

Inspire the Extraordinary

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Inspire the Extraordinary

SAS® Global Forum 2018

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Slide 2 Notes

Welcome

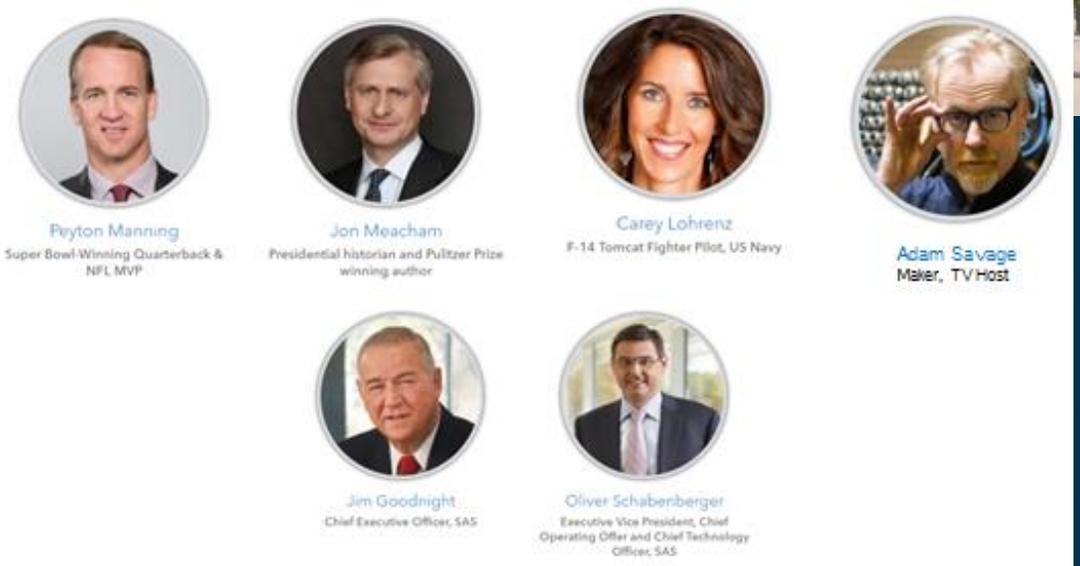
SAS Global Forum is the once a year SAS event held to share with media, users, executives, partners, academics and the world on where we are, corporate focus, future roadmap and exciting trends in the industry.

I'm here to share snippets of the SAS Global Forum 2018, and potentially to excite and inspire you to achieve the extraordinary

Key Stats of SAS Global Forum 2018

Theme: “Inspire the Extraordinary”

- April 8-11, 2018
- 6,300 registrant – biggest forum ever
- 700 sessions
- 469 published proceedings
- Consumed more than 180kgs of M&Ms
- Printed 4,000 T-shirts to order
- Top hashtags from the event
 - #IoT #AI #machinelearning



Peyton Manning
Super Bowl Winning Quarterback &
NFL MVP



Jon Meacham
Presidential historian and Pulitzer Prize
winning author



Carey Lohrenz
F-14 Tomcat Fighter Pilot, US Navy



Adam Savage
Maker, TV Host



Jim Goodnight
Chief Executive Officer, SAS



Oliver Schabenberger
Executive Vice President, Chief
Operating Officer and Chief Technology
Officer, SAS

Slide 3 Notes

I had the fortunate opportunity to attend this year's SAS GF at Denver, Colorado. The 42nd SAS annual event.

