

# Micro-Nano Technology Sol-Gel Corrosion Monitoring System

Prime Sponsor: Army Corps of Engineers



<http://www.etcs.ipfw.edu/~lin/CorrosionSensorSys/HomeCorrosionSensorProject.html>

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## *Project Team*

**Project Sponsor:** Richard Lampo and Michael McInerney

**Principal Investigator:** Max Shing-Chung Yen

**Co-PIs:** Paul I-Hai Lin and Dong Chen

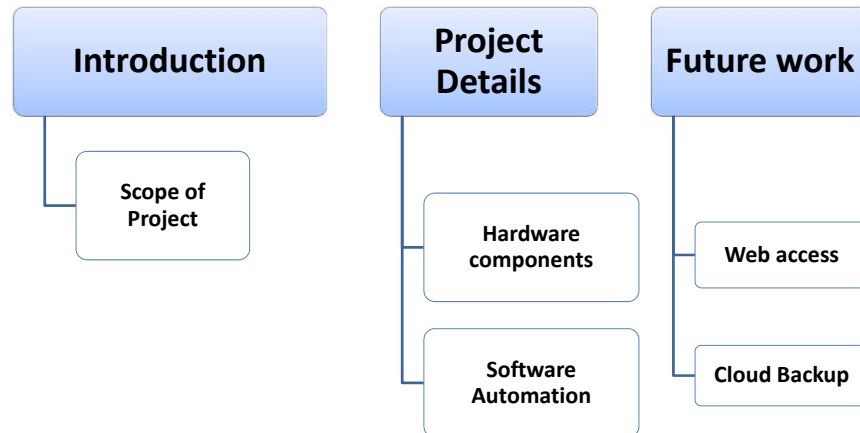
**Graduate Students:** Robert Timberly, MengWei Li, Muhammad Shoaib Mansur

**Undergraduate EE Student:** Steve Groff

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## Executive Summary



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## Introduction

- All materials to some degree are susceptible to deterioration by their environment.
- Corrosion is one of that multibillion dollar cost to modern society
- A computer-based corrosion monitoring system for an Army Bridge

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## Hardware Components



Embedded Computer  
Server Unit Box



Sensor Electronic Box with  
attached corrosion sensor

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**Embedded Computer Server Box with RS 485  
Communication**

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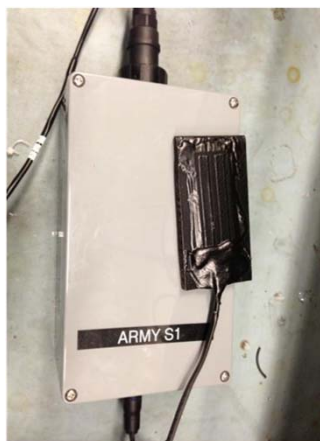
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**Inside View of Sensor Electronics Box**

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**Sol-gel sensor**



**Coal-tar epoxy coated sol-gel**

## Different Types of Sensors

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Coal-tar epoxy coated Cylindrical

## Different Types of Sensors

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## Software Data Extraction



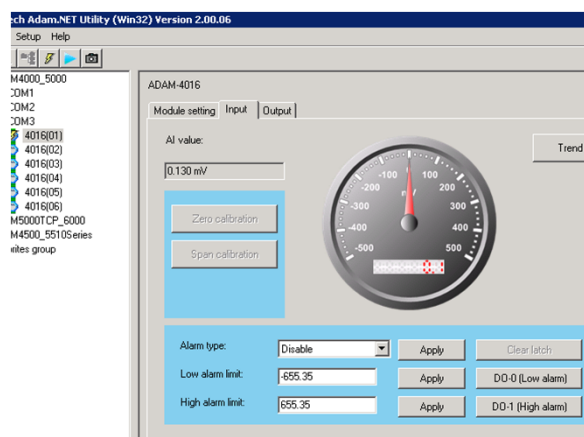
ADAM .NET  
utility



*Automation  
through VBscript*

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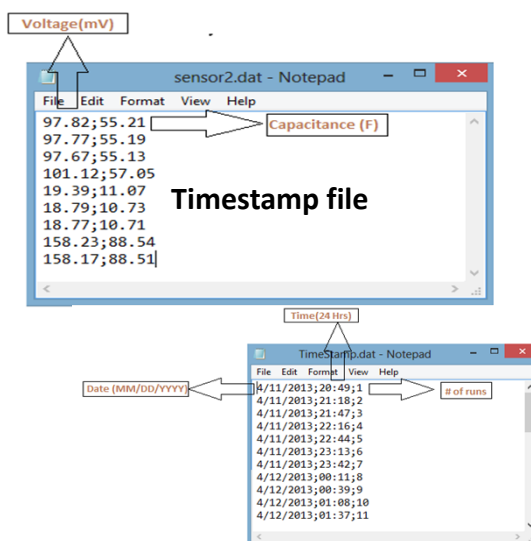
**ADAM Utility Interface**

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**Sensor file**

**Timestamp file**

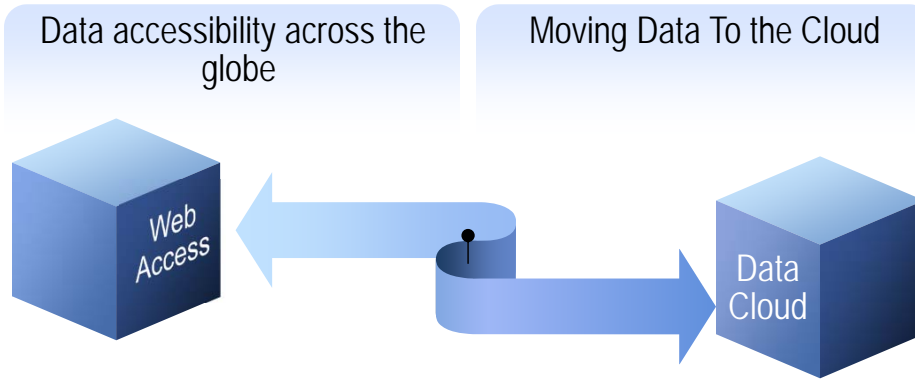


**Field description of data files**

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## What the future holds?



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## Demonstration and Q&A



System