Carestation™ Insights

Sběr a zpracování anetsteziologických dat – cloudové řešení

„Big data“ proudí kolem nás každý den

Smart bits

Life Style tracking may allow health insurance to reduce or increase clients’ fee

Traffic solution

Smartphones congestions and GPS enable optimal traffic management solution
anywhere and anytime

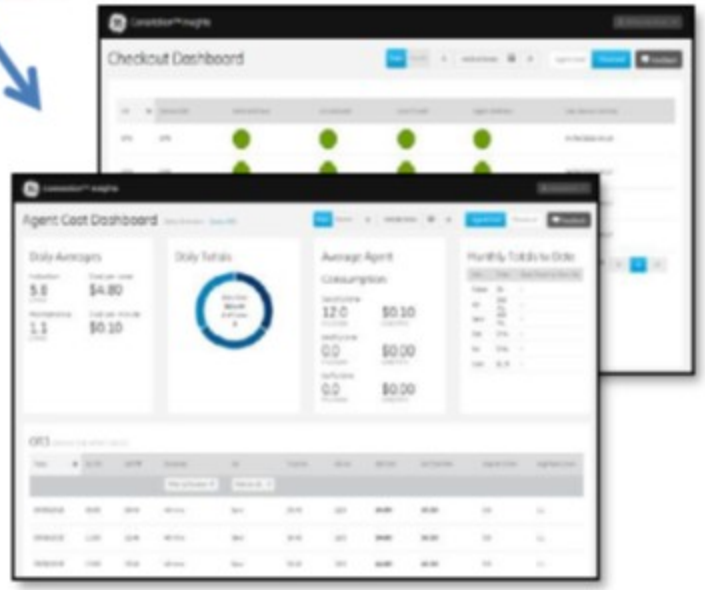
Digital twins

By keeping records of a "digital twin" of each jet engine engineers can keep tabs on its performance on the ground — while it's in the air

Hodně dat ➡ serverové nebo cloudové řešení ?

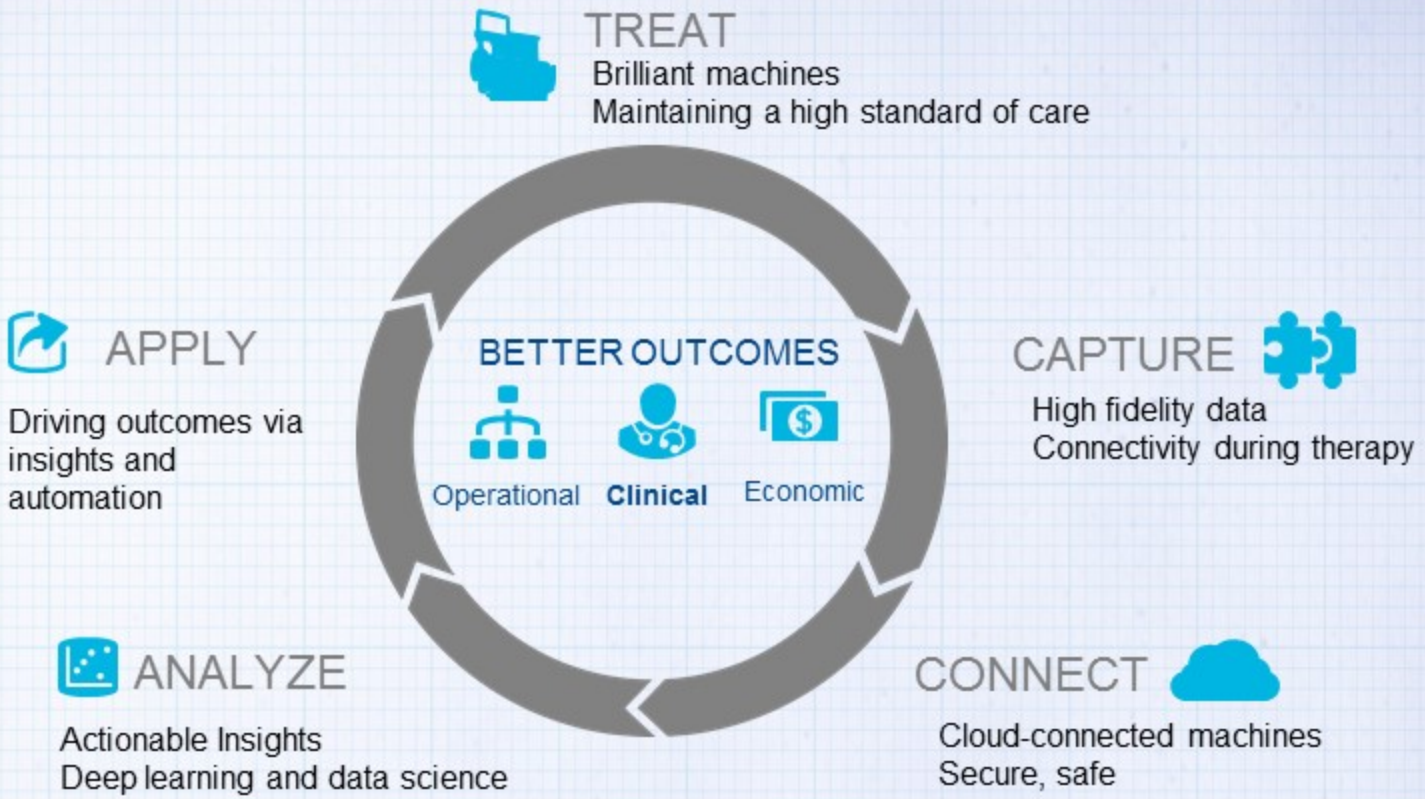
(v reálném čase)

