



DAT User Experience Improvement - Voice & DAT Feature Integration

China EPLM Technology & Features Strategy & Planning
Nov 2020



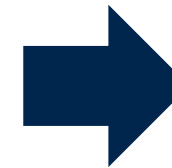
Customer Trust builds on Educational efforts and HMI feedbacks

Current Problem (Customer Research Result):



Customers do not understand how DAT works and therefore lack trust in the tech, a barrier to adoption

- **Lack of familiarity and understanding** of current DAT is a barrier to future adoption.
 - Consumers do not understand how the current tech works, leading to a lack of confidence
- **Experience with current DAT features** impact perceptions and consideration
 - Even with limited exposure, consumers project the benefits and frustrations to the entire category of DAT, giving each DAT a halo effect
 - Drivers with confidence in DAT are more likely to have a positive experience with trying a new feature
- **Belief and trust** in future experience is key to adoption
 - Trust in new DAT is required through safe exposure and educational efforts
 - HMI provides feedback which supports learning-crucial to building confidence and trust



Proposal:

- **Feature Education Offering**
- **Improve DAT user experience by Voice and HMI integration**
- **Provide most natural feedback to customer and support learning crucial**

- **It will be important to educate customer how the feature works and how the vehicle will be**
- **Integrate Voice with DAT feature to improve DAT feature user experience**
- **Get alignment on 'Voice Integrated DAT Feature' execution plan**

Voice & DAT Feature Integration Development Framework

Objective:

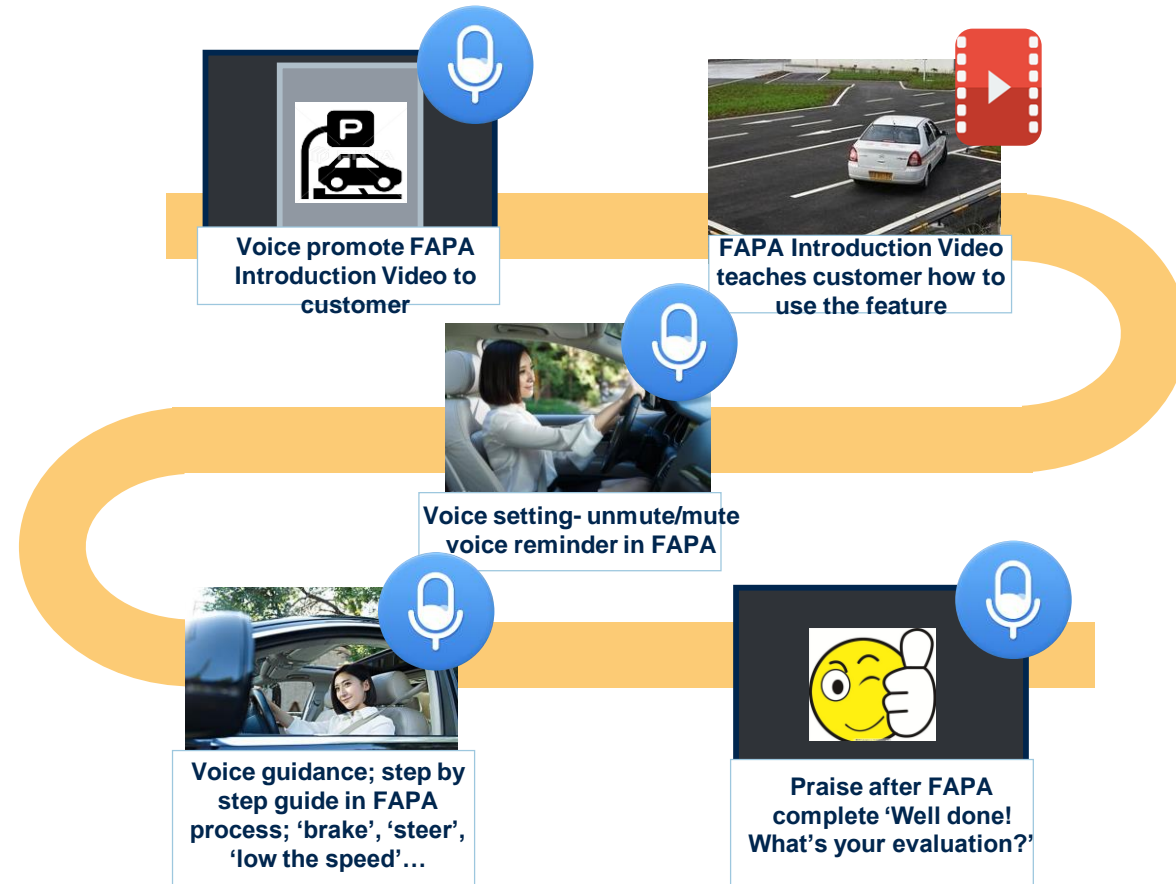
Develop differentiating, first on the market, customer-centric Voice integrated DAT features that supports corporate winning strategy and builds Ford/Lincoln ADAS Technology brand

