TOPPAN Smart City Solution

- Factory/Equipment DX

29th Oct. 2024

Toppan Digital Inc.
Yuji Maruki

TOPPAN

Company Profile

TOPPAN Digital Inc. Company Overview

Company Name	TOPPAN Digital Inc.
Address	1-3-3 Suido, Bunkyo, Tokyo, Japan 112-8531
Established	March 1, 2023
President & Representative Director	Kazunori Sakai
Capital	500 million yen
Employees	811 (as of Apr. 1, 2024)
Business	DX business strategy formulation for the TOPPAN Group as a whole, creation and promotion of the DX business, DX-related R&D, provision of IT infrastructure, etc.

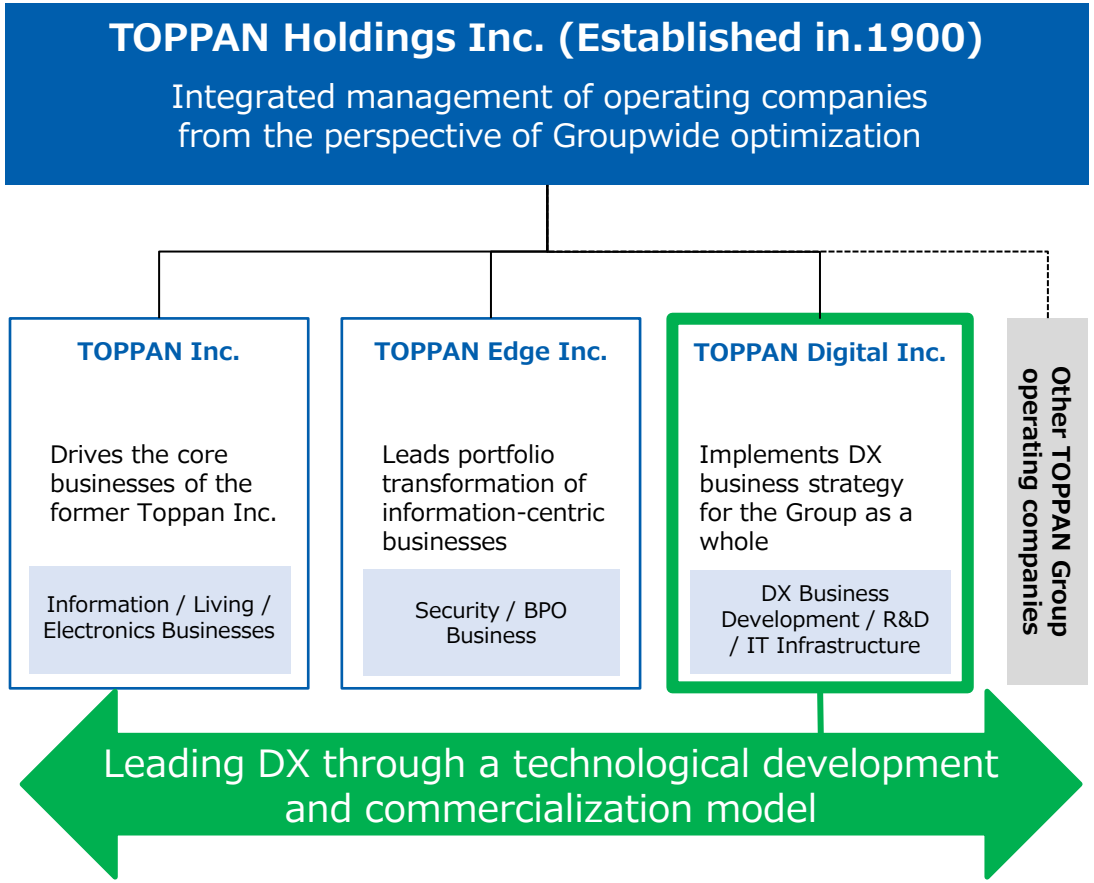
TOPPAN Digital affiliate companies

