

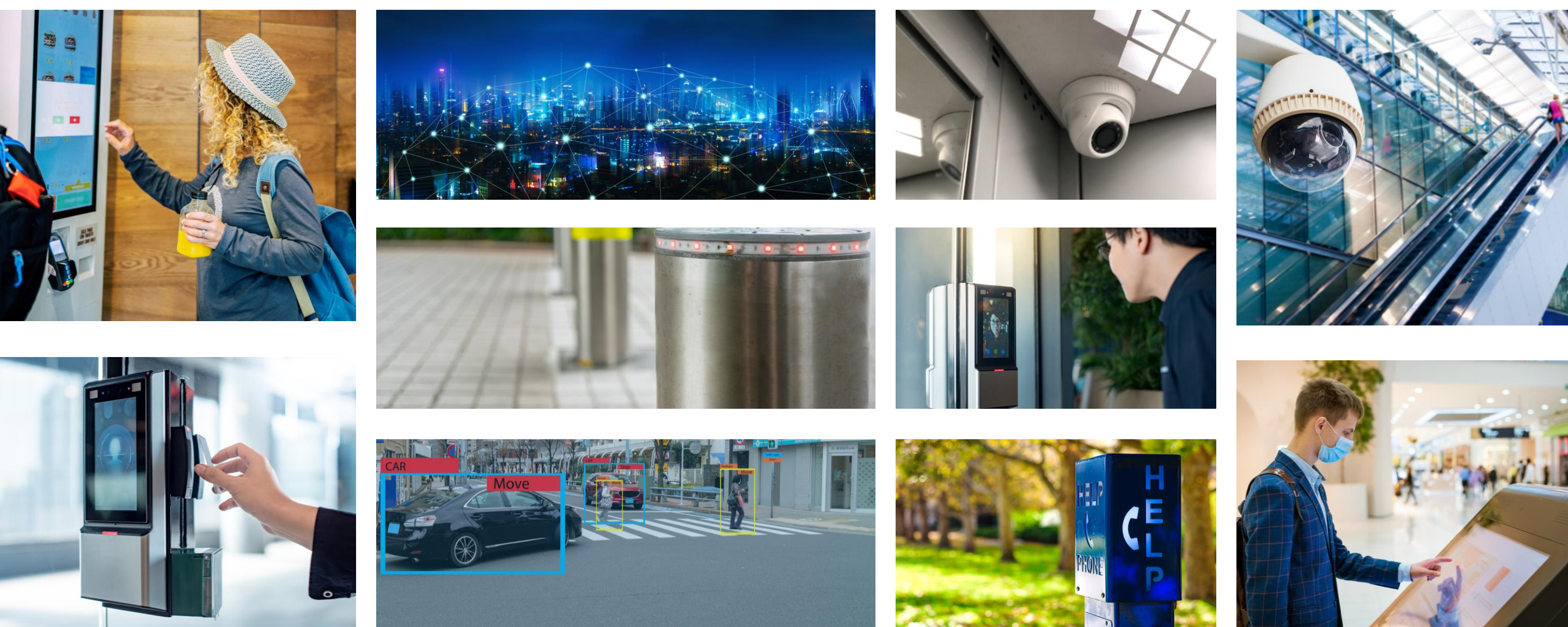
FACTSHEET

# SMART BUILDINGS AND CITIES

Voice, Vision, AI, IoT – System Solutions







## OVERVIEW

Arcturus has been developing edge and embedded systems for over 20 years and during this time has amassed a broad portfolio of hardware, software, tools and expertise. System solutions provide access our core skills and capabilities to accelerate your product development.

Engagements are individually structured and tailored to the needs of each project with dedicated engineering resources that work directly with you to identify requirements, execute on project deliverables and ensure a smooth process from development to deployment. Projects typically consist of a mix of hardware, software, services and support, with simple engagement packages to help get development moving quickly.

