



SOLVAY

asking more from chemistry®

SOLVAY ON A DIGITAL JOURNEY

DIGITAL
@SOLVAY

TrustedFamily – MES
November 23, 2017



Digital Transformation @Solvay

Plant of the future

Customer centricity through Digital

HR move to Employee experience



Florence Henriët

Digital@Solvay Project Leader



NOT AN OPTION BUT A STRATEGIC IMPERATIVE FOR SOLVAY

Digitally powered innovation - Revolution at a Glance



Between those two dates :



Data

Processing Power

Connectivity

Source
Pictures from Total

SPEED UP SOLVAY'S TRANSFORMATION THANKS TO DIGITAL

Group Vision and priorities

Priorities

Areas presented today



OBJECTIVE

Speed up Solvay's transformation towards a more customer centric, agile, innovation driven multi-specialty company

Digital Excellence

Use digital technologies to boost operational excellence

- Increase productivity, efficiency, flexibility, profitability along the entire value chain

Digital Plant

Customer centricity

R&I

Supply chain

Employee Experience

New Business Models

Leverage digital to innovate and disrupt our business models

- Be obsessed about customer needs
- Develop new services based on digital

Sustainable Portfolio

Digital Enablers & Culture

Create the conditions to enable the digital transformation:

- Change Solvay's culture & management model towards a more customer focused, collaborative, open to ecosystem, agile, analytics and innovation driven organization
- Develop digital talent & know-how
- Accelerate the adoption of adequate digital tools

Data analytics

Digital awareness

Basic infra.



Digital Transformation @Solvay

Plant of the future

Customer centricity through Digital

HR move to Employee experience



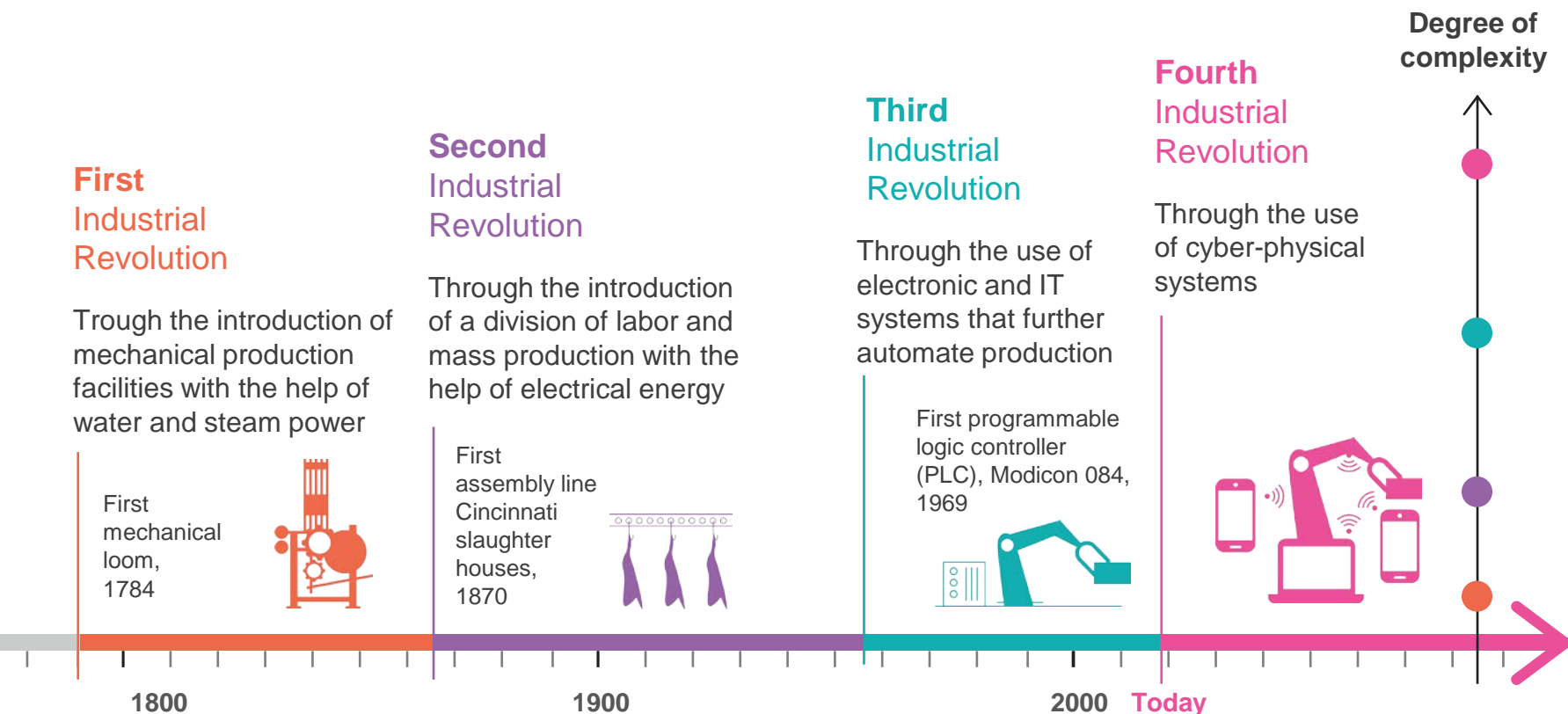
Thierry Cartage

Performance Process Director
and Digital Champion Industrial



FROM INDUSTRY 1.0 ... TO INDUSTRY 4.0

Digital as major component of Industry 4.0



DIGITAL PLANT / INDUSTRY 4.0 @ SOLVAY

Vision co-constructed with GBU Industrial Directors

2 Days workshop with
all GBUs Industrial Directors
(Feb 2016)



Our Vision

- Agile and flexible in the face of an ever changing customer market
- Modular, standardized, scalable, repeatable, relocatable
- Secure in its access to infrastructure and data
- Simple, transparent and open for learning
- Customer oriented, pro-actively connected to customer needs and creating value with innovative products and services
- Sustainable, ensuring employee health and safety, with zero environmental impact
- 100% under control: Predictive, predictable and reliable

