



# Sharing Communications Metadata Across the U.S. Intelligence Community- ICREACH

*15 May 2007*



# The Need for Greater IC Sharing of Information



- 1. (U) Recommendations of 9/11 and WMD Commissions**
- 2. (U) Congressional Interest – IRTPA**
- 3. (U) DNI – A part of 100-Day Plan**
- 4. (U) DoD Information Sharing Strategy**



# Information Sharing Policy



- **(U//FOUO) DCID 8/1, June 2004** – “All IC agencies will provide intelligence information at the earliest point at which customers can understand and effectively use it to support their mission objectives...”
- **(U//FOUO) NSA Policy 1-9, May 2005** – implements DCID 8/1 and Transformation 2.0: “SIGINT information originated by NSA/CSS shall be shared ... with U.S. Government customers and partners ... and with Foreign Partners... to the maximum extent possible, consistent with applicable statutes, executive orders and regulations, and consistent with the ‘need-to-know’ principle and with applicable authorities governing the protection of intelligence sources and methods.”



# SIGINT Dissemination/Sharing Matrix



**SIGINT Data**

	<b>Minimized</b>	<b>Assessed for FI</b>	<b>Shareable</b>
<b>SIGINT Products &amp; Services</b>	Yes	Yes	Yes
<b>SIGINT Communications Metadata*</b>	Yes	No, but provided for FI purposes	Yes
<b>Raw SIGINT</b>	No	No	No

\*(C//REL) **Communications metadata** refers to structured “data about data”: it includes all information associated with, but not including content, and includes any data used by a network, service, or application to facilitate routing or handling of a communication or to render content in the intended format; it includes, but is not limited to; dialing, routing, addressing, or signaling information and data in support of various network management activities (e.g. billing, authentication or tracking of communicants).



# Sharing Matrix - ICREACH



	Minimized	Assessed for FI	Shareable
<b>COMINT Communications Metadata</b>	Yes	No, but provided for FI purposes	Yes

ICREACH



# Building on IC Success – Information Sharing



(C//REL) Ensure efficient, effective sharing of ever expanding volumes of IC communications metadata. The IC requires access to a much greater volume of data, for a larger number of analysts.

- 1. Make more data accessible**
- 2. Wider set of IC Analysts**
- 3. For more comprehensive in-depth analysis of Communications Metadata for**
  - Situational Awareness**
  - Collection Management**
  - Target Development**





# NSA<sup>7</sup> S Proposal

## **PROPOSAL:**

1. (U//FOUO) Make IC communications metadata accessible to the greater IC.
  - a. Data will be updated and accessible instantly by IC Intelligence analysts.
  - b. Data will be provided for foreign intelligence and counter-intelligence purposes.
  - c. Data sources and methods can be protected.
  - d. Data will be minimized\* according to each agency's standards (e.g. NSA's data will be minimized to NSA minimization standards, CIA's data to CIA minimization standards, etc.).

### **\* Minimize:**

(U//FOUO) specific procedures to minimize the acquisition and retention, and prohibit the dissemination, of non-publicly available information concerning unconsenting U.S. persons consistent with the need of the U.S. to obtain, produce and disseminate foreign intelligence information.



# NSA<sup>7</sup> S Proposal

2. (S) Handles the ever increasing volumes of communications metadata (est. 2-5 billion records/day)
3. (S) Incorporates all communication types - telephony and all forms of digital, e.g. e-mail
4. (U) Allows for the expansion of communications metadata fields and sources
5. (U) Accommodates multimedia (voice/data/video) convergence
6. (U) Allows for greater access by U.S. DoD military elements
7. (U) Requires only JWICS account plus PKI
8. (S//NF) Does not necessarily replace CrissCross/Proton
9. (C) Allows for incorporation of foreign partner data\*

\* *As negotiated*





# NSA Proposal Implementation: Use of ICREACH



**(S//REL) ICREACH is a one-stop shopping tool for consolidated communications metadata analytic needs. Through ICREACH, analysts can access most tools and all appropriate data sets related to both telephony and DNI data with a single login.**



# NSA Proposal Implementation: Use of ICREACH



## Current Status:

(S//REL) ICREACH is an evolving NSA toolkit (middleware) focused on analyzing the target in a converged telephony-DNI environment. The federated query searches across all data sets for information relating to a target identifier.

(S//SI//REL) For example, through ICREACH an analyst could find all metadata comms related to a target: phone number, Global Mobile Satellite and cellular events and selectors, email address, etc. and any associated locational information.



# ICREACH Implementation



- 1. (U) Certify Users**
- 2. (U) Train Users**
- 3. (U) Grant Access to Users**



# ICREACH Certification

1. (U//FOUO) Who can be certified? Any individual who:
  - a. requires access in support of Agency X mission (as validated by Agency X POC)
  - b. is a part of the U.S. IC
  - c. holds TS/SCI
  - d. has PKI
  - e. is an IC-intelligence analyst (of any sort)
  
2. (U//FOUO) PKI-enabled accounts will be accessible via JWICS.



# ICREACH Training

(U//FOUO) NSA will train a cadre of individuals from each agency who will then go back and train their own users.

(S//SI//REL) Training consists of:

- a. Intro to communications metadata to familiarize users with PSTN\*, cell phones, email, IMSIs\*\*, etc.
- b. Course to familiarize users with ICREACH tool.
- c. Intelligence Oversight training, including minimization.
- d. Limitations on use of communications metadata for operational purposes.

\* PSTN = Public Switched Telephone Network

\*\* IMSI = International Mobile Subscriber Identity





# ICREACH Access

- 1. (U//FOUO) Agency X POCs to approve accounts for individuals.**
- 2. (U) Accounts expire after three (3) months of inactivity.**
- 3. (U) Users re-apply and are re-certified annually.**



# Intelligence Oversight



1. (U//FOUO) Approval authorities and auditors at each agency will conduct the requisite oversight training and then conduct independent oversight.
2. (U//FOUO) Auditing of agency personnel will be conducted by each agency. ICREACH audit records will be pushed by NSA to each agency in order to perform that task.
3. (U//FOUO) Access will be terminated immediately upon identification of any violation and will be reinstated only upon re-certification by the agency approval authority.
4. (U//FOUO) NSA will perform random auditing of IC-wide users to ensure compliance across the IC and notify Agency X of any non-compliance.



