Austin Regional ITS Architecture and Deployment Plan Update

Training Workshop

March 30, 2015









- Intro to Turbo Architecture
- Making minor updates in Turbo
- Advanced modifications
- Generating useful reports and diagrams



Today's Agenda



- Intro to Turbo Architecture
- Making minor updates in Turbo
- Advanced modifications
- Generating useful reports and diagrams





What is Turbo Architecture?

 A tool for documenting your regional ITS architecture in a manner consistent with the National ITS Architecture



- Built on a Microsoft Access database structure
- Files have a .tbo extension
- Current version 7.0 supports version
 7.0 of the National ITS Architecture





When you open a Turbo Architecture File...

The Menu



S	Start	Planning	Stakeholders	Inventory	Services	Ops Concept	Requirements	Interfaces	Standards	Agreements
				Current F	Region: Austin	Regional ITS A	Architecture			

- Start
- Planning
- Stakeholders
- Inventory
- Services
- Ops Concept
- Requirements
- Interfaces
- Standards
- Agreements

Kimley *W* Horn

Start Tab



Start	Planning	Stakeholders	Inventory	Services	Ops Concept	Requirements	Interfaces	Standards	Agreements
			Curre	ent Region: Austi	n Regional ITS Ar	chitecture			
Architectures					Regional Ar	chitecture Attribu	tes		
Regional					Name				
Austin Regi	onal ITS Archite	cture			Austin Regi	onal ITS Architec	ture		
Region to I	Project		New	Delete	Description				
					2015 Austi	n Regional ITS Ar	chitecture Upda	te	*
Project									
									-
					Timeframe				
					2015-2040				
					Geographic	Scope			
					The Austin eleven cou Bastrop, Bl Travis, and	Regional ITS Arc nty TxDOT Austir anco, Burnet, Ca Williamson.	hitecture covers n District. The e Idwell, Gillespie	the geographic leven counties co Hays, Lee, Lland	scope of the onsist of o, Mason,
		_			Service Sco	ope			
Project to F	Region		New	Delete	The Austin inventory, f requiremen ITS in the A	Regional ITS Arc TS service packa ts, interfaces, st ustin Region. A s	hitecture identifi ages, operationa andards, and ag separate ITS De	es the planning, s Il concepts, funct greements that ar ployment Plan has	stakeholders, tional e related to s been
					Developer		Ma	aintainer	
					Kimley-Horn	1	Tx	DOT Austin Distri	ict
					Version		Da	ate/Time	
L					March 2015		03	/30/2015 07:00 A	M
			New	Delete	Cha	nge Log		Apply	Cancel

Navigation of Regional and Project Architectures



Start	Start Planning Stakeholders Inventory Services Ops Concept Requirements Interfaces Standards Agreements Current Region: Austin Regional ITS Architecture		Agreements						
			Curre	ent Region: Aust	in Regional ITS Ar	chitecture			
Architecture	3				RegionalAr	chitecture Attribu	tes		
Regional					Name				
Austin Reg	ional ITS Archite	cture			Austin Regi	ional ITS Architec	ture		
Region to	Project		New	Delete	Description				
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Desirat									
Project									_
					Timeframe				*
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					eleven cou Bastrop, B Travis, and	Inty TxDOT Austir lanco, Burnet, Ca Williamson.	n District. The el Idwell, Gillespie,	even counties co Hays, Lee, Lland	onsist of o, Mason,
					Service Sco	ope			
Project to Related	Region		New	Delete	The Austin inventory, I requiremen ITS in the A	Regional ITS Arc TS service packa hts, interfaces, st Austin Region. A s	hitecture identifi ages, operationa andards, and ag separate ITS Dep	es the planning, s I concepts, funct preements that ar ployment Plan has	stakeholders, ional e related to s been
					Developer		Ма	intainer	
					Kimley-Horr	ı	Tx	DOT Austin Distr	ict
					Version		Da	te/Time	
					March 2015	5	03	/30/2015 07:00 A	M
			New	Delete	Cha	inge Log		Apply	Cancel

Planning Tab



Start Planning Stakeholders	Inventory	Services	Ops Concept	Requirements	Interfaces	Standards	Agreements
	Curre	nt Region: Austi	n Regional ITS A	rchitecture			
Objectives and Strategies			Objective/	Strategy Attributes	;		
Regional Objectives	Cus	tomize	Туре	ç	Supports		
			Objective	•			-
02 Real-Time Traffic Information			Number	Name			
03. Active Traffic Management			23	Transit Signal Price	ority		
	gies		Descriptio				
			Need to a	woond traffic sign	al priority for tran	eit vehicles	
			Need to e	xpand traffic signa	ai priority for trai	ISIL VEHICLES	<u>^</u>
08. Toll Administration and Coordinatio	n						_
09. Regional Connection to CIECC							· ·
V rositive train control			Source				
12. Ongoing Training							•
			Selected	Performance Mea	sures All Perfo	rmance Measure	Add
						marree measure	
	n						
17. Roadway Service Patrols			<u> </u>				
18. Mitigate Adverse Weather Condition	ons		Selected	Service Packages	All Service Pa	ckages	Search
20 Work Zone Coordination			APTS	09: Transit Signal I	Priority		
20. Work 2016 Coordination			ATMS	03: Traffic Signal (Control		
22. Transit Travel Time Optimization							
			Selected	Projects All Proje	ects		
				1 1/101			1
	es						
	ring						
New De	elete			Ap	oply	Cancel	

