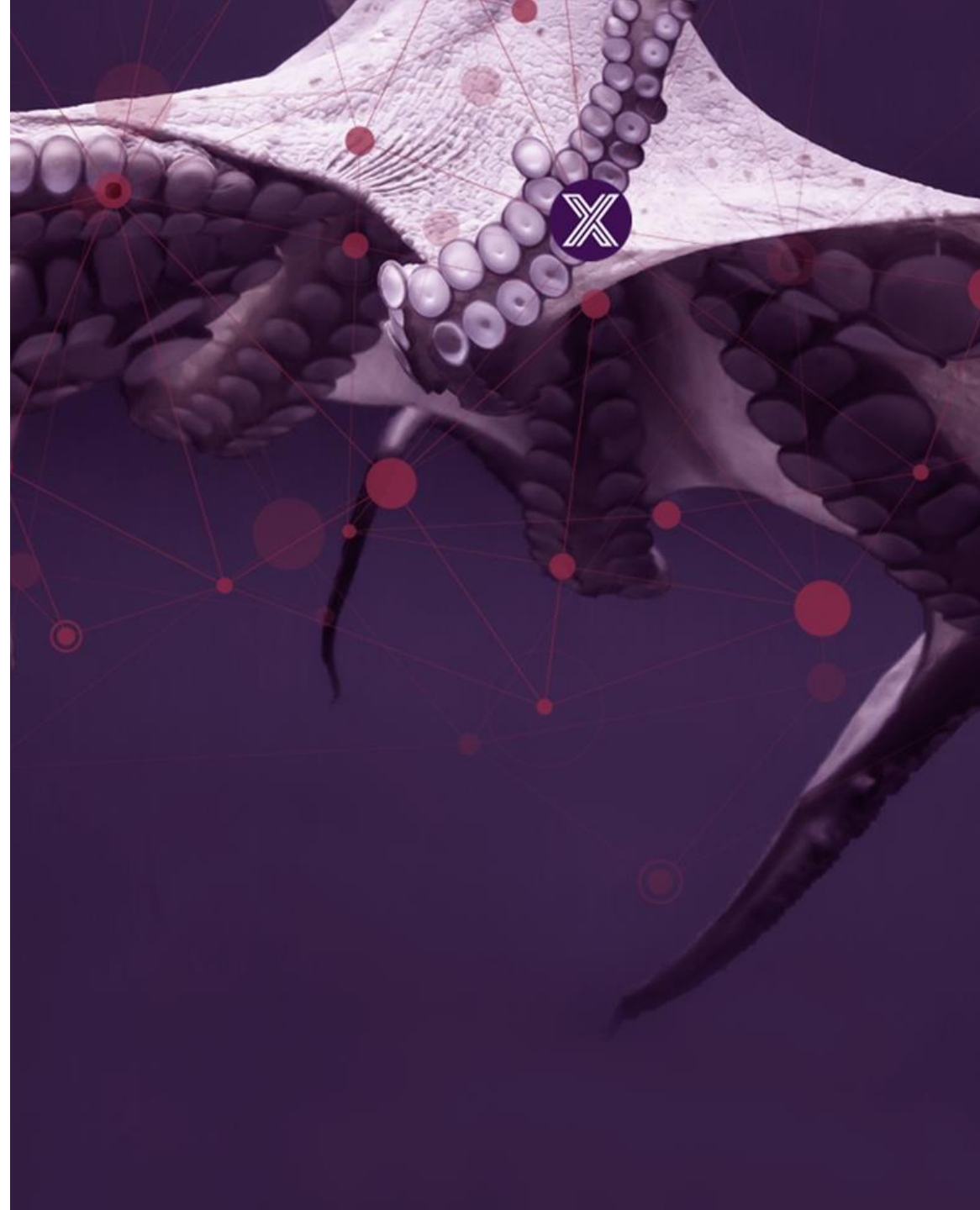# Commerce Project Usability Discussion

November 6th, 2019

# Hiring the right tool for the job

Pre-TSC Survey

- Intent was to see how similar (or divergent) thinking is across our community

- 21 respondents from our community (mailing lists, TSC and slack outreach)
- Not bad for a first survey
- Some questions have been recognized as being poorly written
- But: we have some common thinking as a result

Rank the priority of EdgeX Value Propositions
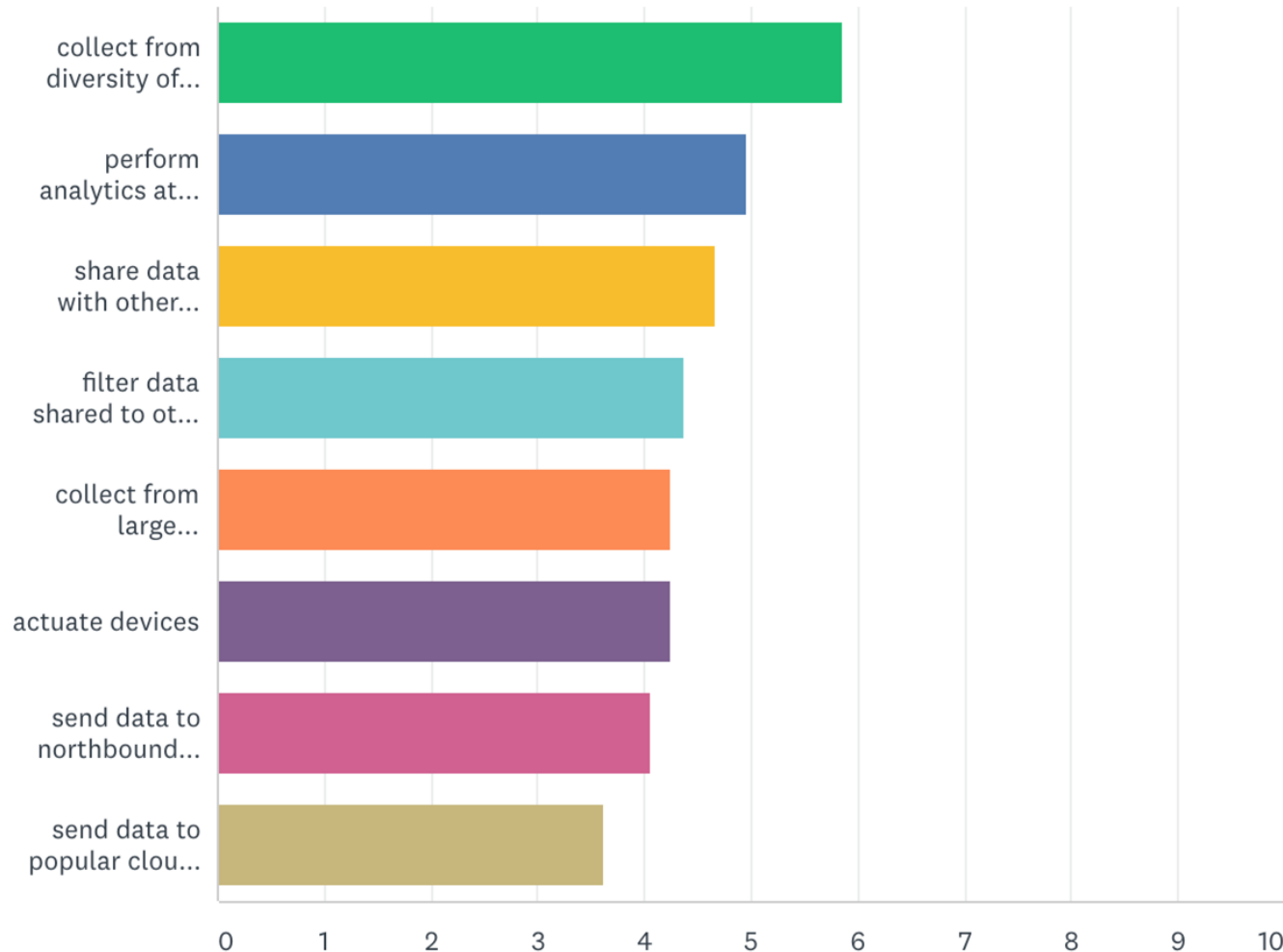
- Collect data from diversity of devices
- Edge analytics
- Data sharing across apps
- Filtering data shared…

