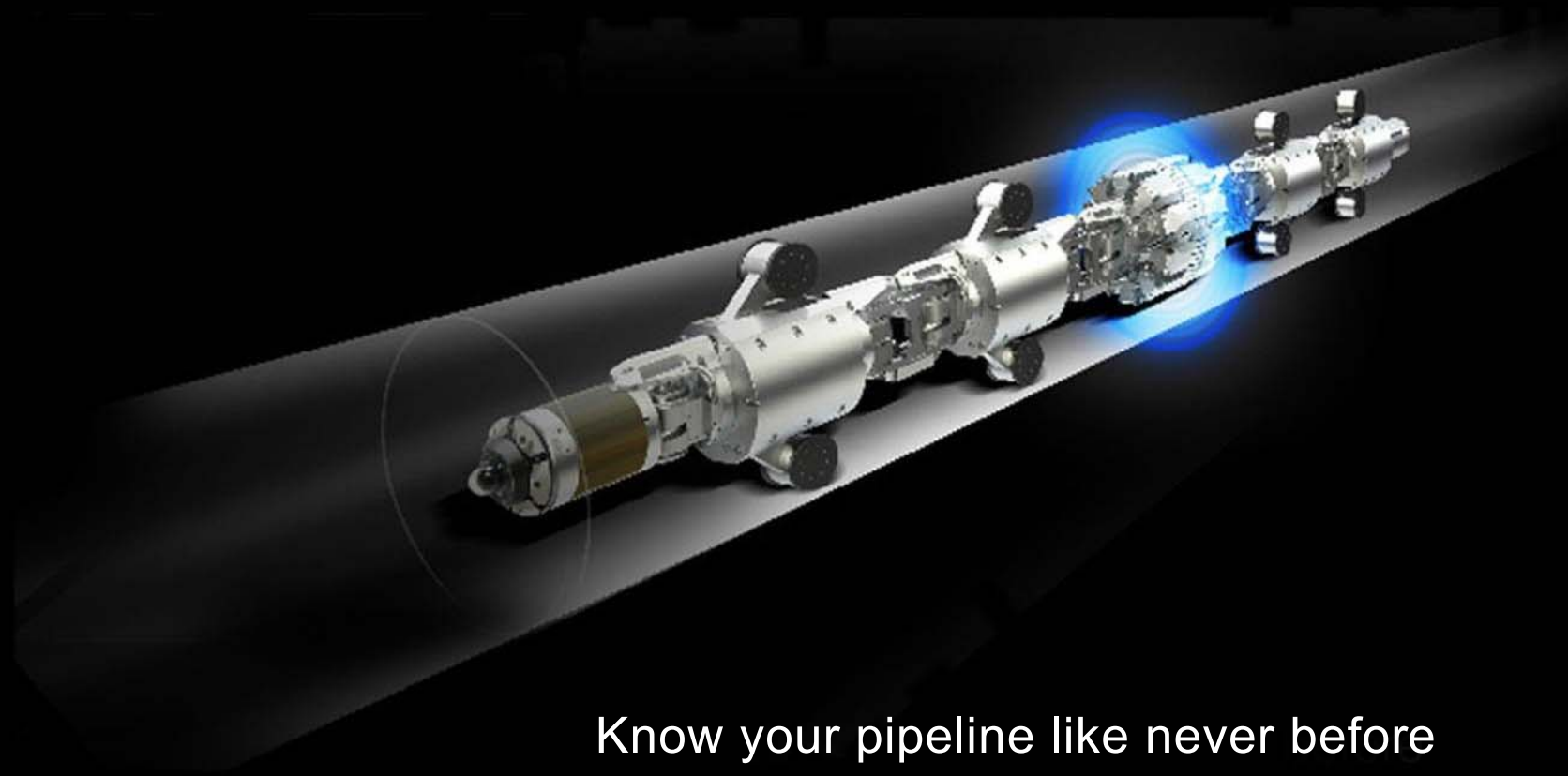


Internal inspection of pipelines with robots

Paul Laursen

