



# Airspace

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AIXM 5 Public Design Review  
February 7-8, 2006  
Washington DC



# Airspace

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- Modelled by AIRSPACE entity
- Generic entity representing
  - Regions – ICAO and otherwise
  - Areas
  - Zones
  - Sectors – elementary and/or consolidated
- Airspaces used in/by
  - Air traffic services
  - Special regulated airspace
  - Client defined airspace
  - Various 'limited' airspace

# AIRSPACE

<<XSDcomplexType>> AIRSPACE	
<<AIXMIdentifier>> + CODE_TYPE : Varchar(10)	Airspace type – FIR, UIR, TMA, CTR, P, D, R...
<<AIXMIdentifier>> + CODE_ID : Varchar(10)	
+ TXT_LOCAL_TYPE : Varchar(60)	
+ TXT_NAME : Varchar(60)	
+ CODE_CLASS : Varchar(5)	Class of airspace
+ CODE_LOC_IND : Varchar(4)	
+ CODE_ACTIVITY : Varchar(15)	Activity or purpose
+ CODE_MIL : Varchar(6)	
+ CODE_DIST_VER_UPPER : Varchar(5)	
+ VAL_DIST_VER_UPPER : Number(8,4)	Upper limit
+ UOM_DIST_VER_UPPER : Varchar(2)	
+ CODE_DIST_VER_LOWER : Varchar(5)	
+ VAL_DIST_VER_LOWER : Number(8,4)	Lower limit
+ UOM_DIST_VER_LOWER : Varchar(2)	
+ CODE_DIST_VER_MAX : Varchar(5)	
+ VAL_DIST_VER_MAX : Number(8,4)	Maximum limit
+ UOM_DIST_VER_MAX : Varchar(2)	
+ CODE_DIST_VER_MNM : Varchar(5)	
+ VAL_DIST_VER_MNM : Number(8,4)	Minimum limit
+ UOM_DIST_VER_MNM : Varchar(2)	
+ VAL_LOWER_LIMIT : Number(3)	FIR only-limit between upper and lower airspace
+ TXT_RMK : Long Varchar	

# Airspace Type

**AIRSPACE**

\* CODE\_TYPE

\* CODE\_ID

Is it correct?

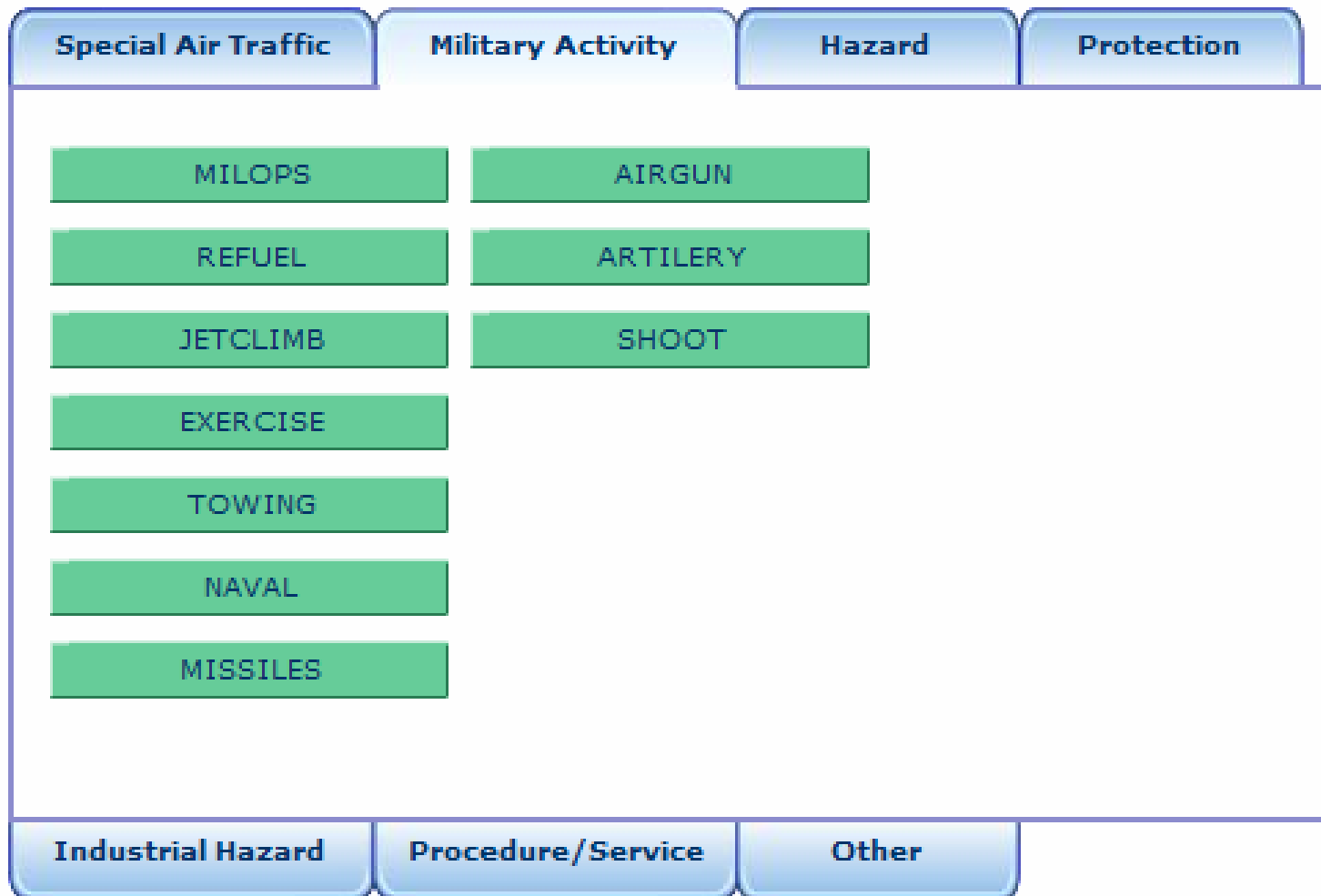
FIR	SECTOR-C	TSA	POLITICAL
UIR	P	D-AMC	NO-FIR
CTA	D	R-AMC	OTA
UTA	R	TRA	AMA
OCA	D-OTHER	CBA	ASR
TMA	ADIZ	RCA	RAS
CTR	A		PART
SECTOR	W		
AWY	PROTECT		
CLASS			