- Least: send data to popular cloud service providers

Does the website landing page convey your understanding of the EdgeX purpose and value propositions?
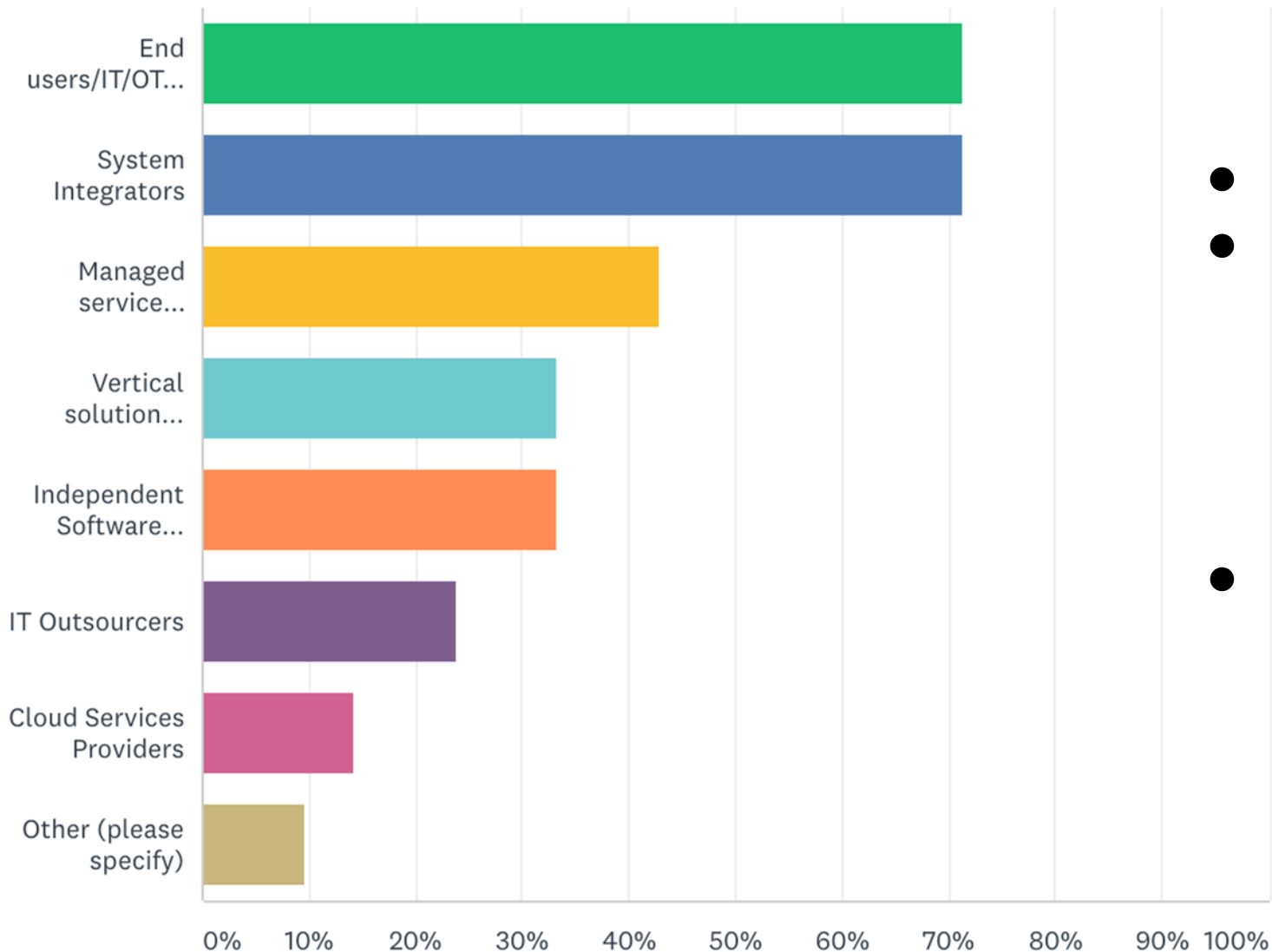
