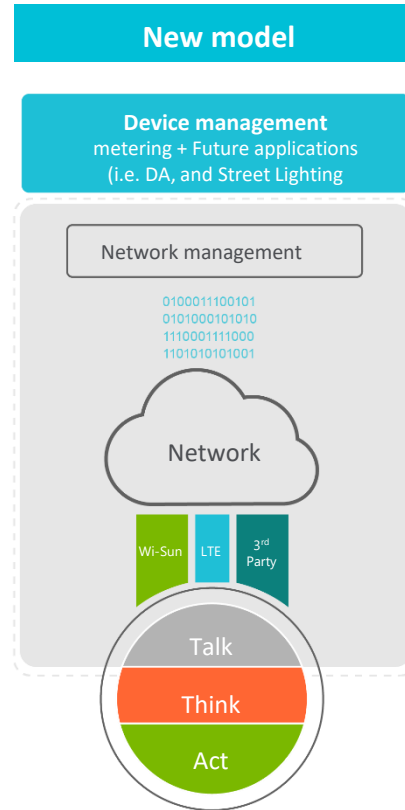
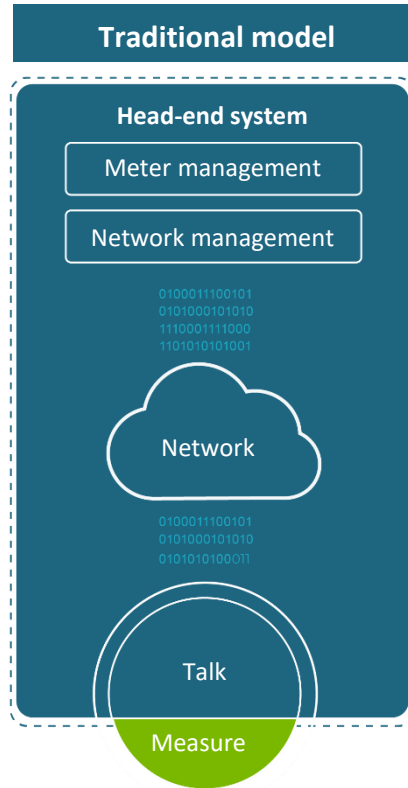




Technology & Innovation

Jyoti Mahurkar-Thombre, EVP R&D, CTO

Shifting from smart metering to grid edge intelligence



Benefits of the new model

- Intelligence layer across many networks
- Application support on third party sensors
- Ability to leverage existing networks

Gridstream Connect

- Gridstream Connect is Landis+Gyr's **technology platform**, enabling **intelligent connectivity** across the Utilities service territory
- Designed to **evolve with the utility** as their business and technology needs change, i.e. to address the unique needs that come with **managing the grid**
- Allow augmented capabilities extending the utility investment into **smart infrastructure** and **increasing benefit to consumers**.



1 Intelligent endpoints

- Advanced metrology
- Increase edge Intelligence
- 3rd party sensors & apps
- Integration with home energy management

2 Flexible communications

- Multi-protocol communications
- Network management
- Multi-networks: Wi-SUN, NB-IoT, LTE-M

3 Application enablement

- Modular software
- Independent device management system
- App development software development kit and ecosystem
- 3rd party software integration
- Meter data analytics

★ 2nd wave use cases

- Value proposition driven by grid edge intelligence
- Capability to integrate apps at the endpoint, at the network, and at the business applications layer
- Driving flexibility, resilience and security at the grid edge.

Our next generation architecture is enhancing grid edge intelligence for 2nd wave use cases

Taking Gridstream® Connect to market



Needs

Intelligent endpoints

- Integration to the grid of behind the meter assets: residential solar, storage, EV
- Interaction with smart controllers

Flexible communications

- Build a bidirectional multi-tier communication network
- Enable multiple utility-grade applications: flexibility management, grid management
- Enable smart infrastructure applications

Application enablement

- Grid resilience
- Energy management
- Flexibility management
- Asset optimization analytics
- Grid management

Landis+Gyr advantages

- Advanced sensing
- Smart load and generation controllers
- Flexible processing, modular capabilities
- Multi-utility coverage: electricity, gas, water, street-lighting

- Proven high scalability
- Multi-networks and flexible network management
- Intelligent connectivity
- Standards based interoperability

- Enabling edge intelligence, community intelligence or enterprise-level intelligence
- Enabling 3rd party developers
- Having largest installed base for deployment

Key product launches

- E360 Next gen residential meter for IEC markets
- E660 Next gen industrial meter for IEC markets
- Street lighting controller

- Cisco partnership
- Network gateway and bridge
- Gridstream network management
- Wi-SUN, LTE-M, communication modules and networking

- Advanced Grid Analytics
- Gridstream Connect app ecosystem: developers hub, apps marketplace, insights, provisioning

Upgradable endpoints

Field upgradeable meter endpoint

- Hot pluggable – no disruption of service required



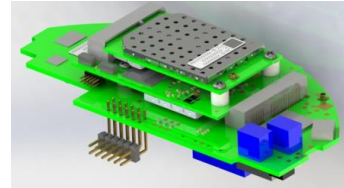
Key value for utilities

Rapid deployment of new capabilities

Expansion modules

Added processing power and flexible communications

- Connect to behind the meter assets (e.g. solar, EV, home battery)
- Real time load disaggregation



