# ReCap RESTful Web API

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# ReCap REST API, 3D model from photos

- ReCap 360 demo
- Photogrammetry
- REST API

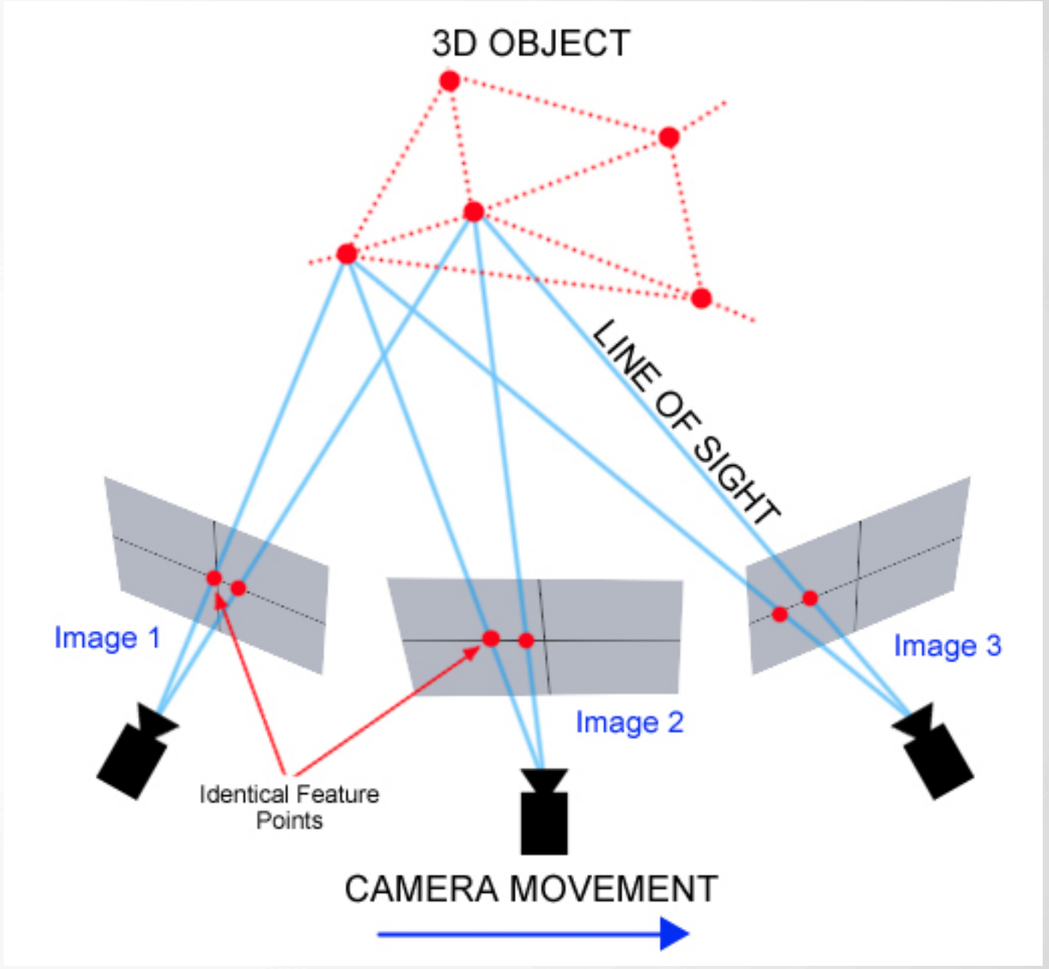
- Partner examples:
  - Soundfit
  - Kubit
  - Skycatch

# 3D models from Photo

- Reality Solutions Group
  - ReCap 360
- Autodesk Consumer Group
  - http://123dapp.com/catch
    - Mobile
    - Online
    - Desktop
- 3rd party developers
  - Pilot
  - Through ADN

