

Smart Health



Partnering to deliver Care@home and Wellbeing@home

1 | VERIZON – SMART HEALTH

2 | ERICSSON – SMART HEALTH CATALYST

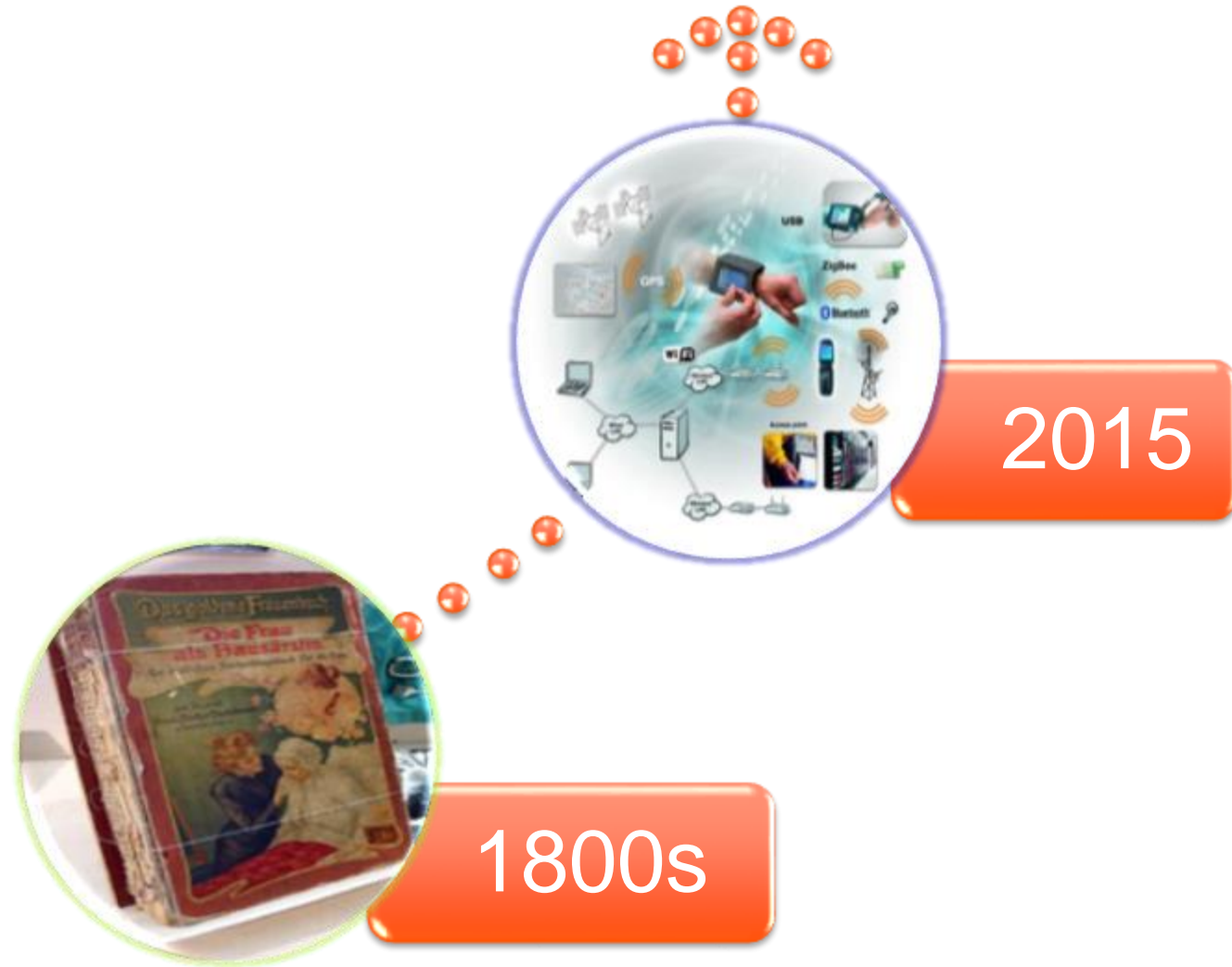
3 | ORANGE – WHAT'S NEW IN THE CATALYST

4 | VALUE OF AN ECOSYSTEM APPROACH



Quality Care New Ways

Modern technology has made patients more reachable to provide quality care



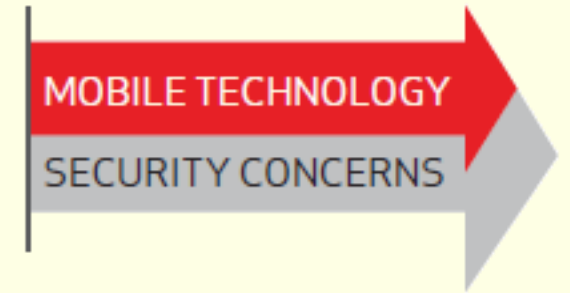
Industry Overview



Staffing pressures will persist.

Technology Trends

- Health information technology
- Electronic Medical Records
- Mobile solutions
- Internet of Things



Mobile use and security concerns are increasing.

Challenges

- Reduce medical errors
- Improve patient satisfaction
- Ensure security & compliance
- Patient management efficiency



EMR adoption is on the rise.

Industry Trends

- Increased regulation
- Growing demand for services
- Rising costs and eroding margins
- Staffing pressures

Transform healthcare through new technology

- **Affordable** and accessible Healthcare solutions.
- **Secure** exchange of patient data
- Provide **real-time access** to care and remote patient monitoring— from virtually anywhere.
- **Manage fraud**, Identify and block suspicious activity.
- **Manage the cost** of payment fraud.
- **Stay informed** of the latest scams

Secure solutions to solve healthcare's biggest challenges

- According to CDC, about **72% of U.S. physicians** now use EMRs
- **Connected** medical devices, telehealth, and remote monitoring
- Support a connected system to manage and exchange **ePHI**
- Address security **compliance** measures.
- Align with applicable HIPAA **security** requirements.

