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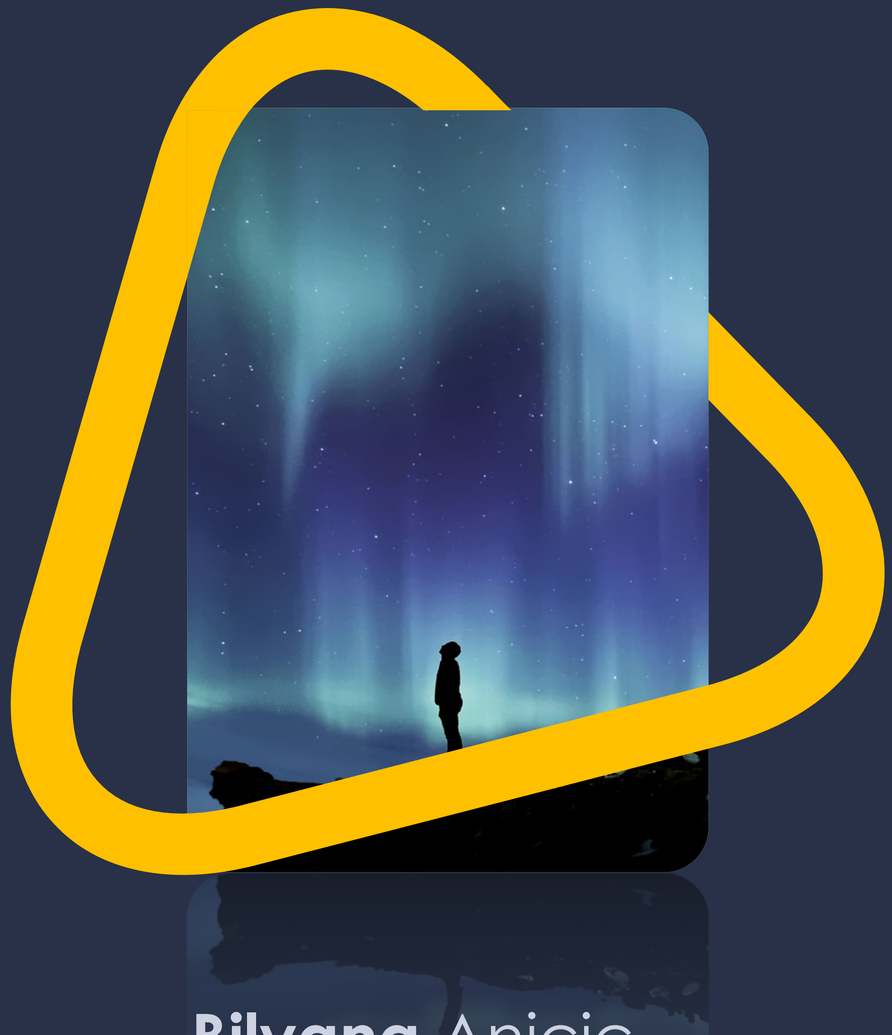
Digital Transformation
Mapping our Future



GeoIgnite Conference
Ottawa June 18th, 2019

Bilyana Anicic
Aurora Consulting

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Timeline

What can I tell you in 25-30 minutes?

Thoughtline

Digital Transformation

Start with WHY

Citizens expect us to change.

New drivers for change

New needs for predictive insights coupled with the unprecedented amounts of data and computing processing power available.

Connecting the dots

People, data, processes and technologies for new insights.

