Flexthink!

Industrial IoT made real Conference

Tour 2016: May to Oct.

Talk2M

The IIoT cloud developer platform

Jean-Paul CORMANN

jcn@ewon.biz

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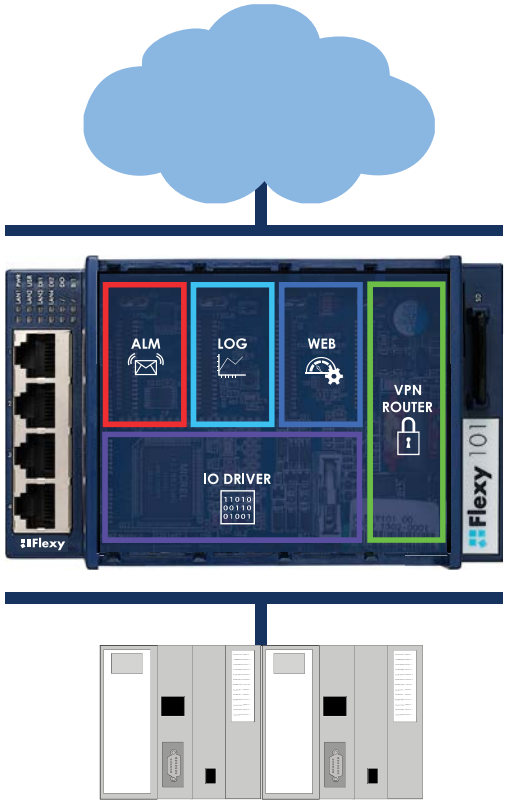
HMS Connecting Devices™

eWON Flexy



- eWON Flexy = the IIoT router developer platform
  - IOserver
  - Data collection
  - Alarm notification
  - Custom web pages / Reporting
  - Basic scripting
  - Java ETK (& Java IOserver)
  - …

=> Data available on the eWON ✔

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Customer requests/needs

- I want to access my data remotely.
- I need an application to monitor the data of all my remote devices.
- The application should run on my PC but also on my tablet, smartphone, ...
- Transform the raw data in some nice looking KPI
- And in some cases, it would be great if I could interact with my devices on the remote side.

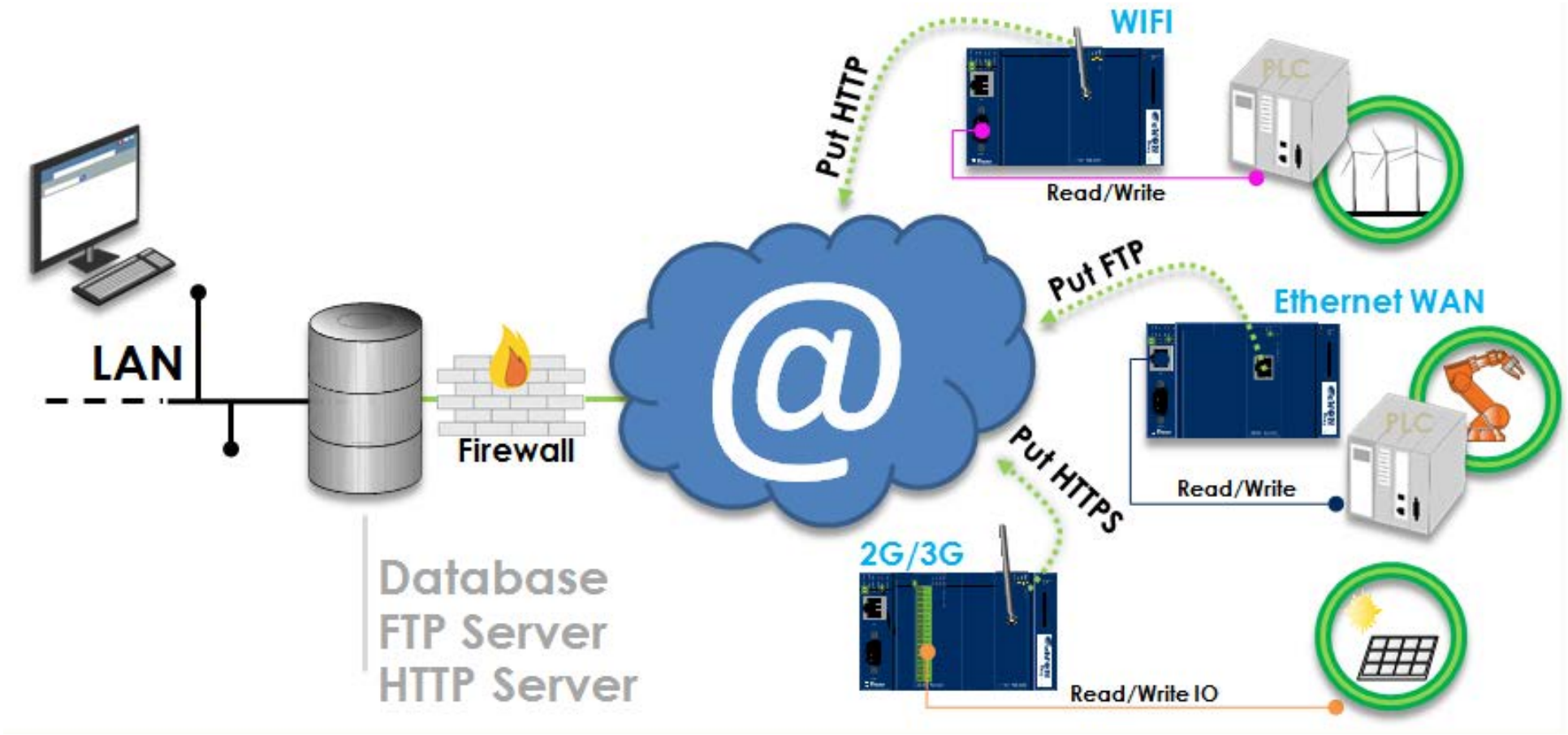
As a developer…

- You know how to:
  - Develop nice front end applications
  - Put data into a database
  - Transform raw data into KPI
  - etc.

