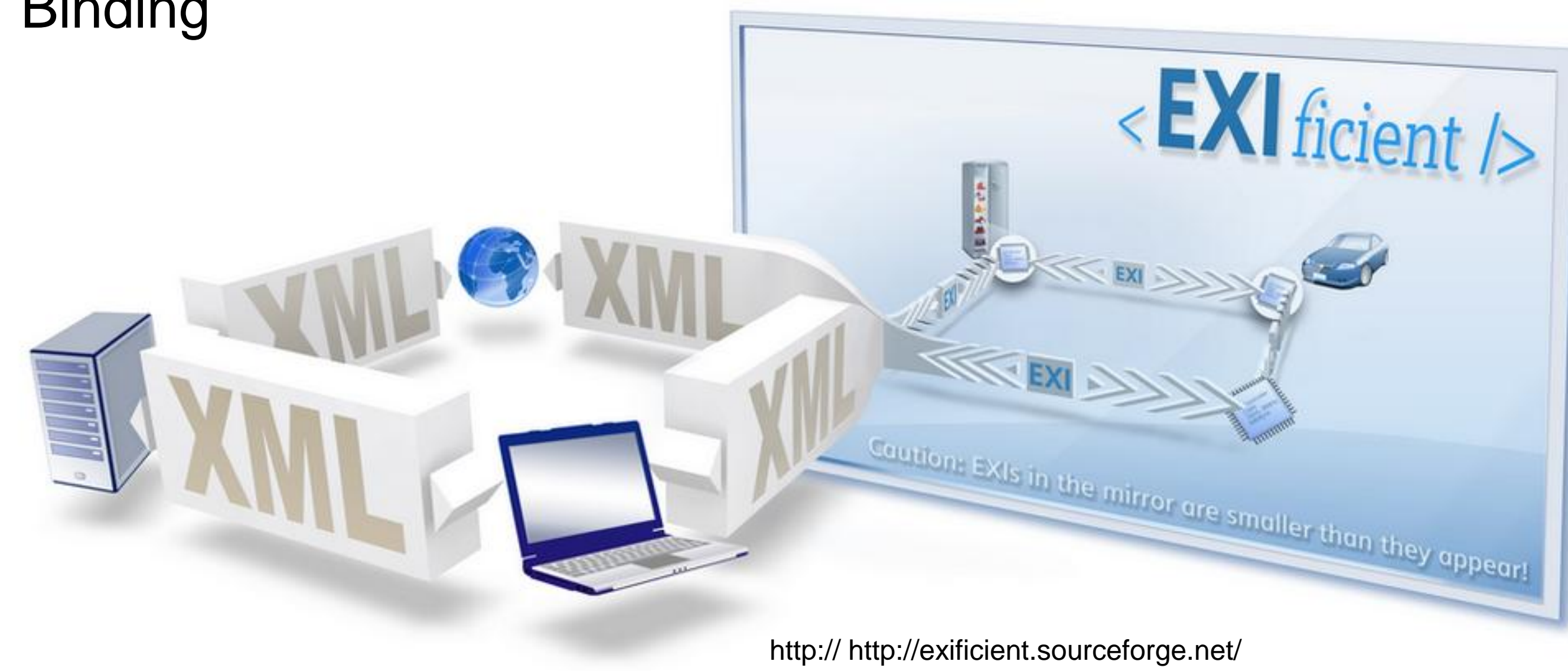# EFFICIENT XML INTERCHANGE (EXI) COMPRESSION AND PERFORMANCE