5 PRIORITY INITIATIVES SUPPORTED BY DIGITAL

Huge Impact on EBITDA

Global digital roadmap and ambition under development

Priority digital initiatives

Asset performance enhancement

Enhance process performance (yield, energy, throughput, quality) through APC (Advanced Process Control) and Data Analytics (Advanced non-linear Process Modeling)

Asset-network value maximization

Maximize asset-network profitability (ex. several plants producing the same product) applying dynamic optimization algorithms (Scheduling)

Data-enabled asset reliability

Prevent / predict equipment failure by capturing more equipment data and applying Data Analytics

Digital workforce

Implement human – machine interface technology to streamline key processes (e.g., work-permits, inspections –link to ERP/MES)

Robotics – Cobotics – Drones

Optimize plant fixed costs through robotization of key processes of production or linked to production. **Cobotics** is a new technology where robots assist human beings in their tasks

20+ PROOFS OF CONCEPT

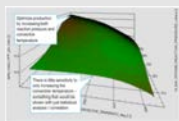
POCs allow quick assessment of the value and a win fast/fail fast mode
100+ experts involved in 15+ sites from all GBUs, SBS and Industrial

Priority digital initiatives

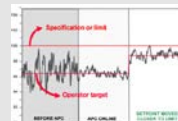
Proof of concept

Asset performance Enhancement

Spinetta
(SpP)



Devnya
(Soda Ash)



Tavaux
(SES)



Asset-network value maximization

Spinetta (Special monomer production scheduling)



Data-enabled asset reliability

Collonges
(Silica)



Torrelavega
(SES)



Digital workforce

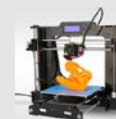


Robotics - Cobotics Drones

Changshu
(SpP)

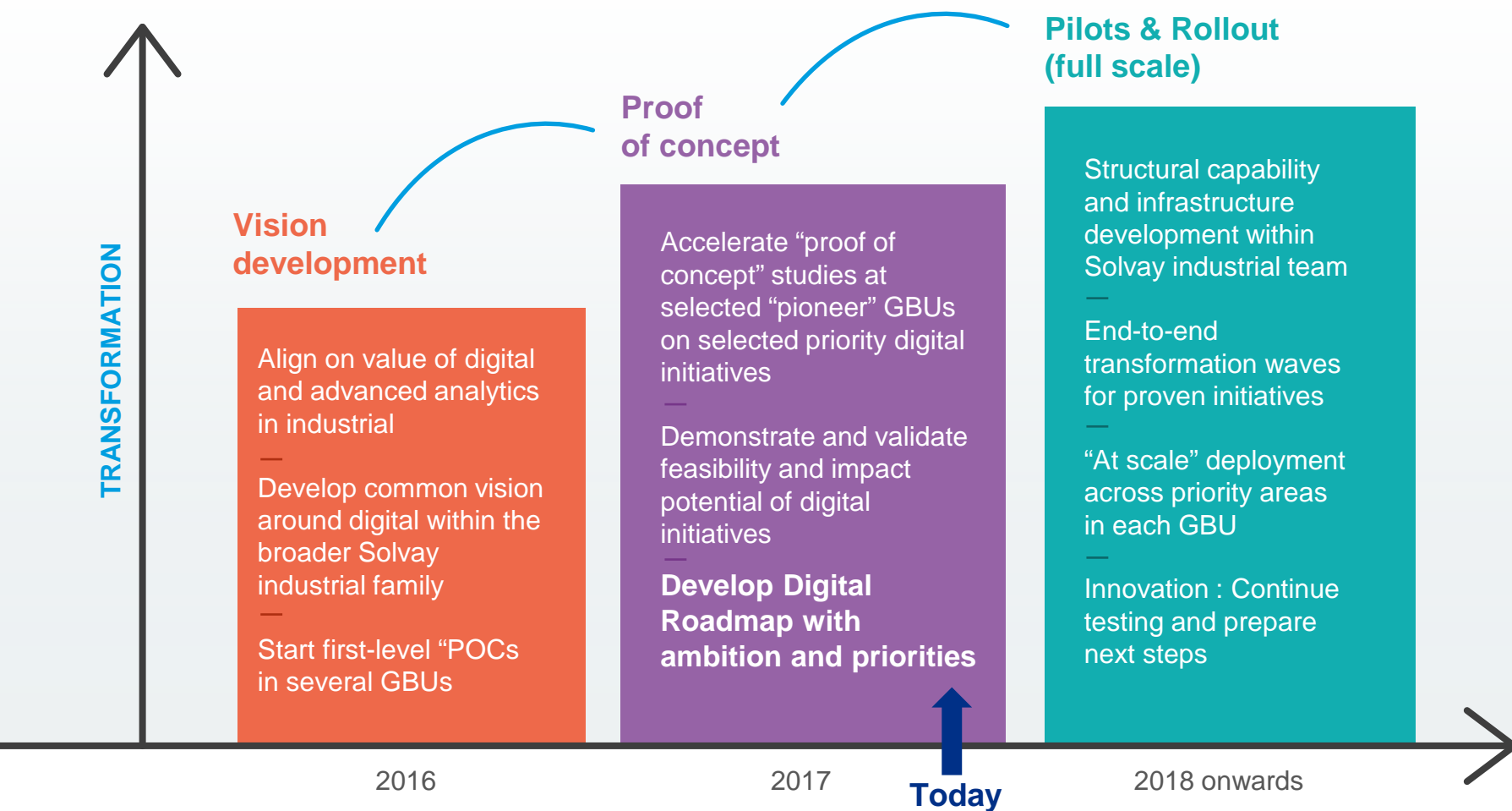


Liyang
(Sp Chem)