# Airspace Activity

Special Air Traffic	Military Activity	Hazard	Protection
TFC-AD	GLIDER	SPACEFLT	
TFC-HELI	PARAGLIDER	UAV	
TRG	HANGGLIDER	WORK	
ACROBAT	PARACHUTE	DUSTING	
AIRSHOW	DROP	FIRE	
SPORT	BALLOON		
ULM	ASCENT		
Industrial Hazard	Procedure/Service	Other	

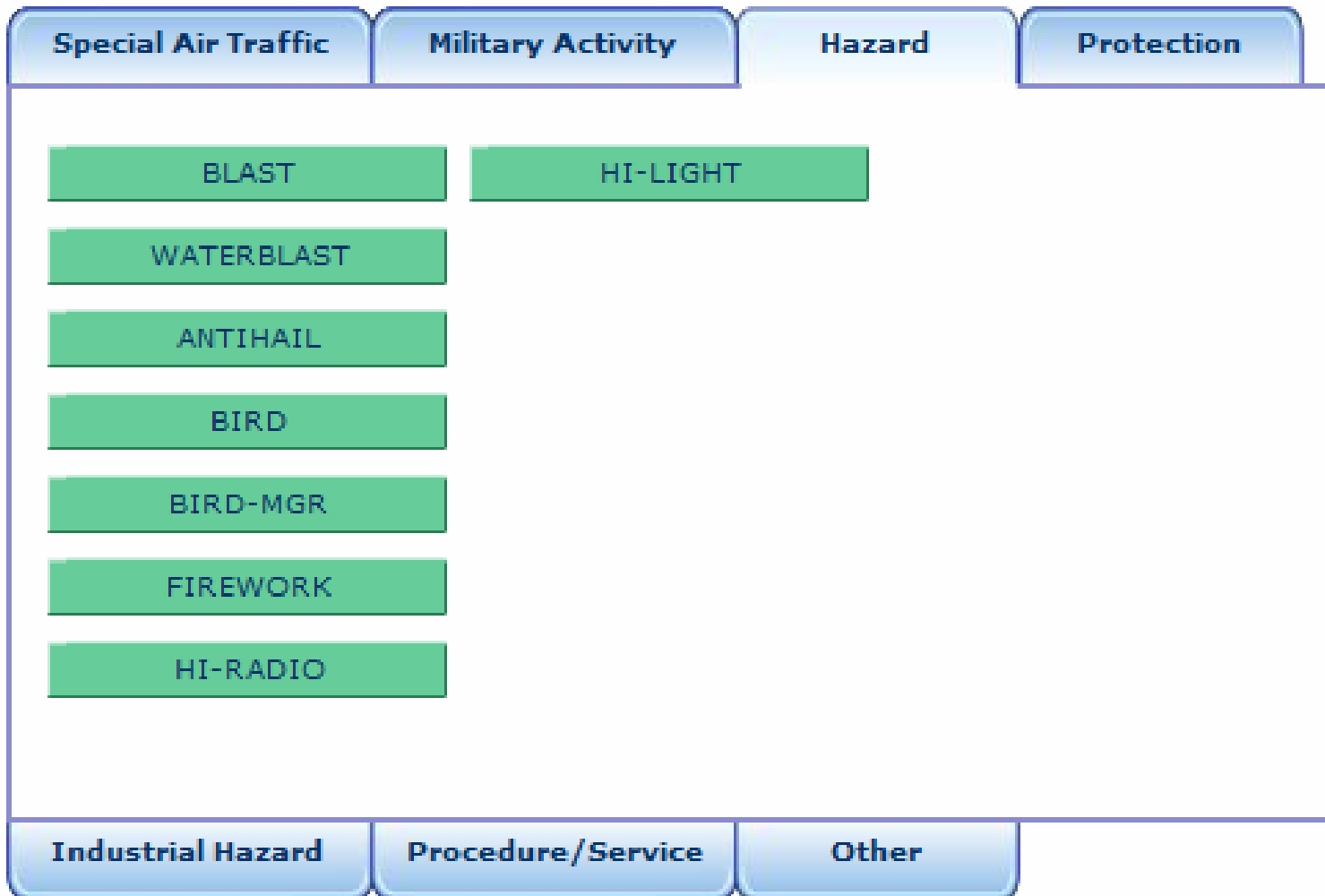
# Airspace Activity

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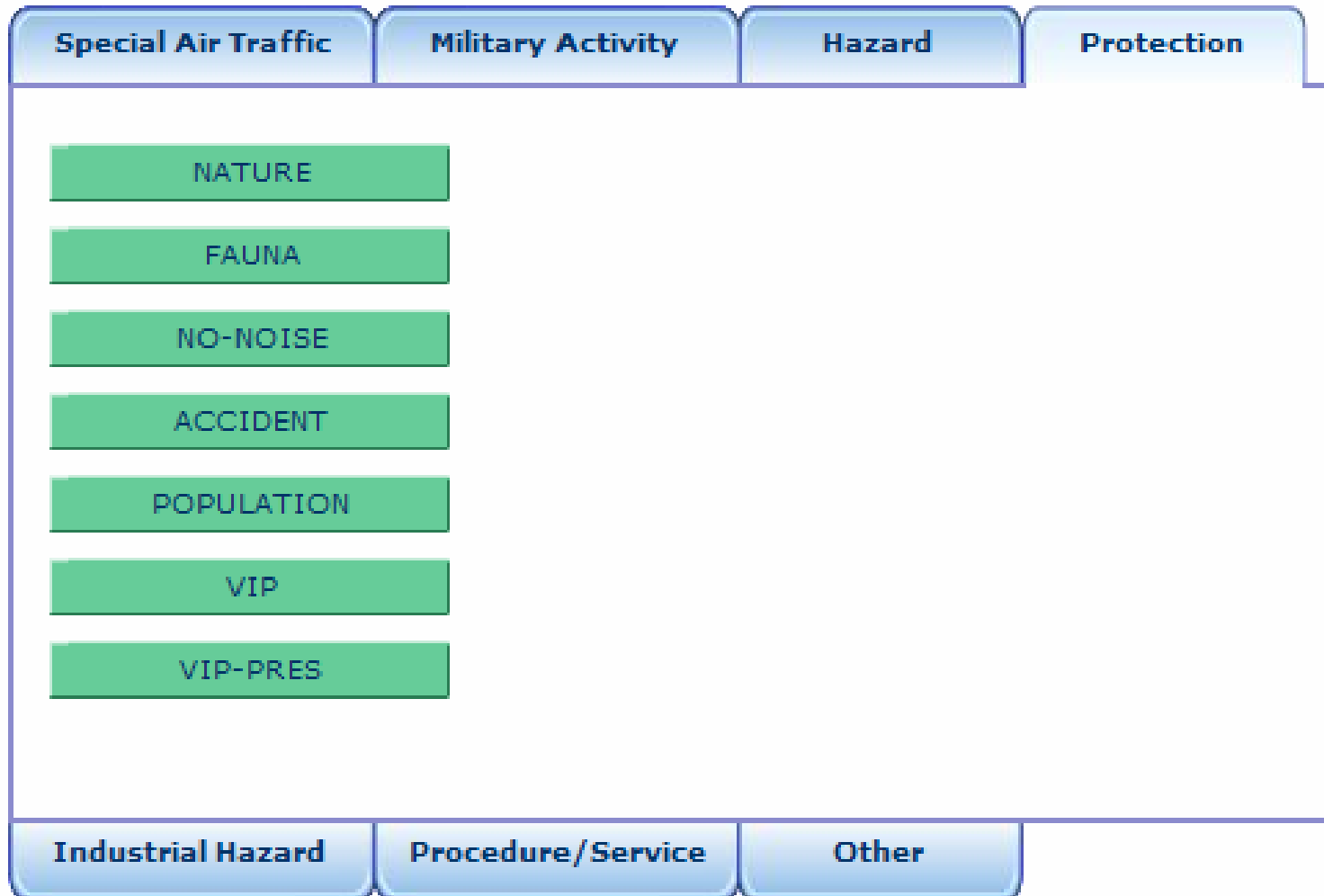
# Airspace Activity

