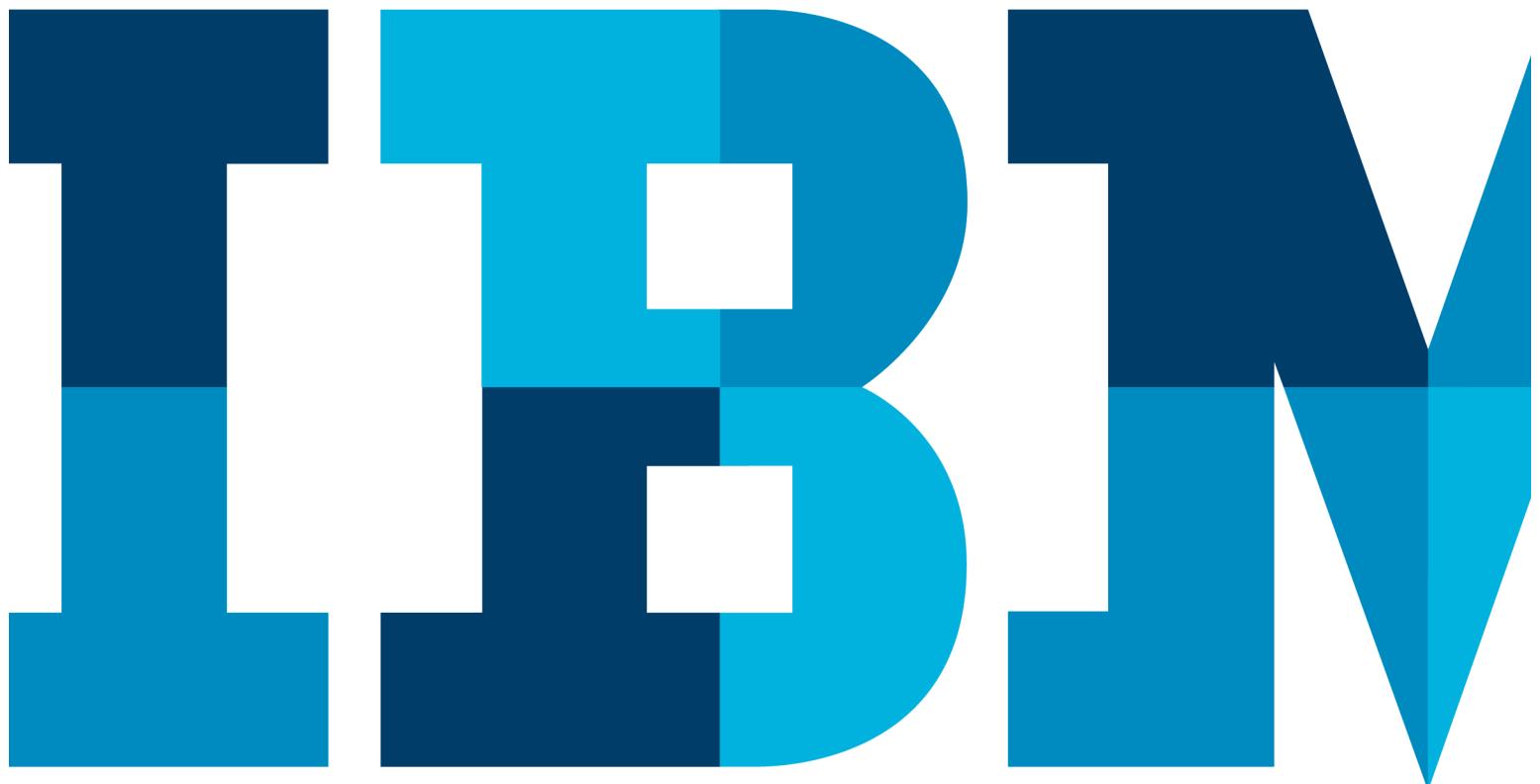


IBM Blockchain Proof of Technology Blockchain Explained

Lab One – Bluemix - Exercises



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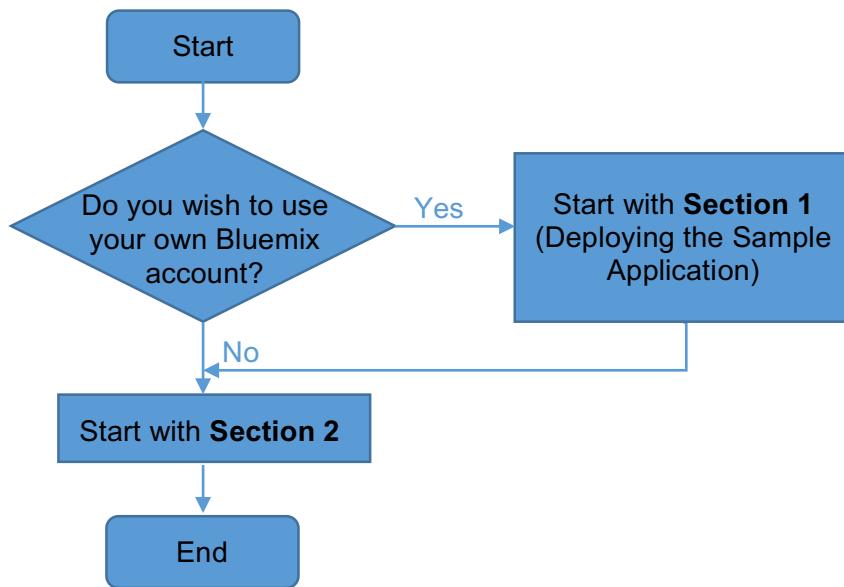
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Overview Introduction to the Lab

The purpose of this lab is to introduce you to the concepts of a Blockchain by showing you how a Blockchain transfers assets between participants in a business network. We will use car leasing as the scenario for the demo.

The lab runs inside the IBM® Bluemix environment; however, for this lab we will ignore Bluemix and focus on the car leasing demo itself. There is a follow-up lab that will properly introduce you to the Bluemix environment, and allows you to create and monitor the Blockchain service and application.

Usually, the car leasing demo will have been set up for you prior to starting this lab and you can simply log on to the demo web page without having to log into Bluemix. If you wish to use your own Bluemix account (or if you are an IBMer), then you first need to deploy the car leasing demo into your account; details of how to do this are listed in Section 1. If you are using the application that has been set up for you, start with Section 2.



Section 1. Deploying The Sample Application

In this section, we will log onto Bluemix and initiate the car leasing demo application.

	You only need to complete this section if: (a) You wish to sign up for Bluemix, OR (b) You wish to use your existing Bluemix account, OR (c) You are an IBMer.
-----------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------

1.1. Deploying the Sample Application

- 1. Open a web browser and go to www.bluemix.net.

	It is recommended to use Firefox or Chrome. Problems can generally be resolved by clearing the browser's cache and cookies, or running the browser in private mode.
-----------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------

- 2. Click 'Sign Up' or 'Log In' to create a new Bluemix account or log into your existing account.
- 3. Once you have successfully signed up and logged into Bluemix, select **CATALOG** from the top bar.
- 4. Scroll down to the Network section and click **Blockchain**.
- 5. Review the service description and information about the service.
- 6. Click **VIEW DOCS** and learn about the process of creating a Blockchain environment.
- 7. Click 'Sample Apps and Tutorials' on the left of the page to view the available apps.

- __8. Click **DASHBOARD** to view any created services. If running this lab as part of the Proof-of-Technology workshop you should see the following services already created for the car leasing application (and associated Blockchain service):

The screenshot shows the IBM Bluemix dashboard with two service cards:

- car-lease-demo-jpayne23-1310**: This service is listed under the plan **ibm-blockchain-plan-5-prod**. It has a status of **Running** and includes icons for **.js** and **ccp**.
- car_lease_blockchain**: This service is listed under the plan **ibm-blockchain-plan-5-prod**. It has a status of **Not Started** and includes a gear icon.

If these services exist then go to step 11!

- __9. Click **Deploy to Bluemix** against the Car Lease demo. Log in to Bluemix again if necessary.

The first time a Bluemix ID creates a sample, a new DevOps alias is required. **Pick a unique ID** and click acceptance of the terms and then click create. For Proof-of-Technology workshops, use the first part of the email address, for example **ibmpot000101** (without the '+' character). Then click continue on the following page.

IBM Bluemix™ DevOps Services

Pick an alias

To set up your Git repository, we need to associate your IBM id with an alias.

An alias is a unique, publicly visible short name used in Git repository paths, Track & Plan, and desktop and command line clients.

