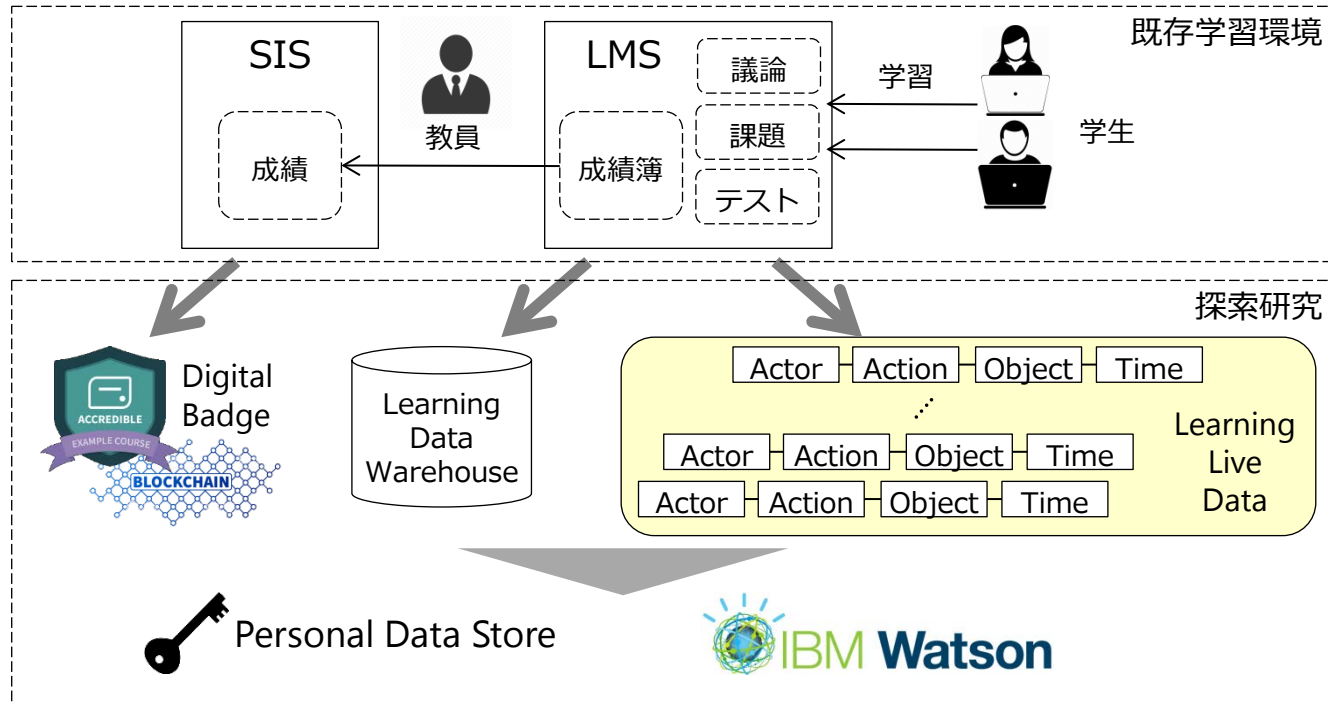


# Caliper JSON データ分析 に関する課題

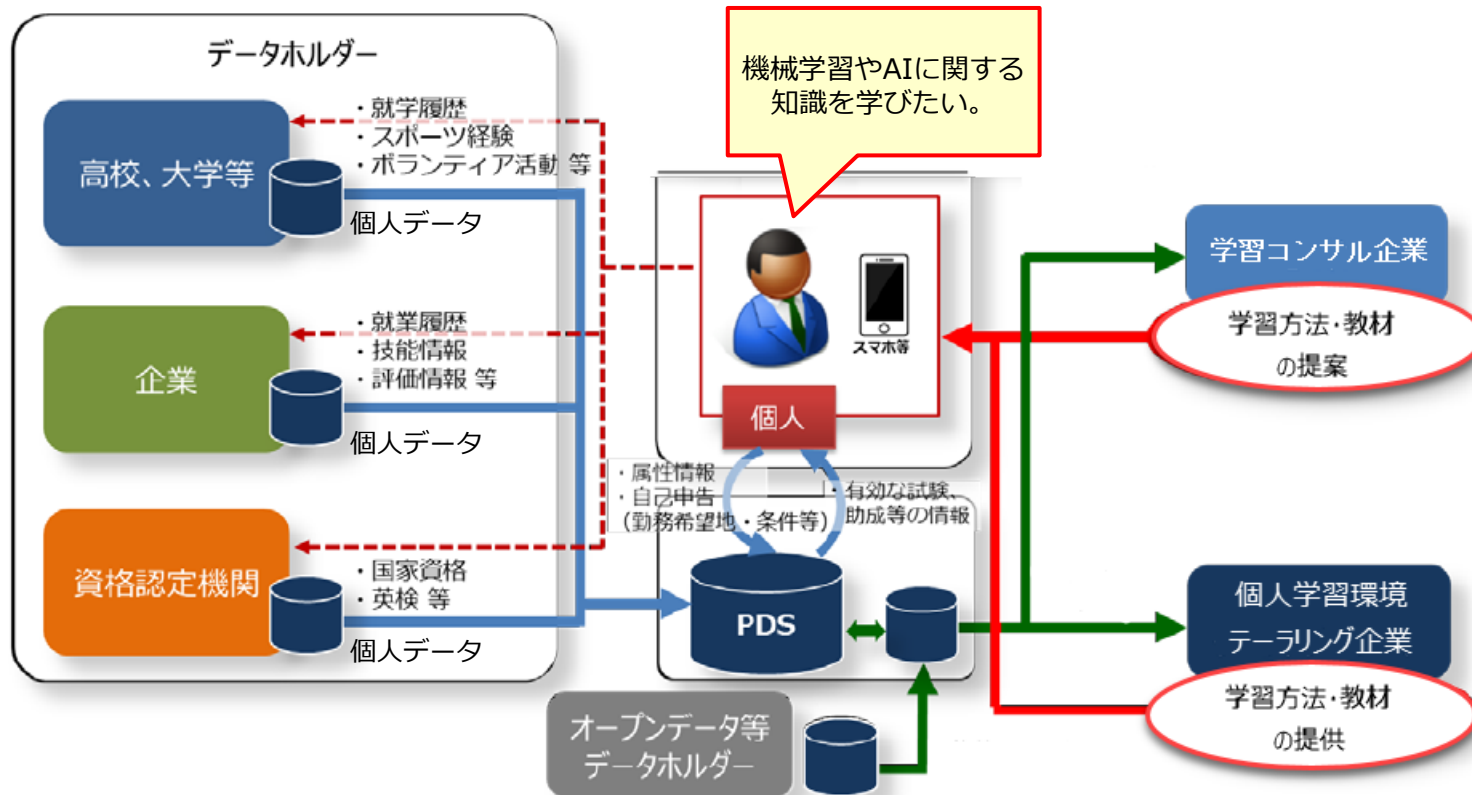
2018年8月29日

情報メディア教育研究センター  
常盤 祐司

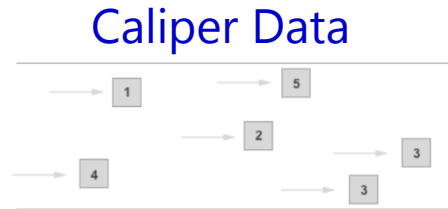
# 学習のAI化 – 概要



# 学習のAI化 - ビジネスモデル



# 学習のAI化 - IT Infrastructure



Amazon  
SQS



AWS  
Lambda



Amazon  
Redshift



Assemblogue

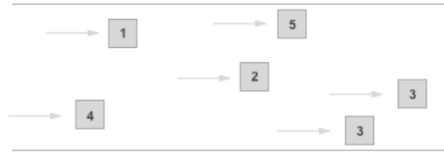
Personal  
Data Store



# Caliper JSON の管理

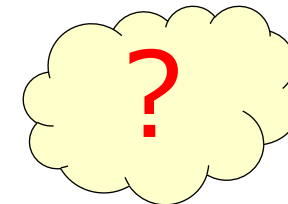


## Caliper Data



Amazon  
SQS

保存期間  
14日



- 場所
- 形式

```

{
  "sensor": "http://hosei.instructure.com/",
  "sendTime": "2018-08-04T00:24:54.348Z",
  "dataVersion": "http://purl.imsglobal.org/ctx/caliper/v1p1",
  "data": [
    {
      "@context": "http://purl.imsglobal.org/ctx/caliper/v1p1",
      "id": "urn:uuid:50dd26eb-1297-450c-b28d-9ceb592cf2f7",
      "type": "NavigationEvent",
      "actor": {
        "id": "urn:instructure:canvas:user:125310000000000030",
        "type": "Person",
        "extensions": {
          "com.instructure.canvas": {
            "user_login": "12X3456",
            "root_account_id": "1234500000000000001",
            "root_account_lti_guid": "abcMgk9o7kftOu2oN50lbwXxSPJM9yjcYsRIE0p:canvas-lms",
            "root_account_uuid": "abcMgk9o7kftOu2oN50lbwXxSPJM9yjcYsRIE0p",
            "entity_id": "12345000000000000030"
          }
        }
      },
      "action": "NavigatedTo",