Healthcare technology solutions are built for organizations large and small

- Myriad technology and experience
- **Communications**
- **Mobility**
- **M2M**
- **Cloud**
- **IoT**
- **Security services**

Core Technologies



NETWORKS AND ADVANCED COMMUNICATIONS

- Secure, **reliable** backbone network
- **Connected** location solutions
- **Wi-Fi** solution
- **Contact center** solution
- **Voice and video** solution



CLOUD

- **Cost-effective**
- Store and safeguard **protected** health information
- Access and share patient files on demand, from **virtually anywhere**
- Secure platform aligned with applicable **HIPAA** requirements



MOBILITY

- Mobile **field management**
- Bring your **own device**
- **Secure access** to mobile applications
- Mobile device and plan
- Mobile **security**



INTERNET OF THINGS (IoT)

- Engage customer **remotely**
- Monitor patient biometrics **24x7**
- **Real time** notification
- **Track assets** and vehicles
- **Monitor** machines
- Data **analytics**

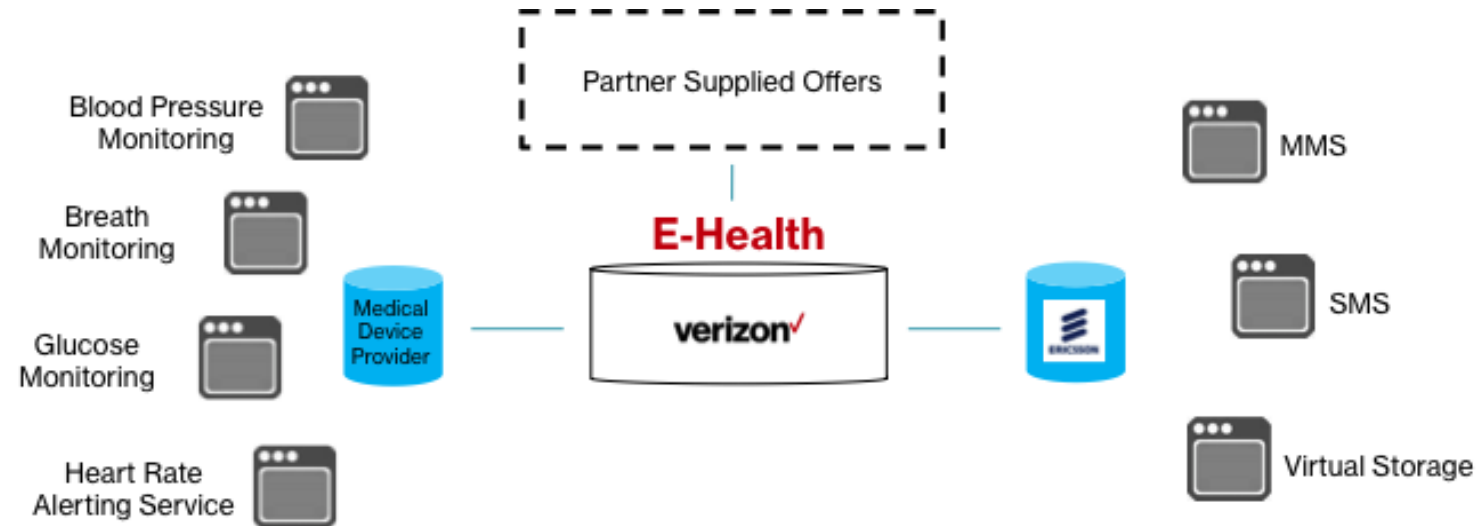
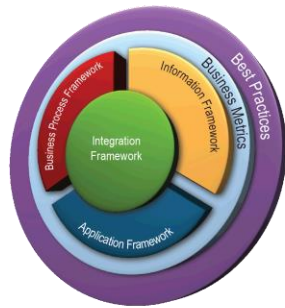


SECURITY

- **Prepare** - reinforce your defenses
- **Recognize** - intercept attacks
- **Response** - lessen attack impacts
- **Intelligence** – know more about attackers and their patterns



Our Catalyst Focus Area



- Leverage Open Digital APIs to Deliver Value
 - Smart Health Catalog Mash up – Nov '14
 - Continued Evolution of Catalog – Jun '15
 - Actively Participate in building the Smart Health Eco System

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Smart Health

- The Smart Health tmforum program brings together the ICT community with the industry vertical Health community to align open digital economy assets with health related assets to deliver both enterprise and consumer based solutions and/or APPs.
- The program utilizes the TM Forum assets in the form of best practices, APIs and standards to drive the ability for disparate industries to come together to deliver.
- The team utilizes the Open Digital Program Assets within the catalyst:
 - business canvas for each ecosystem participant,
 - use cases,
 - reference process flows,
 - partner touch-points,
 - APIs
 - entities and metrics

