



Evidence Solutions, Inc.

And the

West Virginia State Chapter  
of the  
American Association of Legal Nurse Consultants (AALNC)

Present:

Electronic Medical Record Forensics:

Trust the Data, No the Software!

May 11, 207

Presented by:

Scott Greene, SCFE, CEO  
Evidence Solutions, Inc.


A Digital Forensics Firm

520-512-5001  
866-795-7166

[Scott@EvidenceSolutions.com](mailto:Scott@EvidenceSolutions.com)

West Virginia  
CHAPTER AMERICAN  
ASSOCIATION OF LEGAL  
NURSE CONSULTANTS

Faculty:  
Scott Greene  
Evidence Solutions, Inc.  
866-795-7166  
Scott@EvidenceSolutions.com



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

Trust the Data  
not  
The software



Copyright Evidence Solutions, Inc. 2010.  
Computer, Technology & Digital Forensics.

## Electronically Stored Information in Litigation

- Frequently we are presented with data that appears perfectly normal and supports a particular side to a case.
- Unfortunately software, displays data in a sorted and organized form. Manipulated Data will not be evident when looking at standard reports.



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## How am I going to get there?

- A Civil Case: Medical Billing
- A Civil Case: Falsified Email
- A Criminal Case
- With a few other things thrown in...
  - EMR Forensics For Instance



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## Scott Greene

- Has been doing computer consulting for over 35 years.
- Performing:
  - Custom programming
  - Design and optimization
  - Database administration
  - Network and workstation general support
- For:
  - Service
  - Retail
  - Hospitality
  - Legal
  - Manufacturing
  - Medical



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## Reasons to examine electronic data

- Almost all documents are now 'word processing' documents.
- Nearly all business activities are now computerized
- E-mail communications have surpassed telephone and postal ( snail mail ) communication.
- Text Messages now overshadow E-mail



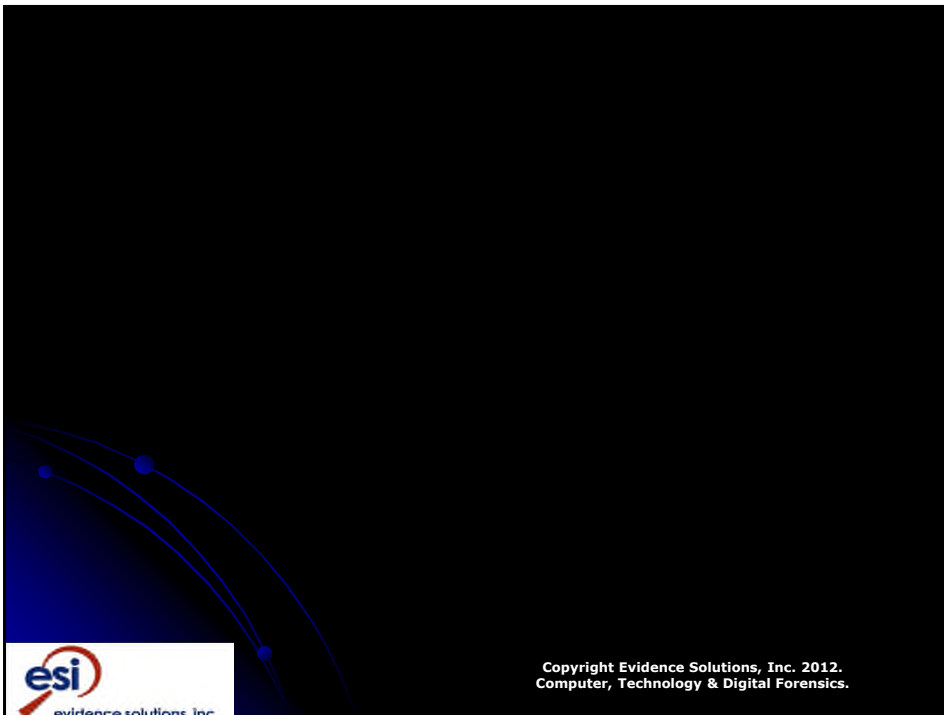
Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## What can data Forensics Tell Us?

