

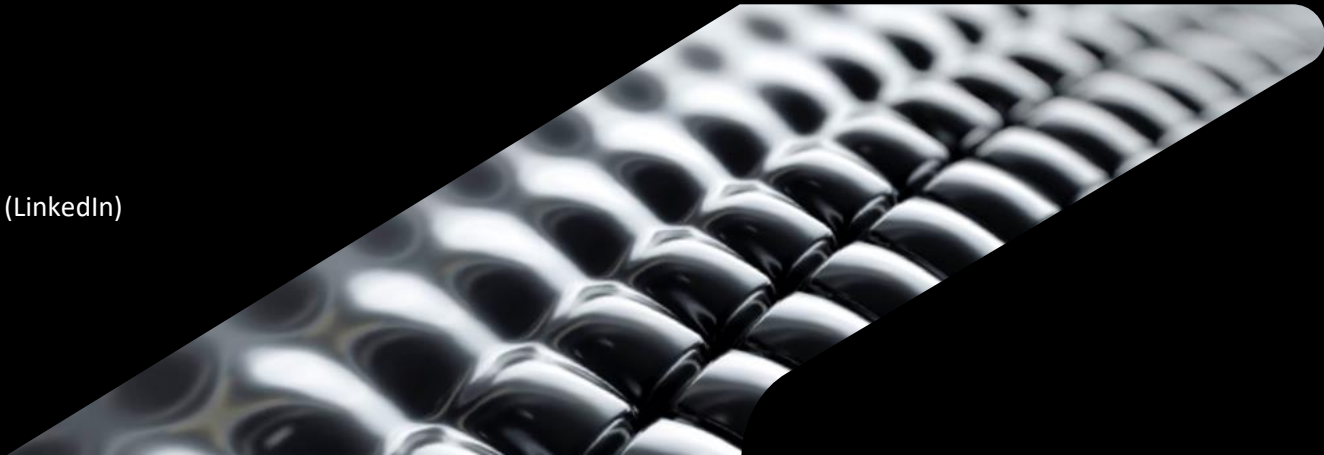


# How Revit Automation Saved Tens of Thousands of Working Hours at MRV&CO

BES501756

André Fonseca Pinheiro  
BIM Manager | @andrefonsecapinheiro (LinkedIn)

**MRV&CO**



# About the speaker

ANDRÉ FONSECA PINHEIRO

- Civil Engineer with emphasis in Production
- Sandwich graduation at University of Toronto, Canada
- Leader BIM Manager at MRV
- Passionate about technology and BIM
- 14 Years of experience in construction for real state



# About us (MRV&CO)



- Brazilian company;
- 42 years of history;
- 1 in 150 Brazilians lives in an MRV;
- 1.5M people live in an MRV;
- US\$50M + invested in digital transformation over the last 5 years;
- We are a CONSTRUTECH;
- Operations in Brazil: 22 states and 162 cities;
- Operations in US: 3 states and 19 cities;
- 276 construction sites running simultaneously.





A man and a woman in business attire are looking at a tablet together in an industrial setting. The man is wearing a dark blue suit jacket over a light blue checkered shirt. The woman is wearing a white shirt with black vertical stripes and dots. They are standing in front of a red metal structure, possibly a staircase or railing. The background is a blurred industrial interior with large windows and hanging lights.

**WHY BIM?**

**WHY AUTOMATION?**



# Why BIM?

WE ARE A **CONSTRUTECH**

- For being the **largest construction company** in Latin America;
- **Leading role** in the market;
- **Obligation** to implement BIM;
- **Vanguard, innovation** in the vein, foundation for other technologies;
- Scale, **company size**, market influence.

# Info about BIM at MRV

8

**Years of  
implementation**

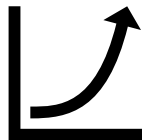
Started in 2014



900

**Projects using BIM**

Different stages of usage



150

**Construction sites**

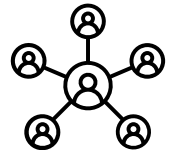
Using BIM360 Docs



1000

**People trained**

Designers, engineers,  
analysts & external  
consultants



# Why automation?

- 400+ designers involved;
- Average of 200 projects running simultaneously;
- BIM Mandates / BEP's / Library;
- Standard products – repetition over & over;
- Time of projects/design took too long at the beginning;
- Helping the culture change.







# BIM Automations

Plugin / Add-ins



# How Revit Automation Saved Tens of Thousands of Working Hours at MRV&CO

## LEARNING OBJECTIVES



The importance of standardizing processes to leverage the use of automation at scale.



See how we collected logs of plugin usage



Understand how we use a data-driven perspective to automate and create plugins at scale

