Edge to Cloud Digital Acceleration Services

Helping enterprises get AI & IoT fuelled applications up and running quickly.

Why Digital Acceleration

Digital acceleration services are essential for businesses looking to stay competitive in an increasingly digital world.

They enable organizations to capitalize on digital opportunities, adapt to changing market demands, and drive sustainable growth through innovation.

Why Syncrasy's Digital Acceleration Services

With over twenty years' experience delivering transformative digital solutions, and an expert team of consultants and engineers with 360-degree digital skills, Syncrasy brings fresh ideas, an in-depth and practical knowledge of modern edge to cloud technologies, and the engineering skills needed to solve digital challenges, deliver early value and set a foundation for a digital future.

Syncrasy's Digital Acceleration Framework

Developed in-house to fast-track the cost-effective development of a new generation of innovative AI & IoT digital products and services, and overcome the limitations and inflexibilities of today's off-the-shelf solutions, Syncrasy's Digital Acceleration Framework:

- Builds on a proven foundation of integrated technologies;
- Reduces development complexity, costs and time to market;
- Optimizes system wide security and scalability;
- Multiplies use case delivery per device; and
- Future proofs AI & IoT investments.

Syncrasy's pre-engineered Digital Acceleration Framework solution building blocks include:

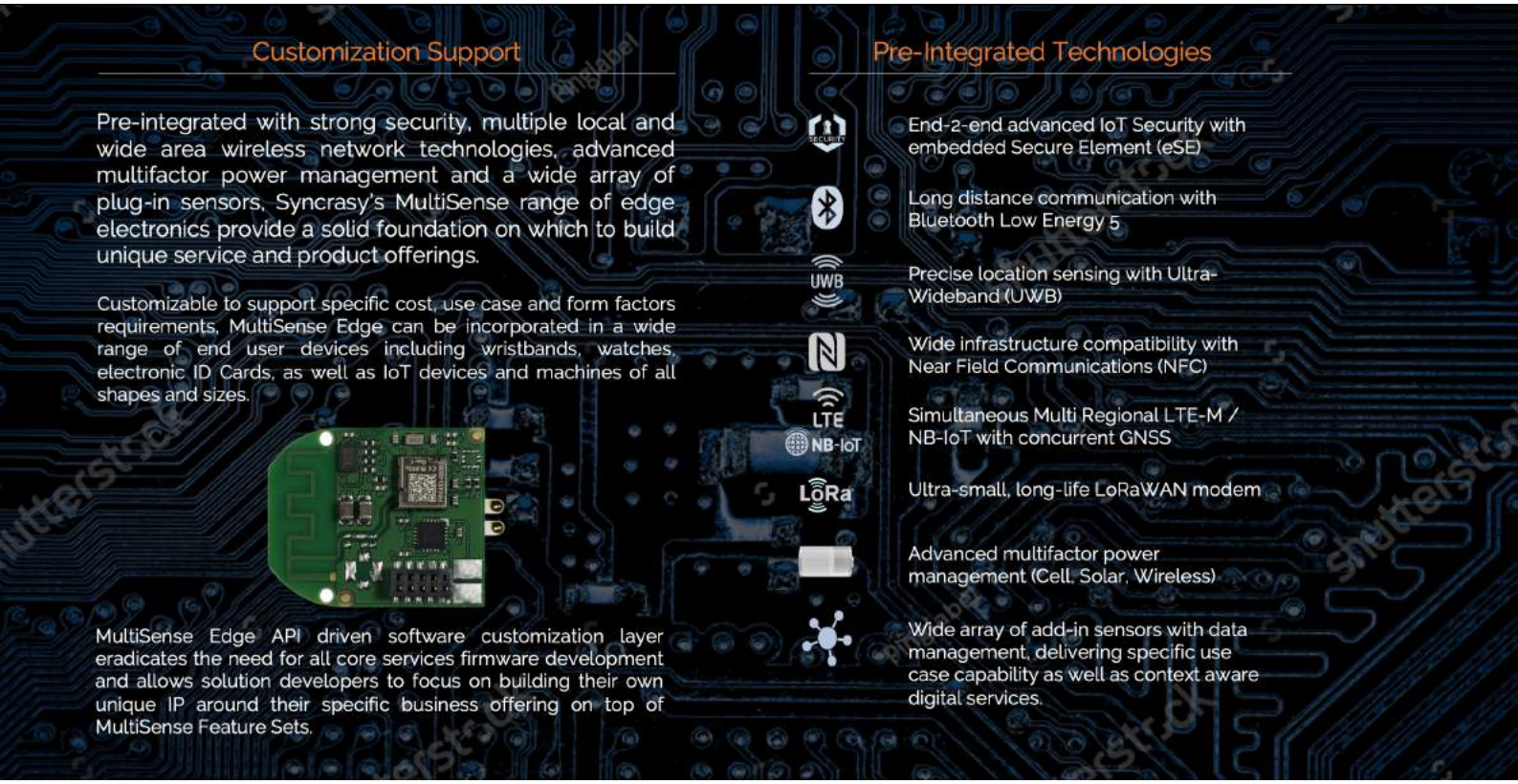
- Edge Device Hardware;
- Advanced Functionality Feature Sets;
- Syncrasy Reference Designs for Use Case Classes;
- Anchors for Edge Data Aggregation and Transit;
- Edge Data Processing;
- Edge Artificial Intelligence (AI);
- Managed Cloud Resources;
- Acceleration Tools and Composable Mobile & Web Application Elements.

