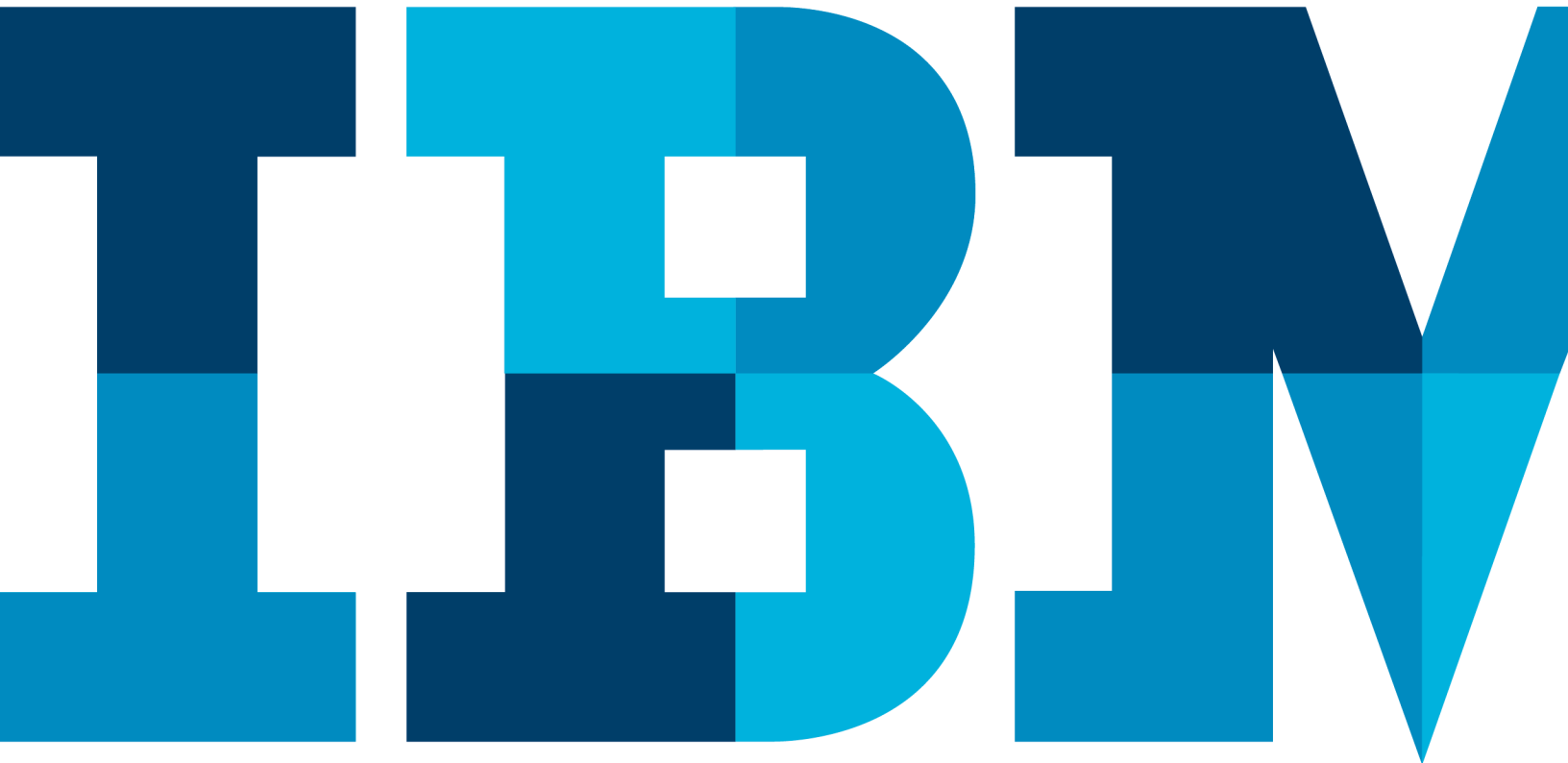


IBM Blockchain Proof of Technology Demo Scenarios Hands On

Lab01 Exercises



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Overview

This lab will give you a hands on demonstration of the example use case of a car leasing market where vehicles can be transferred through the lifecycle of the vehicle from creation by the regulator – DVLA (Driving and Vehicle Licence Agency) – through to the scrap merchant who logs the car as scrapped.

Introduction




Pre Requisites:

- 2 cores
- 4GB RAM
- VMWare V10+
- IBM_HyperLedger_Car_Leasing_Demo_v0.7+

Preferable to have completed 'IBM Blockchain PoT Lab Guide 01 first

Icons

The following symbols appear in this document at places where additional guidance is available.

Icon	Purpose	Explanation
	Important!	This symbol calls attention to a particular step or command. For example, it might alert you to type a command carefully because it is case sensitive.
	Information	This symbol indicates information that might not be necessary to complete a step, but is helpful or good to know.
	Trouble-shooting	This symbol indicates that you can fix a specific problem by completing the associated troubleshooting information.

Section 1. Accessing the Demo environment

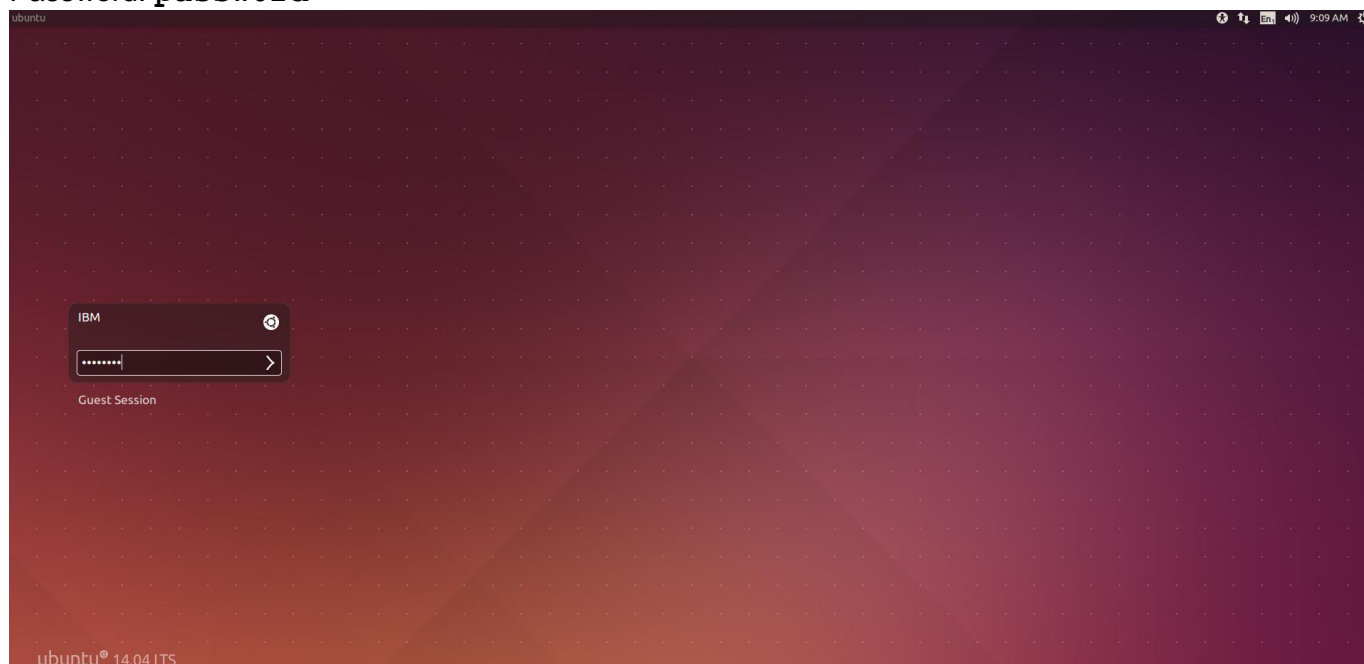
The IBM Blockchain Asset Transfer Demo environment exists in a VMWare virtual machine. The operating system is Linux Ubuntu. The following section will guide you through what you need to do in order to access the Main demo page. The machine should automatically log in for you though the instructions are below if it logs out at any point. All of the sections in this guide use a web browser.

1.1. Log into the VMWare Ubuntu system

The VM should log you in automatically. If it doesn't or if the system locks later you can sign on to the Ubuntu system with the following credentials:

User: **IBM**

Password: **passw0rd**



(to sign on just press enter after entering the password)

NOTE: A network needs to be visible to the virtual machine (even if the network is just to the host environment). If you do not see the up/down arrows in the status bar at the top of the screen, or if you receive errors about no network being available, please tell the lab leader. The virtual machine might need to be reconfigured in NAT mode.

1.2. Start the Automated-Setup

- __1. Open a **Terminal** window (Click on icon shown below)

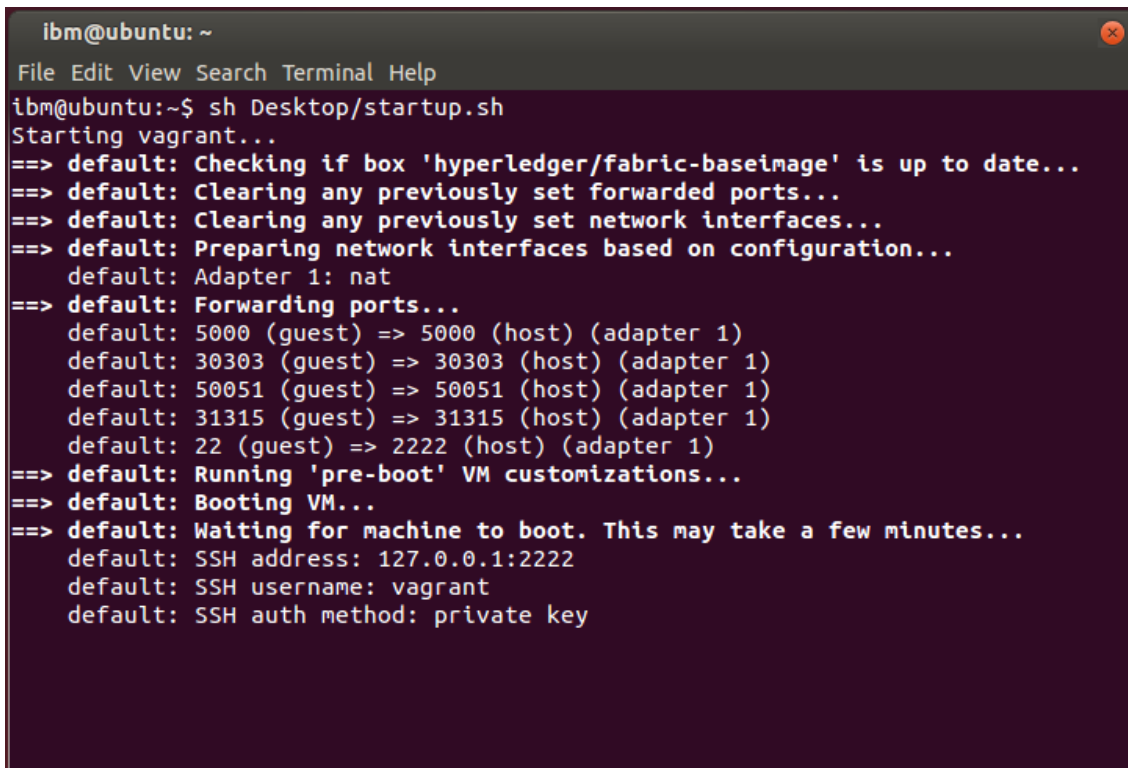


- __2. Press the '**Up Arrow**' to bring up the command required to start the services:

```
ibm@ubuntu:~$ sh Desktop/startup.sh
```

- The command should read '`sh Desktop/startup.sh`' if this is not the case, please type this command

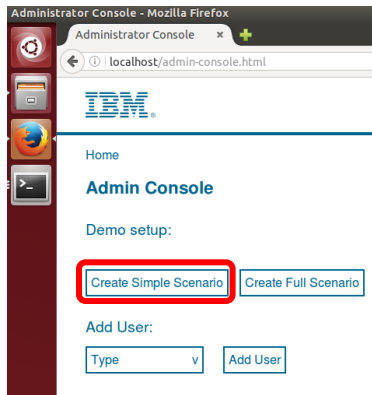
__3. Hit **'Enter'** to run this command.