# (S//NF) Call Events in PROTON\*



•Total Call Events in NSA PROTON\* est. 149 Billion

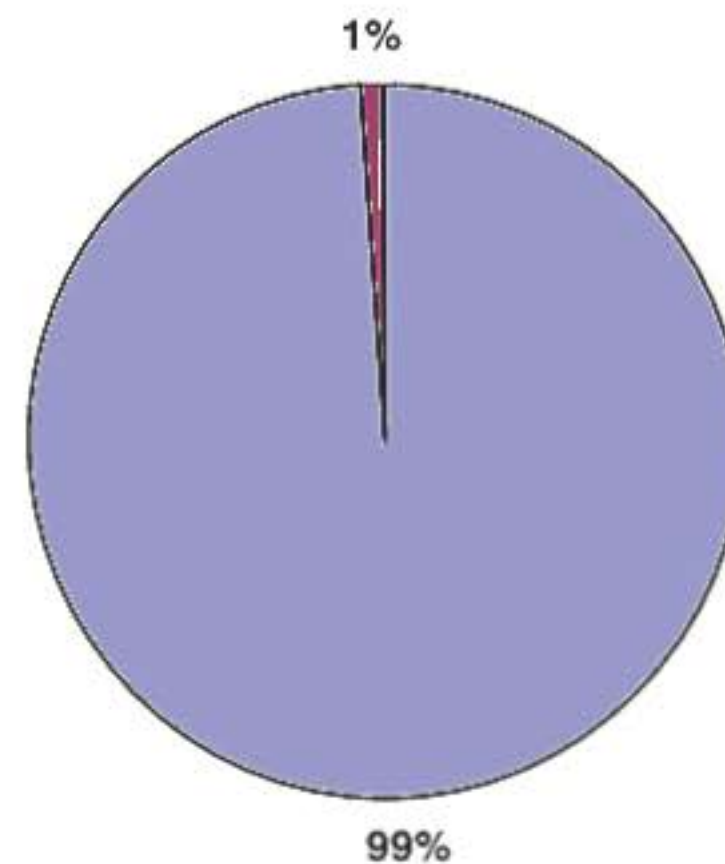
Of those:

•Total Call Events Non-NSA

est. 101 Billion

•Total Call Events Non-NSA,  
Non-NOFORN, Non-HCS

est. 92,000



- Non-NSA Events NOT Shareable with 5 Eyes (NOFORN / HCS)
- Non-NSA Events Shareable with 5 Eyes (Non-NOFORN / Non-HCS)

\* For date range 2000-2006, as of early July 2006; some data has been aged off system





# Current NSA Communications Metadata Holdings



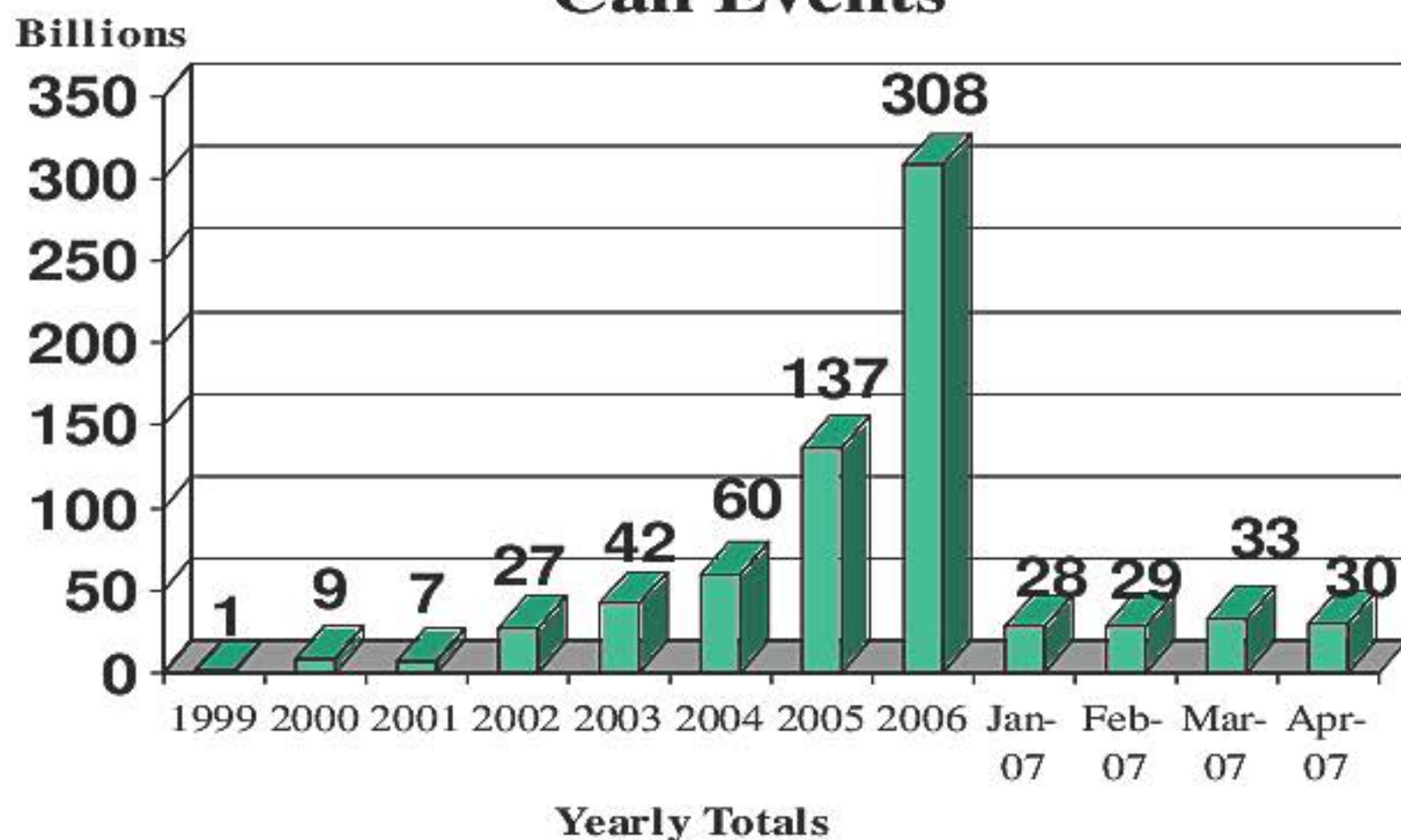
(S//SI//REL) ICReach will share over 850 billion NSA event records at IOC with an additional 1-2 billion records added daily