Edge Device Hardware

Syncrasy's Edge Device Electronics Design Services deliver a range of integrated wireless hardware reference designs, customized to reflect specific budgets, form factors and use cases constraints including device size & shape, feature sets, security levels, power management, data transit frequencies, costs and upgrade management.

Edge Device Software

To accelerate delivery, Syncrasy provides edge software development services that leverages an API driven software layer of pre-integrated proven and evolutionary technologies that power the digital services delivered by Android & iOS Mobiles, connected machines, wearables, robots and IoT devices.



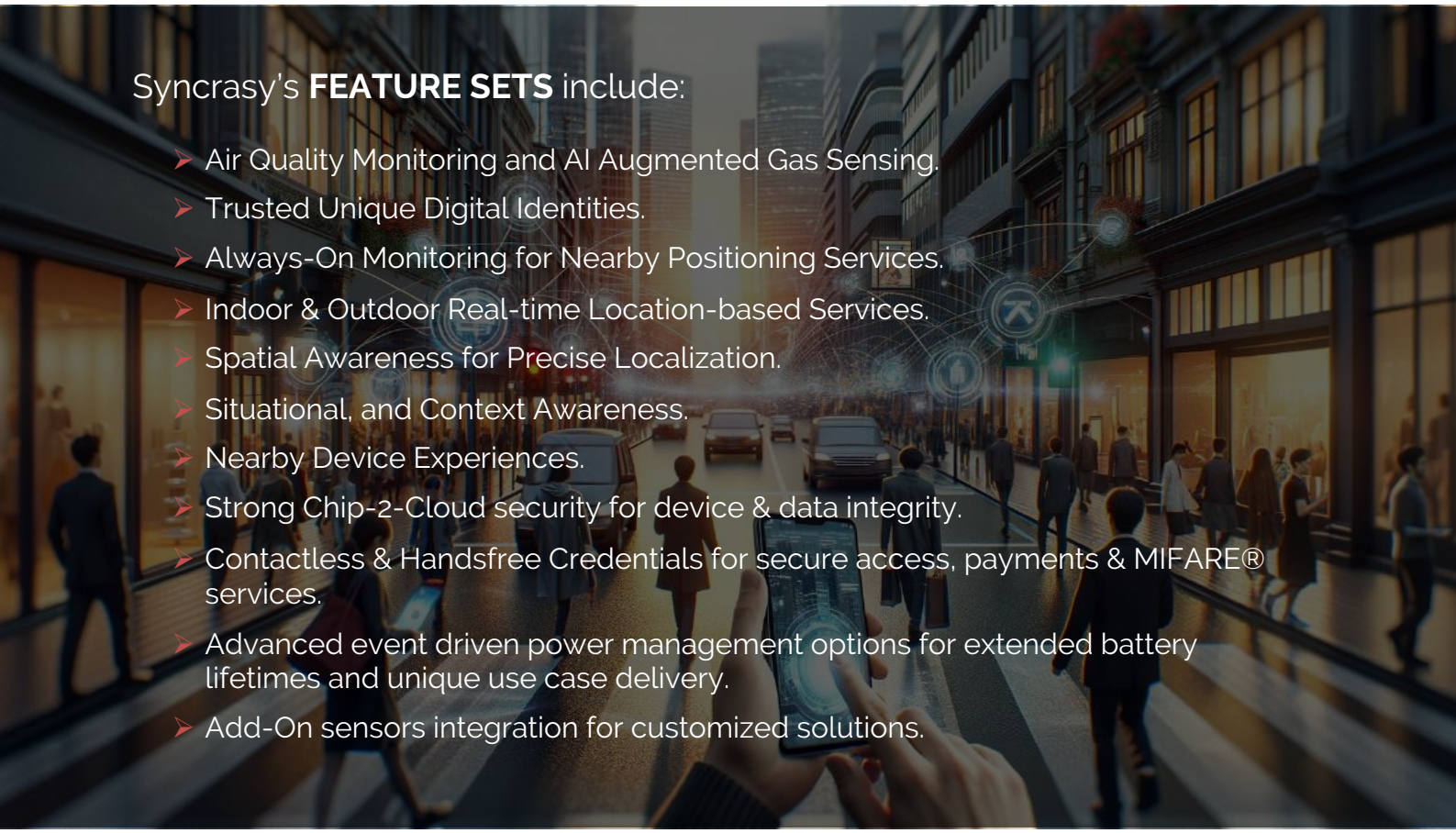
Syncrasy Feature Sets

Feature Sets enable new market entrants & corporate innovation teams to build unique, IP generating solutions that harness the power of:

Location, Situational & Context Aware Technologies, Augmented by AI Enhanced Sensing.

Like an abstraction layer, Syncrasy Feature Sets present the functional capabilities of either single technologies, for example "Power Management", or integrated technologies that create advanced functionality like "Context Awareness".

