

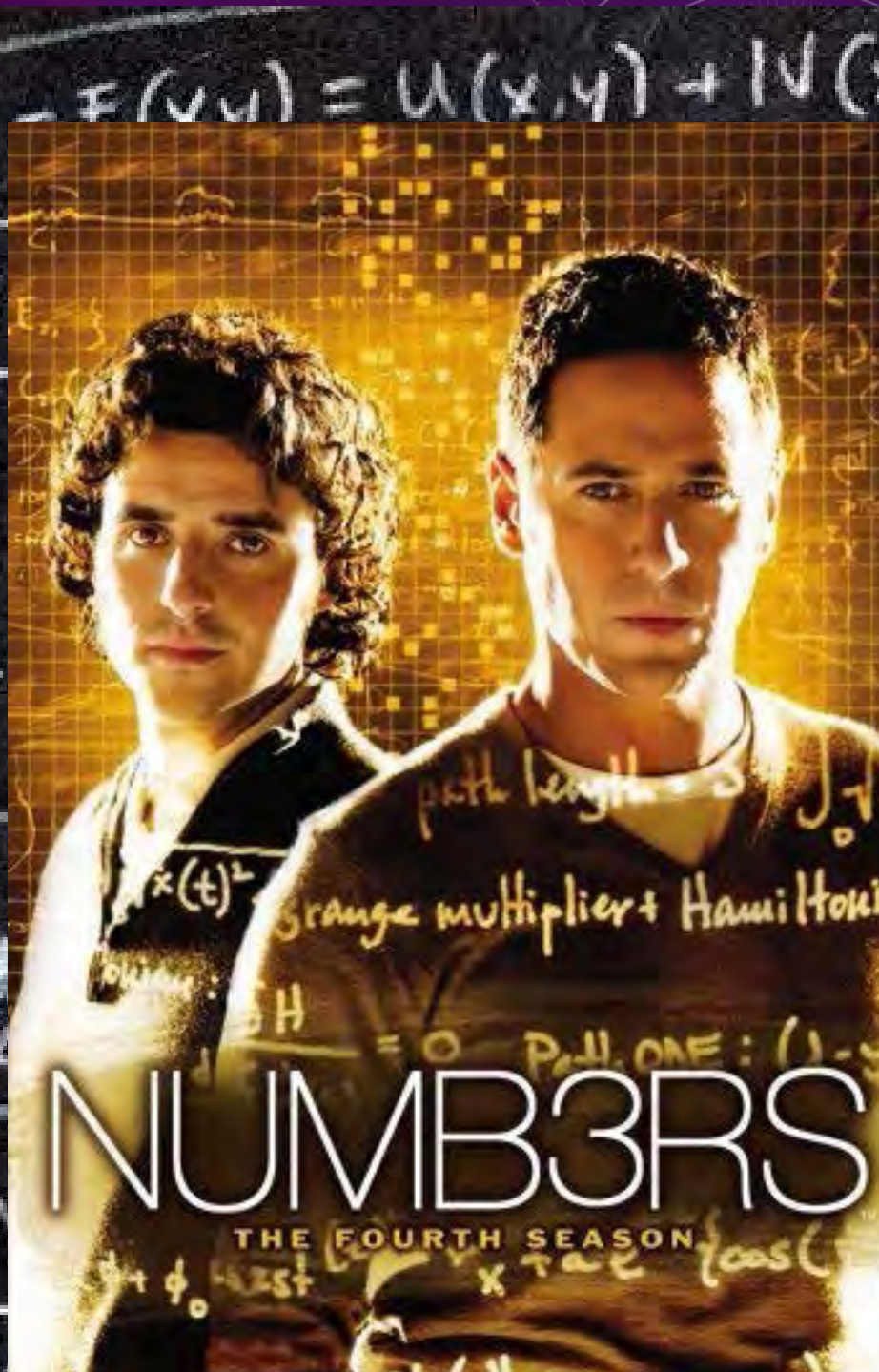


The background is a dark blue gradient with a starry or particle-like texture. Overlaid on this are several white and light blue circular and semi-circular patterns. On the left side, there is a large circular scale with tick marks and numerical labels: 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, and 260. The numbers are arranged in a semi-circle. There are also several circular diagrams with arrows indicating clockwise or counter-clockwise movement, some with dashed outer boundaries. The overall aesthetic is technical and data-oriented.

