

**Joint event of SWIM over CRV
Demonstration and Surveillance data
over SWIM Trial**

MET Scenario

2024. 05. 29

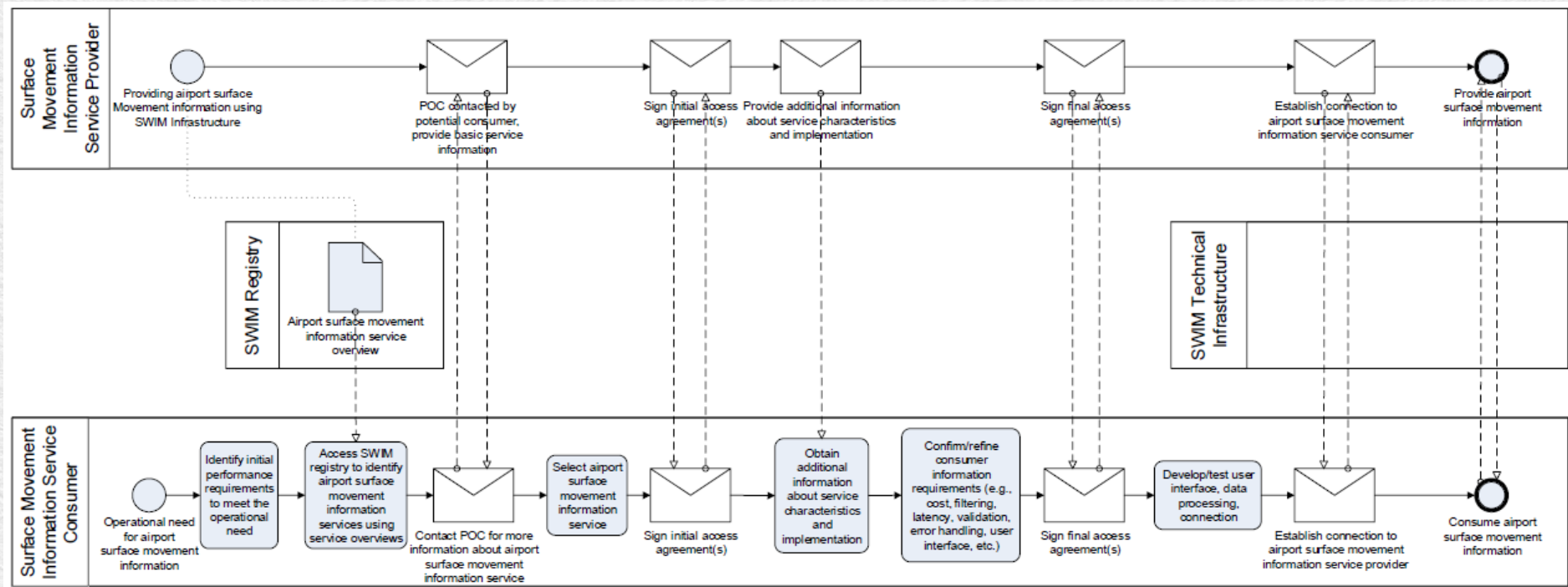
Sehwan Han
Senior Research Engineer
Korea Airports Corporation
Republic of Korea



01

Recap on SWIM ConOps (Doc. 10039)

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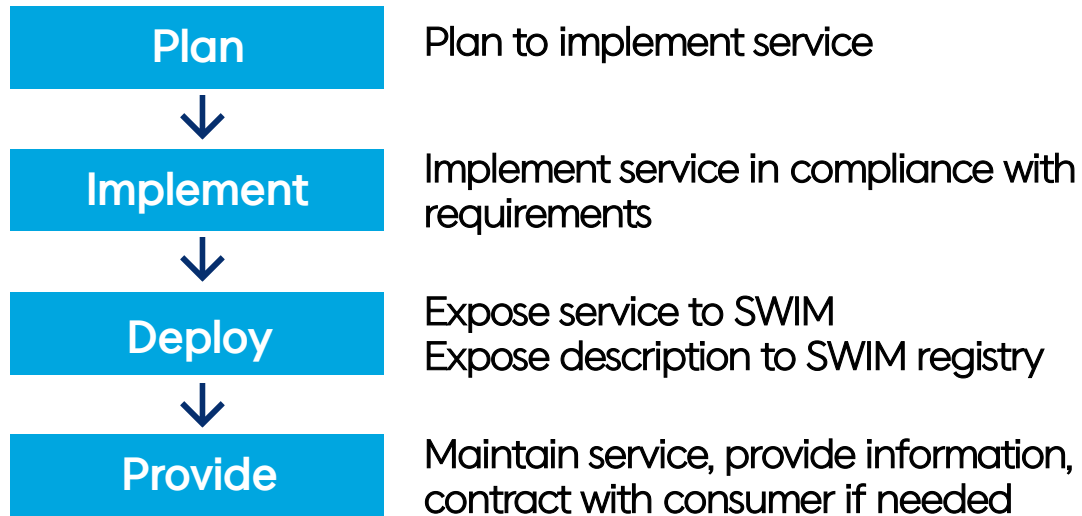