## Telephony (1999-Apr '07)

**Total Call Events** est. 711 Billion

**Total Call Events from 2<sup>nd</sup> Parties** est. 126 Billion

### Call Events

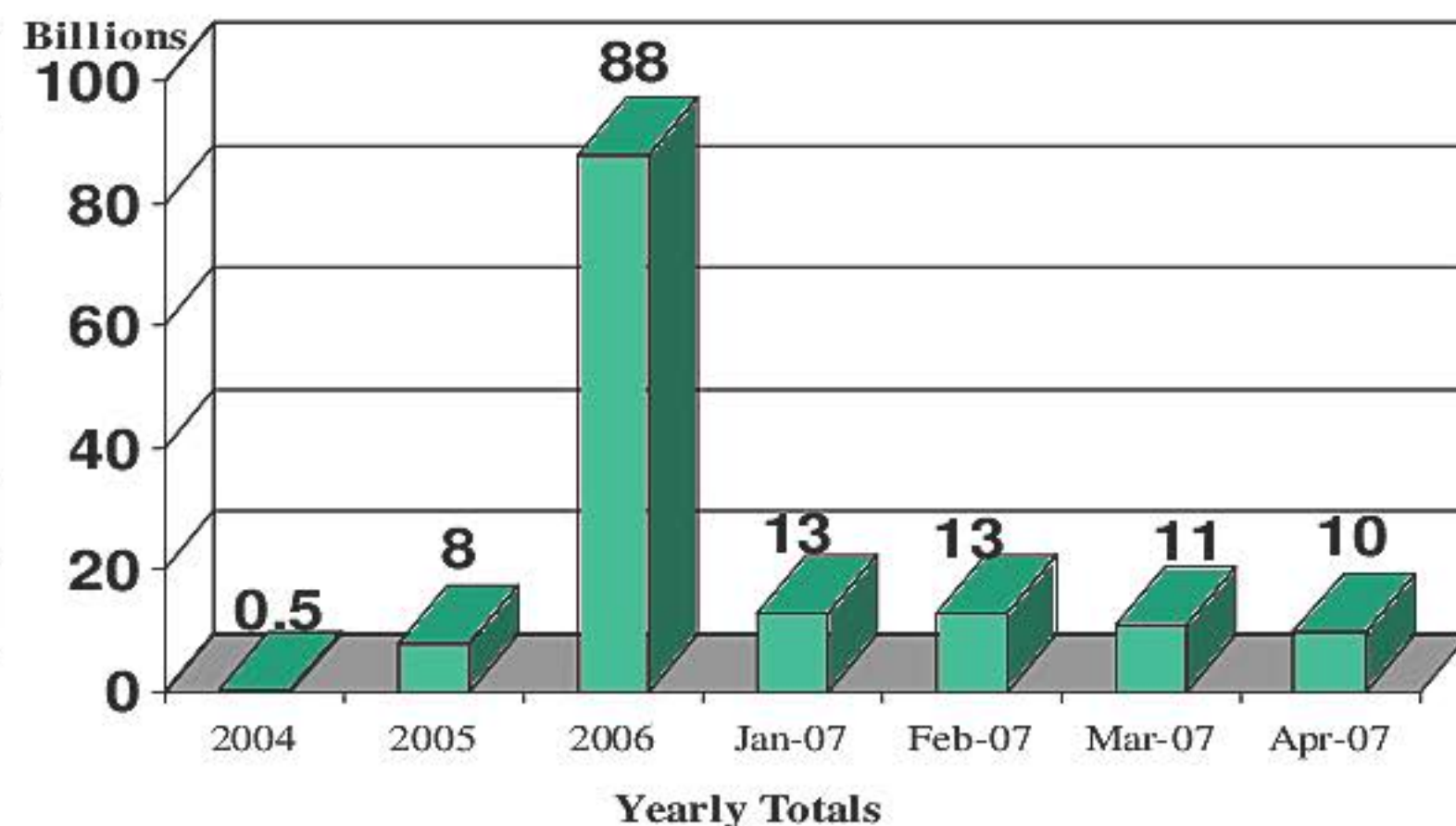


## DNI (2004-Apr '07)

**Total Events** est. 143 Billion

**No DNI yet from 2<sup>nd</sup> Parties**

### DNI Events

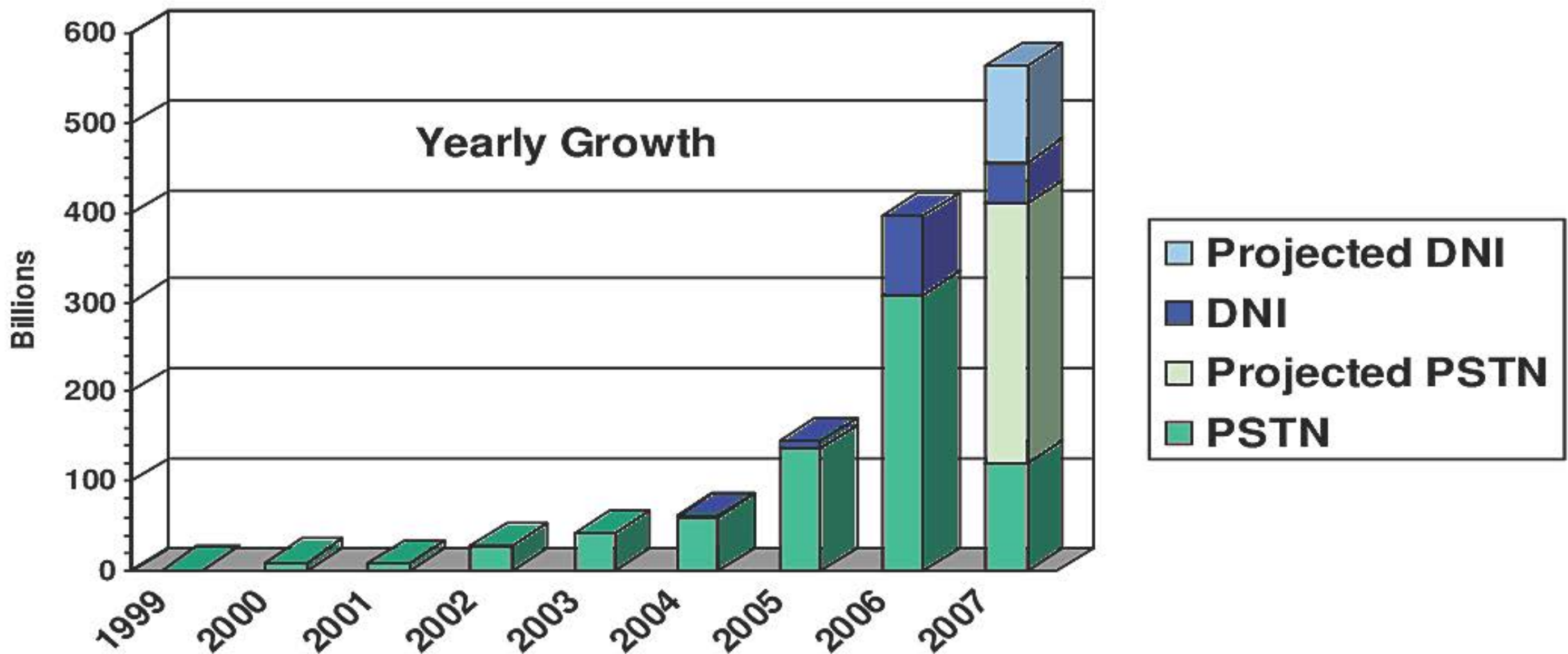




# Large Scale Expansion of NSA Metadata Sharing



**(S//SI//REL) Increases NSA communications metadata sharing from 50 billion records to 850+ billion records (grows by 1-2 billion records per day)**



**\*(C//REL) Includes Call Events from 2<sup>nd</sup> Party SIGINT Partners (est. 126 Billion records)**



# Communications Metadata Fields in ICREACH



(S//NF) NSA populates these fields in PROTON:

- **Called & calling numbers, date, time & duration of call**

(S//SI//REL) ICREACH users will see telephony metadata\* in the following fields:

**DATE & TIME**

**DURATION – Length of Call**

**CALLED NUMBER**

**CALLING NUMBER**

**CALLED FAX (CSI) – Called Subscriber ID**

**TRANSMITTING FAX (TSI) –  
Transmitting Subscriber ID**

**IMSI – International Mobile Subscriber Identifier**

**TMSI – Temporary Mobile Subscriber Identifier**

**IMEI – International Mobile Equipment Identifier**

**MSISDN – Mobile Subscriber Integrated Services Digital Network**

**MDN – Mobile Dialed Number**

**CLI – Call Line Identifier (Caller ID)**

**DSME – Destination Short Message Entity**

**OSME – Originating Short Message Entity**

**VLR – Visitor Location Register**



# Communications Metadata Fields in ICREACH



(S//SI//REL) ICREACH telephony metadata fields (con' t):

**MCC – Mobile Country Code**

**MNC – Mobile Network Code**

**LAC – Local Area Code**

**CELL ID – Serving Cell Identification**

**TIMING ADV – Timing Advance Value  
(distance from base transceiver)**

**LAT/LONG – Latitude/Longitude in  
degrees and minutes**

**CALLING FTIN – Forward Terminal  
Identification Number**

**CALLING RTIN – Reverse Terminal  
Identification Number**

**DIALED NUMBER**

**FWD SIM – Forward Subscriber  
Identity Module**

**REV SIM – Reverse Subscriber  
Identity Module**

**MES TYPE – Message Type**

(S//SI//REL) ICREACH users will also see this DNI metadata:

**Email addresses**

**Chat handles**

**Date & Time**

**Protocols**



# Increases Number of SIGINT Metadata Modes and Fields Shared



**Currently Shared**

**ICReach Expansion**

Metadata Field	PSTN	INMARSAT	PCS	DNI
