



THE AL LAW GROUP

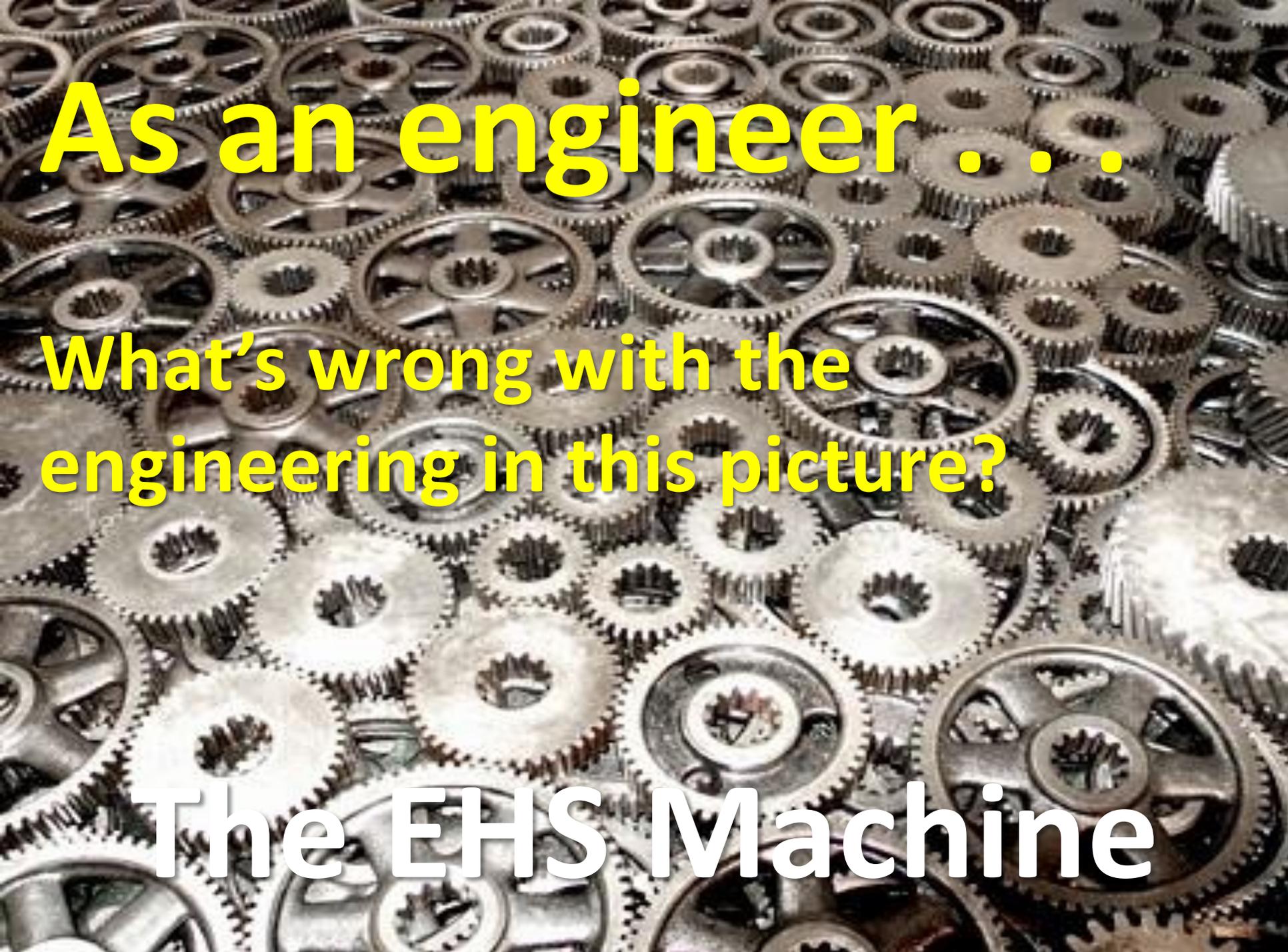
A Bold Vision: EHS Compliance in a Rapidly Evolving 21st Century World

Jed Anderson
The AL Law Group PLLC

STS-AIChE Luncheon
July 20, 2018



THE AL LAW GROUP
INNOVATIVE ENVIRONMENTAL SOLUTIONS



As an engineer . . .

**What's wrong with the
engineering in this picture?**

The EHS Machine

Which is the better engineered EHS system?



VS.



Which is easier to implement?
Which is easier to use?
Which is easier to enforce?

The background of the slide features a blue-toned image of interlocking gears and glowing circuit lines, symbolizing engineering and technology.

Apply Engineering Principles to the EHS System Itself

- “Complexity is a sign of technical immaturity. Simplicity of use is the real sign of a well design product whether it is an ATM or a Patriot missile.” -- *Daniel T. Ling*
- “The cheapest, fastest, and most reliable components of a computer system are those that aren't there.” --*Graham Bell*
- “Five lines where three are enough is stupidity. Nine pounds where three are sufficient is stupidity.” --Frank Lloyd Wright
- “Simplicity is prerequisite for reliability.” -- *Edger W.Dijkstra*

Google

Google Search

I'm Feeling Lucky

A 21st Century EHS System for Air Quality

PSD Program

Title V Program

NNSR Program

NSPS Program

MACT Program

Regional Haze Program

Acid Rain Program

CAIR/CSAPR Program

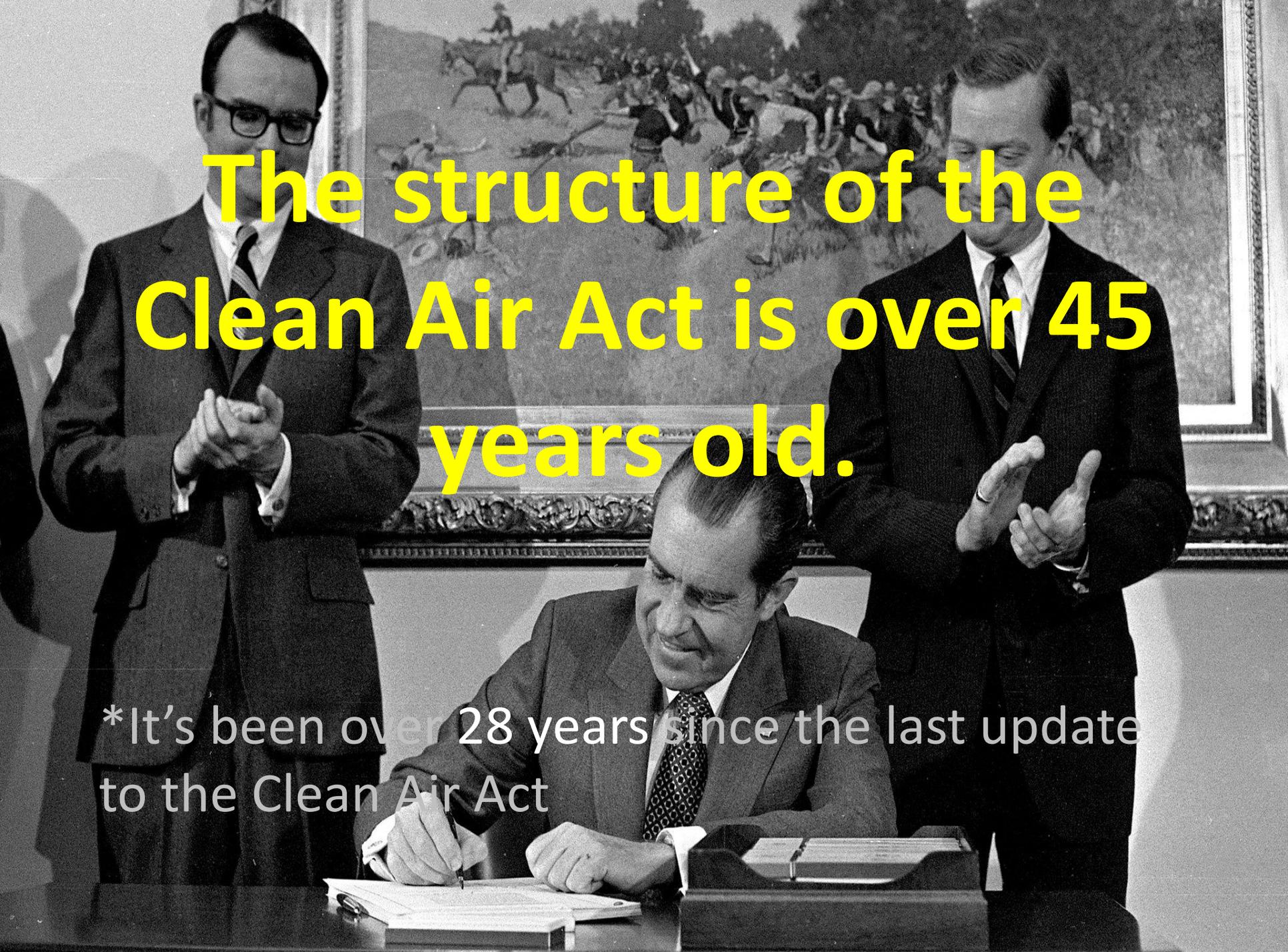
SIP requirements



Multi-Pollutant Market-Based
System Based on Real-Time
Source Monitoring

Approximately 50 to 75% of Clean Air Act regulations would no longer be needed.

