



JOHN DEERE

NOTHING RUNS LIKE A DEERE

Upcoming Changes Affecting API Connections

Chris Hutchinson, SW Engineering Manager

DEVELOP WITH
DEERE
2020

Agenda

Wednesday, January 29, 2020

1. OAuth 2.0 Migration

- OAuth 2.0 overview
- Steps to migrate
- Migration timeline

2. Required Customer Action Event Handling

- What is a Required Customer Action Event?
- How to identify and handle
- Expectations moving forward

OAuth 2.0 Migration

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OAuth 2.0 – Overview

- **What is OAuth and why is it important?**
 - OAuth is a standardized authentication protocol
 - Allows a user to approve an application to act on their behalf
 - John Deere APIs leverage OAuth for authentication and access consent
- **Why is John Deere switching from OAuth 1.0a to OAuth 2.0?**
 - Well supported – predominant industry standard
 - More flexible with respect to grant types and access scopes
 - Better security with short lived tokens (leverages refresh tokens)

OAuth 2.0 – Migration Timelines

For the **MyJohnDeere API** and **JDLink Machine Data API**...

- Mar 2020 – OAuth 2.0 fully supported
- Mar 2020 – 12 month 1.0a deprecation communication
- Sep 2020 – 6 month 1.0a deprecation communication
- Dec 2020 – 3 month 1.0a deprecation communication
- Feb 2021 – 1 month 1.0a deprecation communication
- **Mar 2021 – OAuth 1.0a officially deprecated**
 - **Existing OAuth 1.0a access tokens will no longer work**
 - **OAuth 2.0 will be the only supported authentication protocol**

OAuth 2.0 – Application Requirements – What you need...

- **Client Key and Secret**
 - Obtained by setting up an application in developer.deere.com
- **OAuth Access Scopes**
 - An applicaiton will be required to specify what scopes of access it requires (from which the user will be asked to consent)
- **Redirect URI**
 - Client application redirect landing page after user provides authentication and consent
 - The redirect URI is configured via the application developer.deere.com OAuth profile
- **John Deere's OAuth .well-known URI**
 - Provides standardized meta data such as authorization URI, token URI, scopes, and more
 - <https://signin.johndeere.com/oauth2/aus78tnlaysMraFhC1t7/.well-known/oauth-authorization-server>