Answered: 19   Skipped: 2
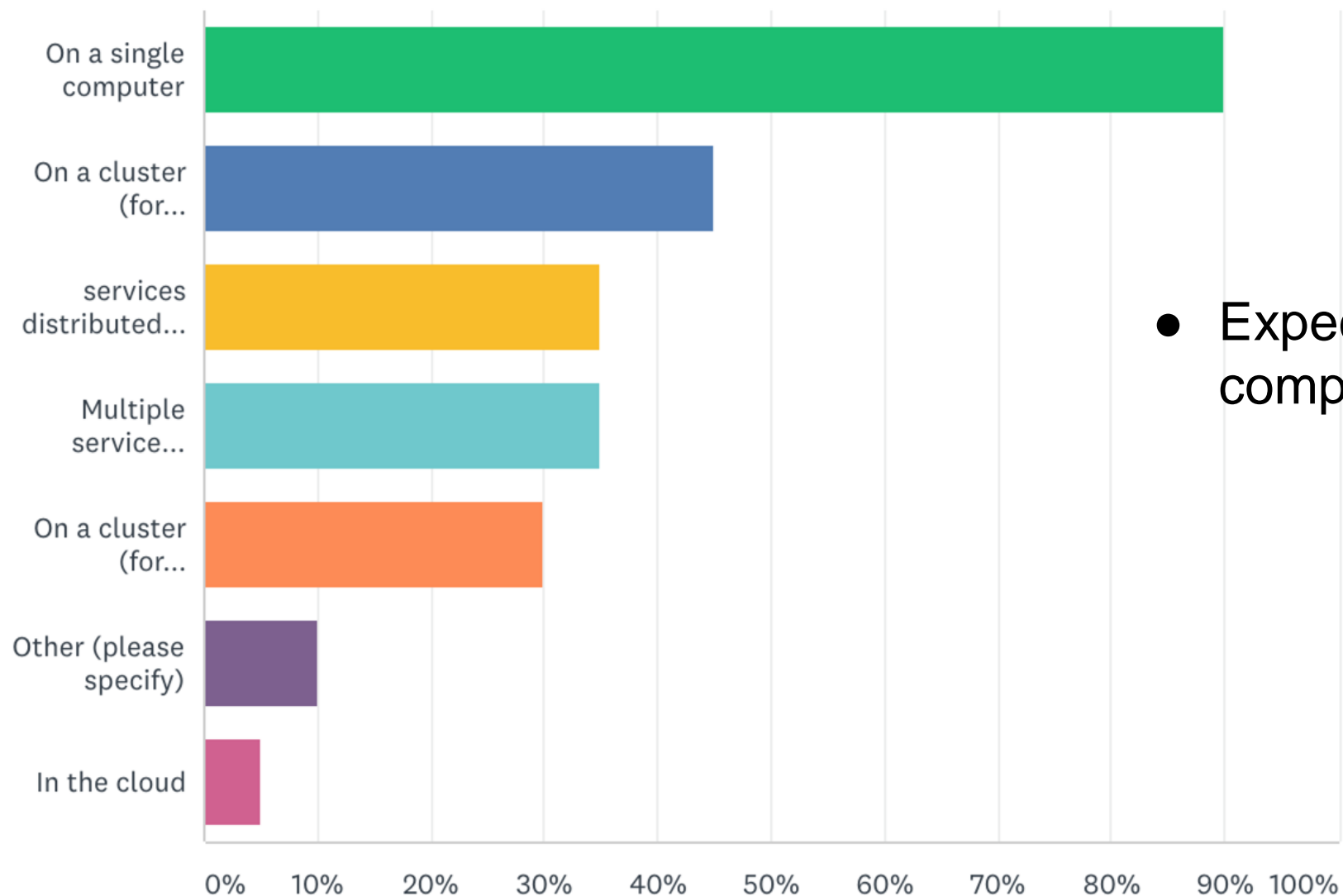
Who will maintain EdgeX installations?
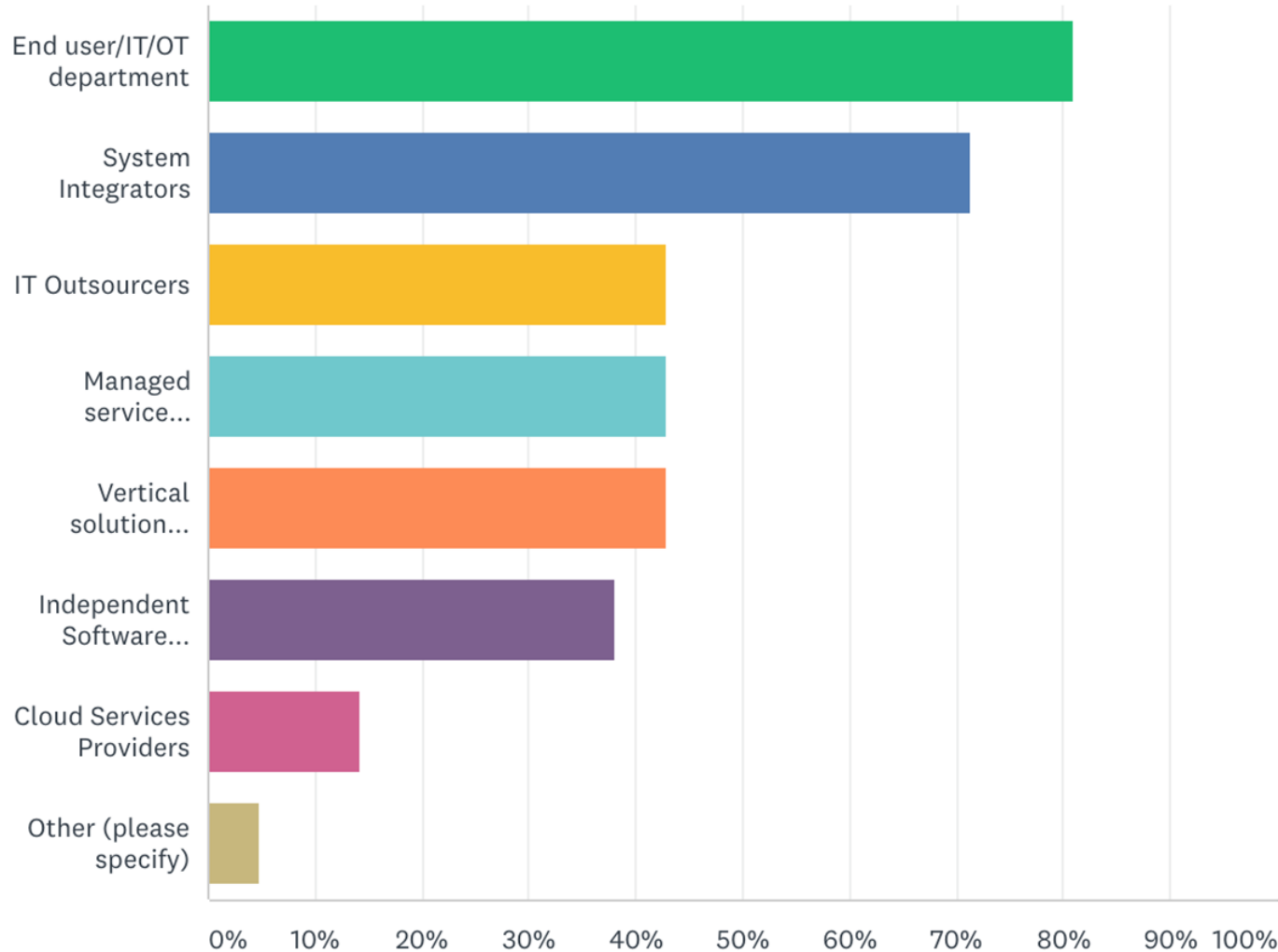
- End User / IT
- System Integrators

