

# Let's talk about MLOps

**Christian Barra // PyCon SK 2019**

**@christianbarra**

**A couple of questions.....**

**@christianbarra**

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**"You are not paid to program, you're not even paid to maintain someone else's program, you're paid to deliver solutions to the business."**

**David Cheney**

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# **1. Let's talk about DevOps**

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**It's a culture**

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**and a set of practices**

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**and capabilities.**

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**"... to shorten the systems development life cycle while delivering features, fixes, and updates frequently in close alignment with business objectives."**

**Wikipedia**

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- **CI/CD**
- **Version control**
- **Monitoring**
- **Learning organization**
- **Logging**
- **ADR (Architecture Design Review)**
- **Runbooks**
- **Lean development**
- **Agile stuff**
- **Documentation**
- **Testing**
- **Alerting**
- **Metrics**
- **SLA**
- **Deploy strategy**
- **....**

# **It's not a set of tools**

- **It's not just CI/CD**
- **It's not Jenkins**
- **It's not Airflow**
- **It's not K8S**
- **It's not the morning standup**
- **...**

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**It's not a ROLE.**

**IMHO.**

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**The true essence of  
DevOps is empathy.**

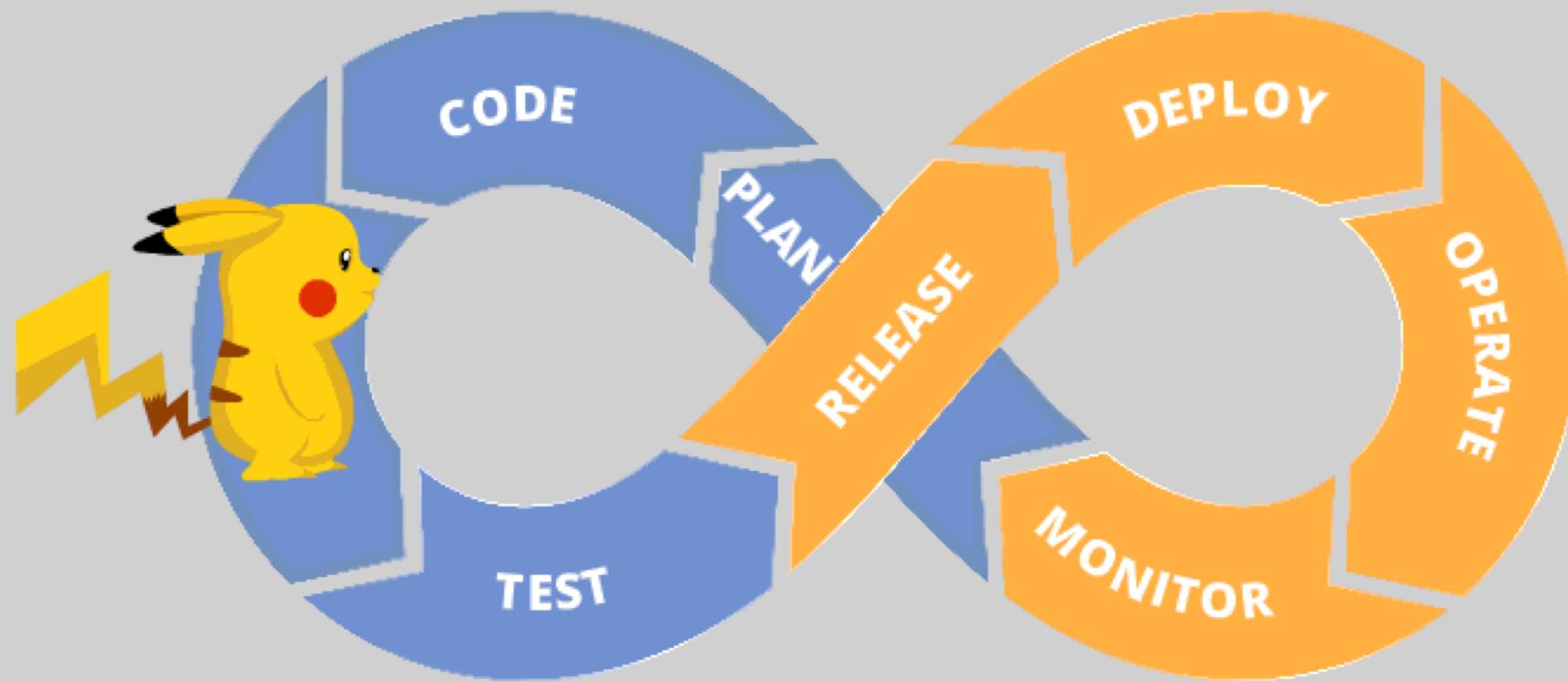
**Jeff Sussna**

**@christianbarra**

**Let's talk about *Pokemon.***

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edureka!



