Privacy Protection Architecture based on oneM2M

KDDI Research, Inc

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KDDI Research

Profile

CEO	Yasuyuki Nakajima
Establishment	April 1, 1998
Shareholders	KDDI CORPORATION, KYOCERA Corporation, TOYOTA MOTOR CORPORATION
Employees	298 people (April 1, 2018)
Head Office	2-1-15 Ohara, Fujimino-shi, Saitama, 356-8502 Japan

Fujimino (Head office)

History

1953	KDD Research Lab was established as a research department of Kokusai Denshin Denwa(KDD)Co., Ltd.
1998	KDD R&D Laboratories, Inc. was established.
2016	KDDI R&D Laboratories, Inc. and KDDI Research Institute, Inc. were merged to form KDDI Research, Inc.

Y R P

San Francisco

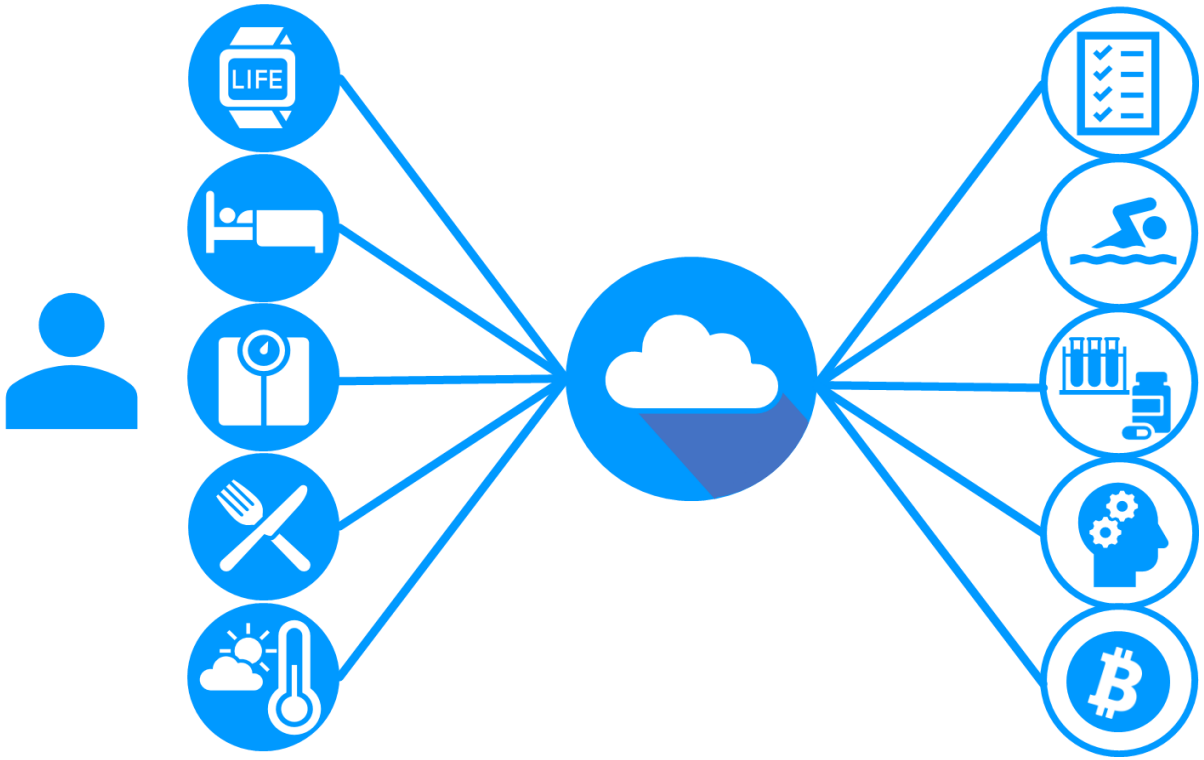
Iidabashi
(Head office of KDDI)

Agenda

- Privacy Policy Manager (PPM)
- Activity of KDDI Research on oneM2M
- PARMMIT

Background

- **Risks of privacy disclosure in IoT connected world are increasing**
  - More and more IoT devices will generate personal data
- **Servicers are required to use personal data in user intended way**
  - End user may not understand what kinds of data are provided to a service from privacy policy



Privacy Policy Manager (PPM)

