Socially Responsible Artificial Intelligence Empowered People Analytics: A Novel Framework Towards Sustainability

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Abstract— **This paper updates the Socially Responsible Artificial Intelligence (SRAI) framework in response to the COVID-19 pandemic. The original SRAI framework was proposed to inform the ethical adoption of artificial intelligence in People Analytics and Human Resource Development (HRD). However, the pandemic created the necessity to extend the principles to other high-risk fields like public health, crisis management, and healthcare delivery. Based on a qualitative synthesis of peer-reviewed articles between 2020 and 2025, this research develops the SRAI framework by proposing a new dimension known as Resilience Responsibility. The new addition reflects the importance of designing AI systems to be trustworthy, flexible, and capable of delivering even in high-pressure situations. The research demonstrates how AI contributed to business responses as well as public health responses during the pandemic but also the research findings highlighted concerns about data bias, privacy, and accountability. The enhanced framework provides actionable recommendations for HR practitioners, healthcare leaders, AI engineers, and policymakers to ensure the adoption of AI is ethical, lawful, sustainable, and resilient to disruptions.**

Keywords- Artificial Intelligence; People Analytics; Pandemic Analytics; COVID-19 data.

I. INTRODUCTION

Artificial intelligence has rapidly transformed human resource development and organizational decision-making [4]. This section provides an overview of the origins of People Analytics, the foundation behind developing the Socially Responsible Artificial Intelligence (SRAI) framework as well as the ethical and sustainability challenges that shaped its foundation.

A. Emergence of People Analytics in HRD

People Analytics (PA) is a developing field in Human Resource Development (HRD), which stands out for emphasizing data-driven "decision science" over intuition-based decisions [1][2][3]. PA involves collecting and analyzing workforce data to guide HR strategies and practices moving HR away from a traditionally experience-based field towards evidence-based decision making. PA is widely applied in various HRD activities, including talent acquisition, skills and competency analysis, employee sentiment analysis, performance management, turnover prediction, and training and development, to inform superior decisions regarding people and talent management [4].

Although PA provides a more efficient, objective, and strategic approach to personnel management, it also raises ethical challenges and legal obligations. For instance, Workday Inc. is accused of utilizing discriminatory AI technology for the job candidate screening process based on age, disability, and race in one recent active lawsuit [5]. Despite these obstacles, PA has grown to be a crucial component of contemporary HRD and signals a move toward more scientific and technology-driven approaches to managing people.

B. Introduction to the SRAI Framework

Addressing the demand for responsible AI in HR in response to the growing ethical and sustainability challenges, a comprehensive Socially Responsible Artificial Intelligence (SRAI) framework was introduced for people analytics [4]. This was one of the first efforts at systematically connecting the concept of Corporate Social Responsibility (CSR) to people analytics on AI-facilitated Human Resource Development. In an extension of classic CSR pyramid and corresponding sustainability paradigms [6], SRAI offers a five-stage model for an organization's economic, legal, ethical, philanthropic, and environmental responsibilities for AI usage with AI-driven HR practices to be followed.

The base layer is economic responsibility, which implies people analytics AI tools being usable, dependable, and delivering organizational performance directing that AI in HR needs to add value, deliver return on investment while minimizing risks. Next is legal responsibility, which requires AI systems to follow legal mandates around data usage, human rights, labor laws in employment-related decision-making, and intellectual property. Ethical responsibility takes a step beyond lawfulness, including standards of fairness, transparency, and respect for privacy of design and deployment of AI beyond what the law requires. Philanthropic responsibility involves a voluntary commitment of Human-Centered AI application for broader social good, for example, application of people analytics for increasing employee and community outcomes, which shows a vision of HRD having beneficial impacts beyond organizational immediate interest. Finally, the model places an environmental responsibility for realizing that AI adoption needs to be ecologically durable. Sustainable AI can help reduce energy consumption and carbon footprint through application of AI for environmental goals achievement.

SRAI framework is stakeholder-centered as it involves recognizing key stakeholders ranging from employees and

managers through job applicants to society at large impacted by AI. SRAI framework charts how each responsibility level translates into goals and requirements for these stakeholders [4]. The integrative literature review used in this study spanning up to 2023 publication covered related concepts like Environmental, Social, and Governance (ESG) criteria and United Nations Sustainable Development Goals (SDGs) for a comprehensive idea of sustainable AI-powered HR.