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# Airspace Activity

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# Airspace Activity

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Special Air Traffic

Military Activity

Hazard

Protection

OIL

GAZ

IND-OIL

IND-CHEM

IND-NUCLEAR

TECHNICAL

Industrial Hazard

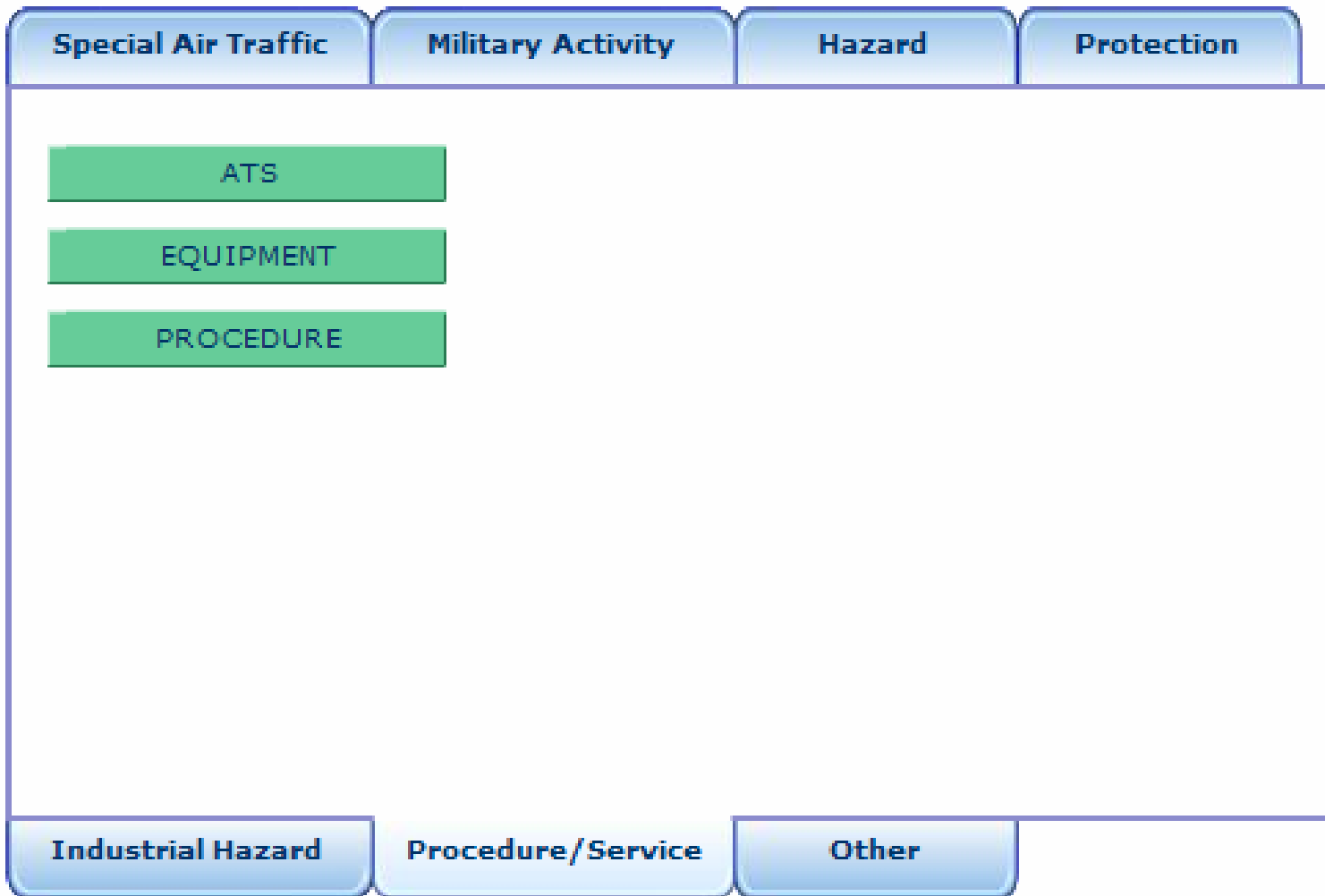
Procedure/Service

Other



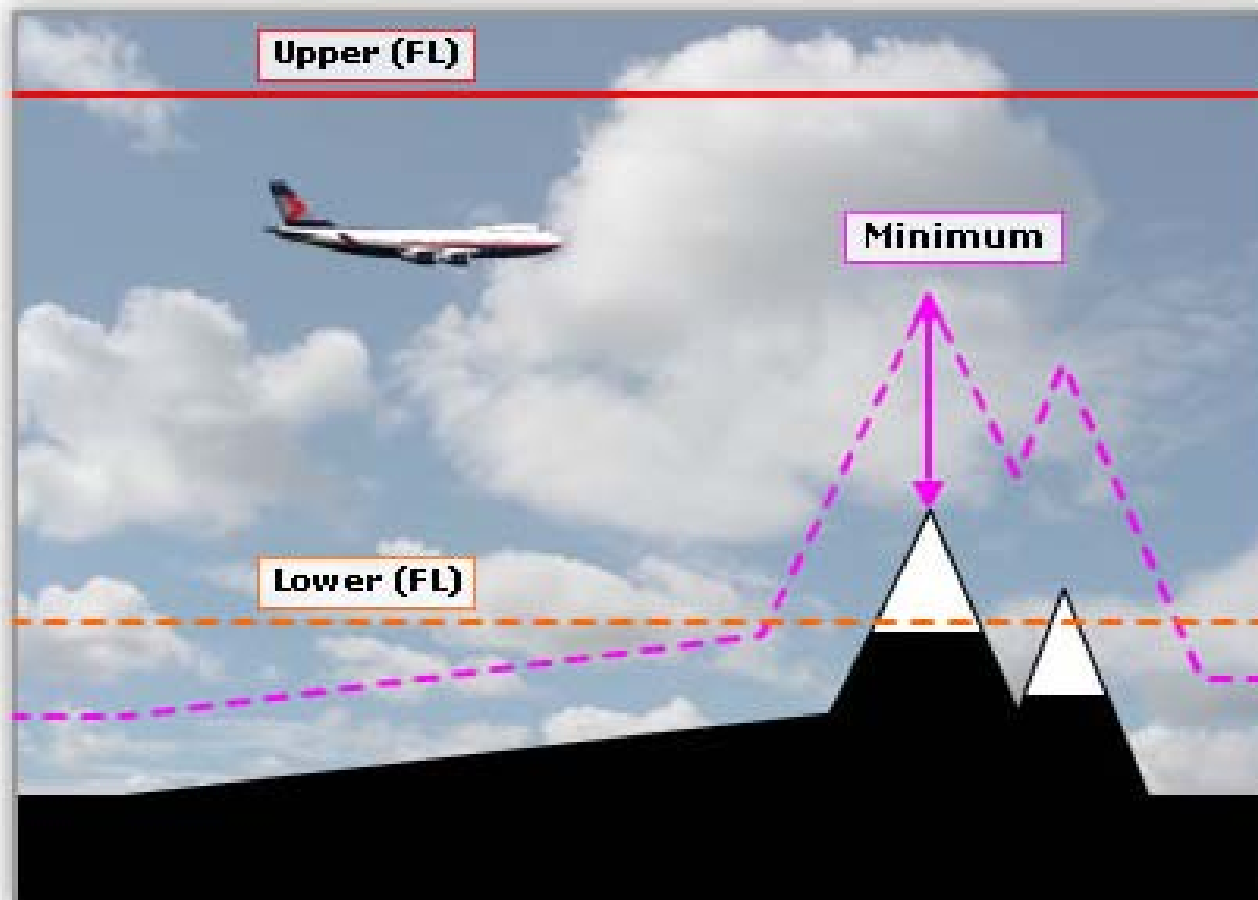
# Airspace Activity

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# Airspace Altitudes

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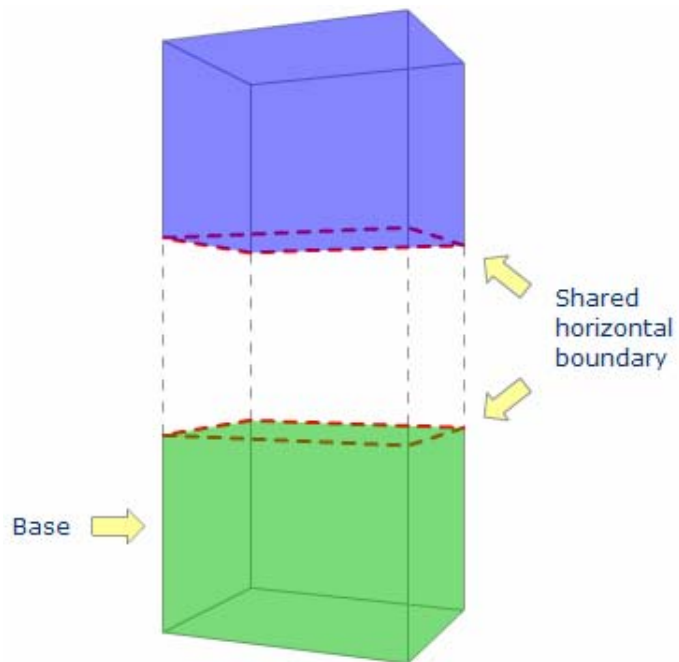
# Airspace Geometry

