GenRocket

The Internet of Medical Things (IoMT): Software and Systems Testing for Devices That Must Not Fail

According to research by Frost and Sullivan, nearly 60% of all healthcare providers have adopted some aspect of the Internet of Medical Things (IoMT). Over 20 billion devices are expected to be in the marketplace over the next 5 – 10 years with more on the way.

Healthcare Professionals

External Applications (i.e. Clinical DSS)

Cloud services for data aggregation, processing, visualization, knowledge extraction and dissemination.

Smartphone Gateway

File Server

Healthcare Professionals

IoMT Devices

IoMT Devices

Heterogeneous Healthcare Repositories

Patient

Patient
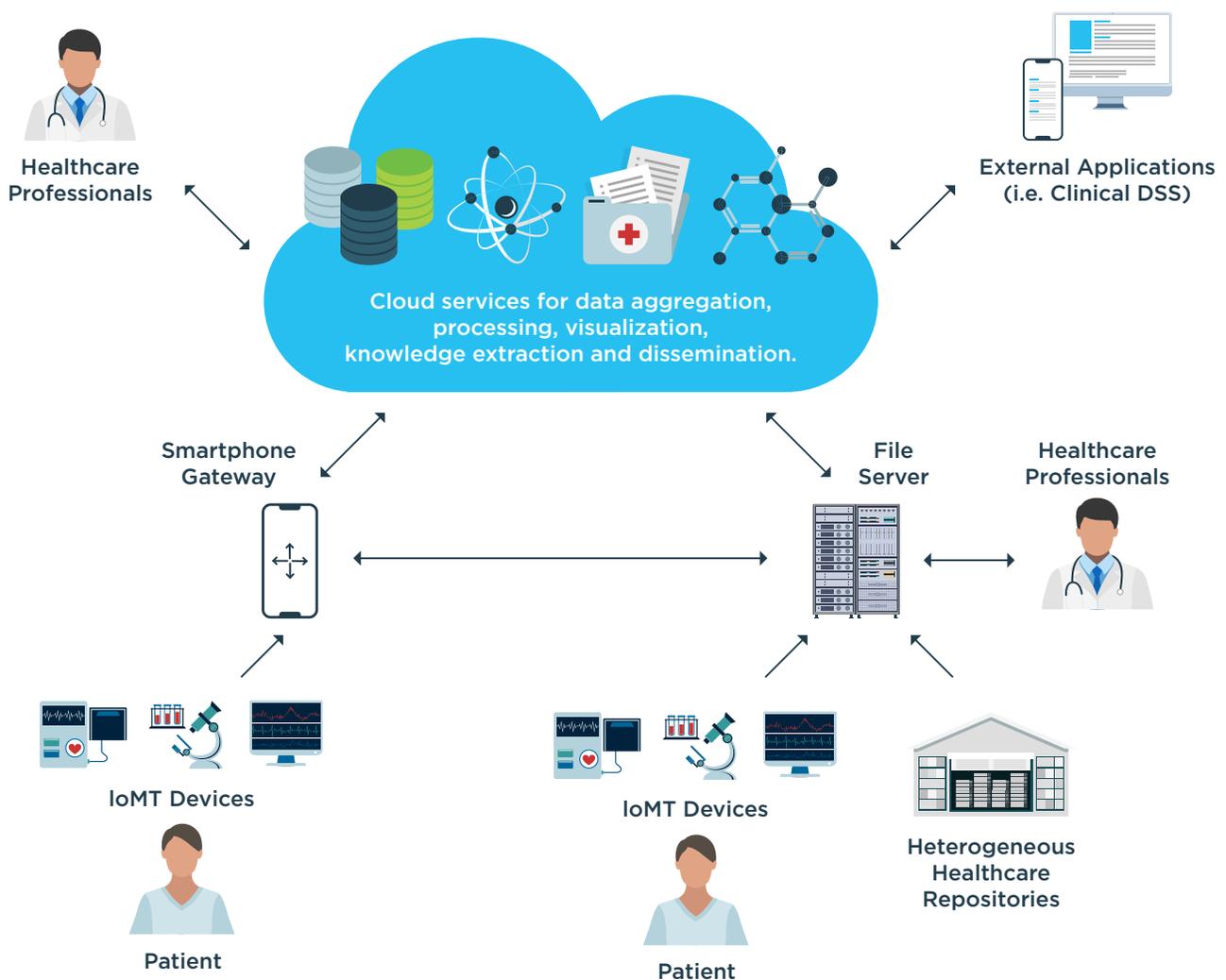
These devices run the gamut from the ubiquitous 'smart' watches that track the user's heart rate to insulin pumps which keep a diabetic child's blood glucose levels stable, and her healthcare provider updated on her vital statistics.

And, while it's nothing more than an inconvenience if a health monitoring watch fails, if an implanted insulin meter or pacemaker fails – it can mean the difference between life or death.

Such devices and systems must be thoroughly tested to ensure that every possible reason for failure is rooted out before the device is used on a vulnerable patient. But developers and testers require an exceptional volume, variety, and format of test data to ensure every combination and permutation is adequately tested before a device or related software enters the market.

Meeting the IoMT Test Data Challenge

IoMT applications operate in a highly distributed and layered architecture where data is ingested, transformed into a standard format, and processed in real-time by a variety of systems. IoMT device data is collected from a vast network of sensors, actuators, wearables, RFID, and other connected devices. Data is securely transmitted from the device level to the cloud via TCP/IP socket communication or messaging queues like MQTT, AMQP, CoAP, DDS, Kafka, and HTTP / HTTPS over Rest API.

Like devices in the broader IoT arena, many IoMT devices collect time-series data, a series of data points collected at regular intervals and indexed in time order. For example, the ability to detect an irregular heartbeat relies on recognizing patterns in time series data.

The use cases for testing IoMT applications are both complex and limitless. Data can be structured, unstructured, or semi-structured. The volume and variety of data required to test both real-time and batch processing systems is enormous. It must be realistic, clinically accurate and complete. And, of course, the need for privacy when it comes to protecting patient health information must be paramount.

GenRocket Synthetic Test Data Solution

Provisioning quality data for testing IoMT software is complicated, but GenRocket's Test Data Automation platform is up to the task. GenRocket synthetic test data ensures that developers and quality assurance teams always have access to data that:

- Meets healthcare industry standards
- Provides 100% HIPAA compliance
- Includes every combination and permutation required
- Offers edge and negative-case test data
- Provides an unlimited volume of data for testing
- Can support any structured or unstructured data format
- Is generated on-demand via distributed self-service portals

The benefits of using GenRocket synthetic test data for IoMT testing projects includes:

- Rapid production of clinically accurate data sets in any volume required
- Lightning-fast data produced in the volume, variety, and format needed
- Ability to create nearly unlimited data variety, including negative and edge-case data
- True testing depth, to exercise every part of any healthcare data processing system.

Ready to get started?

Learn more about **GenRocket's Synthetic Data Solutions for Healthcare** or to see **Synthetic Test Data Automation in action**

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