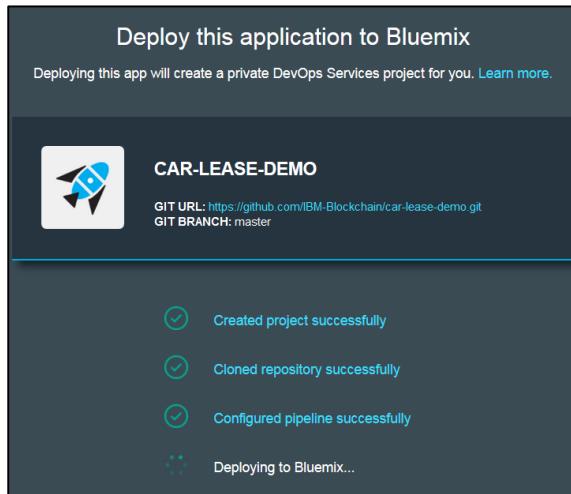
Pick an alias

I accept the DevOps Services [Terms of Use](#).

Create

- __10. Leave the App Name, Region, Organization and Space default and click **DEPLOY**. (You might first need to wait a few seconds for the default field values to be populated.)

Clicking Deploy will cause the car leasing demo to be deployed into your Bluemix environment, and may take a couple of minutes to complete.



Once you see the 'Success!' message click **DASHBOARD** to see the new car leasing application (and associated Blockchain service) you created.

- __11. Click the application's icon in the dashboard (**your icon may vary**)



This will show you information about the application, including the memory that it is consuming and activity log.

The screenshot shows the Bluemix Application Dashboard for the 'car-lease-demo-jpayne23-1310' application. Key details include:

- Routes:** car-lease-demo-jpayne23-1310.eu-gb.mybluemix.net
- Memory Quota:** 512 MB per instance
- Available Memory:** 5.625 GB
- App Health:** Your app is running.
- Activity Log:**
 - 7/11/16 1:12 PM jpayne@uk.ibm.com started car-lease-demo-jpayne23-1310 app
 - 7/11/16 1:11 PM jpayne@uk.ibm.com updated car-lease-demo-jpayne23-1310 app
 - changed routes
 - 7/11/16 1:11 PM jpayne@uk.ibm.com created car-lease-demo-jpayne23-1310 app
- Services:** Blockchain (car_lease_blockchain, ibm-blockchain-platfrom)
- Actions:** RESTART, STOP

1.2. Starting the Sample Application

1. Click the ‘Routes’ URL (something like **Routes: car-lease-demo-jpayne23-1310.eu-gb.mybl...**) in order to run the scenario.

You may see the screen above. This means that the application is not ready to be used yet. Wait until the loading image is gone and you will be presented with the screen shown below.

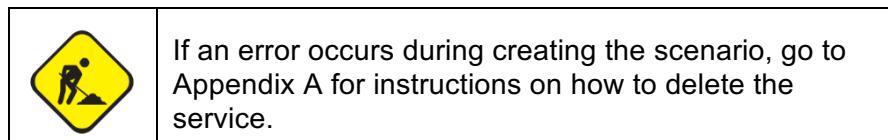
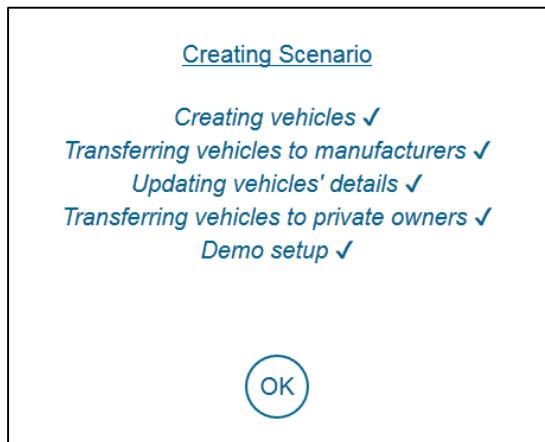


If running this lab as part of the Proof-of-Technology workshop, and the sample has been created, you should now move to Section 2.

- 2. Click ‘Admin Console’ and then ‘Create Simple Scenario’ to load the initial set of assets into the Blockchain. This will take several minutes to complete.



- 3. The scenario setup is complete when ‘Demo setup’ is displayed.



Section 2. Asset Transfer and Disposal Scenarios

In the following sections, you will discover how Blockchain technology is used to track ownership of an asset across multiple parties. The scenario describes how Blockchain technology is used to model the lifecycle of vehicle ownership and control between the following participants:

- 1) Manufacturer to Dealership
- 2) Dealership to Leasing Company
- 3) Leasing Company to Leasee
- 4) Leasing Company to Scrap Merchant

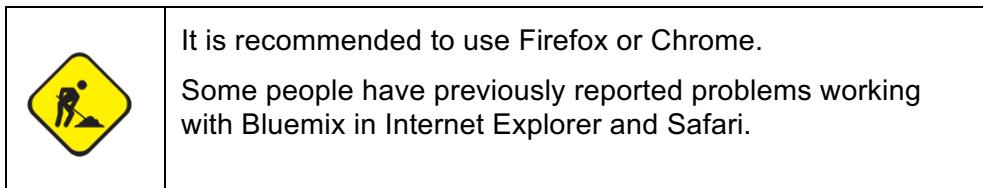
The Scrap Merchant's role in this scenario will also demonstrate how asset disposal can be represented using Blockchain technology.

In this business scenario each participant has entered into a business agreement with each other and all parties are known and trusted by each other. The above process of transferring vehicles has been negotiated and agreed with all participants. As a result the order in which the above processes take place is strictly defined within the demo showing that for example a Manufacturer cannot transfer directly to a Leasee by missing out the dealership and Leasing company transfers.

This demo has been simplified so that by default each role (e.g. "Manufacturer") will only show one participant (e.g. "Alfa Romeo") in the transfer assets page.

2.1. Starting the Asset Transfer Demo

- 1. Bring up a web browser and go to the URL that your instructor has provided. (If you completed Section 1, just use the URL of the application that you already created.)



You should be able to see the home page of the car leasing demo.

The screenshot shows the main menu of the "BLOCKCHAIN CAR LEASING DEMO". The top navigation bar includes the IBM logo and the title. The main menu is divided into two sections: "Main Menu:" and "Transfer Asset".

- Main Menu:**
 - Regulator
 - Live Stats
 - Regulator View
 - Create Asset
- Transfer Asset:**
 - Regulator → Manufacturer
 - Manufacturer → Dealership
 - Dealership → Lease Company
 - Lease Company → Leasee
 - Leasee → Scrap Merchant

2.2. Scenario: Transfer: Manufacturer to Dealership

In the following section you will transfer the ownership of a vehicle from a Manufacturer to a dealership (known as “Beechvale Group”) using the Blockchain.

Before transferring the vehicle to the dealership you will verify which assets the target dealership currently owns.

2.2.1. Verify the target Dealership Assets

In this section, you will act as a dealership and verify which assets the Beechvale dealership owns which is permitted to transfer.

1. From the main demo asset page, click the “Dealership -> Lease Company link” :

The screenshot shows the "BLOCKCHAIN ASSET TRANSFER DEMO" interface. At the top, there is a logo for "IBM" and the title "BLOCKCHAIN ASSET TRANSFER DEMO". Below this is a "Main Menu" with the following options:

- Regulator
- Live Stats
- Regulator View
- Create Asset

Below the menu is the "Transfer Asset" section, which contains the following options:

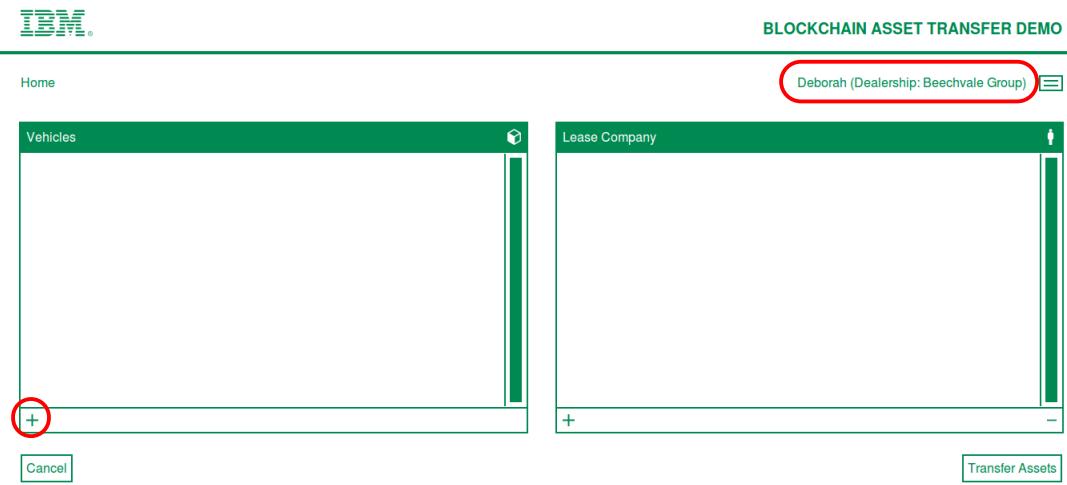
- Regulator → Manufacturer
- Manufacturer → Dealership
- Dealership → Lease Company** (This option is highlighted with a red oval)
- Lease Company → Leaseee
- Leasee → Scrap Merchant

At the bottom of the interface is the "Update Asset" section with the option:

- Manufacturer Update

2. In the Dealership Transfer window, click the plus sign in the “Vehicles” window to verify which vehicles are owned by the dealership known as “Beechvale Group” according to the Blockchain.