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<<XSDcomplexType>>  
AIRSPACE  
-<<AIXMidentifier>> + CODE_TYPE : Varchar(10)  
-<<AIXMidentifier>> + CODE_ID : Varchar(10)  
+ TXT_LOCAL_TYPE : Varchar(60)  
+ TXT_NAME : Varchar(60)  
+ CODE_CLASS : Varchar(5)  
+ CODE_LOC_IND : Varchar(4)  
+ CODE_ACTIVITY : Varchar(15)  
+ CODE_MIL : Varchar(6)  
+ CODE_DIST_VER_UPPER : Varchar(5)  
+ VAL_DIST_VER_UPPER : Number(8,4)  
+ UOM_DIST_VER_UPPER : Varchar(2)  
+ CODE_DIST_VER_LOWER : Varchar(5)  
+ VAL_DIST_VER_LOWER : Number(8,4)  
+ UOM_DIST_VER_LOWER : Varchar(2)  
+ CODE_DIST_VER_MAX : Varchar(5)  
+ VAL_DIST_VER_MAX : Number(8,4)  
+ UOM_DIST_VER_MAX : Varchar(2)  
+ CODE_DIST_VER_MNM : Varchar(5)  
+ VAL_DIST_VER_MNM : Number(8,4)  
+ UOM_DIST_VER_MNM : Varchar(2)  
+ VAL_LOWER_LIMIT : Number(3)  
+ TXT_RMK : Long Varchar
