



# Turbo-Charge Your Insight

Presented By



## SUMUP ANALYTICS

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Lead AI Researcher  
October 2<sup>nd</sup> 2018

Jim Wu  
Lead Acceleration Engineer



TURBO CHARGE YOUR INSIGHT

SUMUP  
ANALYTICS

# THE PAIN POINT

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Too Much To Read

Time Is Scarce

# WHAT WE DO

High-granularity real-time analysis on Unstructured data

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- x Time-consuming
- x Voluminous
- x Unstructured
- x Overwhelming



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# WHAT WE DO

## High-granularity real-time analysis on Unstructured data

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Finance

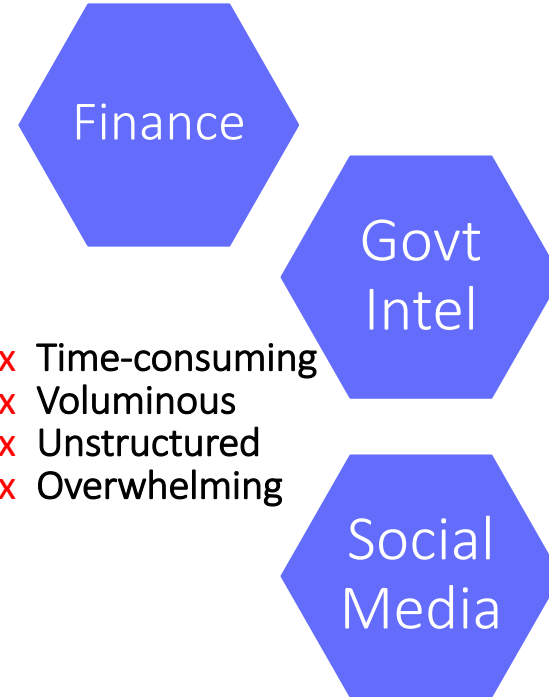
Govt  
Intel

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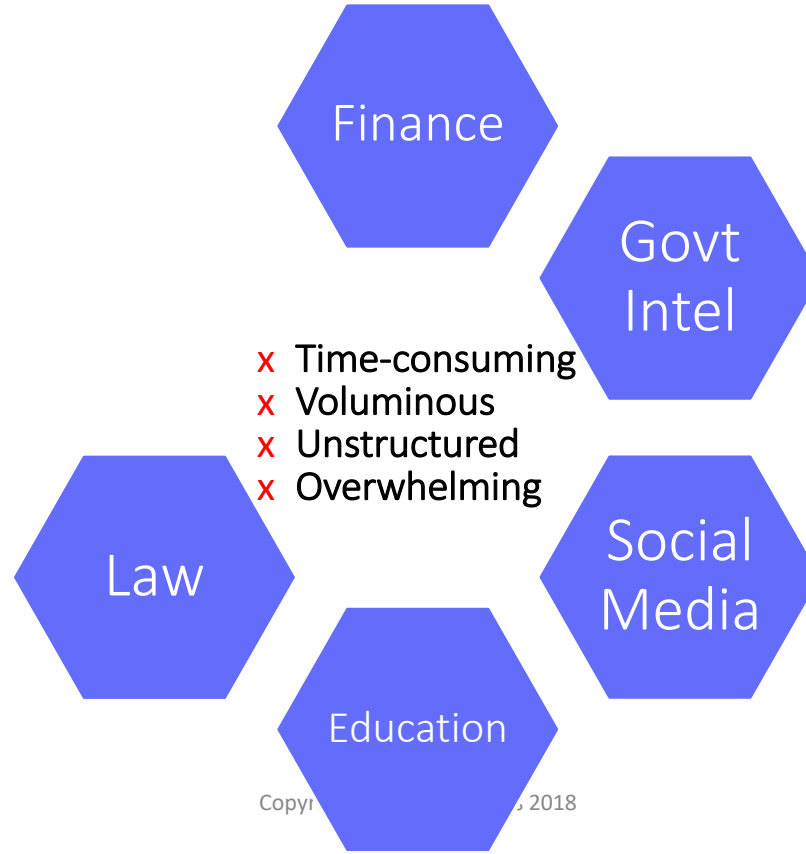
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Social  
Media