## KEY TECHNOLOGIES

Arcturus is focused on five areas of excellence; real-time systems, security, connectivity, communications and machine learning. We offer three product lines that encompass these areas:

- SIPxstream™ - Hardened Voice and Video Communications
- Mbarx™ - Secure IoT Endpoints, Tools and Gateways
- Bring™ - Edge AI and Vision Analytics

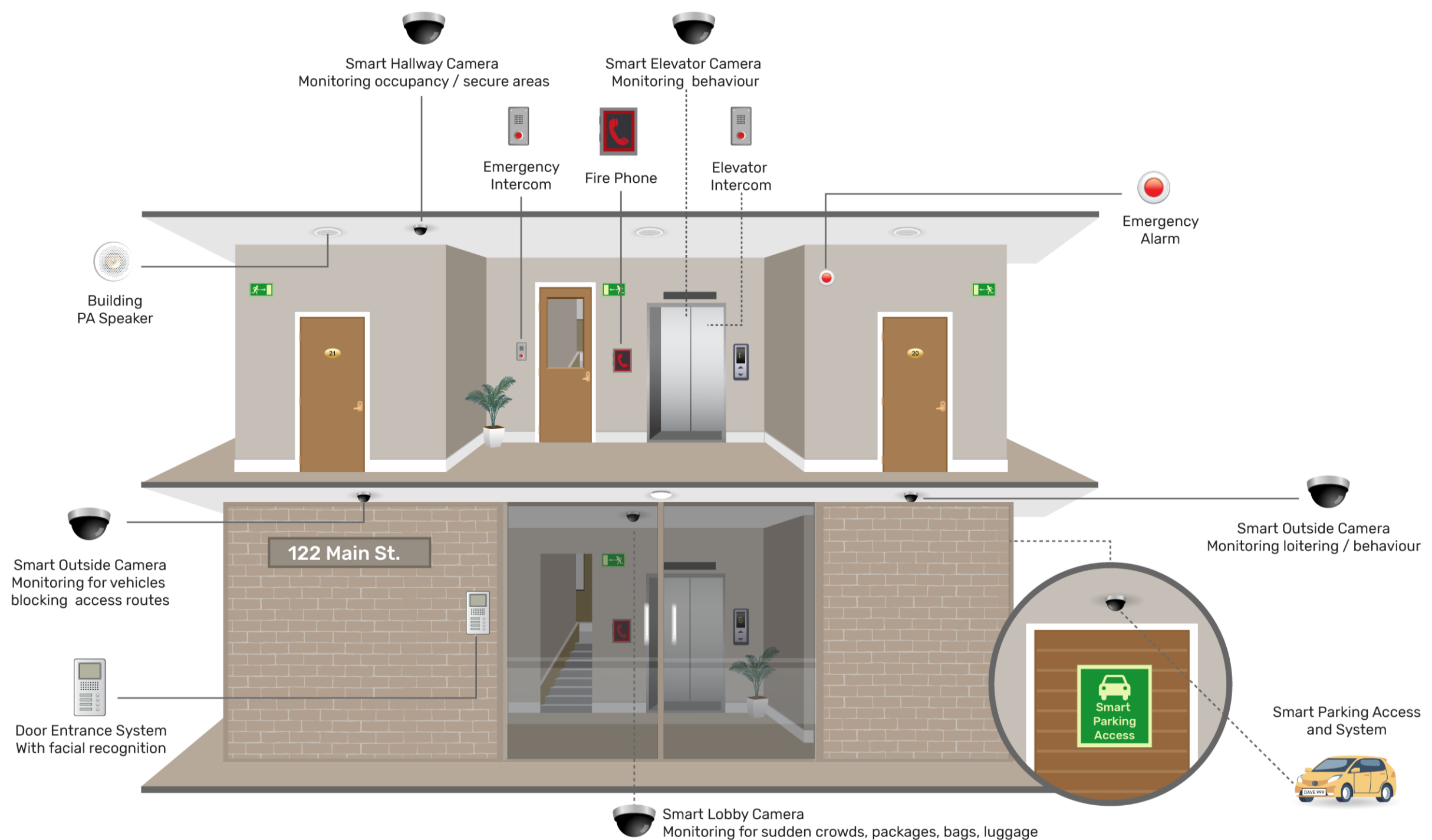
Each product line offers enablement solutions, turn-key applications and specialized hardware. Our system solutions program allows us to work directly with you to combine access to products and customize solutions to address your specific application needs.

## APPLICATIONS

- ✓ Smart safety / security cameras
- ✓ Access control and entrance systems
- ✓ Intercom and Public Address (PA) systems
- ✓ Smart retail signage
- ✓ Smart quick serve restaurant and drive thru kiosks
- ✓ Gas pump retail advertising
- ✓ Elevator monitoring
- ✓ Hospitality and event occupancy monitoring
- ✓ Building alarm controllers
- ✓ Occupancy sensing
- ✓ Smart parking and vehicle detection systems
- ✓ Voice home monitoring systems







### SMART BUILDINGS AND CITIES

At Arcturus we believe that Smart Buildings and Cities are about people, not technologies. We provide solutions that help secure, connect and improve quality of life. Our products make cities safer,, generate valuable insights and enable mission critical communications for city operations – here's how we do it.

