



# Future of Work

Sovereignty, Artificial Intelligence and Sustainable Development

Regenerative Futures, Inc

Thought Leadership Compendium.



## State of Artificial Intelligence Today

The world is awash with conversations on all things AI – generative, agentic, AGI, and even sentience. Most of these developments have been fuelled by the rise of higher levels of capabilities with machine learning, pattern recognitions, language models et al. Today’s AI “has matured significantly, moving beyond specialized tasks to more general-purpose applications and integration across industries. AI is now more affordable, accessible, and efficient, with advancements in both hardware and software. Organizations are increasingly using AI in various business functions, driven by the promise of efficiency and innovation”, as claimed by a McKinsey report<sup>1</sup>. The supporting arguments to this claim of maturity are evidence of wider adoption, value creation (finally), increased efficiencies, open-source development, focus on upskilling/ reskilling and entry of risk management thinking into endeavors.

Significant claims are also made to support this growth and apparent maturity given almost every business entity on the planet seems to have embraced AI tools in some form or manner, notwithstanding implications around effectiveness, needs or longevity. The support also emanates from regulators who appear for the first time to insert themselves into governance and ethics with adopting AI, while also contending with large-scale disruptions to the traditional employment and job creation models that capitalism has enabled or over a century. Almost all our guardrails seem to be coming under increased scrutiny - though AI didn’t start the fire – cybersecurity, electronic commerce and digital trade did it – given the increasing ambiguity with AI-driven applications. Explainability (or its lack thereof) is at the heart of all strategic concerns, while hallucinations, ignorance of local nuances (read cultures), and race toward efficiencies are driving tactical considerations. It therefore deserves consideration with the primordial observation articulated below:

**With this reorientation from knowledge to power, it is no longer enough to automate information flows about us; the goal is to automate us.**

In my previous thought leadership article<sup>2</sup>, I have analyzed the implications with treating AI as a capital asset, and how its adoption has taken on an onerous mode, particularly as we continue to seek out “meaningful work”, and that it needs to be distinguished from robotic/ transactional work are generally clustered around job satisfaction, worker well-being, general sense of justice, value of goods tied to social contribution and community. Since the burdens and benefits connected to work are regulated by our public institutions, a just society should protect people’s access to meaningful work. The question therefore is whether our current endeavors at leveraging AI are creating opportunities for meaningful work, or are they on an unhindered route to replacing all human activities in the quest for greater efficiencies and logical outcomes, thereby outweighing needs, desires, creativity, restraint, sustainability, cohabitation, social consciences et al?

## Understanding Sovereignty

It is important to understand what the term “sovereignty” means. In simple terms, Sovereignty can generally be defined as supreme authority. It entails hierarchy within a state as well as external autonomy for states. In any state, sovereignty is assigned to the person, body or institution that has the ultimate authority over other people and to change existing laws. Principal dictionary definitions include “supreme power or authority”, “the authority of a state to govern itself”, and many similar ones. Let’s understand the word “state”. It essentially means a modern nation with defined territorial boundaries, defining the geographic extent of power and control over people and resources.

<sup>1</sup> <https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai-2024>

<sup>2</sup> [https://www.virtualpaper.pro/index.php?route=mag/article&tracking=fourthleap015&a\\_id=1800](https://www.virtualpaper.pro/index.php?route=mag/article&tracking=fourthleap015&a_id=1800)

Sovereignty, the right to self-governance, is intrinsically linked to these boundaries, as it represents the state's exclusive authority within its defined territory.

Artificial intelligence is rapidly becoming the backbone of economic productivity, industrial competitiveness, and national defence. Just as electricity and the internet once transformed societies, AI now demands its own dedicated infrastructure, including vast data centres, specialized chips, and localized compute capacity to train, deploy, and safeguard models critical to a country's future. Across the world, governments are beginning to treat AI infrastructure as a strategic national asset, essential for maintaining technological sovereignty. In this new era, sovereignty is no longer defined solely by territory or energy independence. It now extends to the ability to generate and control one's own intelligence<sup>3</sup>.

