



Atos Recognized for

2021

Customer Value Leadership

Global COVID-19 Digital
Vaccination Solutions Industry
Excellence in Best Practices

Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Atos excels in many of the criteria in the COVID-19 digital vaccination solutions space.

AWARD CRITERIA	
<i>Business Impact</i>	<i>Customer Impact</i>
Financial Performance	Price/Performance Value
Customer Acquisition	Customer Purchase Experience
Operational Efficiency	Customer Ownership Experience
Growth Potential	Customer Service Experience
Human Capital	Brand Equity

Urgent Need for Seamless Vaccine Distribution and Administration

The World Health Organization aims to curtail the acute phase of the coronavirus (COVID-19) pandemic by ensuring fair and equitable vaccine allocation globally, in collaboration with governments and manufacturers.¹ However, COVID-19 vaccine procurement, distribution, administration, and management are one of the greatest logistical challenges ever undertaken. Specifically, a higher number of approved products and a sufficient vaccine supply to meet the rising demand raise complexity if sites administer two products with different requirements and dose schedules. A smooth COVID-19 vaccine supply chain trajectory, from the factory to the point of use, demands solutions that maintain vaccine integrity and quality throughout the distribution process. Furthermore, managing ultra-cold supply chain complexities requires temperature trackers to monitor vaccines' temperature in real-time throughout distribution to validate cold chain compliance.

Secured data management and integration from research and development (R&D) to post-marketing surveillance is essential to devise successful COVID-19 treatment and accelerated vaccine deployment strategies. Furthermore, mobilizing citizens and staff, scheduling and enabling prioritized distribution, and tracking vaccinated citizens for follow-up are primary activities for successful vaccination. Therefore, the need for digital solutions that allow end-to-end, secure data-enabled supply chain operations, traceability, and vaccination management is vital.

¹ "COVID-19 Vaccines." World Health Organization, World Health Organization, Mar. 2021, www.who.int/emergencies/diseases/novel-coronavirus-2019/covid-19-vaccines.

Implementing such systems is essential to protect vaccine integrity, enable real-time vaccine cargo monitoring for suitable distribution; empower seamless vaccination administration management, and monitor deployment.

Founded in 1997 and headquartered in Bezons, France, Atos is a globally acclaimed digital transformation company offering a range of market-leading digital solutions and managing the entire data value chain through an end-to-end partnership approach. It provides an industry-specific solutions and services portfolio for more than 30 industries supported by 105,000 experts worldwide. Present across 73 countries, Atos has extensive multi-country implementation expertise in application deployment, maintenance, digital workplace, and training capabilities across industries. A Societas Europaea company listed on the CAC40 Paris stock index, its revenue reached € 12 billion in 2020. A Worldwide IT Partner of the Olympic Games since 2001, Atos enjoys a strong global brand presence.

Enabling Safe and Secure COVID-19 Vaccination Program Delivery at Scale

The COVID-19 pandemic accelerated digital transformation and industry 4.0 focus, elevating the role and use of advanced digital technologies in life sciences research, vaccination program deployment, and supply chain management. However, the need for technology convergence is critical to driving efficiency and productivity.

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“As an end-to-end system integrator and a digital transformation leader, Atos creates a world-class technology-enabled partner ecosystem to deliver a full suite of connected solutions to support the Covid-19 vaccination process. The scalable, modular, and expandable digital vaccination portfolio facilitates cost-effective deployment globally. The company's solutions harmonize critical administrative elements of the vaccination process life cycle through connected workflows.”

- Supriya Lala, Best Practices Research Analyst

COVID-19 vaccination process. The scalable, modular, and expandable digital vaccination portfolio facilitates cost-effective deployment globally. The company's solutions harmonize critical administrative elements of the vaccination process life cycle through connected workflows. Covering every stage, from vaccine distribution and traceability to administration management and citizen engagement, monitoring, management, and data security, Atos ensures populations are vaccinated quickly and safely.

