(U//FOUO) In-Flight GSM

[redacted]

S32423/S3T1

•The overall classification of this briefing is TOP SECRET//COMINT//REL

Derived From: NSA/CSM 1-52
Dated: 8 January 2007
Declassify On: 20320108

(U//FOUO) Travel Persona Pod POD50

- (S//REL) Analysis of travel activity carried in Short Message Service (SMS) and GSM traffic

(U//FOUO) Key GSM Terms

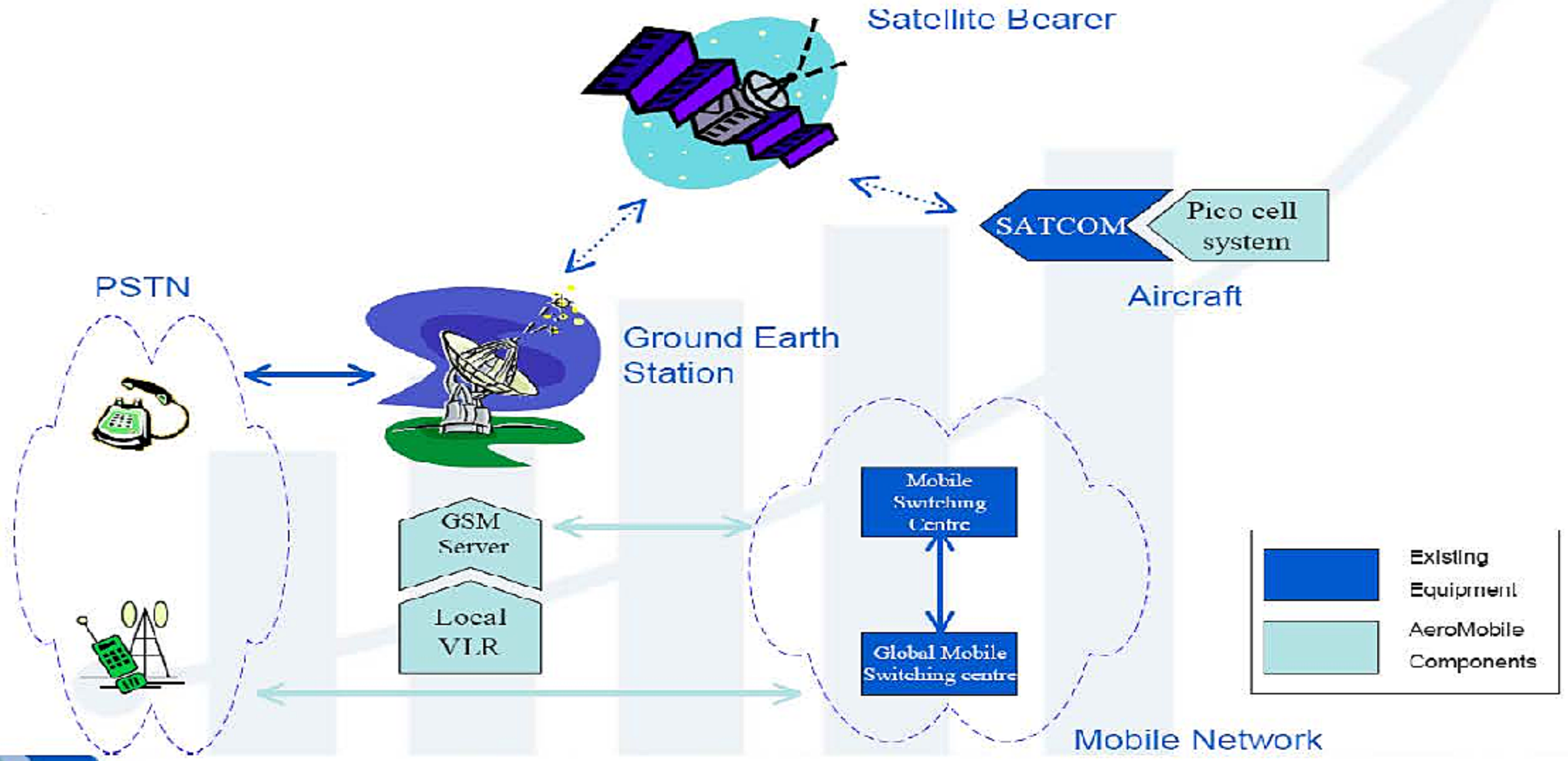
- (U//FOUO) GSM – Global System for Mobile Communictaions
- (U//FOUO) MS – Mobile Subscriber
- (U//FOUO) IMSI – International Mobile Subscriber Identity
- (U//FOUO) MSISDN – MS Integrated Services Digital Network Number
- (U//FOUO) VLR – Visitor Location Register
- (U//FOUO) HLR – Home Location Register