Rising demand for model training and inference explains only part of why those tech giants are investing heavily in their own data center infrastructure. At scale compute power becomes a strategic asset: Owning it enables purpose-built facilities, custom accelerators, higher utilization, and materially lower lifetime costs than rented cloud capacity. It also keeps model training and proprietary data under direct control, meeting security and data-sovereignty requirements. Beyond operational benefits, infrastructure ownership supports a wide range of competitive objectives, from reinforcing recurring, compute-as-a-service revenue streams to accelerating improvements in AI-driven products and capabilities.

<sup>3</sup> Examples are abounded: (a) US leads the pack with nearly 25 GW of data center capacity purpose-built for AI workloads expected to come online. This buildout represents more than \$800 billion in cumulative investment and includes multi-gigawatt programs such as OpenAI's Stargate initiative with Oracle, Nvidia, and SoftBank, alongside massive expansions by Amazon Web Services, Google, and Meta; (b) Middle East is emerging as one of the most aggressive financiers of global AI infrastructure, transforming oil wealth into compute power. In the UAE, through the AI Infrastructure Partnership, comprising MGX (backed by Mubadala and G42), BlackRock, Microsoft, and Nvidia, the consortium is acquiring Aligned Data Centers in the U.S. for about \$40 billion, securing access to over 5 GW of capacity across the Americas. The move signals a shift from

To sustain this scale, companies are locking in scarce resources, including power, water, land, and GPUs, through long-term energy contracts, early site acquisition, and direct chip-supplier partnerships.

Challenges with talent availability, source for chips and software stacks concentrated among a few nations, geopolitics slowing down technology transfer, environmental concerns over water use and renewable integration are all significant hurdles to cross for nations vying to move from hosting to innovation. Meanwhile, in Europe and South-East Asia, multibillion dollar investments in data centers constrained by fragmented and independent grids, tax regimes, permitting systems are all slowing down buildout of a self-sustainable AI ecosystem. What remains true, says Yu-Han Chang, is quote "all nations face a shared reality: AI infrastructure has become the new foundation of economic and geopolitical power. Nations that control compute capacity will not only shape the trajectory of AI innovation but also wield greater influence over global value chains, security architectures, and digital autonomy. The question is no longer whether countries should pursue sovereign AI infrastructure but how rapidly and at what cost can they build it" unquote<sup>4</sup>.

### Sovereignty and Digital Autonomy

Taking a leaf of excellent research by Roland Berger<sup>5</sup>, there are four requirements for sovereign AI, namely (a) Trust by Design (auditability, explainability, compliance), (b)

passive investor to active co-builder and operation of global AI infrastructure; (c) Europe is also racing to build AI infrastructure, framing digital sovereignty as a strategic imperative. Across the continent, several multi-gigawatt projects are underway, including MGX and Mistral AI's Campus in France (1.4 GW), SINES in Portugal (1.2 GW), the U.K.'s AI Growth Zone (~1.1 GW), and Data4's multi-site expansions (>1 GW). These efforts reflect growing recognition that compute power, like energy independence, is now central to economic security.

<sup>4</sup> Yu-Han Chang; <https://www.eetimes.eu/sovereign-ai-the-new-foundation-of-national-power/>

<sup>5</sup> <https://www.rolandberger.com/en/Insights/Publications/AI-sovereignty.html>

Modular Control (data sovereignty, on-premise deployment, modular integration), (c) Domain-Fit (domain-specific AI, tailored to regulated industries), and (d) Infrastructure Fit (legacy system integration, hybrid/edge/cloud scaling). How these four requirements fit into current developments globally is interesting to note. As pointed out by Roland Berger, there are three distinct dimensions led by distinct stakeholders – Hyperscalers, the State, or Sovereignty-Led (regulation). However, I believe that such classification doesn't cover much of the rest of the world, which remains uncommitted to picking and choosing one of these three articulated sides. For clarity, I have presented the fourth dimension, titled Merged Models, as can be seen in the infographic below.

