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# Novas Tecnologias para Projetos de Construção Vertical

# Por que Engenharia Civil?



<http://guiadoestudante.abril.com.br/blogs/melhores-faculdades/tag/engenharia-civil/>

# Engenharia Civil?



# Pequenos erros...



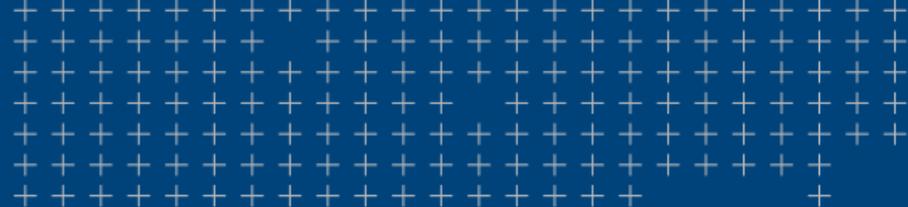
# Reconhecimento ?



<https://encivil.files.wordpress.com/2010/08/image239.gif>

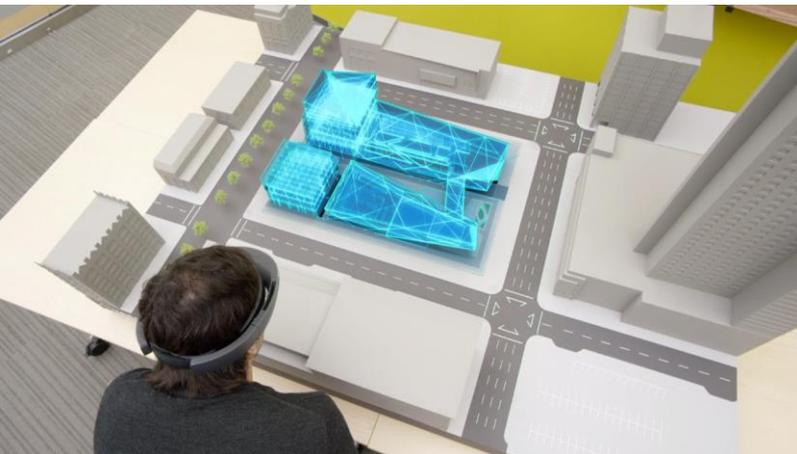


Courtesy TV Globo - August 20, 2016



Transforming the way the world works

# Trimble – Transforming the Way the World Works



# Trimble Brasil

31

Colaboradores

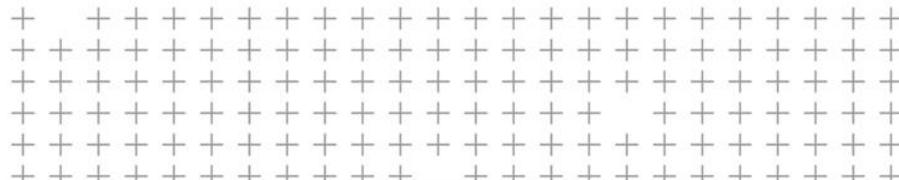


+25 anos  
no Brasil

4 anos  
de atividades  
Campinas



4  
Grandes Áreas  
de atuação



# Trimble Rockies – Estudo de Caso para Construção Vertical

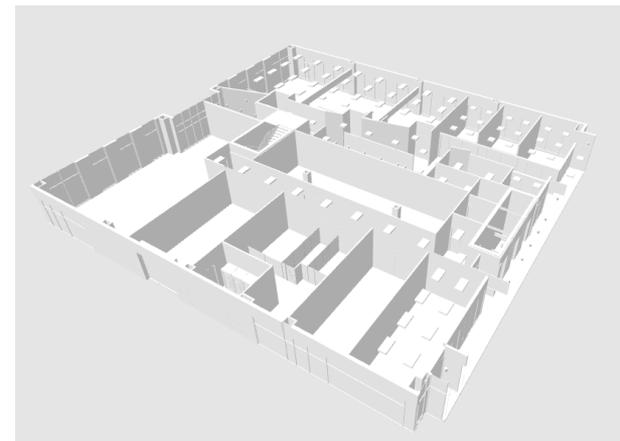
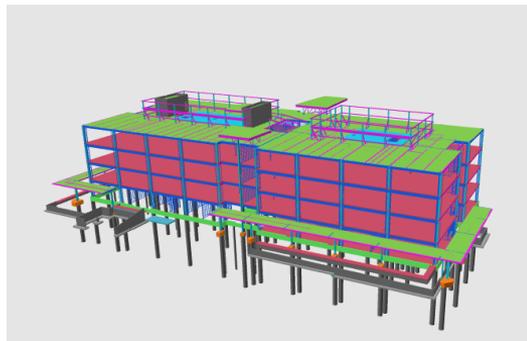
# Trimble Rockies

- Local – Westminster/CO
- 4 andares
- 11,613 m<sup>2</sup> de Área Total
- Capacidade para 570 pessoas

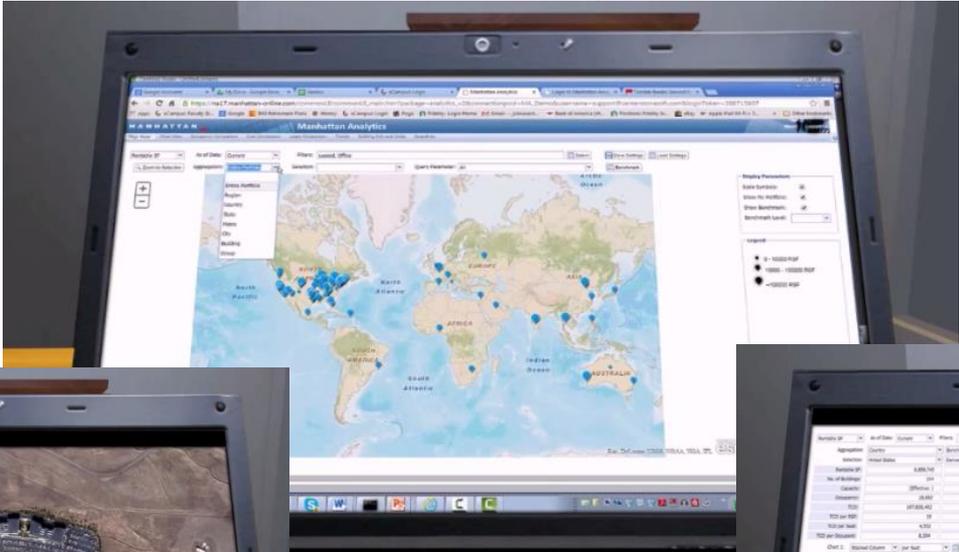


# PROJETO TRIMBLE ROCKIES

- Estudo de Viabilidade
- Reconhecimento de terreno
- Preparação do terreno
- Projetos : BIM
  - Arquitetura
  - Estrutura
  - Instalações
- Plataforma colaborativa
- Resultados Obtidos