      "object": {
        "id": "urn:instructure:canvas:course:1234500000000000003",
        "type": "Entity",
        "name": "home",
        "extensions": {
          "com.instructure.canvas": {
            "asset_type": "course",
            "asset_subtype": "home",
            "entity_id": "1234500000000000003"
          }
        }
      },
      "eventTime": "2018-08-04T01:29:36.000Z",
      "edApp": {
        "id": "http://hosei.instructure.com/",
        "type": "SoftwareApplication"
      },
      "session": {
        "id": "urn:instructure:canvas:session:b9ff57fe206167f0d9dd55fc455ad011",
        "type": "Session"
      },
      "extensions": {
        "com.instructure.canvas": {
          "hostname": "hosei.instructure.com",
          "request_id": "1cc94397-f178-4748-8653-e90deba21cec",
          "user_agent": "Canvas/6.3 (iPhone; iOS 11.4.1; Scale/3.00)",
          "version": "1.0.0"
        }
      }
    }
  ]
}

```

# JSONデータ

## Caliperデータ

```

{
  "sensor": "http://hosei.instructure.com/",
  "sendTime": "2018-08-04T00:24:54.348Z",
  "dataVersion": "http://purl.imsglobal.org/ctx/caliper/v1p1",
  "data": [
    {
      "@context": "http://purl.imsglobal.org/ctx/caliper/v1p1",
      "id": "urn:uuid:50dd26eb-1297-450c-b28d-9ceb592cf2f7",
      "type": "NavigationEvent",
      "actor": {
        "id": "urn:instructure:canvas:user:125310000000000030",
        "type": "Person",