Health Opportunities for Operators

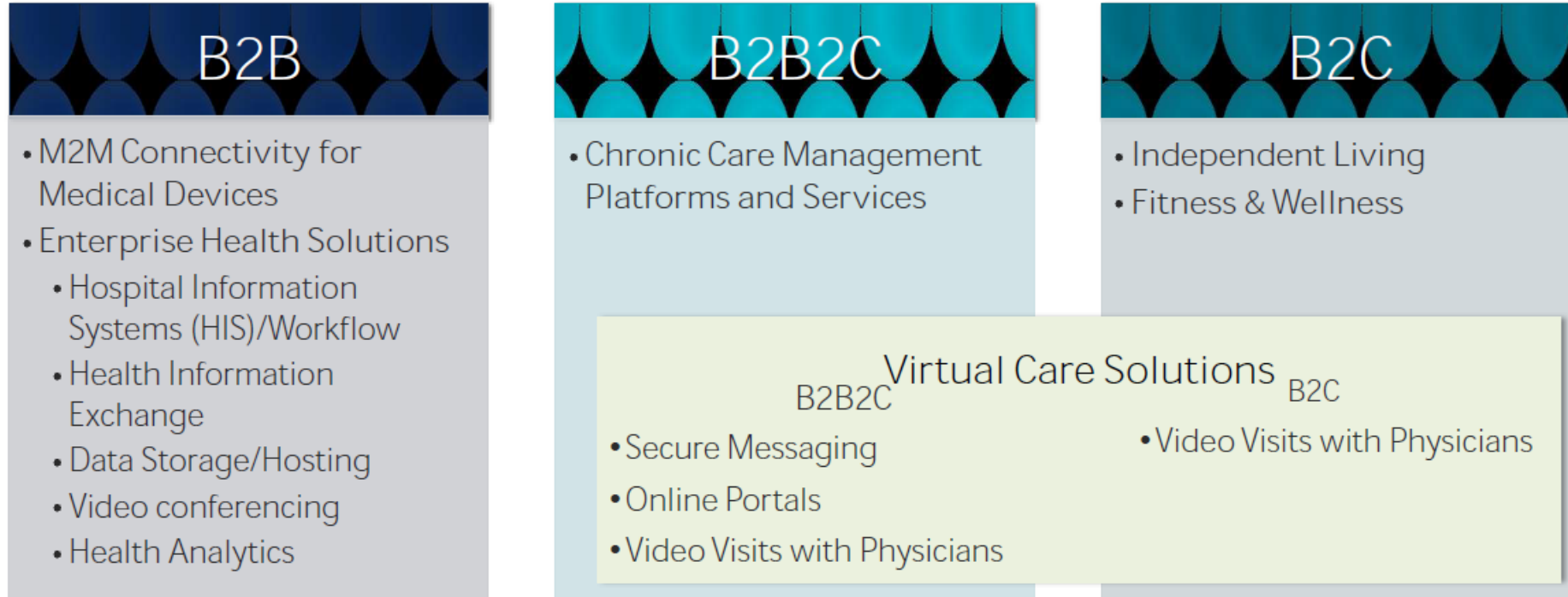


Figure 4 Carrier Opportunities in the Wireless Health Market

* Parks Associates



Catalyst Health Care Topics

Care at Home

■ Care@Home

- Privacy settings
- End User Application – to place the order
- Billing, Charging, Settlement
- Partner Onboarding – agreements and content
- Catalog driven operations for both service management and real time APIs
- Service Orchestration to multiple partner-supplied offerings
- Device independent data collection & processing
- Authorizations

