



Ford Motor Company



## Design Change

### China CDX707 DAT Subscription SYNC+ IVI Enrollment and Unenrollment

Version 1.0

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Ford Motor Company

## 1. Revision History

Rev. (revision)	Author	Description	Section	Date
0.1	Kevin Ji, Ianna Hong	Initial Draft	All	4/21/2022



## 2. Project Background

Ford is building up rich portfolio of products in Connected Consumer and Connected Vehicle product offerings for the China Market. In order to provide best class subscription experience to our customers, Ford is looking at offering Drive Assistance Technology(DAT) subscription on CDX707 to showcase advance technology, improve relevance of tech leadership, as well as create new business model of cash flow opportunity.

Currently assumptions of DAT subscription offering to CDX707 owner includes Advanced Driver Assist (ADA) and Fully Automatic Parking Assist (APA) . The overall DAT subscription solution has been designed in such a way requires SYNC+ HMI changes according subscription enrollment and unenrollment customer experience.

## 3. Project Scope

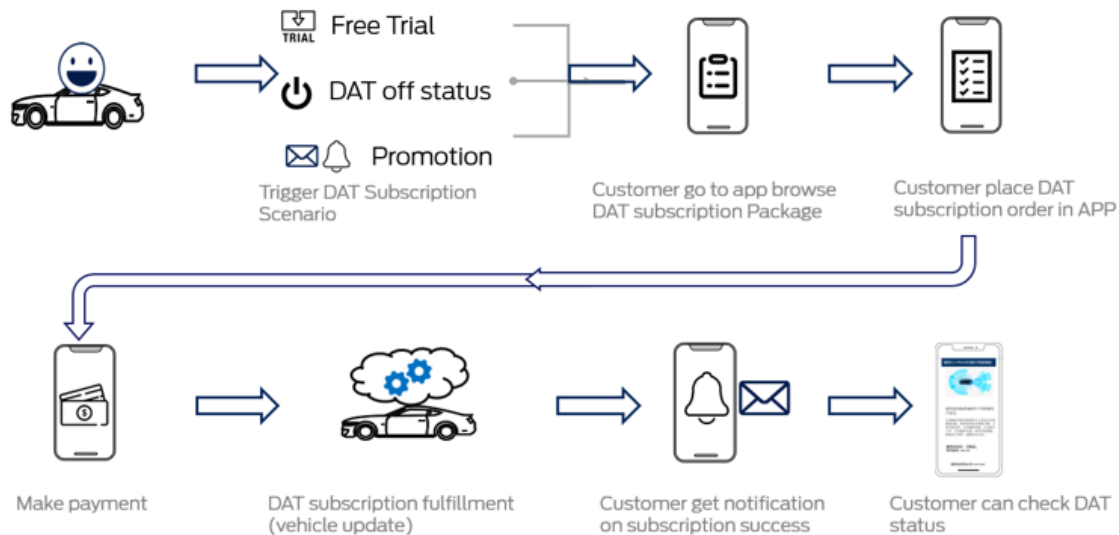
Currently assumptions of DAT recurring subscription offering to CDX707 owner includes Advanced Driver Assist (ADA) and Automatic Parking Assist (APA). The overall DAT subscription solution has been designed in such a way requires SYNC+ HMI changes according subscription enrollment and unenrollment customer experience. Product Offering and Mix as below:

	100	101	102	103	104
Free Trial	3 months	3 months	3 months	lifetime	lifetime
Feature to subscribe after free trial	- ADA - APA	- ADA - APA	- ADA - APA		