To guide the reader through the structure of this paper, the remaining sections are organized as follows. Section II - Research Gap identifies the limitations of the original SRAI framework and explains the need for an update to address high-risk, cross-sector applications such as Pandemic Analytics. Section III - Methodology describes the qualitative approach and data collection process used to refine the framework. Section IV - Findings presents the main results, highlighting how artificial intelligence was applied in both organizational and public health contexts during the COVID-19 pandemic. Section V - Practical Implications links theory to practice through converting findings into actionable recommendations for People Analytics and Pandemic Analytics stakeholders. Finally, Section VI - Conclusion and Future Work provides a summary of the study and outlines future directions for research on socially responsible and resilient AI systems.

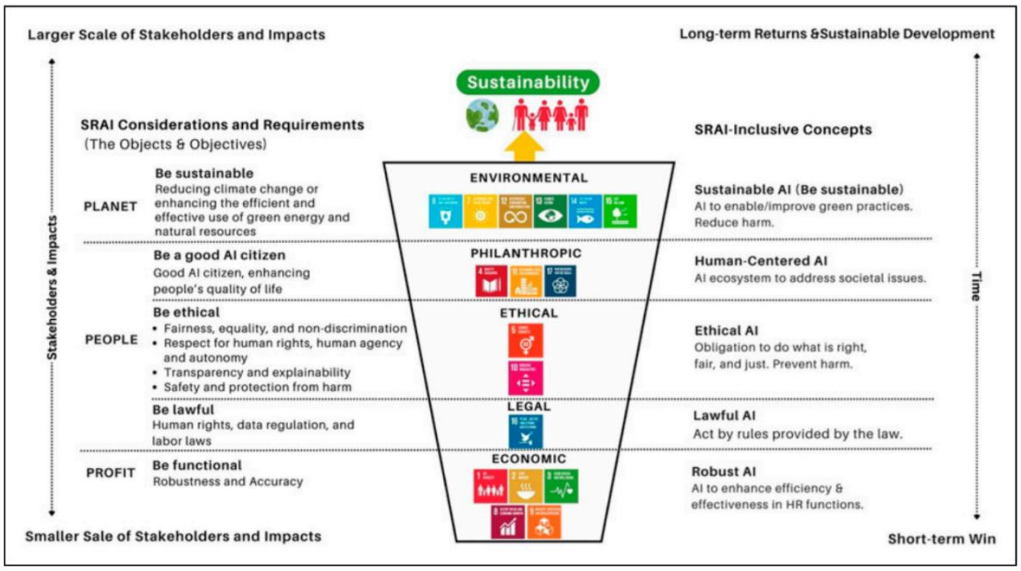

Figure 1. The original SRAI framework.

II. RESEARCH GAP

SRAI framework was originally designed for ethical practice in People Analytics and Human Resource Development with a focus on responsibilities for corporate economic performance, legal compliance, and fair organizational decision-making processes. While it is an important milestone for measuring AI adoption within corporate environment, it has not yet been adapted for high-stakes, real-time, multi-industry applications like Pandemic Analytics. The COVID-19 pandemic revealed the need for socially responsible AI for public health, healthcare systems, and disaster management encompassing broader stakeholder groups, urgent decisions, and more ethical risks. The application of SRAI framework to Pandemic Analytics addresses the gaps and identifies opportunities for pandemic-era data and governance requirements.

Moreover, developments in recent years have raised new gaps calling for a revised viewpoint on SRAI. Firstly, AI machine learning models and generative language tools are creating ethical concerns, such as AI "hallucinations" [7] and other new sources of bias which should be addressed by SRAI frameworks. The study published on behalf of the United States & Canadian Academy of Pathology, raises the concern over potential AI bias due to three main factors, such as, data bias, development bias, and interaction bias which can inadvertently result in unfair and potentially detrimental outcomes within pathology and medical domain [8].

