

# My Generation: Advances in Utility Network Visualization

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# UT-1951 Class Overview

This class discusses the results of an Advanced Infrastructure Analysis Technology assessment recently conducted by Autodesk Consulting for a major electric and gas utility, with over 15 million customers. A key focus of the engagement was the evaluation of emerging mobile and visualization technologies of potential benefit to the clients gas transmission and distribution network operations for both the short term and long term replacement of current mobile solutions. In this class we will demonstrate a number of Autodesk products including InfraWorks, ReCap and PLM 360, and will highlight current advances in emerging technologies, including reality capture and augmented reality. We will discuss the business requirements identified, the current limitations and advantages of each solution, and the final short term and long term recommendations presented

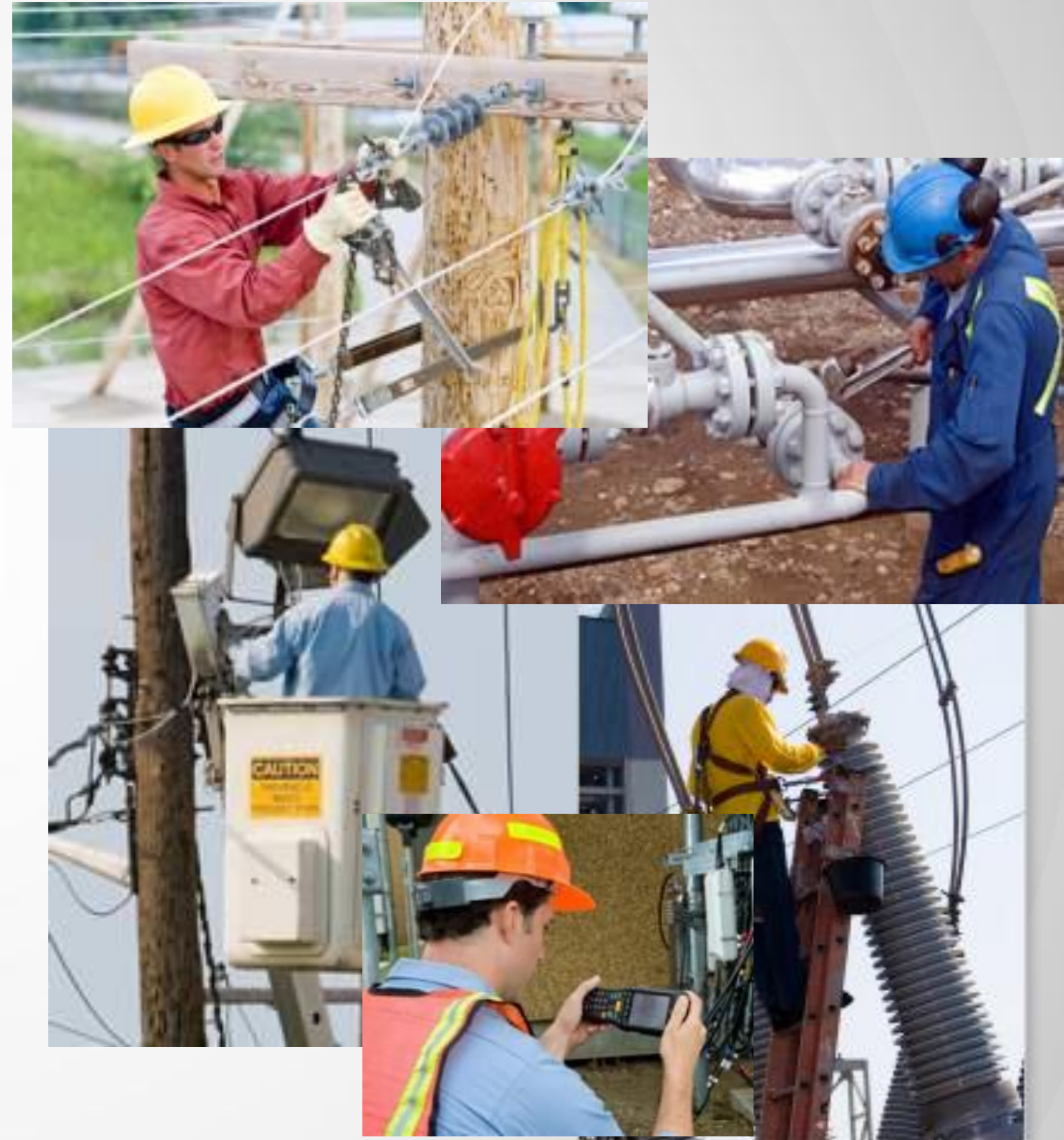
# Key Learning Objectives

**After completing this class, attendees will be able to:**

- Describe best practices for getting started with InfraWorks, ReCap and PLM 360
- Understand how InfraWorks, ReCap and PLM 360 might benefit the utility workflows
- Recognize the various limitations of current product solutions
- Understand the future direction of reality capture and augmented reality technology