Education

# WHAT WE DO

## High-granularity real-time analysis on Unstructured data



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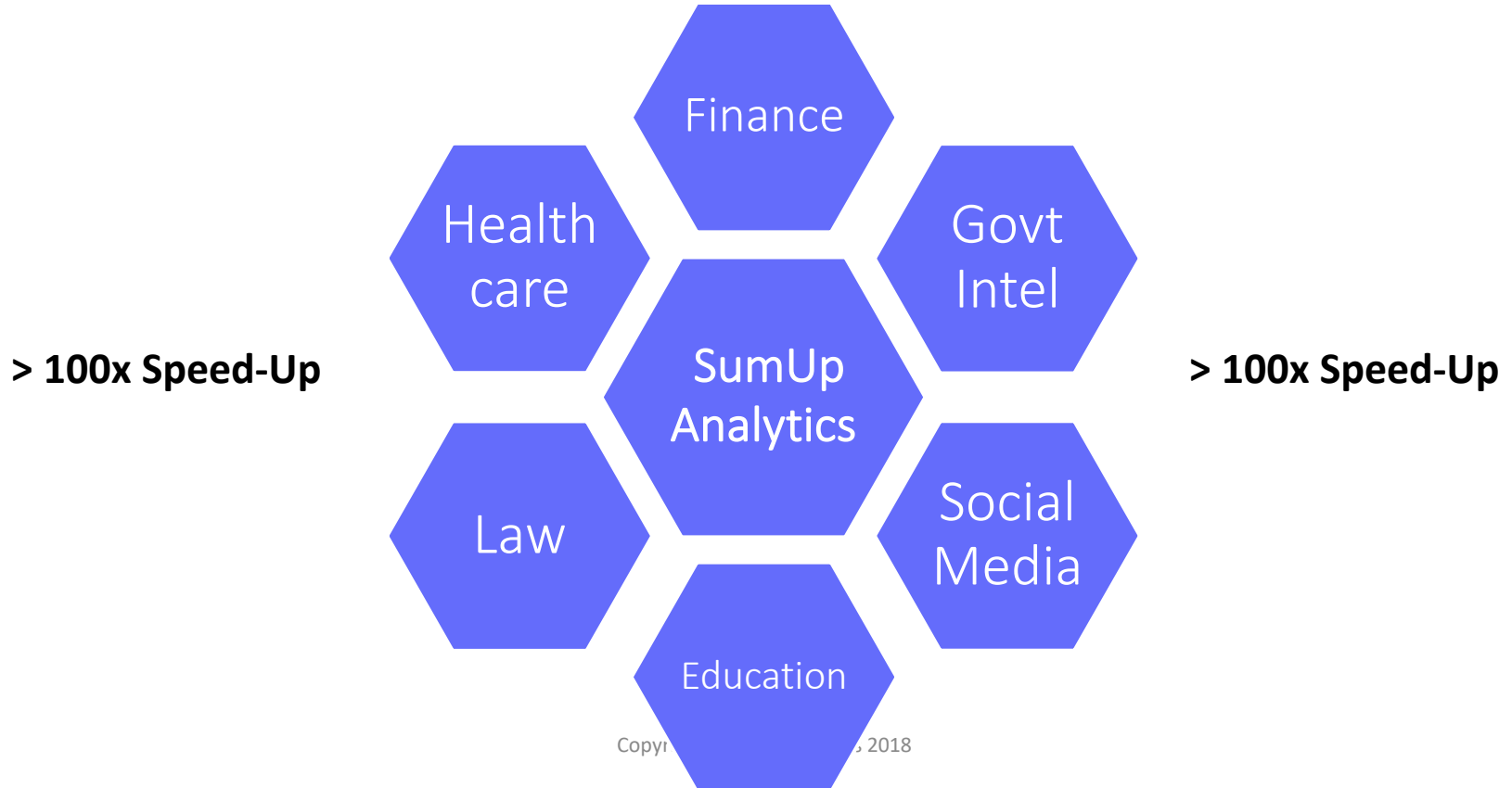
## High-granularity real-time analysis on Unstructured data