The solutions allow authorities to manage the COVID-19 vaccine supply chain, rapidly communicate with staff and local authorities,

administer vaccine appointments, monitor risks, and support accurate record-keeping while utilizing their existing information technology (IT) infrastructure. Primary solution tenets include:

- Digitally Connected Citizen: An omnichannel experience for connected citizens, the solution provides self-serving options for registrations; it includes an automated vaccine appointment management process, automated reminders, consumer matching to administration sites, and query handling via artificial intelligence (AI) chatbots with live agent chat as fallback criteria for complex questions.

The vaccination administration process provides access to robust vaccination progress data, post-vaccination adverse event reporting, and access to real-time information via the citizen portal. The citizen portal prevents overscheduling, limits no-shows, improves customer experience, and provides more bandwidth to the frontline staff.

- **Optimized Vaccine Centre Operations:** It supports inventory management aligning appointments directly with stock levels. The solution facilitates threshold alerting when inventory levels drop to a minimum level, allowing traceability and transparency of inventory and consumables.
- **Inventory Management:** It enables real-time insights, End-to-end vaccine traceability and temperature tracking, demand forecasting, capacity and fulfillment tracking, prioritization, automated allocation of vaccine supply across multiple days, and tracks doses allocated, booked, used, and wasted.
- **Mobile and digitally empowered staff** creates appointments on behalf of citizens to scale up operations, call center, and inbound routing, enhancing vaccination drive, workforce mobility, and productivity and supporting continuous communication and collaboration.
- **System Integration, Infrastructure, and Application Management:** An optimal technology stack enabling vaccination administration demands such as integration with upstream and downstream stakeholders, internal Systems, hosting system integration, and cybersecurity protections.
- **Monitoring and insights analytics:** Embedded analytics drive operational efficiency and decision-making. Predictive and prescriptive analytics provide real-time operational insights for vaccine service delivery trends for corrective actions, while city heat maps display vaccination progress.
- **Atos' solution** also allows managers to assess operating trends. It includes the average rate of registered appointments turning into no-shows, adjusting daily registration, utilizing standby appointments, and managing vaccine preparation towards the ends of the shift to reduce spoilage and increase access.
- **Atos vaccine command center**, a scalable, secure, private operating platform, provides vaccine-specific risk insights and notifies stakeholders based on their location. The vaccination dashboard updates status and second dose adherence, and heat maps determine at-risk communities and vaccinations requirements.

Atos complements all its solutions with consulting, advisory, cloud, and cybersecurity services, supporting the vaccine deployment process. For example, the IT-validated Part11 FDA compliant cold chain compliance monitoring solution with calibrated temperature loggers maintains complete transparency in temperature monitoring. It alerts temperature threshold breaks and provides in-built end-to-end traceability with location tracking. The rapid response contact center as-a-service, an inquiry fulfillment support for healthcare providers, expands contact and inquiry capacity, optimizes vaccine management, and provides outsourcing options, enabling providers to focus on patient care with remote work capabilities. The robust portfolio lowers expenditures to immunize one person fully, improves vaccine transport, storage, distribution, and management analytics. The services ensure enhanced process adoption and implementation and introduce supply chain innovations.

Channelizing the Digital Engine to Co-Innovate with Customers

A customer-centric company, Atos aggressively invests in innovation at scale, organizing 424 customer innovation workshops in 2020, spending €235 million annually on R&D,² with 5000 innovation patents to date³. The company designed unique COVID-19 technology-based responses for organizations in multiple countries and delivered those services at an unprecedented speed and scale.