OAuth 2.0 – Scopes

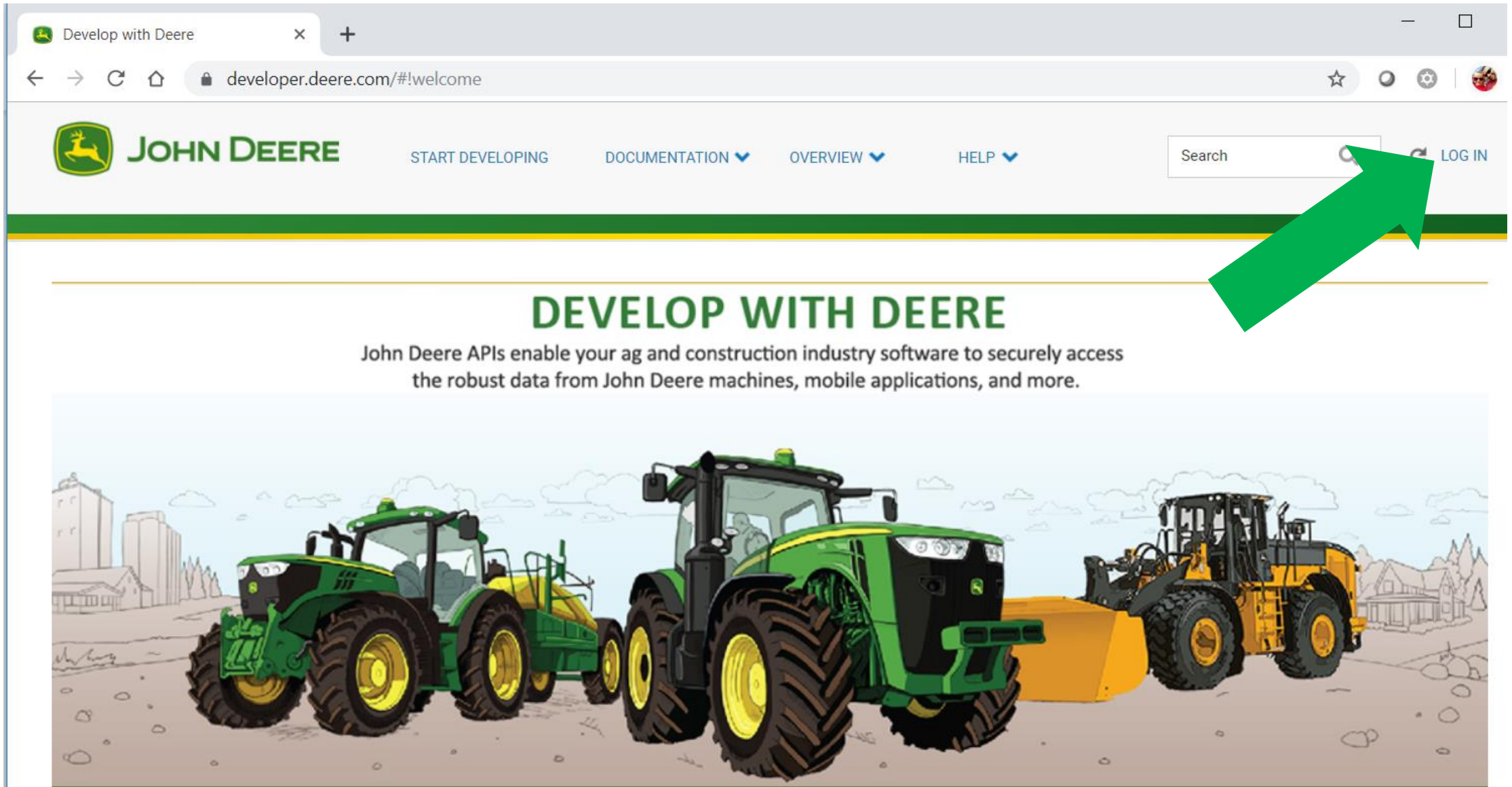
- Profile – **View** user's name and contact info
- Org 1 – **View** operators, staff, and partners
- Org 2 – **Modify** operators, staff, and partners
- Eq 1 – **View** equipment and terminals
- Eq 2 – **Modify** equipment and terminals
- Ag 1 – **View** products, fields, and boundaries
- Ag 2 – **View** agronomic time series data
- Ag 3 – **Modify** products, fields, boundaries, agronomic time series data
- Files – **Upload** and **download** files