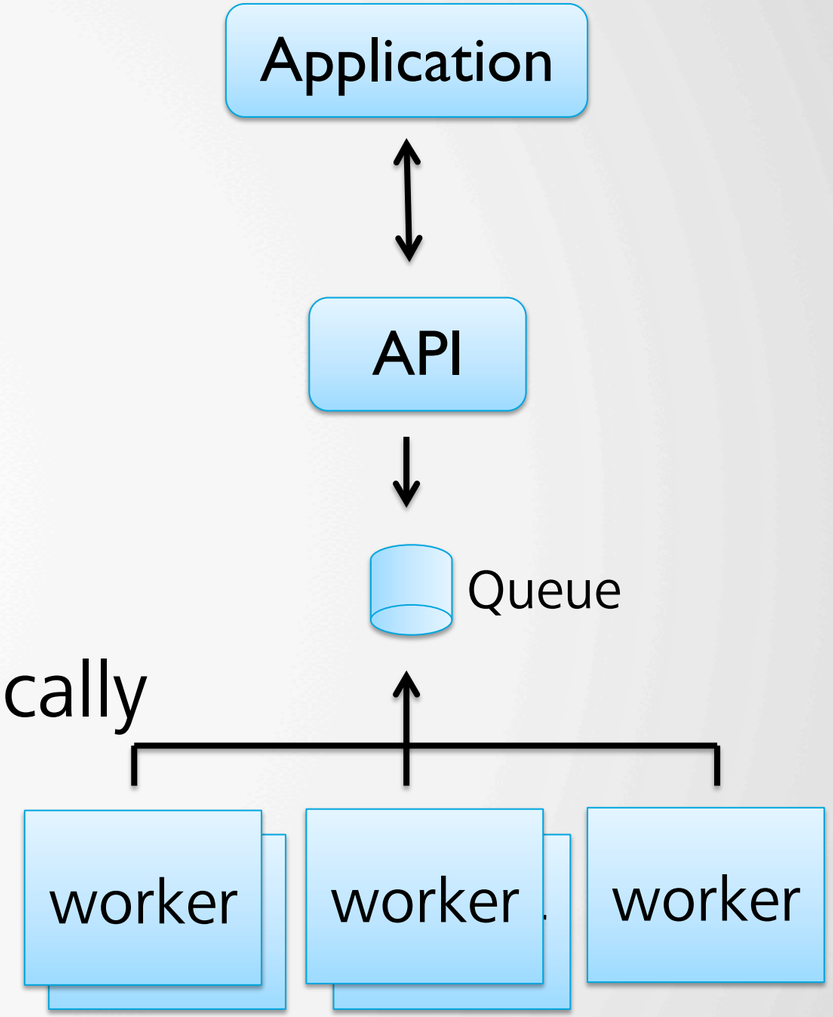
# Photogrammetry

- Principles:
  - Use Photos to reconstruct 3D
  - Camera location and parameters
- Take good pictures
  - Quality versus quantity
  - Lighting
  - Equipment
  - Overlap



# Architecture

- Relying on Amazon web services
  - S3, SQS, SDB, EC2, IAM
- Using queues to manage jobs
- Workers can be added or removed dynamically