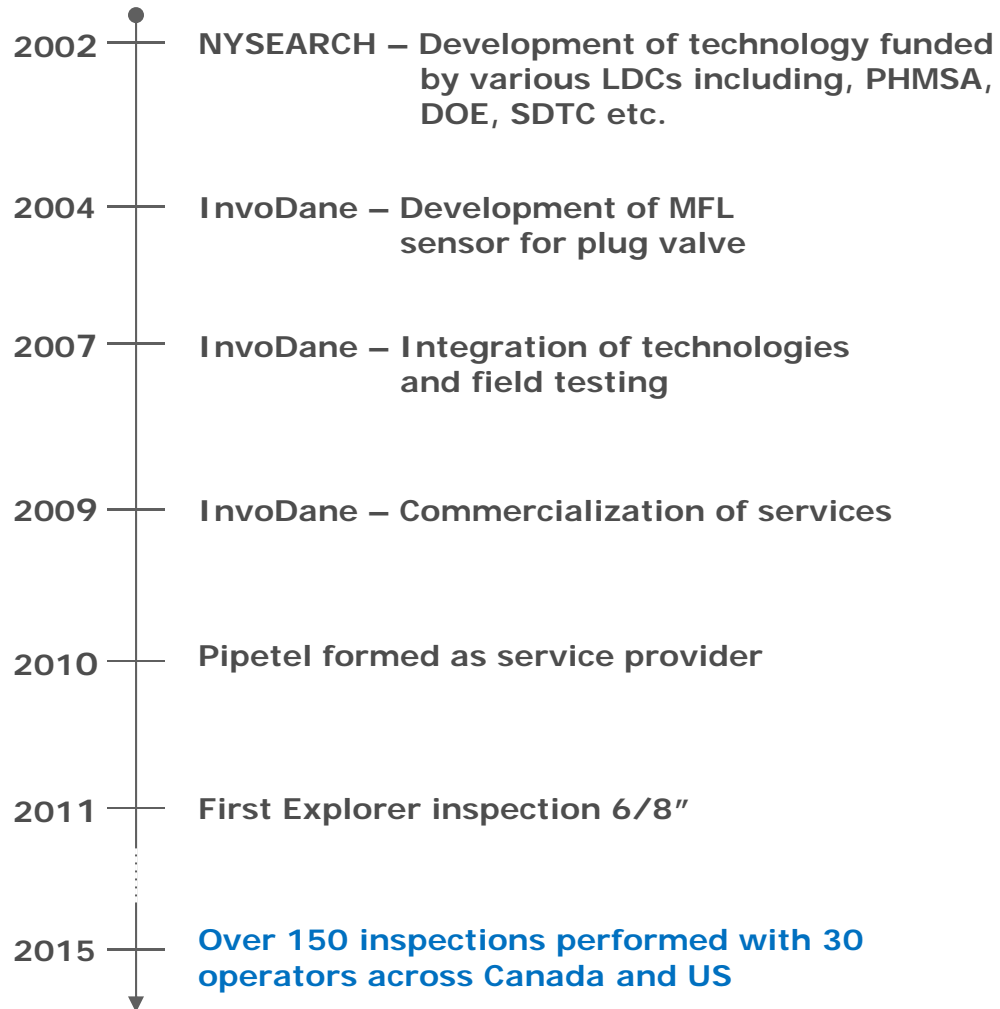


Know your pipeline like never before

Why do we inspect pipelines?

