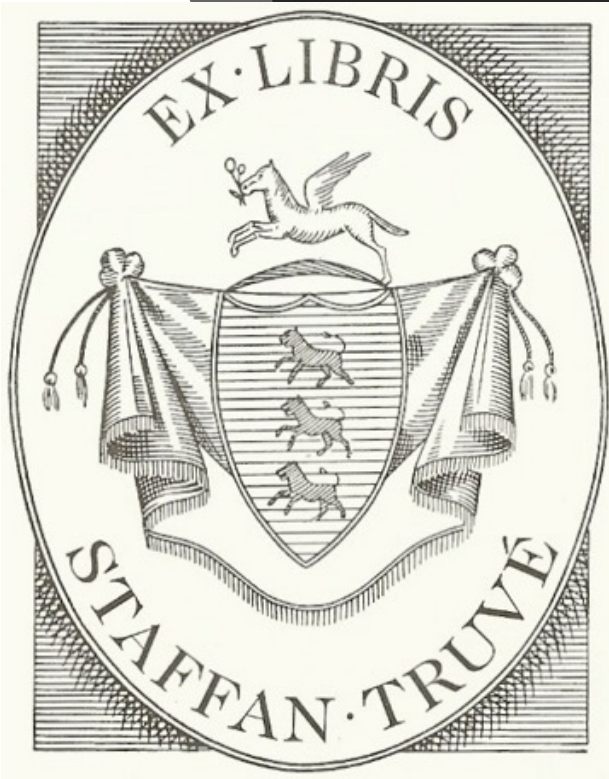


Från det virtuella garaget till...

Staffan Truvé

truve@recordedfuture.com

Who am I?



- Chalmers, MSc in Engineering Physics (81-84)
- Göteborg University, MBA in Business Organization (82-87)
- MIT, Fulbright Scholar (85-86)
- Chalmers, PhD in Computer Science (86-92)

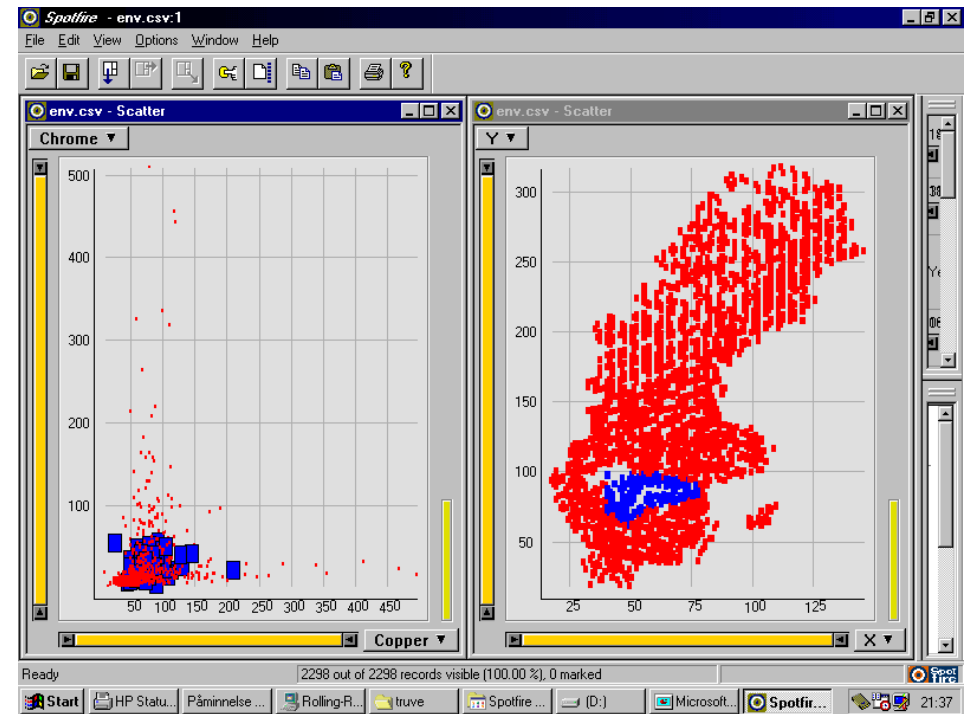
- Kigol (84-?)
- Carlstedt Elektronik (92-93)
- CR&T (94-03) [Spotfire, Gatespace, SmartEye, Pilotfish, ...]
- Innovationskapital (96-07)
- (Viktoria 97, Interactive 98)
- SICS / Interactive Institute (03-09) [Peerialism, Axiomatics, Gavagai, Interspectral, ...]
- Recorded Future (09-?)

- SSF, Vinnova, KK Foundation (93-?)

We choose to go to the moon. We choose to go to the moon in this decade and **do the other things, not because they are easy, but because they are hard**, because that goal will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one which we intend to win, and the others, too.



The Spotfire Story

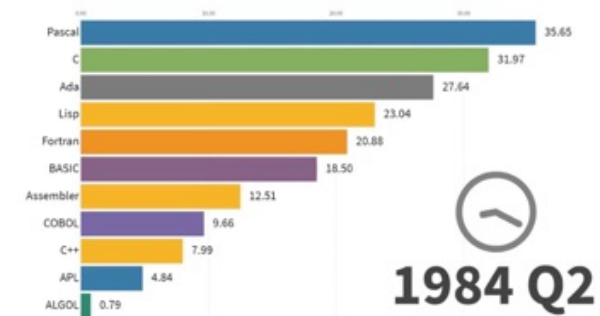


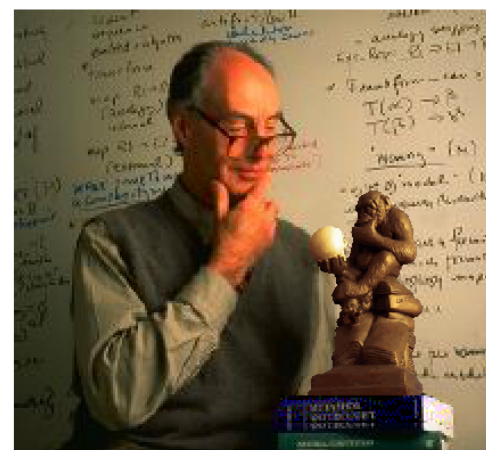
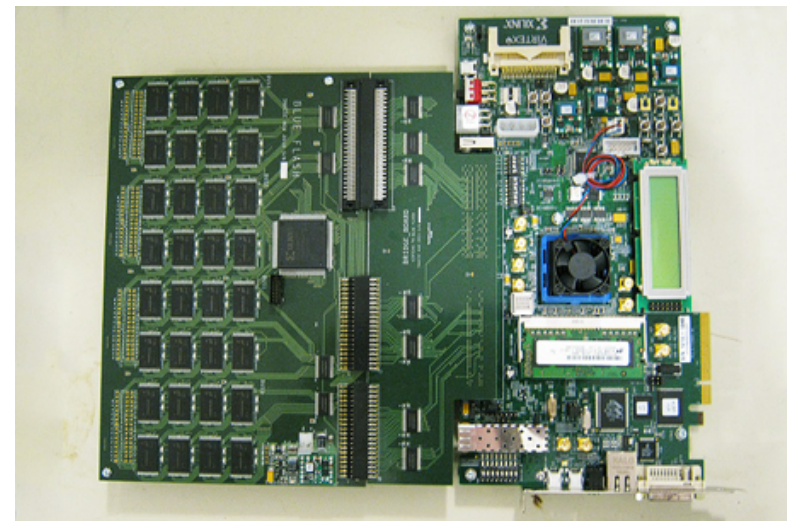