Full documentation will be made available on developer.deere.com by Mar 2020

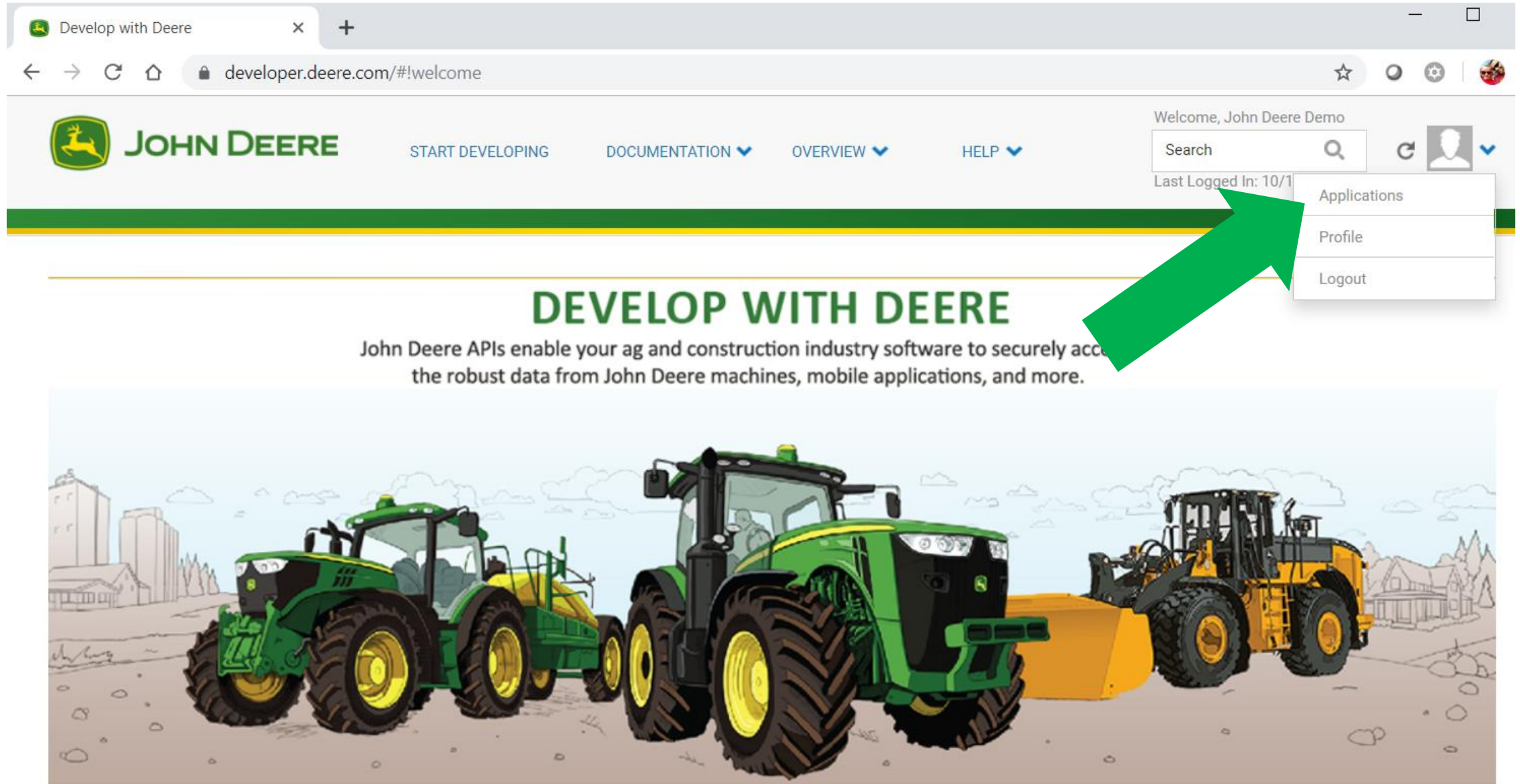
OAuth 2.0 – Migration Steps – Action Required!

1. Register client redirect URI in developer.deere.com
2. Update client authentication logic for OAuth 2.0

OAuth 2.0 – Register Client Redirect URI



OAuth 2.0 – Register Client Redirect URI



The screenshot shows the John Deere Developer Portal interface. The browser tab is titled "Develop with Deere" and the URL is "developer.deere.com/#!/welcome". The header includes the John Deere logo, navigation links for "START DEVELOPING", "DOCUMENTATION", "OVERVIEW", and "HELP", and a user profile section. The user profile section displays "Welcome, John Deere Demo", a search bar, a refresh icon, a user icon, and a dropdown menu. The dropdown menu contains the options "Applications", "Profile", and "Logout". A large green arrow points to the "Applications" option. Below the header, the main content area features the heading "DEVELOP WITH DEERE" and a paragraph: "John Deere APIs enable your ag and construction industry software to securely access the robust data from John Deere machines, mobile applications, and more." At the bottom, there is an illustration of three John Deere tractors and a loader in a rural setting.