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# WHAT WE DO

High-granularity real-time analysis on Unstructured data



# OUR SOLUTIONS

Nucleus SaaS

Streaming Analytics APIs

On-Demand Analytics APIs

---

Step 1: Upload | DataFeeds





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Streaming Analytics APIs

On-Demand Analytics APIs

Step 1: Upload | DataFeeds



Step 2: Iterative Analysis

- Identify Topics & Summarize
- Analyze Sentiment & Consensus
- Get document recommendations
- Deep-dive on-demand

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Step 3: Export & Share

# NUCLEUS BY SUMUP

NEWS

News Feed

RECENT DATASETS >

Test ordering ...

Test5 ...

Chinese BIS ...

10K ...

Trump Twits ...

[See All Datasets](#)

+ Create New Dataset

## DATASET OVERVIEW

DATASET NAME 10K

DATE CREATED August 21, 2018

FILE COUNT 111 Files

SIZE 106.6 MB

LANGUAGES English

## TOPICS IN DATASET

TOPIC1 [data—item](#)  
[financial—statements](#)  
[statements—supplementary](#)  
[supplementary—data](#)

TOPIC2 [income—loss](#)  
[cash—cash](#)  
[cash—equivalents](#)  
[income—taxes](#)

TOPIC3 [analysis—financial](#)  
[operations—item](#)  
[management—discussion](#)  
[item—management](#)

## FILTER DATASET

Run a deeper analysis on this dataset using specific keywords.

dividends ✕

+ ADD KEYWORD AND PRESS ENTER

Add Keyword

Analyze

## DATA—ITEM FINANCIAL—STATEMENTS STATEMENTS—SUPPLEMENTARY SUPPLEMENTARY—DATA

SUMMARY

- Pronounced variability or delays in the construction of desalination plants or reductions in spending for desalination, could negatively impact our Water segment sales and revenue, which in turn could have an adverse effect on our entire business, financial condition, or results of operations and make it difficult for us to accurately forecast our future sales and revenue.

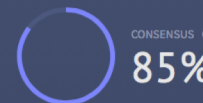
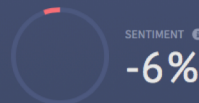
Source: ERI110-K2018-03-08.txt

- MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS ", " Our fiscal year begins on April 1 and ends on March 31.

Source: WMS10-K2016-09-15.txt

- ", "31", "Certain of our accounting estimates or assumptions constitute "critical accounting estimates" for us because:", "the nature of these estimates or assumptions is material due to the levels of subjectivity and judgment necessary to account for highly uncertain matters or the susceptibility of such matters to change; and", "the impact of the estimates and assumptions on financial condition and results of operations is material.