CRIME DATA ANALYSIS AND MAPPING

BEN CARLETON

$(VU' - UV') / V^2 Z$
 $U = X$
 $L = \mathbb{R} \times \mathbb{R}$
 $F(z)$
 $F(VU) = U(x, y) + IV$
 $\lim_{x \rightarrow 0} f(x+h)$
 $f(x+iy) = u + iH$
 $ZI = \text{SQRT}(z)(x, y)$
 $\frac{2k+1}{2}$
 $x=2$
 Δ
 $Z = \cos \theta + i \sin \theta$
 $(z - z - z) = 1$





path length = $\int \sqrt{dx^2 + dy^2}$
 $x(t)^2$
 strange multiplier + Hamiltonian
 $\frac{\partial H}{\partial x} = 0$
 P.O.L. ONE: (1, 1)

NUMB3RS

THE FOURTH SEASON

ϕ_0 \cos
 x τ α ϵ \cos

| id | date_time | lat | lon | incident_type_id | narrative | import_source |
|--------|------------------------|-----------|------------|------------------|---|---------------|
| 1 | 2015-10-14 20:12:38-04 | 38.899416 | -77.050960 | 1 | Robbery Unarmed,2 Vics,Susp Fled | ADM |
| 2 | 2015-10-25 12:48:19-04 | 38.898998 | -77.042549 | 2 | Fraud by Deception | ADM |
| 3 | 2015-10-25 12:52:09-04 | 38.899316 | -77.047269 | 1 | | ADM |
| 243685 | 2015-10-30 23:00:00-04 | 41.821094 | -87.628547 | 2 | Battery Domestic Battery Simple | CHI |
| 243686 | 2015-10-30 23:00:00-04 | 41.801122 | -87.747875 | 2 | Theft \$500 And Under | CHI |
| 243687 | 2015-10-30 23:00:00-04 | 41.962233 | -87.776346 | 2 | Theft \$500 And Under | CHI |
| 243688 | 2015-10-30 23:00:00-04 | 41.920988 | -87.648607 | 2 | Criminal Damage To Property | CHI |
| 243689 | 2015-10-30 22:58:00-04 | 41.881218 | -87.740108 | 1 | Prostitution Solicit On Public Way | CHI |
| 243690 | 2015-10-30 22:55:00-04 | 42.013128 | -87.684983 | 2 | Battery Domestic Battery Simple | CHI |
| 243691 | 2015-10-30 22:55:00-04 | 41.879148 | -87.740568 | 1 | Prostitution Solicit On Public Way | CHI |
| 243692 | 2015-10-30 22:50:00-04 | 41.814355 | -87.703815 | 2 | Burglary Forcible Entry | CHI |
| 243693 | 2015-10-30 22:50:00-04 | 41.726253 | -87.623856 | 2 | Robbery Aggravated Vehicular Hijacking | CHI |
| 243694 | 2015-10-30 22:45:00-04 | 41.773181 | -87.660398 | 2 | Battery Domestic Battery Simple | CHI |
| 243695 | 2015-10-30 22:45:00-04 | 41.862988 | -87.703566 | 2 | Criminal Damage To Property | CHI |
| 243696 | 2015-10-30 22:33:00-04 | 41.732032 | -87.638641 | 2 | Battery Aggravated: Other Dang Weapon | CHI |
| 243697 | 2015-10-30 22:30:00-04 | 41.884321 | -87.647434 | 2 | Assault Simple | CHI |
| 243698 | 2015-10-30 22:30:00-04 | 41.910537 | -87.674193 | 1 | Criminal Damage To Property | CHI |
| 243699 | 2015-10-30 22:29:00-04 | 41.873613 | -87.712060 | 1 | Liquor Law Violation Liquor License Violation | CHI |
| 243700 | 2015-10-30 22:26:00-04 | 41.986089 | -87.699257 | 2 | Battery Simple | CHI |
| 243701 | 2015-10-30 22:25:00-04 | 41.919428 | -87.757241 | 2 | Battery Domestic Battery Simple | CHI |
| 243702 | 2015-10-30 22:20:00-04 | 41.750873 | -87.557726 | 2 | Other Offense Probation Violation | CHI |
| 243703 | 2015-10-30 22:20:00-04 | 41.885488 | -87.726422 | 2 | Robbery Strongarm - No Weapon | CHI |