Key Workstreams / Waves:

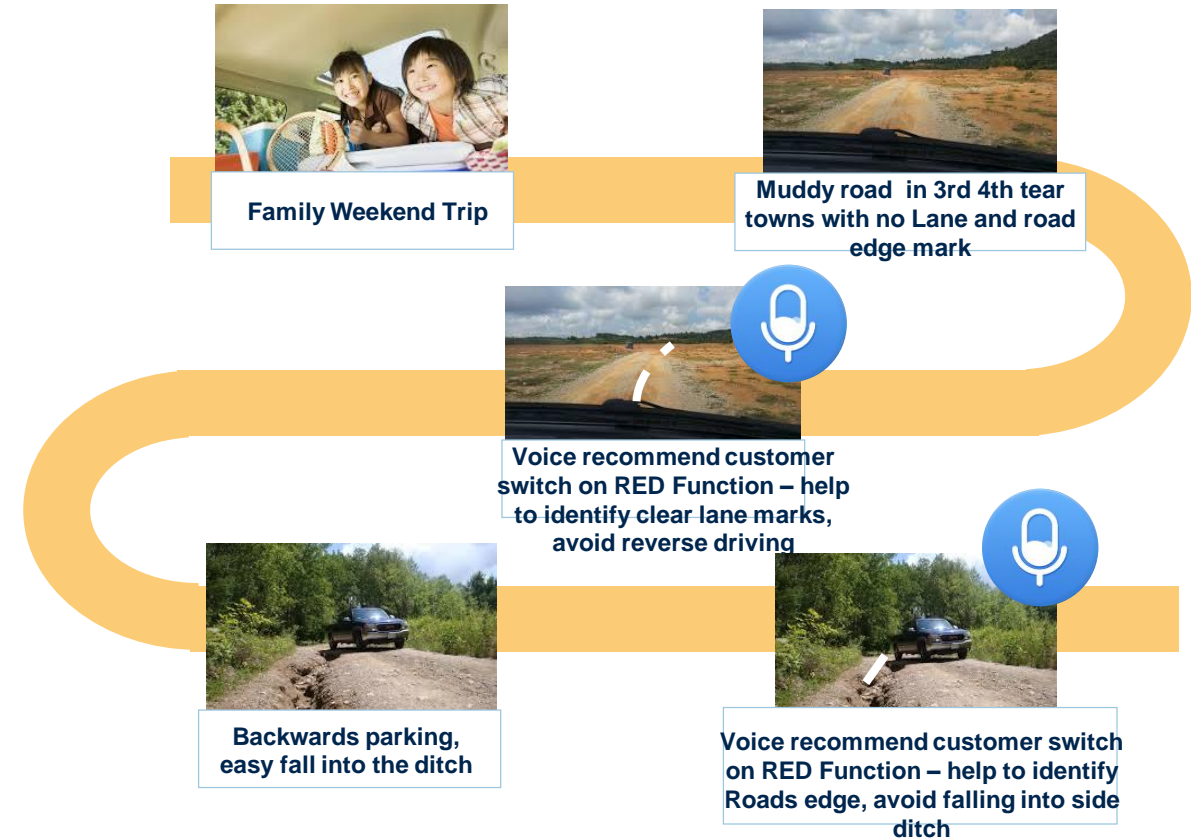
	Now 2020CY Near 2021-2023CY Far 2023CY +		
	Wave I	Wave II	Wave III
Program	U625	Cross-carline Ford & Lincoln Programs	Cross-carline Ford & Lincoln Programs
Scope	<ul style="list-style-type: none">Full Automatic Parking Assist /Semi Assisted Parallel Parking:- Voice promote E-Manual (Video Education)- Voice Guidance	<ul style="list-style-type: none">Adaptive Cruise Control with Stop & Go: Intelligent Traffic Situation Detection; Voice Recommend Customer Switch On 'ACC S&G'Lane Keeping System with Road Edge Detection: Intelligent Traffic Situation Detection, Voice Recommend Customer Switch On FeatureAutomatic Emergency Brake: Voice Remind Customer Switch On AEBIntelligent Adaptive Cruise Control: Voice Remind Speed LimitationIntersection Assist 1.0: Voice Remind Switch On AEBObjective Detect Camera View: Voice Recommend Customer Switch On ODCV To Detect Front View	<ul style="list-style-type: none">TBD (Active Drive Assist; Intersection Assist 2.0; Cross Traffic Alert)