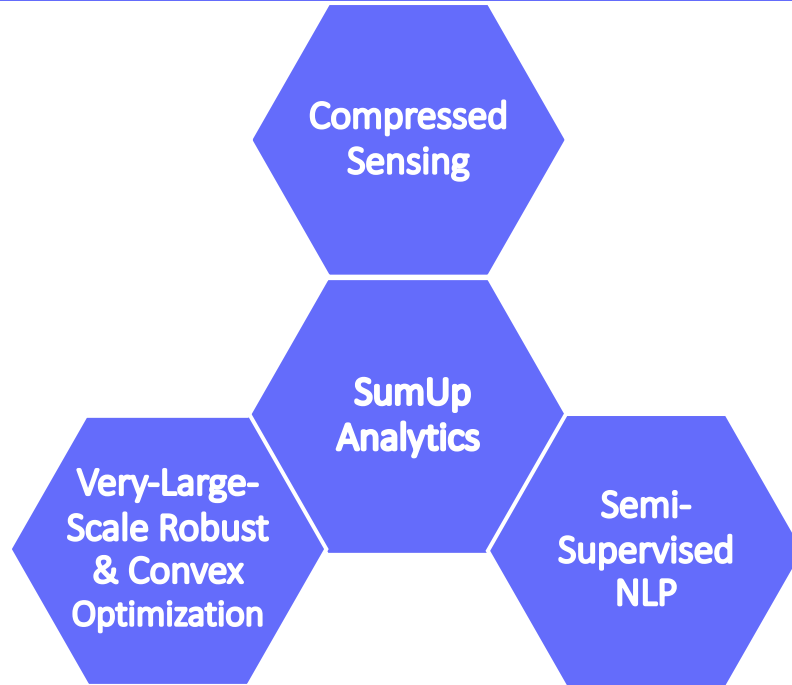
Source: CWC010-K2016-03-15.txt



# DIFFERENTIATED INTELLECTUAL PROPERTIES

## R&D in Analytics & Computational Systems

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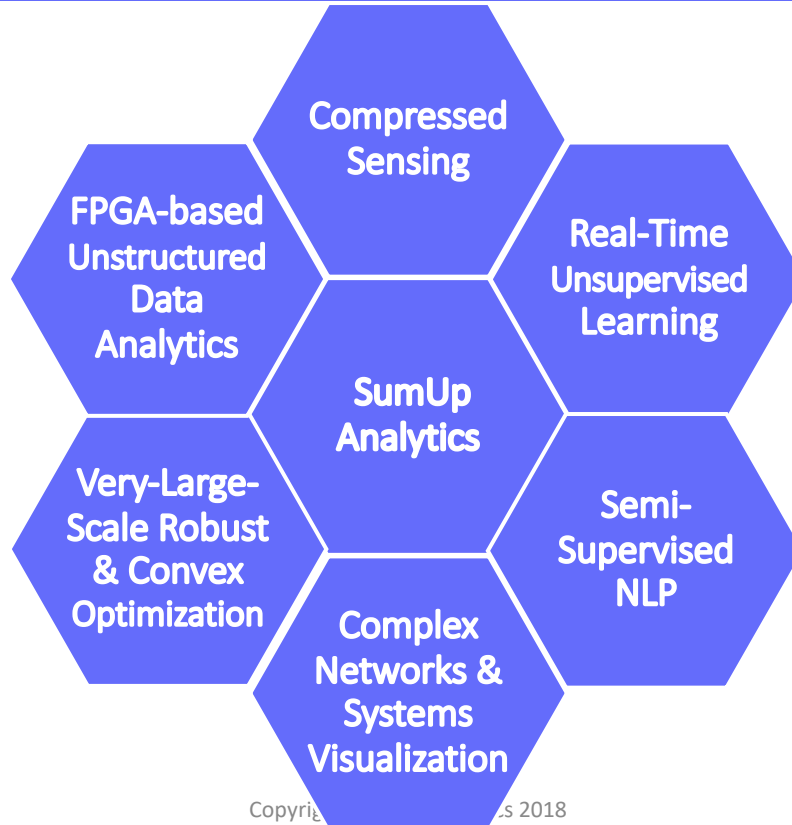


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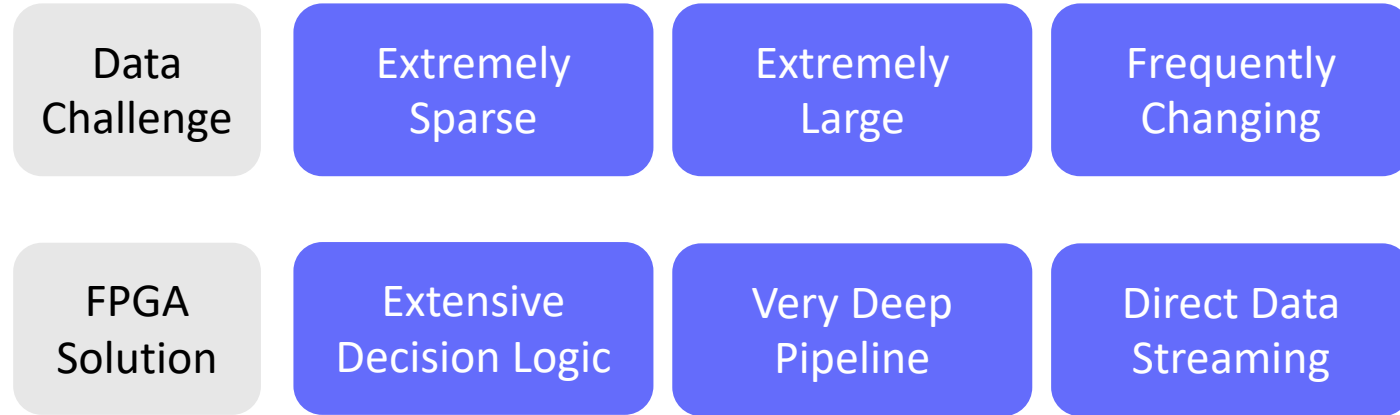
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**Leverages our Xilinx partnership**