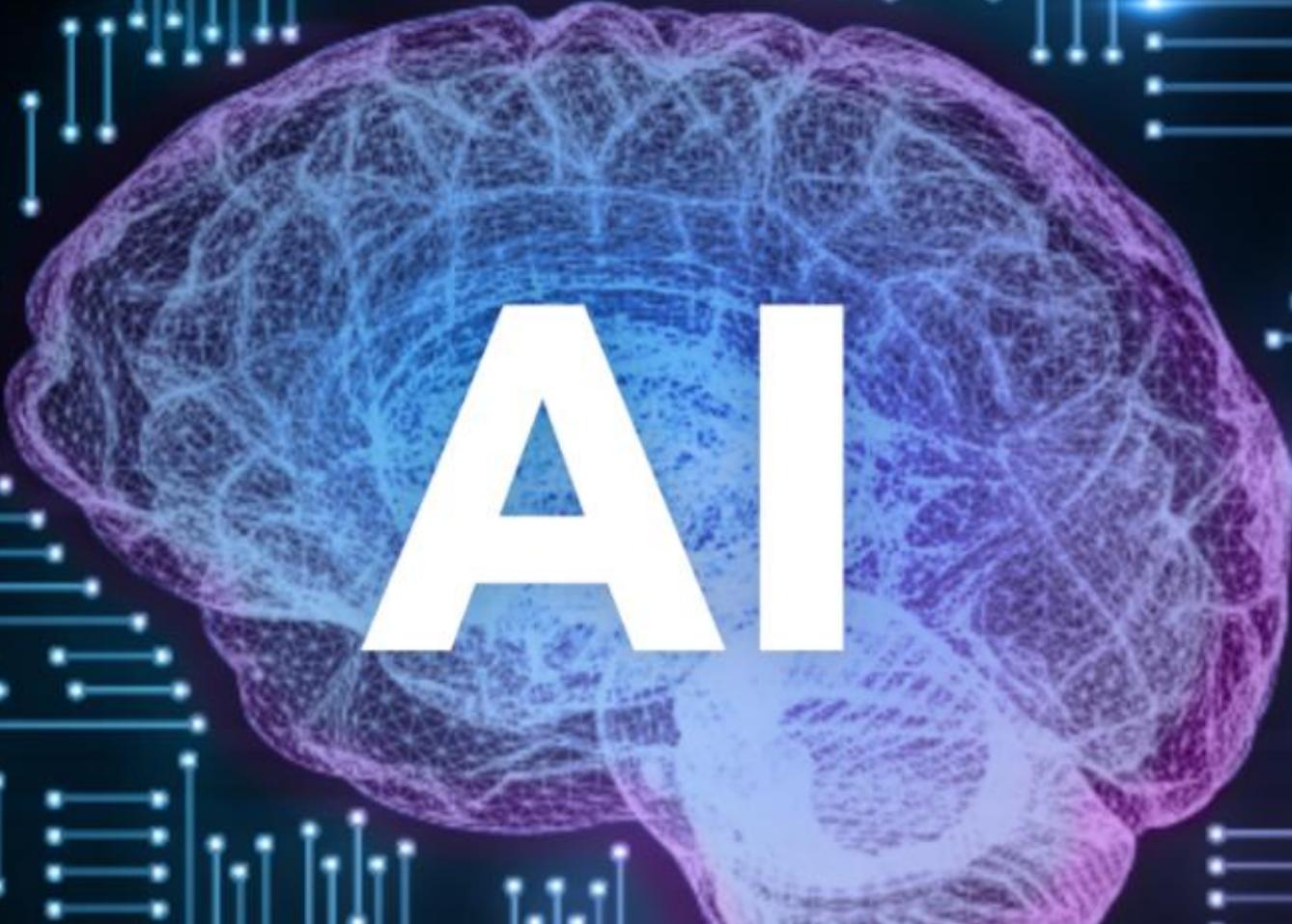
It was only last month. Seems like a long time ago and a lot has happened: Malaysia has a new government, Royal Wedding, Jacinta Ardern is about to give birth.

This is an event where like-minded people with interests in the world of SAS and analytics come together to learn the art of the possible. This year,

67 countries represented – biggest SAS global forum ever

- With over 700 sessions presented over 2.5 days
- It is the time of year for collective publications of white-papers/proceedings for SAS Users, Executives, Platform Administrators, Architects
- Ate too much M&Ms
- Custom made T-shirt print to order right in front of you
- Featured presenters include – Peyton Manning, former NFL Quarterback for 18 seasons.
- Jon Meacham – political historian. Interesting talk in the midst of a political drama since the 2016 election in the US.
- Adam Savage – whom you might all know from Mythbuster – sharing his obsession on recreating accurate artefacts. E.g. Stanley Kubrick (American film Director, screenwriter, producer)
- Of course we get the keynote from Dr. Goodnight and Oliver Schabenberger – EVP, COO, CTO.

AI & The Evolution of Analytics



AI

Slide 4 Notes

During the opening session, Oliver Schabenberger elaborated on AI and ML. Painting a picture of how it can be applied to help better humans lives. How our goal is to turn a world of data into a world of intelligence.

