

Collaborative Intelligence

Updated: 2018-10-22









- Analysts spend too much time doing (re)search and not enough doing analysis.
- Creating knowledge takes time.
- "Our goal is to automate 75% of their tasks, so they can look harder at our toughest problems."

Robert Cardillo Director of NGA US Dept of Defense











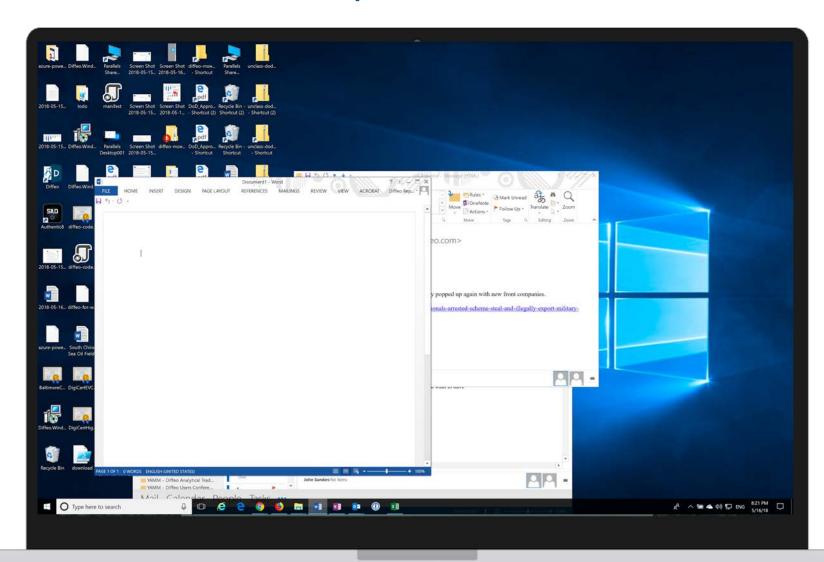












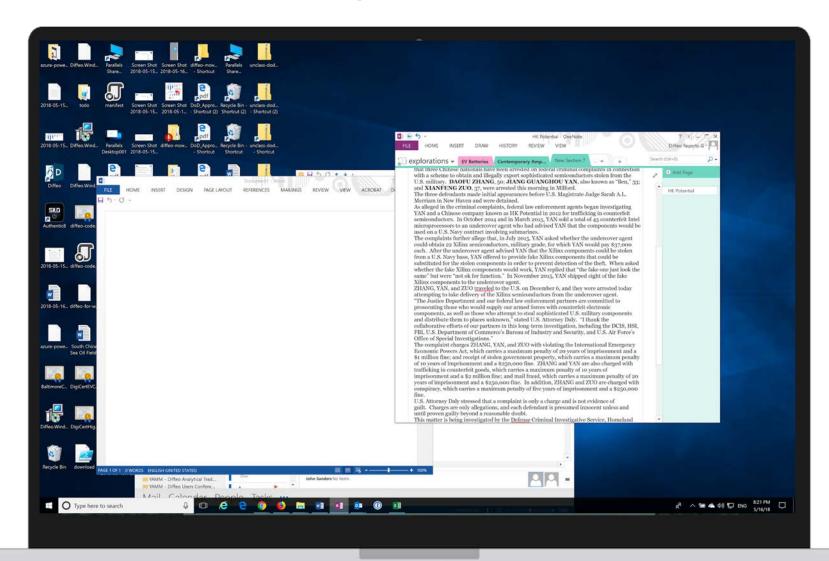












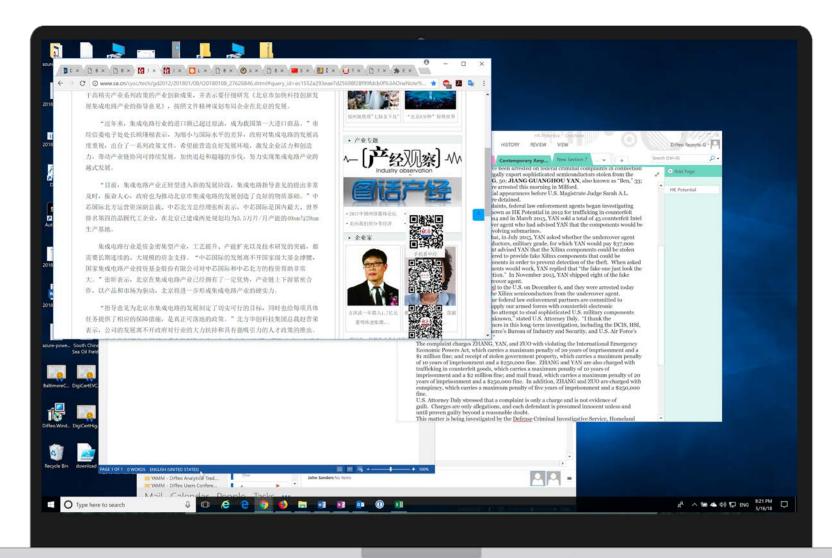












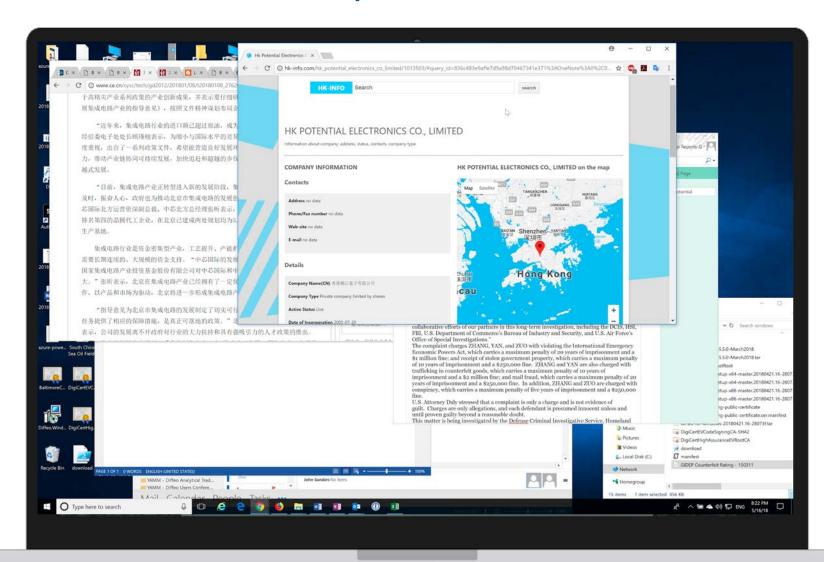












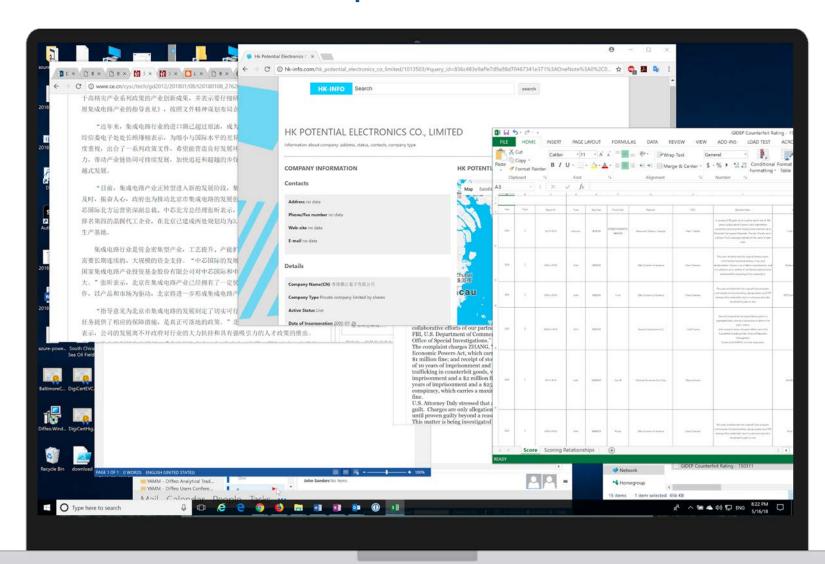












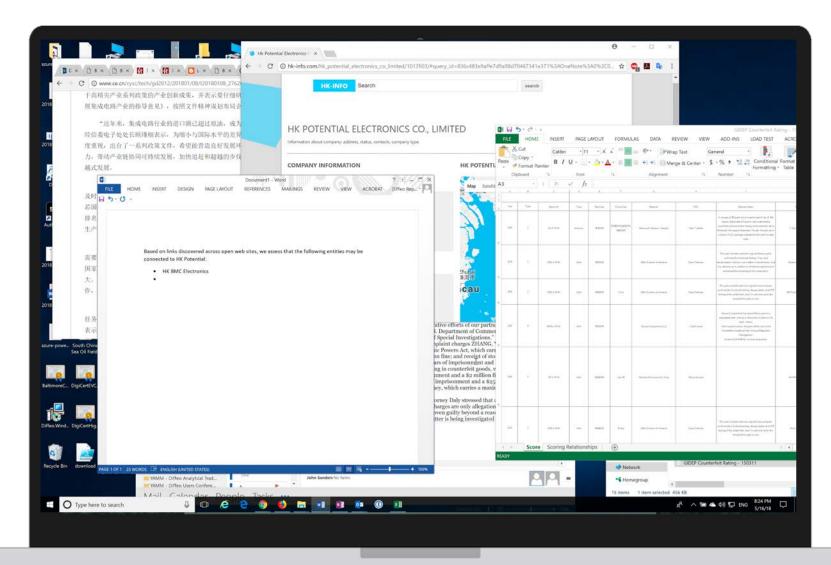












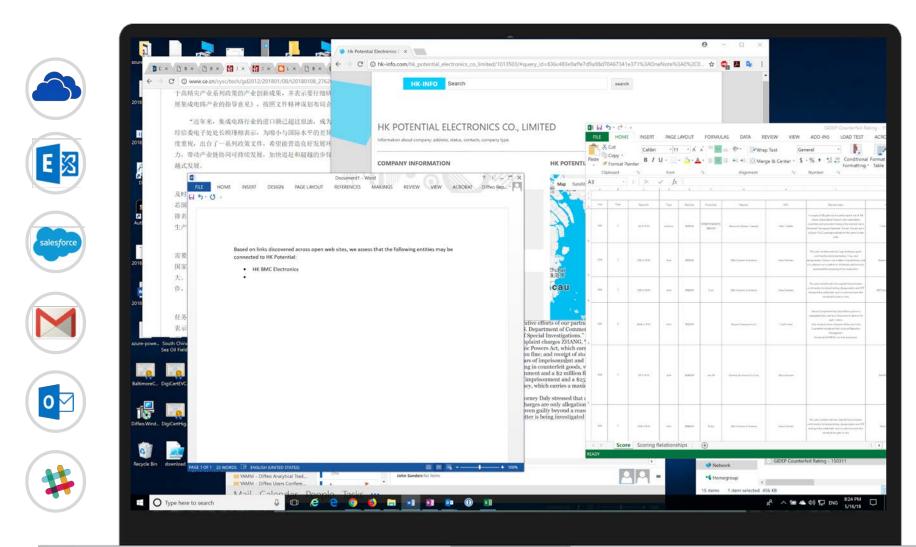
















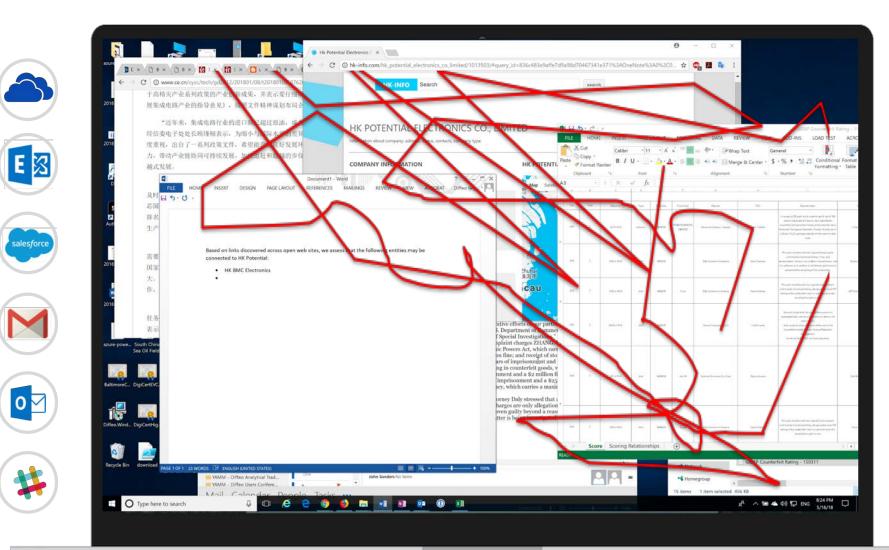


















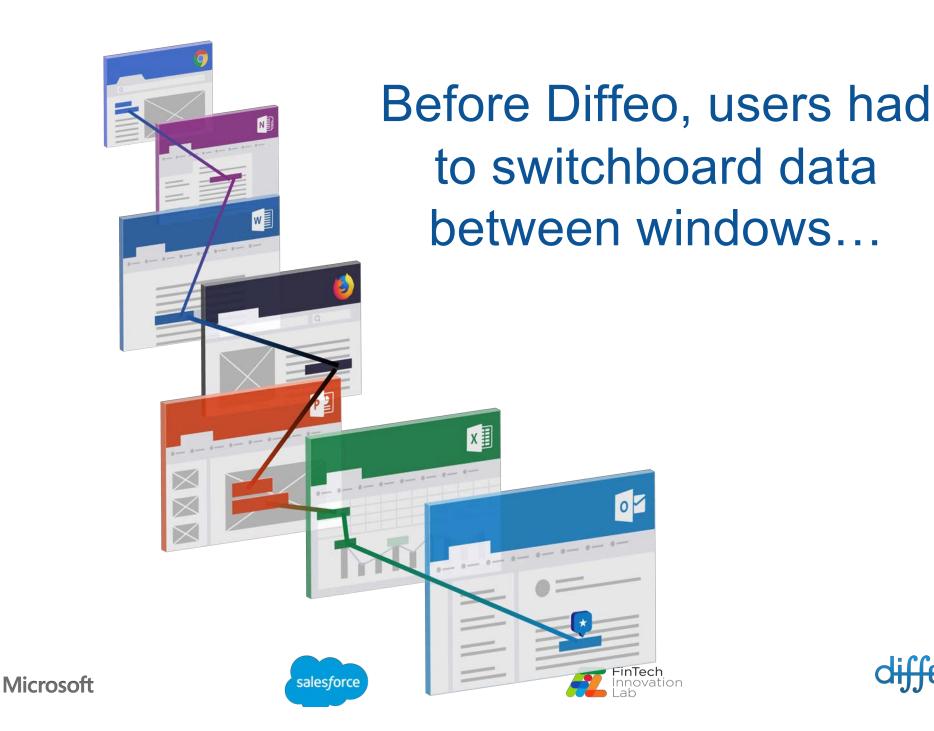








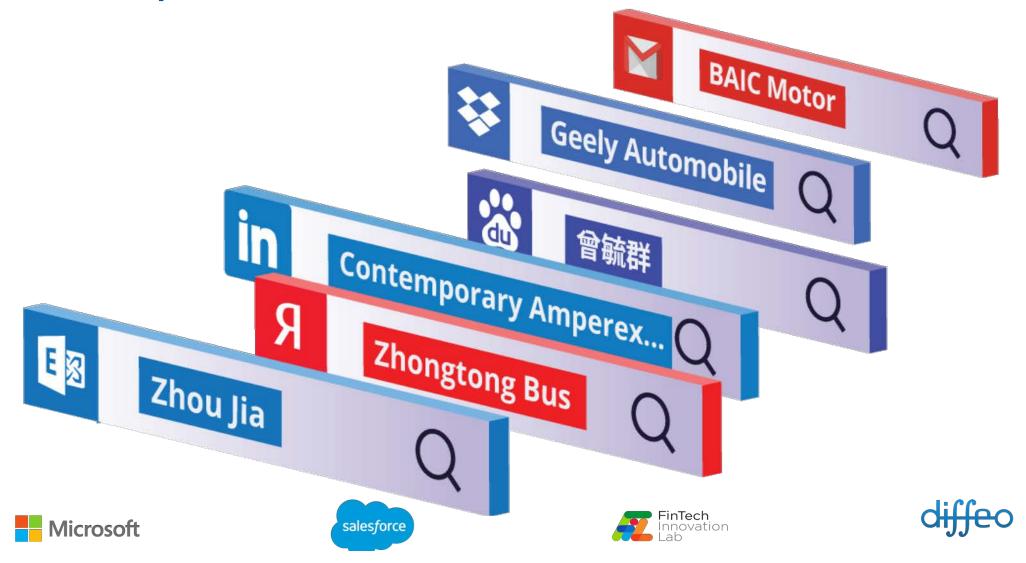
Problem 12



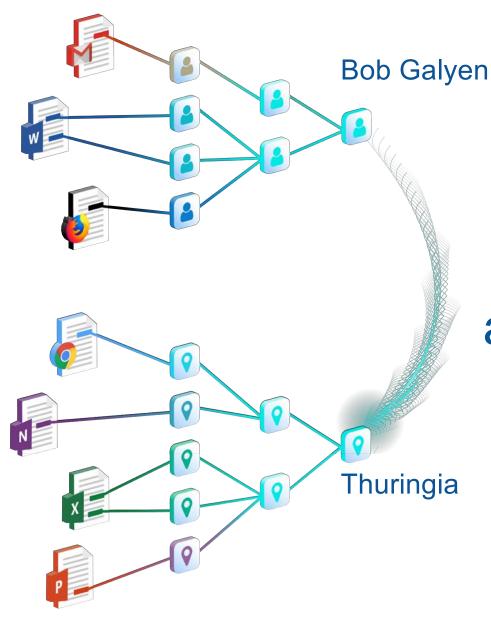


Problem

... and manually query disparate data silos...



Problem 14



... and manually connect the dots across unstructured content.









Al-powered research assistant

You invite Diffeo into your documents, so it can highlight knowledge gaps, track mentions, run queries, digest results, and find relationships.