# FPGA: NATURAL FIT FOR UNSTRUCTURED DATA

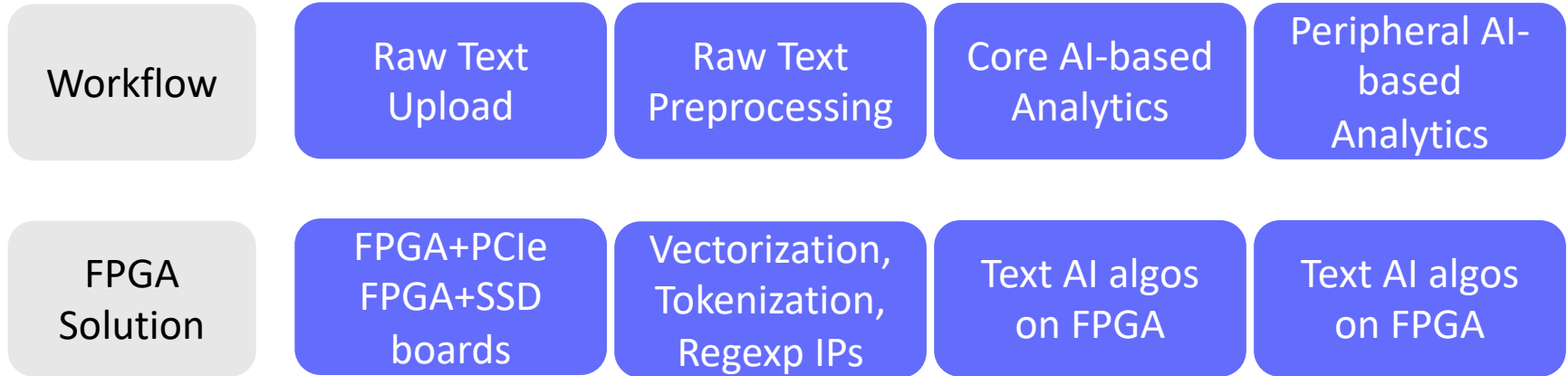
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**FPGA very appealing to implement AI algos for Unstructured Data**