Kimley **Whorn**

Stakeholders Tab



Start	Planning	Stakeholders	Inventory	Services	Ops Concept	Requirements	Interfaces	Standards	Agreements
			Curre	ent Region: Austi	n Regional ITS Are	chitecture			
Stakeholders	3				Stakeholder	Attributes			
Perional St	akeholders	Ctakabaldara	*	Autoselect	Name				
Regional St		Stakenoiders			City of Ceda	ar Park			
City	of Austin	in County		*					
	of Austin and Tra	avis County			Description				
	of Austin Fire De	nartment			Municipal g	overnment for the	e City of Cedar F e City	ark. Includes bo	th traffic and
City	of Austin Police (Department			maintenanc	c sections for th	e ony.		
City	of Cedar Park								
City	of Georgetown								
City	of Round Rock								
City	of Round Rock P	Public Safety		=					
City	of San Marcos	Den idea						<u>_</u>	
Com	mercial Informati mercial Vehicle F	on Provider				Stake	holder Group	\sim	
	ty Departments	leet operations						1	
Cour	ity Emergency M	lanagement Agenc	cies		Associated	Stakeholders A	All Stakeholders		1
🔽 🁮 Cour	ty Public Safety	,			Amtrak				A
CTRI	AN				Archive	e Data Users	-		=
V 😤 Depa	artment of Public	Safety			Army C	orps of Engineer Travis County Of	s fice of Emergen	rv Management	
V 😤 Finar	ncial Institution				Capital	Area MPO	nee of Emergen	cy management	
Hays	County	D ¹ -1-1-1-			CapMet	tro			
	pendent School I	Districts			CARTS				
	IMedia				Cellular	Providers			
	er Colorado Rive	er Authority			City of	Austin Austin and Travis	County		
🗑 🌻 Muni	cipalities	,			City of	Austin Aviation D	epartment		
NOA 👮 🔽	A				City of	Austin Fire Depar	tment		
🔽 荣 Othe	r Regional Comn	nunications Provide	ers	+	City of	Austin Police Dep	artment		
•				4	Citv of	Georaetown			•
	Ne	ew	Delete			Ap	ply	Cancel	

Inventory Tab



Start	Planning	Stakehok	ders Inventory	Services	Ops Concept	Requirements	Interfaces	Stan	dards	Agreements
			Curre	ent Region: Aust	in Regional ITS Ar	chitecture				
Elements					Element Attr	ibutes				
Regional Ele	ements All Flem	nents			Name					
	nty ITS Field Equi	inment			CTRMA Ope	erations Center				
	nty Maintenance	and Constr	ruction Operations Disr	patch	Type					
Cour	nty Maintenance	and Constr	uction Vehicles		Normal]
🔽 📑 Cour	nty Public Safety	Dispatch a	nd PSAP							
Cour	nty Public Safety	Vehicles			Stakeholder	r			Status (Region)
	MA CCTV Camer	as			CTRMA			•	Existing	•
	MA DMS MA Field Sensor	\$			Description					
	MA HERO Vehick	es			The custor	ner service cente	er for the CTRMA.	This r	epresent	sthe 🔺
	MA Operations C	enter			backend sy	ystems of the Tol	Authority.			
CTR	MA Toll Collection	n SmartHUB	1							-
	MA Toll Plazas									
	MA 1011 Reconcili MA Website	ation Office	;		Selected S	Subsystems/Term	inators All Subs	system	s/Termina	itors
	and Other Public	: Safety Sp	ectrum Systems	=	Emerge	ency Managemen	t (Subsystem)			
DPS	Communications		-		V Paymer	nt Administration	(Subsystem)			
🔽 📄 DPS	Emergency Vehi	icles			Traffic	Management (Su	bsystem)			
Finar	ncial Institution									
Hays	s County Flood C	losure Gate	es							
Have	s County Flood D	Varning Bea	acons							
Hays	s County Office	of Emergen	cy Management		Selected P		ecte			
🔽 📑 Hays	s County Radio S	Systems								1
🔽 📄 Inde	pendent School I	District Bus	es							
V Inde	pendent School I	District Disp	batch							
Indej	pendent School I city Buses	District Polic	ce							
	ony Duada									
				F						
Sort By:	Element (Stakeho	lder 🔘 Subsystem	/Terminator						
	Ne	w	Delete			Ap	ply	Cance	1	

Services Tab





Ops Concept Tab



Start	Planning	Stakeholders	Inventory	Services	Ops Concept	Requirements	Interfaces	Standards	Agreements
			C	urrent Region: Austi	n Regional ITS Archite	cture			
Role and Respon	All Areas All Areas Inved Data Systems mercial Vehicle Oper rgency Management for tenance and Constr- ing Management for sit Management for sit Management for sit Management for the sit Management for the s	for Austin Regional IT rations for Austin Reg Operations for Austin Austin Regional ITS / Austin Regional ITS A Austin Regional ITS A	Autoselect S Architecture gional ITS Architectur in Regional ITS Archite Architecture or Austin Regional ITS Architecture tecture rchitecture rchitecture	e ecture S Architetcture	Role and Respon Name Transit Manager Description Selected Servic APTS01: Tr APTS01: AF APTS01: AF APTS01: AF APTS02: AF Selected Stake CapMetro CARTS Independen Private Tran TxDOT Selected Project	nsibility Area Attribut ment for Austin Regio ce Packages All Se ansit Vehicle Trackin PTS1-1 CapMetro PTS1-2 CARTS PTS1-3 Private Trans PTS1-4 Independent 1 ansit Fixed-Route Op PTS2-1 CapMetro Fix sholders Related St t School Districts isportation Providers	es mal Architecture rvice Packages g portation School District ierations ed-Route akeholders All Stat	keholders]	
	1	lew D	elete			4	Apply (Cancel	