BENEFITS: DEVELOPMENT, IMPLEMENTATION AND EVALUATION
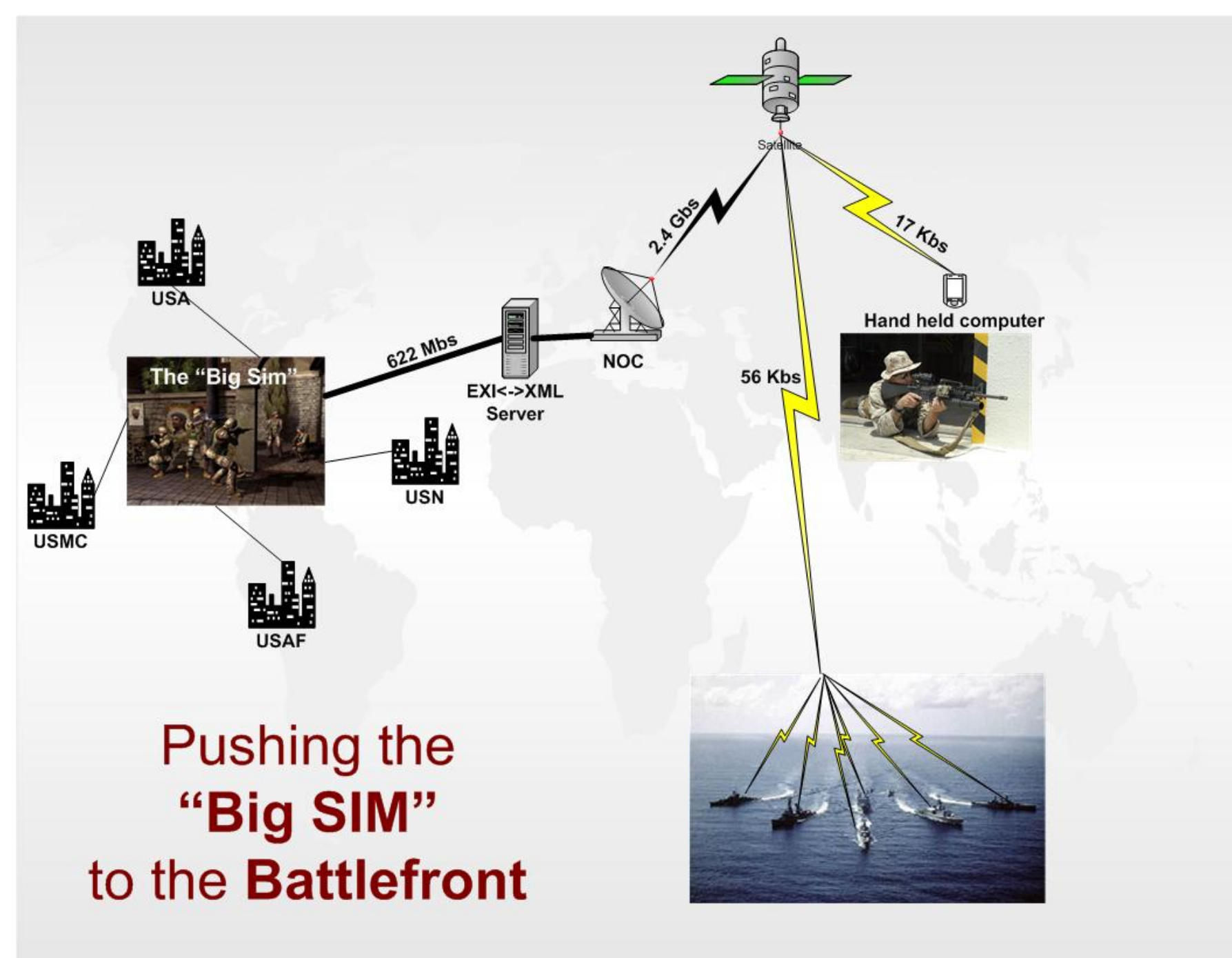
<MOTIVATION>

