

# APLIKACE UMĚLÉ INTELIGENCE

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"A lot of cutting edge AI has filtered into general applications, often without being called AI because once something becomes useful enough and common enough it's not labeled AI anymore," Nick Bostrom

Petr Jirásek

# OSNOVA

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Watson

Quill

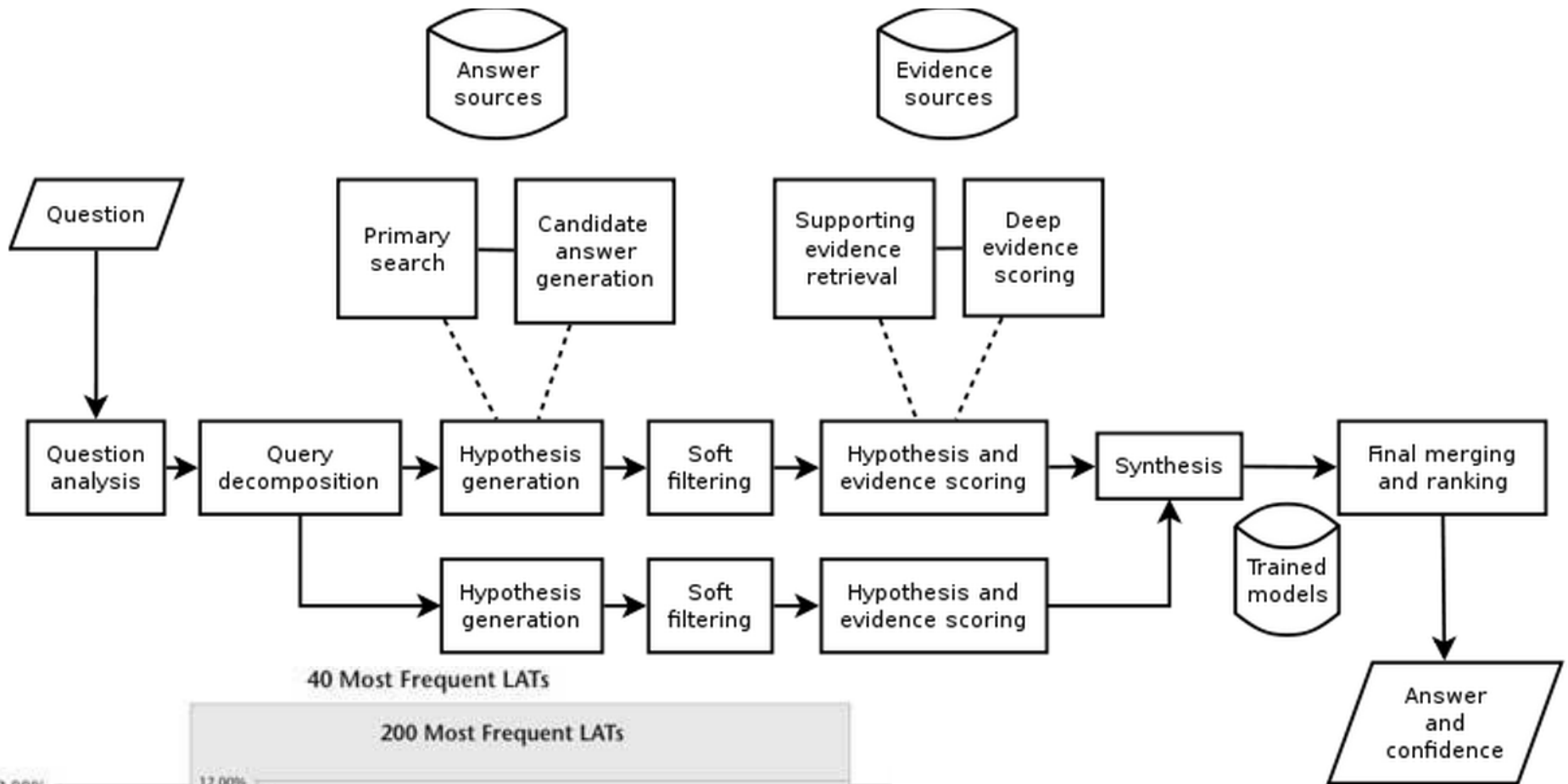
# Watson

- Vyvinut IBM
- Nástupce Deep Blue
- Na základě položené otázky vrátí odpověď
- V roce 2011 porazil své lidské soupeře ve hře Jeopardy!