SWIM ConOps describes how information provider and consumer interacts in SWIM environment

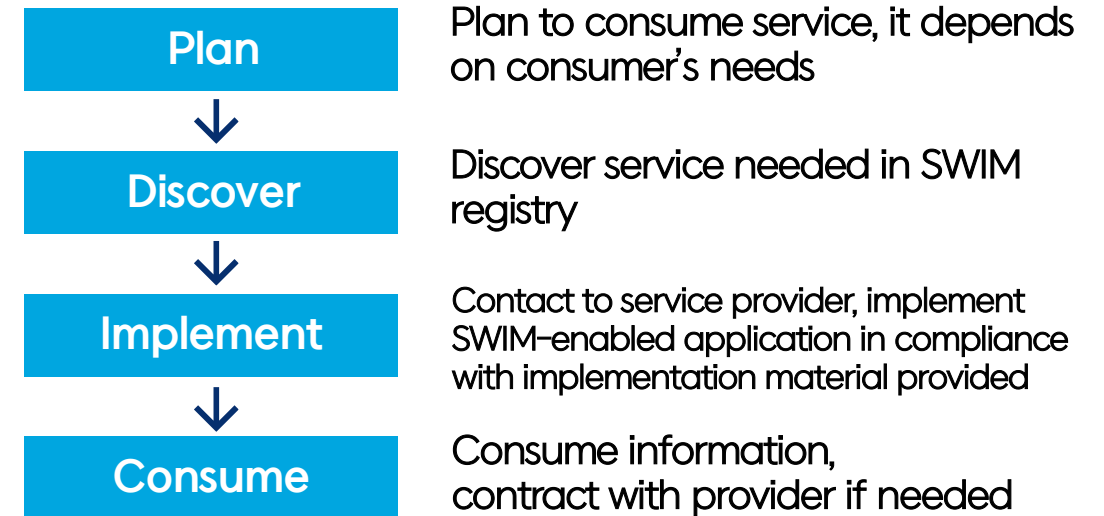
Recap SWIM ConOps (Doc. 10039)

