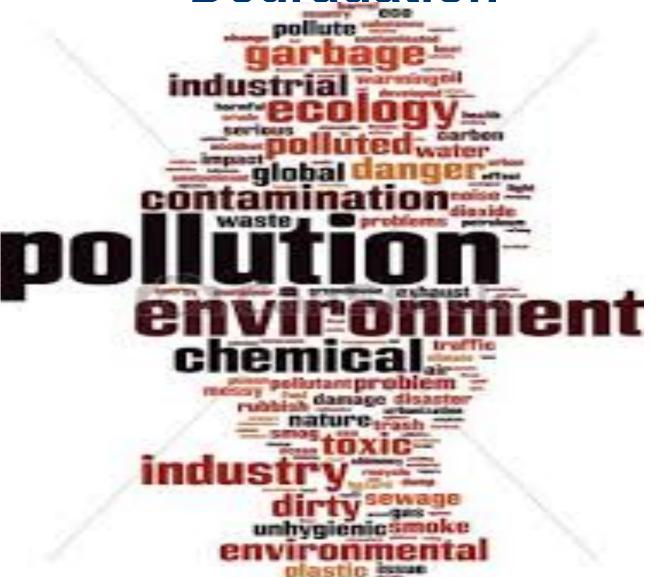


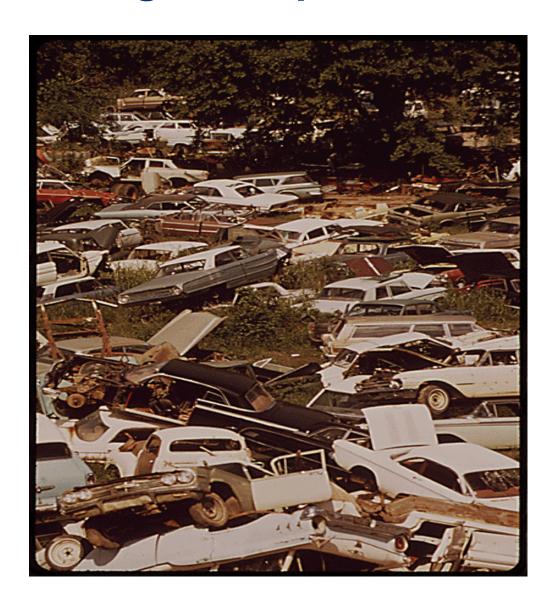
# **Environmental Engineering- A Look Back & Glimpse to the Future**

Kris Morico, PE, BCEE, CSP, D. WRE, ENV SP, F. ASCE Global Leader – Environmental Programs

## A Walk Back in World History.....

# History...Environmental Degradation

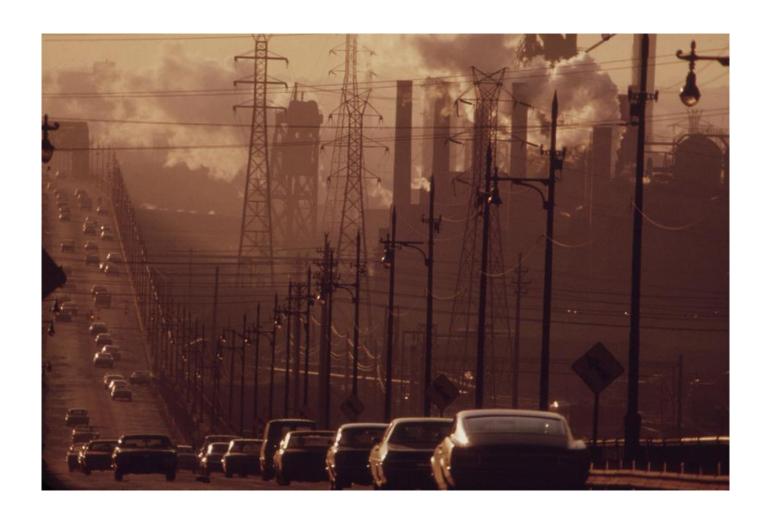




















#### New Hork Times

KEW YORK, FRIDAY, JANUARY 21, 1990

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#### DISTRICTING PLAN NIXON, STRESSING QUALITY OF LIFE, ASKS IN STATE OF UNION MESSAGE FOR BATTLE TO SAVE ENVIRONMENT

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#### **Historic Manufacturing Operations**