Aging and Loneliness at Home

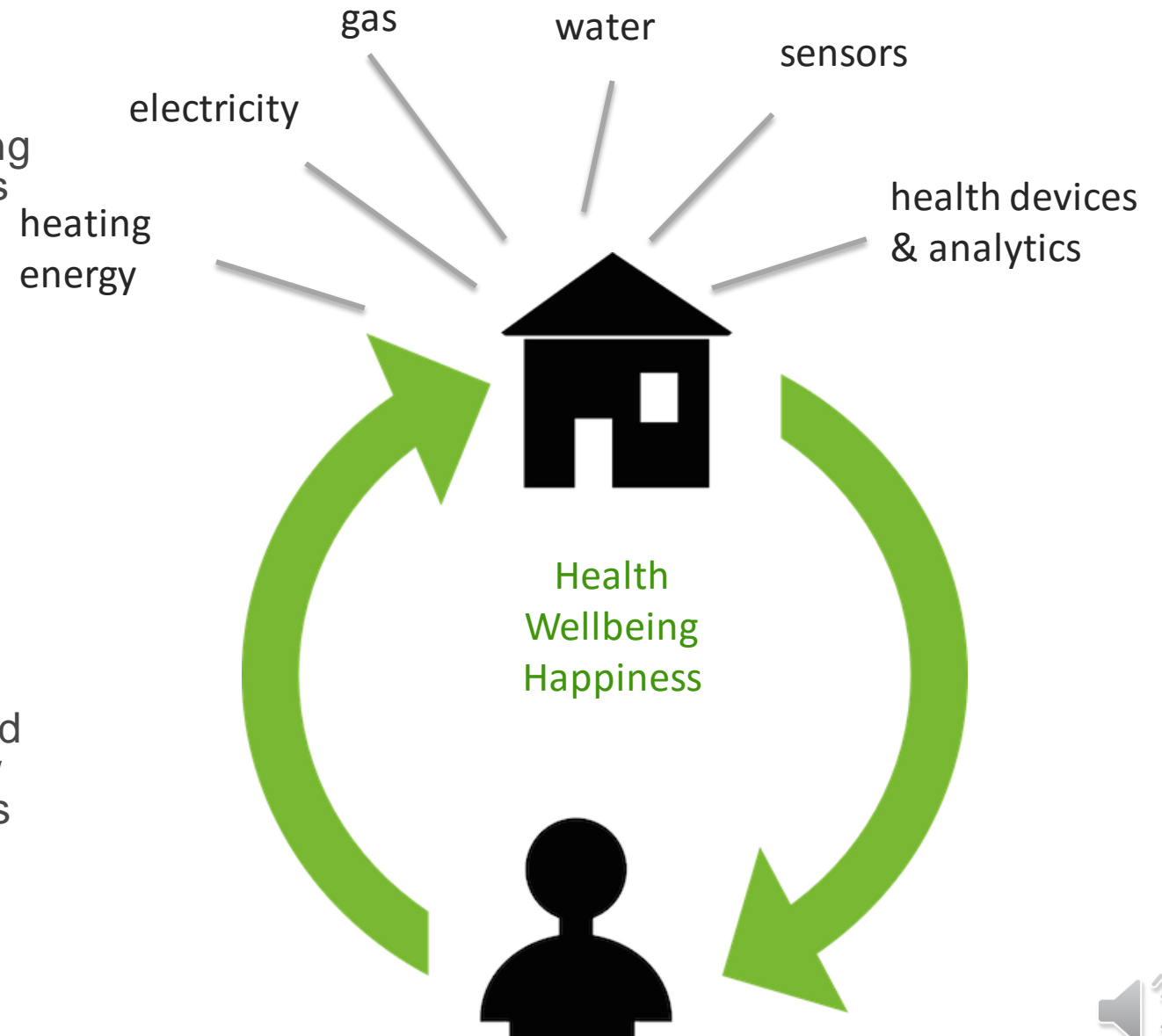
■ WellBeing@Home

- Non-intrusive monitoring
 - Green Light, Yellow Light, Red Light Status
- End User Application – to place the order
- New device support – sleep monitor
- Utilities play a role



Case: Successful Aging at home

- Tracking healthy aging can be performed using data collected from the senior's home such as
 - electricity consumption patterns down to device level
 - water consumption signals
 - gas usage signals
 - sensor-instrumented beds and chairs
 - usage of health condition tracking devices (e.g. blood pressure)