Customer Journey

Wave I: Voice integrated Full Automatic Parking Assist



Wave II: e.g. Voice integrated LKS with Road Edge Detection



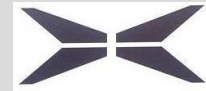
Benchmarking



Voice integrated NOP (Navigation of Pilot)

Launch Time: 26th Sep. 2020
OTA 2.7.0 version

- **Suggest Driver to handover in the case of driving to highway exit ramps**
- **Remind driver if there is lane merging into main lane**
- **Suggest driver to handover if NOP can not merge into/change lanes**



Voice integrated NGP (Navigation Guided Pilot)

Launch Time: 2021

- **Voice Remind customer to hand over in the case that vehicle itself can not Lane changing; Highway exit/entrance ramps; Merge into main lane**

- **Only start-up NIO & Xpeng announced similar features on the market, but mostly base on Navigation instead of DAT features itself**
- **Ford will be JV first, if we can launch 'Voice integrated DAT' Wave I in Apr. 2021**

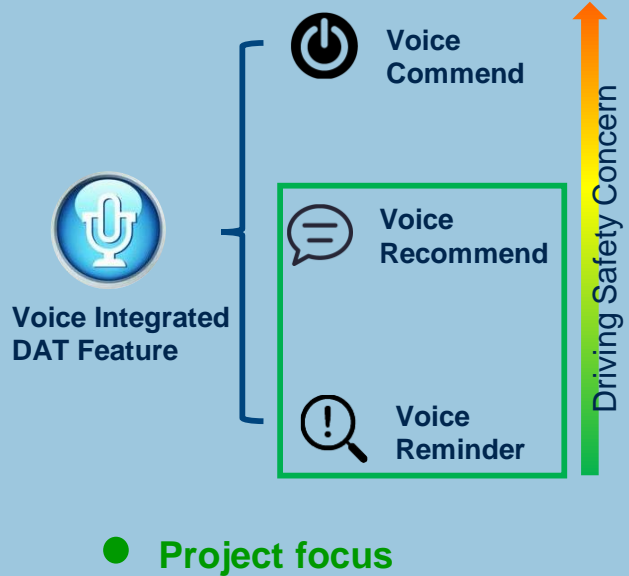
DAT Feature Annual Process Overview

1 Feature Request Collection

Draft New Feature Description
One Pagers



2 Break Into Experience Areas



3 Market Desirability Prioritization

Do they want this?
Desirability

5 Business Viability & Profitability Analysis

Should we do this?
Viability

4 Technical Feasibility Analysis

Can we do this?
Feasibility

★ **OUTPUT:** Most valuable Voice integrated DAT features (project feature content)

This feature prioritization process aims to generate a list of China market desired experience for Voice integrated DAT feature content

Market Desirability Prioritization

Input:

- Total 25 DAT 1.5 Level Features (Completion on the market)

Process:

- Tech planning & Cross-carline marketing review and discuss each feature experience with engineering partners, group ranked 25 features by 'Global DAT Desirability Criteria'
- Tech planning calculated total scores with global identified ration

*Global
Desirability
Criteria*

Output:

- Wave I: Deploy FAPA as pilot project on U625
- Wave II: Another 6 'H' ranked customer experience

Global Desirability Criteria

- Overall Customer Impact
- Competitive Gap / Customer Demand
- Customer Reach
- Strategic Importance
 - Corporate priorities
 - Tech synergies
 - Business growth and/or Regional need
 - Communications opportunities

