Red Hat
Enterprise Data
and Analytics Team

Uncertainty Opens the Door to a More Data-driven future: The Data-informed Decision Making Equation

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- Welcome everyone to the NC Tech Association's STATE OF TECHNOLOGY Event.
- As you know, this year's theme is Data: The New Natural Resource.
- I have the honor of kicking off an exciting two day virtual conference,
- and hope to share with you a vision of how to build a data culture and the data literacy essential for our professions and our world to thrive.
- There is no better time than the present!
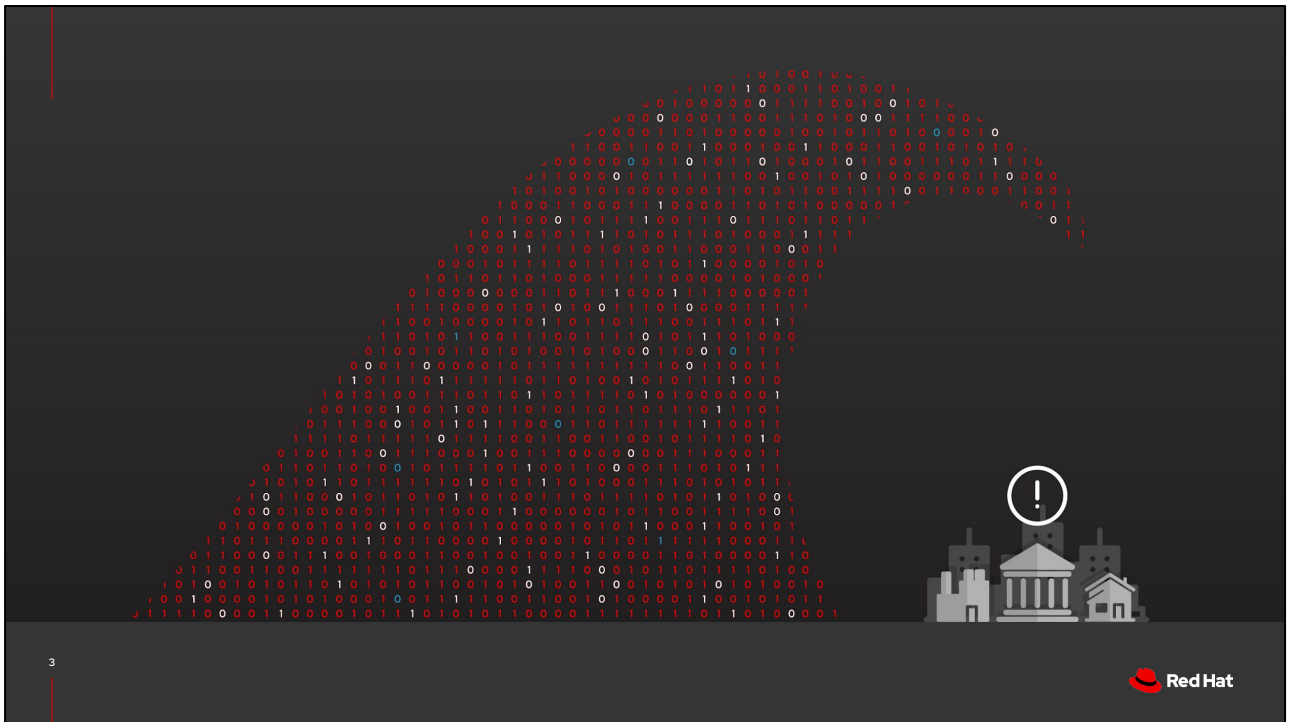
- Whether it's quarantine guidelines for the public or supply chain management getting PPE into the right people's hands as quickly as possible, never before has understanding data been so critical to everyone making potentially life-saving decisions.
- While the COVID-19 pandemic is less than a year old, it has fundamentally changed all of our lives...and provided a platform for extolling the virtues of data, and the importance of a data literate populace.
- Let's take a look at what we can learn from the COVID-19 pandemic to help prepare ourselves, and our organizations, to overcome any data-related obstacles that may be heading our way.

1st - DATA QUALITY
- One of the first challenges that became apparent centered around data quality.
- In the early days of the pandemic, it quickly became clear that there was **very limited data** available.
- We have seen **different definitions** of what constitutes infection rates and mortality rates from state to state, country to country.
- The **time dimension** that is being used for reporting infections varies as well - we've seen it is based on date of test, or date of result.
- **Metrics, or KPIs, are inconsistent** as well - in May, it was reported that the state of Virginia was using both Covid tests and antibody tests to report infection rates, thus inflating the overall number of tests given, which slightly held down the apparent percentage of positive infections.
  - https://www.washingtonpost.com/local/virginia-antibody-covid-19-tests-northam-reopening/2020/05/14/fa9f62b0-95e4-11ea-82b4-c8db161ff6e5_story.html?fbclid=IwAR0FxPrx0F0TqvhIWxqwFhiiD_oTt6v0FWgHyHSn7D0Ni_BnMSArvxvwSrs
- Without high quality, trusted data, how confident could health experts, public policy leaders, and the like be with the decisions they needed to make -- quickly?
- And how do we help the decision-makers in our own organizations be confident with the quality of the data being provided?
- But just as using data to inform decisions began its prime-time prominence, a number of data-related challenges began to appear.

