

The responsible use of artificial intelligence

Positioning & messaging

At Motorola Solutions, we believe that AI-powered solutions applied purposefully can complement human decision making and cultivate public trust while preserving individual rights. More specifically, we understand that the human aspect — the individual using the technology and the citizens impacted by its use in society — should always be at the center of each innovation. We consistently hold ourselves to the highest ethical standards in our work and this is no different when building new technologies and innovating with AI.

This paper is intended to provide employees visibility into how AI is being leveraged responsibly at each level of the product development process. Additionally, there are a number of use cases included to illustrate how AI can assist in accelerating both the public safety and enterprise workflow.

Fundamental tenets – mission-critical AI by Motorola Solutions

All of our AI technology is created to be equitable, transparent, understandable, accountable, secure and reliable. Additionally, we adopt four fundamental tenets to guide the development and use of AI technology:

- **Human in the loop:** We believe that AI should be used to assist and accelerate human decision making, not replace it. Our AI systems are advisory in nature and will never take consequential actions on their own. Using AI-generated guidance, we can help customers make better decisions faster.
- **Workflow-focused application:** We identify authorized and specific areas in the workflow where AI can deliver improvements, enabling users to accomplish the same tasks faster and more successfully. We are applying proven AI technology in a focused and collaboratively developed way, to narrowly-defined and well-understood use cases.
- **Disciplined innovation:** We apply proven AI and machine learning technologies that are carefully trained, thoroughly characterized and extensively tested. This results in AI-powered solutions that are far less likely to behave unexpectedly in the field.
- **Oversight:** We established the Motorola Solutions Technology Advisory Committee (MTAC) to serve as a ‘technical conscience’ and advise the company on ethics, limitations and implications of specific product technologies. Additionally, we consult with objective third parties to provide an outside-in point of view to guide our decisions.

Ensuring mission-critical AI is applied responsibly

We are committed to ensuring that mission-critical AI is applied responsibly through each step of the product/solution innovation process, from ideation to customer deployment.

Applying human-centered design to our products

- We apply a human-centered approach to all our products, which means we place our customers, their communities and their underlying challenges at the center of our design process. When incorporating AI-enabled features in our products, this approach ensures that the ideal user experience is supported by the appropriate technical solutions.
- We thoughtfully design the specific interactions where users make AI-assisted decisions as a part of their workflow, ensuring that information presented is meaningful, understandable and preserves user control.
- We apply our knowledge of our users' workflows to consider precisely when, how and why users experience AI-powered features in our solutions, enabling the appropriate use of the technology through experiential and technological guardrails.
- We enforce these principles consistently and rigorously throughout our product development process. We identify risks early, define a strategy informed by empathy, and continuously improve solutions with user feedback.

Training our products with machine learning

- We recognize that machine learning algorithms operate as a function of the data to which they are exposed, and as such, the algorithms perform differently if they learn purely on the basis of their fielded environment since individual customers will not have a breadth and diversity of training data.
- We do not allow our products to learn in customer operational settings when the consequences of inaccuracy are significant or there is considerable complexity in properly training an algorithm (e.g., facial recognition). We thoroughly test and characterize all applications of AI and, where appropriate, we train the algorithms ourselves. We may allow our products to employ machine learning to adapt to specific customer dynamics (e.g., camera scene specifics or patterns of life to identify unusual events) or when localization is required (e.g., training on natural language vernacular that is specific to a particular user group).

Providing transparency into products

- We explain all of our AI-based applications in plain, understandable language to give users guidance on their intended use as well as how the applications perform under applicable operating conditions.
- We participate in open and objective industry benchmarks, such as NIST's Facial Recognition Vendor Test.

Managing data within our products

- We carefully secure and manage all of the data that we use in creation of our AI capabilities to ensure that we know its uses in our products as well as its provenance for quality and compliance purposes.
- When we accept data from our customers for this purpose (e.g., machine learning algorithmic training), we do so under an explicit contractual agreement.
- We rigorously secure data, de-identify it to the greatest possible extent, carefully maintain its provenance and adhere to instructions from our customers.

Validating our products

- We consult with objective third parties to provide an outside-in point of view to guide our decisions including industry groups like IJIS (Integrated Justice Information System), university engagements like MIT, and customer research.
- We employ former practitioners in order to provide an end-user perspective. We also have comprehensive quantitative customer research programs in place with our customer and user communities.