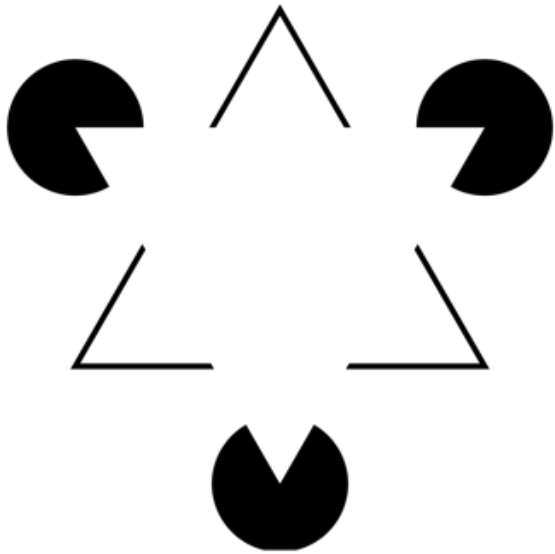
A:A1: 'EMP
Worksheet Range Copy Move File Print Graph Data System Quit
Global Insert Delete Column Erase Titles Window Status Page Hide

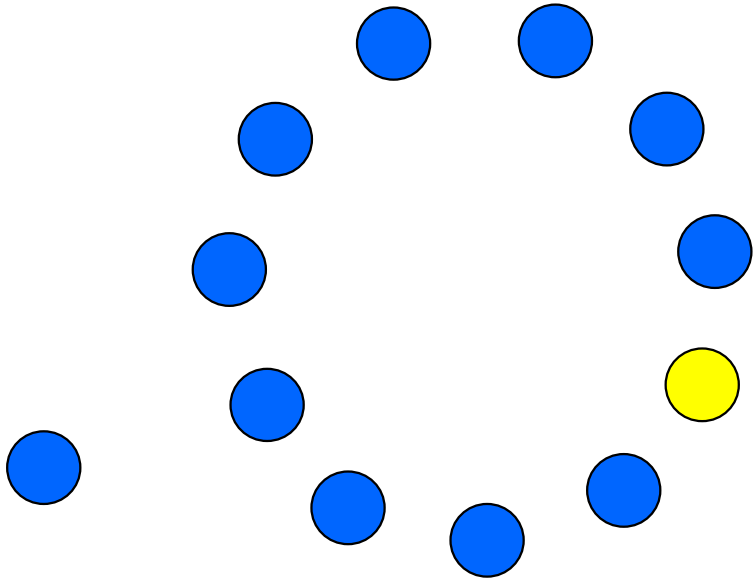
A	B	C	D	E	F	G	
1	EMP	EMP NAME	DEPTNO	JOB	YEARS	SALARY	BONUS
2	1777	Azibad	4000	Sales	2	40000	10000
3	81964	Brown	6000	Sales	3	45000	10000
4	40370	Burns	6000	Mgr	4	75000	25000
5	50706	Caeser	7000	Mgr	3	65000	25000
6	49692	Curly	3000	Mgr	5	65000	20000
7	34791	Dabarrett	7000	Sales	2	45000	10000
8	84984	Daniels	1000	President	8	150000	100000
9	59937	Dempsey	3000	Sales	3	40000	10000
10	51515	Donovan	3000	Sales	2	30000	5000
11	48338	Fields	4000	Mgr	5	70000	25000
12	91574	Fiklore	1000	Admin	8	35000	---
13	64596	Fine	5000	Mgr	3	75000	25000
14	13729	Green	1000	Mgr	5	90000	25000
15	55957	Hermann	4000	Sales	4	50000	10000
16	31619	Hodgedon	5000	Sales	2	40000	10000
17	1773	Howard	2000	Mgr	3	80000	25000
18	2165	Hugh	1000	Admin	5	30000	---
19	23907	Johnson	1000	VP	1	100000	50000
20	7166	Laflare	2000	Sales	2	35000	5000