OUR DIGITAL JOURNEY

POCs delivering value – Structuring and scaling up



OUR DIGITAL JOURNEY - CURRENT FOCUS

POCs leveraged to design Digital Roadmap for Industrial Operations and start full scale projects

- 1 Understand **digital trends** in industrial sector, including strategies, operating models and infrastructure
- 2 Identify Digital opportunities and create a “**Industry 4.0 heatmap**” per digital lever across GBUs
- 3 Reflect on Digital **operating model cornerstones** to drive digital transformation / ambition and identify **training needs** for current workforce and **new profiles** (data managers/ data scientists / agile developers / ...)
- 4 **Craft a Digital Roadmap** for Solvay Industrial, including activities, impact and capacity building
- 5 **Initiate 5 full scale projects** (Europe, US) to build the foundations of digital transformation for industrial sites



Digital Transformation @Solvay

Plant of the future

Customer centricity through Digital

HR move to Employee experience



José Ignacio Patiño

Marketing & Sales CRM and
Digital Director

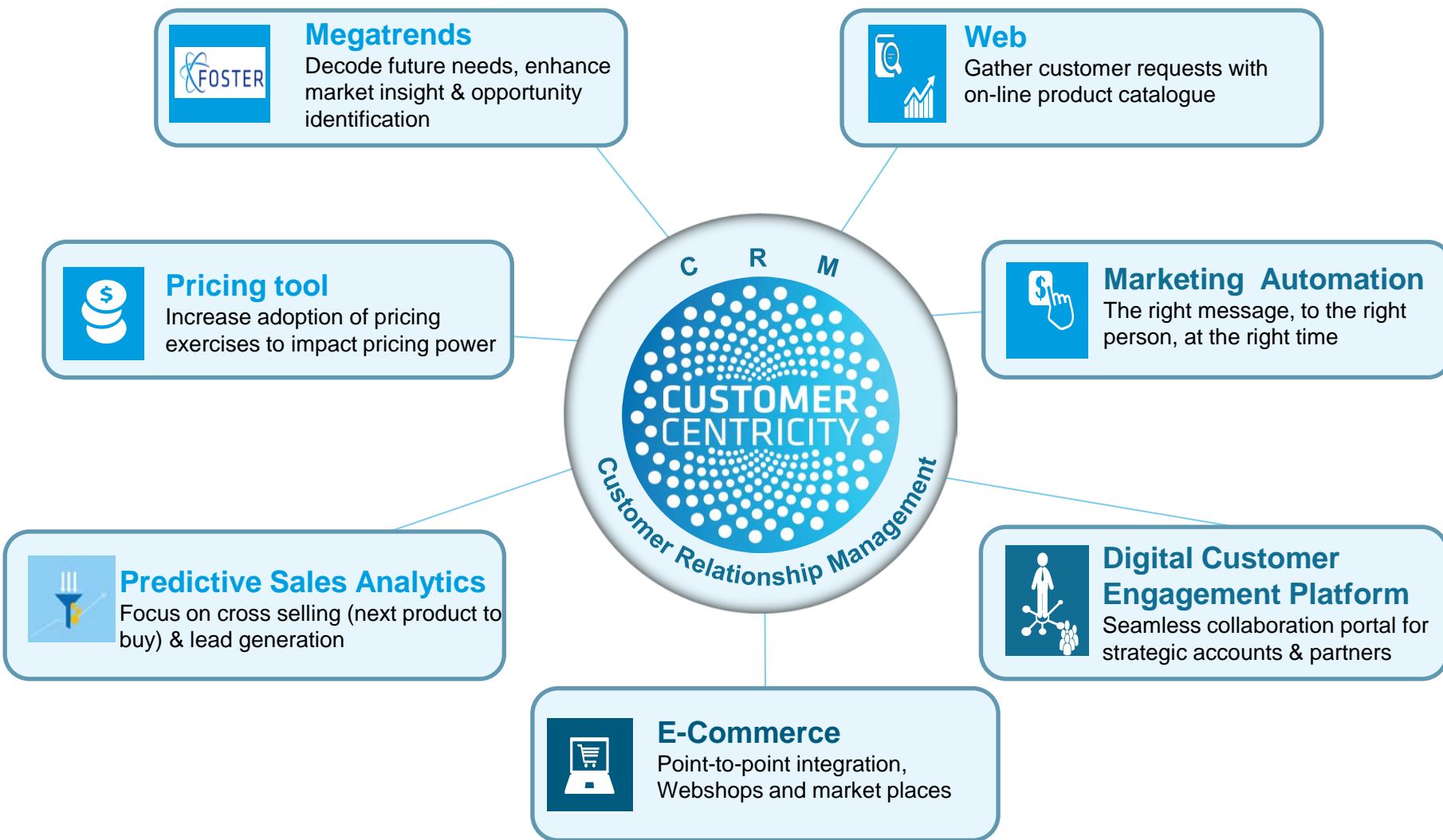


Vincent Colegrave

Head of Digital & Social Communications

DIGITAL M&S TRANSFORMATION

A business driven & customer centric approach to drive sustainable and profitable growth



A PURPOSE

pur·pose

/'pərpəs/

Noun

The reason for which something is done or created
or for which something exists.

