

Automotive Edge Computing Consortium

Use-case and Requirement Document (URD)

Version 3.0.0

January 31, 2020



Table of Contents

1.	Scope .	pe1					
2.	Term and Definitions						
3.	Genera	eneral Requirements					
4.	4. Use Cases and Requirements						
4	.1. Inte	elligent Driving: Vehicle Data Collection	. 5				
	4.1.1.	Description	. 5				
	4.1.2.	Actors	. 5				
	4.1.3.	High-level Illustration	. 6				
	4.1.4.	Flow	. 6				
	4.1.5.	Requirements	. 6				
4	.2. Inte	elligent Driving: Selective Vehicle Data Collection	. 7				
	4.2.1.	Description	. 7				
	4.2.2.	Actors	. 7				
	4.2.3.	High-level Illustration	. 8				
	4.2.4.	Flow	. 8				
	4.2.5.	Requirements	. 9				
4	.3. Inte	elligent Driving: Data Processing Distribution1	10				
	4.3.1.	Description1	10				
	4.3.2.	Actors1	10				
	4.3.3.	High-level Illustration1	11				
	4.3.4.	Flow1	11				
	4.3.5.	Requirements1	12				



4.4	. Inte	Iligent Driving: Selective Data Collection via MSP Edge Server	. 13
4	.4.1.	Description	. 13
4	.4.2.	Actors	. 13
4	.4.3.	High-level Illustration	. 14
4	.4.4.	Flow	. 14
4	.4.5.	Requirements	. 15
4.5	. Inte	Iligent Driving: Access Network Selection	. 16
4	.5.1.	Description	. 16
4	.5.2.	Actors	. 16
4	.5.3.	High-level Illustration	. 16
4	.5.4.	Flow	. 17
4	.5.5.	Requirements	. 17
4.6	. Inte	lligent Driving: Inter-edge Hand-over (Vehicle Trigger)	. 18
4	.6.1.	Description	. 18
4	.6.2.	Actors	. 18
4			
	.6.3.	High-level Illustration	. 19
4	.6.3. .6.4.	High-level Illustration	
			. 19
	.6.4. .6.5.	Flow	. 19 . 20
4 4.7	.6.4. .6.5.	Flow Requirements	. 19 . 20 . 20
4.7. 4.7	⊦.6.4. ⊦.6.5. . Inte	Flow Requirements Iligent Driving: Inter-edge Hand-over (Center Trigger)	. 19 . 20 . 20 . 20
4.7 4.7 4	6.4. 6.5. . Inte	Flow Requirements Iligent Driving: Inter-edge Hand-over (Center Trigger) Description	.19 .20 .20 .20
4.7. 4 4 4	6.4. 6.5. . Inte	FlowRequirements	. 19 . 20 . 20 . 20 . 21



4.	8. In	telli	gent Driving: Parameter Dissemination	23		
	4.8.1.	D	Description			
	4.8.2.	Α	Actors	23		
	4.8.3.	Н	ligh-level Illustration	24		
	4.8.4.	F	low	24		
	4.8.5.	R	Requirements	24		
4.	9. H	igh-	definition Map: Vehicle Data Collection	25		
	4.9.1.	D	Description	25		
	4.9.2.	Α	Actors	25		
	4.9.3.	Н	ligh-level Illustration	25		
	4.9.4.	F	low	25		
	4.9.5.	R	Requirements	25		
4.	10.	Hig	h-definition Map: Data Processing Distribution	25		
4.	11.	Hig	h-definition Map: Access Network Selection	26		
4.	12.	Hig	h-definition Map: Inter-edge Hand-over	26		
4.	13.	Hig	h-definition Map: Map Data Delivery	26		
	4.13.1	۱.	Description	26		
	4.13.2	2.	Actors	26		
	4.13.3	3.	High-level Illustration	26		
	4.13.4	1.	Flow	27		
	4.13.5	5.	Requirements	27		
4.	14.	Hig	h-definition Map: Data Compression and Extraction	28		
	4.14.1	۱.	Description	28		
	4.14.2	2.	Actors	29		



4.14.3.	High-level Illustration	29
4.14.4.	Flow	29
4.14.5.	Requirements	30
4.15. Hi	gh-definition Map: Intelligent Data Routing and Caching	30
4.15.1.	Description	30
4.15.2.	Actors	30
4.15.3.	High-level Illustration	31
4.15.4.	Flow	31
4.15.5.	Requirements	32
4.16. Hi	gh-definition Map: Data Integration	32
4.16.1.	Description	32
4.16.2.	Actors	32
4.16.3.	High-level Illustration	33
4.16.4.	Flow	33
4.16.5.	Requirements	34
4.17. Hi	gh-definition Map: Delta Update	34
4.17.1.	Description	34
4.17.2.	Actors	34
4.17.3.	High-level Illustration	35
4.17.4.	Flow	35
4.17.5.	Requirements	36
4.18. Hi	gh-definition Map: Resource Scaling	36
4.18.1.	Description	36
4.18.2.	Actors	37



