

# Industry 4.0 and the Implications for HR

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An analysis of cognitive technologies and their role in shaping the future of work.





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# Introduction

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CEOs are turning to their internal HR functions to help their organisations rapidly evolve and adapt to the changing demands of the new digital landscape.

HR leaders now find themselves at the forefront of organisational decision-making: driving technology absorption, fostering innovation, enabling new work models and simultaneously attracting, retaining and developing the workforce of the future.

This White Paper aims to support business leaders and Human Resources (HR) teams as they strive to define new people strategies in the digital economy, also known as the **Fourth Industrial Revolution** or **Industry 4.0**.

This body of work explores the fundamental pillars of Industry 4.0 from the perspective of HR - framing the concept of HR 4.0. We also outline practical applications of HR 4.0 within enterprise organisations, highlighting the challenges and wider benefits of embracing an 'automation-first' mindset.

Adopting HR 4.0 as a practice, helps organisations sustain a competitive advantage by revamping their people strategy with scalable and flexible technologies.





# Evolution or Revolution?

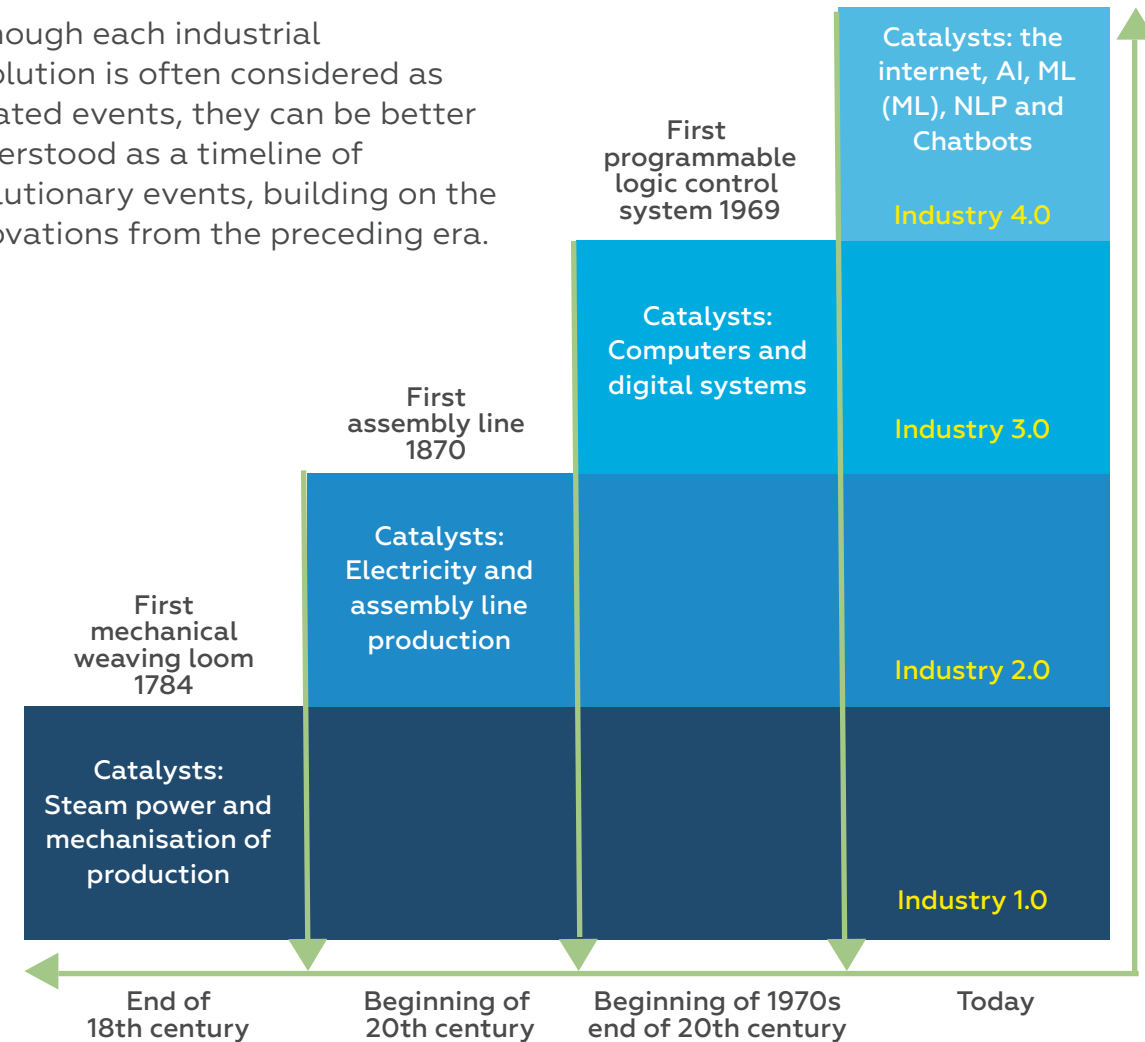
The First Industrial Revolution introduced the change from an agrarian and handicraft economy to one dominated by industry and machine manufacturing. Its impact on civilisation was immense. No longer centred around villages, farming and the local crafting of goods, people flocked to cities to work in factories under low wages and in terrible conditions.