Secondly, the legal and regulatory landscape around AI has evolved rapidly presenting new challenges for public regulators to implement effective administrative interferences [9]. Since 2023, regulators both in the United States of America and internationally, such as in the European Union are trying to impose bias audit mandate for AI algorithms as well as automated decisions affecting human resources. For example, starting from February 1, 2026, the state of Colorado will be the first U.S state to require organizations to identify and mitigate algorithmic discrimination risks for high-risk AI systems [10]. At the U.S federal level, Congress proposes the AI Whistleblower Protection Act (H.R. 3460) which would protect individuals who report unethical, biased, and illicit AI practices in their workplaces, such as automated hiring and surveillance methods [11].

Finally, there is an emerging emphasis on environmental sustainability in AI. The energy usage and carbon output of AI systems have raised alarm bells regarding the environmental impact of AI. Latest estimates indicate that training and running big AI models can release massive

amounts of CO_2 [12]. The study shows based on data from 275 Chinese cities that the carbon footprint contribution of digitization and artificial intelligence is underestimated because the effects increase the carbon impact by 665% [13].

III. METHODOLOGY

This study provides a qualitative review of existing literature to explore the impact of the COVID-19 pandemic on the use of AI in both Pandemic Analytics and People Analytics. The purpose of the paper is to update the original SRAI framework by analyzing recent research and emerging trends in People Analytics, and to apply the framework to Pandemic Analytics. We conducted research in academic databases, including Google Scholar, ScienceDirect, MDPI, Emerald Insight, and other reputable industry sources based on articles published between 2020 and 2025. Our search employed keywords like "AI," "People Analytics,", "Pandemic Analytics", "COVID-19," and "HR."

During this process, we explored a new layer called "Resilience Responsibility". Pandemic-focused research articles, reports from Deloitte, and recent news concerning responsible AI also supported the establishment of this new category. This method ensures our framework incorporates both academic expertise and real-world practices.

IV. FINDINGS

This section explores the updated SRAI framework into actionable recommendations for practitioners across industries. It provides clear guidance on how economic, legal, ethical, philanthropic, environmental, and resilience responsibilities can be implemented in both People Analytics and Pandemic Analytics contexts.

A. Organizational Use of AI During the Pandemic: Lessons from People Analytics

Although Pandemic Analytics is associated with healthcare and public health, the COVID-19 crisis transformed organizational behavior. Latest studies find that the COVID-19 pandemic served as a "career shock" and it has fundamentally changed the importance of People Analytics as main factors of Human Resource Development. HRM evolved from a merely administrative role to a strategic leadership position by focusing on redesigning work culture during the crisis. The use of Artificial Intelligence to enhance People Analytics in HRD increasingly accelerated between 2020 and 2025. Findings show that AI is transforming HR by ensuring employee safety and well-being [14], promoting adaptable workforce practices [15], improving employee performance [16], measuring employee engagement [14], and employee resilience [17] during and after Covid-19 pandemic. Increasing reliance on data-driven strategies highlights how organizations can benefit from AI in facilitating flexible work arrangements, workforce planning, upskilling, and fair performance assessments.

With remote work, new generations, and greater fairness expectations transforming company policies in the post-COVID-19 workplace, leaders should be aware of the increasing threat of hidden bias in AI and people analytics [18]. Rapid post-pandemic implementation of AI can hide or amplify bias if leaders fall into the false assumption that algorithms are unbiased. As organizations become more reliant on people analytics for hiring, career advancement, and performance reviews, ethical blind spots must be addressed proactively through bias awareness, such as leadership training, frequent audits of bias in AI tools, and stronger accountability procedures to detect, reveal, and reduce bias, whether through human effort or through machine [19].

Research further showed that many studies explored the ethical implications of People Analytics during its historic rise following the COVID-19 pandemic [20][21][22]. Studies expressed concern regarding the data-driven decision-making process and the processing of sensitive information about employee behaviors, well-being, and emotional state. For example, organizations are using AI-powered tools like Microsoft Viva to track work trends and identify risks of employee burnout. While these tools aim to improve productivity and engagement, critical ethical concerns are raised regarding privacy, algorithmic bias, and workforce autonomy [20]. In order to promote operational efficiency, employee satisfaction, and organizational adaptability, the 5P model (Purpose, People, Process, Performance, and Partnership) was proposed as a solution and a framework for purposeful, ethical, and people-centered implementation of AI in post-COVID organizational practices [23].

Collectively, these organizational experiences highlight the urgent need for resilient, ethical, and transparent decision-making systems. The lessons from People Analytics provide important insights into the role of AI functioning under systemic pressure and SRAI's applicability for data governance and pandemic preparation.

