

INNOVATION AND CHANGE

# DON'T PANIC

A HUMAN- AND PROBLEM-CENTRIC  
APPROACH TO AI-LED INNOVATION



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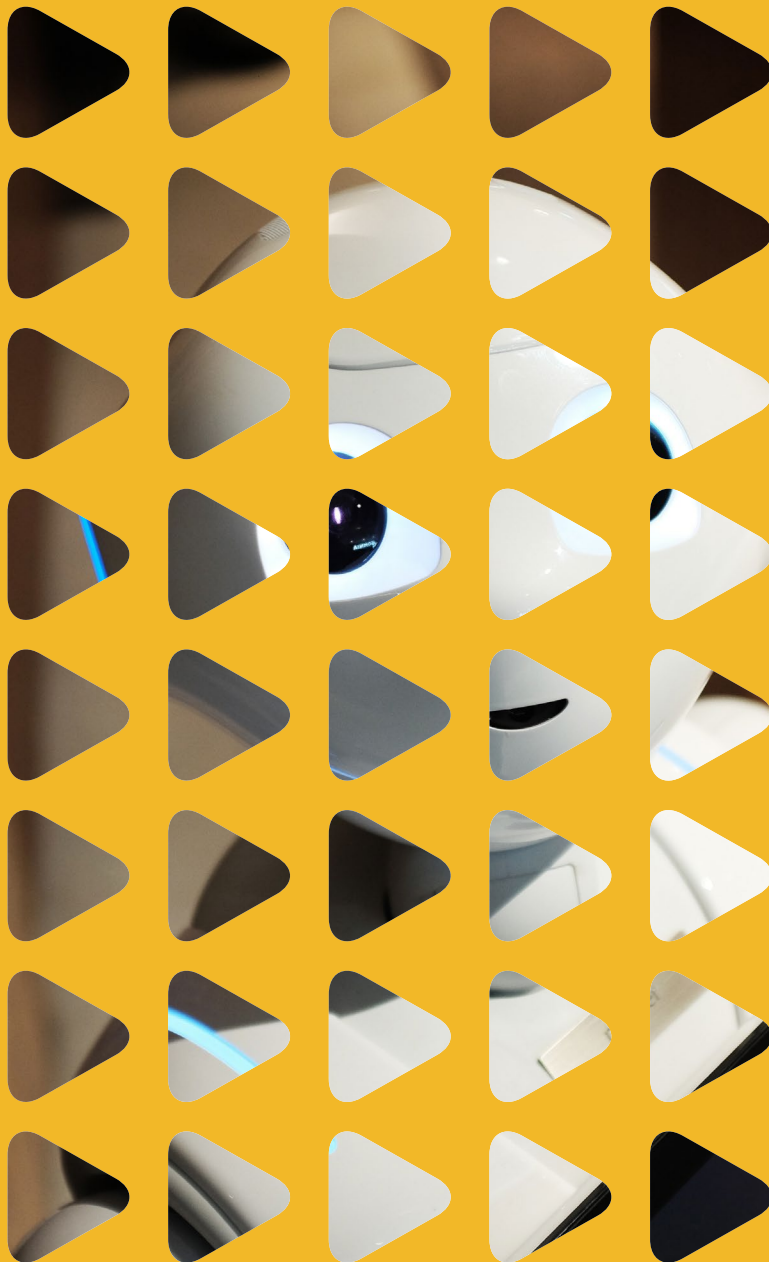
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This is a preprint from the book "Sweden Through the Crisis", to be published  
in the fall by SIR, Stockholm School of Economics Institute for Research.



**P**rior to the COVID-19 pandemic, the technology of Artificial Intelligence, or AI, was already heralded as a new technological infrastructure, likely to lead to waves of social and technological innovation in the long-term, ultimately creating jobs and improving quality of life. AI has been compared to previous waves of technological advancement, notably those that occurred in the post-WWII years. However, this technological advancement understandably also comes with anxiety as jobs are likely to disappear in the short term. This short-term pain has come with long-term gain: a 1963 study by University of Chicago economist Yale Brozen (1) found that although 13 million jobs vanished in the wake of technological advances during the 1950s, these advances were among the various factors that led to the creation of more than 20 million others.

