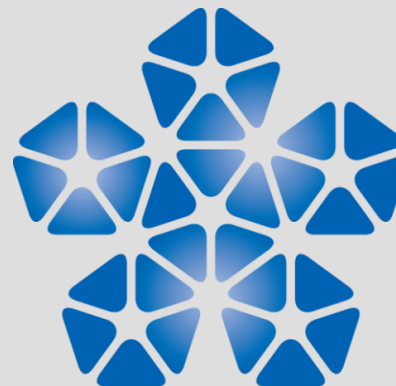


ISO 19848

Standard data for shipboard
machinery and equipment

(一社)日本船用工業会
新スマートナビゲーションシステム研究会
2017年5月16日

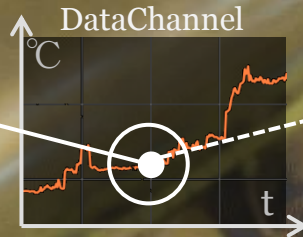


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Overview

Data Channel ID

<http://IMO1234567/MainEngine/Cylinder2/ExhaustGas/Temp>



Data Channel Property

Unit: °C
Range: 0-700
...

Naming Rule

UniversalID =
[protocol] "://" NamingEntity ShipID LocalID

TimeSeriesData

UML Model

DataChannelList

jsmea-mac

ID Structure

Dictionaries

XML

```
<?xml version="1.0" encoding="UTF-8" ?>
<Package xmlns="urn:ISO19848:HIP" xmlns:nr="urn:ISO19848:SHIP" ?>
  <Header>
    <ShipID>IMO1234567</ShipID>
    <DataChannelList.xml ?>
      <TimeStamp>2016-01-01T00:00:00</TimeStamp>
    </DataChannelList>
    <Author>Author1</Author>
    <DateCreated>2015-12-01T00:00:00</DateCreated>
  </Header>
</Package>
```

JSON

```
{
  "Package": {
    "xmlns": "urn:ISO19848:HIP",
    "xmlns:nr": "urn:ISO19848:SHIP",
    "Header": {
      "ShipID": "IMO1234567",
      "DataChannelList.xml": {
        "TimeStamp": "2016-01-01T00:00:00"
      },
      "Author": "Author1",
      "DateCreated": "2015-12-01T00:00:00"
    }
  }
}
```

CSV

```
1 2017-02-17T18:04:05Z, 1.124475
2 2017-02-17T18:04:08Z, 1.124475
3 2017-02-17T18:04:11Z, 1.124475
4 2017-02-17T18:04:14Z, 1.124475
5 2017-02-17T18:04:17Z, 1.124475
6 2017-02-17T18:04:19Z, 1.124475
7 2017-02-17T18:04:22Z, 1.124475
8 2017-02-17T18:04:25Z, 1.124475
9 2017-02-17T18:04:28Z, 1.124475
10 2017-02-17T18:04:31Z, 1.124475
11 2017-02-17T18:04:34Z, 1.124475
12 2017-02-17T18:04:37Z, 1.124475
13 2017-02-17T18:04:40Z, 1.124475
14 2017-02-17T18:04:43Z, 1.124475
```