B. Artificial Intelligence Empowered Pandemic Analytics: Innovations and Opportunities

The pandemic has highlighted the role of AI-driven data analytics extending beyond HR and reshaping sectors like healthcare, public health surveillance, and crisis management, where the most sensitive and protected health data are analyzed. Understanding the role of the pandemic in creating opportunities and ethical risks in the healthcare industry, especially regarding data privacy, bias, and oversight will be valuable in formulating more human-centered and socially responsible AI principles.

The COVID-19 pandemic accelerated the pace of AI-driven analytics innovations across healthcare and public health. In the early stages of the pandemic, researchers highlighted AI's important potential to help with prediction, detection, control, and treatment. For instance, AI-based epidemiological models were used to predict the spread of the disease, and deep learning systems were applied to medical images for the diagnosis of COVID-19 from chest scans [24]. Furthermore, platforms like BlueDot employed natural language processing and machine learning for identifying early COVID-19 symptoms based on social media reports as well as health reports, and Metabiota employed predictive modeling with traveler data and population density to forecast outbreak dynamics. AI has also optimized telehealth service delivery. For example, Ada Health supported public health

responses via AI-based chatbots offering symptom check-ups along with affordable telehealth services during periods of restricted mobility [25].

The role of AI in healthcare goes beyond diagnostics. AI-powered predictive analytics have been useful for clinical decision support. A systematic review (2020–2022) found numerous machine learning models that predicted intensive care unit admission and mortality risk for COVID-19 patients using combinations of clinical variables. These models provided healthcare professionals with early warnings of high-risk cases and enabled them to deliver proactive care [26].

Beyond healthcare, COVID-19 has greatly advanced the adoption of AI and "smart" technologies across eight major industries, such as food services and manufacturing. Thirty-nine distinct kinds of smart technologies powered around 40 types of pandemic use cases, including remote communication, healthcare service delivery, data analytics, and logistics. For example, online education platforms with AI tutors replaced in-person classes during lockdowns and AI-enabled robots assisted in hospitals to examine patients as well as deliver medications while reducing infection risk [27]. Furthermore, AI mobile health apps like mHealth has the potential to revolutionize post-pandemic public health surveillance by automating illness forecasting, outbreak detection, and resource management [28].

The recent developments in AI have also increased the number of applications in predictive modeling of outbreaks, healthcare delivery optimization, and public health surveillance which can be used in future pandemics. For example, tools like epitweetr and Open Source Intelligence (OSINT) are used to analyze social media and environmental data for threat detection with vast geographic scope. The Machine Learning algorithms have the ability to forecast outbreaks based on input data of population density, weather, and vector movement. Not only do these algorithms outperform traditional statistical methods, but also AI models prevent supply and communication disruptions through resource allocations like oxygen supply in hospitals, and through developing public health warnings with the help of Gen AI language models [29].

The swift implementation of AI to pandemic responses also raised major concerns. Non-standardized datasets complicate validation which results in inconsistent performance and erosion of trust. Worldwide efforts by organizations such as World Health Organization, Centers for Disease Control and Prevention, and commercial software companies have tried to establish and standardize large-scale datasets, such as CORD-19 repository. Data security and privacy are also long-standing issues because pandemic surveillance is at odds with personal data protection [25]. Many of the reviewed studies involved sensitive personal data, which should be handled carefully even during a pandemic. Therefore, the pandemic emergency offered a valuable opportunity for more ethical and responsible action [26]. The studies raised concerns about ethical issues related to privacy, fairness, and accountability. Transparency in data sources and AI models is essential to building trust among the public and healthcare providers. Regular testing for biases and continuous monitoring is necessary to avoid unfair treatment of marginalized groups. Overall, AI should not replace human expertise and judgment but rather supplement them in managing the pandemic [24].

There are also obstacles to large-scale AI implementation. The reliability of AI models is of first concern, as many AI models were deployed with little peer review during the pandemic. The application of many sophisticated AI technologies in low-resource and low-income countries is limited because AI tools are created using data from high-income countries which employ robust digital infrastructure. International cooperation, the sharing of models and data, and region-specific AI solutions are crucial for improving global health disparities [30].