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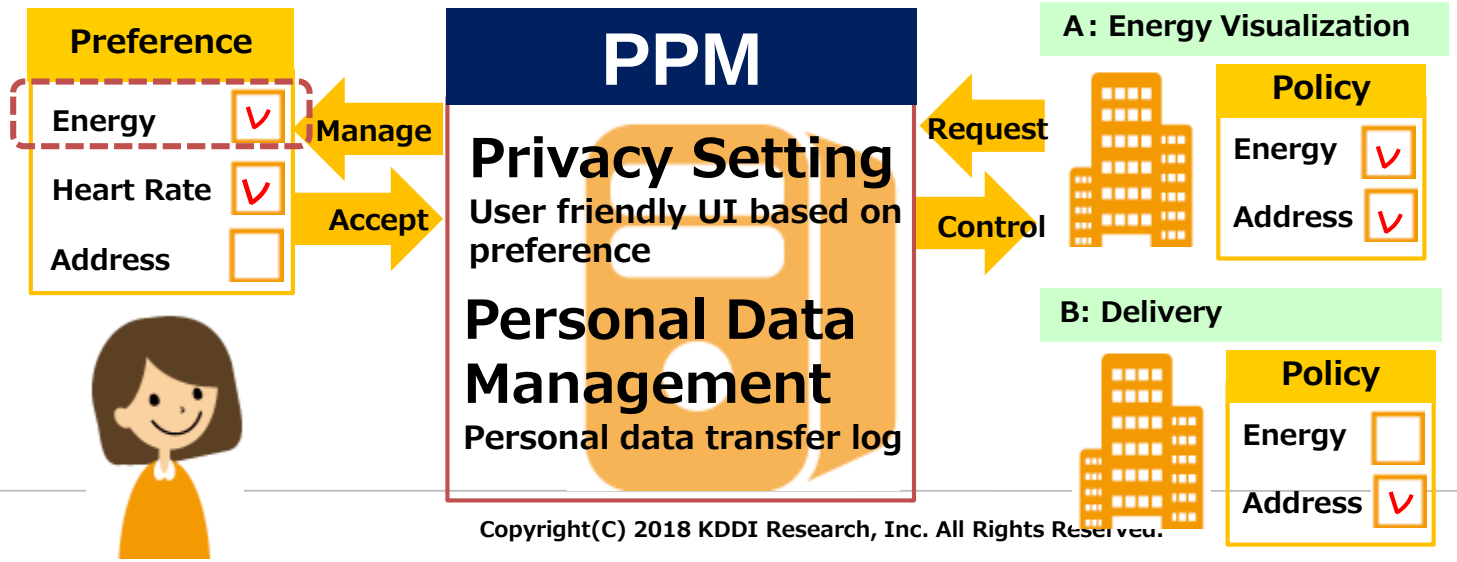
- **PPM provides user friendly UI of privacy policy**
  - End user configures the user's privacy preferences
  - PPM compares privacy policy with privacy preference
  - End user creates a privacy setting for each service
- **PPM issues access control information to control personal data**
  - Access control information is based on privacy settings
  - PPM does not host personal data
- **PPM shows personal data transfer logs**
  - End user easily understand what kinds of personal data are used in each service



PPM Standardization in oneM2M

oneM2M Release 2

Mar. 2015
Use case of PPM

May 2015
Proposal of PPM architecture

Jul. 2015
Proposal of Markup-language

Sep. 2015
PPM architecture on oneM2M

Jan. 2016
PPM implementation model

Jan. 2016
PPM architecture on oneM2M

Aug. 2016
oneM2M Release 2

Dynamic Authorization

oneM2M Release 3 & 4

Sep. 2017
Enhance PPM architecture

Dec. 2018
oneM2M Release 3

Distributed Authorization

Normative

Informative

Future work

Jan. 2018
Proposal of service subscriber and user

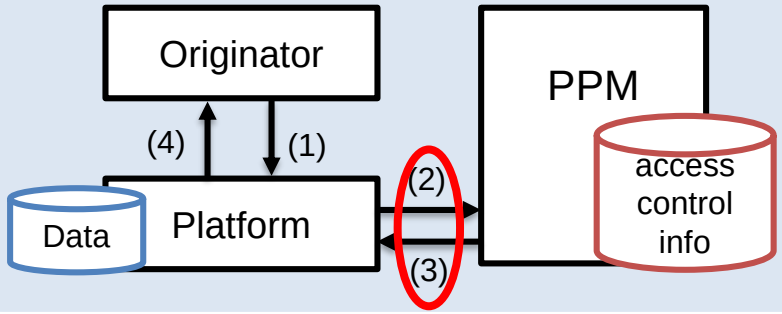
XXX. 2019
Technical report for Release 4