**The nation's current
EHS system is
antiquated, too big,
and too complicated.**

A black and white photograph of President Richard Nixon sitting at a desk, signing a document. He is wearing a suit and a patterned tie. Two men in suits stand behind him, clapping. The man on the left is wearing glasses. In the background, there is a large framed painting of a battle scene. The text "The structure of the Clean Air Act is over 45 years old." is overlaid in large yellow font across the center of the image.

The structure of the
Clean Air Act is over 45
years old.

*It's been over 28 years since the last update
to the Clean Air Act

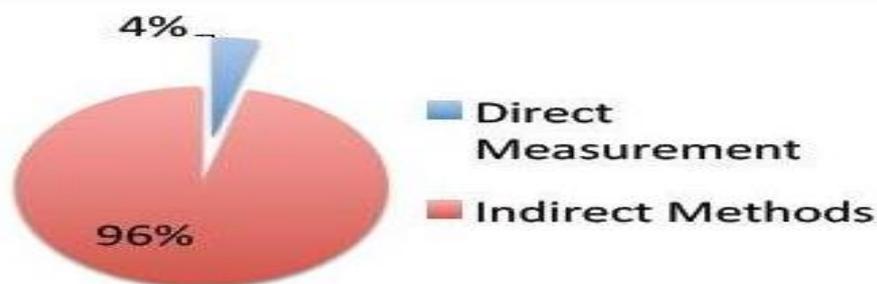
The hardware that runs the Clean Air Act was written before this thing came out.



Historic System Based Largely on Estimating Emissions Due to the Past Inability to Measure Most Emissions Sources

Emissions Factors in Reporting

All Reporting



Reporting using Indirect Methods



U.S. GAO, AIR POLLUTION: EPA SHOULD IMPROVE OVERSIGHT OF EMISSIONS REPORTING BY LARGE FACILITIES (2001)

“Emission factors in AP-42 are neither EPA-recommended emission limits ... nor standards.... Use of these factors as source-specific permit limits and/or as emission regulation compliance determinations is not recommended by EPA.” ----U.S. EPA

FLIR HI MANUAL BL

Tank Emissions via FLIR GasFindIR Infrared Camera



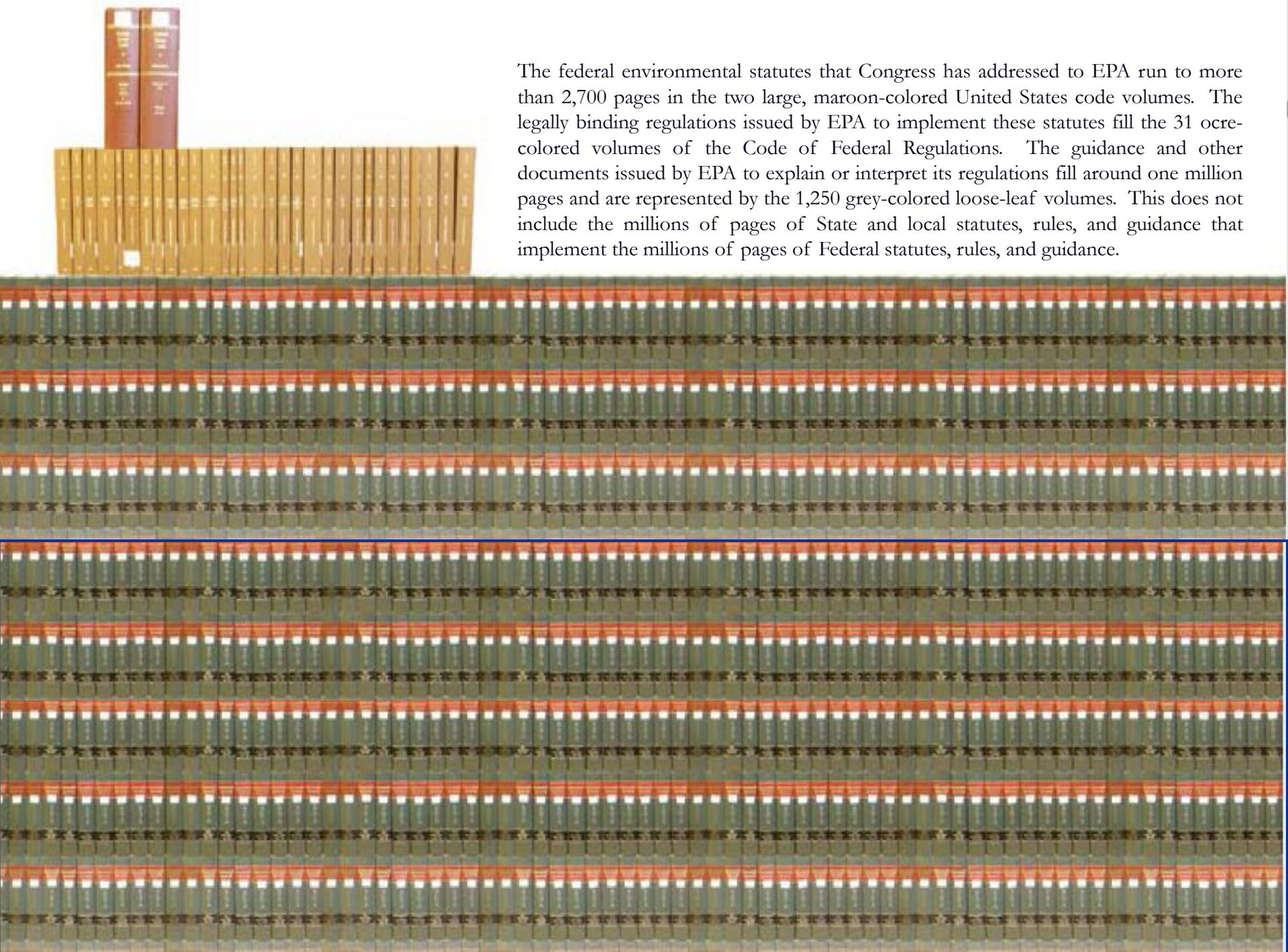
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▶ ⏩ 🔊 0:27 / 0:48

⚙️ 🏠

The federal environmental statutes that Congress has addressed to EPA run to more than 2,700 pages in the two large, maroon-colored United States code volumes. The legally binding regulations issued by EPA to implement these statutes fill the 31 ocre-colored volumes of the Code of Federal Regulations. The guidance and other documents issued by EPA to explain or interpret its regulations fill around one million pages and are represented by the 1,250 grey-colored loose-leaf volumes. This does not include the millions of pages of State and local statutes, rules, and guidance that implement the millions of pages of Federal statutes, rules, and guidance.



Most Complicated Law in Human History

*Clean Air Act and its attendant regulations are almost 2x more complicated than the U.S. Tax Code

“Measuring the Complexity of the Law: The United States Code”

[Daniel Martin Katz](#)

Illinois Tech - Chicago Kent College of Law

[Michael James Bommarito II](#)

Bommarito Consulting, LLC

August 1, 2013

22 *Artificial Intelligence and Law* 337 (2014)



Table 12: Normalized Ranking from Most to Least Complex

Title	NetFlowRank	TokenRank	EntropyRank	DepthRank	CompositeScore	CompositeRank
42	2	8	2	10	5.5	1
26	7	2	29	1	9.75	2
5	1	21	23	2	11.75	3
49	25	11	9	5	12.5	4
31	4	17	18	12	12.75	5

President Obama Commenting on Air Quality Regulation

---“Hugely
complicated and
very technical”



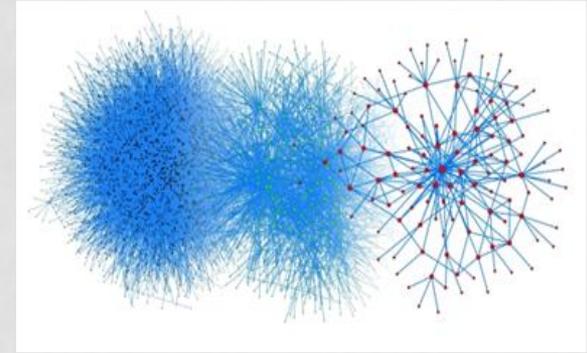


---“I hate that each sector has 17 to 20 rules that govern each piece of equipment and you've got to be a neuroscientist to figure it out”. ---Gina McCarthy, U.S. EPA Administrator (2009-2016)