- Analyzing this data to give insights about the elderly's behavior patterns and wellbeing - and making it visible to family caregivers will allow early detection of possible significant changes and permit early intervention



Utilizing a Digital Ecosystem

Business Drivers

- › Rise of e-commerce
- › Advent of the digital economy
- › Cross-vertical collaborations with contributions from a myriad of partners

Ecosystem Needs

- › Open environment for knowledge-sharing and exposure
- › Building-block approach to web services
- › Service Management on an end-to-end basis

Digital ecosystem

An open socio-technical digital environment

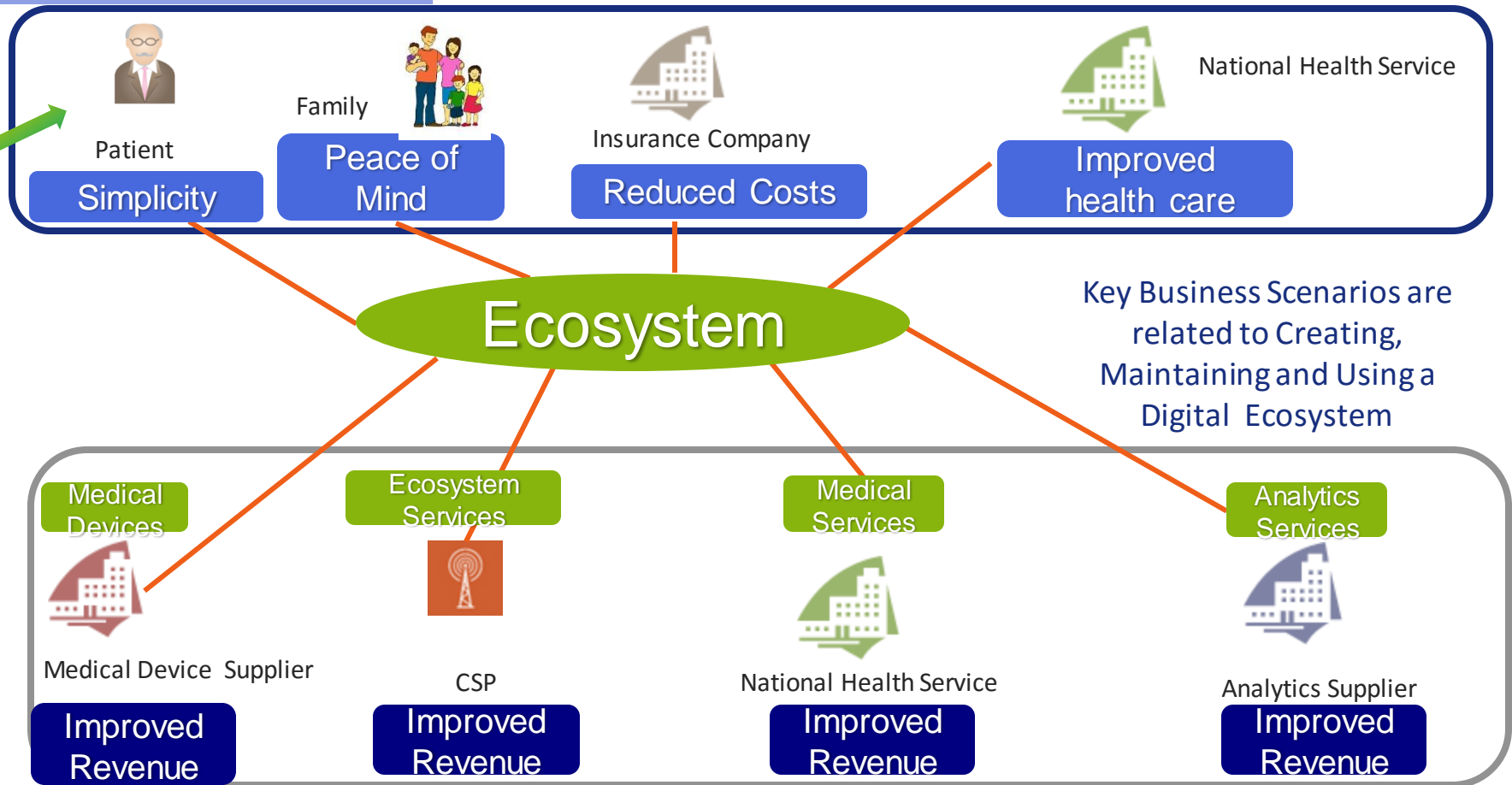
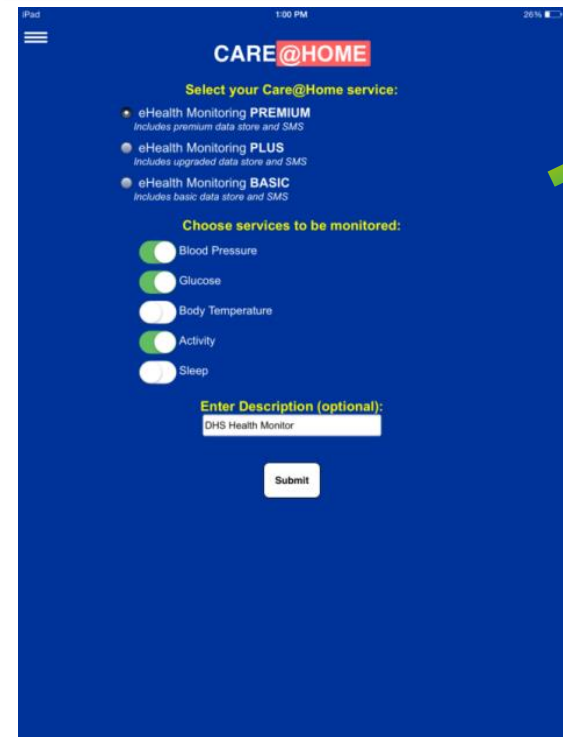
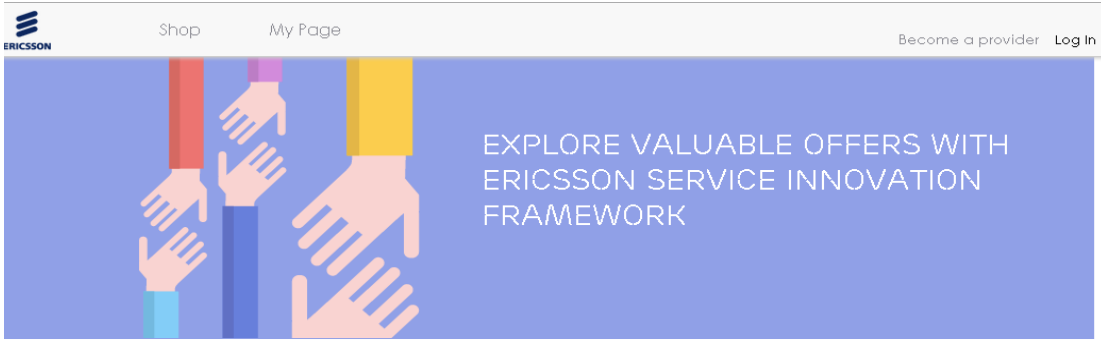
With properties of self-organization