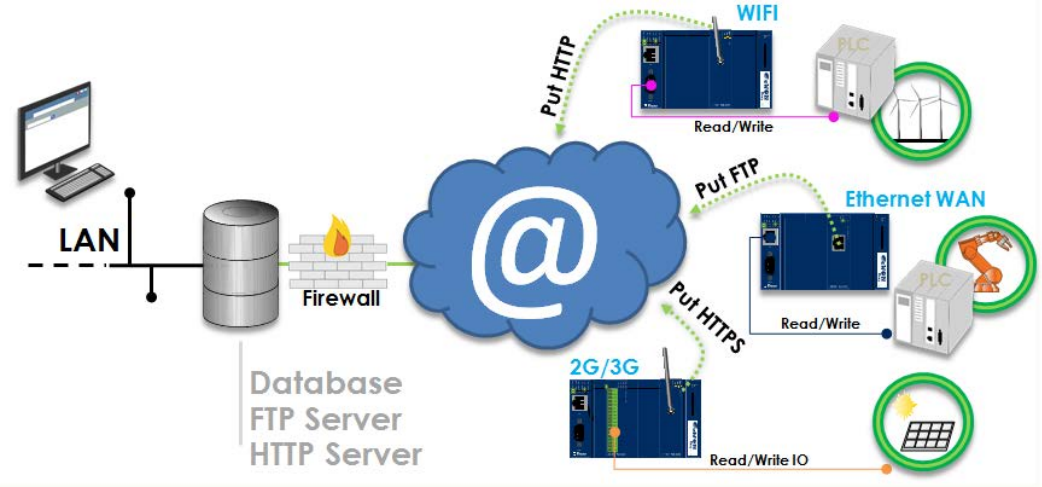
- But how to get the remote data into my application, into my database ?

Collect remote data

(push method)

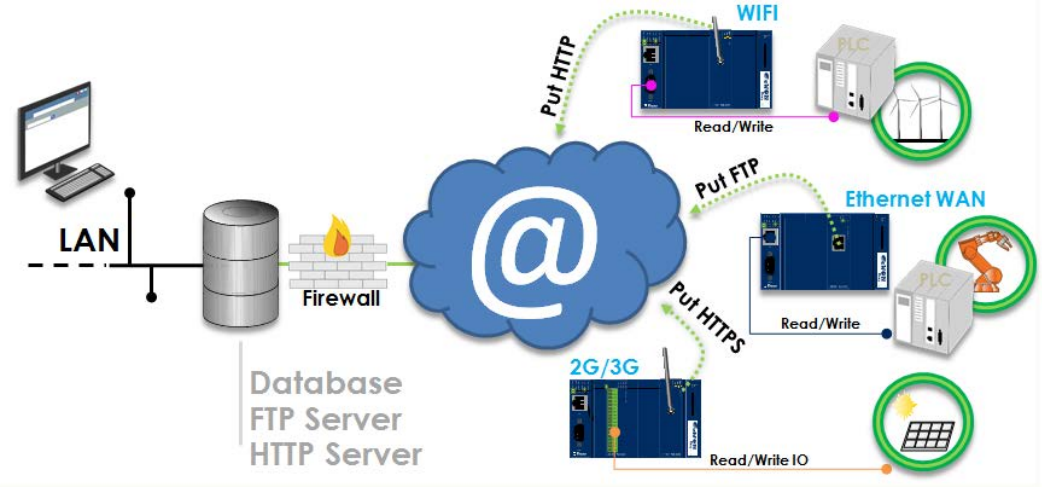


What is the pain?



- Hosting a public Internet server
  - Requires IT skills and infrastructure:
    - Server facing the Internet
    - Public IP
    - Firewall
    - SSL certificate for secure connections

What is the pain?

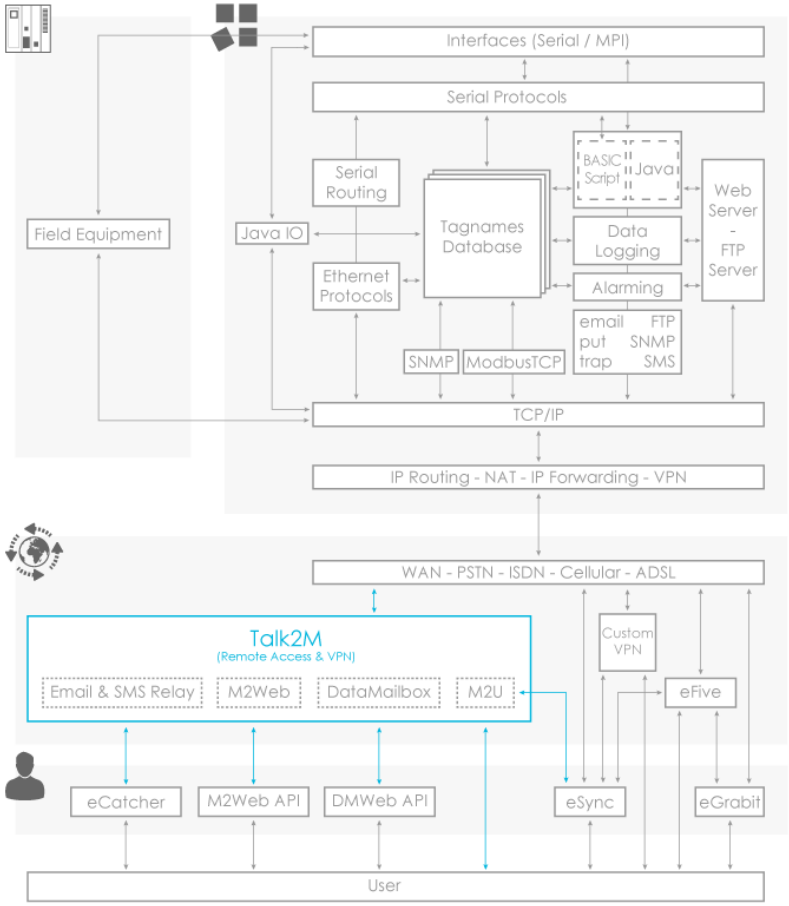


- Manage data synchronization
  - Only send new data!
  - Handle duplicated history samples, etc.