Ops Concept Tab



Start	Planning	Stakeholders	Inventory	Services	Ops Co	ncept	Requirements	Interfaces	s St	tandards	Agreeme	ents
			C	urrent Region: Austin	Regional IT	SArchite	cture					
Role and Respon Regional Areas	sibility Areas All Areas hived Data Systems f mercial Vehicle Oper rgency Management away Management for lent Management for	for Austin Regional IT ations for Austin Reg Operations for Austi r Austin Regional ITS Austin Regional ITS	Autoselect 'S Architecture gional ITS Architectur in Regional ITS Archit S Architetcure Architecture	e ecture	Stakeh Area Transil Stakeh CapMe Selec	older Role Manager older tro ted R&Rs	es and Responsibiliti ment for Austin Regi	es onal Architectur	re		Edit	R _R
⊞… ⊽ ြo Main ⊞… ⊽ Coo Park	itenance and Constru ing Management for A	uction Management f Austin Regional ITS A	ior Austin Regional IT: Architecture	S Architetcture		Role a	and Responsibility		In Project	Status	Include	
	fic Signal Control for A Isit Management for A Indetro RTS ependent School Dist	Austin Regional IIS / Austin Regional Arch ricts	Architecture		•	Coordi Munici and pr for eva (includ	inate emergency pla pal, County, and Sta ovide emergency tra acuations, fires, and ling re-entry).	ns with tewide EOCs ansit services disasters		Planned		
	vate Transportation Pi OOT	roviders				Coordi agenc	inate transit service y transit vehicles.	with all other		Planned		=
🗄 🔽 🏠 Trav	eler Information for A	Austin Regional ITS A	rchitecture			Coordi regiona regiona station	inate transit service al transit providers, a al intermodal termina is, and regional airpo	with other as well as ls, AMTRAK orts.		Planned		
						Obtain munici area th equipn vehicle	traffic signal priority palities in the agency prough the municipal nent for all MetroRap es.	r from the r's service ity's field id BRT transit		Existing		
						Operation next st	te on-board systems top annunciation.	to provide		Existing		
						Provid sched conditi fixed-r Metro/ Passe	e automated transit r uling through automa ion reports on all age route, MetroRapid BF Access Paratransit, a nger Rail transit vehi	maintenance ated vehicle ency RT, and MetroRail icles.		Existing	✓	
						Provid (Metro agenc ability transit	e demand response Access paratransit) y's defined service a to provide a demand plan on the agency'	bus service for the area, with the response s website.		Existing		
						Provid	e fixed-route bus se	rvice for the			,	-
	N	lew D)elete					Apply	Cancel			

Requirements Tab



Start	Planning	Stakeholders	Inventory	Services	Ops Concept	Requirements	Interfaces	Standards	Agreements
			Cı	Irrent Region: Austin	Regional ITS Archite	ecture			
Elements					Functionality				
Elemente					Specif	v Functionality			£
Liements Fur	nctional Areas				i opeen	, anotionally			J
City of Aus	stin TMC			^	Selected Func	tional Areas Relate	d Functional Areas		
City of Aus	tin Traffic Database					Require	ments		
City of Aus	tin Watershed Protec	tion			Autoscie et		linenta		
City of Aus	ain Watersheu Protec	2001			Collect Traf	ffic Surveillance			
City of Aus	tin/Travis County 911	Dispatch Center (CT	ECC)		HRI Iraffic	Management			
City of Aus	tin/Travis County Rad	dio Systems			TMC Evacu	ation Support			
City of Ced	ar Park CCTV Camer	as			TMC Incider	nt Detection			
📝 City of Ced	lar Park DMS				TMC Incider	nt Dispatch Coordina	tion/Communication		
📝 City of Ced	lar Park Field Sensors	s			TMC Multim	odal Coordination			
📝 City of Ced	lar Park Flood Closure	e Gates		E	TMC Multim	odal Crossing Manag	gement		
📝 City of Ced	lar Park Flood Detecto	ors			TMC Probe	Information Collectio	n		
City of Ced	lar Park Flood Warnin	ig Beacons			TMC Region	Control	ent		
City of Ced	lar Park Public Inform	ation Office			TMC Signal	Monitoring and War	nina		
City of Ced	lar Park Rail Notificati	on System	tama		TMC Traffic	Information Dissemi	ination		
City of Ced	lar Park School Progr	ammable riasher Sys	tems		TMC Work	Zone Traffic Manage	ment		
City of Ced	lar Park Traffic Sional	le			Traffic Data	a Collection			
City of Geo	proetown CCTV Came	eras			Traffic Equi	ipment Maintenance			
City of Geo	orgetown DMS								
City of Geo	orgetown Field Senso	ors							
City of Geo	orgetown Flood Closu	ire Gates							
📝 City of Geo	orgetown Flood Deteo	ctors							
📝 City of Geo	orgetown Flood Warn	ing Beacons							
📝 City of Geo	orgetown Public Infor	mation Office							
City of Geo	orgetown Rail Notifica	ation System							
f City of Geo	orgetown School Prog	grammable Flasher Sy	vstems						
f City of Geo	orgetown TOC	a la							*
City of Bou	ind Pock CCTV	lais							
City of Rou	ind Rock Communicat	tions Center							
City of Rou	Ind Rock Communicat	tions Division							
City of Rou	Ind Rock Convention	and Visitors Bureau							
City of Rou	Ind Rock Crash Reco	rds Database							
📝 City of Rou	ind Rock DMS			-	Entity			Туре	
							Apply (Cancel	

Requirements Tab



of Georgetown TOC		- All	-	. ⊻ Lim	it Sort	Presen
		City of Georgetown TOC - All Requirements (97 Entries)				
Functional Area	Number	Requirement	Status	Ir	nclude	Tailored
Collect Traffic Surveillance	1	The center shall monitor, analyze, and store traffic sensor data (speed, volume, occupancy) collected from field elements under remote control of the center.	Not Planned	•		
	2	The center shall monitor, analyze, and distribute traffic images from CCTV systems under remote control of the center.	Not Planned	•		
	3	The center shall monitor, analyze, and store multimodal crossing and high occupancy vehicle (HOV) lane sensor data under remote control of the center.	Not Planned	•		
	4	The center shall distribute road network conditions data (raw or processed) based on collected and analyzed traffic sensor and surveillance data to other centers.	Not Planned	•		
	5	The center shall respond to control data from center personnel regarding sensor and surveillance data collection, analysis, storage, and distribution.	Not Planned	•		
	6	The center shall maintain a database of surveillance equipment and sensors and associated data (including the roadway on which they are located, the type of data collected, and the ownership of each)	Not Planned	•		
IRI Traffic Management	7	The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for traffic data.	Not Planned	•		
HRI Traffic Management	1	The center shall remotely control highway-rail intersection (HRI) equipment located in the field.	Not Planned	•		
	2	The center shall accept collect highway-rail intersection (HRI) advisory or alert data from rail operations centers.	Not Planned	•		
	3	The center shall collect highway-rail intersection (HRI) equipment operational status and compare against the control information sent by the center.	Not Planned	•		
	4	The center shall provide the highway-rail intersection (HRI) equipment operational status to rail operations centers.	Not Planned	•		
	5	The center shall collect incident information related to a highway-rail intersection (HRI), such as intersection blockages or crashes or equipment malfunctions.	Not Planned	•		
	6	The center shall implement control plans to coordinate signalized	Not Planned	-		