The demo asset interrogates the Blockchain to identify all vehicles owned by the dealership and will present a window with the results (note the dealership user “Deborah” will only see vehicles owned by the dealership).



3. In the results window, verify the number of cars and their make. Note the number in the first column of this table is used to model the Vehicle Identification Number (or VIN).

Vehicles		
948881310167423	Toyota Celica, Silver, DG16 FVG	<input type="checkbox"/>
549523556856725	Jaguar F-Type, Red, HE16 WDZ	<input type="checkbox"/>
523447019546831	Land Rover Defender, Silver, EY16 FRV	<input type="checkbox"/>

According to the Blockchain, the Beechvale dealership owns 3 cars (none of which are Alfa Romeo's).

Click the cross to dismiss the window.

4. Press Cancel on the dealership page to return to the Main demo menu:

The screenshot shows a web-based application titled "BLOCKCHAIN ASSET TRANSFER DEMO". At the top right, it displays the user's name "Deborah (Dealership: Beechvale Group)" and a navigation icon. The main interface is divided into two vertical panels. The left panel is titled "Vehicles" and contains a large empty area with a green scroll bar. At the bottom of this panel is a horizontal bar with a plus sign on the left and a minus sign on the right. Below this bar is a blue rectangular button labeled "Cancel", which is circled in red. The right panel is titled "Lease Company" and also contains a large empty area with a green scroll bar. At the bottom of this panel is a horizontal bar with a plus sign on the left and a minus sign on the right. To the right of the "Lease Company" panel is a small blue rectangular button labeled "Transfer Assets".

You will now transfer an Alfa Romeo car to the Beechvale Dealership, from the cars owned by Alfa Romeo (the Manufacturer).

2.2.2. Transfer the asset (from Manufacturer to Dealership)

- From the demo main menu, click the “Manufacturer -> Dealership” link in the Transfer Asset section:

Main Menu:

- Regulator
- Live Stats
- Regulator View
- Create Asset

Transfer Asset

- Regulator → Manufacturer
- Manufacturer → Dealership**
- Dealership → Lease Company
- Lease Company → Leaseee
- Leaseee → Scrap Merchant

Update Asset

- Manufacturer Update

- The Transfer Asset window shows an identity “Martin” (the manufacturer of Alfa Romeo vehicles). Click the plus sign in the Vehicles box:

Home

Martin (Manufacturer: Alfa Romeo) ≡

Vehicles	Dealership
+	-
Cancel	Transfer Assets

3. The demo asset collects details from the Blockchain on cars that Martin (the Alfa Romeo manufacturer) owns and presents the results:

Vehicles	
546303780997253	Alfa Romeo Giulietta, White, JU65 XMH
128994473011261	Alfa Romeo MiTO, Black, YD65 FTB
747542562791231	Alfa Romeo 4C, Red, RX65 RNG
880352730316924	Alfa Romeo MiTo, Blue, NL65 DTU

X

Click the check box of the first car in the list to include it in the transfer request.

Click the checkmark at the bottom of the list of vehicles to save the choice.

4. The Alfa Romeo with VIN number “**880352730316924**” now appears in the list of vehicles to be transferred:

The screenshot shows the 'BLOCKCHAIN ASSET TRANSFER DEMO' interface. At the top, there's a logo and a navigation bar with 'Home' and 'Martin (Manufacturer: Alfa Romeo)'.

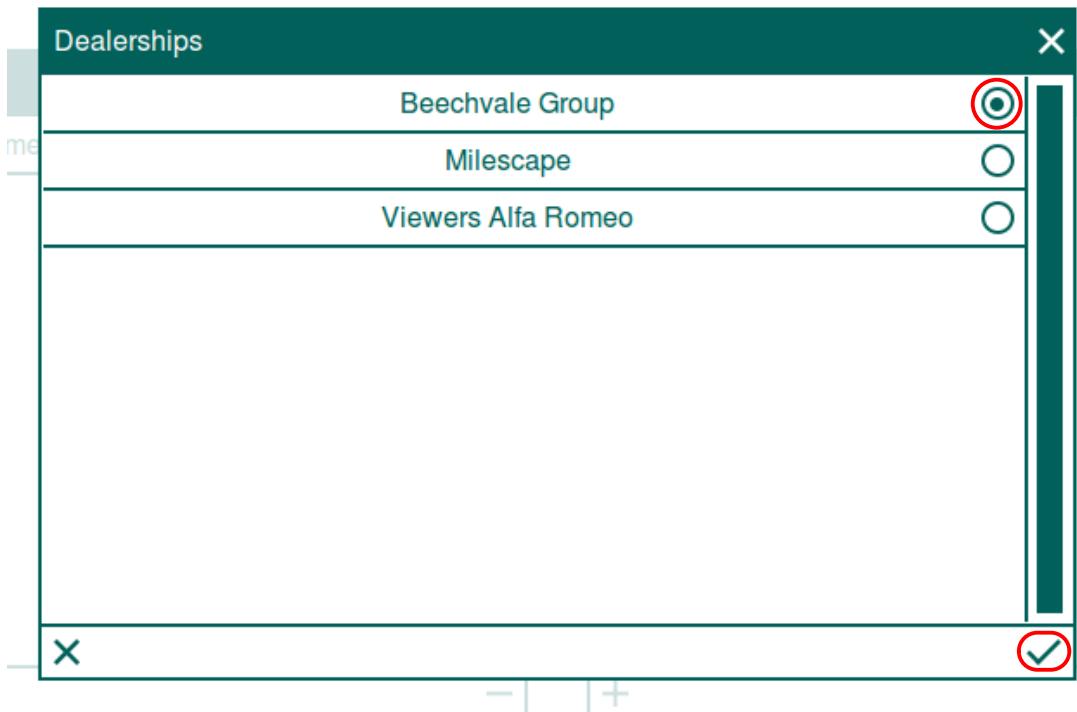
Vehicles Section: A table lists vehicles. The row for VIN '880352730316924' is highlighted with a red circle around the entire row. The vehicle details are: 'Alfa Romeo MiTo, Blue, NL65 DTU'. Below the table is a '+' button.

Dealership Section: An empty table with a '+' button on its left side.

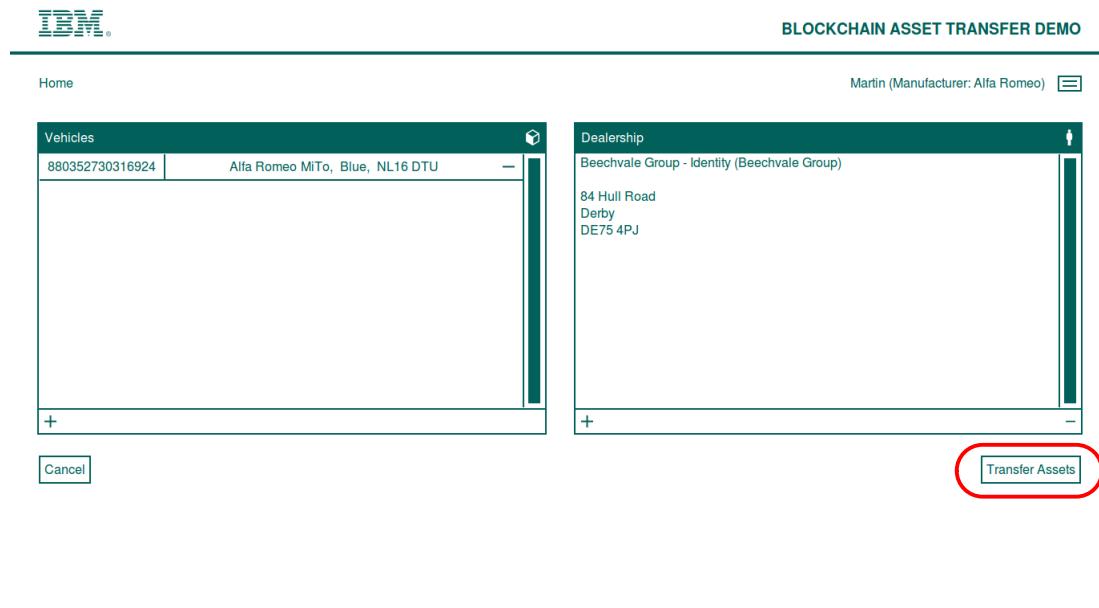
Buttons: 'Cancel' and 'Transfer Assets'.