```

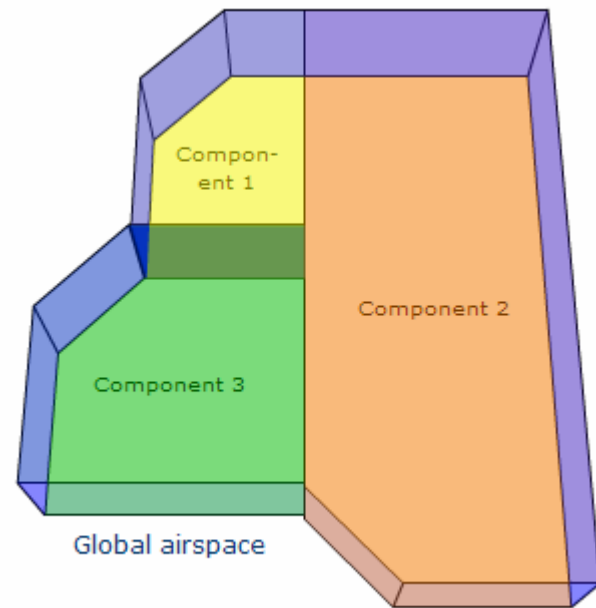
GM\_POLYGON  
(circle, arcs, lines)

# Derived Airspace

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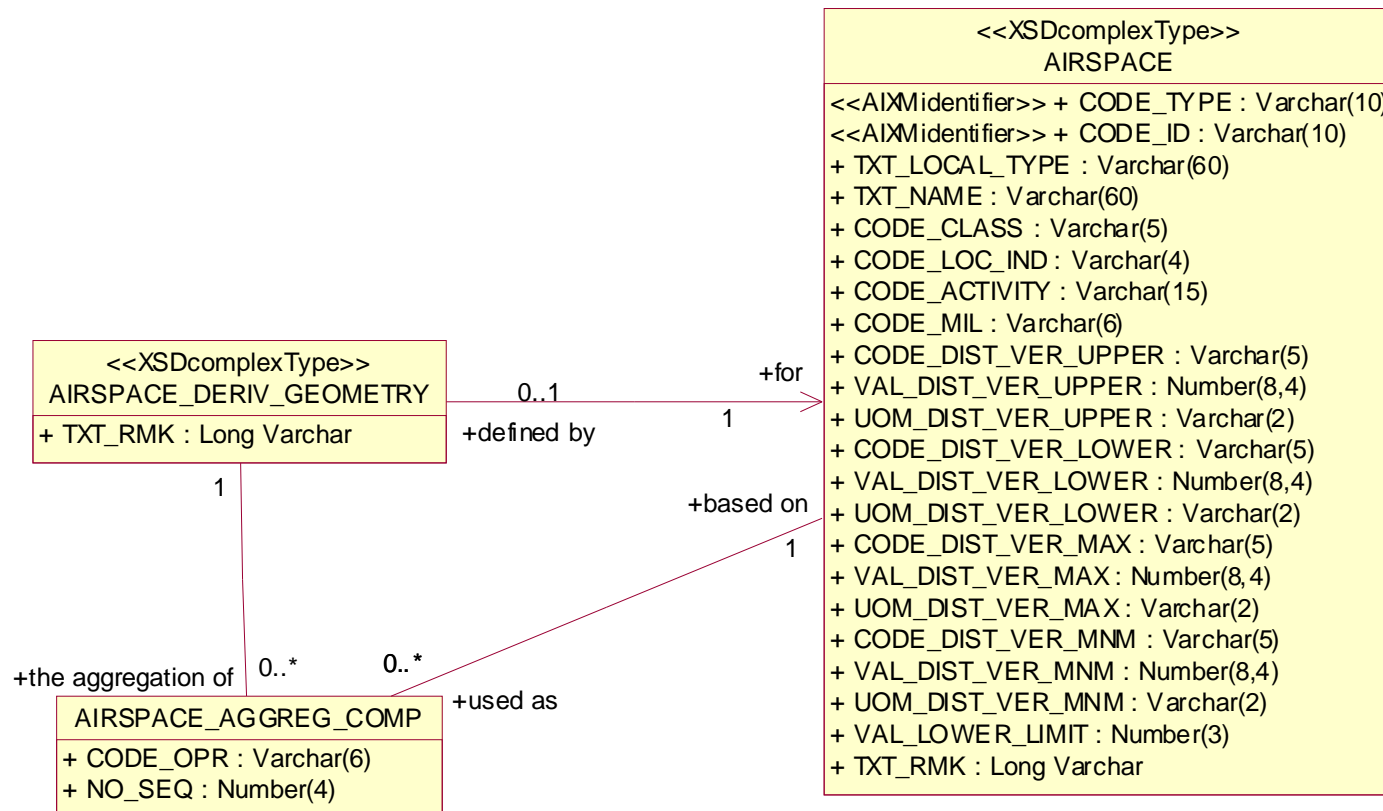


Airspaces with same horizontal border



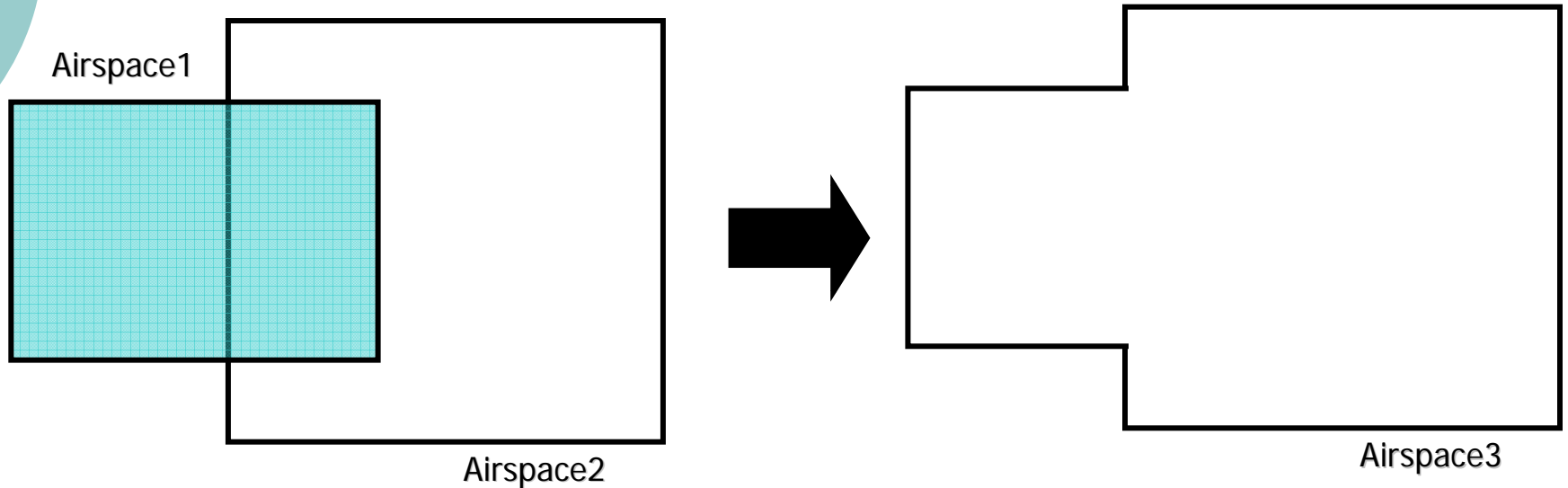
Airspace *derived* from aggregation of parts

# Airspace Geometry



# Aggregation Example - UNION

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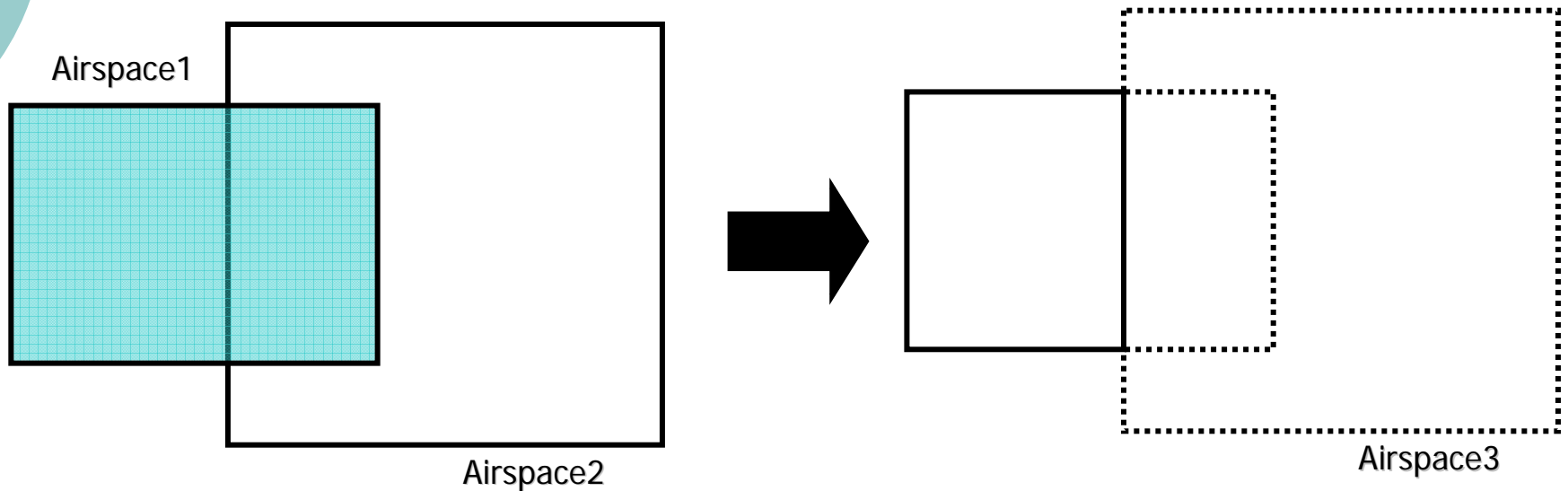


Airspace1 as aggregation component: CODE\_OPR = BASE, NO\_SEQ = 1

Airspace2 as aggregation component: CODE\_OPR = UNION, NO\_SEQ = 2

# Aggregation Example - SUBTR

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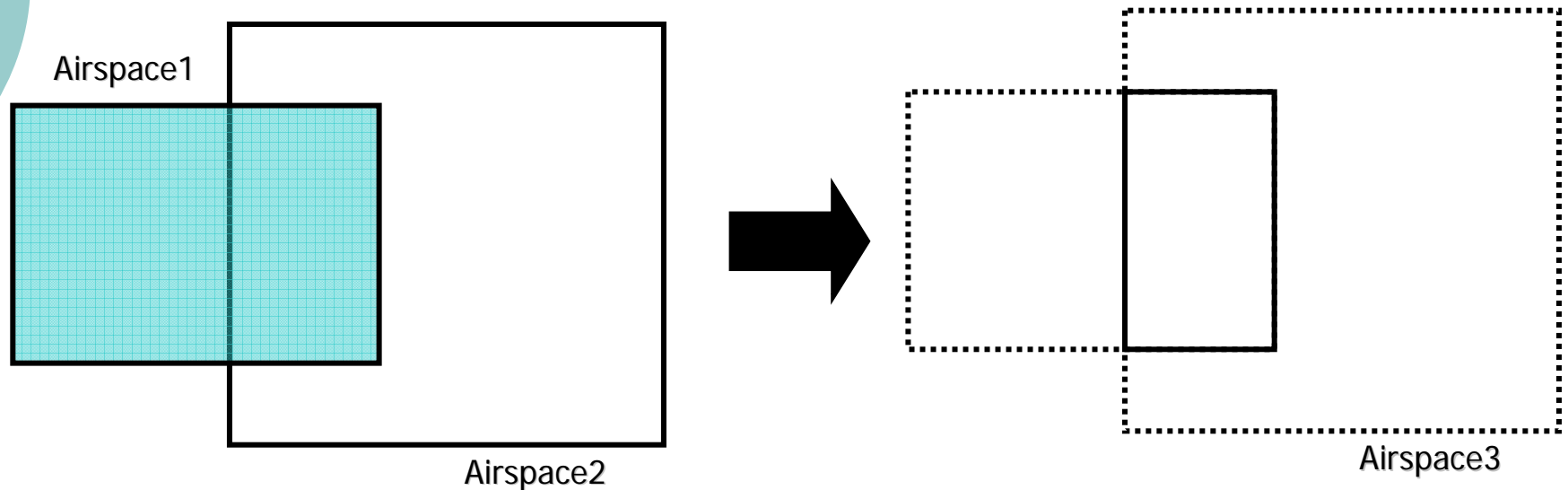
Airspace1 as aggregation component: CODE\_OPR = BASE, NO\_SEQ = 1