- Almost Everything: from the character of the user to their interests, activities, financial health, acquaintances and more.
- Collected from their life online: applications, email systems, web browsers and free space.
- The details from their life, outlook, intelligence and interactions are as individual as any fingerprint.
- All Public & Private business transactions, communications with accomplices, fraud indicators and much more are frequently available.



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.



## Billing Case

- Plaintiff Company:
  - Contracted to bill for a high end medical specialist with his own surgical facility.
  - Maintained:
    - That they properly billed for all services.
    - The did so in a timely manner.



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## Billing Case

- Defendant Doctor/Surgical Facility
  - Maintained that the Plaintiff did not bill timely
  - Determined that the Plaintiff chose to concentrate on the large ticket bills



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## Case BS ( Before Scott )

- Procedural issues of the billing dispute
- Discovery disputes – billing company claimed that it didn't have certain data
- Arbitrator failed to order production of billing software until eve of arbitration



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## Scott's Special Master Tasks

- Evidence Solutions was tasked with analyzing the software and determining what standard reports were available from the system.



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## Scott's Special Master Tasks

- Unable to get the software running we decided to look at the data.



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

The first report from the  
database.

[claction1\\_package.pdf](#)



Copyright Evidence Solutions, Inc. 2010.  
Computer, Technology & Digital Forensics.



Recno	Claim	Idnum	Date	Type	Note	Resp	Dateent	Timeent	Whoentered
12966	3167	1279	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED	UHC	01/14/09	16:07	SMW
12967	3216	1279	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED	UHC	01/14/09	16:07	SMW
12968	1249	774	01/14/09	SECONDARY	SECONDARY CLAIM PRINTED	UHC	01/14/09	16:08	SMW
12969	1246	774	01/14/09	SECONDARY	SECONDARY CLAIM PRINTED	UHC	01/14/09	16:08	SMW
12970	1541	845	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED	UHC	01/14/09	16:08	SMW
12971	3221	1369	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED	UHC2	01/14/09	16:08	SMW
12972	3084	1369	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED	UHC2	01/14/09	16:08	SMW
12973	1778	968	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED	UHC2	01/14/09	16:08	SMW
12974	1333	818	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED	UN16	01/14/09	16:09	SMW
12975	2849	1295	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED	TR12	01/14/09	16:09	SMW
12976	2858	1304	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED	TR12	01/14/09	16:09	SMW
12977	1392	830	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED	CIG1	01/14/09	16:09	SMW
12978	1834	485	02/18/09	PRIMARY	PRIMARY CLAIM PRINTED	CIGN	02/18/09	18:36	KW
12979	1692	485	02/18/09	RECEIPT	CLAIM RECEIPT PRINTED		02/18/09	18:36	KW
12980	1692	485	02/18/09	PRIMARY	PRIMARY CLAIM PRINTED	CIGN	02/18/09	18:36	KW
12981	2201	878	02/26/09	RECEIPT	CLAIM RECEIPT PRINTED		02/26/09	12:20	SMW
12982	280	231	12/31/06	STATEMENT	STATEMENT PRINTED >120		12/31/06	12:32	SMW
12983	283	243	12/31/06	STATEMENT	STATEMENT PRINTED >120		12/31/06	12:32	SMW
12984	272	209	12/31/06	STATEMENT	STATEMENT PRINTED >120		12/31/06	12:32	SMW
12985	1799	980	12/31/06	STATEMENT	STATEMENT PRINTED >120		12/31/06	12:32	SMW
12986	1871	980	12/31/06	STATEMENT	STATEMENT PRINTED >120		12/31/06	12:32	SMW
12987	1897	987	12/31/06	STATEMENT	STATEMENT PRINTED >120		12/31/06	12:32	SMW
12988	1966	987	12/31/06	STATEMENT	STATEMENT PRINTED >120		12/31/06	12:32	SMW
12989	3282	1416	12/31/06	STATEMENT	STATEMENT PRINTED 31-60		12/31/06	12:32	SMW


esi evidence solutions, inc.

Copyright Evidence Solutions, Inc. 2012. Computer, Technology & Digital Forensics.