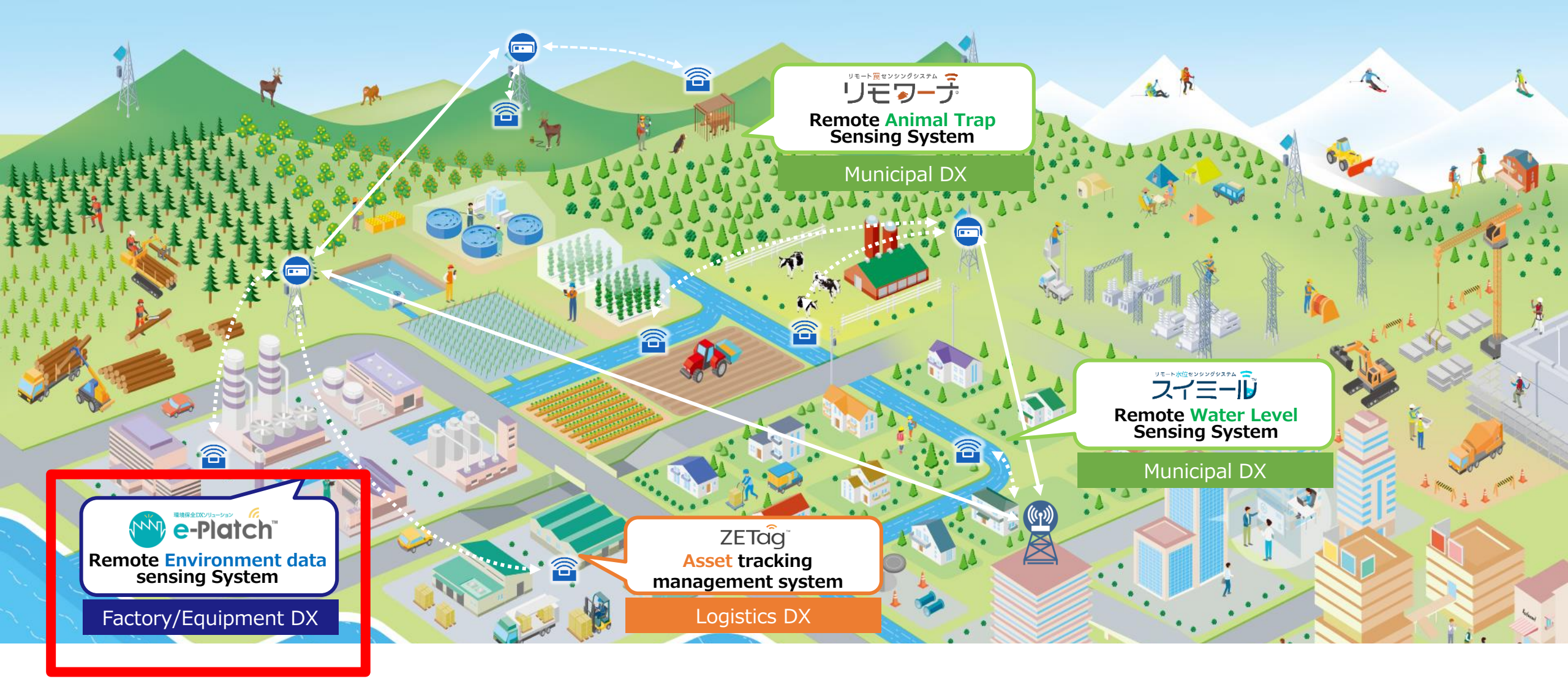
Company Name	Business
ARMORIS Armoris Co., Ltd.	Training of cybersecurity personnel for companies and public institutions, along with the provision of services thereto to improve their security level
AIOI AIOI·SYSTEMS CO., LTD.	Development, manufacturing, and sales o f logistics and production systems

TOPPAN Digital's Role

TOPPAN Digital leads the Group's DX initiatives and contributes to society through this new type of role.

We strive to resolve increasingly complex and sophisticated challenges facing customers and society with digital technology that cuts across the TOPPAN Group's products and services.