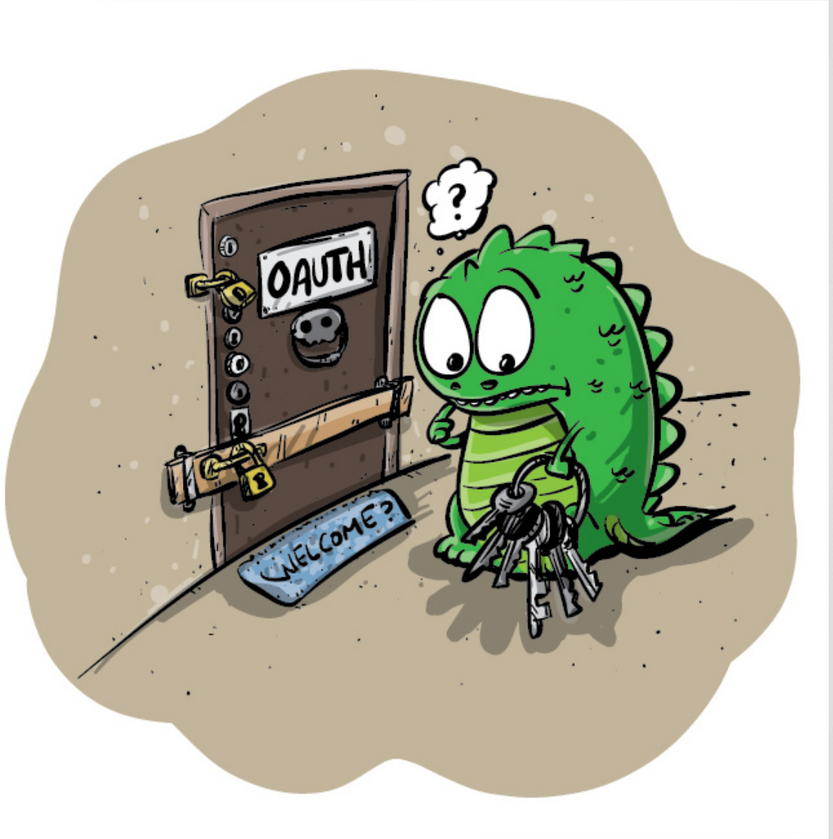


# Basic workflow

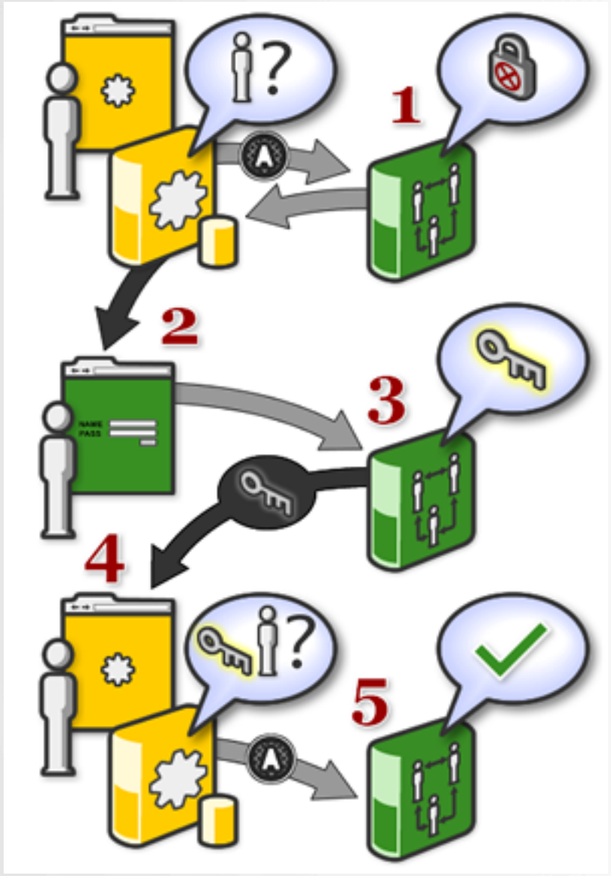
- Create a Photoscene
  - Set meshquality
- Upload images
- Run computation
- Poll for completion (get progress)
- Get the result

# Authentication

- Signature with Oxygen:
  - ADSK service based on OAuth 1.0
  - You need a ConsumerID and ConsumerKey
  - It’s a 3 legged authentication
  - Authentication data in the HTTP header
- Your application, your clientID



# OAuth shortest primer ever




1) The user wants to use the application
   The app requests a token to the O2 server

→ **Request token**

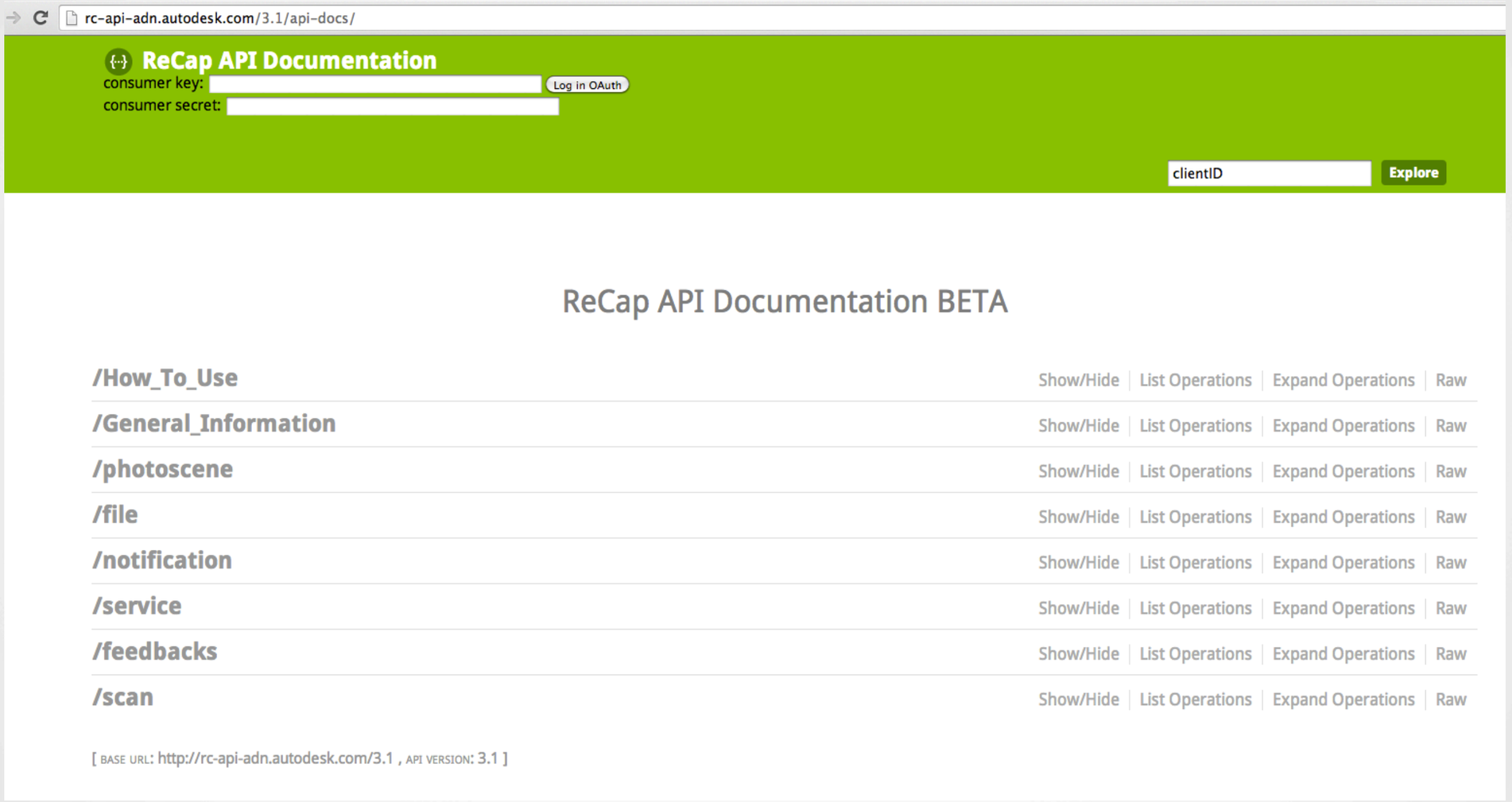
2) Using this token the app requests the server to Authorize the user with her credentials (login, password)

