



Short Metercloud Intro

Sent to: Utility Week Live

Date: May 11, 2018

Sent by: Greenbird Integrations Technology

1. What do we do?

- Delivering system integration as a service
- Fixed price subscription model
- Secure and scalable by design
- Pre-defined business orchestrations like Smart Metering, Smart Grid or Smart Billing including all necessary deep integrations
- Large-scale testing and simulation out-of-the-box
- Utility system connectors (e.g. Siemens EnergyIP, SAP)
- Onboarding up to 80 % shorter than with traditional system integration projects.

2. Why do we do this?

2.1. Data is the new Electricity

Digitization, deregulation, decentralization and decarbonization - the 4Ds drive the energy revolution. The entire energy system is facing tremendous changes. Utilities worldwide develop a growing understanding that **the 4Ds will create and rely on a vast amount of data** The future Energy 4.0 era will be data driven. The future digital utility will be analytics driven.

2.2. Utilities need to make Sense of their Data

A 100 years ago, the companies that didn't manage to embrace electricity went quickly out of business. Now, data is the new electricity and only utilities that make sense of their data in a smart way, will be in the driver's seat position and take the lead in the future energy system.

Utilities must make a **leap forward today to stay in business tomorrow**. They need modern and adaptable IT solutions. They need an innovate approach to manage data. And smart and effective integration solutions.

Quick, stable, scalable, flexible and affordable **system integration enables the future digital utility** to make new data-driven decision support solutions possible.



3. Traditional system integration

Traditionally, utilities would hire a system integrator (SI) whose business model is to delivery **custom development projects**, billing the clients on **time and material cost**. The more billable hours spent on a customer's project, the better for the SI. **And for any new feature or new requirement, the utility would have to invest again in development.**

For utilities the traditional system integration approach is like dancing on a high wire:

- **High investment costs** in infrastructure and licenses
- **High risk** for delays, low quality or budget cracks
- **High operational efforts** to operate, manage and maintain the solutions
- **Low scalability** related to business success or growth
- **Limited** access to platform **experiences** or competency
- **Low agility** and slow development cycles for new requirements
- High degree of **vendor lock in**



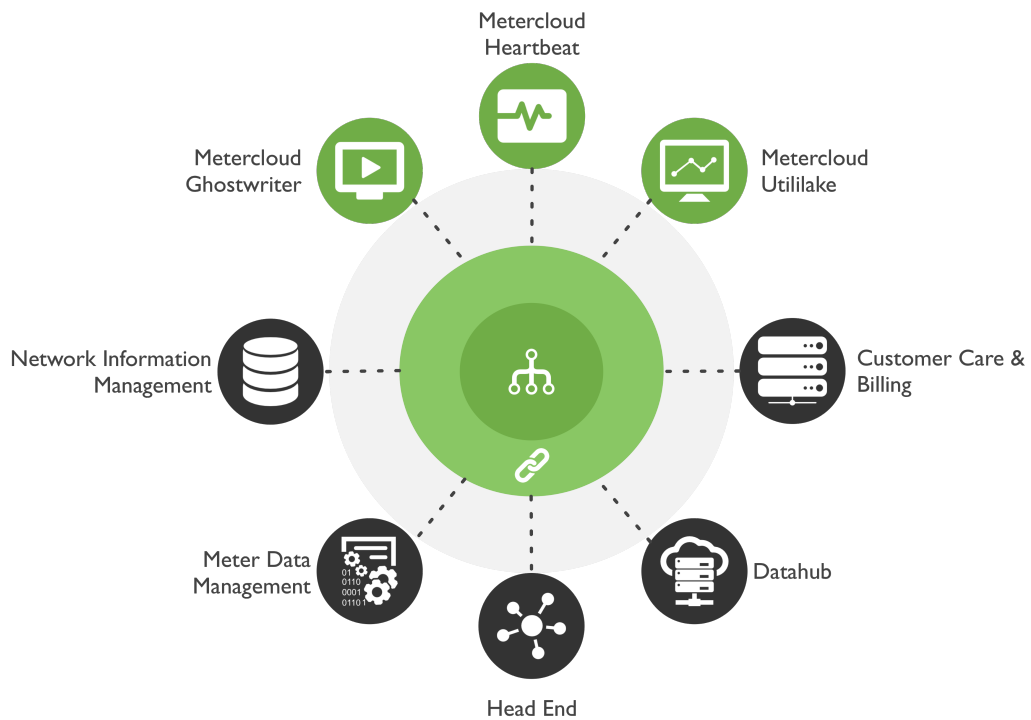
The traditional SI approach means for utilities:

- **High investment costs** in infrastructure and licenses
- **High risk** for delays, low quality or budget cracks
- **High operational efforts** to operate, manage and maintain the solutions
- **Low scalability** related to business success or growth
- **Limited** access to platform **experiences** or competency
- **Low agility** and slow development cycles for new requirements
- High degree of **vendor lock in**

The traditional system integration approach harms and slows down utilities' digital transformation.



4. Metercloud - Next Practice Integration

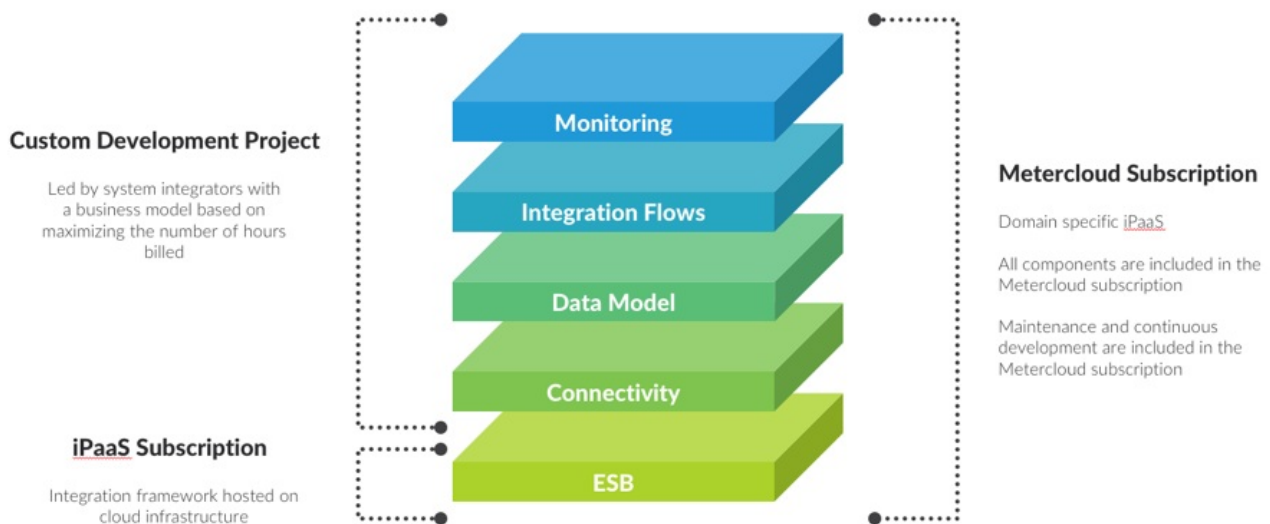


Where most traditional system integration projects fail, Metercloud delivers integrations for smart metering, smart billing and smart grid on time, on budget, on quality and on value.

Metercloud's out-of-the-box orchestrations and connectors together on top of a complete integration platform as a service, enables Metercloud customers to reduce the above mentioned costs drastically and to reduce their implementation time by up to 80 %.

Where a traditional system integration project for smart metering, smart billing or smart grid typically would last between 12 and 24 months, Metercloud enables onboarding within few weeks.

Commercially, Metercloud differentiates clearly from traditional models as a lot of added value is delivered "out-of-the-box" in addition to standard ESB functionality.



5. Key references

5.1. Smarthub

Customer Challenge

Smarthub is a Norwegian service provider driving the energy revolution by delivering smart metering and smart grid as a service for DSOs. They are currently delivering services to 10 DSOs. Smarthub is operating the head end system, validation of consumption values, meter data management system, and integration towards the Norwegian datahub called Elhub. The DSOs are operating their own customer information systems, work order management systems, DMS and SCADA. To automate the smart metering value chain, Smarthub needed a multitenant integration solution with short time-to-market.