A terminal window titled 'ibm@ubuntu: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The user has executed the command 'sh Desktop/startup.sh'. The output shows the process of starting a Vagrant VM, including checking for updates, clearing ports and interfaces, preparing network interfaces (Adapter 1: nat), forwarding ports (5000, 30303, 50051, 31315, 22), running pre-boot customizations, booting the VM, and waiting for the machine to boot. The SSH address is 127.0.0.1:2222, the username is vagrant, and the auth method is private key.

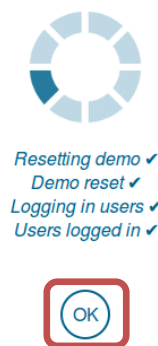
```
ibm@ubuntu: ~  
File Edit View Search Terminal Help  
ibm@ubuntu:~$ sh Desktop/startup.sh  
Starting vagrant...  
==> default: Checking if box 'hyperledger/fabric-baseimage' is up to date...  
==> default: Clearing any previously set forwarded ports...  
==> default: Clearing any previously set network interfaces...  
==> default: Preparing network interfaces based on configuration...  
default: Adapter 1: nat  
==> default: Forwarding ports...  
default: 5000 (guest) => 5000 (host) (adapter 1)  
default: 30303 (guest) => 30303 (host) (adapter 1)  
default: 50051 (guest) => 50051 (host) (adapter 1)  
default: 31315 (guest) => 31315 (host) (adapter 1)  
default: 22 (guest) => 2222 (host) (adapter 1)  
==> default: Running 'pre-boot' VM customizations...  
==> default: Booting VM...  
==> default: Waiting for machine to boot. This may take a few minutes...  
default: SSH address: 127.0.0.1:2222  
default: SSH username: vagrant  
default: SSH auth method: private key
```

You should see the above outputted as the command runs. Several terminal windows will open, minimise these as they are running the application server, peer and membership service.

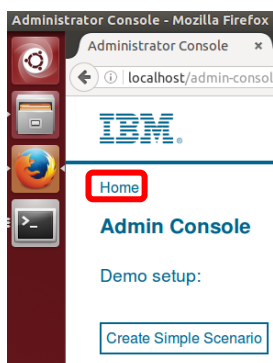
- ___4. The script will take around 1 minute to complete, then you can click the Firefox icon on the far left. Then scroll to the bottom of the webpage to the 'Admin Console' page




- ___5. Click [Create Simple Scenario](#)
- ___a. This will initialise the demo with a blockchain and vehicles to use within the demo
 - ___b. It will take around 1 minute to complete
 - ___c. Once complete, press 'OK'



- ___6. Finally, click [Home](#) to go to the main page of the Demo



The demo is now ready to use.

Note: Do not close  window as this is running the services used within the App

Section 2. Asset Transfer and Disposal Scenarios

In the following sections you will discover how blockchain technology can be used to track ownership of an asset across multiple parties. The scenario describes how blockchain technology could be 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 (EG "Manufacturer") will only show one participants (EG "Alfa Romeo") transfer assets page. This can be changed later in Lab02. Within this lab, please always select the TOP participant in the list when selecting who to transfer an asset to.

2.1. 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.

2.1.1. Verify the target Dealership Assets

In this section you will act as a Dealership and verify which assets the Beechvale Dealership

- a) “owns”
- b) Is permitted to control in the blockchain

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



BLOCKCHAIN ASSET TRANSFER DEMO

Main Menu:

Regulator

[Live Stats](#)[Regulator View](#)[Create Asset](#)

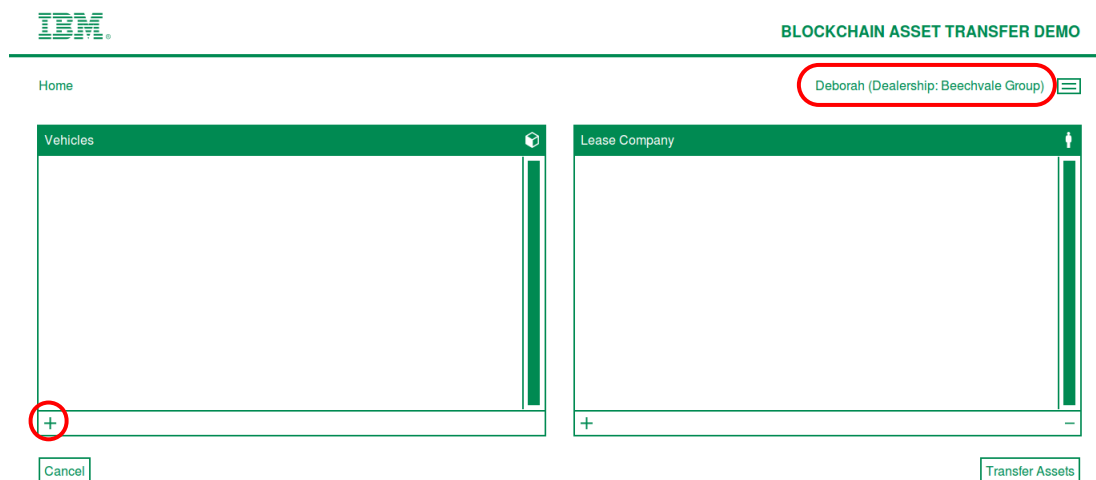
Transfer Asset

[Regulator → Manufacturer](#)[Manufacturer → Dealership](#)[Dealership → Lease Company](#)[Lease Company → Leasee](#)[Leasee → Scrap Merchant](#)

Update Asset

[Manufacturer Update](#)

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).



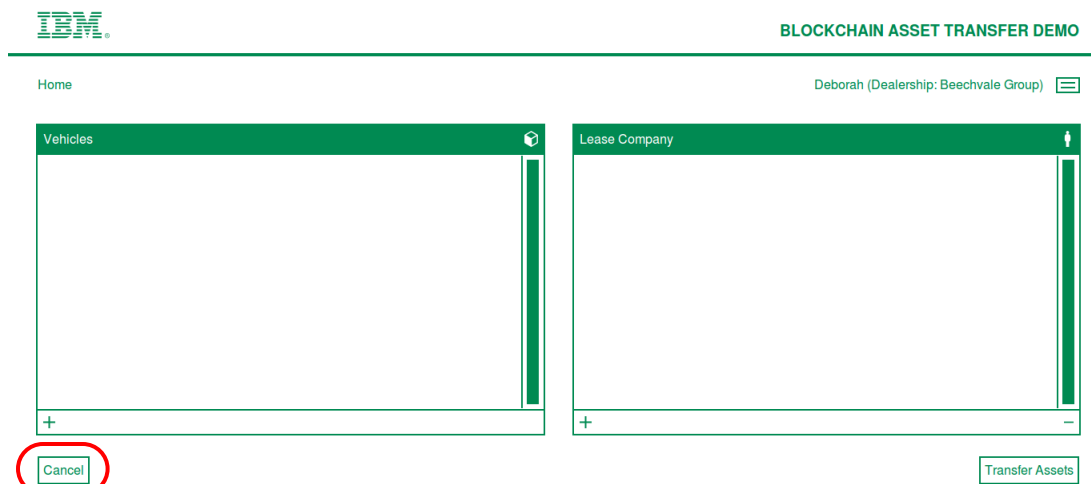
3. In the results window, verify the number of cars and their make. Note the number in the first column of this table is used to model the Vehicle Identification Number (or VIN).



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:



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

2.1.2. Transfer the asset (from Manufacturer to Dealership)

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



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

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



BLOCKCHAIN ASSET TRANSFER DEMO

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			X
880352730316924	Alfa Romeo MiTo, Blue, NL16 DTU	<input checked="" type="checkbox"/>	
747542562791231	Alfa Romeo 4C, Red, RZ65 RNG	<input type="checkbox"/>	
128994473011261	Alfa Romeo MiTo, Black, YD65 FTB	<input type="checkbox"/>	
546303780997253	Alfa Romeo Giulietta, White, JU65 XMH	<input type="checkbox"/>	
X			✓

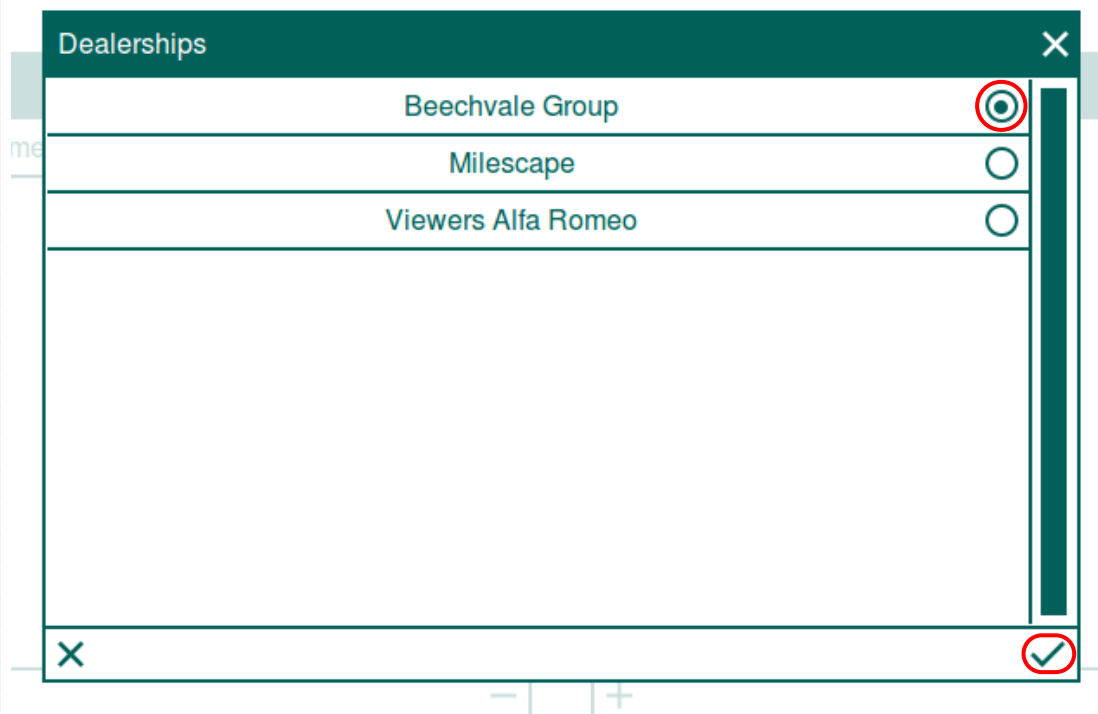
Click the tick box of the first car in the list to include it in the transfer request.