- Cloud Service Providers at the bottom, but contrary to Asia market trends

Who will make purchase decision to use EdgeX?

- End User / IT
- System Integrators

- Cloud Service Providers at the bottom, but contrary to Asia market trends
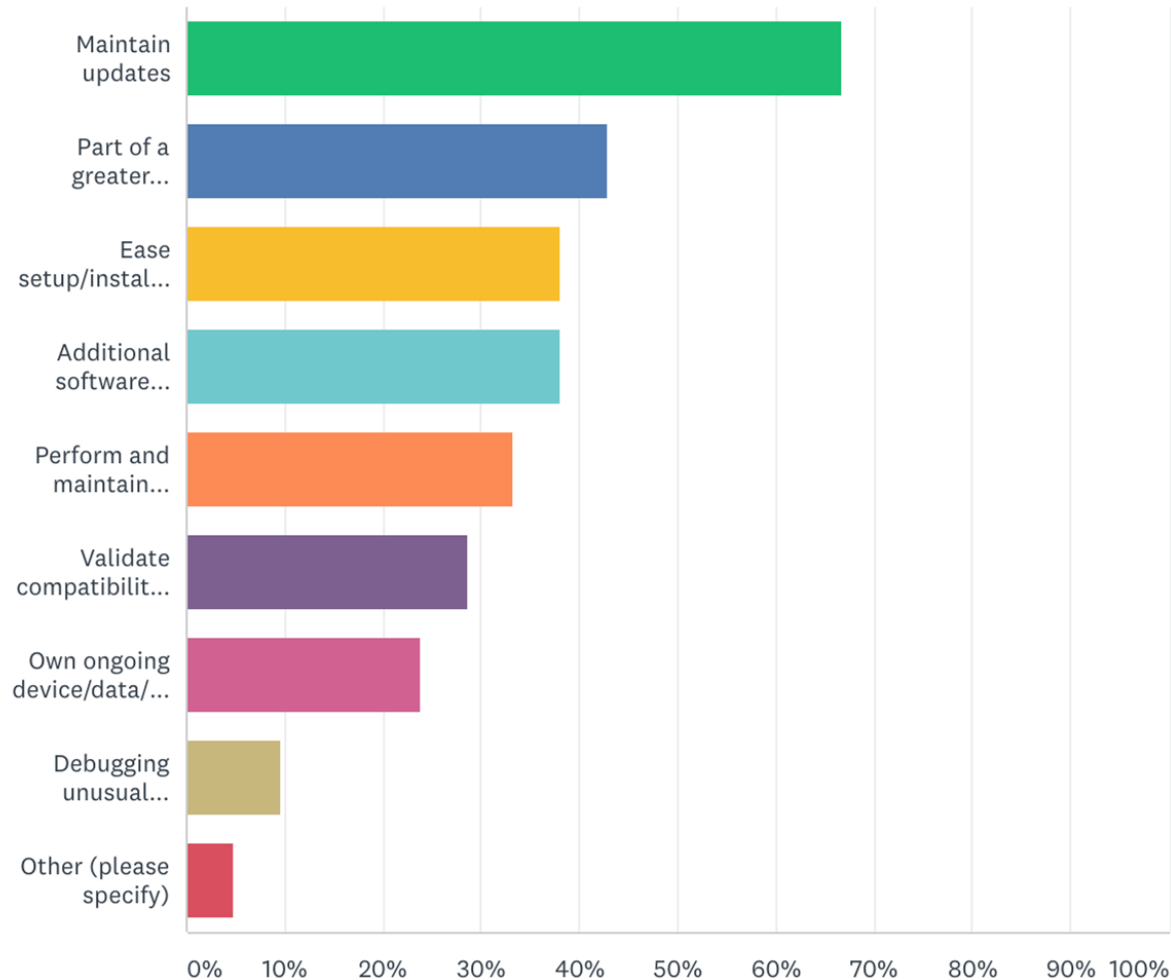
How will EdgeX core services be installed?