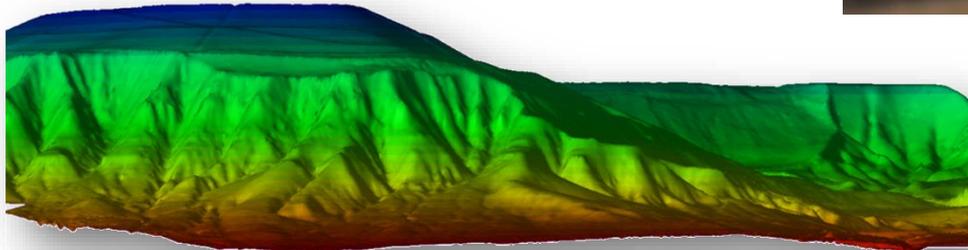
# Estudo de Viabilidade



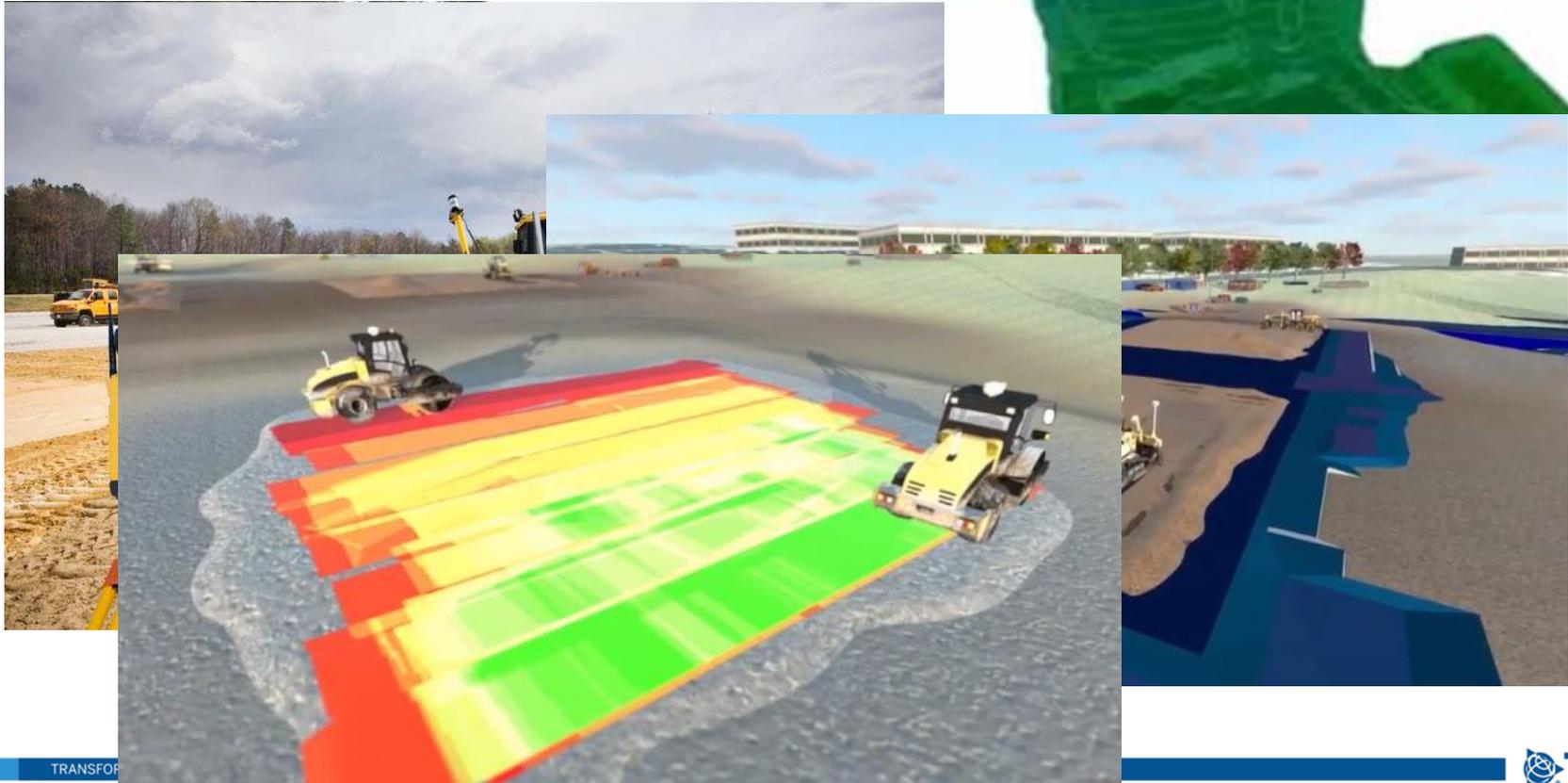
Software Manhattan



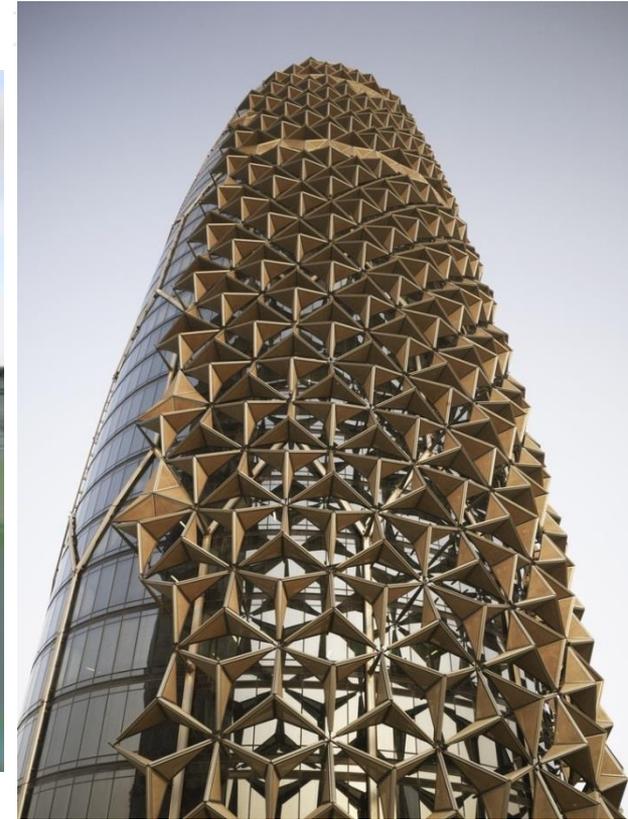
# Reconhecimento do Terreno