Key value for utilities

Upgrade endpoint with grid edge applications at marginal cost

Enhancing edge computing, new processing modules, and new miniaturized endpoints

Innovation (2/2) | Grid edge applications to enable 2nd wave use cases

Endpoint embedded apps

Landis+Gyr and 3rd party apps at the grid edge

- Flexibility management
- Load disaggregation



Key value for utilities

Remote deployment of new grid edge monitoring and control apps

Crowdsourced IQ

Grid edge distributed computation

- For artificial intelligence calculations
- Dynamic discovery of neighboring nodes and associated services



Key value for utilities

More distributed processing power for infrequent calculations or for co-processing between advanced/non-advanced endpoints

Voice augmented metering

Smart assistants for energy

- Integration of smart metering with Amazon Alexa (digital assistant)
- Provides notifications, energy saving tips of the day and insights about last consumptions



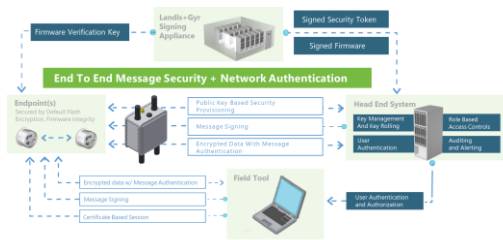
Key value for utilities

Smart energy efficiency assistant at home

Flexibility management, load disaggregation, distributed computation and energy monitoring using digital assistants

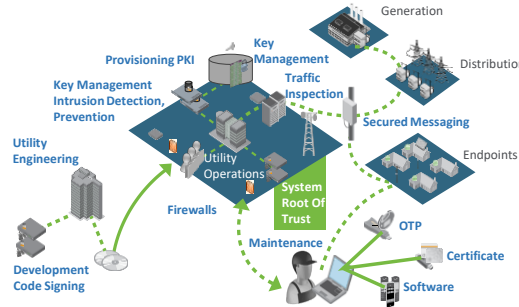
Continuously developing industry-standard security

Far-reaching data security



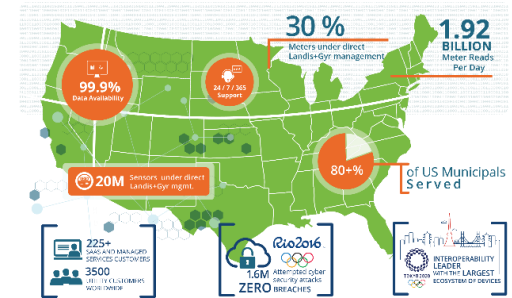
- People and process
- Systematic data protection
- Compliance and auditability
- Resistance and local security
- Periodic edge-to-edge penetration tests

Security architecture



- Secure by design
- Industry standards-based approach
 - Based on government best practices/recommendations
 - NSA Suite B / NISTIR 7628 / OpenSG AMI-SEC / NIST FIPS 140
 - Edge-to-edge protection

Open security posture



- Open security posture with utilities
- Joint risk-based prioritization with our customers
- Continuous improvement and road mapping of updates/hot-patches

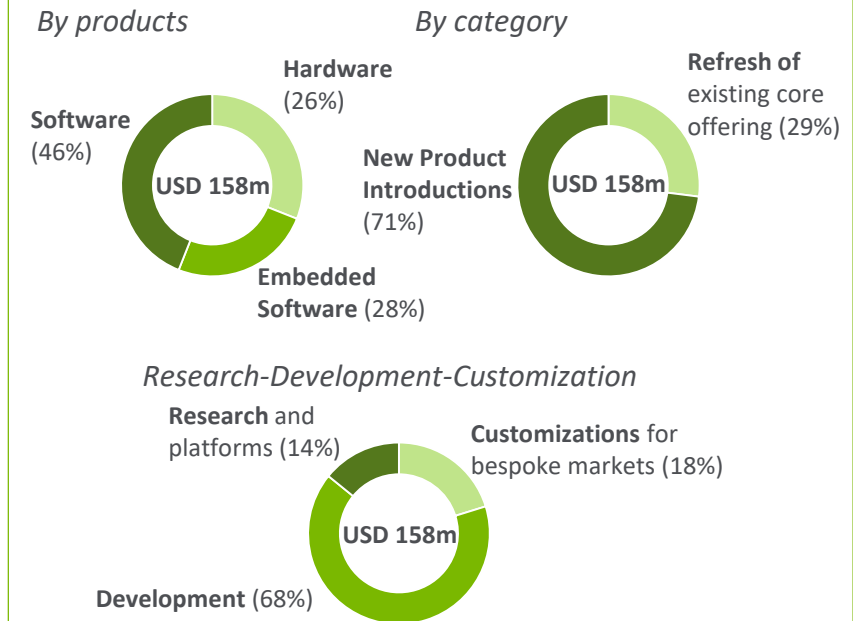
Security is of paramount importance: designed into portfolio, continuously tested and improved

The DNA of Landis+Gyr research and development is software

Key success factors

<p>Global footprint</p>	<ul style="list-style-type: none"> Technical expertise where customers need it: customer intimacy, responsiveness
<p>Scale creates opportunity</p>	<ul style="list-style-type: none"> 1'389 technical professionals working on leading edge solutions and innovations
<p>Expertise</p>	<ul style="list-style-type: none"> Breadth & depth of expertise in metering, communication, software, analytics Over USD 110m annual spend on software (embedded or applications) gives significant competitive advantage for 2nd wave positioning i.e. value add use cases

Breakdown of FY17 R&D investments



74% of our R&D focus is related to software and embedded software, 71% is on new product introductions