| 243704 | 2015-10-30 22:20:00-04 | 41.887058 | -87.647515 | 2 | Theft From Building | CHI |
| 243705 | 2015-10-30 22:11:00-04 | 41.767451 | -87.619586 | 1 | Assault Agg Po Hands No/Min Injury | CHI |
| 243706 | 2015-10-30 22:06:00-04 | 41.890778 | -87.634580 | 2 | Robbery Strongarm - No Weapon | CHI |
| 243707 | 2015-10-30 22:05:00-04 | 41.911559 | -87.796067 | 2 | Battery Domestic Battery Simple | CHI |
| 243708 | 2015-10-30 22:02:00-04 | 41.753367 | -87.642893 | 1 | Criminal Trespass To Land | CHI |
| 243709 | 2015-10-30 22:01:00-04 | 41.955235 | -87.748135 | 2 | Robbery Armed: Handgun | CHI |
| 243710 | 2015-10-30 22:00:00-04 | 41.847319 | -87.692866 | | | |
| 243711 | 2015-10-30 22:00:00-04 | 41.653735 | -87.595301 | | | |
| 243712 | 2015-10-30 22:00:00-04 | 41.792676 | -87.765433 | | | |
| 243713 | 2015-10-30 22:00:00-04 | 41.812041 | -87.686333 | | | |
| 243714 | 2015-10-30 22:00:00-04 | 41.883830 | -87.647421 | | | |
| 243715 | 2015-10-30 22:00:00-04 | 41.963313 | -87.676425 | | | |
| 243716 | 2015-10-30 22:00:00-04 | 41.761886 | -87.570074 | | | |
| 243717 | 2015-10-30 22:00:00-04 | 41.935387 | -87.652705 | | | |
| 243718 | 2015-10-30 22:00:00-04 | 41.821173 | -87.615042 | | | |
| 243719 | 2015-10-30 21:56:00-04 | 41.767178 | -87.726820 | | | |
| 243720 | 2015-10-30 21:55:00-04 | 41.944386 | -87.660347 | | | |
| 243721 | 2015-10-30 21:50:00-04 | 41.747902 | -87.647605 | | | |
| 243722 | 2015-10-30 21:50:00-04 | 41.800429 | -87.689101 | | | |
| 243723 | 2015-10-30 21:50:00-04 | 41.950130 | -87.661676 | | | |
| 243724 | 2015-10-30 21:47:00-04 | 41.912271 | -87.765612 | | | |
| 243725 | 2015-10-30 21:45:00-04 | 41.939073 | -87.788522 | | | |
| 243726 | 2015-10-30 21:45:00-04 | 41.903382 | -87.628664 | | | |
| 243727 | 2015-10-30 21:44:00-04 | 41.896923 | -87.775206 | | | |
| 243728 | 2015-10-30 21:39:00-04 | 41.912661 | -87.766141 | | | |
| 243729 | 2015-10-30 21:35:00-04 | 41.755145 | -87.584070 | | | |
| 243730 | 2015-10-30 21:35:00-04 | 41.939974 | -87.649697 | | | |
| 243731 | 2015-10-30 21:30:00-04 | 41.942024 | -87.649334 | | | |
| 243732 | 2015-10-30 21:30:00-04 | 41.941522 | -87.750231 | | | |
| 243733 | 2015-10-30 21:30:00-04 | 41.685785 | -87.687105 | | | |
| 243734 | 2015-10-30 21:30:00-04 | 41.786083 | -87.774254 | | | |



1970's-80's

CLEAR

Display # 1

Message # 2

EVENT RETURNED: 11/11/2004 15:28:56

Event: 0405070001 **Date/Time:** 05/07/2004 10:16:45
Agency: ANY **Call Source:** P
Call Type: 5311 - Disorderly Conduct **Priority:** 0
Location: 128 W MAPLE RD
 128 MAPLE
Beat: 04 **Sector:** DELTA **District:** 32

Description: TWO MALES FIGHTING IN THE PARKING LOT NEXT TO THE MINI MART. CLERK STATES THAT THE SUBJECT WERE ARGUING AS THEY WERE LEAVING THE STORE. UNKNOWN IF ANY OTHER SUBJECTS OR WEAPONS ARE INVOLVED OR IN THE AREA .