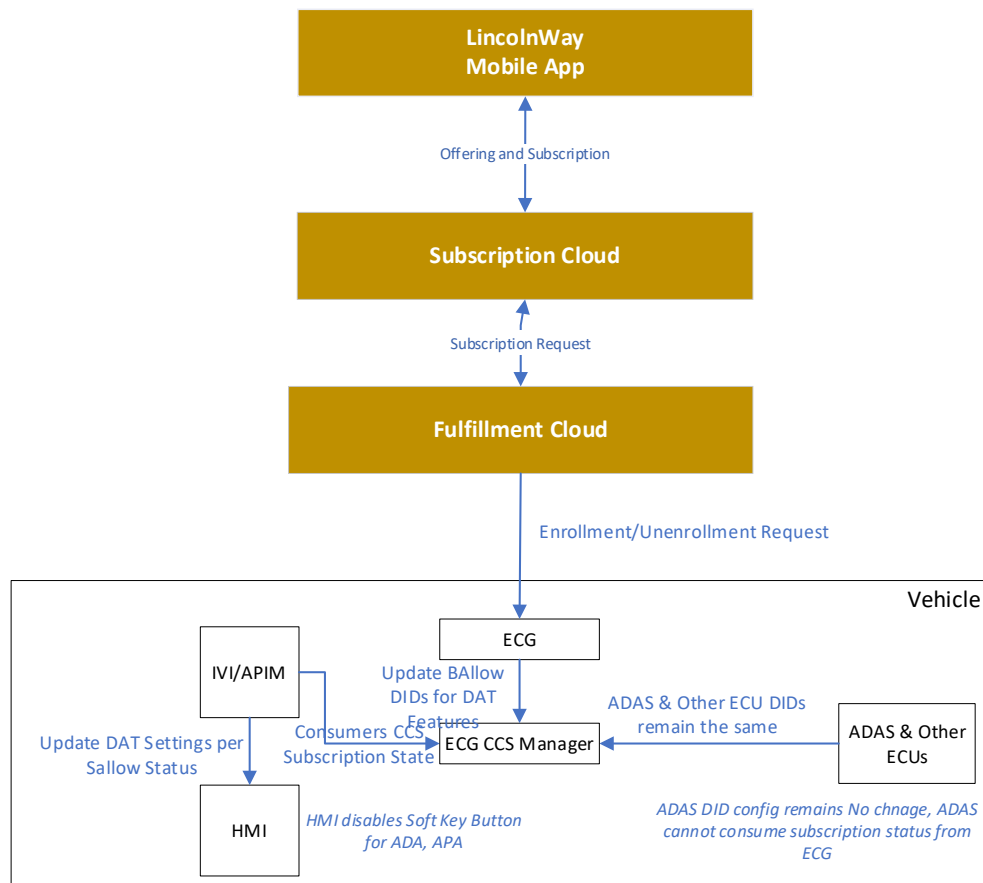
- 2 DAT packages to be purchased: **ADA & APA for CDX707 100/101/102 Trim level**
- Enroll and unenroll **ADA/APA** feature by changing SYNC+ HMI setting.