Automate

Accelerate (re)search

Augment intelligence

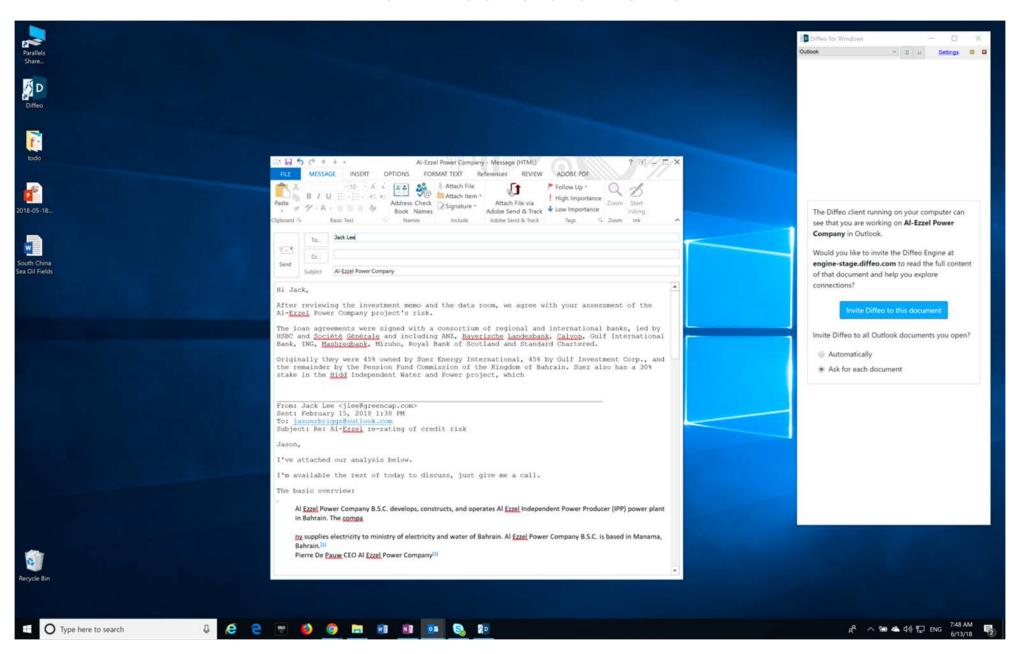








Invite Diffeo to draft email

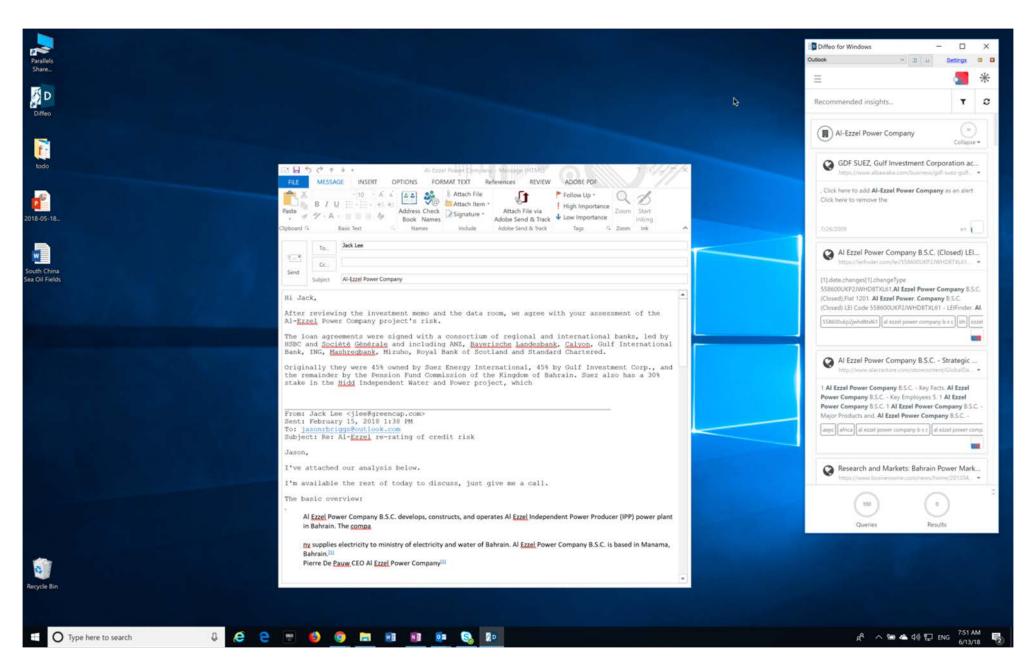










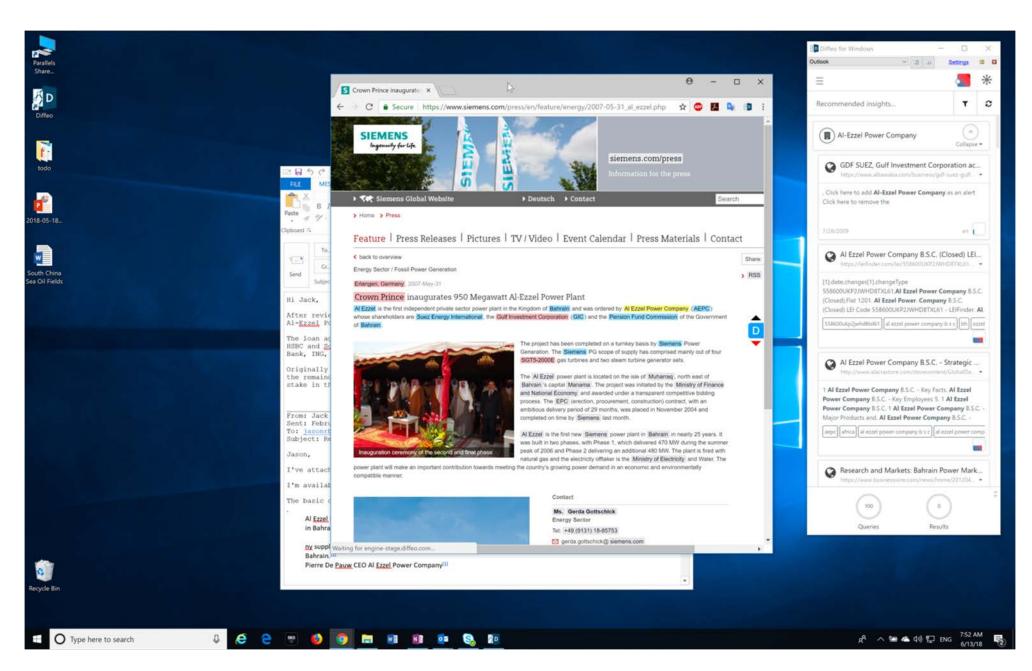










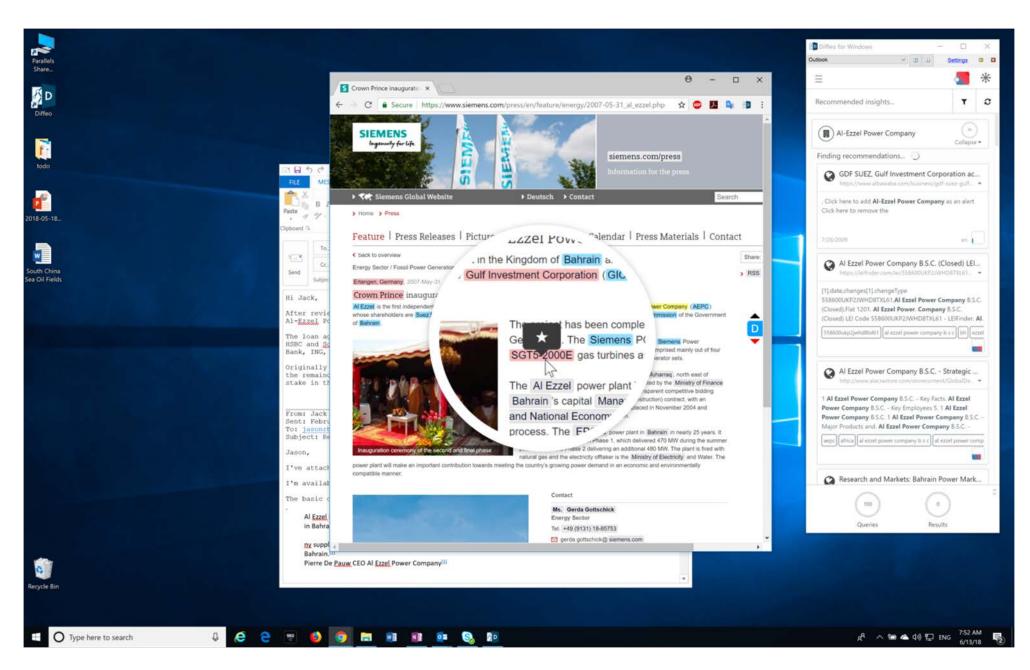










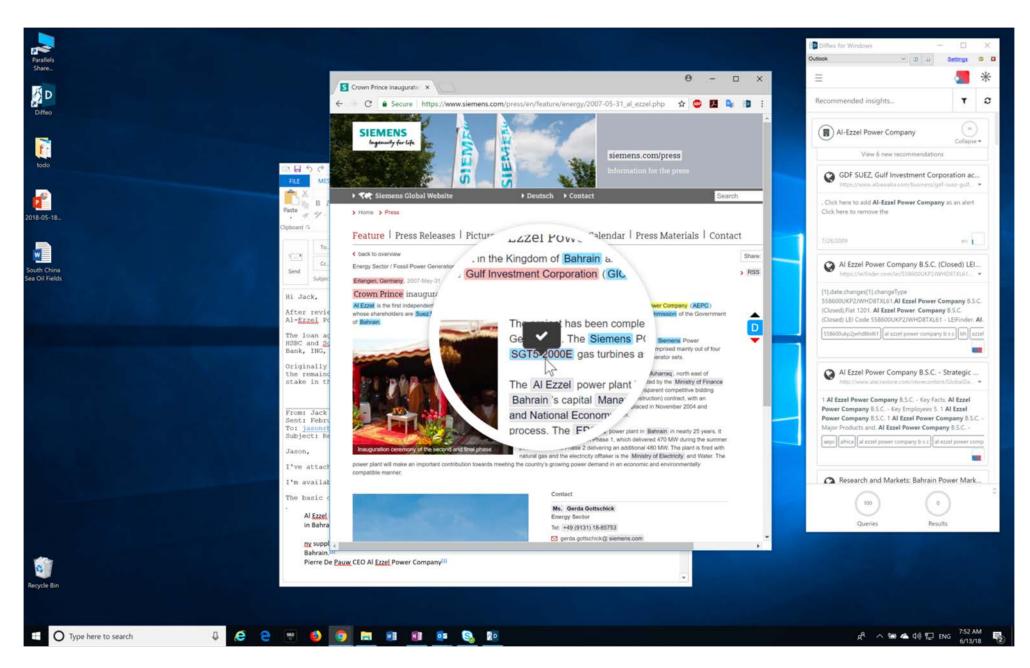










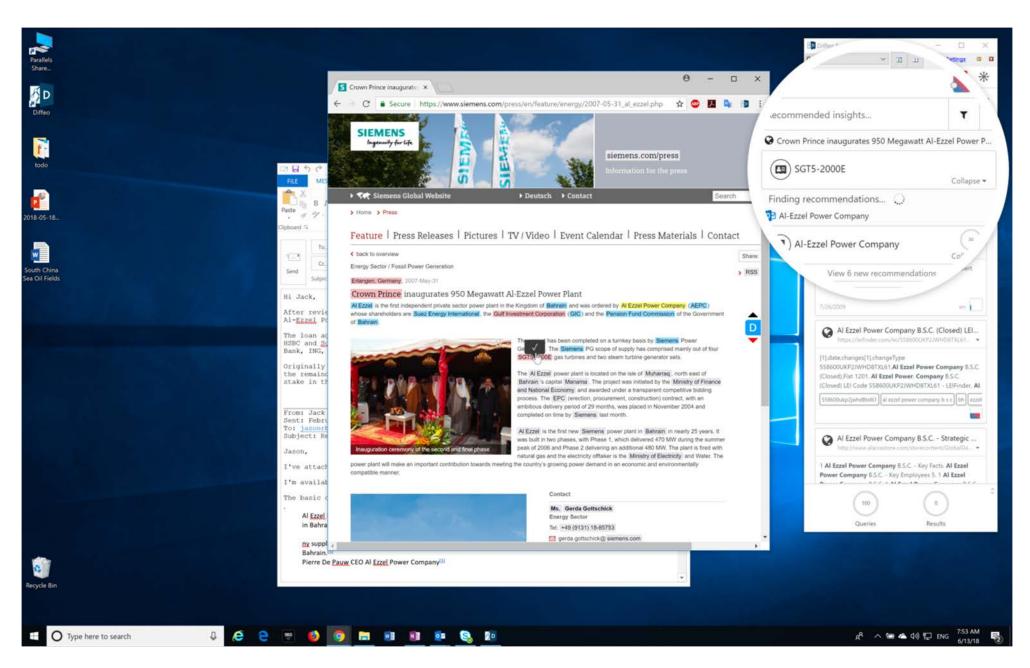