Jako např.Garmin

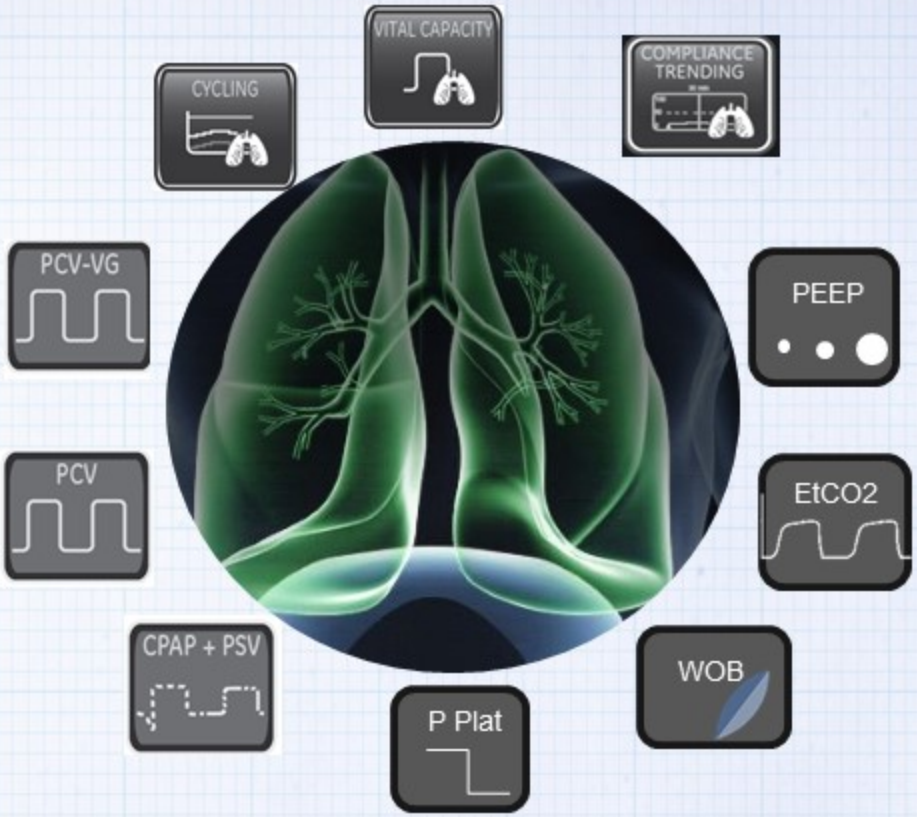


AiSYS CS2 digital system

Making Data-Driven Outcomes a Reality



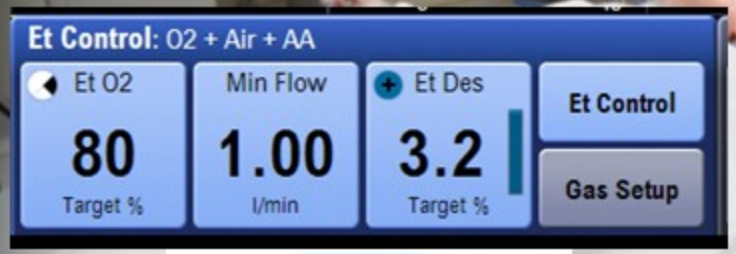
Parametry plicní ventilace – Lung protection strategy (protektivní ventilace)