The COVID-19 pandemic has increased anxiety: both among employees, as unemployment rises, and among employers as they are pressured to make strategically important decisions in a time of crisis. After a period of relative stability and economic growth, the economy tanked during and in the wake of, the COVID-19 pandemic. Estimates suggest that four years of global growth are being undone, with Swedish GDP likely to fall by approximately 6% in the second quarter. Firms are drastically cutting expenditures and governments have tried to stimulate economies and calm markets. The Great Lockdown of 2020 shares much in common with the Great Depression. In particular, the scale and scope of the economic fallout has created economic and personal uncertainty that will take years, if not decades, to move past. Again, history is instructive. The Wall Street Crash of 1929 at the end of the “Roaring Twenties”, characterized by optimism, growth, and societal progress, preceded the Great Depression. Aggravated by trade tariffs and sharp drops in international trade, it was the worst economic downturn in history. The COVID-19 pandemic, together with the current Sino-American trade war and tariffs, has once more precipitated an unprecedented drop in economic activity and drastically increased unemployment. Once more, there is widespread anxiety around both

the economic downturn and advances in modern technology, notably the move towards AI-led automation.

A combination of anxiety related to uncertainty around the pandemic itself, coupled with the pressure to automate, means that leaders, out of urgency rather than in a measured and thoughtful way, risk implementing AI under the worst of circumstances. Nevertheless, action is needed. The dramatic changes to the Swedish (and global) economy are a precursor to a “new normal.” This is both a challenge and an opportunity; leaders need to develop strategies without the pressure of anxiety, and need to do so with employees’ wellbeing in mind. These changes, if executed thoughtfully, are not only likely to be more favorably received, but ensure the competitiveness of an organization long past the pandemic.

In this article, we treat AI as a digital infrastructure likely not only to effect organizational change, but also lead to subsequent waves of technological and social innovation. Considering AI in this way highlights the possibilities associated with and importance of, AI and humans working together—and how the one complements the other. At a time where risk and uncertainty loom large, it is more important than ever that leaders remain in the drivers’ seat and navigate thoughtfully with long-term gains in mind. Specifically, this implies taking a problem-centric approach to AI implementation, including humans in the process, and creating space for reflection and serendipitous innovation. Although existing complications, e.g. GDPR, do not go away, both the cognitive break and the onset of a “new normal” associated with the pandemic provide an opportunity for AI-led reinvention.

### **Economic and social gains through (AI) infrastructures**

History tells us that the introduction of a new technology does not have to entail a choice between humans and technologies. On the contrary, the implementation of relatively simple technologies not only improve the quality of life, they can even encourage more economic activity, creating new jobs and roles. For instance, the introduction of the

ATM in 1967 and consequent automation of basic financial transactions did not reduce the number of bank tellers. Instead, as people conducted more transactions, the number of bank tellers increased, and has grown at a faster rate than the labor market at large since the year 2000 (2).

The introduction of more fundamental technologies, known as infrastructures, has actually been a catalyst for additional waves of technological and social innovation—leading to even more extensive gains in the quality of life, and with them economic activity. The steam engine, electricity, and the computer are generally acknowledged to be infrastructural, in that one person making use of them does not preclude them being used by another, and that they enable not just new technologies that build upon them, but force innovators to reconsider existing ways of doing things, driving new waves of technological and social innovation (3).