①

Brand awareness

Customer-centricity

②

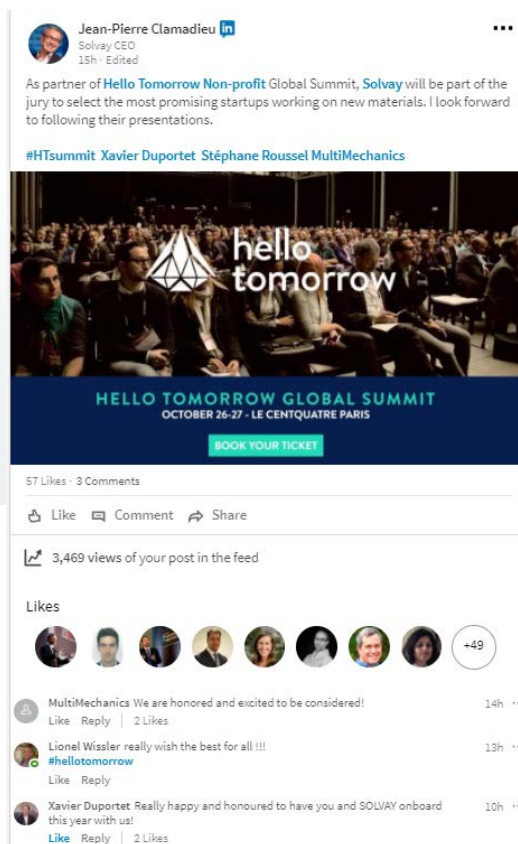
A PURPOSE



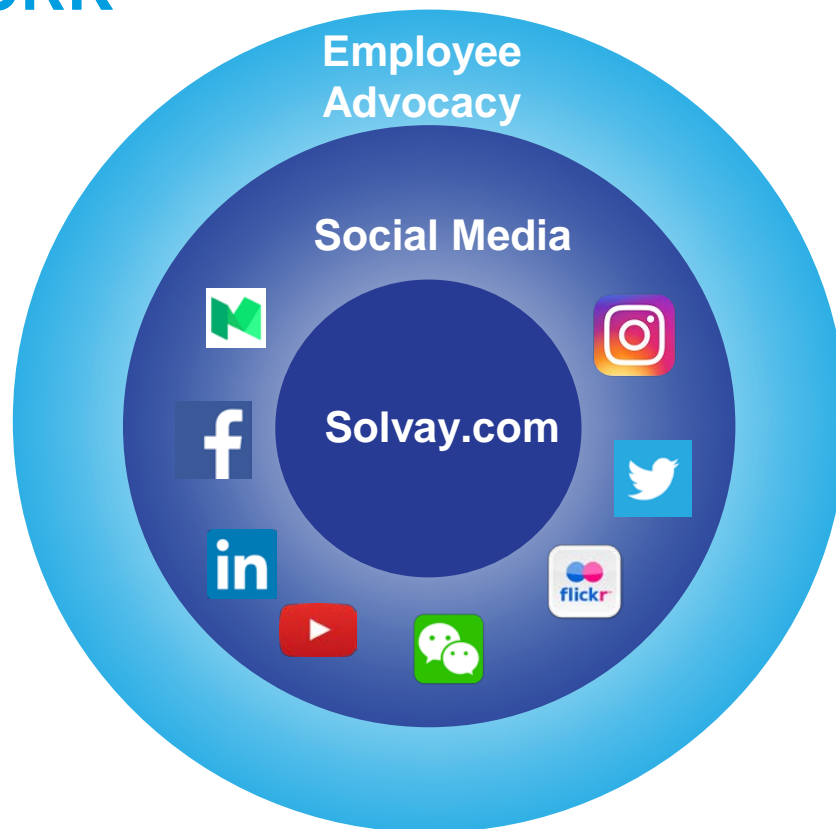
Energy Efficient Motors with only 6% loss
instead of 70% for thermal motors, lubricants by **SOLVAY**

Used by all of us, clean technologies could cut our
world's energy consumption by 2. #futureisclean

