



Multi-layered
Security
Technologies
for hyper-connected
smart cities

Future Smart City Life protected by M-Sec Security Technology



An Introduction to
EU-Japan Collaboration Project
M-Sec



Please do not divert this book without permission.
Produced by: Bibai Teleworking Plaza "Bisate"

Chapter 1
~Companion
Database(CCDB)~

However, there was no need to worry for her safety. There were sensors installed all over the house, including doors, windows, and beds!



What a wonderful day!!

Margaret

There lived an elderly woman named Margaret who lived by herself.



Margaret had a daily routine, and it was time for her to go shopping.



...allowing them to see whether she was safely living alone!



The sensors directly sent information to computers of family members and nurses who were far away...

The hacker watched and observed her every move by stealing her Cloud information.

That grandma usually leaves around this time...

Hacker

But... a disturbing shadow was creeping in.

When she came home, all her valuables had been stolen by someone!

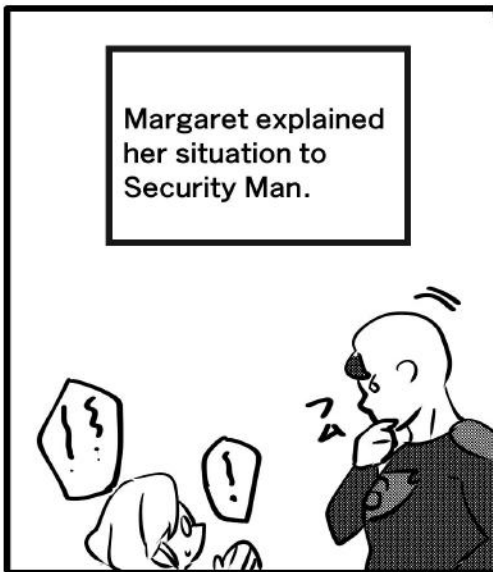
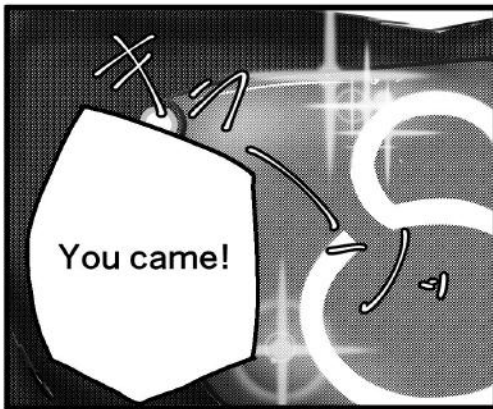
There all gone! Even my ring and necklace. I was only out for one hour... WHY!?!?

I'm home! ... what??

After a while, Margaret returned home to find...

Help me, Security Man!!!!

What, what should I do...?



Companion Database?

It's called "Companion Database(CCDB)"

Here, I shall use this...

M-Sec is an abbreviation for "Multi-layered Security technologies to ensure hyperconnected smart cities with Blockchain, Big Data, Cloud and IoT."

Let me start by explaining Security Man's M-Sec Technology.

Excuse me for interrupting. Let Me Explain!