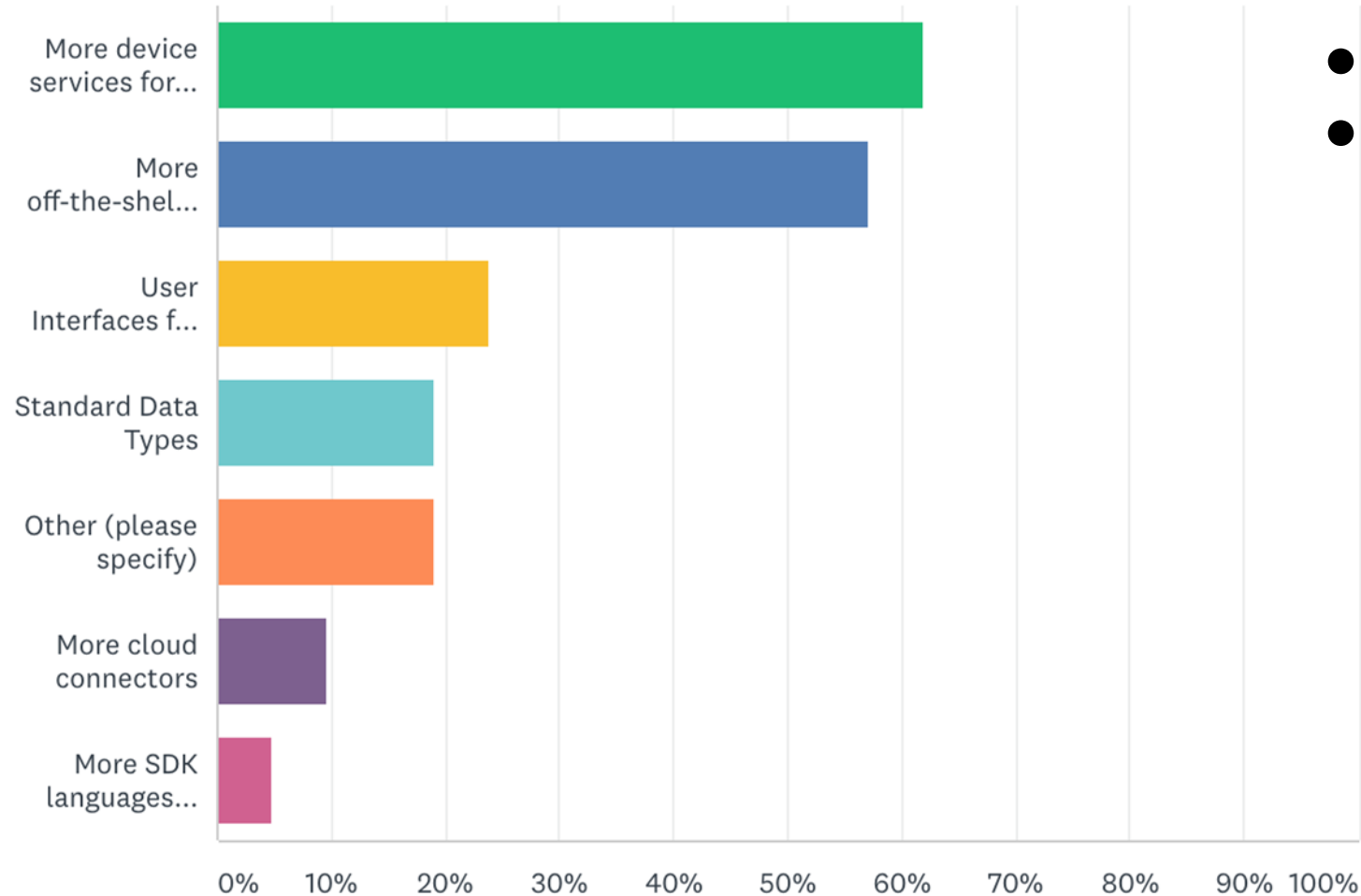- Expecting to land on a single computer

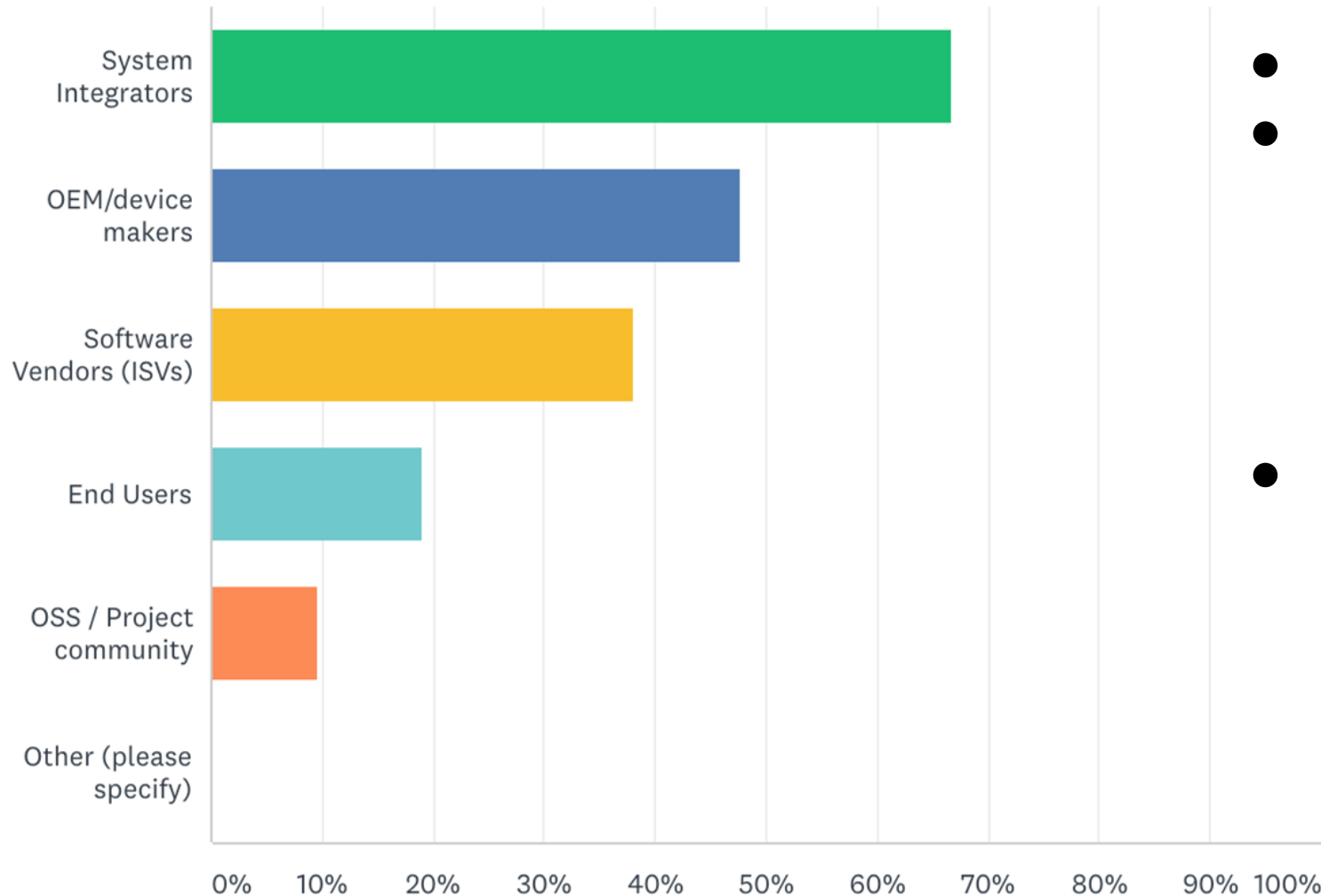# Why would a customer want to use a vendor to support EdgeX?