# Autodesk Ecosystem at MRV



## DESIGN OF ALL DISCIPLINES

Architectural  
Earthmoving  
Structural  
Aluminum Forms  
MEP  
Finishes



## COLLABORATION

Designers  
Managers  
Coordinators  
Analysts  
  
Internal & External



## SCHEDULING

Planning & Control  
Field



## DOCUMENT MANAGEMENT AND COMMUNICATION

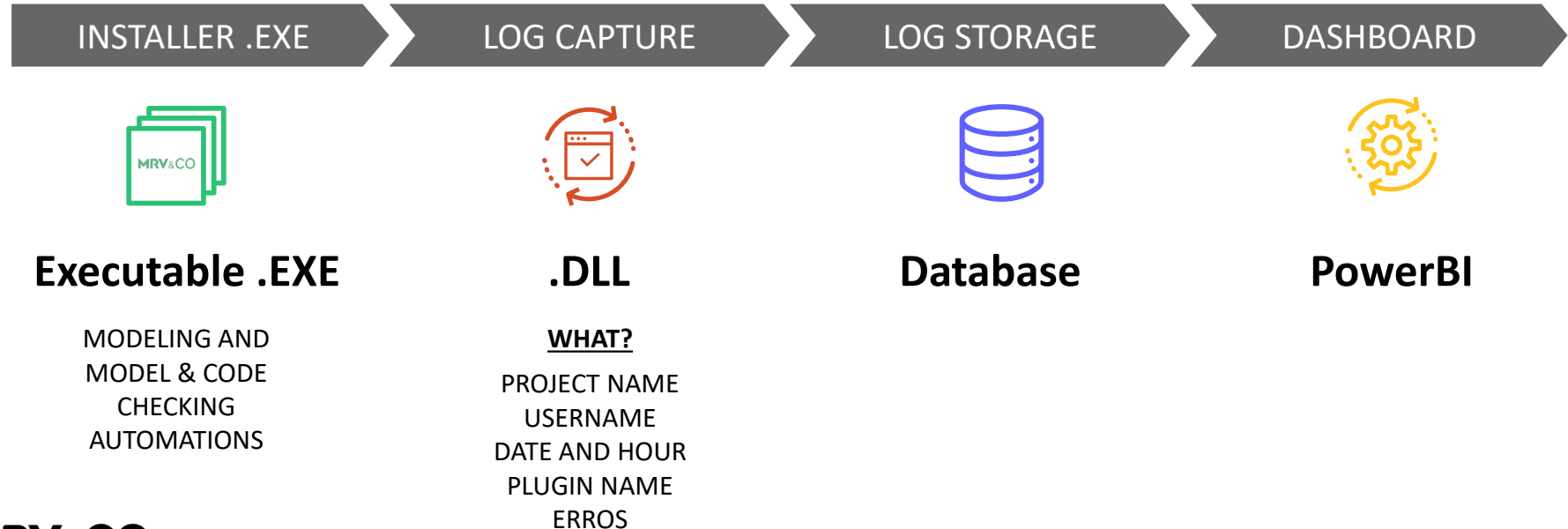
Backoffice and Field

# Automation

## DATA COLLECTION

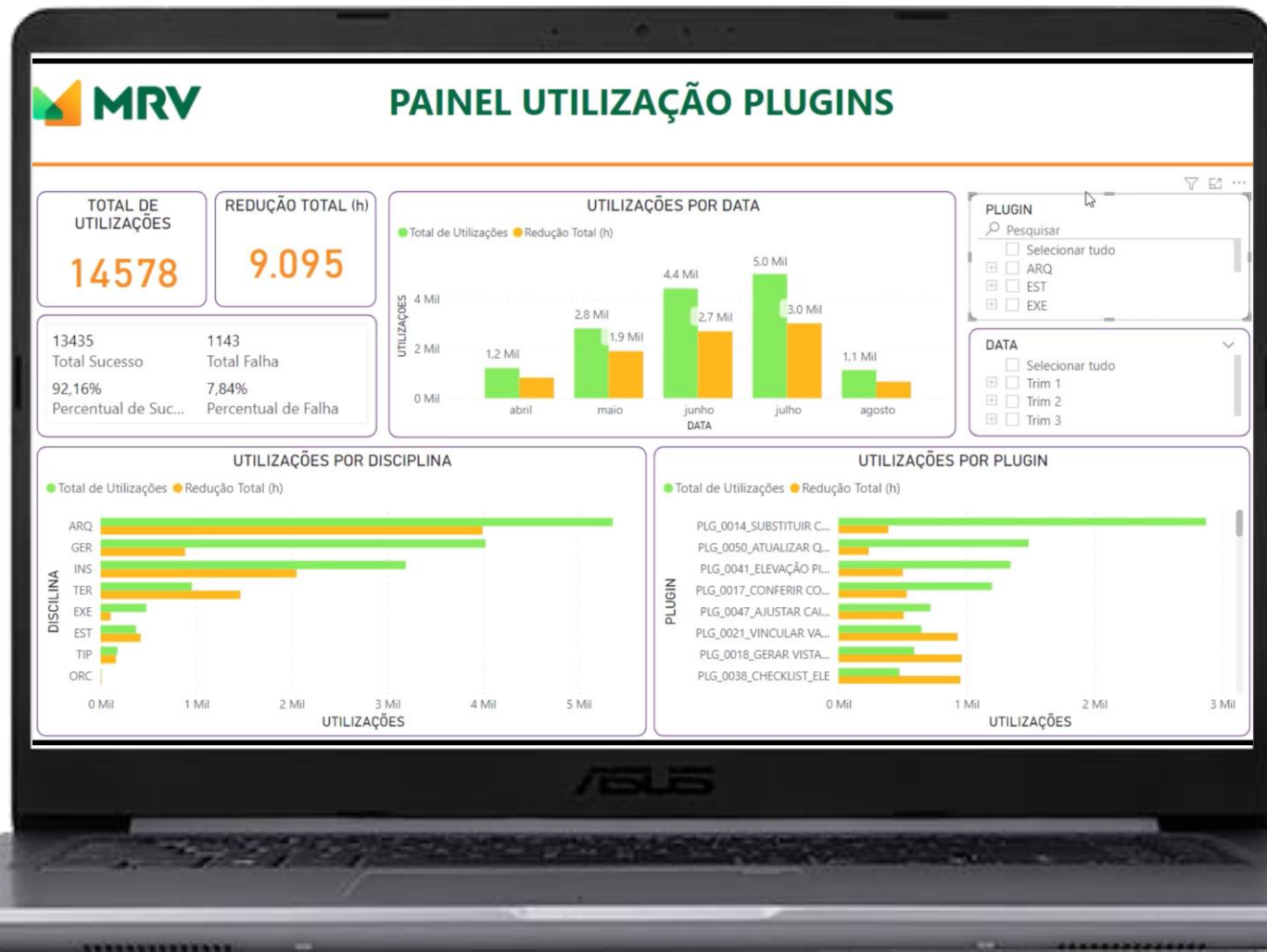
Through a collection of some information, we manage the use of the add-ins / plugins, making possible conduct our automation strategy through data driven.