Scope of Demonstration

Service Provider



Service Consumer

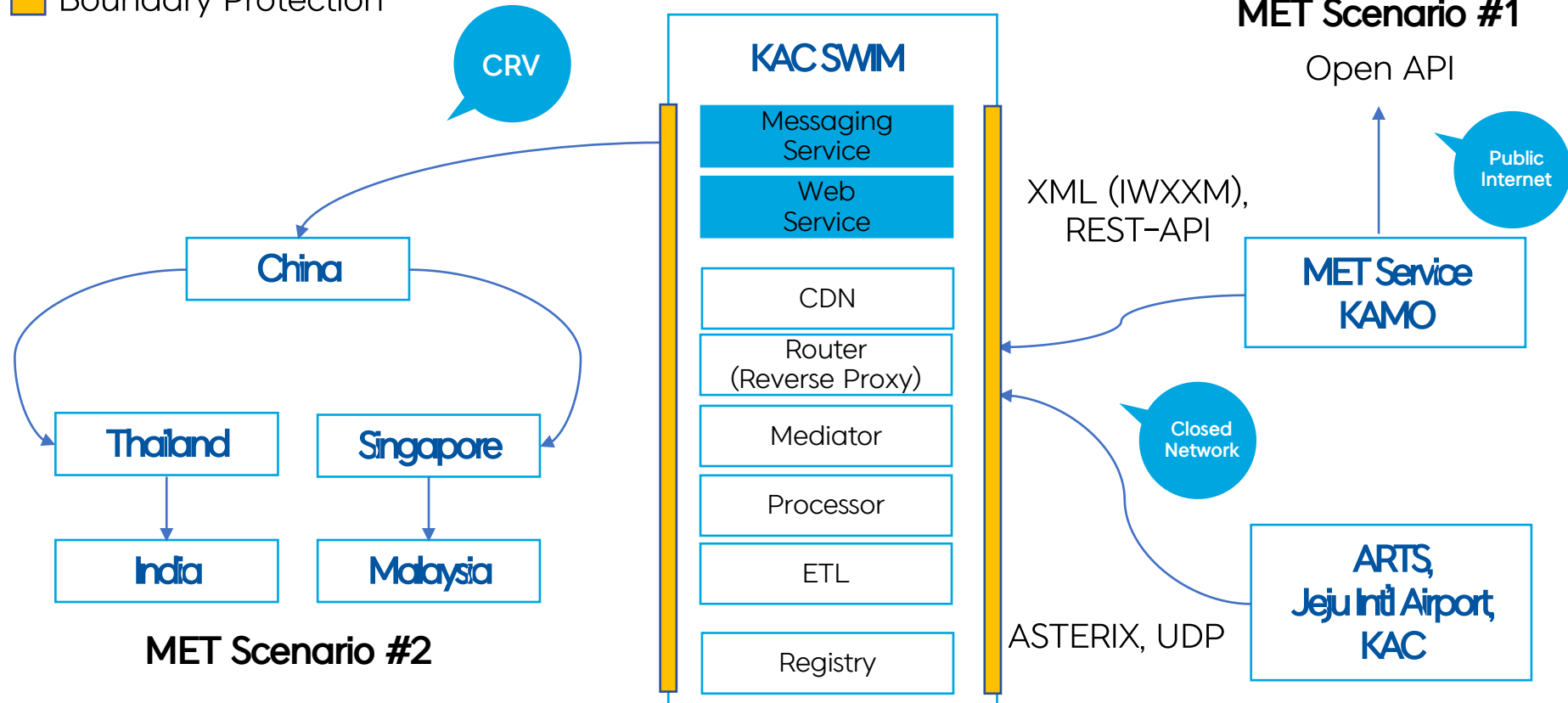


02

Introduction on Demonstration

Introduction on Demonstration

Boundary Protection



03

MET Scenario #1

Open API (2 cases)

see more >

environmental weather national administrative agency

Preview

XML Korea Meteorological Administration Aviation Meteorological Administration_Aviation Weather Specialist (IWXXMVer. 3.0) inquiry service

This service provides observation data and aviation weather expert data from 7 airports across the country to support the safe operation of aircraft. (Aviation weather observation,...

Provider Korea Meteorological Administration, Korea Meteorological Administration **Modification date** 2021-05-07 **views** 2871 **Application for use** 337
keyword Aviation weather, aviation weather specialist, IWXXM

Shortcuts

environmental weather national administrative agency National focus

Preview

XML **JSON** Korea Meteorological Administration_Aviation weather specialist (IWXXMVer.2.0) inquiry service

This service provides observation data and aviation weather expert data from 7 airports across the country to support the safe operation of aircraft. (Aviation weather observation,...

Provider Meteorological Administration **Modification date** 2021-08-04 **views** 5510 **Application for use** 163
keyword Aircraft weather observation, airport forecast, aviation weather special report

Application for use

 No
Permission
Required

 Permission
Required
(token)

Plan



Discover



Implement



Consume

 Public Data Portal (Operational)
<https://data.go.kr>

MET Scenario #1

DATA PUBLIC DATA PORTAL .GO .KR Find Data Request Data Data Reuse Resources User Guide

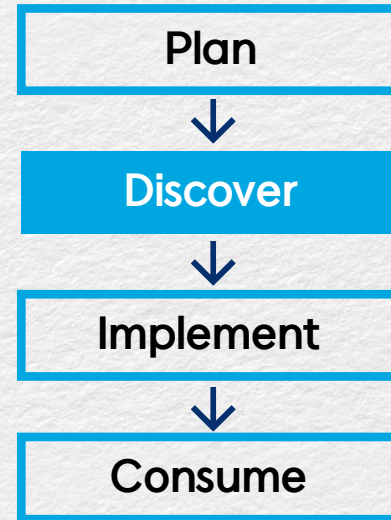
OPENAPI Detail   [copy URL](#)

XML
Meteorological Administration Aircraft Supervisory Service _ Aircraft Weather Specialist (IWXXMVer. 3.0) inquiry service
 To support the safe operation of aircraft, it is a service that provides data observed at 7 airports nationwide and data related to aircraft. (Professional offer)

About OpenAPI [Download metadata](#)

Classified	Environment - Air	Provided By	
Department		Department No	032-222-3079
API Type	LINK	Data Format	XML
Usage	337	Keyword	Aircraft, Aircraft Commercial Specialist, IWXXM
Registered	2021-05-07	Edited	2021-05-07
URL	http://amo.kma.go.kr/new/html/news/api.jsp		
Payment	free		
Scope of License	The use permission range limitless		
References	항공기상전문 개발자 가이드.pdf		

Public Data Portal (Operational)
<https://data.go.kr>



Apply for an OpenAPI development account

JSON+XML Korea Meteorological Administration_Aviation weather specialist (IWXXMVer.2.0) inquiry service

Provider	Meteorological Administration	Service type	REST
Deliberation or not	Automatic approval	Application type	Development account Application for use
Processing status	application	Period of use	Can be used for 24 months from the date of approval

Public data provision system

* Businesses who wish to use services that include location information among public data must obtain a 'location information service permit' or submit a 'location-based service business report' to the Korea Communications Commission in accordance with the 'Act on the Protection and Use of Location Information, etc.'.

* If you are a business that falls under this category, please attach the 'Location-based service business report certificate' in the attached file.

* Please note that if the 'location-based service business report certificate' is not registered when applying for use, it may be rejected.

Select purpose of use

* Marked is a required field.

* Purpose of use

☒ website development ☐ App development (mobile, solution, etc.) ☐ etc ☐ References

☐ Research (papers, etc.)