4.18.3.	High-level Illustration	37
4.18.4.	Flow	37
4.18.5.	Requirements	38
4.19. V2	Cloud Cruise Assist: Vehicle Data Localization	38
4.19.1.	Description	38
4.19.2.	Actors	40
4.19.3.	High-level Illustration	41
4.19.4.	Flow	41
4.19.5.	Requirements	42
4.20. V2	Cloud Cruise Assist: MSP Edge Server Selection	43
4.20.1.	Description	43
4.20.2.	Actors	43
4.20.3.	High-level Illustration	44
4.20.4.	Flow	44
4.20.5.	Requirements	45
4.21. V2	Cloud Cruise Assist: Fast Local Reaction	45
4.21.1.	Description	45
4.21.2.	Actors	45
4.21.3.	High-level Illustration	46
4.21.4.	Flow	46
4.21.5.	Requirements	46
4.22. V2	Cloud Cruise Assist: Vehicle Data Distribution via Different Networks	47
4.22.1.	Description	47
4.22.2.	Actors	47



4.22.3.	High-level Illustration	48
4.22.4.	Flow	48
4.22.5.	Requirements	48
4.23. V2	Cloud Cruise Assist: Seamless Service Migration	49
4.23.1.	Description	49
4.23.2.	Actors	49
4.23.3.	High-level Illustration	49
4.23.4.	Flow	50
4.23.5.	Requirements	50
4.24. V2	Cloud Cruise Assist: Inter-edge Service Continuity	51
4.24.1.	Description	51
4.24.2.	Actors	51
4.24.3.	High-level Illustration	52
4.24.4.	Flow	52
4.24.5.	Requirements	53
4.25. Mu	lti-Tenant System: Multiple Vehicle Systems and Multiple Cellular	
Networks		53
4.25.1.	Description	53
4.25.2.	Actors	53
4.25.3.	High-level Illustration	54
4.25.4.	Flow	54
4.25.5.	Requirements	55
	lti-Tenant System: Multiple Vehicle Systems, Multiple Cellular Netwee MSP Edge Servers	



	4.26.1.	Description	. 55
	4.26.2.	Actors	. 55
	4.26.3.	High-level Illustration	. 56
	4.26.4.	Flow	. 56
	4.26.5.	Requirements	. 56
4	.27. Sed	curity: Personal Data Protection	. 57
	4.27.1.	Description	. 57
	4.27.2.	Actors	. 57
	4.27.3.	High-level Illustration	. 58
	4.27.4.	Flow	. 58
	4.27.5.	Requirements	. 58
4	.28. Mol	bility Service: Fast Transaction	. 59
	4.28.1.	Description	. 59
	4.28.2.	Actors	. 59
	4.28.3.	High-level Illustration	. 59
	4.28.4.	Flow	. 60
	4.28.5.	Requirements	. 61
4	.29. Mol	bility Service: Universal Service Login	. 61
	4.29.1.	Description	. 61
	4.29.2.	Actors	. 62
	4.29.3.	High-level Illustration	. 62
	4.29.4.	Flow	. 62
	4.29.5.	Requirements	. 63
5.	System S	ecurity Requirements	. 63



5	.1. Th	reat Surface	. 64
5	.2. Sc	ope	. 66
	5.2.1.	Vehicle Systems	. 66
	5.2.1.1	. Vehicle System scope	. 68
	5.2.1.2	Requirements	. 69
	5.2.2.	Access Network	. 69
	5.2.2.1	. Access network scope	. 69
	5.2.2.2	Requirements	. 69
	5.2.3.	MSP Servers	. 69
	5.2.3.1	. Application hosting	.71
	5.2.3.2	MSP Server and hosting scope	. 76
	5.2.3.3	Requirements	. 76
	5.2.4.	Applications	. 77
	5.2.4.1	. Application scope	. 78
	5.2.4.2	Requirements	. 78
	5.2.5.	Identification	. 78
	5.2.5.1	. Requirements	. 79
	5.2.6.	Authentication	. 79
	5.2.6.1	. Requirements	. 79
	5.2.7.	Authorization	. 79
	5.2.7.1	. Requirements	. 80
	5.2.8.	Access-control	. 80
	5.2.8.1	. Requirements	. 80
	5.2.9.	Audit & Accountability	. 80



	5.2.9.1.	Requirer	ments	81
6.	Overall R	equireme	nts	82
Anr	nex A (Info	mative):	Potential Use Cases	98
Anr	nex B (Info	mative):	Application Classification and Operational Behavior	100

Note: This content is only available to AECC members.