Compact & Efficient XML

Better Compression than other Techniques with Binary Data Binding

http:// http://exificient.sourceforge.net/

Bandwidth Maximization / Deepening The Web

Extends XML use to Low-bandwidth, High- Volume Domains

Pushing the **"Big SIM"** to the **Battlefront**

Standardization and Interoperability

World Wide Web Consortium Member Created

"Best of Breed Solution"

Application To DoD

- DoD is Heavily Invested in XML
- DoD Files are often Numerically Intensive
- DoD Files are often Very Large
- Next Generation of Devices Supported
- DoD Tactical Networks are Bandwidth Limited

<PROBLEM STATEMENT>

Network Edge Devices Unable To Process Native XML Format (Battery, CPU, Bandwidth)

- XML is VERBOSE
- XML is Text Only = Computationally Expensive
  - String to Numeric Conversions
  - Memory Intensive
  - Power Demanding

Net-Centric Warfare Requires XML

- Every Sailor and Soldier is a Sensor (Low Bandwidth mobile edge)
- System of Systems Interoperability (the DoD Information Warfare vision)

Why Not GZip

- Because it Doesn't Address Processing Efficiencies
- Better Compression can be Achieved for XML

<SOLUTION>

Standardized Compact And Efficient Binary Xml Format: Efficient XML Interchange (EXI)

- Both commercial and open-source implementations available
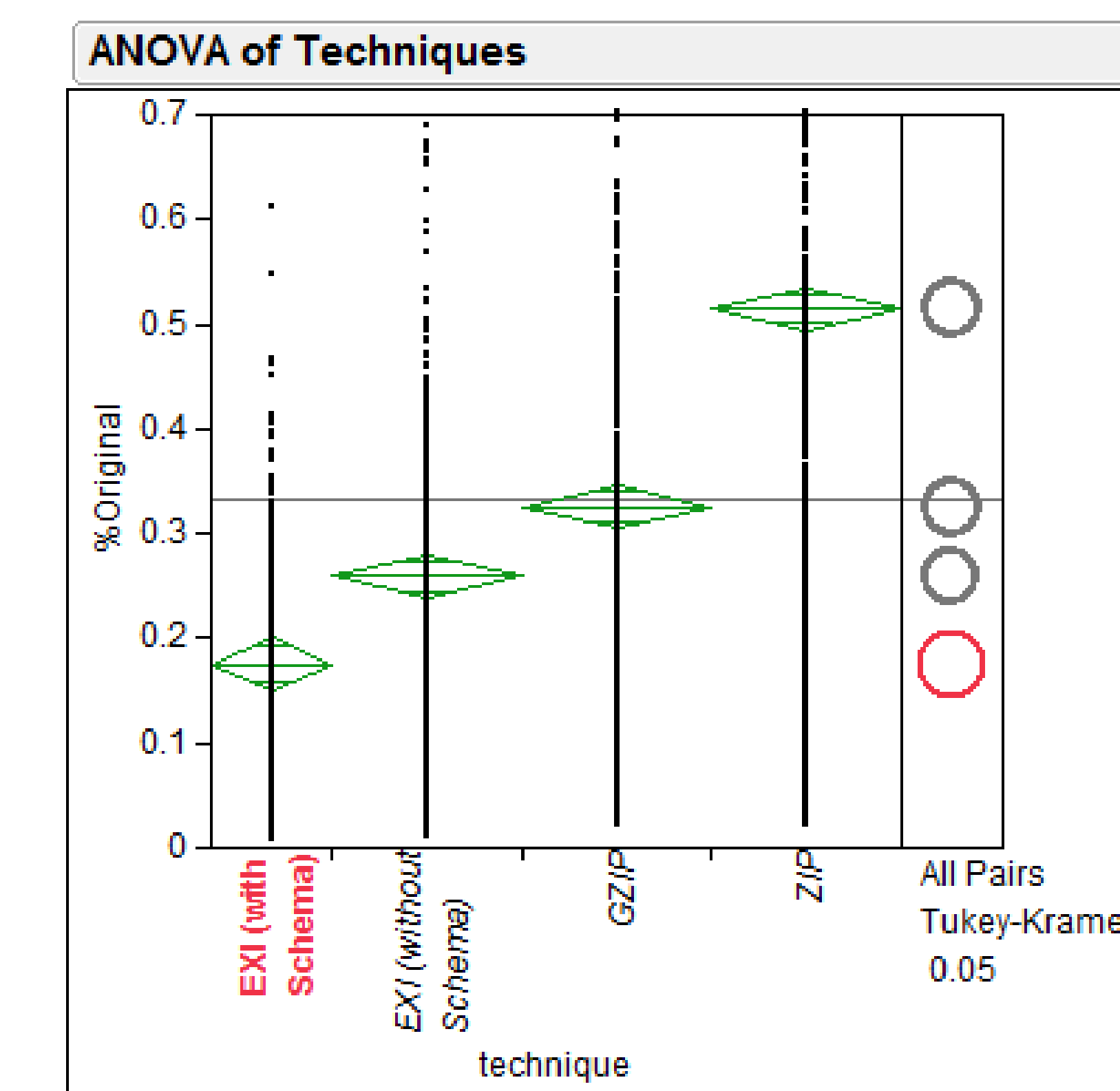