- ~~Remote control ?~~
  - ~~How to interact with a device on remote side~~

Talk2M

The IIoT cloud developer platform



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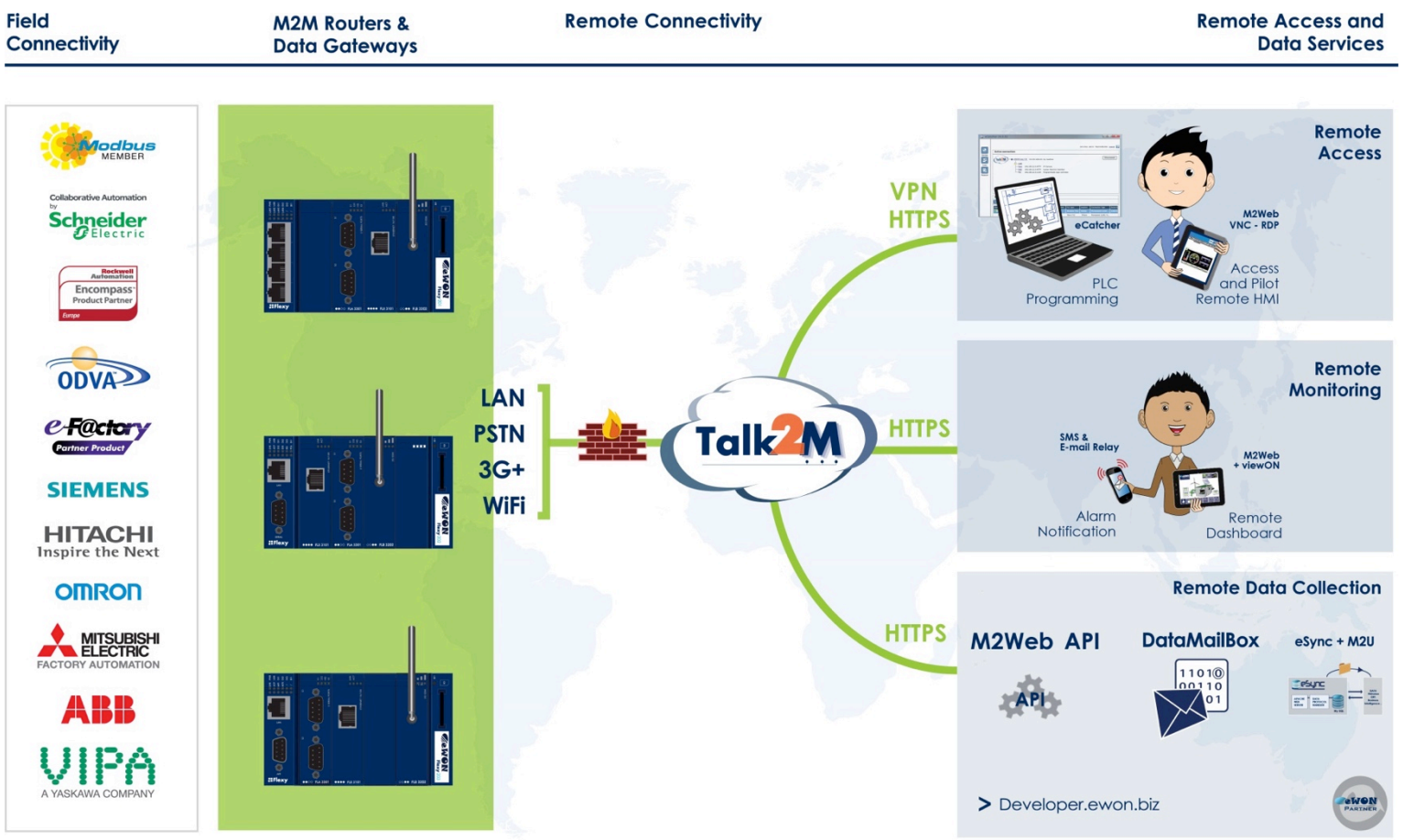
Talk2M



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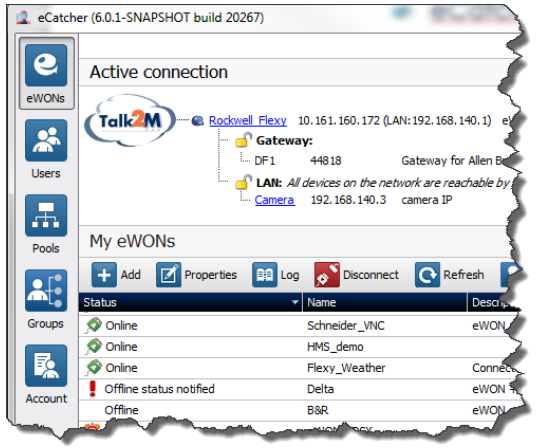
Remote access solution



- eCatcher
  - Talk2M VPN client and configuration tool
  - Establishes a VPN tunnel between your PC and the remote LAN
  - Allows remote maintenance of any device connected to eWON (Ethernet, serial, MPI, USB)
- M2Web
  - is the HTTPS web portal to Talk2M.
  - Allows connecting to Web Server of your eWON and local devices (PLC, HMI, Camera)
  - Works on any platforms (PC, Tablets, Phone…)

Let's connect our eWON to Talk2M …

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Talk2M APIs

(developer platform)

- Talk2M APIs :
  - RESTful API
  - Requests performed using HTTPS
  - Answers received in straightforward Json-based format