Dr. Mathieu

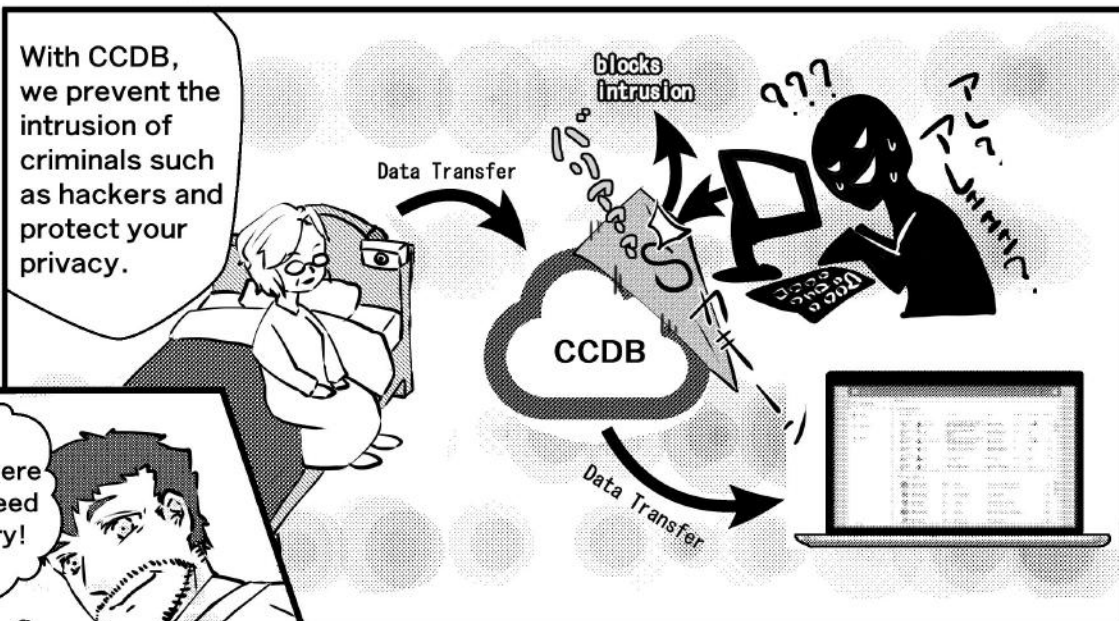
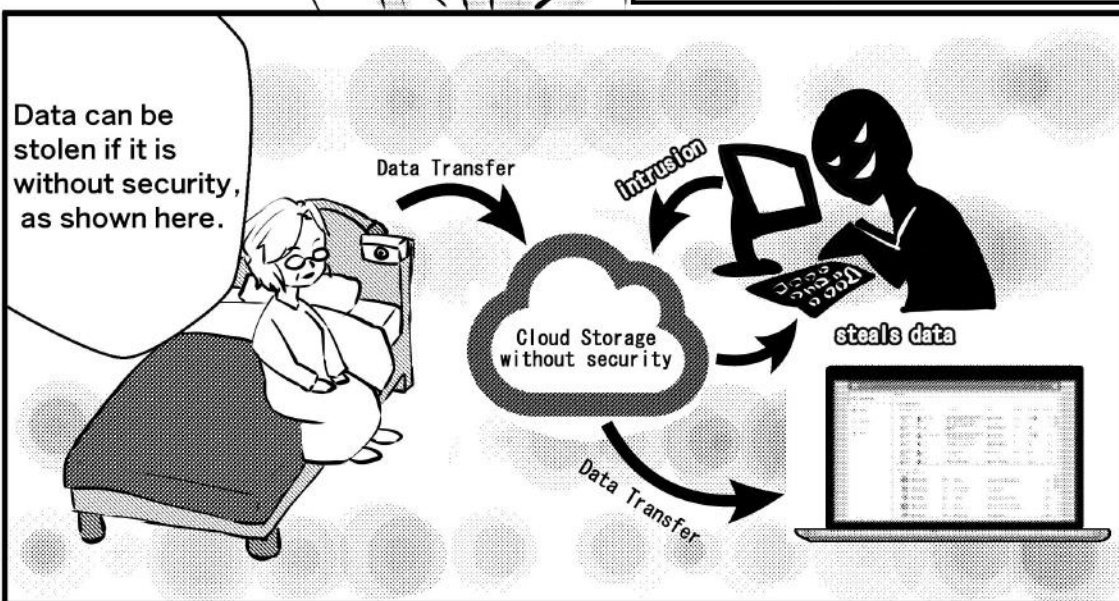
Most electrical appliances and sensors in the world are connected to a network. Through those devices, data, such as user information and usage information are gathered. Within this flow of data, there are many layers of protection. "Device Layer," "Network Access Layer," "Data Output and Accumulation Layer," "Application Layer," etc. Each layer has a specific threat.

An example is shown below for clarity.