5.2

Data Channel ID

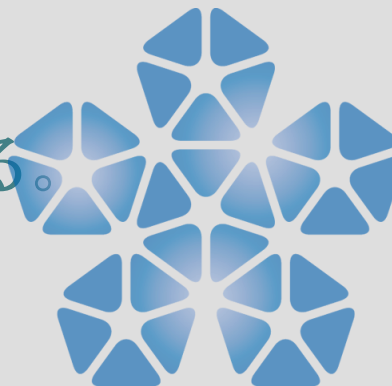
- Universal ID
 - 全世界で一意。

UniversalID = [protocol] "/" "/" NamingEntity ShipID LocalID

- Local ID
 - 船内で一意。
 - 船が異なってもIDは同じ。

LocalID = NamingRule LocalDataName

- Short ID
 - 船内で一意。
 - 船が異なればIDも異なる。
 - チャンネル番号を利用。

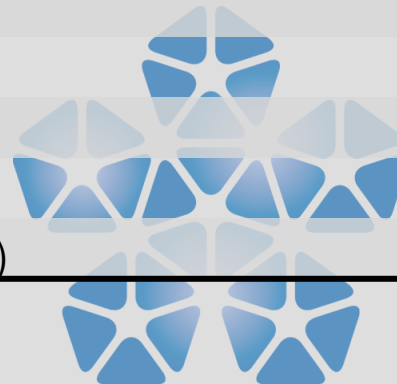


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Example

UniversalID	http://data.shipdatacenter.jp/imo1234567/MainEngineAirCooler3//CFW/Out/Temp
LocalID	/jsmea_mac/MainEngineAirCooler3//CFW/Out/Temp
ShortID	0001
ShipID	imo1234567
NamingEntity	data.shipdatacenter.jp
NamingRule	jsmea-mac
LocalDataName	MainEngineAirCooler3//CFW/Out/Temp

UniversalID	http://data.dnvgl.com/imo1234567/dnvgl-vis/411.1/C101.31+1/ExhGas+t(C)
LocalID	/dnvgl-vis/411.1/C101.31+1/ExhGas+t(C)
ShortID	0001
ShipID	imo1234567
NamingEntity	data.dnvgl.com
NamingRule	dnvgl-vis
LocalDataName	411.1/C101.31+1/ExhGas+t(C)

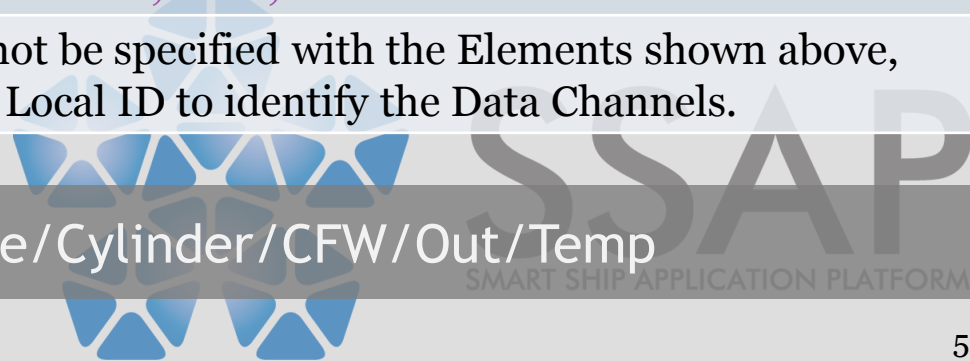


Annex B

Naming Rule - jsmea-mac -

Name Object	Description
System	Discrete equipment, systems, and units. <i>Dictionary : <u>MainEngine</u>, DieselGeneratorSet, CSWSystem, etc.</i>
Component	Part of the System above. <i>Dictionary : <u>Cylinder</u>, TurboCharger, FOCommonLine, etc.</i>
Content	Contents that flow through pipelines or others. <i>Dictionary : FO, <u>CFW</u>, DO, CSW, WO, ELECTRIC, etc.</i>
Position	Position that indicates relative positions in System and Components. <i>Dictionary : IN, <u>OUT</u>, LINE, INSIDE, etc.</i>
Item	Indicates temperatures, pressures and other measurement objects. <i>Dictionary : <u>Temp</u>, Press, Current, RPM, etc.</i>
Suffix (Option)	Only if Data Channels cannot be specified with the Elements shown above, a word may be added after Local ID to identify the Data Channels.