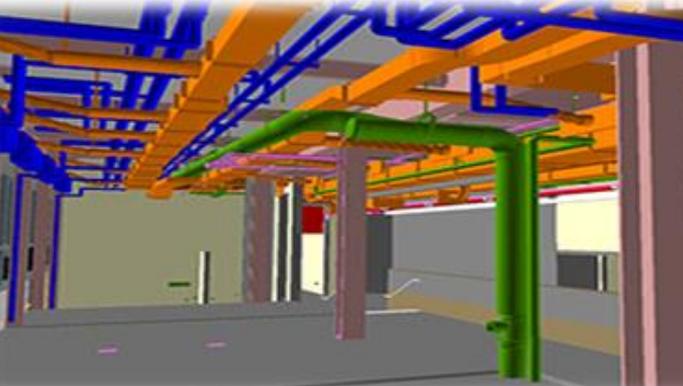
# Preparação do Terreno



# Projetos – Arquitetura



# Projetos – Instalações

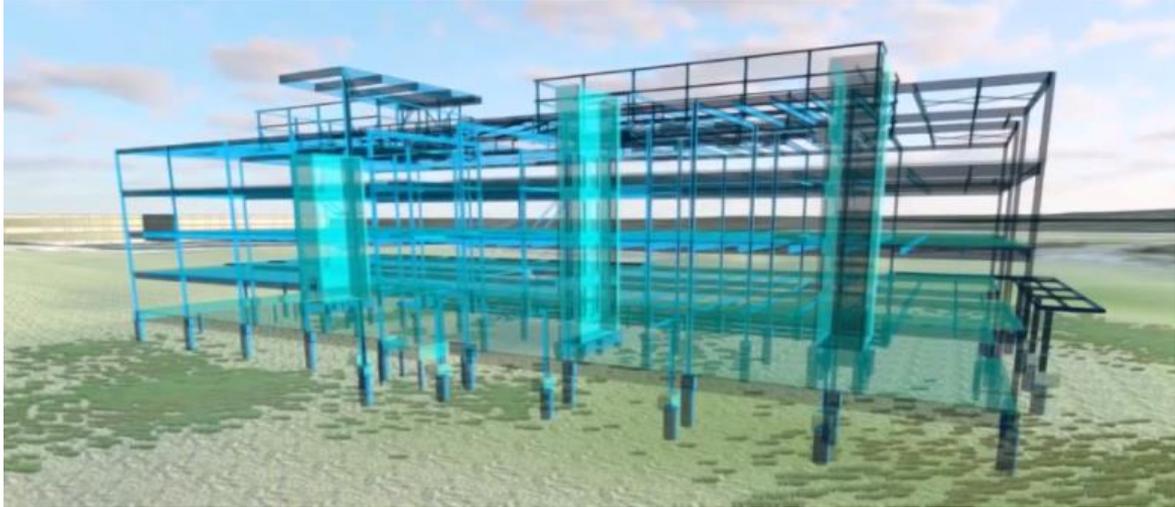
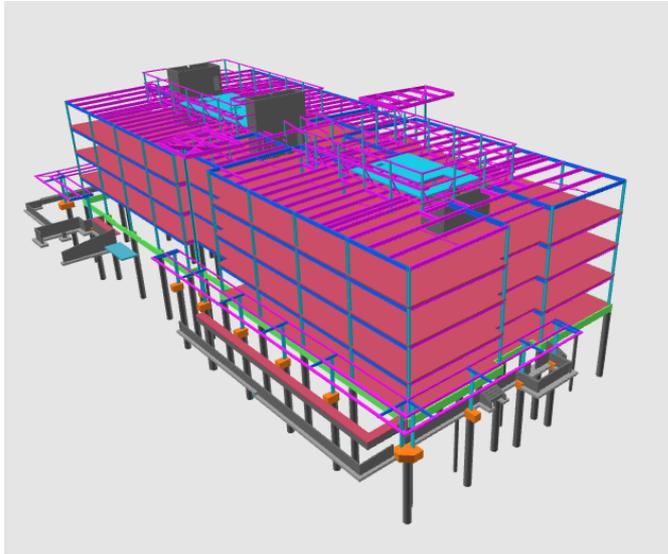