# Energy Utilities: An Industry in Transition

- Field personnel make up a large portion of the typical utility workforce
- Connection with field workers is vital
- Retiring workforce (55-60) and planning for replacement is top utility management concern
- Mobile worker and mobile technology now top-of-mind in utilities
- Technology for the Next Generation utility field worker



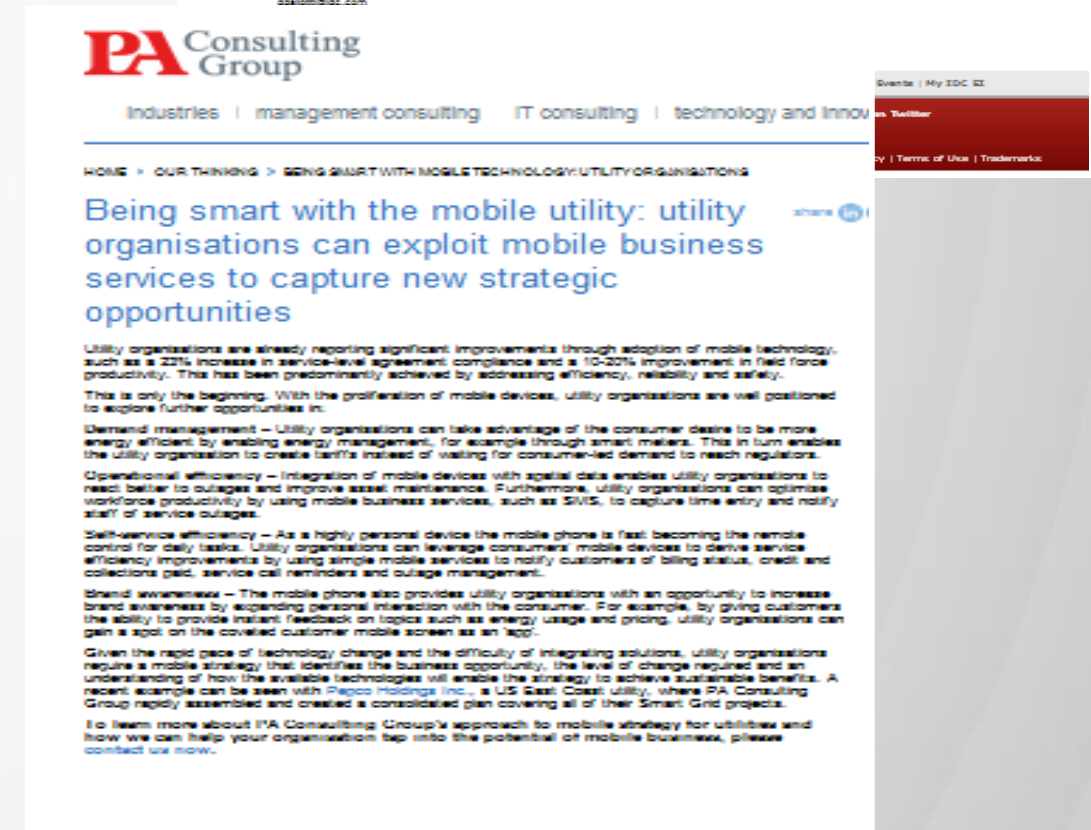
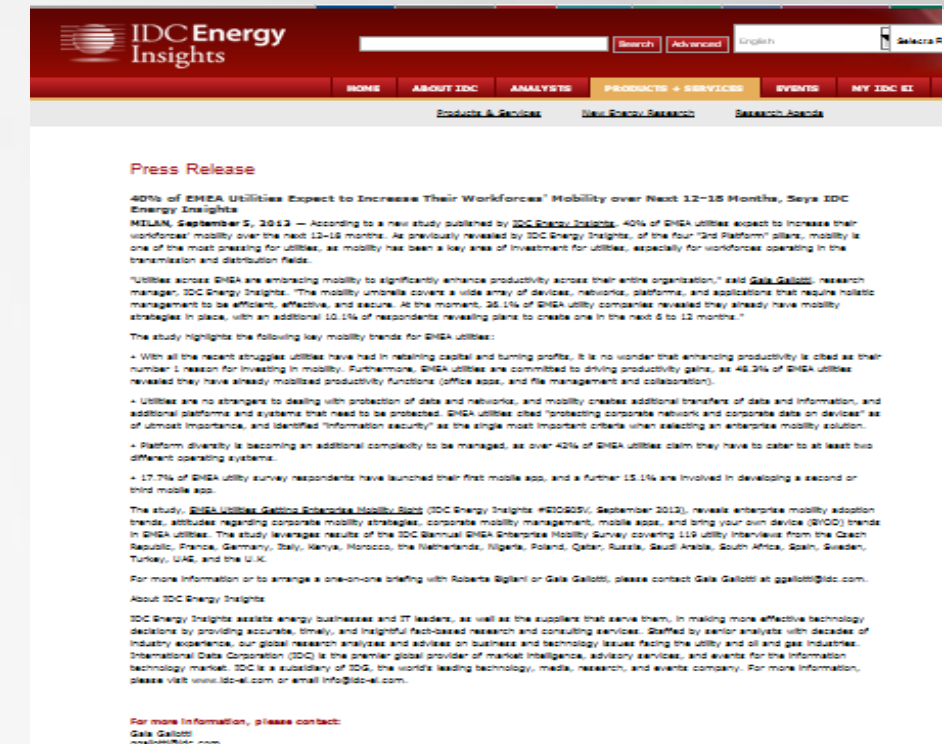
# Utility Mobility Trends