Develop with Deere

developer.deere.com/#!/welcome

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START DEVELOPING DOCUMENTATION OVERVIEW HELP

Welcome, John Deere Demo


Search

Last Logged In: 10/1

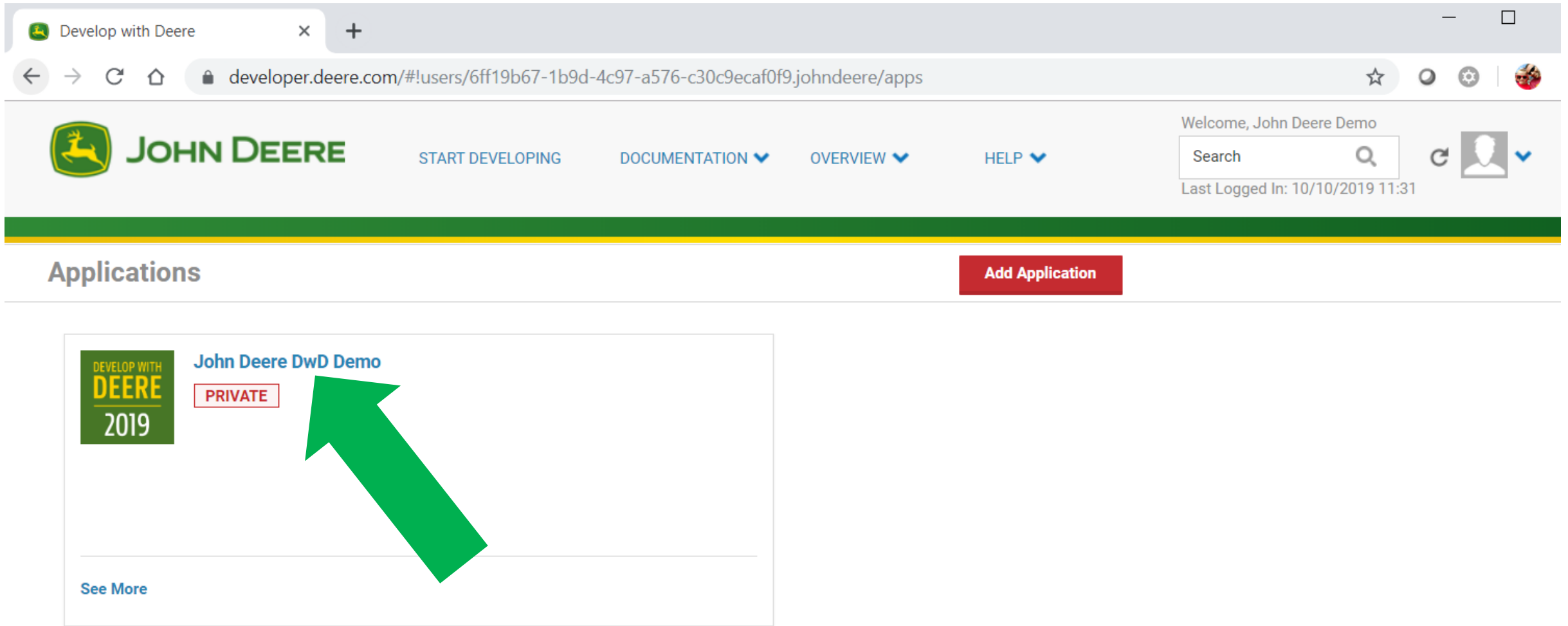
- Applications
- Profile
- Logout

DEVELOP WITH DEERE

John Deere APIs enable your ag and construction industry software to securely access the robust data from John Deere machines, mobile applications, and more.



OAuth 2.0 – Register Client Redirect URI



The screenshot shows a web browser window with the address bar displaying `developer.deere.com/#!/users/6ff19b67-1b9d-4c97-a576-c30c9ecaf0f9,johndeere/apps`. The page header features the John Deere logo, navigation links for [START DEVELOPING](#), [DOCUMENTATION](#), [OVERVIEW](#), and [HELP](#), and a user profile section for "John Deere Demo" with a search bar and a "Last Logged In: 10/10/2019 11:31" timestamp. The main content area is titled "Applications" and includes a red "Add Application" button. A card for the "John Deere DwD Demo" application is shown, marked as "PRIVATE", with a large green arrow pointing to its title. A "See More" link is located at the bottom of the card.