V. Practical Implications for People Analytics and Pandemic Analytics Stakeholders

The COVID-19 pandemic presented the possibility for AI systems to contribute to organizational agility and pandemic response but also it uncovered risks surrounding system vulnerability, data misuse, and bias. Practical implications offer actionable guidance for all types of stakeholders from healthcare administrators to leadership policymakers, data scientists, AI engineers, and to HR professionals to ensure ethical, legal, sustainable, and resilient AI deployment for both health emergency scenarios as well as work environments.

A. Economic Responsibility: Be functional

The SRAI model's economic component highlights the use of AI to improve productivity, resource allocation, and efficiency. In HR, it involves AI-powered workforce planning, monitoring of engagement, and hybrid work plan. In healthcare, AI models help to forecast intensive care unit admissions, automate personal protective equipment delivery, and mitigate critical care delays. However, short-term financial gains should be balanced with longer-term investments in people and technology. During the COVID-19 pandemic, data-driven efficiency allowed many organizations to pivot quickly, however, businesses also learned that over-dependence on testing-phase algorithms and taking people factors for granted can have negative long-term impacts. Therefore, the updated framework encourages professionals to pursue the economic benefits of People Analytics and Pandemic Analytics as well as implementing internal mechanisms to fulfill legal, ethical, and social obligations

B. Legal Responsibility: Be lawful

The AI systems are subject to applicable labor laws, health privacy laws like HIPAA, data protection regulations, and civil rights protections. The lesson from pandemic management is that even during emergencies, personal data must be handled carefully and in accordance with privacy principles as ethical and legal standards will be vulnerable during a crisis. Compliance with law guarantees data openness, fair play, and stakeholder confidence. Practitioners are advised to keep records on sensitive data processing, monitor AI models for bias, and create systems where

employee data as well as patient data are secured during business-as-usual operations and emergencies.

C. Ethical Responsibility: Be ethical

Ethical considerations in AI-enabled PA require more than just following laws, as they encompass fundamental values such as dignity, fairness, explainability, and harm prevention. Post-pandemic AI use showed the lack of human-centered design in the applications of performance tracking and hiring practices. Taking into account AI-related nuances and anomalies, industry leaders should make the final decisions and ensure that stakeholders are informed about data collection, processing, and AI-driven decision-making practices. The "A human-in-the-loop" strategy helps balance algorithmic input with discretion and empathy.

D. Philanthropic Responsibility: Be a good AI citizen

An organization's voluntary attempts to employ AI for the greater benefit are reflected in its philanthropic responsibilities. This layer involves using Data Analytics to promote community involvement, inclusion, and employee well-being above and beyond simple compliance. People Analytics could help community workforce programs through HR departments, and public health agencies could share aggregated models of AI for balanced disease surveillance. These are all about taking a proactive approach for inclusion, for public confidence, for health, and for supporting the Sustainable Development Goals even when economic return is not the mission.

E. Environmental Responsibility: Be sustainable

The SRAI pyramid's top level, environmental consideration, encourages AI systems to support ecological sustainability. With the additional benefit of reducing carbon emissions due to less frequent travel and Telehealth, the pandemic showed that widespread remote business and health operations are feasible. Leaders can use AI-enabled analytics to measure these effects and develop policies that support climate goals and enhance work-life balance. In HR it enables "Green HRM" programs; in healthcare and logistics, it could assist in the creation of sustainable supply chains.

F. Resilience Responsibility: Be future-ready

The findings from research papers explored in the industries from HR to healthcare to crisis management opened a new perspective for socially responsible AI, which is resilience responsibility. This specific responsibility emerged due to volatility and systemic uncertainty marked by the pandemic. Resilience responsibility can inform professionals that not only should AI-enabled Data Analytical systems be efficient, fair, and sustainable, but also organizations should assume the responsibility to prepare for, respond to, and recover from unexpected shocks while continuing organizational functions and adaptability. Practical implementation of resilience responsibility can include AI-driven scenario planning, early warning models, simulation tests for disasters or cyberattacks, and identifying system vulnerabilities. Recent news concerning the Grok AI incident, which shared antisemitic content on the X platform, or the Open AI incident, which tried to copy itself to external servers during shutdown, underscores the need for resilient AI architectures [31][32]. If the AI-enabled automation is left unsupervised, these advanced tools can replicate or magnify societal harms. A recent report by Deloitte also projects that natural disasters like the COVID-19 pandemic can cause US$460 billion in average annual losses to infrastructure globally. However, US$70 billion of the total loss amount can be saved annually if infrastructure resilience is enhanced with AI [33]. Overall, resilience responsibility is long-term insurance that serves as a safety net to withstand disruptions, to adapt to uncertainty, and to align with human values, safeguarding both society and innovation.