YYY. 2020
oneM2M Release 4

PPM Architecture in oneM2M

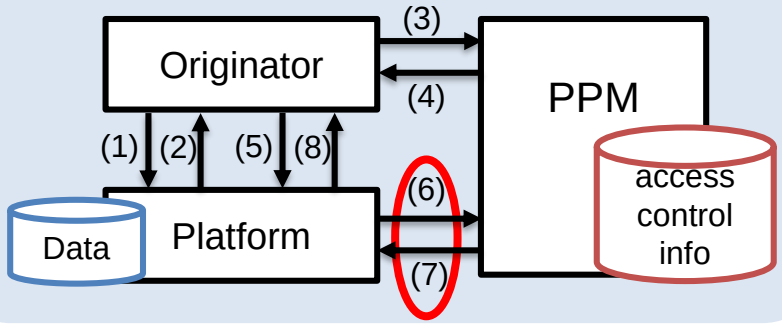
■ Dynamic Authorization (Release 2)

Direct Dynamic Authorization Server

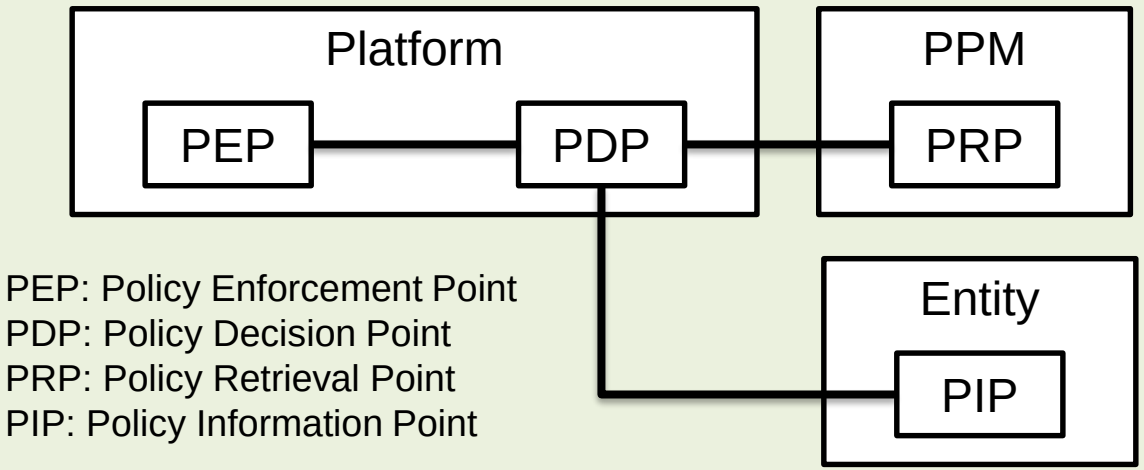


(1) Request personal data
(2) Request access control information
(3) Respond access control information
(4) Respond the data or NG

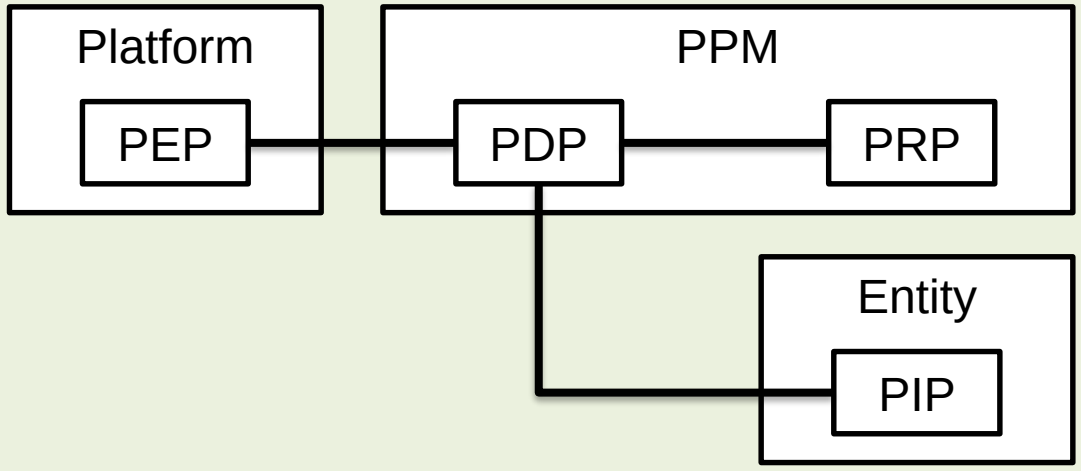
Indirect Dynamic Authorization Server



■ Distributed Authorization (Release 3)