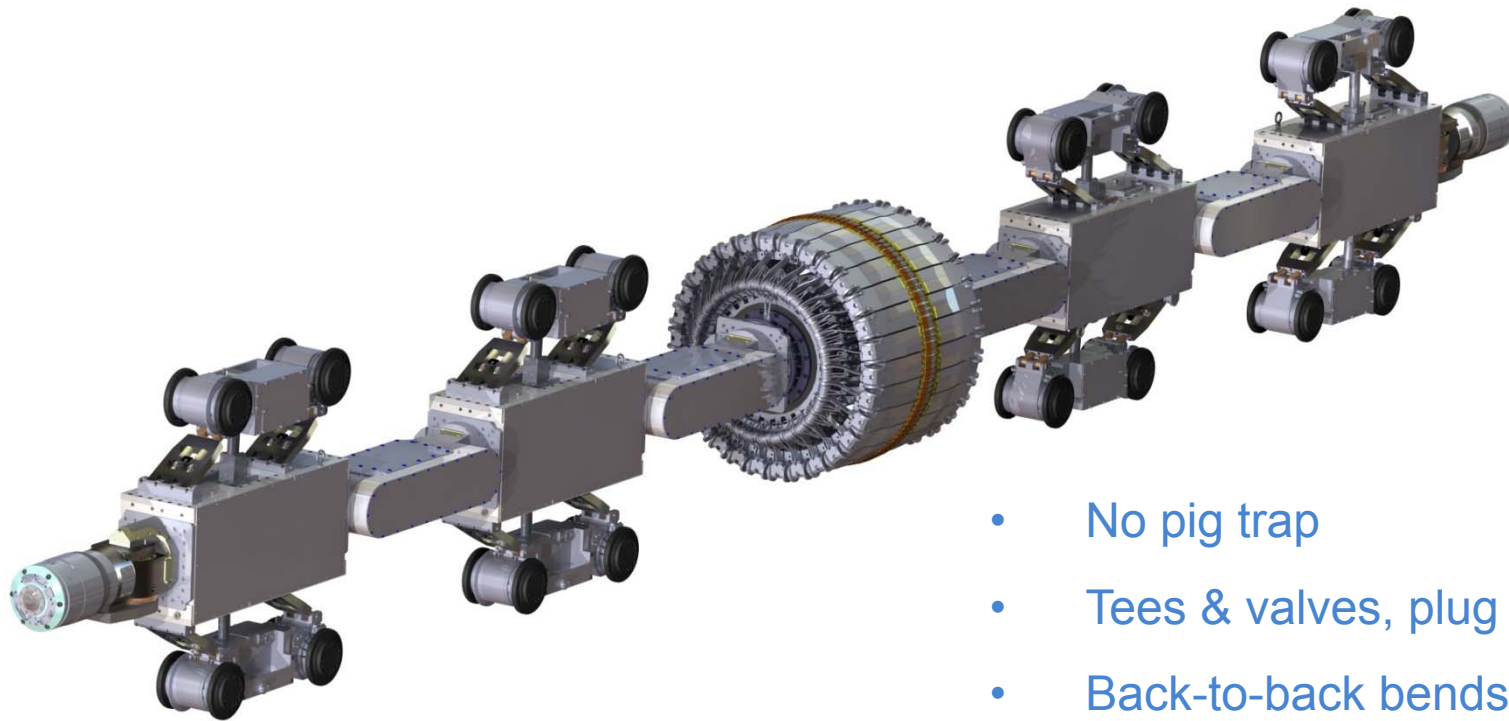
- Risk mitigation
- Know your assets for preventative maintenance
- Rules & regulations
- NTSB recommendations to PHMSA in January 2015
 - *Require that all natural gas transmission pipelines be capable of being in-line inspected by either reconfiguring the pipeline to accommodate in line inspection tools or by the use of new technology that permits the inspection of previously uninspectable pipelines...*