        "extensions": {
          "com.instructure.canvas": {
            "user_login": "12X3456",
            "root_account_id": "1234500000000000001",
            "root_account_lti_guid": "abcMgk9o7kftOu2oN50lbvwXxSPJM9yjcYsRIE0p:canvas-lms",
            "root_account_uuid": "abcMgk9o7kftOu2oN50lbvwXxSPJM9yjcYsRIE0p",
            "entity_id": "12345000000000000030"
          }
        }
      },
      "action": "NavigatedTo",
      "object": {
        "id": "urn:instructure:canvas:course:123450000000000003",
        "type": "Entity",
        "name": "home",
        "extensions": {
          "com.instructure.canvas": {
            "asset_type": "course",
            "asset_subtype": "home",
            "entity_id": "1234500000000000003"
          }
        }
      },
      "eventTime": "2018-08-04T01:29:36.000Z",
      "edApp": {
        "id": "http://hosei.instructure.com/",
        "type": "SoftwareApplication"
      },
      "session": {
        "id": "urn:instructure:canvas:session:b9ff57fe206167f0d9dd55fc455ad011",
        "type": "Session"
      },
      "extensions": {
        "com.instructure.canvas": {
          "hostname": "hosei.instructure.com",
          "request_id": "1cc94397-f178-4748-8653-e90deba21cec",
          "user_agent": "Canvas/6.3 (iPhone; iOS 11.4.1; Scale/3.00)",
          "version": "1.0.0"
        }
      }
    }
  ]
}
    
```