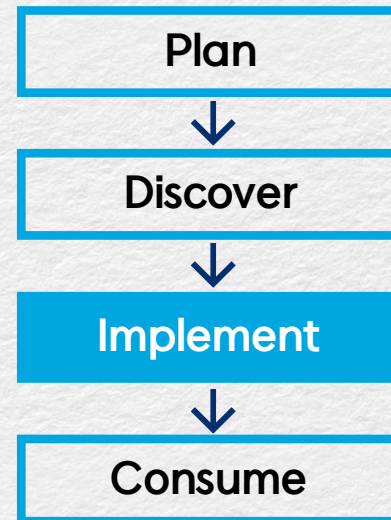
View development account details

Basic Information

data name	Korea Meteorological Administration_Aviation weather specialist (IWXXMVer.2.0) inquiry service detailed description		
Service type	REST	Deliberation or not	Automatic approval
Application type	Development account Application for use	Processing status	approval
Period of use	2023-09-22 ~ 2025-09-22		

Service information

Data format	JSON+XML
End Point	http://apis.data.go.kr/1360000/AmmlwxxmService
The way the authentication key is applied may vary depending on the API environment or API call conditions . Please use the key that runs while applying the encoded/decoded authentication key provided by the portal . * We will strive to provide clearer information on the portal in the future.	
General authentication key (Encoding)	
General authentication key (Decoding)	



MET Service (IWXXM 2.0), auth required
Apply to Use, Public Data Portal (Operational)

MET Scenario #1

```
GET http://amoapi.kma.go.kr/amoApi/iwxxm3/metar?icao=RKSI

Params Authorization Headers (7) Body Pre-request Script Tests Settings Cookies

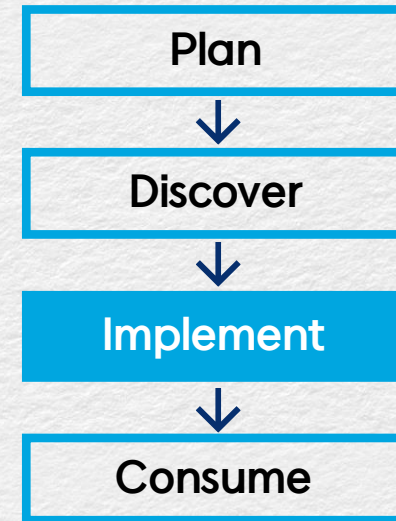
Body Cookies Headers (6) Test Results Status: 200 OK Time: 372 ms Size: 3.43 KB Save Response

Pretty Raw Preview Visualize XML

1 <iwxxm:METAR xmlns:aixm="http://www.aixm.aero/schema/5.1.1" xmlns:gml="http://www.opengis.net/gml/3.2" xmlns:iwxxm="http://icao.int/iwxxm/3.0" xmlns:metce="http://def.wmo.int/metce/2013"
  xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" automatedStation="false" gml:id="metar-RKSI-20240402020000Z"
  permissibleUsage="NON-OPERATIONAL" reportStatus="NORMAL" xsi:schemaLocation="http://icao.int/iwxxm/3.0 http://schemas.wmo.int/iwxxm/3.0/iwxxm.xsd">
2   <iwxxm:extension>
3     <msgText>METAR RKSI 020200Z 16006KT 110V180 CAVOK 18/M03 Q1015 NOSIG=</msgText>
4   </iwxxm:extension>
5   <iwxxm:issueTime>
6     <gml:TimeInstant gml:id="metar-RKSI-20240402020000Z">
7       <gml:timePosition>2024-04-02T02:00:00Z</gml:timePosition>
8     </gml:TimeInstant>
9   </iwxxm:issueTime>
10  <iwxxm:aerodrome>
11    <aixm:AirportHeliport gml:id="metar-RKSI-20240402020000Z">
12      <aixm:timeSlice>
13        <aixm:AirportHeliportTimeSlice gml:id="metar-RKSI-20240402020000Z">
14          <aixm:interpretation>BASELINE</aixm:interpretation>
15          <aixm:designator>RKSI</aixm:designator>
16          <aixm:name>INCHEON INTERNATIONAL AIRPORT</aixm:name>
17          <aixm:locationIndicatorICAO>RKSI</aixm:locationIndicatorICAO>
18          <aixm:ARP>
19            <aixm:ElevatedPoint axisLabels="Lat Long" gml:id="obs-point-RKSI" srsName="http://www.opengis.net/def/crs/EPSG/0/4326">
20              <gml:pos>37.28 126.26</gml:pos>
21              <aixm:elevation uom="M">7.0</aixm:elevation>
22              <aixm:verticalDatum>EGM_96</aixm:verticalDatum>
23            </aixm:ElevatedPoint>
24          </aixm:ARP>
25        </aixm:AirportHeliportTimeSlice>
26      </aixm:timeSlice>
27    </aixm:AirportHeliport>
28  </iwxxm:aerodrome>
29  <iwxxm:observationTime>
30    <gml:TimeInstant gml:id="obs-RKSI-20240402020000Z">
31      <gml:timePosition>2024-04-02T02:00:00Z</gml:timePosition>
32    </gml:TimeInstant>
33  </iwxxm:observationTime>
```

