Open Energy Solutions Inc.

Open Distributed Systems Platform (OpenDSP)

Wade Malcolm

OpenDSP: Built on OpenFMB

- OpenDSP (Open Distributed Systems Platform – working name) is a collaborative effort led by utilities to develop a real-time operational technology (OT) platform
- OpenDSP characteristics:
  - Can manage the operation of both utility and customer assets allowing for new service and revenue opportunities
  - Leveraging distributed intelligence (DI) and grid edge interoperability facilitating interaction with all vendor equipment and software
  - Delivered as an Open Source core with a mix of proprietary and open extensions
  - Built upon other open source applications
- Creating an "Energy Operating System"
- Broad market support to share cost and risk

May 2019 T&D World

Avista Utilities and Duke Energy partner to create an energy operating system available to the entire utility industry.

By **Curtis Kirkeby**, Avista Utilities Inc., and **Stuart Laval**, Duke Energy Corp.

The electric utility industry is increasingly challenged by external drivers such as regulatory obligations and mandates as well as competitors who want to disintermediate utility customers from their current energy provider. Distribution system operator (DSO) models and aggregator participation are challenging the status quo for utility business models.

The utility industry must navigate these changes and help to shape the new business models while still providing safe, reliable and affordable energy to customers. At the same time, customer participation should be empowered, so there is reasonable influence on the type of resource consumed, the location of the resource, and who provides the energy. This is extremely challenging to support with a typical utility's portfolio of operating technologies.

Duke Energy Mount Holly, NC Microgrid Site.

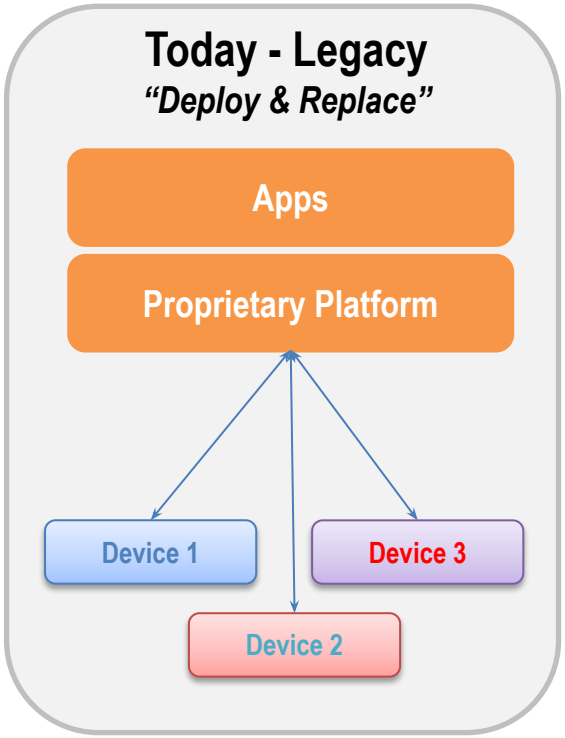
May 2019 | T&D World 49

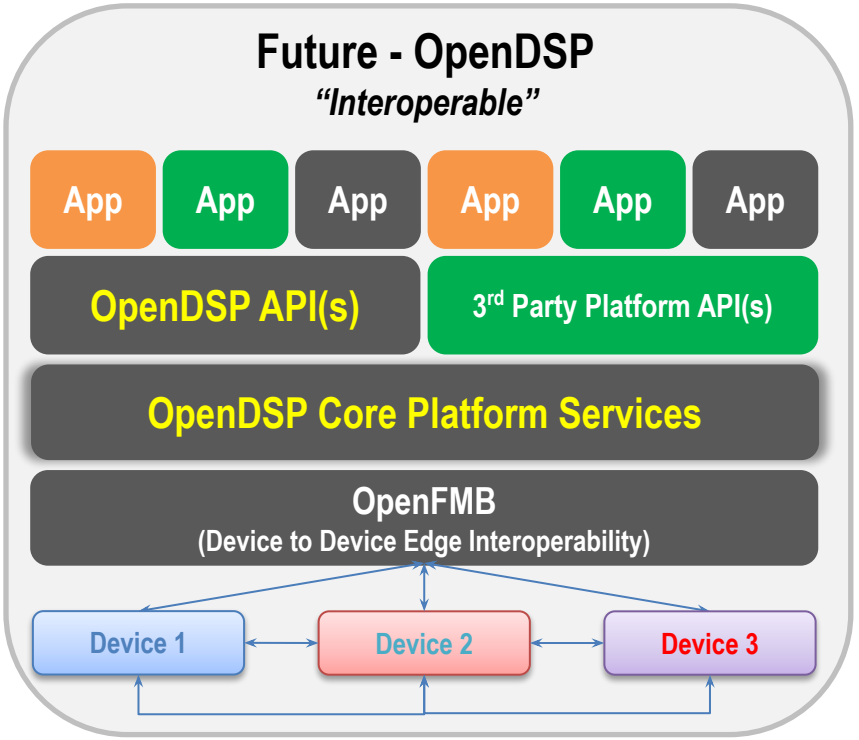
Also see: https://utilityanalytics.com/2019/06/utilities-collaborate-on-open-source-software/

Legacy vs OpenDSP Platforms

Legend

Vendor-specific | 3rd Party | Open-Source





"Analogies"