DATA.WK3

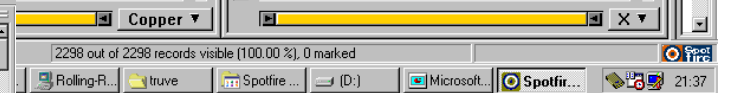
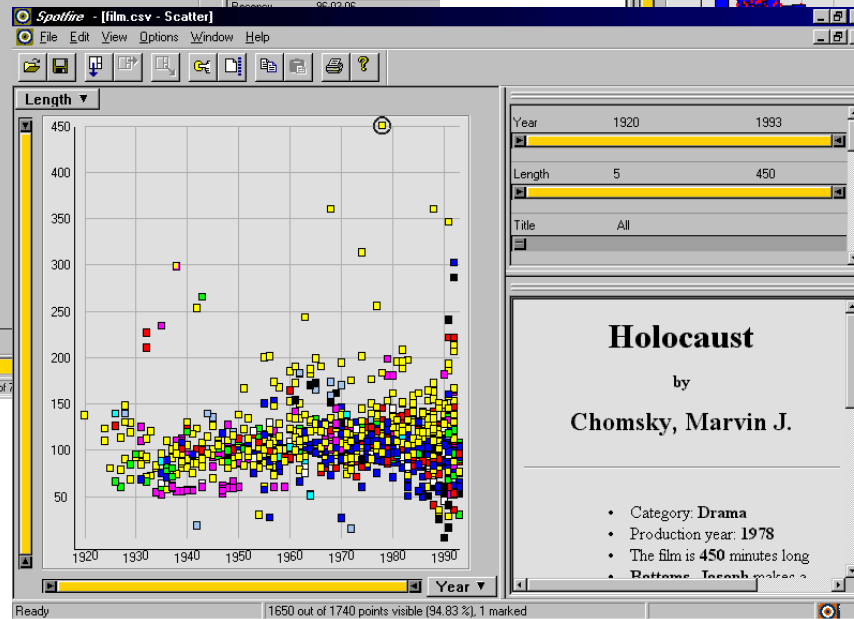
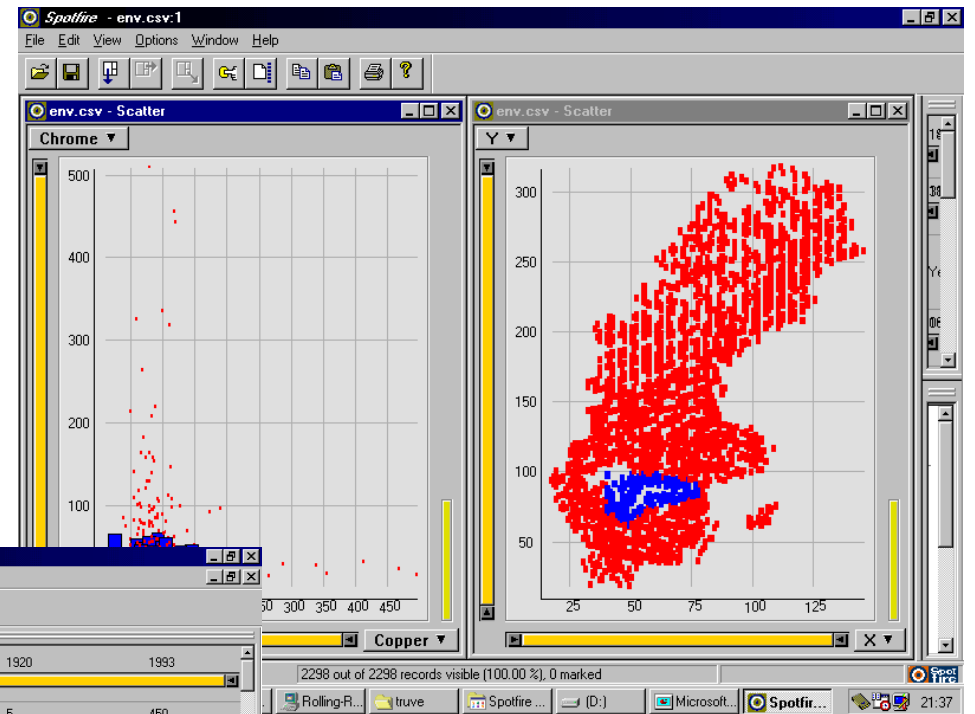
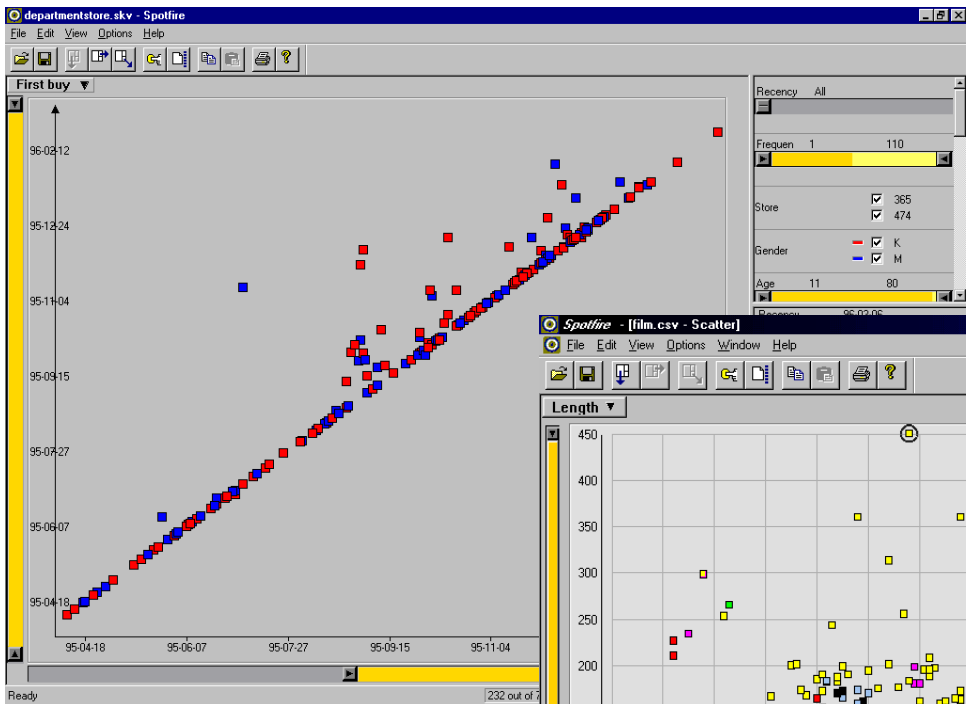