LocalID = /jsmea_mac/MainEngine/Cylinder/CFW/Out/Temp



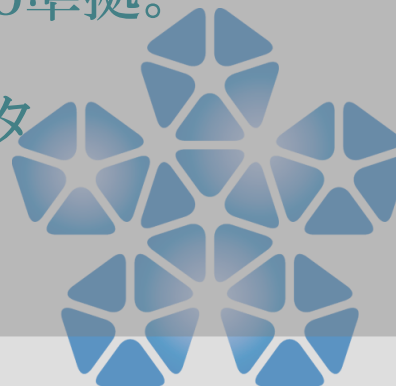
5.3

Properties

規格で定義済みのPropertyと区別することを条件に追加可能

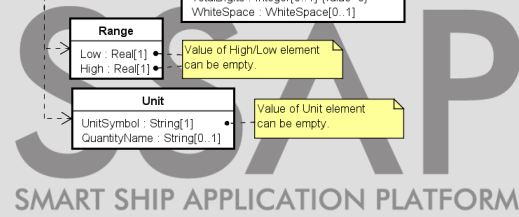
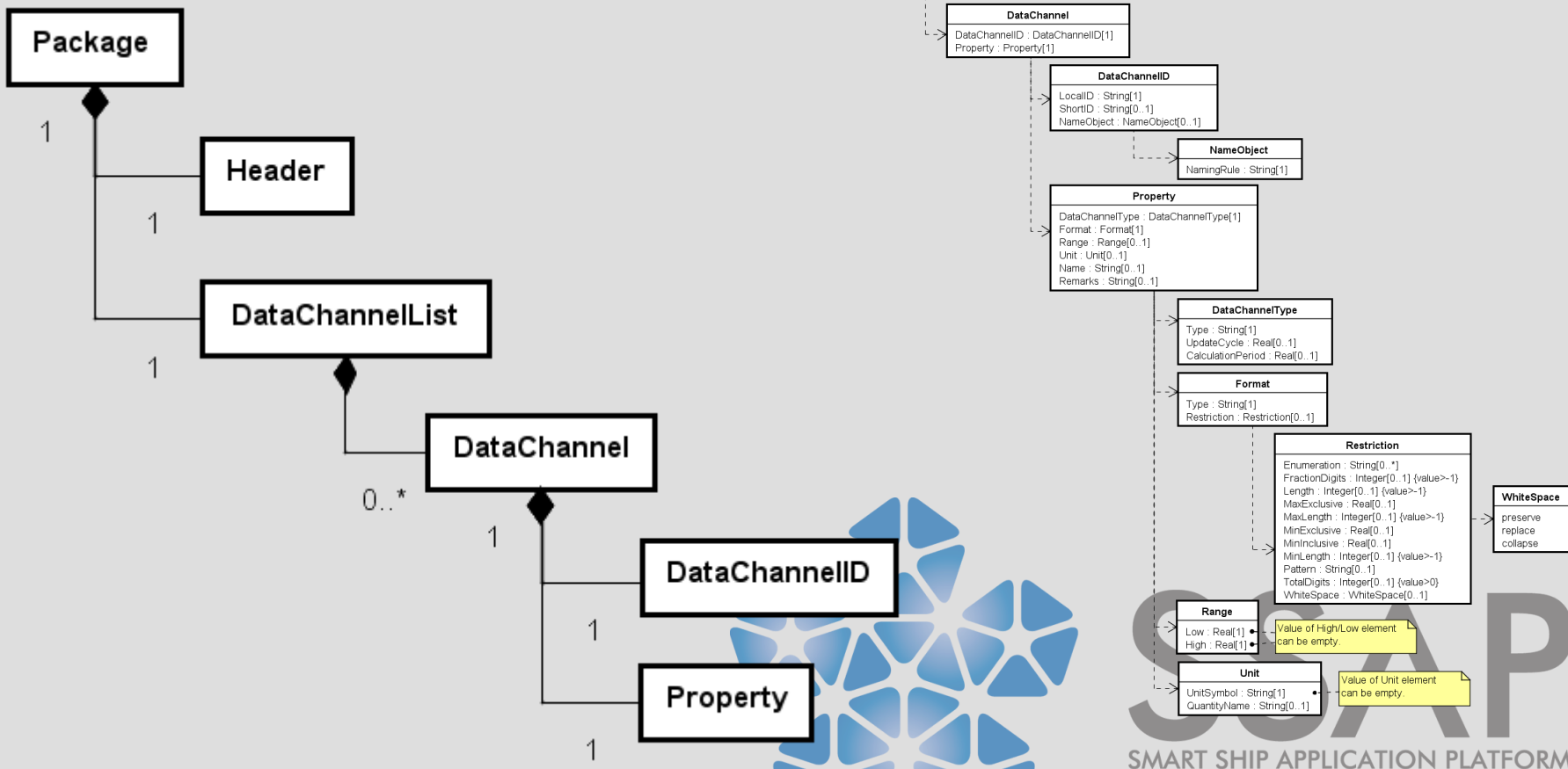
6種類のPropertyを規格で定義