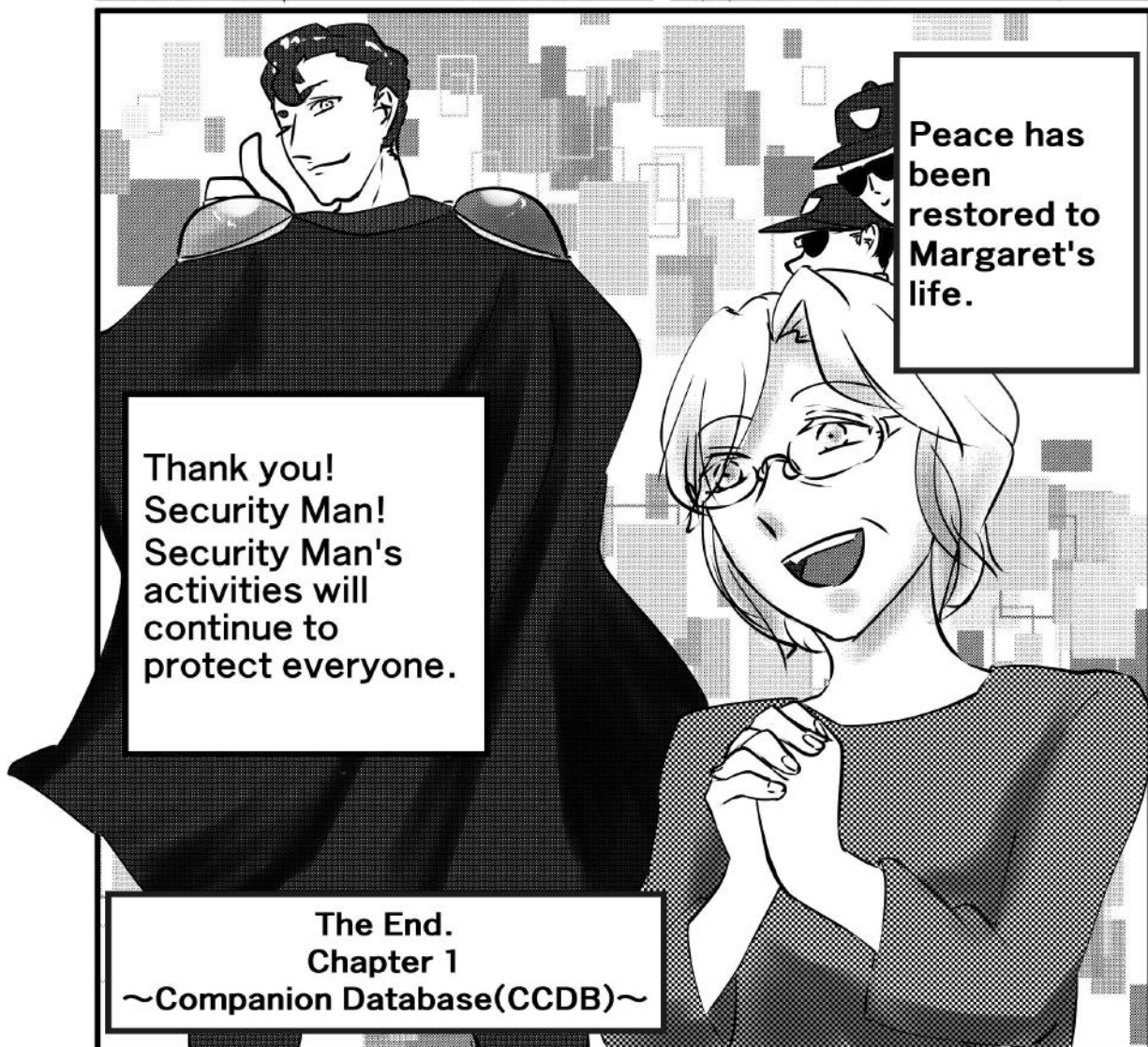
CCDB has not only an encryption function but also a built-in blockchain, so it prevents information tampering and theft.

In addition, a tool called "Smart Contract" is used, which only allows authorized users by the data owner to access the data.

These tools protect multiple layers.



Now there is no need to worry!



Chapter 2 ~GANonymizer~

Such great weather,
a perfect day
for a ride.

Sonia

At this tourist's
destination, horse
riding can be
enjoyed.

Good!
Look at the
camera!

Sonia and her
friend used
"Smile City
Report" to take
a picture,

How about
here?

Here's a
perfect view
for a picture!

Okoshi-san

However, a couple
of days later, an
incident occurred:
a girl was
abducted.

We took many
great pictures!
I will share
them with my
friends.

And so, they
shared them
with their friends
through the app.



Soon after,
the abductor
was identified
and captured...
The girl safely
returned home.

A girl walking
out of a mansion
was
unexpectedly
included in the
picture and the
abductor saw
her.

The incident
was caused
by the picture
uploaded to
"Smile City
Report."



If the victim was
someone else,
and we did not
know you, you
could have faced
serious legal
actions. So, we
must do something
about it to avoid
this in the future.

My daughter
was abducted
because of
your pictures!
The criminal
seems to have
come up with
the crime
after seeing
your post.

We are in a
bad
situation.

The girl's
parents were
Sonia's
neighbors.
After hearing
the reason
for their
daughter's
abduction,
they decided
to visit her