(U//FOUO) What is In-Flight GSM?

- (U//FOUO) The ability for a Mobile Subscriber to use GSM services while traveling onboard an aircraft

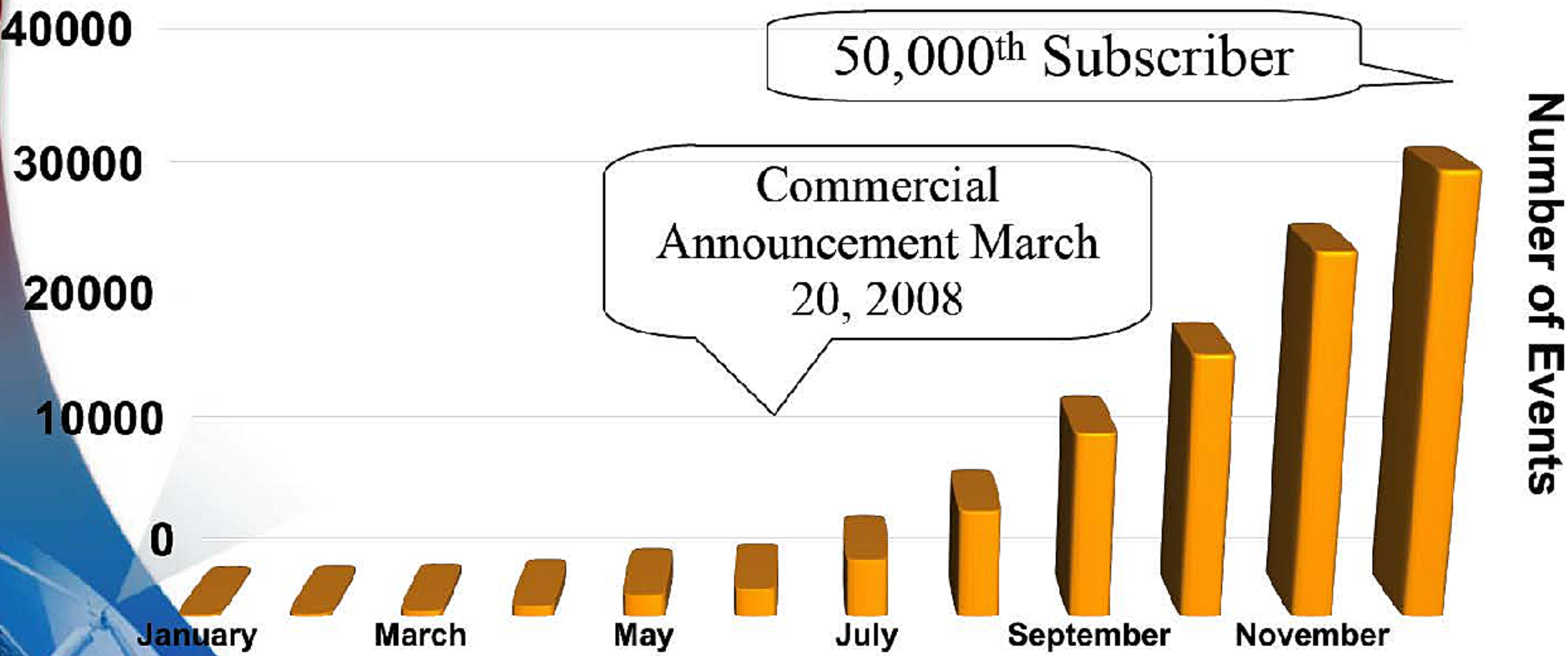
(U//FOUO) How In-Flight GSM is Implemented