Click the Tick mark at the bottom of the list of Vehicles to save the choice.

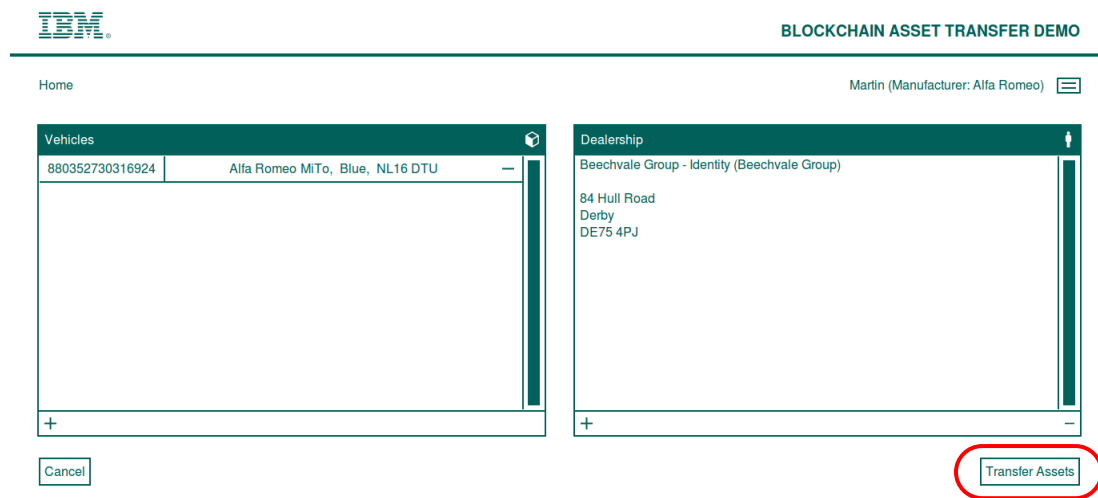
4. The Alfa Romeo with VIN number “**880352730316924**” now appears in the list of vehicles to be transferred:

Click the plus sign in the Dealership box.

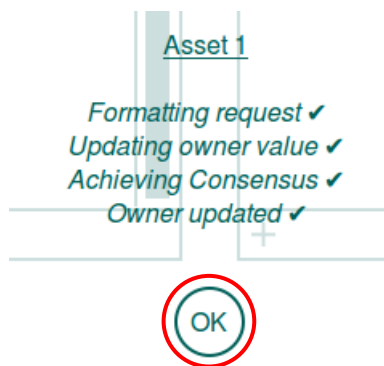
5. From the list of Dealerships, choose “Beechvale Group” then, click the tick mark to confirm your choice):



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



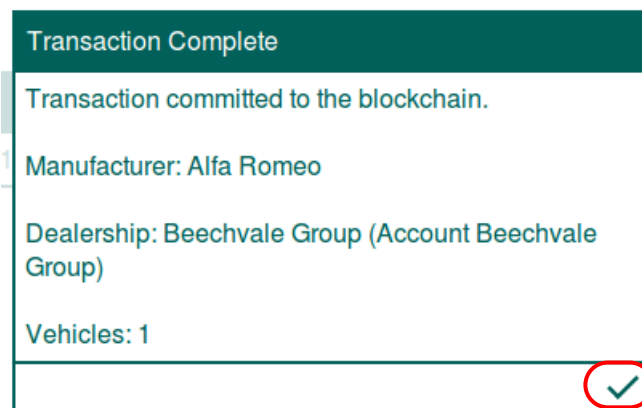
7. The Demo asset, highlights what it is doing with the blockchain in the status window:



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”.

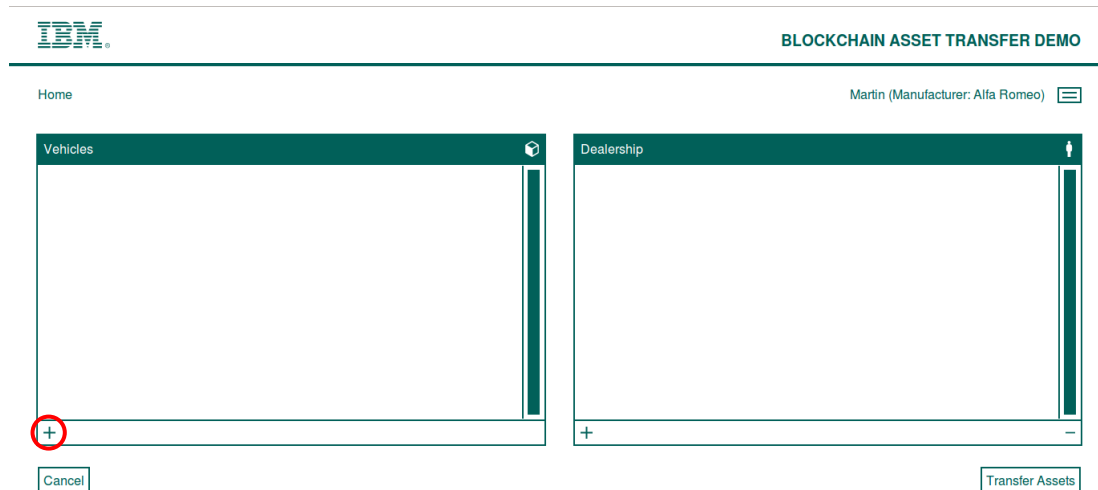
8. Click OK to acknowledge the transfer status messages.

9. Click the tick mark to acknowledge the Transaction Complete message:

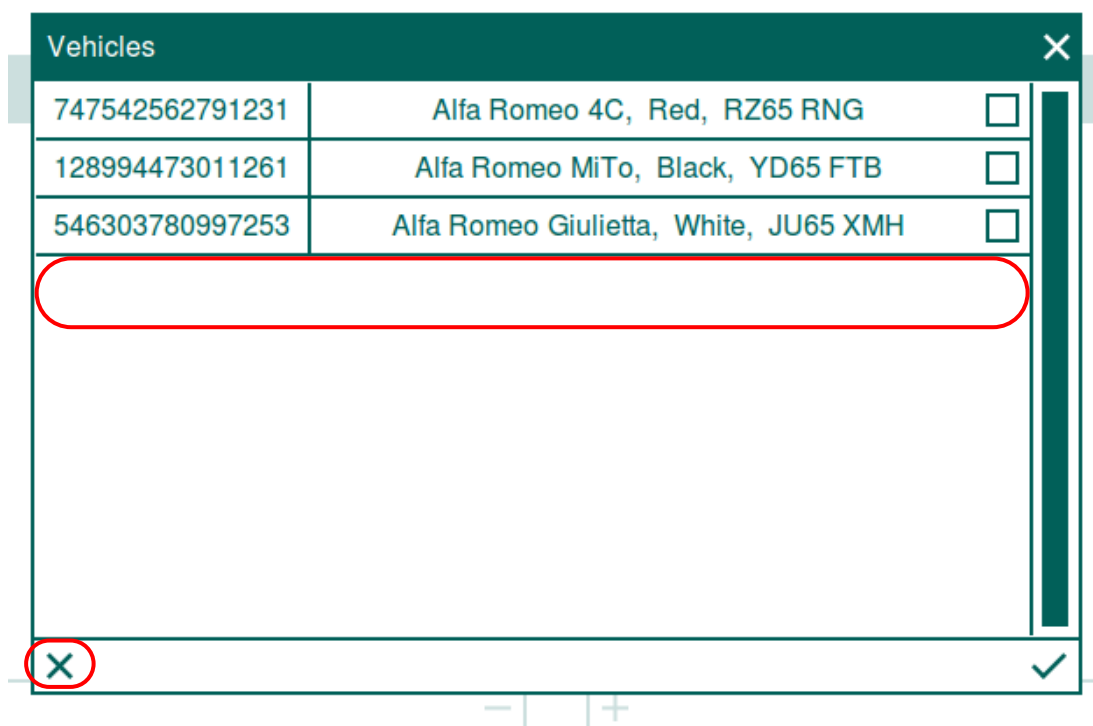


2.1.3. Verify Manufacturer has no control over Transferred Asset

1. 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:

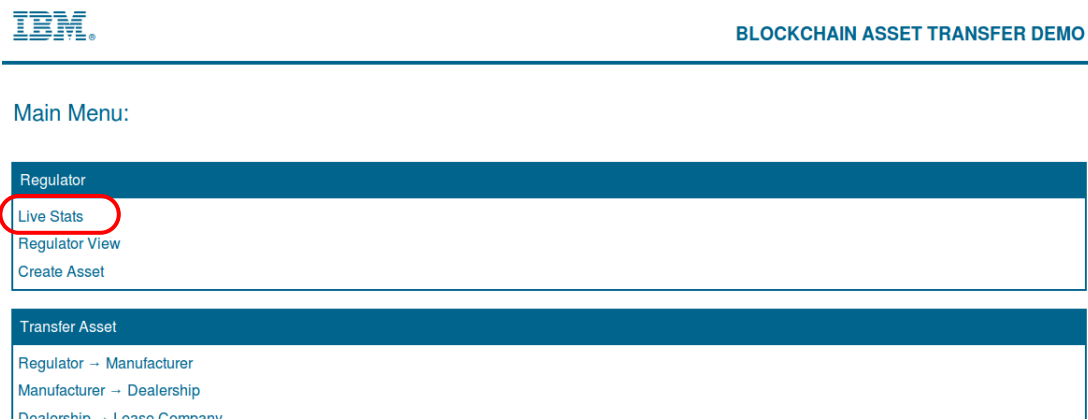


2. The manufacturer now controls only three assets, the transferred vehicle is no longer visible to the manufacturer. Click the cross mark to dismiss the window.

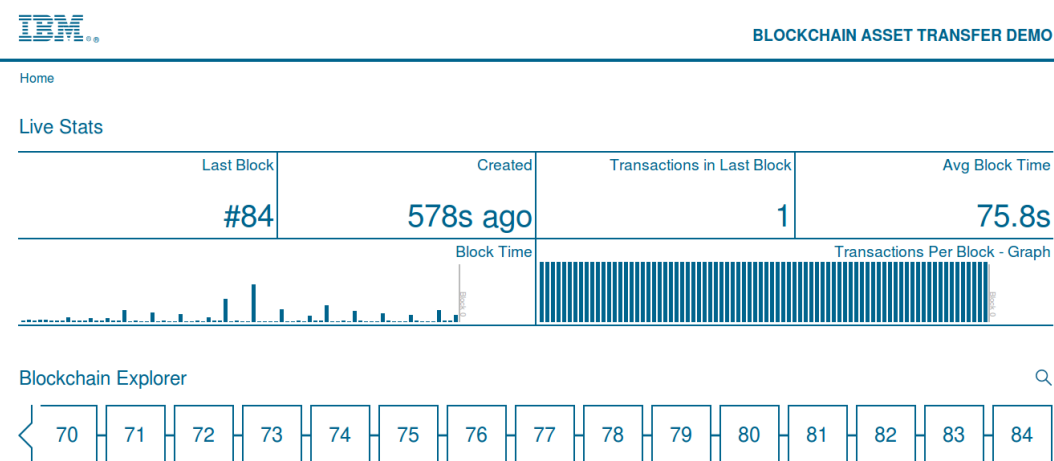


2.2. Scenario: View the blockchain Activity

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



2. The blockchain statistics page shows the transfer activity as a vertical bar in the Transactions window:



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

Created: How long ago since the Last Block was committed

Transactions in Last Block: How many transactions are in the Last Block

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

Block Time graph: A graph showing how long 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.