## Caliperデータファイル

```

{
  .....
}
    
```

```

{
  .....
}
    
```

```

{
  .....
}
    
```

```

{
  .....
}
    
```

```

{
  .....
}
    
```

課題：  
 どのような  
 データ形式  
 で管理すべきか？

# JSONデータファイル

配列JSONにすれば、Pythonでは Dictionary(辞書)オブジェクトにて、Key - Value形式で処理することができる。

```
[  
  {  
    .....  
  },  
  {  
    .....  
  },  
  {  
    .....  
  },  
  {  
    .....  
  }  
]
```

```
import json
```

```
with open("data.json") as f:  
    data = json.load(f)  
    for d in data:  
        print(d.get("sensor"))
```

# データ取り出しの課題

```
{
  "sensor": "http://hosei.instructure.com/",
  "sendTime": "2018-08-04T00:24:54.348Z",
  "dataVersion": "http://purl.imsglobal.org/ctx/caliper/v1p1",
  "data": [
    {
      "@context": "http://purl.imsglobal.org/ctx/caliper/v1p1",
      "id": "urn:uuid:50dd26eb-1297-450c-b28d-9ceb592cf7",
      "type": "NavigationEvent",
      "actor": {
        "id": "urn:instructure:canvas:user:125310000000000030",
        "type": "Person",
        "extensions": {
          "com.instructure.canvas": {
            "user_login": "12X3456",
            "root_account_id": "123450000000000001",
            "root_account_lti_guid": "abcMgk9o7kftOu2oN50lbvwXxSPJM9ycYsRIE0p:canvas-lms",
            "root_account_uuid": "abcMgk9o7kftOu2oN50lbvwXxSPJM9ycYsRIE0p",
            "entity_id": "123450000000000030"
          }
        }
      },
      "action": "NavigatedTo",
      "object": {
        "id": "urn:instructure:canvas:course:123450000000000003",
        "type": "Entity",
        "name": "home",
        "extensions": {
          "com.instructure.canvas": {
            "asset_type": "course",
            "asset_subtype": "home",
            "entity_id": "123450000000000003"
          }
        }
      },
      "eventTime": "2018-08-04T01:29:36.000Z",
      "edApp": {
        "id": "http://hosei.instructure.com/",
        "type": "SoftwareApplication"
      },
      "session": {
        "id": "urn:instructure:canvas:session:b9ff57fe206167f0d9dd55fc455ad011",
        "type": "Session"
      },
      "extensions": {
        "com.instructure.canvas": {
          "hostname": "hosei.instructure.com",
          "request_id": "1cc94397-f178-4748-8653-e90deba21cec",
          "user_agent": "Canvas/6.3 (iPhone; iOS 11.4.1; Scale/3.00)",
          "version": "1.0.0"
        }
      }
    }
  ]
}
```