- Data Channel Type
 - 計測値の種別（瞬時値、平均値等）
- Format
 - 計測値のフォーマット（数値、文字等）
- Range
 - 計測値の範囲。
- Unit
 - 計測値の単位、ISO80000準拠。
- Name
 - データチャンネルのデータソースにおける名称。
- Remarks



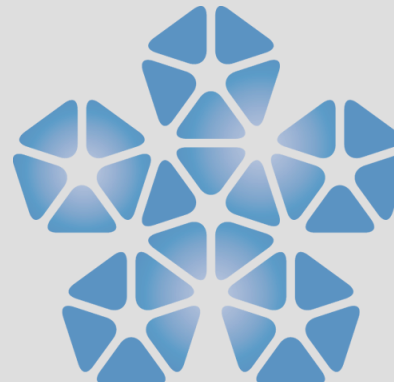
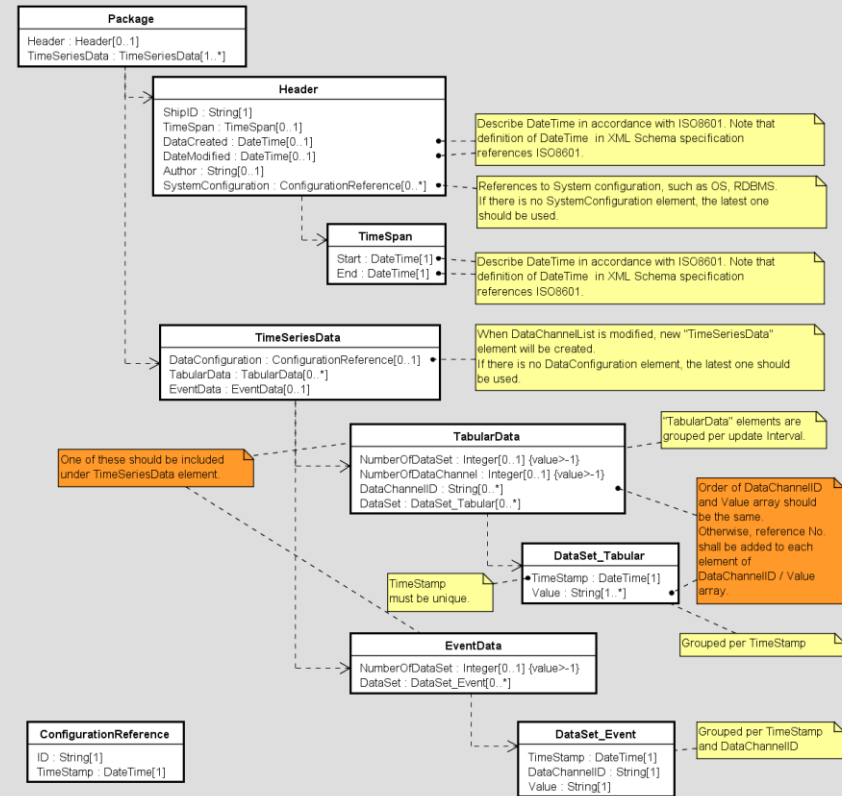
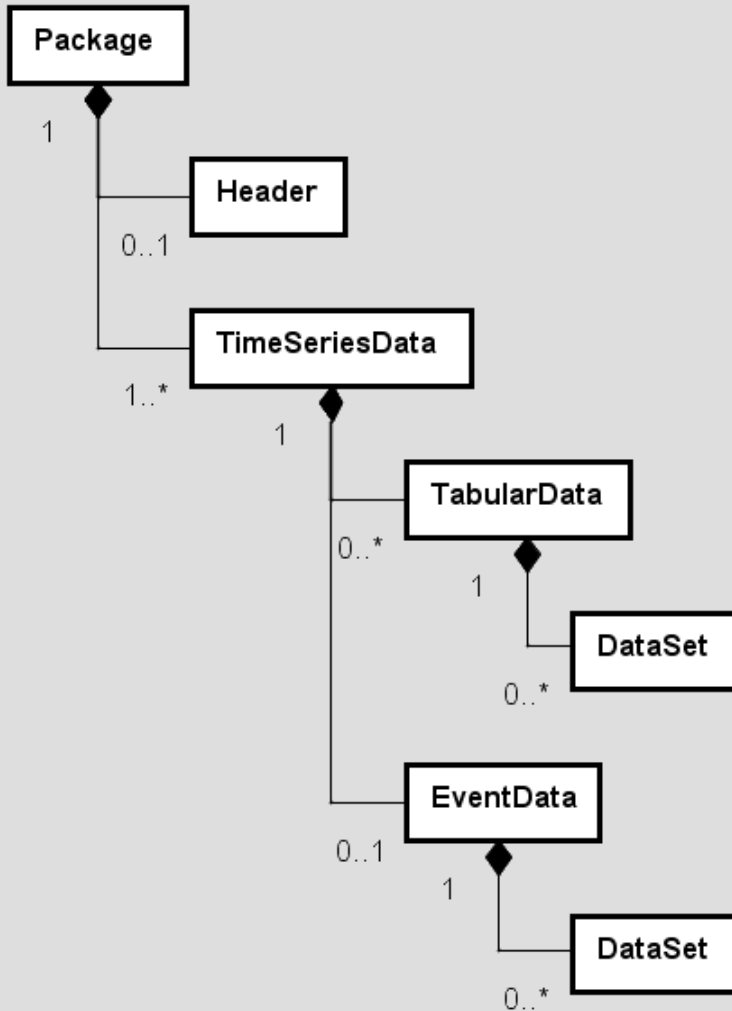
7.4