S#1 WMA,6-0,200,BRO,BRO - BLUE JEANS / BROWN TSHIRT
 S#2 WMA 5-8,185,BRO,BOR - BLK PANTS / RED SHIRT

RP: SMITH,JANICE DOB: 06/13/1965
RP Location: 128 W MAPLE RD
RP Phone: 788-2451 **Req Contact:** YES
Dispatcher: ADMIN **Incident #:** 04-001355
Dispo: 01 **Call Status:** A
Dispo Cmnt: UNIT 100 HAS TWO IN CUSTODY, ENROUTE TO LOWER BOOKING

Display # 1

Display # 2

Status Monitor

Map



QRY

ADM

PREV

NEXT



MDC # 0000 Unit ID: 1009

DISP:0405070001

NO MESSAGES

CMDL

DISP

ENR

ARV

CLR

VEHS

MISC

FREE

Today

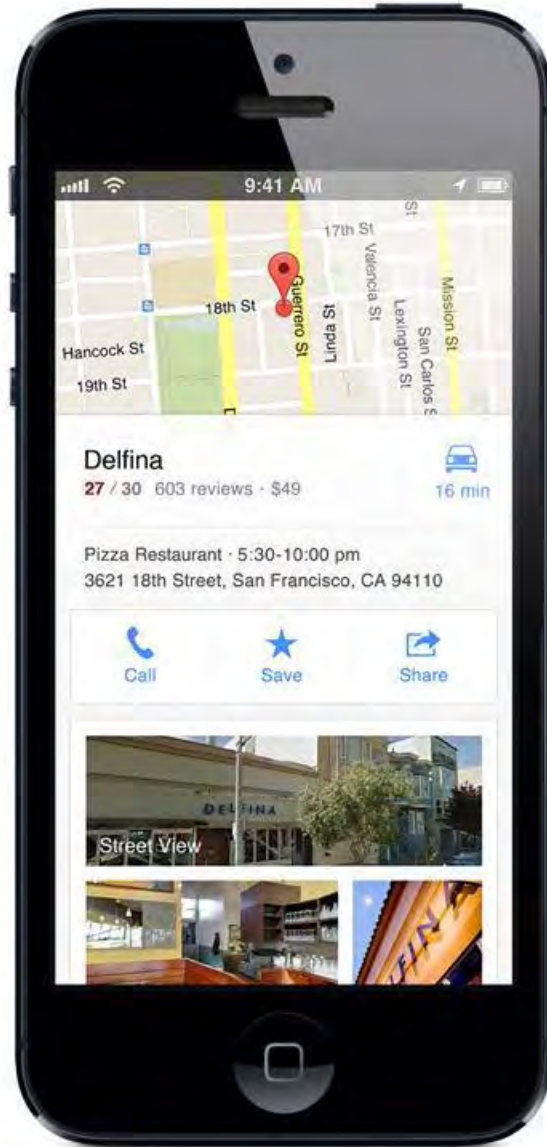
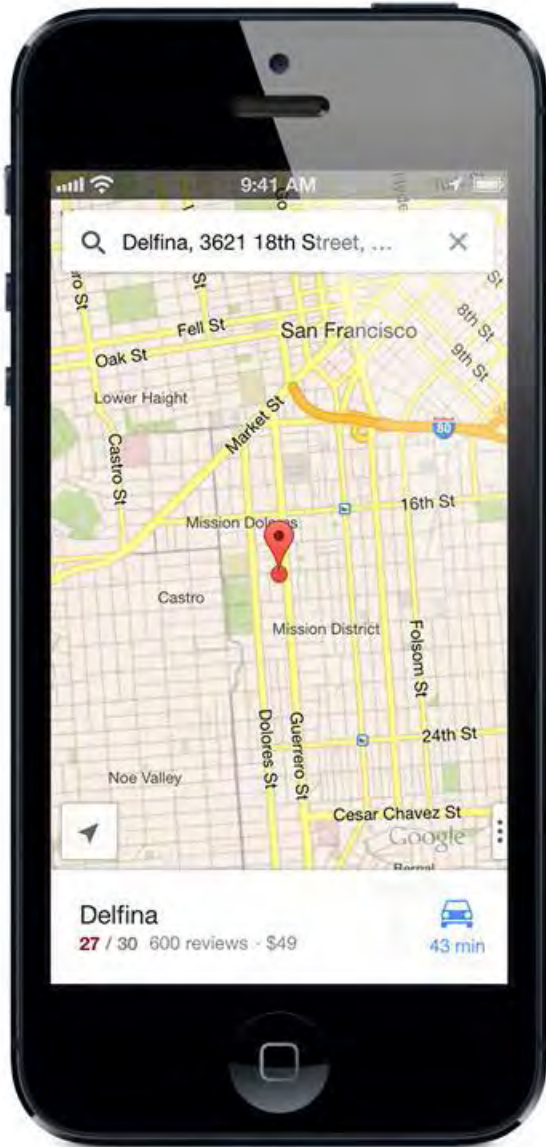


