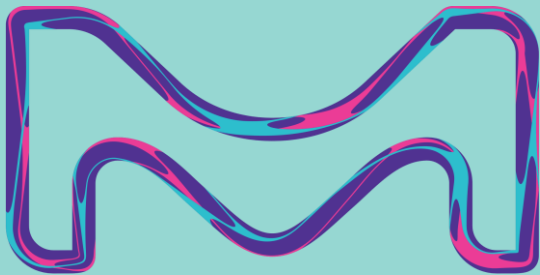


Science-Based Target initiative (SBTi):

Science-based targets provide a clearly defined pathway for companies to reduce GHG emissions, helping prevent the worst impacts of climate change and future-proof business growth.

Targets are considered 'science-based' if they are in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement, pursuing efforts to limit global warming to 1.5°C.

Guidance and Executive Summary



Group

Full-year 2022 guidance

Net sales:

Strong organic growth
Positive FX of 1% to 4% YoY

EBITDA pre:

Strong organic growth
Positive FX of 2% to 5% YoY



Executive Summary

4 key priorities to deliver on
our science & tech ambitions



**Mobilizing for
Efficient growth**



**Leveraging
Innovation
in the BIG3**



**Driving
Culture & Leadership**



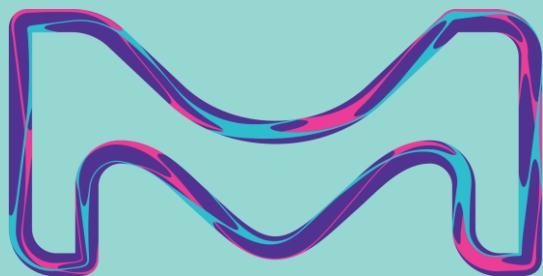
**Focusing on
Sustainability**



Appendix



GROUP



Group 2022 business sector guidance¹

Life Science

Net sales

- Strong organic growth
- Strong core business, Process Solutions COVID-19 sales of up to ~€900 m
- Process Solutions as main growth driver

EBITDA pre

- Strong organic growth
- Slight to moderate positive FX

Healthcare

Net sales

- Solid organic growth
- Mainly driven by Mavenclad[®] and Bavencio[®]
- CM&E back to growth post VBP

EBITDA pre

- Moderate to solid organic growth
- Mainly driven by Mavenclad[®] sales
- Solid to strong positive FX

Electronics

Net sales

- Solid to strong organic growth
- Strong contribution by Semiconductor Solutions
- Continuous strong OLED performance

EBITDA pre

- Solid organic growth
- Solid to strong positive FX

Additional financial guidance 2022

Further financial details

Corporate & Other EBITDA pre	Slightly higher costs driven by hedging
Interest result	~ €-150 to -190 m
Effective tax rate	~22% to 24%
Capex on PPE ¹	~€1.6 to 1.7 bn
Hedging/USD assumption	FY 2022 hedge ratio ~50% at EUR/USD ~1.16
2022 Ø EUR/USD assumption	~1.11 to 1.16

¹Based on gross additions to PPE on balance sheet in fiscal year, to reflect planned Capex expansion more accurately



Group

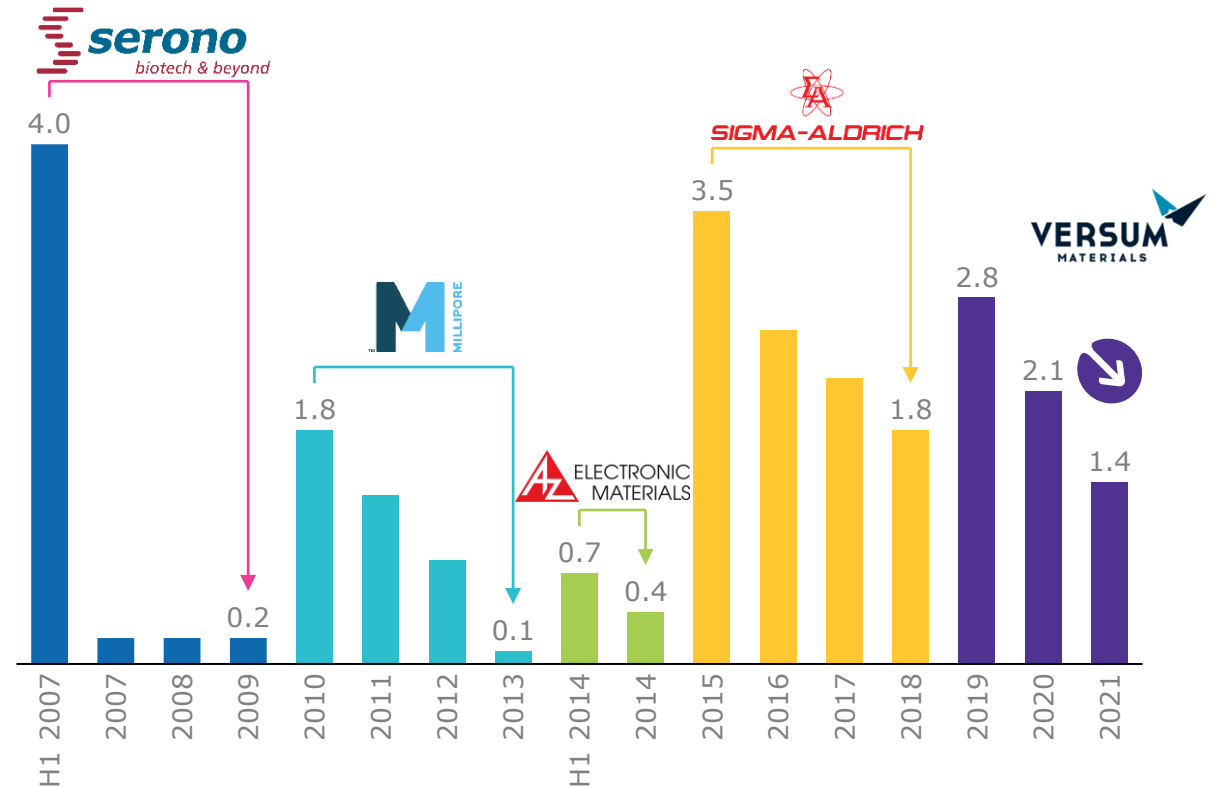
Focus on organic growth and further deleveraging

Proven swift deleveraging after major acquisitions

UPDATE

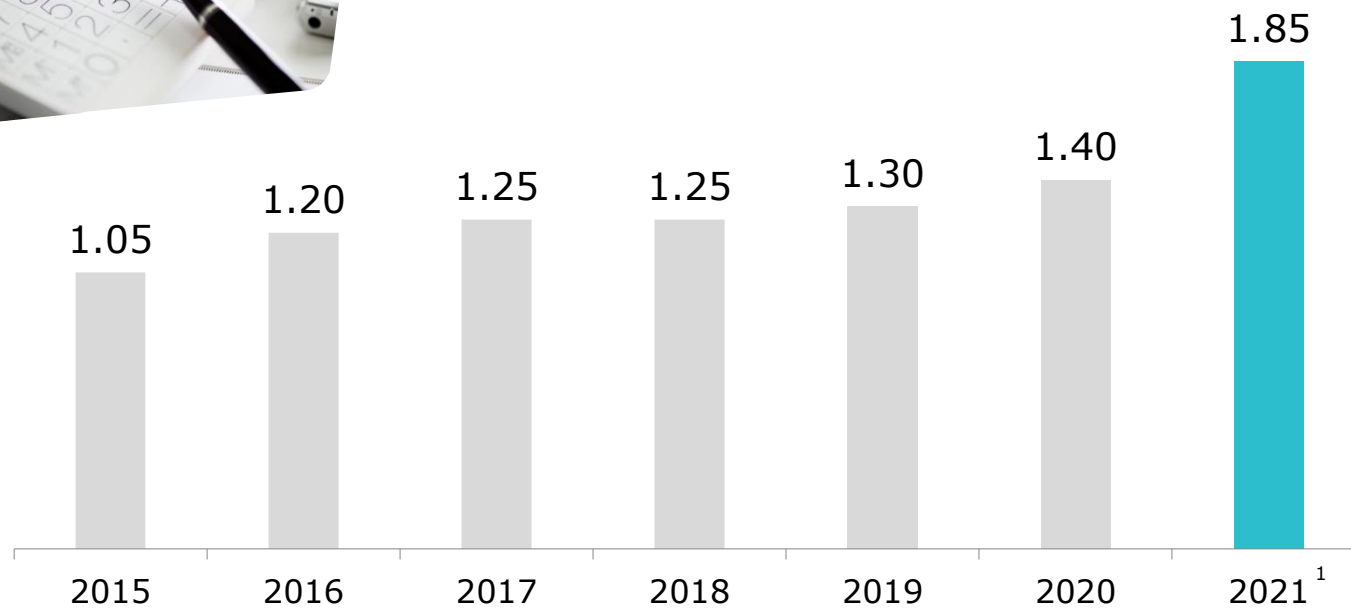
- **Deleveraged to ~1.4x** net debt/EBITDA pre in 2021
- **M&A on agenda from 2022**; higher likelihood for small & medium sized deals
- Annual capex guidance: from ~€1.4 bn in 2021 to ~€2 bn by 2023 and **increased focus on organic investment**
- Dividend policy mirrors **sustainable earnings trend**

Net debt / EBITDA pre track record & outlook



Strong company performance drives all time high payment to shareholders

Dividend¹ development 2015 - 2021



2021 dividend

- Dividend of €1.85 (+32% YoY) per share proposed¹ for 2021
- Payout ratio of 21.2% of EPS pre in 2021; aiming for 20% to 25%
- Dividend yield² of 0.8%

¹Final decision is subject to Annual General Meeting approval

²Calculated with 2021 year-end share price of €227.00 per share.



Group

Company's ownership structure

Shareholders of Merck KGaA, Darmstadt, Germany

- Shareholders hold ~30% of Group's total capital
- Share capital is divided into 129,242,252 bearer shares and one name share without nominal value
- Listed at German Stock Exchange's Prime Standard, member of the DAX 30
- Only bearer shares entitled to vote at Company's Annual General Meeting: **one share, one vote**

Supervisory Board

Its Chairman leads AGM, representing interests of Group's shareholders:

- Approving financial statements of the Group
- Working together with Executive Board, receiving reporting on progress regarding business and financial development at Group, Containing 16 members: **8 employee representatives, 8 independent representatives** (2 family representatives and 6 elected shareholder representatives)
- 2 committees: **Nomination and Audit Committee**

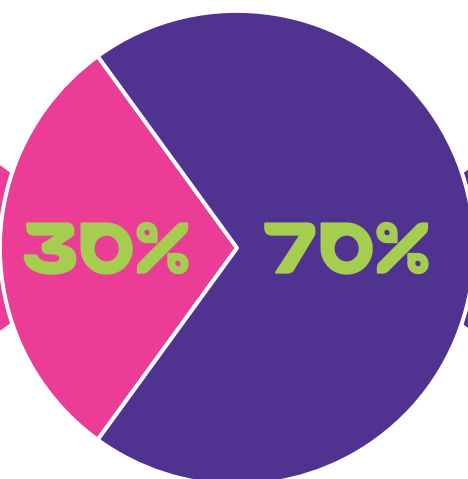
Nomination Committee
Defines criteria and makes proposals for new candidates

Audit Committee
Control systems, external auditing, financial statements

Finance Committee
financial statements, external auditing

Personnel Committee
Executive board members, contracts, compensation

R&D Committee
research activities of all sectors: HC, LS, EL



E. Merck KG, Darmstadt, Germany: Partners' Meeting & Family Board

- E. Merck KG, Darmstadt, Germany (99.9% the Family) holds ~70% of Group's total capital
- These 70% of the total capital are **not entitled to vote** at Company's AGM
- A Family Board represents the entrepreneurial interests of the Family (elected by partners' meeting)

Board of Partners

Elected by Family Board, and takes over some duties of a usual Supervisory Board:

- Appointment, dismissal and supervision of Executive Board members of Merck KGaA, Darmstadt, Germany
- Approves extraordinary business transactions and annual financial statements of E. Merck KG, Darmstadt, Germany
- Contains **5 members of the Family Board and 4 external members** of the business community
- 3 committees: **Finance, Personnel and R&D Committee**



Group: Executive board compensation

Pay for performance reflecting the company's long-term strategy

Variable	40-50%	<h3>Long-Term Incentive Plan</h3> <ul style="list-style-type: none"> Reflecting the long-term strategy for Company's growth and (from 2022) sustainability ambition 4 years performance cycle: 3 years target achievement + 1 year holding period Based on virtual Group Share Units (Grant € divided through start share price, multiplied with the end share price) Financial targets: 50% Group Share Price vs. DAX + 25% EBITDA pre margin + 25% Organic sales growth From 2022 multiplied with sustainability factor (0.8-1.2) reflecting KPIs from each of the sustainability goals Corridors for each target and achieved targets published transparently ex-post in the compensation report Maximum cap: Maximum pay out 250%, maximum € cap for LTIP for each board member published Claw-back allows to retain amounts allocated from the Long-Term Incentive Plan 	<ul style="list-style-type: none"> + Performance of Group share price vs. the DAX 50% + EBITDA pre margin in relation to target value 25% + Organic sales growth in relation to target value 25% ✗ 0.8-1.2 Sustainability factor = 0-180% of allocated units
	25-35%	<h3>Profit Sharing</h3> <ul style="list-style-type: none"> Three-years average profit after tax of the E. Merck KG, Darmstadt, Germany, multiplied with individual permille rate From 2021 reduced individual performance factor of 0.8-1.2 can increase (bonus) or decrease (malus) the amount based on a set of criteria, incl. the 3 sustainability goals, disclosure of catalogue and reasons for if performance factor ≠ 1.0 Individual permille rate for each board member and maximum € cap for each board member published Staggered incentivization and minimum threshold value and maximum limit for profit after tax (€0.75/2.0 bn) Mandatory personal investment in Group Shares amounting to one third of the net payment of the profit sharing (4 year holding period) 	
	6-9%	<h3>Pension Entitlements</h3> <p>Defined contribution</p>	
Basic	0-3%	<h3>Additional Benefits</h3> <p>Mainly contributions to insurance policies, personal security expenses, company car...</p>	
	15-20%	<h3>Basic Compensation</h3> <ul style="list-style-type: none"> Fixed and non-performance related compensation Paid in 12 equal monthly installments €1.4 million for the chairman / up to €1.1 million for the members of the executive board 	
Maximum total compensation: reduced to €11.5 m Chairman, €9.5 m other executive board members			

Executive Board long-term incentive linked to sustainability

- Starting from fiscal year 2022, our sustainability strategy will be even more firmly embedded in the compensation system for the members of the Executive Board
- The sustainability factor encompasses three performance criteria according to the sustainability strategy and measures the performance indicators over a three-year target achievement cycle
- The sustainability factor depends on the degree of target achievement and may increase or decrease the outcome of the financial performance indicators of the LTIP (Performance Group Share vs. DAX, EBITDA pre margin, organic sales growth) in the range of 0.8x and 1.2x

Parameters for the sustainability factor for the 2022 tranche of the LTIP¹:

Performance Criteria	%	Performance Indicators
Dedicated to human progress	20%	People treated with our Healthcare products
Creating sustainable value chains	40%	Percentage of relevant suppliers (in terms of number and purchase volume) that are covered by a valid sustainability assessment
Reducing our ecological footprint	40%	Scope 1 + 2 greenhouse-gas emissions



Group

Strategic focus areas in sustainability

Sustainability innovation and technology for our customers

- Sustainability as integral part of **product design**
- Enable **customers** to reduce sustainability footprint
- SBV as a tool to assess net sustainability **impact**

Health and wellbeing impact of our technologies and products

- Health (Healthcare, Life Science) & wellbeing (Life Science, Electronics)-related impact of:
 - Company **products**
 - Company's **activities**

Climate change and emissions

- **Greenhouse gas emissions** Scope 1, 2, 3
- **Renewable energy**
- **Energy efficiency** in operations



Sustainability culture & values

- **Diversity & inclusion** activities
- Sustainability **mindset**: Communication, trainings, incentive schemes
- **Employee engagement**

Sustainable and transparent supply chain

- Supply chain management activities:
 - Sustainability **assessments**
 - Supplier **data management**

Secured social license to operate across regions

- **Safe & ethical** research, **ethical & compliant** business conduct
- **Plant & process** safety, **patient & product** safety
- **Stakeholder** engagement & communication

Water and resource intensity

- **Waste & water** management and **recycling**
- **Circular** activities

Group

External stakeholders assess our engagement



As of 2021, Group received an MSCI **ESG* Rating of AAA.**

*Environment, Social, Governance



In September 2021, we improved our **ESG Risk Rating** to 18,3 and were assessed by Sustainalytics to be at **low risk** of experiencing material financial impacts from ESG factors.



Since 2008, Group is part of **FTSE4Good Index**, measuring the performance of companies with strong ESG practices, ranking percentile rank 95 (top 5%).



In 2020, Group has once more achieved **prime status** by **ISS Oekom.**



Since 2019, the Group share is again **included in STOXX Global ESG Leaders Index**, a sustainability index based on key environmental, social and governance criteria.



Company has been **reconfirmed** as a constituent of the **Ethibel Sustainability Index (ESI) Excellence Europe** since May 2020, based on VigeoEiris.



The Group received gold status in 2022, stating Company is among the **top 3% of companies.** **EcoVadis** annually examines ~75,000 suppliers from 160 countries.



CDP Climate: In 2021, we scored "B" (2020: B). **CDP Water:** In 2021, we received a "A-" (2020: B).



In the 2021 **Access to Medicine Index** Group ranked **eighth place.** We were recognized for our performance in R&D, where we ranked fifth.



