



Safe & Sustainable Interstate Pipeline Operations

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Imagination at work

produces
equipment from
drill bit to the
pump island ...
The “all-stream
company”



Providing safety,
efficiency and
sustainability



Pipeline Safety ... the goal
has to be zero incidents!



Safety depends on:



- A strong safety culture
- Sound business practices
- Reasonable, well enforced regulations
- Use of advancing technology

Safety by the numbers:

- 100% of lines monitored routinely
- 73% of interstate gas lines use “smart pigs”
- Leaks down 94% from (1984-2012)
- Material and weld leaks down 20% (2002-14)
- Excavation damage down 34% (2002-14)



Tip: To
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The Intelligent Pipeline Solution

The ability to organize and analyze multiple sets of data spatially along the gas transmission system improves the quality and speed of decision making

GIS – Attributes, Leaks, Valves, Taps, ILI

One Call – Dig tickets

Risk Model – Risk scores from internal model

SCADA – Pressures, flow, temp, btu

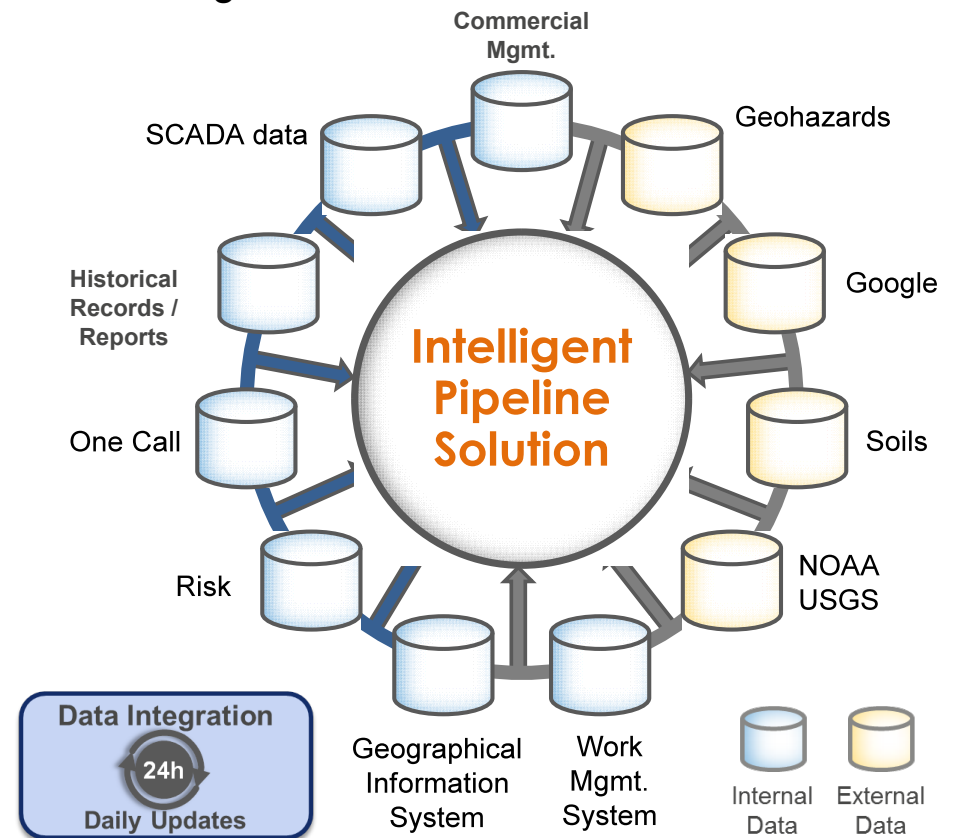
Commercial Management System –
Scheduled volumes