By abstracting away the complications of the underlying technologies, new market entrants and innovation teams can focus on leveraging customizable functional capabilities to deliver unique digital solutions.



Syncrasy's **FEATURE SETS** include:

- Air Quality Monitoring and AI Augmented Gas Sensing.
- Trusted Unique Digital Identities.
- Always-On Monitoring for Nearby Positioning Services.
- Indoor & Outdoor Real-time Location-based Services.
- Spatial Awareness for Precise Localization.
- Situational, and Context Awareness.
- Nearby Device Experiences.
- Strong Chip-2-Cloud security for device & data integrity.
- Contactless & Handsfree Credentials for secure access, payments & MIFARE® services.
- Advanced event driven power management options for extended battery lifetimes and unique use case delivery.
- Add-On sensors integration for customized solutions.

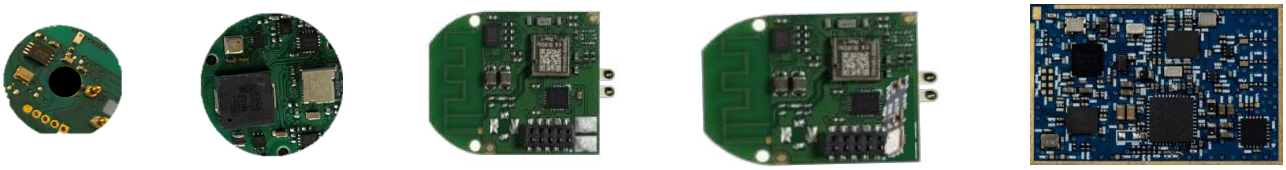
Context Changes Everything

Syncrasy Reference Designs for Use Case Classes

To accelerate use case development, Syncrasy's engineering team have pre-integrated those technologies that are common across specific classes of use cases, creating pretested Printed Circuit Board (PCB) Reference Designs that optimize cost and adaptability.