BRAND AND USER GENERATED CONTENT



A FREEDOM WITHIN A FRAMEWORK TO MEET CUSTOMER NEEDS



CRM & Social CRM Platforms

Analytics Tools & Dashboards

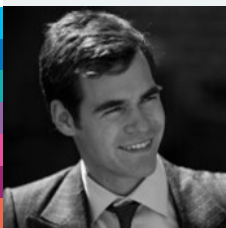


Digital Transformation @Solvay

Plant of the future

Customer centricity through Digital

HR move to Employee experience

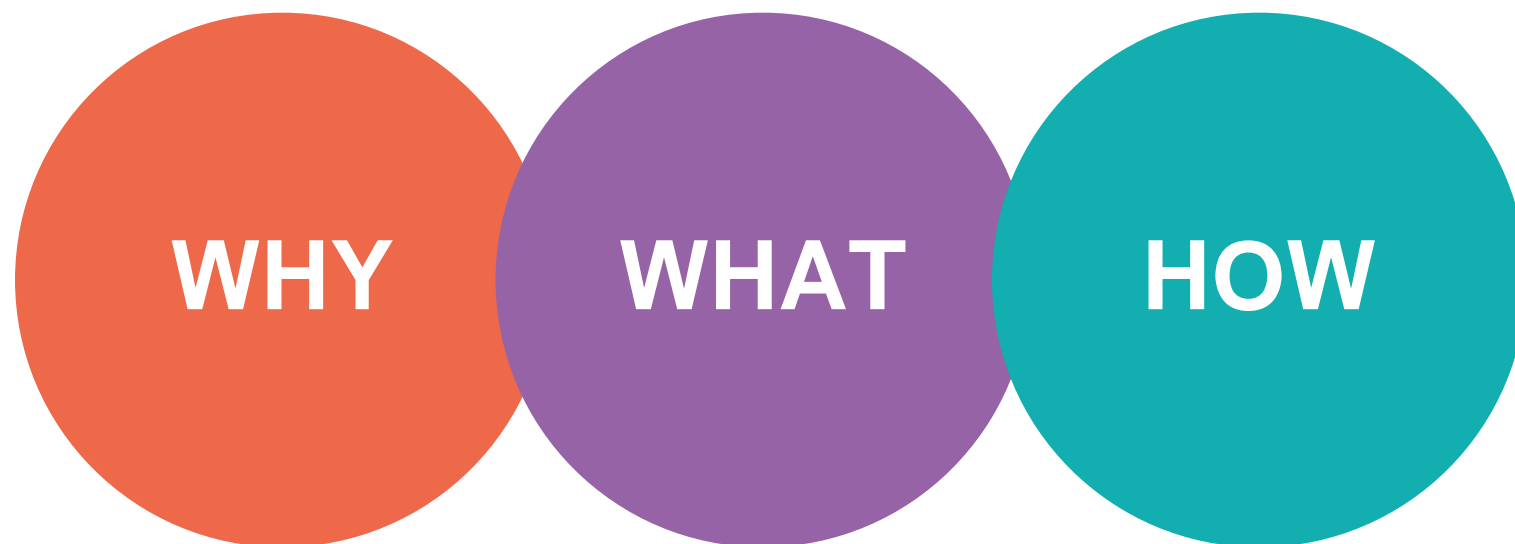


Bruce Fechey-Lippens

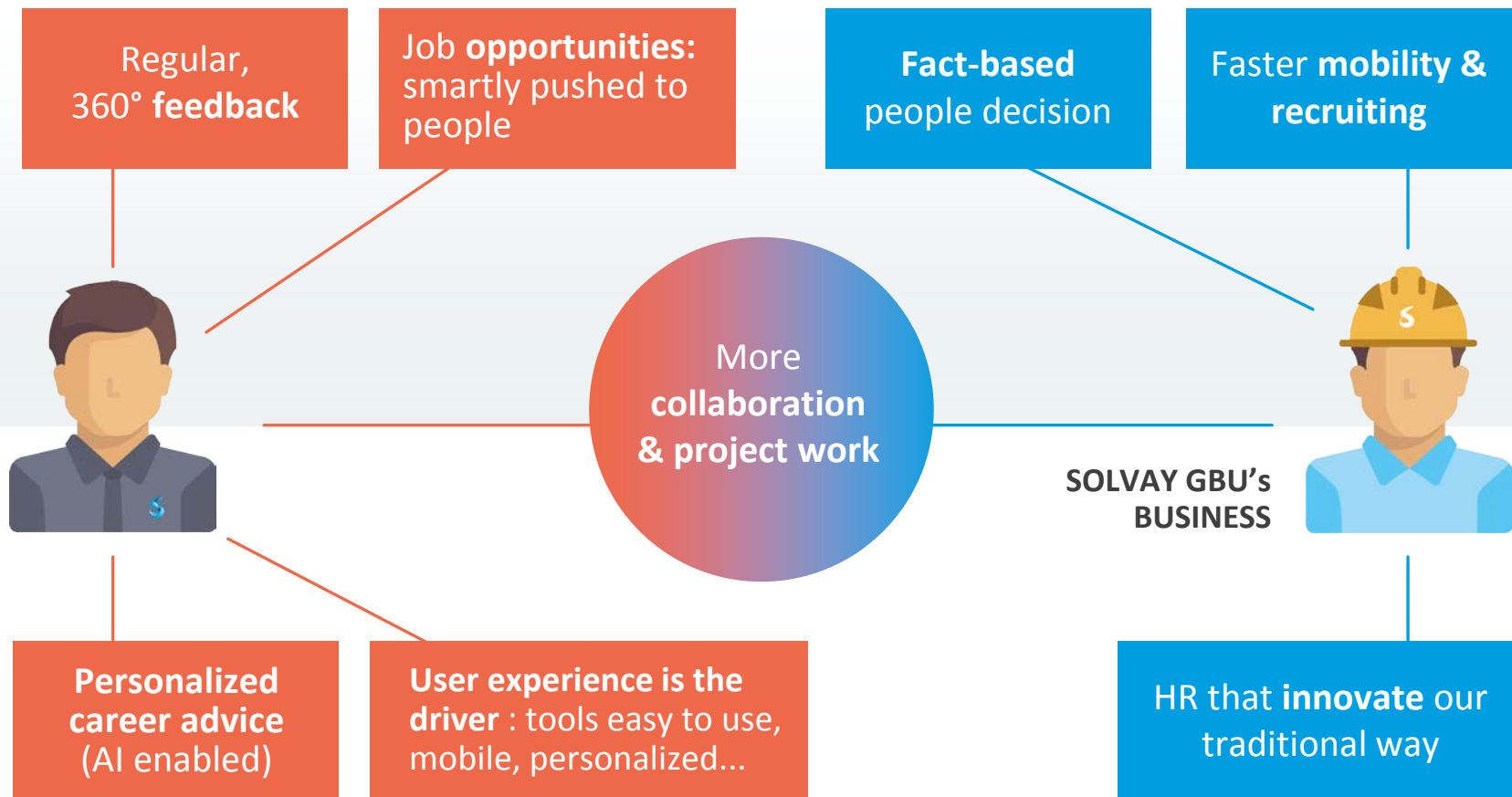
Head of people analytics
and HR digital transformation



LET'S DISCOVER TOGETHER...



