



DEVELOPER
PROGRAM

SDL FUNDAMENTALS

SDL HACKATHON
MWC AMERICAS 2017



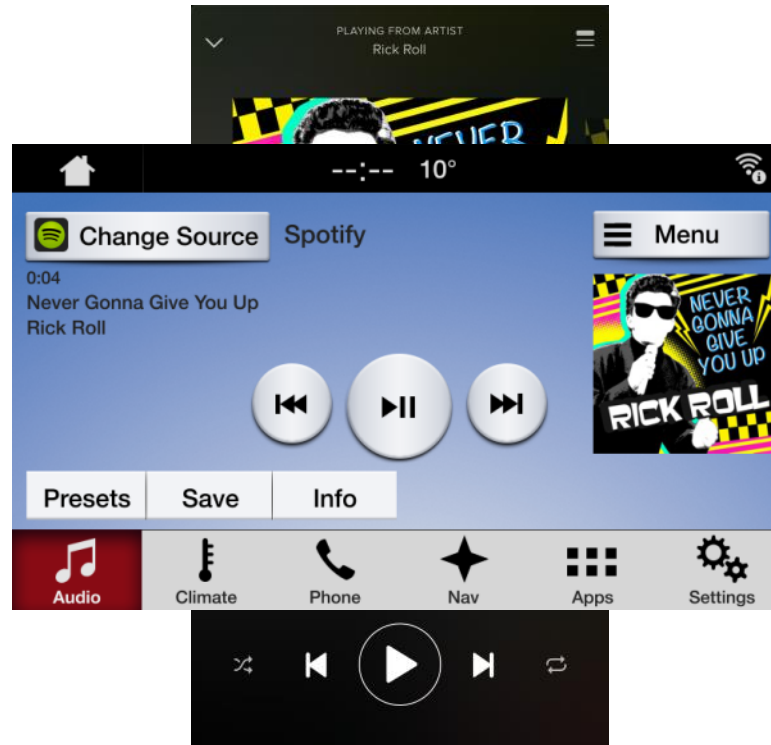
Go Further

AGENDA



- Concept
- SW Overview
- Remote Procedure Calls (RPC)
- Communication Flow
- Policies
- Additional Resources

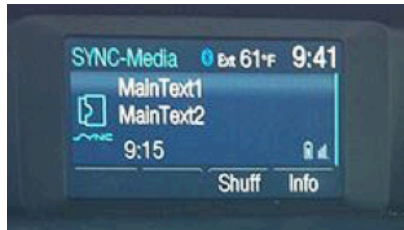
CONCEPT



SYNC SYSTEM COMPARISON

SYNC 1

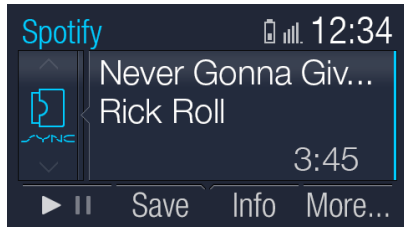
North America



- Two Line Display
- Non-Touch System
- No Vehicle Data
- No Graphic support
- No Softbutton support
- No Template support

SYNC 1.1

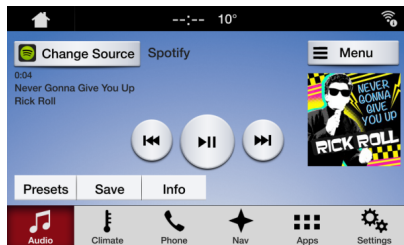
Global



- Four Line Scrollable Display
- Non-Touch System
- Basic Vehicle Data
- No Graphic support
- Softbutton support
- No Template support