These reference designs provide a valuable resource that reduces development times, minimizes errors, improves efficiency and reliability, speeds time to market and reduces the costs of developing new digital products and services.

NanoSense IdSense GeoSense AirSense MultiSense



The functional capabilities and costs of the reference designs range from the very low cost NanoSense PCB, which is focused on use cases requiring Nearby Secure Authentication and Identification by Contact, to the advanced capabilities of the MultiSense PCB that incorporates the functionality built into lower cost GeoSense PCBs (Authenticate, Identify, Sense, Monitor, Record, Locate Indoors & Outdoors Plus Accurate. Real-time Localization) enhanced for more advanced use cases with the inclusion of Spatial Awareness for Precise Localization, Situational and Context Awareness, Strong Chip-2-Cloud security for device & data integrity, and Contactless & Handsfree Credentials for secure access, payments & MIFARE® services.

PCB Reference Design Comparative Features

Features		Application	NanoSense	IdSense	GeoSense	AirSense	MultiSense
Digital Identity	Product Authentication	Detect cloning, fraud & counterfeit	●	●	●	●	●
	Data Encryption	Ensure privacy of data	●	●	●	●	●
	User Data	Offline access to primary data to identify	●	●	●	●	●
	Permanent Id Pairing	Proof of authenticated data	●	●	●	●	●
	Id Broadcast	Make ID visible in range	●	●	●	●	●
	Secure Transaction	Enable digital wallet / secure hand-free transaction					○
Sensing	Low Power Id & Data Streaming	Broadcast dynamic data coming from selected sensors	●	●	●	●	●
	Id Beacon	Collect ID in range		●	●	●	●
	Contact Detection	Monitor social interaction		●	●	○	●
	T°C	Monitor temperature	●	○	●	●	○
	Motion Events	Monitor significant motions	○	○	●	○	○
	3d Accelerometer Logging	Sensor acquisition for post processing		○	●	○	○
	Records In Memory	Data storage for post processing		●	●	●	○
	Proximity Scanner	NFC Reader					○
	Programmable Environment Sensor	Environment sensor with embedded AI allowing custom application		○	○	●	○
Localization	Basic Ranges (Far, Nearby, Proximity)	Estimated Position in 360° range (10x meters, 1x meters, 10x cm)	●	●	●	●	●
	Accurate Nearby Distance (cms)	Accurate distance in 360° range (< 30 meters)					●
	Spatial Nearby Awareness*	Estimated or accurate distance in +/- 45° range		○	○	○	●
	In-Door RTLS*	2D/3D position vs reference infrastructure	●	●	●	●	●
	Out-Door Positioning	Global positioning (Latitude, Longitude)			●	●	○
Connectivity	Proximity (Passive NFC)	Easy connect with device to identify, authenticate, read, and write user data	○	○	●	●	●
	Nearby (Bluetooth Low Energy)	Connect with smartphone to control	●	●	●	●	●
	Long Range (BLE Mesh)	Connect device between them to extend range and limit number of gateways required		○	○	○	○
	IoT Cell (Lora)	Low power IOT cell (1x km) with no network operator subscription		○	○	○	○
	Global IoT Network (LTE/M/NB-IoT)	Using network operator infrastructure with subscription		○	○	○	○
Battery Performance	Battery-Less	No battery, powered by peer device (e.g., NFC reader)	○				
	Green Power (Solar…)	Using harvested source of energy to power or extend battery lifetime	○	○	○	○	○
	1.5v Battery	Miniature battery (< 12 mm)	○				
	3v Battery	Usual Coin cell (< 24 mm)	○	●			
	Rechargeable Battery	Battery size might depend on the form factor	○	○	●	●	●
	Wireless Battery Charging	Allows removing connectors and ensure battery charging of waterproofed product		○	●	●	○
	Battery Lifetime (Basic)	Device ID can be scanned at any time during this period	10 years	8 years	5 years	5 years	5 years
	Battery Lifetime (Standard)	Low power ID & data streaming	2 Years	2 years	2 years	2 years	2 years
	Battery Lifetime (Hybrid)	Standard + Recording sensing data from sensors in the embedded memory.		1 Year	1 Year	1 Year	1 Year
	Battery Lifetime (Connected)	System connected to the device can enable features and collect real time data and records		1 Year	1 Year	1 Year	1 Year