systematic & consistent lung protection strategy could help clinicians reduce post operative pulmonary complications

Automatické řízení anestezie – úspora anestetik AA a plynů O2

End-tidal Control (EtC)



EtC automates the delivery of anaesthetic agent and oxygen to the patient

* Et Control ('Et Control', Et') or TCA and Aisys CS² are not available in all markets. Not for sale in the US. Not cleared by the US FDA

The digital Aisys CS² enables power of data in anaesthesia care

Operating Theaters

Aisys CS² Machine 2 MachineN

GE Cloud Gateway

Data De-Identified & Encrypted

0101
1010
0010

Health Cloud

High Speed Ingestion | Data Enrichment | Cloud Storage | Analytics Dashboards

Analysis

Data analysis and storage

Transforming complex data into actionable insights

Anesthesia domain knowledge

Simplicity: limited IT management required

Privacy: through patient de-identification

Security: through GE design and monitoring

Scalability: open to a community of users

Aisys CS²: integration of digital mixer, vaporization, controls

TREAT with sophisticated software and advanced features

CONNECT
Easy robust interface to EMR, medical industry standard protocols like HL7

CAPTURE
Hundreds of data points, high resolution seamless

300+
Data Points

EMR

Creating the 'Digital Twin'

Leverages data from connected devices and makes it accessible for deep analysis

GE Healthcare Protected Cloud

Cloud security is often stronger than on premise systems

Powerful: collect & archive high fidelity data to enable anaylsis

De- identified patient data: the cloud is anonymous

Cloud technology has higher uptime and better redundancy than most on premise systems

Cloud technology is flexible and modular, can grow with the needs

Managing volume, velocity and variety of data within a secure cloud-based system

Dashboard Low Flow

Taking low flow to new heights

REDUCE OPERATION COSTS

CHALLENGE

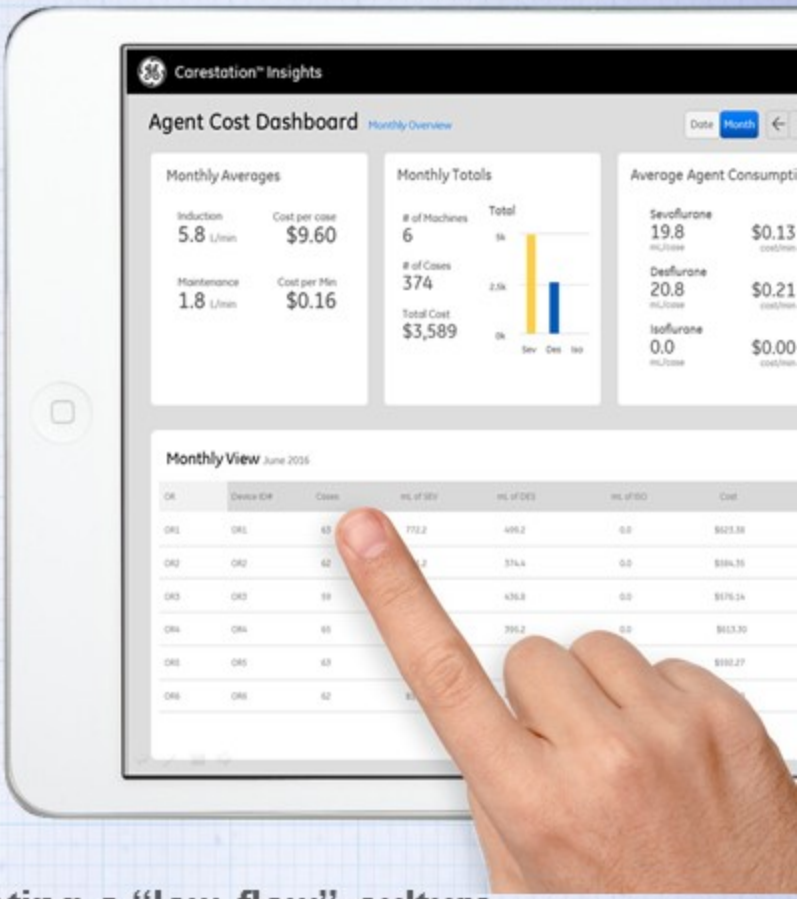
Anesthetic agents are a big ongoing expense associated with anaesthesia delivery units.