For example, the purposely developed Pandemic Data Management platform supports national detection and de-containment, including building a future international containment and traveler circulation management service. In Vienna, Atos developed an epidemic management system with the IT systems integrator in response to the city's municipal department's request to establish a method to control potential measles or SARs-outbreaks. The system interfaces with the Austrian central registry "ZMRZentrales Melderegister" and their epidemic registry "EMS-Epidemiologisches Meldesystem" based on the Microsoft Dynamics platform. The application combines planning and preparation for epidemics, investigation and control to create a single point of data, monitoring, and forecasting to predict spreading scenarios and design prevention plans.

In another case, the company responded quickly and flexibly to a non-departmental public body of the Department of Health and Social Care, England, to establish a remote service desk for vaccination rollout. In collaboration with Webhelp, Atos delivered a 36-agent desk, operational from 6 am to 10 pm, providing staff at the vaccination centers with IT, estates provision, facilities, and vaccination program logistics support. After an intensive specific service desk agent training, a partial desk went live in 10 days. The service desk was completely operational within the next five days, supported by remote service desk agents.

Leveraging Strategic Imperatives to Design Covid-19 Rebound Services Portfolio

Atos reinvented its original vaccination distribution and administration portfolio to design several innovative use cases, enabling customers to handle post-pandemic challenges and promoting sustainable business continuity. A 180-member team from the company's internal scientific and expert communities delved into developing a strategy addressing Atos' COVID-rebound focus. It identified four strategic imperatives to create a framework, underscoring:

- **Technology mastery:** Companies must have technology mastery to realize the maximum potential from technology application.
- **Frictionless working:** Customers can implement technologies in a frictionless manner (implementing smart factories for life sciences research and virtual care for care delivery). Customers can gain value from data and share it equitably and securely, both at the individual (participating in widespread test-and-trace programs) and enterprise levels (global collaboration in vaccine development).

² <https://atos.net/content/investors-documents/ir-2020/atos-integrated-report-2020-en.pdf>

³ <https://atos.net/en/insights-and-innovation/innovation-labs>

- **Data equity:** Promote data equity to enable data ecosystem members to establish shareholding interests in the collective value of otherwise disparate datasets.
- **Sustainable by purpose:** Government and organizations focus more on sustainability, decarbonization prioritization, and related environmental impact.

By leveraging the framework, Atos built its best-in-breed COVID-rebound services portfolio. The end-to-end service offering, independent of the stakeholder and market, comprises:

- The digital epidemiological surveillance service for post-vaccination adverse event monitoring allows Internet-of-things device integration to collect data, develop blockchain solutions, detect signals, and use machine learning to predict prognosis. Notable examples include leveraging the Huma partnership for virtual care delivery.
- The rapid identification and break transmission service enable maintaining health status proof for workplace social distancing and contact tracing, vital for the public health sector. For example, Atos' partnership with Ipsotek provides workplace social distancing and facial recognition solutions for crowded public spaces to break transmission. Also, the company introduced the HealthSafe vaccine passports to re-open society securely as a COVID-rebound initiative. The integrated solution quickly verifies hospital-visiting patients or relatives, thus lowering long queues at public places and securely enabling rapid access to citizens' health data.
- The communication services offering leverages omnichannel communication technology, e.g., citizens' portal or personalized community offering chat bot-supported help desk for symptom identification, risk management, directing patients to the correct location, and sending alerts to staff. Also, Atos' Breakaway adoption offers clients a simulation-based solution that creates actual build and workflows for implementing new processes and technologies (EHR). By enabling simulation techniques, the unique solution enables risk-free adoption.
- The clinical services cover virtual chronic care management, screening, triage at the point of care, remote patient monitoring (RPM), and teleconsultation.
- The company enables customers to design, test, and develop AI-accelerated vaccines and treatments, leveraging smart clinical trial processes and digital twin functionality through its treatment and prevention offerings. It enables smart manufacturing and distribution promoted by an intelligent supply chain with cold chain (temperature) monitoring, especially vital during vaccine transport to remote or rural areas.
- Digital workplace and business model include cloud solutions for best-in-class cybersecurity and digital workplace, along with existing solutions (ServiceNow and Capacity Analytics).