Work Mgmt. – Leak (grade, repair), CIS

NOAA – Temperature, Precipitation

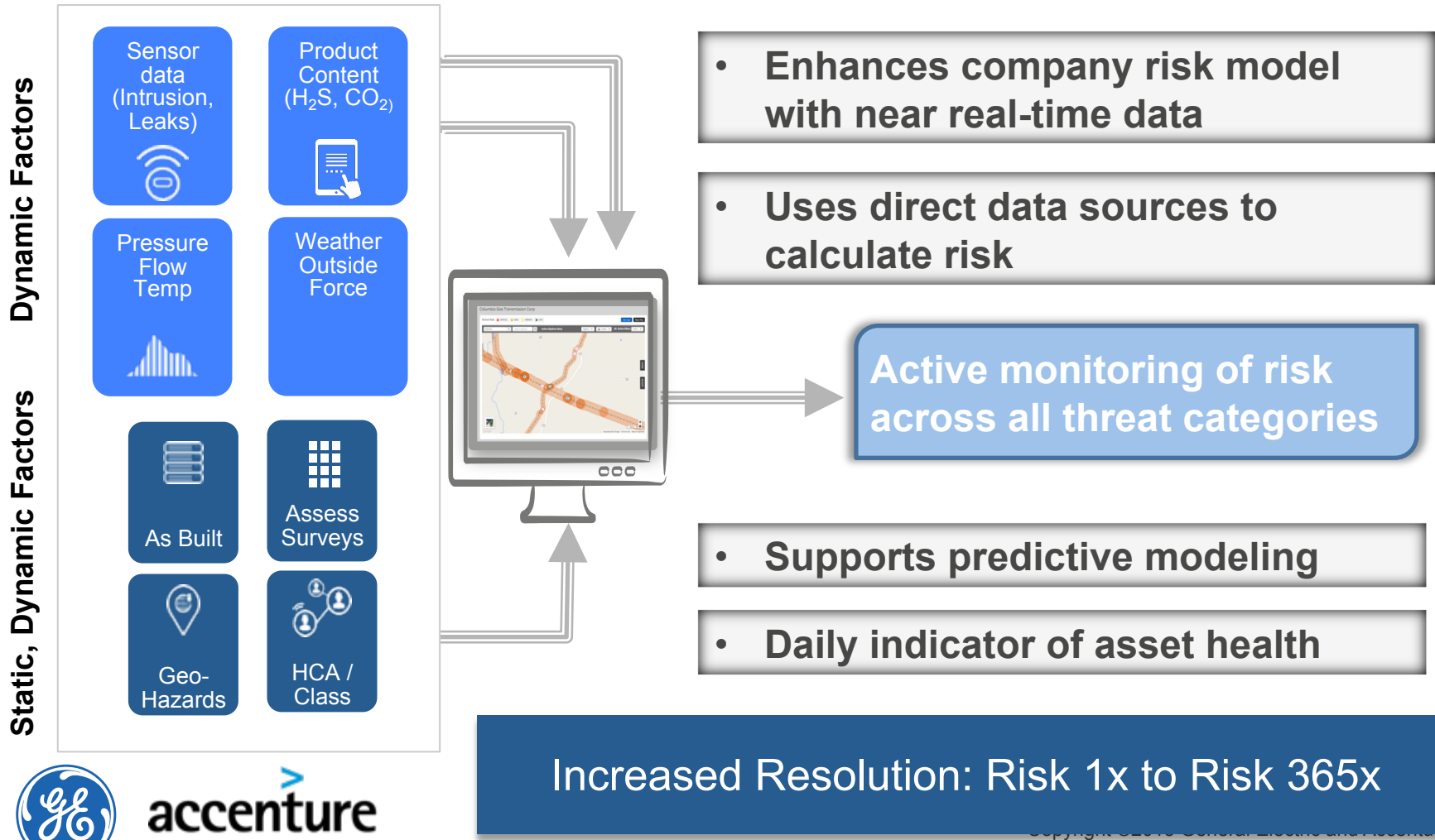
USGS – Fault lines, Stream flow

Geohazards – Areas prone to slips



Functional Highlight: Active Risk Analytics

Near real-time data driving daily assessment of the transmission network



Integrity programs using smart pigs

Geoff Foreman - Senior ILI technology Advisor

1 million measurements a second ... “healthcare for the pipeline network”



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ILI's mission: "to achieve zero

failures"

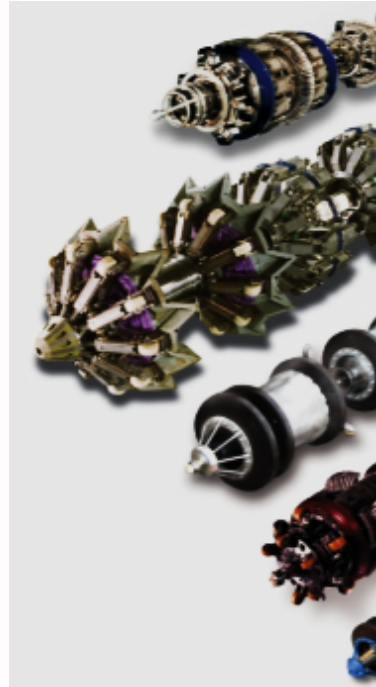
Find these...

... pipelines are exposed to a number of threats having the potential to cause severe damage



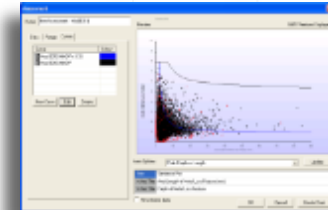
using technology...