Syncrasy NanoSense

Authenticate & Identify

Application Examples:

- Animal identification & tracking.
- Health Monitoring (e.g., skin patches).
- Livestock Farming,
- Low-cost Nearby Asset Tracking,
- Sensor Monitoring,
- Identity Authentication.

NanoSense, available in different form factors to comply with use case constraints, enables very low cost Nearby Secure Authentication and Identification by Contact Solutions.

Uploaded user data can be personalized, leading to many possible applications in conjunction with any smartphone, and the premium security level ensures secure authentication protecting data accessibility by proximity scanning.

Add-in sensor data can be streamed within the identification message, and because of its low energy usage for broadcasting identification messages, NanoSense PCBs have a long battery life that can also be enhanced with energy harvesting solutions such as solar.

Syncrasy IdSense

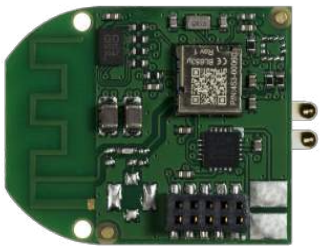
Authenticate, Identify, Sense, Monitor, Record & Locate Indoors

Application Examples:

- NanoSense Use Cases.
- Animal Social Interaction, Behavior.
- Roaming TAGs.
- Scanning Devices.
- Enhanced Livestock Farming,
- Highly Secure Identity Authentication

IdSense inherits all the Nearby Secure Authentication and Identification by Contact capabilities of the NanoSense, and adds additional functionality including:

- Built in security with embedded Secure Element for highest level of security.
- The ability to collect continuous behavior, social interaction and sensors data; and upload when connectivity is available.
- Advanced power management features for best battery lifetime.
- Indoor geolocation data insights with 2D/3D position by reference to localization infrastructure.



Application Examples:

- NanoSense Use Cases.
- IdSense Use Cases
- Student Attendance & Security
- Produce Traceability
- Pet Identification & Tracking
- "Find My" Security for high value goods
- Wide Area Livestock Management

Syncrasy GeoSense

Authenticate, Identify, Sense, Monitor, Record, Locate Indoors & Outdoors

GeoSense inherits all the Authenticate, Identify, Sense, Monitor & Record capabilities of the IdSense, and adds additional functionality including:

- Outdoor localization of identified object with the addition of Global Positioning using Global Navigation Satellite Systems (GNSS), enabling outdoor localization.
- Data collected can be recorded in local memory or accessible through optional IOT connectivity.
- Adding to Syncrasy's Advanced Power Management System for best battery lifetime, GeoSense batteries can be continuously recharged with ambient light in addition to wireless battery charging capabilities.

Application Examples:

- Personalized, Home, Business, Community & Government air quality devices.
- Supply chain spoiled food detection.
- Gas & toxic chemical leakage detection.
- Early wild-fire detection.
- Hazardous environment reporting.
- Livestock manure emissions.
- Transport passenger health monitoring.