→ **Authorize**

3) The app gets an accessToken to sign all future requests

→ **Access token**

# Documentation



# Example: compute a complete photoscene

PID = POST /photoscene meshquality=7 → Create a scene and get its Photoscene ID

POST /file/ image1.jpg p=PID&type=image
POST /file/ image2.jpg p=PID&type=image
POST /file/ image3.jpg p=PID&type=image
→ Upload all the images composing this Photoscene

POST /photoscene/PID → Run the computation

while(progress) GET /photoscene/PID → Wait for the scene completion (or wait for the notification)

GET /photoscene/PID format=obj → Get the computed file (OBJ)

# Expert controls

- Change the mesh quality, choose a specific export
- Use a callback
- Modify project file ( Add/remove image(s), manual points, survey points )
- Use a template
- Define a bounding box
- Meta-data ninja
  - Set specific camera parameters
  - Advanced control on mesh post processing (cleaning, healing, …)

# Callback

- A callback is a notification sent when the photoscene has been processed
- Specified when creating the photoscene:
  - Email: POST /photoscene callback=email://bob@autodesk.com
  - HTTP: POST /photoscene callback=http://website/callback?id=1232
  - iOS push: POST /photoscene callback=apple://12qwABer4cvd635yte
  - Custom ? To be defined

# Returns from the API

- XML or JSON
  - xml=1 (default) or json=1

- API return code (specific to the HTTP call)

```
<code>28</code>
<msg>The scene name cannot be empty</msg>
```

- Process error code (specific to computation)

```
<progressmsg>ERROR</progressmsg>
<progress>100</progress>
<error_msg_id>7</error_msg_id>
```

**Your photoscene: AU**

**ReCap API**

Sent: Thursday, December 5, 2013 1:10 PM

To: Stephane Negri


# great news!

your 3D model is ready.

hello snegri

Your 3D model 'AU' is ready on Autodesk® RECAP™ 360!

Go ahead and view it wireframed or textured along with the ability to see camera locations and stitch photos - or just download it in full resolution! We can share it to a bunch of convenient formats such as OBJ, RCM, FBX, RCS and IPM!

take me to my model

Feel free to contact us for support or to share your feedback and suggestions about working with Autodesk® RECAP™ Photo!

your friends,

Autodesk® RECAP™ 360 team.

# Useful links

- Autodesk contact:
  - recap.api@autodesk.com
- Documentation/test client
  - http://rc-api-adn.autodesk.com/3.1/api-docs/
- External links
  - RESTful API: http://en.wikipedia.org/wiki/Representational_state_transfer
  - Oauth: http://hueniverse.com/oauth/
  - REST add-on: https://addons.mozilla.org/en-us/firefox/addon/restclient/

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SoundFit
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