| LIN | LOCATION | AREA.. | NAT. | TAC | TIME. | TRUCKS |
|-----|---------------------------|--------|------|-----|-------|---|
| 1 | 19569 JOHN HAMILTON RD | 5-6 | HF | 6D | 18:54 | W5 W2 W1 W4 W12 TL2 T1 TW1 TW4 TW12 A17-1 BC602 |
| 2 | 251 WAXPOOL DR SW-LB #D | 1-10 | 10C1 | 6B | 17:33 | A13-4 302 1376 |
| 3 | 910 WASHINGTON ST W-MB | 3-9 | FILL | 6B | 17:11 | E2 |
| 4 | 21730 RED RUM DR-AB #117 | 23-2 | FILL | 6B | 16:24 | RE6 E6 |
| 5 | 43216 DEFENDER DR-CH | 19-2 | FILL | 6B | 15:26 | E415 M415 E438 M438 E436 M440 E415 M415 |
| 6 | 39459 JOHN MOSBY HWY-AL | 7-11 | FILL | 6B | 14:29 | W1 RE23 ER1 ER1 |
| 7 | JOHN MOSBY HWY-MB/SALLS R | 7-6 | HF | 6C | 14:10 | W7 W3 ER9 W8 E19 T1 E515 TW7 TW3 TW8 A7 BC603 S0601 CH8 FM608 QW4 TW515 QW4 TW1 BC501 BC602 TW5 L-6 SPT9 SV7 974 A13-4 302 1376 A13-5 9933 W1 QE5 W5 ER1 QW5 A3-1 9906 RE23 FM602 A13-2 SV9 FM312 906 972 A3-1 9906 |

1411 STATION WAY NE-LB 1-9 1 18:55 17B3-FALL UNKNOWN PATIENT

ENTER: STAT

CQ



PROBLEM

- How to turn historical data into actionable information for law enforcement agencies?
- How to do so in a way that's relatable and user-friendly across the agency?

SPATIAL AUTOCORRELATION

- Given trends and an area of interest, identify “hotspots” in the data, i.e. where the crime is
- Visual indication of where the crime is happening on a map

Waldo Tobler’s “First Law of Geography”:

"Everything is related to everything else, but near things are more related than distant things."