Other Comments About the Complexity of the System

- ❖ **“The Clean Air Act is complicated and contentious”.**

--Senate Environment
and Public Works Committee



- ❖ **“The federal Clean Air Act alone has been referred to as the most complicated statute in history.”**

--Erich Brich writing for the ABA

- ❖ **“The Act itself has often been called “unreadable” and “incomprehensible.”**

—John Quarles and Bill Lewis, Morgan & Lewis

- ❖ **“The statute and its regulatory offshoots are very complicated.”**

---U.S. Department of Justice



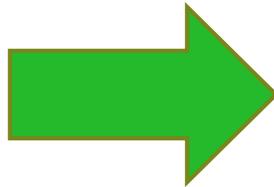
50,000
Compliance
Points

TCEQ Requirements Growing and Becoming More Complicated



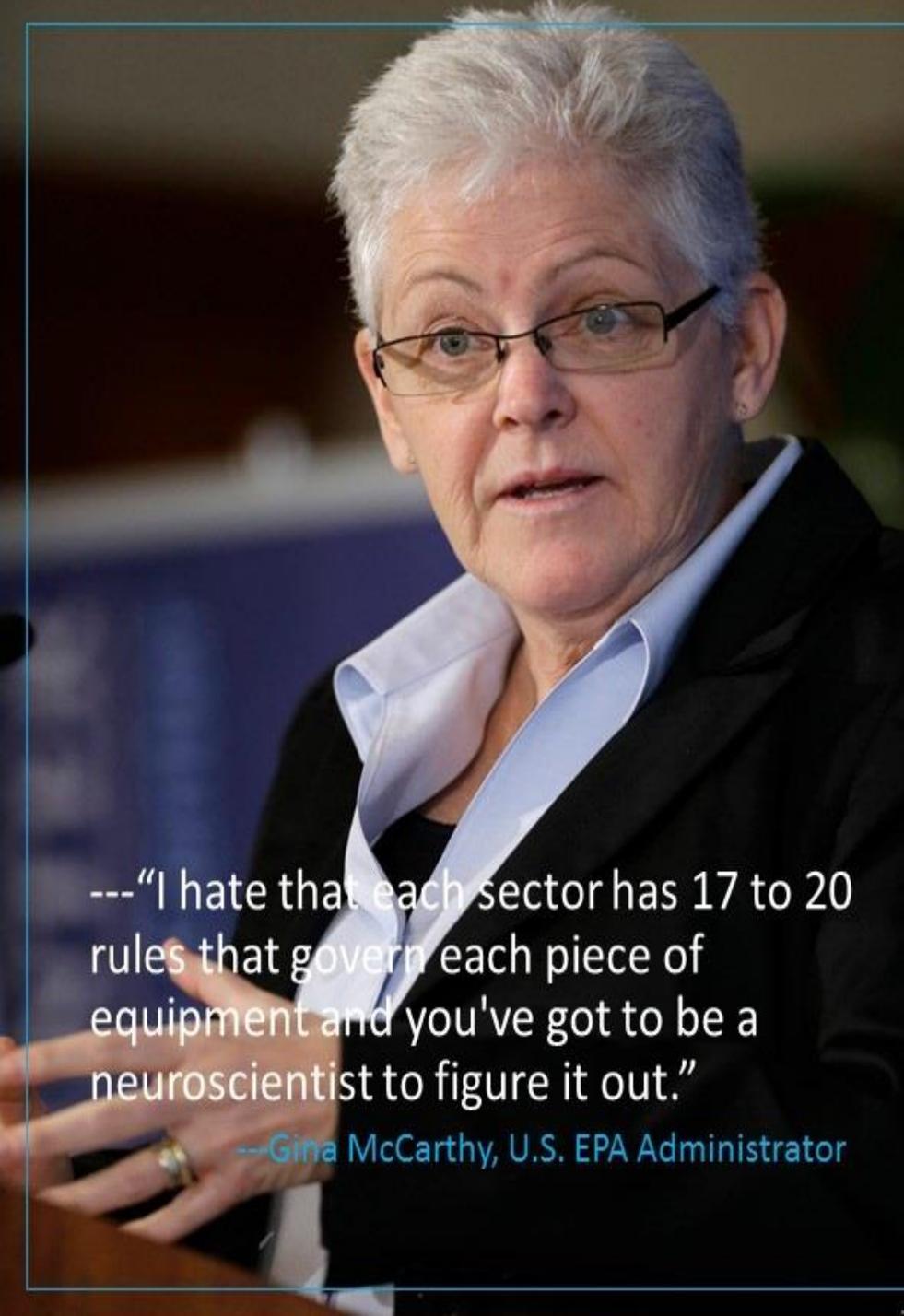
3,796

No. of Rule Records in 1999



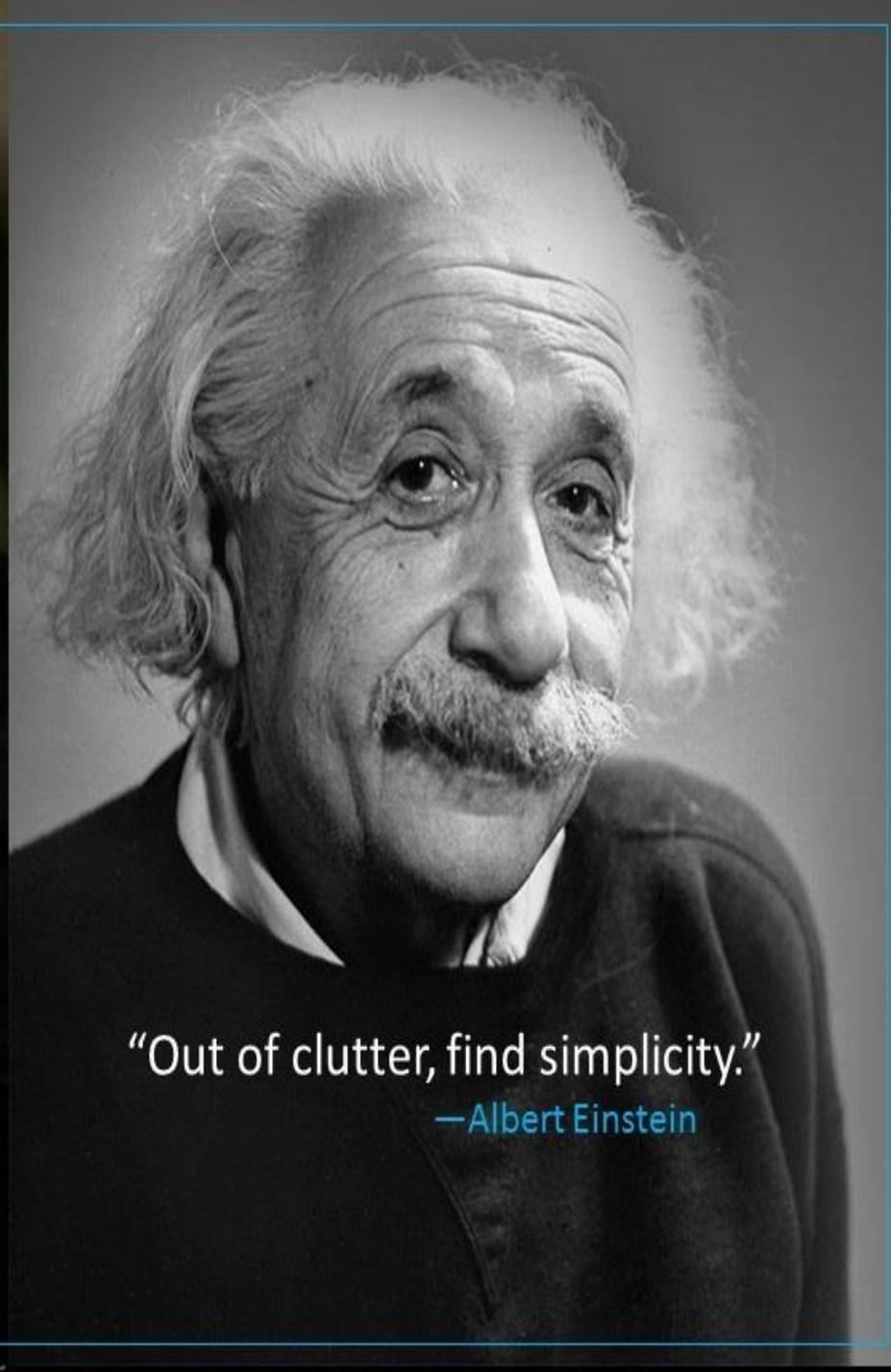
4,835

No. of Rule Records in 2016



---“I hate that each sector has 17 to 20 rules that govern each piece of equipment and you've got to be a neuroscientist to figure it out.”