AI is all the buzz today. Event if you are not in the IT industry, we are all affected by AI. We are surrounded by smart devices, the smart phone that we cannot live without, that tells us how to get from A to B. Or asking “Hey Siri – where did I park my car?”

Artificial Intelligence stems from the evolution of analytics. Hence, AI = Analytics

In Oliver’s address, he said:

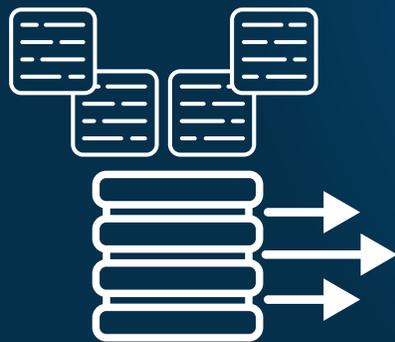
- Analytics Transform Lives
- It all starts with asking the question, being curious. Curiosity is at the heart of human progress.
- Analytics has always been a differentiator between those who use it and those who don’t.

In the past, innovation and technology drives analytics advancements, (what we can do with analytics were limited by the technology) but today, analytical demands drives technology and technological innovation.

First, let’s go into explaining the top 3 buzz words

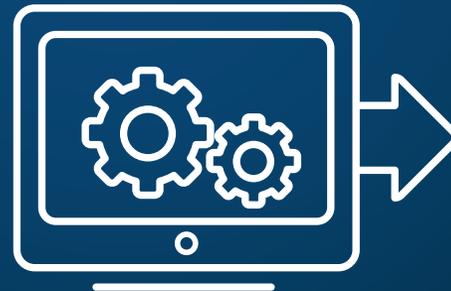
Internet of Things (IoT)

is the concept of everyday objects – from industrial machines to wearable devices – gathering & sharing data and take action on that data



Machine Learning (ML)

Automates analytical model building.. systems can learn from data, identify patterns and make decisions with minimal human intervention..



Artificial Intelligence (AI)

is the science of training computers to perform tasks that typically require human intelligence to complete.



Slide 5 Notes

- The three main themes were the “Internet of Things”, “Machine Learning” and “Artificial Intelligence”
- So let’s peel away the cliché terms and clarify what each of these terms means.
- IoT
 - Things that are connected to the internet and are generating data.
 - 90% of the world’s data has been created in the last 2 years. IoT played a key role in this.
 - By 2025, 55bil devices connected to the internet (7.6 bn today. Projected to be 8.1bn by 2025). IoT. 40% of analytics need to be executed at the edge
 - We are producing more data than ever before – computers, servers, phones, car components, wearables, smart home
 - All generating data – customer data, system data
 - For this data to be of use, it must first be captured, typically uploaded to the internet
 - Example:
 - IoT: Fitbit – steps, Car/Smart phones – location GPS, car logs.
 - Have you ever gotten a prompt on your phone as you’re about to leave your house on how long it will take you to travel to work? How does it know you’re about to leave to work? Where you work?
- Machine learning
 - This is a subset of AI. It is a field of computer science that often uses statistical techniques (e.g. deep learning, neural net) to give computers the ability to “learn” with data without explicitly programmed.
 - Using that information to analyse & make decisions, to build models and be able to respond to data as it occurs.
 - How do you teach a computer to learn? Through models, algorithms and a whole lot of data.
 - Example:
 - Go, Deep blue, Image and object recognition
 - How do you teach Deep Blue to play chess so well? It is building the algorithm that assesses all the possible known moves, score them for the best outcome or least loss.
- AI
 - The overarching concept of analytics. Creating computers than can perform human tasks.
 - Stems from 2 words – Artificial and Intelligence. How do you define intelligence? The ability to speak? Comprehend sentences and context? Decipher an image or an object to understand what it is?
 - Example:
 - Self driving car: Movement in front – is it a car moving away, coming up to a cross-road, is it a pedestrian stepping out on the road.

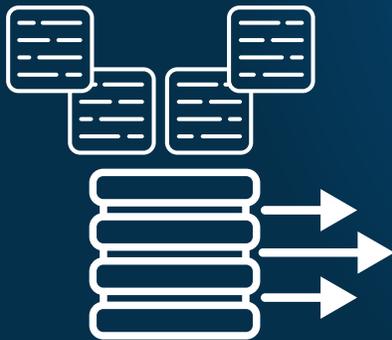
Application of IoT, ML, AI

Human analysis is inherently biased

- Which parameters to change?
- How many campaigns can we manage?