2.3. 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.

2.3.1. 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.

1. 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

2. 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:

Vehicles		
880352730316924	Alfa Romeo MiTo, Blue, NL16 DTU	<input checked="" type="checkbox"/>
549523556856725	Jaguar F-Type, Red, HE16 WDZ	<input type="checkbox"/>
523447019546831	Land Rover Defender, Silver, EY16 FRV	<input type="checkbox"/>
948881310167423	Toyota Celica, Silver, DG16 FVG	<input type="checkbox"/>

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:

Lease Companies		
LeaseCan		<input checked="" type="radio"/>
Every Car Leasing		<input type="radio"/>
Regionwide Vehicle Contracts		<input type="radio"/>

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

IBM BLOCKCHAIN ASSET TRANSFER DEMO

Home Deborah (Dealership: Beechvale Group)

Vehicles

880352730316924	Alfa Romeo MiTo, Blue, NL16 DTU
-----------------	---------------------------------

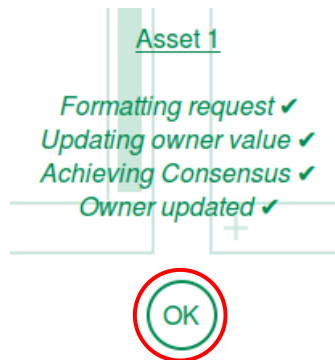
Lease Company

LeaseCan - Identity (LeaseCan)

64 Zoo Lane
Slough
Berkshire
SL82 4AB

Cancel Transfer Assets

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 Tick:

Transaction Complete

Transaction committed to the blockchain.

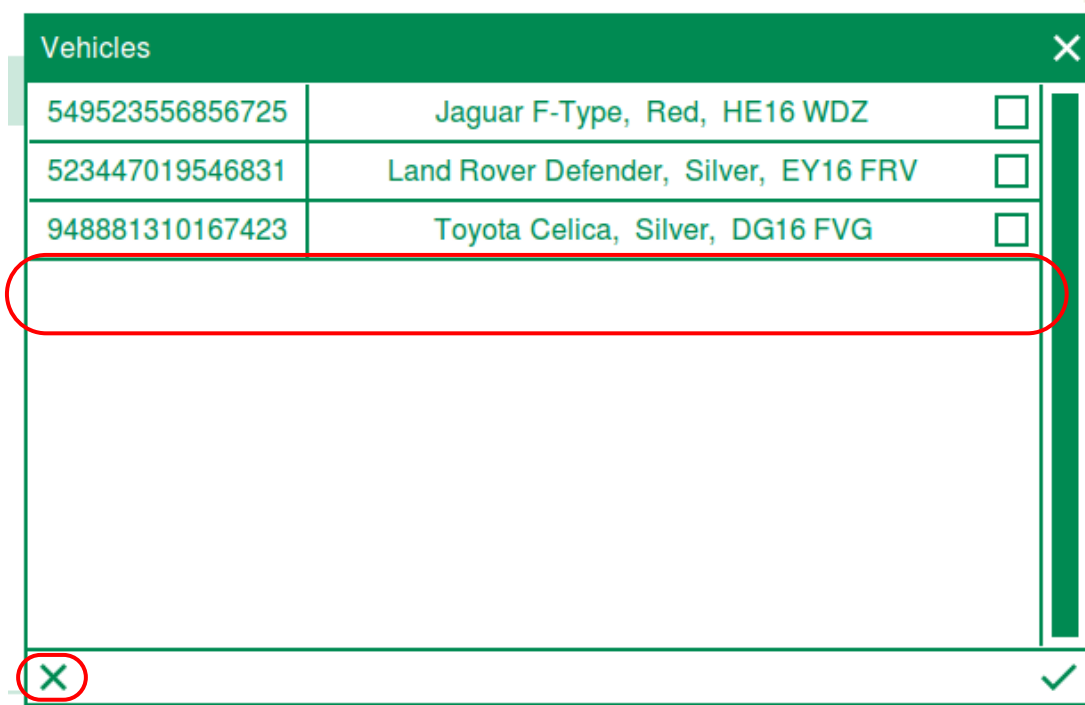
Dealership: Beechvale Group

Lease Company: LeaseCan (Account LeaseCan)

Vehicles: 1

✓

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:



The screenshot shows a window titled "Vehicles" with a close button (X) in the top right corner. The window contains a table with three rows of vehicle information. Each row has a vehicle ID, a description, and a checkbox. A red circle highlights the plus sign (+) at the bottom left of the window, indicating where to click to refresh the list. A green checkmark is visible at the bottom right of the window.

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

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

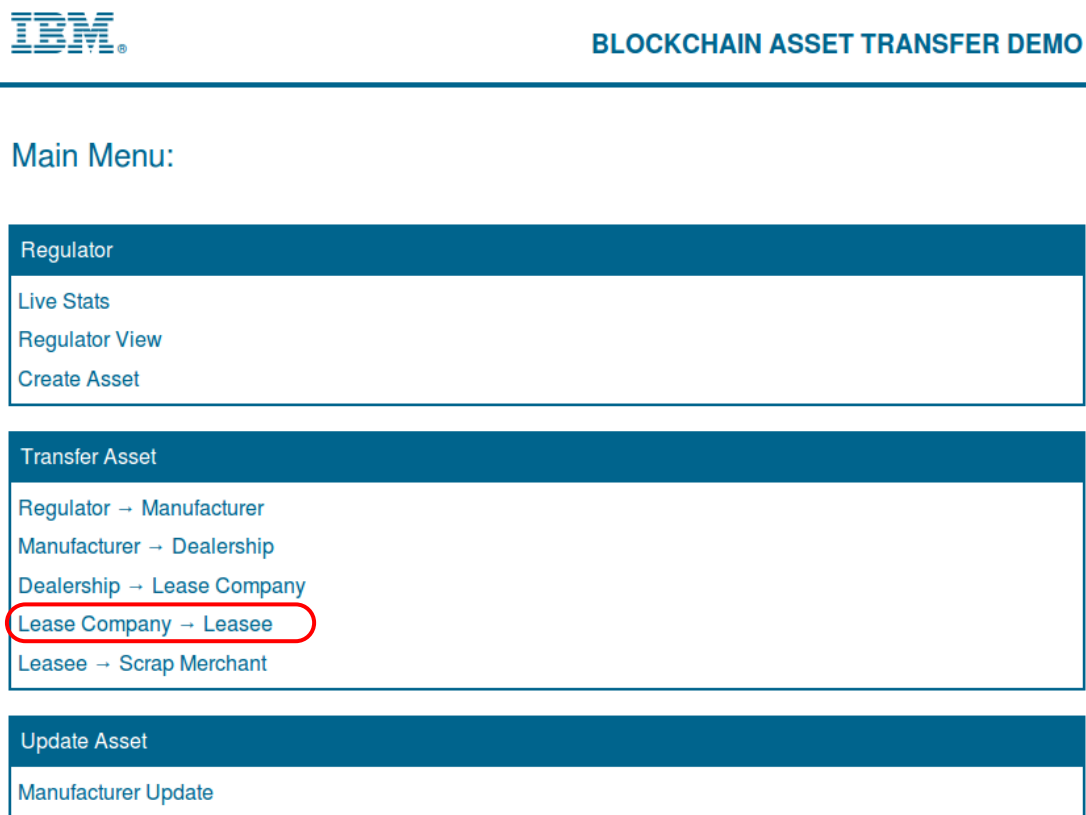
2.4. Scenario: Transfer: Lease Company to Lessee

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 Lessee.

2.4.1. 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 -> Lessee” link:



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

IBM BLOCKCHAIN ASSET TRANSFER DEMO

Home Lesley (Lease Company: LeaseCan)

Vehicles

880352730316924	Alfa Romeo MiTo, Blue, NL16 DTU
-----------------	---------------------------------

Leasee

Joe Payne - Identity (Joe Payne)

84 Byron Road
Eastleigh
SO50 8JR

Cancel Transfer Assets

3. When Consensus has been achieved click the OK button.
4. Dismiss the Transaction Complete message by clicking the tick.
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).

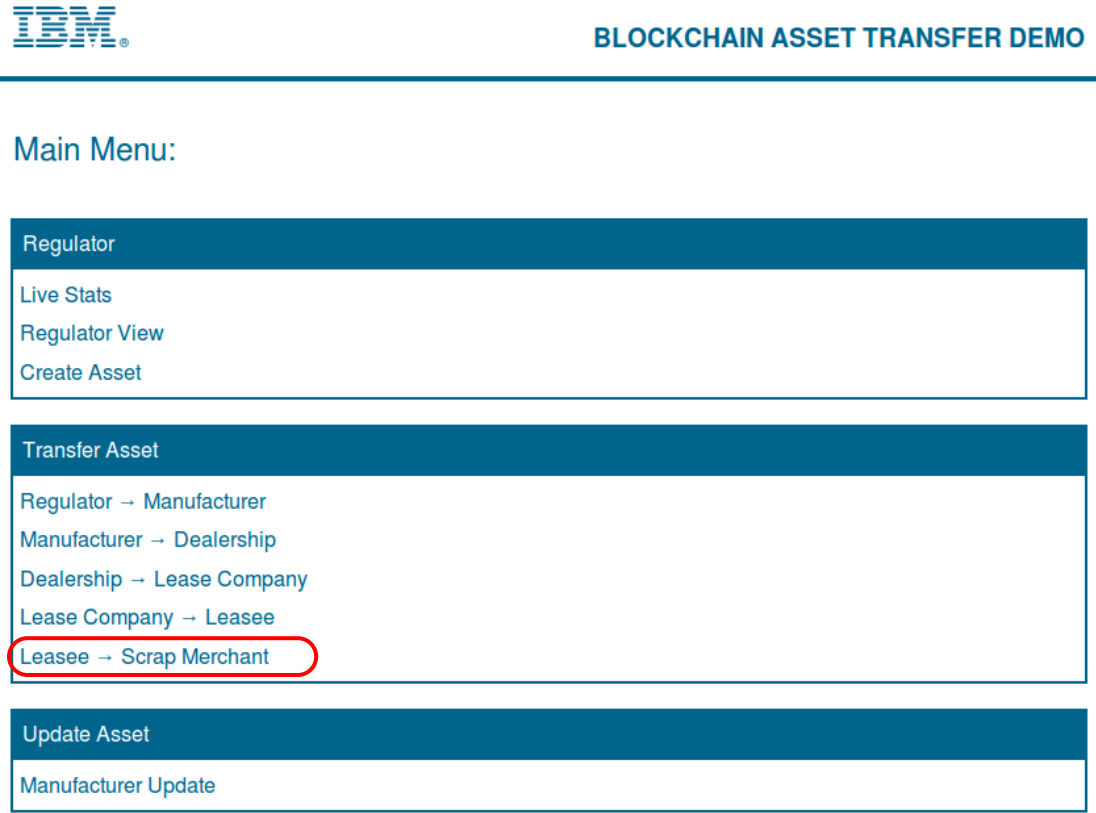
2.5. Scenario: Transfer: Leasee to Scrap Merchant

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.