Pokemon Go - Riding on DevOps principles

**It's a never ending process of  
continuous improvement....**

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**using the feedback  
that you get...**

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**when you have  
end to end ownership....**

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**of your systems.**

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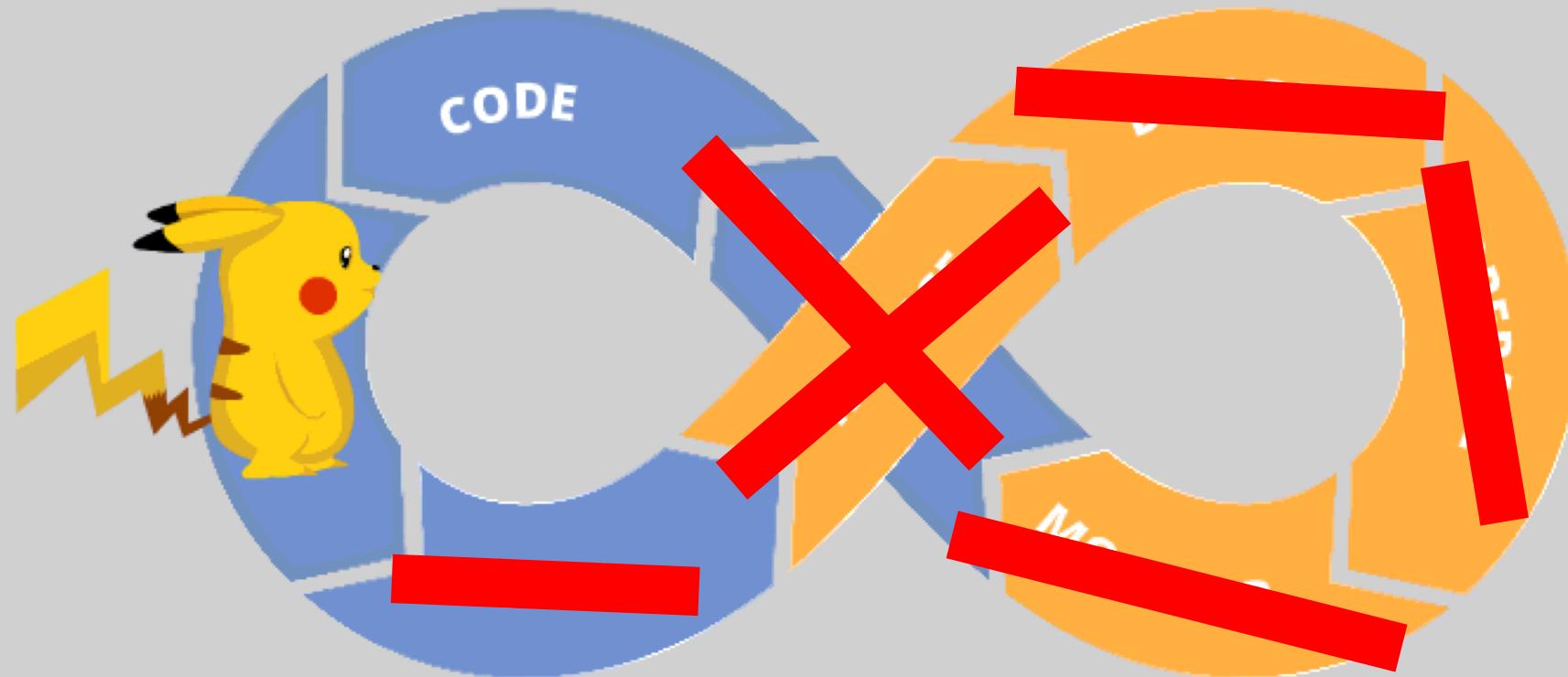
**You build it, you ship it.**