Group

Regular portfolio review remains key to success

strong track record

- Acquisitions and divestments are part of Group's history
- Licensing and partnerships remain on our agenda
- All prior transactions earned their cost of capital



defining portfolio guard rails

- Three strong pillars with no business marginalized
- Leading market position in attractive markets
- Focus on innovation and sustainability through science and technology



clear financial M&A criteria

- Supporting profitable growth strategy
- $IRR > WACC$
- EPS pre accretive
- Maintain investment grade rating



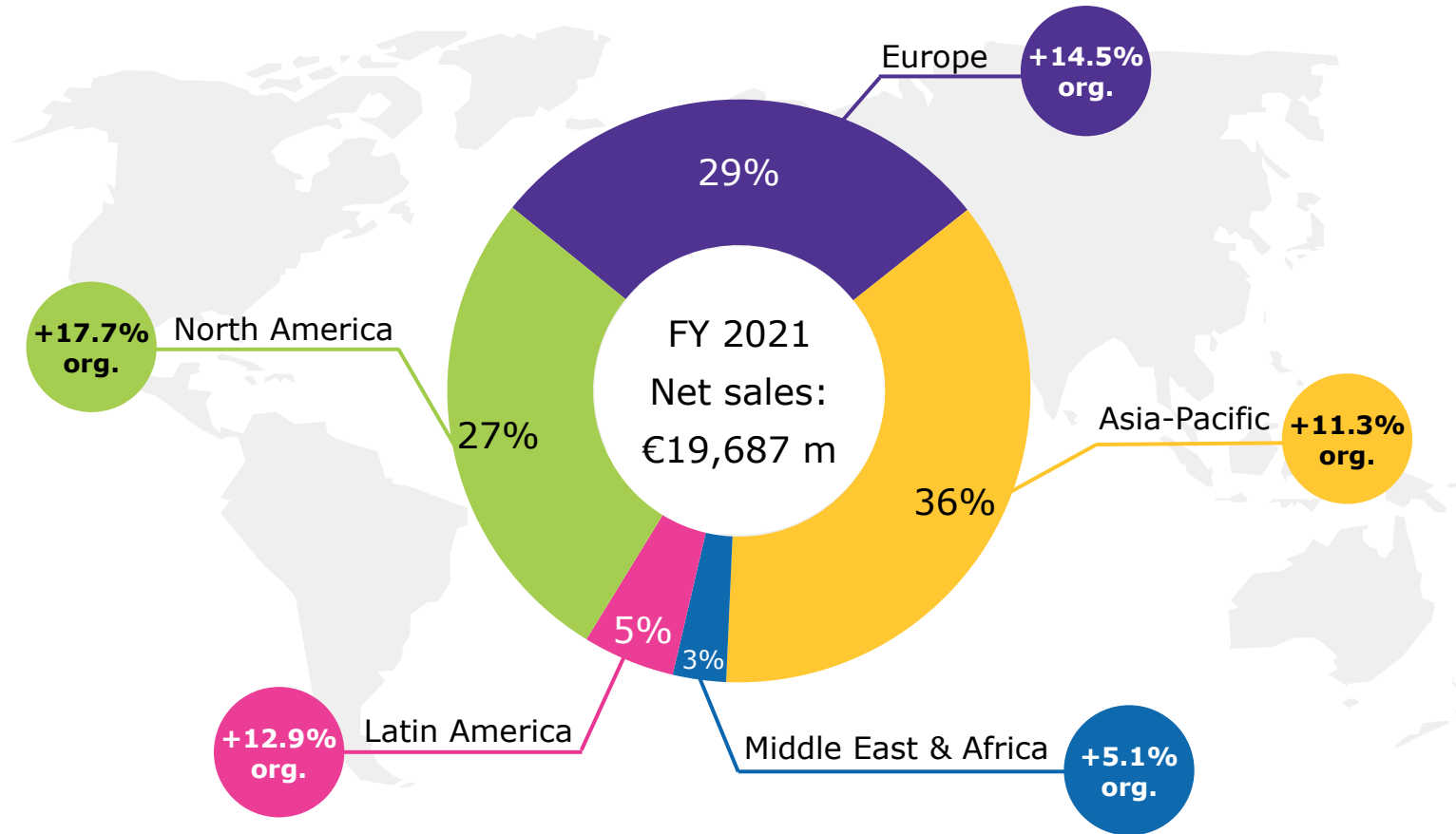
Current set-up is strong and organic investment opportunities are attractive

Ready to pursue external growth opportunities following swift deleveraging post Versum

Targeted and more regular bolt-on approach more likely than large transformative deals

Strong Life Science continues to be primary growth driver across all regions

Regional breakdown of net sales [€m]



Regional organic development

- APAC: Process & Semiconductor Solutions, drive +11% growth
- Europe: Process Solutions and Research Solutions remain primary growth drivers, Fertility and recent Healthcare launches also contributing
- North America: Process Solutions, Research Solutions, and Bavencio® top three growth drivers, further supported by Fertility & Semiconductor Solutions
- LATAM growth driven primarily by CM&E, Applied Solutions and Fertility
- Fertility continues driving ME&A growth



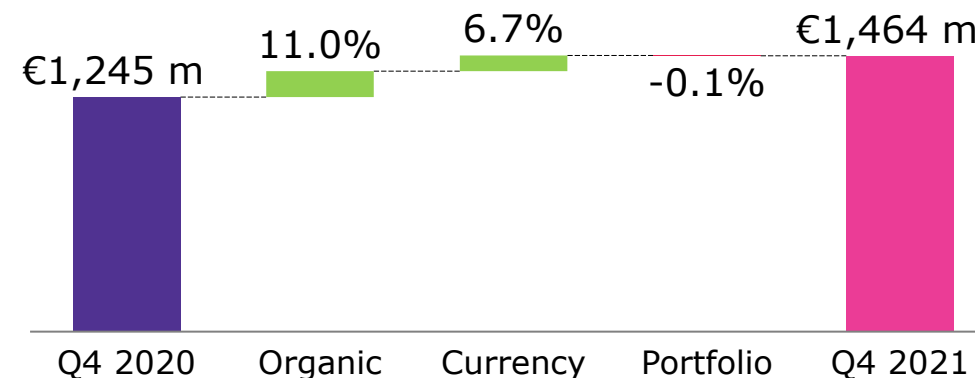
Q4 2021: Double-digit growth of Sales and EBITDA pre, Life Science business performance remains main contributor

Q4 YoY Net Sales

	Organic	Currency	Portfolio	Total
Life Science	14.2%	3.3%	0.0%	17.5%
Healthcare	4.7%	3.2%	0.0%	7.9%
Electronics	10.4%	4.2%	0.0%	14.7%
Group	9.9%	3.4%	0.0%	13.4%

- Double-digit org. sales growth of +14% in Life Science, mainly driven by outstanding +25.5% organic growth of Process Solutions
- Healthcare up +4.7% organically, driven by Oncology (+20.6% org) and Fertility recovery (+8.8% org.)
- +24% organic growth in Semiconductor Solutions and favorable FX development partially offset by organic decline of -10.5% in Display Solutions, resulting in +14.7% growth in Electronics

Q4 YoY EBITDA pre



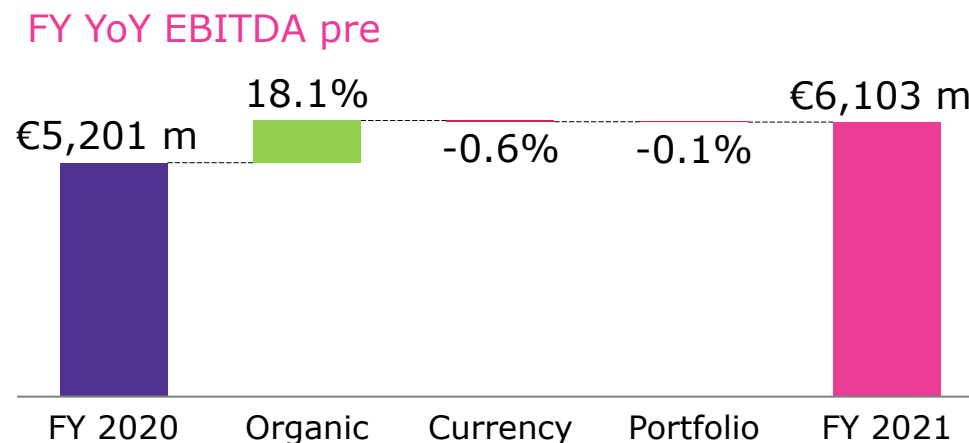
- EBITDA pre growing +11% organically driven by higher EBIT and decrease in D&A
- Margin expansion mainly due to strong Life Science performance
- Favorable FX responsible for +6.7% growth



FY 2021: +14% org. growth mainly driven by double-digit growth of Life Science, supported by strong Healthcare and Electronics performance

FY YoY Net Sales	Organic	Currency	Portfolio	Total
Life Science	21.3%	-1.6%	0.0%	19.6%
Healthcare	8.5%	-1.4%	-0.3%	6.8%
Electronics	7.7%	-0.9%	0.0%	6.7%
Group	13.8%	-1.4%	-0.1%	12.3%

- Life Science: Record growth across all business units; +31% org. in Process Solutions driven by strong core business and COVID-19 demand; Research and Applied grow +15% org. and +9% org.
- Healthcare: Recent launches up +60% org. on top of growing established portfolio (+3% org.) supported by Fertility recovery; driving strong +8.5% org. growth in the sector
- Electronics: Double digit growth of Semiconductor Solutions (+15% org.) and Surface recovery (+13% org.) more than offset Display decline (-6% org.), driving +8% org. growth overall

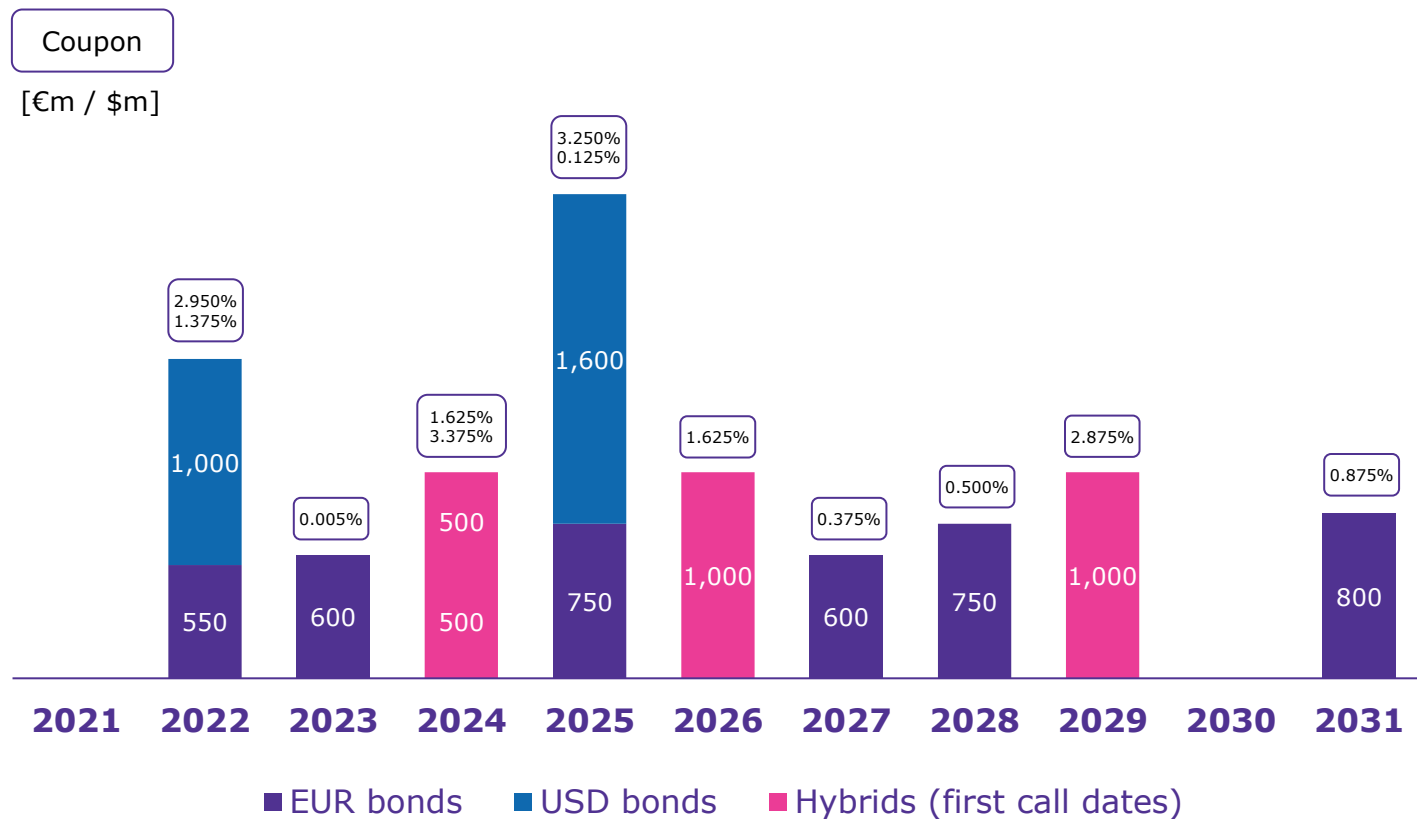


- EBITDA pre up +18% org. (+27% org. excl. 2020 Biogen provision reversal), ahead of sales
- Life Science operating leverage main driver for margin expansion, supported by stringent cost management across the enterprise
- Slight negative FX effects driven primarily by USD, JPY & TRY, partly offset by positive effects from CNY



Credit details

Maturity profile as of Dec 31, 2021



Credit rating information

	LT Rating	Since	Outlook	ST Rating
MOODY'S	A3	21.10.21	Stable	P-2
S&P Global	A	29.05.13	Stable	A-1
SCOPE	A-	11.10.21	Positive	S-1



Q4 2021: Overview

Key figures

[€m]	Q4 2020	Q4 2021	Δ
Net sales	4,599	5,213	13.4%
EBITDA pre	1,245	1,464	17.6%
<i>Margin (in % of net sales)</i>	27.1%	28.1%	1.0pp
EPS pre	1.57	2.06	31.2%
Operating cash flow	1,288	1,045	-18.9%

[€m]	Q4 2020	Q4 2021	Δ
Net financial debt	-10,758	-8,753	-18.6%
Working capital	3,938	4,207	6.8%
Employees	58,096	60,335	3.85%

Comments

- Net sales up +13%, driven by strong org. performance across all sectors, particularly Life Science
- EBITDA pre up +18%, driven primarily by Life Science and Electronics
- EBIT pre contribution main driver for EPS pre improvement
- Operating cash flow down -19% from tax cash-out and inventory build up to serve sales and ensure supply security
- Sound working capital management ensures growth significantly below sales growth



FY 2021: Overview

Key figures

[€m]	FY 2020	FY 2021	Δ	(Excl. Biogen provision reversal)	
				FY 2020	Δ
Net sales	17,534	19,687	12.3%		
EBITDA pre	5,201	6,103	17.3%	4,836	26.2%
Margin (in % of net sales)	29.7%	31.0%	1.3pp	27.6%	3.4 pp
EPS pre	6.70	8.72	30.1%	6.07	43.7%
Operating cash flow	3,477	4,616	32.7%		

[€m]	Dec. 31, 2020	Dec. 31, 2021	Δ
Net financial debt	-10,758	-8,753	-18.6%
Working capital	3,938	4,207	6.8%
Employees	58,096	60,335	3.85%

Comments

- Sales up +12%, driven by strong growth across all sectors, particularly Life Science
- 340 bps uplift in underlying EBITDA pre margin¹ fueled by strong Life Science performance and operating leverage
- EPS pre growth of +44%¹ mainly driven by EBIT pre contribution, further supported by better financial result
- Operating cash flow up +33% supporting strong net debt reduction of €2 bn
- Sound working capital management ensures growth significantly below sales
- Headcount mainly driven by Life Science

¹Excluding €365 m Biogen Provision Release



Q4 2021: Reported figures

Reported results

[€m]	Q4 2020	Q4 2021	Δ
EBIT	611	1,039	70.0%
Financial result	-52	-47	-10.0%
Profit before tax	559	992	77.4%
Income tax	-119	-185	56.1%
<i>Effective tax rate (%)</i>	21.2%	18.7%	-2.6pp
Net income	436	802	84.1%
EPS (€)	1.00	1.84	84.0%

Comments

- Strong performance across all sectors, particularly in Life Science, drive +70% EBIT growth
- Improved financial result driven by ongoing deleveraging
- Income tax developing in line with profit before tax, tax rate temporarily below guidance corridor as FY closes above the lower end
- Higher net income and EPS reflect higher EBIT, improved financial result and lower tax rate



FY 2021: Reported figures – comps impacted by Biogen provision reversal

Reported results

[€m]	FY 2020	FY 2021	Δ
EBIT	2,985	4,179	40.0%
Financial result	-354	-255	-28.1%
Profit before tax	2,630	3,924	49.2%
Income tax	-637	-859	34.9%
<i>Effective tax rate (%)</i>	24.2%	21.9%	-2.3pp
Net income	1,987	3,055	53.7%
EPS (€)	4.57	7.03	53.8%

Comments

- EBIT growth of +40% mainly driven by leveraged business growth, understated by €365 m for Biogen provision reversal in 2020
- Improved financial result reflects lower interest expenses driven by continuous deleveraging
- Lower effective tax rate due to favorable country mix, primarily in Life Science
- Net income and EPS reflect EBIT growth and improved financial result



Cash flow statement

Q4 2021 – Cash flow statement

[€m]	Q4 2020	Q4 2021	Δ
Profit after tax	440	807	366
D&A	496	475	-21
Changes in provisions	185	-50	-235
Changes in other assets/liabilities	-48	-192	-144
Other operating activities	-60	16	76
Changes in working capital	275	-11	-285
Operating cash flow	1,288	1,045	-243
Investing cash flow	-98	-352	-254
thereof Capex on PPE	-609	-199	409
Financing cash flow	-1,381	-319	1,062

Cash flow drivers

- +83% growth in profit after tax driven by strong business performance, lower tax rate and improved financial result
- Changes in provisions primarily driven by lower restructuring provisions
- Other assets & liabilities mainly driven by Life Science tax prepayments in U.S.
- Working capital primarily driven by higher inventories to support sales and supply security in Life Science and Electronics
- Lower operating cashflow reflects working capital and tax prepayment
- 2020 investing cash flow suppressed by reversal of Q3 temporary excess cash investment, 2020 PPE elevated by Burlington and Tempe purchases
- LY financing cash flow reflects bank loans and commercial paper repayment



Cash flow statement

FY 2021 – cash flow statement

[€m]	FY 2020	FY 2021	Δ
Profit after tax	1,994	3,065	1,071
D&A	1,938	1,762	-176
Changes in provisions	-110	196	305
Changes in other assets/liabilities	-123	-121	2
Other operating activities	-59	62	122
Changes in working capital	-162	-349	-186
Operating cash flow	3,477	4,616	1,138
Investing cash flow	-1,340	-1,578	-238
thereof Capex on PPE	-1,377	-1,059	318
Financing cash flow	-1,522	-2,504	-982

Cash flow drivers

- Operating cash flow growing €1.1 bn or +33% vs. FY 2020
- Increase in profit after tax driven by strong operational performance, particularly in Life Science
- Delta in changes in provisions driven primarily by Biogen provision reversal of €365 m in 2020
- Net working capital outflow driven by inventories to support Life Science and Electronics sales growth & supply security
- 2020 Capex on PPE elevated by building purchases in Burlington and Tempe
- Financing cash flow driven by ongoing strong deleveraging



Adjustments in Q4 2021

Adjustments in EBIT

[€m]	Q4 2020		Q4 2021	
	Adjustments	thereof D&A	Adjustments	thereof D&A
Healthcare	93	0	-17	3
Life Science	6	3	14	11
Electronics	29	11	26	8
Corporate & Other	23	0	-49	1
Total	151	14	-26	23



Adjustments in FY 2021

Adjustments in EBIT

[€m]	FY 2020		FY 2021	
	Adjustments	thereof D&A	Adjustments	thereof D&A
Healthcare	85	2	14	6
Life Science	21	3	40	11
Electronics	223	123	91	33
Corporate & Other	79	0	65	3
Total	407	128	210	53



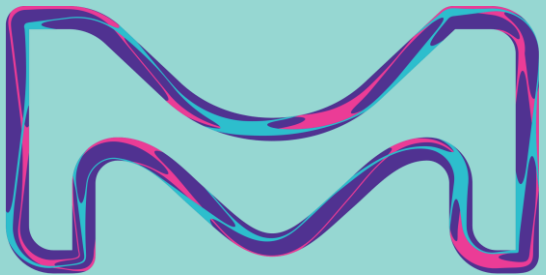
Financial Calendar



Date	Event
April 22, 2022	<i>Annual General Meeting</i>
May 12, 2022	Q1 2022 Earnings release
August 4, 2022	Q2 2022 Earnings release
November 10, 2022	Q3 2022 Earnings release
March 2, 2023	Q4 2022 Earnings release