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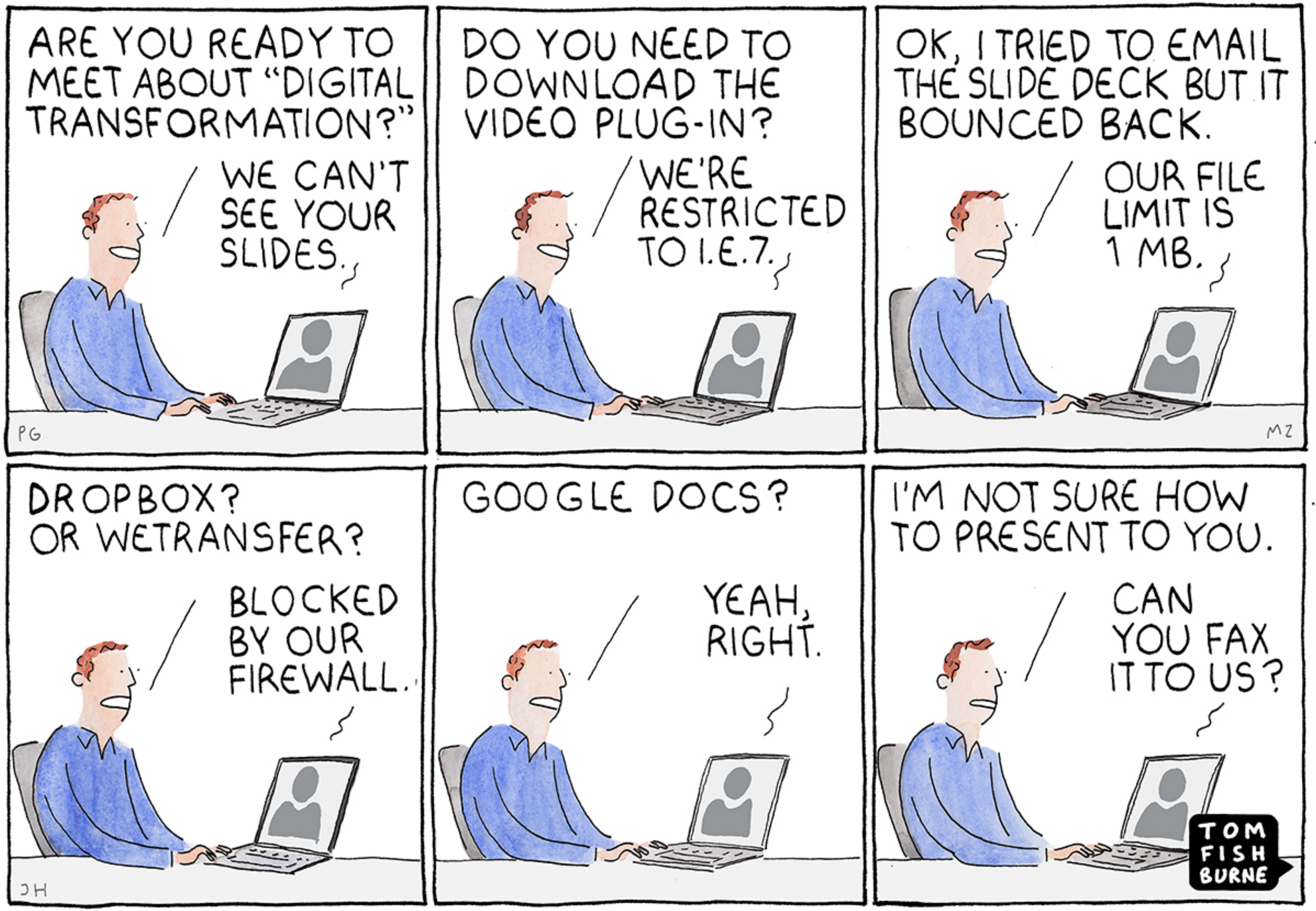