Syncrasy AirSense

Authenticate, Identify, Sense, Monitor, Record, Locate Indoors, Outdoors, Plus IAQ & VoC + VCC AI Augmented Gas Sensing

AirSense inherits many of the functional capabilities of the GeoSense, and adds additional functionality including:

- An advanced gas sensor with Artificial Intelligence, integrated high-linearity and high-accuracy pressure, humidity and temperature sensors.
- Location based Indoor Air Quality monitoring & Alerting of IAQ index constituents.
- Gas Sensing. Augmented by AI software, trainable to detect Volatile Organic Compounds (VOCs), Volatile Sulfur Compounds (VSCs) and other gases such as carbon monoxide and hydrogen.

Syncrasy MultiSense

Authenticate, Identify, Sense, Monitor, Record, Locate Indoors & Outdoors Plus Accurate. Real-time Localization and more...

Application Examples:

In addition to the GeoSense Sense Use Cases, the following applications leverage MultiSense unique capabilities, including high accuracy, low interference, and secure data transmission, applications include:

- Precision Indoor Positioning and Tracking.
- Hands Free Access Control and Authentication.
- Contactless Transactions, including Payments.
- Precision location tracking for robotics and automated guided vehicles in manufacturing.
- Underground & surface mining safety applications.

MultiSense adds premium features to the GeoSense capabilities including:

- 3D spatial awareness with centimeter level accuracy.
- 3D Nearby tracking, compatible with latest generation of iOS & Android smartphones.
- Optional global connectivity (Cellular Networks) allows for real time data collection.
- Migration to hands-free transactions.
- Continuous sensor data collection for processing through Edge / Cloud AI Models.
- MultiSense can be used to build Smart Wearables, Anchors or combined with Gateways.

Syncrasy Anchors for Edge Data Aggregation

Syncrasy MultiSense wireless anchors serve as communication hubs for IoT devices by:

- **Centralizing Data**: from multiple IoT devices.
- **Positioning**: for precise location tracking.
- **Connectivity**: bridging to larger networks.
- **Real-time Communication**: quick data transfer for time-sensitive applications.
- **Security**: advanced security to protect data.
- **Power Management**: Extends device battery life through efficient power management.

In essence, Syncrasy MultiSense wireless anchors enable efficient data collection, accurate positioning, seamless connectivity, real-time communication, enhanced security, and effective power management for IoT networks.

Edge Data Processing

Building a Quicker, More Intelligent, Interconnected World

Billions of IoT sensors—in retail stores, on city streets, on warehouse floors, and in hospitals—are generating massive amounts of data. Tapping into faster insights from that data can mean improved services, streamlined operations, and even saved lives. But to do this, enterprises need to make decisions in real time, and that means taking their AI compute to where the data is, the network's edge.

Syncrasy harnesses NVIDIA's Jetson™ Platform to power a wide range of Edge Use Cases, helping industries transform their business.

- Real-time Processing
- Reduced Network Data
- Enhanced Privacy and Security
- Operational Reliability
- Scalability
- Energy Efficiency
- Cost-Effective
- Localized Customization
- Reduced Cloud Dependency
- Compliance with Data Sovereignty Regulations

By processing data closer to where it is generated, edge computing minimizes the delay in data transmission, allowing for immediate decision-making and faster response times. This is particularly crucial for applications requiring instant insights, such as autonomous vehicles, health and safety solutions of first responders, workers operating in hazardous environments, healthcare monitoring, and industrial automation.

Edge Artificial Intelligence (AI)

Localized, Real-time Intelligence

At the edge, IoT and mobile devices use embedded processors to collect data. Edge computing takes the power of AI directly to those devices and processes the captured data at its source, instead of in the cloud or data center. This accelerates the AI pipeline to power real-time decision-making and software-defined autonomous machines.

- Real-time facial and object recognition.
- Enhanced predictive maintenance.
- Real-time alerts for abnormal readings.
- Localized behaviour analysis.
- Autonomous navigation, obstacle avoidance, and decision-making without latency.
- Energy usage optimization.
- Real-time tracking with predictive outcomes.

Managed Cloud Resources

Syncrasy leverages AWS to deliver business-critical Infrastructure that accelerates applications on a global scale.