... technology tools detect & quantify defects such as cracks, corrosion & dents



and engineering IP

... assessment & software tools identify pipeline threats and determine condition



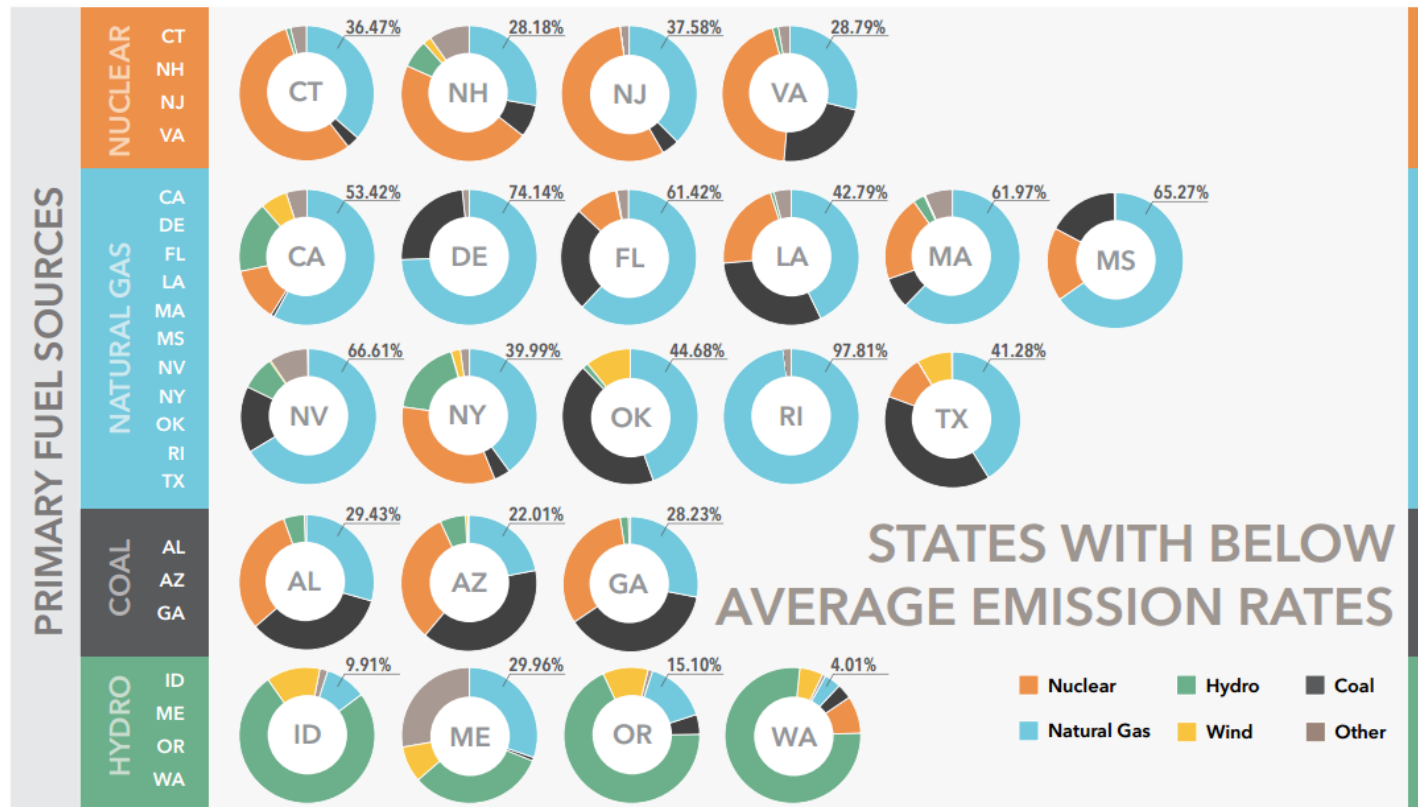
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Natural Gas Sustainability
... good now and getting
better every day!



Data from the EIA shows that natural gas is the prime power source in 11 of the 22 states with below average emission rates.



Source: U.S. Energy Information Administration, State Energy Data System - <http://www.eia.gov/state/seds/>



See tutorial regarding confidentiality disclosures. Delete if not needed.

Key technologies to reduce emissions ... what industry is already doing.

Leak detection and repair

- Regular Inspection
- Smart Pigs
- Aircraft, drones
- Direct assessment & Hydro test

Compression changes

- ICL
- Wet seals rather than dry
- Replacing rod packing
- Actuators

Natural Gas Production

Greenhouse gas emissions





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Some sources of emissions ... a One Future study by ICF – Released June 2, 2016