Recno	Claim	Idnum	Date	Type	Note
12966	3167	1279	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED
12967	3216	1279	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED
12968	1249	774	01/14/09	SECONDARY	SECONDARY CLAIM PRINTED
12969	1246	774	01/14/09	SECONDARY	SECONDARY CLAIM PRINTED
12970	1541	845	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED
12971	3221	1369	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED
12972	3084	1369	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED
12973	1778	968	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED
12974	1333	818	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED
12975	2849	1295	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED
12976	2858	1304	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED
12977	1392	830	01/14/09	PRIMARY	PRIMARY CLAIM PRINTED
12978	1834	485	02/18/09	PRIMARY	PRIMARY CLAIM PRINTED
12979	1692	485	02/18/09	RECEIPT	CLAIM RECEIPT PRINTED
12980	1692	485	02/18/09	PRIMARY	PRIMARY CLAIM PRINTED
12981	2201	878	02/26/09	RECEIPT	CLAIM RECEIPT PRINTED
12982	280	231	12/31/06	STATEMENT	STATEMENT PRINTED >120
12983	283	243	12/31/06	STATEMENT	STATEMENT PRINTED >120
12984	272	209	12/31/06	STATEMENT	STATEMENT PRINTED >120
12985	1799	980	12/31/06	STATEMENT	STATEMENT PRINTED >120
12986	1871	980	12/31/06	STATEMENT	STATEMENT PRINTED >120
12987	1897	987	12/31/06	STATEMENT	STATEMENT PRINTED >120
12988	1966	987	12/31/06	STATEMENT	STATEMENT PRINTED >120
12989	3282	1416	12/31/06	STATEMENT	STATEMENT PRINTED 31-60

esi evidence solutions, inc.


Note	Resp	Dateent	Timeent	Who
PRIMARY CLAIM PRINTED	UHC	01/14/09	16:07	SMW
PRIMARY CLAIM PRINTED	UHC	01/14/09	16:07	SMW
SECONDARY CLAIM PRINTED	UHC	01/14/09	16:08	SMW
SECONDARY CLAIM PRINTED	UHC	01/14/09	16:08	SMW
PRIMARY CLAIM PRINTED	UHC	01/14/09	16:08	SMW
PRIMARY CLAIM PRINTED	UHC2	01/14/09	16:08	SMW
PRIMARY CLAIM PRINTED	UHC2	01/14/09	16:08	SMW
PRIMARY CLAIM PRINTED	UHC2	01/14/09	16:08	SMW
PRIMARY CLAIM PRINTED	UNI6	01/14/09	16:09	SMW
PRIMARY CLAIM PRINTED	TRI2	01/14/09	16:09	SMW
PRIMARY CLAIM PRINTED	TRI2	01/14/09	16:09	SMW
PRIMARY CLAIM PRINTED	CIG1	01/14/09	16:09	SMW
PRIMARY CLAIM PRINTED	CIGN	02/18/09	18:36	KW
CLAIM RECEIPT PRINTED		02/18/09	18:36	KW
PRIMARY CLAIM PRINTED	CIGN	02/18/09	18:36	KW
CLAIM RECEIPT PRINTED		02/26/09	12:20	SMW
STATEMENT PRINTED >120		12/31/06	12:32	SMW
STATEMENT PRINTED >120		12/31/06	12:32	SMW
STATEMENT PRINTED >120		12/31/06	12:32	SMW
STATEMENT PRINTED >120		12/31/06	12:32	SMW
STATEMENT PRINTED >120		12/31/06	12:32	SMW
STATEMENT PRINTED >120		12/31/06	12:32	SMW
STATEMENT PRINTED >120		12/31/06	12:32	SMW
STATEMENT PRINTED 31-60		12/31/06	12:32	SMW



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

# Claims Without Payment


[nopaymentclaims prov B 0 payment.pdf](#)



Copyright Evidence Solutions, Inc. 2010.  
Computer, Technology & Digital Forensics.


Claims with No Payment Detail Report (n  
Sorted by 'Claim'.