## IDC Energy Insights

- 40% of EMEA utilities expect to increase their workforce mobility over next 12-18 months
  - Embracing mobility to significantly enhance productivity
  - 26% already have mobility strategies in place

## PA Consulting

- Being smart with the mobile utility
  - Reporting 23% increase in service-level agreement compliance
  - 10-20% improvement in field force productivity
  - By addressing efficiency, reliability, safety



# Business Value Benefits – Mobility

- Both quantitative and qualitative benefits can be realized through the implementation of a mobile technologies
- Potential Quantitative Benefits
  - Labor productivity / knowledge transfer
  - Reduction in number of field visits
  - Reduction in redesign and rework
  - Business process improvement / standardization
- Potential Qualitative Benefits
  - Transform service delivery
  - Quality
  - Safety

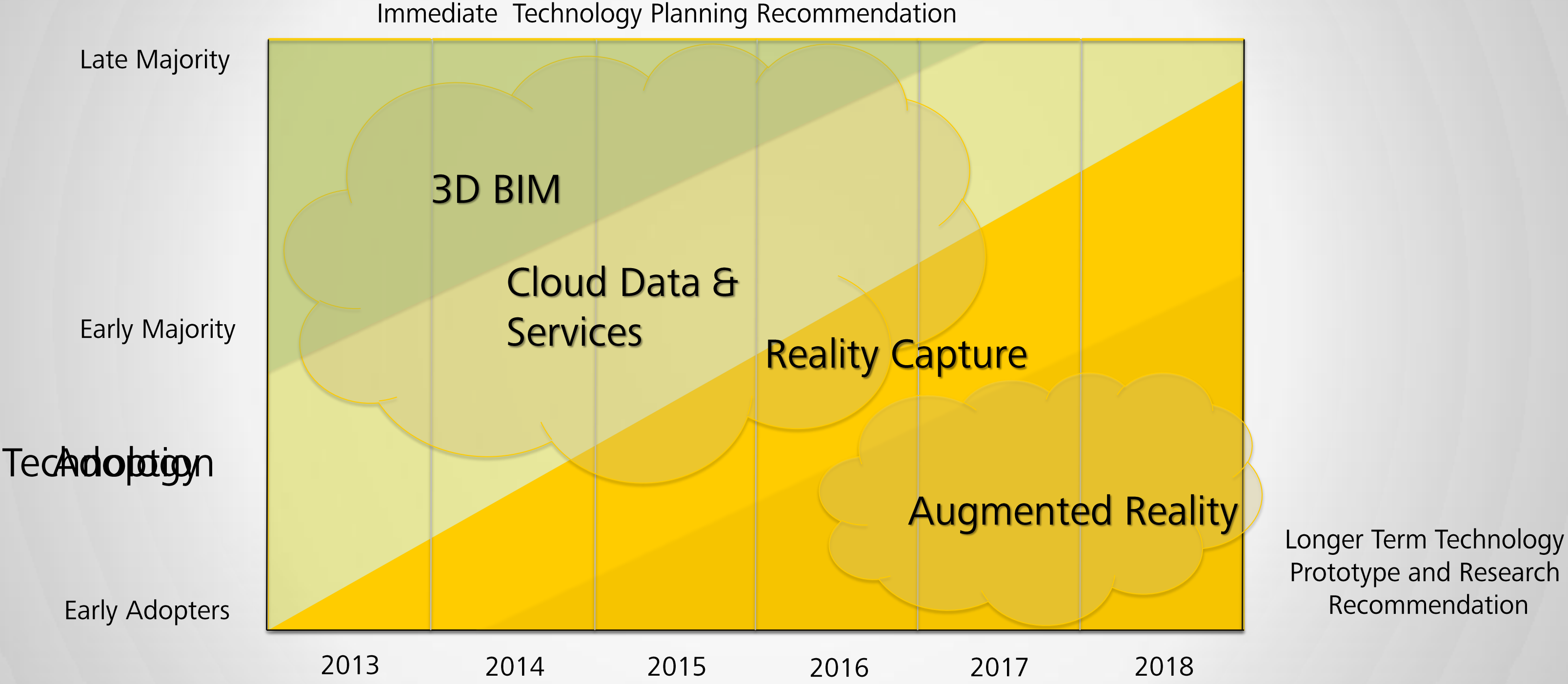


# Utility Vision

***By 2020, leading utilities will have a complete, accurate, and dynamic 3D model of their infrastructure, including overhead and underground facilities, related equipment and parts, and mobile assets.***



# Technology Adoption Roadmap



Recommendation Timeframe	Issue	Applicable Tech Trend	Expected Benefit	ADSK Solution	Advantage
Short Term (Immediate )	<p>Current Mobile App. Replacement Planning</p> <p>Android not a supported IT platform</p> <p>Android security</p> <p>Not in control of entire process inception to end</p> <p>Field crew scheduling</p> <p>Geographic boundaries</p>	Cloud Services	<p>Centralized administration</p> <p>Collaboration hub for resource balancing</p> <p>Insulate from tablet OS changes</p> <p>Secure managed IT infrastructure</p>	BIM360 or PLM360 (TBD) products	<p>COTS meets 70% + of required functionality, lower support cost</p> <p>Mgmt. dashboards</p> <p>Enable integration with dynamic scheduling cloud-based services offered</p> <p>Potential for better USA North integration in future</p>