Interfaces Tab



Selection of applicable interconnects

Start Planning Stakeholders I		Inventory	Inventory Services Ops Concept Re					ents	Interfaces		Stand	ards	A	greemen	
				Build (Connect	Flows	Group	<mark>2↓</mark> Sort	Filter	2 Elements	 Limit	 New	(i) Info	Service Servic	<mark>}</mark> ent
			Austin Regiona	ITS Architec	ture: Al	Intercor	nnects	(27486 8	intries)						
Element			Element					Com	nunicatio	ns					include
ABIA Pol	ice Dispatch		ABIA Polic	e Vehicles				Not Ide	entified					-	1
ABIA Pol	ice Dispatch		Austin Re	gion Incident, M	utual Aid	and Comn	nunicati.	Not Ide	entified					•	1
ABIA Pol	ice Dispatch		Austin/Tra	vis County EOC	CTECC)		Not Ide	entified					•	1
ABIA Pol	ice Dispatch		City of Au	stin Public Infor	mation Of	fice		Not Ide	entified					•	1
ABIA Pol	ice Dispatch		City of Au	stin Public Work	s Dispate	ch		Not Ide	entified					•	1
ABIA Pol	ice Dispatch		City of Au	stin TMC				Not Ide	entified					•	1
ABIA Pol	ice Dispatch		City of Au	stin/Travis Cour	nty 911 D	ispatch Ce	enter (C.	Not Ide	entified					•	1
ABIA Pol	ice Dispatch		DPS Com	nunications				Not Ide	entified					-	V
ABIA Pol	ice Dispatch		Local Print	and Broadcas	t Media			Not Ide	entified					-	1
ABIA Pol	ice Dispatch		TxDOT Au	stin District Mai	ntenance	Office		Not Ide	entified					•	1
ABIA Pol	ice Dispatch		TxDOT Au	stin District Mai	ntenance	Sections	Dispato	h Not Ide	entified					•	1
ABIA Pol	ice Dispatch		TxDOT Au	stin District TM	C (CTECC)		Not Ide	entified					-	1
Amtrak D	lispatch		CapMetro	Fixed-Route Op	erations	Center		Not Ide	entified					-	1
Amtrak D	lispatch		CARTS Tr	ansit Operation	s Center			Not Ide	entified					•	1
Amtrak D	Dispatch		Private Tra	ansportation Pro	ovider Op	erations		Not Ide	entified					•	1
Archive	Data Users		Capital Are	a MPO Archive				Not Ide	entified					•	1
Archive	Data Users		City of Au	stin Pavement N	lanagem	ent Syster	n	Not Ide	entified					-	1
Archive	Data Users		City of Au	stin Traffic Data	base			Not Ide	entified					•	1
Archive	Data Users		City of Ro	und Rock Paver	nent Man	agement 9	System	Not Ide	entified					•	1
Archive	Data Users		Municipal	Pavement Mana	gement S	System		Not Ide	entified					•	
Archive	Data Users		Statewide	Crash Records	s Informa	tion Syste	m	Not Ide	entified					•	1
Archive	Data Users		TxDOT Au	stin District Hist	orical Tra	affic Datab	base	Not Ide	entified					-	1
Archive	Data Users		TxDOT Au	stin District Pav	ement M	anagemen	t Syster	n Not Ide	entified					•	V
Archive	Data Users		TxDOT Au	stin District Pub	lic Trans	portation I	Manage.	Not Ide	entified					-	1
Archive	Data Users		TxDOT Au	stin District Roa	idway Da	ata Collect	ion Sys.	Not Ide	entified					-	1
Army Co	rps of Engineers Flo	od Detectors	Army Corr	s of Engineers	Flood Mo	onitorina C	enter	Not Ide	entified					-	V



Interfaces Tab



Selection of applicable architecture flows

Start	tart Planning Stak		Inventory	Services	Ops Concept	Requirements	Interfaces	Standards		Agreements	
All				Build Conr	ect Flows Gro	□ 🛃 - 🤜	r Elements L	imit New In	₽ fo Pr	👥 esent	
		A	Austin Regional IT	S Architecture: /	All Architecture F	lows (5871 Entrie	es)				
Source	Element		Flow Name		Destinati	on Element		Status		Include	1
City of R	ound Rock TMC		hri control data		City of Ro	und Rock Traffic Si	gnals	Planned	•	V	
City of R	ound Rock TMC		hri request		City of Ro	und Rock Traffic Si	gnals	Planned	•	V	
City of R	ound Rock TMC		signal control comm	nands	City of Ro	und Rock Traffic Si	gnals	Existing	-	V	
City of R	ound Rock TMC		signal control devic	e configuration	City of Ro	und Rock Traffic Si	gnals	Existing	-	V	
City of R	ound Rock TMC		signal control plans	i.	City of Ro	und Rock Traffic Si	gnals	Existing	-	V	
City of R	ound Rock TMC		signal system confi	guration	City of Ro	und Rock Traffic Si	gnals	Existing	-	V	
City of R	ound Rock TMC		traffic sensor contr	ol	City of Ro	und Rock Traffic Si	gnals	Existing	-	V	1
City of R	ound Rock TMC		road network cond	itions	City of Ro	und Rock Website		Planned	-	V	1
City of R	ound Rock TMC		emergency traffic of	coordination	CTRMA O	perations Center		Planned	-	V	1
City of R	ound Rock TMC		incident information		CTRMA O	perations Center		Planned	-	V	1
City of R	ound Rock TMC		road network cond	itions	CTRMA O	perations Center		Planned	-	V	1
City of R	ound Rock TMC		traffic images		CTRMA O	perations Center		Planned	-	V	1
City of R	ound Rock TMC		flood warning_ud		DPS Com	nunications		Planned	-	V	1
City of R	ound Rock TMC		incident information		DPS Com	nunications		Planned	-	V	1
City of R	ound Rock TMC		resource deployme	nt status	DPS Com	nunications		Planned	-	V	1
City of R	ound Rock TMC		road network cond	itions	DPS Com	nunications		Planned	-	V	1
City of R	ound Rock TMC		traffic images		DPS Com	nunications		Planned	-	V	-
City of R	ound Rock TMC		road network cond	itions	Independe	ent School District D	ispatch	Planned	-	V	-
City of R	ound Rock TMC		road network cond	itions	Municipal	Public Safety Dispa	tch and PSAP	Planned	-	V	-
City of R	ound Rock TMC		emergency traffic of	coordination	Municipal	County Traffic Oper	rations Center	Planned	-	V	-
City of R	ound Rock TMC		incident information		Municipal	County Traffic Oper	rations Center	Planned	-	V	-
City of R	ound Rock TMC		road network cond	itions	Municipal	County Traffic Oper	rations Center	Planned	-	V	1
City of R	ound Rock TMC		traffic images		Municipal	County Traffic Oper	rations Center	Planned	-	V	1
City of R	ound Rock TMC		emergency plan co	ordination	Municipal/	County Transit Ope	rations Center	Planned	-	V	1
City of R	ound Rock TMC		emergency transit s	service request	Municipal	County Transit Ope	rations Center	Planned	-	V	1
City of R	ound Rock TMC		incident response s	tatus	Municipal/	County Transit Ope	rations Center	Planned	-	V	•
					Inclu	ide All	Clear All	Apply		Cancel	