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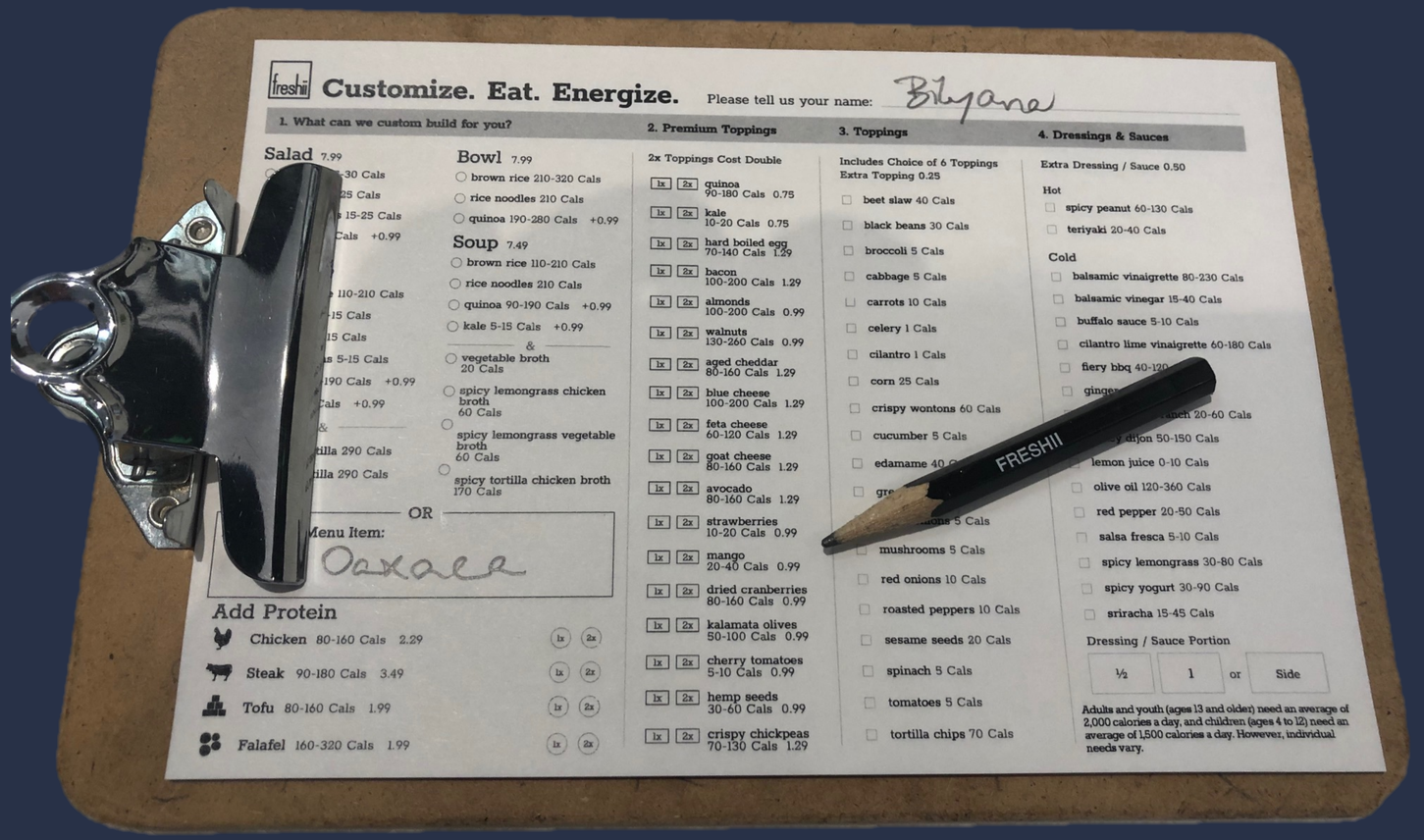
WHY Change?