Toppan's Smart City Solution by ZETA

ZETA Low Power Wide Area Network for IoT

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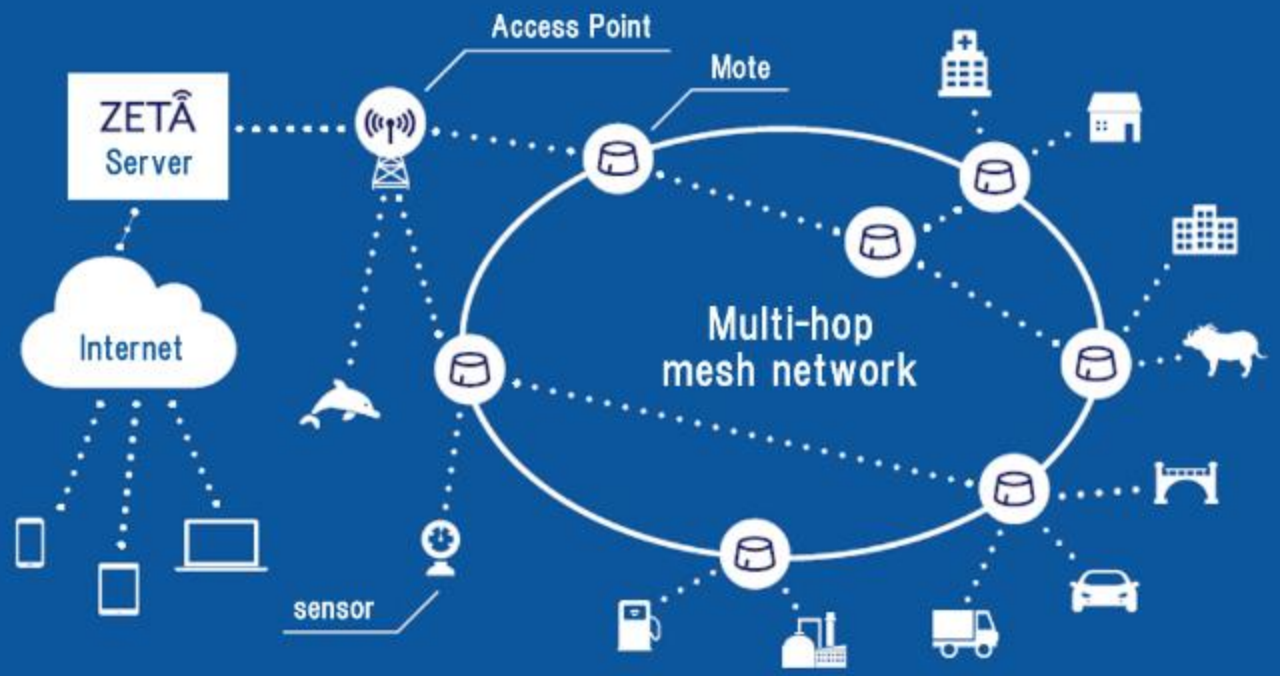
ZETA is.

(1) Multi-channel communication with ultra-narrow bandwidth

(2) distributed access over a wide area using a mesh network

(3) bi-directional low-power communication is possible,

It is a wireless communication standard (communication technology) for the IoT.



In Japan, multiple channels (1 channel: 200 KHZ) in the 920 MHZ band (916-928 MHz) are used.

Feature 1

UNB (Ultra Narrow Band)

2kHz, strong against RF interference

Feature 2

Mesh Network

Extend IoT coverage with Multi-Hop

(Each Distance: 1 ~ several km)

Feature 3

LP Bi-Directional Communication

Up-Link from sensors
Down-Link from server

Factory/Equipment DX e-Platch

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Sensors

ZETA sensors

Ex) Temp & humidity sensor

*Range of sensors available, including water leakage, water level, etc.

ZETA sensors

Existing measuring instruments

・pH
・ORP
…etc.

4-20mA

ZETABOX

RS-485

Power meter
… etc.

ZETABOX

1 Existing measuring instruments
*Devices with output

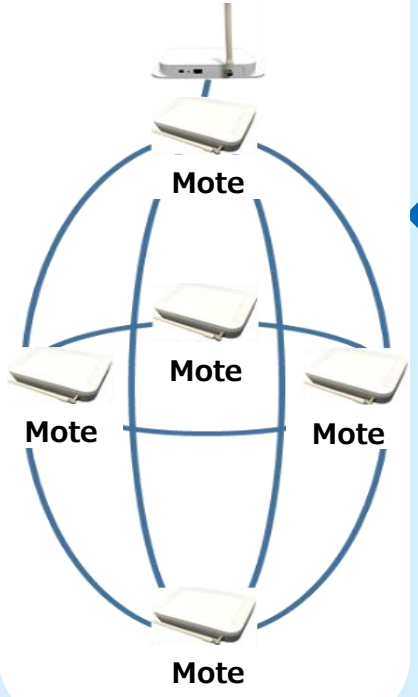
Analog meters

Magnetic sensors

2 Analog meters

ZETA LPWA network

Multi-hop network



LTE

Cloud Server platform

ZETADRIVE

Monitoring system

3 e-Platch application

API link-up

Customer system (ERP etc)

e-platch will start in Vietnam in 2025

Feature 1

Connect Existing measuring instruments

- No replacement needed
- No change in maintenance process
- Low initial cost

Feature 2

Remote monitoring of analog meters

- Low cost comparing to the camera services
- Indoor/outdoor usable

Feature 3

Dedicated Monitoring application

Visible collected environment data by app.
(Graphs / Alerts / Generate reports)

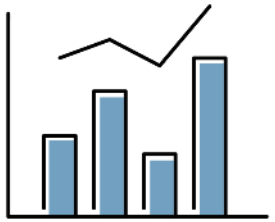
EXPECTED BENEFIT

Let us improve your inspection work with the following 3 advantages

Reduction of inspection workload

Remote monitoring of meter readings reduces inspection workload, providing solutions for worker shortages.