Kimley **Whorn**

Standards Tab



 Automatic selection of associated standards for the flows that were selected

St	art	Planning	Stakeholders	Inventory	Services	Ops Concept	Requirements	Interfaces	Standards	A	greements	
Curre	nt Archite	cture Standards	View	E 24 -	Filter Limit	i 😫						
1			VIEW	Austin Re	gional ITS Archite	ecture Standards	(28 Entries)					
	Group	Group/Doc ID	Title		-		, ,	SDO		User Defined	Include	Â
Þ	V	ATIS General Use	Advance	ed Traveler Informa	tion Systems (ATIS) General Use Stand	dards Group	SAE				
	v	ATIS Low Bandwi	idth Advance	ed Traveler Informa	tion Systems (ATIS) Bandwidth Limited	Standards Group	SAE			V	
	V	DSRC 5GHz	Dedicate	d Short Range Con	munication at 5.9 0	GHz Standards Grou	qu	ASTM/IEEE/S	AE		V	
	V	DSRC 915MHz	Dedicate	d Short Range Con	munication at 915 I	MHz Standards Gro	up	ASTM			V	
	v	IEEE IM	Incident	Management Stand	ards Group			IEEE			v	
	V	Mayday	On-boar	d Vehicle Mayday S	tandards Group			SAE			V	
	V	NTCIP C2C	NTCIP C	enter-to-Center Sta	ndards Group			AASHTO/ITE/	NEMA		V	
	V	NTCIP C2F	NTCIP C	enter-to-Field Stand	ards Group			AASHTO/ITE/	NEMA		V	
		APTA TCIP-S-001	3.0.4 Standard	andard for Transit Communications Interface Profiles							V	
		ASTM E2468-05	Standard	andard Practice for Metadata to Support Archived Data Management Systems							V	
		ASTM E2665-08	Standard	d Specifications for	Archiving ITS-Gen	erated Traffic Monit	oring Data	ASTM			V	Ξ
		IEEE 1455-1999	Standard	d for Message Sets	for Vehicle/Roadsi	ide Communications		IEEE			V	
		IEEE 1570-2002	Standard	d for the Interface E	letween the Rail Su	ubsystem and the Hi	ighway Subsystem	at IEEE			V	
		IEEE P1609.11	Standard	d for Wireless Acce	ss in Vehicular Env	vironments (WAVE)	- Over- the-Air Data	E IEEE			V	
		ITE TMDD	Traffic N	lanagement Data Di	ctionary (TMDD) ar	nd Message Sets fo	r External Traffic Ma	n AASHTO/ITE			V	
		NTCIP 1201	Global O	bject Definitions				AASHTO/ITE/	NEMA		V	
		NTCIP 1202	Object D	efinitions for Actua	ted Traffic Signal C	ontroller (ASC) Unit	s	AASHTO/ITE/	NEMA		V	
		NTCIP 1203	Object D	efinitions for Dynar	nic Message Signs	(DMS)		AASHTO/ITE/	NEMA		V	
		NTCIP 1204	Object D	efinitions for Enviro	nmental Sensor St	ations (ESS)		AASHTO/ITE/	NEMA		V	
		NTCIP 1205	Object D	efinitions for Close	d Circuit Television	(CCTV) Camera Cor	ntrol	AASHTO/ITE/	NEMA		V	
		NTCIP 1206	Object D	efinitions for Data (Collection and Monit	toring (DCM) Device	s	AASHTO/ITE/	NEMA		V	
		NTCIP 1207	Object D	efinitions for Ramp	Meter Control (RMC	C) Units		AASHTO/ITE/	NEMA		V	
		NTCIP 1208	Object D	Object Definitions for Closed Circuit Television (CCTV) Switching				AASHTO/ITE/	NEMA		V	
		NTCIP 1209	Data Ele	ment Definitions for	Transportation Ser	nsor Systems (TSS))	AASHTO/ITE/	NEMA		V	
		NTCIP 1210	Field Ma	nagement Stations	(FMS) - Part 1: Obje	ect Definitions for Si	gnal System Master	s AASHTO/ITE/	NEMA		1	-
					Nev	v Сору	Modify	Delete	App	ply	Cancel	