# Trimble x Trena



# Projetos - Estrutural

CONCRETO PRÉ-MOLDADO



CONCRETO MOLDADO IN LOCO

METÁLICAS



# BIM





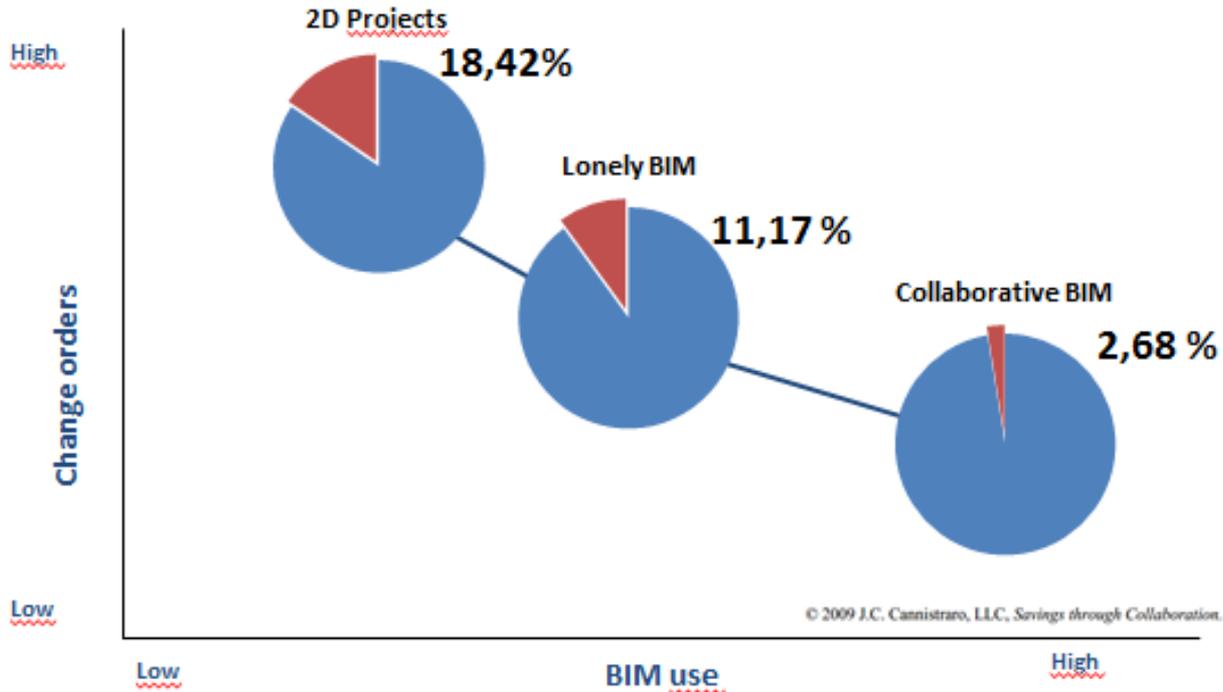
# Plataforma Colaborativa – Trimble Connect