Develop with Deere

developer.deere.com/#!/users/6ff19b67-1b9d-4c97-a576-c30c9ecaf0f9,johndeere/apps

JOHN DEERE

START DEVELOPING DOCUMENTATION OVERVIEW HELP

Welcome, John Deere Demo

Search

Last Logged In: 10/10/2019 11:31

Applications

Add Application

DEVELOP WITH DEERE 2019

John Deere DwD Demo

PRIVATE

See More

OAuth 2.0 – Register Client Redirect URI

The screenshot shows the John Deere Developer Portal interface. At the top, there's a navigation bar with the John Deere logo, links for 'START DEVELOPING', 'DOCUMENTATION', 'OVERVIEW', and 'HELP', a search bar, and a user profile section with the text 'Welcome, John Deere Demo' and 'Last Logged In: 10/10/2019 11:31'. Below the navigation bar, a green banner displays '← John Deere Dwd Demo' and three buttons: 'Activated in Production' (green), 'Edit' (grey), and 'Delete' (red). The main content area is divided into two sections: 'DETAILS' and 'SECURITY'. The 'DETAILS' section includes fields for 'Application Description', 'Version Description', 'Parent Organization' (Tenant - JohnDeere), 'Tags' (None), 'Visibility' (Private), 'Website' (None), 'Implementation' (Sandbox), and 'Updated' (10/4/2019 14:19 [2 weeks ago]). The 'SECURITY' section displays the 'App ID' (johndeere-7d5qS7Wfxhq1emRPPHCQag85) and the 'Shared Secret' (masked with asterisks). A large green arrow points to the 'Shared Secret' field. Below the 'Shared Secret' field are two 'Copy to Clipboard' buttons. At the bottom of the 'SECURITY' section are three buttons: 'Import Credentials', 'OAuth Profile', and 'Regenerate Shared Secret'. On the left side of the page, there's a sidebar with a green header 'DEVELOP WITH DEERE 2019' and a list of menu items: 'Details' (selected), 'Overview', 'Performance', 'Logs', 'License Monitor', 'Test Client', and 'Team'.

Develop with Deere

developer.deere.com/#!apps/326d07bd-9d8f-4414-8ac3-f6b42dcb83fa.johndeere/versions/7d5qS7Wfxhq1emRPPHCQag85.johndeere/d...

JOHN DEERE

START DEVELOPING DOCUMENTATION OVERVIEW HELP

Welcome, John Deere Demo

Search

Last Logged In: 10/10/2019 11:31

← John Deere Dwd Demo

Activated in Production Edit Delete

DEVELOP WITH DEERE 2019

Details

Overview

Performance

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License Monitor

Test Client

Team

DETAILS

Application Description

Version Description

Parent Organization

Tenant - JohnDeere

Tags : None

Visibility : Private

Website : None

Implementation : Sandbox

Updated : 10/4/2019 14:19 [2 weeks ago]

SECURITY

App ID

johndeere-7d5qS7Wfxhq1emRPPHCQag85

Copy to Clipboard

Shared Secret

Show

Copy to Clipboard

Import Credentials OAuth Profile Regenerate Shared Secret

OAuth 2.0 – Register Client Redirect URI

ACCESS TOKEN	AUTHENTICATION
Token type	Application Type
<div>Provider Default</div>	<div>Confidential</div>
ID TOKEN	Authentication Method
ID Token Signing Algorithm	<input checked="" type="radio"/> Global Setting
<div>Provider Default</div>	<input type="radio"/> Choose from authentication options below
<input type="checkbox"/> Require Authentication Time Claim	<input type="checkbox"/> Require Signed Requests
	JWKS URL
	<div>Enter a URL</div>
	<input type="checkbox"/> Restricted Common Scopes
	<input type="checkbox"/> Restricted Response Types
	Redirect URI
	<div>https://www.my.application.com/signup</div>
	<div>Add</div>



Cancel

Save

OAuth 2.0 – Migration Steps – Action Required!