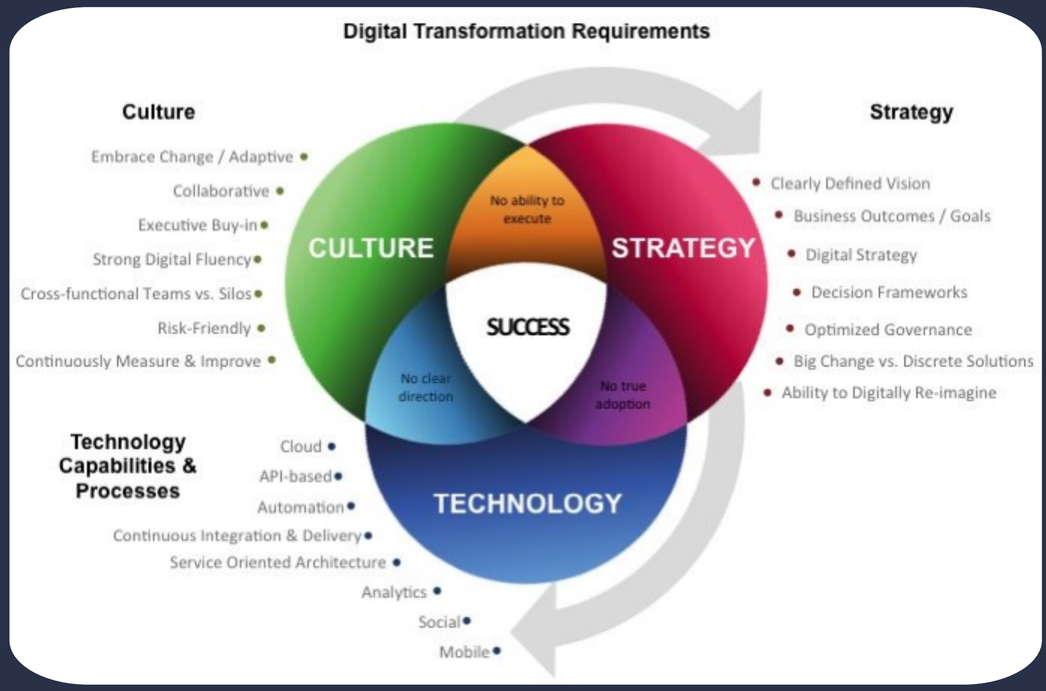


New technologies have changed the way **citizens expect** services to be delivered, whether from business or government

Digital Transformation

Going paperless.

Digital technology enabling
Innovation and Creativity



Affecting both individuals and businesses

UNDERWAY

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Complex decision support applications

DIGITAL TRANSFORMATION

THE FUTURE IS NOW

Drivers for change.

01

Mobility

02

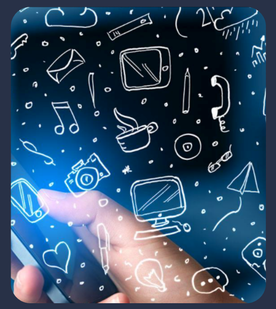
Connected Society

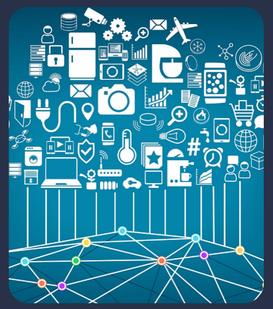
Citizen Expectations

03

IoT Data

Open Data





DATA & TECHNOLOGY INNOVATION

NEW INSIGHTS NOW

“Data and analytics will become the centerpiece of enterprise strategy, focus and investment” Gartner

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LOCATION.
LOCATION.
LOCATION.