The girl's father,
Arturo

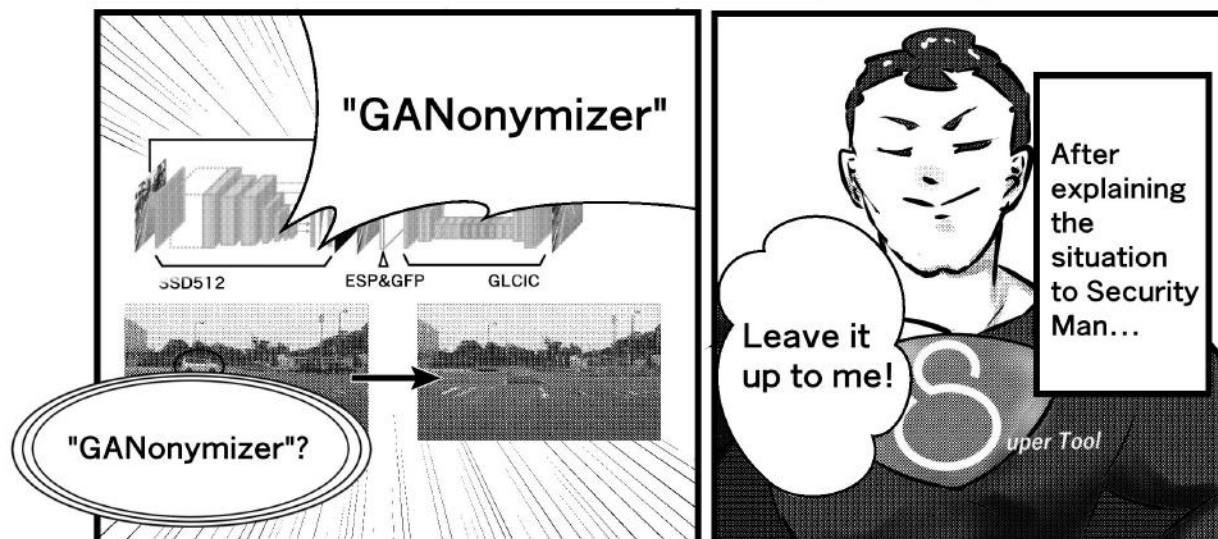


**Help me,
Security
Man!**

What should
I do... I still want
to upload
pictures..

hmm...





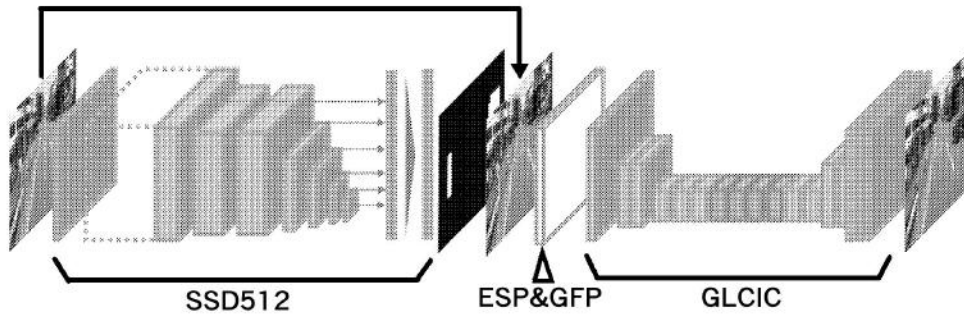
The following is more detailed explanation.



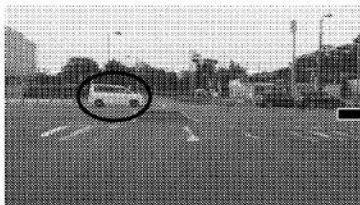
"GANonymizer" uses two deep learning neural network engines to process images. The first engine erases parts of the image that relates to private information. The second engine replaces it with a natural background.

1st Engine
Personal information relating image is detected and erased.

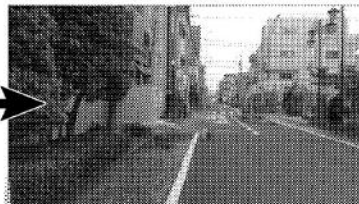
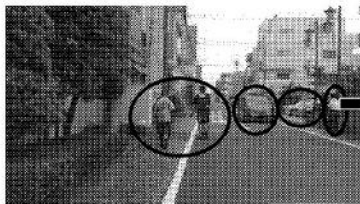
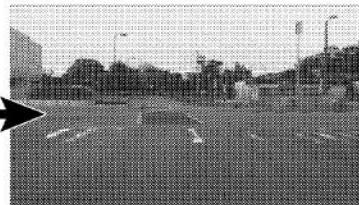
2nd Engine
The erased area is repaired with a natural background.



Original



After GANonymizer



Faces, cars, and other images that are aired on TV are only blurred out. With "GANonymizer," these will be automatically erased from the images.

Now there is no need to worry!





And the abducted girl returned to her family.



Afterwards, Sonia was able to safely upload with her "GANonymizer" installed "Smile City Report" app.

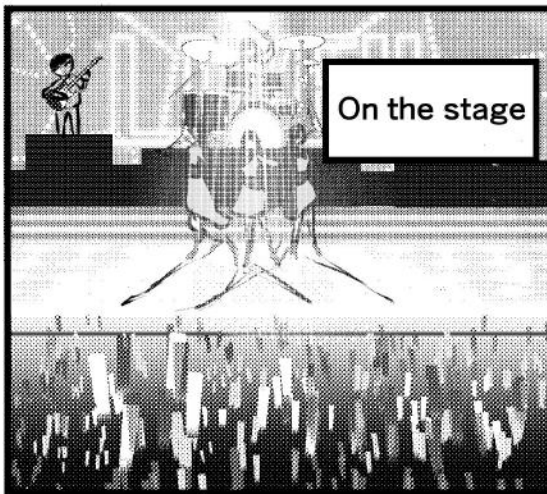


Once again, Security Man saved the day!