Do more, faster

- Scale out – massive parallelising of tasks
- Change ALL parameters (no bias), retest, etc.
- More segments, better personalisation
 - E.g, Potentially thousands of campaigns, etc.



Slide 6 Notes

Extending that further, how do we apply the data from IoT, with ML and AI in our lives? What are the practical use cases?

How can we use it to solve the world's problems? How can it benefit the world and humanity?

Some things to think about when considering the application of IoT, ML and AI:

When we do analysis, humans are inherently biased, due to our upbringing, culture and interpretation. That leads to imparting those biases (consciously or unconsciously) to the interpretation of the analysis

It is not because we are wrong, but because we're each different and we're limited to how each of our brains work. And our capacity.

AI and ML opens out a whole new dimension and potentials to help humans do more, faster.

- Technology today can be scaled out (across big data clusters) and scaled up (in the cloud) to remove the capacity constraints.
- Now we have the computers and technology to test ALL inputs in a model, tune and re-test continuously very quickly with the powerful processing capacity.
- Instead of 12 or 20 customer segments, there can be thousands – the more we personalise a campaign, the more likely we are to be able to engage customers as individuals.
- We will talk about a few use cases on the application of AI

Food for thought

If you use data to train your model to be used for future predictions, What if the data generated to-date were generated based on human with biasness? Would we then be training the machines based on biased data? And by using it for future decision assistance, are we propagating the biasness in our future action?

#Data4Good

- **Analytics helping humanity**

- Introduced GatherIQ – crowdsourcing app
- https://www.sas.com/en_au/data-for-good.html

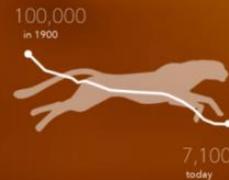


- **Protecting Endangered Species – WildTrack**

- “Saving endangered species one footprint at a time”
- Using Visual Imaging to model indigenous trackers
- https://www.sas.com/en_us/explore/analytics-in-action/impact/wildtrack.html



AI research can help to give cheetahs a fighting chance.



The cheetah population has seen a 93% decline over the past century.



Cheetahs are no longer found in 76% of their former habitats throughout Africa.



Cheetahs rarely prey on domestic animals; yet many are killed based on the assumption of being a threat to livestock.



Highly sought after cheetah cubs are smuggled from Africa, with only 1 in 6 surviving the journey.

Slide 7 Notes

- During the SGF, SAS emphasized again the many DataForGood initiatives
 - Using data and analytics to help humanity
 - GatherIQ is an app that you can access through your phone or computer – containing data shown using visual analytics where you can start a conversation on a project that matters to you. – solving world hunger, missing migrants, world conservation..
 - Share it on social media. Get involved. Have conversations. Share with your friends. Be engage.
- Another Data4Good program is the Wildtrack project that SAS worked on that started over 10 years ago.
 - In Africa, cheetahs are disappearing.
 - One couple has spent years with indigenous trackers, understanding what they can analyse from a cheetah's footprint.
 - Instead of fixing tracking devices on animals that is highly invasive where you have to catch them, fix a device and release, this project uses image analysis, AI, to study the animals.
 - Footprint images are now fed into a model which uses image analysis to be able to determine not only specific animals, but also the gender, age and health of the animal.
 - A true example of how we can use AI to have the skills of an indigenous tracker.
 - Now anyone with a camera on their phone can take a photo of a footprint and upload it for image analysis

SciSports

- **SciSports and SAS® Viya® Score New Insights on Soccer Pitch**

- SAS Viya enables real-time analysis of streaming soccer data
- https://www.sas.com/en_us/customers/scisports.html

- **Other applications**

- Disaster relief response
- Blood flow in stroke patients



Slide 8 Notes

- SciSports is a sports analysis company in the Netherlands
 - They use SAS and opensource technology to do sports analysis. Help clubs to scout players, report on player statistics etc.
 - They use analytics to analyse streaming videos of players, record statistics, and their movements – speed, distance, accuracy.
- Other use cases for usage of AI and ML mentioned are
 - Disaster relief response – Nepal earthquake in April 2015
 - Image recognition of MRI imagery to detect blood flow of the artery in stroke patients. Through image recognition, it can be used to detect a healthy artery vs clogged artery.
 - The possibilities are endless and what can we do with AI to help better human lives.