History



Explorer

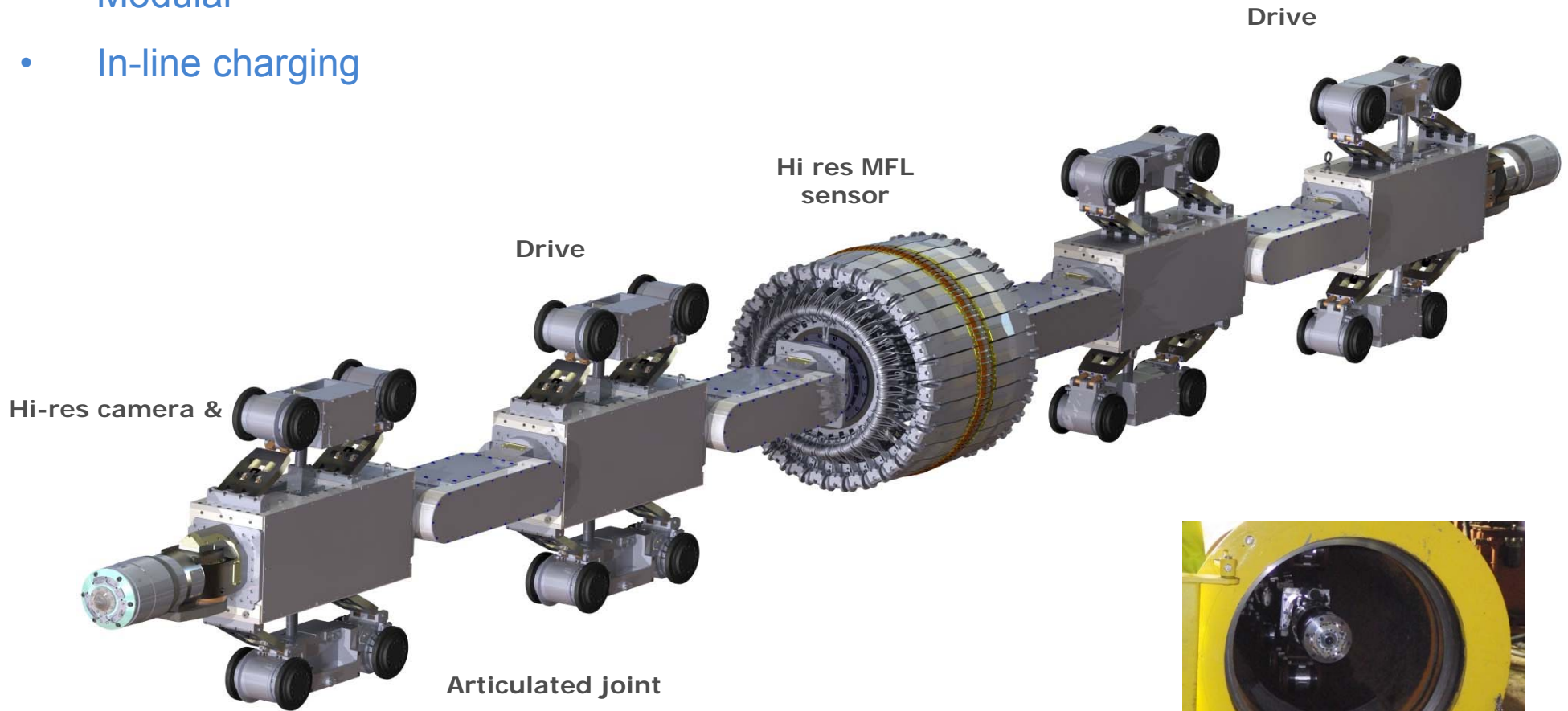
- Live pipelines up to 750 psi
- High, low or no flow