  ⇒Supports all usual programming languages & platforms

- Requirements :
  - **Developer ID** (ex: 61d88c56-6976-4d3e-ad4e-a79dde788010)
    - to identify the developer
  - **Talk2M account login** (Talk2M account name, user, password)
    - to grant access to the customer's remote devices (= eWONs)

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2 types of Talk2M API:

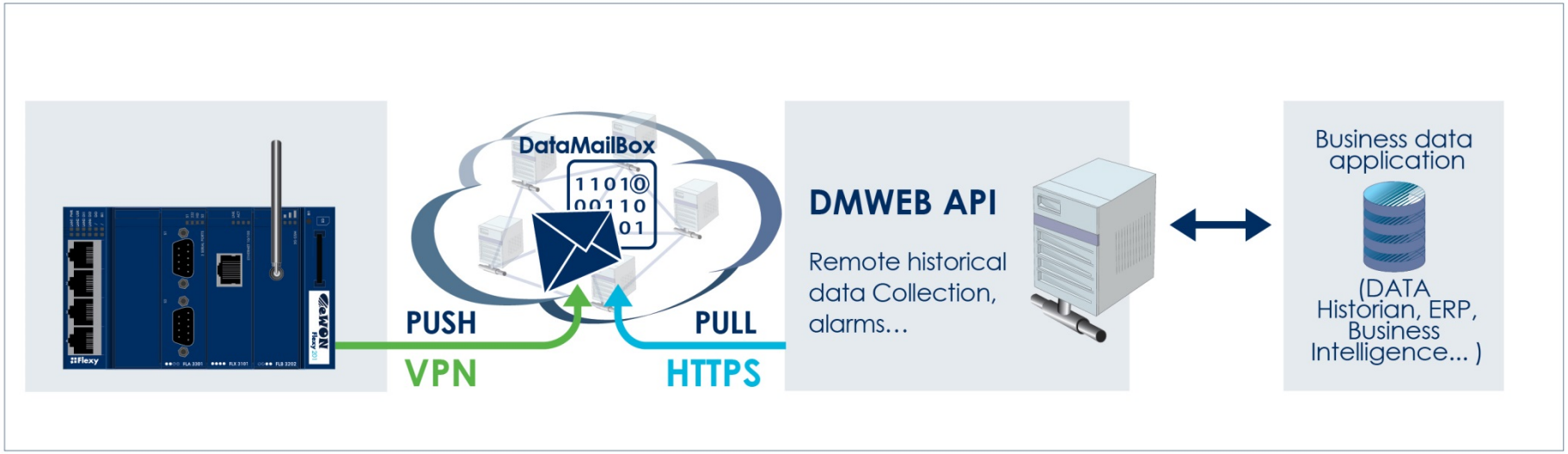
DMWeb & M2Web

- DMWeb API
  - To synchronize historical data of eWONs:
    - Historical logging
    - Historical alarms
  - Easy and straightforward way to retrieve new field data

- M2Web API
  - To access the web server of :
    - eWON
    - Any Ethernet devices connected to the eWON.
  - Easy way to interact with your device (read / write)

Talk2M DataMailbox
(DMWeb API)

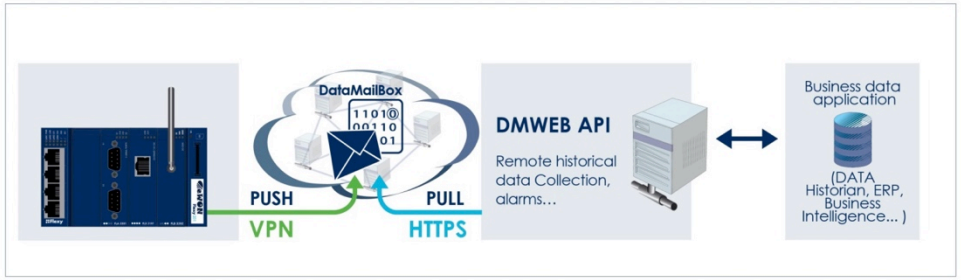
Talk2M DataMailbox



- Temporary storage for tags and alarms history
- eWON pushes the data to the DataMailbox of the account
- Easy and straightforward way to retrieve new historical data
- Remember your old mailbox managed by your ISP

Talk2M DataMailbox

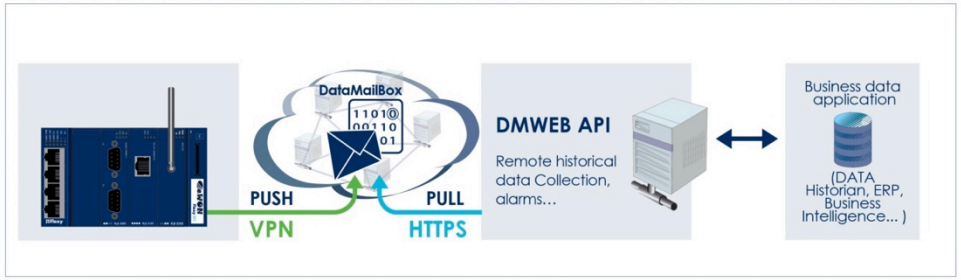
Benefits



- No need to host a public Internet server
  - Only outgoing https requests to get the data
- DMWeb: A super-easy data *synchronization* protocol
  - In one call, retrieve the new data
- Push – Pull Method:
  - Everyone (each eWON & your application) synchronizes at their own pace
  - No need of permanent connection