The Second Industrial Revolution, also known as the Technological Revolution, was a phase of rapid standardisation and industrialisation with the invention of electricity and enabled mass production. While before one station assembled an entire automobile, now the vehicles were produced in partial steps on the conveyor belt – significantly faster and at lower cost.

The Third Industrial Revolution was all about computers and digital systems which enabled new ways of processing and sharing information. Transistors, microprocessors, robotics and automation – not to mention the internet and mass communications – would eventually allow for the ultimate in scale: globalisation.

The Fourth Industrial Revolution, aka Industry 4.0, focuses on the end-to-end digitisation and automation of processes with the use of cognitive technologies. It is characterized by a range of new technologies that are fusing the physical, digital and biological worlds, impacting all disciplines, economies and industries, and even challenging ideas about what it means to be human.

Although each industrial revolution is often considered as isolated events, they can be better understood as a timeline of evolutionary events, building on the innovations from the preceding era.



1. <https://www2.deloitte.com/content/dam/Deloitte/ch/Documents/manufacturing/ch-en-manufacturing-industry-4-0-24102014.pdf>



**“The digital revolution is a human revolution. While new technologies are what’s driving Industry 4.0, ultimately, it is people who will bring it to life in businesses.**

**As HR Leaders, we play a pivotal role in helping to lead our organisations to a new future of work - one that has the potential to be more inclusive, more purposeful and one which can deliver more positive impact to our people and our consumers. It is for this reason why I think there’s no better time to be in HR. ”**

**Leena Nair**  
**Chief HR Officer, Unilever**

World Economic Forum HR 4.0



# Industry 4.0 and what it means for HR



Industry 4.0 blurs the lines between people and technology, merging the physical and digital worlds within a single reality. In tandem, the increasing intensity of social, technological and economic changes challenge pre-existing consumer behaviours.

Digitalisation has created a new people-driven paradigm driven by choice, accessibility and flexibility. The combination of all these overlapping trends, requires organisations to change how they attract, develop and manage relationships with their employees and candidates.

It requires HR leaders digitise essential functions within their

internal operational processes and optimise existing capabilities with new innovative and data-driven technologies - all while ensuring employees feel valued at work.

Industry 3.0's previously accepted one-size-fits-all operational models and single function HR software applications are now redundant.

Industry 4.0 is about automation, interconnectivity and experience personalisation. Understanding how to effectively and efficiently leverage the new technologies has become a priority for many leaders at enterprise organisations and beyond.

2. Deloitte Insights (2018). The rise of the social enterprise: 2018 Deloitte Global Human Capital Trends

3. Edlich, A., Ip, F., & Whiteman, R. (2018). How bots, algorithms, and artificial intelligence are reshaping the future of corporate support functions



# The 6 core cognitive technologies

To understand how cognitive technologies can benefit HR functions, it is important to understand the basis and offerings of each specific cognitive facet.