OPPORTUNITY

By choosing automated minimal total Fresh Gas Flow at all anesthesia stages, anesthetic expense can be **massively minimized**

OUTCOME

The saving derived from automation of low flow practices can help fund new purchasing



Potential benefits for hospitals and networks adopting a "low flow" culture

* Minimal Flow settings are determined by the clinician and vary by patient need. Savings occur when waste gases are reduced. Continuous monitoring is required for low flow anesthesia.

Carestation™ Insights

https://carestationinsights.gehealthcare.com

Carestation™ Insights

Agent Cost Dashboard

Monthly Overview

Date | Month | 06/2016 | Agent Cost | Checkout

Monthly Averages

Induction
5.8 L/min

Cost per case
$9.60

Maintenance
1.8 L/min

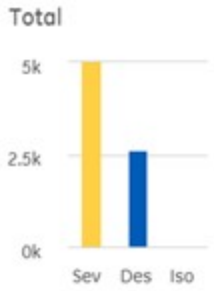
Cost per Min
$0.16

Monthly Totals

of Machines
6

# of Cases
374

Total Cost
$3,589



Average Agent Consumption

Sevoflurane
19.8 mL/case
$0.13 cost/min

Desflurane
20.8 mL/case
$0.21 cost/min

Isoflurane
0.0 mL/case
$0.00 cost/min

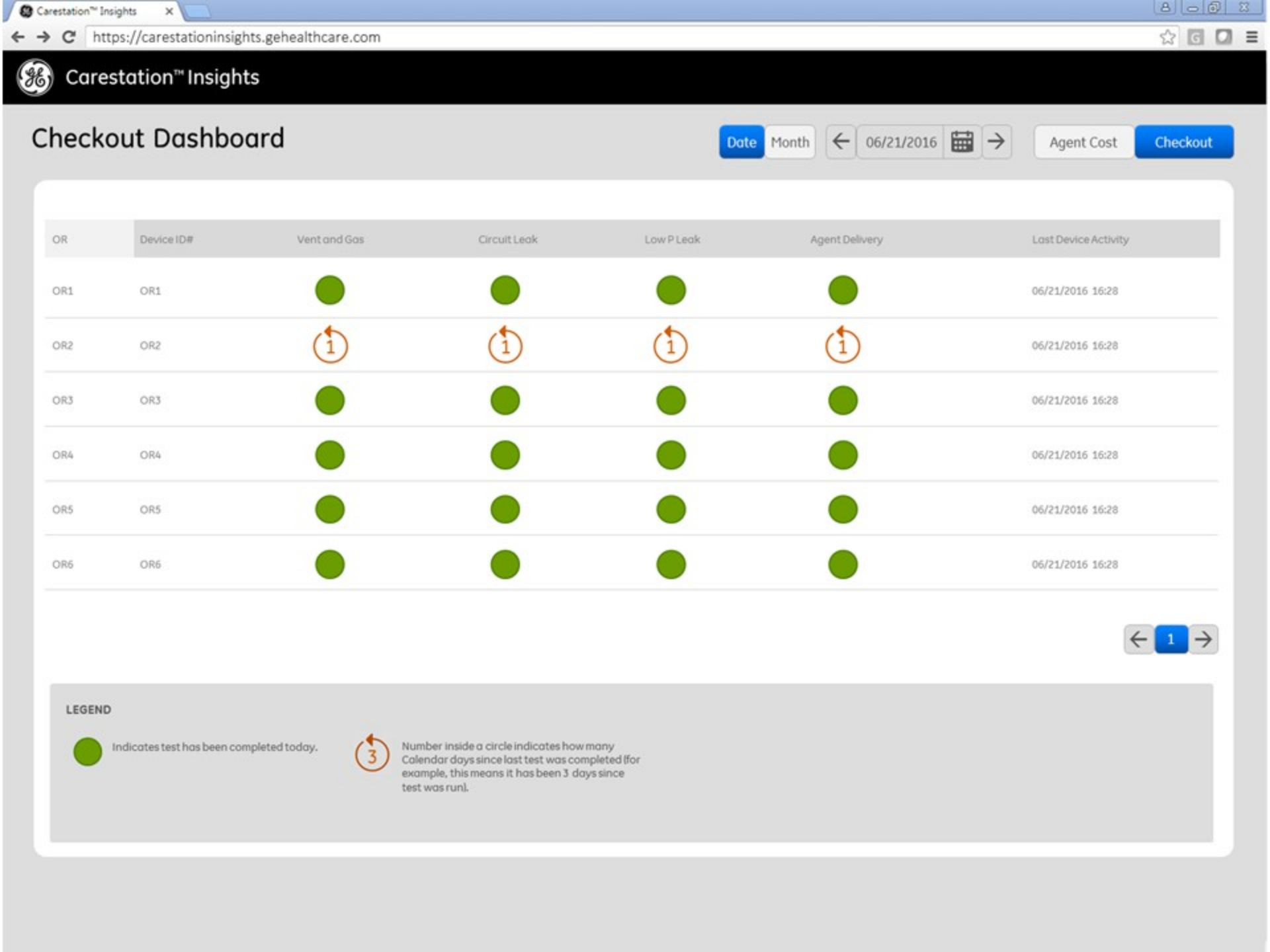
Monthly Totals to Date

Info	Total	Daily Trend vs. Prev. Mo.