Aimed at building digital services

To create value and revenue streams

For networking partners and society

Smart Health - Ecosystem



Ericsson Service Innovation Ecosystem

Service Exposure & Interaction

Creation, assembly and exposure of real-time network session flows

Service Exposure
& Interaction



Ecosystem Management

Storefront for onboarding, component selection and new offering development

Ecosystem
Management



User Experience & Interaction

Self-service on any device providing intuitive user experience

User Experience
& Interaction



Ericsson Service Innovation Framework

M2M Device & Data
Management



M2M Device & Data Management

Industry agnostic M2M support for the digital services ecosystems

Enterprise Catalog



Enterprise Catalog

Enterprise-wide repository for all product offerings and their specifications

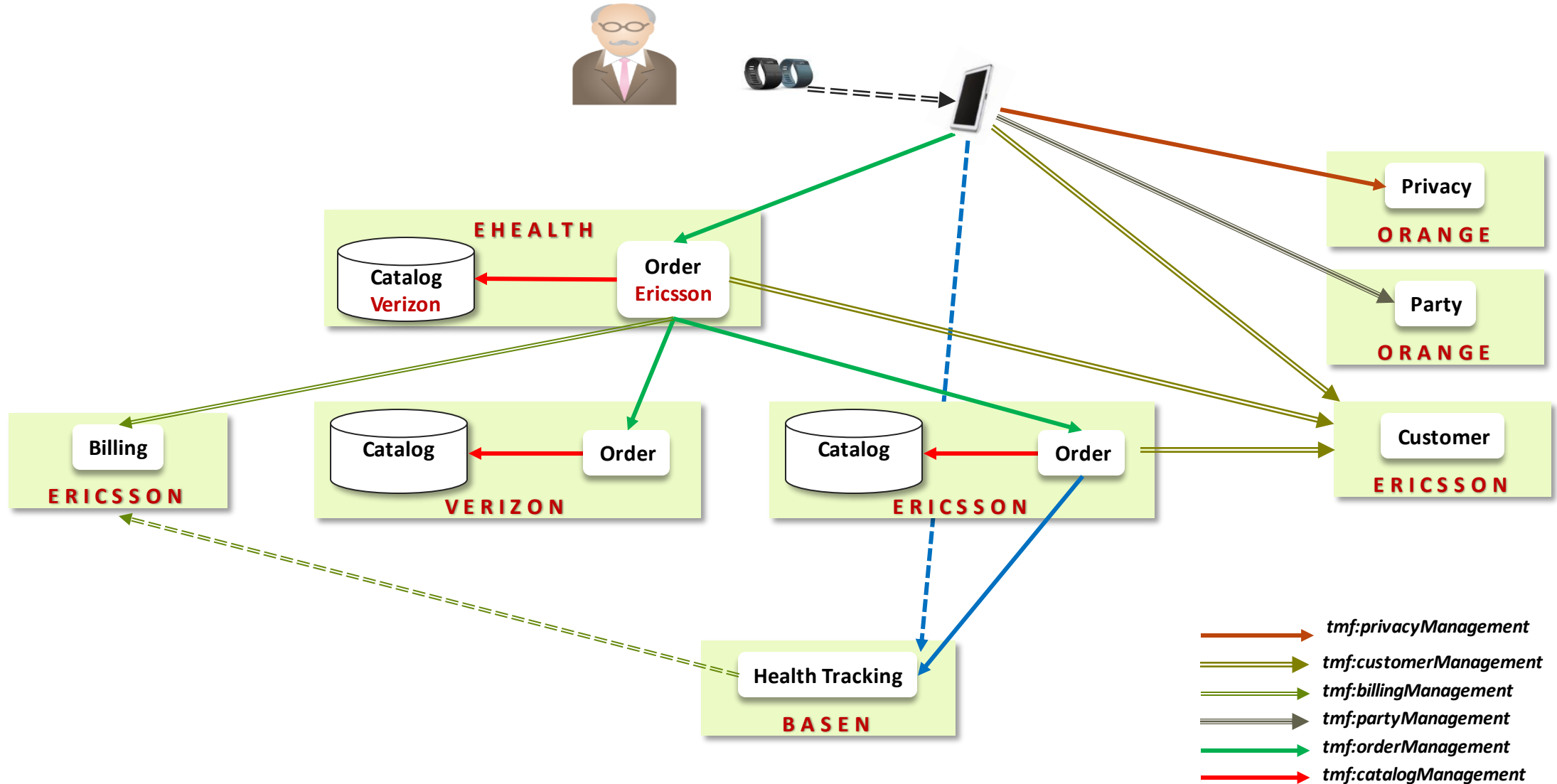
Service
Management



Service Management

Component-driven management of fulfillment, assurance, policy, charging, billing

Open Digital APIs in Use



Use Case

■ Ecosystem Provider Perspective

Concept to Market

- On-Board Partner
- On-Board Partner Service
- Set Up Product Area
- Develop APP

Order to Service

- Download & Register APP
- Register as a customer
- Register my privacy settings
- Order Equipment & Service
- Register Equipment

Service Execution

- Collect Device Measurements
- View Individual Report
- Notify Event
- Notify Patient to Medicate
- Analyze Public Health Information
- Nurse visit
 - Privacy Profile updates

Usage to Payment

- Collect Usage, Rate, & Guide
- Generate Invoice
- Accept Payment
- Settle with Partners



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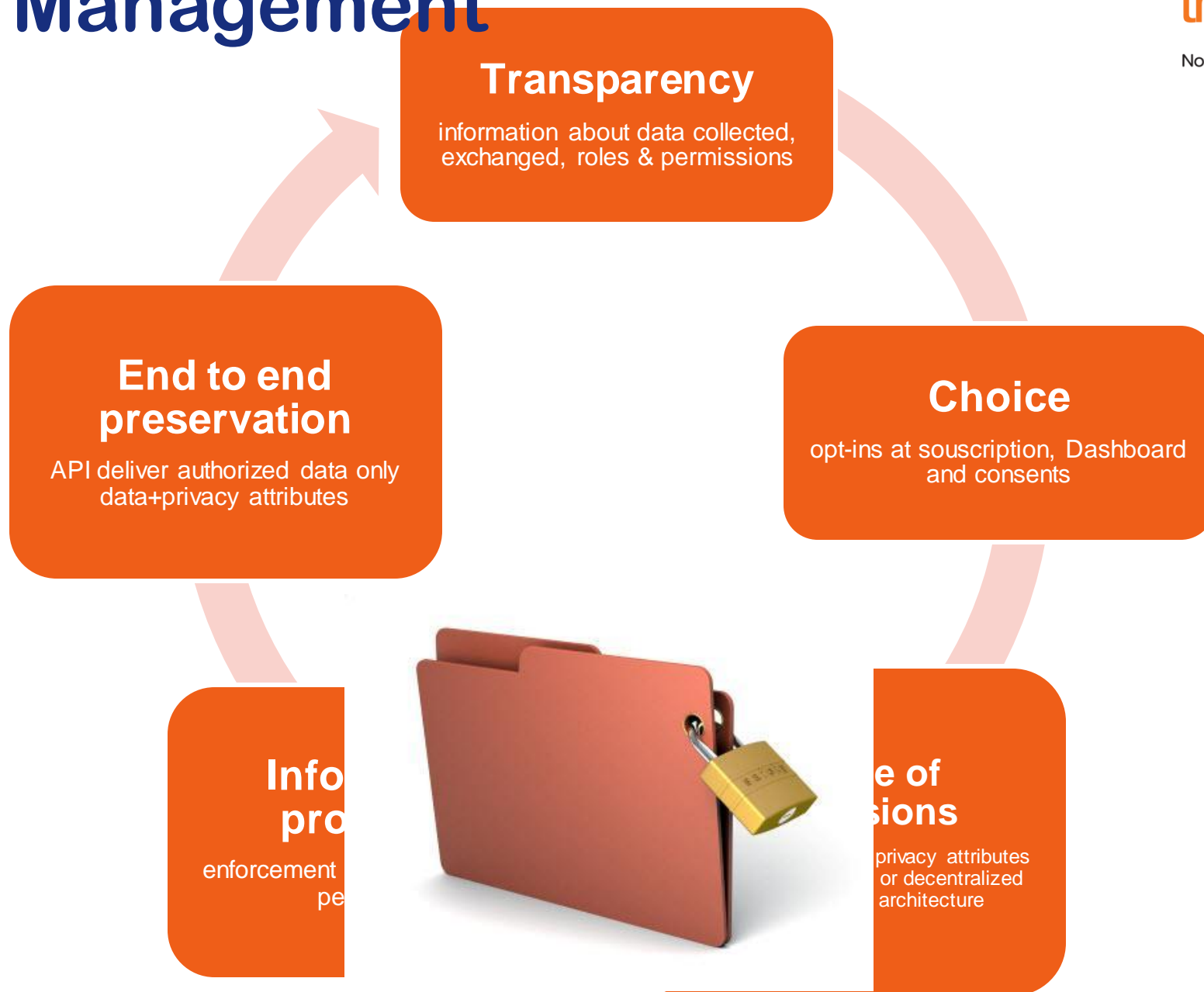
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Adding Privacy by Design into Smart-Health Catalyst thanks to TM Forum Privacy Management