RETAIL AUTONIMOUS CARS SMART CITIES SUSTAINABLE DEVELOPMENT PUBLIC HEALTH

REAL ESTATE DEFENCE ENVIRONMENT AND CLIMATE CHANGE TRANSPORTATION FINANCIAL INDUSTRY

INSIGHTS

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Cloud

Unlimited computing power
Cheap processing
Compile data from different sources

IoT Data

Media
Imagery
Sensor
Earth observation
Health and habits
Location

Algorithms

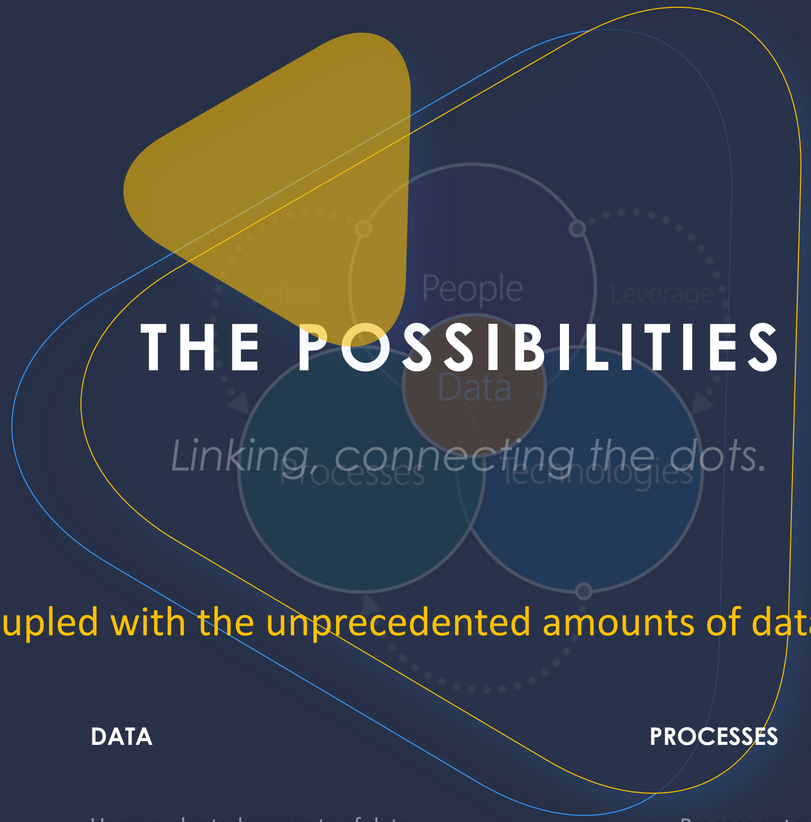
Analytics
AI

Blockchain

Secure by design
Encrypted (Hash Tables)
Distributed

New opportunities.

New insights.



THE POSSIBILITIES

Linking, connecting the dots.

New needs for predictive insights coupled with the unprecedented amounts of data and computing processing power available.

PEOPLE

Data Scientists who will combine the skills and talents from often disjointed areas of expertise (e.g. geomatics and sociology).

DATA

Unprecedented amounts of data untapped – due to various limitations

PROCESSES

- Process automation
- The bigger picture
- The implications for sustainable development
- Spatial analysis
- Policies and Standards

TECHNOLOGIES

- Cloud computing
- IoT
- Artificial Intelligence – AI
- Integration of a geographical component into business intelligence processes and tools, often incorporating spatial database and spatial OLAP tools.
- Niche apps

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People will be key to leveraging and making use of the new technologies, data and insights.

Enterprise Architects will reduce complexity.

Heterogeneous teams are more creative than homogeneous ones.

Diversity = better strategic choices

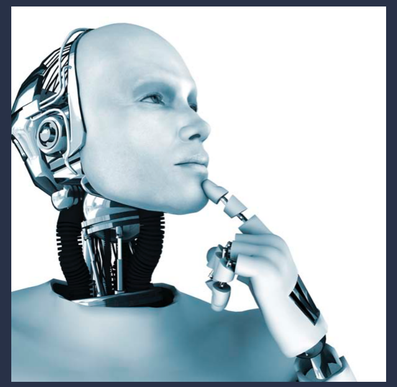
Privacy and ethics concerns are mounting and need to be given a proper attention.

PEOPLE

Stories
DATA SCIENTISTS CLOUD ARCHITECTS ENTERPRISE ARCHITECTS

Stories
DIVERSITY

Stories
PRIVACY AND ETHICS



MODERN DATA SCIENTIST

Data Scientist, the sexiest job of 21th century requires a mixture of multidisciplinary skills ranging from an intersection of mathematics, statistics, computer science, communication and business. Finding a data scientist is hard. Finding people who understand who a data scientist is, is equally hard. So here is a little cheat sheet on who the modern data scientist really is.