- And many of these challenges mirror the issues that we face in our own organizations every day.

How RH has dealt with these challenges:
1. **Definitions**, role of **councils & DLT** (ex. - net new customer, industries, sales stages, renewal rates)
2. **Data Certification** process
    a. Certified data labeled differently
    b. Must be certified for inclusion in a production, enterprise dashboard
3. **Enterprise Data Sets**
    a. Common sets of data - sometimes integrating multiple sources, business logic applied (& documented)

If time, address the 80% rule -- Where is the balance between getting data quickly in critical situations versus the quality of the data (or having enough quantity to ensure it's reliable)?

RIGHT ANALYTICS, at the **RIGHT TIME**

- Many of our organizations focus on tracking and reporting **descriptive** and **diagnostic** data.
- And that makes sense from a **historical perspective**.
- Even in our personal lives, we gather what data we have, try to investigate **why things happened** (in the past), and then **make better decisions** moving forward.
- But many organizations are **just beginning to get serious** about the **predictive** and **prescriptive** work that needs to be done.
- Thinking again about Covid-19, I think we can all agree that the **information on case numbers and the source are important** pieces of information for us, and **decision-makers**, to know.
- But **how valuable is that information compared to when we combine it with information on when and where cases will peak**,
- and **what actions we need to take to both address the current situation as well as future outbreaks**?
- If I'm in the role of a **decision-maker**, I am **definitely looking for the latter** when making decisions that could affect the **reputation of my company**, **millions of dollars in investments**, and the **livelihood of our employees**.
- The lesson we can learn here is that we need to continue to **push the boundaries on the types of analytics** we are doing with the data that we

- have, to **provide as full a picture as possible**.

How RH has dealt with these challenges:
- Analytics leadership team
- Analytics community of practice
- Data science community/council/peer review
- Moving from dashboards to **models and predictive information**
- Role of **analytics solution leaders - their primary goal** is to get the predictive and prescriptive products **ADOPTED**

+ Great data visualization

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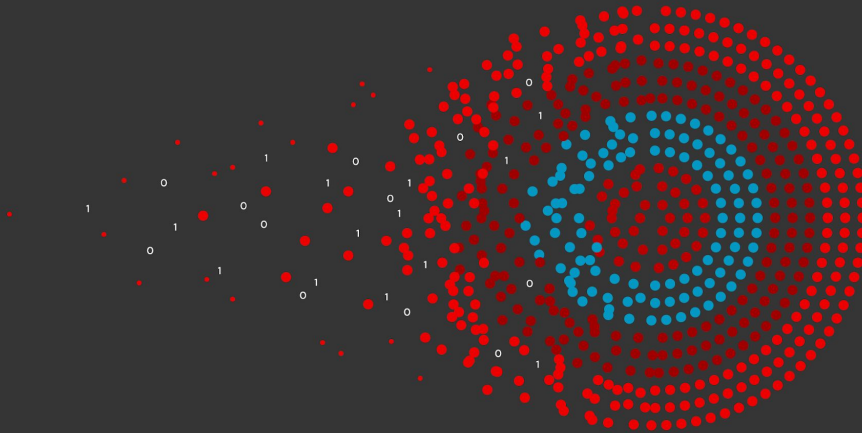
GREAT DATA VISUALIZATIONS
- The importance of good data visualizations that **help tell a story** has, perhaps, never been more important than now.
- Alongside worry and panic comes a strong desire from the **public at-large** for information they can **readily interpret**.
- I'm sure most of us saw the **steady stream of data visualizations on the news**, LinkedIn, Facebook, or other social media platforms.
- And some of the **pitfalls of bad visualization** were, and still are, **clearly present**:
  - Using the **wrong type of chart** for the data being shown;
  - **a lack of inclusion of data sources** and **freshness** of data;
  - **changing the scale** from one point in time to another, which masked the increase in infection rates in some states
  - and **overloaded charts** that are almost impossible to read.
- There were also some **very good visualizations** and dashboards created that **helped inform the public** on a variety of issues.
- **Most organizations struggle** with these same issues:
  - there are some good visualizations that **decision-makers can rely on**,
  - and **many that don't provide much value or, at worst, misinform.**

How RH has dealt with these challenges:
- Enterprise visualization tool (for most of our org)
- Community building and enablement efforts