AeroMobile System Topology



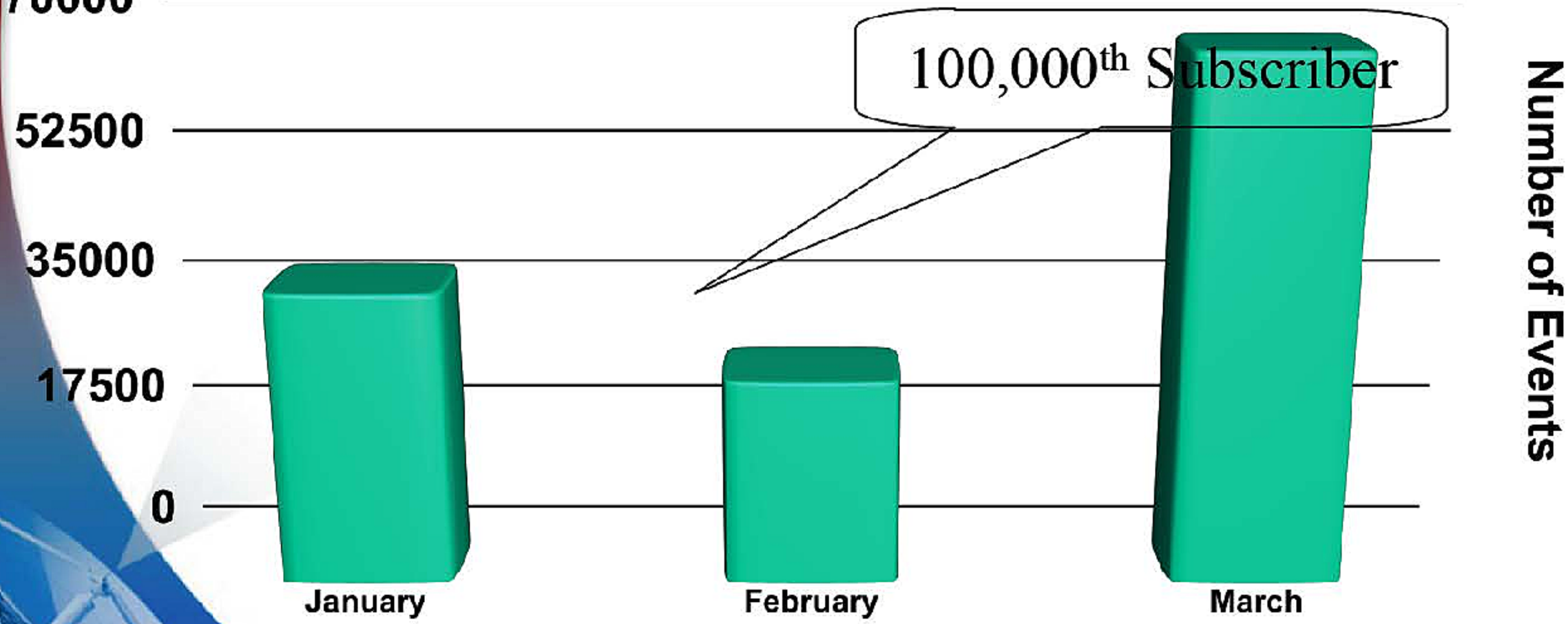
(U//FOUO) Popularity

2008 In-Flight GSM Activity



(U//FOUO) Popularity

2009 In-Flight GSM Activity



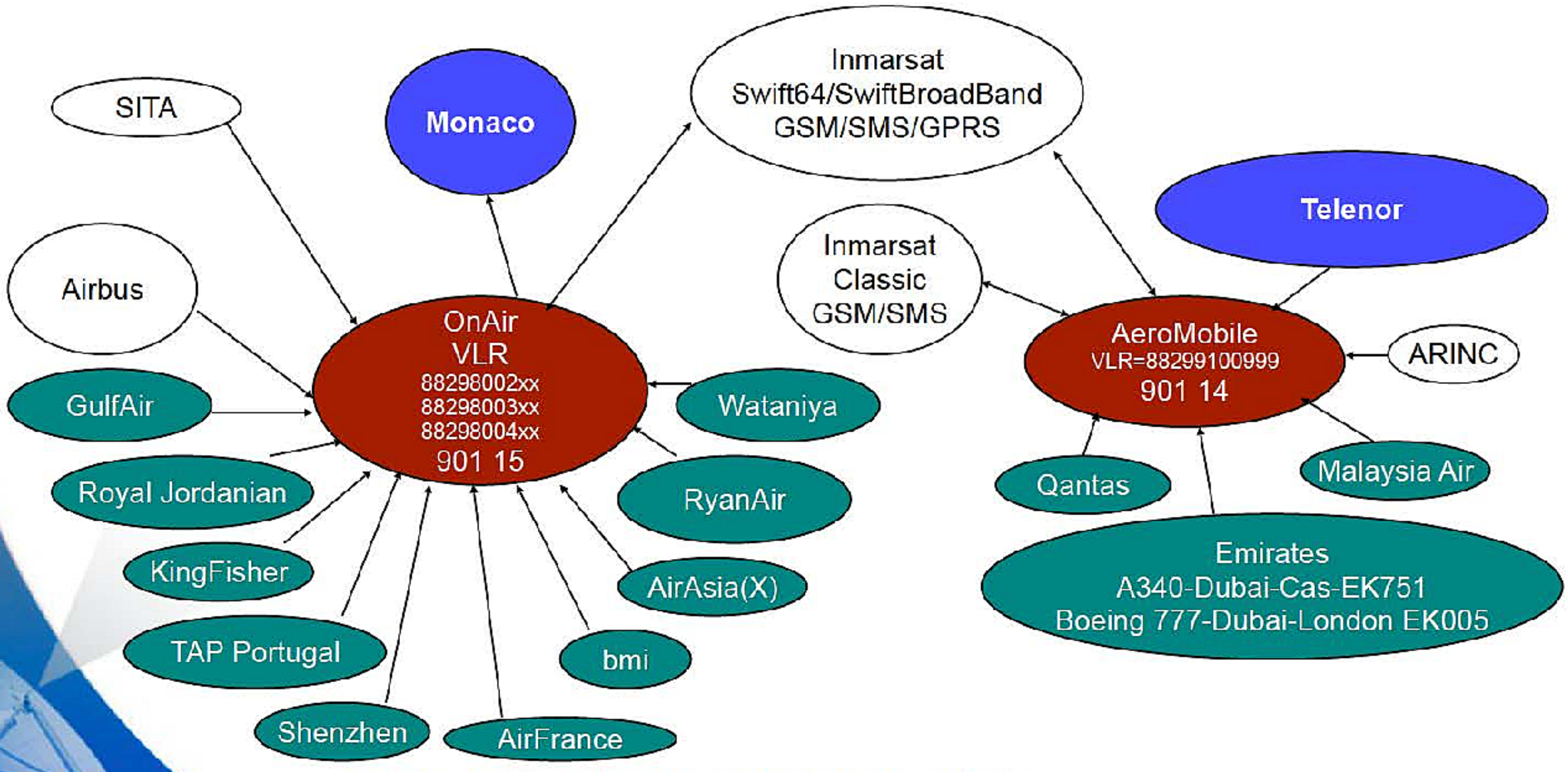
(U//FOUO) Popularity

- (U//FOUO) Jan – Dec 2008 the usage roughly doubled every month.
- (U//FOUO) Took 9 Months (March 20 to Dec. 16) to reach 50K users.
- (U//FOUO) Took 2 months (Dec 17 to Feb 15) to reach the 2nd 50K users. (100K in 11 months)
- (U//FOUO) Last count 160,170 (as of 3/20/2009)

