Foreword

Historically a slow adopter, the Chemical industry is being challenged by the pace of Digital and the need for Innovation

**Innovation imperative**

- Even more true in the current challenging business environment for Chemical manufacturers, innovation is critical to continue to grow and differentiate
- To cope with the historical lag between innovation and implementation, digital and exponential technologies enable acceleration

**Incremental and disruptive mix**

- Digital is not new for Chemical manufacturers with a focus historically on incremental approaches; the innovation portfolio could be more balanced to address existing core & future transformational businesses
- Today’s major concern is to identify any blind spots or disruptions from digital trends

**Scaling up of initiatives**

- Chemical players have launched numerous digital initiatives across businesses and geographies
- The key is to move from project to enterprise-wide initiatives to justify higher investments

**Organizational agility & flexibility**

- The current structure and processes organizations deploy are being challenged especially in the chemical industry to foster continuous innovation beyond product innovation, and collaboration internally and externally

**Not only economic but also social benefits**

- Considering that the chemicals industry is facing both an image deficit and a talent challenge, digital is a major lever to attract, develop and retain talent, and to engage all stakeholder groups

Source: Monitor Deloitte analysis
2016 Deloitte
Summary
Digital sophistication and maturity
Chemical players are at varying maturity stages of their digital transformation journey

Voice of the Industry – Quantitative analysis

Strategy & Innovation

- Almost 40% of executives want their company to be digital trailblazers (or disrupters) by outperforming the industry average over the next 3 years
- Companies approach digitally-driven ecosystems differently leading to various innovative responses in near future - the adoption of open and semi-open platforms are underdeveloped beside Innovation & ICT enablement
- However, more than 50% of companies lack a digital strategy & transformation roadmap creating a major challenge to overcome

Performance & Scalability

- Most companies (75%) currently appear to be focusing on digital initiatives for incremental, organic growth and margin improvement
- Short-term focus on sales activation & customer experience, commercial & supply chain efficiency; Mid-term focus new business development and asset intelligence
- Predictive Analytics, Sensors and Controls are the main technologies perceived for growth & operation (IoT trends)
- Some companies are underestimating cyber threats (22%), not having performed any risk assessment in the past 12 months

Agility & Transformation

- Organizational agility (55%) and flexibility (39%) are the biggest barriers to enable digital transformation and disruption
- Current digital responsibilities are challenged – significant shift expected from IT to the business with corporate guidance (CEO/COO)
- Lack of change management components designed to help executives embrace the digital agenda
- The critical role of cyber security and strategic alliances have not yet been fully recognized to make the most of digital

Image & Talent

- Digital initiatives are primarily focused on the immediate economic value – contrasted maturity towards internal/external social benefits
- Most executives advocate digital engagement potential for customers but lack perspective across other stakeholder groups
- Proprietary digital channels (Websites, Mobile apps) are preferred to engage customers – social platforms are less common (34%)
- Facebook and Twitter (and their regional equivalents) are leading social media platforms to engage customers & other stakeholders – B2B & B2C blurring boundaries

Note: ICT Information and communications technologies. Source: Deloitte 2016 Global Digital Chemistry Survey: 102 responding executives from more than 50 chemical companies over the May-June period

2016 Deloitte
Digital opportunity and challenge
Most companies have launched a lot of digital experiments – but no evidence yet of true transformation to realize its full potential

Spectrum of digital initiatives

"When thinking about the future health and development of your company, how important are digital initiatives in the following areas?"
Most companies (75%) currently appear to be focusing on digital initiatives for incremental, organic growth and margin improvement – but already 40% consider new information-based business models

Strategy & Innovation
Almost 40% of executives want their company to be digital trailblazers (or disrupters) by outperforming the industry average over the next 3 years

Agility & Transformation
Current digital responsibilities are challenged – significant shift expected from IT (enabler) to the business (driver) with corporate guidance (CEO/COO)

Monetizing digital initiatives

"What are the top three (3) capabilities required to monetize digital initiatives? Please rank in order of importance.”
Only few capabilities identified e.g. the critical role of cyber security and strategic alliances have not yet been fully recognized to make the most of digital

Source: Deloitte 2016 Global Digital Chemistry Survey: 102 responding executives from more than 50 chemical companies over the May-June period
Participants
Responding companies
102 respondents from a balanced mix of companies in terms of sizes, businesses and geographies (USA, EU and APAC)

Company size
- 79% Annual revenues above $1bn
- 21% More than US$25 billion
- 23% US$10 billion to US$25 billion
- 17% US$5 billion to US$10 billion
- 19% US$1 billion to US$5 billion
- 23% Less than US$1 billion

Business sector
- 30% Business focus on solutions
- 4% Solutions
- 8% Conglomerates
- 9% Intermediates
- 10% Agrochemicals
- 12% Fine chemicals
- 18% Distribution
- 30% Petrochemicals
- 3% Inorganics
- 6% Industrial gases

Headquarters location
- >10 Countries of origin for the companies
- United States: 23%
- Japan: 19%
- Germany: 17%
- Belgium: 10%
- France: 9%
- Netherlands: 6%
- Australia: 6%
- India: 6%
- Austria: 3%
- Luxembourg: 3%
- Saudi Arabia: 23%
- China: 14%
- Norway: 10%
- Switzerland: 6%

Note: Solutions combining specialty chemicals, coatings, plastics and composites. Conglomerates mixing Material & Life science and/or integrating the value chain.