—Gina McCarthy, U.S. EPA Administrator

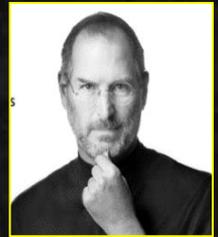
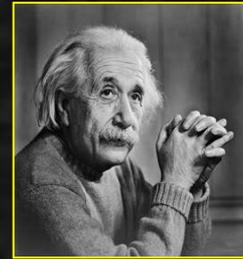
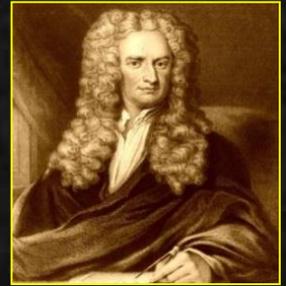


“Out of clutter, find simplicity.”

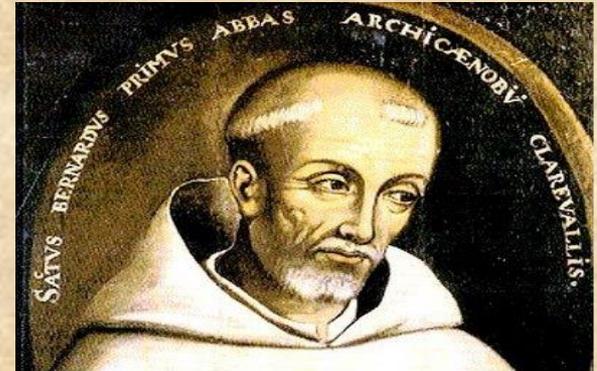
—Albert Einstein

How would these people approach EHS compliance?

- “The definition of genius is taking the complex and making it simple.” ---**Einstein**
- “Truth is ever to be found in the simplicity, and not in the multiplicity and confusion of things.” ---**Isaac Newton**
- “That's been one of my mantras - focus and simplicity. Simple can be harder than complex: You have to work hard to get your thinking clean to make it simple. But it's worth it in the end because once you get there, you can move mountains.” ---**Steve Jobs**
- “In building a statue, a sculptor doesn't keep adding clay to his subject. Actually, he keeps chiselling away at the inessentials until the truth of its creation is revealed without obstructions.”---**Bruce Lee**
- “All the great things are simple.” --- **Winston Churchill**

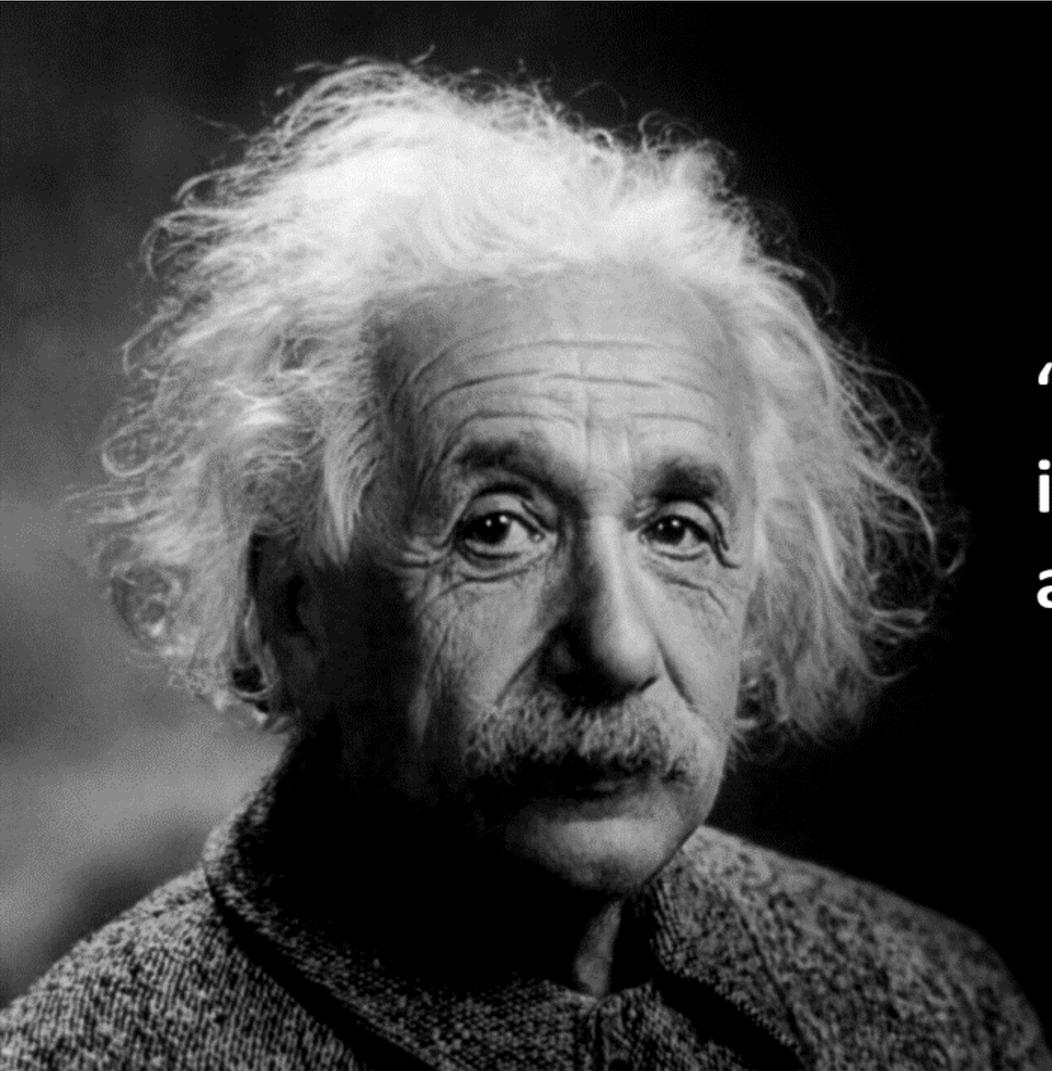


What would happen if we applied Occam's Razor to EHS systems?



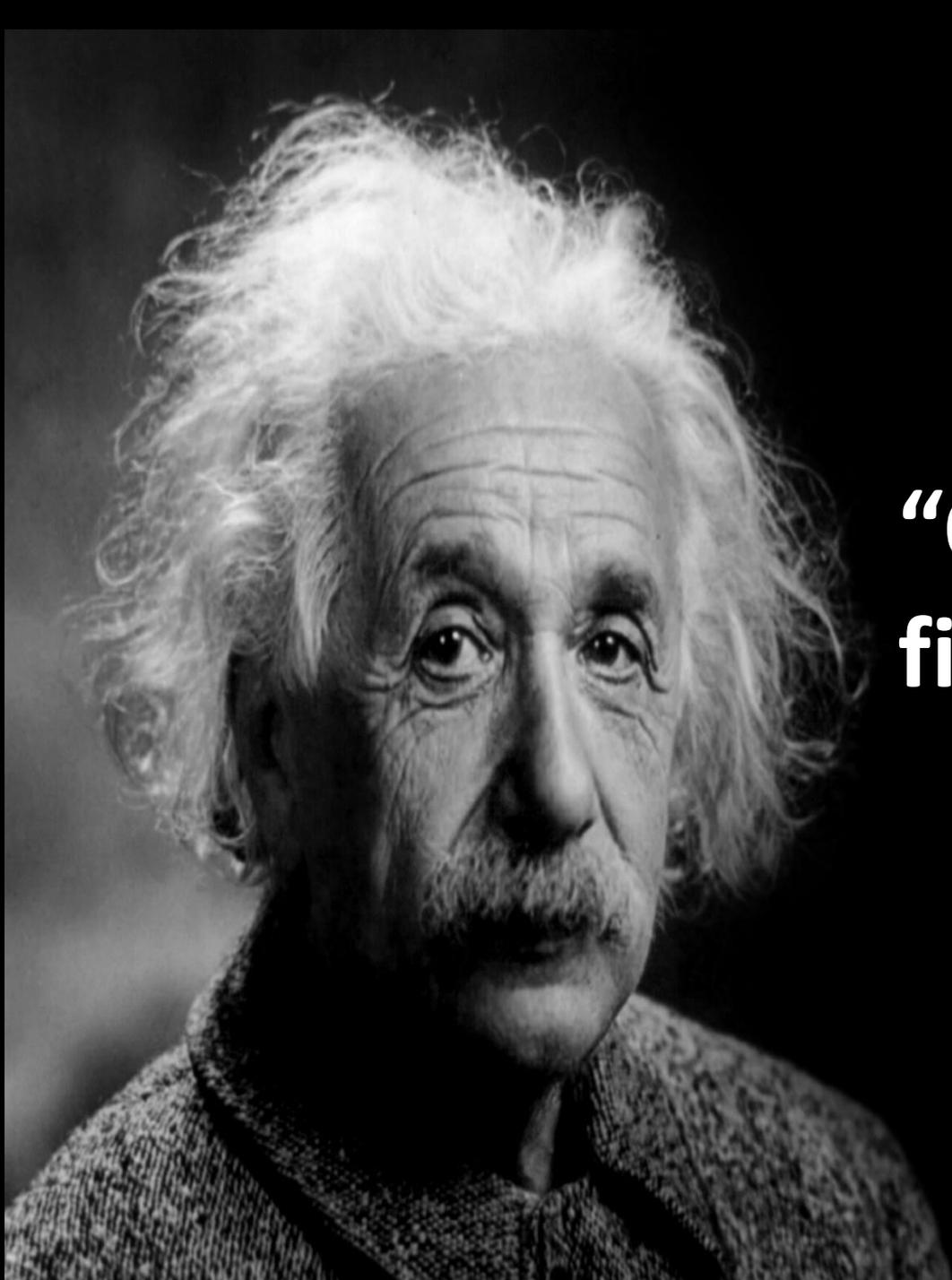
Occam Razor is that *“entities are not to be multiplied beyond necessity.”*