Typically, the notion of an infrastructure conjures up the notion of a large-scale physical resource made by humans for public consumption. However, digital technologies increasingly take on the same infrastructural role—and bring with them further characteristics. Crucially, digital technologies are more flexible than their physical counterparts, and computer code can be reused and redeployed almost instantly—creating global opportunities, but also global competition (4). These infrastructures, both physical and digital, are key to development and growth in that they enable and drive the expansion of service provision. They interact with trends such as globalization, integration of economies, and outsourcing. AI is one such digital infrastructure.

So how does one make the most of a digital infrastructure, in a considered and thoughtful way? Maximizing long-term gains requires seeing beyond short-term cost cutting and instead allowing AI and humans to join forces in a process of “augmentation,” so that they collaborate to accomplish goals beyond their reach independently. Both forming and using the infrastructure with the goal of augmentation in mind will not only include individuals in AI adoption, but also support AI so that it is more robust and relevant than it might otherwise have been.

### **Towards augmentation through AI**

Developing a strategy for the implementation of AI builds not only on a good understanding of the technologies involved, but also good understanding of the context into which AI is being deployed. Here, we also suggest that treating an infrastructural technology like AI not only affects how it should be perceived on the macro level, but also how it should be approached at an organizational level. We outline the differences between AI-led automation and augmentation, and propose a problem-led approach to initiating the latter. Automation refers to machines taking over a human task entirely, while augmentation implies that humans collaborate with machines when performing a task (5).

Primarily targeted at routine and repetitive tasks, automation has been a source of efficiency and cost cutting as it has replaced the need for human labor and has been implemented at a low (in the case of digital technology nearly zero) marginal cost. Analogous to the Industrial Revolution where manual labor was automated, today’s Digital Revolution implies widespread automation of routine cognitive tasks through AI and Robotic Process Automation (RPA). Extensive analysis has pointed to the risks of excessive reliance on automation, both on an organizational and societal level. These hazards range from inadvertently racist chatbots, to massive financial trading losses, and biased crime prevention and sentencing.

While this process has generated great wealth, it poses a fundamental paradox that is said to threaten societal welfare. Though technology yields abundance, it does so by replacing scarce and costly labor with cheap and plentiful capital, and may in the process skew income from labor towards capital, driving societal inequality and causing a decline in welfare. Moreover, the implementation of automation is largely static. There is little scope for ongoing improvements and creativity—without the involvement of humans. It may nevertheless have a role in the larger implementation of an augmentation strategy.

**Augmentation** involves drawing on the relative strengths of hu-

mans and machines, thus potentially achieving superior outcomes than either could achieve separately. Prior research has suggested that this approach enables superior outcomes not only in terms of productivity and performance, but also in terms of human engagement, overall robustness, and ongoing innovation. Rather than removing human involvement and responsibility entirely, augmentation enables humans to focus on their strengths in leadership, strategic thinking, and common sense. Without having to perform tedious tasks, humans can act as safeguards against biases, ensure that machines contribute to the organization’s strategic objectives, and channel their creativity in pursuit of innovation.

Most researchers agree that implementing sheer automation is short-sighted, and that augmentation brings with it not only the potential for efficiency gains, but also leaps in innovation. Crucially, for both individuals and organizations, the implementation and consequence of innovation leads to the creation of new products, services, and processes—and with them new jobs and roles. This was also the case with previous waves of automation. “Machines that can read, write, do arithmetic, measure, feel, remember, now make it possible to take the load off men’s minds, just as machines have eased the burden on our backs,” said one General Electric (GE) ad in the 1950s. GE was among the first US firms to automate both its factories and its offices, including for engineering calculations (1952) and data processing (1954).

### A problem-based approach

But how can an organization know what should be implemented, and how? We suggest that there are two domains in which augmentation through AI is most effective, namely for coping with the problems of *Information Overload* and *Flawed Reasoning*. Information overload can refer to either volume or speed at which decisions need to be made yet are beyond the reach of individual human minds. Flawed reasoning, however, refers to the human tendency to either engage in “motivated reasoning” (i.e., wishful thinking or excessive generalization,

which may lead to discrimination) or “human error,” meaning that we are prone to make inferior decisions when faced with stress, fatigue, or other emotional factors. Both are the result of human cognitive limits in terms of our ability to make sense of the world around us and effectively pursue goals. Of course, real-life applications will often include both dimensions, but broadly speaking, these are the areas where AI is most likely to complement human beings (see Table 1).