Establish accurate and reliable inspection routine



By automating human-dependent inspection work, more accurate and reliable data can be recorded.

Reducing the risk of accidents & addressing SDGs issues

Remote monitoring supports the early detection of abnormalities.

The alert function supports quick response to abnormalities and reduces the risk of accidents.

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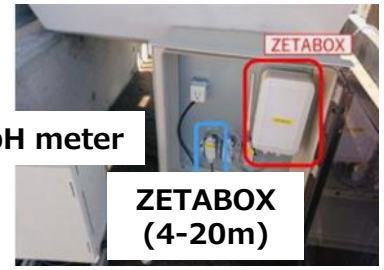
e-Platch installation is ongoing over 10 TOPPAN factories

Case study: Toppan Kumamoto Factory

@ Effluent treatment facilities



Monitoring pH by using ZETABOX (4-20mA)

Monitoring analog meter by using magnetic sensor

TOPPAN Kumamoto factory

@ Cleanroom

Setting up temperature & humidity sensor

@ Rooftop

Installing access point

Cost	Investment incl.devices **JPY 40 million**	Installed	Personal Expense (Outsourcing) Save **JPY 35 million/year** Related improved operation cost Save **JPY 15 million/year**
Inspection work	No.of check point : **1,100** Workload : **530hrs/month**		No.of check point : **300** Workload : **150hrs/month** → **70% Reduction**

Appendix: ZETA Alliance

ZETA Alliance: Mission / Activities

ZETA Alliance is promoting the application of ZETA to various social issues, to contribute to the realization of an ultra-smart society advocated by Society 5.0.

- Announcement / publication of ZETA case studies and utilization
- Members' cooperation such as joint development of ZETA sensor devices and services
- Activities related to the improvement requests of ZETA standards
- Localization activities of ZETA in Japan
- Development of ZETA equipment made in Japan
- Promotion of cooperation and exchange between ZETA members, etc.

ZETA Alliance Japan Board Members and Auditor

Board Member

Shintaro Moroi

諸井 眞太郎

TOPPANデジタル株式会社

事業開発センター
LOGINECT事業開発部
部長
IoT事業・ハードウェア開発

Qiang Zhu

朱　強

株式会社テクサー
代表取締役

ZETA日本総代理店

Munehito Sawamura

澤村　宗仁

アイティアクセス株式会社
取締役

クラウドサーバー・サービス開発

Ohzeki Masaru

大関　優

株式会社NTTドコモ
カンパニーコーポレート部
カンパニー戦略統括室

スマート農業サービス展開

Masakazu Urade

浦出 正和

株式会社ソシオネクスト
コネクテッドソリューションチーム
ビジネス戦略部　ビジネス戦略課
部長代理

LSI開発

Kazuhiro　Matsui

松井 一博

稲畑産業株式会社
情報電子第三本部　第
三営業部　部長

ソリューションプロバイダー

Auditor

Masanori　Matsuzaki

松崎　真典

株式会社DEGLO
代表取締役

情報通信等の事業支援

ZETA Alliance Japan Members

ZETA Alliance
JAPAN since 2018

94
May, 2024

Promoter

ALLION AIoT EXPERT
Buddy Net
Giv-Tech
IK 稲畑産業株式会社
IT Access
NTT docomo
socionext
TECHSOR
TOPPAN
ZiFiSense

ZETA Alliance Japan Members

Adopter

AETERLINK
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Basis
Bestreha
DNP 大日本印刷
DEGLO
FPT Software
GENECH
株式会社阪南コーポレーション
アイテック阪急阪神 株式会社
maxell Within, the Future マクセルフロンティア
maxell Within, the Future
NEC NEC通信システム
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nishimu ニシム電子工業
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TOWADA
亚控科技 WellinTech
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ACCESS
Alibaba Cloud
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KDDI Research
KOBATA GAUGE
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Mini Solution
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三信電気株式会社
Σtop Inc.
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VERISERVE
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Special member

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東京大学生産技術研究所 野村研究室
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大阪府立大学工学研究科 Takei Research Gr.
松前研究室
崇城大学 情報学部亜原理研究室
東京都立大学 電子情報システム工学域

Case studies of ZETA Alliance members

"ZETA" is used in various places all over Japan

https://zeta-alliance.org/contents/case#post-2415

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