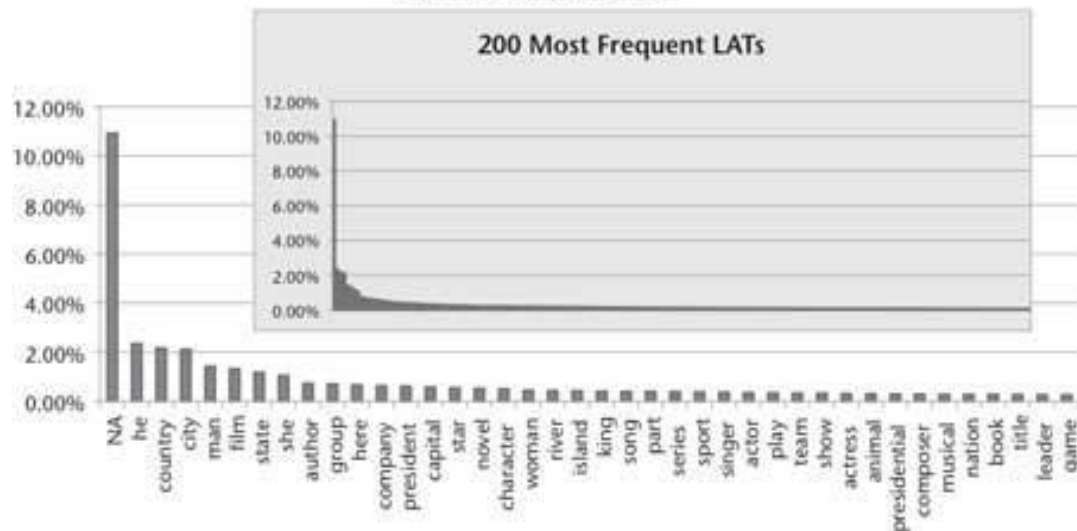
# Architektura

- DeepQA
  - Tvorba hypotéz, shromažďování faktů, jejich analýza, ohodnocení
- Dále technologie pro zpracování jazyka, vyvozování znalosti a jejich reprezentace, rozpoznávání a syntéza řeči, vyhledávání informací, strojové učení....
- 750 serverů, každý 8 proc. jader, 3,5 GHz
- Masivní paralelizace
- C++ a Prolog
- Apache Hadoop framework, SuSE Linux Enterprise Server 11
- Data: Wikipedie, DBPedia, Wordnet, Yago...



40 Most Frequent LATs

200 Most Frequent LATs



# Dekompozice otázky

## **Category: “Rap” Sheet**

**Clue:** This archaic term for a mischievous or annoying child can also mean a rogue or scamp.

**Subclue 1:** This archaic term for a mischievous or annoying child.

**Subclue 2:** This term can also mean a rogue or scamp.

**Answer:** Rascalion

## **Category: Diplomatic Relations**

**Clue:** Of the four countries in the world that the United States does not have diplomatic relations with, the one that's farthest north.

**Inner subclue:** The four countries in the world that the United States does not have diplomatic relations with (Bhutan, Cuba, Iran, North Korea).