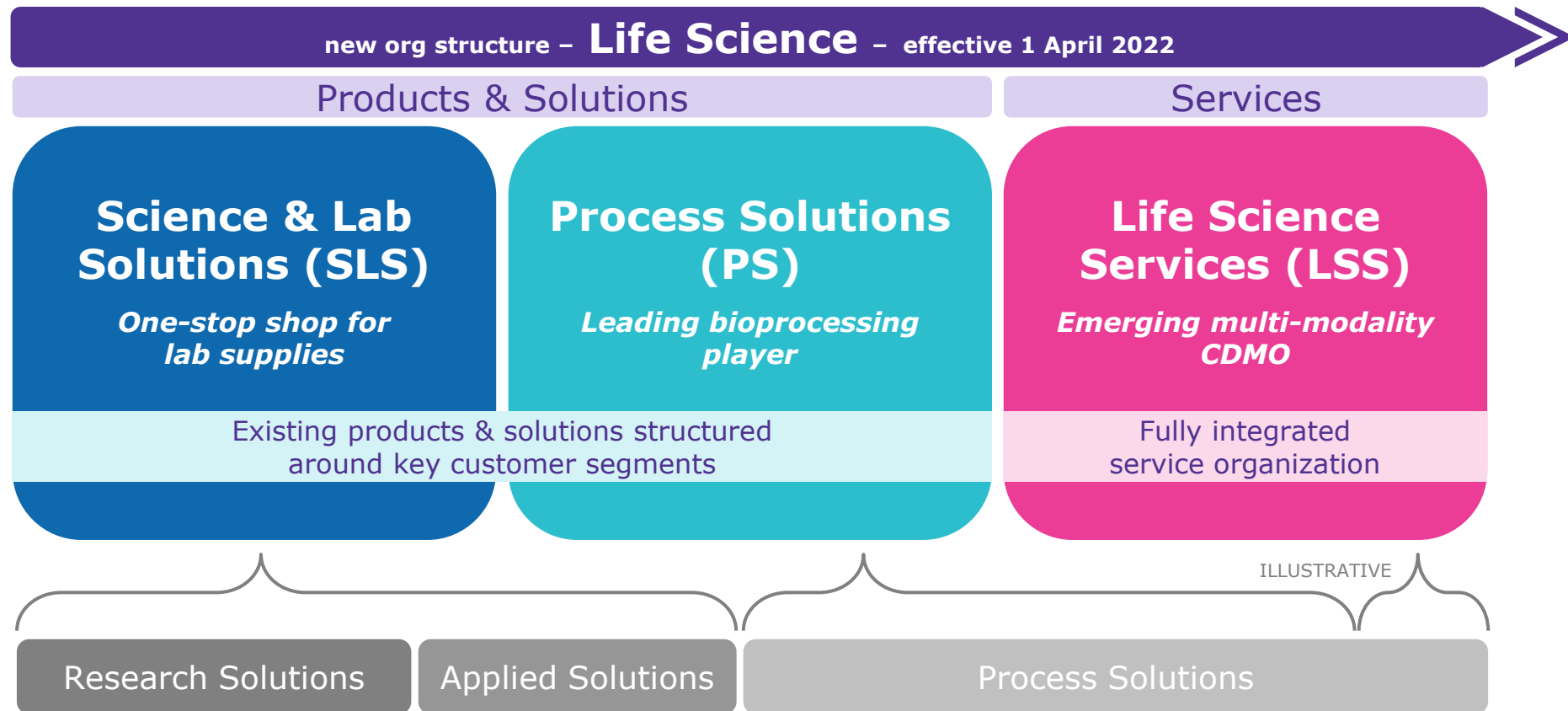
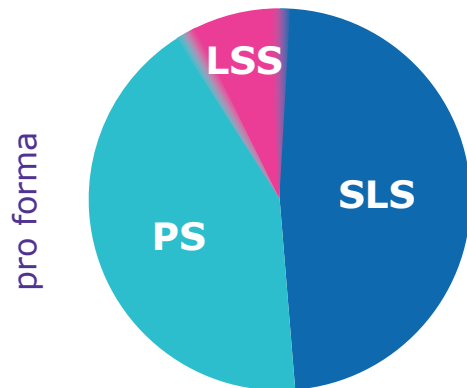
Life science



Life Science

New organizational structure and operating model to support long-term growth strategy and better serve evolving customer needs

Life Science sales split by business unit (9M-21)



Accelerating ability to provide best-in-class products and services to customers across pharma & biotech, industrial & testing, academic & government, and diagnostics

Life Science

New enablement function & leadership to complement existing capabilities and deliver expert value to the business

new org structure – **Life Science** – effective 1 April 2022

Capabilities & Enablement



Continue to deliver expert value & support

Ensure flawless execution of transformation agenda

Further establish standardized & best-in-class processes & structures

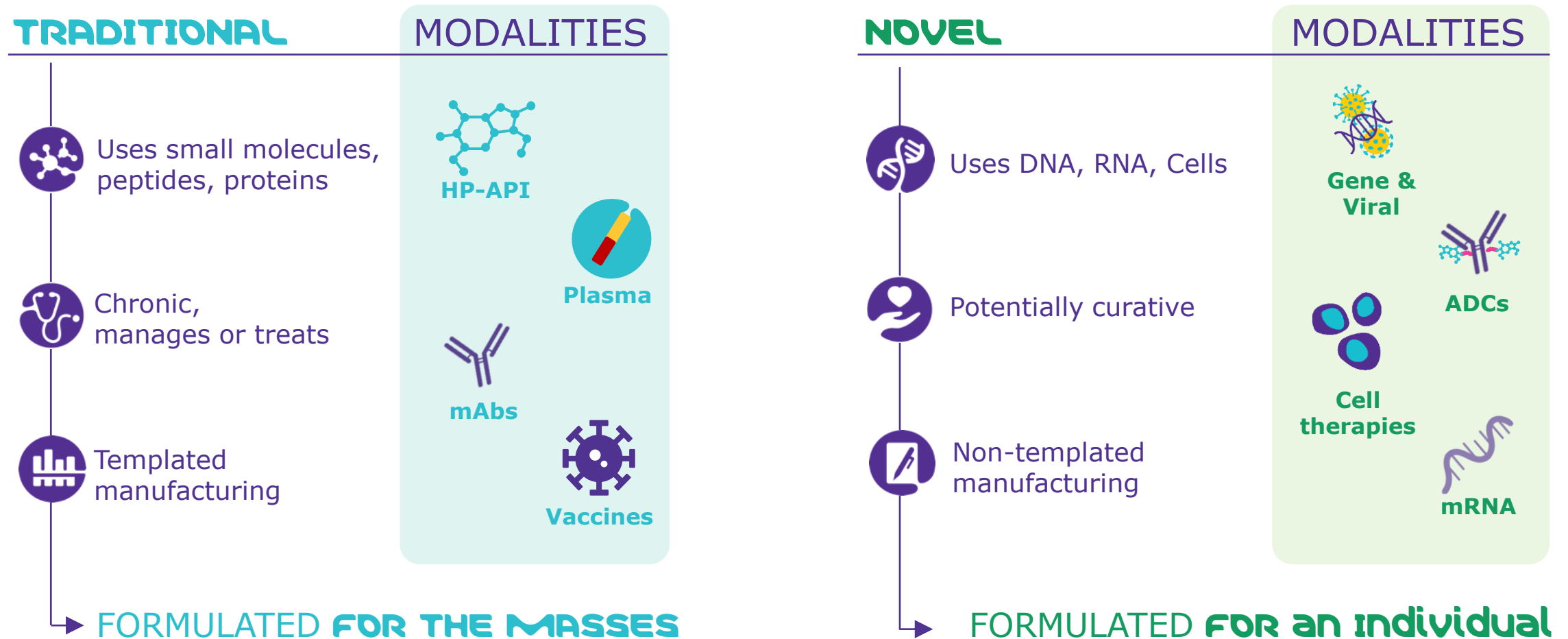


¹ New leadership since 1 Dec 2021; ² New leadership since 1 Aug 2021



Process Solutions: Therapies are evolving from treatments to cures

Advancing traditional is critical as novel modalities develop



Acronyms: HP-API = highly potent active pharmaceutical ingredient; mAbs = monoclonal antibodies; DNA = deoxyribonucleic acid; (m)RNA = (messenger) ribonucleic acid; ADC = antibody drug conjugate



Process Solutions

Moving from today's technology to BioPharma 4.0

unit operations		 PALL	ThermoFisher SCIENTIFIC	SARTORIUS
Cell culture media	●	●	●	●
Biopharm materials	●	●	●	●
Chromatography	●	●	●	●
Hardware	●	●	●	●
Single use	●	●	●	●
Sterile	●	●	●	●
Virus	●	●	●	●
Clarification	●	●	●	●
Tangential flow filtration	●	●	●	●

● = A leading player
 ● = Significant presence
 ● = No offering

Sources: press releases, company reports, and internal assessments

Intensified, integrated, digitally-enabled

mAbs templated 30 years ago → Next generation bioprocessing

Intensified Processing

Value for customers

Perfusion BioRx Matrix chrom In-Line Dilution Single Pass TFF

Process Analytics

Insight for customers

control Application Control Engine connect Orchestrator
collaborate Customer Portal collect ProcessPad ProCellics

▶ Progress
 ○ Launched

Real-time Release

Assurance at speed

Microbial cont./ Bioburden

Biosafety

CQA

In-process

Core technologies



Process Solutions: Strategic direction

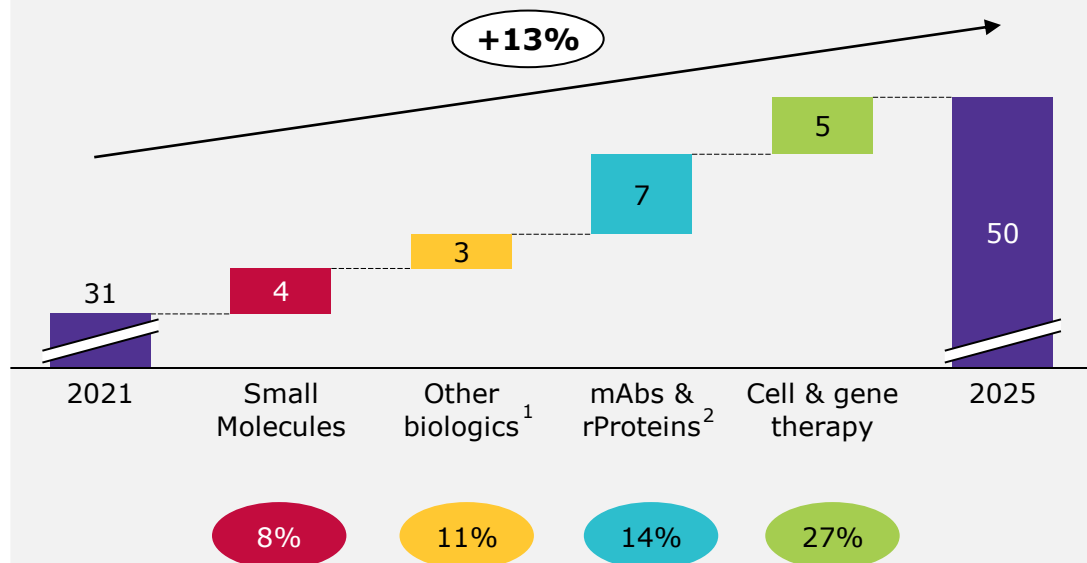
Innovate and invest today to continue above market growth in the future



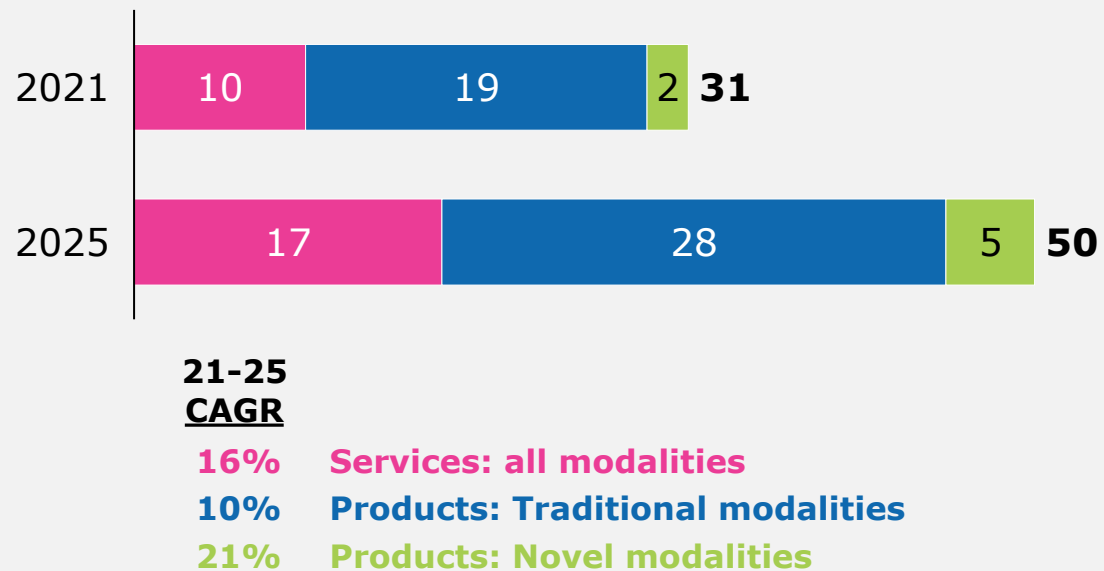
Opportunities in services to accelerate double-digit growth

Accessible Market (€ bn)

mAbs dominate; Novels fastest



Importance of services and novel modalities increases



Sources: Evaluate Pharma, internal market models, CSR sales data; ¹ Other biologics include plasma, vaccines, insulin, microbial and non-mAb biosimilars; ² mAbs include ADCs here
 Acronyms: mAbs = monoclonal antibodies, rProteins = recombinant proteins, ADCs = antibody drug conjugates



Process Solutions

Next-generation bioprocessing on the cards

Today's process & portfolio

CHOZN
Cell Line

Ex-Cell®
Advanced™
media

Mobius®
bioreactor

Clarisolve®
Depth Filters

Eshmuno®
Chrom. resin

Viresolve®
Pro Solution

ProSep®
Ultra Plus
Resin

Opticap®
Filters

Pellicon®
Ultrafiltration
Cassettes
Launched 2018

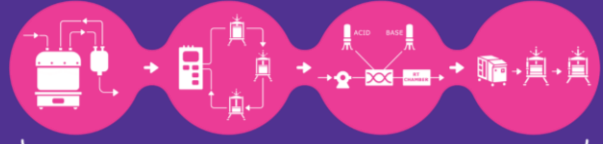
Durapore®
Filtration

Millipak®
Final Fill
Filter
Launched 2018

BioReliance® **cGMP SOLUTIONS & SERVICES** **EMPROVE®**

Tomorrow's process

MAb process intensification 2017 - 2020+



continuous processing >2025

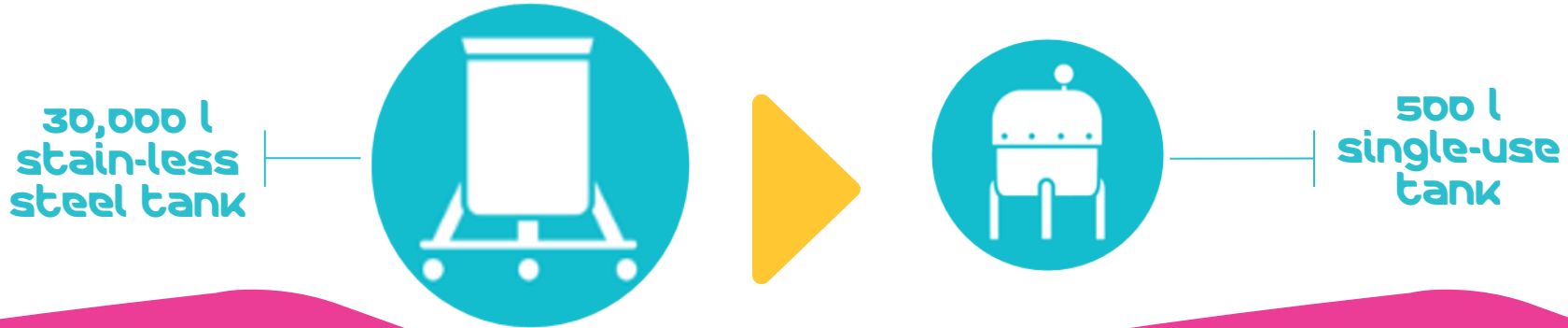


Continuous bioprocessing will ...

- be an evolution in mAb bioprocessing
- take time to establish
- leverage the present
- lead to hybrid solutions

Process Solutions

Our single-use technologies drive flexibility in modern bioprocessing



Traditional Multi-use facility

CAPEX* required	~\$500 m to \$1 bn
Time to construct	5 to 10 years
Change over time	4 weeks
Footprint	~>70,000 m ²

Innovative single-use facility

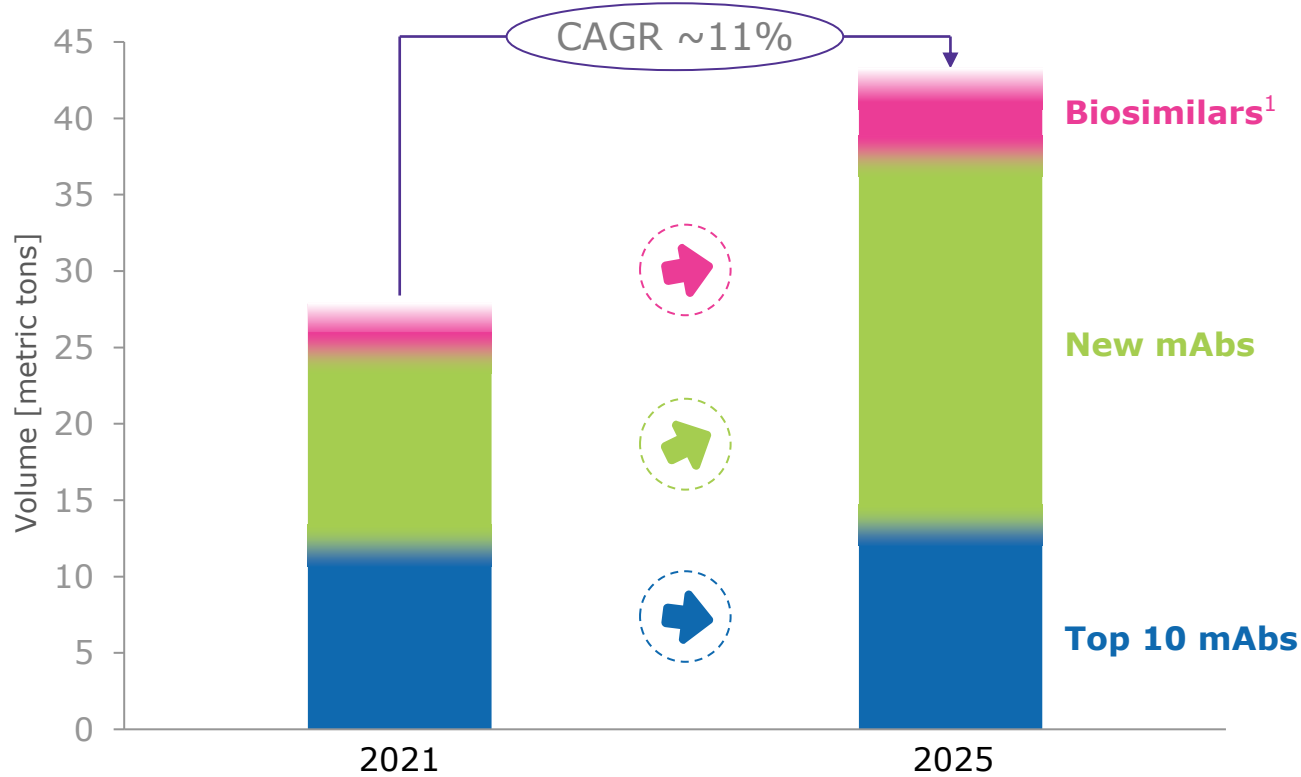
CAPEX required	\$20 m to \$100 m
Time to construct	1.5 years
Change over time	0.5 days
Footprint	~11,000 m ²