METAR(RKSI), MET Web Service (IWXXM 3.0), no auth required

<http://amoapi.kma.go.kr/amoApi/iwxxm3/metar?icao=RKSI>



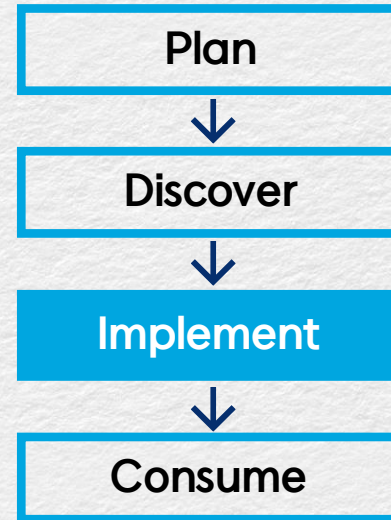
MET Scenario #1

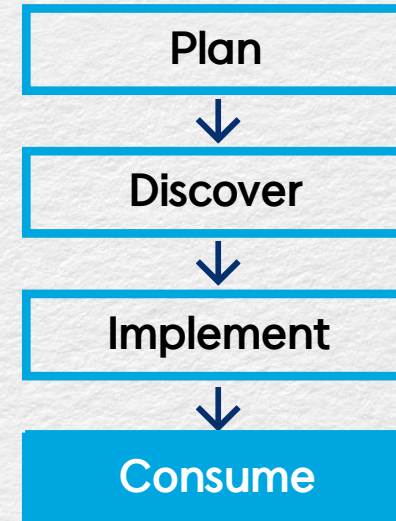
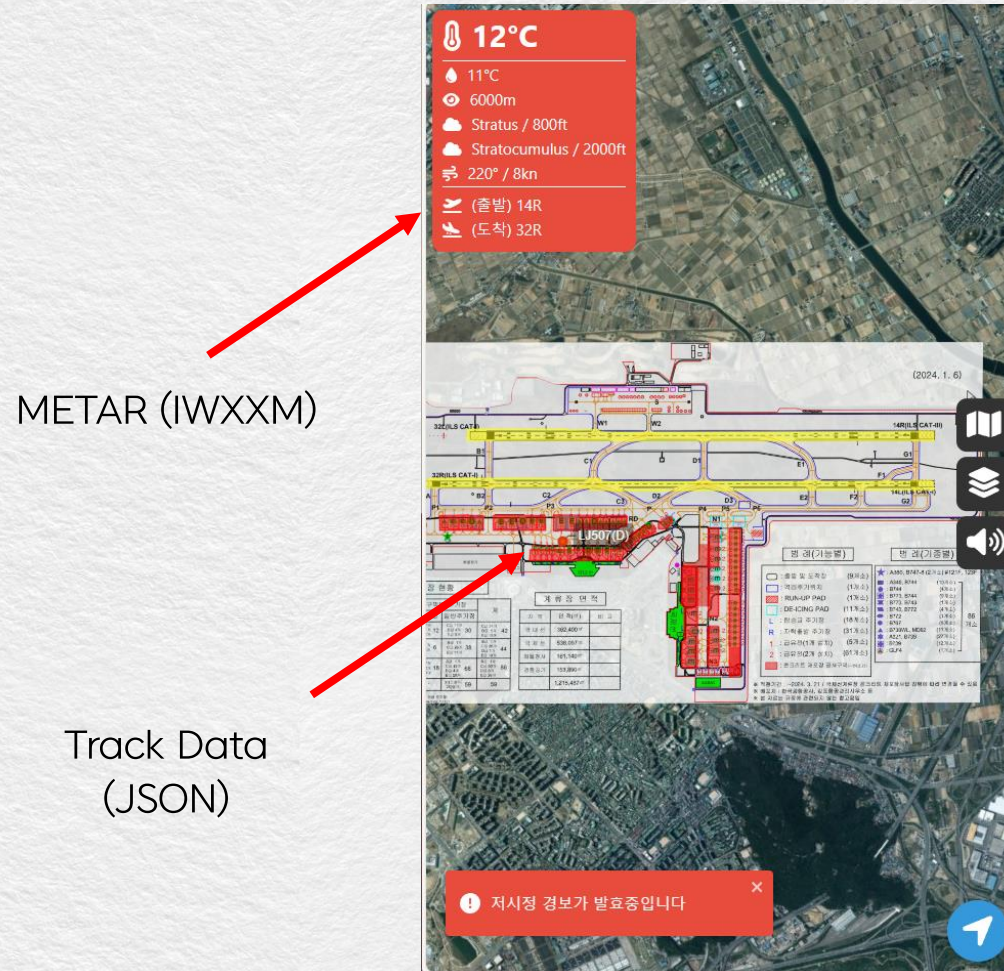
```
GET https://apis.data.go.kr/13600000/AmmlwxxmService/getMetar?serviceKey=i
Send

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies
Body Cookies (1) Headers (8) Test Results
Status: 200 OK Time: 398 ms Size: 2.11 KB Save Response
Pretty Raw Preview Visualize XML
1 <?xml version="1.0" encoding="UTF-8"?>
2 <response>
3   <header>
4     <resultCode>00</resultCode>
5     <resultMsg>NORMAL_SERVICE</resultMsg>
6   </header>
7   <body>
8     <dataType>XML</dataType>
9     <items>
10      <item>
11        <icaoCode></icaoCode>
12        <airportName></airportName>
13        <metarMsg>
14          <iwxxm:METAR xmlns:aixm="http://www.aixm.aero/schema/5.1.1" xmlns:gml="http://www.opengis.net/gml/3.2" xmlns:iwxxm="http://icao.int/iwxxm/2.0" xmlns:metce="http://def.wmo.int/metce/2013" xmlns:om="http://www.opengis.net/om/2.0" xmlns:sams="http://www.opengis.net/samplingSpatial/2.0" xmlns:sf="http://www.opengis.net/sampling/2.0"
15            xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" automatedStation="false" gml:id="metar-RKSI-20240402030000Z"
16            permissibleUsage="OPERATIONAL" status="NORMAL" xsi:schemaLocation="http://icao.int/iwxxm/2.0 http://schemas.wmo.int/iwxxm/2.0/iwxxm.xsd http://def.wmo.int/metce/2013
17            http://schemas.wmo.int/metce/1.2/metce.xsd http://www.opengis.net/samplingSpatial/2.0 http://schemas.opengis.net/samplingSpatial/2.0/spatialSamplingFeature.xsd">
18            <iwxxm:extension>
19              <msgText>METAR RKSI 020300Z 22008KT 130V250 CAVOK 19/M01 Q1015 NOSIG=</msgText>
20            </iwxxm:extension>
21            <iwxxm:observation>
22              <om:OM_Observation gml:id="obs-RKSI-20240402030000Z">
23                <om:type xlink:href="http://codes.wmo.int/49-2/observation-type/IWXXM/1.0/MeteorologicalAerodromeObservation"/>
24                <om:phenomenonTime>
25                  <gml:TimeInstant gml:id="ti-20240402030000Z">
26                    <gml:timePosition>2024-04-02T03:00:00Z</gml:timePosition>
27                  </gml:TimeInstant>
28                </om:phenomenonTime>
29                <om:resultTime xlink:href="#ti-20240402030000Z"/>
30                <om:procedure>
31                  <metce:Process gml:id="p-49-2-metar">
32                    <gml:description>WMO No. 49 Volume 2 Meteorological Service for International Air Navigation APPENDIX 3 TECHNICAL SPECIFICATIONS RELATED TO
33                    METEOROLOGICAL OBSERVATIONS AND REPORTS</gml:description>
34                  </metce:Process>
35                </om:procedure>
36              </om:OM_Observation>
37            </iwxxm:observation>
38          </metarMsg>
39        </item>
40      </items>
41    </body>
42  </response>
```