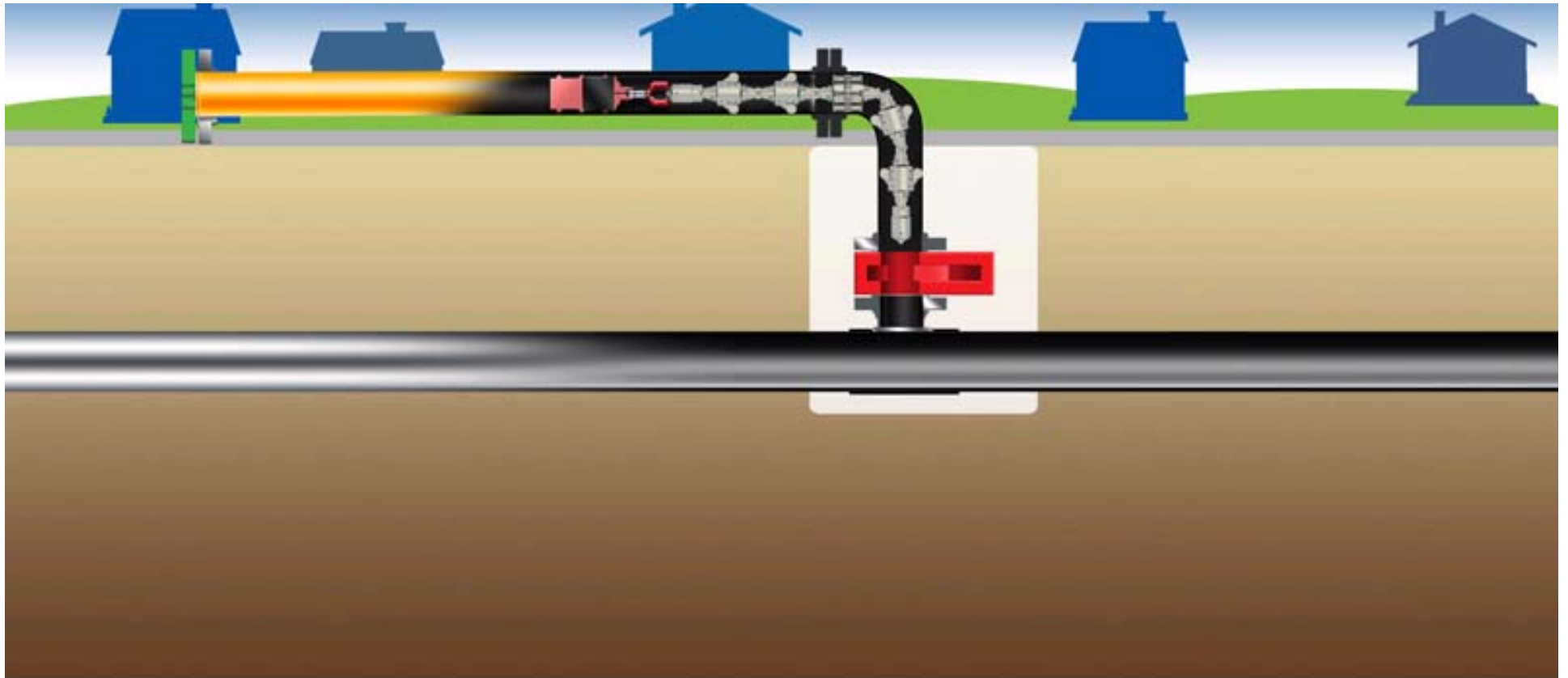
- No pig trap
- Tees & valves, plug valves
- Back-to-back bends
- Vertical segments