Strong demand for single-use technologies and Process Solutions' broad offering was and will remain a key source of growth for Life Science



mAbs market democratization will drive diversification, change & variability

mAb volume projections 2021 to 2025



Market development

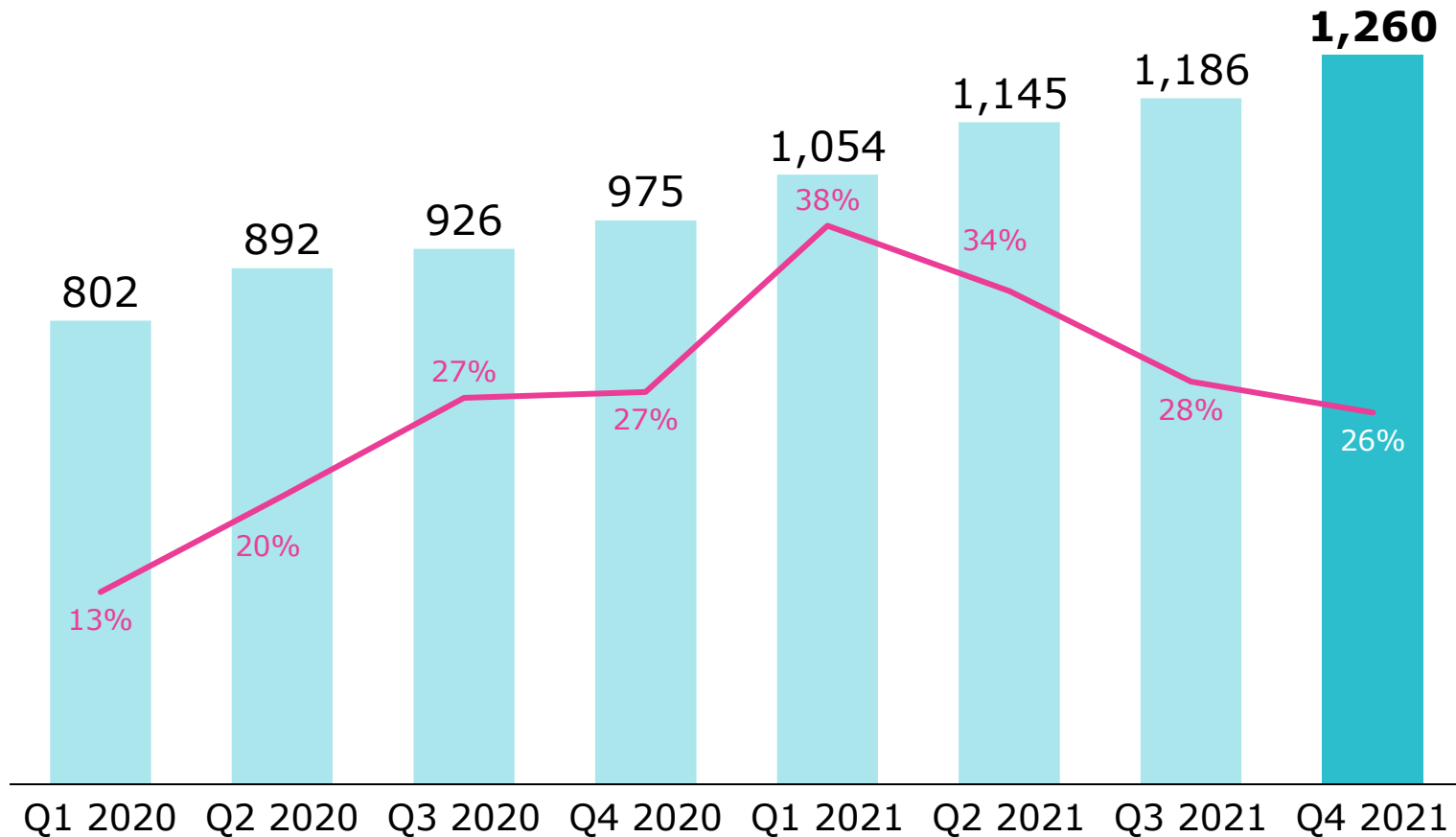
- mAbs market will grow ~11% CAGR
- Top 10 originator mAbs represent ~45% (11mT) of volume today; volume grows but share declines to ~35% (14mT) in 2025
- Biosimilars continue to gain share

¹Biosimilars scaling factor = 2.8 based off internal estimates and McKinsey analysis; Source: company estimate based on industry forecasts, EvaluatePharma; Acronyms: mAbs = Monoclonal antibodies



BIG 3 - Process Solutions: Record Q4 2021 in absolute terms, declining growth rate against high comps

Sales development [€m] - org. growth [%]

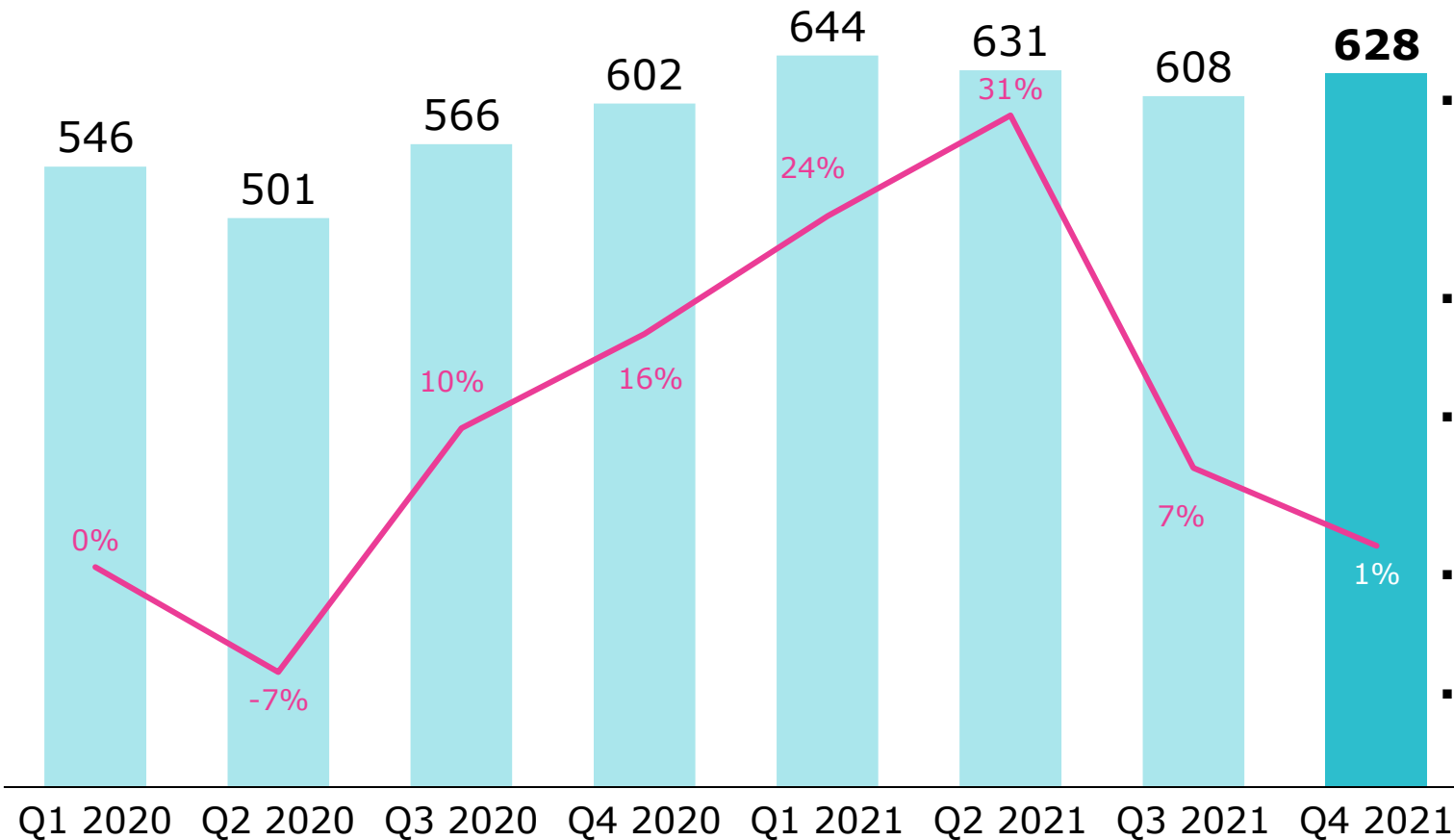


- Continued **strong core business** explaining >50% of Q4 growth; **additional COVID-19 demand** (mainly vaccine related) fading sequentially and facing tougher comps
- **BioProcessing remains biggest growth driver**, followed by formulations (e.g. lipids for mRNA)
- **Growth moderating further** as expected **amid rising comps**, including significant COVID-19 business
- Sequentially higher sales as output increases on the back of **ongoing productivity gains and successful capacity ramp-up**
- **Order intake growth** slowing further sequentially in Q4; slightly up Y-o-Y amid normalization against tough comps



Research Solutions: normalizing growth against rising comps

Sales development [€m] - org. growth [%]

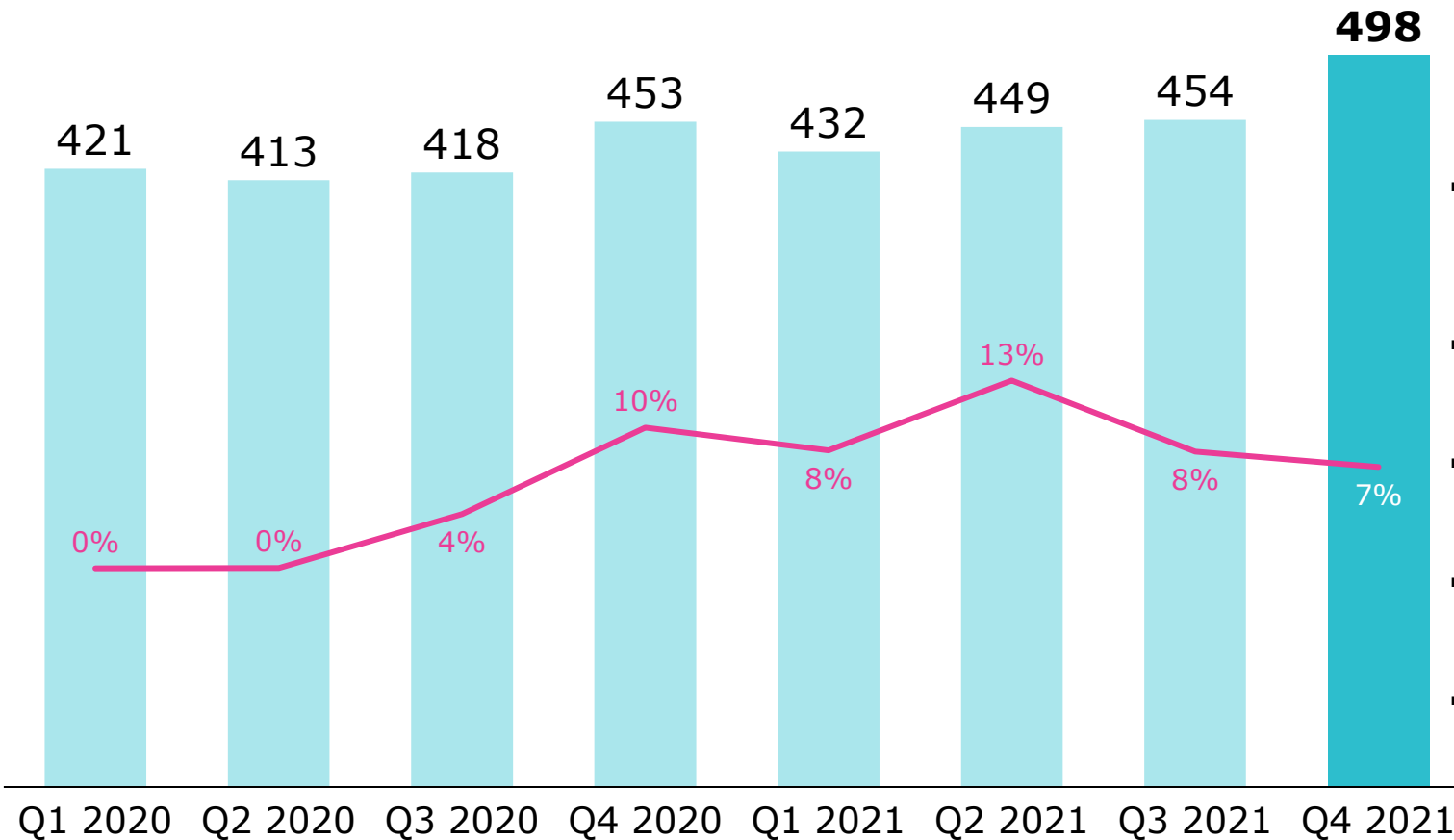


- **Organic growth slowing to +1.5% against strong comps** as Q4 2020 was elevated by post lockdown laboratory rebound and additional COVID-19 demand
- **Core business slightly growing** despite strong comps given recovery in Q4 2020
- **COVID-19 sales** (diagnostics raw materials) weighing on growth and **fading further** sequentially albeit at reduced pace
- **Stable development in NA and Europe**, all other regions growing
- **Industrial & Testing** and **Pharma & Biotech growing**, mitigated by declines in other customer segments



Applied Solutions: Record absolute sales and robust growth despite strong baseline

Sales development [€m] - org. growth [%]



- **Strong finish** with robust growth despite high comps with Q4 2020 benefitting from post-lockdown recovery
- **Core business as main driver** with broad-based performance across business lines
- **Small COVID-19-related sales contribution**, below Q4-2020
- All regions contributing to growth in Q4 with **North America** and **APAC** as key drivers
- All customer segments growing, led by **Diagnostics**



Life Science Q4: Sequential growth drives another record quarter; 14% org. growth normalizing but still well above mid-term guidance

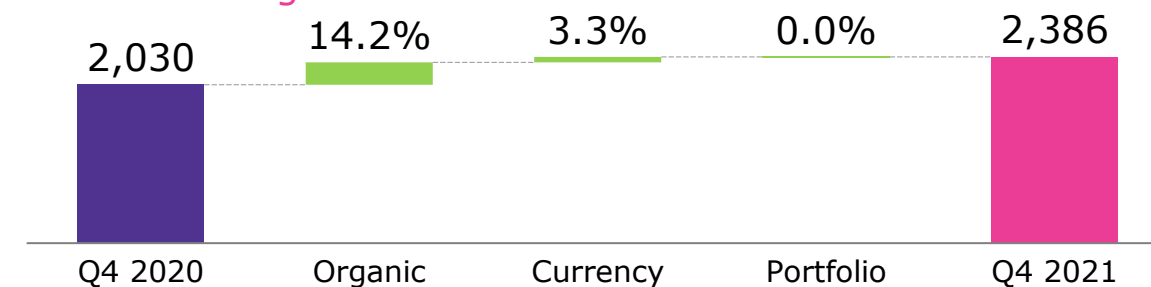
Life Science P&L

[€m]	IFRS		Pre	
	Q4 2020	Q4 2021	Q4 2020	Q4 2021
Net sales	2,030	2,386	2,030	2,386
M&S*	-531	-584	-529	-582
Admin	-76	-85	-73	-89
R&D	-87	-101	-86	-99
EBIT	451	628	457	643
EBITDA	650	837	-	-
EBITDA pre	653	840	653	840
(in % of net sales)	32.2%	35.2%	32.2%	35.2%

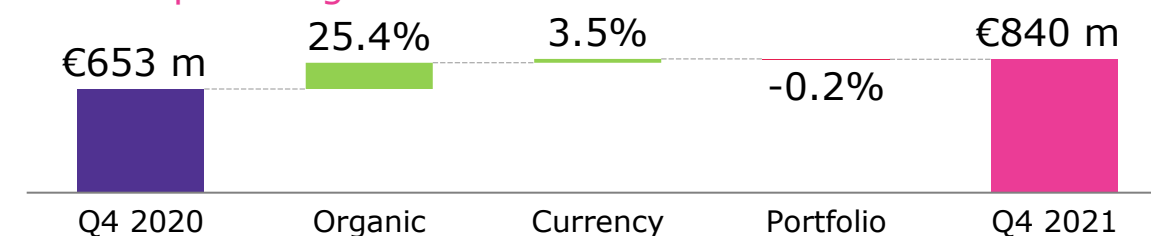
Comments

- Process Solutions: Strong organic growth of +25%, majority of growth driven by robust core business performance, continuously supported by COVID-19 demand; comps also include significant COVID-19 business
- Research Solutions: Slight organic growth of +1.5% against strong comps, elevated by Q4 2020 post lockdown laboratory rebound and additional COVID-19 business
- Applied Solutions: +7% organic growth ahead of mid-term guidance, despite no significant COVID-19 tailwind

Net sales bridge



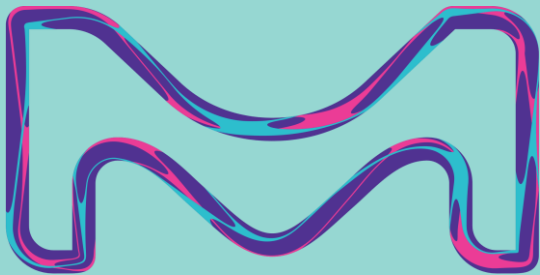
EBITDA pre bridge



- M&S in % of sales declining from 26% to 24% due to strong top line leverage, higher in absolute terms with logistics being the largest driver
- Higher R&D spend in absolute terms with continued focused investments in high growth and emerging segments, e.g. next gen bioprocessing
- Strong EBITDA pre growth (+25% org.) again exceeding sales growth driven by strong performance, favorable product mix & pricing; margin expansion vs. LY sequentially levelling out as anticipated



healthcare



Healthcare

Pioneering patient benefit in MS for > 30 years

Rebif[®]
(interferon beta-1a)

- Blockbuster **platform therapy**
- Well-established clinical profile
- >1.8m patient-year experiences¹
- Continued upgrading (pregnancy label, injection devices)



EMA 1998 | FDA 2002
>100 countries

MAVENCLAD[®]
cladribine tablets

- Oral **high-efficacy therapy** with unique posology & mode of action^{2,3}
- Only product to demonstrate full antibody response to COVID-19 vaccines⁴
- Growing in HE dynamic market
- >30,000 patients¹



EMA 2017 | FDA 2019
84 countries

EVOLUTINIB
BTKi

- Designed for **best-in-class efficacy**⁵
- Full covalent binding and dosing regimen expected to enable constant, near complete BTK occupancy⁶
- Dual mode of action targeting both B-cells and immune cells in the CNS and periphery^{6,7}



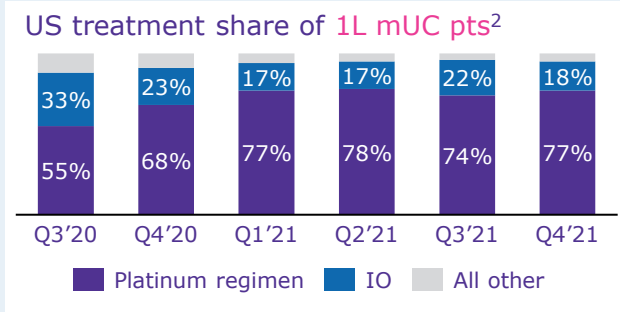
Phase 3 Clinical Development

Healthcare

Building focused leadership positions in Oncology

Building leadership in mUC¹

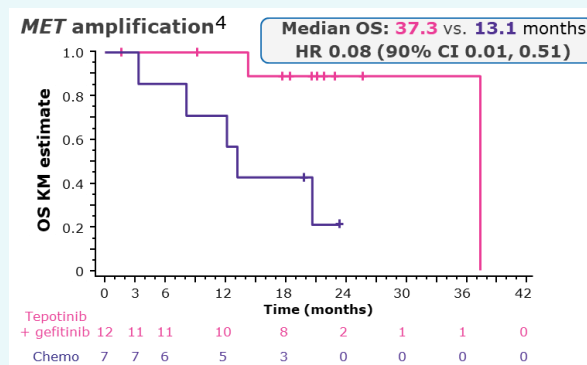
- **Bavencio** redefined SoC in mUC with unique 1L maintenance Tx. Since launch, platinum-based regimen has grown substantially



- Significant opportunity to drive further growth by increasing adoption of 1L maintenance Tx
- Opportunity to further strengthen Bavencio as SoC with novel combinations (e.g. anti-TIGIT)

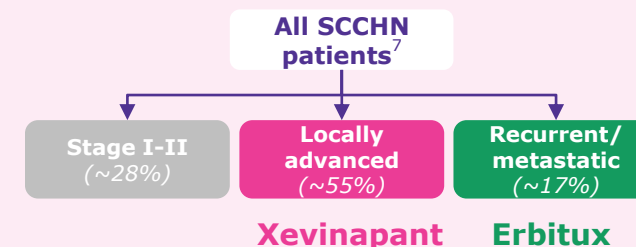
Defining leadership in MET-driven tumors

- **Tepmetko** - discovered and developed inhouse, highly potent and selective c-MET inhibitor
- Has shown consistent efficacy in METexon14 mutation across treatment lines³ and strong tolerability profile
- Foundation for expansion with MET-amplified tumors indications