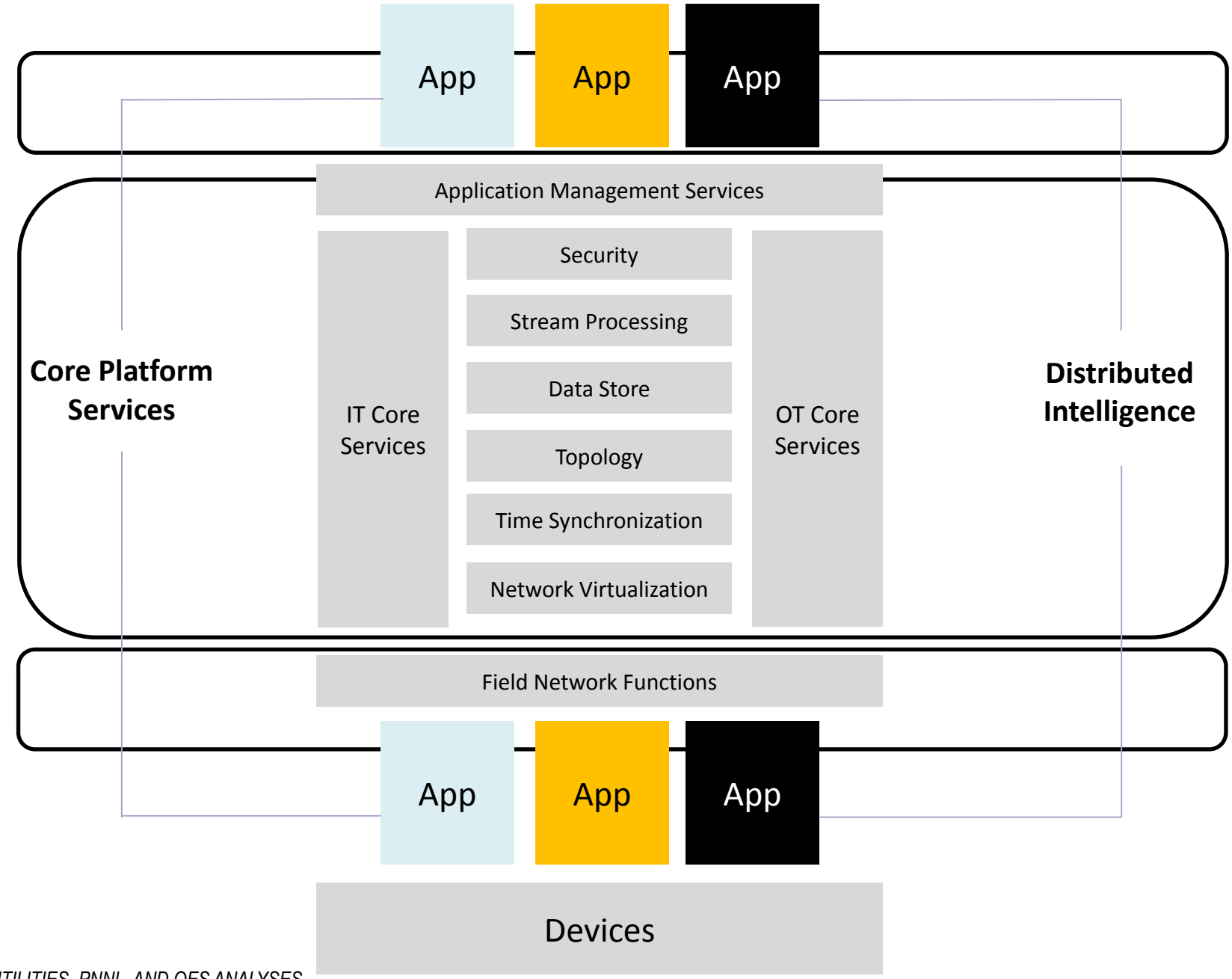
redhat.
Google Play
Linux
android
USB
Enabling Connections™
API

Today's platforms and applications are typically proprietary and cannot talk to each other easily

The future is interoperable and open-source leading to greater value for all participants

SOURCES: DUKE ENERGY AND OES ANALYSES

OpenDSP General Logical Architecture



SOURCES: AVISTA UTILITIES, PNNL, AND OES ANALYSES

Value Proposition and Next Steps

VALUE PROPOSITION

Deployment & Maintenance

- Combine Centralized and Distributed Capability as Desired
- Augment/Enhance Existing Systems
- Shorter Commissioning Times
- Automated Device Discovery
- Reduced Long Term Maintenance

Operations

- Autonomous Grid Edge Execution
- Coordinated Grid Edge Execution
- Interoperability with Disparate Technologies and Vendors
- Distributed Topology
- Context Based Solutions
- Improved Performance – Faster Response Time
- Manage the System Closer to Limits – Maximize Utilization

NEXT STEPS FOR OpenDSP

Focus Group Kickoffs

- Operational Technology Focus
  - Deployment
  - Commissioning
  - Testing
  - Operations
  - Appropriate Documentation
- Focus Group to be Initial Adopters

Focus Group Expectations

- Broaden the Platform Vision
- Establish a Feedback Mechanism
- Identify and Facilitate Additional Installations/Testing

Initial Prototype Release to be Executable Code

Utilities send an Email to info@openenergysolutionsinc.com to be invited to future Focus Group meetings

A Call to Action: Help Shape OpenFMB and OpenDSP

- Utilities
  - OpenFMB:
    - Consider participation in the UCA International Users Group (UCAIug) OpenFMB Users Group
    - Encourage your vendors and consultants to participate in the UCA International Users Group (UCAIug) OpenFMB Users Group
  - OpenDSP:
    - Participate in the upcoming OpenDSP Focus Group Meetings
    - Email info@openenergysolutionsinc.com for meeting details