Explorer

- Self propelled & tetherless
- Modular
- In-line charging



Deployment



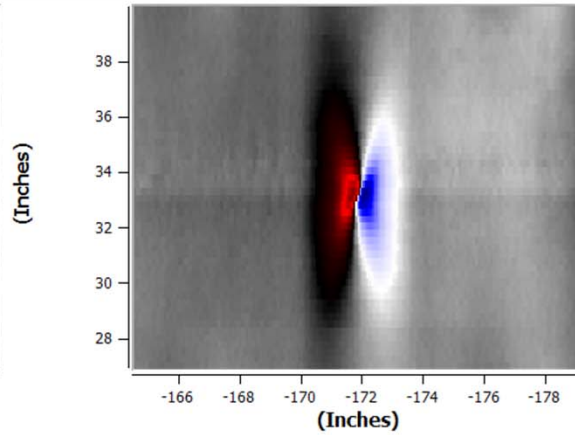
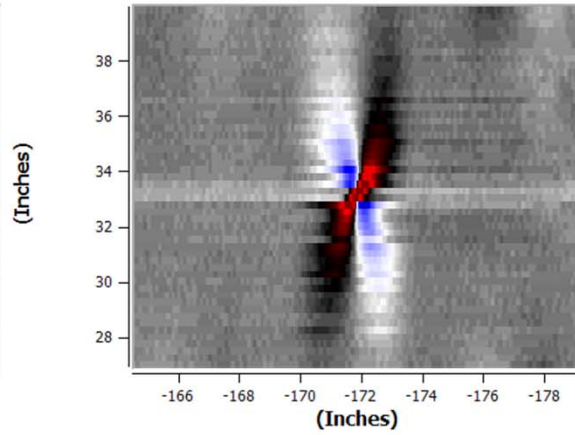
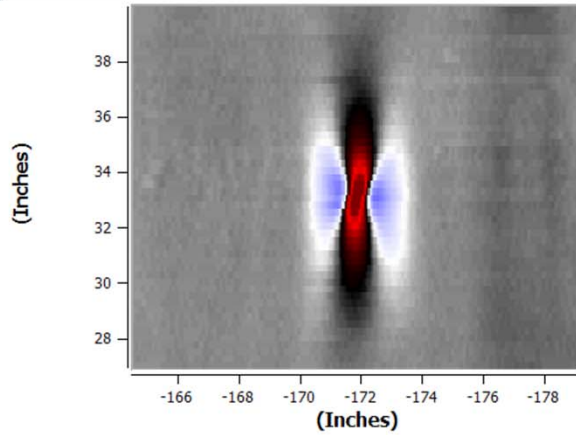
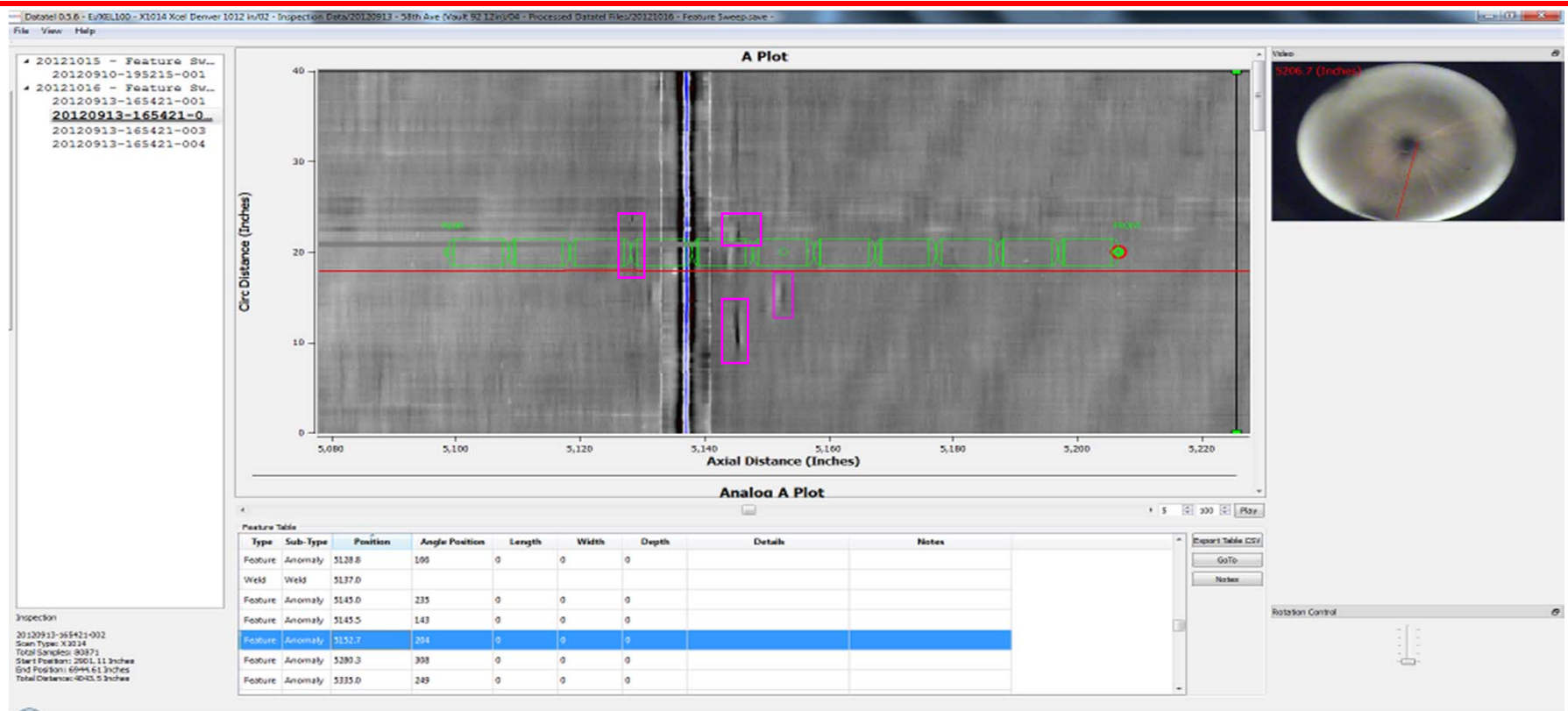
EXPLORER

pipetel
TECHNOLOGIES INC.