Privacy Management



Transparency

information about data collected, exchanged, roles & permissions

Choice

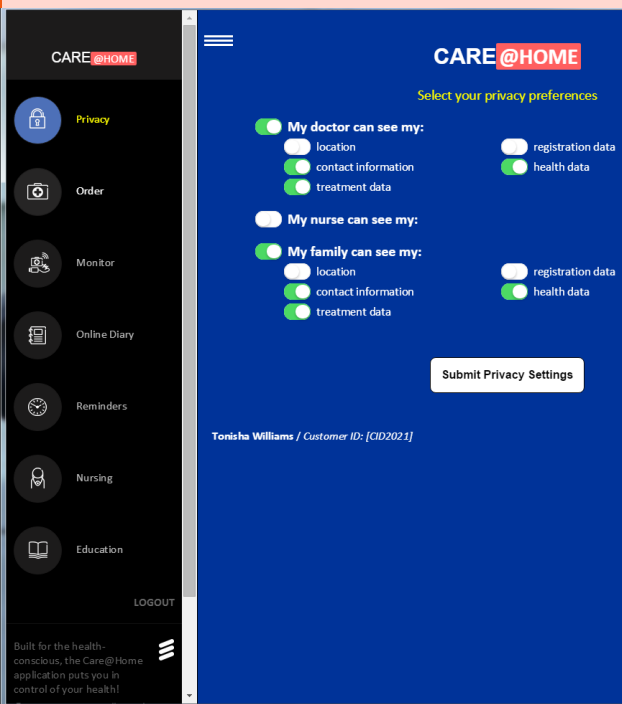
opt-ins at souscription, Dashboard and consents

Storage of permissions

independently of data, privacy attributes are stored centralized or decentralized depending on the architecture

Care@Home application :

- based on **Privacy Management eTOM**
- get User's preferences regarding permissions related to PII and roles
- uses **Privacy Management SID**
- uses **Privacy API** (draft) to create Privacy Policy for end-user
- provide **dashboard** to change settings



input/outputs APIs :

- create privacy profile types*
- create privacy profiles
- get privacy profiles
- enforce privacy

* not implemented in this version

partyId	partyName	partyPrivacyProfileTypeRef	subscriptionPrivacy	contactPrivacy	eHealthPrivacy	treatmentPrivacy
BBBBBBBAAAZ2345	John Doe's	http://serverlocation:port/privacy/PartyProfileType/103	Doctor(Nurse)Family	Doctor(Family)	Doctor(Doctor)	Doctor(Nurse)
BBBBBBBAAAZ2345	John Doe's	http://serverlocation:port/privacy/PartyProfileType/103	Doctor(Nurse)Family	Doctor(Family)	Doctor(Doctor)	Doctor(Nurse)
AAAAAAAZAZ2345	John Doe's	http://serverlocation:port/privacy/PartyProfileType/103	Doctor(Nurse)Family	Doctor(Family)	Doctor(Doctor)	Doctor(Nurse)
AZAZAZ2345	John Doe's	http://serverlocation:port/privacy/PartyProfileType/103	Doctor(Nurse)Family	Doctor(Family)	Doctor(Doctor)	Doctor(Nurse)
98989	John Doe's	http://serverlocation:port/privacy/PartyProfileType/103	Doctor(Nurse)Family	Doctor(Family)	Doctor(Doctor)	Doctor(Nurse)
m132	John Doe's	http://serverlocation:port/privacy/PartyProfileType/103	Doctor(Nurse)Family	Doctor(Family)	Doctor(Doctor)	Doctor(Nurse)
777	John Doe's	http://serverlocation:port/privacy/PartyProfileType/103	Doctor(Nurse)Family	Doctor(Family)	Doctor(Doctor)	Doctor(Nurse)
4442345	John Doe's	http://serverlocation:port/privacy/PartyProfileType/103	Doctor(Nurse)Family	Doctor(Family)	Doctor(Doctor)	Doctor(Nurse)
2345	John Doe's	http://serverlocation:port/privacy/PartyProfileType/103	Doctor(Nurse)Family	Doctor(Family)	Doctor(Doctor)	Doctor(Nurse)
112345	John Doe's	http://serverlocation:port/privacy/PartyProfileType/103	Doctor(Nurse)Family	Doctor(Family)	Doctor(Doctor)	Doctor(Nurse)
11112345	John Doe's	http://serverlocation:port/privacy/PartyProfileType/103	Doctor(Nurse)Family	Doctor(Family)	Doctor(Doctor)	Doctor(Nurse)
112321112345	John Doe's	http://serverlocation:port/privacy/PartyProfileType/103	Doctor(Nurse)Family	Doctor(Family)	Doctor(Doctor)	Doctor(Nurse)
122332345	John Doe's	http://serverlocation:port/privacy/PartyProfileType/103	Doctor(Nurse)Family	Doctor(Family)	Doctor(Doctor)	Doctor(Nurse)
BBBBBBBAAAZ2345	John Doe's	http://serverlocation:port/privacy/PartyProfileType/103	Doctor(Nurse)Family	Doctor(Family)	Doctor(Doctor)	Doctor(Nurse)
OOOOOOLIVEIER	Olivier Carpenter	http://serverlocation:port/privacy/PartyProfileType/103	Doctor(Nurse)Family	Doctor(Family)	Doctor(Doctor)	Doctor(Nurse)