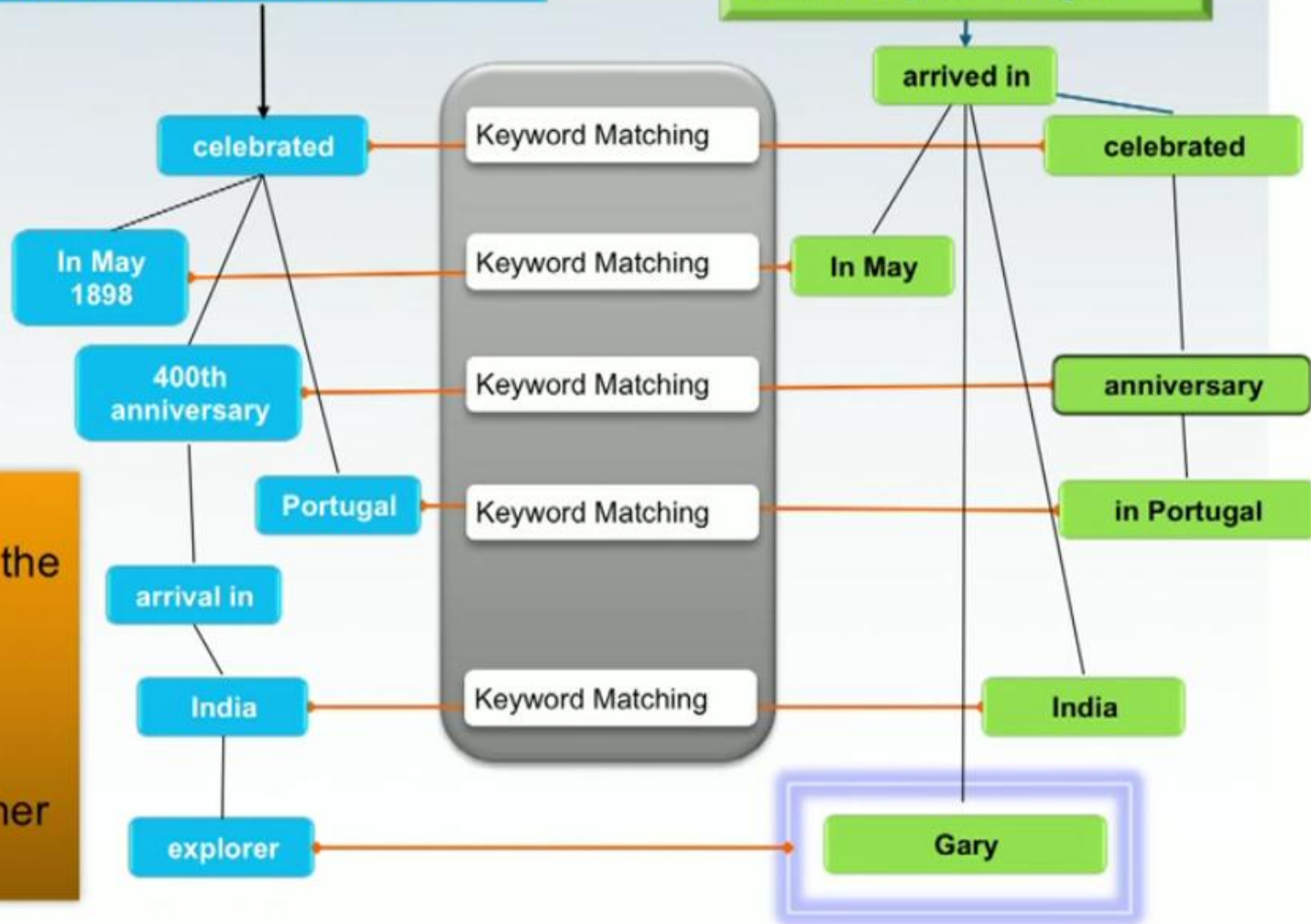
**Outer subclue:** Of Bhutan, Cuba, Iran, and North Korea, the one that's farthest north.

**Answer:** North Korea

# Keyword Evidence

In May 1898 Portugal celebrated the 400th anniversary of this explorer's arrival in India.

In May, Gary arrived in India after he celebrated his anniversary in Portugal.



This evidence suggests "Gary" is the answer BUT the system must learn that keyword matching may be weak relative to other types of evidence

In May 1898 Portugal celebrated the 400th anniversary of this explorer's arrival in India.

On the 27<sup>th</sup> of May 1498, Vasco da Gama landed in Kappad Beach

- > Search Far and Wide
- > Explore many hypotheses
- > Find Judge Evidence
- > Many inference algorithms

Temporal Reasoning

Statistical Paraphrasing

GeoSpatial Reasoning

Date Match

Para-phrases

Geo-KB

celebrated

Portugal

May 1898

400th anniversary

arrival in

India

explorer

landed in

27th May 1498

Kappad Beach

Vasco da Gama

Stronger evidence can be much harder to find and score.