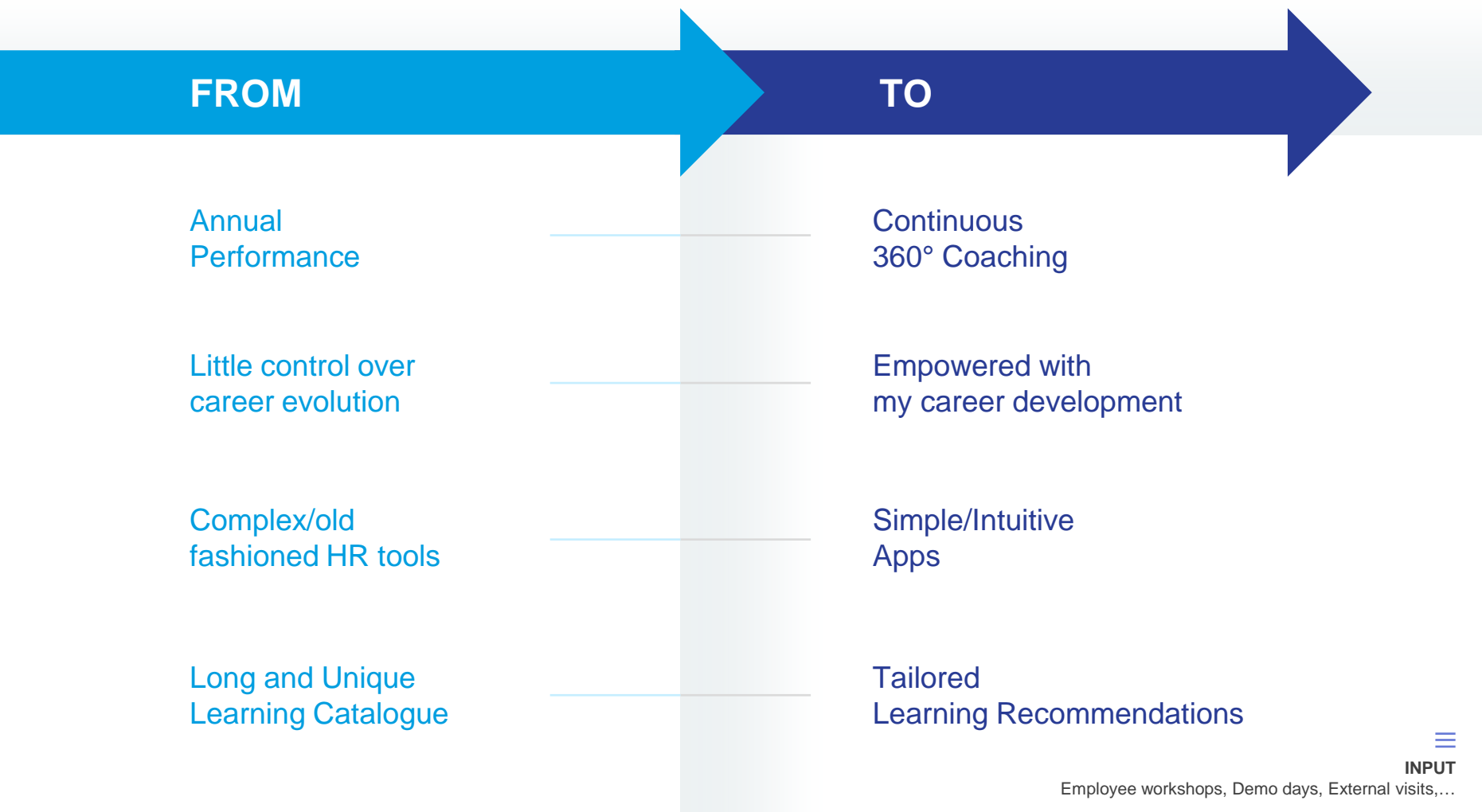
WHY: SOLVAY AND IT'S PEOPLE ASK FOR...