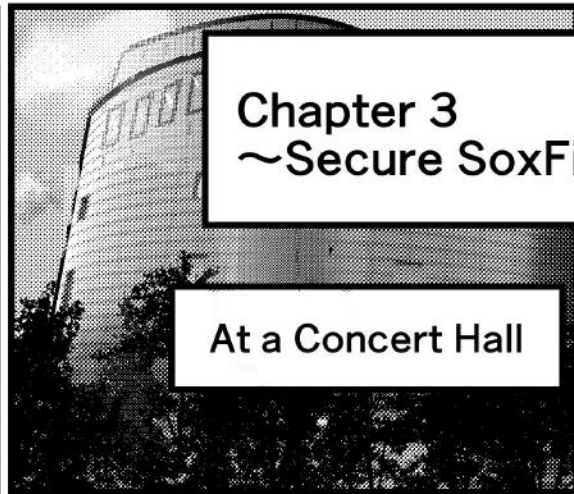
Where to next, Security Man?

His fight continues for those who suffer...

The End.
Chapter 2
~GANonymizer~



On the stage

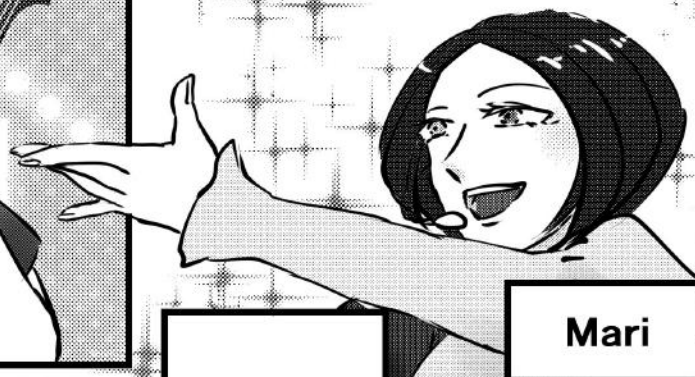


Chapter 3 ~Secure SoxFire~

At a Concert Hall



Guitarist,
Akira



Mari

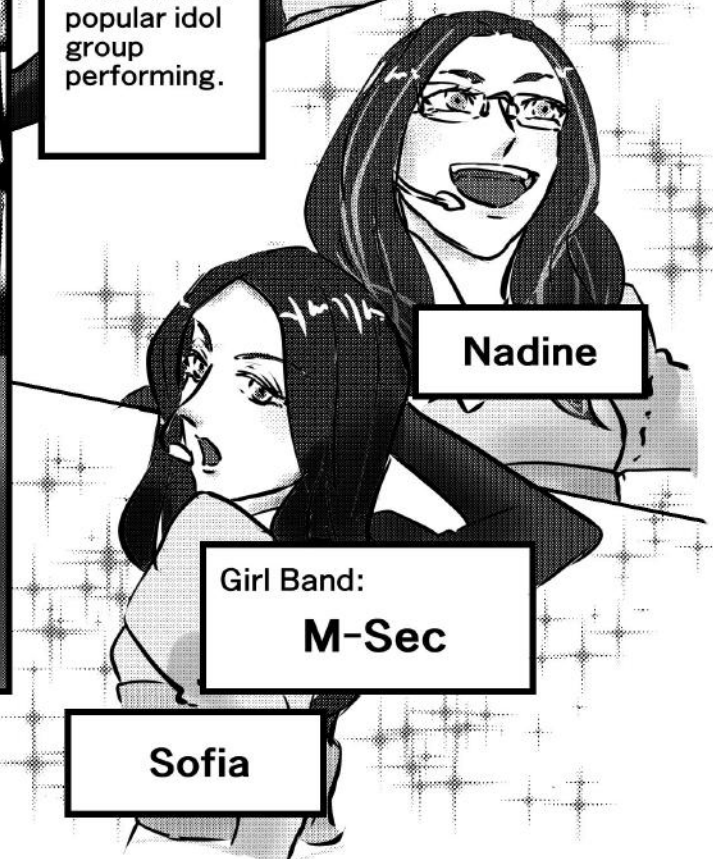
There was a popular idol group performing.



And he is Ishii-san.

Despite the high demand for tickets, this fan successfully got one and was cheering in the crowd.