1. Register client redirect URI in developer.deere.com
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OAuth 2.0 – Authorization Code Flow

1. Obtain authorization and token URI from .well-known URI

- <https://signin.johndeere.com/oauth2/aus78tnlaysMraFhC1t7/.well-known/oauth-authorization-server>

2. Acquire authorization code

- Requires user to authenticate and consent to access

3. Acquire *access* token

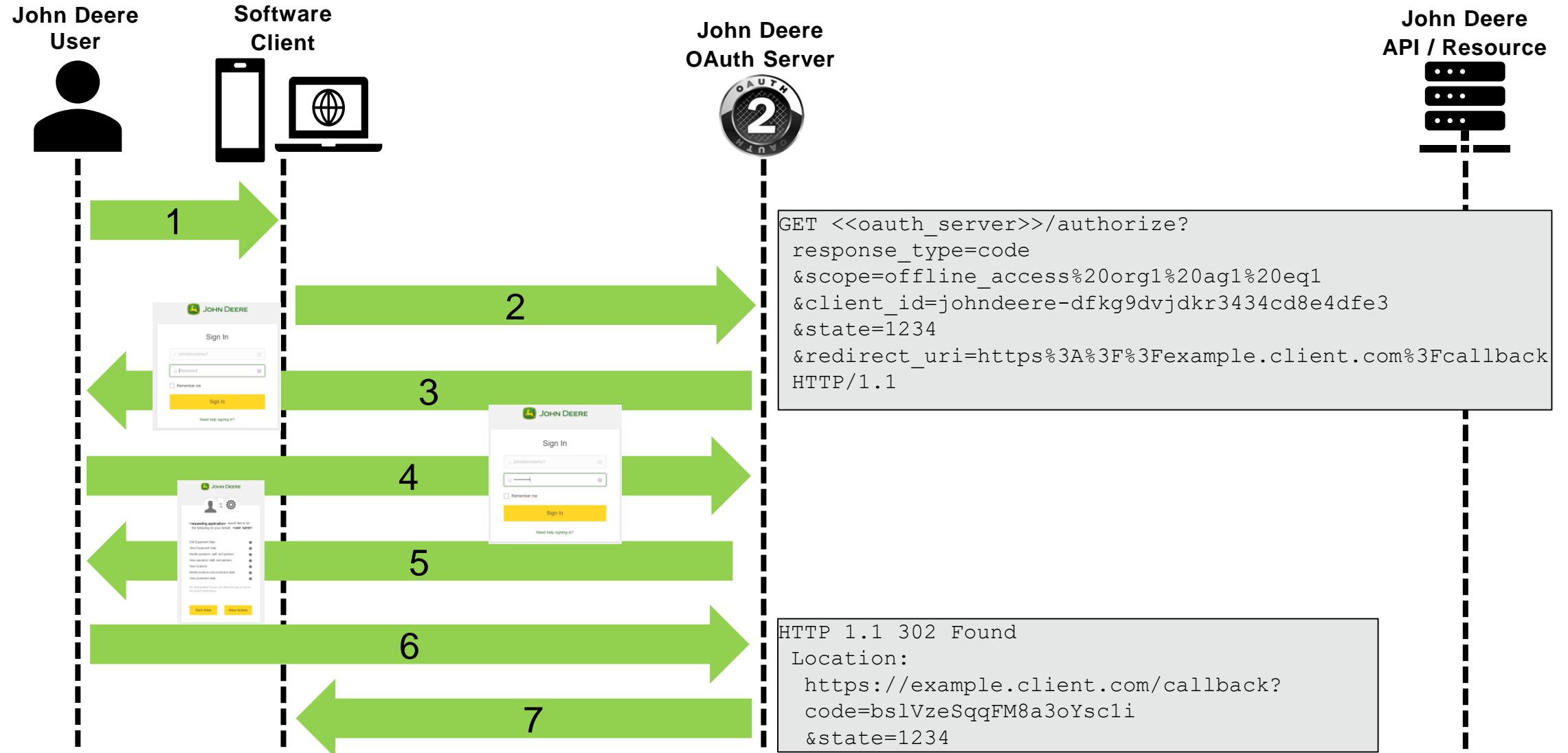
- Authorization code required to mint access token

4. Setup periodic *refresh* token logic to acquire new *access* token

- *Refresh* token should be used to acquire new *access* token (valid for only 12hrs)