(U//FOUO) Reasons for Increase

- (U//FOUO) More planes equipped with In-Flight GSM capability
- (U//FOUO) Less fear that plane will crash due to making/receiving a call
- (U//FOUO) Not as expensive as people thought

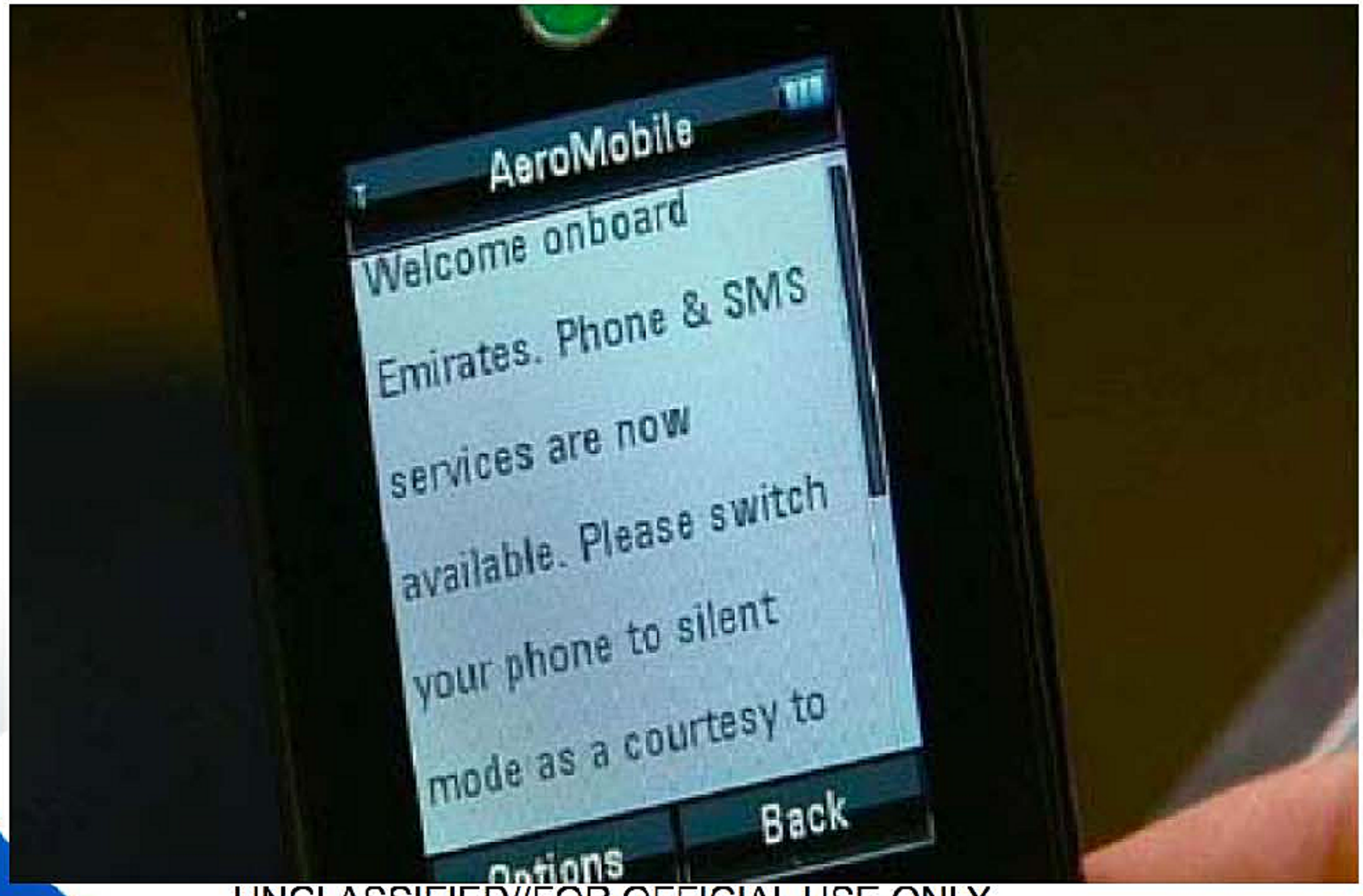
(U//FOUO) Who's Implementing In-Flight GSM