Agreements Tab



Start	Planning	Stakeholders	Inventory	Services	Ops Concept	Requirements	Interfaces	Standards	Agreements
			Cu	rrent Region: Austi	n Regional ITS Archi	tecture			
Agreements					Agreement Att	ributes			
Number	Title				Title				
640 (D)	loint One	arations/Shared Cont	rol Agreement Pub	ic Public)/911 P	Joint Operation	ns/Shared Control A	greement Public	c-Public)(911 RDMT Pr	oject) – TxE
• 02	Data Sha	ring and Usage (Pub	lic-Private) - TxDO	T Austin Distric	Number		St	atus	
• 03	Standard	Operating Procedur	es (Public-Public) -	CTECC Partners	01		E	Existing	
• 04	Electronic	c Toll Interoperability	(Public-Public) - T>	DOT TOD. CTR	Туре		2		
• 05	Railroad	Right-of-Way (Public	-Private) - TxDOT	and Public or Pr					
• 06	Transit S	ignal Priority (Public-	Public) - City of Au	stin and CapMe	Description				
** 07	Toll Waiv	ers During Traffic Ind	cidents (Public-Pub	lic) - TxDOT, A	Provides for t	he development of a	a unified public	safety communication	system that
** 08	Traffic S	ignal Operation and I	Maintenance (Public	c-Public) - City	could include	911 operations, CAL	D, mobile data in	nformation transfer, pr	ublic safety and
60 	Traffic S	ignal Operation and I	Maintenance (Public	c-Public) - TxD	public service	e radio communicatio	ons, and ITS ma	nagement, all of whic	h might be
🍲 10	Fatal Cra	ish Agency Coordina	tion (Public-Public)	- TxDOT, DPS,	operated non	ina iony integrated c	UNDINED CENTER	7.5	
🍲 11	ITS and T	Traffic Signal Timing I	Data Sharing and U	sage (Public-P	Land Chalashal	ulaa.			
12	Incident [Data Sharing and Us	age (Public-Public)	- TxDOT Austin	Lead Stakenoi	der			
** 13	Data Sha	aring and Usage (Pub	lic-Public) - TxDOT	Austin District					
🍤 14	Data Sha	aring and Usage (Pub	lic-Private) - TxDO	TAustin Distric	Selected Stal	keholders All Stake	eholders		
** 15	Operation	ns and Maintenance.	Agreement (Public-	Public) - TxDO	CanMetro				
🍲 16	Frequent	Training of Key Pers	sonnel (Public-Publ	ic) – TxDOT Au	City of Au	stin			
					City of Au	stin and Travis Cour	nty		
					City of Au	stin Aviation Depart	ment		
						ent School Districts			
					V IXDOTAL	ISUIT DISTITICT			
					Selected Proj	ects All Projects			
Vi	sible Columns:	Number O Te	e 🗿 Roth						
			e outi		<u></u>				
		New	Delete			A	pply	Cancel	
	<u> </u>								





- Intro to Turbo Architecture
- Making minor updates in Turbo
- Advanced modifications
- Generating useful reports and diagrams





- Stakeholder and element names and definitions
- Element status
- Flow status





- Stakeholders Tab
 - Select the stakeholder you wish to modify
 - Make the modifications
 - Apply the changes



Editing an Element



- Inventory Tab
 - Select the element you wish to modify
 - Make the modifications
 - Apply the changes
- Potential characteristics to edit
 - Name
 - Description
 - Stakeholder
 - Subsystems/Terminators
 - Status

Editing Flow Status



- Interfaces Tab
 - Locate the flow
 - Change the status
 - Apply the change

Note: Each time you open Turbo Architecture the Interfaces Tab defaults to connections. To view the flows, click the flows button.

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- Scroll and scroll and scroll
- Use available filters to isolate the flow in question
 - Filter by Single Element
 - Filter by Multiple Elements
 - Filter by Service Package
 - Limit Filter
- Filters can be used in combination with one another

Kimley *W* Horn



- Good for elements with very few connections (i.e. TxDOT Austin District CCTV Cameras)
- Not very useful for elements with connections to many other elements (i.e., TxDOT Austin District TMC (CTECC) – Filtering by Multiple elements is more appropriate

Filter by Single Element



- Right click on the elements button and select the element you want to locate
- Select show all to capture all flows involving the element

v	Show All Interfaces Show Communications Elements									
Include	Element Name									
	ABIA Police Dispatch	=								
	ABIA Police Vehicles									
	Amtrak Dispatch									
	Archive Data Users									
	Army Corps of Engineers Flood Detectors									
	Army Corps of Engineers Flood Monitoring Center									
	Austin Bergstrom International Airport									
	Austin Region Incident, Mutual Aid and Communications Network									
	Austin/Travis County EOC (CTECC)									
	Bicyclists									
	Capital Area MPO Archive									
	CapMetro Barrier System									
	CapMetro DMS									
	CapMetro Fixed-Route Operations Center									
	CapMetro Fixed-Route Vehicles									
	CapMetro Freight and Passenger Rail Operations Center									
	CapMetro Lessee Freight Cars									
	CapMetro Maintenance Garages									
	CapMetro MetroAccess Paratransit Operations Center									
	CapMetro MetroAccess Paratransit Vehicles									
	CapMetro MetroRail Passenger Rail Vehicles									
✓	CapMetro MetroRapid BRT Operations Center	CapMetro MetroRapid BRT Operations Center 🔹 🔻								
Sel	ect All Clear All Project Elements OK	٦								

Filter by Single Element



- Click the filter button to turn on the filter
- Click the limit button to limit the flows displayed to those that are part of the regional ITS architecture