### 3.1. Highlevel Subscription Design and Flow:



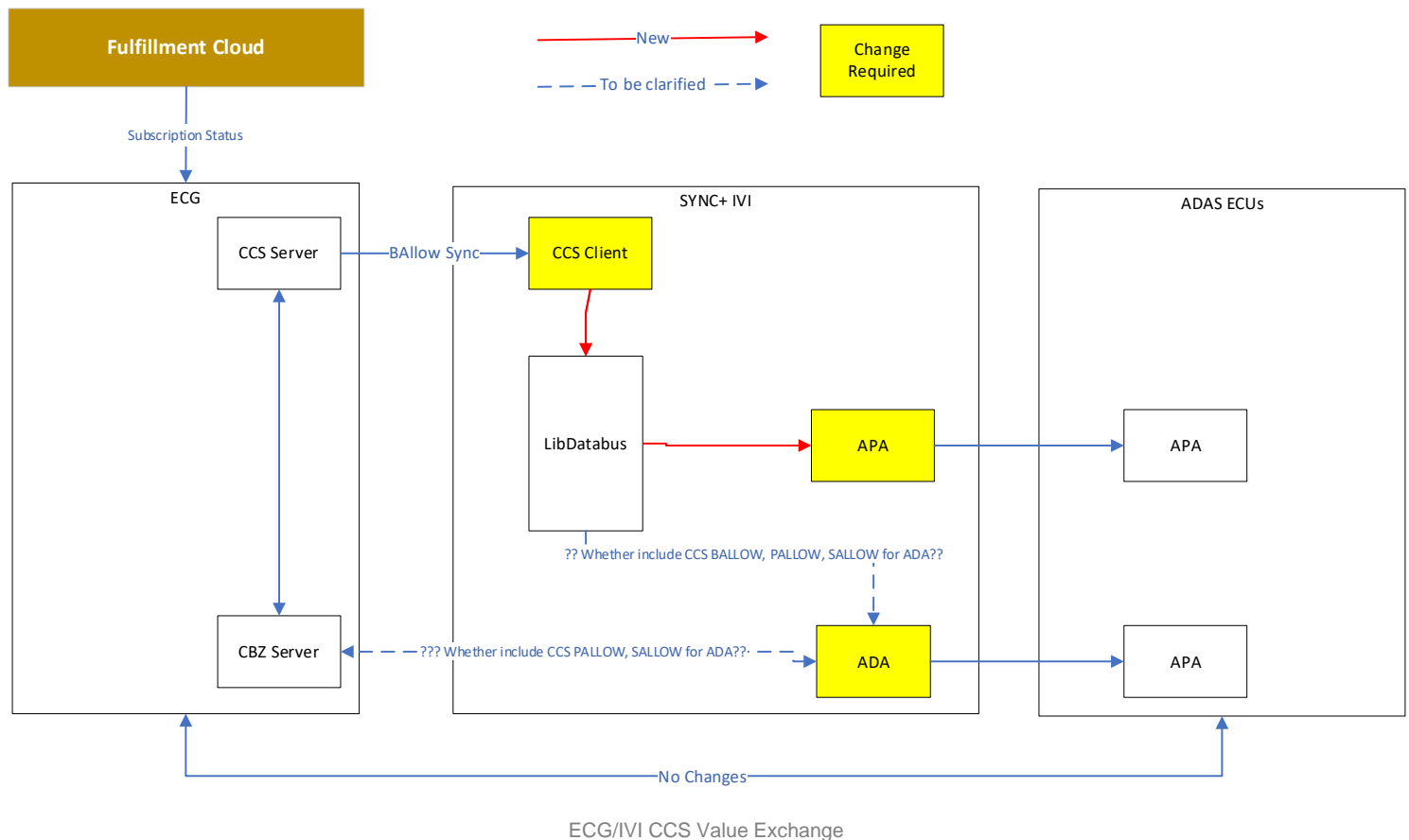
DAT Subscription User Journey



DAT Subscription Integration Flow



- SYNC+ HMI setting is based on **ADA/APA** individual Customer Connectivity Settings(CCS) **BAllow** value from Ford Cloud, and which are broadcast from ECG and consumed by IVI/APIM
- SYNC+ IVI CCS client needs to send **ADA/APA** IVI application with updated BAllow.
- **ADA/APA** IVI application should consume CCS feature state (BAllow=1/0) , then update SYNC+ DAT HMI setting at next ignition cycle when SYNC+ IVI returns from sleep mode
- There is no ADAS and Other ECUs updates required for both subscription enroll and unenroll process.



- **ADA/APA's CCS Sallow value and enrollment status mapping as below:**

FEATURE code	CCS Feature ID	ECG DID (Enrolled)	ECG DID (Unenrolled)	CCS SYNC failure
ADA	69	DE17 start byte 3, start bit 7:1	DE17 byte 3, start bit 7:0	CCS cannot get DID values
APA	109	DE17 start byte 12, start bit 7:1	DE17 start byte 12, start bit 7:0	CCS cannot get DID values



### 3.2. APIM/IVI Enrollment Functional Requirement

#### 3.2.1. ADA & APA for 707 100/101/102 Trim

- 2.2.1.1 When ECG receives Vehicle Configuration Command from cloud to enroll **ADA & APA for 707 100/101/102 trim**, it shall send Vehicle Configuration Command Response (acknowledgment) and process the request to enable **ADA (Feature ID 69) and APA (Feature ID 109)**.
- 2.2.1.2 If the request to enable **ADA (Feature ID 69) and APA (Feature ID 109)** is successfully processed by ECG, ECG shall send VCC response alert as success.
- 2.2.1.3 If ECG is not able to process the request to enable **ADA (Feature ID 69) and APA (Feature ID 109)** successfully then ECG shall send Vehicle Configuration Command response alert as failure.
- 2.2.1.4 ECG CCS manager shall publish the latest **ADA (Feature ID 69) and APA (Feature ID 109)** subscription status to SYNC+ and any other interested clients.
- 2.2.1.5 When **ADA (Feature ID 69) and APA (Feature ID 109)** are enrolled, then ECG DE17 shall show/broadcast as table below, and APIM/IVI should consume CCS subscription state (SAllow=1), then update SYNC+ DAT HMI setting at next ignition cycle(detail in next section).

FEATURE code	CCS Feature ID	ECG DID (Enrolled)
ADA	69	DE17 start Byte 3, start Bit 7:1
APA	109	DE17 start Byte 12, start Bit7:1

### 3.3.APIM/IVI Unenrollment Functional Requirement

#### 3.3.1. ADA & APA for 707 100/101/102 Trim

- 2.3.1.1 When ECG receives the Vehicle Configuration Command from cloud to unenroll **ADA & APA for 707 100/101/102 trim**, it shall send Vehicle Configuration Command Response (acknowledgment) and process the request to disable **ADA (Feature ID 69) and APA (Feature ID 109)**.
- 2.3.1.2 If the request to disable **ADA (Feature ID 69) and APA (Feature ID 109)** is successfully processed by ECG, ECG shall send VCC response alert as success.
- 2.3.1.3 If ECG is not able to process the request to disable **ADA (Feature ID 69) and APA (Feature ID 109)** successfully then ECG shall send Vehicle Configuration Command response alert as failure.
- 2.3.1.4 ECG CCS manager shall publish the latest **ADA (Feature ID 69) and APA (Feature ID 109)** subscription status to SYNC+ and any other interested clients. When **ADA (Feature ID 69) and APA (Feature ID 109)** is unenrolled, then ECG DE17 shall show/broadcast as table below, and APIM/IVI should consume CCS subscription state (BAllow=0), then update SYNC+ DAT HMI setting at next ignition cycle(detail in next section).