TRANSFORMING THE WAY THE WORLD WORKS



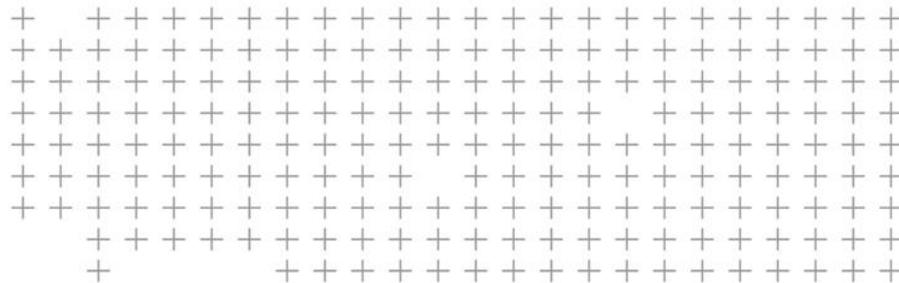
# Resultados Obtidos



**PRODUTIVIDADE DA MÁQUINA  
30%+**

**REDUÇÃO DO RETRABALHO  
50%+**

**MELHORIAS GERAIS DE  
30%**



# Outras Tecnologias para Construção Civil

# Laser Scanner

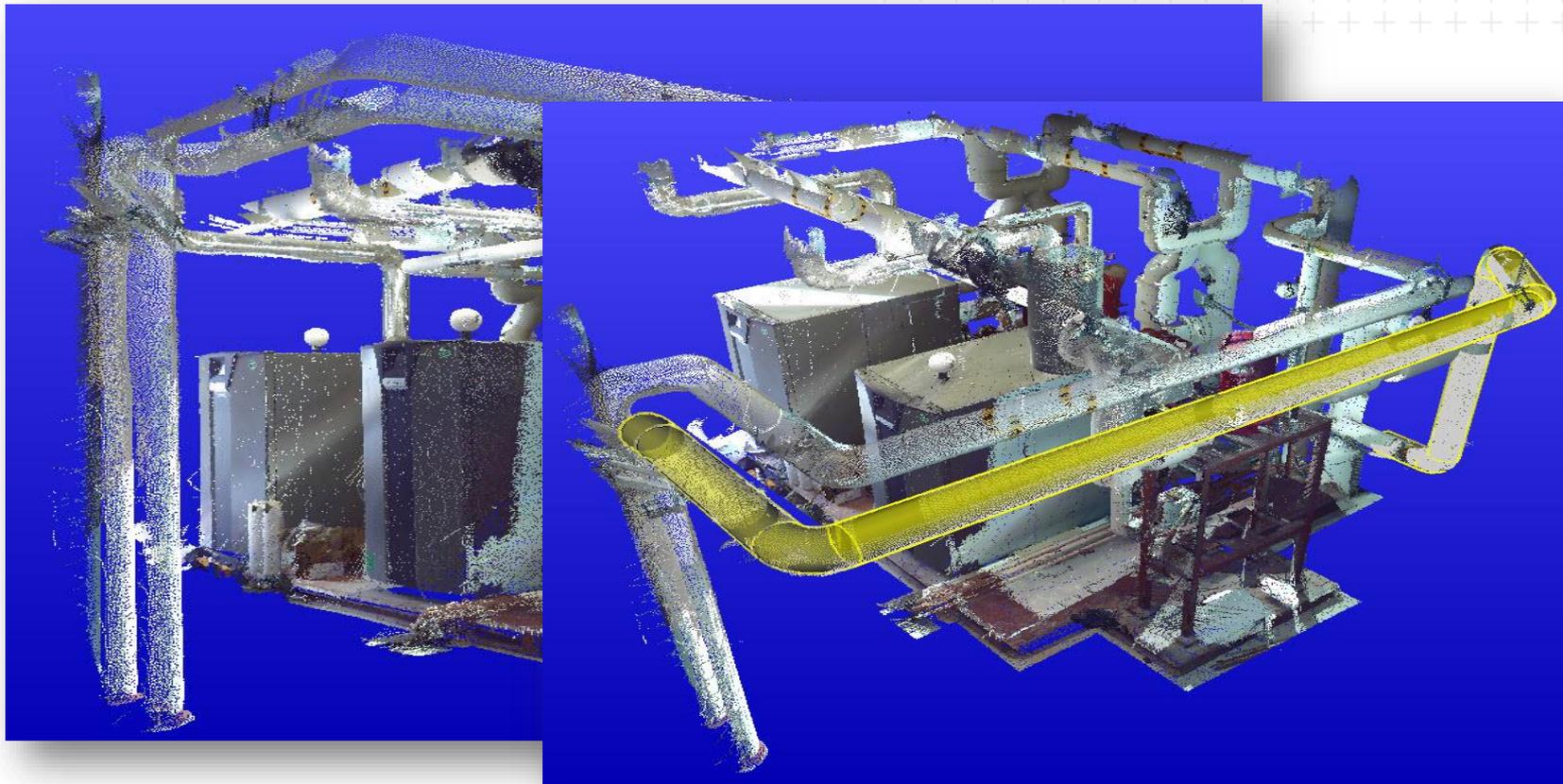


# Vantagens na utilização do laser scanner para As-Built

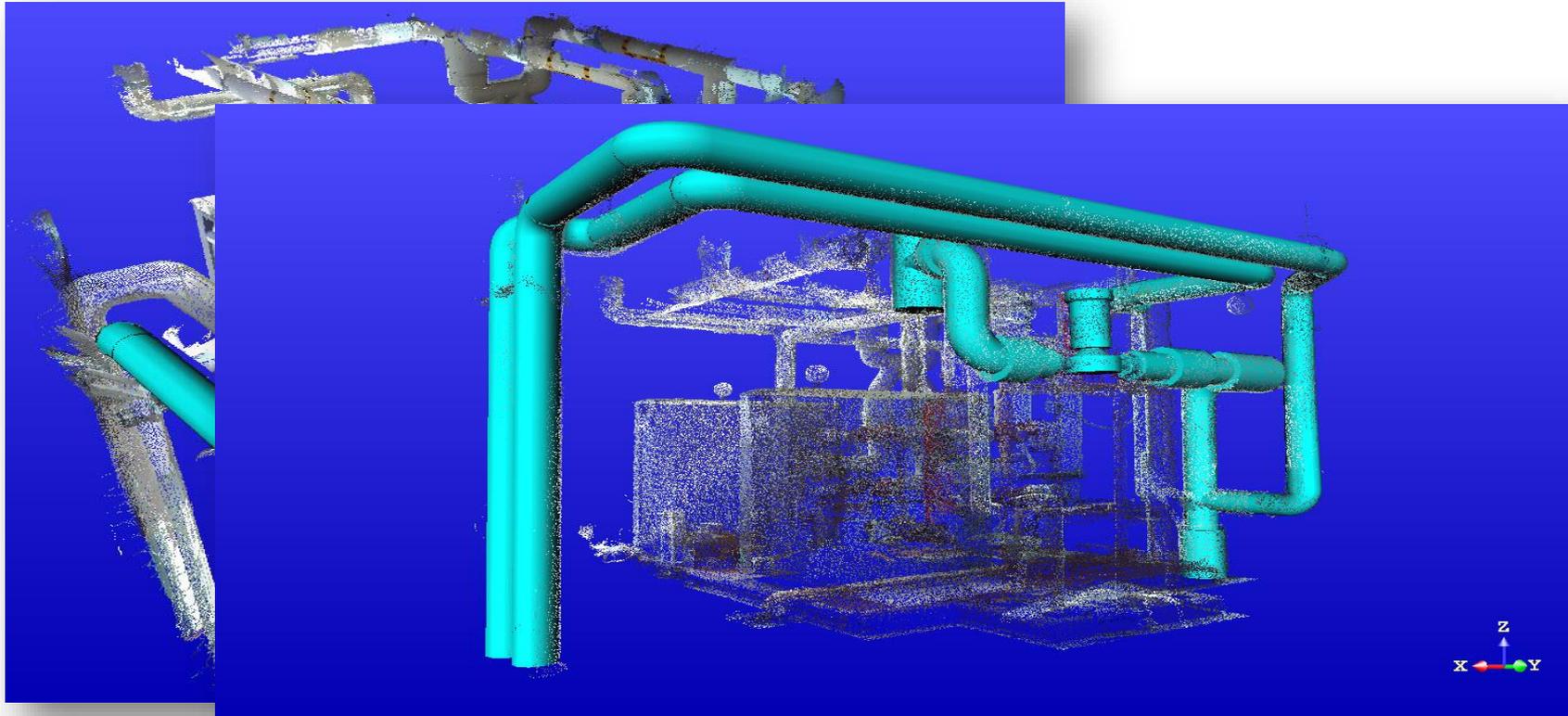
- Rápida coleta de pontos em campo
- Alta precisão
- Maior segurança em campo
- Diminuição do retrabalho