Delivering Virtual Care through Remote Patient Monitoring

Atos aims to shift healthcare and clinical trials from hospital to home, leveraging remote patient monitoring technologies (RPM). In collaboration with Huma, it is launching a Virtual Ward to monitor patients remotely, track symptom deterioration, and flag high-risk patients, enabling health services to intervene early, optimize clinical resources, and manage healthcare capacity. Besides virtual care

delivery, Atos' Huma-powered modular platform supports population health management and complex global decentralized clinical trial runs.

The platform provides remote patient data capture through patient apps with in-built e-consent, ePRO collection, biometric capture, and telemedicine.

The company integrated a portfolio of nearly 400 wearables and connected devices to enable seamless data capture. A web-based research dashboard allows for insights into the collected patient data; it includes directly communicating with patients via telemedicine and remote monitoring of patient-provided data. The platform, configurable for any therapy area and procedure, enables questionnaire customization for care management and research. It can implement telemedicine visits through smartphones, add content for contextual learning, and build use cases for tailored care pathways. In addition, it addresses the clinical trial process through a consent verification option for onboarding patients to participate in the study questionnaire, including individual validation. Other apps addressing the care management process support treatment, care planning, monitoring, medication, and patient engagement.

Virtual Ward Case Study

As virtual care delivery enabler, a notable humanitarian initiative of Atos included helping India to fight against COVID-19 by supporting the Pune-based Symbiosis Hospital, a designated COVID-19 center. The 900-bed facility experienced a high patient surge during the pandemic without having appropriate monitoring techniques. To that end, Atos is acting as the Systems Integrator and program manager of the COVID-19 Virtual Ward, Huma's hospital at-home solution, which enables remote monitoring of high-risk COVID-19 patients supported by a patient-centric app and a medical companion device (pulse oximeter). The app allows at-home patients to sign up, provide consent, enter vital statistics and symptom details that reflect on a web-based portal, a dashboard for the clinicians to prioritize patients for follow-up or next steps. The color-coded status of the patient reading configures as per thresholds based on country-specific clinical care guidelines. The easily deployable cloud-based solution enables social distancing, prevents COVID-positive patients' contact with hospital staff, increases hospital bed capacity, diverts resources to critical patients, and remotely monitors home-quarantined patients.

Developing Innovative Solutions for Health Passport, Clinical Research, Digital Workplace

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Atos continues to increase its geographic presence in North America and Europe, launching innovative solutions for COVID-rebound. For instance, its ongoing work on HealthNGo Solution, a secure mobile health certificate wallet to support return to work and public activities through vaccine passports (for the public sector). Similarly, it collaborates with Spain to create a safe travel experience for Spanish citizens.

The company created the SARS-Cov-2 Fighting Platform available to universities and laboratories focused on several COVID-19-related projects to support the life science industry. For example, the Spanish National Center for Biotechnology leverages Atos supercomputing expertise to determine how the COVID-19 virus initiates infection through protein structure modeling. By modeling 3-dimensional volumes of molecular structures, the company supports the drug discovery process. Similarly, the Virtual University of Senegal utilizes Atos' BullSequana Intel-based supercomputer to evaluate COVID-19 containment measures impact.

In addition, the company's data scientist experts' team participated in the online 'COVID-19 Dataset Challenge', an international competition hosted on the online community, Kaggle. Utilizing its best-in-class AI and automation skills, the team processed the information from over 470,000 scientific articles to update scientists on the latest COVID-19 publications, providing deeper insights about the virus and supporting treatment discovery research. Other recent developments include its work on a significant proposal for an international emergency response organization for cold chain compliance monitoring.

Atos partnered with Eupry to develop a "Vaccine Logistics Monitoring as-a-Service" solution that allows public sector, pharmaceutical, and logistics companies to manage large-scale COVID-19 and other vaccine distribution supply chains in compliance with regional regulations, good manufacturing, and standardized distribution practices.