Current SAS Viya Solutions



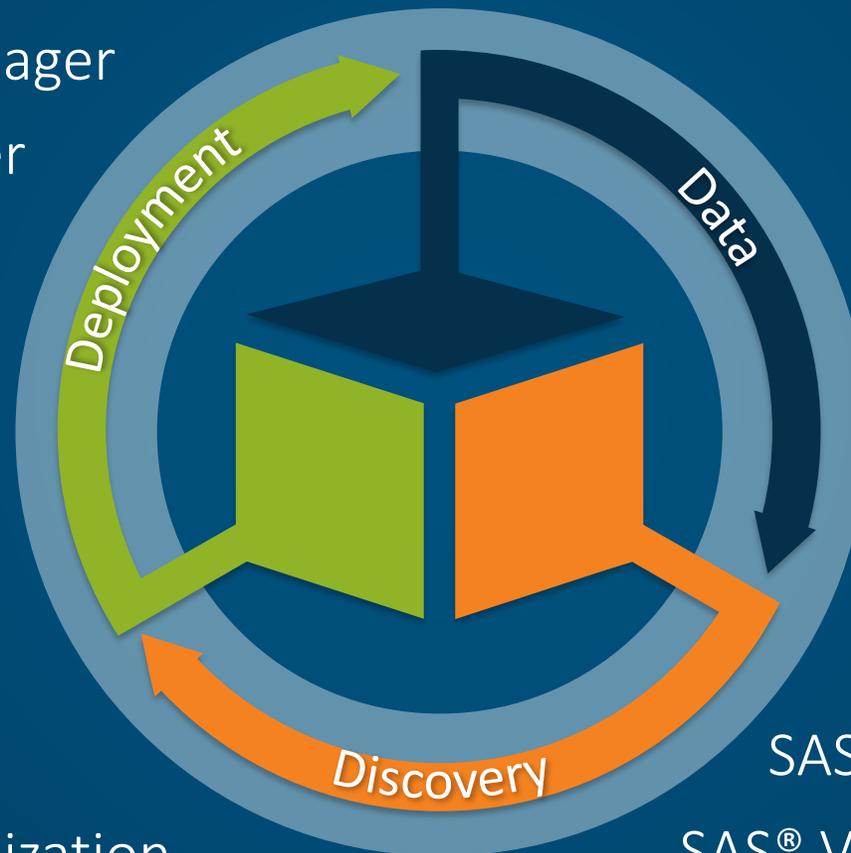
SAS® Decision Manager

SAS® Model Manager

SAS® Scoring Accelerators

SAS® Event Stream Processing

SAS® Visual Investigator



SAS® Data Preparation

SAS® Visual Analytics

SAS® Visual Statistics

SAS® Visual Data Mining and
Machine Learning

SAS® Optimization

SAS® Visual Text Analytics

SAS® Visual Forecasting

Slide 9 Notes

SAS is very excited to talk about SAS' latest architecture – SAS Viya.

Now on version 3.3 – released in December 2017

Products currently available on Viya.

Giving us a total of 12 products today on Viya.

SAS ESP is now available on Viya to further support the IoT use cases.

Come middle this year, there will be Viya 3.4, with the analytics products on version 8.3

I managed to catch a glimpse of SAS Natural Language beta at work. To build Chatbots with easy flow. No official release date yet but rumour has it that it might be released end of this year.

We will be seeing a lot more new exciting solutions on Viya being released in the coming months.

So what happens to SAS 9.x? <next slide>

SAS platform strategy

9.4 & ™

SAS Viya

SAS 9

one SAS platform

Slide 10 Notes

First and foremost, don't worry, SAS 9 is still here and supported for the foreseeable future
SAS 9.4M5 was released in Dec 2017, together with Viya 3.3. Rumour has it that by end of this year, there will be a SAS 9.5 release.
This demonstrates SAS' continuous support for both 9 AND Viya. SAS 9 would not be going away anytime soon.
With interconnectivity between the architecture, both SAS 9 and Viya makes up the ONE SAS PLATFORM.