- ▶ **In physics:** Occam's Razor (or parsimony) was used to formulate the theory of special relativity by Einstein, the principle of least action by Mauepertuis and Euler, and quantum mechanics by Planck, Heisenberg, and Broglie.
- ▶ **In chemistry:** Theory of thermodynamics and the reaction mechanism.
- ▶ **In statistics and probability theory:** Kolmogorov complexity, Bayesian model comparison, and Laplace approximation



**“The definition of genius
is taking the complex
and making it simple.”**

Albert Einstein



**“Out of clutter,
find simplicity.”**

Albert Einstein



---“All my actions have been focused on only one thing . . . make environmental simpler.

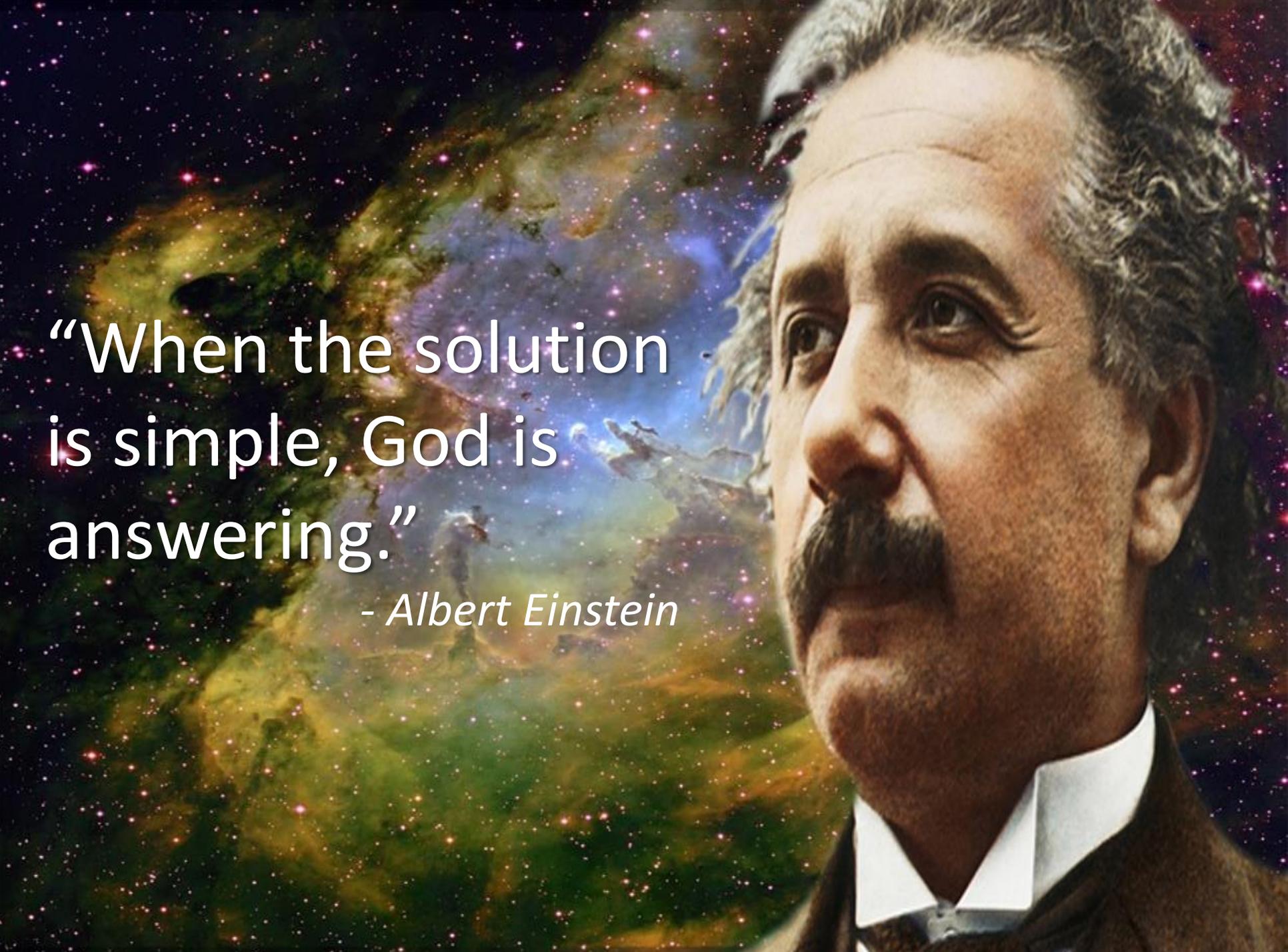
Better for clients.

Better for the environment.

Better for humanity.” —Jed Anderson





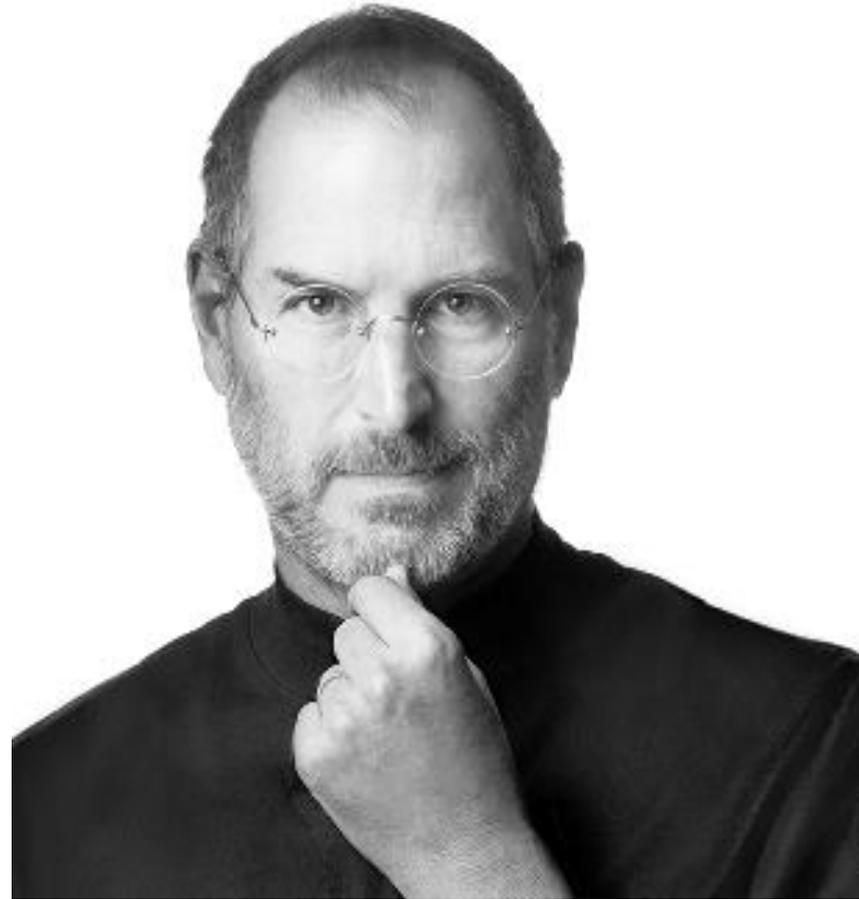
A composite image featuring a portrait of Albert Einstein on the right side, looking towards the left. The background is a vibrant, multi-colored nebula in space, with shades of green, yellow, blue, and purple, set against a dark field of stars. The text is overlaid on the left side of the image.

“When the solution
is simple, God is
answering.”

- Albert Einstein

“Simple can be harder than complex: You have to work hard to get your thinking clean to make it simple. But it's worth it in the end because once you get there, you can move mountains.”