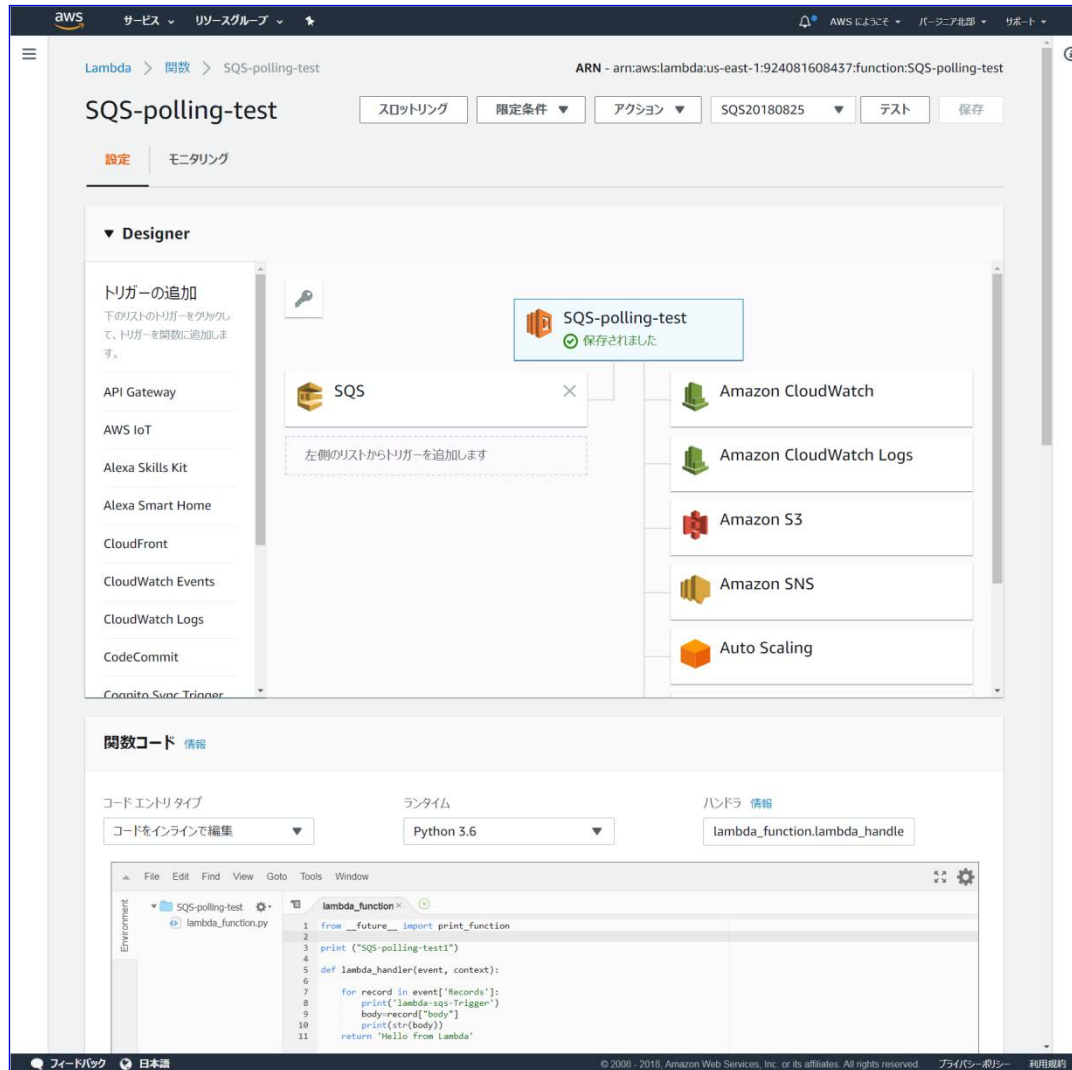
List が含まれる。  
例 : (d.get["data"][0]).get("action")

keyのないオブジェクトがある。



# SQSのデータダウンロード

SQSをトリガーとしたLambdaにてS3への書込みを確認中



The screenshot shows the AWS Lambda console interface for a function named "SQS-polling-test". The function is configured with the following settings:

- ARN:** arn:aws:lambda:us-east-1:924081608437:function:SQS-polling-test
- Trigger:** SQS (selected)
- Runtime:** Python 3.6
- Handler:** lambda\_function.lambda\_handle

The "Designer" section shows the function is triggered by SQS. The "関数コード" (Function Code) section shows the following Python code:

```

1 from __future__ import print_function
2
3 print ("SQS-polling-test!")
4
5 def lambda_handler(event, context):
6
7     for record in event['Records']:
8         print('lambda: sqs: trigger')
9         body=record['body']
10        print(str(body))
11        return 'Hello from Lambda'
    
```

# ディスカッション

---

1. JSONデータファイルの形式
2. Caliper データを読み込むPython標準ライブラリ
3. 保有期間が14日であるSQSデータの保存方法