SYNC 3

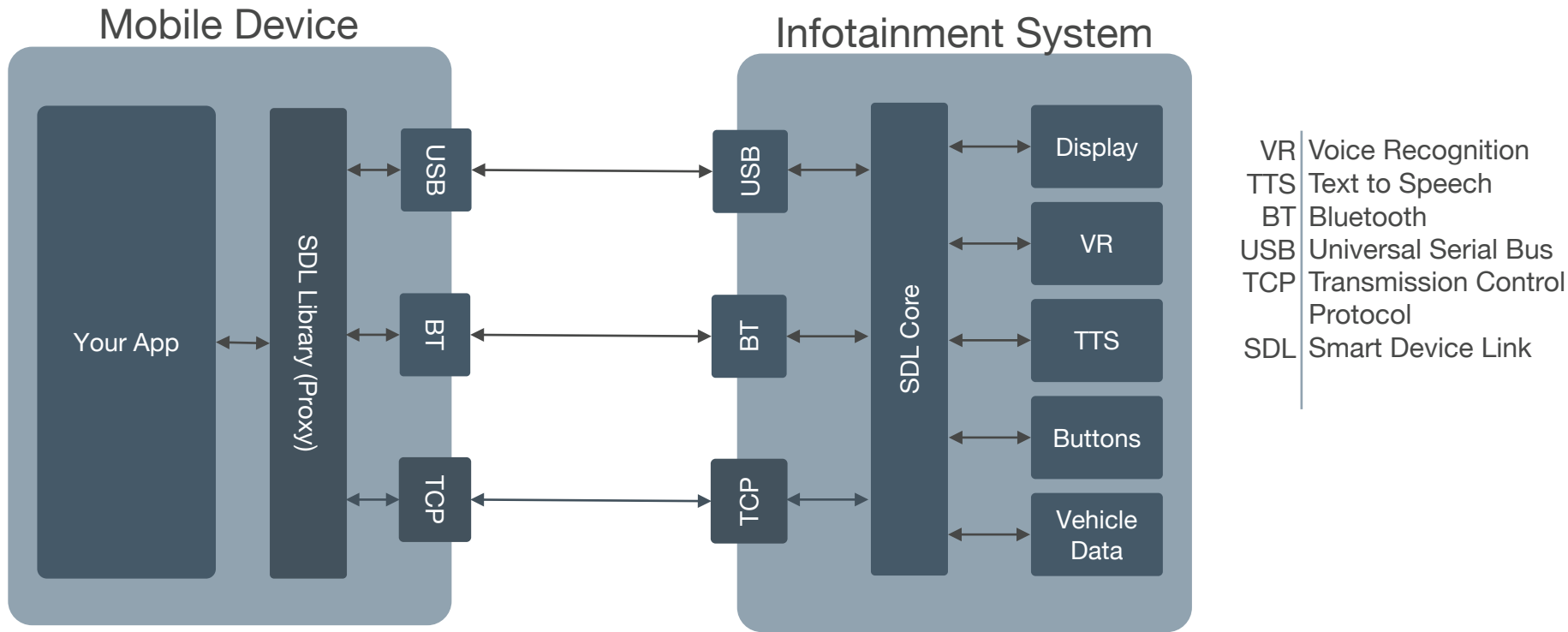
2015: North America
2016: Global



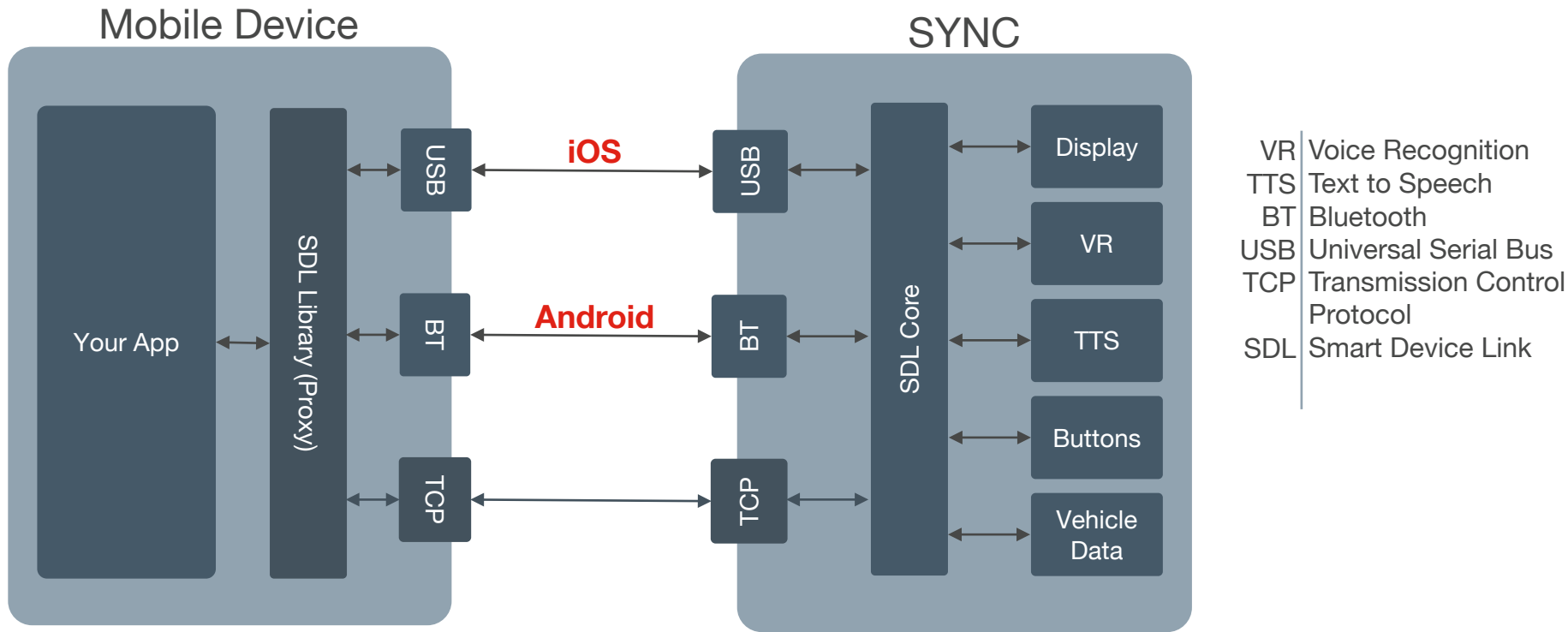
- Four Line Display
- Touch System
- Improved Vehicle Data
- Graphic support
- Softbutton support
- Template support

AppLink is Fords implementation of the open source technology SmartDeviceLink.