2.5.1. 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 IBM Blockchain Asset Transfer Demo Main Menu. The menu is divided into three sections: Regulator, Transfer Asset, and Update Asset. The 'Transfer Asset' section contains a list of transfer paths, with 'Leasee -> Scrap Merchant' highlighted by a red circle.

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

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

The screenshot shows the IBM Blockchain Asset Transfer Demo interface. At the top, there is a header with the IBM logo and the title 'BLOCKCHAIN ASSET TRANSFER DEMO'. Below the header, there is a navigation bar with 'Home' and 'Joe (Leasee: Joe Payne)'. The main content area is divided into two panels: 'Vehicles' and 'Scrap Merchant'. The 'Vehicles' panel shows a table with one row: 880352730316924, Alfa Romeo MiTo, Blue, NL16 DTU. The 'Scrap Merchant' panel shows details for Cray Bros (London) Ltd, including their address: 26 Electric Eel Avenue, Twickenham, Greater London, SE51 9DR. Both panels have a plus sign (+) in the bottom left corner. A 'Transfer Assets' button is highlighted in the bottom right corner.

3. When Consensus has been achieved click the OK button.
4. Dismiss the Transaction Complete message by clicking the tick.
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).

2.6. 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.

2.6.1. 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:



BLOCKCHAIN ASSET TRANSFER DEMO

Main Menu:

Regulator

Live Stats
Regulator View
Create Asset

Transfer Asset

Regulator → Manufacturer
Manufacturer → Dealership
Dealership → Lease Company
Lease Company → Lessee
Lessee → Scrap Merchant

Update Asset

Manufacturer Update

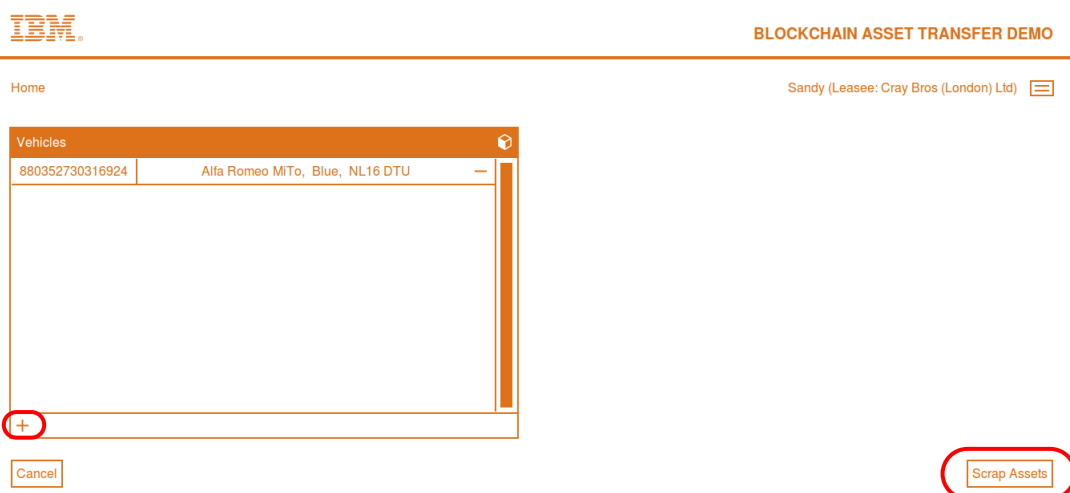
Dispose Asset

Scrap Merchant → Scrap

Admin

Admin Console

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):



3. When Consensus has been achieved click the OK button.
4. Dismiss the Transaction Complete message by clicking the tick.
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).

2.7. 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.



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

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):

IBM BLOCKCHAIN ASSET TRANSFER DEMO

Home Ronald (Regulator: DVLA) 


Search by V5C ID... Filters v Sort v

[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, this can be seen by the same vehicle being 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 (Note: A vehicle's V5C ID is randomly generated so pick choose one which appears for you):

IBM BLOCKCHAIN ASSET TRANSFER DEMO

Home Ronald (Regulator: DVLA) 

DA6060712 Filters v Sort v

[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”.

IBM BLOCKCHAIN ASSET TRANSFER DEMO

Home

View As...

- < Regulators
- < Manufacturers
- < Dealerships
- < Lease Companies**
- < Leasees
- < Scrap Merchants

LeaseCan

Every Car Leasing

Regionwide Vehicle Contracts

DA6060712

Filters v Sort v

[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

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”.

IBM BLOCKCHAIN ASSET TRANSFER DEMO

Home

Lesley (Lease Company: LeaseCan)

Search by V5C ID...

Filters v Sort v

[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: Beechvale_Group → LeaseCan	[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: LeaseCan → Joe_Payne	[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	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
[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

6. Copy The V5C ID **DA6060712** and use the search feature to show only the history of the one vehicle (Note: A vehicle's V5C ID is randomly generated so pick choose one which appears for you):

The screenshot shows the IBM Blockchain Asset Transfer Demo interface. At the top, the IBM logo is on the left and 'BLOCKCHAIN ASSET TRANSFER DEMO' is on the right. Below the logo, there is a 'Home' link and a user profile 'Lesley (Lease Company: LeaseCan)' with a menu icon. A search bar contains the V5C ID 'DA6060712', which is highlighted with a red rectangle. To the right of the search bar are 'Filters v' and 'Sort v' buttons. Below the search bar is a table showing the history of the vehicle.

[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.

Section 3. Asset Creation, Update & Multiple Asset Transfer

In the previous section you discovered how blockchain technology could be used to transfer assets between participants. The assets that you transferred were already created and existed on the blockchain. In the following sections you discover how assets:

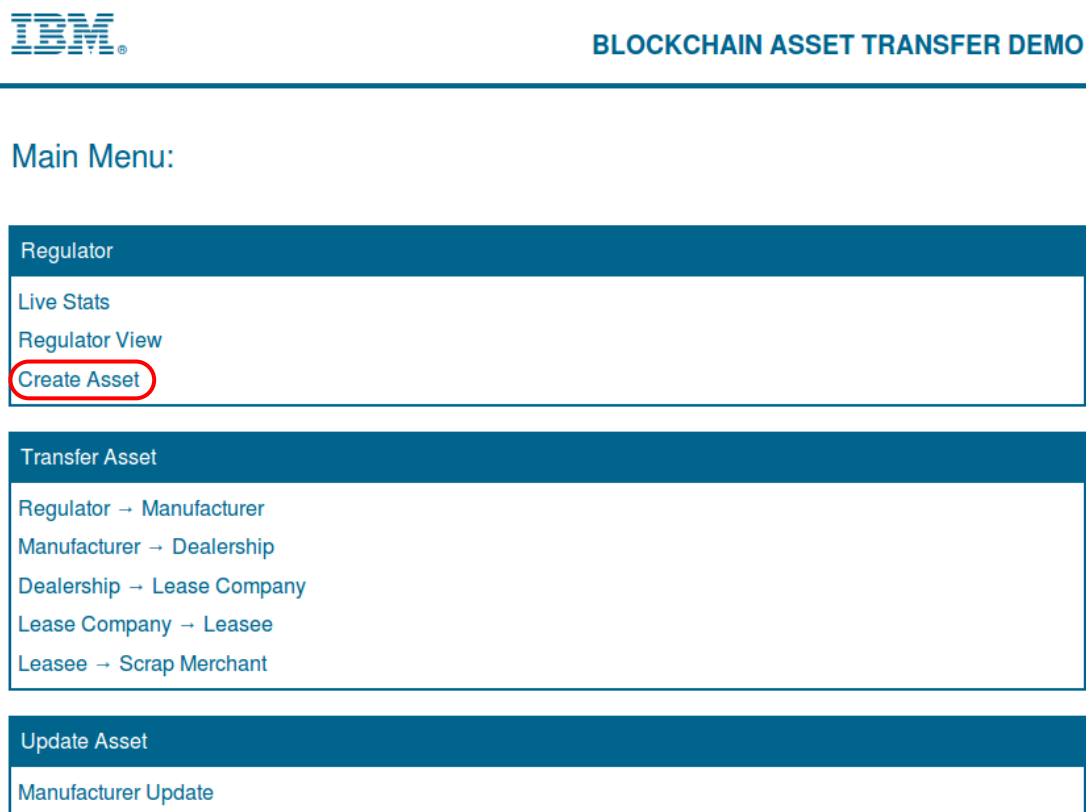
1. are created,
2. modified,
3. can be transferred with other assets.

You will create an instance of the vehicle template, modify this template so that it contains enough information for it to be defined as vehicle. You will then transfer the asset with another to show multiple assets can be transferred together in the transaction.

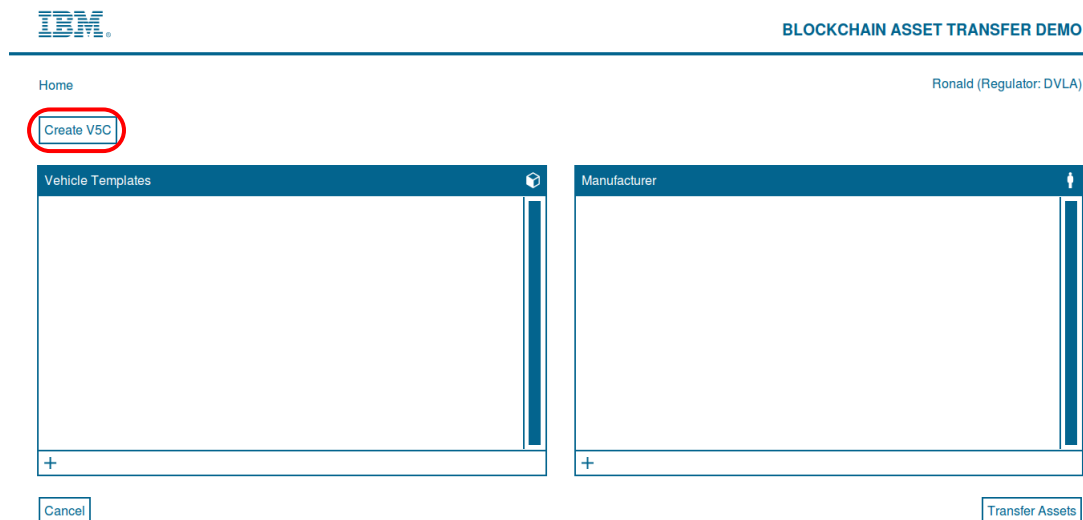
3.1. Scenario: Regulator: Create Vehicle Template

In this section you will act as the regulator and create a Vehicle Template that the manufacturer can use to identify a vehicle.