	Start	Planning	Stakeholders	Inventory	Services	Ops Cor	icept i	Requirements	Interfaces	Standards	Ag	reements	
All				- Build	Connect Flows	Group S	2↓ - ⋖ Sort - Filte	er Elements	☑ ④ (Limit New In	i) 😫 fo Present			
				Austin Regional	ITS Architecture:	All Archite	cture Flows	(108 Ent					
	Source Ele	ment		Flow Name		1	Destination Ele	ement		Status		Include	-
Þ	Austin Regi	on Incident, Mutual Ai	id and Communicati	incident report_ud		c	apMetro Metr	oRapid BRT Op	ations C. ter	Planned	•	V	Ш
	Austin Regi	on Incident, Mutual Ai	id and Communicati	incident response coo	rdination_ud	C	apMetro Metr	oRapid BRT Op	en, ions Cen, r	Planned	-	1	
	Austin/Trav	is County EOC (CTEC	CC)	emergency plan coord	ination	C	apMetro Metr	oRapid BRT Op	erations Center	Planned	-	1	
	Austin/Trav	is County EOC (CTEC	CC)	emergency transit ser	vice request	C	apMetro Metr	oRapid BRT Op	erations Center	Planned	•	1	
	Austin/Trav	is County EOC (CTEC	C)	evacuation information	l.	C	apMetro Metr	oRapid BRT Op	erations Center	Planned	•	1	
	Austin/Trav	is County EOC (CTEC	C)	incident response stat	us	C	apMetro Metr	oRapid BRT Op	erations Center	Planned	-	V	
	Austin/Trav	is County EOC (CTEC	C)	transportation system	status	C	apMetro Metr	oRapid BRT Op	erations Center	Planned	•	1	
	CapMetro F	ixed-Route Operation	is Center	transit service coordin	ation	C	apMetro Metr	oRapid BRT Op	erations Center	Planned	•	1	
	CapMetro F	reight and Passenge	r Rail Operations C	transit service coordin	ation	C	apMetro Metr	oRapid BRT Op	erations Center	Planned	-	1	

Filter by Multiple Elements



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 Right click on the elements button and select the source and destination elements of the flow you want to locate

🔊 Eleme	ent Selection 📃 🗖 🗖	٢.
	Show All Interfaces Show Communications Elements	
Include	Element Name	*
	TxDOT Central Permitting Office	
	TxDOT Demand Response Transit Intake Center	
	TxDOT Highway Conditions Reporting System	
	TxDOT Motor Carrier Routing Information	
	TxDOT Other District Maintenance Sections Dispatch	
	TxDOT Other District TMCs	
	TxDOT Other Permitting Systems	
	TxDOT Rest Area/Visitor Center/Truck Stop/Service Plaza Kiosks	
	TxDOT San Antonio District TMC (TransGuide)	
	TxDOT Statewide Emergency Management Coordinator	
	TxDOT Statewide Pavement Management System	
	TxDOT Statewide Roadway Data Collection System	
	TxDOT TOD Customer Service Center	
	TXDOT TOD DMS	
	TxDOT TOD DVAS	
	TxDOT TOD Field Sensors	
	TxDOT TOD Toll Collection SmartHUB	
	TxDOT TOD Toll Collection Website	
	TxDOT TOD Toll Plazas	
	USGS Flood Monitoring Center	Ξ
	USGS Flood Monitoring Devices	_
	UT Events Office	Ŧ
Sel	ect All Clear All Project Elements OK)

Filter by Multiple Elements



- Click the filter button to turn on the filter
- Click the limit button to limit the flows displayed to those that are part of the regional ITS architecture

Sta	rt Planning	Stakeholders	Inventory	Services	Ops Concept	Requirements	Interfaces		Standards	Ag	reements
All				- 🕅 Build	Connect Flows	Group Sort	Filter Elem	ents	☑ Limit Ne) 🌲 w Info	👷 Present
	Austin Regional ITS Architecture: All Architecture Flows (2 Entries)										
	Source Element		Flow Name		Destin	ation Element			Sta		Include
•	TxDOT TOD Customer Serv	vice Center	toll instructions		TxDOT	TOD Toll Plazas			Existing		· 🗸
	TxDOT TOD Toll Plazas		toll transactions		TxDOT	TOD Customer S	Service Center		Existing	-	·



Filter by Service Package



- Right click on the filter button and select the service package instance that you want
- Click the filter button to turn on the filter



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A Word of Caution on Filters



- Before saving and exiting Turbo Architecture, make sure that in the elements filter, all elements are selected again and that the service package filter is also set back to all
- Failure to do this can save that filter setting and cause confusion later

Today's Agenda



- Intro to Turbo Architecture
- Making minor updates in Turbo
- Advanced modifications
- Generating useful reports and diagrams





- Background Information
 - How flows are created
 - Large regions and excess flows
 - User defined (custom) flows
 - Performing a build



How Flows Are Created



 Flows available for selection in Turbo Architecture are based on element subsystems and service package selected



Large Regions and Excess Flows



- In a large region, an extraordinary amount of potential flows are generated due to the many possible connection combinations
- Unnecessary flows should be deleted after the desired flows have been selected to make the database easier to work with
- The result of the flow "clean up" is that if you need to add a flow later in a maintenance phase, it might not be there and you'll need to perform a build to generate all of the potential flows again

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User Defined Flows



- Reasons to use a User Defined (custom) flow
 - Unique application not outlined in the National ITS Architecture
 - More commonly user defined flows are used for stakeholder clarity
- Turbo Architecture allows you to associate a user defined flow with a standard flow
 - Useful in certain situations where a user defined flow is being utilized for stakeholder clarity
 - A word of caution: When associating a user defined flow with a standard flow, the standard flow will no longer be available to you, you have effectively renamed the flow
- User defined flows will not appear in Turbo generated service package diagrams because they have no association with a service package (exception is "renamed" flows)

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Creating a User Defined Flow



Tools menu, select add flow

		Flow A	Attributes								
amber alert confirmation_ud	A	Name									
amber alert_ud archive data products request_ud archive data products_ud archive requests_ud archive status_ud area pollution data_ud asset restrictions_ud		amber	r alert confirmation_ud								
		Confi may i	Confirmation that the amber alert system commands have been received. Confirmation may include the messages that was activated and displayed.								
barrier system status_ud			Source	_	Destination	_	Replaces				
current asset restrictions_ud emergency acknowledge ud		•	Emergency Manag	-	Emergency Manag	-	<no replacement=""></no>				
emergency data request_ud			Traffic Manageme	-	Other Emergency	-	<no replacement=""></no>				
emergency transit schedule information_ud			Traffic Manageme	anageme 🔻 Other Traffic Mana 💌 <i< td=""><td><no replacement=""></no></td></i<>		<no replacement=""></no>					
emergency traveler information_ud evacuation information_ud			Traffic Manageme	•	Traffic Manageme	Ŧ	<no replacement=""></no>				
event plan approval_ud flood monitoring information_ud flood sensor control_ud flood warning_ud hazmat information request_ud hazmat information_ud HOV price information_ud		Applie Au Flow	es to Architectures (ustin Regional ITS Archite	Ctur	All O Select						