## Artificial Intelligence (AI)

Systems capable of performing tasks that normally require human intelligence, such as speech recognition, decision-making, and language translations.



## Machine Learning (ML)

A subset of artificial intelligence. The cognitive capabilities allow the system to identify, learn and predict based on historic 'big-data'.



## Natural Language Processing (NLP)

The ability of a computer program to understand human language as it is spoken. NLP systems are able to derive meanings from words or sentences and transcribe this to data.



## Interconnectivity: API's & Integrations

This covers a software's ability to communicate with other software within an existing tech stack.



## Robotic Process Automation (RPA)

Technology that allows businesses and organisations to configure software systems to carry out routine, rule-based computer tasks in a way similar to a human.



## Conversational Agents (Chatbot)

A chatbot or virtual assistant is a computer program that simulates human conversation through voice commands or text.



# HR 4.0: The future of work

In Industry 4.0 innovation, operational agility and speed of delivery are critical to business growth and a sustainable competitive advantage.

HR 4.0 is the utilisation of cognitive technologies to deliver value across the HR lifecycle and the wider organisation.

HR 4.0 is a shorthand to describe the journey that businesses and HR leaders must take towards actualising a complete value chain transformation.

At the center of this transformation is automation, the technology by which a process is performed with minimal human assistance.

Automation transforms how work is done by substituting, augmenting and creating new tasks for workers by eliminating manual, bureaucratic and repetitive work.

At EVA.ai, HR 4.0 is defined as having an 'Automation First' mindset. In reality, any process can be automated. Here at EVA, we don't automate for the sake of doing so, but only if the automation adds value for all stakeholders involved. This requires that 'processes that can be automated whilst adding value for all stakeholders involved'.



**"The best way to predict the future is to create it."**  
**Peter Drucker**



4. Bersin, J., B. Denny, M. Hauptmann, et al., Leading the social enterprise: Reinvent with a human focus, 2019 Global Human Capital Trends, Deloitte, 2019  
5. I4CP, Automating Work: The Human/AI Intersection, 2019.





# The synergies between Industry 4.0 and HR 4.0



Industry 4.0 at its core is the marriage of physical processes/people/things and cognitive digital technologies such as Machine Learning (ML), Automation, Natural Language Processing (NLP), Deep Learning and Analytics.

Introducing cognitive technology and an 'Automation First' mindset into any company allows for the emergence of a digital enterprise that is not only interconnected but also capable of making holistic, informed and data-driven decisions to facilitate intelligent outcomes.  
**A HR 4.0 company.**

Within an HR 4.0 company data collected from digital and cognitive technologies drives intelligent action that can be applied in the real world.

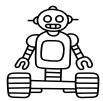
Whether it's insights into building more meaningful relationships with candidates and employees, or data-driven insights into developing new business models and real-time insights that help the C-suite identify new growth opportunities.

6. Deloitte Insights (2018). The rise of the social enterprise: 2018 Deloitte Global Human Capital Trends  
7. Illigan, S., "HR 2025: 7 critical strategies to prepare for the future of HR", SHRM, 29 October 2018,