- Style guides for consistency
- Training on visualization and storytelling best practices
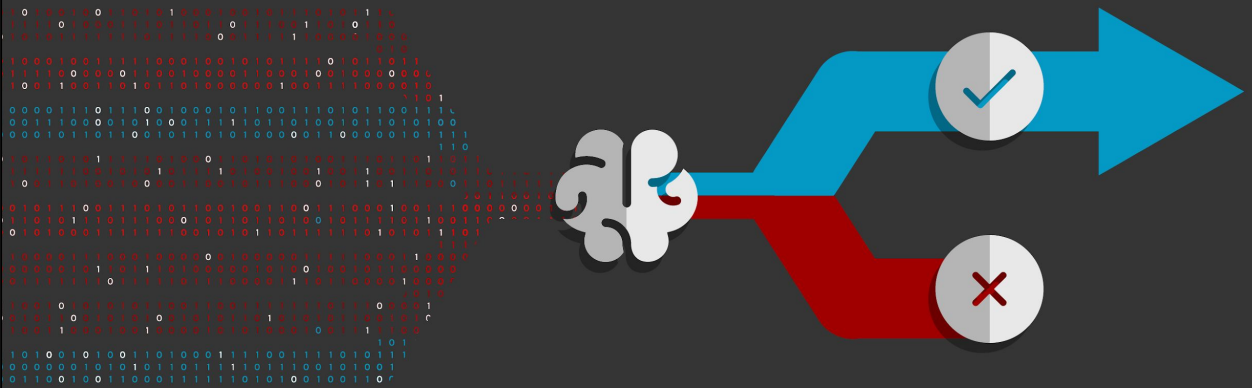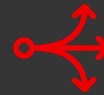
DATA LITERACY

- Once we have good (or better) data quality AND considered the different analytical techniques we can use, AND visualized that data in a way that tells a good story, **the work is still not done**.
- We need everyone in our organizations to be able to **understand** what they are being presented with and to **ask good questions of that information**.
- In other words, **we need data literacy**.
- It's important that we take a step back and **define what we mean** when we talk about **data literacy**.
- There are many definitions out there but at RH, **we define data literacy as the ability to read, work with, and communicate with data**.
- And that **communication piece is key**.
- The ability to all speak the **same "data" language,** understanding **dialects** and levels of **fluency**, is what really allows organizations to thrive.
- As I've already mentioned with some of the shortfalls on data as it relates to Covid-19,
- **poor data literacy** may in fact be **the biggest issue we face**.
- While news organizations and public health briefings did their best to inform the public,
- the reality is that the **general population has limited knowledge to interpret much of the data provided**.

- Few of us are health experts and not all of us understand health statistics, such as the **importance of R0** (# of ppl infected by 1 person), **sampling statistics**, etc.
- Most of the decisions that were ultimately made in regard to lockdowns ended up being made at the State level, with some Federal guidance.
- But this **raises some good questions about whether that approach really makes sense** given what we know about the differences between at-risk and not at-risk populations.
- These are the types of questions that require a **certain level of data literacy to ask**, and **eventually answer**.
- I'm confident that the data will continue to be analyzed so that a good approach to decision making can be made if, and when, we encounter another situation like this.

How RH has dealt with these challenges:
- RH has **built its own data literacy program**, which we continue to expand upon.
- There is not a single approach to embarking upon an effort like this.
- RH is focusing on **educating and supporting ALL employees** across the organization with a **diverse set** of data literacy skills that will help Red Hatters make, or support, good decision-making.
- And to build an effective data literacy program, it's about **more than training** -- you have to think about how you:
  - **engage** the organization (through dialogue with leaders, working with the data and analytics community, cross-functional collaboration, and communicating to everyone in the organization),
  - **develop skills** (through formal and informal learning opportunities), and
  - **enablement** (through technology augmentation and other resources/support)

DATA INFORMED DECISIONS

- High quality data, analyzed properly, then visualized with a supporting story,
- and a more data literate workforce ready to read and understand it,
- **good data-informed decisions are *possible*** and can be made with **greater levels of confidence** over and over again.
- But we **cannot make the assumption** that just because we have done all the supporting work that good data-informed decisions will always follow.
- We all **make decisions every single day in both our personal and professional lives**, but how many of us have been trained in how to make good decisions?
- And in the **steps that need to be taken in order to have the best chance** of making a good decision?
- It's important that we provide training and support not only for leadership but **for everyone in our organizations to understand how to make good data-informed decisions**.
- There's no magic solution out there that guarantees a 100% success rate.
- But having a decision-making framework, along with data literacy skills, will increase the chances that the **best decisions are being made** and will **provide clarity/line of sight** to the rest of the organization about how decisions are being made which will increase confidence and support.

How RH has dealt with these challenges:
- Red Hat is building a data-informed **decision making workshop**.
- This workshop will provide a decision-making framework that can be used as a guide by all Red Hat associates.
- It will also focus on the **types of data that can, and should, be used to help inform** the decision making process at each step of the framework.
- We also have dashboards, like our **executive dashboard**, that provide our executives with a current and accurate information at-a-glance.
- These dashboards are being connected to our **operational dashboards**, **where the decisions are being made.**

IN CLOSING

- This is definitely **a journey** we are all on.
- **How we approach data and analytics**, how we **interact** with it and **make decisions** with it
- Will be **one of, if not THE biggest factor, in determining** which businesses **thrive** and which **tread water** or **don't survive** over the next decade.
- Don't wait for the next crisis - move forward **now**, feel that **sense of urgency**, and prepare everyone.
- Start on the journey, or speed up the journey you're already on
- No matter how **small or large** your organization is, or your budget, you can make a difference!

Thank you

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Thank you and enjoy the rest of the conference!