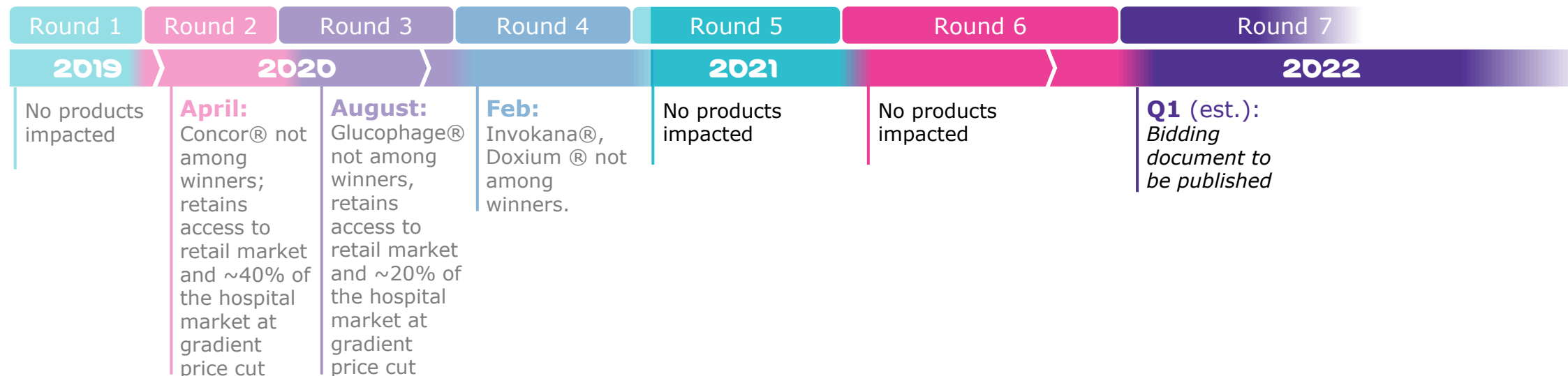


Expanding leadership in SCCHN

- **Xevinapant⁵** focuses on a novel mechanism with curative intent in a large segment with high unmet need, complimentary to Erbitux
- Strong clinical POC, doubling OS in Phase II study⁶
- Untreated and unresectable LA SCCHN patient candidates for chemoradiotherapy ~40K US & EU5



China's VBP: Rounds 5 and 6 with no impact on the Group. Confidence in approx. stable established portfolio business in 2022













- ▶ Glucophage back to QoQ growth Q4'21 post VBP impact with a positive outlook for 2022
- ▶ Erbitux successfully included in NRDL for **both mCRC and SCCHN** for reimbursement (effective January 1st, 2022)

Acronyms: VBP = Volume-Based Procurement, NRDL = National Reimbursement Drug List, mCRC = metastatic Colorectal Cancer, SCCHN = Squamous Cell Cancer of the Head and Neck




























Pipeline with uncorrelated risk and significant potential

Five focus assets with FIC potential

	FIC POTENTIAL	COMPETITION	PROMISE
Evobrutinib (BTK inhibitor)			Tackling unmet need for patients in RMS: Addressing chronic inflammation and progression between relapses, in addition to reducing acute inflammation with BIC ARR Comprehensive PhII data supports BIC profile
Xevinapant (IAP inhibitor)			Transformative patient benefit – Maximizing chances for cure for patients with locally advanced SCCHN
Berzosertib (ATR inhibitor)			Blocking ATR “master regulator” of DNA repair to enhance efficacy of TOP I inhibitors for patients with few treatment options
M1231 MUC1/EGFR bi-specific ADC			Next generation “Triple Innovation” ADC for patients with solid tumors aiming for effective delivery of potent chemotherapy payload with reduced on & off target toxicity
Enpatoran TLR7/8 inhibitor			Small molecule for targeted inhibition of important lupus mediator TLR7/8, aiming for improved efficacy with low infection risk

Focused Leadership

Leveraging and extending deep expertise

	EVOCRUTINIB	XEVINAPANT	BERZOSERTIB	M1231	ENPATORAN
Disease insights/ Wealth of data	MS leadership  	SCCHN leadership  		NCSLC Lung Cancer (Likely indication) 	Depth & breadth of clinical trial experience and data 
Biologic expertise	Immune receptor & immune complex signaling  	Apoptosis 	DNA damage response (DDR)  	Oncogenic signaling/ EGFR receptor  	Innate and adaptive immunity  
Platform capabilities	FIC small molecule  	<i>In-licensed</i>	<i>In-licensed</i>	Next generation ADCs/ bi-specific antibody  	FIC small molecule  
World-Class Collaborations		Existing collaboration on IO combo 	NCI Tempus 	Sutro 	Academic collaborators (for TLR8 structure & disease modelling) 

Potential FIC BTK inhibitor, designed for BIC efficacy

FIC BTK INHIBITOR EVOBRUTINIB

- **Pioneering program**, developing breakthrough mechanism of action with potential to change SoC in RMS
- Aiming to **address chronic inflammation and progression between relapse** in addition to **reducing acute inflammation, delivering BIC ARR**
- **Strong clinical data** supporting our confidence in Evobrutinib BIC profile
- **PhIII studies** (Evolution MS 1&2) **fully recruited**, (PR October 4, 2021)

	EVOBRUTINIB	TOLEBRUTINIB	FENEBRUTINIB	REMIBRUTINIB/ ORELABRUTINIB
ARR at 48 weeks (PhII)	0.11 ¹	0.17 ⁷	No PhII conducted	No PhII conducted
PhIII dose supported by robust data?	✓ ^{2,3}	✓ ⁸	⊖ No dose finding study in MS	⊖ No dose finding in MS
95% occupancy at trough in patients	✓ ^{3,4}	Not shown	Not available	Not available
Disease relevant CNS concentration?	✓ ^{5,4}	⊖ Only single dose effect in HV (120mg dose)	⊖ Not studied	⊖ Not studied
Statistically significant effect on SEL volume based on MRIs over 48 weeks	✓ ⁶	⊖ Not seen	⊖ Not studied	⊖ Not studied
Safety/Tolerability? ¹¹	✓ ^{1,4}	✓ ^{8,4}	✓ ¹⁰	Not available

¹ Montalban X, et al. N Engl J Med 2019;380:2406–17; ² Papasouliotis O, et al. PAGE 2021;29:Abstr 9801; ³ Papasouliotis O, et al. Eur J Neurol 2021;28(Suppl. 1):120 [OPR-084]; ⁴ Montalban X, et al. Mult Scler 2020;26 (Suppl. 3):213 [Abstract P0197]; ⁵ Piasecka-Stryczynska K, et al. Mult Scler Relat Disord 2021;51:103001 [Abstract P013]; ⁶ Arnold D, et al.ECTRIMS 2021 [OP115]; ⁷ Oh J, et al.ECTRIMS 2021 [P667]; ⁸ Reich D, et al. Lancet Neurol 2021;20(9):729-38; ⁹ Owens T, et al. Clin Transl Sci. 2021; doi: 10.1111/cts.13162; ¹⁰ Oh J, et al. Neurology 2021;96(Suppl. 15):Abstr 4564; ¹¹ Evobrutinib, Tolebrutinib and Fenebrutinib have shown asymptomatic & reversible ALT elevations that have been reversible on treatment withdrawal

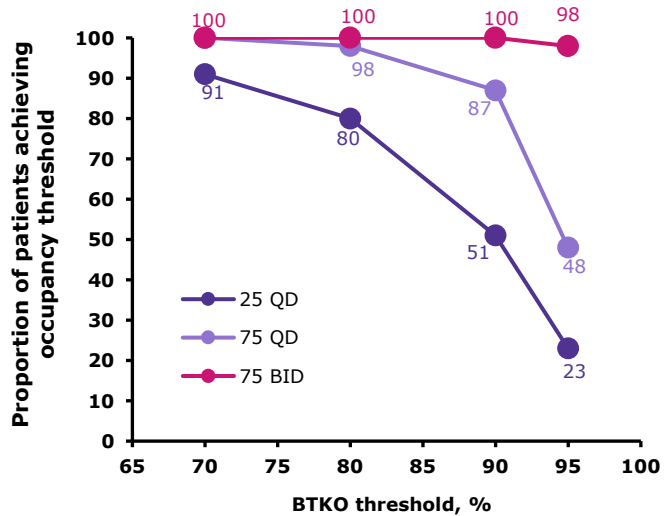
Protein turnover of BTK requires BID dosing to achieve optimal BTK occupancy for best efficacy

98% of patients receiving 75mg BID achieved >95% trough BTKO¹

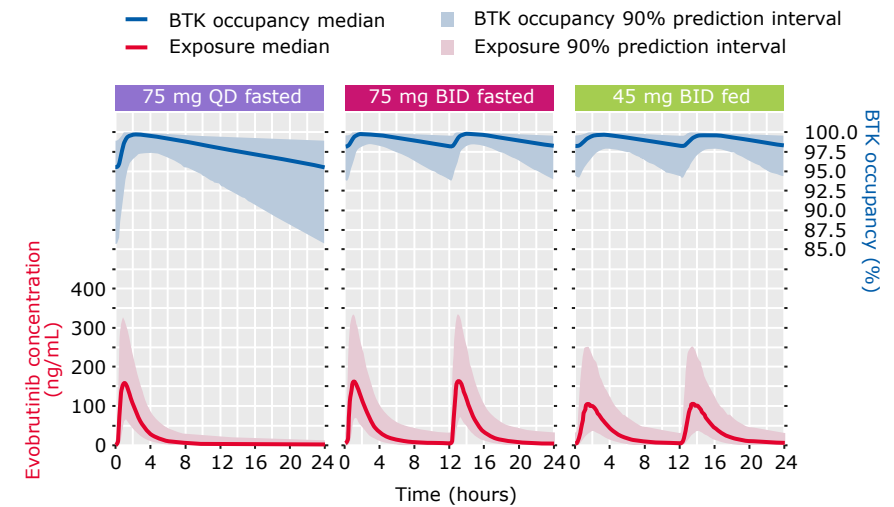
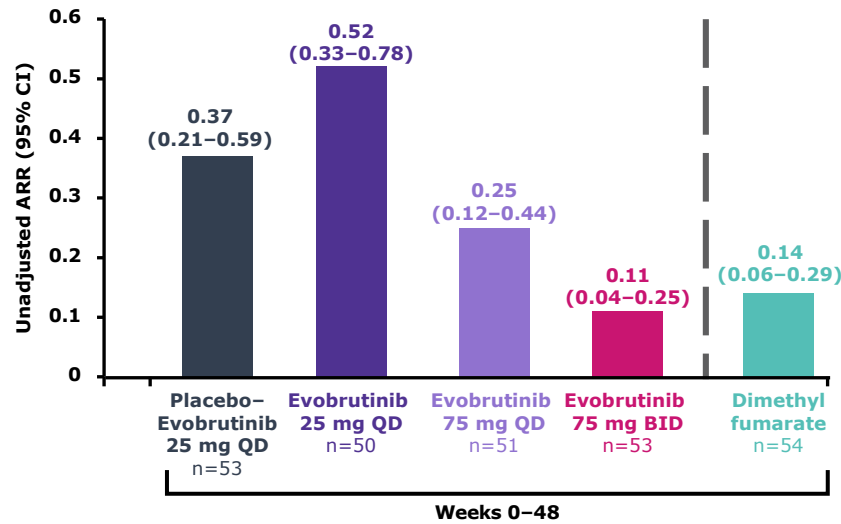
Patients achieving >95% BTKO experienced greatest ARR reduction²

Food effect enables a lower dose in PhIII¹

PATIENTS ACHIEVING BTKO THRESHOLD, %



PhII SECONDARY ENDPOINT



Due to continuous BTK protein turnover QD dosing of a covalent inhibitor with short half-life results in suboptimal BTKO

ARR reduction in the Evobrutinib 75mg BID group was sustained over 108 weeks^{1,2}

PhIII dose (45mg BID fed) reaches comparable Evobrutinib exposure and BTK occupancy to PhII dose (75mg BID fasted) despite modestly lower plasma peak concentration

¹ Papasouliotis O. et al. Eur J Neurol 2021;28(Suppl. 1):120 [OPR-084]

² Montalban X. et al. N Engl J Med. 2019 Jun 20;380(25):2406-2417. doi: 10.1056/NEJMoa1901981. Epub 2019 May 10.



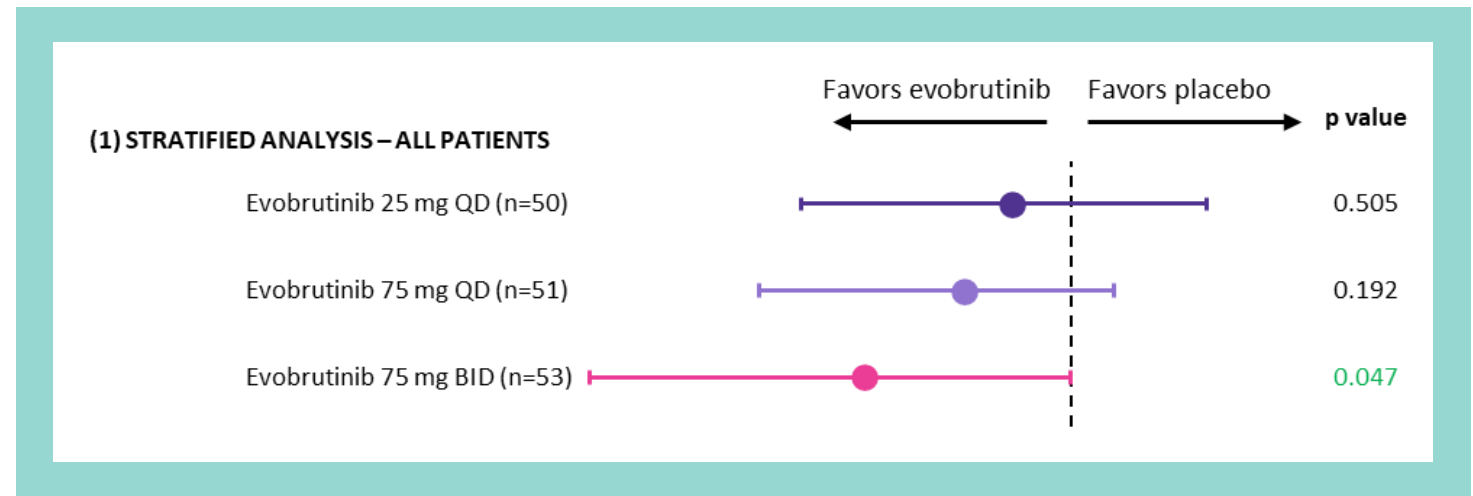
First clinical evidence of impact on brain lesions associated with chronic inflammation^{5,6}

SELs – A BIOMARKER FOR CHRONIC TISSUE LOSS IN THE ABSENCE OF ACUTE INFLAMMATION

- Slowly expanding lesions (SELs) (also known as “smouldering lesions”) are chronically active, demyelinated MS lesions, thought to be driven by sustained microglial activity, resulting in the progressive accumulation of irreversible neural tissue damage and axonal loss¹
- SELs are visible on conventional MRI/T2 images MRI and show gradual, radial expansion over time
- SEL activity and ongoing tissue damage within SELs predict long-term disability²
- Approved MS therapies have shown little impact on SELs³, - consistent with their main treatment effect on acute inflammation

ECTRIMS 2021
oral presentation

EVOBRUTINIB REDUCED SEL VOLUME IN A DOSE-DEPENDENT MANNER AT 48 WEEKS⁴



¹ Elliott C, et al. *Mult Scler* 2019;25:1915-25; ² Elliott C, et al. *Brain* 2019;142:2787-99; ³ Preziosa P, et al. *Mult Scler* 2021;27(10):1520-32; ⁴ Arnold D, et al. ECTRIMS 2021 [OP115]; ⁵ Montalban X, et al. ECTRIMS 2018 [232075; 322]; ⁶ Montalban X, et al. *N Engl J Med*. 2019 Jun 20;380(25):2406-2417. doi : 10.1056/NEJMoa1901981. Epub 2019 May 10. R&D Update Call 2021

Summary

Potential FIC BTK inhibitor designed for BIC efficacy

- **Pioneering development** of breakthrough MoA with potential to rewrite SoC in RMS
- Aiming to **address chronic inflammation and progression between relapse** in addition to **reducing acute inflammation, delivering BIC ARR**
- **Confidence in BIC profile supported by compelling clinical data from our comprehensive PhII program**

- ✓ Best ARR was achieved at BTKO of 95%; ARR of 0.11 at 48 weeks is supportive of BIC efficacy
- ✓ Importantly: Achieving 95% BTKO requires BID dosing of a covalent BTK inhibitor with short half-life due to continuous turnover of BTK protein
- ✓ Evobrutinib concentrations achieved in CSF of RMS patients support an effect on microglia
- ✓ Dose dependant reduction of SEL, a biomarker for disease progression is first evidence of Evobrutinib effect on chronic inflammation and progression
- ✓ De-risked profile based on safety analysis in >1000 patients

- **PhIII studies** (Evolution MS 1&2) **fully recruited** (Sept 2021), expected read out in Q4 2023

Targeted inhibition of important lupus mediator aiming for improved efficacy with low infection risk

- **For lupus patients, precise intervention for improved efficacy at low infection risk remains an unmet need in lupus**
- Enpatoran is an oral small molecule inhibitor of TLR7/8
- There is **evolving genetic evidence for TLR7 as a critical driver of lupus pathologies**

Inhibition of TLR7/8, a important lupus mediator is expected to result in

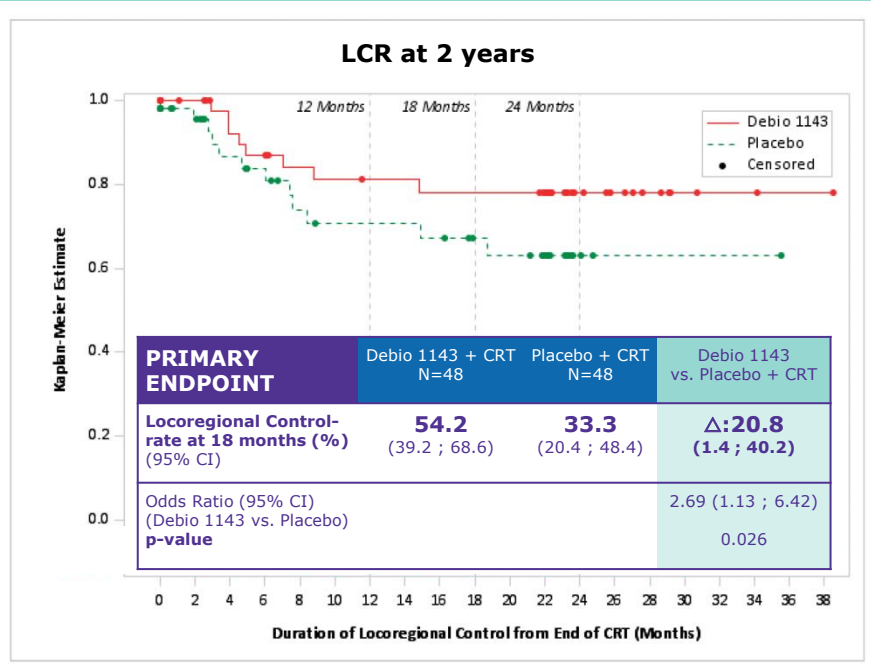
- broad inhibition of lupus-relevant effectors
 - with potential for improved efficacy compared to strategies targeting single effectors (pDC, IFN, B-cells)
 - at low risk of infection
-
- **Compelling MoA, functional and safety data from PhI HV and COVID PhII study**
 - **Innovative PhII in CLE and SLE planned to initiate in H1 2022, aiming to generate PoC in H1 2023**