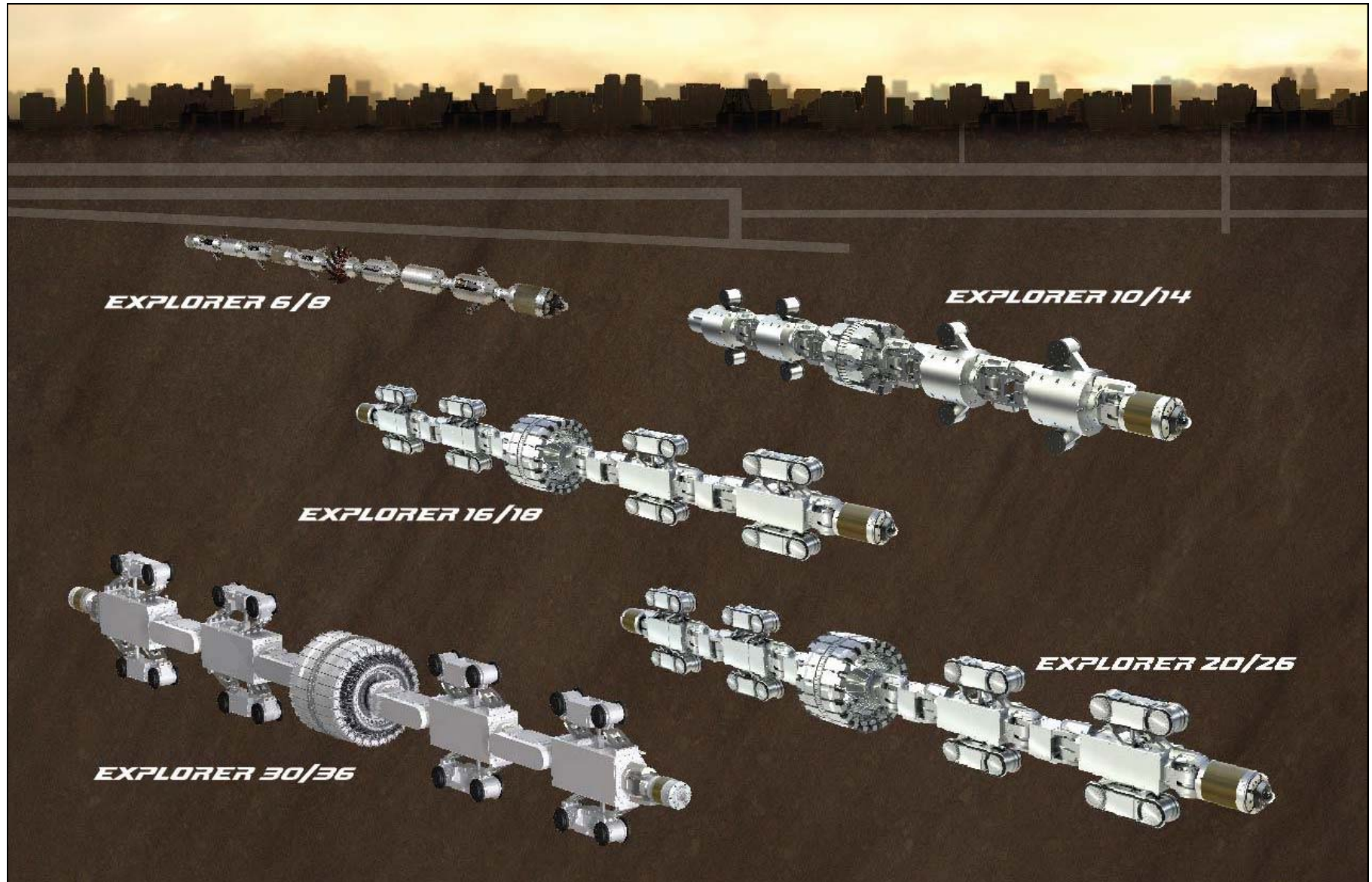
pipetel



MFL data



Robot fleet



Conclusions

- Robotic inline inspection continues to grow and improve
- Navigation of difficult pipeline features is possible
- Provide wealth of knowledge of pipeline previously unpiggable
- Current research will continue to provide more inspection opportunities and more information about pipelines
- Unpiggable is becoming piggable in many situations

UNPIGGABLE GAS PIPELINE INSPECTION – AT YOUR SERVICE

Thank you & questions

“Knowledge is only part of understanding.
Genuine understanding comes from hands-on experience”

*Dr. Seymour Papert
MIT*