Patient	Claim Date	Claim Dateent	Claim Number	Provider	Procedure Amount
75	02/22/05	04/13/05	77	B	3,500.00
77	04/13/05	04/13/05	79	B	12,500.00
Total for: April					16,000.00
Grand Total for Report:					16,000.00

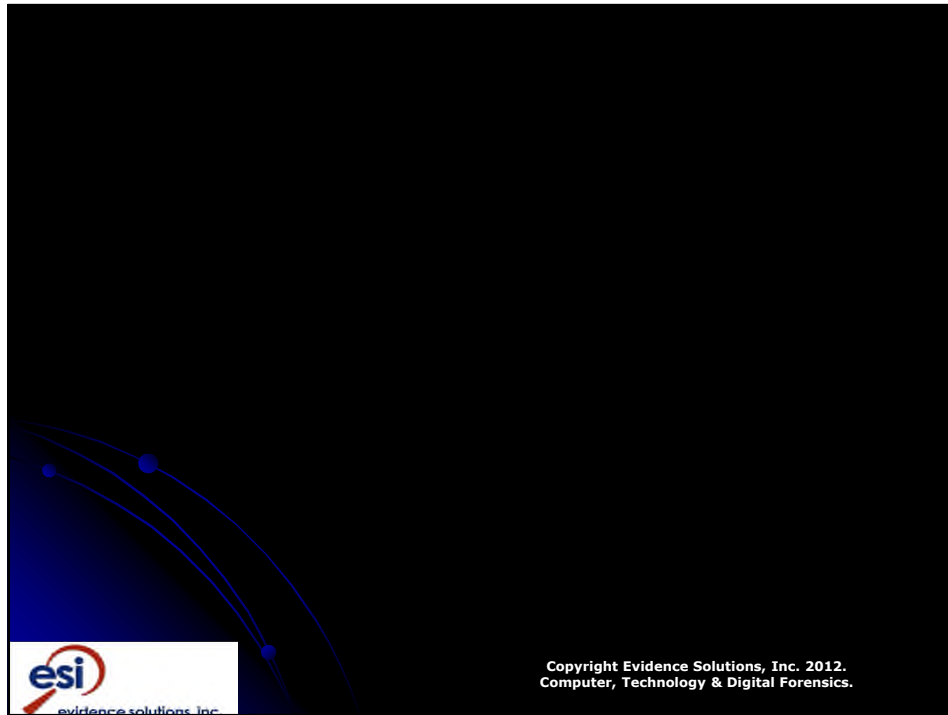


Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

Payment Amount	%	Adjustment or Writeoff Amount	%	Write off Date	Activity Dateent
0.00	0.0	-3,500.00	100.0	09/27/05	09/27/05
0.00	0.0	-12,500.00	100.0	12/31/06	05/14/09
0.00		-16,000.00			
0.00	0.0	-16,000.00	100.0		



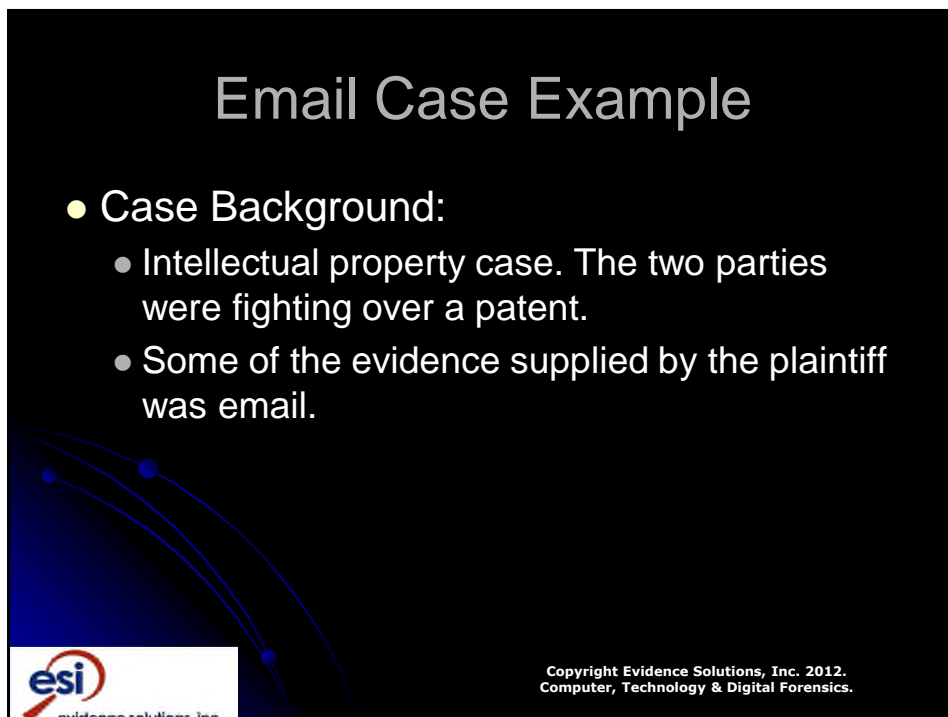
Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## Email Case Example