Start Date: 2015-01-01

End Date: 2015-12-31

Interval: 30

Crime Type: Theft II

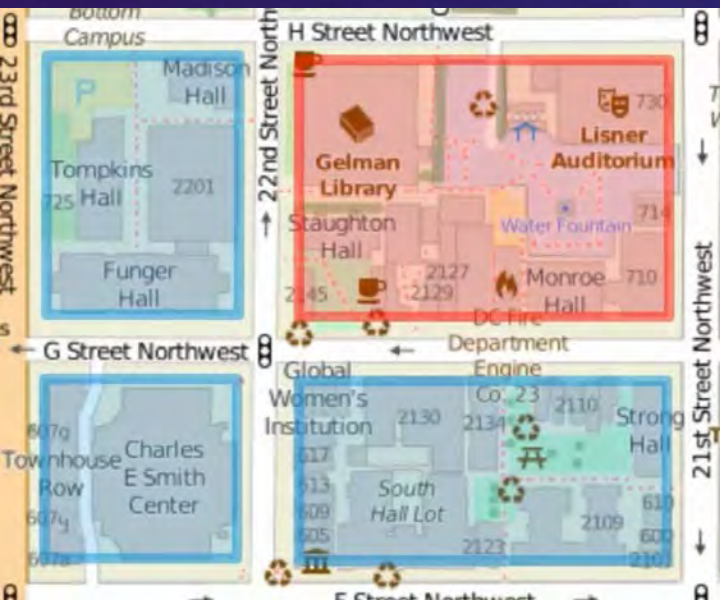
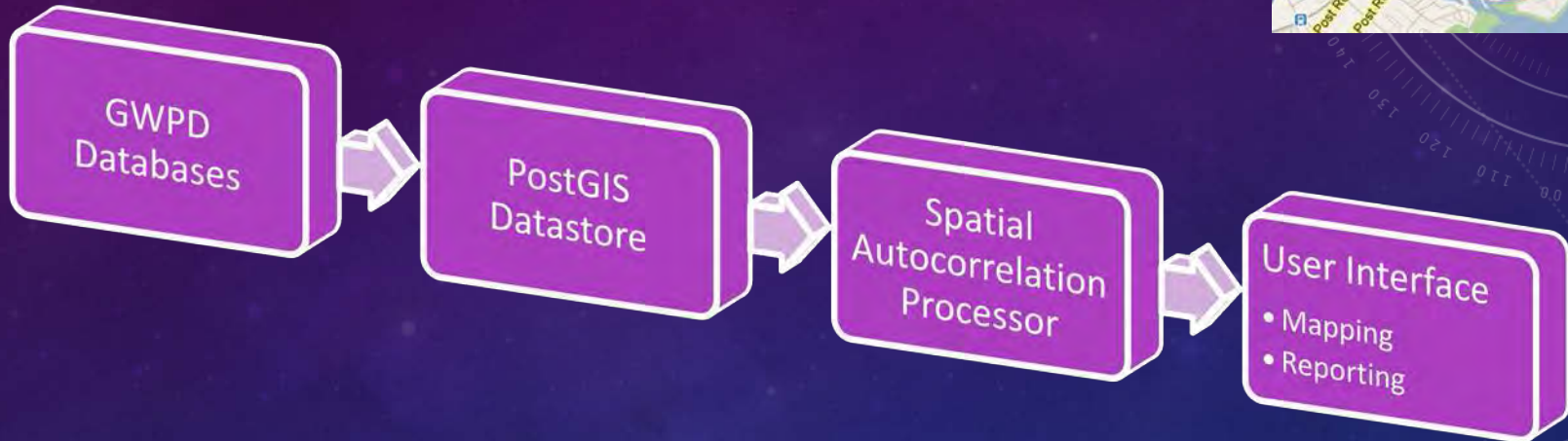
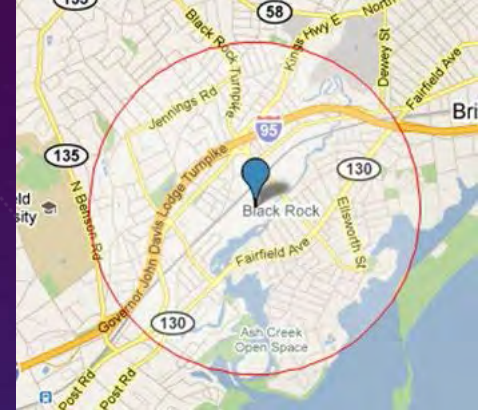
Submit



TARGETED TO SMALLER LAW ENFORCEMENT AGENCIES

- Focusing on integration with existing data sources
- Functionality adapted to smaller geographic areas of responsibility

SPATIAL DATA PROCESSING PIPELINE



Product Sales

| Sales Date | Subcategory | Product | Quantity | Sales |
|------------------|-------------|----------------------|--------------|-------------|
| January 05, 2009 | Accessories | Carrying Case | 68 | \$9,224.60 |
| | | Mini Battery Charger | 44 | \$1,056.00 |
| | Digital | Slim Digital | 112 | \$10,980.60 |
| | | | 44 | \$8,357.80 |
| | | | 44 | \$8,357.80 |
| | | 156 | \$19,338.40 | |
| January 11, 2009 | Accessories | Lens Adapter | 17 | \$1,147.50 |
| | | | 17 | \$1,147.50 |
| | Digital | Advanced Digital | 39 | \$7,234.50 |
| | | | 39 | \$7,234.50 |
| | Total | | 56 | \$8,382.00 |
| Total | | 576 | \$106,920.40 | |