Voice Integrated DAT Feature Desirability Prioritization Top 7

<i>Feature Name</i>	<i>Experience type</i>	<i>Priority</i>
ACC S&G	Voice Recommend	H
AEB	Voice Remind	H
FAPA	Voice Recommend / Guidance	H
iACC	Voice Remind	H
LKS w/ RED	Voice Recommend	H
Intersection Assist 1.0	Voice Recommend	H
ODCV	Voice Recommend	H

- Filter total 25 customer DAT experience by global desirability criteria to top 7 most desirable experience
- Move to next step, study on engineering feasibility and viability assessments

Voice Integrated DAT Feature Migration Plan

TBD

Program Code	2020 CY	2021 CY	2022 CY	2023 CY	2024 CY	2025 CY
CD391ICA	3/20	8/21 JL				
CD539ICA		11/20		10/22 JL		
U540		12/20		2/23 JL		
U625	3/20		1/22 JL			
CX482ICA		12/20		4/23 JL		
CX483		4/21		1/23 JL		
CX727		8/21		1/24 JL		
CD542		9/21		8/24 JL		
U554		11/21		1/24 JL		
U625ICA			1/22	12/23 JL		
CD764			1/22	1/25 JL		
U611ICA			1/22	12/23 JL		
CDX706				10/22		
CX483MCA				1/23		
CDX788				2/23		
CX771				2/23		
CDX707				2/23		
S650				3/23		
CDX747				6/23		
U611MCA				12/23		
U725					11/24	

Wave I

Wave II

Wave I J1: Apr. 2021
OTA for Post J1 Programs
Content: Voice integrated for FAPA/ SAPA

Wave II J1: Oct.2022
OTA for Post J1 Programs
Content: FAPA/ SAPA and 6 new features

Project Funding Proposals:

Define leading program to undertake feature development cost

Recommended

Wave I:	FAPA/SAPA (Full Automatic Parking Assist /Semi Assisted Parallel
Leading Program:	U625
Core Development:	About 0.35M \$
Follow Programs Average Application:	About 0.005M \$
Wave II:	Acc S&G;... (Adaptive Cruise Control with Stop& Go ...)
Leading Program: (Aligned With IVI Phases Leading programs)	CX727; CX788; CDX707
Core Development Undertaken Per Leading Program:	Per Leading Program Average Undertake about 0.8M \$
Follow Programs Average Application:	Per Follow Program Average Application Fee about 0.035M \$

Next Step and Help Required

Next Step: Complete Engineering Feasibility and Viability Phase

- Continue Feature Design Feasibility Study (Technical solution, Lead time, Cost, Cyber Security, etc) with PD and feature owners
- Understand business value of top experiences, Marketing team's support is required for PVA assessment and program take rate, to build a well business case

Help Required: Project Funding and Resource

- **Project Funding:**
Define leading program to undertake feature development cost
- **PD Resource:**
 1. **Two Product Owners** are required to drive and respond to all related features implement circle
 2. Support needed for User Research to verify customer expectation and preference



Back Up

Voice integrated FAPA on U625 Projection Goal

Enhance the ADAS function by AI voice reminder & guidance

*3 Stages include at least 8 ADAS features optimization for the programs from Phase II to Phase V