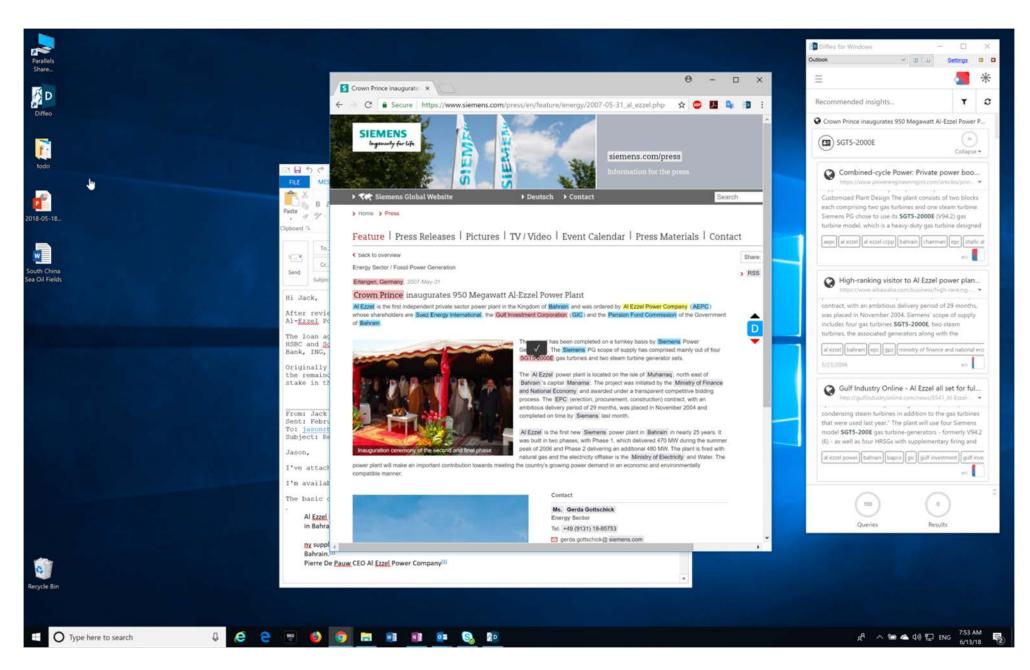










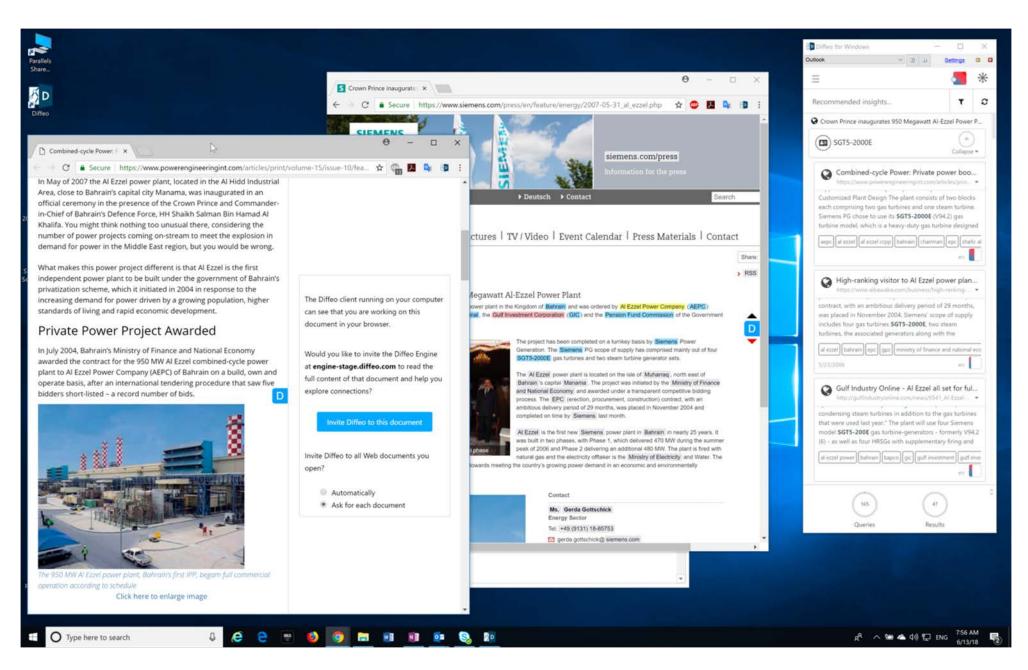










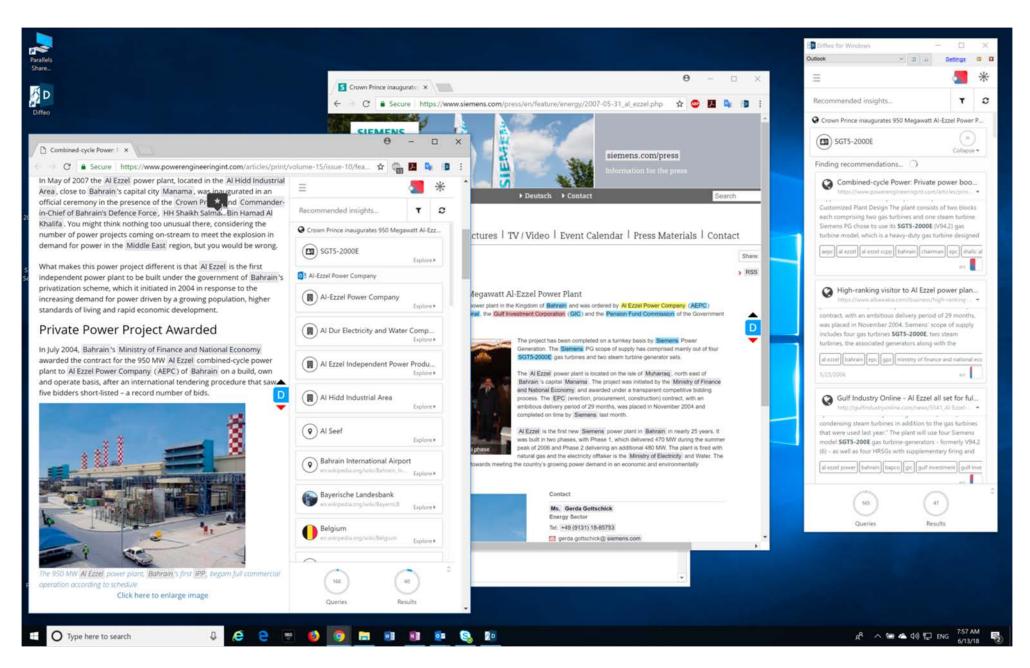










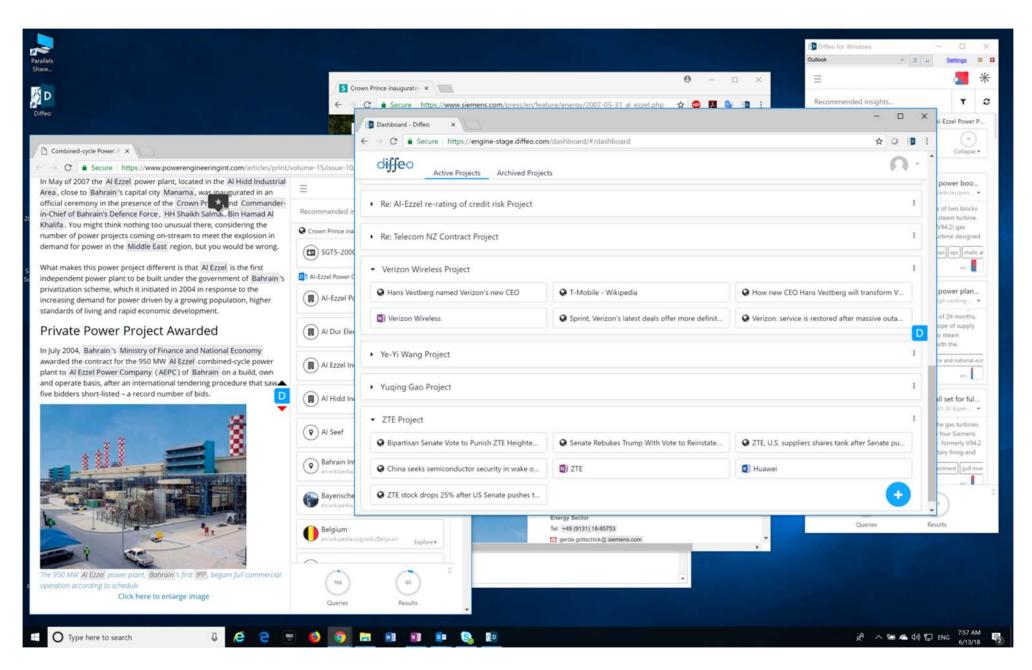










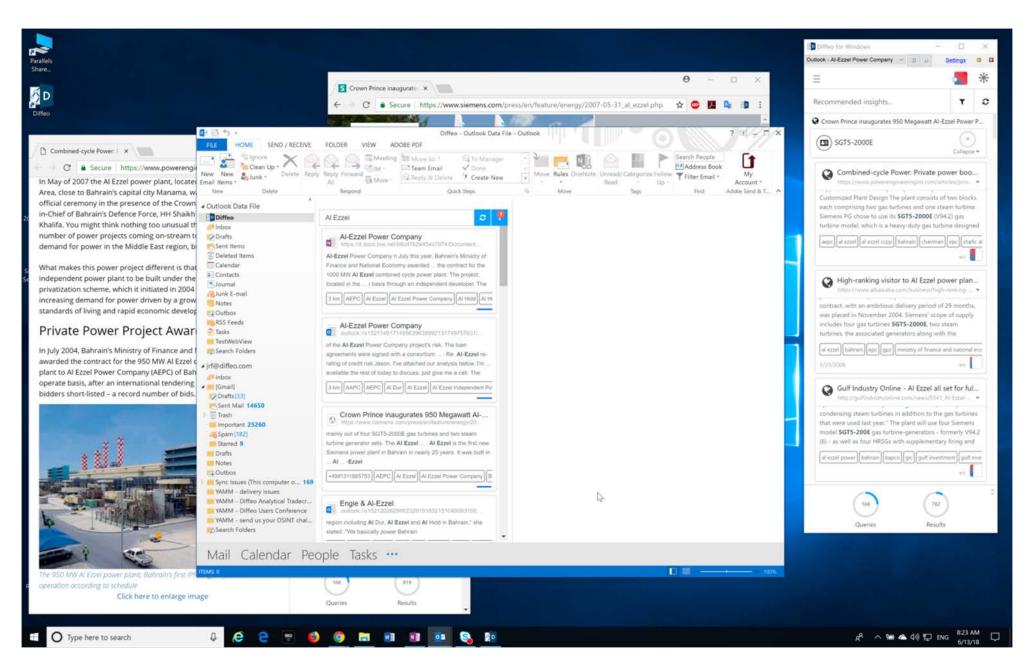










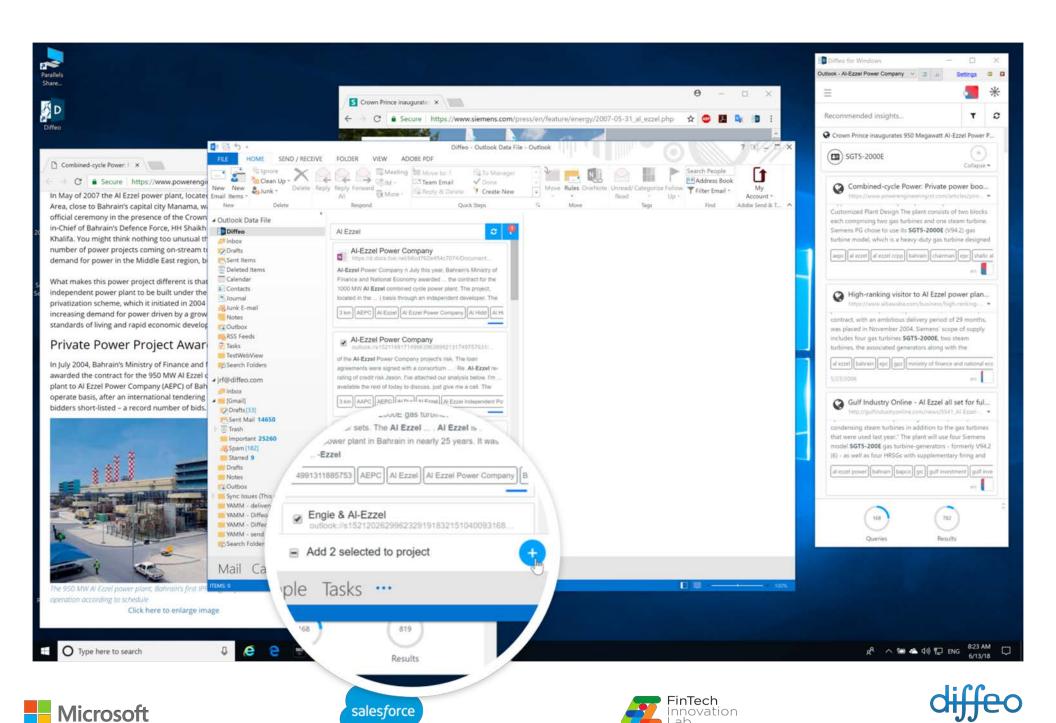


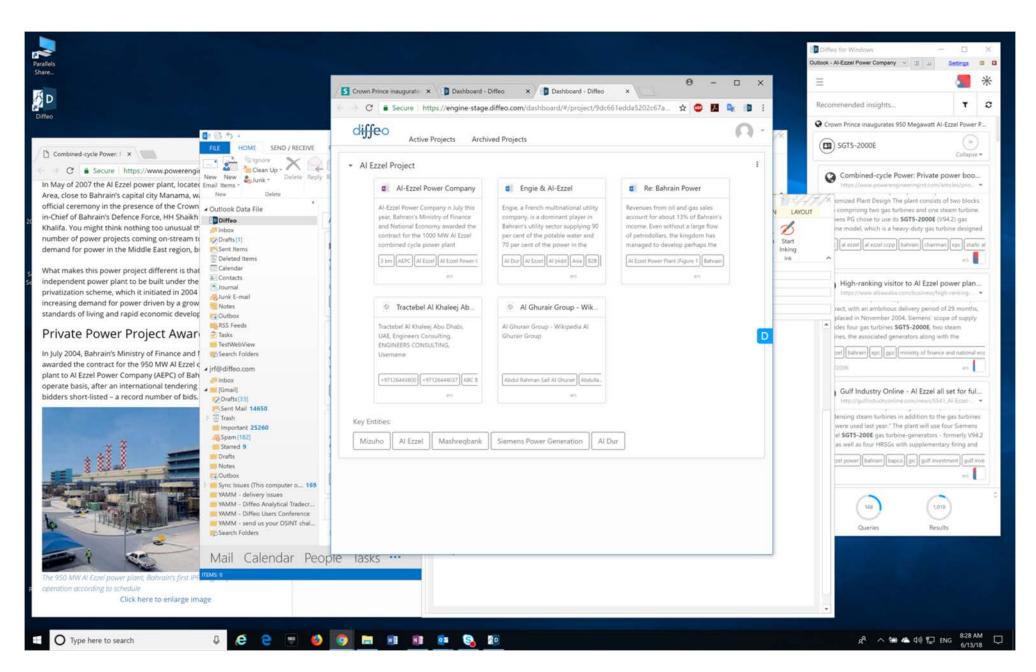










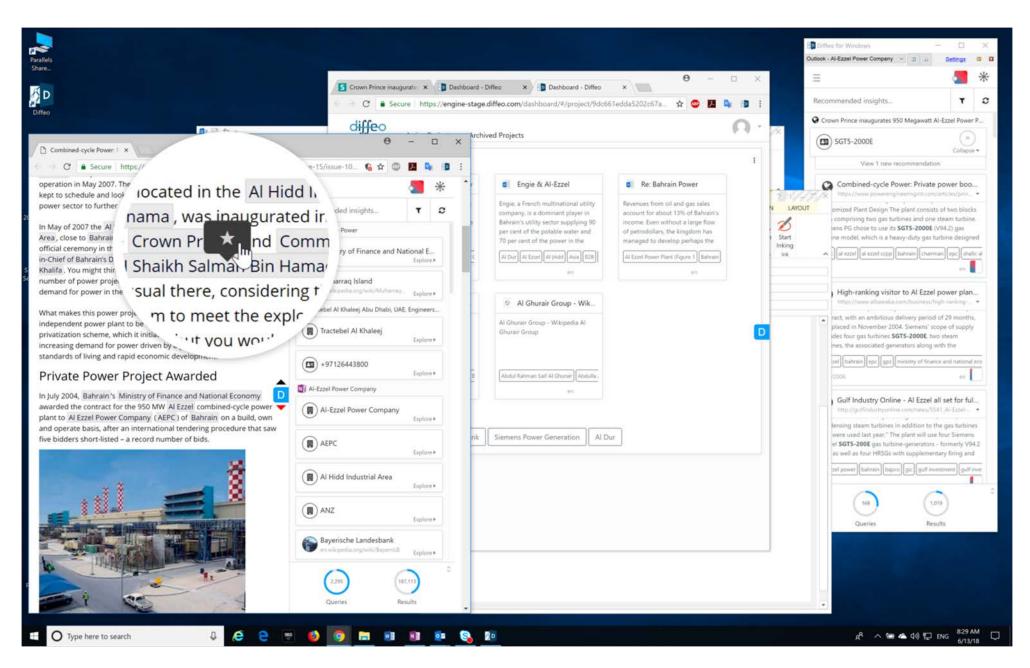










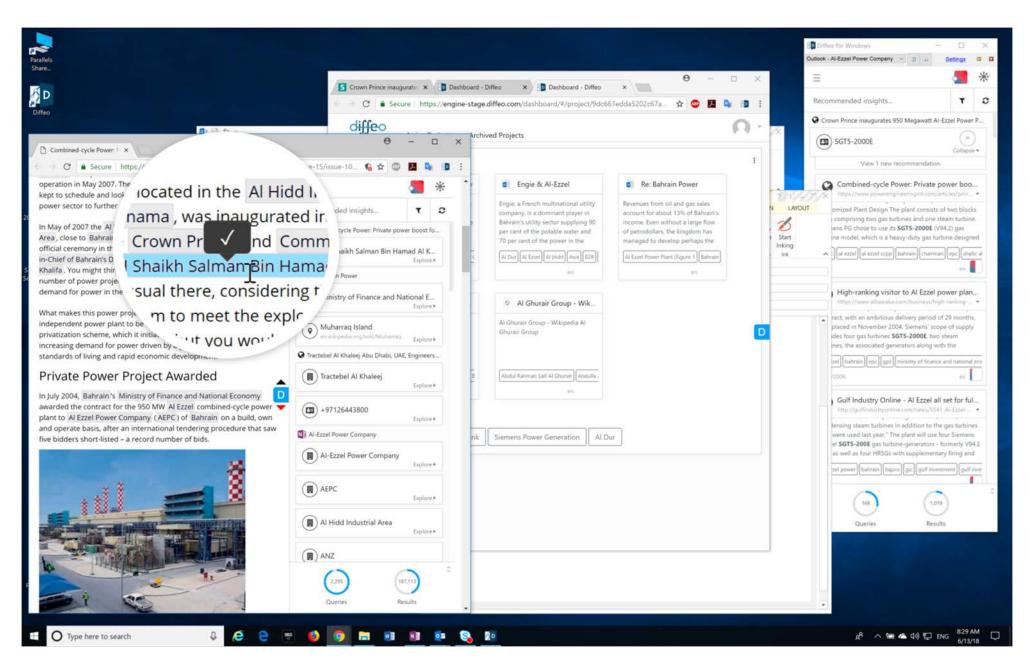