- Case Background:
  - Intellectual property case. The two parties were fighting over a patent.
  - Some of the evidence supplied by the plaintiff was email.



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

From: "John C Plaintiff" <JohnP@Lost-Tech.com>  
 To: <Mark@manufacturer.com>  
 Cc: "Robert Z Defendant" <Robert@LostTechnologies.com>  
 Sent: Friday, March 03, 2006 3:35 PM  
 Attach: Image Of Product.pdf  
 Subject: Emailing: Image of Product.pdf

Mark,  
 Please find attached a picture of our new product that we discussed.

Thanks,  
 John  
 President  
 Lost Tech, Inc.

www.LostTechnologies.com

ISO 9001:2000 \* ISO 14001 \* ISO18001 \* UL Listed

E-mail: JohnP@LostTechnologies.com

The message is ready to be sent with the following file or link attachments: Image Of Product.pdf



Copyright Evidence Solutions, Inc. 2012.  
 Computer, Technology & Digital Forensics.

## Electronic Version


From: "John C Plaintiff" <JohnP@Lost-Tech.com>  
 To: "<Mark@manufacturer.com>" <Mark@manufacturer.com>  
 Cc: "Robert Z Defendant" <Robert@Lost-Tech.com>  
 Sent: Friday, March 03, 2006 3:35 PM  
 Attach: Image Of Product.pdf  
 Subject: Emailing: Image of Product.pdf

Mark,  
 Please find attached a picture of our new product that we discussed.

John

Lost Tech, Inc.  
 www.LostTechnologies.com  
 ISO 9001:2000 \* ISO 14001 \* ISO18001 \* UL Listed  
 E-mail: JohnP@LostTechnologies.com

The message is ready to be sent with the following file or link attachments: Image Of Product.pdf



Copyright Evidence Solutions, Inc. 2012.  
 Computer, Technology & Digital Forensics.

## Electronic Metadata

"MS Exchange Server version 6.5.7638.1"

Emailing: Image of Product.pdf

Return-path: <>

From: "John C Plaintiff" <JohnP@Lost-Tech.com>

To: "<Mark@manufacturer.com>" <Mark@manufacturer.com>

Cc: "Robert Z Defendant" <Robert@Lost-Tech.com>



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## Second Email

From: "Robert Z Defendant" <Robert@LostTechnologies.com>

To: robertzdefendant@yahoo.com;

Sent: Thursday, March 30, 2006 9:29 AM

Subject: FW: Check This out?

funny mpeg



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## Second Email Metadata

From: Robert Defendant  
To: robertzdefendant@yahoo.com  
Return-Path: <Robert@LostTechnologies.com>  
Subject: FW: Check This out?  
Produced By Microsoft Exchange V6.0.6249.0  
Date: Thu, 30 Mar 2006 08:29:26 -0800  
• From: "Robert Defendant" <Robert@LostTechnologies.com>  
To: <robertzdefendant@yahoo.com>



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## Third Example Email Body

From: <Jose McCormick>  
To: <"John C Plaintiff">  
Date: Monday, October 02, 2006 1:14 PM  
Subject: new product status  
CC: <Mrs Plaintiff>

• John,  
We've started on new product. It isn't perfect yet.  
Jose



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## Third Example Email Metadata

"MS Exchange Server version 14.02.5004.000"