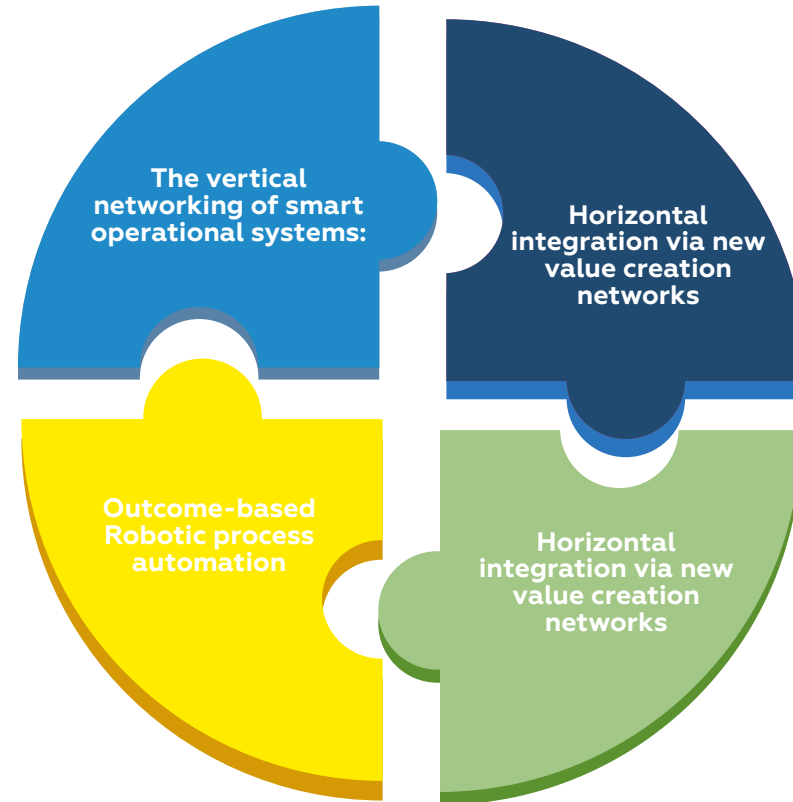
# The 4 pillars of an HR 4.0 organisation

To understand the advantages that a HR 4.0 approach within any business, Klaus Schwab's four pillars of Industry 4.0 have been adapted to the HCM use-case:



## The vertical networking of smart operational systems:

A technology focus that champions inter-connectivity across previously disparate systems, and data silos in real-time. The network of cognitive technologies allows for real-time system transparency, process visibility and data accessibility across every HR touchpoint.



## Horizontal integration via new value creation networks:

A new focus on value-creation networks that creates opportunities for business growth. It combines data from both internal and external sources to improve decision making via experience-driven feedback loops




## Outcome-based robotic process automation

RPA that allows for the elimination of previously time-consuming and manual work based on status changes within a process. It allows companies to develop the competencies (and mutual trust) to better integrate IT and organisational functions.



## Acceleration through exponential technologies:

The utilisation of cognitive technologies such as Machine Learning, Natural Language Processing (NLP), Conversational Agents and Data science to augment, understand and predict opportunities for business growth. The key: creating synergies via technology.



**“My concern, however, is that decision makers are too often caught in traditional, linear (and nondisruptive) thinking or too absorbed by immediate concerns to think strategically about the forces of disruption and innovation shaping our future...**

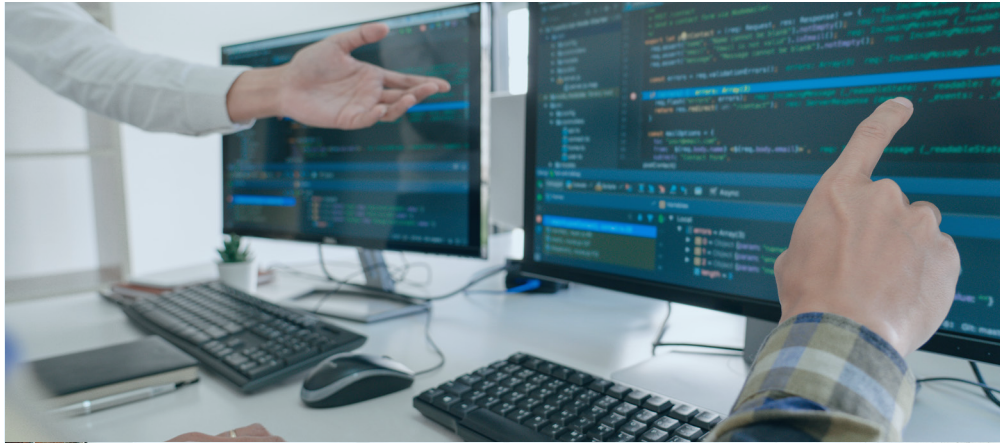
**Shared understanding is particularly critical if we are to shape a collective future that reflects common objectives and values.”**

**Klaus Schwab**  
**Founder of the World Economic Forum**

The Fourth Digital Revolution (2016)



# Vertical networking of smart operational systems



Utilises a central cognitive-technology solution that manages an organisation's existing tech stack, to communicate and organise these previously disparate systems within an intelligent network of cyber-physical systems (CPS).