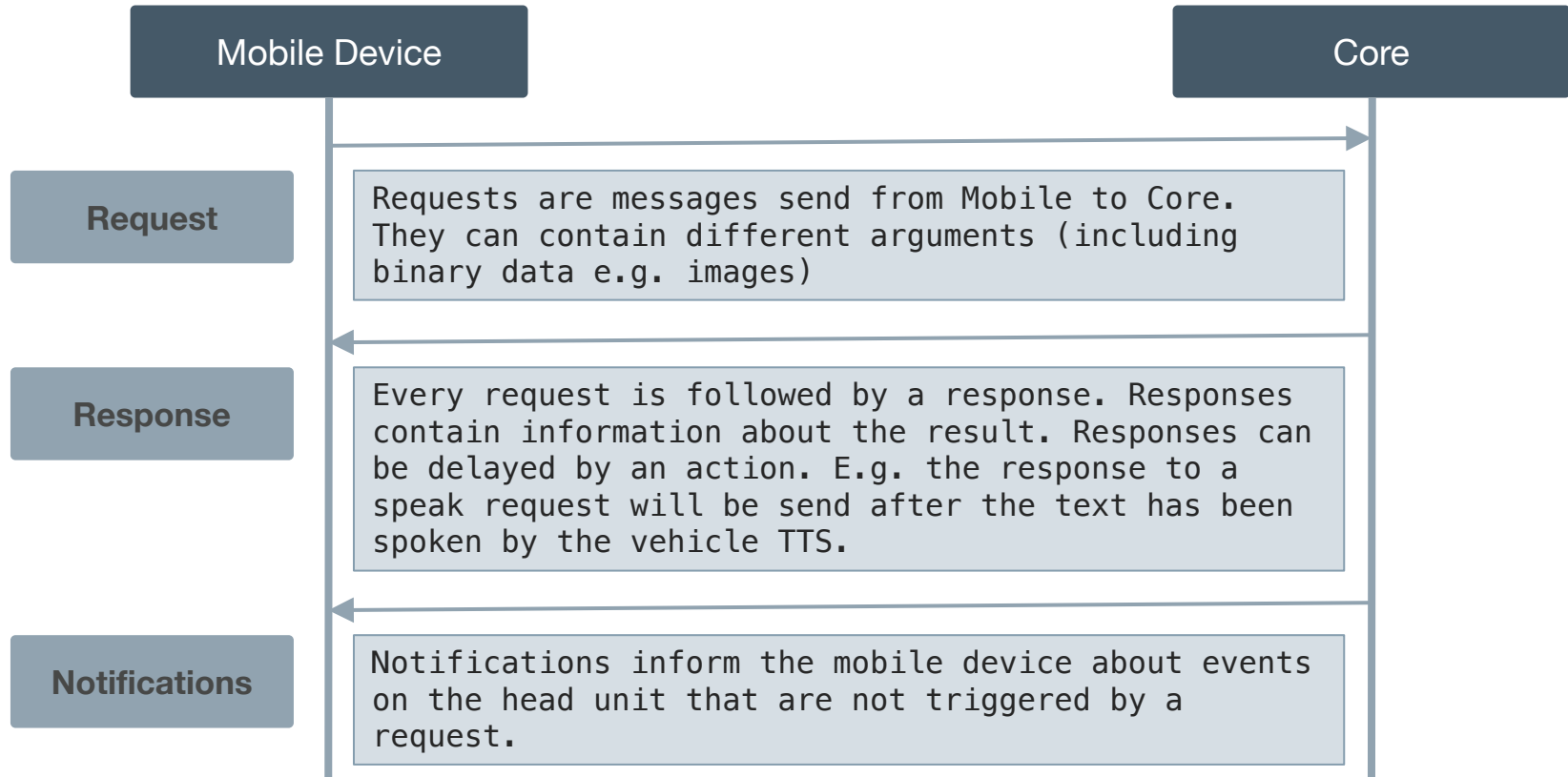
CONCEPT - SDL



CONCEPT – SYNC1/1.1/3



Remote Procedure Calls - Concept



Remote Procedure Calls - Connecting

Generic Request Information

Description

Every request has to contain a correlation ID. This ID will be included in the response. This enables the unique connection between Request and Response

Arguments

CorrID – Integer

Remote Procedure Calls - Connecting

Generic Response Information

Description

Every response includes at least four different items.

Arguments

CorrID – Integer
Success – Boolean
ResultCode – ENUM SDLResult
Info – String

Remote Procedure Calls – Setup

Requests

registerAppInterface

First RPC send by the App. Identifies the app and supplies the head unit with basic information.

putFile

PutFile is used to upload images to the head unit. Image formats that can be used: JPG, PNG.

SetAppIcon

SetAppIcon is used to select a previously uploaded image as the App icon.

addCommand

The App can fill a menu with it's interaction options. One AddCommand per menu item is required.

Remote Procedure Calls - Connecting

RegisterAppInterface Request

Description

RegisterAppInterface is the first RPC that an App sends to the head unit. It contains information about the App.

Arguments

```
appName - String  
ttsName - String  
vrSynonyms - <Array>String  
isMediaApplication - Boolean  
languageDesired - ENUM SDLLanguage  
appID - String  
[...]
```

Remote Procedure Calls - Connecting

RegisterAppInterface Response

Description

The RegisterAppInterface response contains a lot of information about the head unit.

Arguments

Language – ENUM SDLLanguage
DisplayCapabilities – Struct SDLDisplayCapabilities
ButtonCapabilities – Struct SDLButtonCapabilities
[...]

Remote Procedure Calls – Outputs

Requests

Show

Show will populate the template with information.

Speak

The speak RPC takes a string and uses the on-board TTS engine to speak it to the driver.

Alert

The alert will display a popup to the driver.

ScrollableMessage

Scrollable message takes up to 500 characters to be displayed to the user. (Restricted while driving)

SetDisplayLayout

SetDisplayLayout lets the app choose what template to be used.

Remote Procedure Calls – User Interaction

Requests

`createInteractionChoiceSet`

`CreateInteractionChoiceSet` enables the developer to create lists that are stored on the head unit.

`performInteraction`

`PerformInteraction` takes an array of ChoiceSet ID's to ask the user to choose one item. VR or Manual.

Notifications

`onCommand`

`OnCommand` is triggered when the user selects an command from the menu.

`onHMISStatus`

`OnHMISStatus` informs the App about the current status of its visibility.

Remote Procedure Calls – Vehicle Data

**PERMISSION
NEEDED ON TDK**

Requests

`getVehicleData`

`GetVehicleData` enables the App to receive one time vehicle data in the response.