Maximizing chances for cure in LA SCCHN

PhII: Consistent benefit across primary & secondary endpoints

PRIMARY ENDPOINT LCR

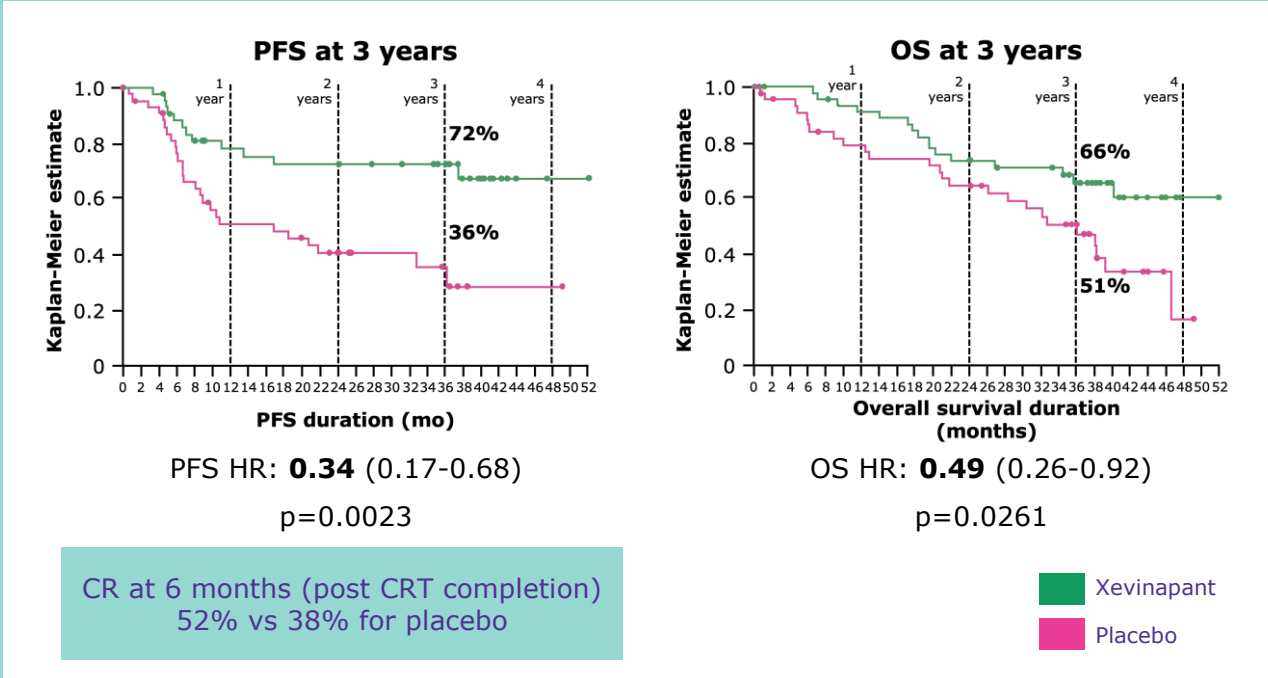
first presented at ESMO 2019



Lancet Oncology, August 2020, doi:10.1016/S1470-2045(20)30327-2

SUBSTANTIAL IMPROVEMENT OF PFS AND OS

3-year update, presented at ESMO 2020



ESMO 2020; Bourhis J, et al. Abstract No. LBA39

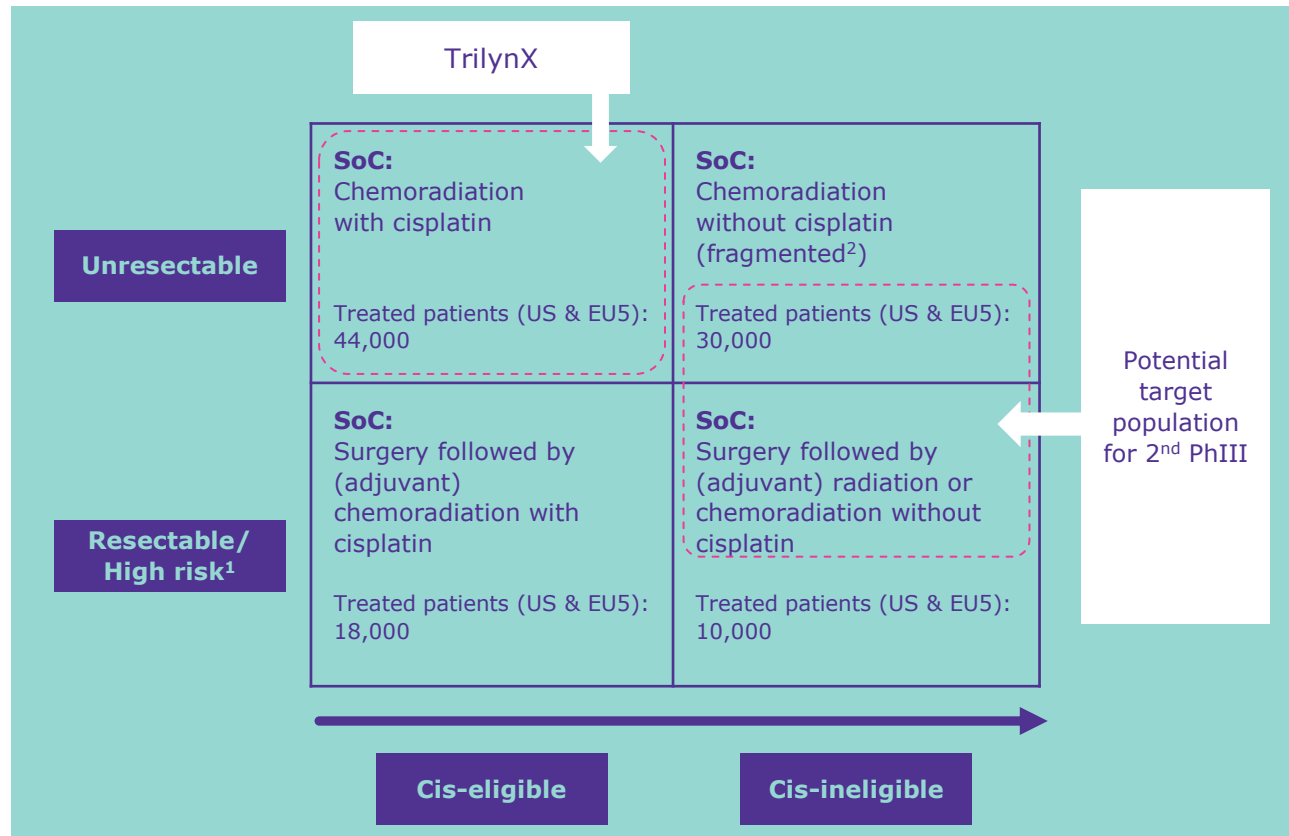
Up Next: 5-year Update of OS at ESMO 2022

LA SCCHN = Locally advanced squamous cell carcinoma of the head and neck
R&D Update Call 2021



Leveraging market-leading expertise in SCCHN

LA SCCHN SIMPLIFIED TREATMENT PARADIGM AND EPIDEMIOLOGY



Leveraging our Erbitux heritage

- LA SCCHN is a **curative setting** that requires a multi-disciplinary approach
- Surgery and/or (chemo-)radiation therapy is the standard of care, though almost 50% of patients progress
- **Limited progress in ~20 years**
 - IO has not been successful due to challenges of concurrent radiation
- **Building focused leadership in LA SCCHN**
 - Our goal is to transform LA SCCHN in combination with (C)RT with a focused PhIII program

Xevinapant – Maximizing chances for cure

¹ Low/ intermediate risk patients: SOC is Surgery followed by (adjuvant) radiation, Incidence (US + EU5): 41,000; ² The combination of cetuximab/RT is the only approved regimen for patients ineligible to receive high-dose cisplatin. Multiple non-approved regimens are used in practice, however, with differences across geographies and depending on patient status and physician preference.

Maximizing the potential of Berzosertib

CURRENT DEVELOPMENT FOCUS

Establish Berzosertib as new SoC in 2L SCLC

1. Topotecan combination (Pt-sensitive & Pt-refractory patients)
2. Combinations with other TOP-1 inhibitors (Irinotecan, Sacituzumab govitecan)
3. Further combinations (Lurbinectidin)

BERZOSERTIB POTENTIAL BEYOND SCLC

Ovarian cancer:

Biomarker studies to identify best target population for upcoming PhII study of Bersozertib/Gemcitabine¹

Refractory GI tumors:

Berzosertib/Irinotecan combination

SCLC – Earlier treatment line:

1L Maintenance setting with IO

¹ Encouraging evidence of clinical efficacy; Lancet Oncology, Volume 21, Issue 7, July 2020, Pages 957-968

Berzosertib is lead program in our DDR pipeline

- **ATR inhibition has significant therapeutic potential with 3 distinct applications:**
 - Enhancing chemotherapy efficacy
 - Achieving synthetic lethality (monotherapy in patients with HRD alterations or combination with PARP inhibitors)
 - Combination with immunotherapy
- **Development focus for potential FIC ATR inhibitor Berzosertib is combination with chemotherapy/topoisomerase I inhibitors**
- **SCLC** is the most aggressive form of lung cancer, with poor treatment outcomes; **most patients experience rapid progression even after achieving responses**

- ✓ **Remarkable early data in rSCLC demonstrated with Berzosertib/Topotecan combination** when compared to historic control SoC Topotecan monotherapy
- ✓ 30% ORR in Pt-resistant patients (Topotecan monotherapy historic control is <10%)
- ✓ Durable responses with 67% of patients achieving >6months PFS, (Topotecan monotherapy historic control shows Pt-resistant patients relapse within a few weeks)

- **Two ongoing PhII studies:** Randomized NCI study and DDRiver SCLC 250
- **Up next: oral ATRi M1774 with development focus synthetic lethality** (monotherapy and PARPi combination); dose escalation ongoing, PhII PoC studies to initiate in 2022

Tepotinib (MET kinase inhibitor)

First-in-class launch in MET Exon14 sets foundation for EGFRm/METamp opportunity



Lay the foundation in NSCLC – MET Exon14
(VISION study, NCT02864992
3-5% of total NSCLC population)

- **Highly competitive data** set presented at ASCO 2020 and published in New England Journal of Medicine in May 2020 (99 patients with a follow up ≥ 9 mths)
- **First-in-class launch¹** in Japan² in March 2020, Sakigake designation³ granted in 2018
- **Approval by US FDA¹** received on February 3, 2021
- **13 worldwide approvals** granted so far



Tap into a growing opportunity in NSCLC – EGFRmut/ METamp
(INSIGHT 2 study, NCT03940703
2-5% of total NSCLC population)

- **Increased EGFRm detection** with testing and treatment moving into earlier lines of therapy (ADAURA trial demonstrates a 79% reduction in the risk of death with Osimertinib in the adjuvant setting (ASCO 2020), suggesting an even greater uptake of Osimertinib)
- **METamp as the main mechanism of acquired resistance** – publications suggest prevalence of METamp post-Osimertinib in tissue at levels between 30-66%⁴, with possible underestimation of gene amplification in plasma.

1: approved for both treatment naïve and previously treated METex14 positive NSCLC patients; 2: second largest Oncology market globally; 3: SAKIGAKE designation promotes research and development in Japan, aiming at early practical application for innovative pharmaceutical products; 4: Roper et al., "Clonal Evolution and Heterogeneity of Osimertinib Acquired Resistance Mechanisms in EGFR Mutant Lung Cancer", Cell Rep Med, 2020; Acronyms: EGFR = Epidermal Growth Factor Receptor; NSCLC = Non-small cell lung cancer



Tepotinib (MET kinase inhibitor)

Tapping into the rapidly evolving EGFRm/METamp market – Encouraging INSIGHT 1 data



INSIGHT 2 – Tepotinib + Osimertinib in Osimertinib Relapsed METamp NSCLC

Recruiting

- **Study design recently amended to reflect evolved and future standard of care:**
 - **Target population** – Inclusion criteria adjusted to focus solely on 1L Osimertinib failures
 - **Testing** - Streamline patient enrollment based on current gold standard method (TBx FISH)
 - **METamp as the main mechanism of acquired resistance** – publications suggest prevalence of METamp post-Osimertinib in tissue at levels between 30-66%, with possible underestimation of gene amplification in plasma.
- Estimated primary completion date: **November 2022**

A solid foundation - Encouraging INSIGHT 1 data (18-months follow-up presented at WCLC 2019)²

Endpoint	Tepotinib + gefitinib	Chemotherapy
Primary - PFS (HR 0.13 [90% CI 0.04, 0.43])	16.6 m	4.2 m
Secondary - ORR (OR 2.67 [90% CI 0.37, 19.56])	66.7%	42.9%
Secondary - OS (HR 0.09 [CI 0.01, 0.54])	37.3 m	13.1 m

- ✓ **Proof of Concept: MET amplification can be considered a suitable biomarker** for treatment with Tepotinib
- ✓ **Safety:** generally **well-tolerated**, most adverse events mild to moderate

1: Piotrowska et al., "Landscape of Acquired Resistance to Osimertinib in EGFR -Mutant NSCLC and Clinical Validation of Combined EGFR and RET Inhibition with Osimertinib and BLU-667 for Acquired RET Fusion", AACR Cancer Discovery 2018; 2: Wu et al., "Long term outcomes to tepotinib plus gefitinib in patients with EGFR mutant NSCLC and MET dysregulation: 18 month follow up", presented at WCLC 2019; Acronyms: FISH = Fluorescence in situ hybridization; TBx = Tissue Biopsy



Healthcare Q4: Continued strong Bavencio® ramp up and strong growth in Fertility drive +4.7% organic growth in the sector

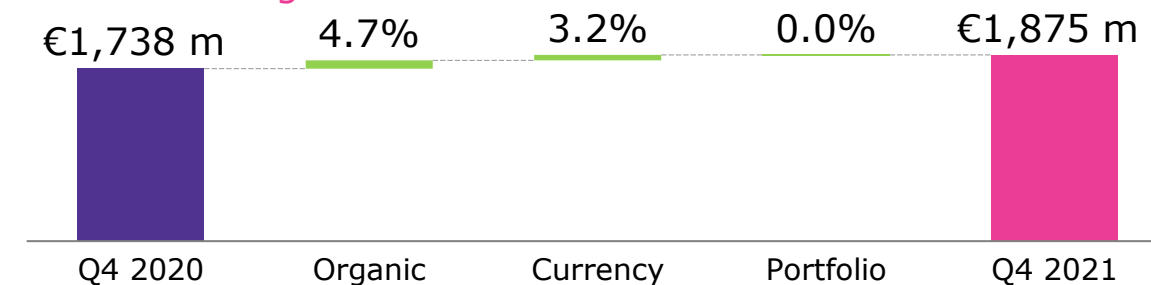
Healthcare P&L

[€m]	IFRS		Pre	
	Q4 2020	Q4 2021	Q4 2020	Q4 2021
Net sales	1,738	1,875	1,738	1,875
M&S*	-449	-452	-414	-453
Admin	-84	-84	-80	-79
R&D	-479	-395	-454	-392
EBIT	305	424	397	407
EBITDA	433	518	-	-
EBITDA pre	525	498	525	498
(in % of net sales)	30.2%	26.6%	30.2%	26.6%

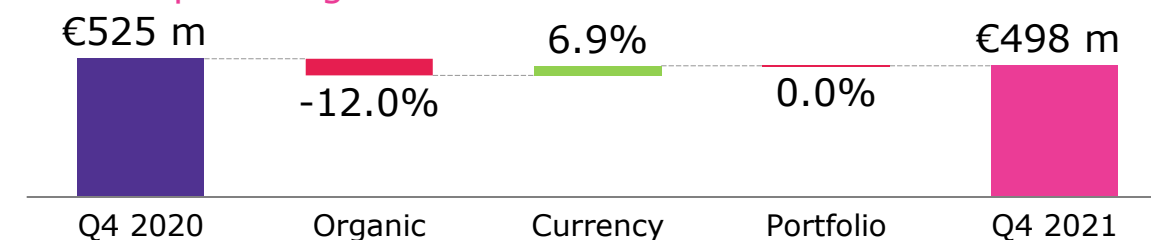
Comments

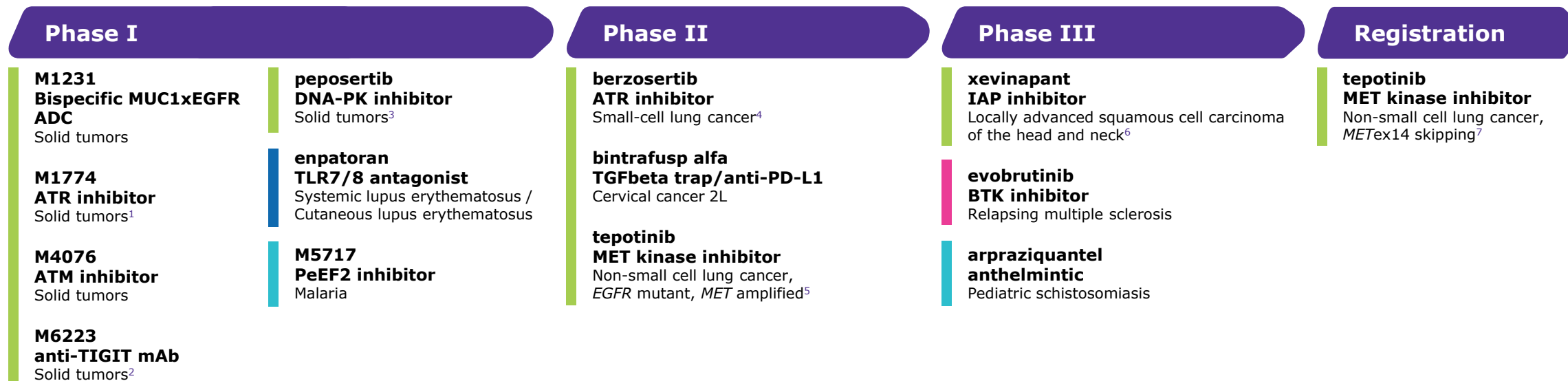
- Oncology up +21% org., primarily driven by continuous strong uptake of Bavencio® (+132% org.) supported by ongoing Europe launch
- Mavenclad® growing organically amid suppressed dynamic market, not fully offsetting Rebif® org. decline of -12%
- CM&E returning to growth (+3% org.) post VBP impact, continuous strong growth in Fertility (+9% org.)
- M&S increase driven by ramp up of promotional activities vs. pandemic-related lower activity level in prior year
- Bintrafusp study termination and related provisions in Q3 main driver for lower absolute R&D level
- EBITDA pre and margin decline driven by phasing in other operating expenses & income from BD deals and missing bintrafusp income, as well as production yield fluctuations, in parts compensated by +7% FX

Net sales bridge



EBITDA pre bridge





- Oncology
- Immunology
- Neurology
- Global Health

ADC: Antibody drug conjugate; 1L: first-line treatment; 2L: second-line treatment

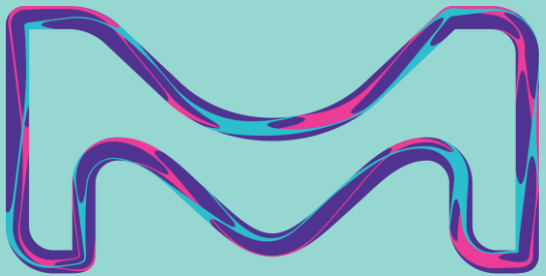
¹ Study as monotherapy and in combination with niraparib. ² Includes study in combination with bintrafusp alfa. ³ Includes study in combination with avelumab. ⁴ Includes studies (phase I/II) in collaboration with/ sponsored by external partners, e.g. US National Cancer Institute (NCI). ⁵ In combination with osimertinib. ⁶ In combination with cisplatin and radiotherapy in unresected LA SCCHN patients eligible for cisplatin. ⁷ As announced on February 18, 2022, Tepotinib was approved by the European Commission as monotherapy for the treatment of adult patients with advanced non-small cell lung cancer harboring alterations leading to METex14 skipping, who require systemic therapy following prior treatment.

Unless noted otherwise, clinical programs conducted in collaboration with external partners are not shown unless Merck KGaA, Darmstadt, Germany has co-ownership of data. In such case the indication is shown in *Italics*.

Pipeline products are under clinical investigation and have not been proven to be safe and effective. There is no guarantee any product will be approved in the sought-after indication.