METAR(RKSI), MET Web Service (IWXXM 2.0), auth required

[https://apis.data.go.kr/13600000/AmmlwxxmService/getMetar?](https://apis.data.go.kr/13600000/AmmlwxxmService/getMetar?serviceKey=[token]&dataType=XML&icao=RKSI)
serviceKey=[token]&dataType=XML&icao=RKSI





04

MET Scenario #2

SWIM Registry

Service Discovery Service

Description > SWIM Service > Description

Surveillance Information (ADS-B) Publication Service (ASTERIX)

All

- Name
- Description
- Provider
- Lifecycle
- Category
- Interface
- Geographical Extent
- Access Restriction
- Exchange Model
- Functions
- Information Source
- Support Availability
- Service Validation
- Operation
- Message

Name

Name

Surveillance Information (ADS-B) Publication Service (ASTERIX)

Version

0.0.1

Description

Description

Surveillance Information (ADS-B) Publication Service (ASTERIX) for the SWIM over CRV demonstration and surveillance d

Additional Description

Provider

Provider Organization

Korea Airports Corporation

Provider Organization Description

Korea Airports Corporation (KAC) operates 14 airports in the Republic of Korea. Although the APG and KAC has been...

GET http://swim-registry.kr:8001/smxs/services

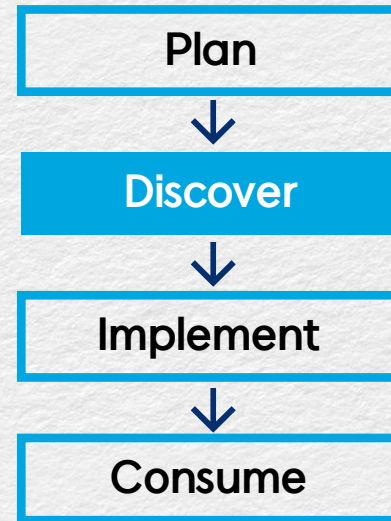
Params Authorization Headers (7) Body Pre-request Script Tests Settings