#### **Historic Manufacturing Operations**



#### **Historic Manufacturing Operations**



## Today.....Environmental Evolution



# Environmental Engineering Transformational Digital Technologies

## **Transformational Technologies**

Drones

FLIR

Google Glasses



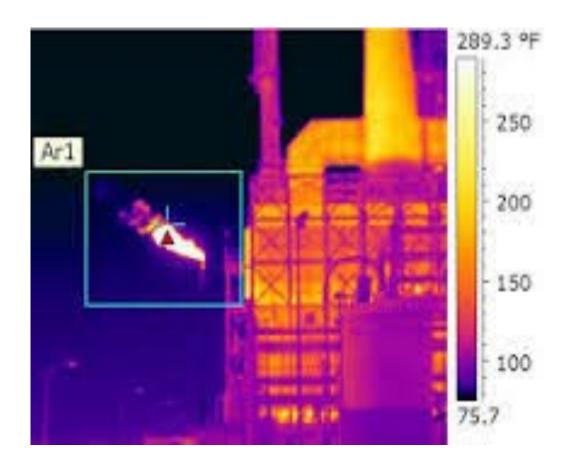
Robots

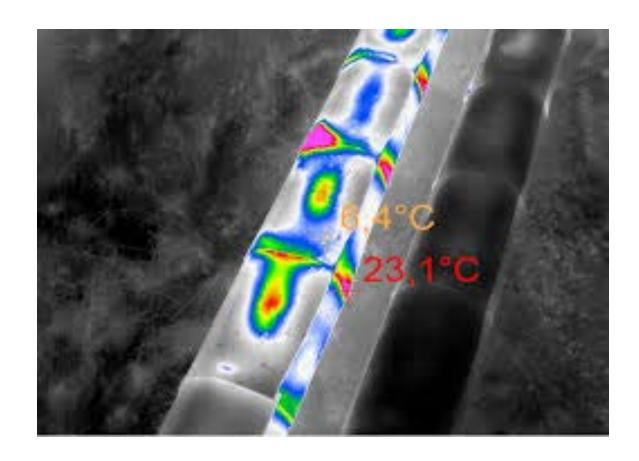
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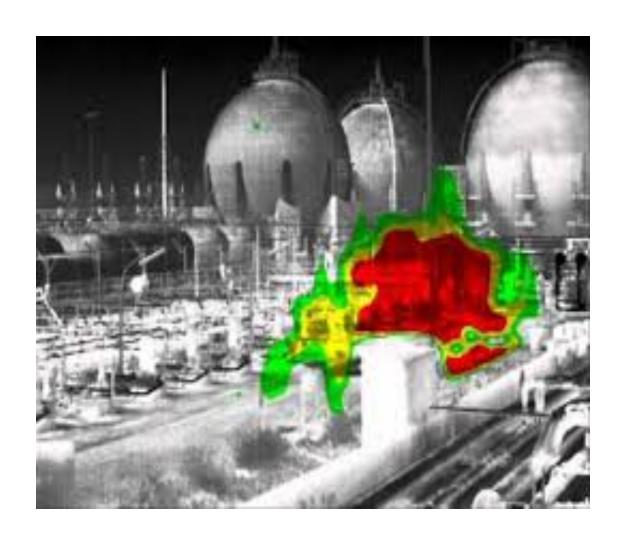


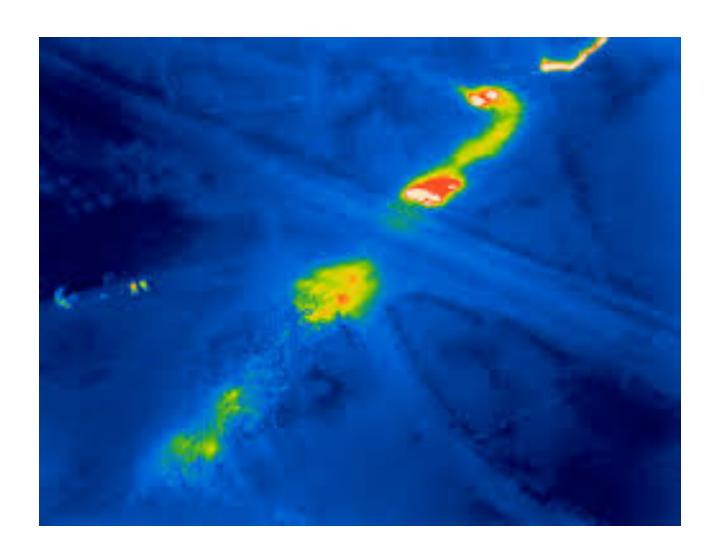
#### Drones.....