Date	X	X	X	X
Time	X	X	X	X
Duration	X			
Called Number	X			
Calling Number	X			
Called Fax number	X			
Transmitting Fax number	X			
IMSI			X	
TMSI			X	
IMEI			X	
MSISDN			X	
MDN			X	
CLI			X	
DSME			X	
OSME			X	
VLR			X	
MCC			X	
MNC			X	
LAC			X	
Cell ID			X	
Timing Advance			X	
Lat/Long		X	X	
Calling FTIN		X		
Calling RTIN		X		
Dialed Number		X		
Forward SIM		X		
Reverse SIM		X		
Email Address			X	X
Chat Handle				X
Protocols				X



# ICREACH Log-in


IC\_Reach 1.0 - Netscape

File Edit View Go Bookmarks Tools Window Help

Search

IC\_Reach 1.0 (U//FOUO) Target Development Services (...)

**DYNAMIC PAGE - HIGHEST POSSIBLE CLASSIFICATION IS TOP SECRET//COMINT//REL to USA, AUS, CAN, GBR and NZL//20291123**




**ICREACH Version 1.0 Released March 2006**

(S) IC\_REACH is a one-stop shopping tool for consolidated metadata analytic needs. Through IC\_REACH, analysts can access several data sets related to both telephony and DNI data with a single login and a federated query that returns any available data from multiple sources. For more information, please review the IC\_REACH [FAQs](#).

**ICREACH Login**

<p>* Click only if your certs are imported into your browser</p> <p>PKI Login</p>	SID: <input type="text"/>	<ul style="list-style-type: none"> <li>• <a href="#">Request a ICREACH User Account</a></li> <li>• <a href="#">Change my ICREACH Password</a></li> <li>• <a href="#">Update my ICREACH Account Information</a></li> </ul>
	Password: <input type="password"/>	
	Login Reset	

Click [here](#) for instructions on how to obtain your personal certificate to use PKI.

	Software Development by: <a href="#">TAC/TDS</a>	Last Modified: 06 January 2006	Derived From: NSA/CSSM 1-52 Dated: 23 Nov 2004 DECLASSIFY ON: 20291123
	Information Owner: [REDACTED]	Last Reviewed: 28 December 2005	
	Database PM: [REDACTED]	Version: 1.0	
	Page Publisher: [REDACTED]	Machine: [REDACTED]	

**Related Links:**

- [Target Development Services](#)
- [Target Analysis Center](#)

Transferring data from [REDACTED]



# ICREACH Query

IC\_REACH 1.0 - Netscape

File Edit View Go Bookmarks Tools Window Help

https://[redacted]ic\_reachWebApp/login.do?GUID=F9009NLpLLhDQFGVgDyC9JyTJTtCGN Search

Mail Home Radio My Netscape Search Bookmarks NSA News Yahoo Search Tools SEARCHLIGHT WHI Help Service

IC\_REACH 1.0 (U//FOUO) Target Development Services (...)