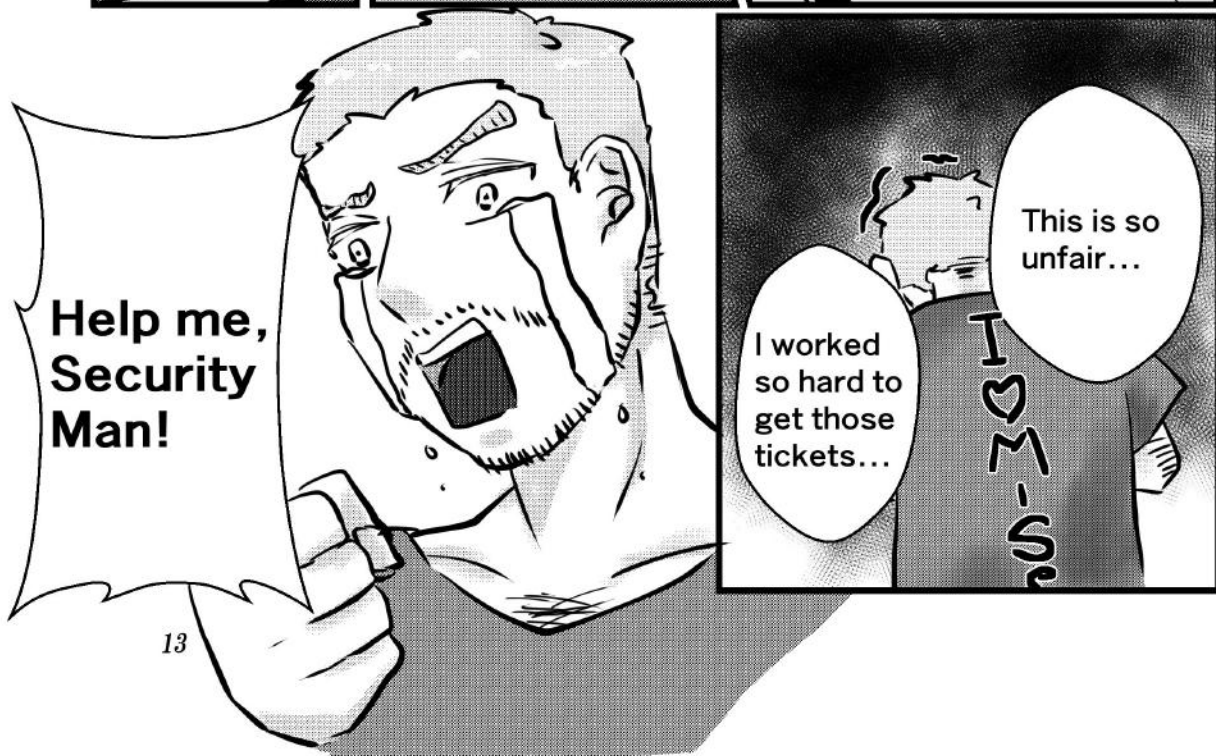
M-Sec fan,
Ishii-san

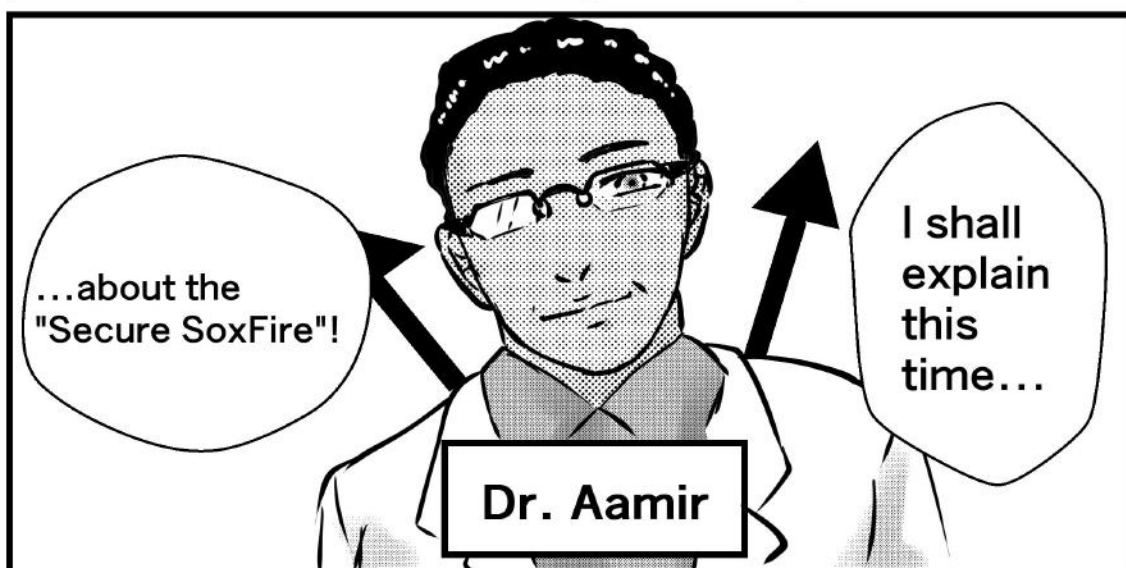
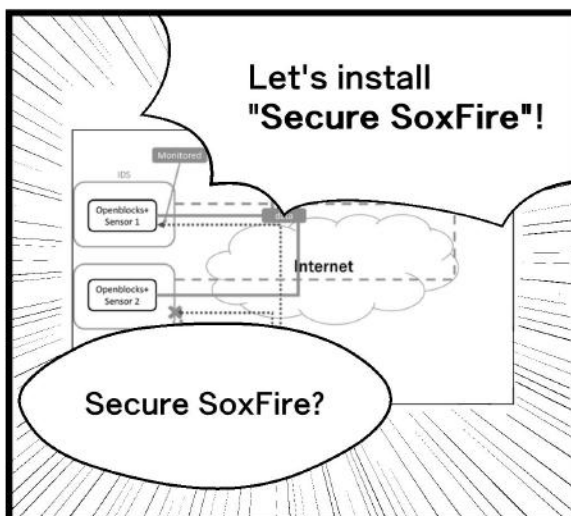