Metercloud Solution

Greenbird was chosen to deliver Metercloud for solving to end-to-end integration for the operation of smart meters and smart grid. Prebuilt Metercloud Orchestrations supports the meter-to-cash process, commissioning and provisioning of smart meters, required asset synchronization, required integration towards the Norwegian Elhub and handling of events and alarms for DMS and SCADA. With Metercloud Ghostwriter, Smarthub could simulate the consumption readings from all planned smart meters before the rollout. All data flows are monitored with Metercloud Heartbeat.

Benefits with Metercloud

Smarthub went live with their service offering less than three months after signing the contract on Metercloud, and could deliver instant value to the DSOs. With the subscription model on Metercloud, Smarthub had low upfront costs for configuration of Metercloud. The subscription for Metercloud is based on the number of smart meters deployed, and gives Smarthub a predictable price for system integration.

5.2. Hafslund

Customer Challenge

Hafslund, the Norway's biggest DSO, was planning a digital transformation and a large-scale rollout with 700,000 smart meters. Hafslund was placing major investments on new IT systems, which could turn smart meter readings and smart grid data into real assets for the company. They had to verify that all business processes in the meter-to-cash value chain was performing as expected before the rollout of the smart meters started.

Metercloud Solution

Hafslund chose Metercloud Ghostwriter for simulating the output from their 700,000 planned smart meters. Metercloud Ghostwriter emulates the interface for the head end system from the meter vendor Aidon. Hafslund could run simulations with realistic consumption values from 700,000 smart meters. It is possible test scenarios with missing readings from the smart meters and to define areas with power outages at given times.

Benefits with Metercloud

By utilizing Metercloud Ghostwriter for simulation of their planned smart meters, they could perform end-to-end testing of the smart metering value chain. Hafslund revealed several bottlenecks and performance issues early in their smart metering project. Early detection

ensured that all systems and system integrations could be optimized before the actual smart meter rollout started. Hafslund significantly reduced the risk for a situation with failing billing after the smart meters was rolled out.

5.3. Middle East Public Utility

Customer Challenge

The ministry of Energy and Water is driving the energy revolution in a Middle East Country and will deploy close to 1 million smart meters for electricity and water. The rollout is led by a telecom operator, and a large IT cooperation is responsible for delivering all required IT systems for operating the digital grid. The contractor needed a system integration service for integration of the head end system, meter data management system, customer care and billing, asset management, prepaid management solution, and work order management solution.

Metercloud Solution

Greenbird was chosen to deliver Metercloud for end-to-end integration of the smart metering value chain. Metercloud Orchestrations have out-of-the-box support for the meter-to-cash process, commissioning and provisioning of smart meters, asset synchronization, and for handling work orders. Metercloud Connectors ensure rapid connection of enterprise systems throughout the value chain.

Benefits with Metercloud

By choosing Metercloud, the IT responsible party removed system integration from the critical path in the project. The subscription model on Metercloud reduces risk during the project stage and has a predictable price model in production. System integration was transformed from an obstacle and into a platform for agility and innovation. The customer is now in a strong position for embracing the data economy, and for their next steps towards developing the country.

6. About Greenbird

Greenbird is a Norwegian software company headquartered in Oslo. The company was founded in 2010 to solve the system integration challenge for digital utilities deploying smart metering and smart grids. With more than 10 years of experience from major smart meter rollouts in the Nordics, the founders of Greenbird realized that most utilities developed custom system integrations with drawbacks like unpredictable costs, unreliable operations, and low flexibility for innovation. By delivering Metercloud, Greenbird is challenging traditional system integration by offering all required system integration for smart metering and smart grids as a service with a subscription.

Greenbird is building an ecosystem for Metercloud, enabling other utility software vendors to deliver substantially shorter time to market for innovative solutions supporting the digital utility. By removing the system integration barrier, Metercloud acts as a catalyst for innovation in the energy industry. Greenbird is a leading system integrator for digital utilities in the Nordics. In Norway, utilities owning more than 80 % of the market are Greenbird clients.

Based on the unique benefits Metercloud is creating for utilities and smart grid vendors, Greenbird closed a series A funding of 5 million USD in November 2016. The funding was made by the leading smart grid investors Statkraft Ventures and ETF Partners, and will enable Greenbird to further develop the Metercloud ecosystem and drive innovation in the energy industry.