# Využití a budoucnost

- Finance
  - Citibank
  - Zhodnocení investic
  - Kontrola rizik
- Zdravotnictví
  - Návrhy diagnóz
  - Asistence lékaři
  - Rozpoznání tumoru na snímcích, čtení EKG apod.
    - Zatím není implementováno

# Quill

- Vyvinut společností Narrative Science
- Virtuální žurnalista
- Na základě vstupních dat vygeneruje novinový článek, zprávu



**Finance:**  
52-Week High Alerts  
Ex-Dividend Alerts  
Earnings



**Business:**  
Franchise Ops  
Marketing Services



**Audience:**  
Conference Review



**Baseball:**  
Recaps



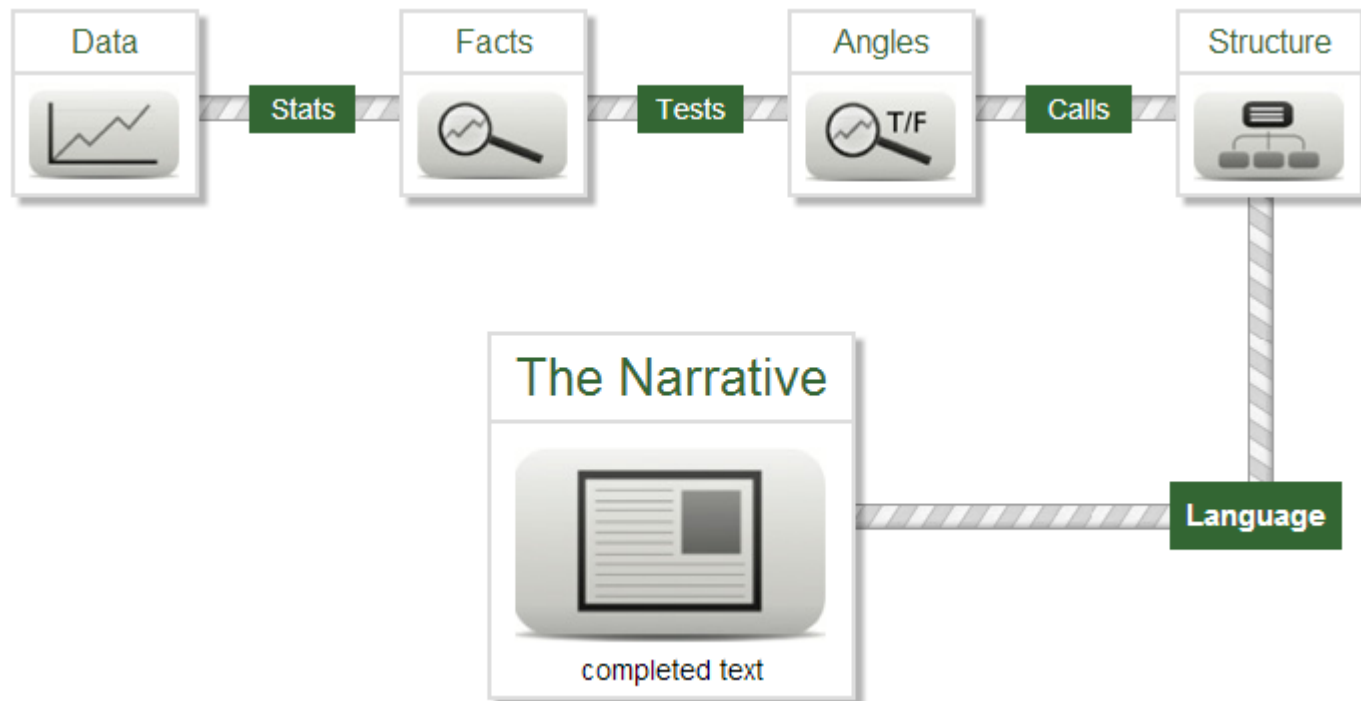
**Real Estate:**  
Market Updates



**Education:**  
Student Feedback

<http://wow.n-s.us>

# Princip



# Vstup

• .....

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  </feature>  
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    <Count value="1" />  
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```

• .....

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</OffenseStats>  
</feature>
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• .....