Subject: new product status

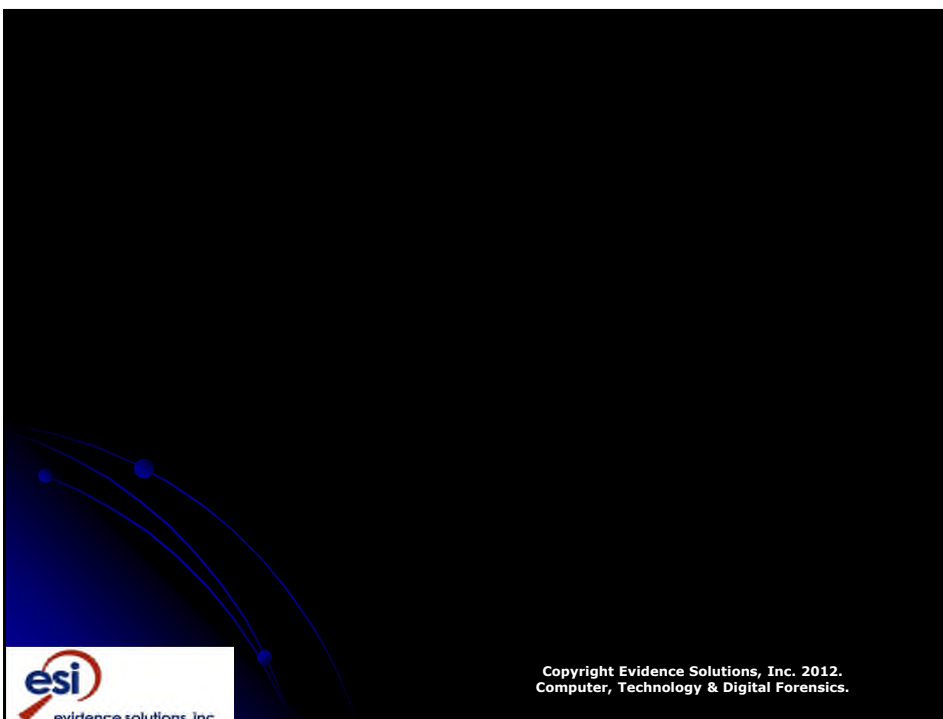
The only problem is:

Build:14.02

- Rollup 3 for Exchange Server 2010  
Service Pack 2 May 29, 2012



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.





## Sources of Evidence: Cell Phones

- The Good:
  - They do more for us than ever before!
- The Bad
  - As they become more complex they take time to analyze
- The Ugly
  - Professional criminals know to use and dispose of them



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## Portable Sources of Evidence

- Cell Phones
  - Text messages
  - Photos?
    - GeoTagging
  - Calendars
  - Phone Books
  - Call Logs
  - Complete information about where the phone has been....



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## Capturing Data

- **Hard Disk Drive**
  - **Hard Drive Image or Mirror Image:** This is a bit-by-bit copy of storage media. (i.e., an exact copy of a physical Hard Drive).
- **Cell Phone**
  - **Capture.** This is different in that not everything on all cell phones can be copied.
  - **Data must be sent to the phone to do the capture.**



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## Other Falsification

- **Accounting Systems**
  - **Changes to 'Payee' in Accounts Payable**
- **Electronic Medical Records**
  - **"But they have an audit log"**



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## What to do / How to do it

- Meta Data is Everywhere
  - – it can tell a much different story than the data
- How do you know when to call for help?
  - - upfront a consultant can steer a case in the right direction
  - - data that looks suspicious



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## What to do / How to do it

- Are there things that should signal suspicion that data has been altered?
  - If it is too good to be true, it probably is.
- Can you do a quick review of data produced to advise on what deeper review is possible?
  - Yes