Short Term (1-2 years)	Need crew feedback loop to perfect map and asset data	Reality Capture	Capture of “as-built” facilities in 3D using existing photos	Infraworks /123D Catch Product (TBD)	<p>Automated asset location data</p> <p>R&amp;D opportunity</p>
Medium Term (2-3 years)	Need crew feedback loop to perfect map data	(GPS advances)	Capture of “as-built” facility locations	BIM360 product (TBD)	Perfect asset location data
Medium Term (2-3 years)	<p>Inaccurate Maps</p> <p>“Mapped for Convenience” issues</p>	Reality Capture	Accurate drive-by capture of “as-built” OH facilities	<p>Lidar fitment vehicles</p> <p>ReCap product</p>	<p>Lower cost and rapid OH facility locations and identification</p> <p>R&amp;D opportunity</p>
Long Term (3-5 years)	<p>Provide rich contextual information closer to point of work</p> <p>Poor map legibility</p>	Augmented Reality (AR)	<p>Access to back office IT system asset information to improve decisions</p> <p>AR is GUI of future</p>	Infraworks product	<p>Advanced AR solution and focal point of Autodesk product development</p> <p>R&amp;D opportunity</p>

# Conclusions

- A number of advanced technologies are available to transform mobile technology tools for field personnel.
- Planners should consider the rapid pace of technological advancement to begin to plan 1-3 year timeline for production system deployments.
- The Cloud is well suited for rapid deployment and support of utility mobile solutions and is available today for immediate adoption.
- Reality Capture and Augmented Reality (AR) are the key technology trends that will transform mobile field worker solutions in asset intensive industries...will become the “user interface” for applications.