Click the plus sign in the Dealership box.

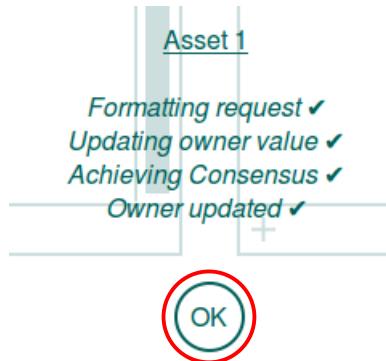
5. From the list of Dealerships, choose “Beechvale Group” then, click the checkmark to confirm your choice):



6. The Transfer menu should now have the following details. Click the “Transfer Assets” button:



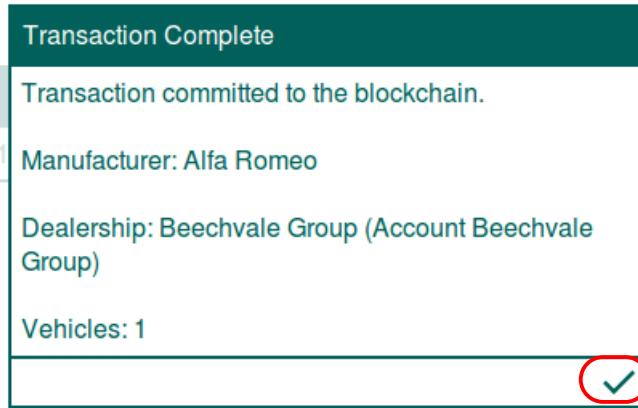
7. The Demo asset, highlights its activits with the Blockchain in the status window:



The demo asset updates the owner of the contract based on the dealership specified in the transfer request. The demo asset then waits for the open source Blockchain technology to declare “consensus” shown by the stage “Achieving Consensus”. Once consensus is achieved the transfer request is “committed” to the blockchain. We then confirm the information update has been successful, as shown by the confirmation “Owner Updated”.

8. Click OK to acknowledge the transfer status messages.

9. Click the checkmark to acknowledge the Transaction Complete message:



2.2.3. Verify Manufacturer has no control over Transferred Asset

- The manufacturer's ability to control the asset has now been removed. Click the plus sign on the Vehicles box to verify that the manufacturer can no longer see the asset you transferred:

The screenshot shows the 'BLOCKCHAIN ASSET TRANSFER DEMO' interface. On the left, there is a 'Vehicles' section with a large empty box and a red circle highlighting the '+' button at the bottom-left corner. On the right, there is a 'Dealership' section with a similar large empty box and a '-' button at the bottom-right corner. At the top right, it says 'Martin (Manufacturer: Alfa Romeo)' with a dropdown menu icon. At the bottom left is a 'Cancel' button, and at the bottom right is a 'Transfer Assets' button.

- The manufacturer now controls only three assets, the transferred vehicle is no longer visible to the manufacturer. Click the cross mark to dismiss the window.

The screenshot shows a 'Vehicles' modal dialog box. It contains a table with three rows of asset information:

Asset ID	Asset Description	Control Box
546303780997253	Alfa Romeo Giulietta, White, JU65 XMH	<input type="checkbox"/>
128994473011261	Alfa Romeo MiTO, Black, YD65 FTB	<input type="checkbox"/>
747542562791231	Alfa Romeo 4C, Red, RX65 RNG	<input type="checkbox"/>

A large red oval highlights the empty space below the table. At the bottom of the dialog are two buttons: a red 'X' on the left and a green checkmark on the right.

2.3. Scenario: View the Blockchain Activity

- From the Demo asset main menu, click the Live stats link:

Main Menu:

- Regulator
- Live Stats**
- Regulator View
- Create Asset

Transfer Asset

- Regulator → Manufacturer
- Manufacturer → Dealership
- Dealership → Lease Company

- The Blockchain statistics page shows the transfer activity as a vertical bar in the Transactions window:

Last Block	Created	Transactions in Last Block	Avg Block Time
#84	578s ago	1	75.8s

Block Time Graph

Transactions Per Block - Graph

Blockchain Explorer

70 71 72 73 74 75 76 77 78 79 80 81 82 83 84

Last Block: The block number is of the last committed block

Created: How long ago since the last block was committed

Transactions in Last Block: The number of transactions in the last block

Avg Block Time: The average time between each block being committed

Block Time Graph: A graph showing how much time was between each block – also showing ‘Block 0’ if the scale allows

Transactions Per Block - Graph: How many transactions were in each Block – also showing ‘Block 0’ if the scale allows

Blockchain Explorer: Allows you to look at a specific block’s details in the Blockchain. More detailed explanation in Lab 02.

2.4. Scenario: Transfer: Dealership to Leasing Company

In this section you will act as “the dealer”. First, you will verify that the asset you transferred earlier is now available to you to transfer; you will then transfer the asset to the leasing company.

2.4.1. Verify the Dealership can now control the Asset

In the previous section you transferred the ownership of the vehicle **880352730316924** from the Alfa Romeo manufacturer to the dealership “Beechvale Group”. The vehicle will now appear in the list of vehicles Beechvale Group are able to control.

- From the demo “Regulator View” click Main Menu, then click the “Dealership -> Lease Company” link:



BLOCKCHAIN ASSET TRANSFER DEMO

Main Menu:

Regulator

Live Stats

Regulator View

Create Asset

Transfer Asset

Regulator → Manufacturer

Manufacturer → Dealership

Dealership → Lease Company

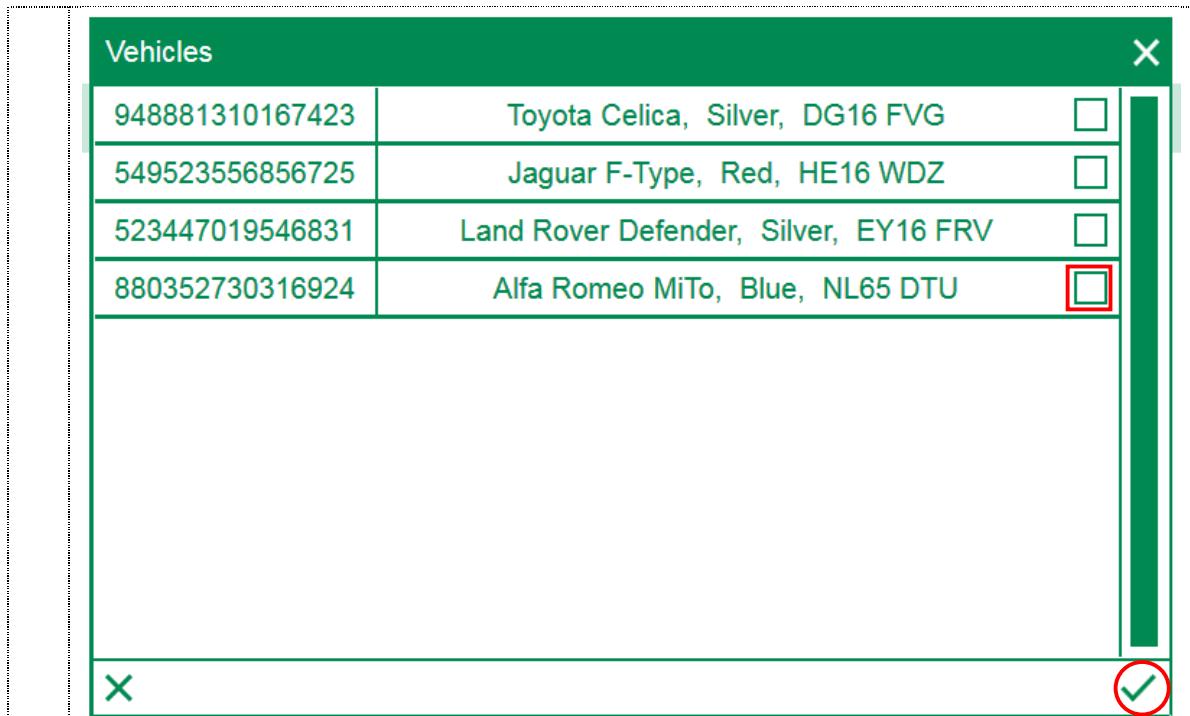
Lease Company → Leasee

Leasee → Scrap Merchant

Update Asset

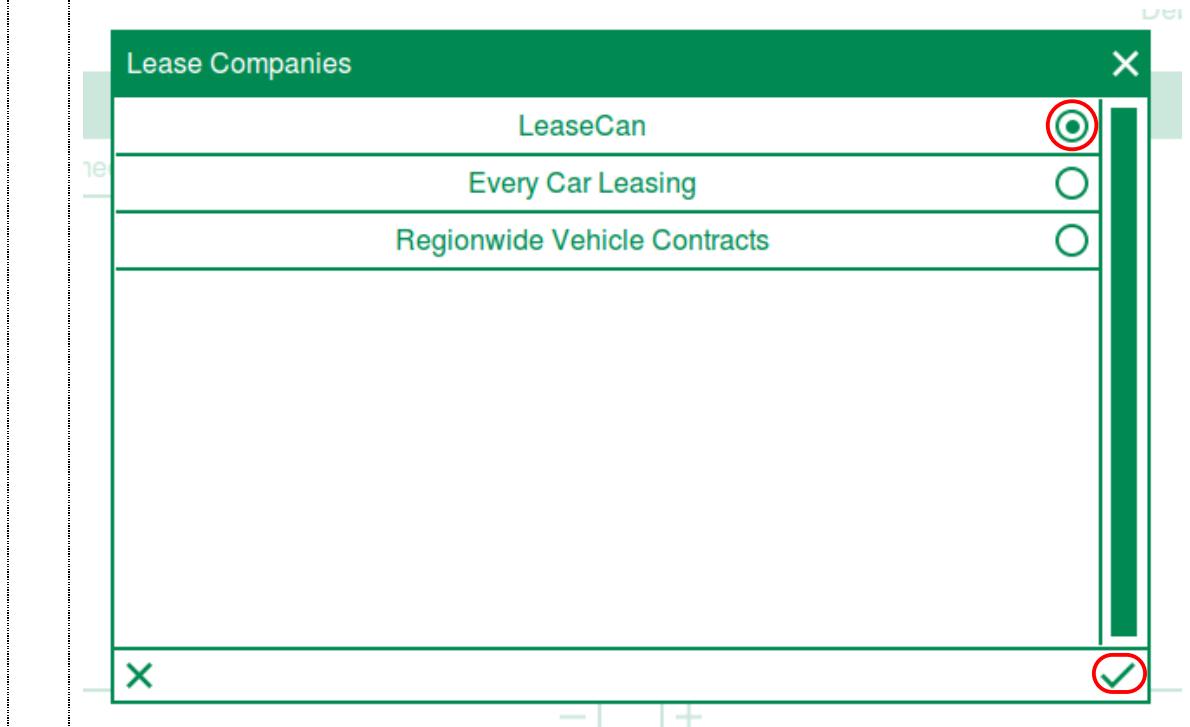
Manufacturer Update

- In the Dealership page, click the plus sign in the “Vehicles” box to show the list of vehicles controlled by the dealer, you should see the vehicle **880352730316924** is now under the control of the dealership:



Select the vehicle 880352730316924 and click the tick at the bottom of the screen.

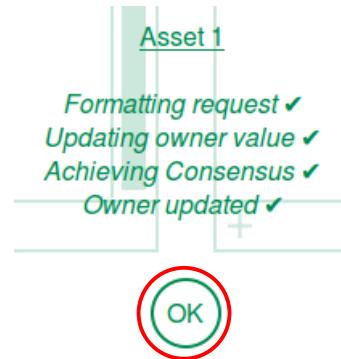
3. In the Lease Company window click the plus sign to add “LeaseCan” Lease Company window:



4. Check the Vehicle and Lease Company details are correct, then click the “Transfer Assets” button:

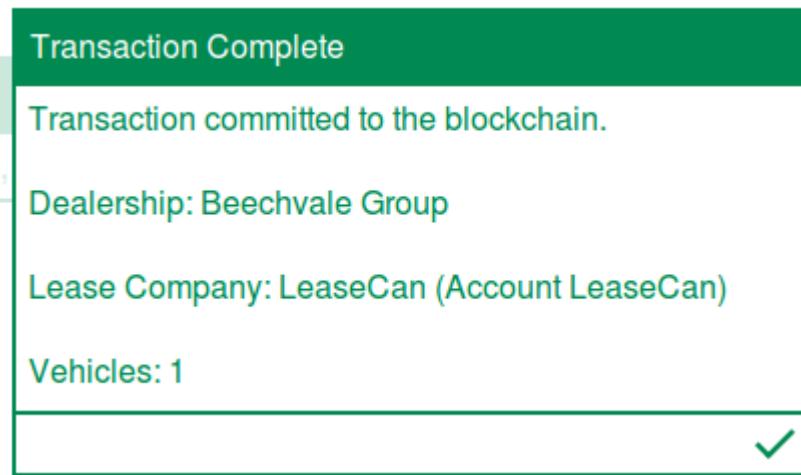
The screenshot shows the "BLOCKCHAIN ASSET TRANSFER DEMO" interface. On the left, under "Vehicles", there is a card for an Alfa Romeo MiTo, Blue, NL16 DTU with ID 880352730316924. On the right, under "Lease Company", there is a card for LeaseCan - Identity (LeaseCan) located at 64 Zoo Lane, Slough, Berkshire, SL82 4AB. At the bottom right, a green button labeled "Transfer Assets" is circled in red.

5. As with the previous transfer the demo extracts the contract details used to define the vehicle, updates the owner, waits for consensus to be achieved then confirms the update was successful, as shown by the message “Owner Updated”:

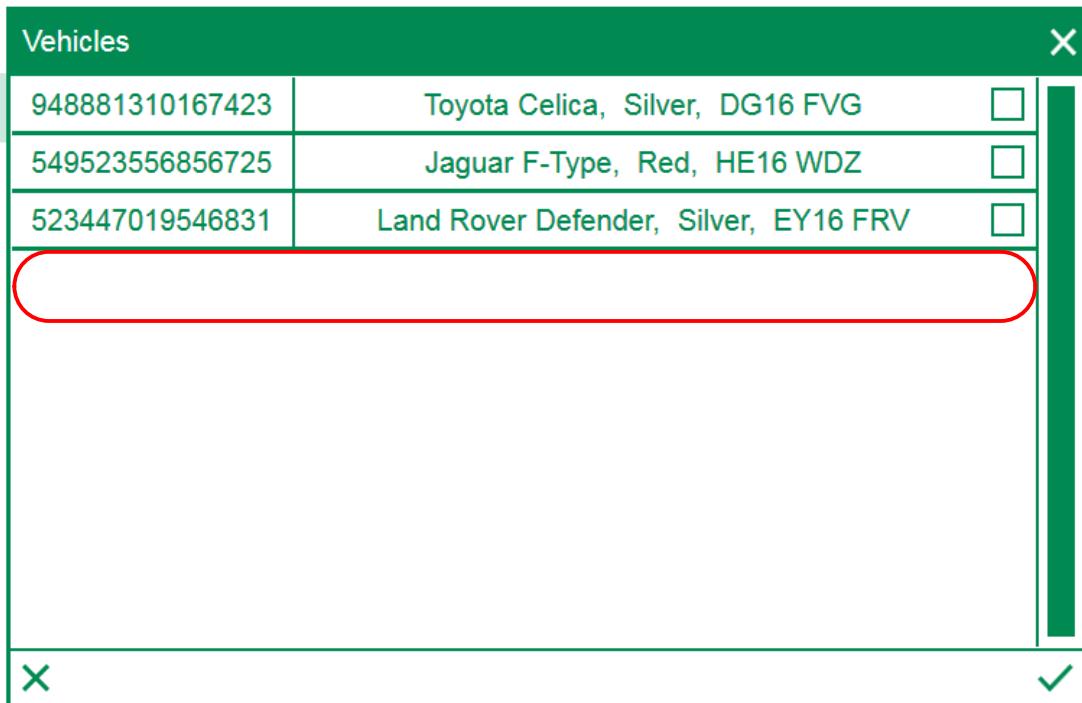


Click OK.