#### System Integration by Mbarx

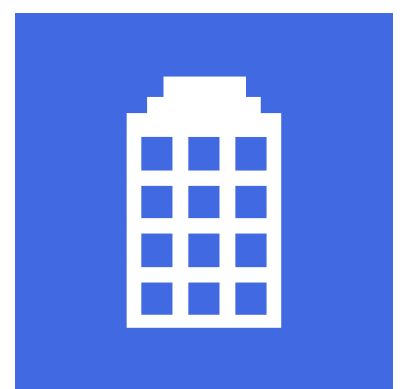
Central to any connected product is the need to manage it, update it and gain insights into its performance. Mbarx Secure IoT provides a secure end-to-end solution for management, telemetry and OTA firmware updates. In addition, Mbarx offers tools and reference implementations for installers or IT personnel to help them easily visualize their systems, connect, control, update and manage.

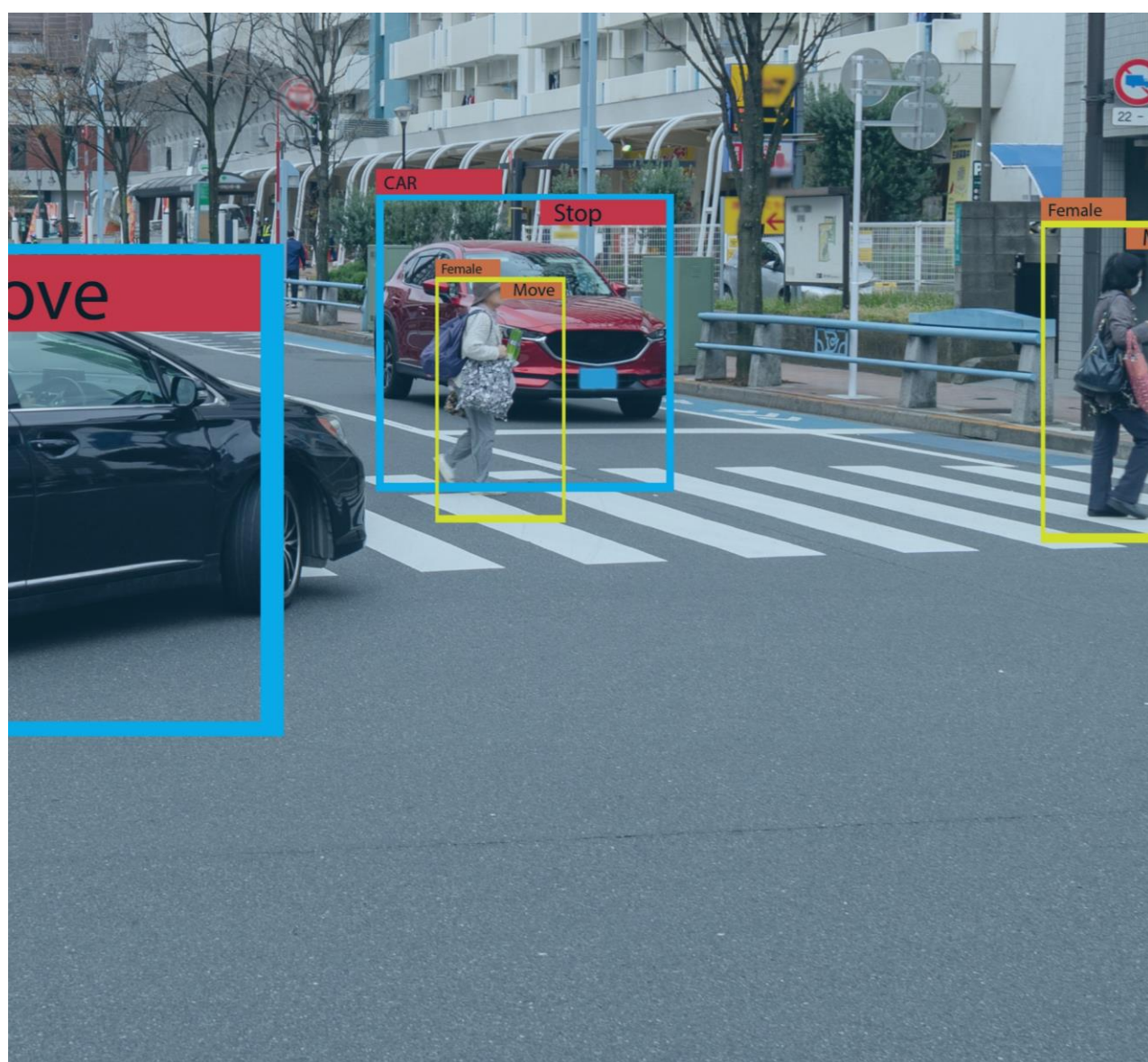
Tools and endpoints work together with Mbarx Site Controller gateways to form an ecosystem of connectivity, making it possible to manage endpoints at remote sites anywhere, anytime, even if they are located securely behind firewalls.