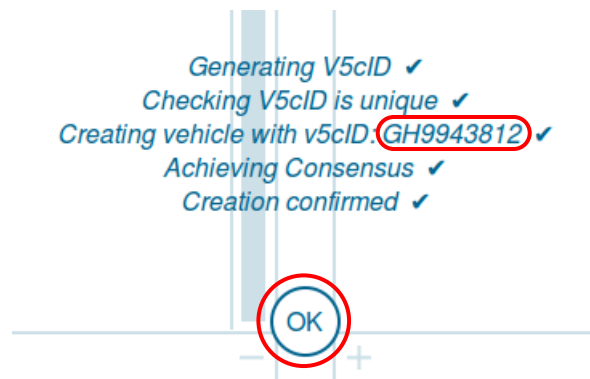
1. From the demo Main Menu, click the “Create Asset” link:



2. Click the "Create V5C" button:



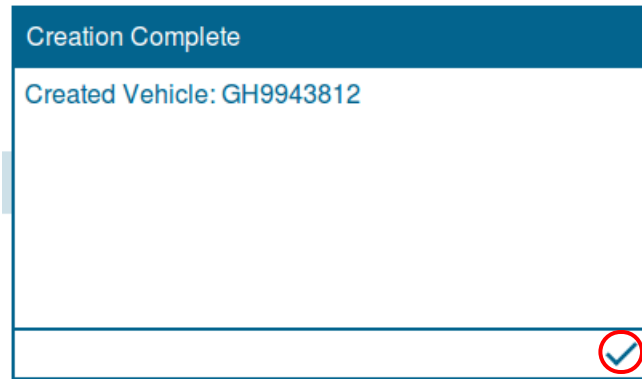
3. A new Vehicle Template (blockchain Smart Contract) will be created and added to the blockchain. Just as transferring an asset caused waited for Consensus to be achieved, the act of adding the "Vehicle Template" to the blockchain also waits for consensus to be achieved.



Make a note of the new v5cID – Each is unique so may not match the screenshots.

Wait for the "Consensus Achieved" message then Click OK.

4. Note the Creation Complete message, then dismiss the message

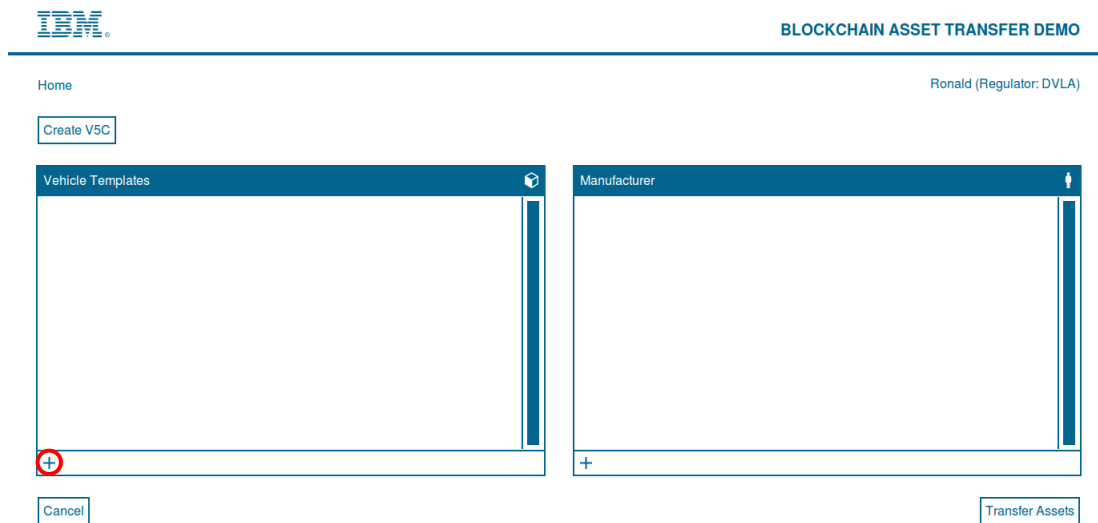


You will now be able to transfer this Vehicle Template to the manufacturer for further updates.

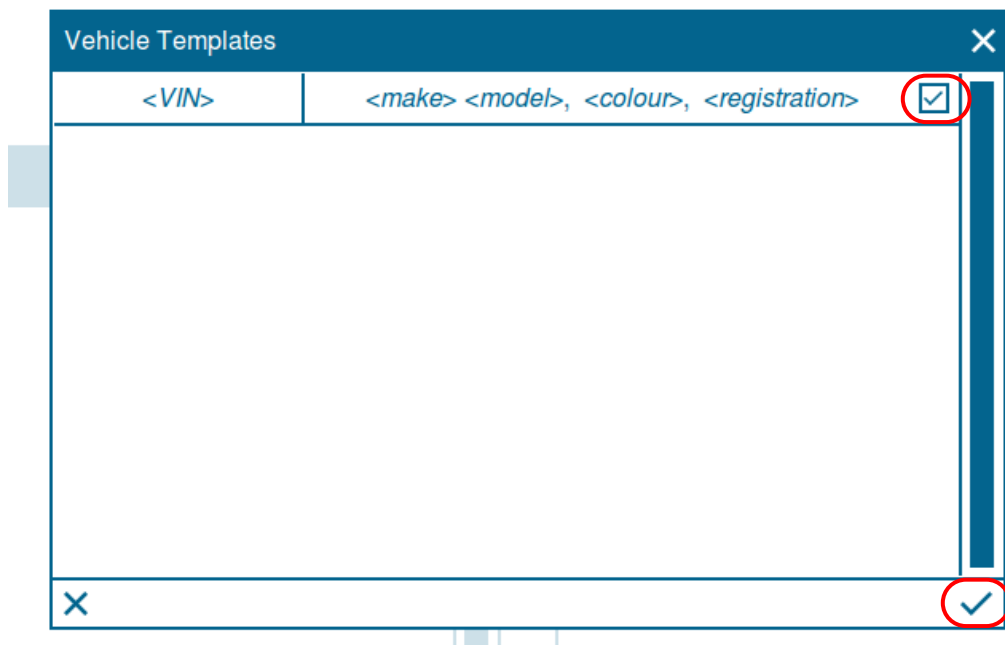
3.2. Scenario: Transfer Vehicle Template to Manufacturer

Once created, a Vehicle Template is transferred to the Manufacturer so that the details in template can be completed when a vehicle is ready. In this section you will act as the Regulator and transfer the Vehicle Template to the manufacturer.

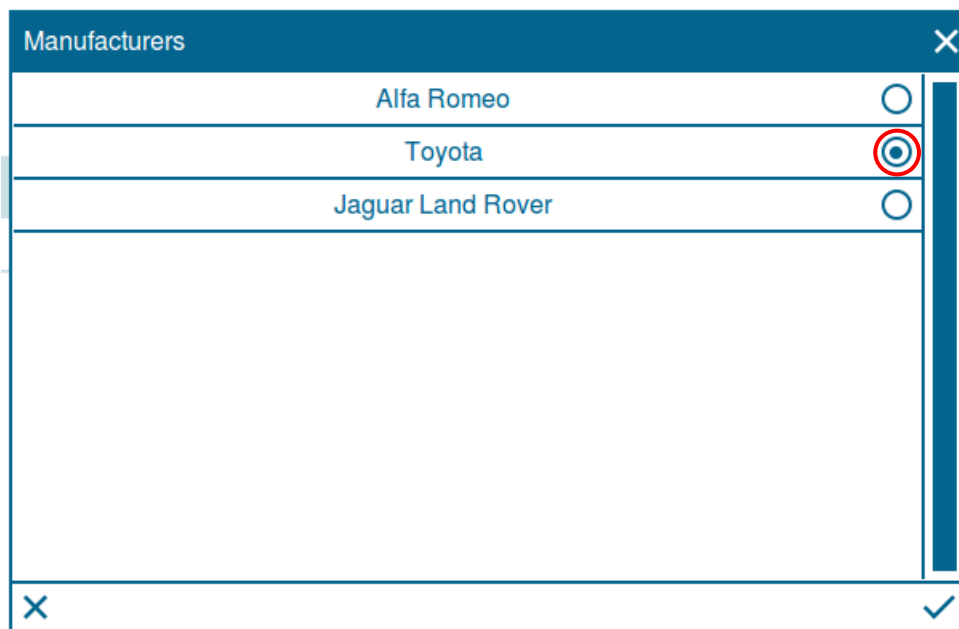
1. To transfer the new Vehicle Template, click the plus sign in the “Vehicles Templates” box:



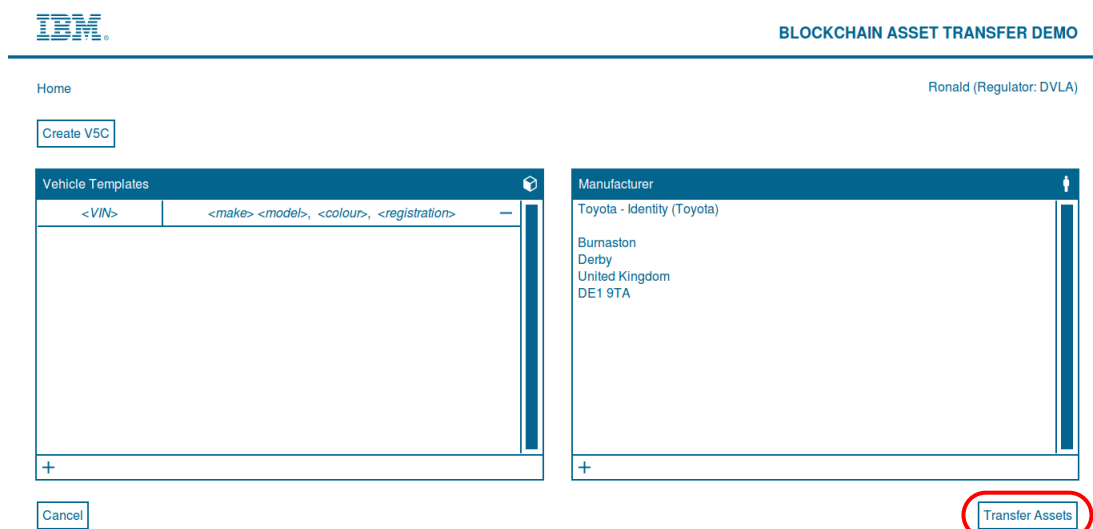
2. In the window select the Vehicle Template (it will have no details specified in it):



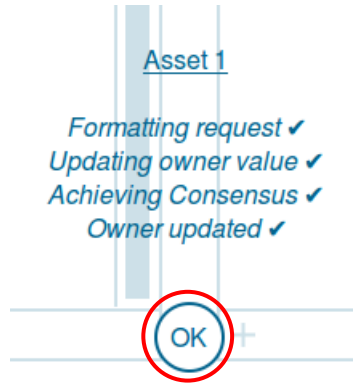
3. In the Manufacturer window click the plus sign. From the list of manufacturers choose Toyota:



4. Click "Transfer Assets":



5. Wait for the “Consensus Achieved” message to appear, then click OK:



6. Dismiss the Transaction Complete message:



7. The asset has now transferred to the manufacturer “Toyota”.
Verify it no longer exists in the Vehicle Template (hint: click the plus mark)

3.3. Scenario: Update a Vehicle Template

A Manufacturer can update an “empty” Vehicle Template and complete the details required in the template. In this section you will act as the Manufacturer and update the empty Vehicle Template.