**DYNAMIC PAGE HIGHEST POSSIBLE CLASSIFICATION IS TOP SECRET//COMINT//NOFORN//20291123**

[Federated Query](#) [Account Info](#) [Logoff](#)

**FEDERATED QUERY**

[Query](#) | [Results](#) | [Feedback](#) | [Help](#) | [What's New](#)

↔ Wildcard searches are not supported ↔  
 ^^ Searches are limited to 150 or fewer selectors ^^

Date Range:  to

Selector:  *(comma delimited)*

File of Selectors:   *(one per line)*

Query Name:

**DYNAMIC PAGE - HIGHEST POSSIBLE CLASSIFICATION IS TOP SECRET//COMINT//NOFORN//20291123**

Transferring data from [redacted]



# ICREACH Query Summary

IC\_REACH 1.0 - Netscape

File Edit View Go Bookmarks Tools Window Help

https://[redacted]ic\_reachWebApp/login.do?GUID=F4389NLPLLND3F5Vg3yCUyUJTrCGN Search

Mail Home Radio My Netscape Search Bookmarks NSA News Yocha Search Tools SEARCHLIGHT Web Help Service

IC\_REACH 1.0 (U//FOUO) Target Development Services (...)

**DYNAMIC PAGE - HIGHEST POSSIBLE CLASSIFICATION IS TOP SECRET//COMINT//NOFORN//20291123**

[Federated Query](#) [Account Info](#) [Logoff](#)

**FEDERATED QUERY SUMMARY**

[Query](#) | [Results](#) | [Feedback](#) | [Help](#) | [What's New](#)

ic\_reach\_results  
20060924 to 20061024

Save As  Save

Your query matched records in the following databases.  
Click on the selector to view its expanded results.

LEGEND							
FC	PSTN	FP	PCS	GN	CNDB	LS	INMARSAT
F	Error Occurred	I	Invalid Selector				

Selector	FC	FP	GN	LS
[redacted]	2	0	1	0

Selector	FC	FP	GN	LS
[redacted]	17	0	1	0

Selector	FC	FP	GN	LS
[redacted]	I	I	I	1111

Selector	FC	FP	GN	LS
[redacted]	0	3	1	0

Document: Done (1.797 secs)





# ICREACH Data Results

IC\_REACH 1.0 - Netscape

https://[redacted]ic\_reachWebApp/login.do?GUID=F338UNLPllLnD3FSVg3yCJJyLJIFCGN

**DYNAMIC PAGE - HIGHEST POSSIBLE CLASSIFICATION IS TOP SECRET//COMINT//NOFORN//20291123**

[Federated Query](#) [Account Info](#) [Logoff](#)

(20060924 to 20061024)

Data Sources Searched:

- GNDB
- INMARSAT
- PSTN
- PCS

**GNDB**

NUMBER	COUNTRY	PROVINCE	LOCATION	NSP	CTRY CODE	NDC	LEOC	SUBSCRIBER	NSN	NETWORK	STATUS
[redacted]	[redacted]		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	XXX	[redacted]	PLMN	A

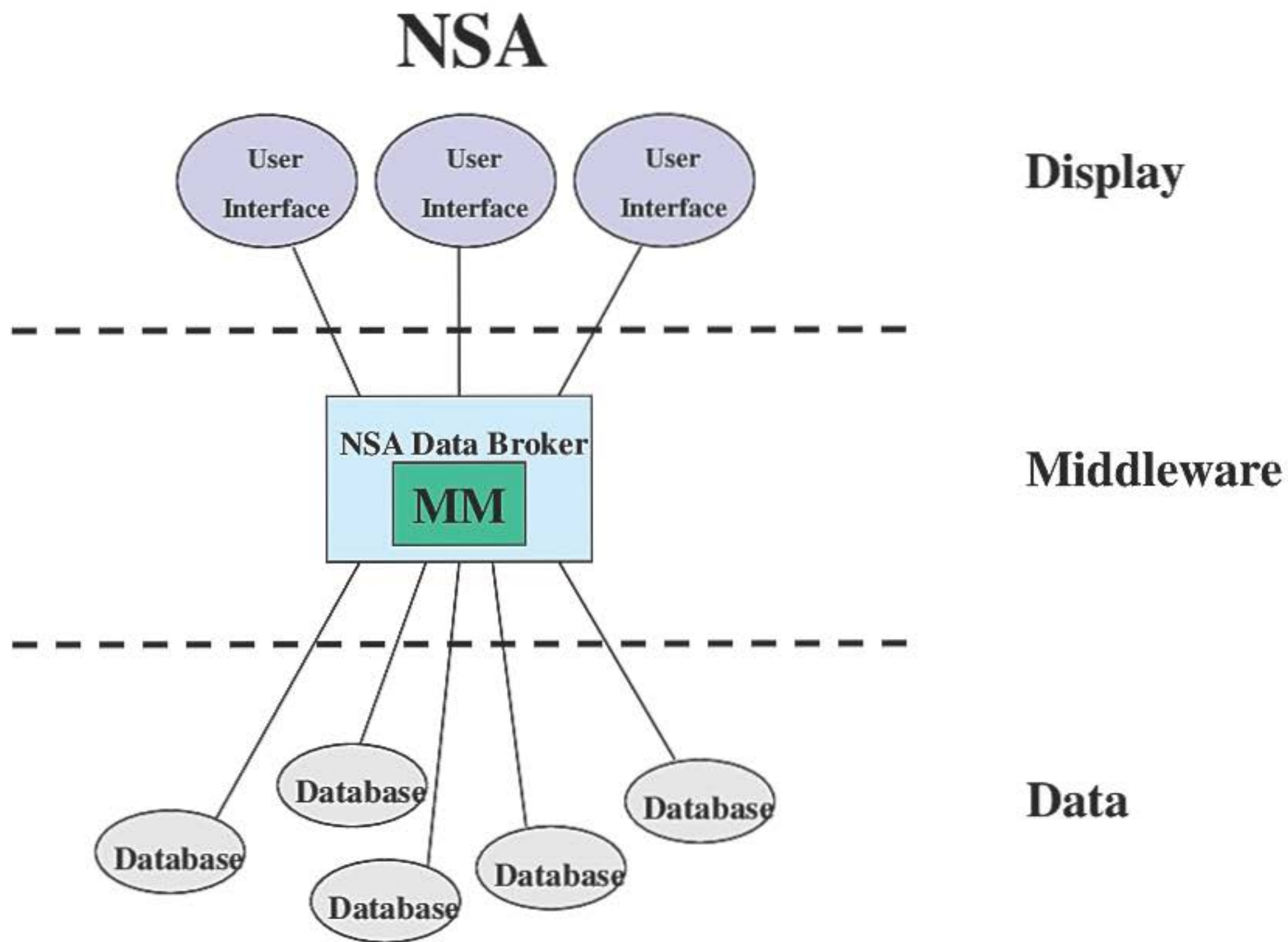
**PCS**

DATE	DUR	LMSI	TMSI	IMEI	MSISDN	MDN	CLI	DSME	OSME	VLR	MCC	MNC	LAC	CELL ID	TIMING ADV	LAT	LONG
20061011 060211					[redacted]				[redacted]								
20061007 060002					[redacted]				[redacted]								
20061001 041705					[redacted]				[redacted]								