Deploying Our Products and Supporting Our Customers

- We build compliance controls and audits into our products, enabling our customers to adhere to local laws and regulations as well as enforce their own policies. We train our customers on those product controls and how to be compliant with industry standards and regulations.
- Customers can enforce responsible policies and accountability by instituting end-to-end compliance controls across the entire workflow. For example, a user must be authenticated and have an active case number attached with actions, user actions are logged and checked against an agency's policies.
- We collect operational feedback from fielded products when possible in order to identify performance issues as well as any inconsistent or undesirable behavior. This allows us to improve accuracy by refining and retaining the model with enhanced data sets, and our cloud-based system allows us to rapidly deploy changes universally across our database.

Controlling to whom we sell our products

- We have a robust export control compliance program for ensuring that we only sell to countries and customers allowed by the U.S. government. Our processes are applied on a transaction (contemplated sale) and product capability basis that precludes commerce with the U.S. embargoed countries list, tests against third party tools and services for screening countries, organizations and individuals, and assesses all contemplated products against applicable control lists published by the U.S. Department of State and Department of Commerce.

- We apply our corporate code of business conduct, which all employees are trained on regularly, and we will not engage in business transactions that would violate that standard.
- We carefully vet and monitor our channel partners and resellers to ensure that they are compliant with these standards.

Accelerating the workflow with AI

We believe when leveraged responsibly, artificial intelligence can vastly improve the workflow for both businesses and public safety.

Challenge: Multitasking leads to as much as a 40% drop in productivity (Harvard Business Review)

How AI helps: AI actively monitors cameras for unusual situations, such as the appearance of smoke or individuals matching the description of missing or abducted persons, allowing video analysts to verify potential items of interest instead of scanning endless video feeds.

Challenge: 240M 911 calls received each year (National Emergency Number Association)

How AI helps: AI automatically transcribes and translates speech to text – including recognizing key terms like “heart attack” allowing the call taker to focus on the response and streamlining 911 call center interactions.

Challenge: 70% of officers prefer requesting license plate checks verbally vs. looking them up manually. (2016 PoliceOne.com Virtual Personal Assistant Online Survey)

How AI helps: AI uses natural language recognition to perform standard queries helping officers save time and stay safer in the field by operating “eyes up and hands free.”

Challenge: 27,000 camera feeds collecting video every day in a large city

How AI helps: AI rapidly searches historical video for missing citizens or persons of interest, speeding up case resolution, especially in major incident scenarios.

Challenge: 94.2% of high schools employ security cameras in varying degrees. However, oftentimes the data lags and the cameras are only used as a reactionary tool. (National Center for Education Statistics, 2016)

How AI helps: AI proactively notifies educators and school resource officers when something unusual happens like a door is propped open or a banned vehicle drives on campus.

Challenge: As workplaces reopen during the COVID-19 pandemic, businesses are working to remain compliant with social distancing and mask recommendations.

How AI helps: AI actively monitors social distancing and mask wearing efforts within a facility recognizing and notifying facility managers of high violation zones and times requiring corrective measures.

Challenge: Among people with dementia who wander, at least 50 percent could suffer serious injury or die if they remain missing for more than 24 hours. (The Alzheimer's Foundation)

How AI helps: AI can help identify those who cannot identify themselves by matching against a database.

Challenge: 30% of an officer's time is spent on administrative tasks with 400,000 incident reports created annually in a large city (2018 Motorola Solutions Law Enforcement Survey Report, LAPD CompStat Division)

How AI helps: AI can transcribe a spoken narrative recorded by the officer – rather than typing up a report in their vehicle or back at the precinct – and automatically populate it in the incident record, where the original audio file is kept as evidence.

Challenge: 8% of high school students in 2019 reported being in a physical fight on school property at least once in the previous year. (Centers for Disease Control and Prevention 1991-2019 High School Youth Risk Behavior Survey Data.)

How AI helps: AI can detect congregating groups in video that indicate a fight or other disturbance is imminent, and alerts security to defuse the situation.

Challenge: \$61.7B in 2019 retail losses from theft, fraud and shrink (National Retail Federation, July 2020)

How AI helps: AI can monitor video to help minimize shrink and theft by notifying security personnel when people are present at off hours or in the wrong location.