6. Dismiss the Transaction Complete message by clicking the checkmark:



7. Click the plus sign in the “Vehicles” box to verify that the asset is no longer available to the Beechvale group dealer. You now will see only three vehicles. The vehicle you just transferred to the lease company should not appear:



8. Close this window and “Cancel” out of the Dealership’s Transfer Assets page.

2.5. Scenario: Transfer: Lease Company to Leasee

In this section, you will act as the lease company. First, you will verify that the asset you transferred earlier is now available to you acting as the lease company to transfer; you will then transfer the asset to a leasee.

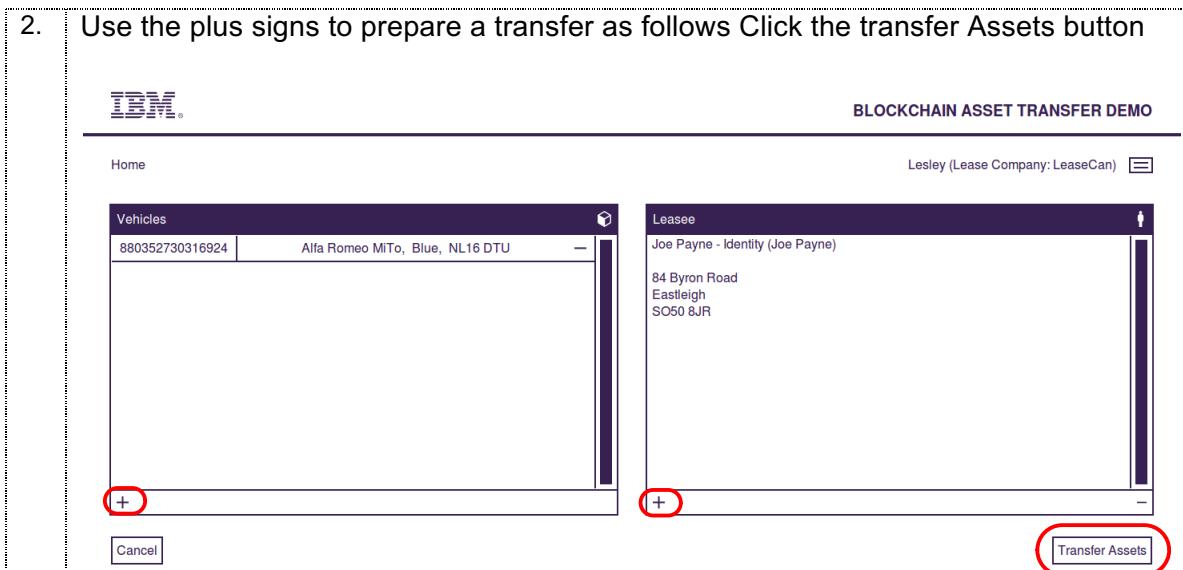
2.5.1. Verify the Lease Company can now control the Asset

In the previous section, you transferred the ownership of the vehicle **880352730316924** from the dealership “Beechvale Group” to the lease company “LeaseCan”. The vehicle will now appear in the list of vehicles LeaseCan are able to control.

1. From the demo Main Menu, click the “Lease Company -> Leasee” link:

The screenshot shows the "BLOCKCHAIN ASSET TRANSFER DEMO" interface. At the top left is the IBM logo. The main menu is titled "Main Menu:" and contains three sections: "Regulator" (with "Live Stats", "Regulator View", and "Create Asset"), "Transfer Asset" (with "Regulator → Manufacturer", "Manufacturer → Dealership", "Dealership → Lease Company", "Lease Company → Leasee" (which is circled in red), and "Leasee → Scrap Merchant"), and "Update Asset" (with "Manufacturer Update").

2. Use the plus signs to prepare a transfer as follows Click the transfer Assets button

 <p>The screenshot shows the 'BLOCKCHAIN ASSET TRANSFER DEMO' interface. It has two main sections: 'Vehicles' on the left and 'Leasee' on the right. In the 'Vehicles' section, there is a table with one row containing the vehicle details: '880352730316924' and 'Alfa Romeo MiTo, Blue, NL16 DTU'. Below this table is a horizontal bar with a red circle around the '+' sign. In the 'Leasee' section, there is a table with one row containing the leasee details: 'Joe Payne - Identity (Joe Payne)' and '84 Byron Road, Eastleigh, SO50 8JR'. Below this table is a horizontal bar with a red circle around the '+' sign. At the bottom right of the interface, there is a red circle around the 'Transfer Assets' button.</p> <p>when ready:</p>	
<p>3. When a consensus has been achieved click the OK button.</p> <p>4. Dismiss the Transaction Complete message by clicking the checkmark.</p> <p>5. Verify that the vehicle is no longer available to the lease company (click the plus sign in the vehicles box, the vehicle 880352730316924 should not appear in the list of vehicles).</p>	

2.6. Scenario: Transfer: Lease to Scrap Merchant

In this section, you will act as the leasee (individual). First, you will verify that the asset you transferred earlier is now available to you acting as the Leasee to transfer; you will then transfer the asset to a scrap merchant.

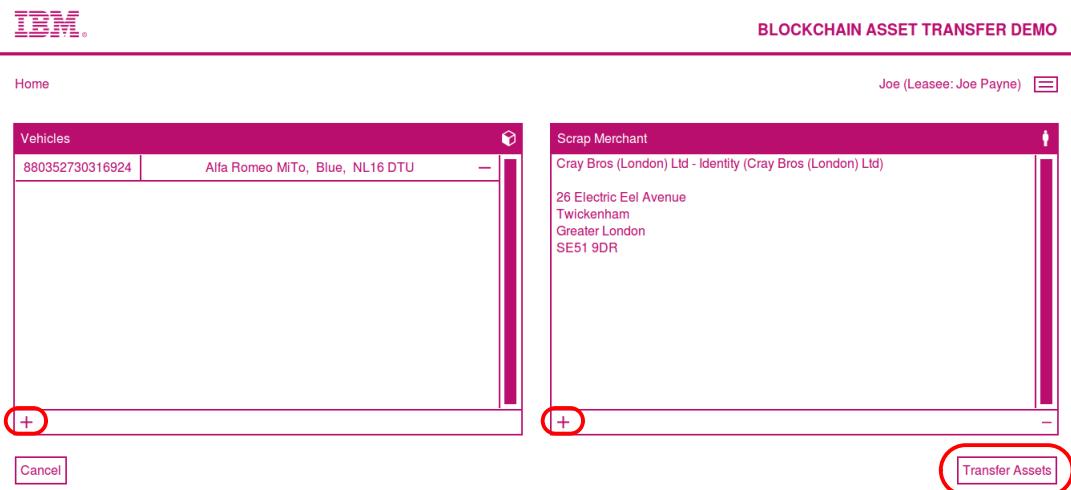
2.6.1. Verify the Leasee can now control the Asset

In the previous section, you transferred the ownership of the vehicle **880352730316924** from the lease company “LeaseCan” to the individual “Joe Payne”. The vehicle will now appear in the list of vehicles Joe is able to control.

1. From the demo Main Menu, click the “Lease Company -> Leasee” link:

The screenshot shows the "BLOCKCHAIN ASSET TRANSFER DEMO" interface. At the top, there is a logo for "IBM" and the title "BLOCKCHAIN ASSET TRANSFER DEMO". Below this is a "Main Menu" section with a dark blue header labeled "Regulator". Underneath are links for "Live Stats", "Regulator View", and "Create Asset". Below the main menu is a "Transfer Asset" section with a dark blue header labeled "Transfer Asset". It lists several asset transfer paths: "Regulator → Manufacturer", "Manufacturer → Dealership", "Dealership → Lease Company", "Lease Company → Leasee", and "Leasee → Scrap Merchant". The "Leasee → Scrap Merchant" link is highlighted with a red oval. At the bottom is an "Update Asset" section with a dark blue header labeled "Update Asset" and a link for "Manufacturer Update".

2. Use the plus signs to prepare a transfer as follows, click the Transfer Assets button when ready:



3. When a consensus has been achieved click the OK button.
4. Dismiss the Transaction Complete message by clicking the checkmark.
5. Verify that the vehicle is no longer available to Joe Payne (click the plus sign in the vehicles box, the vehicle **880352730316924** should not appear in the list of vehicles).