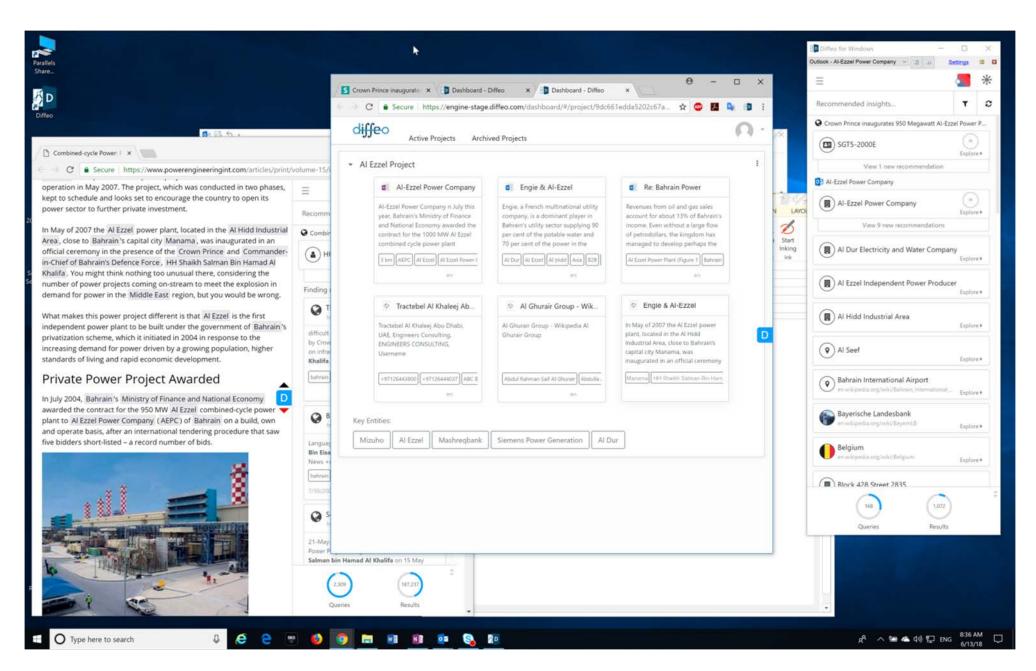










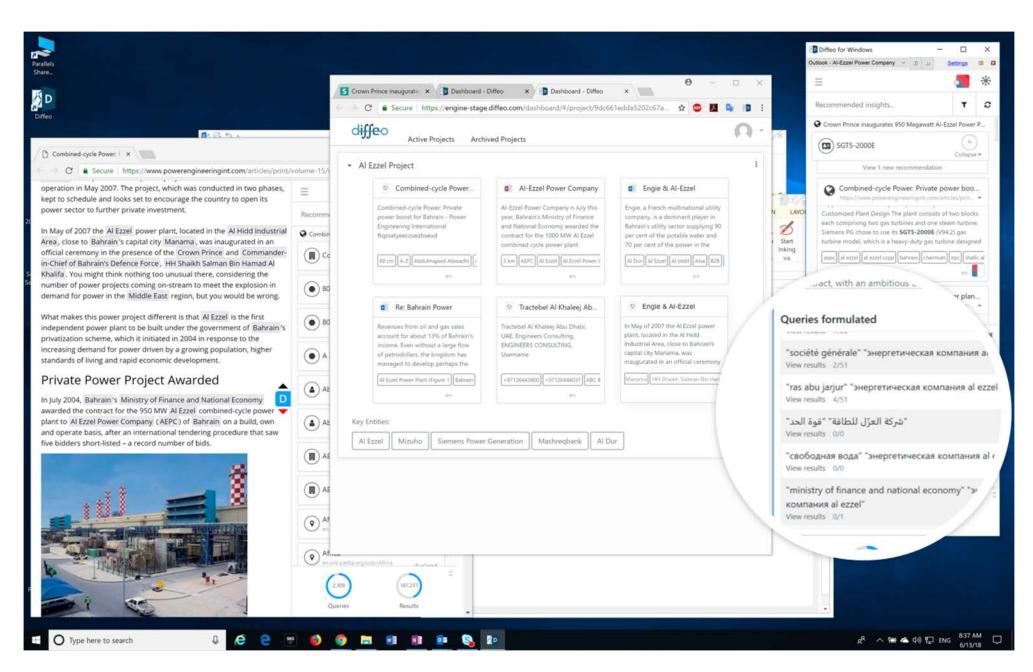










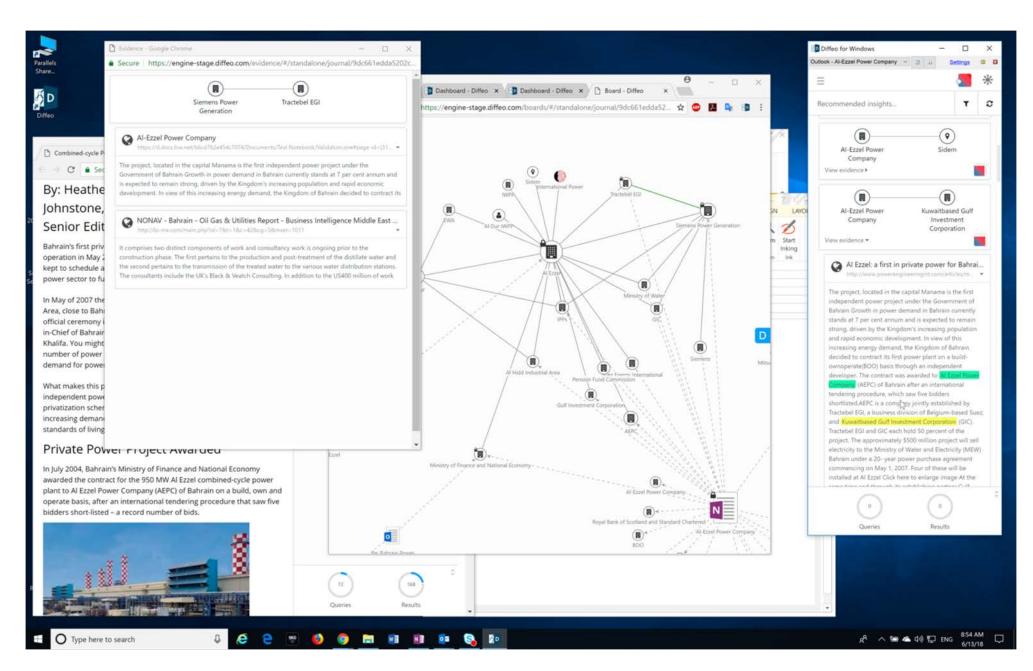










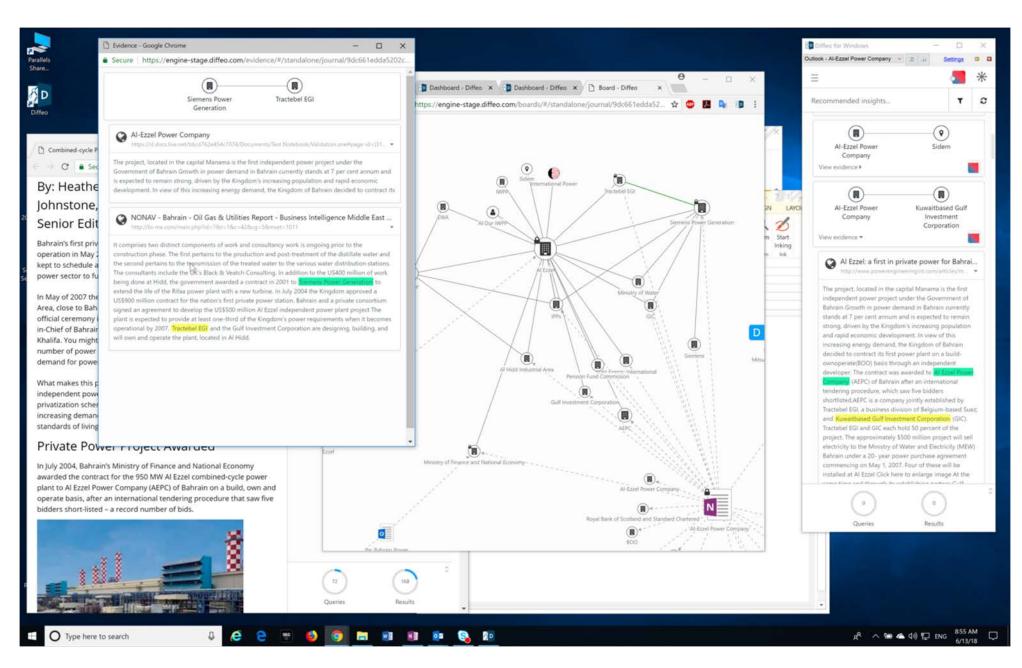










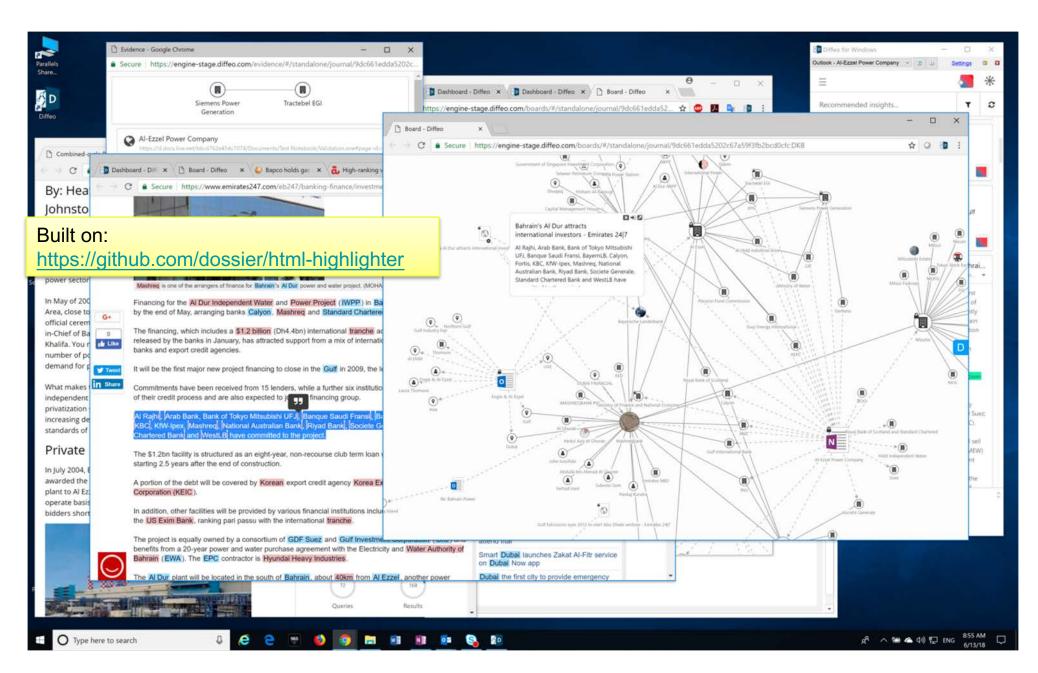


















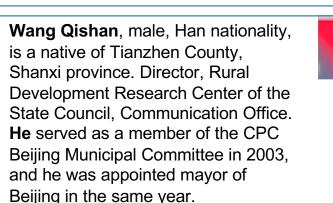




An entity profile used as a retrieval target for generating recommendations.