MATH & STATISTICS

- Machine learning
- Statistical modeling
- Experiment design
- Bayesian inference
- Supervised learning: decision trees, random forests, logistic regression
- Unsupervised learning: clustering, dimensionality reduction
- Optimization: gradient descent and variants

PROGRAMMING & DATABASE

- Computer science fundamentals
- Scripting language e.g. Python
- Statistical computing package e.g. R
- Databases SQL and NoSQL
- Relational algebra
- Parallel databases and parallel query processing
- MapReduce concepts
- Hadoop and Hive/Pig
- Custom reducers
- Experience with xaaS like AWS

DOMAIN KNOWLEDGE & SOFT SKILLS

- Passionate about the business
- Curious about data
- Influence without authority
- Hacker mindset
- Problem solver
- Strategic, proactive, creative, innovative and collaborative

COMMUNICATION & VISUALIZATION

- Able to engage with senior management
- Story telling skills
- Translate data-driven insights into decisions and actions
- Visual art design
- R packages like ggplot or lattice
- Knowledge of any of visualization tools e.g. Flare, D3.js, Tableau

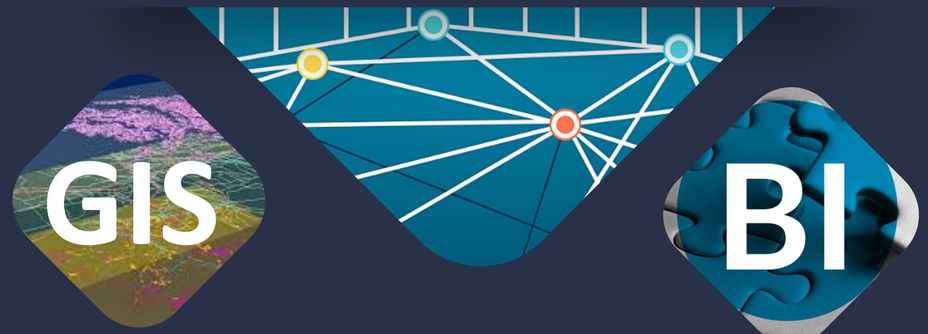
MarketingDistillery.com is a group of practitioners in the area of e-commerce marketing. Our fields of expertise include: marketing strategy and optimization; customer tracking and on-site analytics; predictive analytics and econometrics; data warehousing and big data systems; marketing channel insights in Paid Search, SEO, Social, CRM and brand.