### HOW?



# DASHBOARD

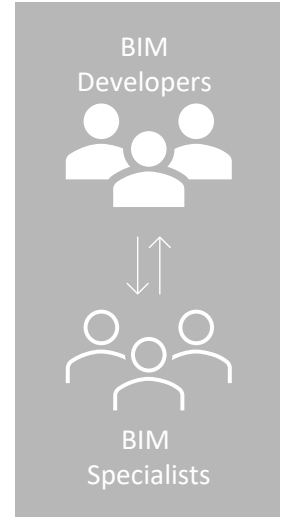
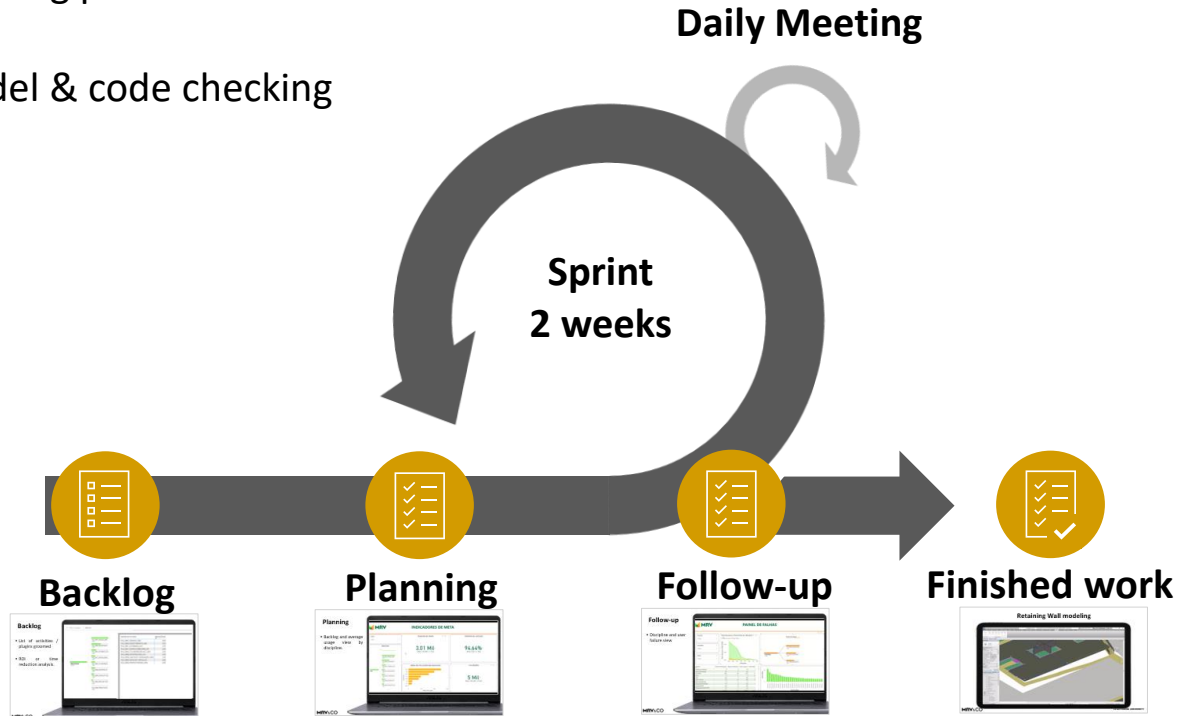
## ■ General usage data



# Automation

## AGILE FRAMEWORKS FORMAT FOR DEVELOPMENTS

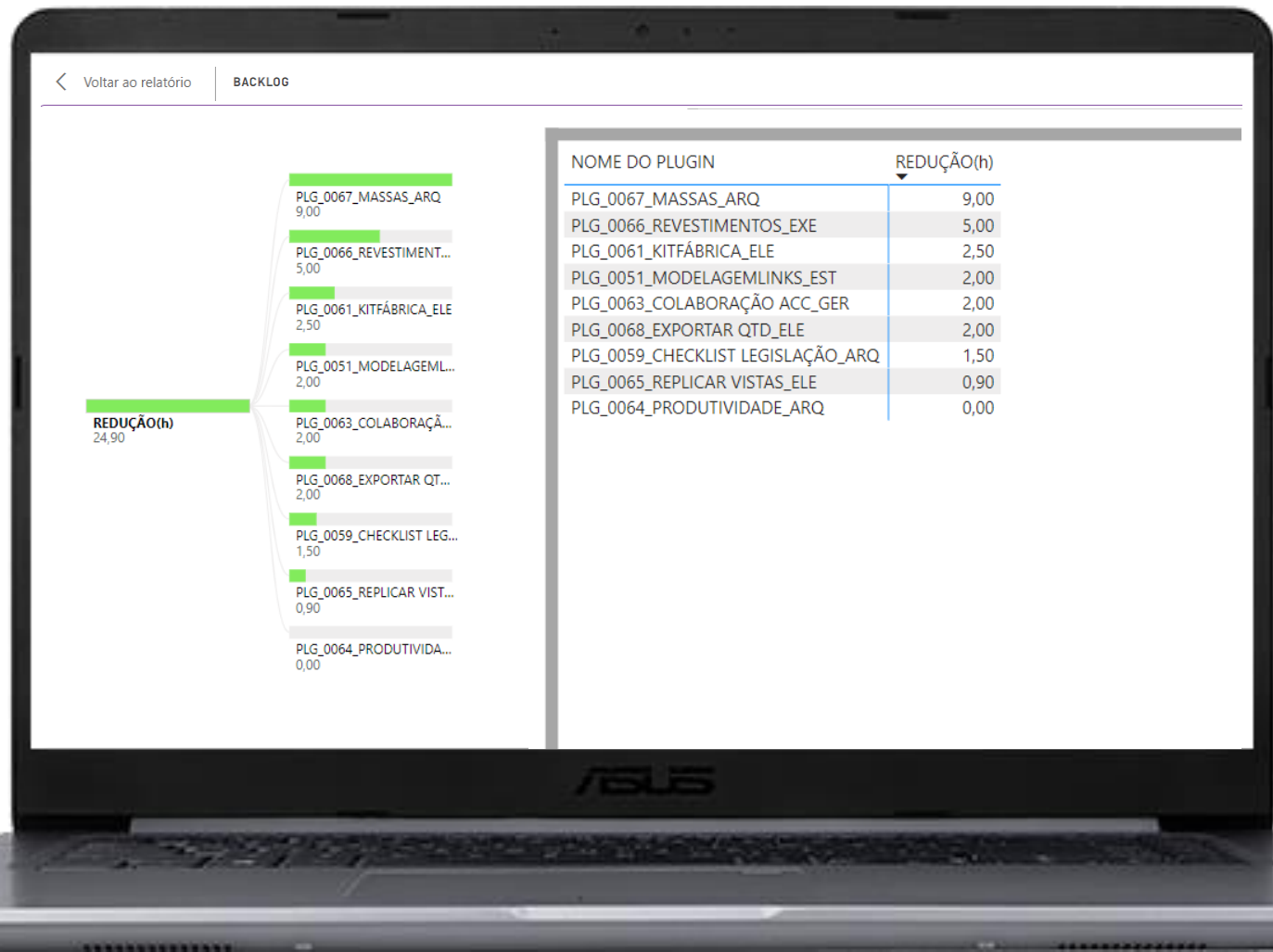
- 50 - modeling process
- 130 - model & code checking