Cases	374	▲10%
AA	7526 mL	▼9%
Sevo	5009 mL	–0%
Des	2516 mL	▲6%
Iso	0 mL	–0%
Cost	$3,589	▼15%

Monthly View June 2016

OR	Device ID#	Cases	mL of SEV	mL of DES	mL of ISO	Cost	Ave Ind L/Min	Ave Main L/min	Action
OR1	OR1	63	772.2	499.2	0.0	$623.38	6.0	1.6	View Details
OR2	OR2	62	871.2	374.4	0.0	$584.35	5.9	2.0	View Details
OR3	OR3	59	752.4	436.8	0.0	$576.14	5.8	1.8	View Details
OR4	OR4	65	910.8	395.2	0.0	$613.30	6.0	1.9	View Details
OR5	OR5	63	891.0	374.4	0.0	$592.27	5.9	2.1	View Details
OR6	OR6	62	811.8	436.8	0.0	$599.90	6.0	1.7	View Details

1


Carestation™ Insights
https://carestationinsights.gehealthcare.com
Carestation™ Insights
Checkout Dashboard
Date
Month
06/21/2016
Agent Cost
Checkout
OR
Device ID#
Vent and Gas
Circuit Leak
Low P Leak
Agent Delivery
Last Device Activity
OR1 OR1 06/21/2016 16:28
OR2 OR2 1 1 1 1 06/21/2016 16:28
OR3 OR3 06/21/2016 16:28
OR4 OR4 06/21/2016 16:28
OR5 OR5 06/21/2016 16:28
OR6 OR6 06/21/2016 16:28
1
LEGEND
Indicates test has been completed today.
3
Number inside a circle indicates how many Calendar days since last test was completed (for example, this means it has been 3 days since test was run).