---Steve Jobs



Revolutionary User Interfaces



Mouse

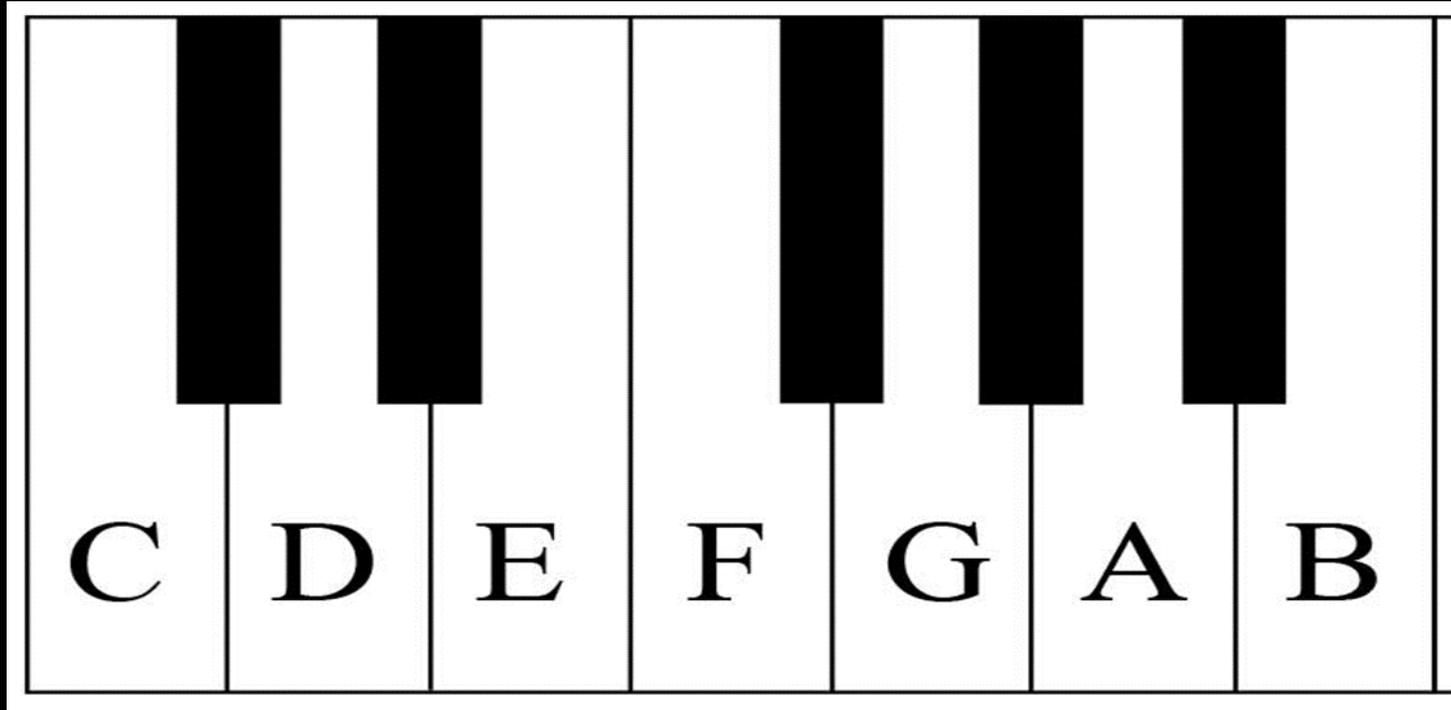


Click Wheel



Multi-Touch

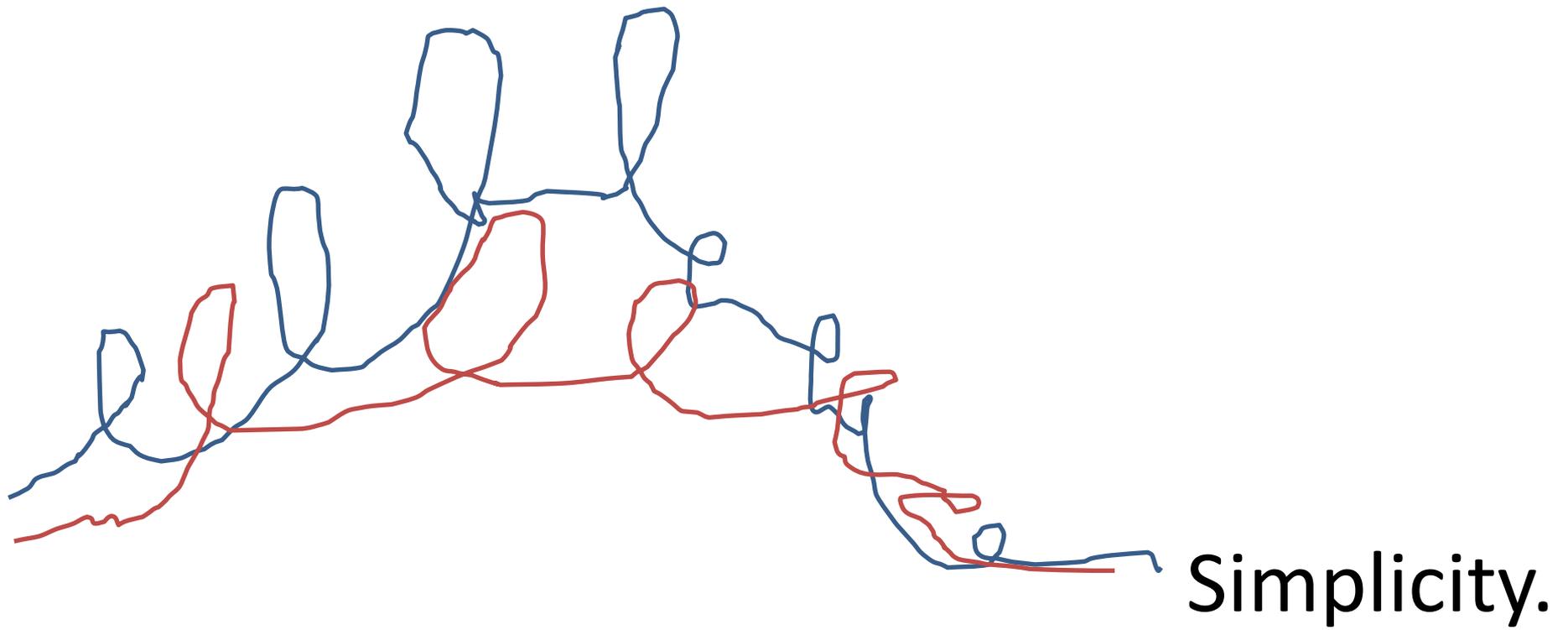
Simple Systems are Powerful



Most music as we know it **only uses 12 notes**. From Rachmaninoff to Bob Marley, from Muddy Waters to Lady Gaga—only 12 notes are used. Imagine what music we could play with a simplified environmental regulatory system?

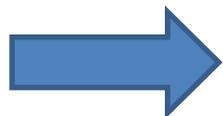
The Best Way to Protect Nature. . . Emulate Nature.

- ❖ “Nature operates in the shortest way possible.” — **Aristotle**
- ❖ “Nature is pleased with simplicity. And nature is no dummy.” — **Isaac Newton**
- ❖ “Nature does not multiply things unnecessarily . . . she makes use of the easiest and simplest means for producing her effects” — **Galileo**



Everything moving toward simplicity.