1. From the Demo Main Menu, click the “Manufacturer Update” 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](#)

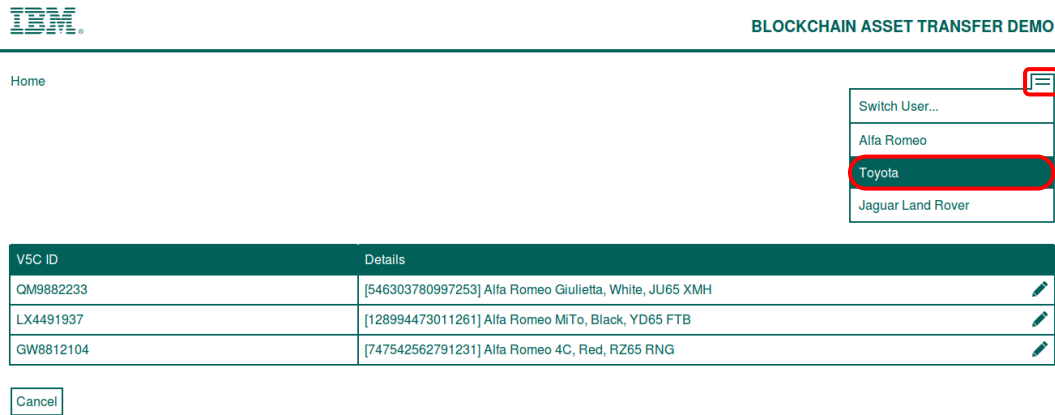
Update Asset

[Manufacturer Update](#)

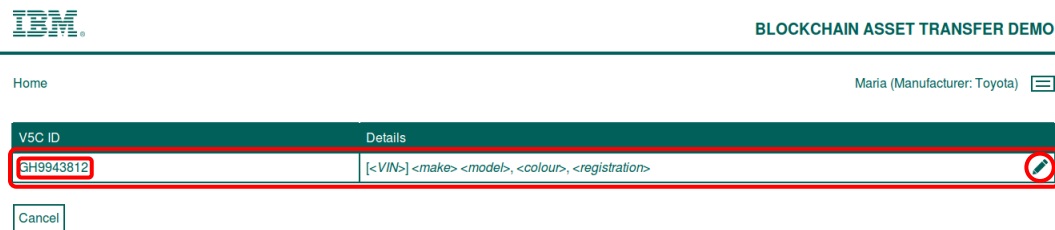
2. A list of Vehicle Templates is shown. The list is formed from the vehicles under the Manufacturer's control.

When the page initially loads the user logged in is Alfa Romeo. To switch the user to Toyota so that you can see the vehicle template you just sent from the regulator.

To do this click the three lines in the top right and then click "Toyota" from the list.



3. The empty Vehicle Template is the one you created (shown by the same V5C ID)



and transferred from the regulator to the Manufacturer in the previous section. Click the edit mark at the end of the "Details" section:

4. This view shows how the Regulator creates a car with all the fields undefined initially. Only the V5C ID is completed which will stay with the vehicle throughout its life irrespective of any other changes made.

V5C	
V5C	GH9943812
VIN	0
Make	undefined
Model	undefined
Colour	undefined
Reg	UNDEFINED
<div> <div>×</div> <div>✓</div> </div>	

5. To complete the Vehicle Template, enter the following:

VIN : **987654321012345** (15 characters)

Make : **Toyota**

Model : **Aygo**

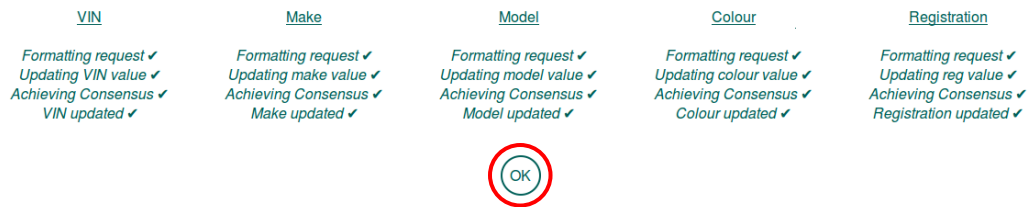
Colour: **Red**

Reg : **FA65 CAR**

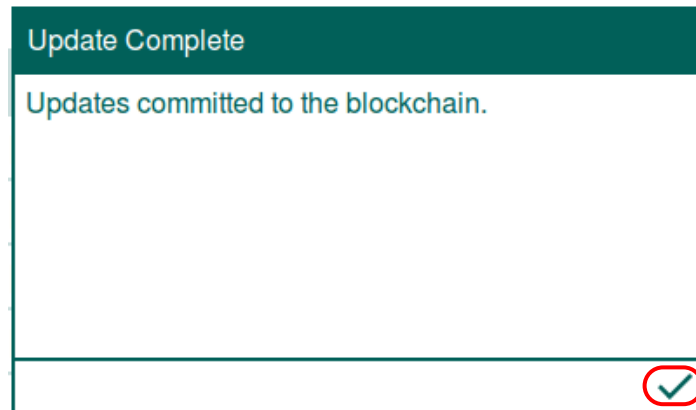
When complete click the tick mark:

V5C	
V5C	GH9943812
VIN	987654321012345
Make	Toyota
Model	Aygo
Colour	Red
Reg	FA65 CAR
<div> <div>×</div> <div>✓</div> </div>	

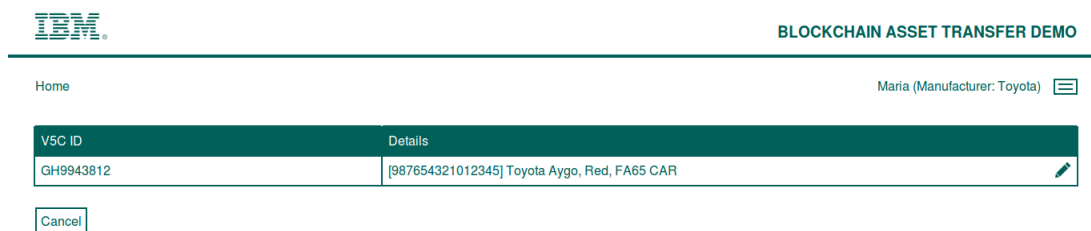
6. Note that each change is treated as a single transaction so multiple transactions happened when multiple fields are being edited. Once all the changes have been updated click "OK":




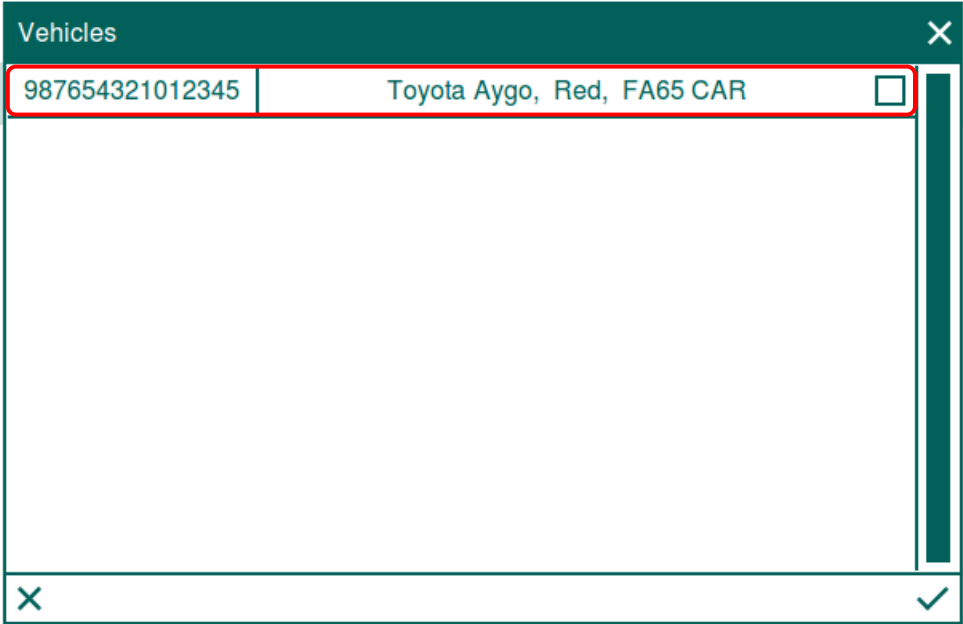
7. Dismiss the Update Complete message:



8. The list of Vehicle Templates in the Update view will now show the completed Vehicle Template:



3.3.1. Verify the Manufacturer can control the new asset

1.	From the Demo Main Menu, click the “Manufacturer -> Dealership” link:
2.	<div>The page will initialise the user as Martin from Alfa Romeo so click on the three bars in the top right and click on Toyota to switch the user.</div> <div></div>
3.	<div>Click the plus sign in the Vehicles box to show which vehicles the manufacturer can control, The updated Vehicle Template should now show in the list:</div> <div></div>

3.4. Scenario: Transferring Multiple Vehicles

In the next section you will transfer multiple vehicles from the Dealership Beechvale Group to the Lease Company LeaseCan.

1. From the Demo Main Menu, click the “Dealership -> Lease Company” link:
2. In the list of vehicles under the Dealership’s control, select all the vehicles:

The screenshot shows a modal window titled 'Vehicles' with a close button (X) in the top right corner. It contains a table with three rows of vehicle information. Each row has a vehicle ID, a description, and a checkbox. All three checkboxes are checked and highlighted with red boxes. A red checkmark in a circle is visible in the bottom right corner of the modal, indicating successful selection.

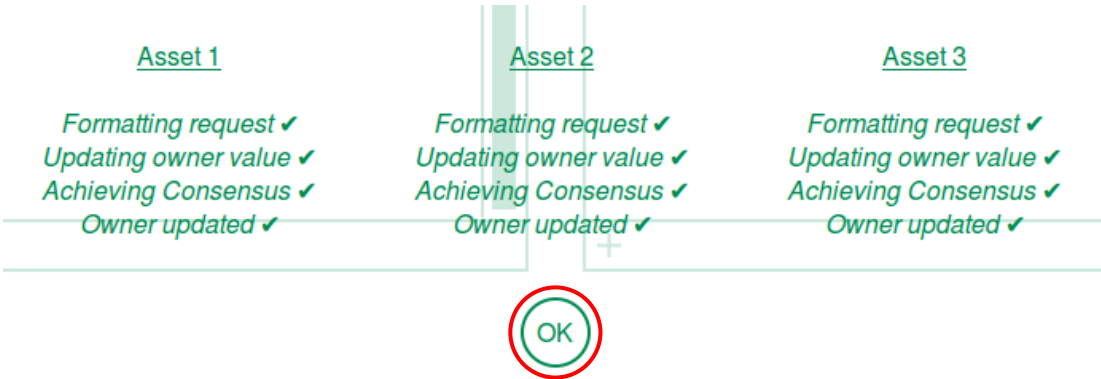
Vehicle ID	Description	Selected
549523556856725	Jaguar F-Type, Red, HE16 WDZ	<input checked="" type="checkbox"/>
523447019546831	Land Rover Defender, Silver, EY16 FRV	<input checked="" type="checkbox"/>
948881310167423	Toyota Celica, Silver, DG16 FVG	<input checked="" type="checkbox"/>

3. The cars appear in the Vehicles box. Use the plus sign in the Lease Company box to add LeaseCan:

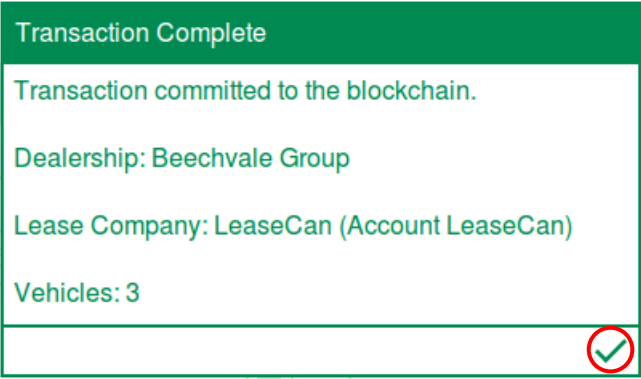
When complete click the Transfer Assets button:

The screenshot shows the main interface of the 'BLOCKCHAIN ASSET TRANSFER DEMO'. At the top, there is an IBM logo and the title 'BLOCKCHAIN ASSET TRANSFER DEMO'. Below the title, there is a navigation bar with 'Home' and 'Deborah (Dealership: Beechvale Group)'. The main content area is divided into two panels. The left panel, titled 'Vehicles', shows a list of three vehicles (Jaguar F-Type, Land Rover Defender, and Toyota Celica) with a red box around the list. The right panel, titled 'Lease Company', shows a list of one company (LeaseCan - Identity (LeaseCan)) with a red box around the list. At the bottom of the interface, there is a 'Cancel' button on the left and a 'Transfer Assets' button on the right, both highlighted with red boxes.