# Backlog

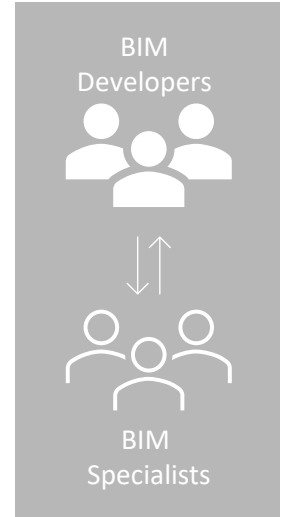
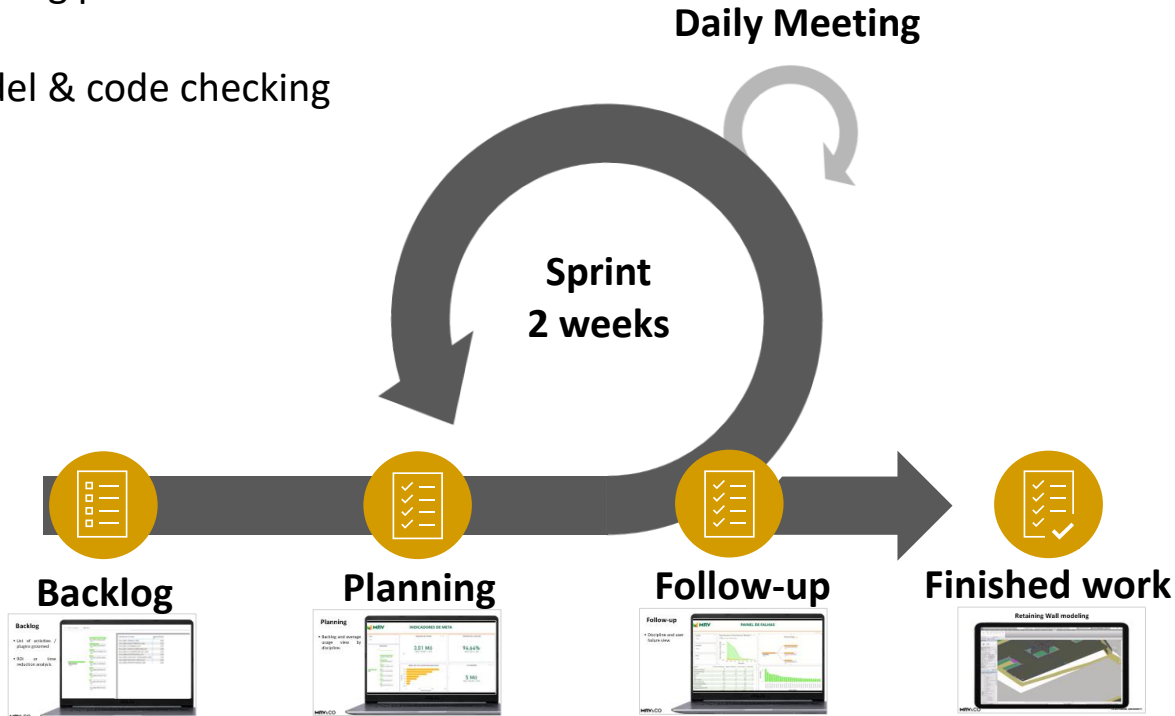
- List of activities / plugins groomed
- ROI or time reduction analysis.