Unknown



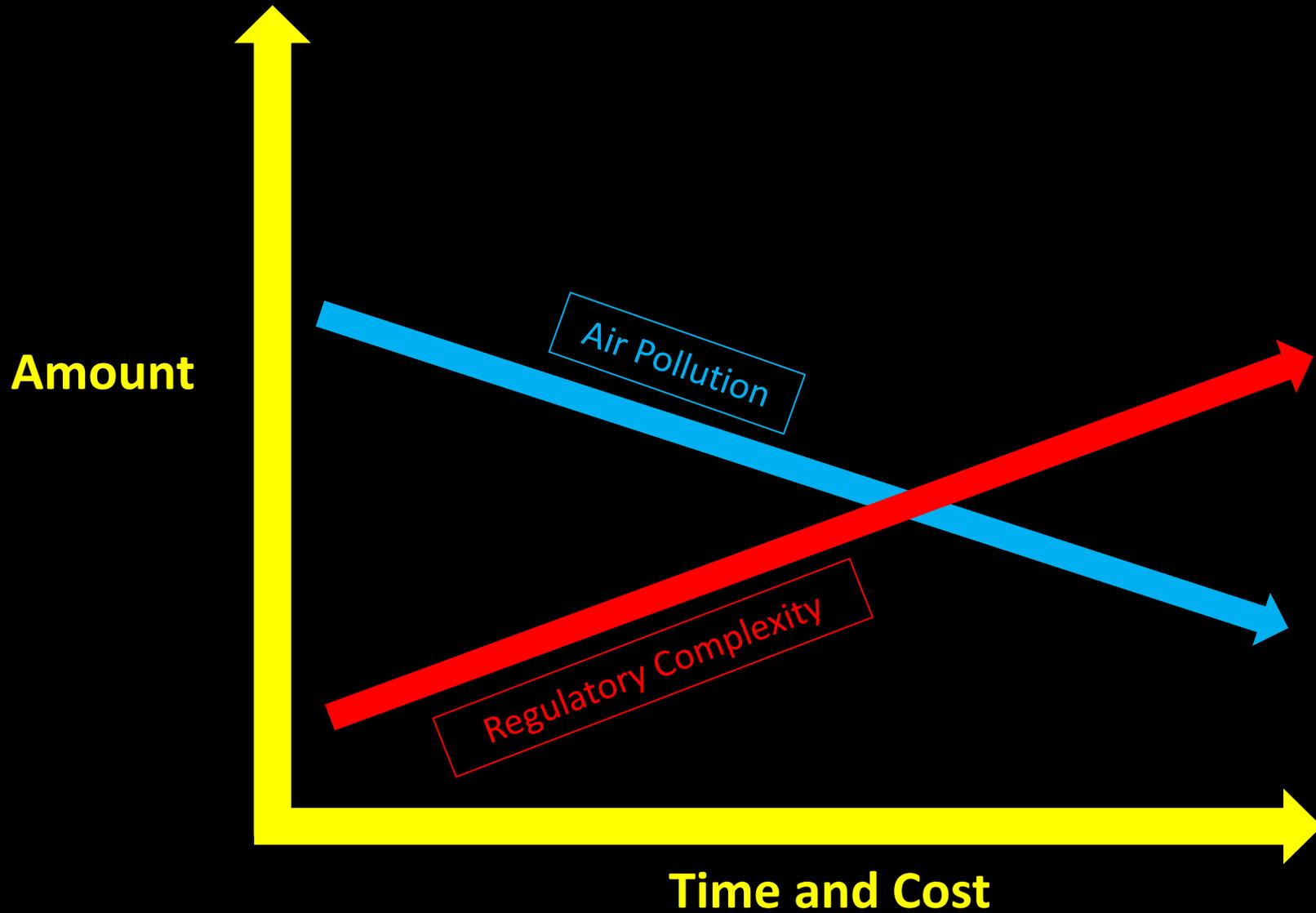
Complex



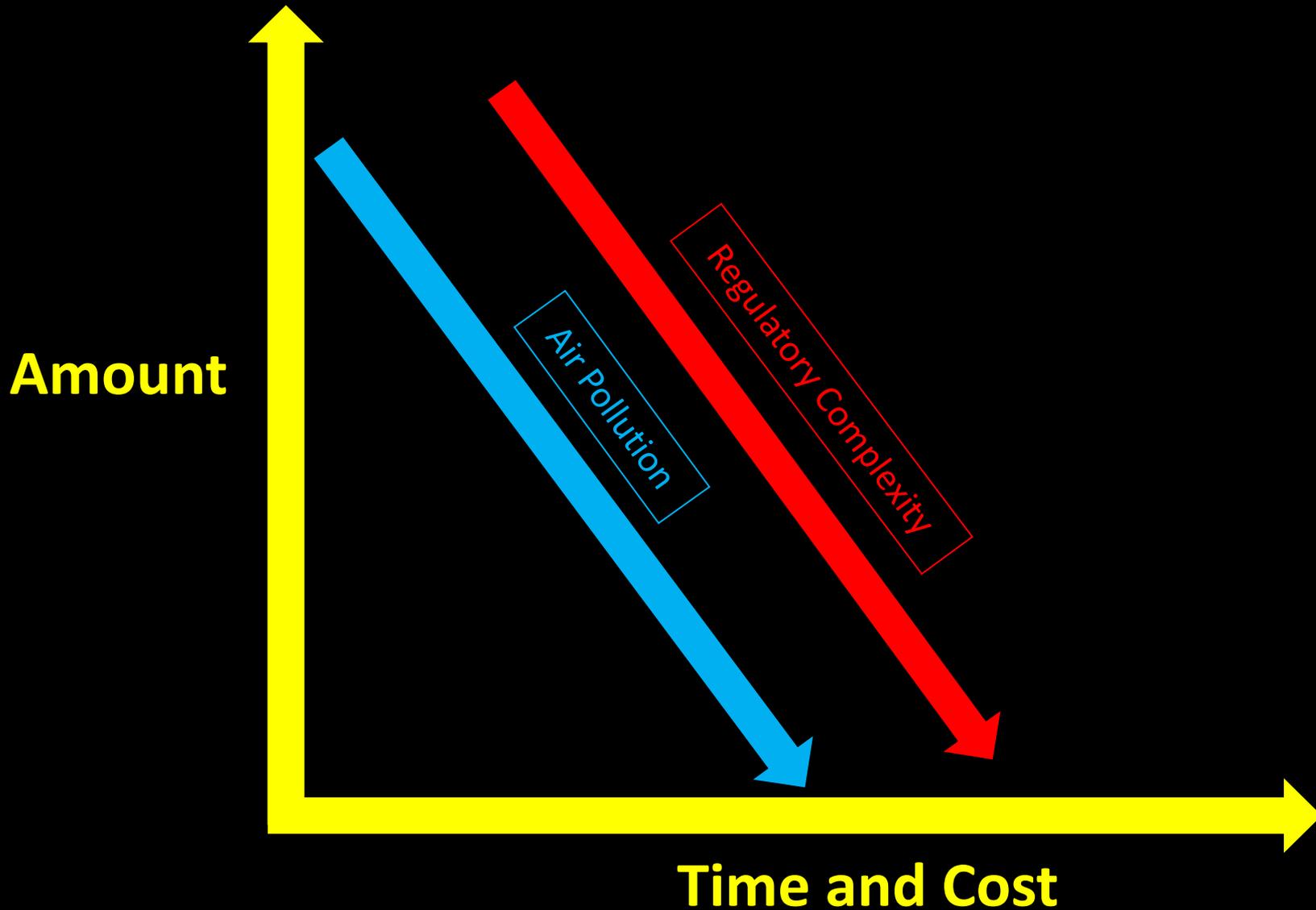
Simple

**What will the
future EHS
system look
like?**

Current EHS System



Future EHS System



A 21st Century Clean Air Act

PSD Program

Title V Program

NNSR Program

NSPS Program

MACT Program

Regional Haze Program

Acid Rain Program

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SIP requirements

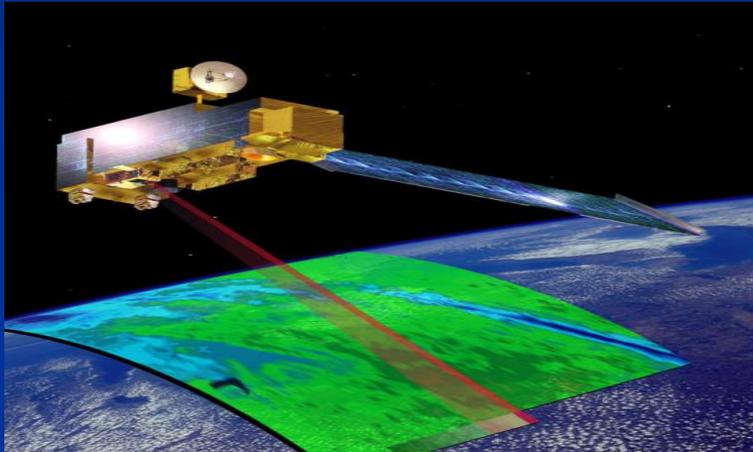


Multi-Pollutant Market-Based
System Based on Real-Time
Source Monitoring

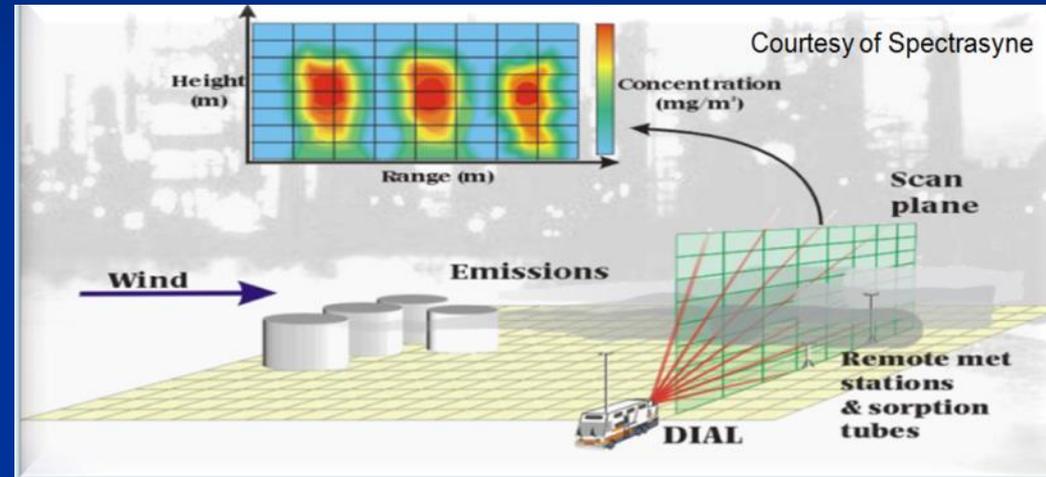
Approximately 50 to 75% of Clean Air Act
regulations would no longer be needed.