Marketing DISTILLERY

Diversity

BEYOND BUZZWORDS

Cross-Functional Teams



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AURORA

Explain **Complex**

01

Explain **Challenging**

02

Explain **Completely new**

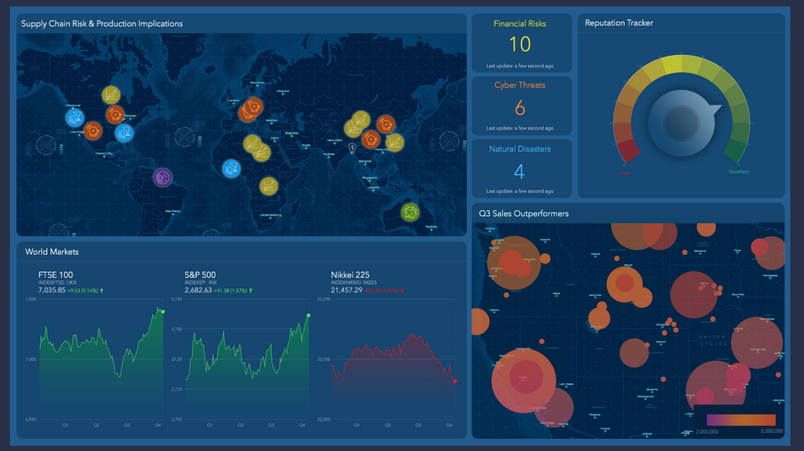
DATA

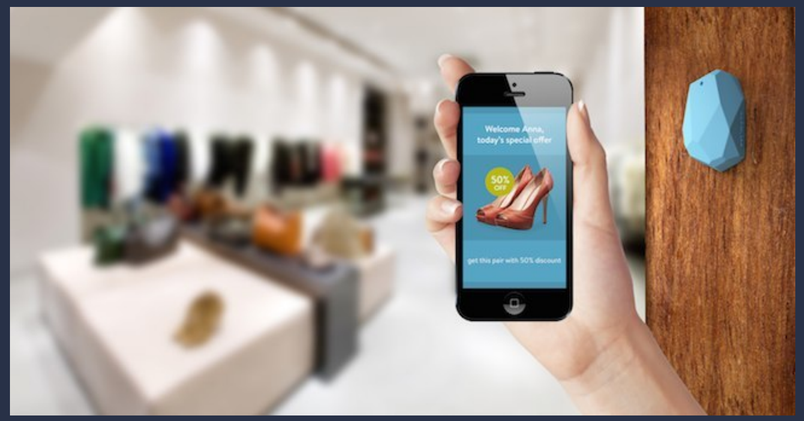
03

Explain **Specialized**

04

From Data to Insights





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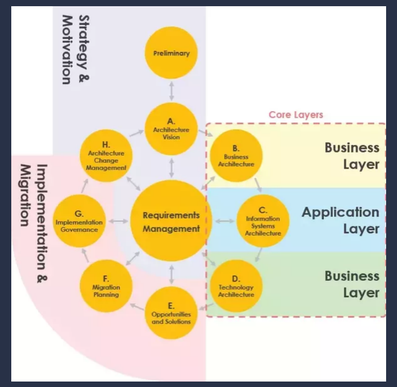
Enterprise Architecture for reducing complexity.

Mitigating risk by setting operating standards.

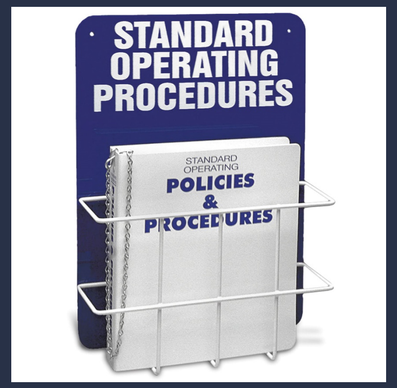
From Big Data to Analytics to Decisions.

PROCESSES

Stories
ENTERPRISE ARCHITURE



Stories
OPERATING STANDARDS



Stories
PROCESSING

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#cloud, #lidar, #AR #VR #AI

TECH

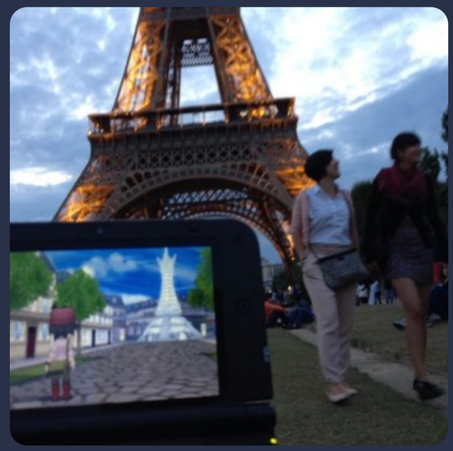
The technologies and buzzwords of the future include cloud computing, satellite and micro sensors on your wearables, LiDAR, High Performance Computing HPC, Augmented Reality AR, Virtual Reality, Twinning, autonomous vehicles AV, artificial intelligence AI, and the list goes on…

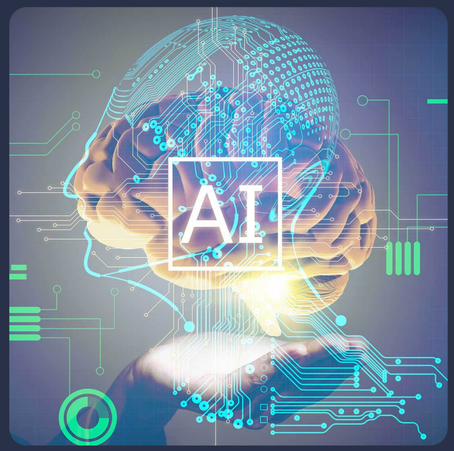
Niche Apps will be delivery mechanisms of choice for targeted application of geospatial data and processing.