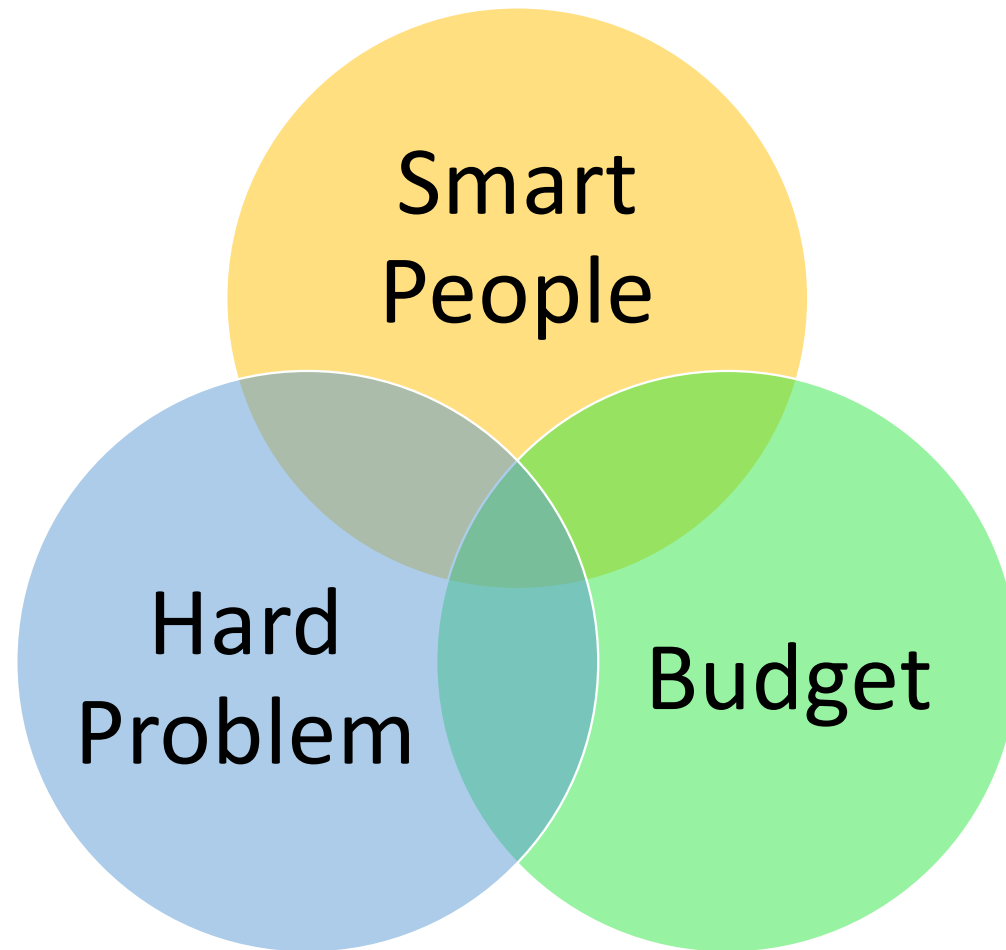


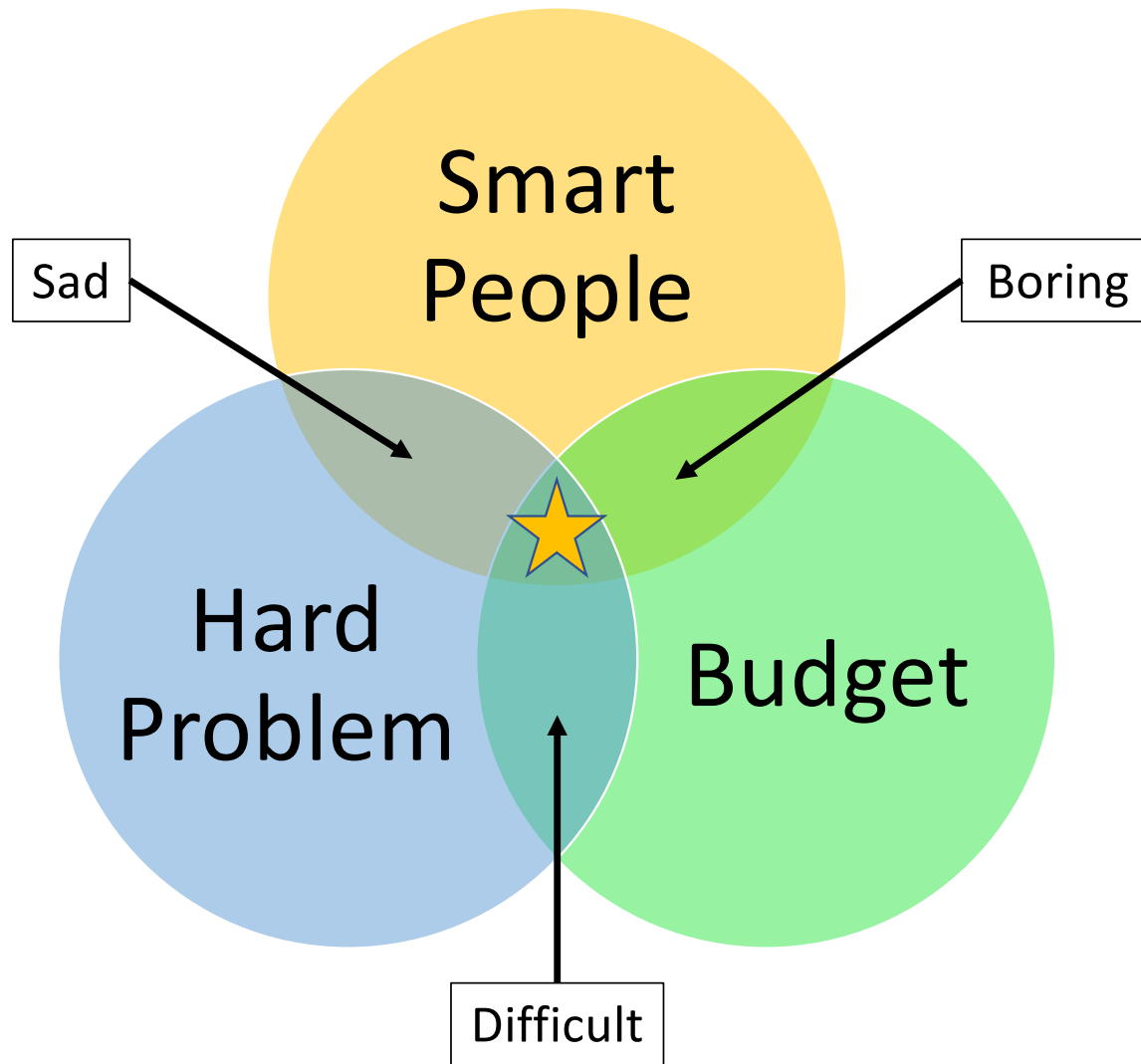
124423423489 / 34442



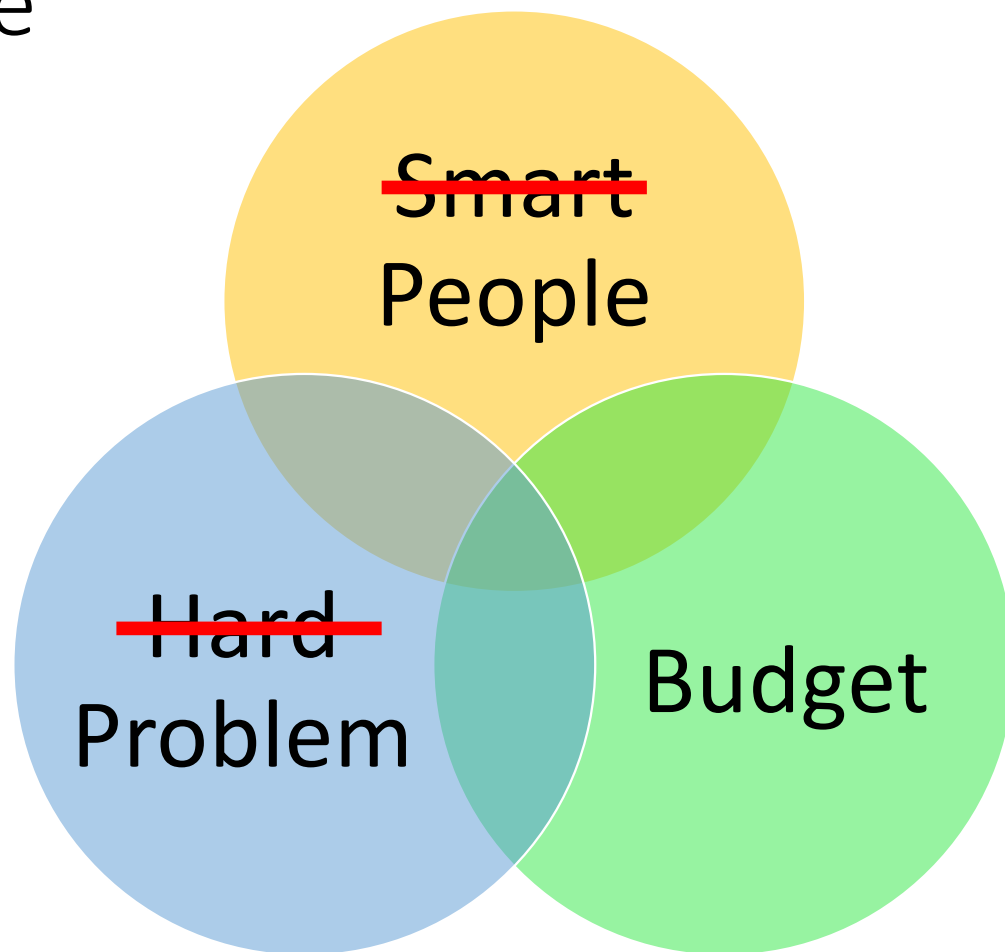
Spotfire evolution

- Very general technology - "Visualize anything"
- No-one wants "anything"
- Start broad, focus, expand
- "Anything" → Pharma → Oil → 6σ
- Act(s) of God
- Smart people with a hard problem to solve and a budget





Expanding the Market





't'sup?



2005



*Humanity has become
a sensor*

2013



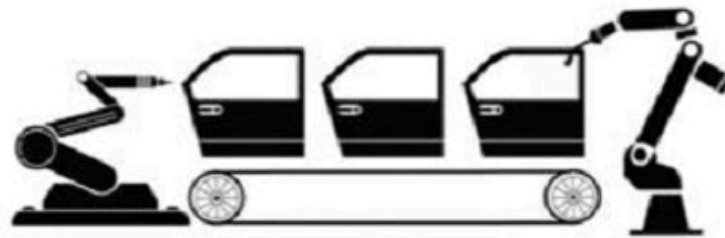
HISTORICAL



REAL TIME



TO PREDICT WHEN
CRITICAL EQUIPMENT
MIGHT FAIL



TO DETERMINE IF MATERIALS, COMPONENTS, AND PRODUCTS MEET SPECIFICATIONS





Kasparov at TED: Don't fear intelligent machines. Work with them

by *Albert Silver*

[1 like it!](#) | [7 Comments](#)

6/12/2017 – Garry Kasparov recently released his latest book called Deep Thinking, and was invited to make a presentation at the wonderful online resource TED. The theme was appropriately on the rise of machines, not just in areas such as chess, but how they are quickly encroaching on areas such as medicine and legal work. Instead of a doomsday speech, he reminds us that we should work with them, our creations, and use them to fulfill our dreams. Enjoy the video!