FEATURE code	CCS Feature ID	ECG DID (Unenrolled)
ADA	69	DE17 start Byte 3, start Bit 7: 0
APA	109	DE17 start Byte 12, start Bit7: 0

### 3.4. IVI/HMI Enrollment Functional Requirement

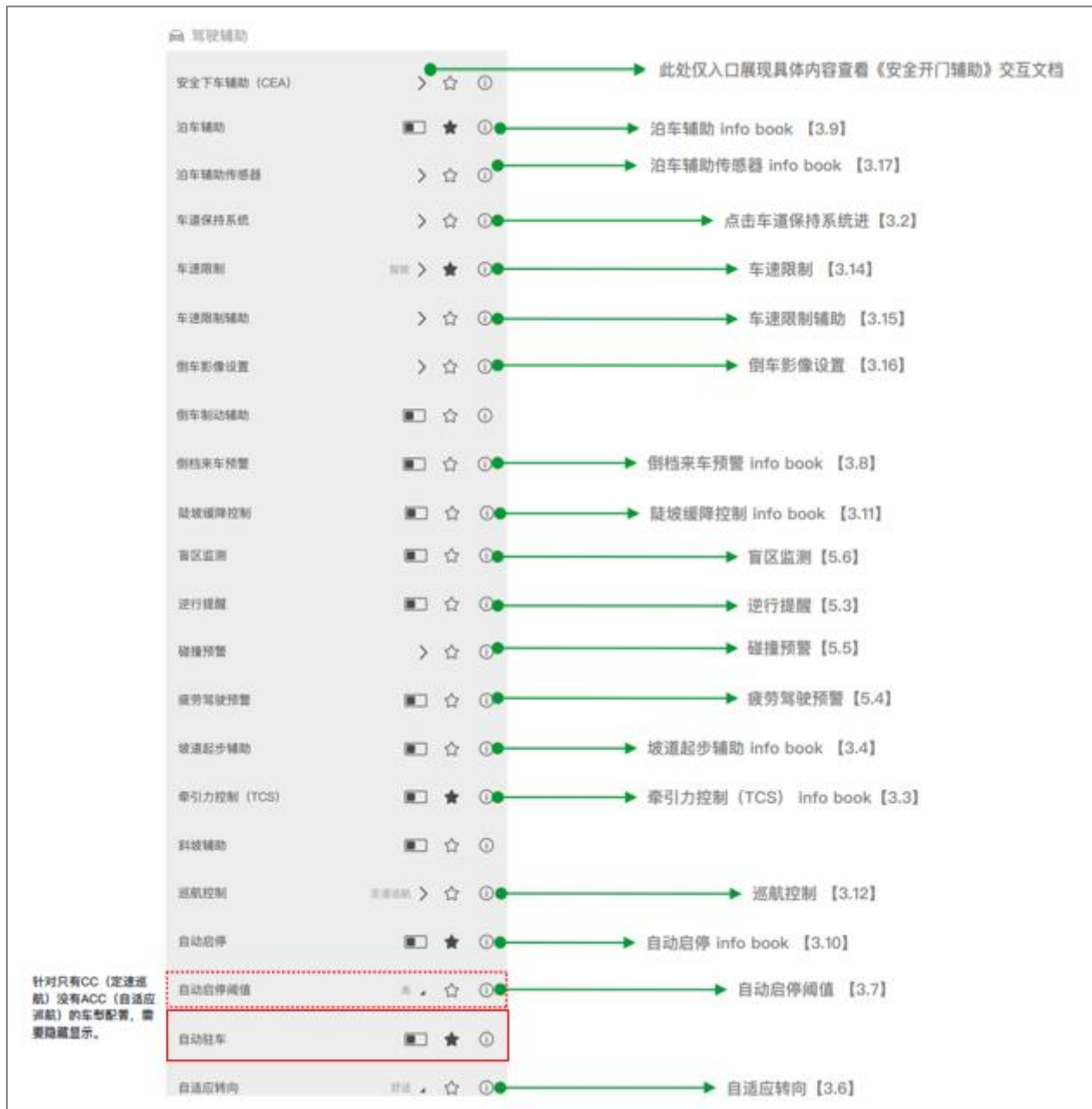
#### 3.4.1. ADA & APA for 707 100/101/102 Trim