4. Note the window now displays status for both assets. Wait for the Consensus Achieved messages for both assets to appear, then click OK:



5. Dismiss the Transaction Complete message, note the number of vehicles is 2:



3.5. Verify the Create, Update & Transfer Multiple Scenarios

In this section you act as the Regulator to verify the above scenarios in the Regulator View.

1. From the demo main menu, click the Regulator View link.

2. Note the above four scenarios in the log:
 1. **Create** Vehicle Template,
 2. **Transfer** Vehicle Template,
 3. **Update** Vehicle Template (logged as 5 separate events)
 4. **Transfer Multiple** Vehicles.

Note also the address in the Update entries match the address you noted earlier.



BLOCKCHAIN ASSET TRANSFER DEMO

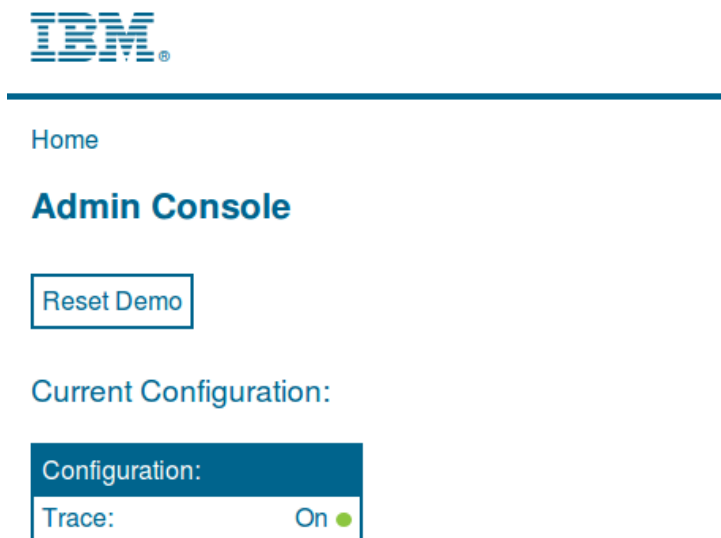
[Home](#)

Ronald (Regulator: DVLA)

[UP7510465]	Transfer: Beechvale_Group → LeaseCan	[549523556856725] Jaguar F-Type, Red, HE16 WDZ	18/03/2016 14:21
[XE5173356]	Transfer: Beechvale_Group → LeaseCan	[523447019546831] Land Rover Defender, Silver, EY16 FRV	18/03/2016 14:21
[WR8143857]	Transfer: Beechvale_Group → LeaseCan	[948881310167423] Toyota Celica, Silver, DG16 FVG	18/03/2016 14:21
[GH9943812]	Update: Toyota	VIN: 0 → 987654321012345	18/03/2016 13:58
[GH9943812]	Update: Toyota	Make: UNDEFINED → Toyota	18/03/2016 13:58
[GH9943812]	Update: Toyota	Model: UNDEFINED → Aygo	18/03/2016 13:58
[GH9943812]	Update: Toyota	Colour: UNDEFINED → Red	18/03/2016 13:58
[GH9943812]	Update: Toyota	Registration: UNDEFINED → FA65 CAR	18/03/2016 13:58
[GH9943812]	Transfer: DVLA → Toyota	Vehicle Template	18/03/2016 13:26
[GH9943812]	Create: DVLA	Create V5C	18/03/2016 12:59
[DA6060712]	Scrap: Cray_Bros_(London)_Ltd	Scrap V5C	18/03/2016 12:56
[DA6060712]	Transfer: LeaseCan → Joe_Payne	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 12:55
[DA6060712]	Transfer: Joe_Payne → Cray_Bros_(London)_Ltd	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 12:55
[DA6060712]	Transfer: Alfa_Romeo → Beechvale_Group	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 12:54
[DA6060712]	Transfer: Beechvale_Group → LeaseCan	[880352730316924] Alfa Romeo MiTo, Blue, NL16 DTU	18/03/2016 12:54
[ZE3286321]	Transfer: Joe_Payne → Cray_Bros_(London)_Ltd	[720965981630055] Toyota Yaris, Red, QD65 YKR	18/02/2016 14:41
[ZE3286321]	Transfer: Beechvale_Group → LeaseCan	[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

Appendix – The Admin Console

On the Main Menu there is a link to a demo “Admin Console” which provides various features.



The admin console provides the following main functions:

1. **Reset Demo.**

This button will stop and restart the blockchain technology and reset the blockchain to a point in time.

2. **Toggle Trace on and off.**

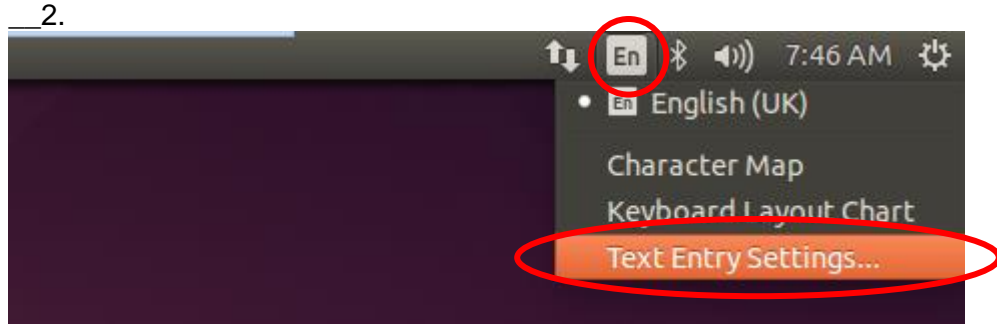
The IBM blockchain Demo has implemented a tracing feature to enable problem determination. Trace entries are written to a `trace.log` file in
“/home/Documents/Demo/Server_Side/logs”


Keyboard Language Change

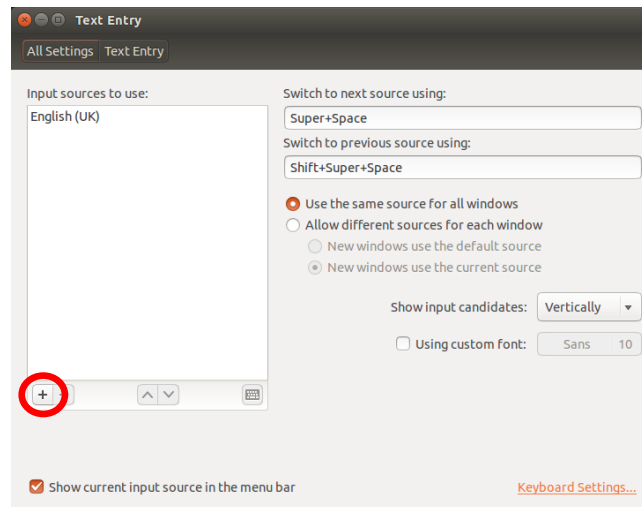
Appendix A. Keyboard Language Change

To change the keyboard language to enable you to use foreign laptops follow these steps:

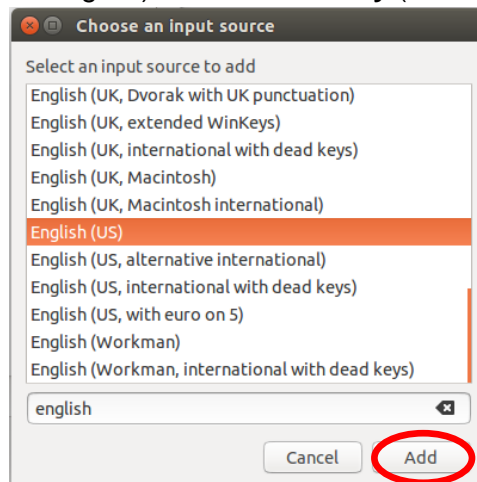
- __1. Click on the  icon in the top right & select **Text Entry Settings...**



- __3. Select the  symbol

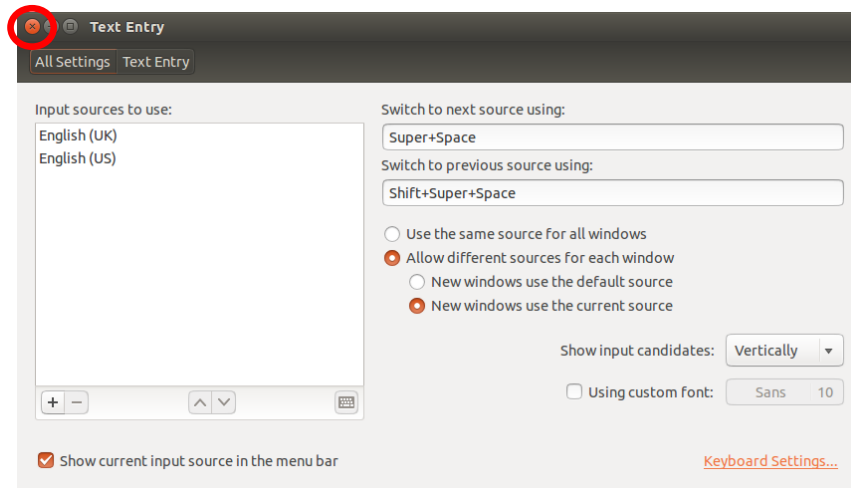


- __4. Type your **Language** (E.G. English) and then **country** (E.G. US)

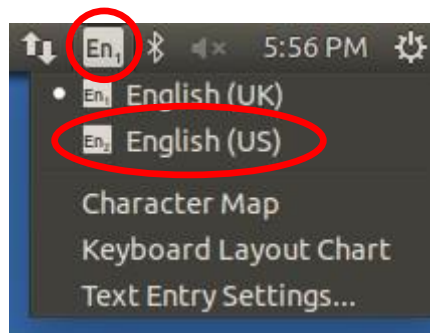


- __5. Select the appropriate keyboard and click 'Add'

__6. **Close the Settings box**



__7. **Select the 'EN' in the top right of the screen and select your new keyboard**



Your keyboard is now ready to use

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