Through human-machine interfaces, the physical and the virtual worlds work closely and seamlessly together: The human defines the requirements, whilst process management via the CPS takes place autonomously.



The CPS links all logical layers of the HR function (including marketing, billing, employee log management etc.), within a seamless user experience.

Vertical networking cognitive capabilities allow enterprises to finally deliver specific and personalised user-experiences at scale.

Multi-ended API's allow for data to flow freely and transparently across each of the CPS nodes, in real-time. Facilitate a cognitive synergy, across all systems that improves the more it is used.

9. ServiceNow (2018). The New CHRO Agenda: Employee Experiences Drive Business Values

10. Deloitte- Industry 4.0: Challenges and solutions for the digital transformation and use of exponential technologies



**Just over two-fifths of companies report that they believe their HR vertical value chains are already benefiting from an advanced level of digitisation, automation and integrations.**

**PWC**

**Industry 4.0: Building the digital enterprise**

2019



# Horizontal integration via new value creation

Utilises a cognitive cyber-physical system (CPS) that focuses on automation, flexibility, and operation efficiency. Every data cell within this intelligent network is logged, allowing for constant transparency and the tracking of information across every entity.

These new value-creation networks function in real-time offering enterprises the capability to respond more efficiently to issues or requests within the organisation.

The first value creation relationship, at the top-of-mind, is the relationship between a business and its employees.

In this example, utilising HR 4.0 methodology, organisations can automate employee engagement to collect frustrations and feedback at scale. Whilst being able to personalise each interaction via CPS logs.

This unlocks the opportunity for high levels of automated collaboration, that facilitates dynamic/adaptive business models, within the overarching organisation goals.

The same capabilities can be applied to candidates, to drive the Employer Value Proposition (EVP).



11. Jesuthasan, R. and J. Boudreau, Reinventing jobs: A 4-step approach for applying automation to work. Harvard Business Review, 2018.  
12. <https://www2.deloitte.com/content/dam/Deloitte/at/Documents/human-capital/at-deloitte-human-capital-trends-2018-ai-robotics-automation.pdf>



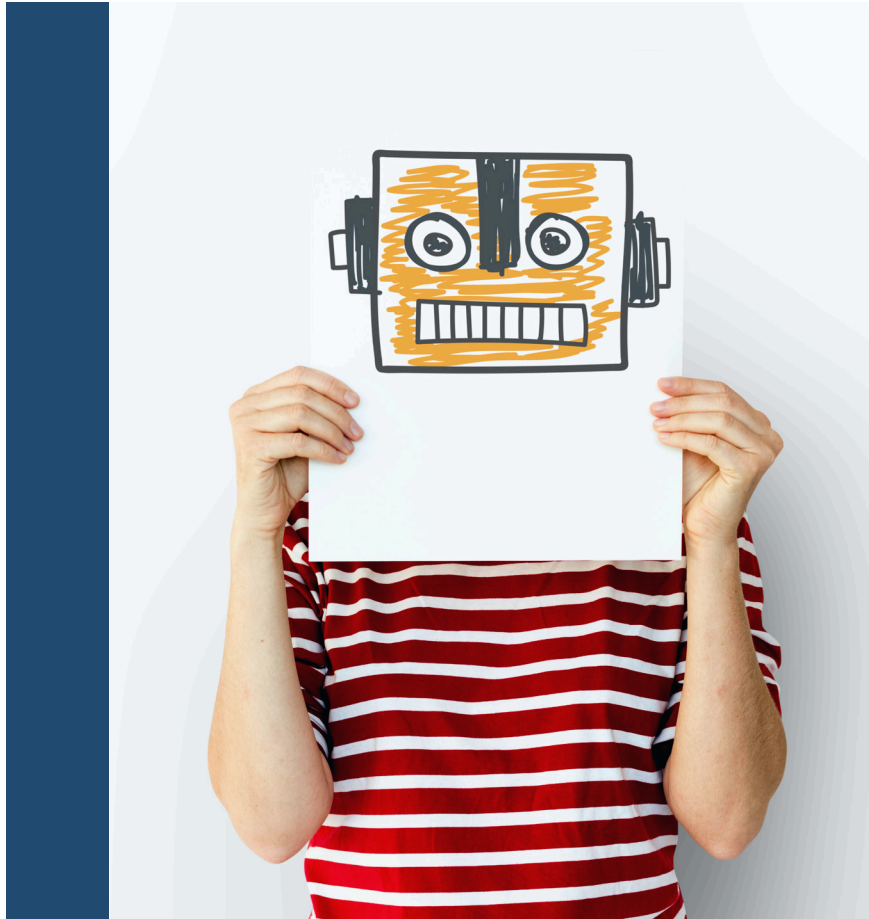
**87% of U.S and U.K employees are not engaged. Disengaged employees cost companies between \$900 billion to \$950 billion per year in lost productivity. Moreover, companies with highly engaged workforces outperform their peers by 147% in earnings per share.**