More than 50 different chemical companies

Source: Deloitte 2016 Global Digital Chemistry Survey: 102 responding executives from more than 50 chemical companies over the May-June period 2016 Deloitte
Most respondents hold senior positions on a global or regional basis across corporate and business functions of the organization.

Most individual respondents have global (63%) or regional (25%) geographic responsibilities – the remaining being national.

Source: Deloitte 2016 Global Digital Chemistry Survey: 102 responding executives from more than 50 chemical companies over the May–June period.
Contacts
Deloitte contacts

For any questions related to this survey, connect with our representatives globally or in your respective geographies.

Global & United States
Duane Dickson
Global Leader, Chemical & Specialty Materials
Deloitte Touche Tohmatsu Limited
rdickson@deloitte.com

Belgium
Stefan van Thienen
Partner
Deloitte Belgium
svanthienen@deloitte.be

Brazil
Marcio Andrade
Director
Deloitte Brazil
marcioandrade@deloitte.com

China
Jiaming Li
Partner
Deloitte China
jiamli@deloitte.com.cn

France
Magali Testard
Partner
Deloitte France
mtestard@deloitte.fr

Germany
Roland Korte
Director
Deloitte Germany
rkorte@deloitte.de

India
Viswanathan Rajendran
Director
Deloitte India
virajendran@deloitte.com

Japan
Teppei Morita
Partner
Deloitte Japan
tmorita@tohmatsu.co.jp

Netherlands
Willem Vaessen
Director
Deloitte Netherlands
wilvaessen@deloitte.nl

Switzerland
Ralf Schlaepfer
Partner
Deloitte Switzerland
rschlaepfer@deloitte.ch

Rene Waslo
Global Advisory Leader, Chemical & Specialty Materials
Deloitte United States (Deloitte & Touche LLP)
rwaslo@deloitte.com

Yann Cohen
Global Digital Chemistry Chair, Chemical & Specialty Materials
Deloitte United States (Deloitte Consulting LLP)
yanncohen@deloitte.com
Reports developed by Deloitte Global and its member firms
These selected reports can help to foster your thinking related to digital chemistry focused on four dimensions:

**Global Chemical industry and trends**
- The chemical multiverse 2.0: The future of chemicals and advanced Materials
- The feedstocks prism: Unveiling value in volatile and complex petrochemicals

**Digital strategy and ecosystems**
- Driving innovation: Advanced materials systems
- End market alchemy: Expanding perspectives to drive growth in Chemicals
- Strategy, not technology, drives digital transformation
- Navigating a shifting landscape: Capturing value in the evolving mobility ecosystem
- Industry 4.0 and the chemicals industry
- Form dirt to data: The second green revolution and the Internet of Things

**Exponential technologies and capabilities**
- Ten types of innovation: The discipline of building breakthroughs
- 2016 Technology Trends: Innovating in the Digital Era
- 3D opportunity and the digital thread: Additive manufacturing ties it all together
- Safeguarding the IoT: Being Secure, Vigilant, & Resilient in the Connected Age

**Digital transformation and talent**
- The talent imperative in the global chemicals industry
- Aligning the organization for its digital future
- Building your digital DNA: Lessons from leaders
- 3D opportunity for engineers: Using behavioral insights to build a new mindset
Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee ("DTTL"), its network of member firms, and their related entities. DTTL and each of its member firms are legally separate and independent entities. DTTL (also referred to as "Deloitte Global") does not provide services to clients. Please see www.deloitte.com/de/UeberUns for a more detailed description of DTTL and its member firms.

Deloitte provides audit, risk advisory, tax, financial advisory and consulting services to public and private clients spanning multiple industries; legal advisory services in Germany are provided by Deloitte Legal. With a globally connected network of member firms in more than 150 countries, Deloitte brings world-class capabilities and high-quality service to clients, delivering the insights they need to address their most complex business challenges. Deloitte’s more than 244,000 professionals are committed to making an impact that matters.

This presentation contains general information only not suitable for addressing the particular circumstances of any individual case and is not intended to be used as a basis for commercial decisions or decisions of any other kind. None of Deloitte GmbH Wirtschaftsprüfungsgesellschaft or Deloitte Touche Tohmatsu Limited, its member firms, or their related entities (collectively, the "Deloitte network") is, by means of this communication, rendering professional advice or services. No entity in the Deloitte network shall be responsible for any loss whatsoever sustained by any person who relies on this communication.