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- * Evergreen (ERWOW) Rural Water for more CEU based classes

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Asset Management
Business Continuity Planning
Data Migration
IT, Security, GIS
Integration between Systems
Mobile and Cloud

Agenda



- Tech Fundamentals
- Basic Concepts
- Advanced Concepts
- Upcoming Trends
- Q/A

Why This ?



- Need to know concepts
- Need to understand basics of IT, and how it works
- Talk the same language with vendors and internal IT Dept, be on the same page
- Understand and learn where jargons are used
- IT negotiations, Cyber security, Data Center, DR, Mobility, and Cloud concepts

Tech Trends



- Spatial
 - GIS
 - CAD
 - Wireframes
- Databases/ Geodatabases
 - SQL, Oracle
 - No-SQL
 - Data marts, data warehouse
- Applications
 - Web, cloud, mobile
 - Digital data and archive
- Field
 - Ground Truth
 - Data Collection
 - Operations

Tech Trends



- Mobility and Workforce Mobilization
 - Work on Mobile smart devices – any OS, any Hardware, anytime, anywhere
 - Same user interface and user experience
- Cloud
 - Unlimited users, devices, and storage
 - Security, Resiliency, DR, Failover, High-Availability
 - No ransom, No IT involvement
- Remote Workforce
 - Remote meetings
 - Collaboration Workspace
- Cyber Security : Zero Trust
 - Default policy of denial instead of trust
 - Oldsmar, FL case study

Tech Trends



- Water/Wastewater Industry Tech and Automation
 - Iot And AI with Telemetry/ SCADA, Flowmeters...
 - AMR Smart Meters
 - Prediction and Autoassignments of jobs
 - Condition Analysis of Assets
 - Pipeline Failure Predictions: Condition and Robotics
 - Self Diagnostics
 - Intelligent Inverters or Intelligent VSDs
 - Forecast based production/ distribution
 - Artificial and Biological sensors for pollutant screening
 - Ecosystem support
 - Dryweather reserve
 - Alleviate Flood Risk
 - Tank Cleaners: Oil-free Robots
 - ...

Tech Trends



- Public Works and Asset Management
 - Maintenance and Operations
 - GIS vs CAD vs SCADA Based asset management - on the fly
 - Construction Management
 - Project Management
 - Emergency Management
 - Document Management - support rich multi-media
 - Planning and Budgeting, CIP, Comp Plans, Rate Studies
 - AI and Sensors, Predictive Maintenance, IoT
 - Natural Language Processing - BIG Data
 - Drones - Remote Recon, Surveillance, Data Capture, Inspections
 - CCTV Integration
 - Asset Recognition – QR code, bar code, picture
 - Virtual Reality, AVR
 - Free and unlimited cloud, update, upgrade, training, APIs

Tech Trends



- IoT
 - Sensor networks : no dark zones, pressure, vibration, flow, quality
 - SCADA and Telemetry
 - Automatic Meter Reads
 - Home and Workplace Automation
- BlockChain
 - Distributed consensus ledger
 - Transactions are batched and stored in a fixed structure called a block
 - Each block has a unique hash key
 - Fully traceable and verifiably untampered record in a chain—hence blockchain
- Crypto
 - Usage in Govt. and Private Sectors**
 - Digital Currency/ Payment systems
 - Land Management and Registrations
 - Voting
 - Identity management and deter thefts
 - Supply Chain traceability
 - Healthcare
 - Taxations
 - Entitlement Management

Tech Trends



- Autonomous and Connected vehicles
 - GPS Tech
 - AVL
 - Sensor Network, ML, AI
 - Mass Transit
 - EV vs. AV
- Big Data
 - Data Pool vs. Data Base
 - Natural Language Processing
 - SQL vs. no-SQL
- Industrial AI and AVR
 - Concept : Real time data : learn : ML
 - Visualize : Where things are, Scenarios, Voice and Gestures
 - Predict : Failures, Workload
 - Augment : Decision making and productivity

Tech Trends



- MLOps
 - Personal heroics vs. engineered performance
 - ML models
- Digital Workspace
 - Optimize individual and team productivity, collaboration, and the employee experience
 - Cost-effective offices that are interwoven with the remote experience
 - Reduce carbon footprint
- DEI Tech
 - AI in Diversity, equity, and inclusion (DEI) initiatives across the talent life cycle
- Rise of the Machines
 - Network of machines with ML and AI
 - Network of machines work together as a group

FUD Principles

- ❖ Fear, Uncertainty, and Doubt (FUD)
- ❖ Everywhere we see:
 - Attackers manipulate trust and confidence manipulator
- ❖ Cybersecurity recommendations
 - Implement Zero Trust
 - Many other recommendations
- ❖ Risk, Resiliency, Cybersecurity Surveys
 - about half of the population are making changes
 - 80-20 rule

Balancing Risk Rewards

- ❖ Long term and Short term Plans
 - Worst case scenarios: Biz Countinuity Class
 - Mock drills, dry runs, Table-Top exercises
- ❖ Observe and Learn
 - Less reinventing, more implementing
- ❖ Focus on your strengths
 - What can you control and influence
 - Build teams to cover blind spots
- ❖ Vulnerabilities
 - Code, database, geodatabase, APIs
 - Programmed to work, not to protect, no perfect code
- ❖ Zero trust
 - Unbreakable
 - Miz of products and services

The Future

- More IoT, Connected Systems, Sensors
- Wearable Technology: watch, glass
- Big Data and Analytics
- Drones
- NLP
- Time Travel: Scenarios
- 3D Models





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