5. Use *access* token to call API resource – Hooray!

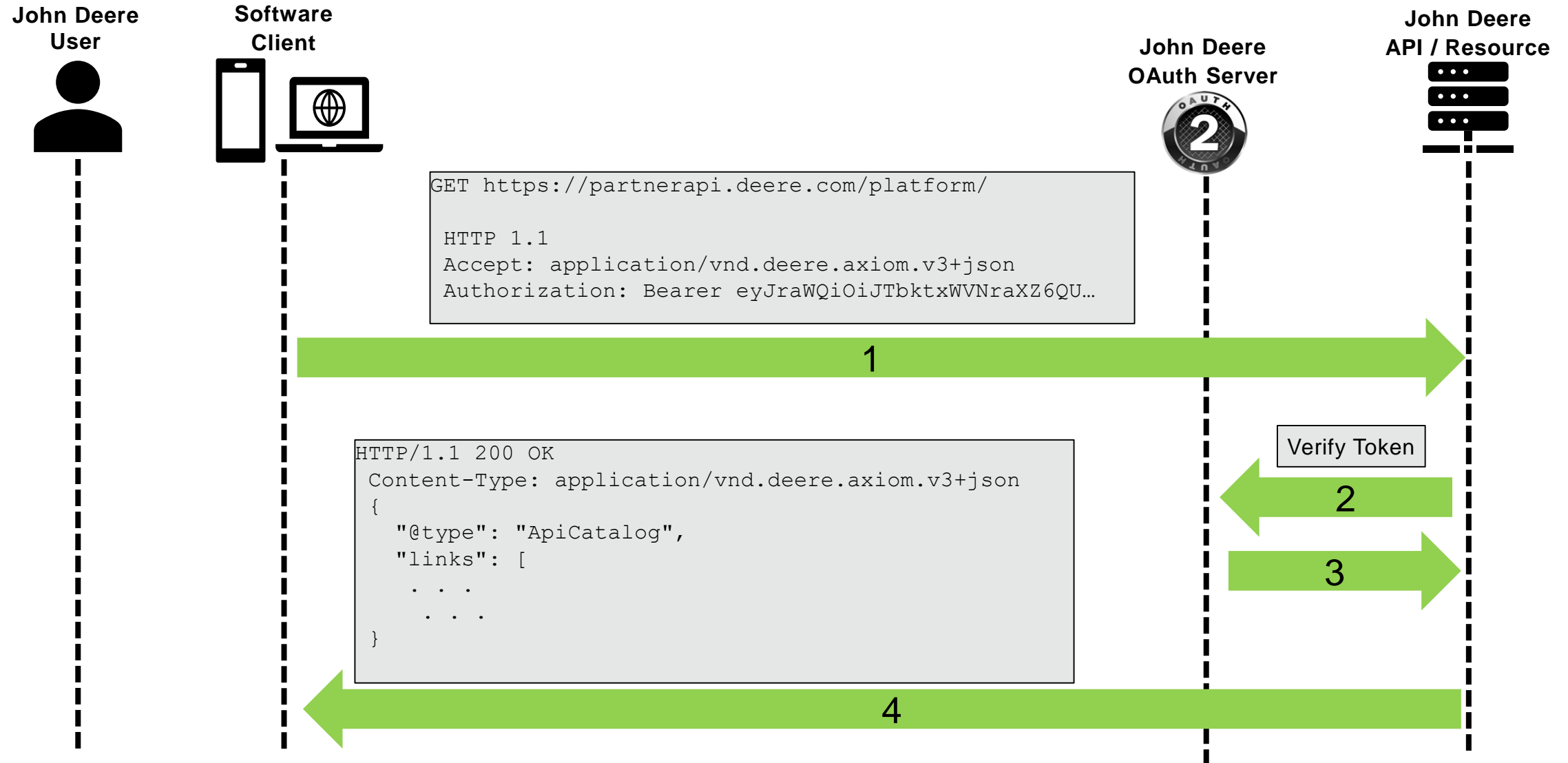
OAuth 2.0 – Auth Code Flow – Request Auth Code



OAuth 2.0 – Auth Code Flow – Request Access Token



OAuth 2.0 – Auth Code Flow – Resource Access



OAuth 2.0 – Auth Code Flow – Refresh Access Token



OAuth 2.0 – Postman and Python Demo

- [Sample Python Code Jupyter Notebook](#)