# Automation

## AGILE FRAMEWORKS FORMAT FOR DEVELOPMENTS

- 50 - modeling process
- 130 - model & code checking



# Planning

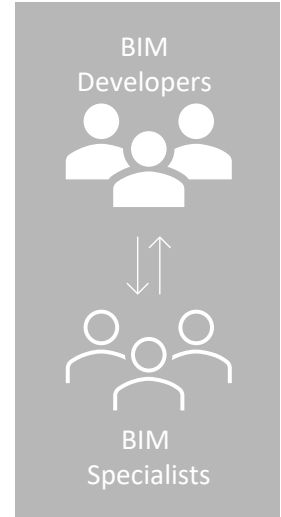
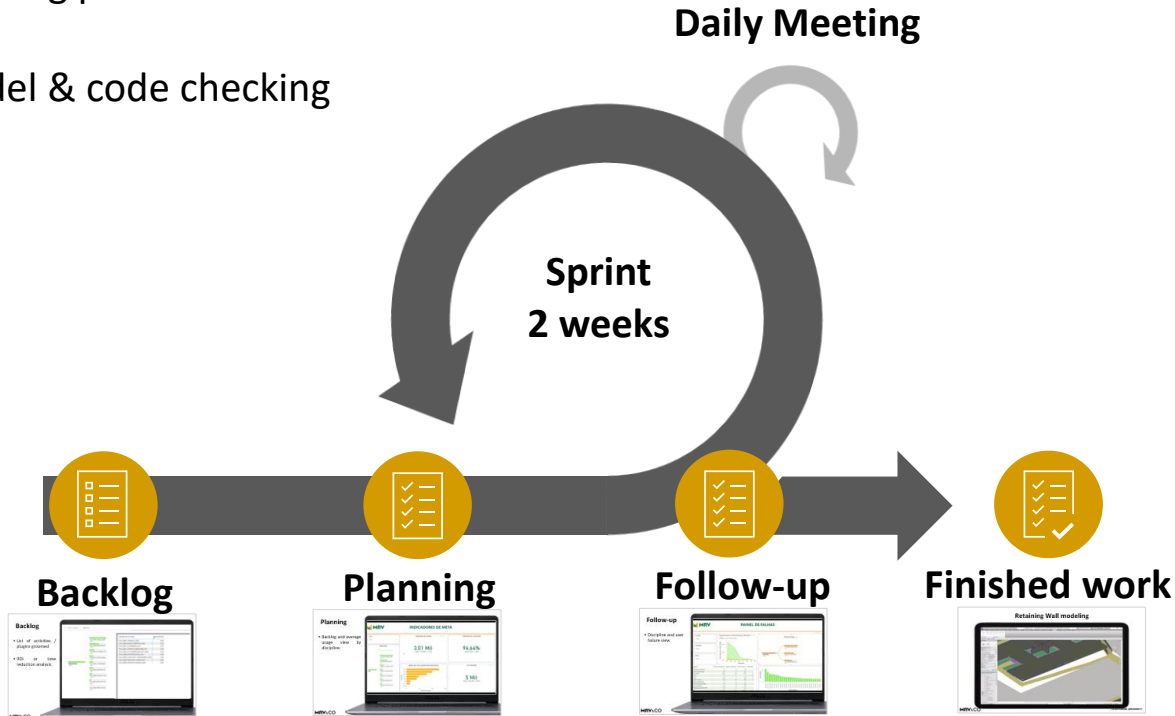
- Backlog and average usage view by discipline.