DOGBERT THE CEO

WE'RE GOING INTO THE INTERNET NEWS BUSINESS.



Dilbert.com DilbertCartoonist@gmail.com

WE'RE HIRING REPORTERS?

NO, WE'LL SUMMARIZE STORIES FROM OTHER SITES AND PROVIDE LINKS.



11-17-09 © 2009 Scott Adams, Inc./Dist. by UFS, Inc.

SO... WE'LL BE PARASITES?

GO BUY A VINYL RECORD, GRANDPA.



tsup?

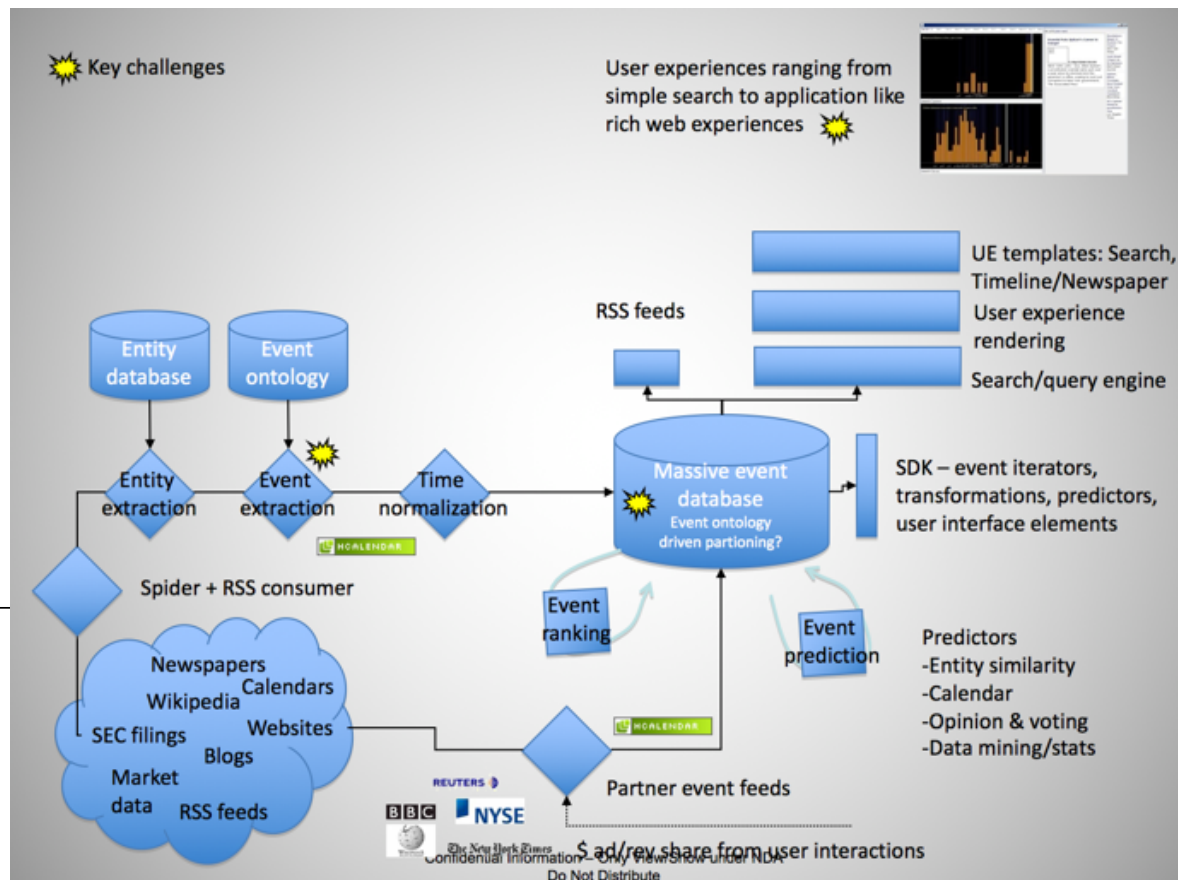
State of Delaware
 Secretary of State
 Division of Corporations
 Delivered 12:11 PM 03/27/2008
 FILED 11:54 AM 03/27/2008
 V 080362449 - 4515467 FILE

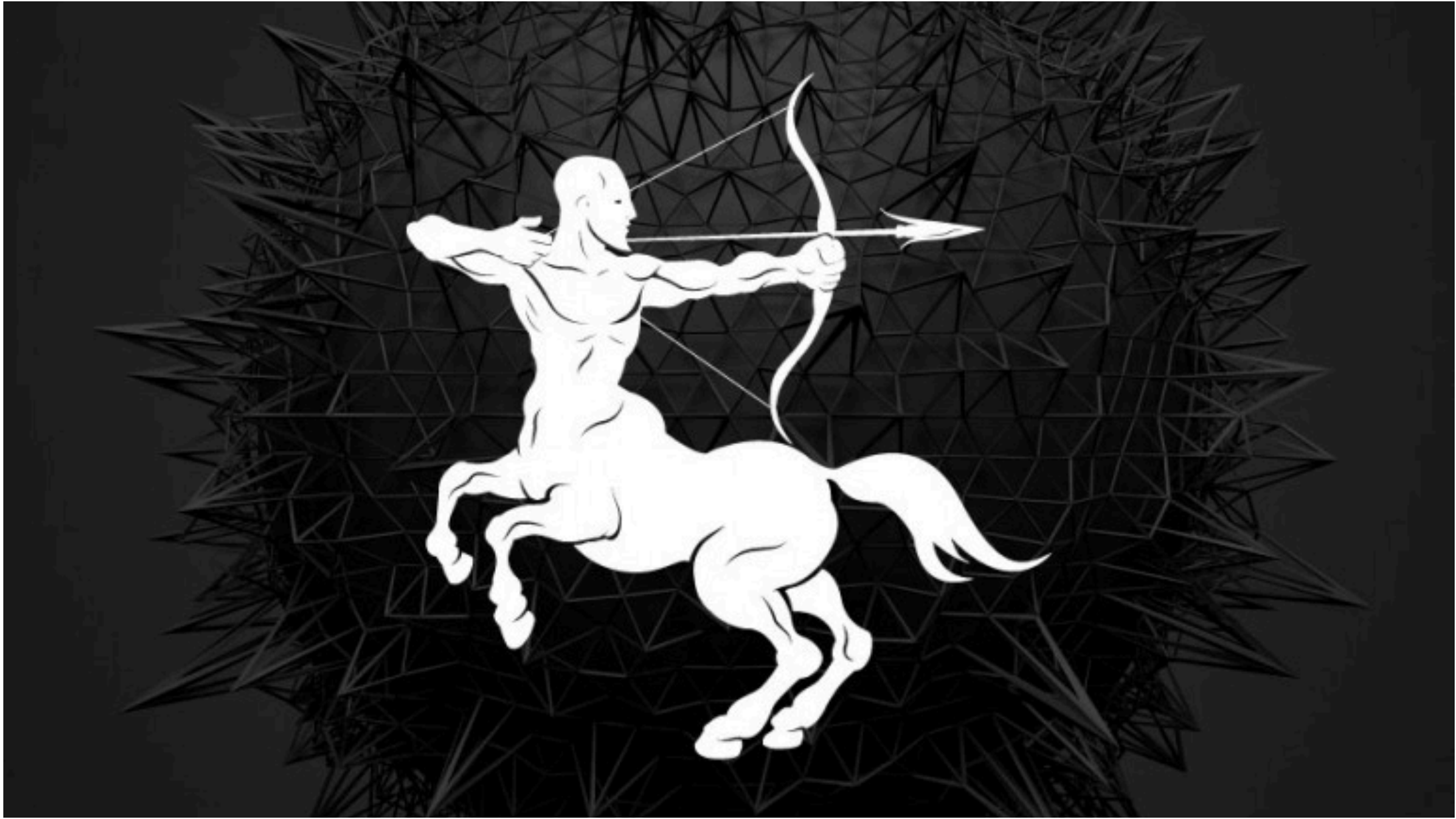
**CERTIFICATE OF INCORPORATION
 OF
 TSUP, INC.**