**Gallup Report  
How to Tackle Employees' Stagnating Engagement**

2019



# Outcome-based Robotic Process Automation



Industry 4.0 has seen a shift from a workforce organised around manual labour, to one built around knowledge-based work.

HR 4.0 companies implement an automation-first approach to protect their intangible assets: their intellectual property (IP, culture and the talent within their workforce.

In this context, HR 4.0 companies use intelligent conversational agents and to deliver meaningful and personalised interactions at scale.

These cognitive technologies can

be deployed to collect the previously subliminal knowledge and insights through intelligent digital data capture. This enables them to improve the scalability and productivity of their organisations.


Conversational assistants can also automate the previously time-consuming tasks of gathering and sorting through valuable information, that may have previously gotten lost in translation.

To put it simply, RPA lets people focus on what people do best while technology does the grunt work.

13. Edlich, A., Ip, F., & Whiteman, R. (2018). How bots, algorithms, and artificial intelligence are reshaping the future of corporate support functions.

14. Jiligan, S., "HR 2025: 7 critical strategies to prepare for the future of HR", SHRM, 29 October 2018,



A group of people in a meeting room. One person is standing and pointing at a whiteboard. The room has a whiteboard with some diagrams and sticky notes. There are people sitting around a table, some looking at the whiteboard. The image is overlaid with a semi-transparent blue filter.

**“There is tremendous automation opportunity in the underlying aspects of running an HR function, but the real opportunity this creates is elevating the people in the HR team to spend more time with people in the company, driving talent development, and creating a better employee experience. ”**

**Mandy Sebel,  
SVP, Head of People UiPath**

How RPA Will Create a More Human-  
centric HR Profession and a More Human  
Workplace



# Acceleration through exponential technologies



Exponential technologies (ET) are digital innovations that continue to evolve, with disruptive economic and lifestyle effects. In this case, ET's are based on the 6 core cognitive technologies of Industry 4.0.

When two or more ET's are applied simultaneously to a challenge, the chance of creating a viable and sustainable solutions increases drastically. For HR functions this logic can be applied to:



## Increasing stakeholder engagement

These systems can receive and process unstructured information, in ways similar to humans via Natural Language Processing (NLP). Utilising a combination of Machine Learning and Natural Language Understanding (NLU), these technologies can grasp the underlying concepts within a dialogue to form hypotheses, infer meaning and synthesise information to produce relevant and meaningful responses.



## Sustaining a competitive advantage:

HR 4.0 engineering methodologies that include capacities for Machine Learning and Deep Learning within a neural network, these systems learn and improve across every data point, interaction and outcome. Allowing organisations to retain the invaluable business knowledge they have built over and contextualise this domain experience to drive business growth.