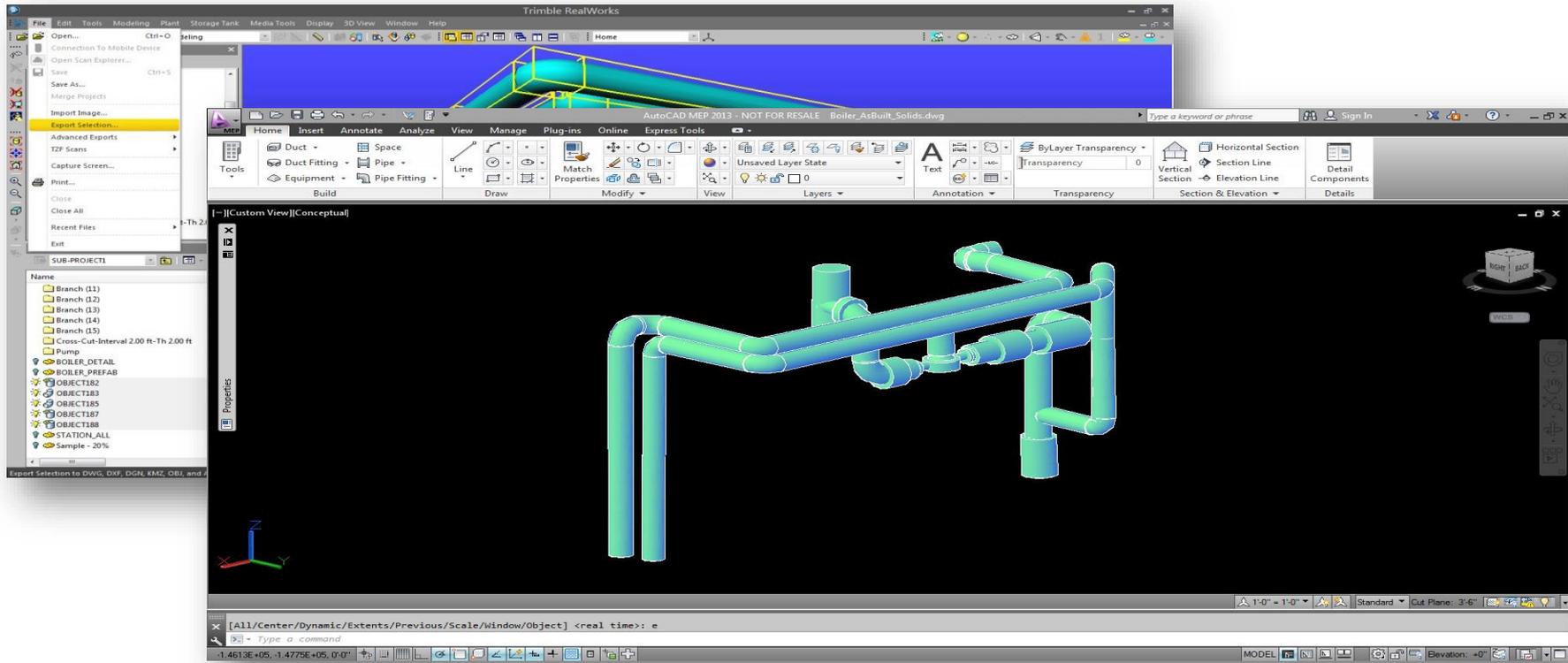
# Nuvem de pontos



# Modelagem da Nuvem de Pontos

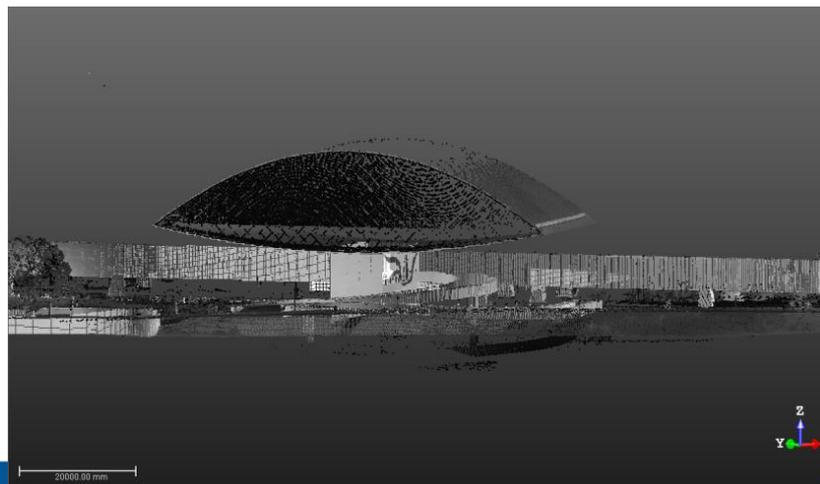


# Exportação de Sólidos 3D

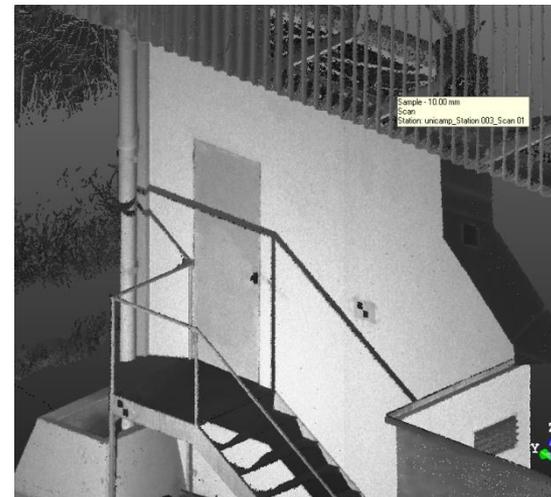
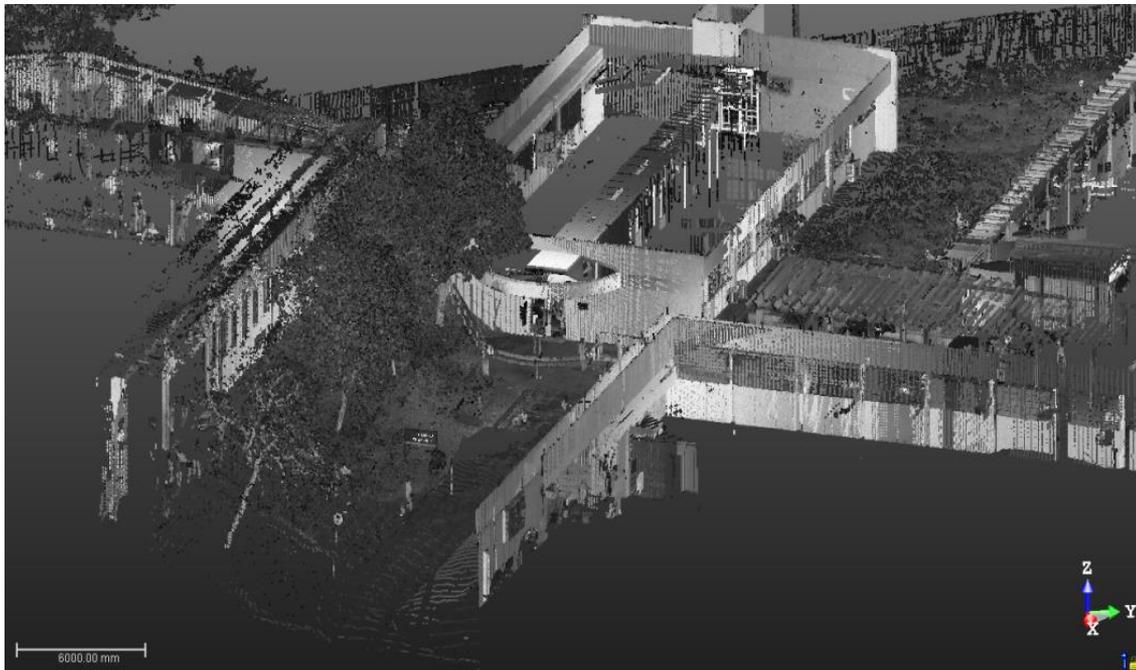