Data Channel List



7.5

Time Series Data




```

<?xml version="1.0" encoding="UTF-8" ?>
<Package xmlns="urn:ISO19848:SHIP_DATA_TRANSPORT"
  xmlns:ne="urn:ISO19848:SHIP_DATA_TRANSPORT:NAMESPACE_EXTENSION">
  <Header>
    <ShipID>IMO1234567</ShipID>
    <TimeSpan>
      <Start>2016-01-01T12:00:00Z</Start>
      <End>2016-01-01T12:00:00Z</End>
    </TimeSpan>
    <DateCreated>2016-01-01T12:00:00Z</DateCreated>
    <DateModified>2016-01-01T12:00:00Z</DateModified>
    <Author>member@database.com</Author>
    <SystemConfiguration>
      <ID>SystemConfiguration.xml</ID>
      <TimeStamp>2016-01-01T00:00:00Z</TimeStamp>
    </SystemConfiguration>
    <SystemConfiguration>
      <ID>SystemConfiguration.xml</ID>
      <TimeStamp>2016-01-03T00:00:00Z</TimeStamp>
    </SystemConfiguration>
    <ne:CustomHeaderElement>Vendor specific headers</ne:CustomHeaderElement>
  </Header>
  <TimeSeriesData>
    <DataConfiguration>
      <ID>DataChannelList.xml</ID>
      <TimeStamp>2016-01-01T00:00:00Z</TimeStamp>
    </DataConfiguration>
    <TabularData>
      <NumberOfDataSet>2</NumberOfDataSet>
      <NumberOfDataChannel>2</NumberOfDataChannel>
      <DataChannelID id="1">0010</DataChannelID>
      <DataChannelID id="2">0020</DataChannelID>
      <DataSet timeStamp="2016-01-01T12:00:00Z">
        <Value ref="1">100.0</Value>
        <Value ref="2">200.0</Value>
      </DataSet>
      <DataSet timeStamp="2016-01-02T12:00:00Z">
        <Value ref="1">100.5</Value>
        <Value ref="2">205.0</Value>
      </DataSet>
    </TabularData>
    <TabularData>
      <NumberOfDataSet>3</NumberOfDataSet>
      <NumberOfDataChannel>1</NumberOfDataChannel>
      <DataChannelID id="1">0010</DataChannelID>
      <DataSet timeStamp="2016-01-01T12:00:00Za">