Talk2M DataMailbox

DMWeb API

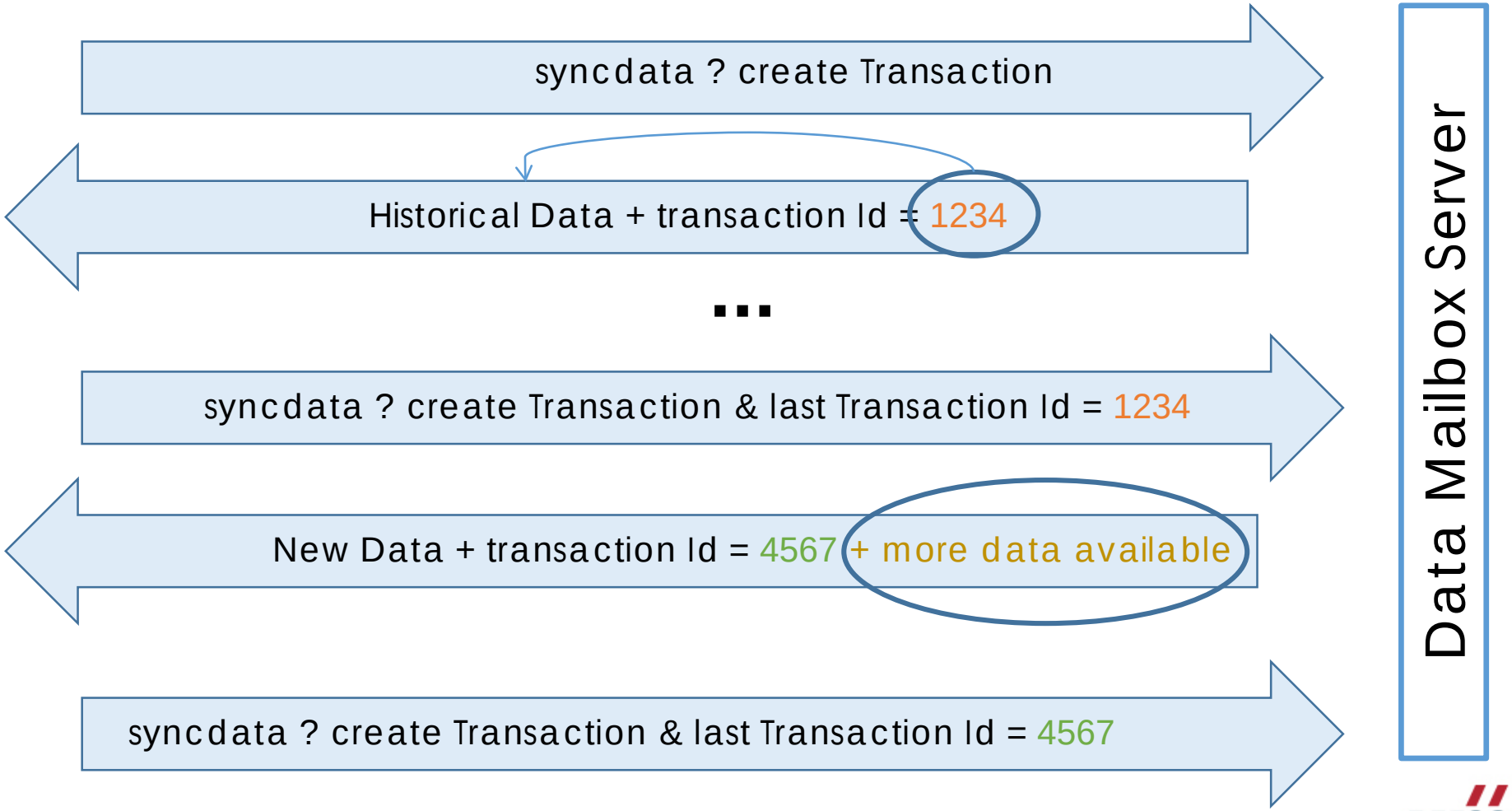


- Goal: Download data from the DataMailbox Server

- HTTPS-based
  - *Base URL : https://data.talk2M.com/*
  - Credentials : *t2maccount, t2musername, t2mpassword, devid*
  - *Methods:*
    - *getewons, getewon*
    - *getdata*: retrieve historical data using criteria (date, tag, ewon)
    - *delete, clean*
    - ***syncdata***: download all NEW historical data without duplicates

DMWeb API

syncdata



Example

https://data.talk2m.com/syncdata?t2maccount=myaccount&t2musername=myname&t2mpassword=mypassword&t2mdevid=61ddac56-6976-4d3e-ad4e-a79dde788010&createTransaction&lastTransactionId=4567

{"success":true,"transactionId":"95010","moreDataAvailable":true,"ewons":[{"id":170735,"name
[{"id":911,"name":"Tag_Int1","dataType":"Int","description":"","alarmHint":"","value":31.0,
{"date":"2015-08-29T03:21:45Z","value":87.0},{"date":"2015-08-29T03:22:46Z","value":88.0},{"date":"2015-08
{"date":"2015-08-29T03:26:45Z","value":92.0},{"date":"2015-08-29T03:27:45Z","value":93.0},{"date":"2015-08
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{"date":"2015-08-29T04:31:46Z","value":56.0},{"date":"2015-08-29T04:32:46Z","value":57.0},{"date":"2015-08

Show Time...

DataMailbox Viewer

- Development tool:
  - for demo purposes
  - to easily generate the URL for the API requests
  - displays the result of the request

The software is available on developer.ewon.biz.

Let’s check on an existing DataMailbox …

eWON configuration

1. Create Tags to acquire data from the field
   - Embedded IO-Servers for standard protocols
   - **Basic** Scripting or **Java EDK** for custom protocols

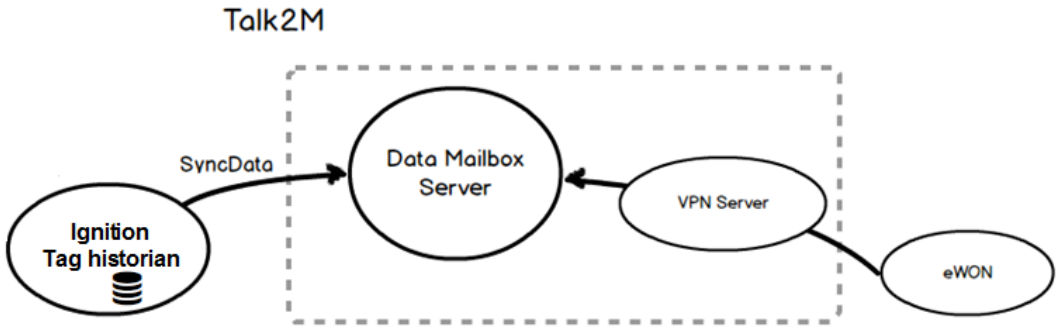
2. Enable historical logging of tags
   - Store on value changes or on time interval