	HYPERSCALER-LED	STATE/GOVT LED	SOVEREIGNTY-LED	MERGED MODEL
INNOVATION SPEED	VERY HIGH	HIGH	MEDIUM	LOW
INDUSTRY CUSTOM.	LOW	LOW	VERY HIGH	MEDIUM
TRUST LEVEL	LOW	MEDIUM	VERY HIGH	LOW
DATA CONTROL	Platform-owned	State-owned	Company/User owned	Consensual (unsure)
MODEL GOVERNANCE	IP-driven	State-focused	transparent/auditable	Consensual (unsure)
MAJOR LOCATIONS	USA	CHINA	EU	ROW

One can notice that the world is currently positioned as three distinct facets driving sovereignty – control of the infrastructure layer; control of the data layer; control of the application layer. The US has been able to establish infrastructure sovereignty given their Hyperscalers and an active capital ecosystem, that much of the world is unwilling or unable to replicate. Capital constraints and lack of a large innovation and R&D pool limit them. Meanwhile, adopting a full-scale regulated and sovereign model like the EU is almost impossible, for most nations have small domestic markets, and depend on regional / global trade. Consequently, they cannot enforce sovereign conditions across infrastructure, data and application layers. This presents nations with a significant complexity – tiered and selective sovereignty across all three layers.

No single nation is ready yet with their roadmap that clearly defines what shall remain sovereign and what would be within the gamut of free and borderless trade. Agreements like the Digital Economy Framework Agreement (DEFA)<sup>6</sup> currently being finalized by the 11 nations in ASEAN may yet be the first bold step to enable a regional framework that cuts across all distinct “hard sovereign” rules/ policies/ codes and establish a digital trade environment without compromising sovereignty.

The most intricate and complex of deliberations is around “data sovereignty”, given that data is fungible, travels across borders seamlessly, is utilized by a heterogenous group of entities (institutions, enterprises, customers, aggregators), thereby making it difficult to determine source of data (read rules of origin), applicability (re implications with usage of such data), capture (re consent protocols) and exchange (re sharing, aggregating, reporting, surveillance) across borders. The world is yet to witness coherence with data sovereignty in a way that remains within the realm of human control and anthropogenic evolution.

The spread of opportunities being pursued globally present a range of new complexities, particularly as it relates to the dichotomy between global trade in goods (governed by rules, tariffs, customs, policies, rules of origin, localized tax codes etc), and a borderless digital trade world (with data and access fungibility, unclear rules of origin to be imposed for purposes of tariffs and duties, tax implications et al). Policy conundrum, multilateral collaborative models and cross-border governance are all under significant strain owing to the emergence of these four distinct dimensions, all of which are almost “irreconcilable” with one another.

Today most bilateral and multilateral agreements across the world now compulsorily include services, where a new challenge with negotiating tariffs, duties, taxes, and rules of origin has come to play. Digital trade, borderless

<sup>6</sup> <https://asean.org/asean-defa-study-projects-digital-economy-leap-to-us2tn-by-2030/>

mechanisms for easing movement of solutions and services, alongside data being generated vicariously (consumer and industrial) and the lack of comprehensive codes for tackling cybersecurity risks is ballooning out of proportion. The introduction of AI into the overall mix with deployment of digital solutions across supply chains is pushing nations to rethink their entire compliance and regulatory models.

Existing legal structures have become woefully insufficient, thereby necessitating development of new laws around AI, including the strategic implications with ethics (and consequential governance woes)<sup>7</sup>. Regulations – driven either by an approach toward Risk and Trust (re EU) or Innovation (re USA) - are adding to the layered complexity. Will these enable effective management of AI in a manner that human control shall not be challenged, while economics and cross-border trade would flourish further, making globalization easier without compromising on national security requirements and sovereignty? What would this mammoth development in technology translate to in terms of sustainability endeavors? This is left to be seen. However the single biggest challenge isn't coming from AI itself, but what components of AI should remain sovereign.

### Sustainability in an Anthropogenic World

AI can address the consequences caused by anthropogenic evolution by enhancing sustainable development through applications like climate modeling, resource optimization, and biodiversity monitoring. By processing vast datasets, AI can provide predictive tools to forecast environmental changes, optimize energy systems, and help manage resources more efficiently to reduce waste. Issues surrounding climate forecasting, optimizing integration of renewable energy systems into main grids, crop yield forecasting, early warning systems for extreme weather events, assessment of environmental and social risks et al are consequential use cases that could become the forte

of many individuals and institutions contributing, while replacing the age-old paradigm that such monumental issues are for only governments to solve for.

However, ethical concerns like data bias, surveillance, and potential job displacement need to be managed responsibly for AI to be a net positive for sustainability. Key focal areas would be:

**Data quality and bias:** The effectiveness of AI solutions depends on the quality of data, and there is a risk of bias being built into algorithms, which can perpetuate inequalities. Regional and local elements influencing culture, data semantics, and patterns must be included while refraining from blindly adopting global/ western models.