- This was a surprise
- Update maintenance topped it
- Bottom: debugging, ongoing device/data configurations, compatibility

What areas of investment are most required to improve end user adoption?
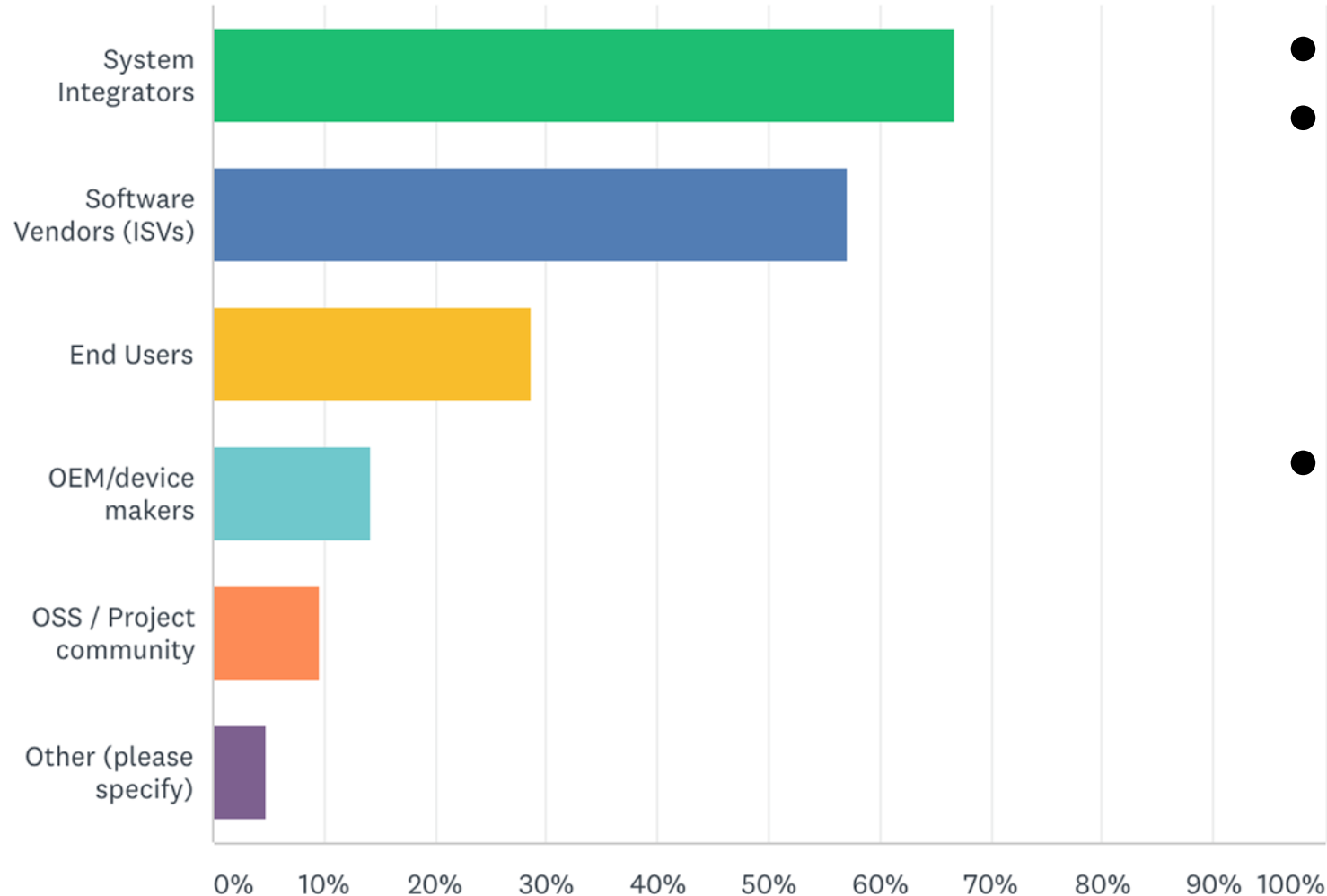

- More: Device Services
- More: App Services

What category of user will author the most device services?

- System Integrators
- OEM/Device Makers

- Least: OSS / Project Community

What category of user will author the most application services?

- System Integrators
- Software Vendors

- Least: OSS / Project Community at the bottom

Select all that are true

ANSWER CHOICES	RESPONSES	
Core Data events should be payload data *format* agnostic (JSON, XML, CBOR, etc)	82.35%	14
Core Data events should be payload data structure agnostic	41.18%	7
Data ingestion should allow data to retain its original formats and structures	35.29%	6
Data ingestion should force incoming data into primitive reading types	29.41%	5
EdgeX should own/enforce data structure standards for various markets (retail, industrial, etc)	29.41%	5

- Top: Core data events should be payload data *format* agnostic
- Least: enforce data structure/standards; force data into primitive reading types

So what did we learn?

1. We expect **End Users** and **System Integrators** to have huge influence in decision making and solution contribution, yet we don't talk to many
   a. Worse, I'm not sure why an SI would adopt our platform today
2. We expect people to author **Device Services** and **App Services**
   a. Need to make this as obvious and easy as possible
3. We need more ready to adopt App and Device Services
4. Our website is insufficient for value prop communication

What is our competition?