3. Configure the push data to the DataMailbox
   - Setup the Talk2M connection (using wizard)
   - Define URL: **ewondata.talk2m.com**
   - Define upload interval
   - Define Tag filter (only export important data)

Let's check the result inside the DataMailbox …

Use case

- Use case with a SCADA/Historian software
  - Ignition: SCADA by Inductive Automation
  - Ignition contains/allows:
    - Internal scripting engine (python script language)
    - HTTPS requests
    - Json decoder
  - Using the DMWeb API “syncdata” retrieve data from the DataMailbox and insert it into Ignition Tag historian



DMWeb API

Summary

Talk2M DataMailbox = Data Collection + Easy

- DataMailbox: We do NOT store customer data
  - The Data Mailbox is a temporary buffer
  - This is why we call it a mailbox
    remember your old mailbox managed by your ISP
  - Implemented as a circular buffer with a maximum retention of 10 days
    - Data older that 10 days are automatically deleted
    - *Use DMWeb API Delete* method to delete data after synchronization

- Use cases
  - Historians
  - Business Intelligence solutions
  - Reporting tools

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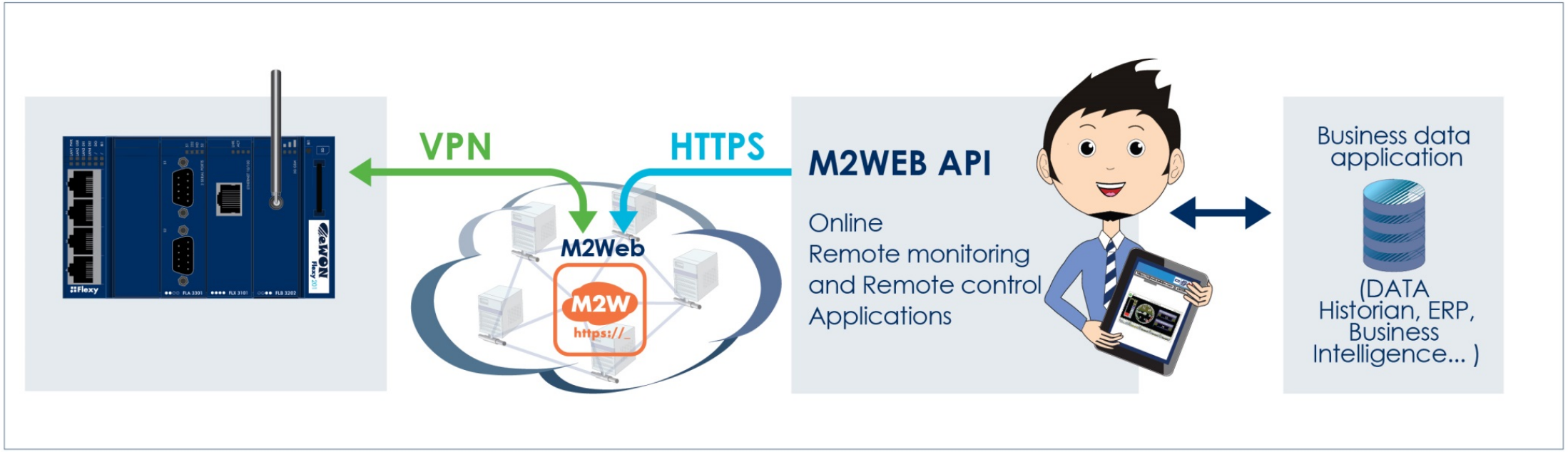
M2Web API

M2Web API



- The M2Web API allows you to access the web server of :
  - eWON
  - Any devices connected to an eWON.

M2Web APIs Syntax

- Base URL : ***https://m2web.talk2M.com/t2mapi/...***

- Example of parameters & methods:
  - t2mapi/**getaccountinfo**
  - t2mapi/**getewons**?[&pool=...]
  - t2mapi/**getewon**?name=...
  - t2mapi/**wakeup**?name=...
  - t2mapi/**sendoffline**?name=...
  - t2mapi/**get**/<*ewonname*>/<*path*>?<*query*>
  - t2mapi/**get**/<*ewonname*>/proxy/<*deviceIp*>/<*path*>?<*query*>

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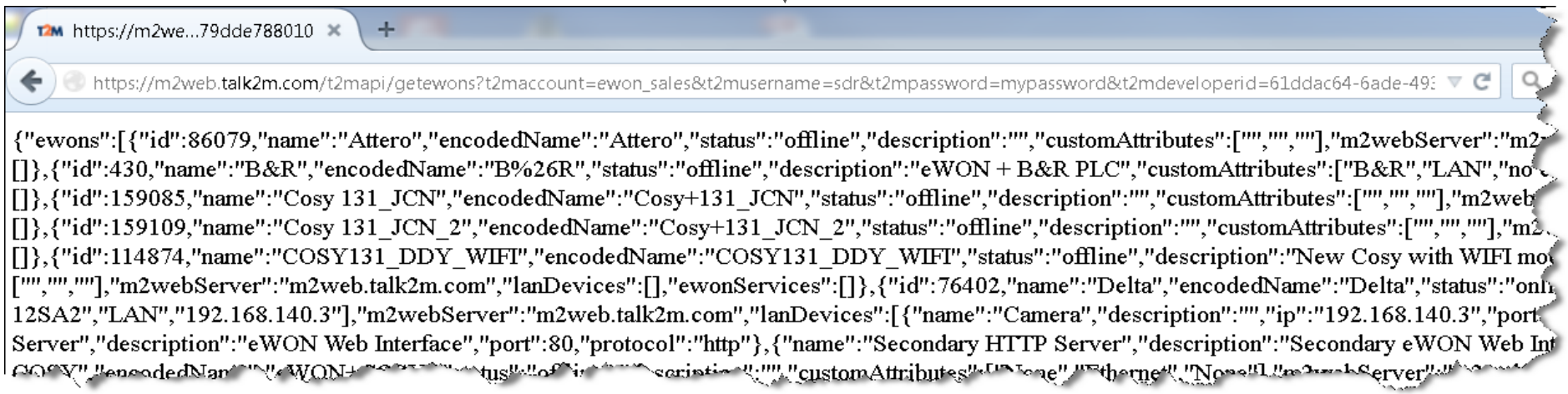
Example