The Operations Controller gateway stack supports real-time Operation Technology (OT) workflow. It bridges the gap between automation and human control by providing a real-time, back-end telemetry interface

into endpoints and supervising their workflow. Front-end presentation using web services allows for event monitoring, control and interaction with endpoints, including event notifications via SMS, VoIP or push. This makes Operation Controllers ideal for environments where users need to act and respond to events generated by devices, sensors, or actions – such as a multi-tenant building access control or security systems.

Tools, gateways and endpoints operate independent of cloud connectivity to ensure security and privacy by using an end-to-end trust chain architecture. Tools can be OEM branded as part of a system solution engagement, providing a unified experience for you customer.





### Edge AI, Vision and ML by Brinq

Brinq Edge AI and Vision Analytics for Smart Buildings and Cities enables intelligence at the edge by providing real-time insights on people, vehicles and objects. It is suitable for physical security / safety, retail or operational applications including:

- Access control and authentication using facial recognition
- Intrusion, boundary crossing, zone and proximity monitoring
- Occupancy detection
- Package analytics
- Tracking and reidentification
- Clothing type/colour characterization
- Physical distancing / proximity
- Action recognition
- Behaviour detection
- Emotion detection
- Vehicle make / model characterization
- License plate recognition

Arcturus has 2D, 3D and depth sense vision, ML, and data science experts in-house that develop custom analytics, datasets, train and optimize models or develop specialized use cases.

### Communications by SIPxstream

SIPxstream delivers a range of voice and video services for applications that demand mission critical communications. SIPxstream can support



RTOS/MCUs in a low as 20KBytes of SRAM or scale to sophisticated multichannel, multi-mode secure voice and video systems using Linux. Central to SIPxstream are:

- High quality voice communications
- Intercom, PA and specialized PTT or handset modes
- Camera integration
- Multimode video (streaming or webservice)
- VoIP and PA, unicast and multicast voice / video transmission
- Recorded announcements for notification
- Intelligibility enhancements and advanced audio algorithms
- Resilience, redundancy, failover, degraded operating modes
- Self-test functions and quality analytics
- Secure and encrypted communications

We have experts in house capable of adapting signalling, implementing codecs, interop testing and supporting specialized requirements.







### Buildings

Arcturus communication solutions are designed to meet or exceed NEMA and NFPA audio intelligibility recommendations for two-way voice and one-way PA paging with options for camera based video or surveillance. Arcturus provides expertise in developing specialized access control systems including occupancy sensing, facial recognition and proximity-based distancing solution using the latest vision technologies.

### City Scale Applications

City scale applications leverage cross-domain data to build value from intelligence. In the smart city, road surface issues are reported to work crews by transit busses; Stadiums work directly with infrastructure to efficiently route pedestrian and vehicle traffic after a game is over. Arcturus combines powerful analytics with data sharing to improve quality of life and create new efficiencies.

### Smart Retail

Understanding your audience is the key to realizing improved revenue through smart signage, kiosks and drive-thru systems. Insights at the edge lead to better advertising, precise target marketing and incentives derived from knowledge about age, gender, appearance, reidentification, actions, emotions or vehicle classification.

### ARCTURUS HARDWARE

Whether you want to design your own chip-down solution or leverage our boards and modules to accelerate time-to-market, Arcturus offers

hardware, design services and support to help. We have hundreds of thousands of devices in service and we leverage this expertise to help you.

- **Quality** - Field failure rates as low as 0.1% / 10,000 units
- **Longevity** - Product life-cycles in excess of 20+ years
- **Time-to-Market** - Boards and modules ready to integrate
- **Reduced Risk** - Hardware and software expertise, support
- **Lower Cost of Ownership** - Software ready for deployment, reduces development cost





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