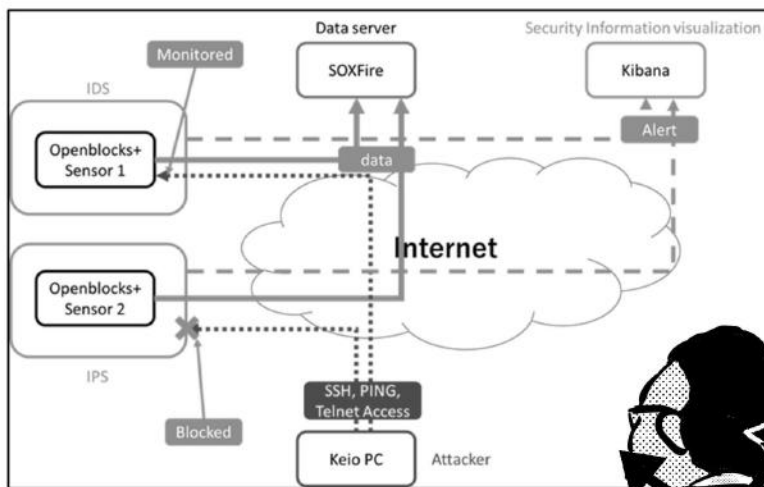
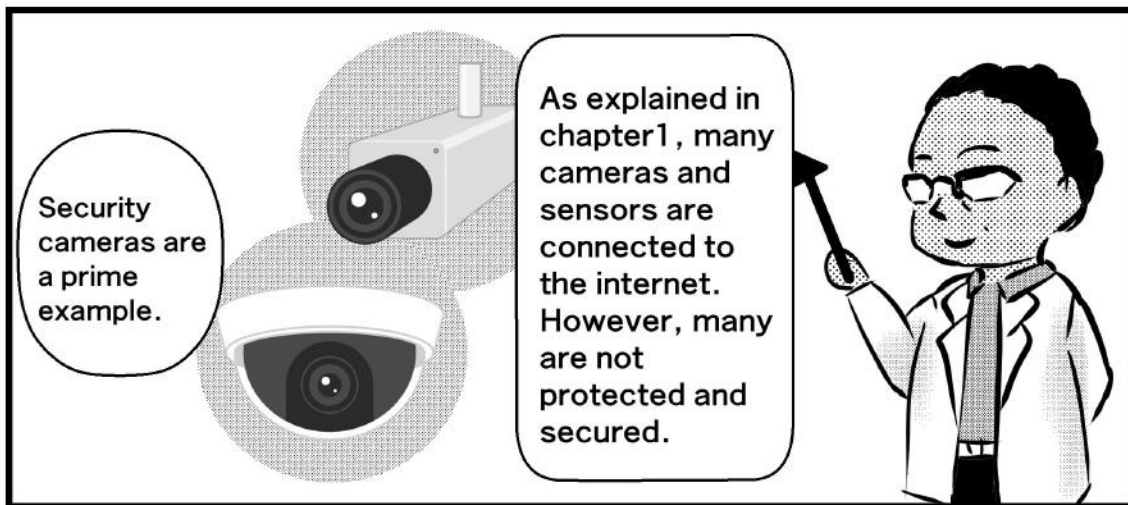
Nadine

