


Performance Benchmarks from an IoT-Based Flood Warning Systems

Jacob Torres, PhD, PE, CFM, D.WRE (Torres & Associates)  
Evan Adrian, PE, CFM, ENV SP (Torres & Associates)



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### The Internet-of-Things (IoT): What is it?



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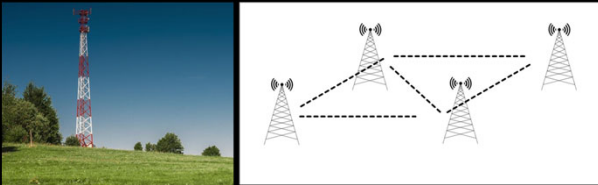
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### The Internet-of-Things (IoT): What is it?



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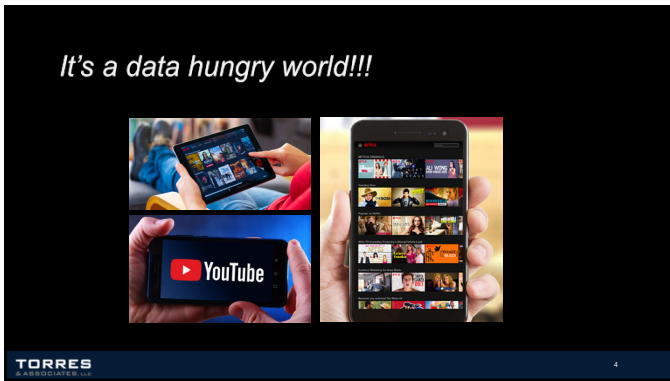
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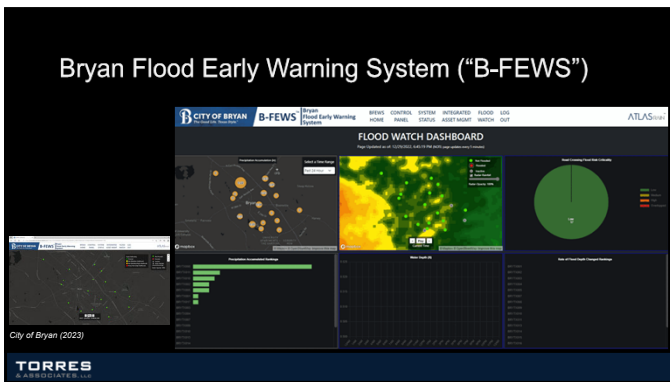
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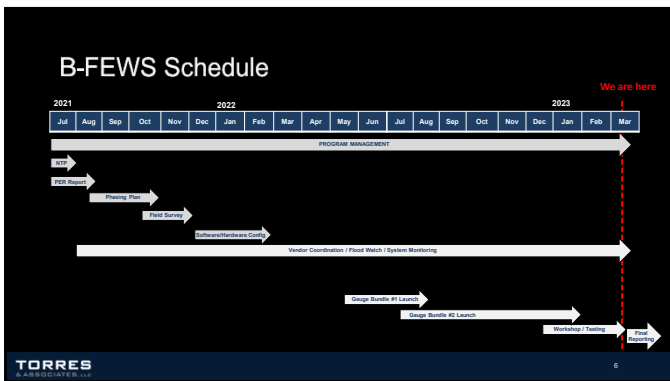
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## B-FEWS Performance Benchmarks

*Benchmark #1: Data Packet Loss* (Tot. Period of Record, Storm Conds., Pop. Surge)

*Benchmark #2: System Performance* (August 2022 Storm, December 2022 Storm)


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## Benchmark #1. Data Packet "Loss"

*Three (3) Gauges (BRYTX001, BRYTX005, BRYTX018)*




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## Benchmark #1. Data Packet "Loss"

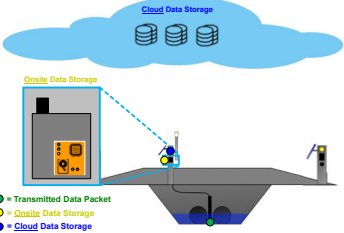
*Three (3) Gauges (BRYTX001, BRYTX005, BRYTX018)*


**Methodology:**

- ◆ Select longest serving gauges
- ◆ Onsite Storage versus Cloud Storage Data Retention

**Comparison Types:**

1. Total Period of Obs. Record
2. Storm Conditions
3. Population Influx / Surge




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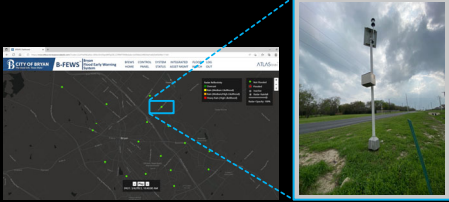
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**Benchmark #1. Data Packet "Loss"**  
 BRYTX001 – Old Reliance Road @ Carters Creek Tributary



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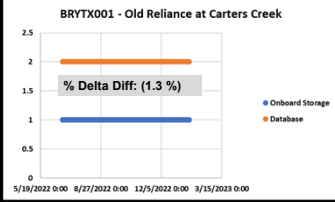
**Benchmark #1. Data Packet "Loss"**  
 BRYTX001 – Old Reliance Road @ Carters Creek Tributary

Period of Obs Record: 8/25/22 – "Present" (3/5/23)  
 Data Timestep: 15 minutes

Measurements:  
 Water Level, Rainfall, Temperature  
 Atm. Pressure, % Humidity



**BRYTX001 - Old Reliance at Carters Creek**



% Delta Diff: (1.3 %)

Legend: Onboard Storage (blue), Database (orange)

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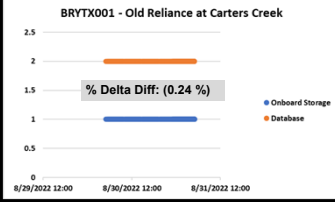
**Benchmark #1. Data Packet "Loss"**  
 BRYTX001 – Old Reliance Road @ Carters Creek Tributary

August 30<sup>th</sup>, 2022 Storm  
 Data Timestep: 15 minutes

Measurements:  
 Water Level, Rainfall, Temperature  
 Atm. Pressure, % Humidity



**BRYTX001 - Old Reliance at Carters Creek**



% Delta Diff: (0.24 %)

Legend: Onboard Storage (blue), Database (orange)

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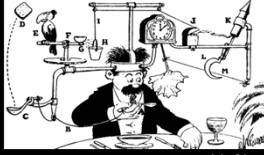






### Summary

- ◆ IoT viable alternative to low cost water sensing but is not a substitute to traditional gauging
- ◆ Suitable in areas with acceptable cellular coverage.
- ◆ No perfect technology (tech evolves)
- ◆ Peer Review Publication
- ◆ Keep It Simple Stupid (KISS)



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### THANK YOU!

Contact:  
Jacob Torres, PhD, PE, CFM, D.WRE  
jmtorres@torresassociatesllc.com

Evan Adrian, PE, CFM, ENV SP  
esadrian@torresassociatesllc.com



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