`subscribeVehicleData`

`SubscribeVehicleData` enables the App to receive vehicle data in a fixed time interval.

Notifications

`onVehicleData`

Will be triggered in a fixed time interval when the user req. specific items via `subscribeVehicleData`.

Remote Procedure Calls – Interaction with embedded systems

Requests

**PERMISSION
NEEDED ON TDK**

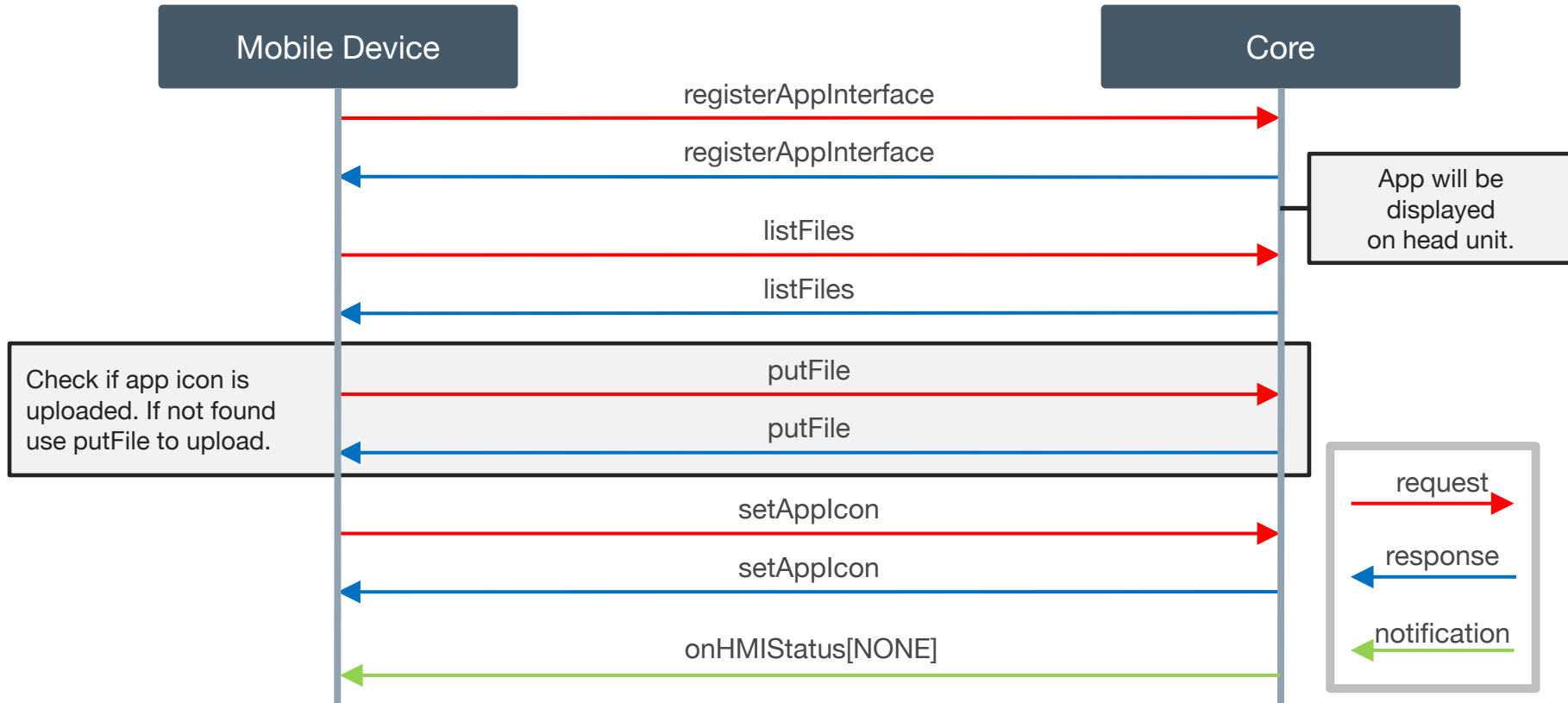
sendLocation

SendLocation enables the App to send a navigation location to the embedded navigation application.