2.7. Scenario: Scrap Merchant - Asset disposal

In this section, you will act as the scrap merchant (individual) and dispose of the asset. First, you will verify that the asset you transferred earlier is now available to you acting as the scrap merchant. You will then dispose of the asset.

2.7.1. Verify the Scrap Merchant can control the Asset

In the previous section, you transferred the ownership of the vehicle **8803527303169234** from “Joe Payne” to the scrap merchant. The vehicle will now appear in the list of vehicles that the scrap merchant is able to control.

1. From the demo Main Menu, click the “Scrap Merchant -> Scrap” link:

The screenshot shows the 'BLOCKCHAIN ASSET TRANSFER DEMO' interface. At the top, there's an 'IBM' logo and a 'Main Menu' button. Below the menu, there are several sections: 'Regulator' (with 'Live Stats', 'Regulator View', and 'Create Asset' options), 'Transfer Asset' (listing 'Regulator -> Manufacturer', 'Manufacturer -> Dealership', 'Dealership -> Lease Company', 'Lease Company -> Leasee', and 'Leasee -> Scrap Merchant'), 'Update Asset' (with 'Manufacturer Update' option), 'Dispose Asset' (with 'Scrap Merchant -> Scrap' option, which is highlighted with a red circle), and 'Admin' (with 'Admin Console' option). The 'Dispose Asset' section is the focus of the screenshot.

2. Use the plus sign to prepare for the disposal of the asset as follows, click the “Scrap Assets” button when ready (note there is no destination on this screen):

The screenshot shows a web-based application titled "BLOCKCHAIN ASSET TRANSFER DEMO". At the top, there's a navigation bar with "Home" and a user profile "Sandy (Leasee: Cray Bros (London) Ltd)". The main content area has a header "Vehicles" and displays a single vehicle entry: "880352730316924" and "Alfa Romeo MiTo, Blue, NL16 DTU". Below this is a large empty box. At the bottom of the vehicle card is a red-bordered "+" button. To the right of the vehicle card is a "Scrap Assets" button, also enclosed in a red oval. Below the vehicle card are two buttons: "Cancel" and "Scrap Assets".

3. When a consensus has been achieved click the OK button.
4. Dismiss the Transaction Complete message by clicking the checkmark.
5. Verify that the vehicle is no longer available to the scrap merchant (click the plus sign in the vehicles box, the vehicle **880352730316924** should not appear in the list of vehicles).

2.8. Scenario: Verify Transaction activity using the Regulator view

In this section you will act as the Regulator and view the asset transfer and disposal activity you have performed above.

The regulator view has unrestricted access to all activities on the Blockchain.

1. From the demo Main Menu, click the “Regulator View” link. Wait for the view to gather the activity from the Blockchain.

The screenshot shows the "BLOCKCHAIN ASSET TRANSFER DEMO" interface. At the top left is the IBM logo. The main menu bar has "Regulator" selected. Below the menu are three sections: "Transfer Asset" containing a list of asset transfers, and "Update Asset" containing a list of updates. The "Regulator View" link in the main menu is highlighted with a red circle.

Main Menu:

- Regulator
- Live Stats
- Regulator View**
- Create Asset

Transfer Asset

- Regulator → Manufacturer
- Manufacturer → Dealership
- Dealership → Lease Company
- Lease Company → Leaseee
- Leasee → Scrap Merchant

Update Asset

- Manufacturer Update

2. When the list of transactions are shown on the screen, you will see the activity in chronological order (with the most recent activity at the top of the list of transactions):

BLOCKCHAIN ASSET TRANSFER DEMO				
Home		Ronald (Regulator: DVLA)	Filters v	Sort v
Search by V5C ID...				
[DA6060712]	Scrap: Cray_Bros_(London)_Ltd	Scrap V5C	18/03/2016 10:49	
[DA6060712]	Transfer: Joe_Payne → Cray_Bros_(London)_Ltd	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 10:42	
[DA6060712]	Transfer: LeaseCan → Joe_Payne	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 10:42	
[DA6060712]	Transfer: Beechvale_Group → LeaseCan	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 10:34	
[DA6060712]	Transfer: Alfa_Romeo → Beechvale_Group	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 10:19	
[ZE3286321]	Transfer: Joe_Payne → Cray_Bros_(London)_Ltd	[720965981630055] Toyota Yaris, Red, QD65 YKR	18/02/2016 14:41	
[ZE3286321]	Transfer: LeaseCan → Joe_Payne	[720965981630055] Toyota Yaris, Red, QD65 YKR	18/02/2016 14:40	
[JM1779586]	Transfer: Beechvale_Group → LeaseCan	[287437467447767] Toyota Auris, Blue, LM16 YHU	18/02/2016 14:40	
[ZE3286321]	Transfer: Beechvale_Group → LeaseCan	[720965981630055] Toyota Yaris, Red, QD65 YKR	18/02/2016 14:40	
[GK8420732]	Transfer: Beechvale_Group → LeaseCan	[181255391772389] Jaguar XJ, Black, FM65 ESL	18/02/2016 14:39	
[DA6060712]	Update: Alfa_Romeo	Registration: UNDEFINED → NL16 DTU	18/02/2016 14:38	
[DA6060712]	Update: Alfa_Romeo	Colour: UNDEFINED → Blue	18/02/2016 14:38	
[DA6060712]	Update: Alfa_Romeo	Model: UNDEFINED → MiTo	18/02/2016 14:38	
[DA6060712]	Update: Alfa_Romeo	Make: UNDEFINED → Alfa Romeo	18/02/2016 14:38	
[DA6060712]	Update: Alfa_Romeo	VIN: 0 → 880352730316924	18/02/2016 14:38	
[GW8812104]	Update: Alfa_Romeo	Registration: UNDEFINED → RZ65 RNG	18/02/2016 14:38	
[GW8812104]	Update: Alfa_Romeo	Colour: UNDEFINED → Red	18/02/2016 14:38	
[GW8812104]	Update: Alfa_Romeo	Model: UNDEFINED → 4C	18/02/2016 14:38	

Note the regulator can see *all* Blockchain transactions. The whole history of the vehicle can be seen in this view and can be seen by the same vehicle previously created by Alfa Romeo before.

3. Copy the V5C ID **DA6060712** and use the search feature to show only the history of the one vehicle:

BLOCKCHAIN ASSET TRANSFER DEMO				
Home		Ronald (Regulator: DVLA)	Filters v	Sort v
Search by V5C ID...				
[DA6060712]	Scrap: Cray_Bros_(London)_Ltd	Scrap V5C	18/03/2016 10:49	
[DA6060712]	Transfer: Joe_Payne → Cray_Bros_(London)_Ltd	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 10:42	
[DA6060712]	Transfer: LeaseCan → Joe_Payne	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 10:42	
[DA6060712]	Transfer: Beechvale_Group → LeaseCan	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 10:34	
[DA6060712]	Transfer: Alfa_Romeo → Beechvale_Group	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 10:19	
[DA6060712]	Update: Alfa_Romeo	Registration: UNDEFINED → NL16 DTU	18/02/2016 14:38	
[DA6060712]	Update: Alfa_Romeo	Colour: UNDEFINED → Blue	18/02/2016 14:38	
[DA6060712]	Update: Alfa_Romeo	Model: UNDEFINED → MiTo	18/02/2016 14:38	
[DA6060712]	Update: Alfa_Romeo	Make: UNDEFINED → Alfa Romeo	18/02/2016 14:38	
[DA6060712]	Update: Alfa_Romeo	VIN: 0 → 880352730316924	18/02/2016 14:38	
[DA6060712]	Transfer: DVLA → Alfa_Romeo	Vehicle Template	18/02/2016 14:22	
[DA6060712]	Create: DVLA	Create V5C	18/02/2016 14:21	

4. Other users can only see part of the lifecycle of the vehicle. They are able to see what happened to the vehicle prior to their ownership and whilst they owned it but cannot see what happened to the vehicle after they transferred it.

Click the three lines in the top right corner of the page to view the ledger as another user. In the dropdown that appears hover over “Lease Companies” then click “Lease Can”.