(S//REL) Finding In-Flight GSM

- (S//REL) I started with internal google searches on in-flight related articles
- (S//REL) Continued Google searches using AirGap account to get more commercial details on in-flight GSM
- (U//FOUO) Found that in-flight providers like to say who's "onboard" with their solution
- (U//FOUO) Airline's provide good usable information in Press Releases

(U//FOUO) Emirates Press Release



(C//REL) NSA Database Searching

- (S//SI//REL) The "Welcome onboard Emirates" text search in DISHFIRE was my initial lauching point
- (S//SI//REL) ASSOCIATION searches are easy way to find In-Flight activity
- (S//SI//REL) CHALKFUN used to confirm roaming and mentioned flights
- (S//SI//REL) FASTSCOPE used to provide timeline of individual's travel

(TS//SI//REL) ASSOCIATION

E-EVENT_DATE	E-IMSI	E-MSISDN	E-VLR_CONFIRMED
1/23/2009 15:58	[redacted]		923210002026-N
1/23/2009 17:40			-
1/23/2009 17:53			88299100999-N
1/23/2009 17:53	-		88299100999-C
1/23/2009 19:16			-

(TS//SI//REL) CHALKFUN

IMSI	MSISDN	EVENT_DATE	VLR	COUNTRY	LOCATION
[redacted]		20090123 15:58:39	923210002026	PAKISTAN	UNKNOWN
		20090123 17:53:55	88299100999	AERONAUTICAL	UNKNOWN
		20090123 17:53:56	88299100999	AERONAUTICAL	UNKNOWN
		20090126 07:41:03	923452000003	PAKISTAN	KARACHI
		20090126 07:41:04	923452000003	PAKISTAN	KARACHI
		20090126 07:41:04	923452000003	PAKISTAN	KARACHI
		20090126 15:08:19	923210002002	PAKISTAN	UNKNOWN
		20090131 05:46:45	923455000036	PAKISTAN	ISLAMABAD

(S//REL) So we see In-Flight GSM now

- (S//REL) We can see it now on daily basis.
- (S//REL) We see that its use is increasing daily.
- (S//REL) How long has data been in Agency databases?
- (S//REL) Started performing same ASSOCIATION query prior to March 20, 2008.

(U//FOUO) Here's what I found

- (TS//SI//REL) First instance of VLR activity was to VLR 88299100999 (Aeromobile) on Oct. 2, 2006
- (TS//SI//REL) The first instance on an OnAir VLR was to VLR 8829800201 on Nov. 23, 2006
- (TS//SI//REL) The first instance of a target registering with In-Flight service was on May 29, 2007 to OnAir's VLR 8829800202

(U//FOUO) Importance

- (TS//SI//REL) Can track a target while onboard an aircraft
- (TS//SI//REL) Data association of IMSI, MSISDN, Flight, Proof number on an airplane
- (TS//SI//REL) Confirm suspected travel of a Target
- (S//SI//REL) Assist in determining when to turn on/off collection (approach US border)
- (TS//SI//REL) Implant VLR's for voice collection (NSA could "own" the air)

(U//FOUO) Continuing Research

- (U//FOUO) More extensive evaluation of data
- (S//SI//REL) Looking for GPRS activity
- (S//SI//REL) Identify vendor hardware
- (S//SI//REL) Identify specific aircraft with solution installed

QUESTIONS?

(U//FOUO) Contact Information

[redacted]

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