In today's fast-paced digital landscape, businesses need robust, scalable, and secure solutions to stay competitive and meet the demands of customers. AWS Cloud Services provides Syncrasy with the perfect foundation to deliver business-critical solutions to our customers,.

Accelerate Your Solution with Syncrasy's Managed Resources.

Syncrasy provides a fully-managed or oversight service for On-Prem, Amazon Cloud, Hybrid Cloud and Multi-cloud deployments to support applications developed with Syncrasy's Acceleration Framework. Start-ups and corporate innovation teams benefit the from cost-effective flexibility that Syncrasy provides to develop and test innovations, then dynamically adjust with high performance and high availability whilst minimizing operational overheads as solutions are rolled out.

- Deploy applications quickly and predictably.
- Scale applications on the fly.
- Seamlessly roll out new features.
- Use only the hardware resources needed.
- Deliver cloud-native applications
- Port across all environments.

Use only cutting-edge technology to ensure performance, reliability, and innovation.

AWS EC2 (Elastic Compute Cloud) – Secure, and resizable compute capacity for virtually any workload, supported by Amazon CloudWatch to overcome the difficulties of managing multiple environments.

AWS ECS (Elastic Container Service) - Manages and orchestrates Kubernetes clusters, helping to more efficiently deploy, manage, and scale containerized applications.

Syncrasy's PostgreSQL on AWS Aurora Serverless v2 - Underpinning Syncrasy's PostgreSQL based Multi-tenant, Multi-lingual Applications, AWS Aurora Serverless v2 offers a highly scalable and serverless database solution that automatically adjusts capacity to match application demand. This ensures optimal performance and cost-efficiency, allowing businesses to focus on innovation without worrying about database management.

Amazon S3 Storage – An industry-leading solution for scalability, data availability, security, and performance, storing and protecting any amount of data for a range of use cases, such as data lakes, websites, cloud-native applications, backups, archive, machine learning, and analytics.

Building Value from Data

In addition to making real-time edge decisions on data generated by the billions of IoT sensors, in retail stores, on city streets, on warehouse floors, and in hospitals, users need a broader view that provides the visual and analytical feedback necessary to make sound operational and strategic decisions.