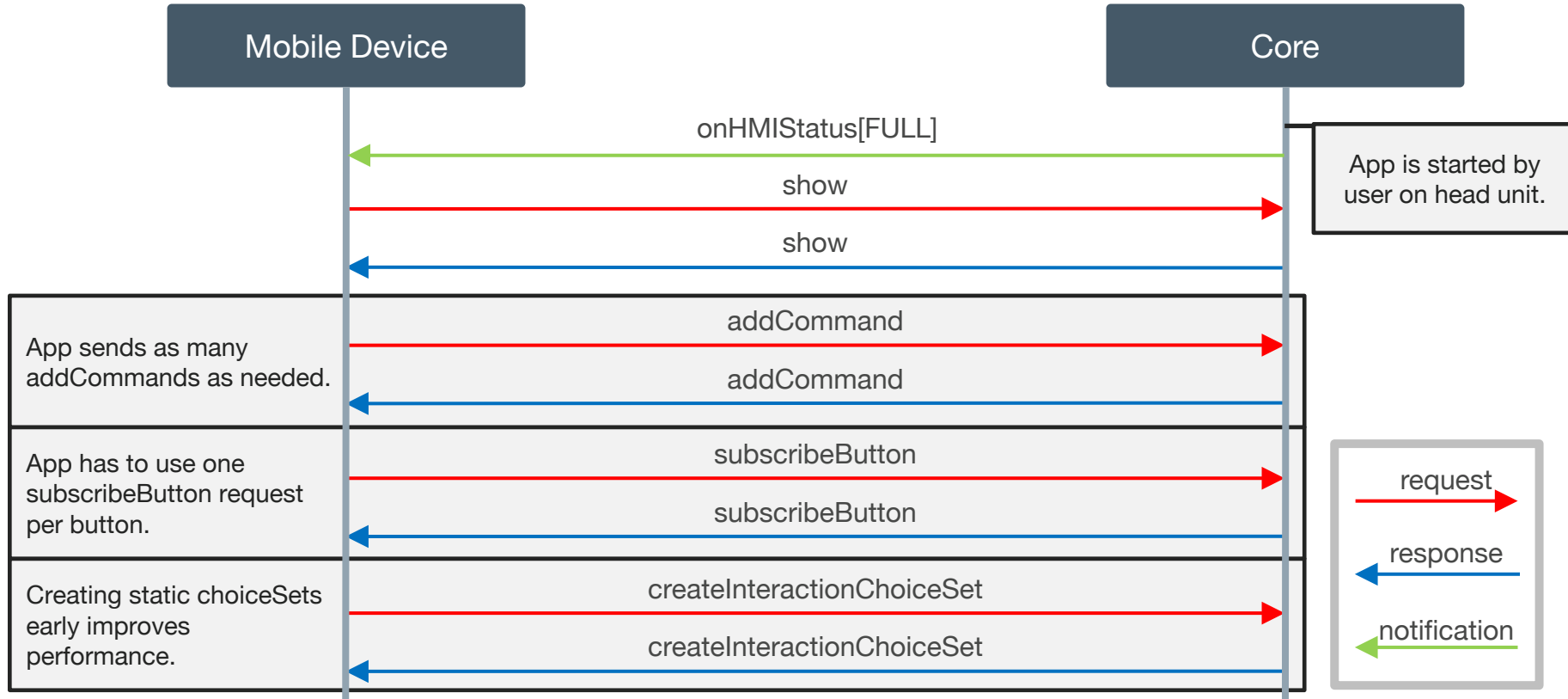
dialNumber

DialNumber allows the app to initiate a phone call from the head unit.