# Laser Scanner

## Museu Oscar Niemeyer - MON



# Laser Scanner – Unicamp Limeira



# Laser Scanner - FEC



# Mobile Mapping



MX7

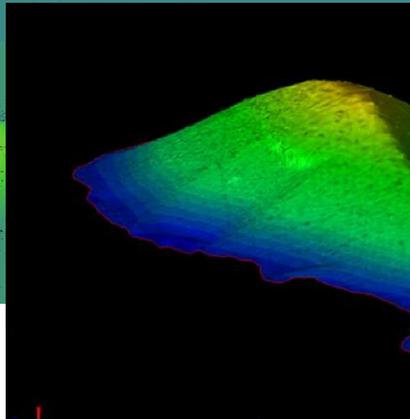
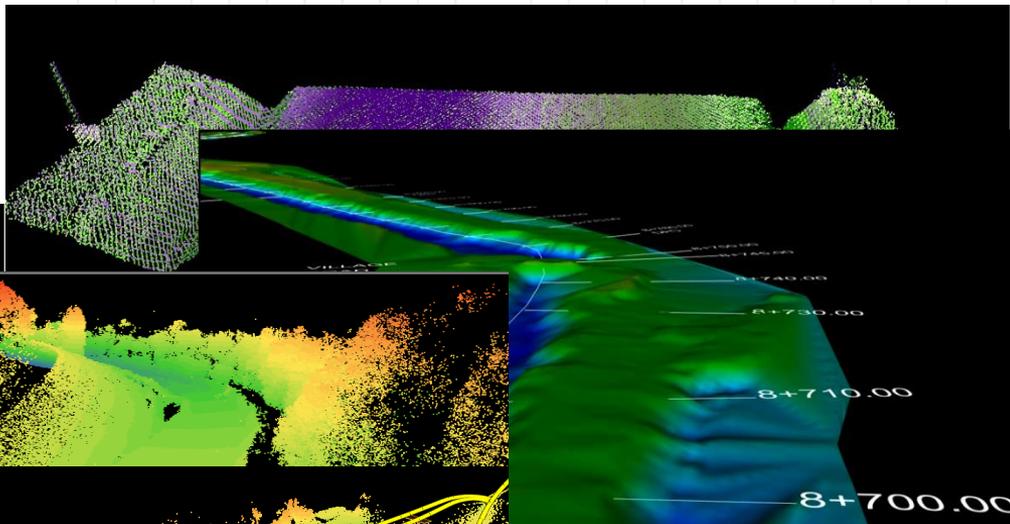