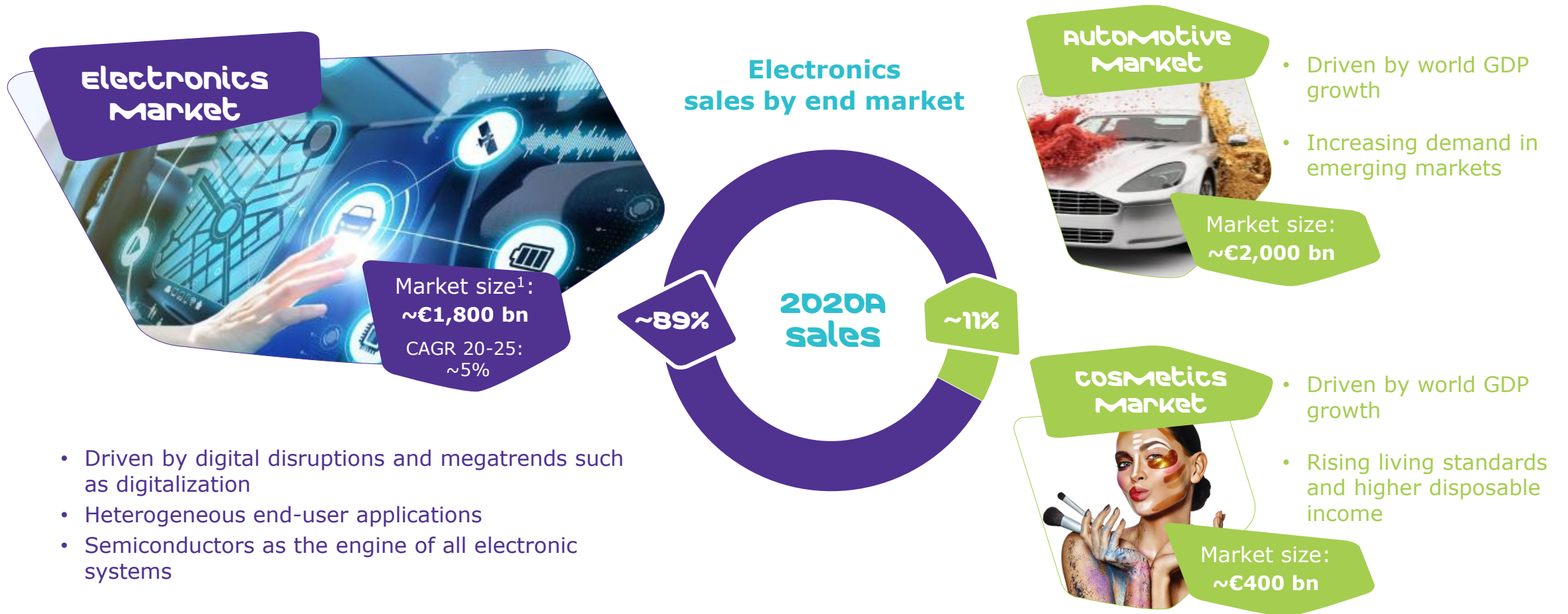


electronics



Electronics

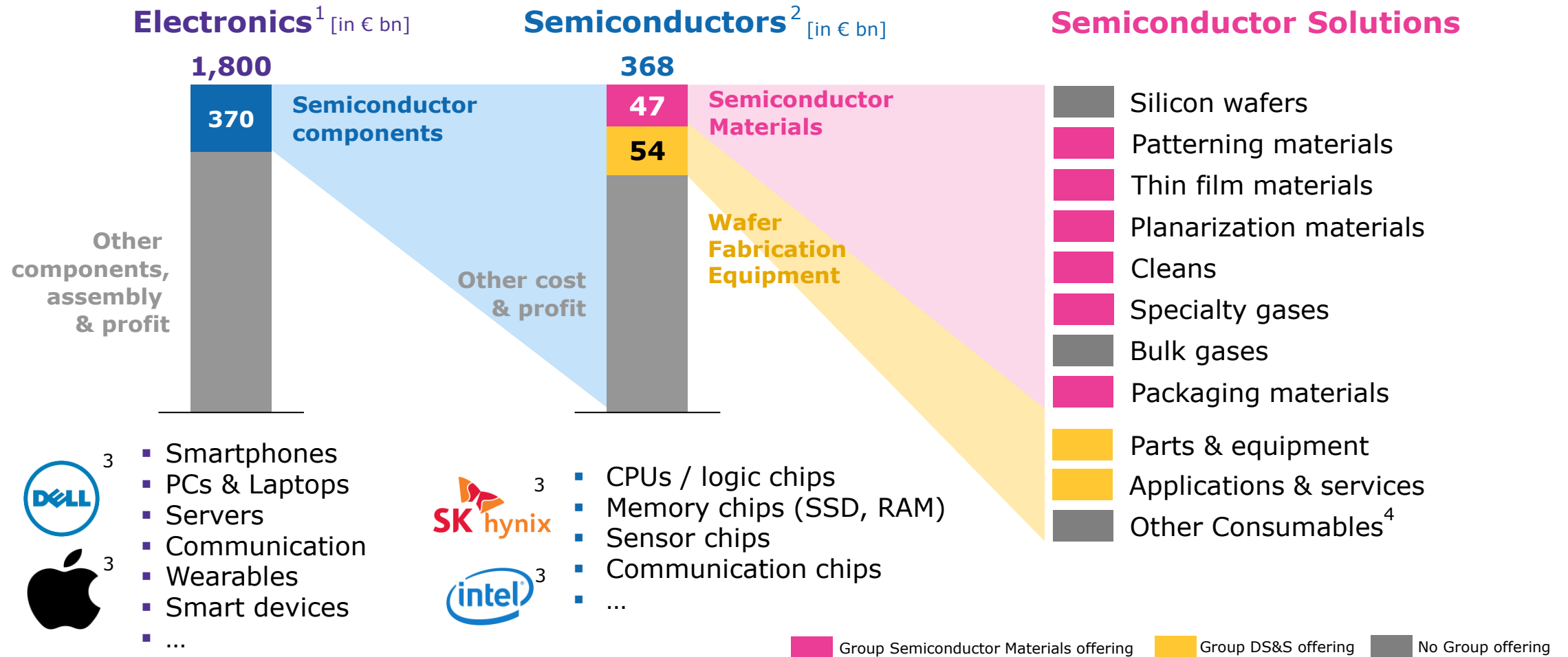
Targets attractive markets – especially in the electronics space



- Driven by digital disruptions and megatrends such as digitalization
- Heterogeneous end-user applications
- Semiconductors as the engine of all electronic systems

¹Prismark 2021

Semiconductor Solutions – **integrated materials player, well positioned to serve the need of customers in semiconductor fabrication**



Illustrative Industry P&Ls based on Sources: ¹Prismark 2021, ²Prismark 2021 & WSTS/SIA & SEMI Q1 2020; ³Representative player in the industry, non-exclusive list, not based on any underlying criteria; ⁴e.g. Filters, Pads, etc.; CPU = Central Processing Unit; RAM = Random Access Memory; SSD = Solid State Disk; CMOS = Complementary metal-oxide semiconductor



Unique comprehensive products and services portfolio offers end-to-end solutions, well-placed in high growth segments



Steps of Company customers in manufacturing integrated circuits



Steps in Group's Delivery Systems & Services business

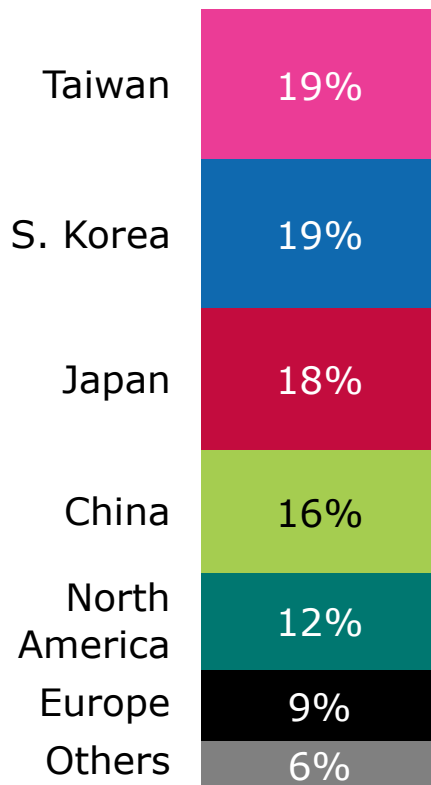


- Group Semiconductor Materials offering
- Group Delivery Systems & Services offering
- Group Intermolecular products & services



Beyond a comprehensive portfolio Semiconductor Solutions also has an industry spanning customer base, supplying various end markets

2019 wafer capacity by region¹



Selected customers per region²



Semiconductor Solutions has **OVER 100 CUSTOMERS**

supplying all top 10 chip makers and virtually all of the top 100³

- Focus on logic chips
- Focus on memory chips
- Focus on other chips

¹SEMI World Fab Forecast Q3 2020 - Dec 2019 capacity,

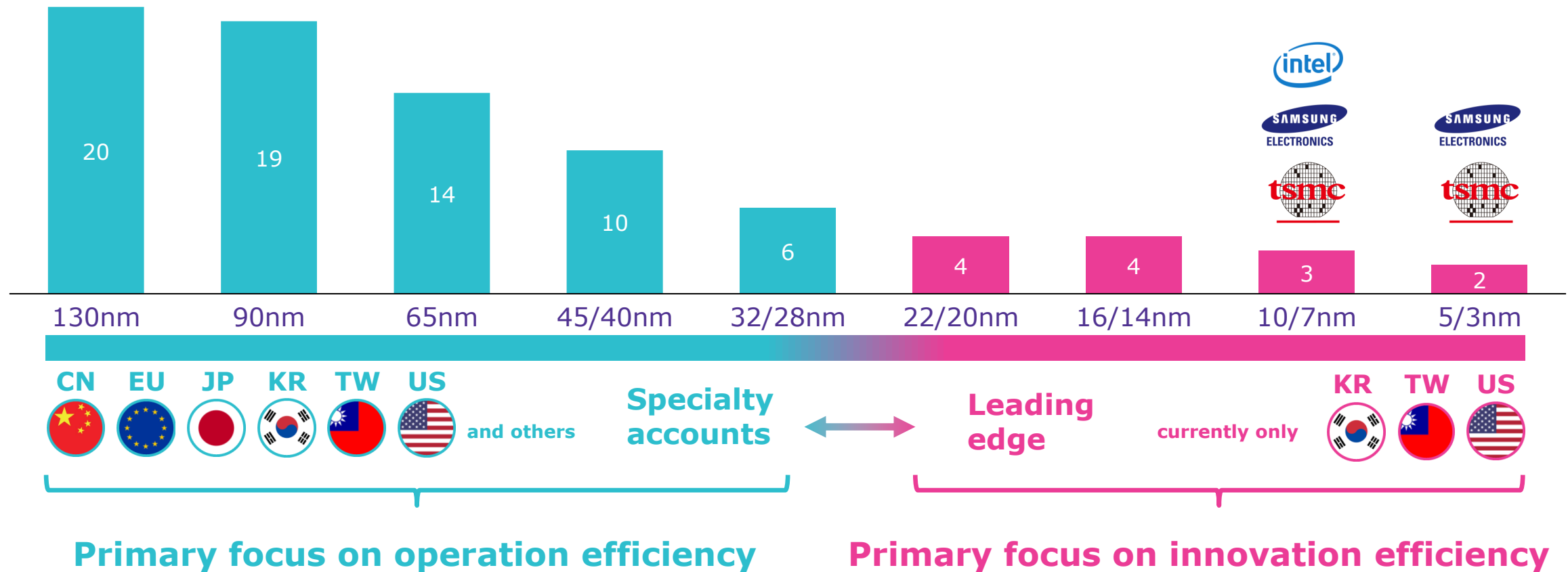
²Representative, non-exclusive list, not based on any underlying criteria

³Based on H1 2020 Sales



Only 3 companies are currently running volume production $\leq 10\text{nm}$ These companies have the largest market shares across all nodes

Number of companies currently running volume production per logic chip node¹



¹Source: Wikichip.org and own data; volume production as of Sep 2020; countries are listed in alphabetical order



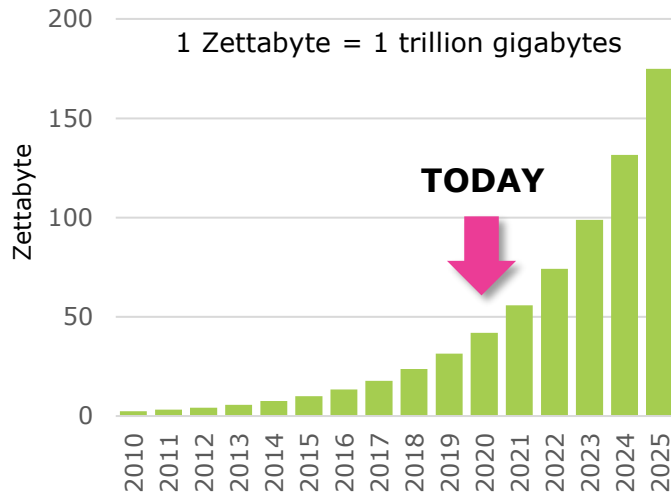
Technology trends inevitably drive exponential data growth... ...more chips needed to generate, transfer, process & store data

Data created worldwide
is growing +30% annually

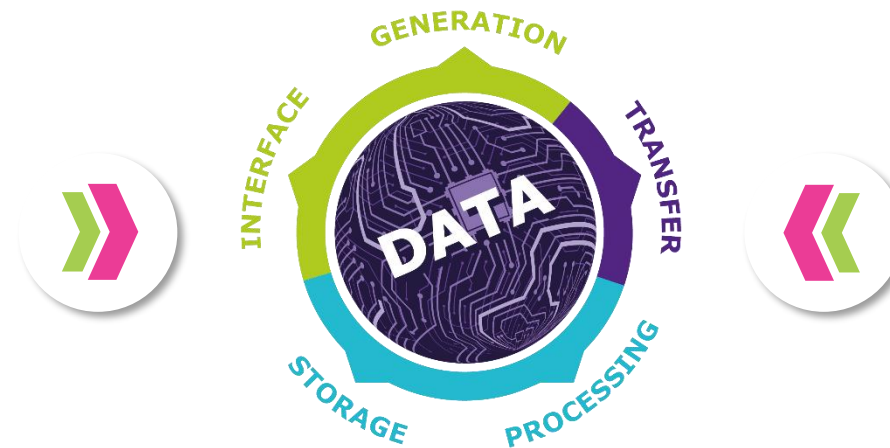
All segments of data application
are affected by global data growth

Technology trends strongly impact
relevance of data application segments

Size of global data sphere



Source: IDC DataAge 2025 Whitepaper



Technology market growth - examples

5G Technology¹
>122% CAGR

Artificial Intelligence²
>33% CAGR

IoT Sensors³
>24% CAGR

Data Center Services⁴
>13% CAGR

Autonomous Driving⁵
>18% CAGR

Semiconductor Solutions supports growth trend as part of “**the company behind the companies, advancing digital living**”

1) alliedmarketresearch.com, Prismark 2020, CAGR 2021-2026; 2) fortunebusinessinsights.com, post-gazette.com, CAGR 2018-2026; 3) mordorintelligence.com, computerweekly.com, CAGR 2020-2025; 4) mordorintelligence.com, Prismark 2020; CAGR 2020-2025; 5G = 5th-generation cellular wireless; IoT = Internet of Things 5) mordorintelligence.com, autonomous car market value CAGR 2020-2025

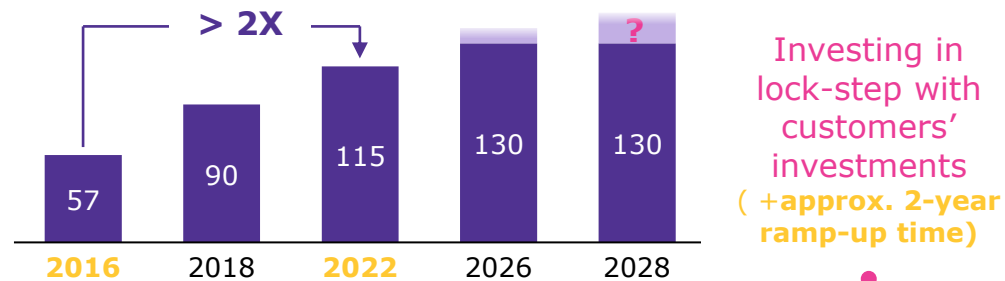


“Level Up” Scale - Expanding in synch with customer demand

A partner of choice, in step for higher demand

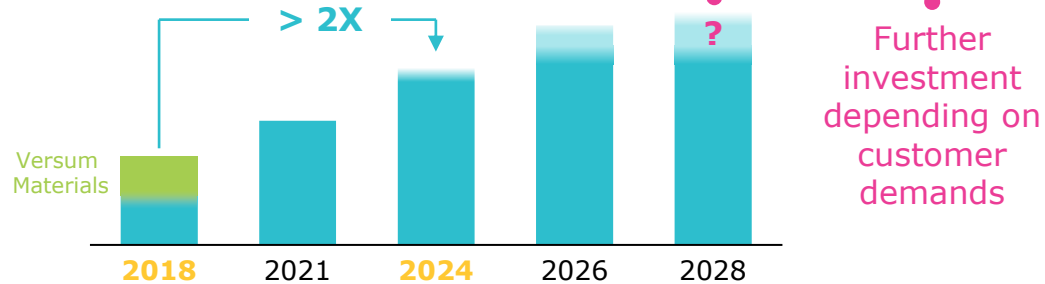
Semiconductor industry

CAPEX p.a.¹ [€bn]







Electronics

CAPEX illustrative [majority in Semi]



1) McClean March 2021, Company announcements; FX rate: 1.18 \$/€; 2) incl. IT

Smart localization, investing close to customers

Share of semi material market ¹	Key investments
Taiwan  ~25%	<ul style="list-style-type: none"> Additional large site ensuring supply for key customers Further expand R&D footprint
Korea  ~25%	<ul style="list-style-type: none"> Expand strong footprint, even higher customer proximity
China  ~15%	<ul style="list-style-type: none"> Become most localized multi-national ready for growth Expand production and R&D
USA  ~10%	<ul style="list-style-type: none"> Expand capacity for global & local supply Enable new sites of key customers

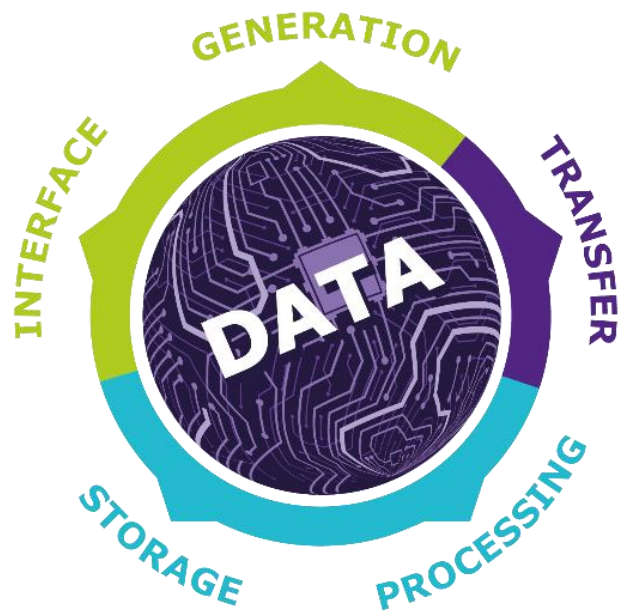
1) Source: Linx Consulting – only relevant segments, 2020; 2) Aggregated spend 2021-25, total spend: ~€2.1 bn, thereof ~11% (~€250 m) in Germany, also to fund global programs



“Level Up” Tech – delivering today and enabling tomorrow

Strong portfolio of silicon & optical technologies empowering today’s applications

Solutions empowering customers to make **smaller, faster, more energy efficient** & **more sustainable** devices in various applications across the entire **data sphere**



- Data Generation**
Sensors, MEMs
- Data Transfer**
Network chips, interconnects, antenna
- Data Processing**
Logic chips: CPUs, GPUs
- Data Storage**
Memory Chip: DRAM, 3D NAND
- Data Interface**
Displays: TV and mobile (LC, OLED)

And enabling tomorrow’s leading-edge technologies

Selected future applications

Next-Gen image sensors

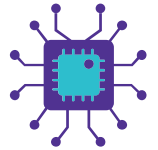
Smart Antennas

Transition to nanosheets

3D NAND with >300 layers

Foldable displays

Our contribution



Leverage semiconductor & display knowledge for new & optimized sensors

New LC, enabling beam forming, replacing bulky mechanical antennas

Novel etchants & dopants allowing higher scaling & lower power consumption

ALD¹ materials that help minimize cross talk between memory cells

Broad set of materials from encapsulation to the OLED stack

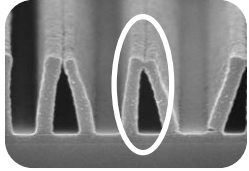
1) Atomic Layer Deposition



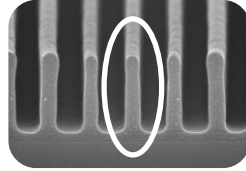
Electronics

Expanding the limits of how small you can go

Pattern collapse

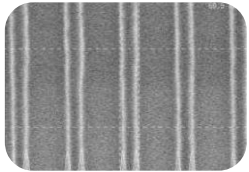


AZ® rinse materials



As lines get narrower and closer together in advanced chip generation, lines tend to “stick” due to surface tension.