Airspace2 as aggregation component: CODE\_OPR = SUBTR, NO\_SEQ = 2



# Aggregation Example - INTERS

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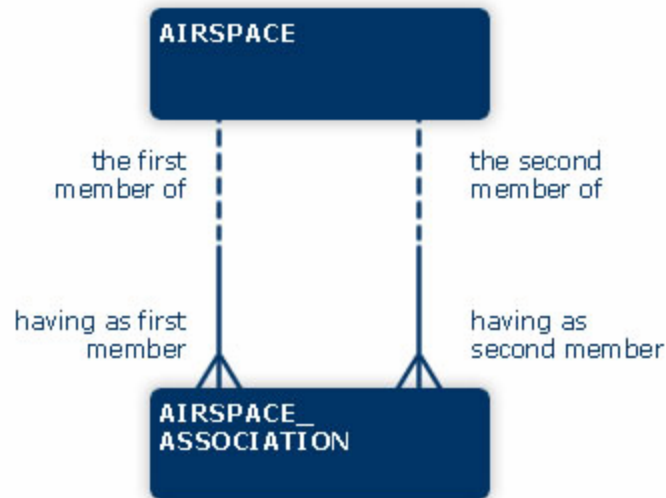


Airspace1 as aggregation component: CODE\_OPR = BASE, NO\_SEQ = 1

Airspace2 as aggregation component: CODE\_OPR = INTERS, NO\_SEQ = 2

# Association

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The *AirspaceAssociation* feature allows us to model different relationships between airspaces that are not geographical, such as time limited use for example.

- When outside the allocated time, another airspace replaces the current one.
  - The time allocations can't overlap otherwise you would have two airspace geometries operating for the same airspace.
- Examples
  - Various sector configurations within a controlled area that are activated at different times.