# Automation

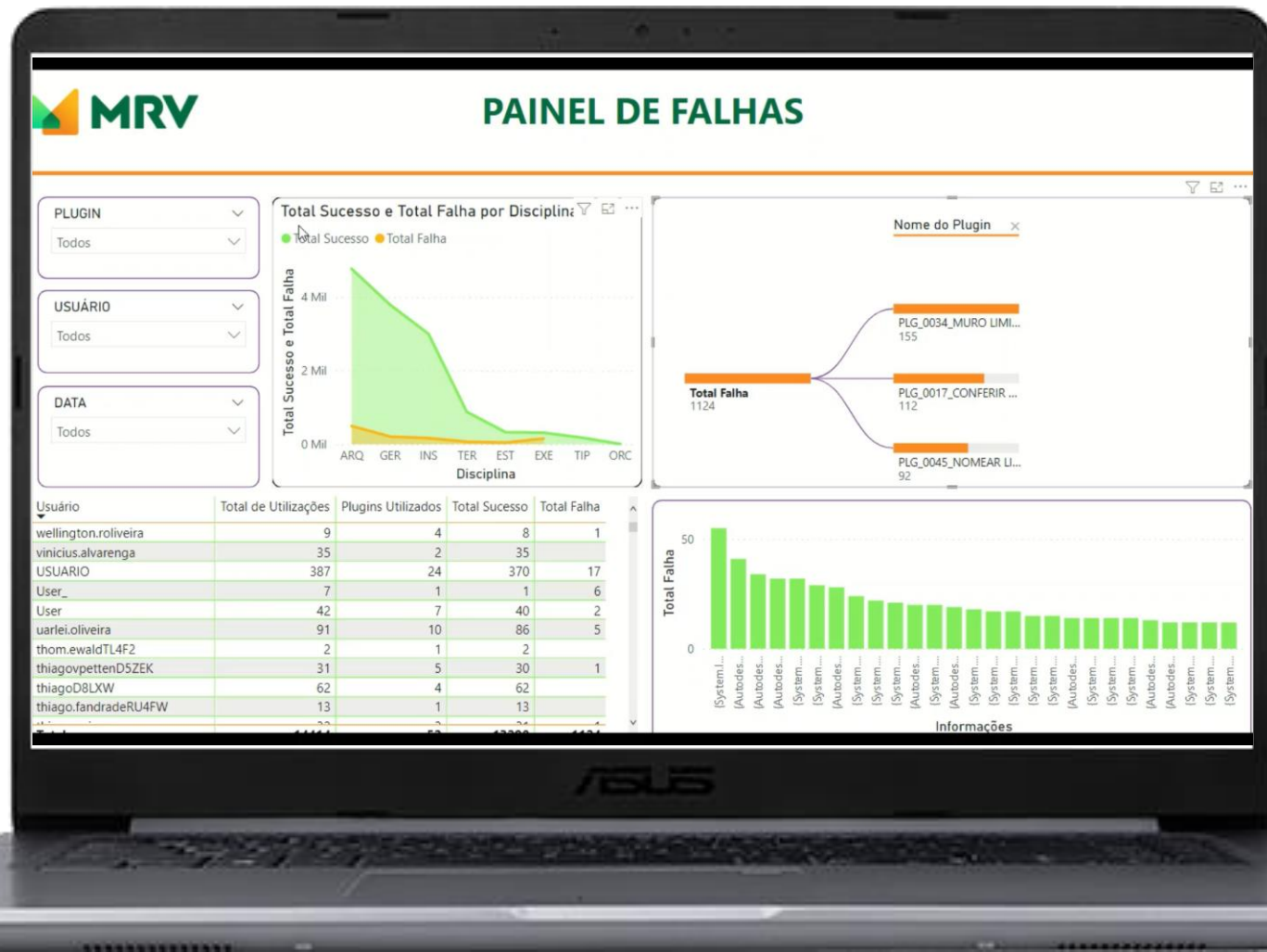
## AGILE FRAMEWORKS FORMAT FOR DEVELOPMENTS

- 50 - modeling process
- 130 - model & code checking



## Follow-up

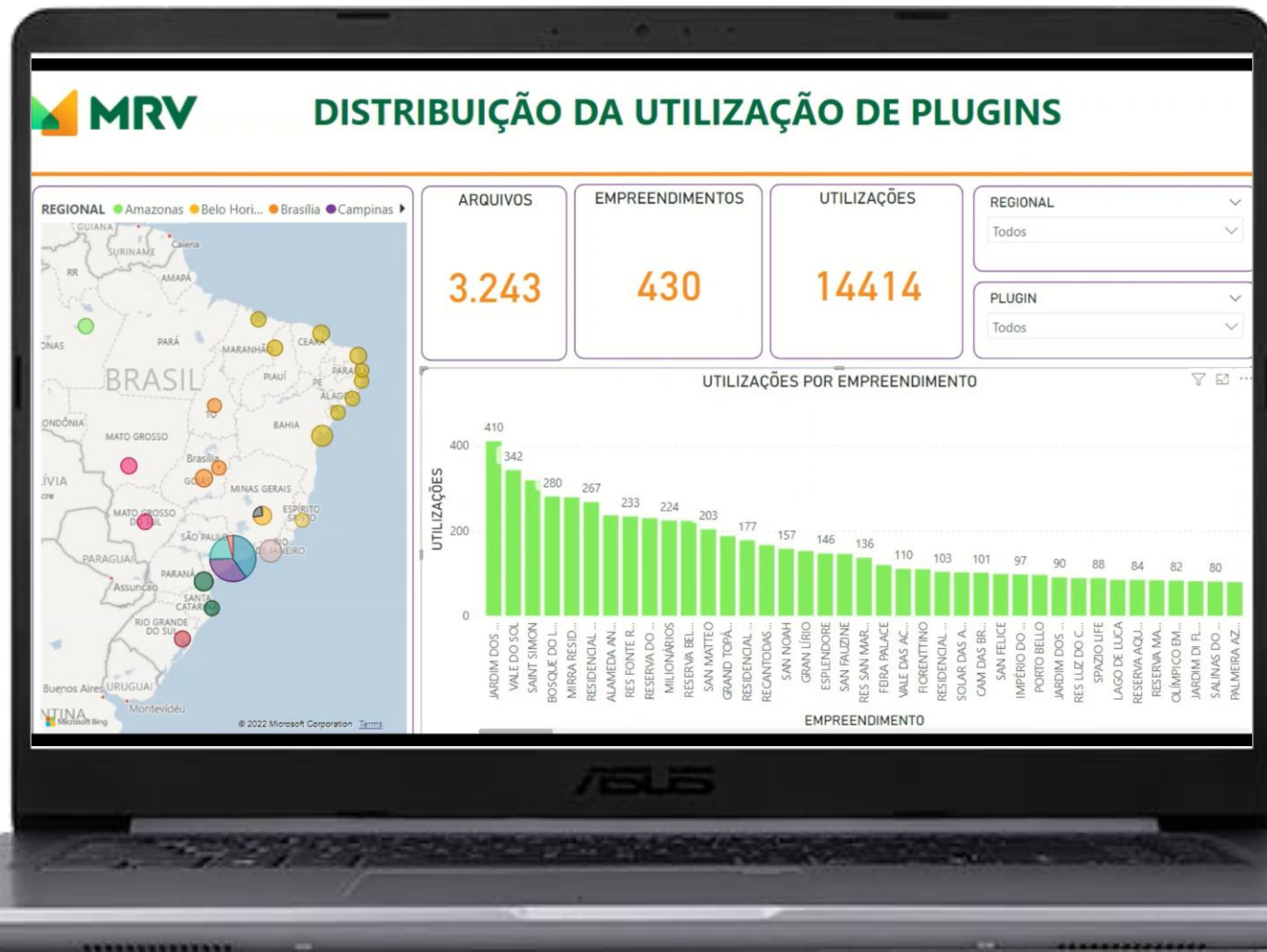