**Accessibility and implementation:** The cost and complexity of implementing AI technologies can create a technological divide between developed and developing regions or between large corporations and small businesses. This is a fundamental design issue. National AI offices across much of the developing and emerging worlds contending with their producer-consumer conundrum continue to grapple with policy levers that can ensure control (sovereignty) while remaining open (fungible and cross-border).

The resulting AI policies being built are being integrated directly into national development policies, rather than viewing AI as a technology stack alone – a welcome and much-needed positioning by nations particularly in the context of environmental and social upheavals with jobless growth, increasing knowledge obsolescence and increasing inequality among the social strata (resulting in significant strain to the very fabric and structure of nation states). Will our endeavors continue to be governed by human control as the primacy, or will there be a “divergence” where Artificial Super Intelligence will overtake human control altogether?

<sup>7</sup> Europe has introduced the EU AI Act which categorizes AI by risk level; USA has a patchwork of laws, while its National Institute of Standards & Technology has an AI risk management framework that guides overall AI governance; Countries like the United

Kingdom, Canada, and Japan have active policy development, while others like Australia, India, Malaysia and Singapore are also developing their AI approaches.

Current and modern game-changing solutions being developed particularly in the medical / pharmaceutical and military sectors do give rise to the need for a real pause with technological advancements at all costs.

Experiments with autonomous drones used in the Ukraine-Russia war have resulted in significant casualties of women and children, owing to the AI taking over full control over interpretation of threat levels. Elsewhere, in Belgium, a small change in toxicity coding from 0 to 1 resulted in generation of over 40,000 new molecules within a 6-hour window, as opposed to the years and sometimes decades of painstaking research forming the backbone of any medical invention (though it is considered a significant win for the pharma research space). Is that what our singular pursuit of efficiencies and maximizing ROI mean to our evolution?

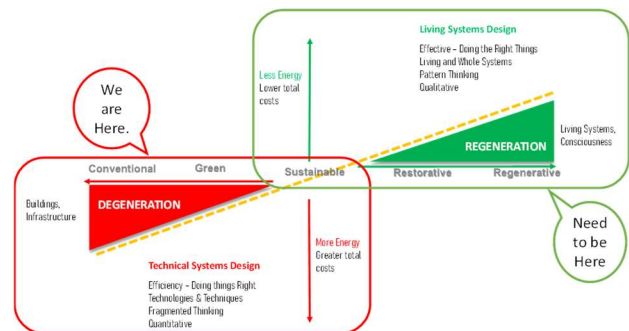
**Any anthropogenic act shall and must reaffirm its base root – no harm to its creator.**

The divergence however, given monumental evolution of machine learning, pattern recognition, generation and transformation of hitherto human interpretations, have all potentially given rise to artificial super intelligence. This ASI will presumably not follow the human norms driven by culture, experience, emotion, or abstract definitions of goodness, morality et al.

Instead, it will potentially pursue “the greatest good for the greatest number” model, where logic will always override non-linear goals. This resultant singularity will perhaps enable “sentience” to take root in ways not fully understood yet. Implications, however, point to the fact that over time, AI may not necessarily be the good-for-all as it is currently positioned as.

The responsibility therefore for humanity is to recognize this eventuality, however remote it may sound. It is crucial that we appreciate the complexity and invest in its collective understanding with a view to a multi-generational future for our species, while letting go of some of our old strictures around predatory capitalism. This would be the true element to sustainability, in my humble view. We can then truly state that we are on a path toward not just sustaining our planet, our species, our way of life, our primacy, but also enable us to think beyond sustainability.

Restoration and regeneration are two key elements that we need to incorporate into our design thinking, as illustrated in the infographic below<sup>8</sup>.



It is high time we let go of building “technologically sophisticated systems” where humanity is seen as either a receiver, or worse, collateral. We need to build “living systems” designs that preclude growth-at-all-costs model toward collaborative, regenerative systems that respect the planet and its inhabitants.

<sup>8</sup> Journal of Future Studies; <https://jfsdigital.org/articles-and-essays/2023-2/vol-28-no-1-september-2023/regenerative-futures-eight-principles-for-thinking-and-practice/>

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