http://www.agiledelta.com/product_efx.html

W3C Endorsed

- Up to Hundreds of Times Smaller, Faster than Native XML
- 100% Compatible with XML, Including Schema-based, Free Form or Multiple-Namespace Hybrid XML
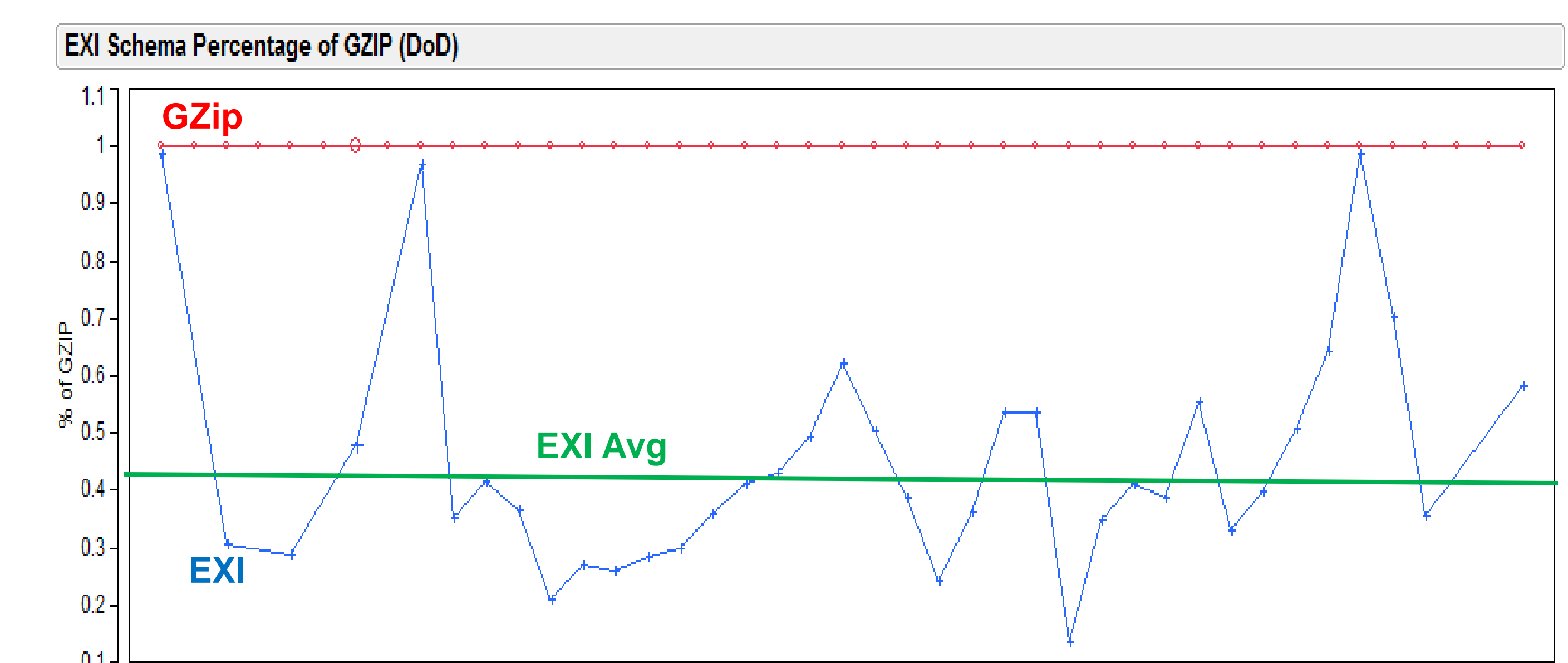
<CONCLUSIONS>

EXI Deliver Statistically Significant XML Improvements

773 XML examples compared in the W3C EXI Test Corpus hosted at NPS

Analysis of Common Compression Techniques at 95% alpha factor EXI (schema and schemaless) deliver statistically smaller files

EXI has DoD Specific Expectation of Doubling Bandwidth Potential

EXI compared to GZip (standard compression) in the long run average is 42% of GZip = 116% increase in bandwidth potential for DoD

Passes The Litmus Test Of Technology Development

- **More - D**eeper network penetration with all the benefits of XML
- **Better –** Usage with what you already have transparently
- **Faster –** Information exchange

<!-- FURTHER INFORMATION -->

Contacts:
Don Brutzman, brutzman@nps.navy.mil, 831.656.2149
Sheldon L. Snyder, slsnyder@nps.edu