- Discipline and user failure view





# Follow-up

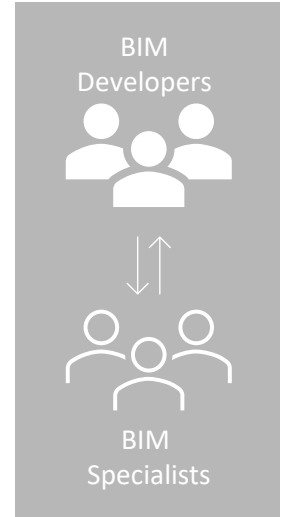
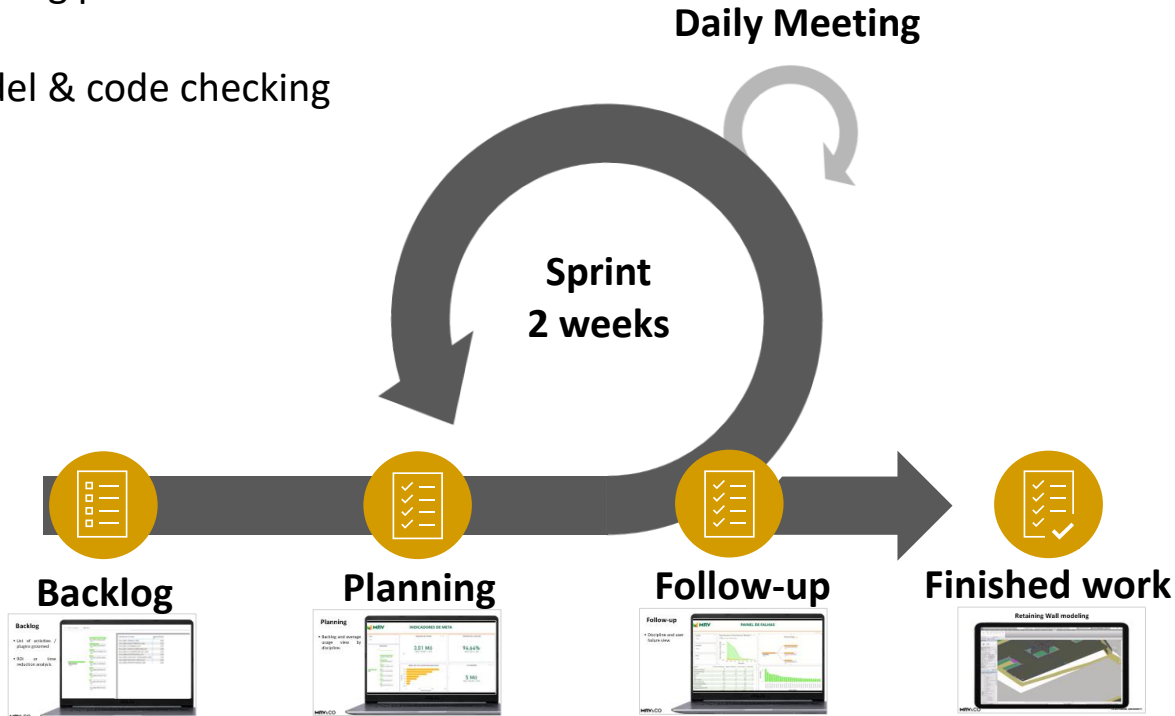
- Geographic distribution of plugin usage