- The client of CCS SYNC+ IVI needs to broadcast the status of subscription through lib-data-bus. The function module of **ADA and APA** in IVI need to get the setting of the CCS DID by themselves and display the regular function page of **ADA/APA** in next ignition cycle.
- “ActiveGlide” is the temporary market name for core ADA feature, subject to future changes

仅当选项设为：智能时，显示容限巡航设置项



ADA (“ActiveGlide 主动驾驶服务功能” switch will be on)



APA ("自动驻车" switch will be on)

- If the value of DID CCS in lib-data-bus is null/undefined, the HMI of **ADA** and **APA** functions in IVI should be same as the status of pervious ignition cycle.
- Popup message when CCS DID of any one of below 2 features is not null/undefined and changed from 0 (unenrolled) to 1(enrolled) see table below

FEATURE	DID (Previous IGN Cycle)	ECG DID (Current IGN Cycle)
ADA	DE17 start Byte 3, start Bit 7: 0	DE17 start Byte 3, start Bit 7: 1
APA	DE17 start Byte 12, start Bit7: 0	DE17 start Byte 12, start Bit7: 1

- Application Name: "林肯 Co-pilot 智行驾驶辅助"





- Popup message title: “状态更新”
- Text: “您的林肯 Co-pilot 智行驾驶辅助状态已更新。 **ActiveGlide** 主动驾驶辅助状态：[已开启]；**APA** 一键泊车辅助系统状态：[已开启]”
- (the parameter is displayed according to current IGN cycle DID)
- Button: “查看详情” click and navigate to feature detailed page
- Message level: 4

### 3.5. IVI/HMI Unenrollment Functional Requirement

- The client of CCS IVI need broadcast the status of subscription through lib-data-bus. The function module of **ADA** and **APA** in IVI need to get the setting of the CCS DID by themselves and display relevant HMI page changes (see requirements on 3.5.1/3.5.2/3.5.3) in the next ignition cycle.
- “ActiveGlide” is the temporary market name for core ADA feature, subject to future changes

#### 3.5.1. ADA

- 3.5.1.1. Remove “**ActiveGlide**主动驾驶辅助功能” switch
- 3.5.1.2. Remove “激活提示” switch (TBC)
- 3.5.1.3. Add “车道居中保持” switch (TBC)
- 3.5.1.4. Add text  
“已取消订阅  
前往林肯之道 App购买驾驶辅助升级包以激活此功能”

仅当选项设为：智能时，显示容限巡航设置项





- 3.5.2.1. Remove “自动泊车” switch
- 3.5.2.2. Do not display any alert information under APA button
- 3.5.2.3. Add text

前往林肯之道App购买驾驶辅助升级包以激活此功能”





- If the value of DID CCS in lib-data-bus is null/undefined, the HMI of **ADA/APA** functions in IVI should be same as the status of pervious ignition cycle.
- Popup message when CCS DID of any one of below 2 features is not null/undefined and changed from 1 (enrolled) to 0 (unenrolled) see table below

FEATURE	ECG DID (pervious IGN Cycle)	ECG DID (Current IGN Cycle)
ADA	DE17 start byte 3, start bit 7: 1	DE17 start byte 3, start bit 7: 0
APA	DE17 start byte 12, start bit 7: 1	DE17 start byte 12, start bit7: 0

- Application Name: “林肯 Co-pilot 智行驾驶辅助”
- Popup message title: “状态更新”
- Text: “您的林肯 Co-pilot 智行驾驶辅助状态已更新。 **ActiveGlide 主动驾驶辅助状态** : [已关闭] ; **APA 一键泊车辅助系统状态** : [已关闭]”
- (the parameter is displayed according to current IGN cycle DID)
- Button: “查看详情” click and navigate to feature detailed page
- Message level: 4

#### 4. Failure Mode

- If CCS SYNC failed during the current IGN cycle, the SYNC+ IVI HMI setting of APA/ADA should be same as pervious IGN cycle
- If CCS Sync failed, related push notice will be presented on LincolnWay App, no additional error message requirement on SYNC+ IVI side.
- SYNC+ HMI change is based on the CCS subscription DID value from pervious IGN, per customer side, it may require several Key-on/Key-off operations which highly depends on CCS sync status.
- SYNC+ may take longer to process DAT feature HMI layout if there is a change on CCS subscription DID status