What entity resolvers do easily is boring.

Wang Qishan, China's top graft buster and a member of the Politburo Standing Committee, making him one of the seven most powerful people in China



Wang, 64, is member of the Political Bureau of the 17th CPC Central Committee and vice premier. He was also elected into the new Central Commission for Discipline Inspection.

High confidence, low novelty recommendations typical of a coref classifier.

What entity resolvers should do is exciting.

Wang also announced that Trinidad and Tobago would receive a 40M yuan grant (approximately TT\$40M) from the Chinese government to fund projects mutually agreed upon by both governments.



Do you realize that Harry Reid and his son Rory have a deal for that land with Chinese Vice Premier Wang Qishan for a 5 billion solar plant. Its allover social media...



The U.S. Chamber of Commerce cohosted a dinner last night at the JW Marriot in Washington to honor Chinese Vice Premier Wang Qishan, who is in the United States to cochair the 23rd China - U.S. Joint Commission on Commerce and



Trade

High novelty recommendations, often near the decision boundary of the coref classifier.









Users deeply engage with Diffeo in their work



See Diffeo's graduation video from the FinTech Innovation Lab with mentors from:















Analyst comments:

- In ~10 minutes I was able to reproduce research from scratch using Diffeo that took about 16 person-hours.
- Used Diffeo to identify a counterparty's hidden connection to an investment organization in Silicon Valley.

Surveys (N>250) indicate that:

>90% "recommend Diffeo to colleagues" and ~30% use Diffeo multiple times each week.









Diffeo Analytical Tradecraft and Technology Conference

Dr. James Tripp, Technical Director, NSOC Ms. Patricia Guitard, Deputy ClOand Senior OSINT Advisor, SES Mr. ElmoWright, SeniorAdvisor, INSCOMArmyOSINTOffice, SES Dr. KfirBar ChiefScientist Basis Technology

Wednesday, June 6, 2018

8:00am - 12:00pm ET

DoubleTree by Hilton

REGISTER NOW »

Diffeo Analytical Tradecraft & Technology Forum

Featured Speakers:

Dr. James Tripp, Technical Director, NSOC

Ms. Patricia Guitard, Deputy CIO and Senior OSINT Advisor, SES

Mr. Elmo Wright, Senior Advisor, INSCOM Army OSINT Office, SES

Dr. Kfir Bar, Chief Scientist, Basis Technology

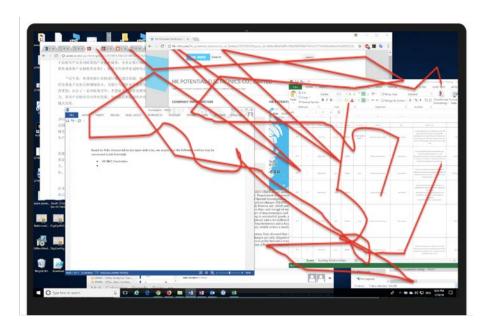
Guest Speaker, Senior Analyst, AFOSI

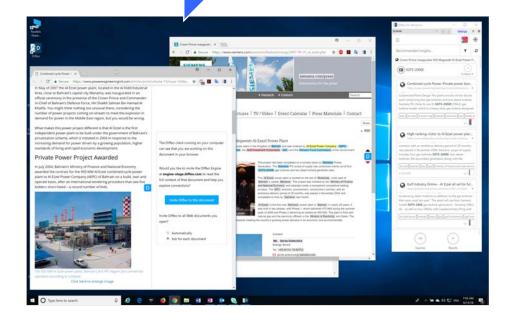






Invite the agent into your work







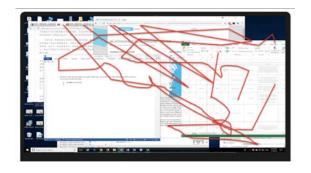


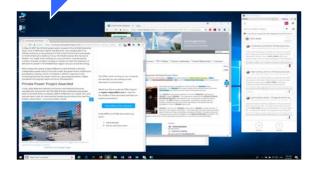




Invite the agent into your work

Capture Institutional Knowledge





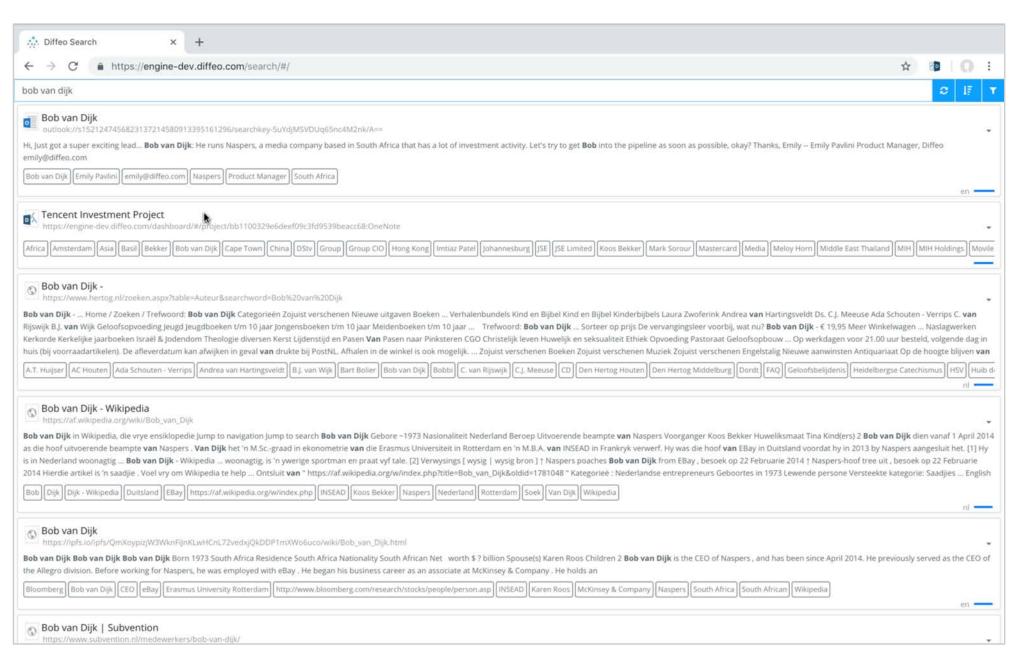










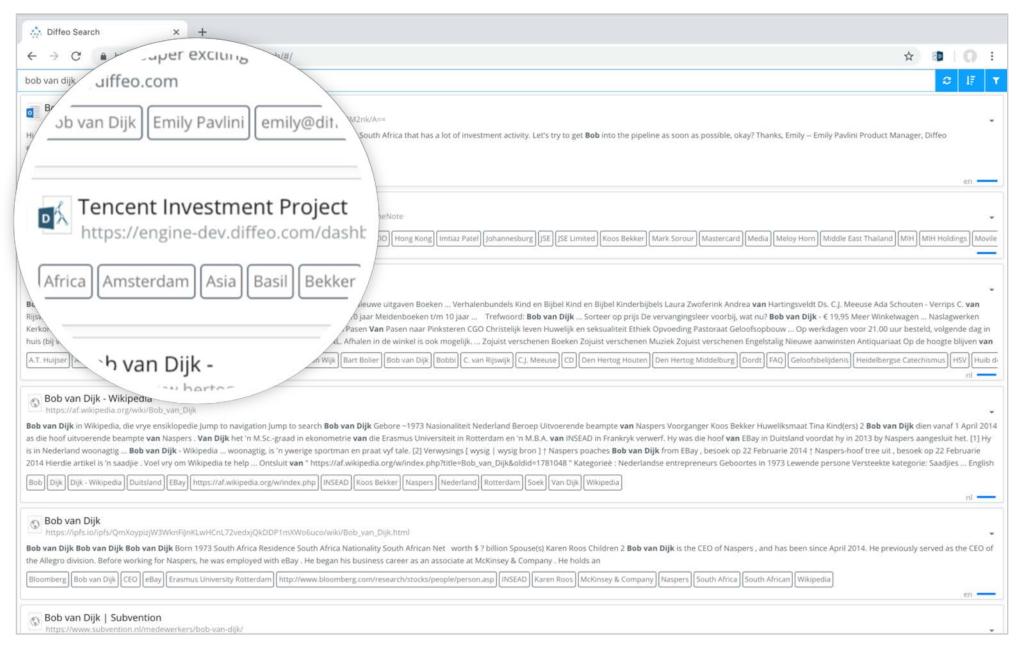










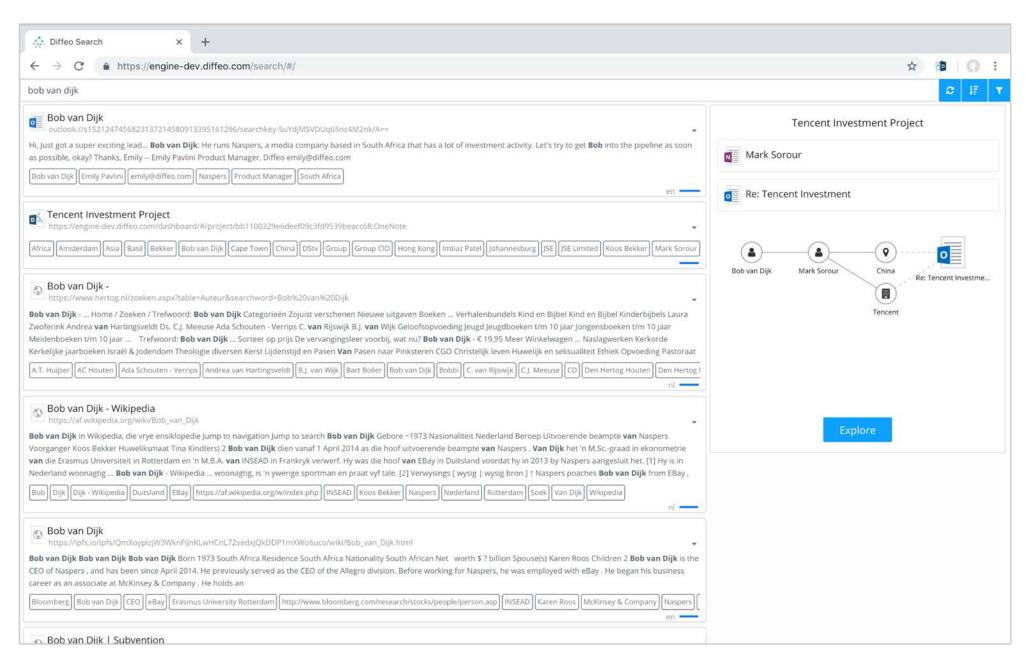










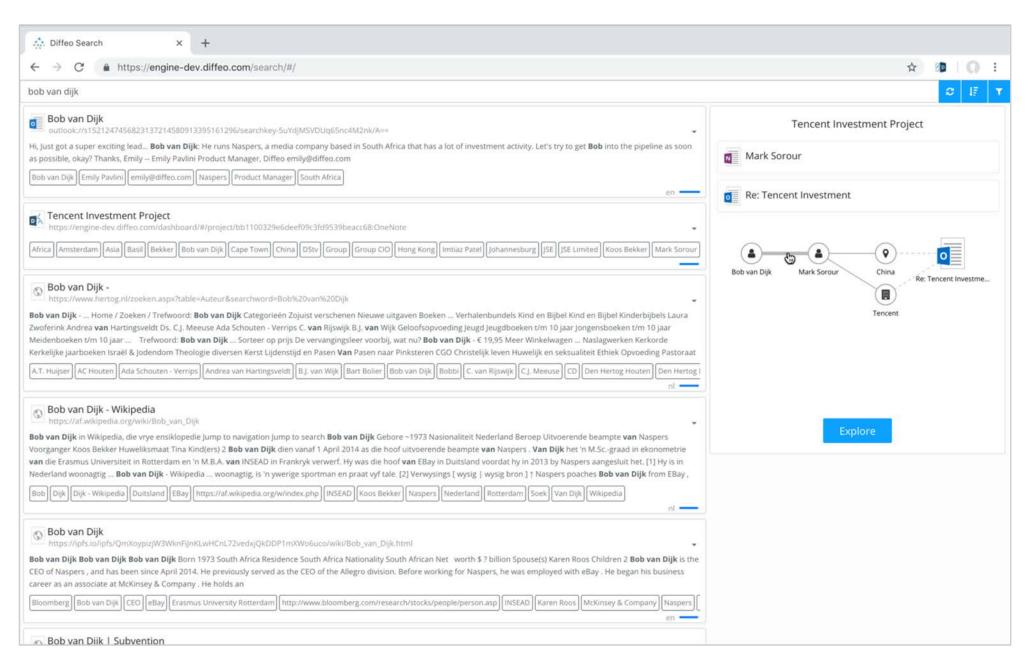










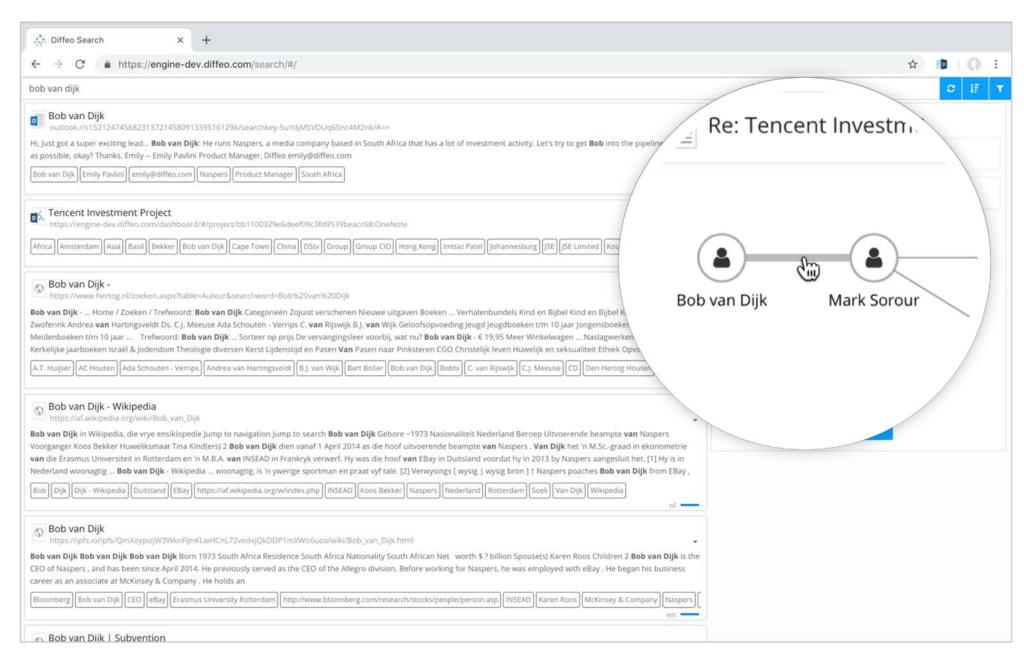










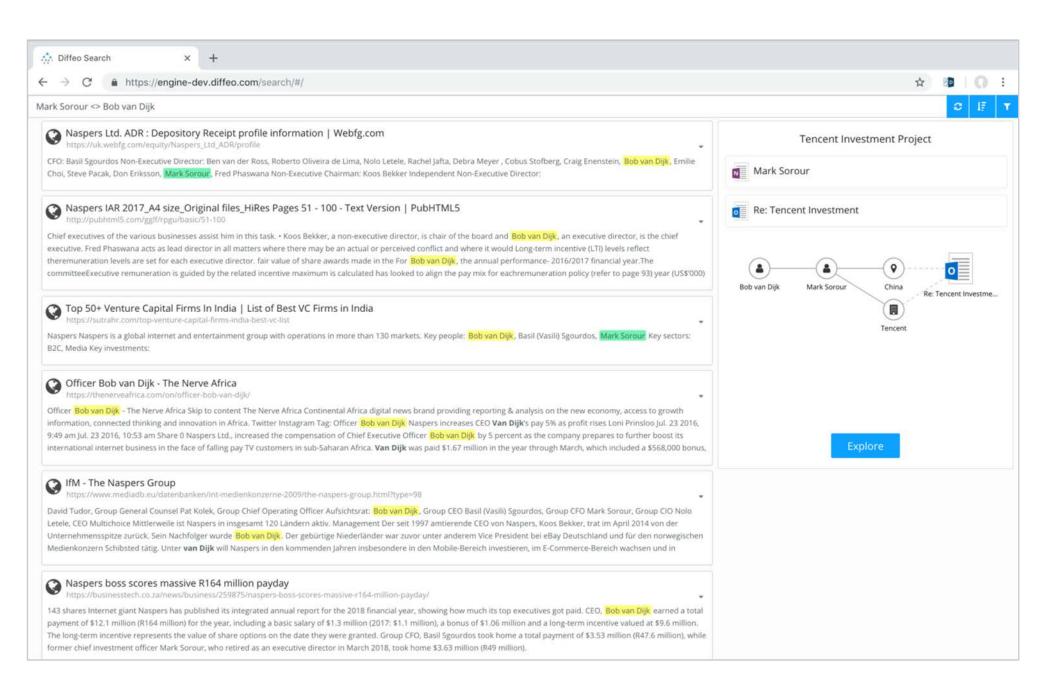










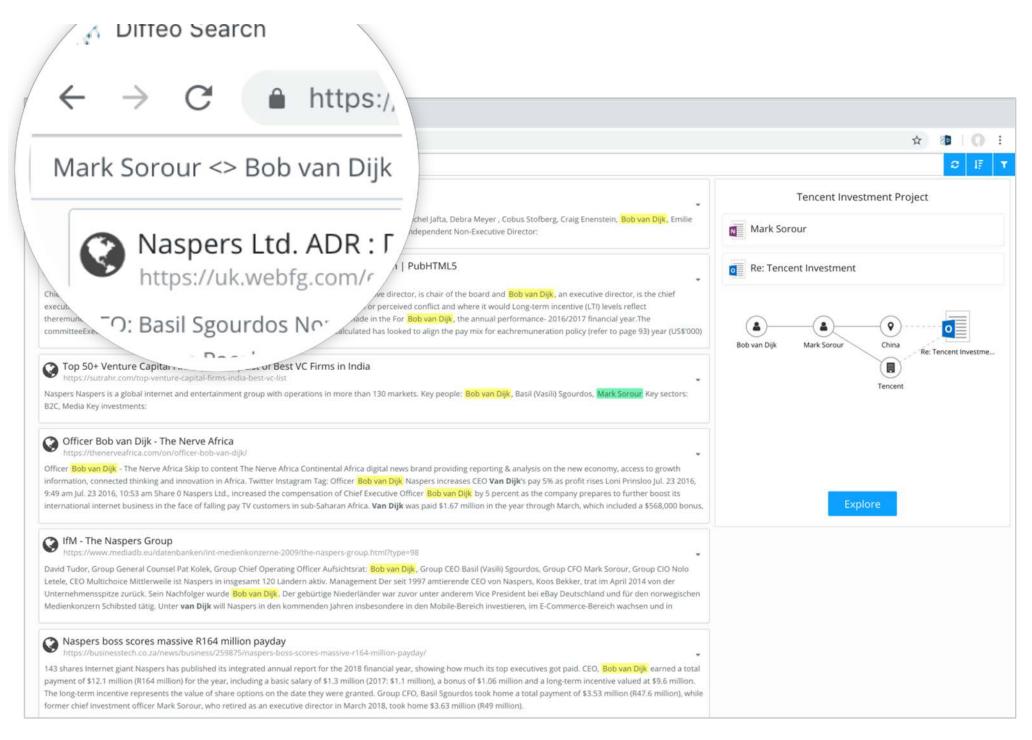










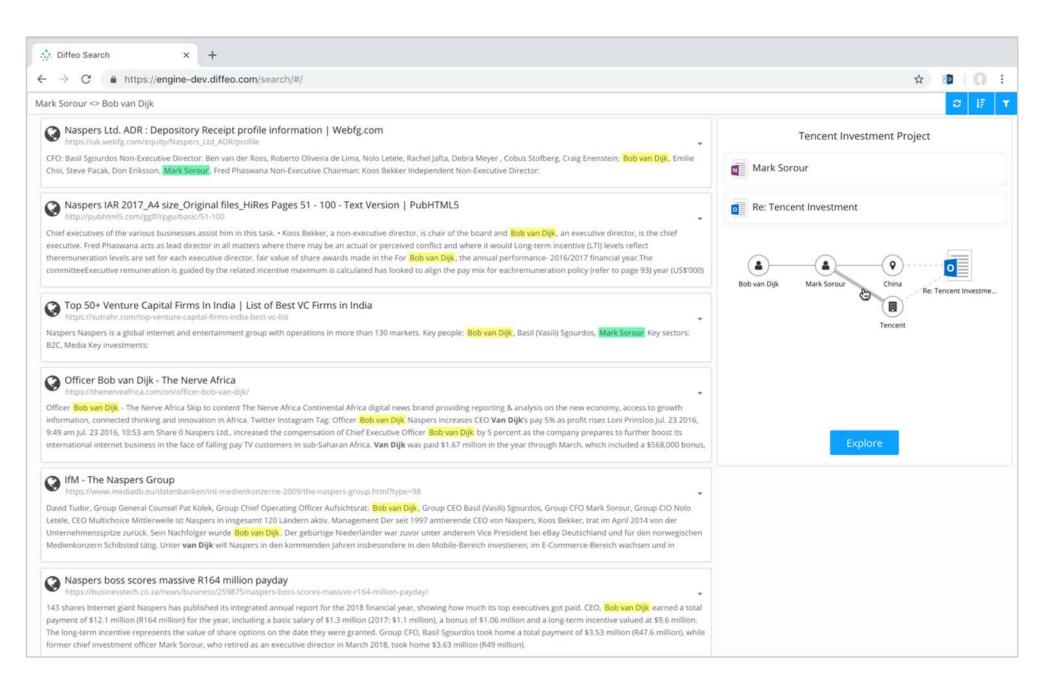










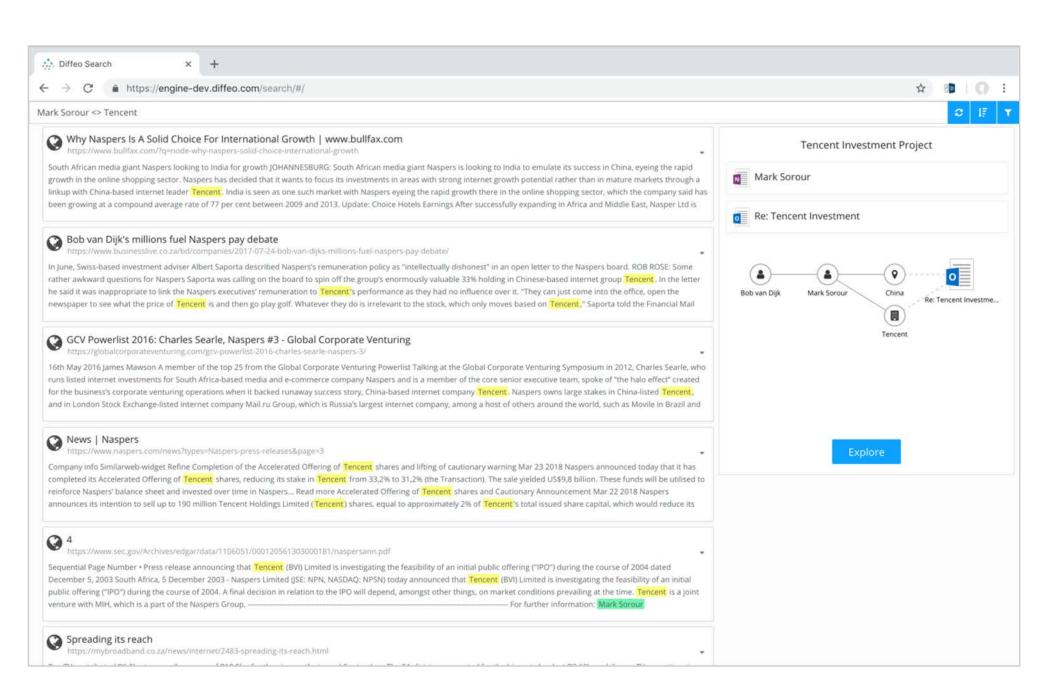












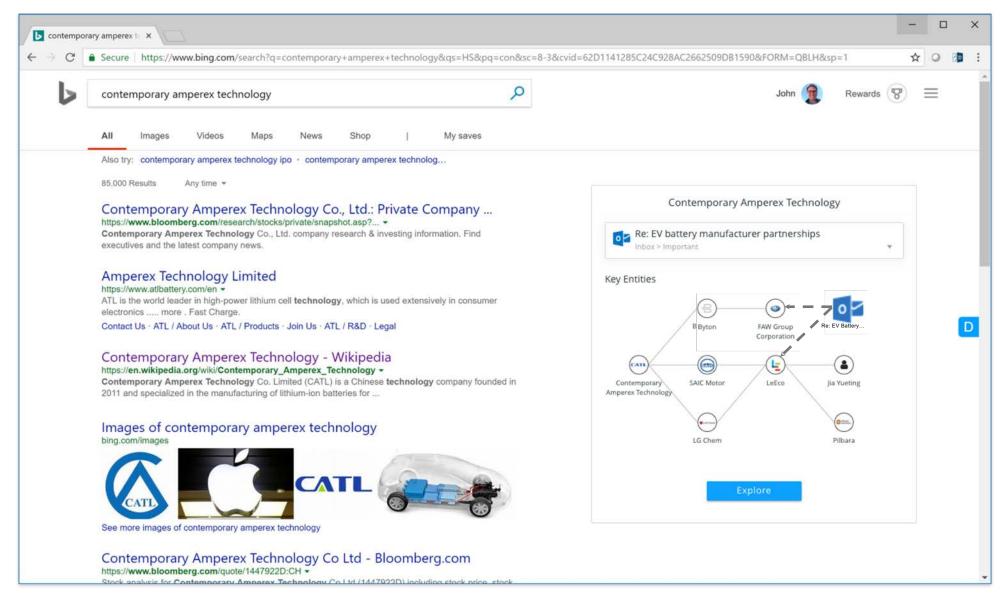








Diffeo Projects → Institutional Knowledge Artifacts



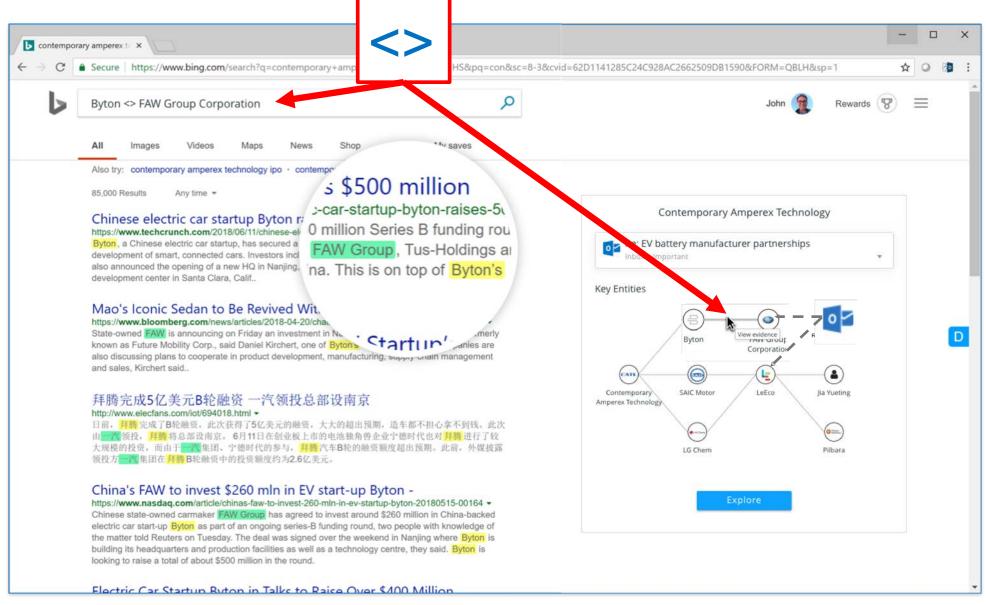








Helps users leverage colleagues' discoveries



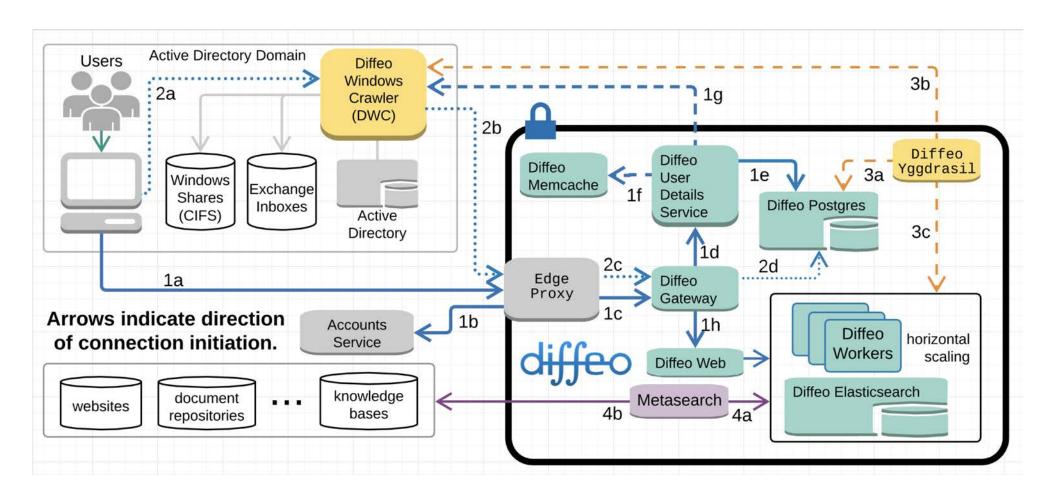






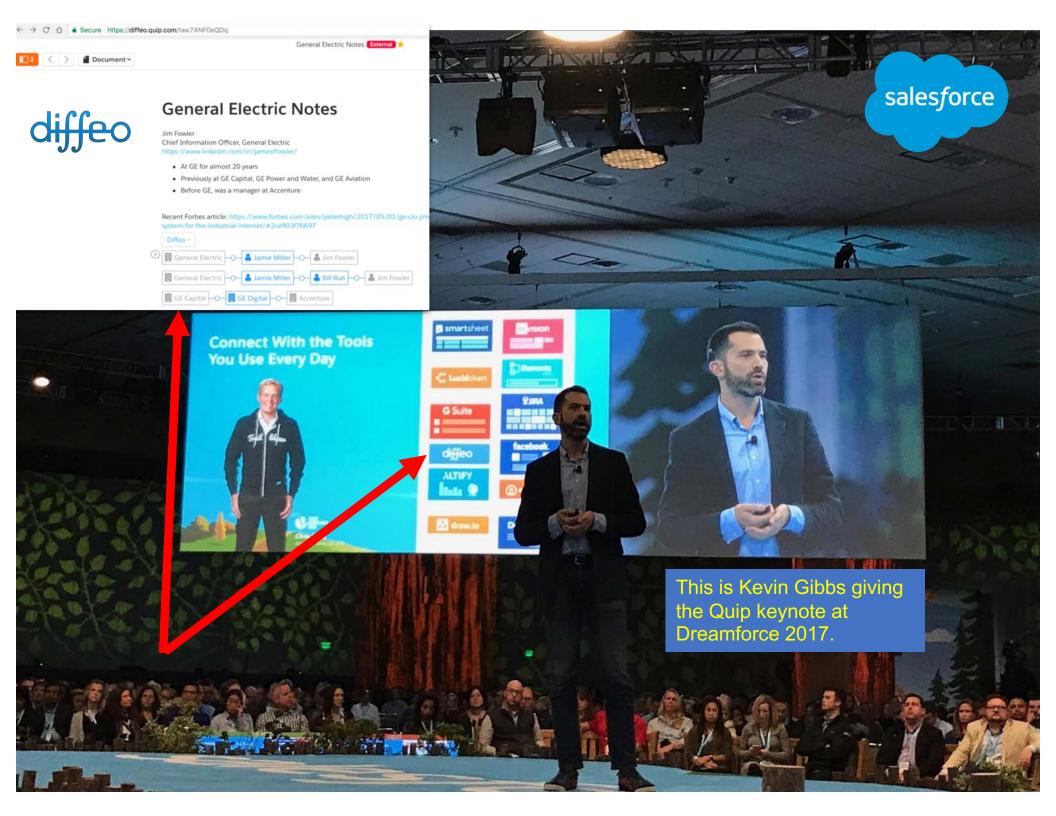


Diffeo in Azure









Thank you!

John R. Frank john@diffeo.com