There are already interconnectivity built into the latest release of Viya and SAS 9.4M5 and more to come in the upcoming releases.
E.g. What does it mean for SAS EG users today? EG can leverage the CAS engine within Viya seamlessly. Same interface that you're used to to do your work, while leveraging the benefits of Viya OPEN architecture.

Note: There WILL be a SAS 9.5 – in the SAS User Group for Administrators, Margaret Crevar - Manager, SAS R&D Performance Lab - has stated it will be Released in November... she just won't commit to which year..(!)

Not just SAS – partners, too..

TERADATA

Hewlett Packard
Enterprise

ORACLE®

Deloitte.

IBM

KPMG

CISCO

intel

Capgemini

redhat

cloudera®

HORTONWORKS

Accenture Applied Intelligence

zencos

DELL EMC

Selerity

metacoda®
productivity through metadata visibility

saasnow
powered by amsio

Slide 11 Notes

- The event wasn't just SAS there showing the wares, we had over 500 partners at the event. Some key partners had booths set up in the QUAD – showing off products, services, giveaways
- This year's SGF, SAS had a clear focus and emphasis on partnering that is stronger than ever before. It is mentioned in this year's keynote messages by Jim Goodnight and Oliver Schabenberger and the conversations I had with the partner companies there.

Personal highlights



Slide 12 Notes

On top of all the things shared, the keynote speakers, key messages and roadmap from SAS leadership, additional highlights include:

1. Got to see IoT, SAS ESP streaming in action – simulation of trunk sensor on the road with real time reports
2. Doug Cutting – creator of Hadoop. He actually brought the yellow elephant belonging to his son there.
3. Took a selfie with the blue bear in front of the Denver Convention Centre

MADE IT A HOLIDAY

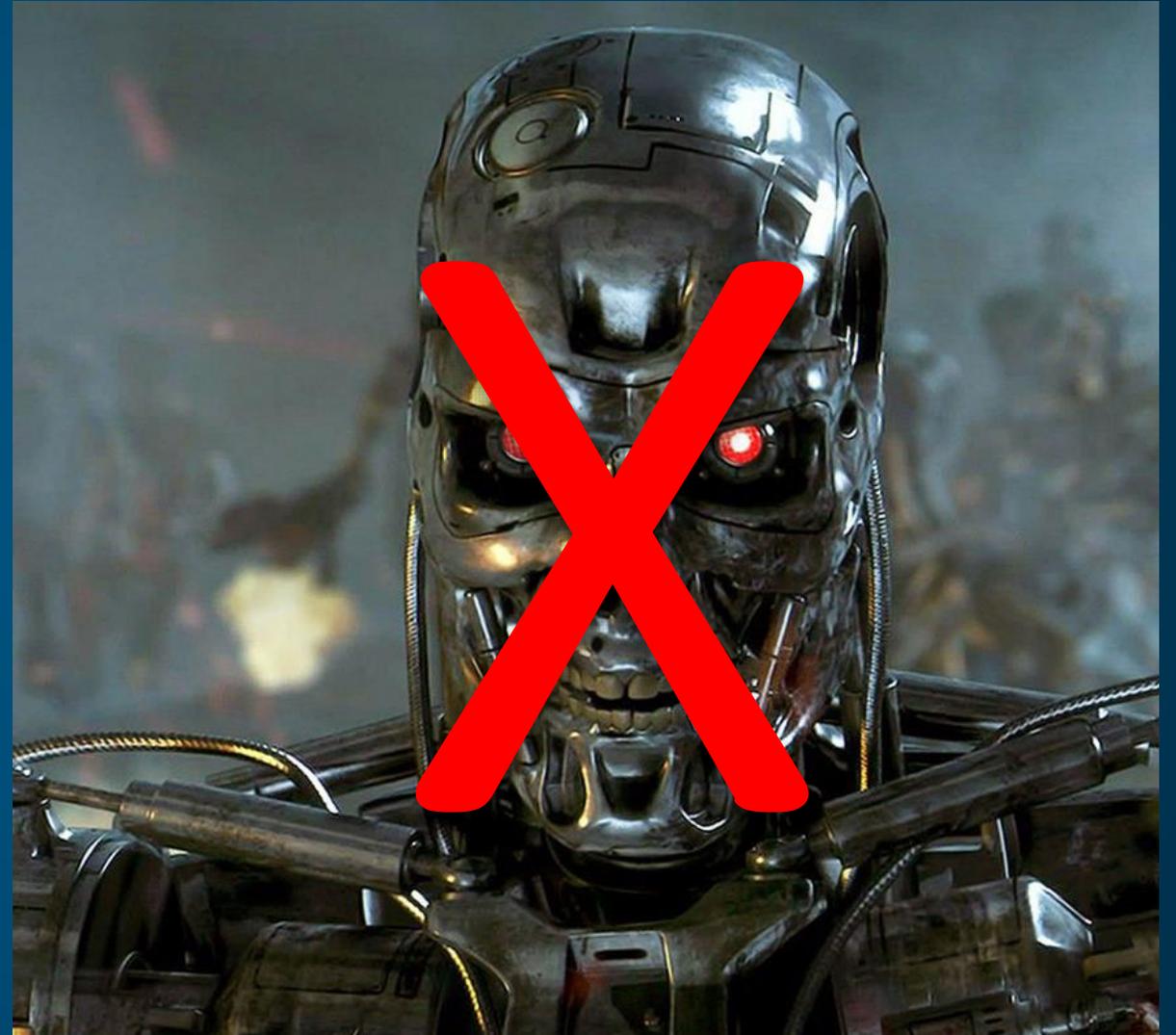
1. Watched a Major League Baseball game that weekend – Rockies were playing
2. Got to see the NFL Colorado Broncos changing room at the Mile High Stadium. (1 mile = 5280 feet = 1609 m)