**And keep it running.**

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## **2. What's the problem with DS/ML?**

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Pokemon Go - Riding on DevOps principles

# **How did it happen?**

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**No idea (🤔).**

**But let's focus on the solutions.**

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# **3. MLOps**

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# **Machine Learning Operations**

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**“[...] applies to the entire lifecycle – from integrating with *model generation* (software development lifecycle, CI/CD), orchestration, and deployment, to health, diagnostics, governance, and business metrics.”**

**Wikipedia**

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**WAT???**

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**Isn't DevOps 🤔 ?**

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**Or maybe not 🤔 ?**

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**You code.**

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**You train the model.**

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**You *ship* the model.**

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**You *operate* the model.**

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**They don't look so different** 🤔

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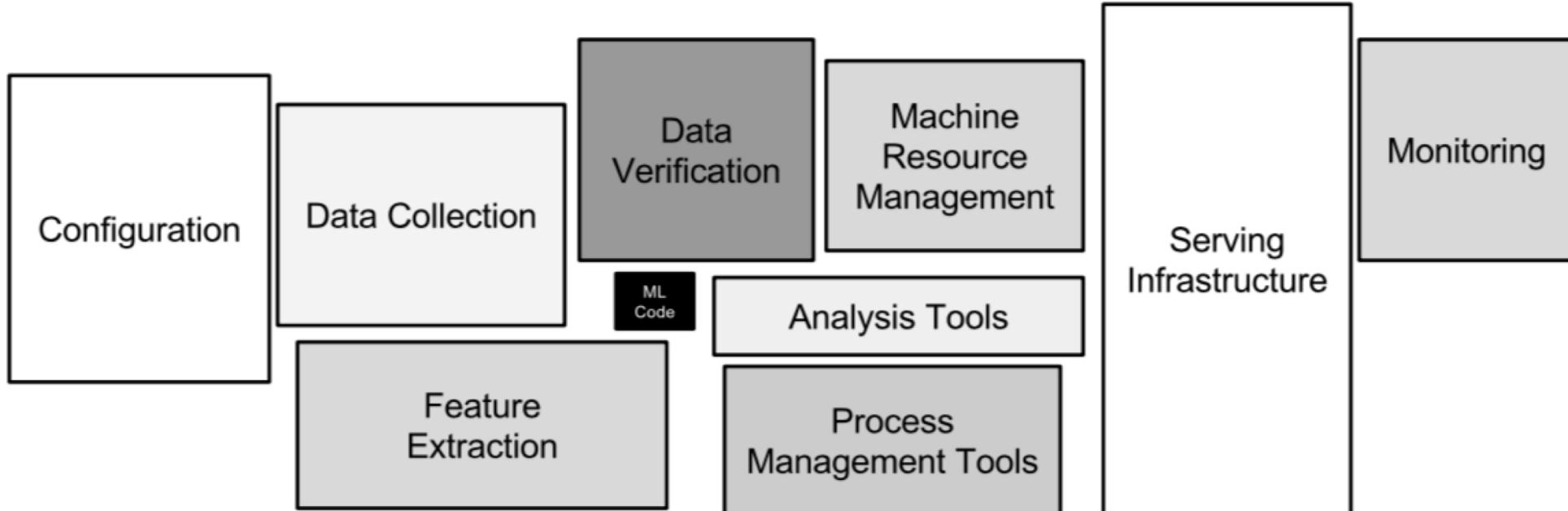


Figure 1: Only a small fraction of real-world ML systems is composed of the ML code, as shown by the small black box in the middle. The required surrounding infrastructure is vast and complex.