MX2

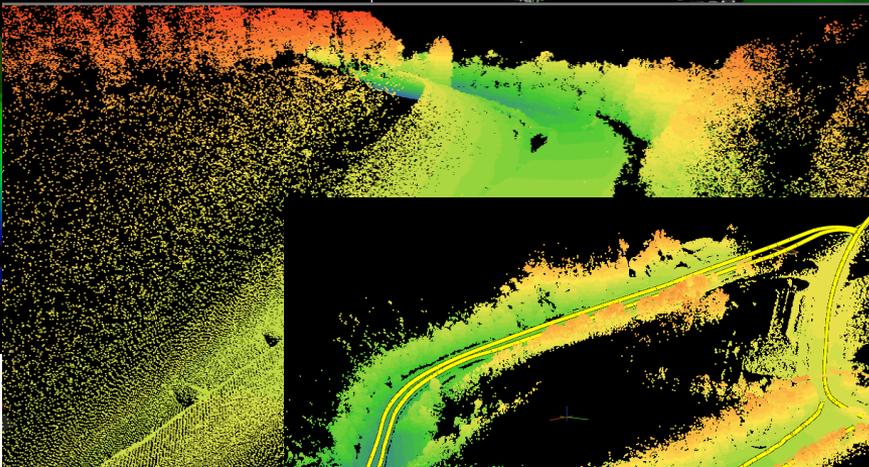




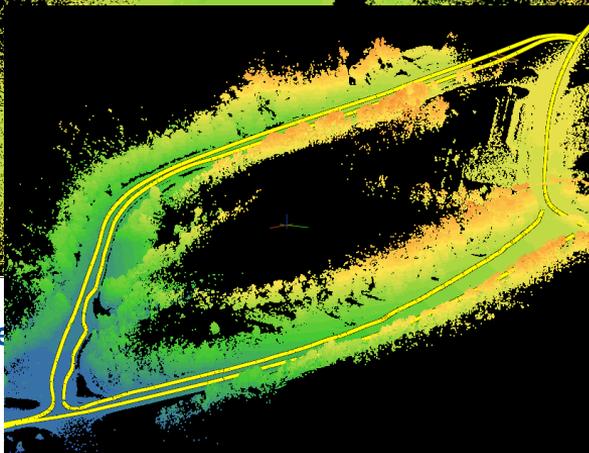
# Exemplos



Cálculo de

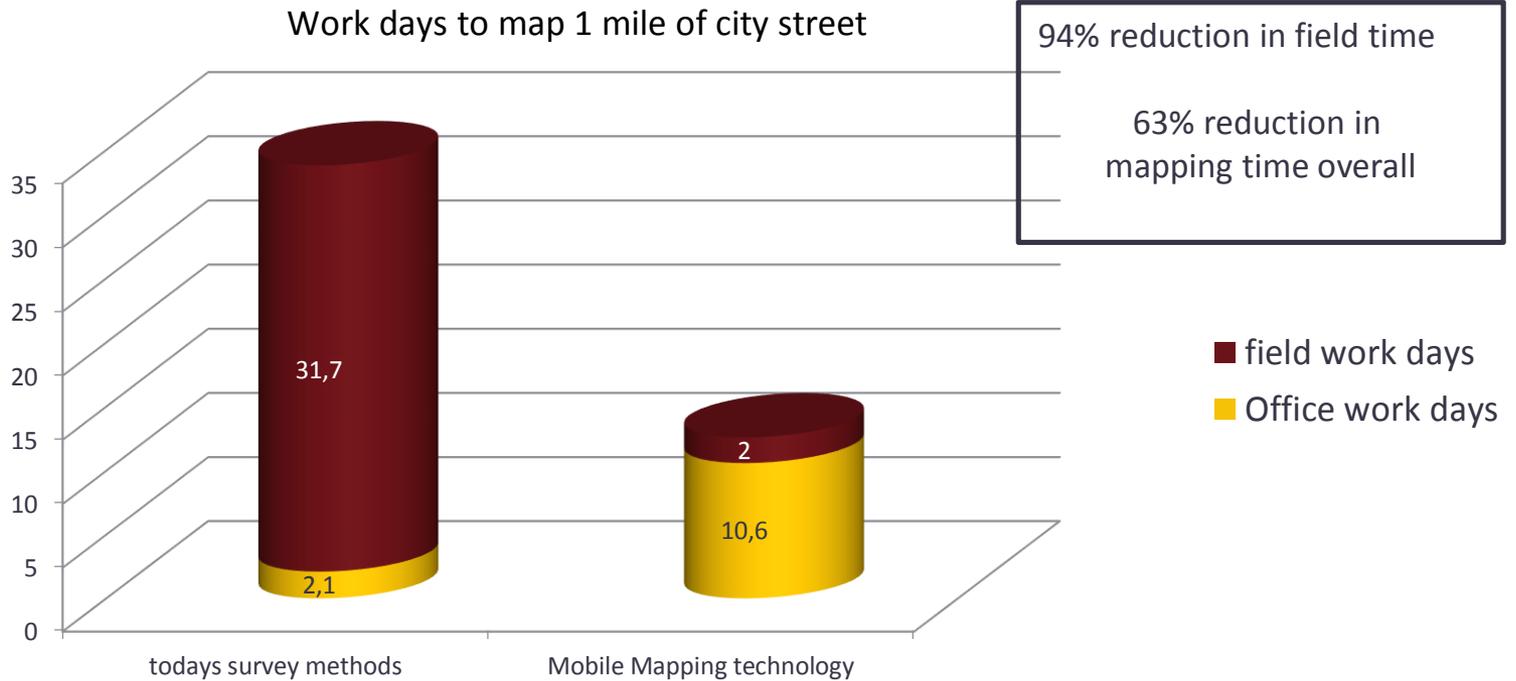


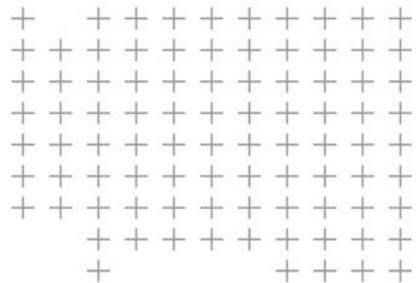
Levantame



elo digital de terreno

# Comparação de tempo: Métodos Tradicionais

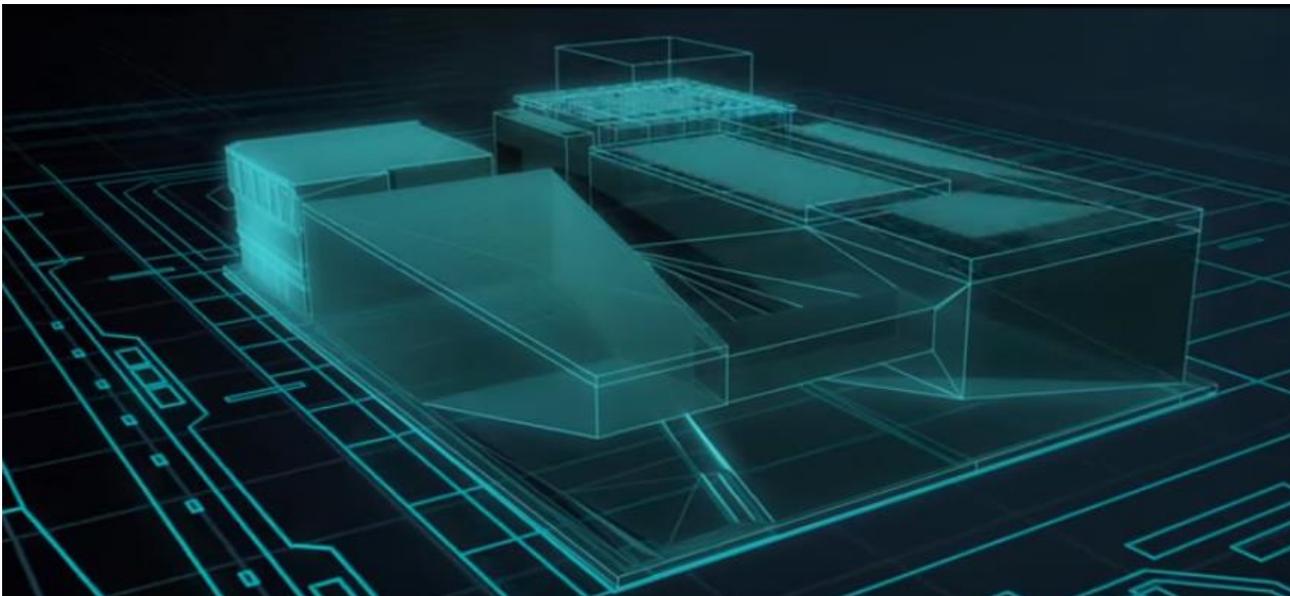




# O Futuro da Construção



# Microsoft HoloLens - Trimble





# Microsoft HoloLens - Trimble