Girl Band:
M-Sec

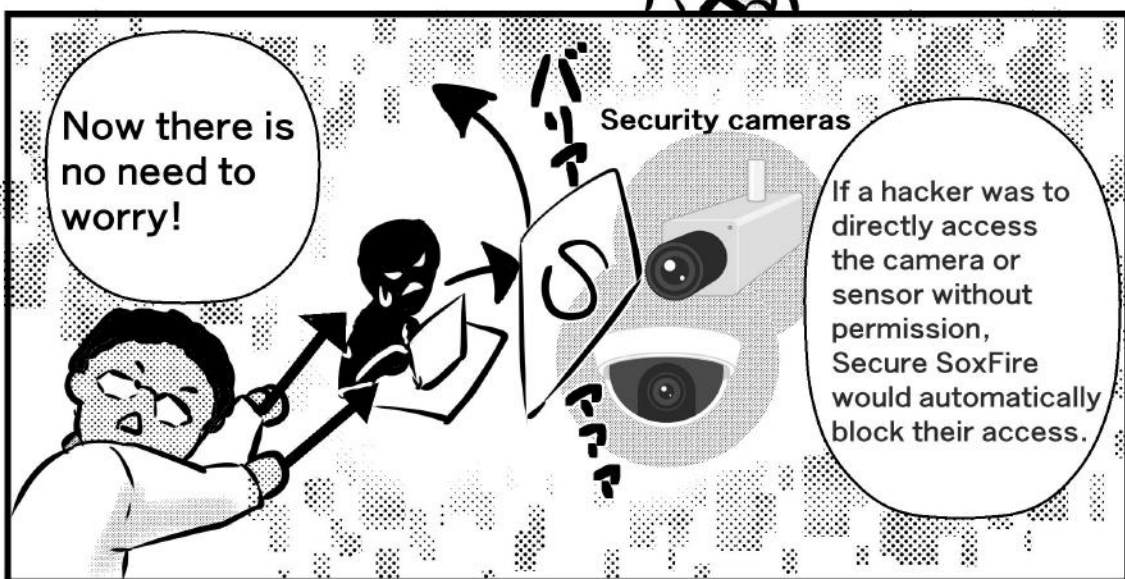
Sofia







Secure SoxFire protects end-to-end (from the IoT sensor to the user through Cloud) by utilizing different security measures such as advanced recognition mechanisms and encrypted surveillance throughout multiple layers.





Before you go...

M-Sec is an EU-Japan collaboration which stands for "Multi-layered Security technologies to ensure hyperconnected smart cities with Blockchain, Big Data, Cloud and IoT," jointly funded by the European Union's Horizon 2020 research and innovation programme (contract No 814917) and by the Commissioned Research of National Institute of Information and Communications Technology (NICT), JAPAN (contract No 19501).

The main goal of M-Sec project is to research, develop, deploy, and demonstrate multi-layered security technologies to ensure hyper connected smart cities and empower IoT stakeholders with an innovative platform that leverages blockchain, BigData, Cloud, and IoT security, upon which they can build innovative smart city applications.

We hope our research results will contribute to a peaceful and safe society.

This book was made for people without technical expertise in the topic to help them better understand M-Sec's research and to introduce them to some expected applications of M-Sec research results.

In this book, there are some examples that have not been updated as of February 2021 .

With M-Sec, on top of the research conducted, our goal is to promote the widespread use of the research results. Check our website, <https://www.msecproject.eu> for more information.



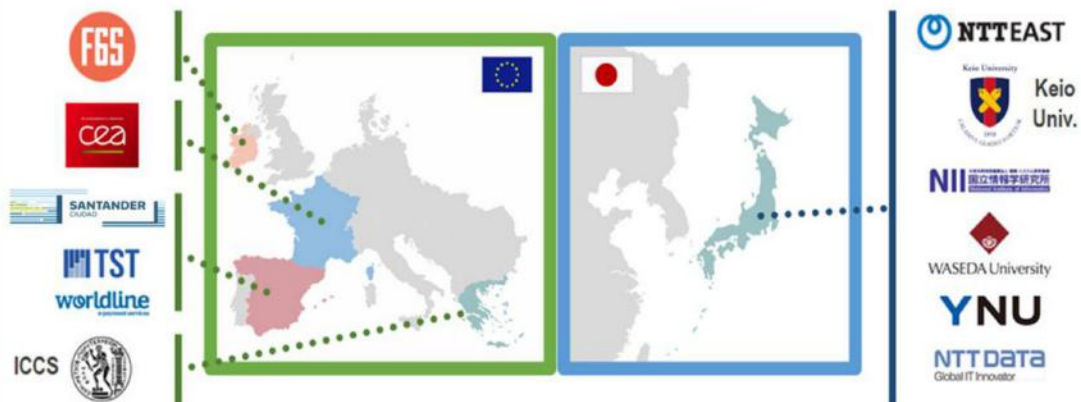
6 V Girl

Project coordinated by

Worldline

NTTEAST

M-Sec Consortium as a whole



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For the latest information about M-Sec project, please visit the links below.



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