- MQTT/Home grown (Target, Intel, Chick-fil-A)
- Cloud Service Provider Edge Platforms (AWS GG, MSFT Azure IOT Edge, etc)
- A lot of large and small solution vendors
  - Telit, WebNMS, Thingsee, ...
- OSS
  - FLEDGE, Kaa, macchina

Deciding between: "Someone else should do this for me" or "my home grown solution is good enough" or "this is the best platform I could imagine using"
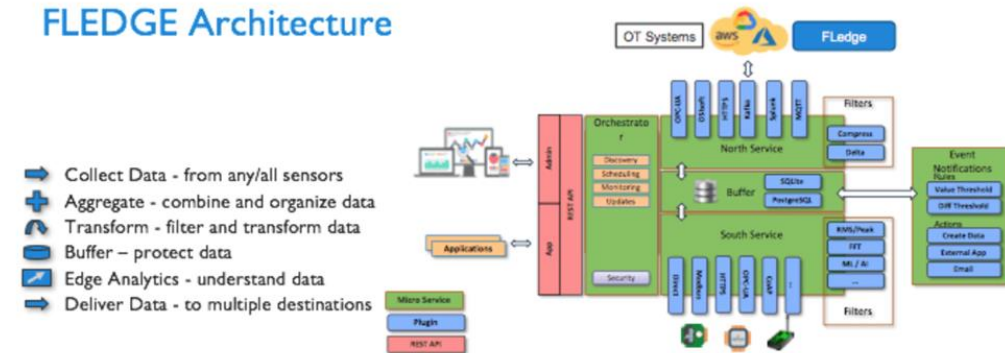
FLEDGE
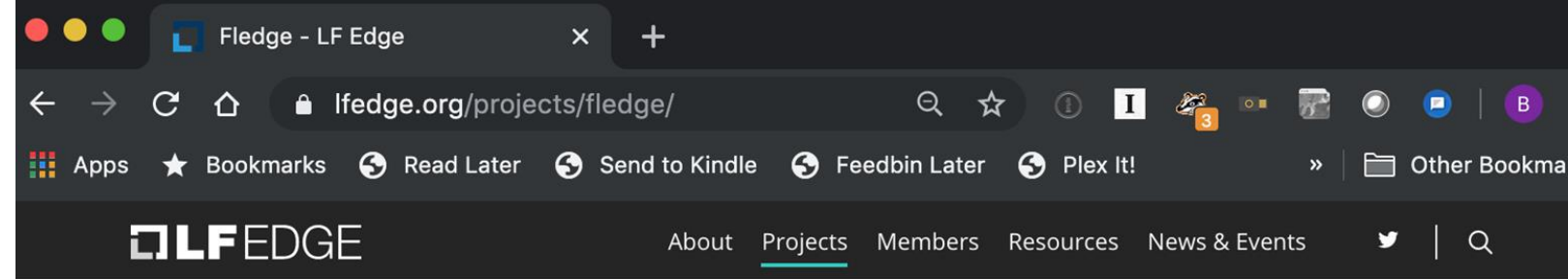
Fledge is an open source framework and community for the industrial edge focused on critical operations, predictive maintenance, situational awareness and safety. Fledge is architected to integrate Industrial Internet of Things (IIoT), sensors and modern machines with the cloud and existing "brown field" systems like historians, DCS (Distributed Control Systems), PLC (Program Logic Controllers) and SCADA (Supervisory Control and Data Acquisition). All sharing a common set of administration and application APIs.

Fledge developers and operators no longer face complexity and fragmentation issues when building their IIoT applications as they gather and process more sensor data to automate and transform business. Fledge's modern pluggable architecture eliminates the data silos often found in plants, factories and mines. By using a consistent set of RESTful APIs to develop, manage and secure IIoT applications, Fledge creates a unified solution.

FLEDGE Architecture

➡️ Collect Data - from any/all sensors
➕ Aggregate - combine and organize data
〰️ Transform - filter and transform data
🔲 Buffer – protect data
📈 Edge Analytics - understand data
➡️ Deliver Data - to multiple destinations

For Industrial Equipment Vendors – Build Your Next Generation Machines

- That learn
- Maintain themselves
- Integrate with your new cloud services
- Integrate with your customer's existing and emerging data systems

For Industrial System Integrators – A Framework for All Your IIoT Business

- Accelerate deployments
- More/tighter integrations
- Own and re-use your value-add code

By contrast, here's our "above the fold"

Delight (from n8n.io)
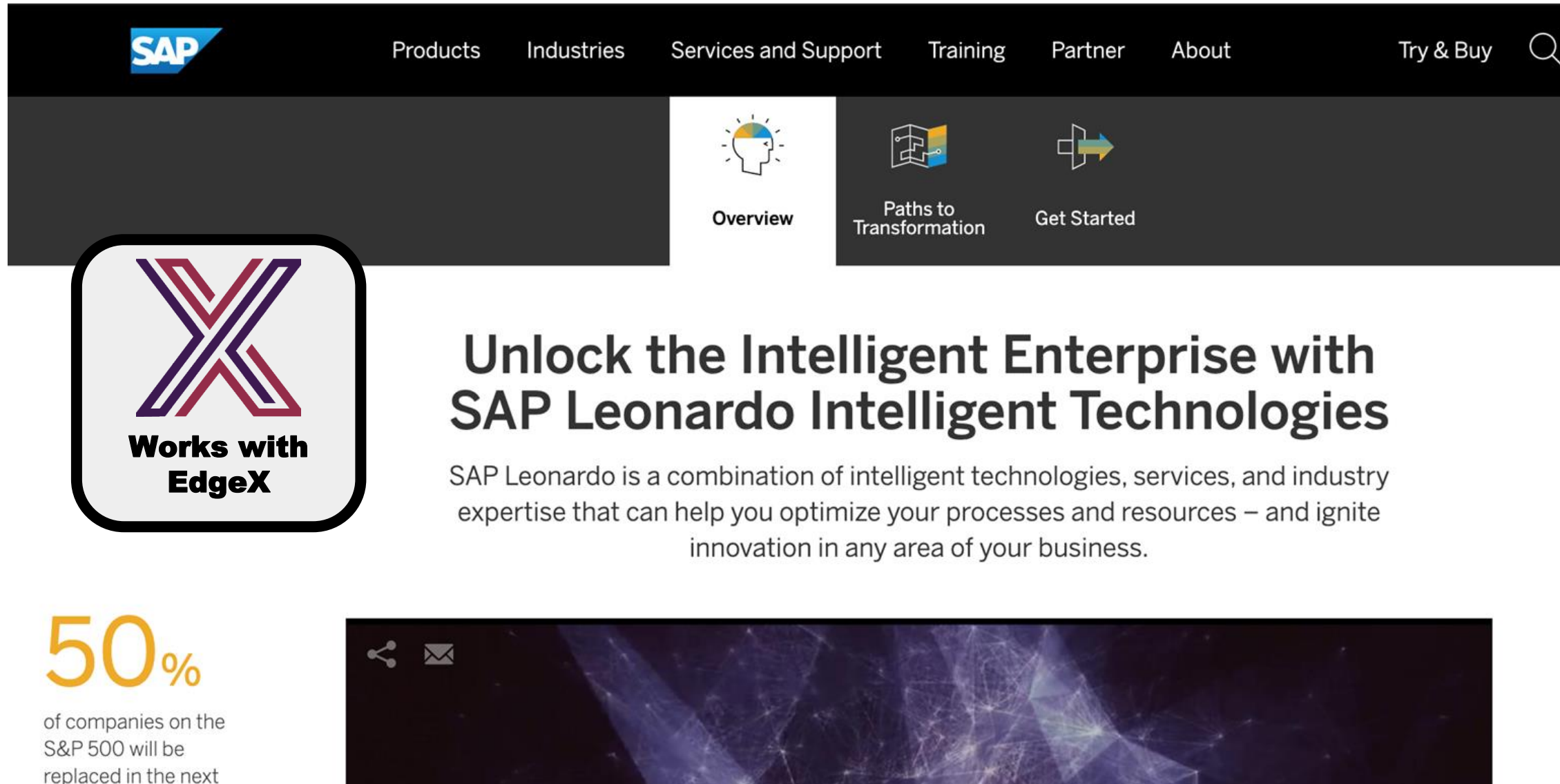
App Store / Compatibility (Azure IOT Edge)