FIRST: The name of the corporation (the "Corporation") is TSUP, Inc.

SECOND: The address of the registered office of the Corporation in the State of Delaware is 1209 Orange Street, Wilmington, Delaware, 19801, County of New Castle, and the name of its registered agent at such address is The Corporation Trust Company.

THIRD: The nature of the business or purposes to be conducted or promoted by the Corporation is to engage in any lawful act or activity for which corporations may be organized under the General Corporation Law of the State of Delaware.





What frustrates human analysts?

- Way too much to read
- Lacking language understanding
- Hard to find relevant sources (deep/dark web), content highly volatile
- Need to prioritize what threats to focus on

→ **Goal is to make the human analyst >10x more efficient**

- Must shift from organizing the web for search to organizing for analysis

“Analyze anything
that’s happening in
the world”

Evidently I never
learn....



“Analyze anything
that’s happening in
the world”

Evolution of Recorded Future

- "Analyze anything"
- Quant trading
- Geopolitical Threat Intelligence
- Cyber Threat Intelligence
- Digital Risk Reduction

- Business model evolution
 - Freemium – monthly subscription
 - Traditional direct sales – annual subscriptions
 - Partners/channels
 - "you don't need to innovate everything"

An aerial photograph of a small, walled village. The village is enclosed by a thick stone wall with several towers. Inside the wall, there are numerous buildings with red-tiled roofs and some greenery. The village is surrounded by a mix of trees and open land. In the background, there are rolling hills and a vineyard.

Who has the keys?

Is someone asking for the keys?

Is someone selling my property?

Are the blueprints out there?

Is someone talking about attacking places like this?

What places like this one have been attacked recently?

COMPANY



Saab AB

References 100 000+
 First Reference Apr 11, 2013
 Latest Reference Sep 23, 2019
 Location Location Sweden
 Primary Industry Sector Primary Industry Sector Aerospace and Defense
 Curated ★



7 of 27 Risk Rules Triggered

Show [all events](#) or [cyber events](#)

TRIGGERED RISK RULES

[Learn more about risk rules](#)



High Volume of Exposed Email Addresses

1779 all-time distinct email addresses in 132 documents found. Sample report (Jan 17, 2019): [Collection 1 - January 2019](#).

High Volume of Exposed Credentials

1195 all-time distinct credentials with passwords in 35 documents found. Sample report (Jan 17, 2019): [Collection 1 - January 2019](#).

Company Website Using Technology Version With High-Risk Vulnerability

Using 1 vulnerable technology: **Php 5.6.31** (associated with high-risk vulnerabilities [CVE-2018-10549](#), [CVE-2018-19520](#); used by [saabgrintek.com](#)).

Attention on Dark Web Markets

36 all-time sightings on 1 Dark Web / Special Access source.

Historical Possible Malware in Company Infrastructure • 5 sightings

Historical Positive Malware Verdict seen for 5 IP Addresses on company infrastructure including [147.13.116.124](#), [148.20.11.139](#), [58.216.177](#)

Historical Typosquat Similarity to Company Domain - Non-Punycode Typo or Homograph • 93 sightings

93 historical typosquats seen for domains on company infrastructure including [saab-tech.com](#) (seen on Jun 19, 2019), [ambarena.com](#) (seen on Jun 9, 2019), [gripenshop.se](#) (seen on Jun 7, 2019).

Company Website Using Often-Exploited Technology

Using 1 frequently exploited technology: **Adobe Flash Player** (used by [saabarena.com](#)).

Where can this intelligence be found?

- Open web - high volume, low-to-high value
 - Mainstream media, blogs, social media, cyber threat intel sources
 - Paste sites
 - Code repositories
 - Dark web sites
 - Underground forums
 - Closed/Dark web – small volume, very high value
 - Technical sources
 - Threat feeds, domain registrations, whois data, malware detonation
 - Human threat researchers
-

Recorded Future Belief



Massive Data

+

Machine Learning

+

Human Expertise

=

**Threat Intelligence
AT SCALE, IN REAL TIME**



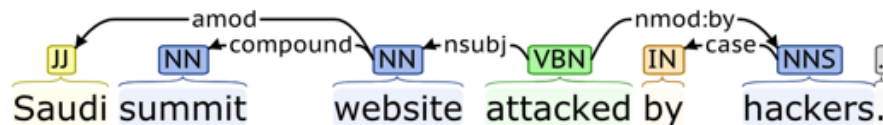
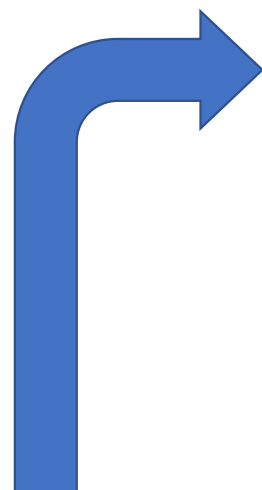
From the Real World to Recorded Future



Saudi summit website attacked by hackers -



Saudi summit website attacked by hackers
The Future Investment Initiative website earlier showed a mocked-up photo of Saudi's ruler as an executioner.
bbc.co.uk