# Angle Tests

#	DERIVATION	MODEL	VALUE
1	<b>BattingDefaultWin</b>	Angle	True
2	<b>BackAndForth</b>	Angle	True
3	<b>PitchingDefaultWin</b>	Angle	True
4	<b>Default</b>	Angle	True
5	<b>TakeTheLeadLate</b>	Angle	True
6	<b>HeroicPerformanceBatting</b>	Angle	True
7	<b>MakingMostOfHits</b>	Angle	True
8	<b>MultipleHomeRuns</b>	Angle	True
9	<b>MultipleXBH</b>	Angle	True
10	<b>MultipleRBIS</b>	Angle	True
11	<b>GoodBattingGame</b>	Angle	True
12	<b>GameClosingSave</b>	Angle	True
13	<b>WinPitcher</b>	Angle	True
14	<b>WinnerBiggestInning</b>	Angle	True

# Angles

## BattingPerformanceChunks

Angle Name	Interestingness	Mutex	Bound Args
MultipleHomeRuns	8.2	set(['batting_performance'])	{player: Player(Wunderlich), }
BattingPerformanceChunks	5.1	set([])	{player: Player(Wunderlich), }

## GameChunks

Angle Name	Interestingness	Mutex	Bound Args
WinPitcher	5.7	set(['winning_pitcher'])	{game: {Game instance at 140621642692624}, }
WinnerBiggestInning	5.6	set([])	{game: {Game instance at 140621642692624}, }
GameClosingSave	5.3	set([])	{game: {Game instance at 140621642692624}, }
PositiveGameChunks	5.2	set([])	{game: {Game instance at 140621642692624}, }

# Derivations

#	DERIVATION	MODEL	VALUE
1	<b>winner</b>	Game	Team(Louisville)
2	<b>loser</b>	Game	Team(Indiana)
3	<b>best_player</b>	Team	DataUndefined(None)
4	<b>cutShort</b>	Game	False
5	<b>pbp_runs_match_linescore</b>	Game	True
6	<b>best_player</b>	Team	Player(Wunderlich)
7	<b>batting_plays</b>	Player	[[{Play instance at 140621679500176}, {Play instance at 140621679334672}, {Play instance at 140621675716240}]]
8	<b>batting_plays</b>	Player	[[{Play instance at 140621681335184}, {Play instance at 140621679500112}, {Play instance at 140621679330768}]]
9	<b>batting_plays</b>	Player	[[{Play instance at 140621681335376}, {Play instance at 140621679342544}]]

# WUNDERLICH STARS AS LOUISVILLE DEFEATS HOOSIERS, 9-7

Generated: 2012-11-23 16:08:21.888768

Tuesday was a great day for Wunderlich, as he clubbed two home runs to carry the Cardinals to a 9-7 victory over the Hoosiers at Patterson Stadium.

The game was back-and-forth heading into the eighth, with four lead changes.

Louisville took the lead in the eighth inning and held on for the victory. The Cardinals scored on a RBI double by Stallings off Squires, plating Arnold.

Shaw got the win for Louisville. He allowed one run over six innings. He struck out two, walked zero and surrendered two hits.

Cardinals closer Holland got the final three outs for the save.

The Cardinals quickly matched Indiana's strong inning with a three-run inning of their own in the sixth. Louisville scored on a RBI double by Duvall, a RBI single by Wunderlich, and a sacrifice fly by Ijames.

A key eighth-inning rally gave the Cardinals the lead for good. Louisville tacked on a total of four runs on A two-run home run by Wunderlich and a RBI single by Ethel.



# CARDINALS TOP INDIANA BEHIND WUNDERLICH'S THREE HITS, 9-7

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A great effort by Wunderlich carried Louisville to a 9-7 win over Indiana on Tuesday at Patterson Stadium.

Wunderlich hit two home runs for the Cardinals. Wunderlich went 3-4 in the game with five RBIs and two runs scored. Wunderlich homered in the fourth and eighth innings.

The game was back-and-forth heading into the eighth, with four lead changes.

Louisville pulled out the win thanks to a strong eighth inning. The Cardinals scored on a RBI double by Stallings off Squires, scoring Arnold.

Shaw got it done on the rubber on the way to a win. He allowed one run over six innings. He struck out two, walked zero and surrendered two hits.

Cardinals closer Holland got the final three outs for the save.