Body Cookies Headers (8) Test Results

Pretty Raw Preview Visualize JSON

```

1 {
2   "services": [
3     {
4       "id": "http://swim-registry.kr/swim-service-description/smxs0.2.0",
5       "name": "SWIM Metadata Exchange Service (SMXS)",
6       "description": "The SWIM Metadata Exchange Service (SMXS) provides metadata of SWIM services registered in the R",
7       "service-category": [
8         {
9           "code": "http://semantics.aero/service-category#discovery",
10          "taxonomy": "http://semantics.aero/service-category"
11        }
12      ],
13      "service-availability-status": [
14        {
15          "code": "http://semantics.aero/availability-status#prospective",
16          "taxonomy": "http://semantics.aero/availability-status"
17        }
18      ],
19      "interface-type": [
20        {
21          "code": "http://semantics.aero/interface-type#resource-oriented",
22          "taxonomy": "http://semantics.aero/interface-type"
23        }
24      ]
25    },
26    {
27      "id": "http://swim-registry.kr/swim-service-description/SIPSA-0.0.1",
28      "name": "Surveillance Information (ADS-B) Publication Service (ASTERIX)",
29      "description": "Surveillance Information (ADS-B) Publication Service (ASTERIX) for the SWIM over CRV demonstrati
  
```



KAC SWIM Registry (non-operational)
http://swim-registry.kr:8000

KAC SWIM Discovery Service (non-operational)
http://swim-registry.kr:8001/smxs/services

RabbitMQ RabbitMQ 3.9.13 Erlang 24.2.1 Refreshed 2024-04-16 11:33:55 Refresh every 5 seconds

Overview Connections Channels Exchanges **Queues** Admin

Virtual host: All
Cluster: rabbit@swim
User: swim Log out

Get Message(s)

Message 1

The server reported 4 messages remaining.

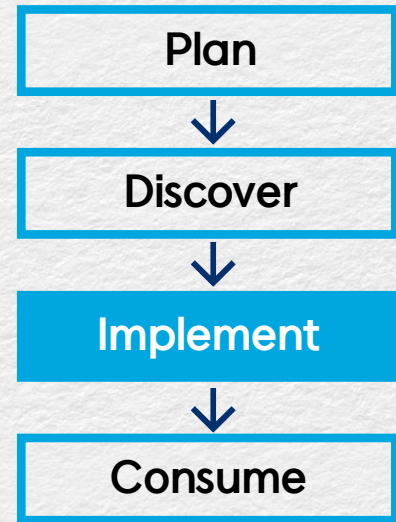
Exchange	x.met.iwxxm.2.0.s3tig
Routing Key	
Redelivered	☐
Properties	headers: - APAC_CATEGORY: IWXXM - APAC_CATEGORY_VERSION: IWXXM_2.0 - APAC_MESSAGE_TYPE: SPECI - APAC_RECIPIENT_LIST: ZB_ATMB,VH_HKCAD,RJ_JCAB,WM_CAAM,WS_CAAS,VT_AEROTHAI,WI_CAI,VL_LPDR,NZ_AIRWAYS,OP_CAAK,RP_CAAK,RJ_JAL - APAC_SOURCE: RK_KAC - APAC_SYSTEM: KAC - APAC_TIMESTAMP: KAC_OUT:1713234830275
Payload	68534 bytes Encoding: string

Message 2

The server reported 3 messages remaining.

Exchange	x.met.iwxxm.2.0.s3tig
Routing Key	
Redelivered	☐
Properties	headers: - APAC_CATEGORY: IWXXM - APAC_CATEGORY_VERSION: IWXXM_2.0 - APAC_MESSAGE_TYPE: AIRMET - APAC_RECIPIENT_LIST: ZB_ATMB,VH_HKCAD,RJ_JCAB,WM_CAAM,WS_CAAS,VT_AEROTHAI,WI_CAI,VL_LPDR,NZ_AIRWAYS,OP_CAAK,RP_CAAK,RJ_JAL - APAC_SOURCE: RK_KAC - APAC_SYSTEM: KAC - APAC_TIMESTAMP: KAC_OUT:1713234830282
Payload	8928 bytes

SPECI/AIRMET(RKRR), MET Publication Service (IWXXM 2.0)



KAC Integrated UI

192.168.20.155:9080

KAC 항공산업연구원 통합 UI

2024-04-16 11:36:54 (KST)

Airport
Gimpo Int'l Airport (RKSS)
Location : 126.7938, 37.5595 / Elevation : 6000

12Cel
Temperature

11Cel
Dew Point

6000m
Visibility

1013hPa
Air Pressure

210Deg8kni
Wind

Departure

Arrival

TIME	FLIGHT	FR	TO
0210	JNA507	RKSS	RKPC
0230	KAL1075	RKSS	RKPC
0235	JJA115	RKSS	RKPC
0240	ESR213	RKSS	RKPC
0240	ABL8811	RKSS	RKPC
0245	TWB713	RKSS	RKPC
0255	KAL1091	RKSS	RKPC
0300	CES512	RKSS	ZSSS
0305	JAL92	RKSS	RJTT
0305	JJA117	RKSS	RKPC

Weather
Gimpo Int'l Airport (RKSS)
Location : 126.7938, 37.5595 / Elevation : 6000

