Innovation is Transforming Government
Information Technologies Extraordinary Capabilities

“A digital computer will be the world's chess champion” 1958, H. A. Simon and Allen Newell – Founders of AI

The New Frontier: Age of Analytics

Rapid Change

Abacus (Circa 3500 BC)
Antikythera Astronomical Computer (ca 87 BC)
Napier's rods (Circa 1600)
Counting Machine (Circa 1820)
ENIAC (Circa 1945)
System/360 (1964)
Deep Blue (1997)
Watson (2010)
Watson is a New Launching Point
Analytics:

Life-Changing When Applied in Medicine

University of Ontario Institute of Technology
Research Project to monitor premature infants in the ICU

- Correlating blood oxygenation with blood pressure to predict “Baby crashing”
- Nosocomial Infection Prediction
  - Monitoring heart rate variability with other information to predict sepsis
  - Alarms up to 24 hours earlier than by experienced ICU Nurses

Sources

Files, TCP Sockets

On-the-fly stream computing

InfoSphere Streams

Persist/Enrich

solidDB

Persist stream data

ODBC/JDBC/SA

solidDB, DB2, IDS
InfoSphere Warehouse

http://www.youtube.com/ibmhealthcare
Municipalities lose as much as 20% of their water through leaks.

A major traffic jam in China caused gridlock for 60 miles and lasted ten days.

A blackout in the Northeast of the US affected over 55 million people.
These Problems are a Result of a Lack of Information, or the Inability to Utilize Information Effectively
Our Solution Focus:
Transform to a Proactive World Where “Failures” are Corrected BEFORE They Occur
An Example: Innovation, Technology and Transportation
Case Study: Stockholm Road Charging

25% reduction in traffic entering cordon
15% reduction in CO₂ emissions
$120M/yr in revenue to City of Stockholm; payback in 4 years
Congestion charges will fund transit improvements

Source: www.stockholmsforsoket.se
Predicting and Mitigating Traffic Congestion BEFORE it Occurs; Big Data In Action

<table>
<thead>
<tr>
<th>10 minute-ahead volume forecast (blue) vs. actual value (black)</th>
<th>10 minute-ahead speed forecast (blue) vs. actual value (black)</th>
</tr>
</thead>
</table>

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Leveraging information to make better decisions

Anticipating problems to resolve them proactively

Coordinating resources to operate effectively

High impact issues require integration across departments
Government Areas for Fraud/Improper Payments

- Tax & Revenue (NY)
- Medicaid and Medicare (NC)
- Unemployment Insurance
- Food & Nutrition Programs (NY)
- Worker’s Compensation
- Improper Payments

Statewide Fraud Analysis System
A Single View of a Constituent

Social Services and Courts Savings in Alameda County and Puerto Rico

Jane Smith

- Lunch Account: 123 456 789, $100
- School Accounts
- Courts Sentencing: ABC 123, Fines $5000
- Tax Record: 545-4656-343
- Delinquent Support Data: 333 44 6789, $5000
- TANF Assistance: 54980094, $7500
- Sentencing Information: 5441 1432 5671 1234, Status
- Joint Mortgage: 123 Main Street
- Secondary Residence: John Smith
- Family Members: Jane Smith, Jenny Smith
- Chile Support Status
- Social Services Rendered
- Juvenile conviction
- Health Records
- Property
## Live Video Feeds from MD DOT

- ARENA DR AT LOTTFSRD RD
- I-270 N. of DEMOCRACY BLVD
- I-270 S. of SPLIT
- I-495 at BRADLEY BLVD
- I-95 AT MD 198
- I-495 E. of I-270
- I-495 E. of MD 650

## Relevant Tweets
### USMC Marathon

- @TheFabulousYawn: woah, I finally just learned where “FRESH SHOTS!” comes from. I live under a rock.
- @nnaya: Hot shots on star movies. Film plesetan pertama kali ya? Lumayan lah nemenin saur biar garing jg.
- @Kerryanne76: Yeah looked at them all, liked the butterfly & the Welsh shots.

## DC Hospitals

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Administrator</th>
<th>Phone</th>
<th>Beds</th>
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</thead>
<tbody>
<tr>
<td>Children’s National Medical Center</td>
<td>Edwin K. Zechman, Jr.</td>
<td>(202) 476-5000</td>
<td>283</td>
</tr>
<tr>
<td>George Washington University Hospital</td>
<td>Trent Crable</td>
<td>(202) 715-4000</td>
<td>371</td>
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<tr>
<td>Greater Southeast Community Hospital</td>
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<td>Not Available</td>
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<td>Hospital for Sick Children</td>
<td>Thomas W. Chapman</td>
<td>(202) 832-4400</td>
<td>130</td>
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<tr>
<td>Howard University Hospital</td>
<td>Larry Warren</td>
<td>(202) 865-6100</td>
<td>482</td>
</tr>
</tbody>
</table>
Opportunity: New Ideas and Replication of What is Working…

DATA + ANALYTICS + NEW PROCESSES = SAVINGS and REVENUE

Smarter Roads

Smarter Oil & Gas

Smarter Food

Smarter Healthcare

Smarter Grids

Smarter Retail

Smarter Water

Smarter Supply Chains

Smarter Public Safety

Smarter Weather

Smarter Transportation

Smarter Cities