Augment + Automate → Collaborate

Diffeo for Intel Analysts

- Research in DARPA Memex and other agencies
- Production systems on private networks.

https://engine.diffeo.com

- 100s of millions of concepts knowledge graphed per day
 - o in 19 languages
- 100s of thousands of queries augmenting analysts *per day*
 - in English, Russian, Chinese, and Arabic
- 40 active deep Web integrations, and growing













































Diffeo forest graphs for entity disambiguation

1. The forest of tree graphs lives in probability space. Each leaf vertex represents natural language mentions of an entity from an indexed document or a knowledge base article about an entity. 6. Roots above entity level connect confusable entities Lower interior vertexes connect leafs that are closer together, i.e. more enabling a profile leaf (P) to efficiently discover a likely to be the same entity (aka "coreferent"). surprising mention (S), see blue dotted arcs. 0.3 5. Subtrees represent subtopics within an entity. The induced structure 0.4 8. Summary vertexes aggregate enables fast novelty ranking. 0.5 entity-resolved relations for ranking and latent knowledge graph analytics. 0.6 2. Interior vertexes carry summaries of context data from within-doc coref chains 0.7 of mentions represented by leafs below. 8.0 0.9 ... Probability 4. Mentions are clustered together 3. Incremental batch clustering selects based on probability of coreference, blocks of mentions based on feature which captures transitive closure data gueries (see red dashed box). recall gains, A=B U B=C → A=C 7. Resolved co-occurring mentions enable openeven if A and C appeared distant. domain cross-document relationship resolution. Red lines represent passages in source documents Blocking applies pairwise feature that mention both Entity 1 and Entity 2. vector comparisons to high-recall subsets of all possible pairs of leafs. Overlap regions of blocks

require merging.



ROI Measurement Methodologies **Unexpected Expected Reciprocal Rank u-ERR**

- Submit **profile** as query to search engine
- Receive items
- Start reading through the list: 3.
 - User examines position n
 - If user finds new knowledge:
 - 6. Update profile
 - Go to 1 with *updated* profile as query.
 - else
 - n += 1
 - Go to 4

Figure of merit: depth in the list

where user discovers

new knowledge

u-ERR = 1 / (expected list position of surprise)

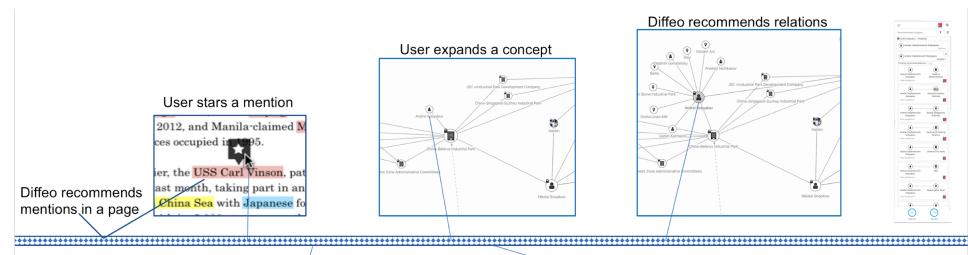








Knowledge Operations Journal



Knowledge Operations Journal

Query social media for USS Carl Vinson

Diffeo finds related entities and prioritizes based on gap analysis All views of a project are synchronized through an OT Journal