Technology has advanced since 1970 that would allow for a more simplified and transparent approach to air quality management

Satellite Monitoring



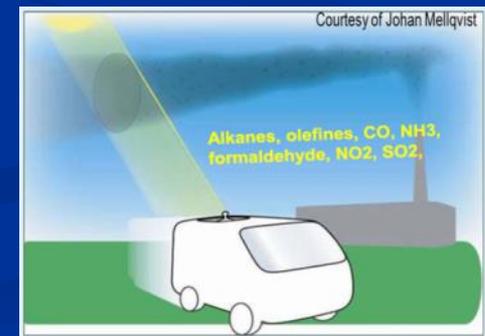
DIAL System



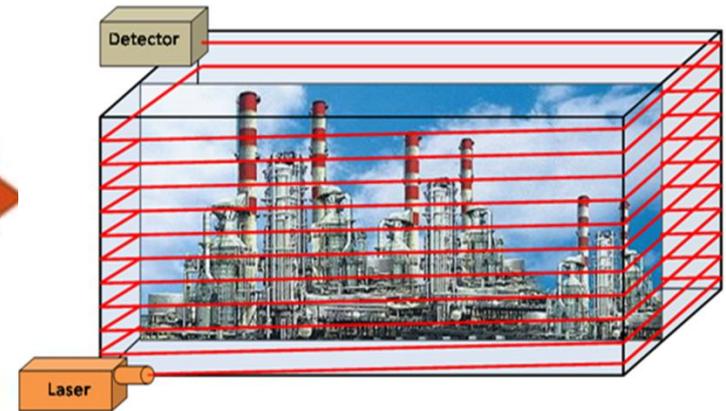
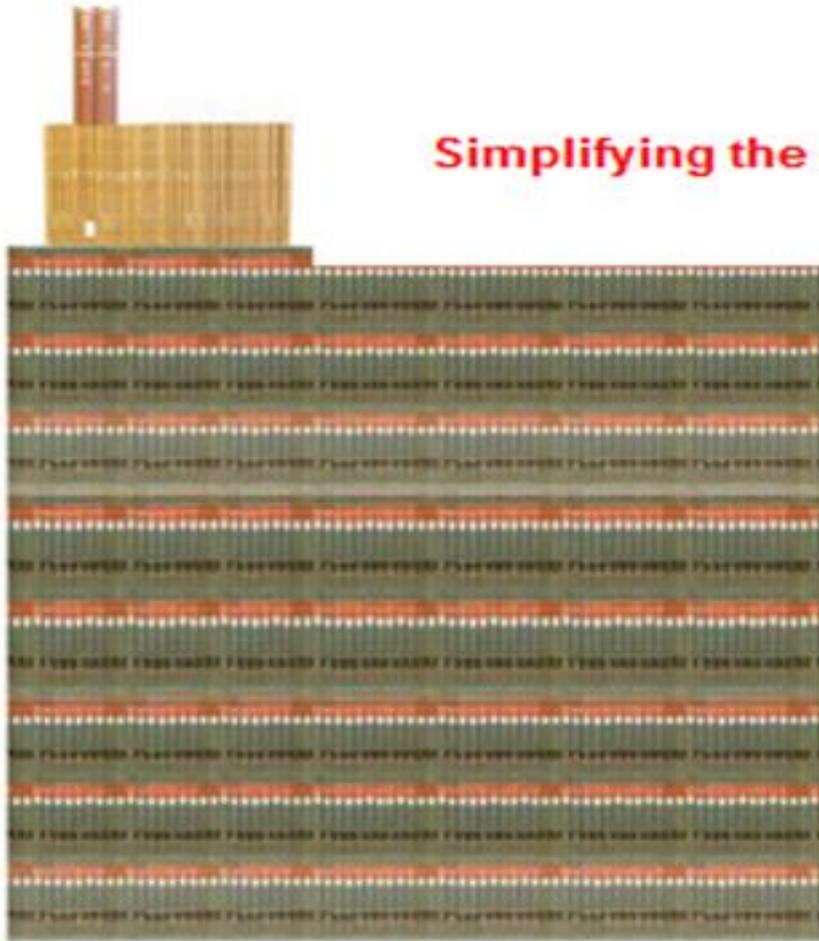
Fence-line Monitoring



SOF System



Simplifying the Air Quality Regulatory System



“Any intelligent fool can make things bigger, more complex, and more violent. It takes a touch of genius -- and a lot of courage -- to move in the opposite direction.”

-----E.F Schumacher



A company could do whatever it wanted
whenever it wanted within its facility so long as
the limits established by the monitoring/remote
sensing bubble were not exceeded

Imagine seeing this webpage as an environmental manager, regulatory agency, or a citizen instead of sifting through millions of pages of regulatory materials to determine if you or someone else is in compliance?

Hourly Emissions from Company ABC's Facility You are Monitoring Today

Pollutant	Amount Emitted (Green)	Amount Available to Emit (Red)
NOx	4.2	2.5
Mercury	2.5	4.5
PM2.5	3.5	1.8
Lead	4.5	2.8

Legend:
■ Amount Available to Emit
■ Amount Emitted

Browser Address Bar: <http://www.chron.com/> Houston News, Sports, Busi... x

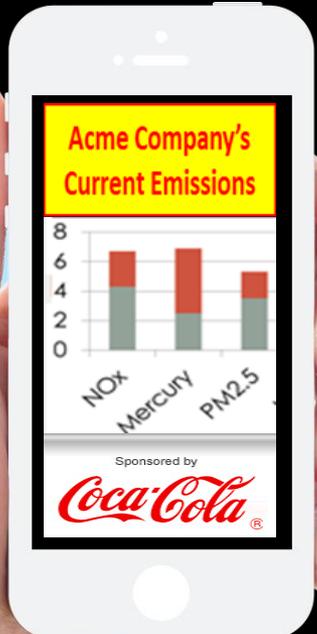
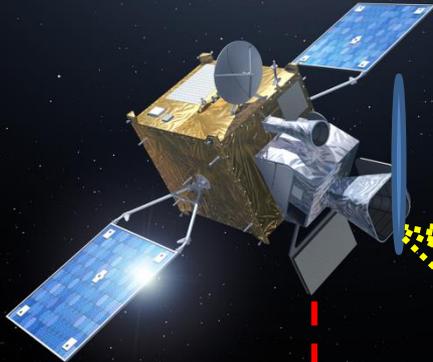
Browser Menu: File Edit View Favorites Tools Help

Browser Tools: Home RSS Print Page Safety Tools

Browser Status Bar: View favorites, feeds, and history (Alt+C)

Page Content: Tulane University HOUSTON RSVP NOW; THE HOUSTON CHRONICLE App for iPad; Houston Weather | Houston Traffic | Mobile | E-edition | Register | Sign In; Wednesday, June 20, 2012 85°F Mostly Cloudy; Things you love in Houston for 50% off or more; CLASSIFIEDS SHOPPING INDEX; Reese's bandit | Tropical weather; Ford HUGE SALE; G25 Journey \$319/month 10k year - 39 month; G37 Journey \$369/month 10k year - 39 month; Order a card, load \$200 or more and receive a complimentary \$25 Gift Card; Share Page Fan Page Twitter Astros Galleries; 100% 2:52 PM 6/20/2012

A 21st Century Clean Air Act



A company could do whatever it wanted whenever it wanted within its facility so long as the limits established by the remote sensing bubble were not exceeded. 50-75% of the CAA would no longer be needed.



The Clean Air Act of 2018

Less Pollution · Less Regulation

**So . . . how will
this all come
about and how
can I get in on it?**



THE AL LAW GROUP

----“A.I. and remote sensing will revolutionize air quality management in the coming years.”

– Jed Anderson, The AL Law Group PLLC

The Google logo is displayed in its characteristic multi-colored font (blue, red, yellow, blue, green, red) against a light gray background with a fine grid pattern.

**A.I. is more important
than fire or electricity.**

–Google CEO, Sundar Pichai



CERES™

A.I. is allowing us to transform environmental services.

---Jed Anderson, The AL Law Group PLLC





AI Enhanced Environmental Consulting and Legal Services

CERESTM

Welcome to CERES™



*“AI Enhanced Environmental Consulting
and Legal Services”*

This is CERES. How can I help you?



A black and white close-up portrait of Richard Branson. He has long, wavy, light-colored hair and a full, light-colored beard and mustache. He is looking directly at the camera with a slight, thoughtful expression. The background is plain and light-colored.

“Complexity is your enemy.”

—Richard Branson

Simplify.



INNOVATIVE ENVIRONMENTAL SOLUTIONS



THE AL LAW GROUP