After a quick strike from the Hoosiers, Louisville responded with three runs in the sixth. The Cardinals scored on a RBI double by Duvall, a RBI single by Wunderlich, and a sacrifice fly by Ijames.

Louisville never surrendered the lead after the eighth inning. The runs piled on thanks to a two-run home run by Wunderlich and a RBI single by Ethel.

# INDIANA SURRENDERS EIGHTH INNING LEAD TO CARDINALS IN 9-7 DEFEAT

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The Hoosiers was in the game until the end, but Louisville captured the lead in the eighth inning and held on for a 9-7 victory over the Hoosiers on Tuesday at Patterson Stadium.

The teams traded runs for most of the contest, leading to four lead changes in the game.

The Cardinals finally managed to grab the lead after a strong eighth inning. Louisville went up for good on a RBI double by Stallings off Squires, bringing home Arnold.

Shaw got the win for the Cardinals. He allowed one run over six innings. Shaw struck out two, walked zero and gave up two hits.

Louisville closer Holland put away the final three outs to record the save.

Louisville scored three runs of its own in the sixth. The Cardinals scored on a RBI double by Duvall, a RBI single by Wunderlich, and a sacrifice fly by Ijames.

Louisville didn't give up the lead after the eighth inning. Additional runs came from a two-run home run by Wunderlich and a RBI single by Ethel.

# Využití a budoucnost


- Forbes, sportovní portály, prezidentské volby, výsledky anket...
- Velmi levné – 1 článek v řádu jednotek dolarů
- Možná personifikace obsahu na uživatele
  - Odborníkovi vygeneruje jiný výstup, než člověku, co se v problematice neorientuje
  - Do obsahu článku může začlenit reklamu cílící na čtenáře
  - V bulváru může ženám zobrazit jiný pohled, než třeba mužům
  - Fanoušek domácího týmu dostane jiný článek než fanoušek týmu hostů
  - .....

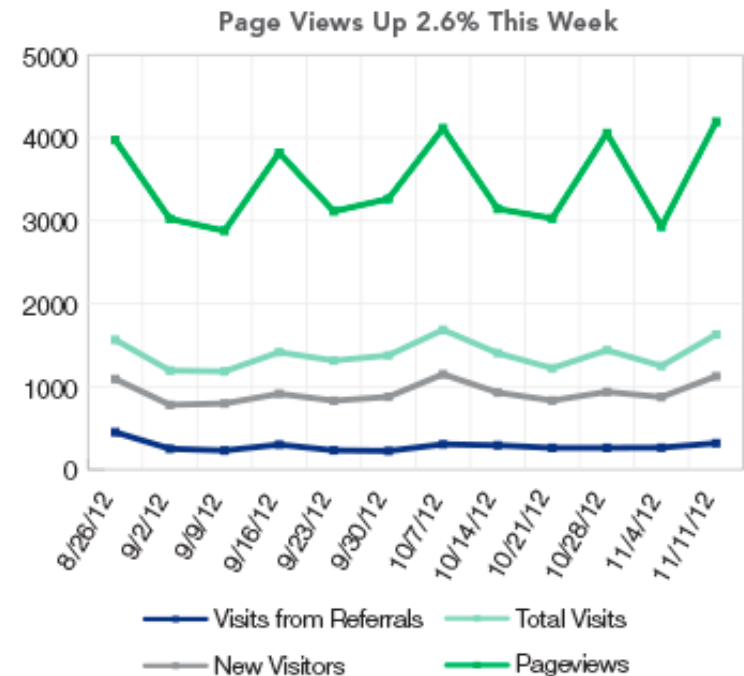
Site: <http://logio.org/>

Performance Period: October 7–13, 2012

## Site Highlights

- For the week ending Oct. 7, 2012, the total number of direct visits was 153, which represents 17.6% of overall visits. Unique visits, visitors who haven't viewed the page at any other time, totaled 638.
- The top referring websites (excluding social networks) were [arstechnica.com](http://arstechnica.com), [coding.smashingmagazine.com](http://coding.smashingmagazine.com) and [nodecloud.org](http://nodecloud.org).
- Mobile visits are averaging 32 per week since Oct. 3, 2011. This is approximately 4.7% percent of the average number of weekly visits to date.

 email report to a friend



Tracking three months of visitors, page views, and referrals