

#### **IBM Software Group**

# Non-Obvious Relationship Awareness (NORA)

Jeff Jonas, Distinguished Engineer and Chief Scientist IBM Entity Analytic Solutions
Las Vegas, Nevada
jeffjonas@us.ibm.com







#### **IBM Software Group**

# Identity Resolution Answering "Who is Who?"





# A Post September 11th Analysis

(Public Information, prepared for presentation purposes only)



#### **Starting with 2 Known Terrorists in US**

#### WATCH LIST: CIA/INS/FBI POSSIBLE TERRORISTS IN THE US:

On or before August 23<sup>rd</sup>, 2001, Nawaq Alhamzi and Khalid Al-Midhar added to INS watchlist

#### MAKE PLANE RESERVATIONS USING SAME NAMES:

- ➤ On or about August 25, 2001, Khalid Al-Midhar purchases cash ticket for American Airlines flight #77 scheduled for September 11, 2001
- On or about August 27, 2001, Nawaq Alhamzi books a flight on American Airlines flight #77 scheduled for September 11, 2001



#### **American Airlines Flight 77** Target - Pentagon



Nawaq Alhamzi



Salem Al-Hazmi



Hani Hanjour







Majed Moged

#### **American Airlines Flight 11 Target - North Tower of World Trade Center**



**Mohamed Atta** 



Wail Alshehri



Abdulaziz Alomari



Waleed Alshehri



Satam Al Sugami

### Starting with 2 Known Terrorists in US

#### **United Airlines Flight 175 Target - South Tower of World Trade Center**



**Ahmed Alghamdi** 



Marwan Al-Shehhi



**Fayez Ahmed** 



Saeed Alghamdi



**United Airlines Flight 93** Target - Unknown

Ahmed Al Haznawi



**Ahmed Alnami** 



Mohand Alshehri



Hamza Alghamdi



Ziad Jarrah









#### **Address Connections**

#### **RESERVATIONS MADE WITH ADDRESS #1 AND ADDRESS #2**

- On or about August 25, 2001, Khalid Al-Midhar makes a reservation on American Airlines flight #77 scheduled for September 11, 2001 using Common Address #1
- On or about August 27, 2001, Nawaq Alhamzi books flight on American Airlines flight #77 scheduled for September 11, 2001 using Common Address #2

#### ADDRESSES ARE USED BY THREE (3) ADDITIONAL PASSENGERS

- Mohamed Atta has reservation on American Airlines flight #11 scheduled for September 11, 2001 using <u>Common Address #1</u> as a contact address
- Marwan al-Shehhi has reservation on United Airlines flight #175 scheduled for September 11, 2001 using <u>Common Address #1</u> as a contact address
- Salem Alhamzi has reservation on American Airlines flight #77 scheduled for September 11, 2001 using <u>Common Address #2</u> as a contact address



# American Airlines Flight 77 Target - Pentagon



Nawaq Alhamzi



Salem Al-Hazmi



Hani Hanjour





**Majed Moqed** 

# American Airlines Flight 11 Target - North Tower of World Trade Center



**Mohamed Atta** 



Wail Alshehri



Abdulaziz Alomari



Waleed Alshehri



Satam Al Sugami

#### 5 are Identified

# United Airlines Flight 175 Target - South Tower of World Trade Center



**Ahmed Alghamdi** 



Marwan Al-Shehhi



**Fayez Ahmed** 



Saeed Alghamdi



United Airlines Flight 93 Target - Unknown

Ahmed Al Haznawi



**Ahmed Alnami** 



Mohand Alshehri



Hamza Alghamdi



Ziad Jarrah







#### **Phone Number Connections**

# ONE (1) ALERTED PASSENGER MAKES RESERVATION USING COMMON TELEPHONE NUMBER

On or about August 28, 2001, Mohamed Atta uses Florida Telephone #1 as a contact number when making reservations on American Airlines flight #11 scheduled for September 11, 2001

#### NUMBER IS USED BY FIVE (5) ADDITIONAL PASSENGERS

- On or about August 26, 2001, Waleed Alshehri and Wail Alshehri make reservations on American Airlines flight #77 scheduled for September 11, 2001 using Florida Telephone #1 as a contact number
- On or about August 27, 2001, reservations for electronic, one-way tickets were made for Fayez Ahmed and Mohand Alshehri for United Airlines flight #175 using Florida Telephone #1 as a contact number
- On or about August 28, 2001, Abdulaziz Alomari reserves a seat on American Airlines flight #11 using Florida Telephone #1 as a contact number