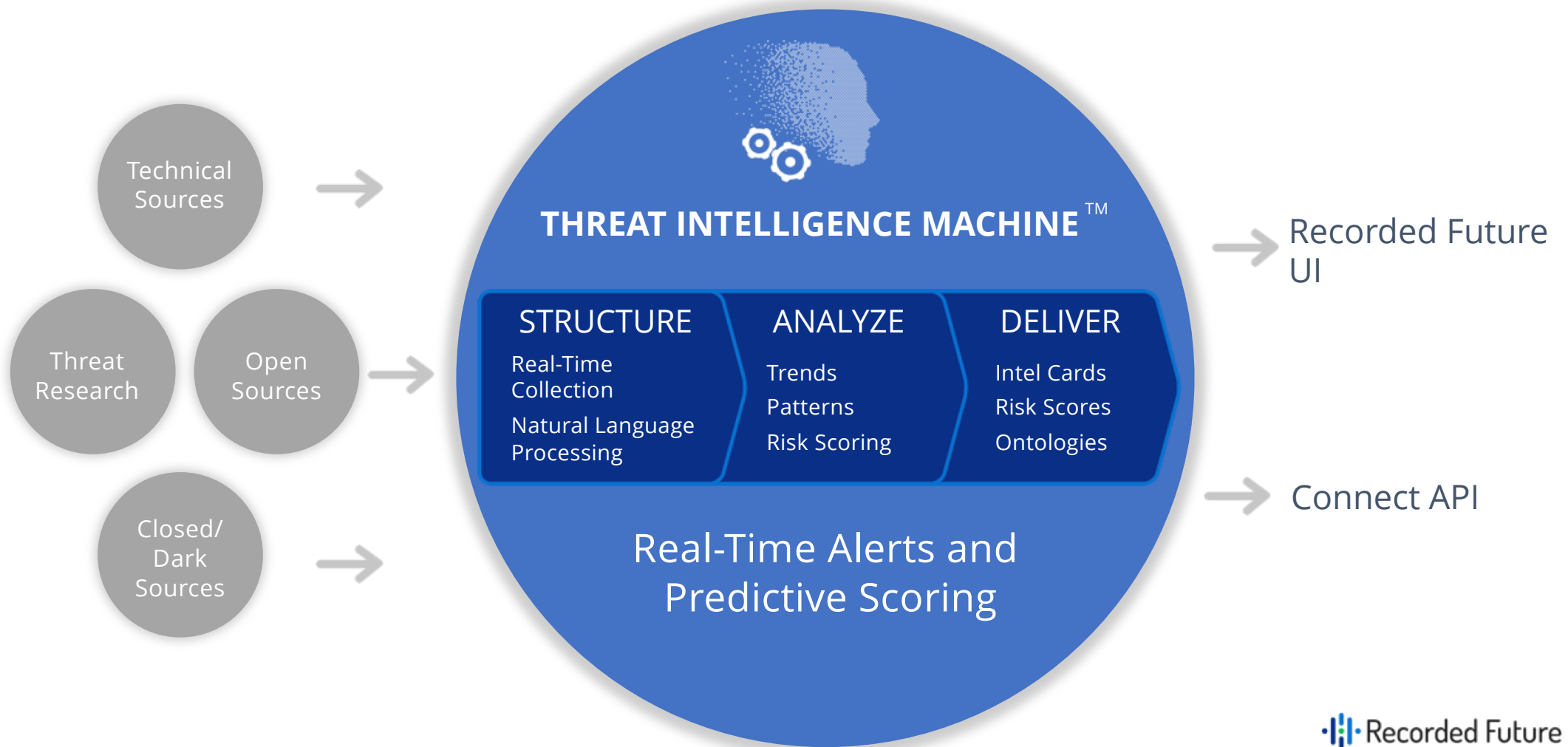
Structured data from analyzed text

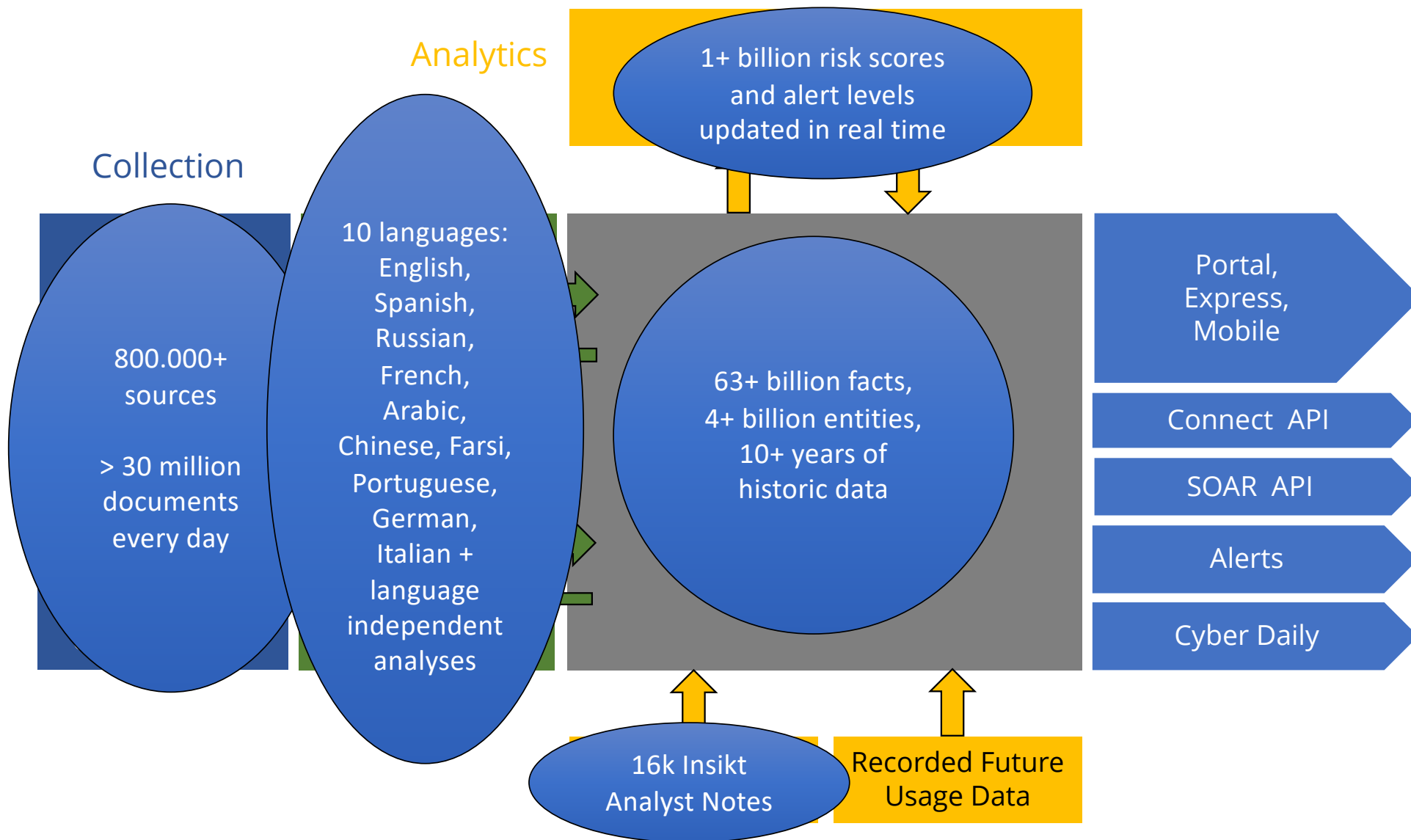


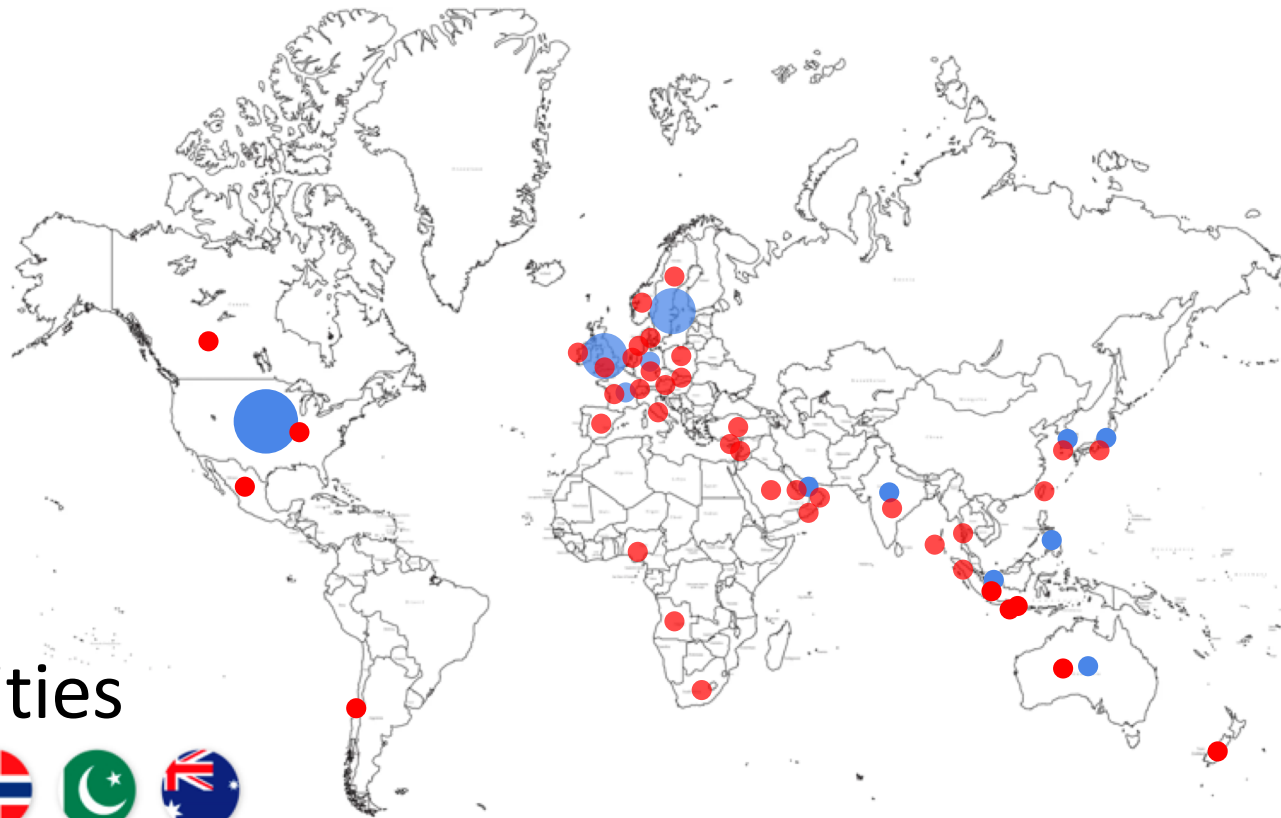
Structured data from technical

Host	Source IP	Port	Destination IP	Destination Port	Bytes	Count	Rate	Time
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10.0.2.15	10.0.2.15	80	10.0.2.15	80	2048	1	2048	10/10/2018 10:10:11
10.0.2.15	10.0.2.15	80	10.0.2.15	80	4096	1	4096	10/10/2018 10:10:12
10.0.2.15	10.0.2.15	80	10.0.2.15	80	8192	1	8192	10/10/2018 10:10:13
10.0.2.15	10.0.2.15	80	10.0.2.15	80	16384	1	16384	10/10/2018 10:10:14
10.0.2.15	10.0.2.15	80	10.0.2.15	80	32768	1	32768	10/10/2018 10:10:15
10.0.2.15	10.0.2.15	80	10.0.2.15	80	65536	1	65536	10/10/2018 10:10:16
10.0.2.15	10.0.2.15	80	10.0.2.15	80	131072	1	131072	10/10/2018 10:10:17
10.0.2.15	10.0.2.15	80	10.0.2.15	80	262144	1	262144	10/10/2018 10:10:18
10.0.2.15	10.0.2.15	80	10.0.2.15	80	524288	1	524288	10/10/2018 10:10:19
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10.0.2.15	10.0.2.15	80	10.0.2.15	80	4194304	1	4194304	10/10/2018 10:10:22
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10.0.2.15	10.0.2.15	80	10.0.2.15	80	134217728	1	134217728	10/10/2018 10:10:27
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10.0.2.15	10.0.2.15	80	10.0.2.15	80	8589934592	1	8589934592	10/10/2018 10:10:33
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10.0.2.15	10.0.2.15	80	10.0.2.15	80	1152921530804862976	1	1152921530804862976	10/10/2018 10:11:00
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10.0.2.15	10.0.2.15	80	10.0.2.15	80	60446292353844043351552	1	60446292353844043351552	10/10/2018 10:11:19
10.0.2.15	10.0.2.15	80	10.0.2.15	80	12089258470768808670304	1	12089258470768808670304	10/10/2018 10:11:20
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10.0.2.15	10.0.2.15	80	10.0.2.15	80	48357033883075234681216	1	48357033883075234681216	10/10/2018 10:11:22
10.0.2.15	10.0.2.15	80	10.0.2.15	80	96714067766150469362432	1	96714067766150469362432	10/10/2018 10:11:23