PEP: Policy Enforcement Point
PDP: Policy Decision Point
PRP: Policy Retrieval Point
PIP: Policy Information Point



PARMMIT

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■ Project overview

- Japanese Government Project
  - Ministry of Internal affairs and Communications
- Social implementation of IoT / BD / AI Information and communication platform[*1]
  - Establishment of cooperation technology between IoT devices and platform
  - Verification of Interoperability between platforms
- Term: 2017 - 2019

Personal data **A**ccess **R**ecording **M**anagement & **M**ulti-platform **I**nterconnection **T**echnologies

*1 http://www.soumu.go.jp/menu_news/s-news/02tsushin03_04000246.html

Target of PARMMIT

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■ Development and implementation

- **Advanced technology for IoT platform: “Distributability ” and “Privacy Protection”**
  - Distribution technology considering user’s privacy
  - High usability PPM
  - Traceability, integrity and low latency

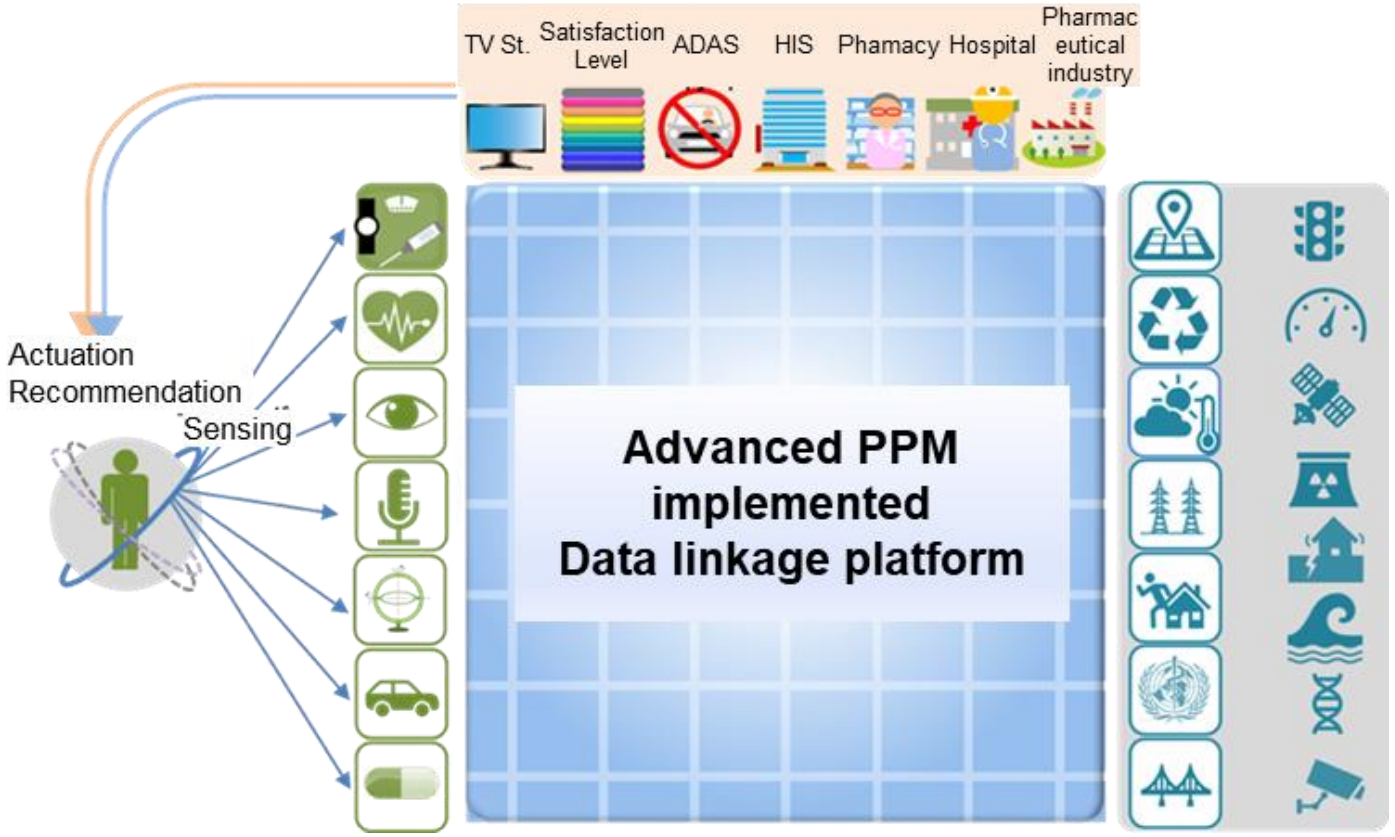
■ Standardization

- Feedback to oneM2M
  - M2M service subscriber and user
- ISO

■ Proof of Concept (PoC)