*FAPA optimization is pilot for the others on U625c

ADAS 智驾提醒



Banma Benchmark ACC/TJA Example in 2021 MY

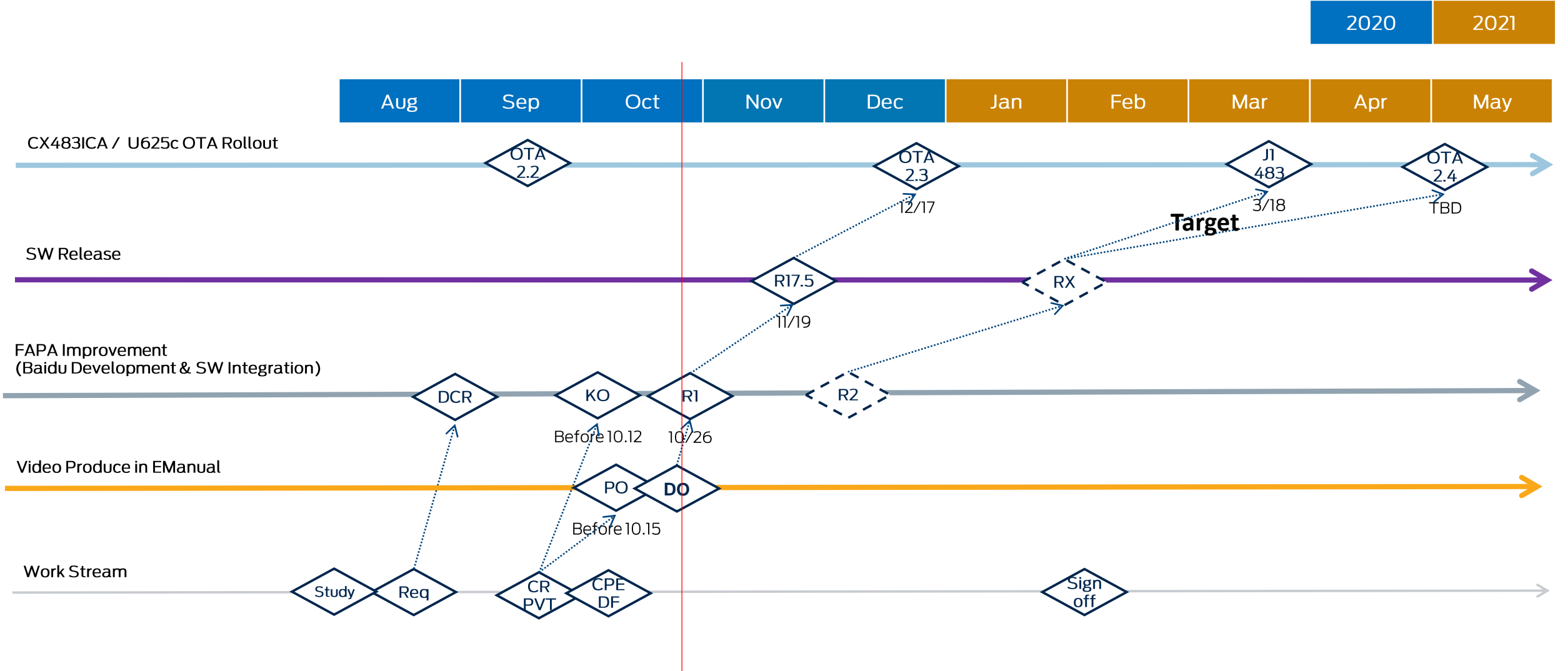
Ford Demo with Voice Reminder



U625 FAPA - Improvement Feature List

Feature Component	Improvement Condition & Description	Idea	Baidu Confirm	Confidence	Duration
VPA - AI Scene	the Functions not used for three months(ADAS)	#Other	TBD	Low	Long
VPA - AI Scene	Customer query fuzzy keyword and not found result	#Other	TBD	Low	Long
VPA - AI Scene	Users are bored, idle and need to wake up (DMS light)	#Other	TBD	Low	Long
VPA - AI Scene	hint after FAPA completed "Well Done ! What's your evaluation?"	#Other	Y	Mid	Mid
Emanual	Add FAPA introduction video	#1#2	Y	High	Short
Emanual	Add Entry to show all pictures of ADAS Function	#Other	Y	Low	Mid
Emanual	Feed back & Report issues	#Other	Y	Mid	Mid
Voice - Q&A	"Does my car have any autopilot features? " "How to use FAPA?"...	#3	Y	High	Mid
Voice - Command	"Start/Stop" in FAPA	#3	N	No	
Voice - Command	"Select mode" in FAPA	#3	N	No	
Voice - Setting	"Open/Mute Voice Reminder" in FAPA	#3	Y	High	Mid
Voice - Reminder	setp by step Reminder in FAPA "shift N""brake""steer"...	#3	Y	High	Short-Mid
Hard Key(Shortcut)	when speed > 40 remind "Please Slow Down..."	#3	Y	High	Short-Mid
Hard Key(Shortcut)	"FAPA has started. Please keep pressing..."	#3	Y	High	Short-Mid
Info Book	Description Improvement & Jump to Emanual	#Other	TBD	Mid	Mid-Long
Navigation	arriving at destination , remind"..."	#2	Y	High	Mid
FAPA	add Icon jump to Emanual	#1	Y	High	Short
FAPA	add button Skip/open voice reminder	#1	Y	High	Short