METAR

NORMAL
Status

12Cel
Air Temperature

11Cel
Dew Point Temperature

1013hPa
QNH

6000m
Visibility

210deg
Wind Direction

8[kn_i]
Wind Speed

false
Is Direction Multiple

Stratus 800 [ft_i] Stratocumulus 2000 [ft_i]
Cloud

METAR (IWXXM)

Plan



Discover

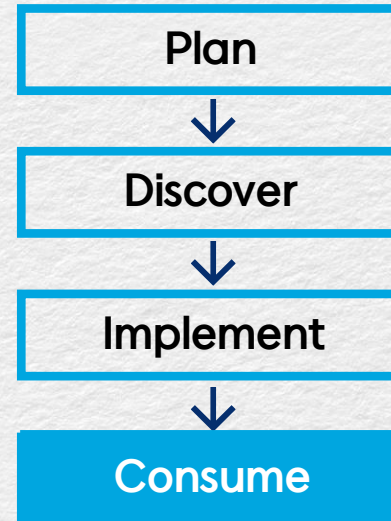
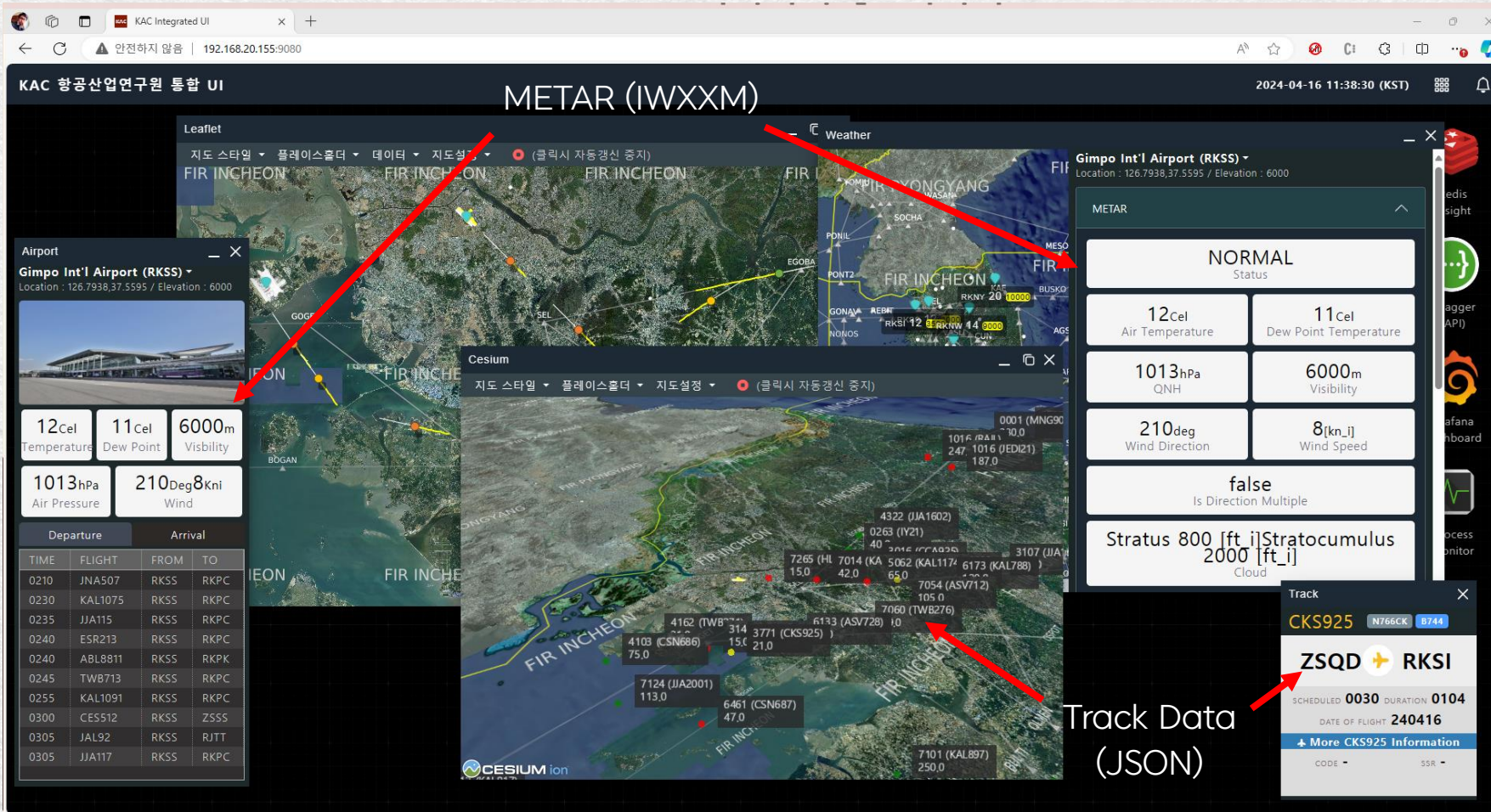


Implement



Consume





Thank You