Documents: Drive (0.188 sec)

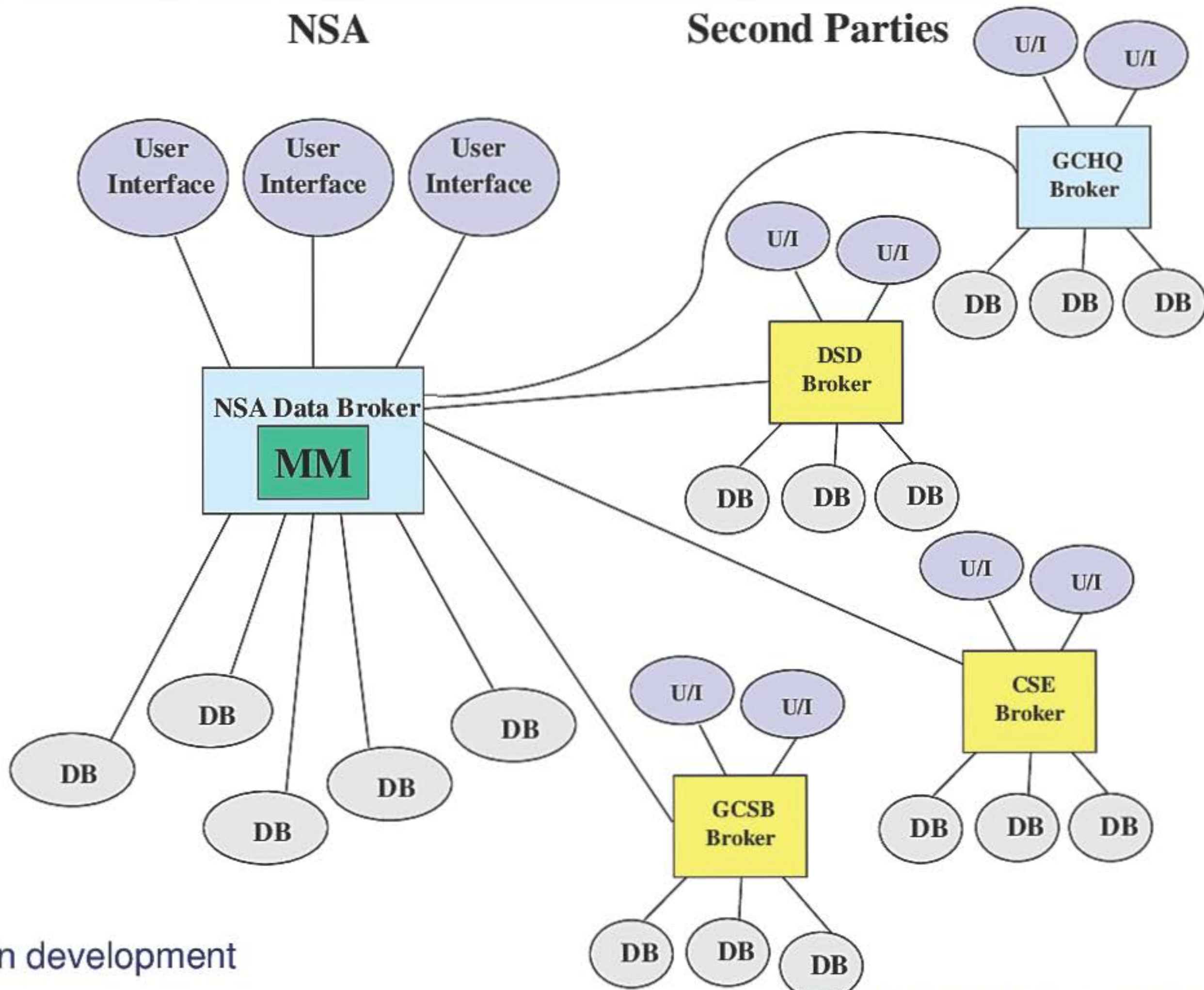


# ICREACH ARCHITECTURE





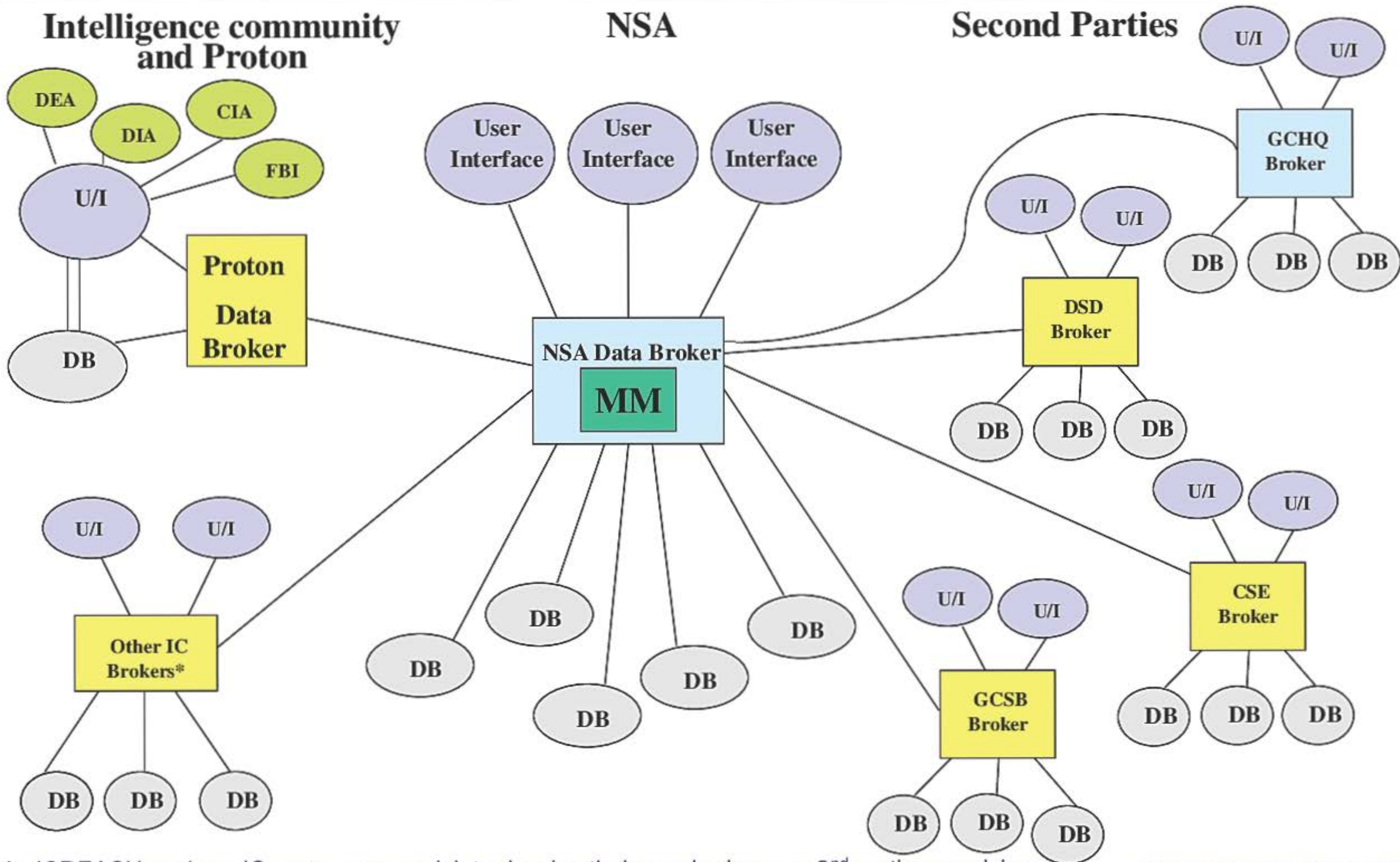
# ICREACH ARCHITECTURE



Brokers in yellow are in development