Connectivity and delivery mechanisms
APIs and NICHE APPS

New reality
AI/AR/VR

New technologies
HPC, LiDAR





Availability and processing
CLOUD

Government of Canada >> Canadians

DIGITAL TRANSFORMATION IS UNDERWAY

Government >> Responsibility >> Citizens

- GC IM-IT Transformation Strategy
  - Workplace Mobility
  - Cloud First
  - Cybersecurity
  - Ethical AI
  - High Performance Computing (HPC)
- Enabling Innovation and Economic Growth
- Improving Communication and Collaboration

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Bear these **five points** in mind

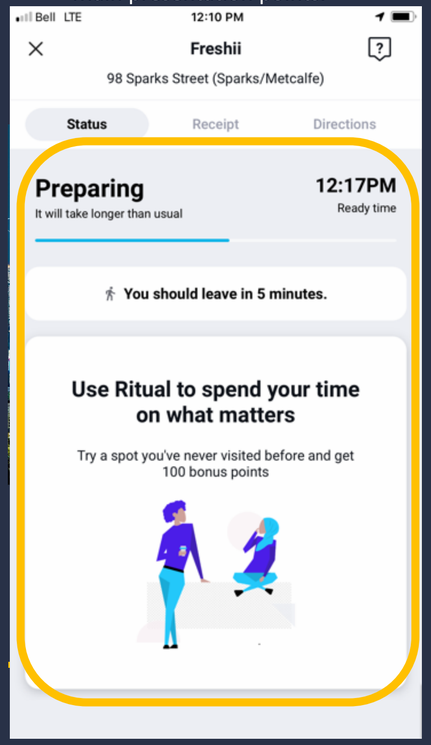
Main presentation points.

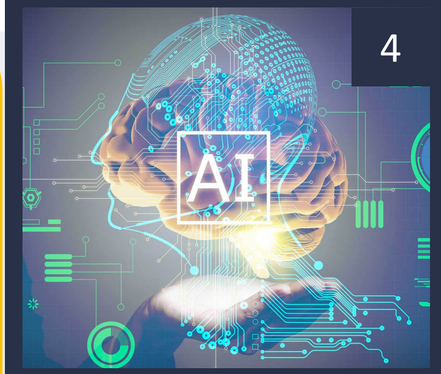
PEOPLE

Geomatics specialist are the Data Scientists are the future

DATA

Unprecedented potential of data previously untapped, Open Data





PROCESSES

Automation, AI, Machine Learning, Policies and Standards

TECHNOLOGY

Cloud, AI, HPC, APIs and niche apps to collect, process and visualize data and deliver insights

Connecting data relating to people, places and things uncovers **invaluable insight** which improves decision making, facilitates a deeper understanding, and enhances engagement.

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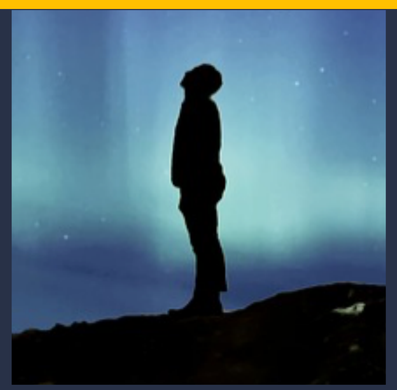
Explain **Technologies**

Explain **Processes**

Explain **People**

MERCI !

THANK YOU!



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