However, what I really appreciate being there is the ability to talk to the people who are the brains and engineers behind the tools.

Names like Margaret Craver, Tony Brown – SAS Platform Performance Lab, Mark Gass – Director of R&D LASR

Wrap-up

- Analytics economy
 - Past: Technology Drives Analytics
 - Now: Analytics drives Technology
- Artificial Intelligence doesn't mean our ~~lives~~ jobs are in danger
- Still need people:
 - To design
 - To create
 - To ask the questions..
 - To have ideas!!



Slide 13 Notes

- We are well and truly into the Analytics Economy. Now Analytics drives Technology (Hadoop was invested to solve the big data problem).
- But this doesn't mean AI will kill all our jobs. In fact, it is more exciting times where analytics will free us up to do the exciting stuff. To design, create and be curious to ask the questions, to have ideas.
- Human will not be replaced. People are still needed – to think up new ideas, to be curious and ask the questions that we need AI to answer.
- People like SAS analysts and SAS support will be in even more demand within the analytics economy and create the AI platform a reality
 - Let's be curious, let's be bold and excited to imagine the extraordinary that changes the world we live in, making them better with analytics.

[Next slide]

Next SAS Global Forum



See you next year

SAS® Global Forum 2019
Dallas, TX // April 28 - May 1

SAS® GLOBAL FORUM 2019

Want to go?

- Regular Attendee
 - Register & pay your own way (make it a holiday!)
 - Write a business case to attend on behalf of your organisation
- Contributed Speaker
 - Visit the SGF 2019 website in Aug/Sep timeframe
 - Propose a paper & have it accepted for presentation
- Special Invited Speaker
 - Contact your SAS representative for details
 - Potential to have your T&E reimbursed
- Practice & get known
 - Present at your local user group

Slide 14 Notes

Next SAS Global Forum 2019, Dallas TX – April 28 – May 1

You could pay your own way?

Or convince your employer to send you?

OR..

Submit suggestion for invited paper.

Think you have a great idea for a paper?

TELL US!

We may pay your flights, registration & accommodation to tell us about it.

Another way to get known (and maybe asked) is to present locally.

- *Hope what I've shared with you have Excited you, Inspire you, and got you Enthuse to attend the next SAS Global Forum April 28 – May 1 2019*
 1. *Hope I gave you an insight on what all the fuss is about of the SAS Global Forum*
 2. *Hope you have gained some understanding of the benefits you could get from the SGF. Be it thought leadership, thought provocation, an extraordinary experience, knowing the community, gaining a wealth of*

Hope this inspired you to do the extraordinary

Links

- **Download proceedings**

- https://www.sas.com/en_us/events/sas-global-forum/program/proceedings.html

- **Streamed sessions**

- https://www.sas.com/en_us/events/sas-global-forum/virtual.html
- Opening session (search “SAS Global Forum 2018” on YouTube)
- <http://video.sas.com/>



Thank you

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