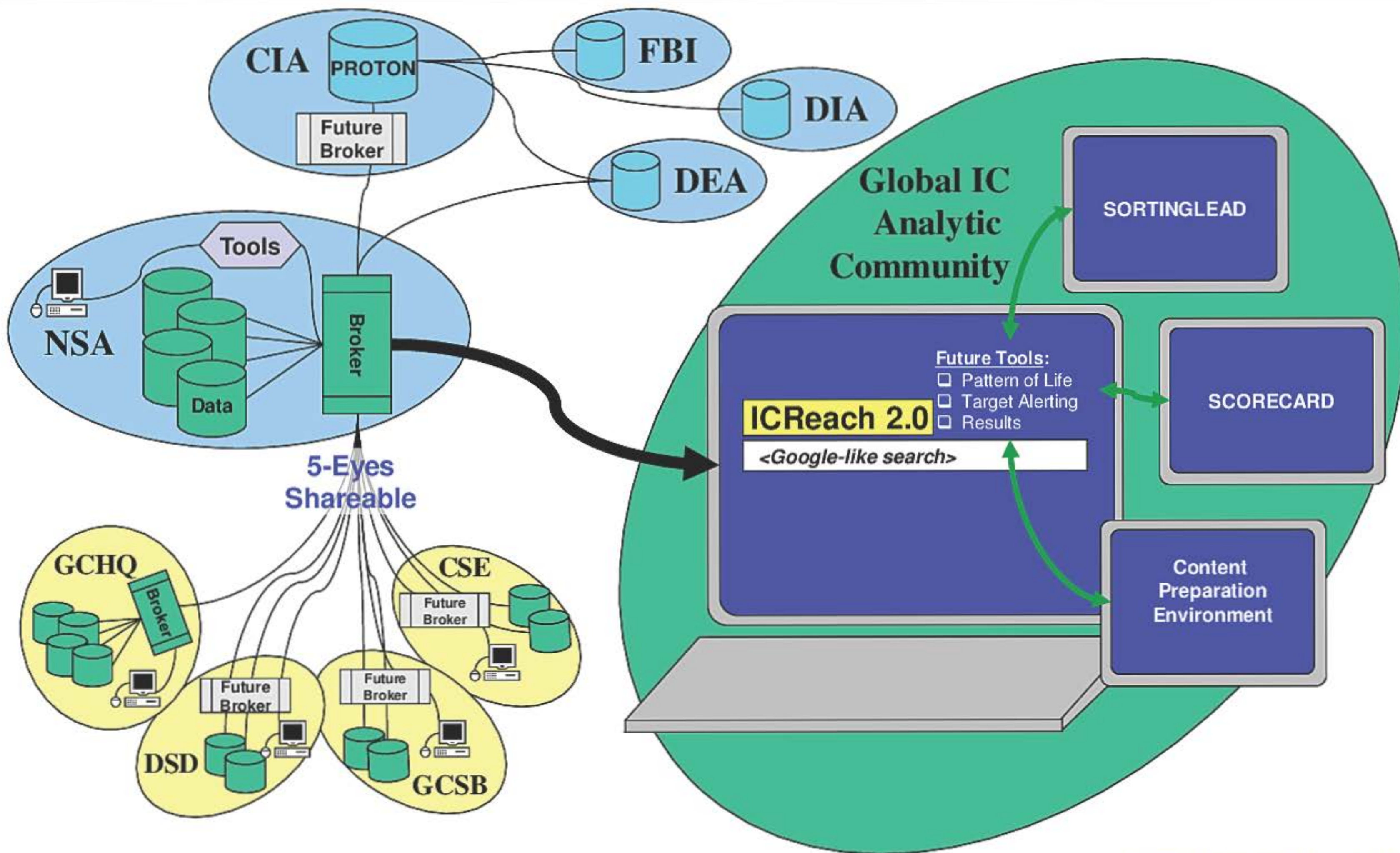
# ICREACH ARCHITECTURE



\*As ICREACH evolves, IC partners may wish to develop their own brokers, as 2<sup>nd</sup> parties are doing