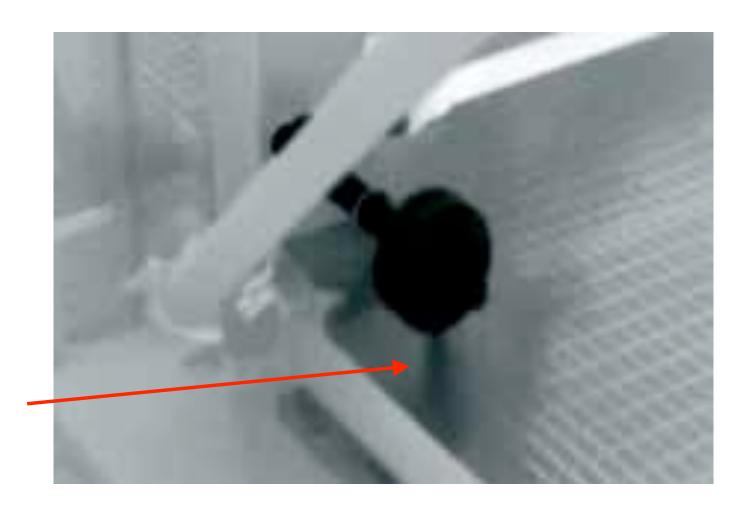


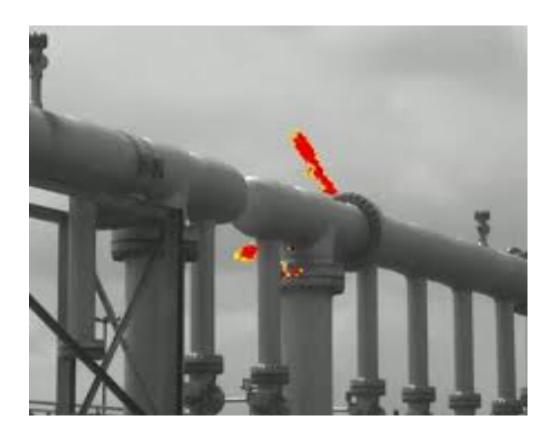






## FLIR...



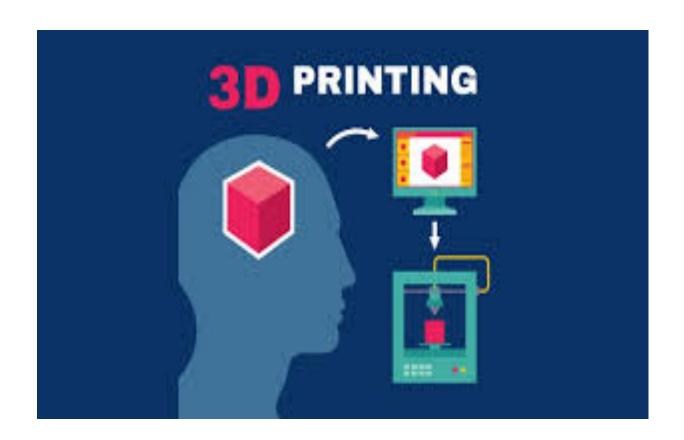


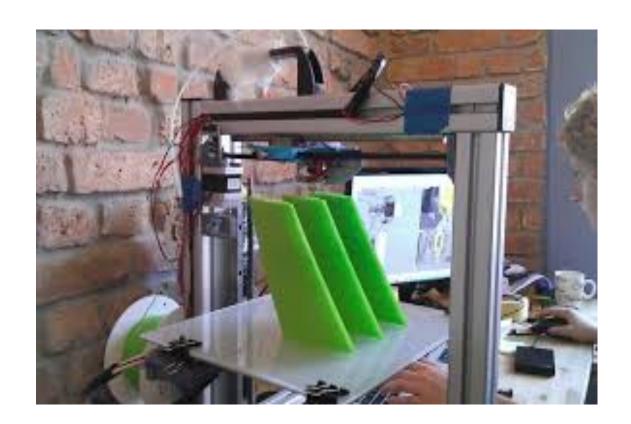
## Google Glasses.....



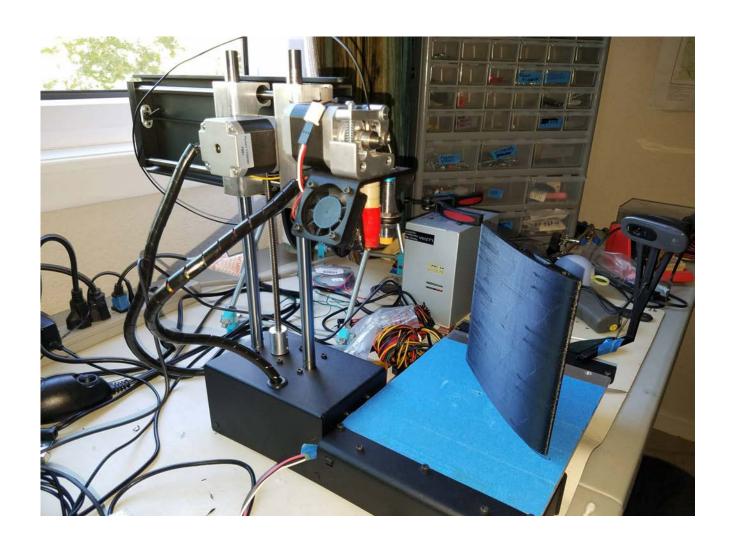
## Robots.....











## **Predictive Analytics**

# Leading Indicators Predictive Asset Management

Proactive Preventative Maintenance

**Health & Safety** 



mart Use of Data

# Predictive Corrosion Detection....



## Future....Environmental Transformation

Environmental Engineer – New Profile/Skills

Predictive, Digital Data

 Sophisticated Engineering Controls



New Technologies (Additive Manufacturing, ++
 +)

## Q&A