(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 Communications
- (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

- PSTN
- Ground Earth Station
- Satellite Bearer
- SATCOM
- Aircraft
- Mobile Network

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(U//FOUO) Popularity

2008 In-Flight GSM Activity

- 50,000th Subscriber
- Commercial Announcement March 20, 2008

Number of Events

January, March, May, July, September, November
(U//FOUO) Popularity

2009 In-Flight GSM Activity

Number of Events

January
February
March

0
17500
35000
52500
70000

100,000th Subscriber

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(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

OnAir
VLR 88296002xx
88296003xx
88296004xx
901 15

SITA
Monaco

Airbus

Inmarsat
Swift64/SwiftBroadBand
GSM/SMS/GPRS

Inmarsat
Classic
GSM/SMS

Wataniya
RyanAir

AeroMobile
VLR=88269100999
901 14

Qantas

Malaysia Air

Emirates
A340 Dubai-Cas-EK751
Boeing 777-Dubai-London EK005

Telenor

ARINC
(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

Welcome onboard
Emirates Phone & SMS services are now available. Please switch your phone to silent mode as a courtesy to others.
(C//REL) NSA Database Searching

- (S//SI//REL) The “Welcome onboard Emirates” text search in DISHFiRE was my initial launching 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
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(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

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