To establish digital workplaces, the company partners with ServiceNow. The "platform of platforms" solution provides customers enterprise-wide, next-generation digital business and information technology workflows. Apart from vaccine administration and management, Atos will leverage the ServiceNow platform to support digital hospitals.

To increase its solutions market adoption and commercialization, the company concentrates on optimizing customer's business models from an end-to-end lifecycle perspective, taking a flexible case-by-case approach for every stakeholder and geography. Besides pioneering decarbonization services and products, Atos commits to securing and decarbonizing digital for its clients, allowing its customers, employees, and societies to work and develop sustainable, safe, and secure information ecosystems globally.

Conclusion

Atos provides a full suite of digital vaccination solutions to address the critical elements of the coronavirus (COVID-19) vaccination process life cycle, distribution, traceability, cold chain compliance monitoring, citizen engagement, and data security through connected workflows. Easily deployable and interoperable with existing information technology (IT) infrastructure, the company allows healthcare organizations and authorities to manage scalable and cost-effective vaccination program administration, communicate seamlessly, and monitor post-vaccination risks.

Apart from vaccination management, Atos' disruptive COVID-19 rebound solutions address post-pandemic challenges and drive digital transformation in healthcare delivery, life sciences research, and workplace social distancing. Its cloud-based platform suite supports disease surveillance, rapid infection identification, and transmission breaks. The platform also enables hospital-at-home models and virtual

care delivery via remote patient monitoring and telemedicine.

Through strategic partnerships with globally recognized IT vendors, Atos continuously innovates to build platform capabilities for customized end-to-end cybersecurity and high-performance computing solutions to further COVID-19 research. Furthermore, the company is channelizing its digital engine to create novel solutions for digital workplaces and Healthsafe passports to enable secured reopening of society.

With its strong overall performance, Atos earns Frost & Sullivan's 2021 Global Customer Value Leadership Award in the digital vaccination solutions (COVID-19) industry.

What You Need to Know about the Customer Value Leadership Recognition

Frost & Sullivan's Customer Value Leadership Award recognizes the company that offers products or services customers find superior for the overall price, performance, and quality.

Best Practices Award Analysis

For the Customer Value Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

Business Impact

Financial Performance: Strong overall financial performance is achieved in terms of revenues, revenue growth, operating margin, and other key financial metrics

Customer Acquisition: Customer-facing processes support efficient and consistent new customer acquisition while enhancing customer retention

Operational Efficiency: Company staff performs assigned tasks productively, quickly, and to a high-quality standard

Growth Potential: Growth is fostered by a strong customer focus that strengthens the brand and reinforces customer loyalty

Human Capital: Commitment to quality and to customers characterize the company culture, which in turn enhances employee morale and retention

Customer Impact

Price/Performance Value: Products or services provide the best value for the price compared to similar market offerings

Customer Purchase Experience: Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

Customer Ownership Experience: Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

Customer Service Experience: Customer service is accessible, fast, stress-free, and high quality

Brand Equity: Customers perceive the brand positively and exhibit high brand loyalty

About Frost & Sullivan

Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at <http://www.frost.com>.

The Growth Pipeline Engine™

Frost & Sullivan's proprietary model to systematically create on-going growth opportunities and strategies for our clients is fuelled by the Innovation Generator™. [Learn more.](#)

Key Impacts:

- **Growth Pipeline:** Continuous flow of Growth opportunities
- **Growth Strategies:** Proven Best Practices
- **Innovation Culture:** Optimized Customer Experience
- **ROI & Margin:** Implementation Excellence
- **Transformational Growth:** Industry Leadership



The Innovation Generator™

Our six analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

Analytical Perspectives:

- **Mega Trend (MT)**
- **Business Model (BM)**
- **Technology (TE)**
- **Industries (IN)**
- **Customer (CU)**
- **Geographies (GE)**