## Implementing a data-driven C-suite:

With an always-on CPS network, HR leaders and the wider organisation have access to real-time data that allow for future-proof decision making and insights that drive organisational capabilities

15. Vikram Mahidhar and David Schatsky: The Internet of Things. Deloitte University Press, 4 September 2013.

16. MDPI - Influences of the Industry 4.0 Revolution on the Human Capital Development and Consumer Behavior: A Systematic Review



**66%** of CEOs believe cognitive technology can drive significant value in HR.

**50%** of HR executives recognize that cognitive technology has the power to transform the key dimensions of HR.

**54%** of HR executives believe that cognitive technology will positively affect key roles in the HR organisation.

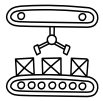
**IBM**

Shaping People Strategies in the Fourth  
Industrial Revolution



# Organisational blockers of HR 4.0

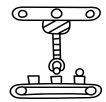
HR 4.0 is no longer a 'future trend' – for many companies it is now at the heart of their strategic and operational agenda. To move forward with HR 4.0, mapping out your existing capabilities to assess the readiness for transformation can allow you to navigate potential blockers such as:



## Legacy systems & disparate technologies:

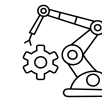
9 out of 10 IT decision-makers claim legacy systems are preventing them from harnessing the digital technologies they need to grow and become more efficient. This means they are ill-equipped to deal with the demands of Industry 4.0.

To begin the transformation, companies have to analyse their current capabilities to understand their employee's frustrations and technologies tied to the processes they want to transform.



## Knowledge silos:

Knowledge silos occur when an organisation's disparate information systems are incapable of sharing data with one another, trapping information in one part of the business, function or business.



## Fixed Mindset = Inertia

HR 4.0 and cutting-edge capabilities – such as RPA and artificial intelligence – are transforming many business processes, and it's easy to be enamoured by these technologies. But enthusiasm for any particular tool won't win converts, experienced change leaders say. Instead, focus on the problem that needs to be fixed – and promote the fix as the key benefit that comes from change.



## Metathesiophobia: The Fear of Change

Leadership is about change, but what is a leader to do when faced with ubiquitous resistance? The best tool for leaders of change is to understand the predictable, universal sources of resistance in each situation and then strategise around them. Most importantly, change must be embraced and driven from the top-down.

15. Vikram Mahidhar and David Schatsky: The Internet of Things. Deloitte University Press, 4 September 2013.

16. MDPI - Influences of the Industry 4.0 Revolution on the Human Capital Development and Consumer Behavior: A Systematic Review



## Where are you now vs Where you want to be

	<b>Siloed Implementation</b> Single use-case HR solutions	<b>Vertical Integration</b> Feature-driven technology	<b>Horizontal Integration</b> Role-based implementations	<b>HR 4.0</b>
<b>User Experience</b>	Focused solutions with isolated application benefits beyond primary use	Digital experience with the utilisation of data as a key differentiator	Data flows with stakeholders, intensive data use across value-chain network	Development of new engagement models with innovative service offerings to all stakeholders
<b>Cognitive integration across the four pillars</b>	Digitised and automated sub- processes. Partial integration and standard capacity for collaboration partly in place	Standardised internal process data flows within the company. Limited interaction with third-party systems	Single data structure, high performance architecture	Fully cognitive, integrated ecosystem with self-optimised, virtual processes, decentralised autonomy, real-time data access
<b>Scalable IT architecture and engineering framework</b>	Fragmented and siloed in-house IT architecture or legacy systems.	Homogeneous IT architecture across in-house platforms Functional API-calls across partner network.	Legal risk consistently addressed periodically with collaboration partners	Central Processing System with open API functionality allowing for secure data exchanges and optimisation loops in real-time
<b>Data, compliance and security</b>	Traditional structures, where cognitive technologies are not the focal point	Factors are recognised but not addressed comprehensively or cohesively across all implemented solutions	Legal risk consistently addressed periodically with collaboration partners	Optimised value-chain management network for compliance, security and legal
<b>Organisation, employees and digital culture</b>	Functional focus, with people processes and technology isolated in 'silos'	Cross-functional collaboration but not structured with consistent performance	Collaboration across company boundaries, culture and knowledge sharing	Transparency, Accessibility and On-demand access to information drives organic collaboration



# Powering HR 4.0

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The research and foundation of the insights in this whitepaper are a consideration of desk based and primary research. No statements are intended to influence any equity investments or decision making and no liabilities as such can be assumed by EVA.ai for choices made having read this paper.