Get it now ♡   Get it now ♡   Get it now ♡   Get it now ♡

Sentiment Analysis Container – Azure Cognitive Services

By Microsoft

Analyze text on the edge, on premises and in the cloud using container support.

Get it now ♡

Unsupervised Anomaly Detection Module

By BRFRame Inc

Unsupervised Anomaly Detection IoT Edge Module (with Python)

Get it now ♡

AI Vision Dev Kit Get Started Module

By Microsoft

Deploy several sample AI models or even your own models with this get started module.

Get it now ♡

AiKaan IoT Edge Monitoring & Control

By AiKaan Labs

AiKaan IoT Edge Application and Device Monitoring.

Get it now ♡

Nebulus UDP Receiver

By Codit

eceiver that will be activated on startup and listens on the configured UDP socket for UDP

Azure Security Center for IoT

By Microsoft

Azure Security Center module collect, process and analyze security data from your IoT Edge

NVIDIA DeepStream SDK

By NVIDIA Corporation

IoT container for NVIDIA DeepStream SDK for NVIDIA Jetson and T4 GPUs

RedisEdge

By Redis Labs

RedisEdge is Redis packaged for IoT/IIoT edge computing solutions

What I want to see: Marketable Compatibility

Some Recommendations for Conversation

1. Clarify our role - what is the job and what are the tools?
2. Provide front and center value prop on site landing page
3. Need to convey "easy" (and back it up with evidence)
4. Need to be ready to promote FOMO
5. Community, Community, Community
6. Have a prominent, consolidated modules "marketplace"
   a. Emulate Azure page - logos and short descriptions link to provider
   b. OSS plugins link to EdgeX project documentation
   c. Commercial offerings link to vendor product pages (e.g. IOTech for OPCUA pub/sub)
   d. Recipes? Perhaps link to solution provider or getting started guides
7. Need easy path for vendors to understand how to contribute to EdgeX and grow their business through us and the marketplace

Three basic roles of EdgeX

1. Collect and ingest data
2. Control and configure devices
3. Analyze, export and share data

What is expected and assumed by our project maturity:

A. It is secure, it is manageable, it is scalable
B. There are a lot of ready to go plugins and integrations
C. It is a modern architecture and easy to extend

We win with 1-3, we lose without A-C

EdgeX Ethos

EdgeX is the preferred platform to collect, translate and share data from devices and applications at the edge. It is preferred due to the sheer number of supported devices, compatible applications and velocity of adoption. End users and System Integrators want each of their vendors to be EdgeX compatible so they have the confidence that they can quickly innovate around new use cases. They want to use EdgeX because:

- Broad, consistent access to data and devices
- Minimal incurred engineering and time costs to deploy
- Large community of compatible vendors reduce the cost of integration
- Defacto data standards ease interoperability of data

EdgeX Ethos - Components

Application Services:
- Provide no-code ingredient actions for popular and simple filtering, transforms and data export;
- Provide low-code/no-code lego blocks for more complex data transforms and simple analytics;
- Provide easy to use docs, SDKs and APIs for power users to extend analytic models and complex integrations

Device Services:
- EdgeX is the neutral platform to actuate and control devices deployed at the edge
- EdgeX is the easiest solution to collect data from devices and applications in top industrial, smart building and network protocols
- EdgeX is the preferred platform to build a device connector

Core Services:
- The average end user should not be aware of Core Services, nor to have to make complex deploy time decisions

All EdgeX Services:
- Provide consistent logging, telemetry, instance naming, service discovery and config handling across all services and SDKs

Thank you

Come join us at the Vertical Solutions Working Group and the Commerce Project

Maslow's Hierarchy of Middleware Needs

Maslow's hierarchy of needs describes the increasing quality of needs from basic air, water, food and shelter up to safety, love and belonging, esteem and self actualization.

Likewise, in a middleware project such as EdgeX, immediacy of value starts with basic connectivity, increases to protocol, envelope, formats, structures and ultimately schema. As each need is resolved, overall efficiency, velocity and value improves the solution integration progress.

Investment and re-use at any level exposes the challenges and gaps at the levels above. "Solve for protocols, and you'll expose limitations in the envelope and data format considerations"

Schema
- GS1, Schema.org, OMG Retail
- Metadata about data structures can make it easier and faster for systems to consume and ingest data from new data sources

Data Structure
- Core Data Readings, Vendor data, primitives,
- Flexible handling of diverse data structures makes it easier to onboard new services and data sources/sinks

Envelope
- Core Data Event, CloudEvent
- Standards and common formats make it easier to inspect, handle, and route data

Payload Format
- JSON, CBOR, XML
- Tools to facilitate conversion and transformation of data formats reduces custom coding

Protocol
- MQTT, REST, webhooks, MODBUS, etc
- Increased selections accelerates integration connectivity

Connectivity
- Network, Radio, etc
- Increases applicability to market