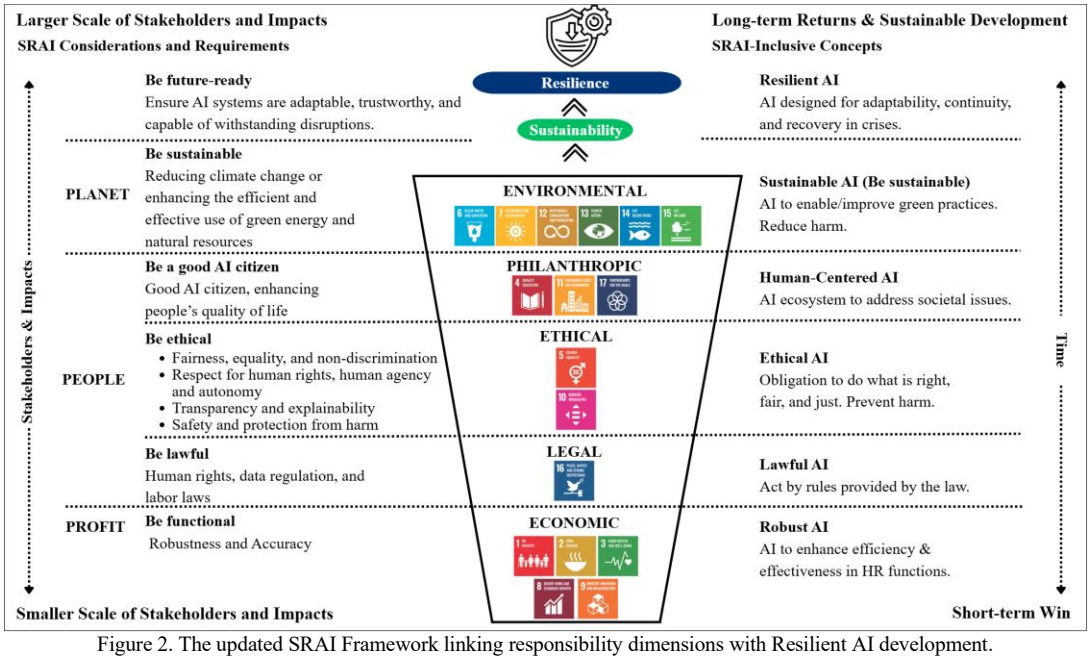

Figure 2. The updated SRAI Framework linking responsibility dimensions with Resilient AI development.

VI. CONCLUSION AND FUTURE WORK

This paper studied the development of the SRAI framework extending it from originally developed for the People Analytics in HRD field to the new domain of Pandemic Analytics. With the help of qualitative analysis in the most recent research papers, industry reports, and pandemic-era innovations, the research presented how AI adoption in the COVID-19 era brought about both opportunities and challenges in high-risk environments such as healthcare, public health surveillance, and crisis preparedness.

The findings suggest that while AI-driven analytics can enhance efficiency, responsiveness, and data-informed decision-making across sectors, it also raises significant risks around legal compliance, ethical use, data privacy, equity, and environmental impact. Most importantly, the unpredictable and disruptive nature of global health crises has introduced the need for an additional dimension which is now introduced as Resilience Responsibility within the SRAI model. This new layer emphasizes the importance of developing AI systems that are not only responsible and sustainable but also robust enough to adapt under conditions of uncertainty and systemic shock.

Through redefining the SRAI framework in pandemic-use terms, our study facilitates a broader foundation for responsibly using AI in organizational and wider public service contexts. It encourages stakeholders including HR professionals, public health officials, and AI architects to implement a socially responsible, law-compliant, ethically appropriate, environmentally sustainable, and resilience-driven AI governance framework. We encourage future research to refine SRAI's layers of responsibilities in response to ongoing technological, regulatory, and societal developments.

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