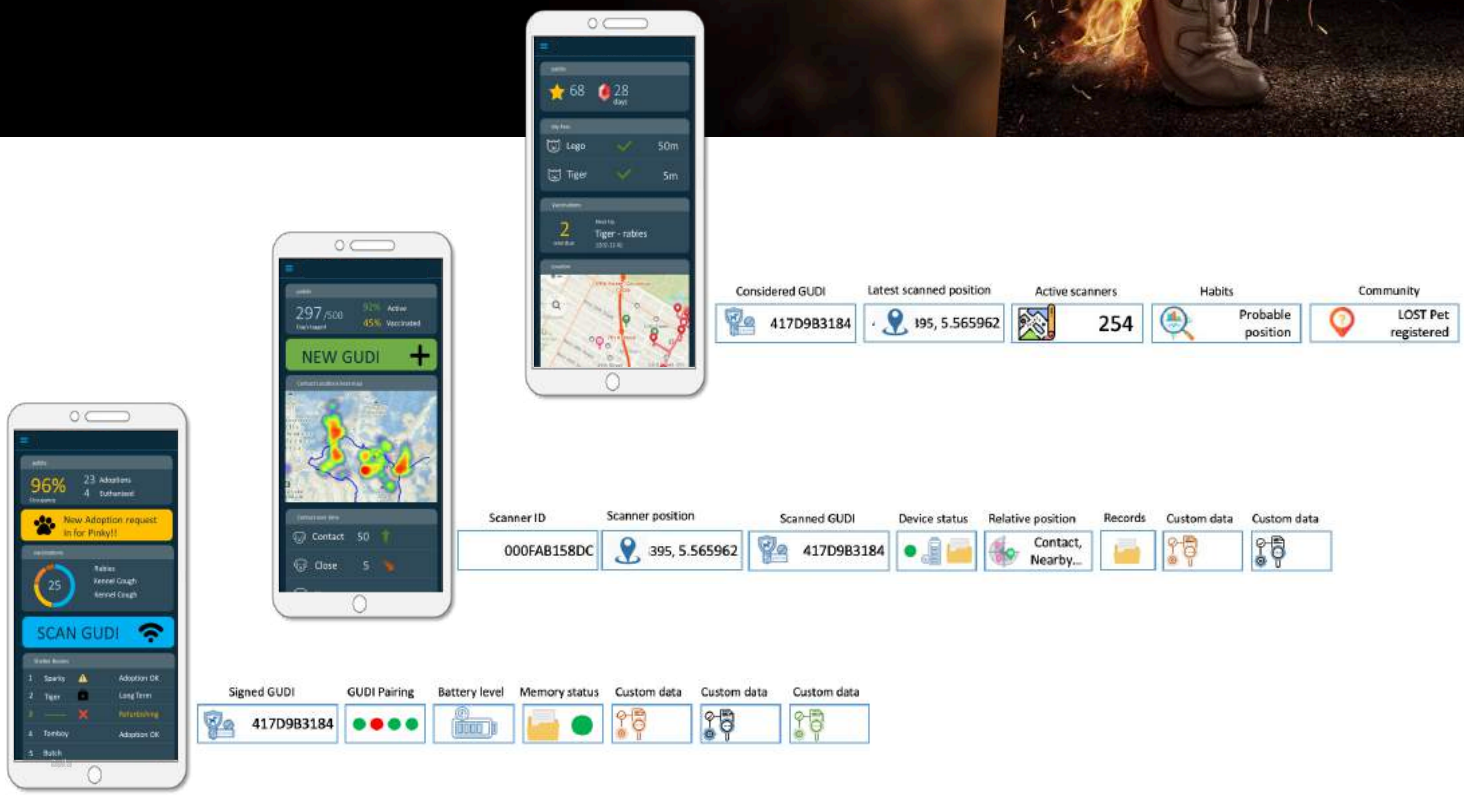
To do this, enterprises need the use the right tools and composable Mobile & Web Application Elements to the cloud resources needed to process the massive amounts of data generated.

Syncrasy Acceleration Tools

Transform data into insights - faster than ever

Designed to fast-track the cost-effective delivery and management of IoT data, and the applications that create value.

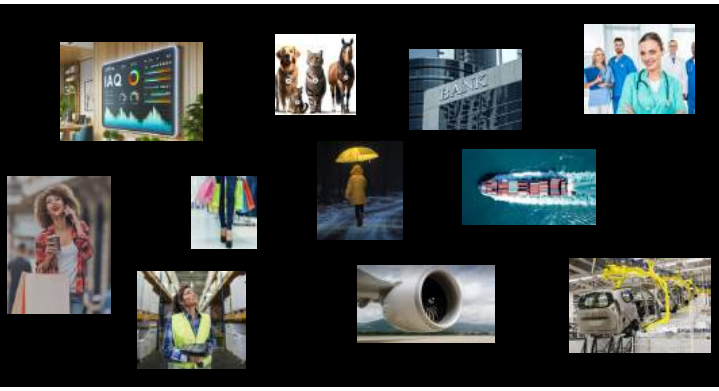
- Pluggable Connectors for Any Data
- Modern Data Pipeline Engineering
- Multitenant / Multilingual Database Architecture
- Self-service Analytics
- Self-Service Insights from Different Perspectives
- Composable Mobile & Web Application Elements

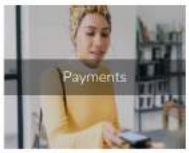


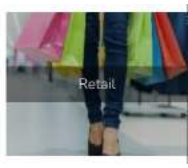
SYNCRASY

Whatever you want to do

Syncrasy's digital acceleration services provide the foundation for success.







Your Ideas - Your Brand - Your IP

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https://www.syncrasy.io/contact/

And we'll reach out to answer all your questions