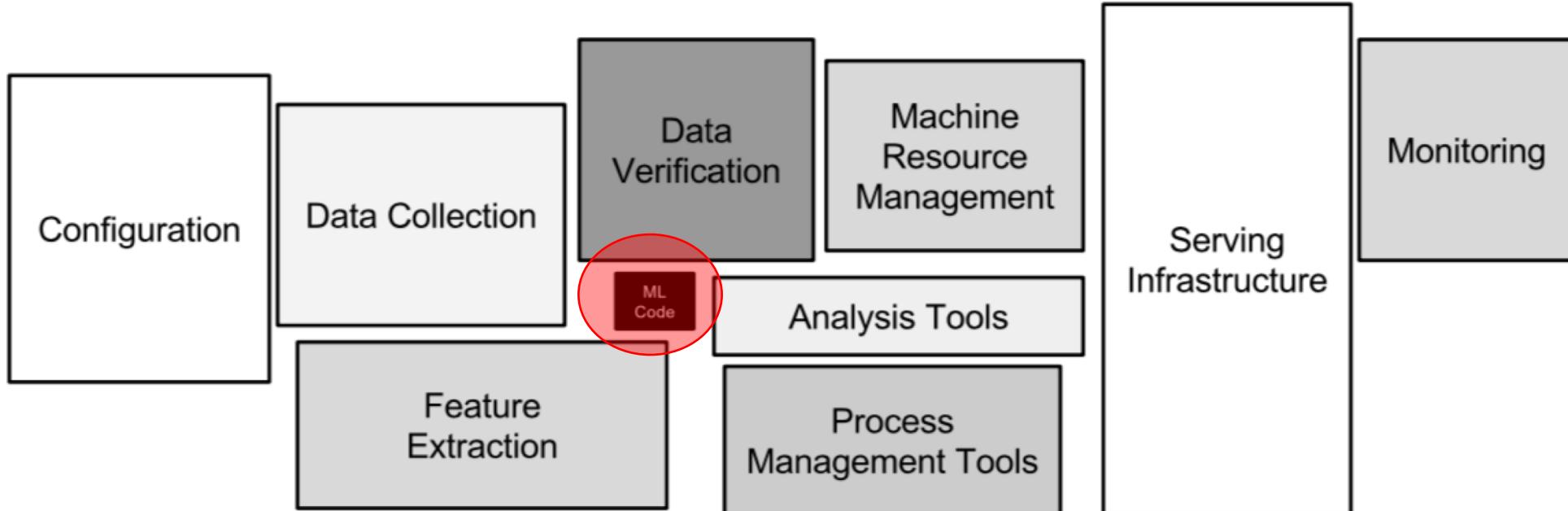


Figure 1: Only a small fraction of real-world ML systems is composed of the ML code, as shown by the small black box in the middle. The required surrounding infrastructure is vast and complex.

**Don't try reinvent every  
software best practice from  
scratch.**

**Again, IMHO.**

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# **4. Production Readiness**

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**A measure of your capability of  
shipping business features in a reliable  
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compromising quality.**

**@christianbarra**

**A measure of your capability of  
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way, *constantly* and *without*  
*compromising quality.***

@christianbarra

**Production readiness is a spectrum.**

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# **Things that contribute to production readiness**

- **Version control**
- **Business requirements are satisfied**
- **CI/CD**
- **Observability (monitoring, logging, tracing, ...)**
- **Runbooks**
- **Orchestration system**
- **1 click deployment/rollback**
- **Canary deployments**
- **Testing spectrum**
- **Documentation**
- **Health checks**
- **Many more stuff...**

# **5. [WIP] Production readiness checklist for ML**

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# **What's the goal of having a checklist?**

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**Increase quality by setting clear requirements/processes.**

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**You do not release  
until everything is** 

**Ideally.....**

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**1. You use version control.**

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**2. (Almost) everything is  
automated.**

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**3. You can introspect your  
system**

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# **4. You have metrics about your system**

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**5. You release often and don't have a release day.**

**Every day (apart from Friday) is a good day!**

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# **6. Your models are services.**

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**7. You can run different versions of your models at the same time.**

Which means you can compare them with real data and rollback easily.

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# **7. You defined what is reproducibility**

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**These are all things that you can  
learn.**

**It's much more easier through osmosis and  
cross pollination.**

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**Which means putting DS and  
SW closer.**

**Remember? empathy!**

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**And PLS stop putting random  
words together....**

**@christianbarra**



# DevOps Production Readiness Engineer

Zurich, Switzerland

To sum it up...

*The market leader in developing distributed ledger technology for settlements in the financial markets.*

## Role overview

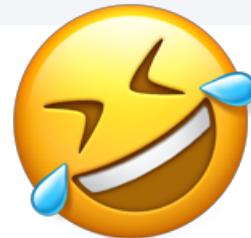
Distributed Ledger Technology is emerging within the financial markets, offering the chance for outdated, archaic systems to be modernized for the transaction driven global electronic markets





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# **Thanks**

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