Lithography limitation

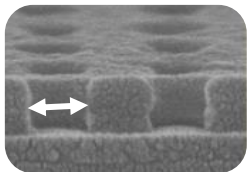


Directed self-assembly (DSA)

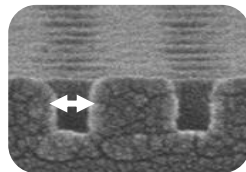


Block copolymer can generate small lines or contact holes by self-assembly. This allows miniaturization without expensive new equipment.

Wide features



AZ® shrink materials



Shrink materials “shrink” the gap between lines and, hence, allow the manufacture of narrower features otherwise not possible.



Company delivers highly innovative solutions for complex customer problems



Semiconductor Solutions

Partner of choice for semiconductor manufacturers globally



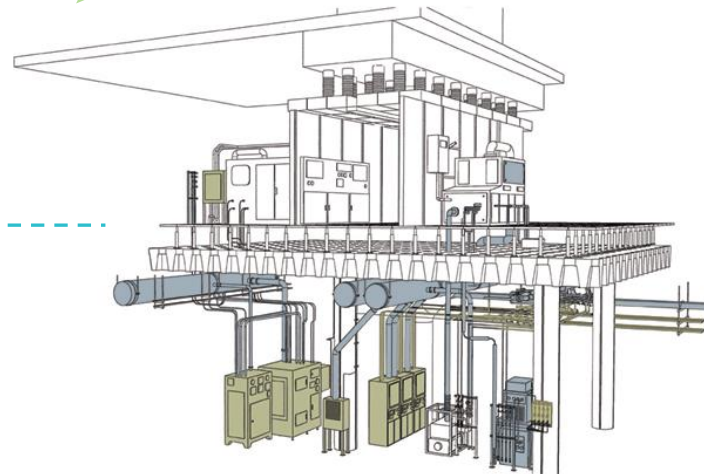
semiconductor materials

Winning in the fab with process owners

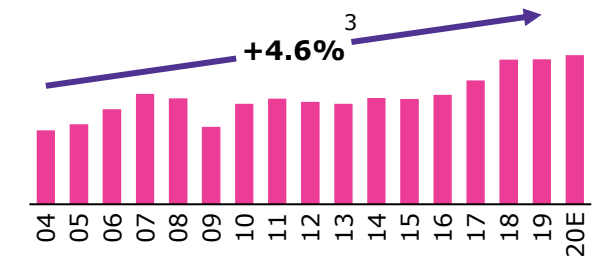


delivery systems & services

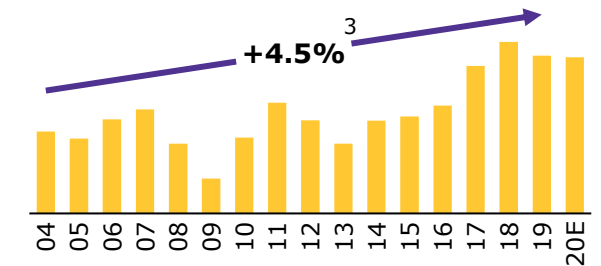
Winning in the sub-fab with facility engineers



Fab material market ¹



Fab equipment market ²



One fab address = two customers: buying cycles, interfaces & nature of business fundamentally different, but ... **combined, highly synergistic**

Fab = Semiconductor fabrication plant

¹Source LINX-Consulting, wafer processing materials - excludes silicon wafers and packaging materials;

²Source: Gartner; ³2004-2019 15-year CAGR



DS&S - Delivery Systems & Services: a trusted global player in **safe and reliable delivery of hazardous materials** to semiconductor industry



Fab projects

- Designing bulk spec **gas delivery systems**
- Managing **construction and installation**
- High-volume customers who store large specialty gas **ISO containers outside fab**



Gas & chemical delivery

- Design and manufacture delivery systems for: specialty gases, CVD/ALD deposition materials, CMP slurries & cleans
- Systems **store gas/chemical containers** while in-use and **control material delivery parameters** to fab processes
- **Interface with customer's fab** process control and monitoring systems.



MEGASYS & in-fab service

- Provide **delivery systems maintenance, materials inventory management**, quality assurance, & new equipment installations
- Contracts with **18 customers' fabs**
- >500 global employees + **~100 field service technicians**

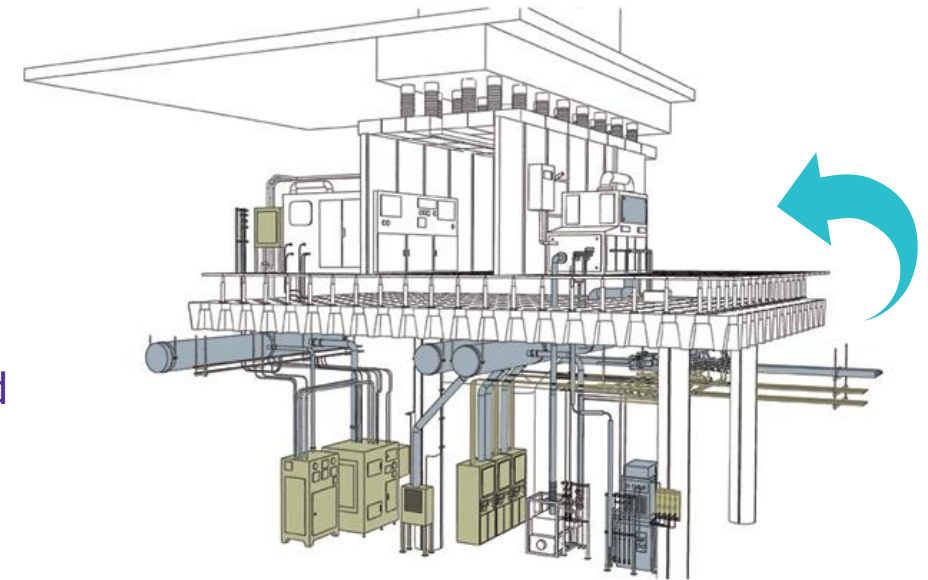


DS&S - Delivery Systems & Services

Winning in the fab equipment market

key strengths

- ✓ Operational and project execution excellence with **99.9997% uptime** of our equipment
- ✓ 30 years of experience with a **flawless safety record** and **full interoperability**
- ✓ **Global footprint** with flexible capacity **where the customer needs us**
- ✓ **Additional credibility** with materials consuming process owners from sub-fab engineers' experience



Ensure next-gen process requirements have **integrated materials + equipment solution**



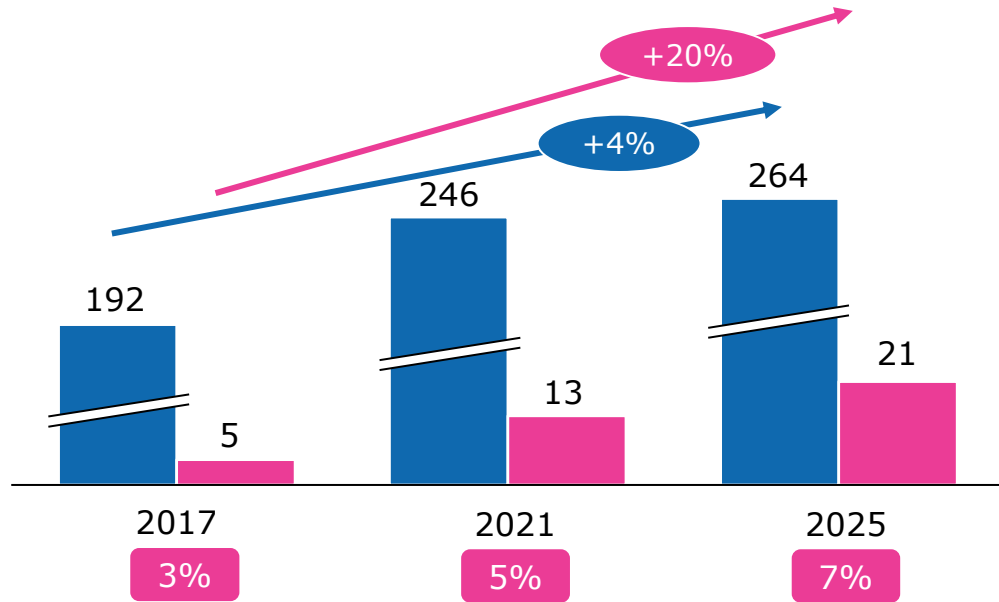
Enabling our customers in semiconductor fabrication **to run with operational excellence**

Electronics

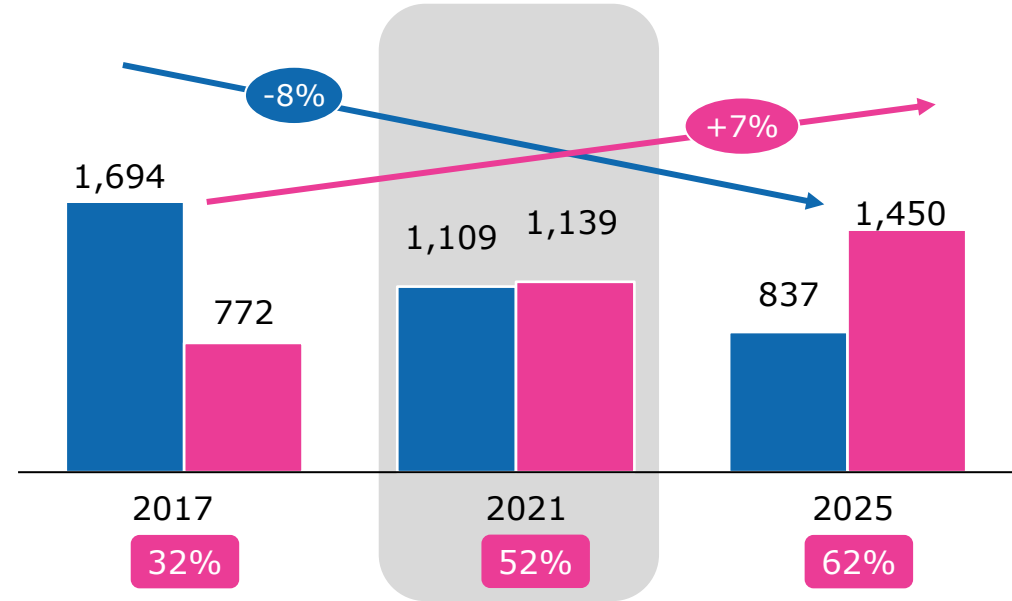
Display Solutions - OLED material market to exceed LC material market **already in 2021**

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

Display shipment area¹
[km²]



Addressable material market²
[€m]



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

- **Material value** per OLED display **higher** than in LCD
- **OLED material market to exceed LC material market by 2021**, but market split between **many more players**

¹Omdia; ²Internal Business Intelligence; Acronyms: LCD = Liquid-Crystal Display, OLED = Organic Light Emitting



Electronics

Strategic roadmap materializing

Measures for a bright future



Darmstadt

- In Darmstadt focus on R&D and production
- Immediate bottom line contribution from 2019 onwards
- Reduce the number of FTEs by ~15% = ~400 FTEs



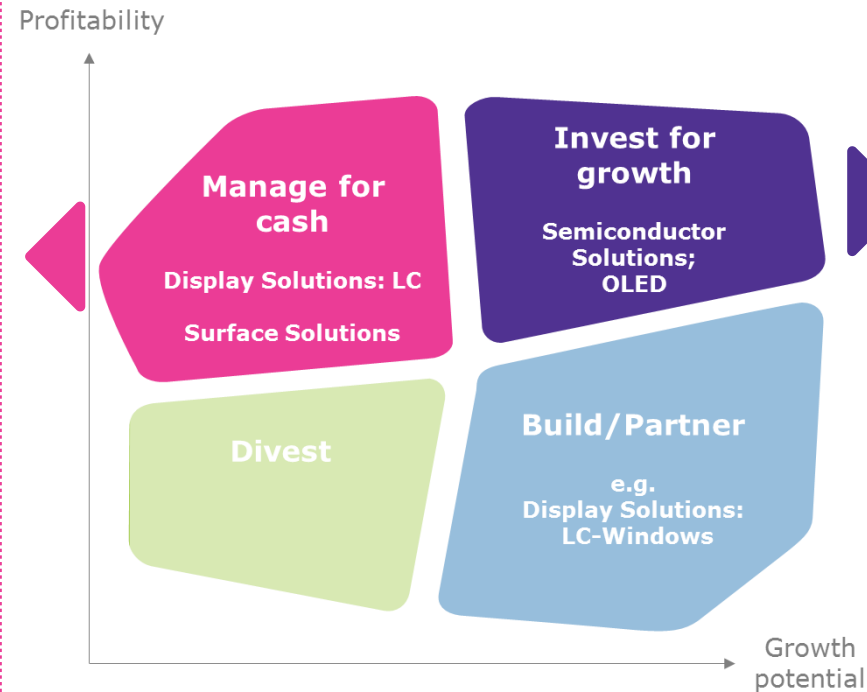
Chilworth

- Chilworth site during September 2019 successfully closed



Atsugi

- Shut down of Electronics activities at Atsugi site started (to be completed during 2021)
- R&D and production activities in Atsugi transferred and consolidated in other PM locations in Asia
- Consolidation of site structure in Japan



- Leading supplier of high-purity process chemicals, gases and equipment serving semiconductor manufacturers
- Track record of accelerated growth and industry leading profitability
- Creating a **leading electronic materials player** with **attractive long-term prospect**



- Leading in advanced materials innovation
- Acquisition to strengthen semiconductor technology offering
- Application specific **materials expertise** with that **perfectly complement** Group's business and technology portfolio



Bottom-line management to support margin ambition of 30% in the long-term



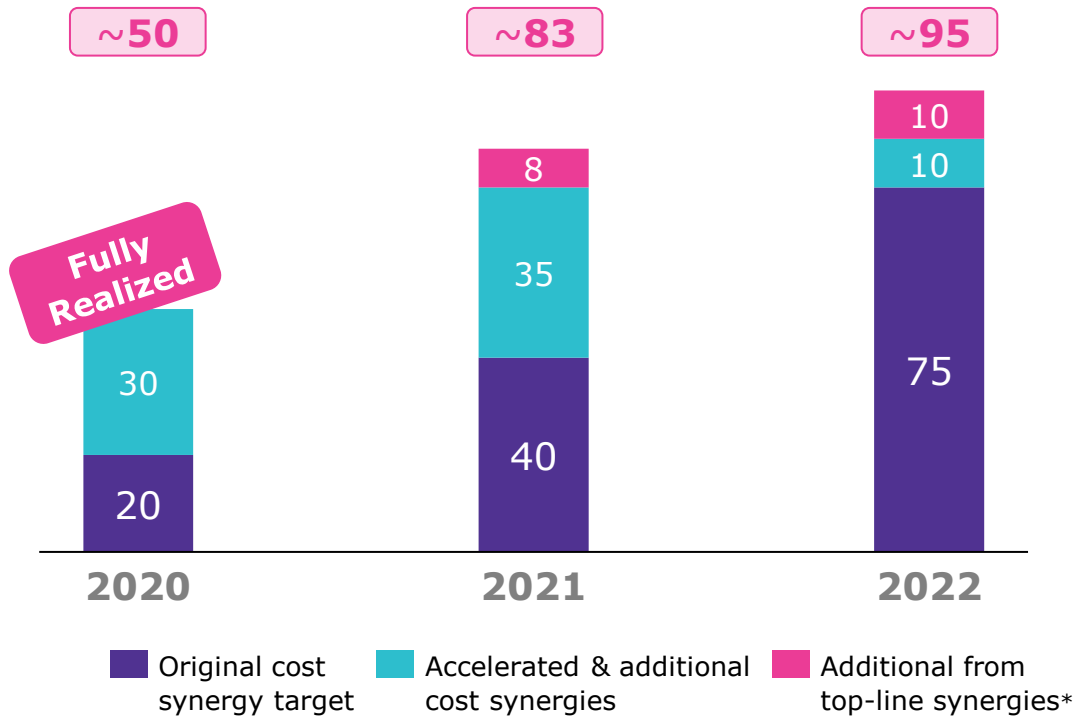
Both transactions successfully closed



Electronics

Successful integration drives substantial synergy upgrade and acceleration

EBITDA pre impact of synergy ramp-up [€m]



Original target for 2022 is now being addressed for 2021

Sources of synergies

- business optimization**
 - Transform country setup
 - Streamline duplicate structures
- procurement and supply chain**
 - Optimize production and supply chain network
 - Achieve savings through joint procurement
- corporate and administrative functions**
 - Integrate corporate & administrative functions
 - Cost savings due to U.S. company delistings

*Top-line synergies from cross-selling, new products introductions and overarching initiatives



Electronics Q4: +24% growth in Semi continues to drive double-digit organic sales growth for the sector

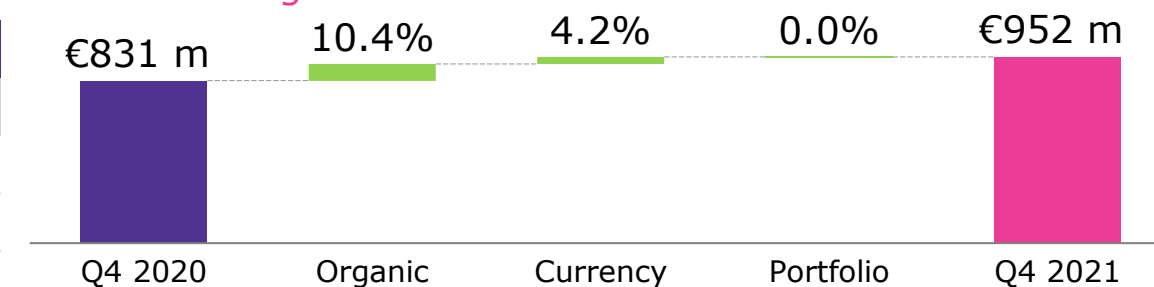
Electronics P&L

[€m]	IFRS		Pre	
	Q4 2020	Q4 2021	Q4 2020	Q4 2021
Net sales	831	952	831	952
M&S*	-136	-154	-132	-152
Admin	-41	-35	-34	-33
R&D	-68	-72	-66	-72
EBIT	79	140	108	166
EBITDA	228	282	-	-
EBITDA pre	246	300	246	300
(in % of net sales)	29.6%	31.5%	29.6%	31.5%

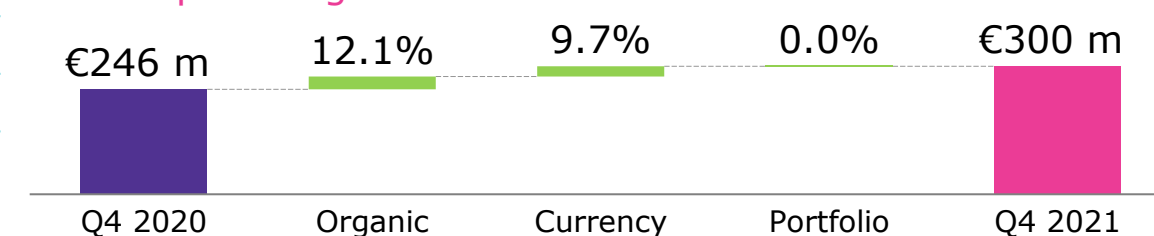
Comments

- Semiconductor Solutions: Record organic sales growth of +24% fueled by over +20% org. growth in materials; additional DS&S project business expected to last throughout all of 2022
- Display Solutions: Strong OLED performance and growth in remaining portfolio party offset LC decline (-10% org. overall)
- Surface Solutions: Slight organic growth of +1% against higher comps amid business recovery onset in prior year quarter

Net sales bridge



EBITDA pre bridge



- M&S flat as percentage of sales, absolute growth mainly driven by higher logistic cost from price and volume increases
- R&D with absolute increase driven by investments in Semiconductor Materials business
- EBITDA pre growth and margin expansion driven by strong business performance (+12% org.) and favorable FX development (+10%)



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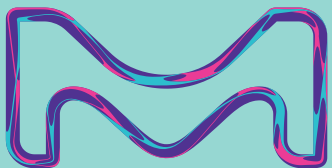


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