	INFORMATION OVERLOAD	FLAWED REASONING
POTENTIAL HUMAN PITFALLS	Administrative burden Mental exhaustion Spurious correlations	Discrimination and favoritism Escalating commitment Workplace accidents
PRIMARY AI BENEFITS	Speed and scale	Consistency and accuracy
PRIMARY ROLES SUPPORTED	Operative and analytical	Managerial and strategic
EXAMPLE APPLICATIONS	Customer service (chatbots/ voice assistance) Healthcare (cancer detection/drug interactions) Finance (portfolio management/trading)	Human resources (hiring/ promotion) Judiciary (sentence/parole) Transportation (autopilot/ driver alerts)

TABLE 1: A PROBLEM-CENTRIC APPROACH TO EXPLORING AUGMENTATION THROUGH AI

A problem-centric approach is generally preferable to a technology-centric approach if AI is to empower individuals and create organizational value. Rather than blindly adopting the technology and “rolling it out,” AI dynamically supports the organization’s strategy and is broadly anchored and communicated among employees and managers. This bottom-up approach to integrating AI in the organization not only allows it to build on past gains, but also to establish a technology and knowledge foundation upon which to base future implementations of AI, consistent with the idea that AI is not just a technology, but an infrastructure.

**Example 1: Talent acquisition and onboarding at Procter & Gamble.** The US consumer goods company Procter & Gamble use an

augmentation approach to AI in their evaluation and consequent execution when onboarding of talent, in what we call a solution to a flawed reasoning problem. While the initial, time- and resource-intensive screening and testing is done primarily by AI to mitigate human unconscious bias, the final stages and ultimate decisions are the responsibility of human recruiters. This has yielded a threefold increase in favorable hiring outcomes, aided more diverse hiring, along with a 75% reduction in time needed for assessments. At the same time, 93% of job candidates report a more favorable assessment experience

**Example 2: Emergency healthcare triage at SOS Alarm.** SOS Alarm who manage the Swedish emergency number 112 have introduced AI in their management of emergency calls in order to handle information overload. The tool, provided by Danish company Corti, records and continuously analyzes conversations in a way that complements the operators' work in identifying conditions including cardiac arrest and stroke. For instance, the operators' ability to identify heart failure increased from 72% to 84% with the support of AI. Similarly, together with Seattle's Harborview Medical Center and Medical One, Corti has analyzed data from 100,000 COVID-19 cases to develop preventative and treatment protocols in collaboration with medical professionals. The results are used to complement public efforts with outbreak and crisis response (e.g., identifying disease hotspots), as well as helping patients with self-assessment and follow-up.

**Example 3: Information dissemination at TietoEVERY.** To manage the COVID-19 situation in a way that provides the entire organization with timely and relevant information, TietoEVERY has developed a chatbot that uses AI to handle information overload, by curating and customizing the information it releases to the employees in its 80 countries of operation. The intention of this chatbot is as follows. Beyond the reach of human experts, the chatbot is continuously fed updated information and in turn provides it around the clock to employees in 80 countries, taking local regulations and conditions into account. For instance, the envisioned chatbot solution notifies those employees that were recently

in contact with a colleague who has tested positive for COVID-19. The tool can also be used to disseminate other information, depending on current needs and developments. TietoEVERY has also deployed AI for medical diagnostics, such as using chest x-rays where AI helps physicians to detect patterns related to the presence and stage of the disease.