10.0.2.15	10.0.2.15	80	10.0.2.15	80	193428135532300938724864	1	193428135532300938724864	10/10/2018 10:11:24
10.0.2.15	10.0.2.15	80	10.0.2.15	80	386856271064601877449728	1	386856271064601877449728	10/10/2018 10:11:25
10.0.2.15	10.0.2.15	80	10.0.2.15	80	773712542129203754899456	1	773712542129203754899456	10/10/2018 10:11:26
10.0.2.15	10.0.2.15	80	10.0.2.15	80	1547425084258407499798912	1	1547425084258407499798912	10/10/2018 10:11:27
10.0.2.15	10.0.2.15	80	10.0.2.15	80	3094850168516814999597824	1	3094850168516814999597824	10/10/2018 10:11:28
10.0.2.15	10.0.2.15	80	10.0.2.15	80	6189700337033629999195648	1	6189700337033629999195648	10/10/2018 10:11:29
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10.0.2.15	10.0.2.15	80	10.0.2.15	80	4951760269626903999356544	1	4951760269626903999356544	10/10/2018 10:11:32
10.0.2.15	10.0.2.15	80	10.0.2.15	80	9903520539253807998713088	1	9903520539253807998713088	10/10/2018 10:11:33
10.0.2.15	10.0.2.15	80	10.0.2.15	80	19807041078507615997426176	1	19807041078507615997426176	10/10/2018 10:11:34
10.0.2.15	10.0.2.15	80	10.0.2.15	80	39614082157015231994852352	1	39614082157015231994852352	10/10/2018 10:11:35
10.0.2.15	10.0.2.15	80	10.0.2.15	80	79228164314030463989704704	1	79228164314030463989704704	10/10/2018 10:11:36
10.0.2.15	10.0.2.15	80	10.0.2.15	80	15845632862806092797940			

The Threat Intelligence Machine







430+ persons, 42 nationalities



Lessons learned

- Skate to where the puck will be... (aka “bleeding edge” :-)
- Dare to explore – early on, when it’s cheap – focus when you “strike gold” – then expand
- Dare to be slow – don’t take more money than you need for the next step – speed up when you have a working business model
- You don’t need to “innovate everything”



Alligator vs. Elephant

Summary

- Someone needs to be at the bleeding edge
- No-one wants anything
- Look for smart people with a hard problem to solve and a budget – but also figure out how to expand
- Act(s) of God
- Be the elephant!