U625 FAPA Improvement Plan



Target U625c OTA2.4
Immediate benefit CX483ICA

Next Step

➤ **FAPA Improvement on U625c or CX483ICA**

- ☐ Waiting PVT check post-sale data feedback
- ☐ CPE DF meeting 10/XX/2020

➤ **Planning**

- ☐ Holistic improvement Scope and cross car line plan
- ☐ Funding Estimation

➤ **PD Program**

- ☐ Need a new Product Owner position to drive and respond for all related features implement circle
- ☐ Support need Implement User Research to verify customer expectation & preference

Desirability Criteria

UX & Customer Impact Rating

0	1	2	3	4	5	6	7	8	9
Nope	Um... What?	Maybe...	OK, if I knew about it..	Good, but..	Meets Needs	Exceeds Expectations	COOL	WOW	AMAZING
Doesn't add value to my life	Hard to Access, Hard to Understand	Limited Usefulness, Hard to Access	Useful feature but Hard to Access	Does What I Want, a bit hard to find out how	Does What I Want, When I Want It	Does What I Want, Intuitive, Easy	Surprise and Delight	Changes my Life	Leads Industry; Transforms the User Experience
	"Does Something"			+ "Seamless, Frictionless"			+ "Transforms my Life"		

Competitive Gap / Customer Demand Rating

DESCRIPTION	RATING SCALE	Description of Competitive Gap & Customer Demand	Additional Details (competitive assumptions futured for year of planned feature/service implementation date)
HIGH GAP/DEMAND	5	Ticket of entry and/or first to market	First to market OR addresses a known gap in the portfolio OR known customer dissatisfier (high impact)
Fairly High	4	75% of competitors expected to offer; high consumer interest	High demand for the feature, most competitors expected to offer OR known quality concern (med impact)
Medium	3	50% of competitors expected to offer; moderate consumer interest	Demand for the feature and about half of competitors are expected to offer
Low	2	25% of competitors expected to offer	Low demand, yet a small about of competitors expected to offer
NO	1	Competitors NOT expected to offer/No Gap or Demand for feature	No Gap – competitors not expected to offer and no customer demand

Customer Reach Rating

DESCRIPTION	RATING SCALE	# of Regions	# of Vehicle Lines	Directional Mix % (estimated take rate)	Type of Consumer / Usage
High – Broad Reach (beyond new vehicle sales)	5	All - Global	>75% of vehicle Lines	> 80%	All (incl. commercial, used, shared, competitive makes, etc.)
Fairly High	4	4+ Regions	>50% of vehicle Lines	> 60%	New Vehicle Buyers + Service Customers
Medium	3	3+ Regions	<50% of vehicles Lines	> 40%	New Vehicle Buyers (traditional in-vehicle experience)
Fairly Low	2	2 Regions	<50% of vehicle Lines	> 20%	
Low Niche	1	1 Region	<25% of vehicle lines	< 20% (e.g. limited deployment/ option)	

Strategic Importance Rating

Strategic Priority	Technology field Synergy	Business Growth	Regional / Market Specific Need	Mar Comms Opp
2	2	Yes	Yes	Yes
1	1	No	No	Negligible
2 = supports more than one SP, or Core to a specific SP	2 = multiple synergies: Connectivity, DAT, Lighting, Safety, etc	Yes = Specific business opportunity for revenue or profit growth directly tied to item (including value of associated data)	Yes = Unique , high priority need specific to a market or region which is NOT already reflected in Global Assessment	Yes = Tier 1 media opportunity (unique to Ford/Lincoln, first to market or first to segment)
1 = supports any SP	1 = touches more than one tech			
At least a 2 for SP or Tech synergy AND one or more "Yes" votes	5			
At least a 1 for SP or Tech synergy AND one or more "Yes" votes	4			
At least a 1 for SP or Tech synergy	3			
At least a 1 for Tech synergy	2			
No specific strategic lever	1			

Memo: Ratings of 4 or 5 are considered exceptions and should be backed by executive champion support at LL3 or LL2 level respectively, with documented rationale