Blockchain Asset Transfer Demo																																							
Home ≡																																							
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> LeaseCan Lease Companies Every Car Leasing Leasees Regionwide Vehicle Contracts Scrap Merchants </div>																																							
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<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">[DA6060712]</th> <th style="width: 40%;"></th> <th style="width: 40%; text-align: right;"></th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr><td>[DA6060712]</td><td>Scrap: Cray_Bros_(London)_Ltd</td><td style="text-align: right;">Scrap V5C</td><td style="text-align: right;">18/03/2016 10:49</td></tr> <tr><td>[DA6060712]</td><td>Transfer: Joe_Payne → Cray_Bros_(London)_Ltd</td><td style="text-align: right;">[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU</td><td style="text-align: right;">18/03/2016 10:42</td></tr> <tr><td>[DA6060712]</td><td>Transfer: LeaseCan → Joe_Payne</td><td style="text-align: right;">[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU</td><td style="text-align: right;">18/03/2016 10:42</td></tr> <tr><td>[DA6060712]</td><td>Transfer: Beechvale_Group → LeaseCan</td><td style="text-align: right;">[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU</td><td style="text-align: right;">18/03/2016 10:34</td></tr> <tr><td>[DA6060712]</td><td>Transfer: Alfa_Romeo → Beechvale_Group</td><td style="text-align: right;">[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU</td><td style="text-align: right;">18/03/2016 10:19</td></tr> <tr><td>[DA6060712]</td><td>Update: Alfa_Romeo</td><td style="text-align: right;">Registration: UNDEFINED → NL16 DTU</td><td style="text-align: right;">18/02/2016 14:38</td></tr> <tr><td>[DA6060712]</td><td>Update: Alfa_Romeo</td><td style="text-align: right;">Colour: UNDEFINED → Blue</td><td style="text-align: right;">18/02/2016 14:38</td></tr> <tr><td>[DA6060712]</td><td>Update: Alfa_Romeo</td><td style="text-align: right;">Model: UNDEFINED → MiTo</td><td style="text-align: right;">18/02/2016 14:38</td></tr> </tbody> </table>				[DA6060712]				[DA6060712]	Scrap: Cray_Bros_(London)_Ltd	Scrap V5C	18/03/2016 10:49	[DA6060712]	Transfer: Joe_Payne → Cray_Bros_(London)_Ltd	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 10:42	[DA6060712]	Transfer: LeaseCan → Joe_Payne	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 10:42	[DA6060712]	Transfer: Beechvale_Group → LeaseCan	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 10:34	[DA6060712]	Transfer: Alfa_Romeo → Beechvale_Group	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 10:19	[DA6060712]	Update: Alfa_Romeo	Registration: UNDEFINED → NL16 DTU	18/02/2016 14:38	[DA6060712]	Update: Alfa_Romeo	Colour: UNDEFINED → Blue	18/02/2016 14:38	[DA6060712]	Update: Alfa_Romeo	Model: UNDEFINED → MiTo	18/02/2016 14:38
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[DA6060712]	Update: Alfa_Romeo	Model: UNDEFINED → MiTo	18/02/2016 14:38																																				

5. The table has now changed and although the user can see the car they can't see what happened after it was transferred to “Joe Payne”.

Blockchain Asset Transfer Demo																																																																																			
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Alfa_Romeo	Colour: UNDEFINED → Blue	18/02/2016 14:38	[DA6060712]	Update: Alfa_Romeo	Registration: UNDEFINED → NL16 DTU	18/02/2016 14:38	[GK8420732]	Transfer: Jaguar_Land_Rover → Beechvale_Group	[181255391772389] Jaguar XJ, Black, FM65 ESL	18/02/2016 14:34	[GK8420732]	Update: Jaguar_Land_Rover	Model: UNDEFINED → XJ	18/02/2016 14:29	[GK8420732]	Update: Jaguar_Land_Rover	Colour: UNDEFINED → Black	18/02/2016 14:29	[GK8420732]	Update: Jaguar_Land_Rover	Registration: UNDEFINED → FM65 ESL	18/02/2016 14:29	[GK8420732]	Update: Jaguar_Land_Rover	VIN: 0 → 181255391772389	18/02/2016 14:28	[GK8420732]	Update: Jaguar_Land_Rover	Make: UNDEFINED → Jaguar	18/02/2016 14:28	[ZE3286321]	Transfer: Toyota → Beechvale_Group	[720965981630055] Toyota Yaris, Red, QD65 YKR	18/02/2016 14:26
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6. Copy The V5C ID **DA6060712** and use the search feature to show only the history of the one vehicle:

The screenshot shows a web-based application titled "BLOCKCHAIN ASSET TRANSFER DEMO". At the top left is the IBM logo. On the right, there's a user profile "Lesley (Lease Company: LeaseCan)" and navigation icons for "Filters v" and "Sort v". The main content area displays a table of vehicle history entries. A red box highlights the search bar at the top of the table, which contains the V5C ID "DA6060712". The table has columns for the ID, Action, Details, and Date. The data is as follows:

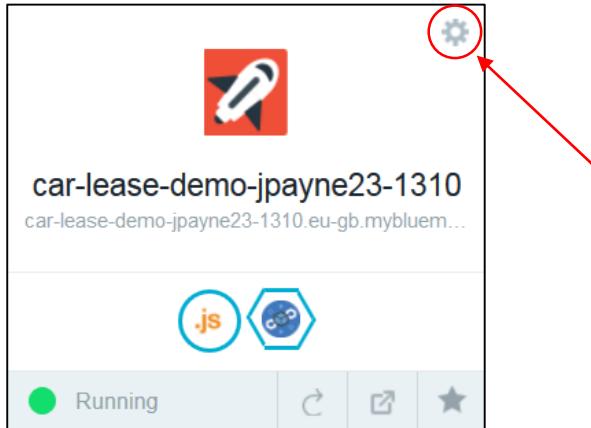
[DA6060712]	Action	Details	Date
[DA6060712]	Transfer: LeaseCan → Joe_Payne	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 10:42
[DA6060712]	Transfer: Beechvale_Group → LeaseCan	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 10:34
[DA6060712]	Transfer: Alfa_Romeo → Beechvale_Group	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 10:19
[DA6060712]	Update: Alfa_Romeo	VIN: 0 → 880352730316924	18/02/2016 14:38
[DA6060712]	Update: Alfa_Romeo	Make: UNDEFINED → Alfa Romeo	18/02/2016 14:38
[DA6060712]	Update: Alfa_Romeo	Model: UNDEFINED → MiTo	18/02/2016 14:38
[DA6060712]	Update: Alfa_Romeo	Colour: UNDEFINED → Blue	18/02/2016 14:38
[DA6060712]	Update: Alfa_Romeo	Registration: UNDEFINED → NL16 DTU	18/02/2016 14:38
[DA6060712]	Transfer: DVLA → Alfa_Romeo	Vehicle Template	18/02/2016 14:22
[DA6060712]	Create: DVLA	Create V5C	18/02/2016 14:21

As you can see the user can see the entire lifecycle of the car from before they owned it up until they transferred it.

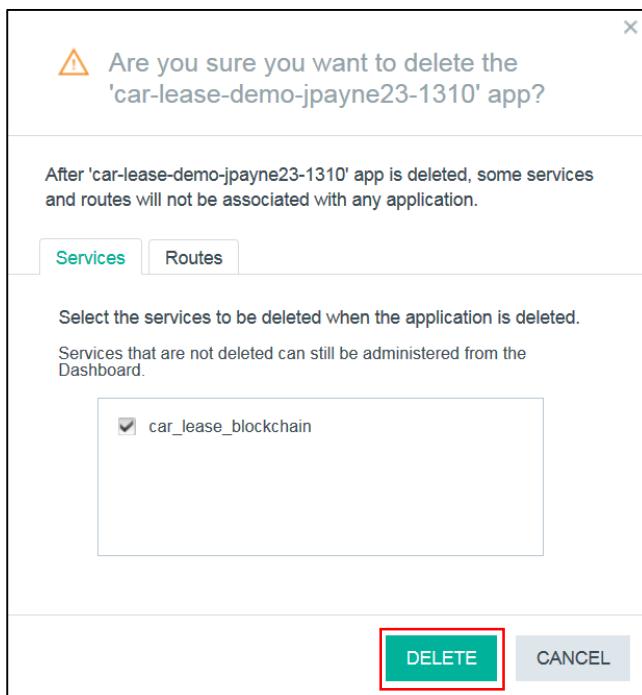
Appendix A. Removing the sample application

This appendix shows how to stop and remove the Blockchain service you created.

- __1. Return to the Bluemix Dashboard by clicking **DASHBOARD**.
- __2. Click the Settings icon in the car lease demo application.



- __3. Select 'Delete App' from the menu.
- __4. Ensure that the 'car_lease_blockchain' service is selected for deletion and click 'Delete'.



- __5. Wait for the items to be stopped and deleted. Once this is done, both the application and the associated service will no longer be visible in the Bluemix dashboard.

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