Creating a User Defined Flow



Enter flow name, description, source and destination subsystems

Extended Flows		Flow A	Attributes								
amber alert confirmation_ud	•	Name amber alert confirmation_ud Description									
amber alert_ud											
archive data products request_ud											
archive requests_ud archive status_ud area pollution data_ud asset restrictions_ud	E	Confi may i	Confirmation that the amber alert system commands have been received. Confirmation may include the messages that was activated and displayed.								
barrier system control_ud		Applie	pplies to Interfaces								
current asset restrictions ud			Source	_	Destination	_	Replaces	-			
emergency acknowledge_ud			Emergency Manag	•	Emergency Manag	•	<no replacement=""></no>	Ξ			
emergency data request_ud			Traffic Manageme	•	Other Emergency	•	<no replacement=""></no>				
emergency transit schedule information_ud			Traffic Manageme	•	Other Traffic Mana	Ŧ	<no replacement=""></no>				
emergency traveler information_ud			Traffic Manageme	Ŧ	Traffic Manageme	•	<no replacement=""> 💌</no>]-			
event plan approval_ud flood monitoring information_ud flood sensor control_ud flood warning_ud hazmat information request_ud hazmat information_ud		Applies to Architectures All Select Austin Regional ITS Architecture									
HOV price information_ud hri advisories_ud hri advisory information_ud	•	Flow N	Kind lational ITS Architecture		User Defined		O Discontinue	ed			



 You must perform a build for your user defined flow to appear in the Interfaces Tab as a potential flow for selection



Performing a Build



- In the Interfaces Tab, click the Build Button
 - It's always a good idea to save the Turbo database before performing a build

4E	2	Would you like to compare your Inventory and Market Package				No	ontinuing? Settings
Build Action	Source Element		Flow Name	Destina	ation Element		Status
	Build Se Inclu Only S Fic	de on the Inte	rfaces Tab de all possible flows tha nal ITS Architecture. flows to the interfaces t tecture.	t are defined in the All F Fi ab, but not to the	e Possible Iows		
	Cons	ride Use () resul adde	Override if you want thi ts of previous builds. A d to the architecture.)verride Previous Builds OK Cance	Aggr s build to override dditional flows ma	the y be		



Build Settings



- Include on Interfaces Tab
 - "All possible flows" will ensure that you get what you need
 - Middle setting is OK for standard applications
 - "Only selected flows" is the automated way to perform the clean up of excess flows

Build Setting	S
Include on	the Interfaces Tab Include all flows that are associated with your selected market packages. Valid flows will not be removed from the Interfaces Tab.
Only Selecte Flows	d All Possible Flows
Flow Selec	tion
	Add flows to the interfaces tab, but not to the architecture.
Conservati	ve Aggressive
Override -	Use Override if you want this build to override the results of previous builds. Additional flows may be added to the architecture.
	OK Cancel Apply

Build Settings



Flow selection

Always use the conservative setting, otherwise
 Turbo will try to guess what flows you want to use

Build Settings	
Include on the	ne Interfaces Tab Include all flows that are associated with your selected market packages. Valid flows will not be removed from the Interfaces Tab.
Only Selected Flows	All Possible Flows
Flow Selecti	ion
	Add flows to the interfaces tab, but not to the architecture.
Conservativ	e Aggressive
Override	Use Concrete if you want this build to override the results of previous builds. Additional flows may be added to the architecture.



Today's Agenda



- Intro to Turbo Architecture
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Generating Diagrams



- Follow these steps
 - Output menu option
 - Select diagrams

type

Select flow or interconnect under diagram



Generating a Flow Diagram (continued)



- Select elements filter (the filter options here works the same as in the Interfaces Tab)
- Select the elements you wish to view

🔊 Eleme	ent Selection	<
	Show All Interfaces Show Communications Elements	
Include	Element Name	
	County Maintenance and Construction Operations Dispatch	
	County Maintenance and Construction Vehicles	
	County Public Safety Dispatch and PSAP	
	County Public Safety Vehicles	
	CTRMA CCTV Cameras	
	CTRMA DMS	
	CTRMA Field Sensors	
	CTRMA HERO Vehicles	
	CTRMA Operations Center	
	CTRMA Toll Collection SmartHUB	
	CTRMA Toll Plazas	=
	CTRMA Toll Reconciliation Office	
	CTRMA Website	
	DPS and Other Public Safety Spectrum Systems	
	DPS Communications	
	DPS Emergency Vehicles	
	Financial Institution	
	Hays County Flood Closure Gates	
	Hays County Flood Detectors	
	Hays County Flood Warning Beacons	
	Hays County Office of Emergency Management	
	Hays County Radio Systems	Ŧ
Sel	ect All Project Elements OK	נ

Generating a Flow Diagram

Existing



- Select preview and the diagram will be generated
- If you want to export the diagram, you can also save it from within the preview



Generating Reports



- Follow these steps
 - Output menu option
 - Select reports
 - Choose a report

③ Reports	X
Available Reports Available Reports Architecture Summary Blanning Stakeholders Coperational Concept (Roles & Responsibilities) Coperational Concept (Roles & Responsibilities) Common Interfaces Common Requirements Common Requir	Report Title Elements Filters Architecture Summary Report Settings Ø Display Description Ø Display Associated Elements Include Change Log Entries Ø Display Status Values Legend
Presents summary information for all regional and project architectures that have been defined.	
	Save Recordset Preview Close



Generating Reports (continued)



- Useful reports include
 - Stakeholders stakeholder names, descriptions, and associated elements
 - Inventory element names, descriptions, subsystem(s), and status
 - Functional Requirements identifies and defines functional areas (equipment packages) by element
 - Standards Activities identifies relevant standards
 - Check Reports identifies potential errors related to information inputs and selections
- Select "preview" to view and print a preformatted report or select "save recordset" to produce a file (.pdf) or (.txt)

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Questions?

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