Desirability Rating										
Level	Feature	Voice Integration			Total	Priority (H/M/L)	Potential Impact to	Addresses Gap / Customer Pull /	Customer Reach / # Impacted	Strategic Priority
		Voice Command	Voice Recommend	Voice Remind						
Pre-DAT	TSR			Speed Limit Voice Reminder	45	L	1	4	2	2
			Intelligent Detect Traffic Situation; Voice Recommend Customer Switch On ACC		90	H	5	5	5	3
	ACC S&G				40	L	1	3	2	2
	LKS									
	BLIS w/ CTA		Recommend Customer Switch On BLIS		55	M	3	3	3	2
	AEB			Voice Remind Switch On AEB	90	H	5	5	5	3
	EAPA				70	M	4	4	3	3
	RVC (Rear View Camera)				40	L	1	1	4	2
	SV Camera				40	L	1	1	4	2
	AHB (Auto High Beam)				35	L	1	1	4	1
DAT 1.0	ACC & LCA				35	L	1	3	2	1
	APA 2.0 (FAPA)		Voice Active Feature Education Video		100	H	5	5	5	5
	GFHB (Glare-free High Beam)				35	L	1	1	4	1
DAT 1.5	iACC			Voice Remind Speed Limit	90	H	5	5	5	3
	LKS w/ RED		Voice Recommend Switch On Function		85	H	4	5	4	4
	Blind Spot Assist 1.0 (LCWA)				35	L	1	1	4	1
	Reserve Brake Assist				45	L	4	1	3	1
	Intersection Assist 1.0			Voice Remind Switch On AEB	90	H	5	5	5	3
	ODCV		Voice Recommend Switch On Feature, Detect Front View		90	H	5	4	5	4

DAT Features Voice Integration Opportunity Study Example

Level	Feature	Bundle Required	Active Method	HMI/IVI Integration	Voice Integration	
					Voice Recommend	Voice Remind
Pre-DAT	TSR	Bundle 1+	One Button	Only presenting speed limit on central display		Speed Limitation Remind
	ACC S&G	Bundle 1X, 5+	One Button	Alert will presenting on cluster, in the case of front intersection happened to active AEB	Intelligent Traffic Situation Detection; Voice Recommend Customer Switch On 'ACC S&G'	—
	LKS	Bundle 1+	Voice promote E-Manual (Video Education) Voice Guidance	—	—	—
	BLIS w/ CTA	Bundle 1B+	1. BLIS - One Button (last memory method, will send customer warning, if BLIS is off) 2. CTA - default on method (Automatic switch on after active the vehicle)	Voice will disturb driver, since there is always vehicle in Blind spot, and many vehicles/passangers/bicycles crossed vehicle during reserving	Voice Recommend Customer Switch On BLIS	—
	AEB	Bundle 1+	CNCAP Switch locates in IVI 2nd level manuel; Default Switch On, there will be 8 seconds alarm if function is switched off	Audio alarm and flash on cluster/central display(4-5 hertz); Regal requires 400 hertz/second, alarm lasting 2 seconds	—	Voice Remind Customer Switch On AEB
	Parking Sensing	Bundle 0	Automatic switch on (Gear Shift on R)	Alarm available & Backup view in Red/Yellow/Green	—	—
	EAPA	Bundle 5P+	One Button(Driving safety concern, not recommend 'voice commend' function	—	—	—
	RVC (Rear View Camera)	Bundle 0	Automatic switch on (Gear Shift on R)	Alarm available & Backup view in Red/Yellow/Green	—	—
	SV Camera	Bundle 3C	Automatic switch on (Gear Shift on R)	Alarm available & Backup view in Red/Yellow/Green	—	—
	AHB (Auto High Beam)	Bundle 1	One Button	—	—	—
DAT 1.0	ACC & LCA	Bundle 1X, 5+	One Button	Alert will presenting on cluster, in the case of front intersection happened to active AEB	—	—
	LCA	Bundle 1X, 5+	One Button	Annoying to warning on central display	—	—
	ESA	Bundle 1X, 4, 5+	—	—	—	—
	PIB	Bundle 1+	—	—	—	—
	APA 2.0 (FAPA)	Bundle 5P+	One Button(Driving safety concern, not recommend 'voice commend' function	—	Voice promote E-Manual (Video Education) Voice Guidance	—
	GFHB (Glare-free High Beam)	TBD	One Button	—	—	—
DAT 1.5	iACC	Bundle 1X, 5+	One Button	Alert will presenting on cluster, in the case of front intersection happened to active AEB		Voice Remind Speed Limitation
	LKS w/ RED	Bundle 1+	—	—	Intelligent Traffic Situation Detection, Voice Recommend Customer Switch On Feature	—
	Blind Spot Assist 1.0 (LCWA)	Bundle 1X+	—	1. Side Back Mirror Red dots alarm 2. steering control 3. cluster HMI (LKA will present picture and highlight pre-collision side)	—	—
	Reserve Brake Assist	Bundle 3+	Automatic switch on	camera+Radar	—	—
	Intersection Assist 1.0	Bundle 1X, 4, 5+	CNCAP Switch locates in IVI 2nd level manuel; Default Switch On, there will be 8 seconds alarm if function is switched off	Audio alarm and flash on cluster/central display(4-5 hertz); Regal requires 400 hertz/second, alarm lasting 2 seconds	—	Voice Remind Switch On AEB
	ODCV	Bundle 6	—	—	Voice Recommend Customer Switch On ODCV To Detect Front View	—
	RCV	Bundle 3C	—	—	—	—
	ORO	Bundle 3C	—	—	—	—
	CbAFS	TBD	—	—	—	—