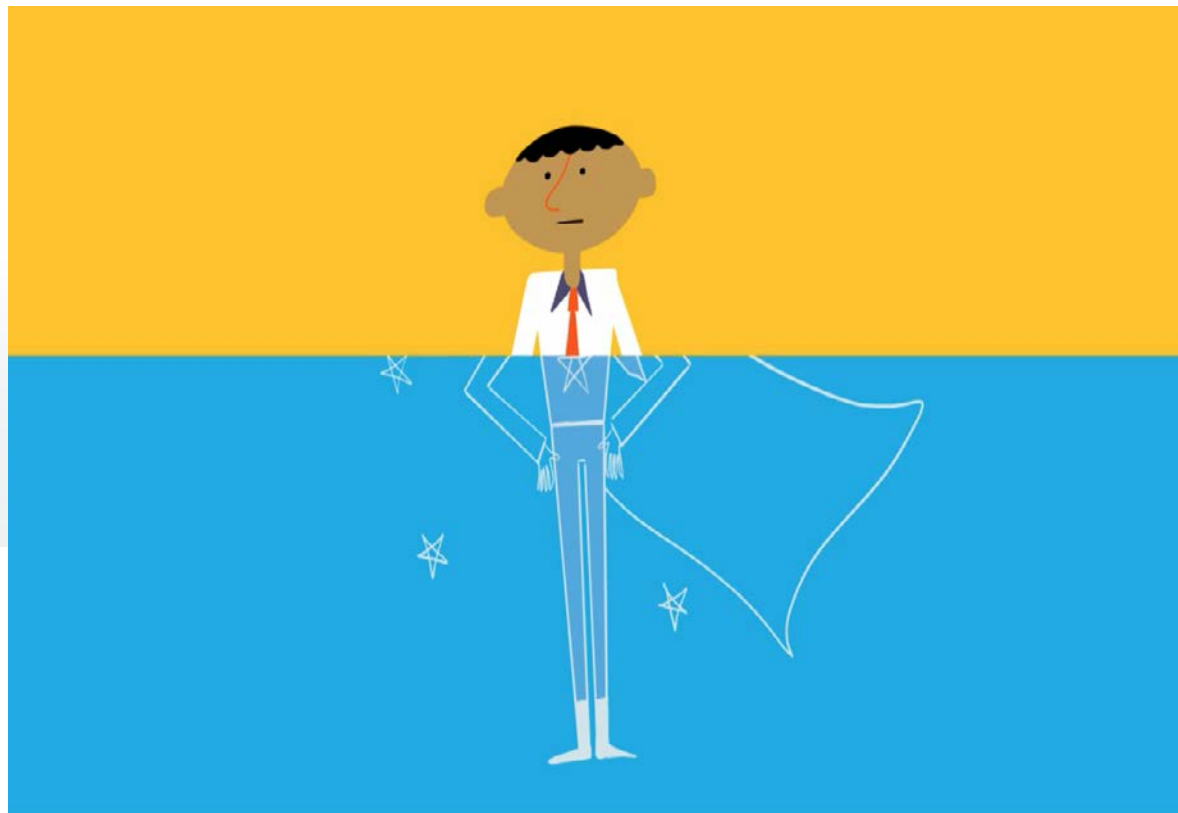
INPUT

Employee workshops, Demo days, External visits,...

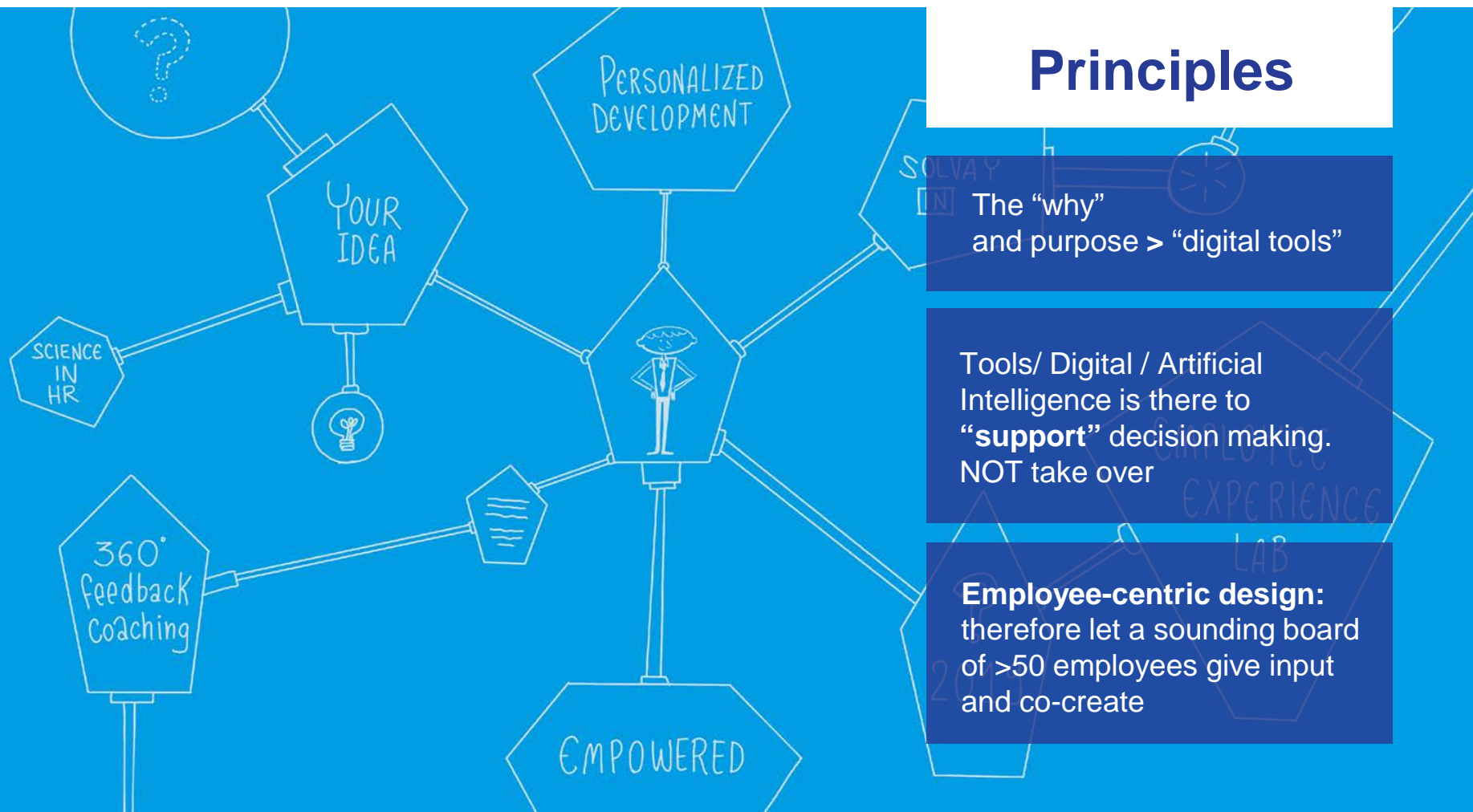
WHAT: CREATE EMPLOYEE EXPERIENCES!