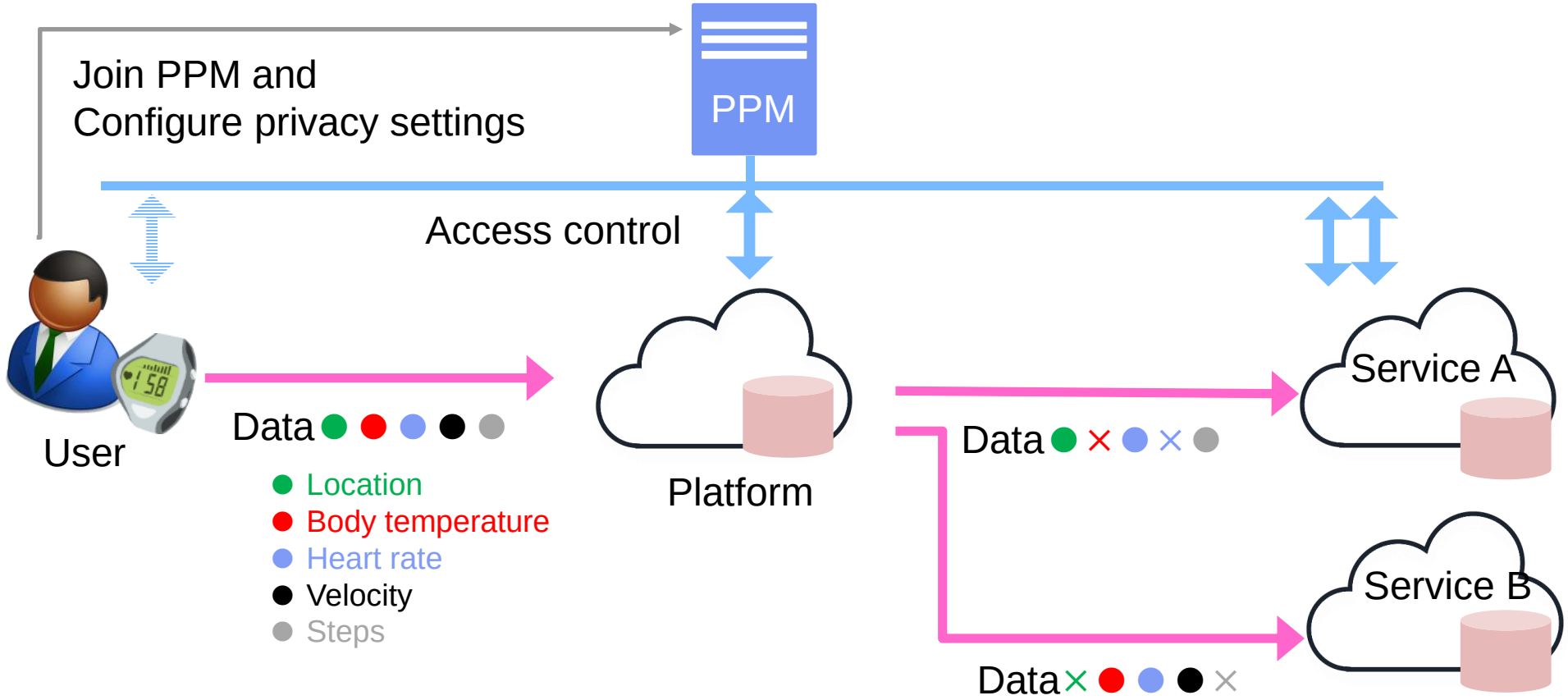
- Application to use case

PARMMIT Working Group



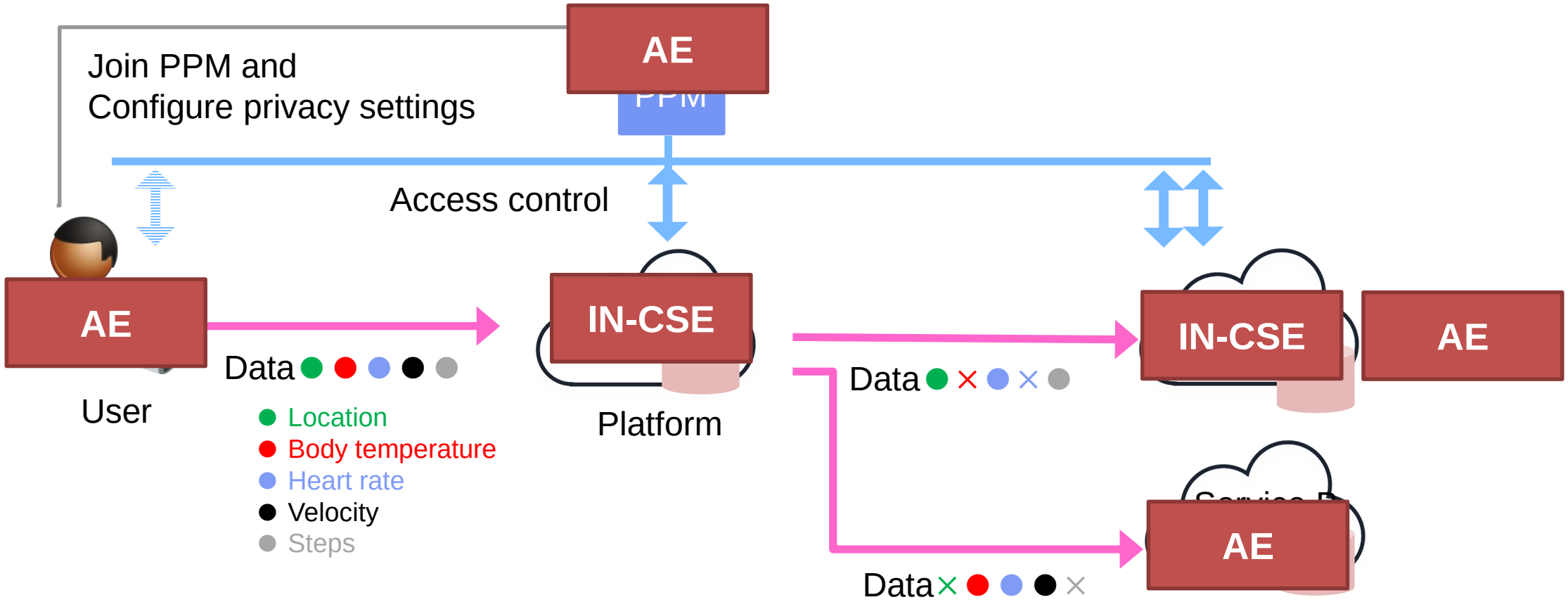
PARMMIT Architecture

- User can configure user's privacy preference on PPM with user friendly UI
- PPM controls user's personal data according to user's privacy settings
- Servicer could simplify the management of consent information by using PPM



PARMMIT Architecture (oneM2M)

- **PARMMIT architecture is based on oneM2M Release 2**
- **PPM is defined as an external authorization server and acts as AE on oneM2M**
  - Static authorization or direct dynamic authorization



PARMMIT Working Group

Overview

- **Term: Oct. 1st, 2018 – Mar. 31st , 2020**
- **Participant company: 11 companies (Oct. 1st, 2018), Over 20 companies will join**
  - ACCESS CO., LTD, DAIICHI SANKYO COMPANY, LIMITED, Mitsubishi Tanabe Pharma Corporation, GSIS: Graduate School of Information Sciences, Tohoku University, PIONEER CORPORATION, Macromill, Inc., Murata Manufacturing Co., Ltd., LIFENET INSURANCE COMPANY, …
- **Web: https://rp.kddi-research.jp/parmmit/**

Objective

- Discuss use cases for proof of PARMMIT concept
  - Use cases treat personal data such as health care information
- Implement PARMMIT architecture and practicality evaluation

Expectation

- Create matching opportunities between information supply business and information utilization business
- Promotion of new business by data linkage

PARMMIT Working Group

Activity plan

- **Implementation plan about PARMMIT architecture for PoC**
- **Proof of PARMMIT concept using a use case**
- **Promotion of PoC result**
  - Target: CEATEC 2019

Procedure

- **Workshop for discuss use cases and technical requirement**
  - Use case of Multi-industry collaboration
  - Use case of low latency requirement
  - Use case of Ad hoc collaboration

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