This is part of an ongoing series of research into the blockers to effective talent acquisition in a new age of effectiveness and automation technologies.

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The EVA.ai team is always available to provide you with more information about our approach to HR 4.0 and answer any questions you may have



[Speak to a member of  
our team](#)

# References



Davenport, T. H. & Ronanki, R. (2018). Artificial Intelligence for the Real World. Harvard Business Review (January-February 2018 Issue). Available online at: <https://hbr.org/2018/01/artificial-intelligence-for-the-real-world>

Deloitte, Bersin, J., B. Denny, M. Hauptmann, et al. 2019, Leading the social enterprise: Reinvent with a human focus, 2019 Global Human Capital Trends,

Deloitte - Industry 4.0-Challenges and solutions for the digital transformation and use of exponential technologies. Available Online at: <https://www2.deloitte.com/content/dam/Deloitte/ch/Documents/manufacturing/ch-en-manufacturing-industry-4-0-24102014.pdf>

Deloitte Insights (2018). The rise of the social enterprise: 2018 Deloitte Global Human Capital Trends. Available online at [https://www2.deloitte.com/content/dam/insights/us/articles/HCTrends2018/2018-HCTrends\\_Rise-of-the-social-enterprise.pdf](https://www2.deloitte.com/content/dam/insights/us/articles/HCTrends2018/2018-HCTrends_Rise-of-the-social-enterprise.pdf)

Edlich, A., Ip, F., & Whiteman, R. (2018). How bots, algorithms, and artificial intelligence are reshaping the future of corporate support functions. Available online at <https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/how-bots-algorithms-and-artificial-intelligence-are-reshaping-the-future-of-corporate-support-functions>

Gallup, (2018) Employee Engagement: The Engaged Workplace. Available online at <https://www.gallup.com/services/190118/engaged-workplace.aspx>

I4CP, Automating Work: The Human/AI Intersection, 2019.

IBM HR4.0: Shaping People Strategies in the Fourth Industrial Revolution (2019).

Illigan, S., "HR 2025: 7 critical strategies to prepare for the future of HR", SHRM, 2018, Available online at <https://www.shrm.org/hr-today/news/hr-magazine/1118/pages/7-critical-strategies-to-prepare-for-the-future-of-hr.aspx>.

PWC - Industry 4.0: Building the digital enterprise. Available at <https://www.pwc.com/gx/en/industries/industries-4.0/landing-page/industry-4.0-building-your-digital-enterprise-april-2016.pdf>

Jesuthasan, R. and J. Boudreau, Reinventing jobs: A 4-step approach for applying automation to work. Harvard Business Review, 2018. Available online at <https://www.hbsp.harvard.edu/product/10174-HBK-ENG>

Klaus Schwab - The Fourth Digital Revolution (2016)

MDPI - Influences of the Industry 4.0 Revolution on the Human Capital Development and Consumer Behavior: A Systematic Review

PWC - Industry 4.0: Building the digital enterprise  
ServiceNow (2018). The New CHRO Agenda: Employee Experiences Drive Business Values. Available online at <https://www.servicenow.com/content/dam/servicenow-assets/public/en-us/doc-type/infographic/chro-infographic.pdf>

UiPath - Robotic Process Automation (RPA) & Human Resources. How RPA Will Create a More Human-centric HR Profession and a More Human Workplace (2019)

Vikram Mahidhar and David Schatsky: The Internet of Things (2014). Deloitte University Press

Zielinski, D. (2018). Robotic Process Automation Gains a Foothold in HR. Society for Human Resource Management

# EVA.ai

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## Powering HR 4.0

EVA.ai is a HR 4.0 solution that helps enterprise organisations thrive by implementing an 'automation-first' mindset.

Our award-winning methodology delivers value across the HR lifecycle by converging exponential technologies from Industry 4.0 - Robotic Process Automation (RPA), Chatbots, Machine Learning and Analytics.

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