- Examine experiences with each feature owners
- Understand each features' 'Active Method' and 'Current HMI/IVI Integration Status'
- Roughly estimate feature optimization risk
- Determine the Minimum Viable Product to improve user experience

Conclusion:

- Figure out total 9 DAT Features HMI Integration Opportunities (7 been prioritized)
- Duo to Driving Safety Concern and Legal Requirement, project only focus on 'Voice Recommend' and 'Voice Notice' Experiences development

Do Not Complete This Column.

Information to be filled in by the Dispositioning Team.

Product Suite Stakeholders

Unique ID: XX-XX-XX

Product Suite:
Type Product Suite Here

Product Owner:

Technical Lead:

Experience Lead:

Current Status:

- ☐ Submitted
- ☐ Reviewed
- ☐ Dispositioned
- ☐ Accepted as Project
- ☐ Scoped

Funding:

Idea Funding Source:
Funding Source Here

Proposed Implementation
Timing: XX / XXXX

Linked Documents:

Scope ID: XX-XX-XX
Feature Roadmap: XX-XX-XX

ADAS voice & guidance (FAPA)

Insight & User Goals:

Customer Description: Our Customer drives his/her car to the indoor/outdoor park lot, and plan to park the car into parking spot. Parking spot is narrow, and driver has fear to crash the surrounding blockers also other vehicles

Pain Points/Passion Point/Jobs to be Done/Problems to be solved:

Parking spot is limited and surrounded with a other vehicles also some blocks, driver get nervous to crash into others,

Benefits:

By educating customer how to perform FAPA function by video and voice guide, will maximum release customer's nervous, guide customer to use new DAT feature, and build the confidence to Ford DAT technology

Idea Description:

- Recommend customer to go through FAPA e- manual (education video) at free time, get well know how to use the feature and build the confidence on the Ford DAT
- Voice guide customer step by step to use FAPA function, park the vehicle in the right parking slot (indoor/ outdoor)

Business Opportunity(s)

Offer customer the most natural/ convenient communicating method to guide customer well use this function, and guide Ford user step by step to build the trust to Ford DAT feature.

First on the marketing, leading Voice integrated DAT feature technology development in auto industry

Linked Experiences/Features/Learn More

Voice integrated FAPA maximum improve user experience

Build on original FAPA feature, integrated voice guiding, voice education

Requestor Name: Name
Requestor Department: Department

Story/Sketch/Picture



Circle the Regions:



Key Markets:

Type Markets Here.

Platform Dependencies:

Ford Mobility:

- ☐ CVP&P- Core
- ☐ CVP&P – IT
- ☐ FordPass
- ☐ GDIA
- ☐ Guides
- ☐ Messaging
- ☐ Appreciation/Loyalty
- ☐ Monetization/Subsription
- ☐ CSL/MSL
- ☐ SDN/TMC

PD:

- ☐ EESE – IVI/TCU/ECG
- ☐ Digital Innovation
- ☐ Chassis
- ☒ EESE – Systems
- ☐ EESE – Modules
- ☒ VE
- ☐ Corporate Design

Other:

- ☐ FCSD
- ☐ FCSD – IT
- ☐ FCS
- ☐ Data Management