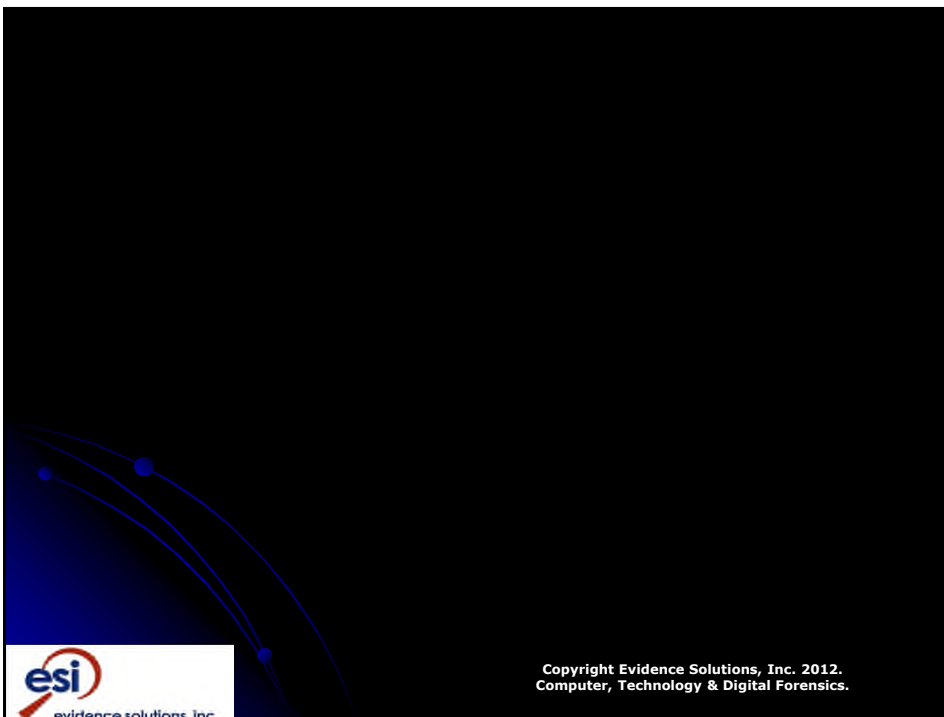
Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## What to do / How to do it

- What kind of budget does it take?
  - a quick review
  - more in depth projects
- Do you have some practical tips for us in writing discovery requests?
  - Yes I have templates that can be used for all sorts of discovery requests




Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.



## Beware Wiping Software


- **Data Wiping, File Wiping, Data Scrubbing or Hard Disk Drive Wiping Utilities (Data Shredding):**
  - These software applications are used to permanently and completely destroy electronic data from Data Storage Devices making it unrecoverable.



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

## Beware Wiping Software


- Eraser 6
- DBAN (Darik's Boot and Nuke)
- CBL Data Shredder
- ErAce
- HDS shredder Free Edition
- HDDEraser
- MHDD
- KillDisk
- Format Command With Write Zero Option
- Macrorit Disk Partition Wiper
- Eraser
- Freeraser
- Disk Wipe
- Hardwipe
- Secure Eraser
- PrivaZer
- PC Shredder
- AOMEI Partition Assistant Standard Edition
- Remo Drive Wipe
- CCleaner



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.


# Beware Wiping Software

- File Shredder
- Hard Drive Eraser
- Super File Shredder
- TweakNow SecureDelete
- MiniTool Drive Wipe
- XT File Shredder Lizard
- Free File Shredder
- WipeDisk
- Free EASIS Data Eraser
- File Secure Free
- Puran Wipe Disk