https://m2web.talk2m.com/t2mapi/getewons?t2maccount=myaccount&t2musername=myname&t2mpassword=mypassword&t2mdeveloperid=61ddac56-6dde-4d3e-ad4e-a79dde788010



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M2Web APIs & eWON

How can I act on my eWON through the M2Web API ?

- M2Web APIs allow the access of any **eWON's** web resources.
- **eWON** provides many web forms that give the possibility to :
  - Get eWON files, tag values, alarms history, user files,… through **Export Block Descriptors**
  - Write Tag values (Memory Tags as well as PLC Tags)
  - Acknowledge alarms
  - Execute a script
  - … See « Web Reference Guide » on our support website

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Export Block Descriptor

- Export Block Descriptor = string defining data to export from eWON
  - EBD Syntax = successive parameters having following structure :
    $xxYY Where xx is the parameter name
    YY is the parameter value
  - EBD examples:
    - $dtIV $ftH => realtime values in text format
    - $dtHT $ftT $st_h2 $et_m0 => historical table of last 2 hours
    - $dtUF $uf/myfile.xyz => export a file of the /usr directory
  - There are mainly 3 kind of parameter to define :
    - The type of data to export (Instant value, Logs, Historical logging,...)
    - The format of the export (binary, text, HTML)
    - In case of timestamped data, the timeframe to export.

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M2Web API & eWON Example

Get Instantaneous Tag values through M2Web API

eWON Web Form to execute an EBD:
http://10.0.0.53/rcgi.bin/ParamForm?AST_Param=<EBD>

The EBD to export realtime data (tags):
$dtIV$ftT

Execute an EBD when locally connected to eWON :
http://10.0.0.53/rcgi.bin/ParamForm?AST_Param=$dtIV$ftT

Execute an EBD through the M2Web API :
https://m2web.talk2m.com/t2mapi/get/eWONName/rcgi.bin/ParamForm?AST_Param=$dtIV$ftT
&t2maccount=MyTalk2MAccount
&t2musername=MyTalk2MUser
&t2mpassword=MyTalk2MPassword
&t2mdeveloperid=61ddac64-6ade-493e-ad4e-a79dde788010
&t2mdeviceusername=eWON_Username
&t2mdevicepassword=eWON_Password

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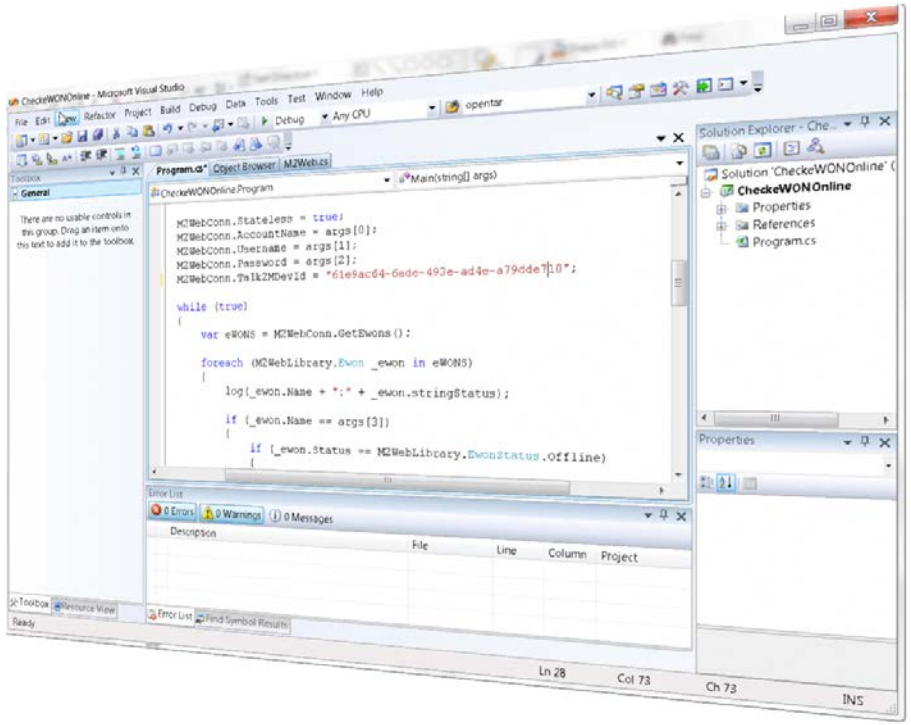
.NET Library



- A .NET library is available to ease the job of .NET developers.
  It exposes the M2WebAPI features through a .NET object model, including the communication with the eWON.

.NET Library

Example

```
var m2web = new M2Web
    {
        Talk2MDevId = "TODO: YOU-GUID-COMES-HERE",
        AccountName = "TODO: YOUR ACCOUNT NAME COMES HERE",
        Username = "TODO: YOUR USERNAME NAME COMES HERE",
        Password = "TODO: YOUR PASSWORD NAME COMES HERE",
    };

Console.WriteLine("Retrieving list of eWONs...");
m2web.LoadEwons();

Console.WriteLine("Online eWONs:");
var onlineEwons = m2web.Ewons.Where(ewon => ewon.Status == EwonStatus.Online);

foreach (var ewon in onlineEwons)
   Console.WriteLine(ewon.Name + (!string.IsNullOrEmpty(ewon.Description) ? "
("+ewon.Description+")" : ""));

Console.WriteLine("Strike <Enter> to continue...");
```

Show Time...

eWON configuration

- Setup the Talk2M connection (using wizard).
- Nothing further to configure. Web forms are already existing on the eWON.