OAuth 2.0 – Refresh Token Best Practice

- Dynamically refresh your **access** token once it expires (valid for 12 hours)
 - There is no need to ask for a new **access** token sooner than it expires
- Remember to keep your **refresh** token “hot”
 - The **refresh** token will expire in 1 year since last used
 - If the **refresh** token expires, the user will be required to re-authenticate to get a new **access** token

OAuth 2.0 – Migration Timelines

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OAuth Resources

- developer.deere.com
 - OAuth 2.0 documentation to be added by Mar 2020
- [My John Deere API Onboarding Jupyter Notebook](#)
 - Sample/executable OAuth 2.0 Python code to be added by Mar 2020
- API Dev Support – Got questions or need additional help?
 - Email api-support@johndeere.com
- OAuth 2.0 Info - <https://oauth.net/2/>



Required Customer Action (RCA) Events

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Required Customer Action (RCA) Event

– What is it?

- An event that requires the user to take action before further account activity is allowed
 - This includes API calls upon the user's behalf
- Examples – user must accept new terms and conditions, verify account information

– What does an RCA event look like?

- Client API calls will result in a 403 response
 - X-Deere-Terms-Location header will include a redirect URL where the user can take action
 - Response payload will indicate a short description of required user action

Required Customer Action (RCA) Event

- **API Response Status**

- 403 Forbidden

- **Response Headers**

- X-Deere-Warning - partnerapi.deere.com "Requested Org is in a restricted state."
 - X-Deere-Terms-Location - https://teammanager.deere.com/organizations/{{ORG_ID}}/terms

- **Body**

```
{
  "@type": "Errors",
  "errors": [
    {
      "@type": "Error",
      "guid": "19f7b283-d383-4990-9e14-1b3ee0f7b63d",
      "message": "Requested Org is in a restricted state."
    }
  ],
  "otherAttributes": {}
}
```

Organization Terms and Conditions Overview

We've updated our Terms and Conditions and our Privacy Statement to reflect changes we've made to strengthen our services to you and to help you manage your data. This is part of our ongoing commitment to safeguard your information, and to establish clear ownership of the organization. Please refer to the [JOHN DEERE DATA SERVICES & SUBSCRIPTIONS STATEMENT](#) for details.

Acceptance of these Terms and Conditions are required for access to data stored within the organization and need to be accepted by the responsible party (Owner, Farm Manager, Administrator) for the organization listed below. By accepting the Terms and Conditions for this organization, you will be designated as its responsible party if one is not currently designated and you will be asked to enter contracts on behalf of this legal entity. As the responsible party, you may provide permissions to accept contracts to other staff members of the organization. This role may be transferred to others through the Team Manager tool and must be actively accepted by the other party. If you do not feel you should be the responsible party or are not authorized to accept contracts on behalf of this organization, please exit this flow and contact the appropriate staff member to complete the acceptance process.

As part of this update, you will be asked for:

- Intended Use of Organization
- Legal Name of Organization
- Organization Name (Displayed Name)
- Organization Address
- Review Current Staff, Partners, Permissions and Machines with Service Contracts

Organization

Bailey's Organization

User Information

The contact information below is provided by your John Deere user profile. In the event that John Deere needs to contact you regarding this organization, please review your user profile information and contact methods below for accuracy.

If you do want to make a change to your John Deere user profile, please access the edit profile link below. Changes will need up to 24 hours to be reflected.

Profile Information

bnhiggins
Bailey Higgins
email@email.com
(123) 456-7890

 [Edit Profile](#)

[Go to MyJohnDeere](#)

of # ○○○○○

[Cancel](#)

[Next](#)

Required Customer Action (RCA) Event

– How to handle an RCA event – 2 alternatives...

1. If possible, navigate the user to the URL supplied in the 403 response X-Deere-Terms-Location header
2. Implement a way to notify the customer that action is required
 - Supply 403 response message and X-Deere-Terms-Location URL as instructions to resolve

– Expectations

- Consider RCA event handling as a best practice moving forward – take steps to handle now
- Upcoming RCA event
 - New John Deere Org Terms and Conditions rolling out in Feb 2020
 - APIs will start returning 403's in Aug 2020 if user has not accepted new Terms and Conditions

Q&A / Feedback

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