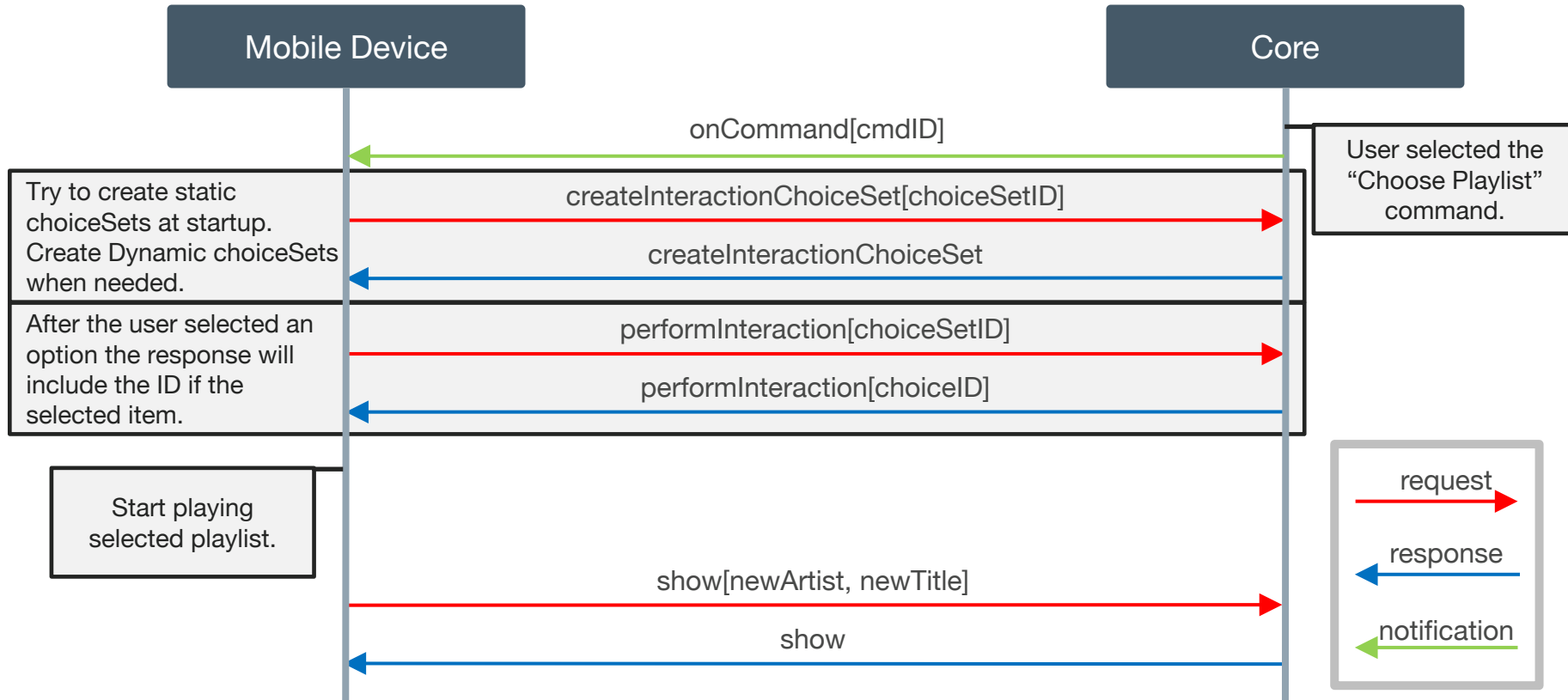
Sequence Diagram – Initial Connection



Sequence Diagram – User Starts the App



Sequence Diagram – Typical Interaction – User chooses playlist



APPLINK POLICIES

- Permissions allow Ford to control the access of Apps to specific requests.
- Following requests are restricted:
 - `getVehicleData`
 - `subscribeVehicleData`
 - `sendLocation`
 - `dialNumber`
- To obtain access the App needs a unique `AppID` and `AppName` provided by Ford.
- The user has to confirm the usage of these requests once.

**TALK TO THE
FORD TEAM**



RESSOURCES

| | |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ford Developer Page | developer.ford.com |
| SmartDeviceLink Page | smartdevicelink.com |
| iOS Guides | smartdevicelink.com/en/guides/iOS/getting-started/installation/ |
| Android Guides | smartdevicelink.com/en/guides/android/getting-started/ |
| iOS Library | github.com/smartdevicelink/sdl_ios |
| iOS Hello World | github.com/smartdevicelink/hello_sdl_ios |
| iOS Relay App | github.com/smartdevicelink/relay_app_ios |
| iOS RPC Builder | github.com/smartdevicelink/rpc_builder_app_ios |
| Android Library | github.com/smartdevicelink/sdl_android |
| Android Hello World | github.com/smartdevicelink/hello_sdl_android |
| Android RPC Builder | github.com/smartdevicelink/rpc_builder_app_android |
| Ford SYNC3 Emulator | developer.ford.com/pages/tools |
| Manticore - SDL Emulator | smartdevicelink.com/resources/manticore/ |