Let's check this on our eWON, using a Web browser for demonstration …

Example 1 : Display the eWON-list of my Talk2M account

Example 2 : using EBD retrieve instant values

Example 3 : using EBD retrieve a /usr file

Example 4 : access device behind eWON

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Small monitoring app

- Goal: Using M2Web API, we turn on/off the light on our demo Rack

- Developed using C#.NET and console output to demonstrate / interact with the user.

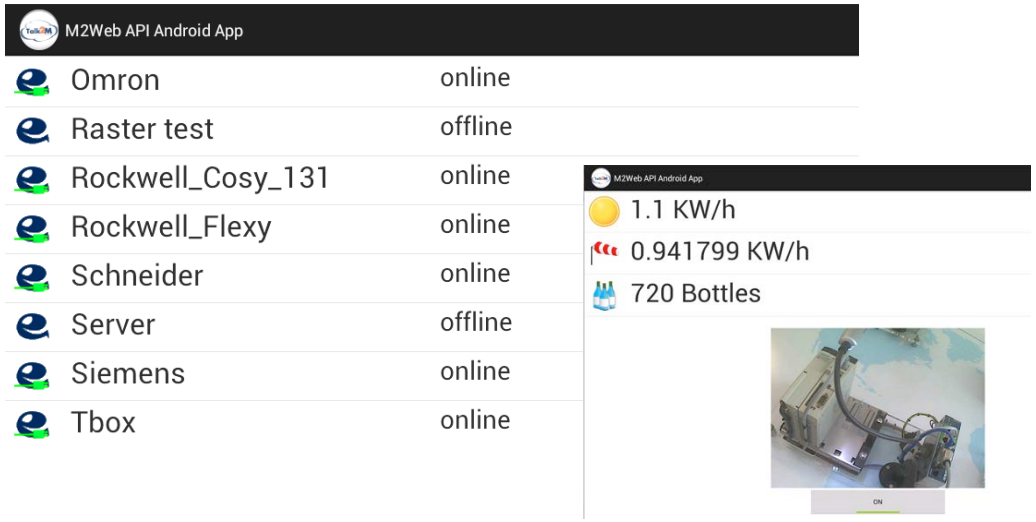
```
Console.WriteLine("+++++++++++++++++++++++++++++++++++++++++++++++++++ ");
Console.WriteLine("+++ Welcome in the LAMP SWITCHING application +++ ");
Console.WriteLine("+++++++++++++++++++++++++++++++++++++++++++++++++++\r\n");
Console.WriteLine("Let's first get the list of eWONs inside the Talk2M account ''eWON_sales'' \r\n");

M2WebLibrary.M2Web M2WebLib = new M2WebLibrary.M2Web();
M2WebLib.AccountName = "ewon_sales";
Console.Write("Enter Talk2M account username: ");
M2WebLib.Username = Console.ReadLine();
Console.WriteLine();
Console.Write("Enter Talk2M account password: ");
```

M2Web API

Summary

- To access the web server of :
  - eWON
  - an Ethernet device connected to the eWON.

- Use cases
  - Monitoring Mobile Apps
  - Remote Control Applications
  - Remote Management of eWON



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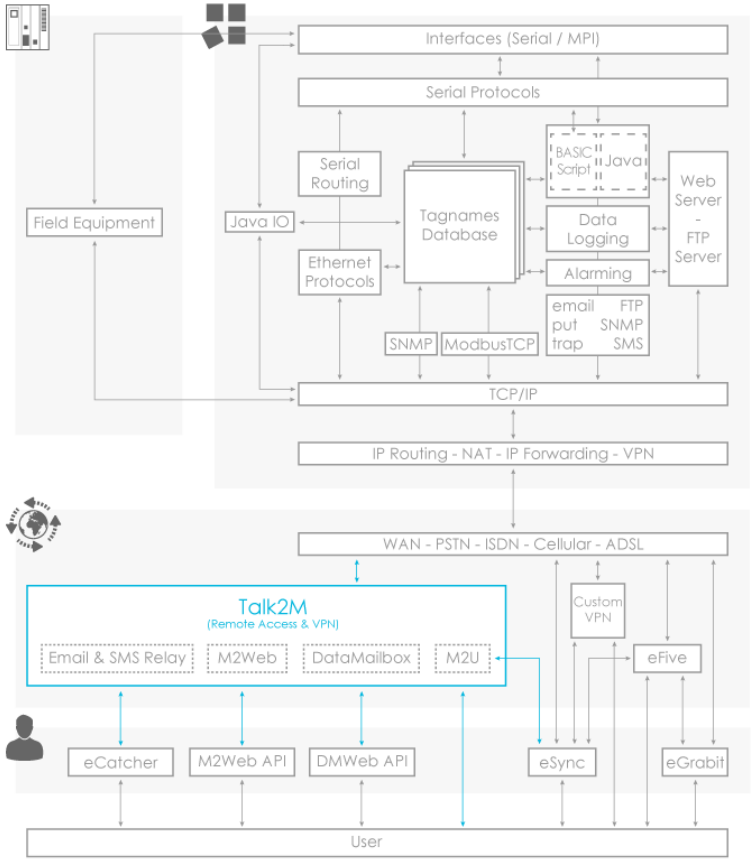
Almost over...

We hope we could convince you that...



eWON Flexy =
your IIoT router developer platform

Talk2M =
your IIoT cloud developer platform

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Where to start from…

- Flexthink starter KIT
- Developer web site: https://developer.ewon.biz/
- Developer forum: https://techforum.ewon.biz/
  - Exchange info
  - Ask eWON and Talk2M related developer questions

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Thank you!

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