Privacy Profiles :

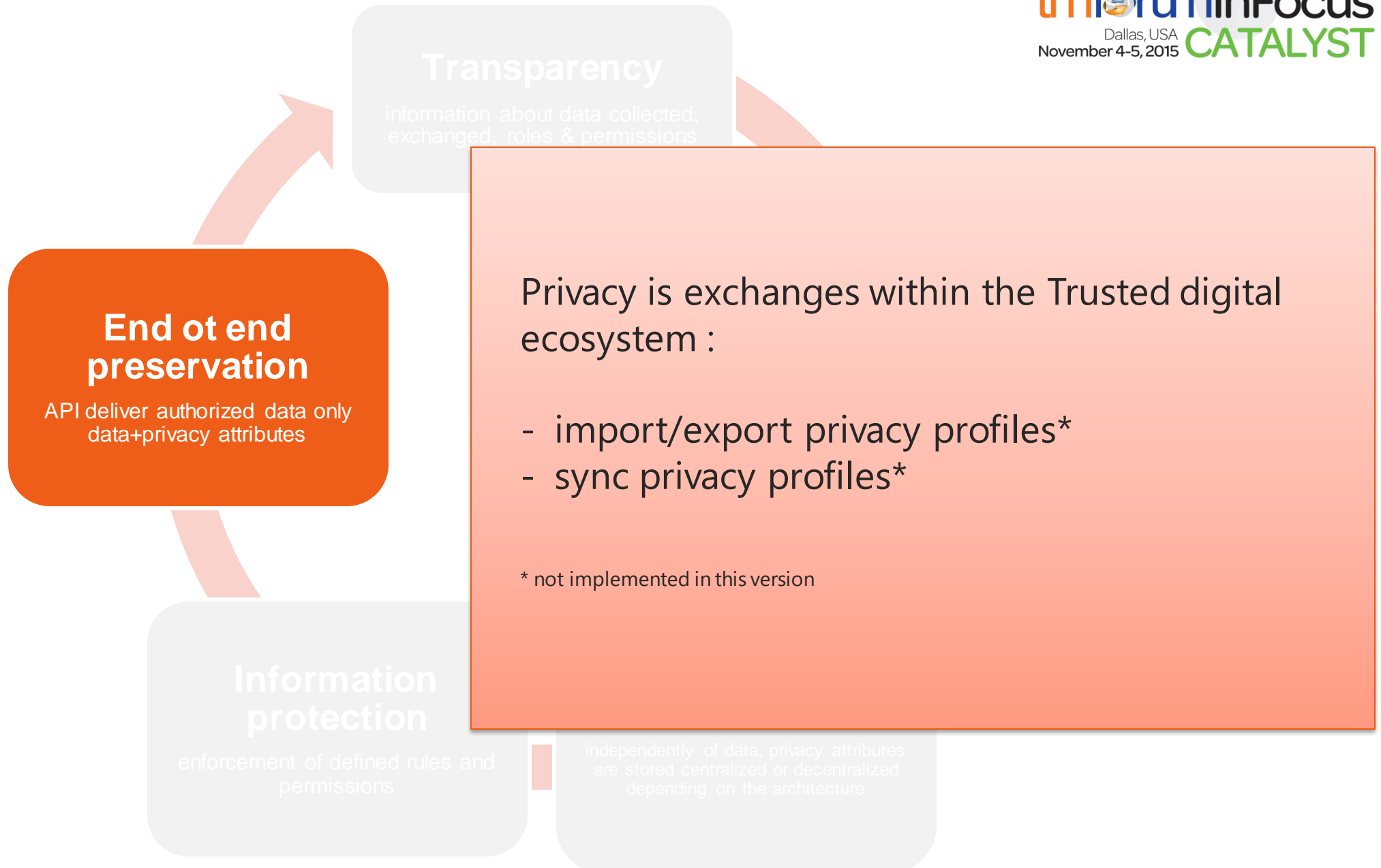
- agreements
- attributes (PII) concerned
- duration of conservation
- usage
- roles authorized to access, use PII

Information protection

enforcement of defined rules and permissions

Storage of permissions

independently of data, privacy attributes are stored centralized or decentralized depending on the architecture



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Value of an Ecosystem Approach

- Enable efficient and **standardized interaction** between parties without the need for deep knowledge of Framework
- Enable businesses to create, evolve and **manage digital services** rapidly and efficiently without the need to deal with the complexity of their partner businesses
- **Touch-points between partners** and the ability to utilize TM Forum APIs to deliver value/content/offers
- **Time to market** for end user collaborative applications
- **Time to revenue** for each of the partners within the ecosystem
- End user, patient, receives more **personalized level of services** and surrounding participants e.g. Doctors, Nurse Practitioners, healthcare organization receive improved information/efficiencies.
- **Integration of healthcare** data along the entire continuum of care
- **Secure authentication** to enable access to medical data for nurses/patients