# ICREACH ARCHITECTURE





# Recap



- **(C//REL) ICREACH is a large scale expansion of communications metadata shared with IC partners**
- **(C//REL) Enables federation of community metadata across IC agencies**
- **(C//REL) Makes greater use of NSA's communications metadata which is information about content (but not the content itself)**
  - **Definition: Information used by networks, services, or applications to route communications or make the content usable including:**
    - **Dialing, routing, addressing, location, or signaling data used for network management**
    - **Formats and protocols used to render the information for people and systems**
- **(S//SI//REL) Expands NSA sharing in three dimensions:**
  - **Includes more modes of communications (PSTN, INMARSAT, PCS, DNI)**
  - **5x increase in types of metadata shared (from 5 fields to 33 fields)**
  - **12x increase in volume shared (from 50 billion to 800+ billion records)**



# Next Steps

- **(U) Pilot development underway – IOC June**
- **(U) CCP Funded for first year**
- **(U//FOUO) Agreements on 2<sup>nd</sup> Party sharing (bi-directional)**
- **(U) Expansion to open source?**
- **(U//FOUO) Limitations and responsibilities related to operational use**
- **(U) Software licensing**



# Preliminary Thinking on ICREACH Roll-out



## **(S//NF) From date of sponsorship:**

- **Train the trainers**
- **Account Set-up**
- **Scrub PROTON NOFORN data for release to ICREACH & Second Parties**
- **Establish ICREACH Configuration Control Board (CCB) across IC**

## **(U//FOUO) 2008:**

- **Reach out to other databases**
- **ICREACH Enhancements**





# ICREACH Timeline

## **(U//FOUO) 2005**

- **Fall: initiative conceptualized**
- **Dec: informally proposed to CIA DIR who suggests staffs meet to discuss it and consider other options before submitting to DNI**

## **(U//FOUO) 2006**

- **Spring-Summer: discussions with policy reps & technical experts from several U.S. IC agencies; broached with Second Parties**
- **Summer–Fall: briefed Program Manager/Info Sharing Environment, ODNI/CIO/Info Sharing & Customer Outreach, & ODNI/CIO/IC Enterprise Architecture**
- **Oct: formally proposed to DNI**
- **Late Nov: interim response from DNI, recommending we continue working initiative with ODNI/CIO & DDNI/Collection**

## **(U) 2007**

- **May: Pilot development begins**
- **June: Pilot IOC**



# Additional slides



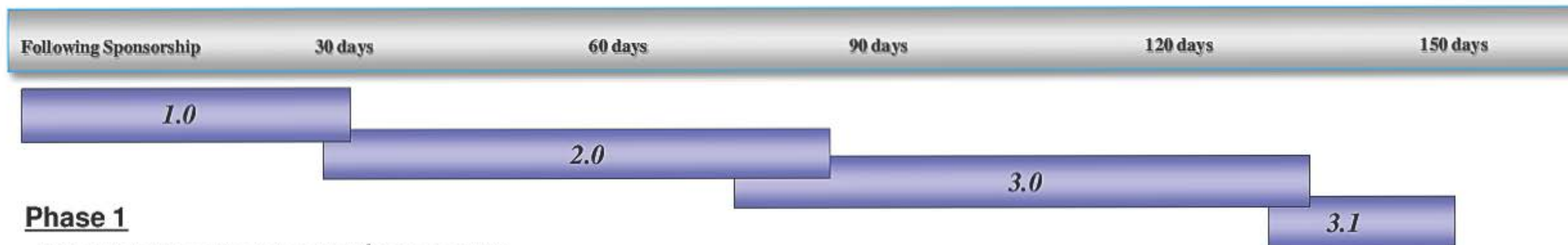


# ICReach Deployment 1 Schedule



**(S//REL) ICREACH requires between \$2.7M and \$3.9M in FY07 to implement the initial phase, depending on the pace of the development effort.**

**FY2007**



**Phase 1**

- Establish IT and training POC' s across the IC
- Add DNI and other NSA data sources (e.g., PCS, GNDB) to Federated Query Service
- PKI Validation and Acct Establishment Process
- Design User and Metadata Use Training Course

**Phase 2**

- Code and Test User Interface (UI) and Web Service
- Test Account Authentication and Security for User Interface
- Conduct "Train the Trainer" for UI and Account Management process

**Phase 3**

- Transition and Integrate ICR to Operational Hardware
- Initiate User training sessions (Final schedule & staffing requirement: TBD)

**Phase 3.1**

- Optimize hardware performance

**Phase 4 and out years**

- Develop interface with IC data sources and brokers
- Enhancements to improve analytic tool integration



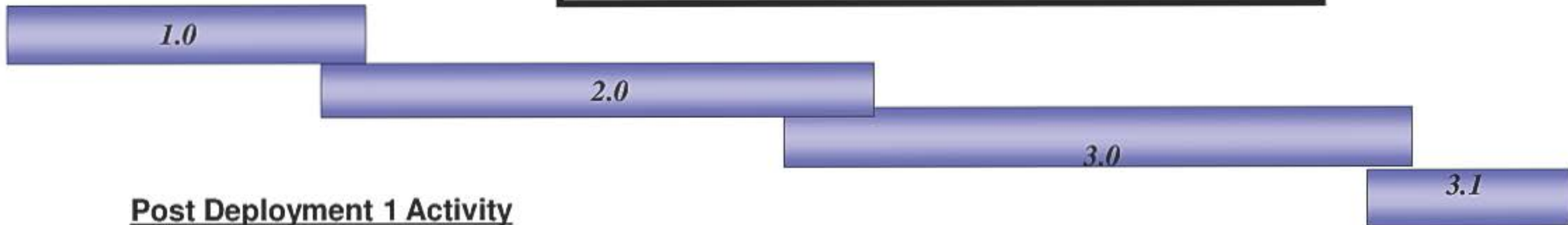
# ICReach Post Deployment 1 Schedule



FY2008



**Deployment 1 Life Cycle Support**  
 • Estimated Life Cycle (per year: 1- 5) = \$2.5 - 4.5M



**Post Deployment 1 Activity**

- Develop interface with IC data sources and brokers
  - Second Party Brokers (as made available)
  - PROTON Data Broker
  - Other IC Agency Data Brokers
- Enhancements to improve analytic tool integration

Resources	Estimated NRE Cost
1 FTE USG PM	4.75 FTE = \$1.350M
.25 FTE Account Access	Hardware = TBD
1.0 FTE GUI	
.5 FTE Web Service	
.5 FTE Config Mgt and Test	
1.0 Training Development	
.5 Database Engineer/Admin	