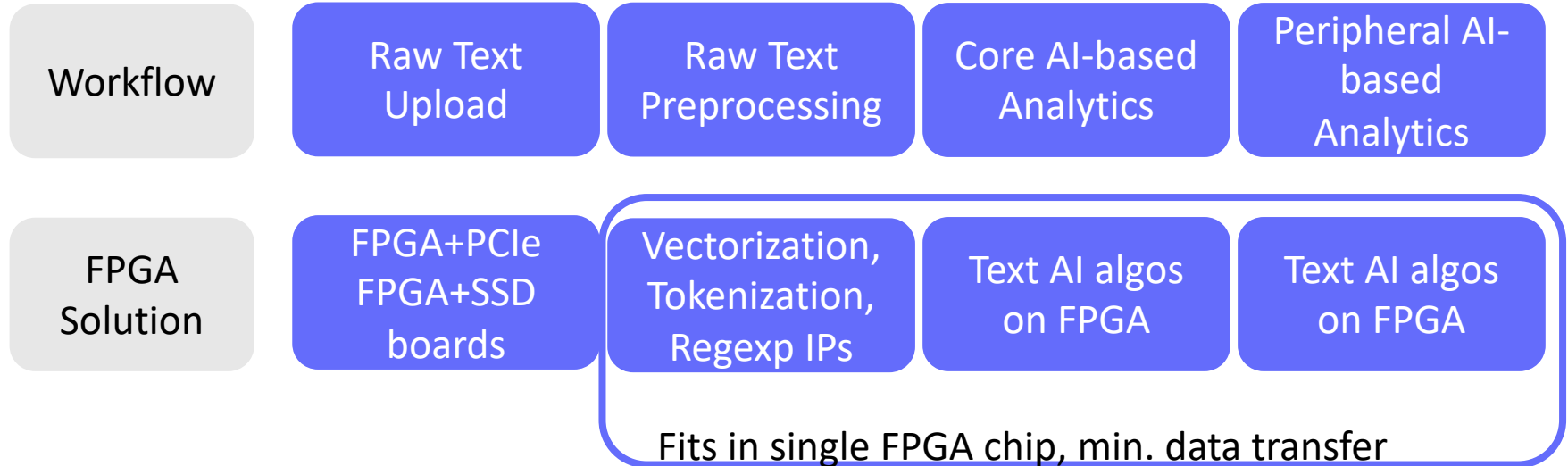
# FPGA: POWERS NUCLEUS END TO END

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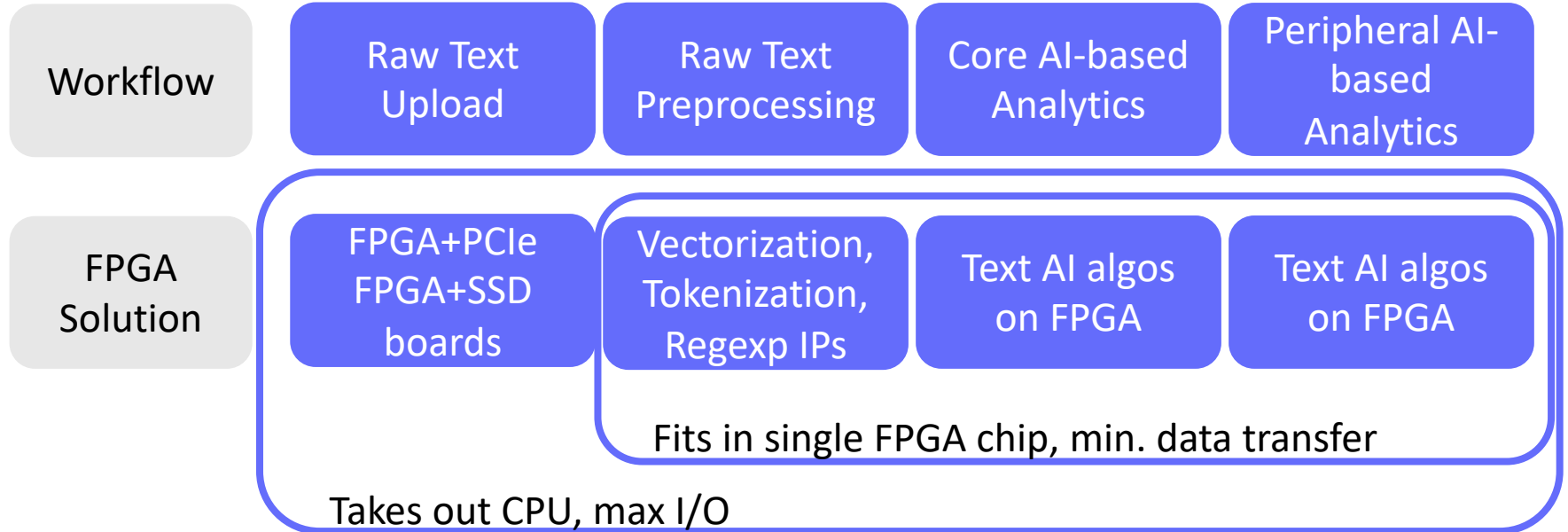
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# FPGA: POWERS NUCLEUS END TO END

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# ACCELERATED DEV & DEPLOY W/ XILINX