WHAT: YOU OWN YOUR SOLVAY EXPERIENCE...



HOW: TEST-AND-ADAPT JOURNEY



HOW: “FLIP” OUR WAY OF WORKING IN THE EMPLOYEE EXPERIENCE LAB

Employee Centric
Design Thinking

New Way of
Working

10x Speed

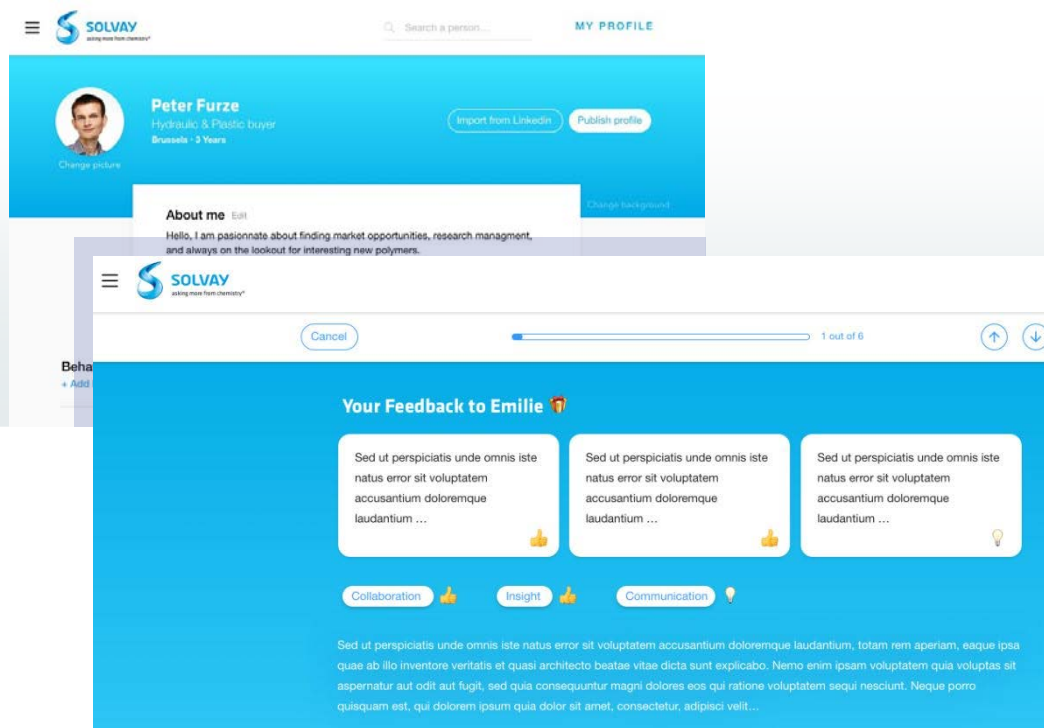


Physical
Place

Skill >
Hierarchy

Collaborative

HOW: NEW EMPLOYEE APP BEING DEVELOPED – PERSONALIZED!



HOW: EMPLOYEE OWNS SOLVAY CAREER

FROM

Coordination

—
'top-down'
decided

—
No science



TO

Collaboration

—
**Empowered
to own
career**

—
Artificial
Intelligence
enabled App

FRAMEWORK:

EMPLOYEE EXPERIENCE > CULTURE > DIGITAL > ANALYTICS



Employee Experience
(what do Solvay people ask?)



I own my career

I develop thanks to **360° feedback**

New way of working: cross-functional, agile project teams

My manager, colleagues and I act like **sparring partners** to all be successful

I have **simple Apps & tools**



Culture Shift



I own my objectives; and adapt those rapidly when needed

I ask and provide 360° feedback frequently

I shape my Solvay career
I shape the way we work
I learn and develop constantly



Digital App & Innovation



YOU!
'Your new HR App'



Clustree

CROSSKNOWLEDGE
A Solvay brand

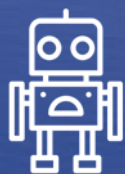
Google



Analytics Insights

- Pattern analysis to nudge employees (e.g., if you ask for feedback you develop faster; if you have frequent check-in talks engagement is much higher)
- ROI: Engagement; Time-To-Perform in job; Team Performance

SPEED OF IMPLEMENTATION DEPENDS ON 3 REALITIES



**MACHINE
LEARNING**



**2018 DATA
PRIVACY**



**NEW WAY
OF WORKING**

IMPACT FOR SOLVAY



Respect Data Privacy



More customer time



**Value for
Solvay**



Employee Experience



New Way of Working

OUR KEY LEARNINGS

A REAL TRANSFORMATION WITH MASSIVE IMPACT

Digital is a **real** transformation

- True technical breakthroughs, combination of Bottom-up (POCs) and Top-Down pilots
- Requires a major change in mindsets and behaviors and deployment of a new culture at all levels
- New capabilities required

Impact is **massive**

- Significant EBITDA impact
- Impact on revenues, production costs, inventories, quality of service to the customer ...

We are getting ready to **capture** it

- All GBUs are engaged in the digital transformation
- Global roadmap to accelerate current deployment



Digital transformation is a journey and we are all part of it!

www.solvay.com



SOLVAY

asking more from chemistry®