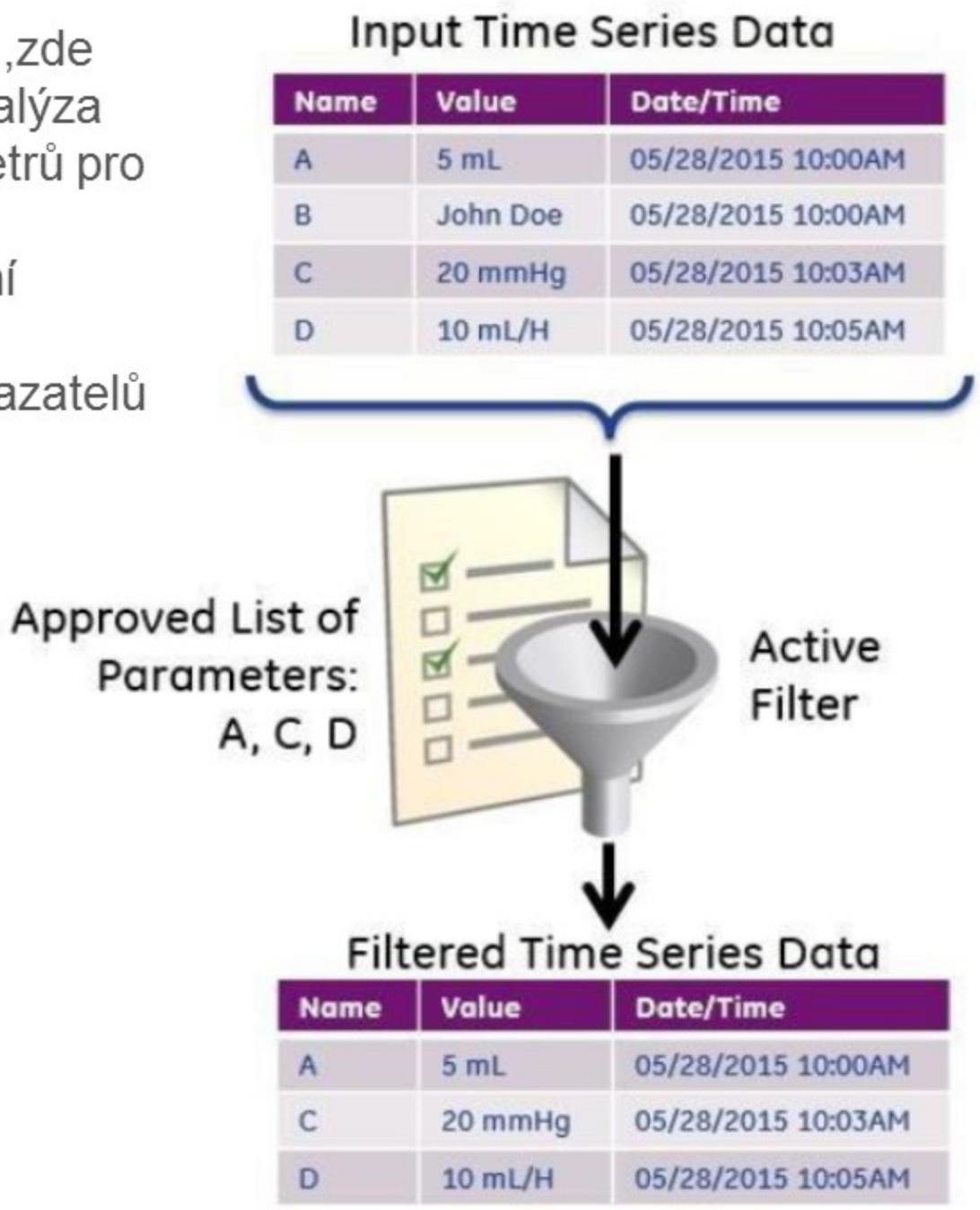
MFA – Mini Field Agent

komunikace s anest. přístrojem TCP port 4444

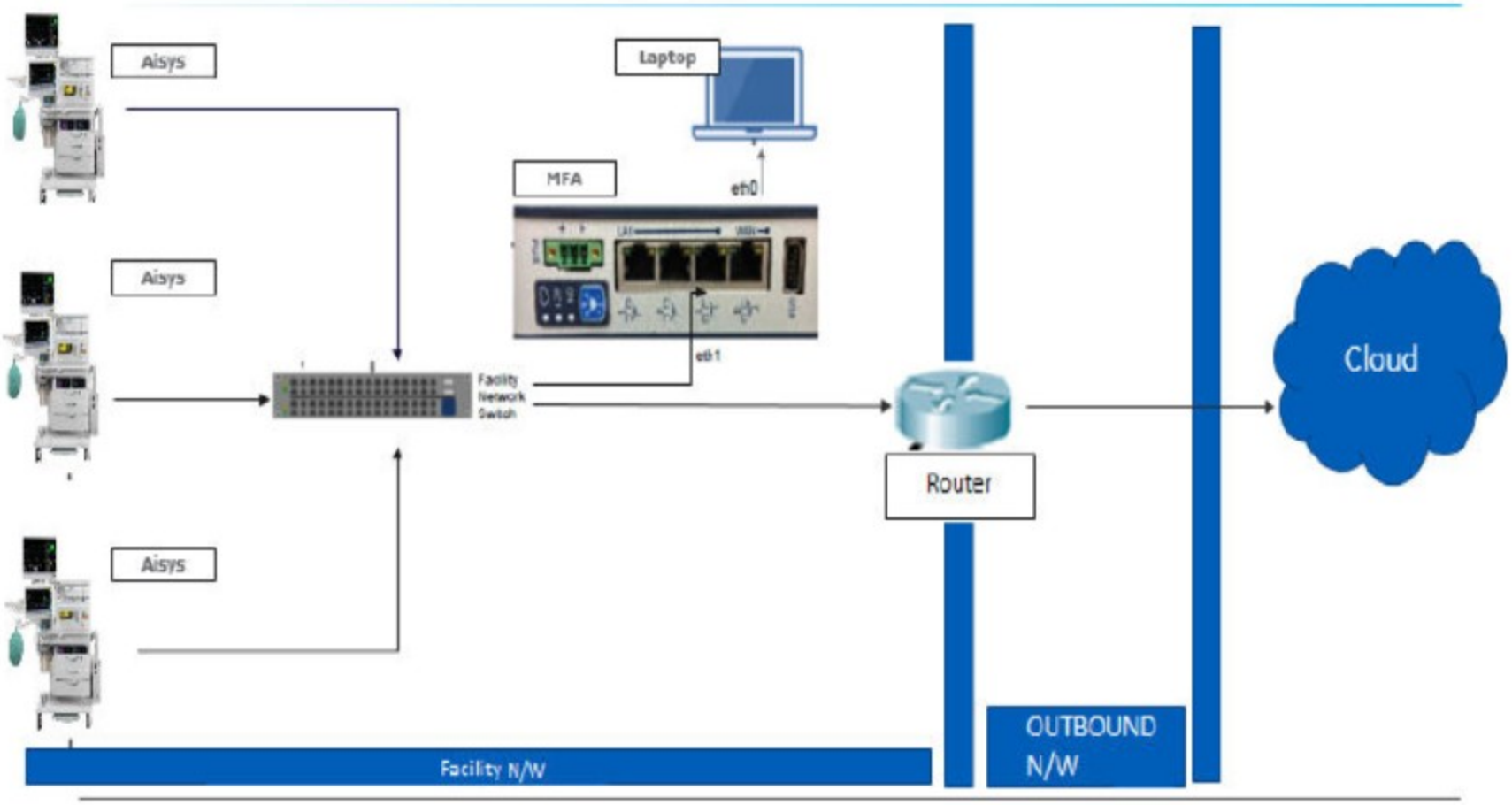
Jednoduchost řešení

AC.26p.012

Anonymizace dat ,zde možná, pouze analýza měřených parametrů pro účely zvyšování efektivnosti vedení anestezie a ekonomických ukazatelů