```

Annex A.2

XML Implementation

- 互換性を重視したフォーマット。
- XML Schemaを規格に添付。データの妥当性を検証可能。
- XML Schemaからサンプルデータの自動生成が可能。
- DataChannelList/TimeSeries Dataの両方を規定。



'timeStamp' 属性は無効です。値 '2016-01-01T12:00:00Za' はデータ型 'http://www.w3.org/2001/XMLSchema:dateTime' に対して無効です。文字列 '2016-01-01T12:00:00Za' の有効な値ではありません。

Annex A.3

JSON implementation

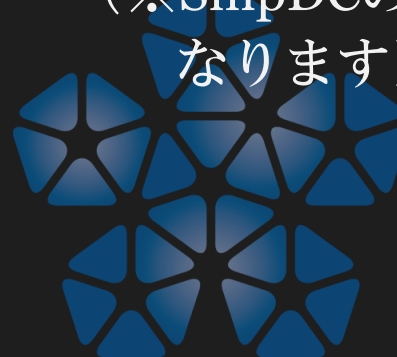
```

1 {
2   "Package": {
3     "Header": {
4       "ShipID": "IMO1234567",
5       "TimeSpan": {
6         "Start": "2016-01-01T12:00:00Z",
7         "End": "2016-01-03T12:00:00Z"
8       }
9     },
10    "DateCreated": "2016-01-03T12:00:00Z",
11    "DateModified": "2016-01-03T12:00:00Z",
12    "Author": "Shipboard data server",
13    "SystemConfiguration": [{
14      "ID": "SystemConfiguration.xml",
15      "TimeStamp": "2016-01-01T00:00:00Z"
16    }, {
17      "ID": " SystemConfiguration.xml ",
18      "TimeStamp": "2016-01-03T00:00:00Z"
19    }
20  ],
21  "TimeSeriesData": [{
22    "DataConfigurationReference": {
23      "ID": "DataChannelList.xml",
24      "TimeStamp": "2016-01-01T00:00:00Z"
25    },
26    "TabularData": [{
27      "NumberOfDataSet": "2",
28      "NumberOfDataChannel": "2",
29      "DataChannelID": ["0010", "0020"],
30      "DataSet": [{
31        "TimeStamp": "2016-01-01T12:00:00Z",
32        "Value": [100.0, 200.0]
33      }, {
34        "TimeStamp": "2016-01-02T12:00:00Z",
35        "Value": [100.5, 205.0]
36      }
37    ]
38  }, {
39  }
40 ]

```

- Webとの親和性に優れたフォーマット。
- データの妥当性の検証はできない。
- DataChannelList/TimeSeries Dataの両方を規定。

(※ShipDCのフォーマットとは異なります)



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Annex A.4

CSV implementation

- 大容量時系列データに特化した表形式のフォーマット。
- Time Series Dataのみを規定。
- HeaderにはShortIDの利用を想定。

	0101,	0101S,	0102,	0102S,	0103,	0103S,	0104,	0104S,	0105,	0105S,	0106,	0106S,	
1													
2	2017-02-17T18:04:05Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
3	2017-02-17T18:04:08Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
4	2017-02-17T18:04:09Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
5	2017-02-17T18:04:10Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
6	2017-02-17T18:04:11Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
7	2017-02-17T18:04:12Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
8	2017-02-17T18:04:13Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
9	2017-02-17T18:04:14Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
10	2017-02-17T18:04:15Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
11	2017-02-17T18:04:16Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
12	2017-02-17T18:04:17Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
13	2017-02-17T18:04:18Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
14	2017-02-17T18:04:19Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
15	2017-02-17T18:04:20Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
16	2017-02-17T18:04:21Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
17	2017-02-17T18:04:22Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
18	2017-02-17T18:04:23Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
19	2017-02-17T18:04:24Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,
20	2017-02-17T18:04:25Z,	1.124475,	V,	1.124475,	V,	11.81211,	V,	11.81211,	V,	1.124475,	V,	1.124475,	V,

Summary



- **URL** compliant Naming scheme
 - Naming Rule of ID
 - Meta data definitions
 - Dictionaries for ID naming.
- **Structured** data format
 - Time Series Data (data)
 - Data Channel List (meta data)
 - **XML** with **schema** definition
 - *Optional JSON/CSV format*



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ご静聴ありがとうございました。



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