# American Airlines Flight 77 Target - Pentagon



Nawaq Alhamzi



Salem Al-Hazmi

Hani Hanjour





Majed Moged

# American Airlines Flight 11 Target - North Tower of World Trade Center







**Mohamed Atta** 

Wail Alshehri

Abdulaziz Alomari





Waleed Alshehri

Satam Al Sugami

#### 10 are Identified

# United Airlines Flight 175 Target - South Tower of World Trade Center













Saeed Alghamdi

Ahmed Al Haznawi

**Ahmed Alnami** 

Ziad Jarrah





Hamza Alghamdi



### **Frequent Flyer Connections**

# ONE (1) ALERTED PASSENGER MAKES RESERVATION USING A FREQUENT FLYER NUMBER

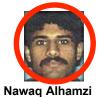
On or about August 25, 2001, Khalid Al-Midhar makes a reservation on American Airlines flight #77 scheduled for September 11, 2001 using <u>Frequent Flyer #1</u>

# FREQUENT FLYER NUMBER IS USED BY ONE (1) ADDITIONAL PASSENGER

On or about August 25, 2001, Majed Moqed makes a reservation on American Airlines flight #77 scheduled for September 11, 2001 using Frequent Flyer #1



# American Airlines Flight 77 Target - Pentagon





Salem Al-Hazmi



Hani Hanjour





# American Airlines Flight 11 Target - North Tower of World Trade Center







**Mohamed Atta** 



Waleed Alshehri

Satam Al Sugami

#### 11 are Identified

# United Airlines Flight 175 Target - South Tower of World Trade Center







**Fayez Ahmed** 

United Airlines Flight 93 Target - Unknown











Hamza Alghamdi

Ahmed Al Haznawi

Ziad Jarrah



#### **Public Record Connections**

#### **PUBLIC RECORDS**

- Alerted subjects Nawaq Alhamzi and Khalid Al-Midhar <u>lived with</u> Hani Hanjour
- Alerted subject Wail Ashehri was <u>roommates and shares PO Box</u> with <u>Satan Al Suqami</u>



# American Airlines Flight 77 Target - Pentagon





Hani Hanjour



Salem Al-Hazmi

Khanu Al-Midhar



American Airlines Flight 11
Target - North Tower of World Trade Center







**Mohamed Atta** 

Wail Alshehri

Abdulaziz Alomari





Waleed Alshehri

Satam Al Sugami

#### 13 are Identified

# United Airlines Flight 175 Target - South Tower of World Trade Center













Marwan Al-Shehhi

**Fayez Ahmed** 

Saeed Alghamdi

Ahmed Al Haznawi

United Airlines Flight 93 Target - Unknown

**Ahmed Alnami** 







Hamza Alghamdi









#### **Remaining Connections**

#### WATCH LIST: INS ILLEGAL/EXPIRED VISAS

On or about August 29, 2001, <u>Ahmed Alghamdi</u> reserves an electronic one-way ticket on United Airlines flight #175 scheduled for September 11, 2001

#### **FIVE (5) ADDITIONAL PASSENGERS:**

- Alerted subject Ahmed Alghamdi and Hamza Alghamdi both use same address on their airline reservations
- Alerted subject Hamza Alghamdi <u>has/does live with</u> Saeed Alghamdi, Ahmed Alhaznawi, Ahmed Alnami
- Alerted subject Ahmed Alhaznawi <u>lives/lived with</u> Ziad Jarrah



# American Airlines Flight 77 Target - Pentagon





Salem Al-Hazmi Hani Hanjour





American Airlines Flight 11
Target - North Tower of World Trade Center







**Mohamed Atta** 

Waleed Alshehri

Satam Al Sugami

All 19 are Identified!

# United Airlines Flight 175 Target - South Tower of World Trade Center







Saeed Alghamdi





Ahmed Alghamdi



Mohand Alshehri



Hamza Alghamdi

United Airlines Flight 93 Target - Unknown





Ziad Jarrah

## All 19 via 3 Degrees of Separation