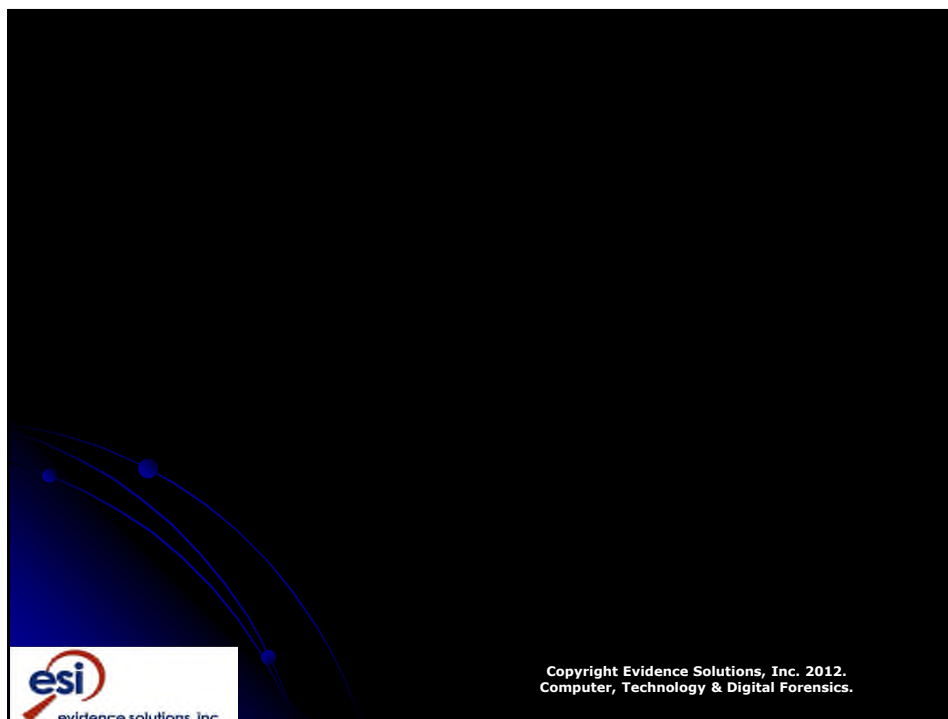
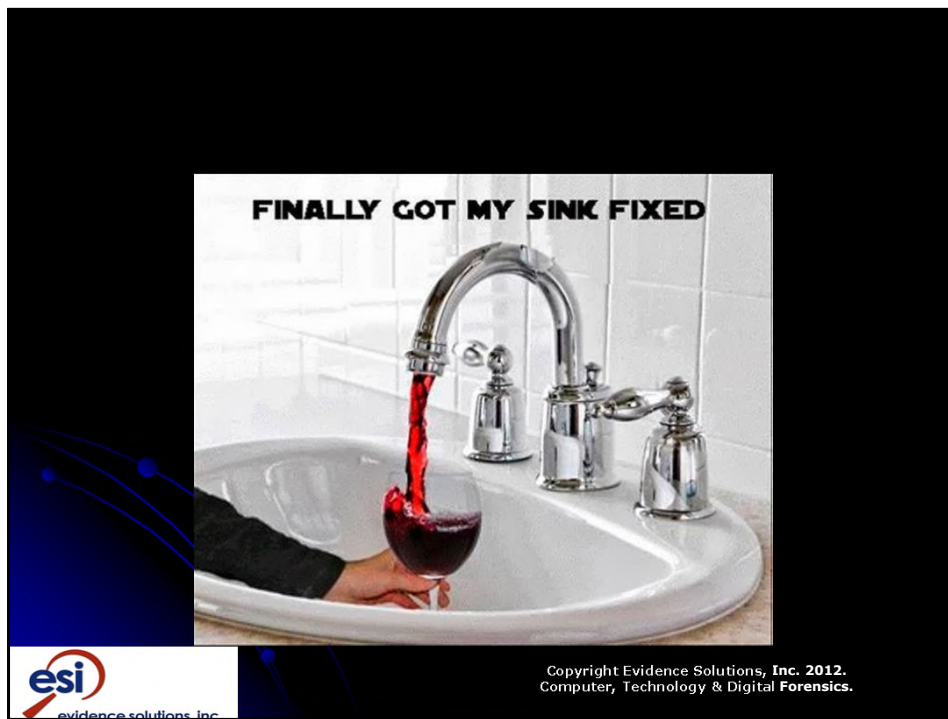
evidence solutions, inc.

Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.




evidence solutions, inc.

Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.



WV  
CHAPTER AMERICAN  
ASSOCIATION OF LEGAL  
NURSE CONSULTANTS  
(AALNC)  
Thank you:  
Erin Oconnell of  
[connellandassociates.net](http://connellandassociates.net)  
for organizing this event!



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.

Contact Information

Scott Greene  
of  
Evidence Solutions, Inc.  
866-795-7166  
[Scott@EvidenceSolutions.com](mailto:Scott@EvidenceSolutions.com)



Copyright Evidence Solutions, Inc. 2012.  
Computer, Technology & Digital Forensics.