Typické zapojení MFA a routování dat do cloudu



Webový přístup k výsledkům v cloudu

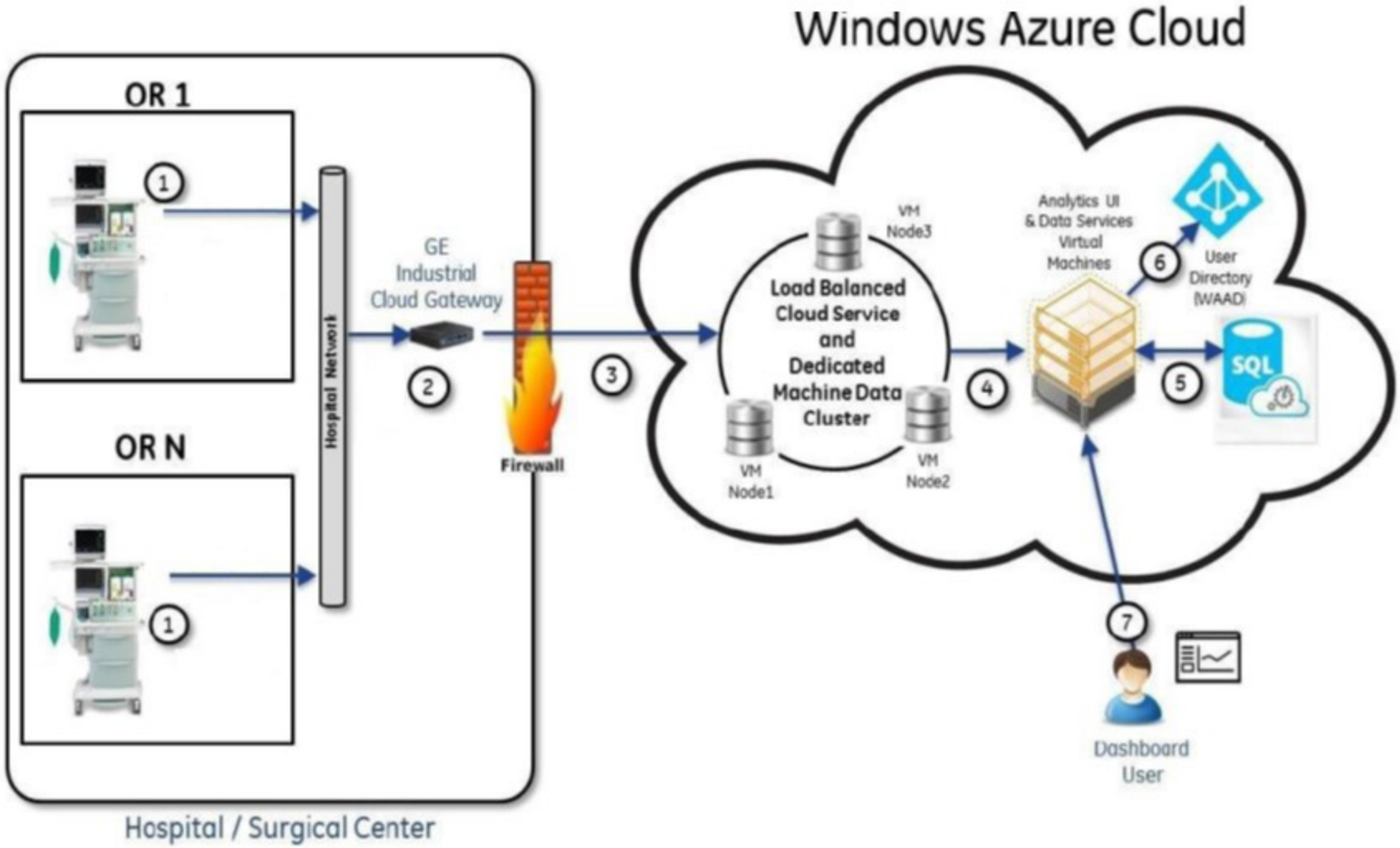


Figure 1 Privacy and Security Environment and Data Flows

naše obvyklé motto:

„Přinášíme a prezentujeme reálná řešení v ČR“

Snaha zprovoznit jedno takovéto reálné pracoviště prozatím ztroskotala na smluvních a kompetenčních nejasnostech……..

Kdo za proud dat z nemocnice bude „zodpovědný“…….
OZT, IT, GDPR manager ???

- Cloudové řešení ano či ne?

  jednoduchost, neomezené úložiště dat, rychlý a neomezený HW, sítě s vysokou rychlostí a stabilitou

- Anonymizace pacientských dat

- Kdo a jak se zaručí, že data nebudou „zneužita“?
- Obáváme se zbytečně? Záleží na typu dat…..
- Spíše právní problém a GDPR

- Jak je to doopravdy s daty v cloudu?
- Microsoft Azure
- Závislost na poskytovateli cloudu se zvýší

Závěr:

Zdánlivě jednoduchá úloha sběru dat a jejich analýzy se díky řešení prostřednictvím cloudu docela komplikuje a ještě asi chvíli potrvá, než nás IT svět přesvědčí, že toto je bezpečná metoda ….

…….a nebo nepřesvědčí?

Zdroj : Prezentace GE Healthcare