Xilinx Public IPs

SumUp Python/SDAccel Wrapper

AWS F1

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Prototyping

**08 / 2018**

**05 / 2018**

Python  
library

Core algo

Xilinx IPs

Standalone

SDAccel

FPGA-  
based, v1

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Standalone  
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F1-based,  
v3

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Core algo

Commercial  
library

Commercial  
library

Xilinx IPs

Standalone  
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based, v1

Standalone  
FPGA-  
based, v2

F1-based,  
v3

F1-deployed

Alveo-ready

SDAccel

# PRODUCT ROADMAP

Deployed on AWS

Powered by Xilinx FPGAs

Coming to VPC

Available Now

Front-End

Dynamic  
Webpage

Compute

Peripheral  
Analytics

Core Analytics

EC2

F1 | Alveo

Data  
Pipeline

Preprocessing

EC2

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Available 18Q4

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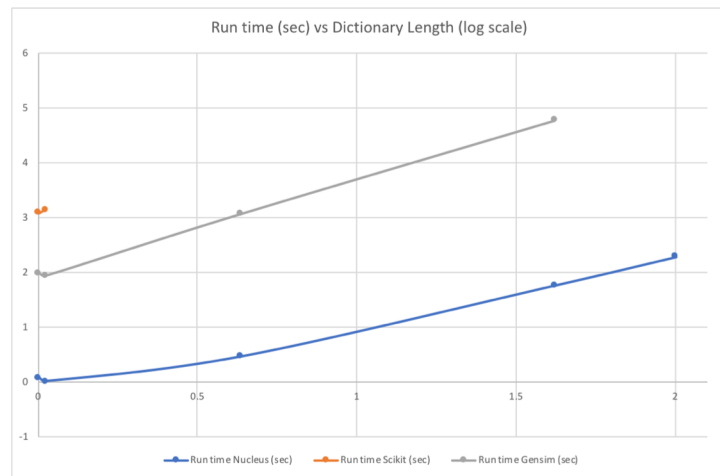
# BENCHMARKS

> 100x Faster

Much higher topic quality

Nbr docs	Dictionary length	Nbr topics	Runtime in seconds			U_Mass Coherence		
			Nucleus	Scikit	Gensim	Nucleus	Scikit	Gensim
31,496	81,801	1	0.1	230	10	-9.7	-19.9	-19.9
		4	0.3	648	32	-9.4	-14.7	-15.5
		8	0.6	1157	51	-11.9	-11.8	-16.0
29,287	78,063	1	0.1	220	10	-4.9	-5.8	-18.2
		4	0.2	588	36	-9.8	-14.9	-16.9
		8	0.7	1023	57	-8.3	-15.8	-16.3
158,348	336,532	1	0.4	2817	98	-4.8	-14.0	-18.0
		4	1.0	11282	371	-6.8	-12.7	-17.6
		8	1.7	N/A	685	-6.9	N/A	-16.0
2,620,008	3,253,518	1	9	39600	8135	-10.0	-15.5	-15.4
		4	21	N/A	34850	-9.0	N/A	-16.8
		8	34	N/A	N/A	-6.3	N/A	N/A
7,539,661	7,817,625	1	20	N/A	N/A	-2.5	N/A	N/A
		4	54	N/A	N/A	-3.5	N/A	N/A
		8	113	N/A	N/A	-5.8	N/A	N/A

U\_Mass: less negative is better



AWS c4.8xlarge, f1.2xlarge

N/A indicates run not completed within 36 hours

# DEMO

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## Alpha Generation in Equities

1day 14h -> 3min 40s

- Portfolio managers, financial analysts, quants

See for yourself

## Social Media Monitoring

6days -> 55min

- Intelligence analysts, compliance officers, data scientists

## IN SUMMARY

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- Nucleus by SumUp offers the fast, flexible and transparent text analytics solution needed by professionals
- Nucleus typically is > 100x faster than alternative solutions
- Further acceleration is achievable through complete integration of data pipeline and algos on FPGA board



The logo consists of a red chevron pointing right, followed by the letters 'XDF' in a white, bold, sans-serif font.

**XDF** XILINX  
DEVELOPER  
FORUM