### **Towards a new infrastructure**

The Industrial Revolution enabled mass production and effectively led to widescale division of labor in society, where workers took on clearly delimited roles in the production of goods. This specialization increased quality and productivity but also led to substantial changes in the labor market, with old crafts becoming obsolete and novel ones emerging, bringing about new skill requirements in the process. Today, the emergence of AI similarly implies radical shifts in society, where routine tasks that can be codified and programmed algorithmically will most likely be the first to be taken over by machines. This implies that human involvement and continuous learning will be required to keep up with the shifts in the labor market.

We recommend not only that organizations approach augmentation through AI in a problem-centric manner, but that they use the conditions created by the COVID-19 pandemic to further this goal—and include employees in the process. This approach not only makes the most of the knowledge that we already have available, but allows leaders to act strategically, limiting both their own and employees' anxieties.

**1. Make the most of the (pandemic) cognitive break.** While the pandemic has been trying for many, it also represents a cognitive break from the usual ways of doing things. This break came at a time in which many organizations had already been discussing implementing AI in small and large ways. Governments across the globe have leapt at the opportunity to create a “new normal” during a time of change, and this possibility is similarly open to organizations looking to implement AI.

One way in which to do this in a thoughtful and measured way is to set aside not just time, but physical space to discuss the problems

that are best solved using AI enhancements, and how implementation should occur. Not only does this make the most of the collective intelligence of those already in the organization, it emphasizes that AI is there to support their daily work, not replace them. It also provides the opportunity for clear and timely communication of what is to come.

**2. Consider AI a complement to human capabilities, and vice versa.**

Not only does research suggest that focusing on augmentation is likely to be the most fruitful when it comes to efficiency. Making the most of human and machine cooperation can help avoid making mistakes at the altar of data-driven determinism.

For instance, typical mistakes made when using large volumes of data include sample bias, overfitting, and spurious correlations. These mistakes are difficult--if not impossible--to catch using AI. However, human common sense is quite good at detecting them in time and accurately generalizing across contexts and domains.

**3. Create space for innovation.** Allowing employees an opportunity to consider the implications of a proposed change is not only a good leadership strategy during a crisis, it is good AI leadership. This is not only because organizational slack typically creates room for innovation, but also because decisions made when anxiety is a significant factor run the risk of underestimating the short-term effects of a technology, and potentially even overestimating the long-term effects.

Another important driver of innovation is education--something that also supports society and the organization in the long term. A 2020 IT&Telekomföretagen survey (6) around the skills needed as digitalization proceeds apace, for instance, highlights the shortages of both technical and soft skills in digitalization. These can, to some degree, be taught. Conversely, existing employees have implicit knowledge around how an organization and industry operates, which cannot be conveyed to a machine.

During the 1950s, GE employees who lost their jobs because of automation were guaranteed a retraining period for as many weeks as they had years of service, during which they would be paid at least 95

percent of their salary. "This was an effort to stabilize income while the employee prepared for the next job," said GE's Earl Willis. "Maximizing employment security is a prime company goal."

**Crisis as a catalyst**

It is often said that "necessity is the mother of invention", and this is true in pandemic times as much as any other crisis. AI should be considered an infrastructure, in that its implementation is not simple and one off. Rather, it will involve multiple opportunities for implementation and improvement. Additionally, it is likely to lead to further waves of technological and social innovation; whether an organization is able to benefit from these gains depends on how it approaches AI implementation.

A problem-centric approach to AI-led augmentation is one such approach, and the pandemic not only provides unexpected conditions for its implementation, but highlights how its implementation is a complement to human talents, and allows individuals to focus on more creative and strategic tasks.

Moreover, the same human touch that is needed to support employees during a crisis is what will make AI implementation fruitful. Both have a level of anxiety involved, but a considered and human-centric approach goes a long way. Moreover, the larger gains made through AI-led augmentation make the most of AI's potential as an infrastructure upon which future waves of innovation can be based. As Brozen argued in 1963: "Instead of being alarmed about growing automation, we ought to be cheering it on."

## THE AUTHORS

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