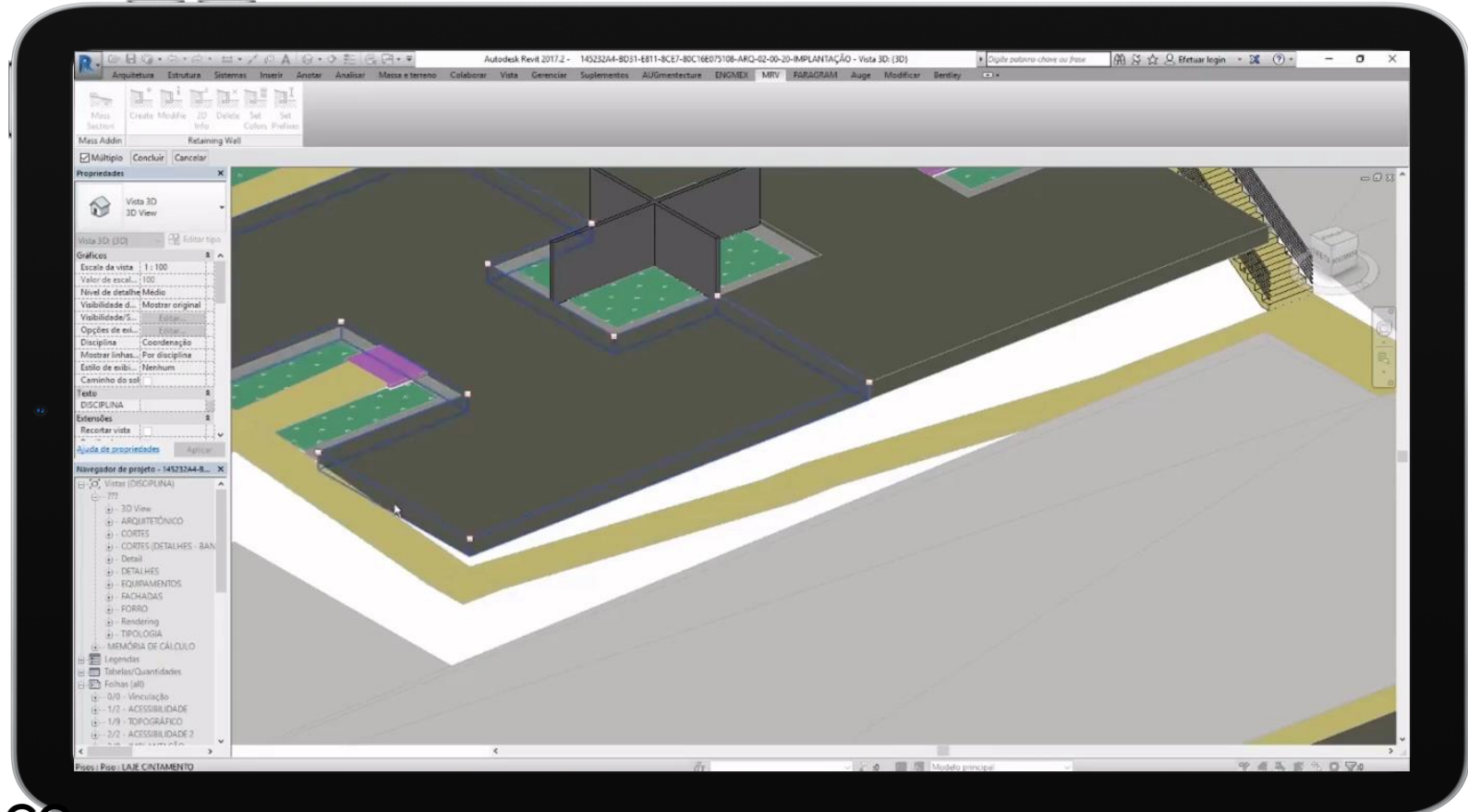
# Automation

## AGILE FRAMEWORKS FORMAT FOR DEVELOPMENTS

- 50 - modeling process
- 130 - model & code checking



# Retaining Wall modeling



# Modulation of aluminum forms



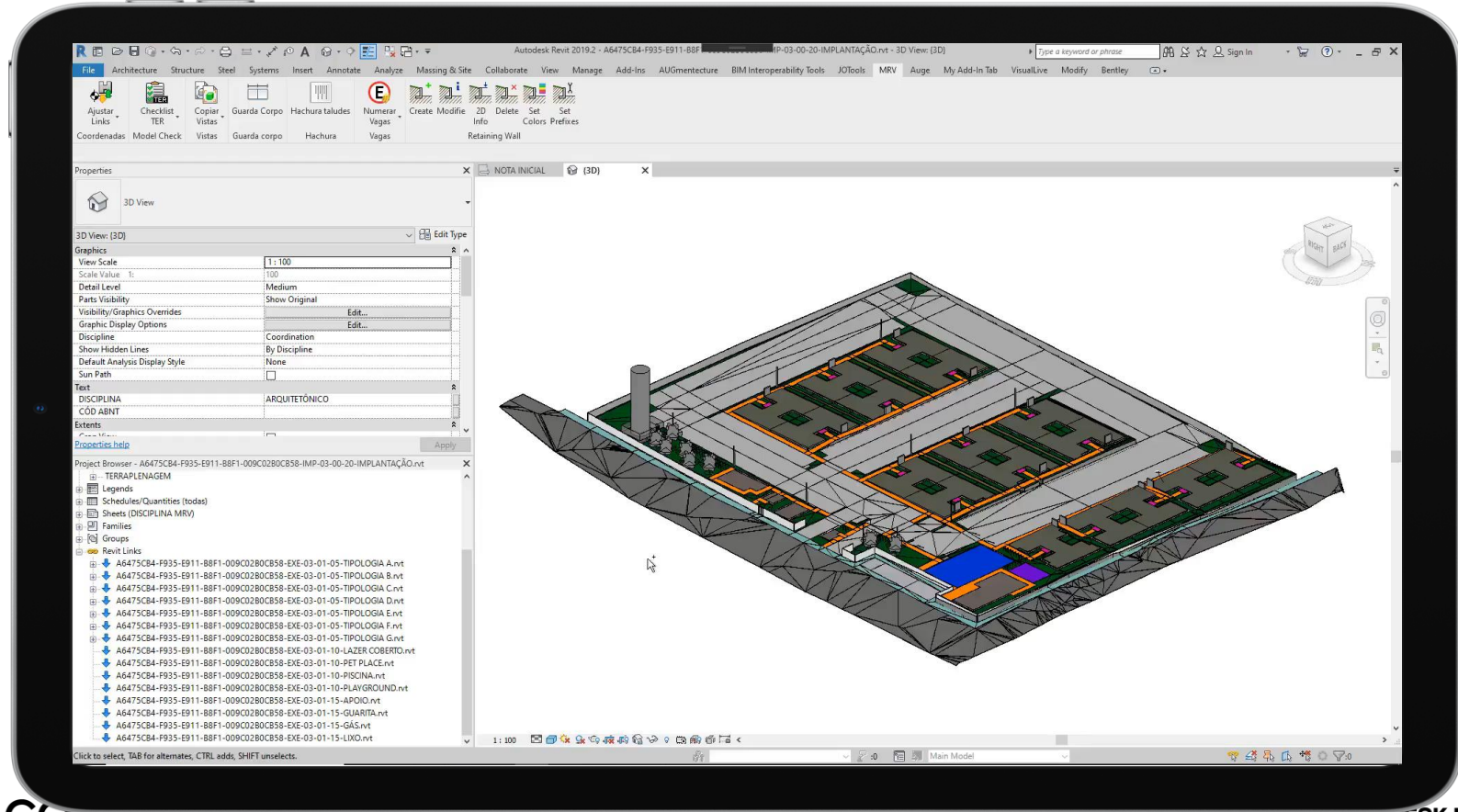
Generativo

The screenshot displays the Generativo software interface. On the left is a sidebar menu with options: Administração, Dashboard, Configuração, Empresa, Cliente/Fornecedor, Preferências, Projetos, Obras, Categorias, **Tipologias** (highlighted), Diário de Obra, Controle de Estoque, Catálogos, Produtos, Inventário, Movimentações, Locais de Estoque, and Ferramentas. The main area is titled 'Locais de Estoque' and features a map of Brazil with purple location pins. Below the map is a table with the following data:

Sigla	Nome	Tipo	Inv. Inicial	Responsável	Endereço
HMG	HUB MG	HUB	<input type="checkbox"/>	Joanes Francisco Marques	Alameda dos Amazonenses, Nº 995, Bairro Parque Jardim Encantado, Vespasiano/MG
HGO	HUB GO	HUB	<input type="checkbox"/>	João Nogueira de Rezende Neto	Rua dos Imigrantes, Nº 5.N., Bairro Jardim Imperial, Aparecida de Goiânia/GO
HCE	HUB CE	HUB	<input type="checkbox"/>	João Nogueira de Rezende Neto	Rua das Orlanças, Nº 5.N., Bairro Passaré, Fortaleza/CE
HSM	HUB SP	HUB	<input type="checkbox"/>	-	Avenida Pedro Pascoal dos Santos, Nº 410, Bairro Residencial Real Parque Sumaré, ...
	Morada Carioca	Obra Teste	<input type="checkbox"/>	-	Estrada Antiga Imperial, Nº 330, Bairro Vila São Paulo, Mogi das Cruzes/SP
	Gran Opera	Obra Teste	<input type="checkbox"/>	-	Alameda A, Nº 31, Bairro Chikaras São Pedro, Aparecida de Goiânia/GO

At the bottom of the interface, it shows 'Versão: 2022.6.12.1', 'Revit: Autodesk Revit 2021', and 'Usuário: joao'.

# Model and Code Checking

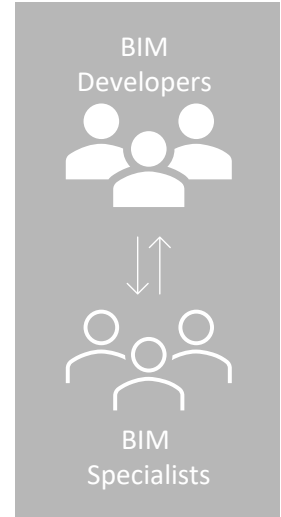
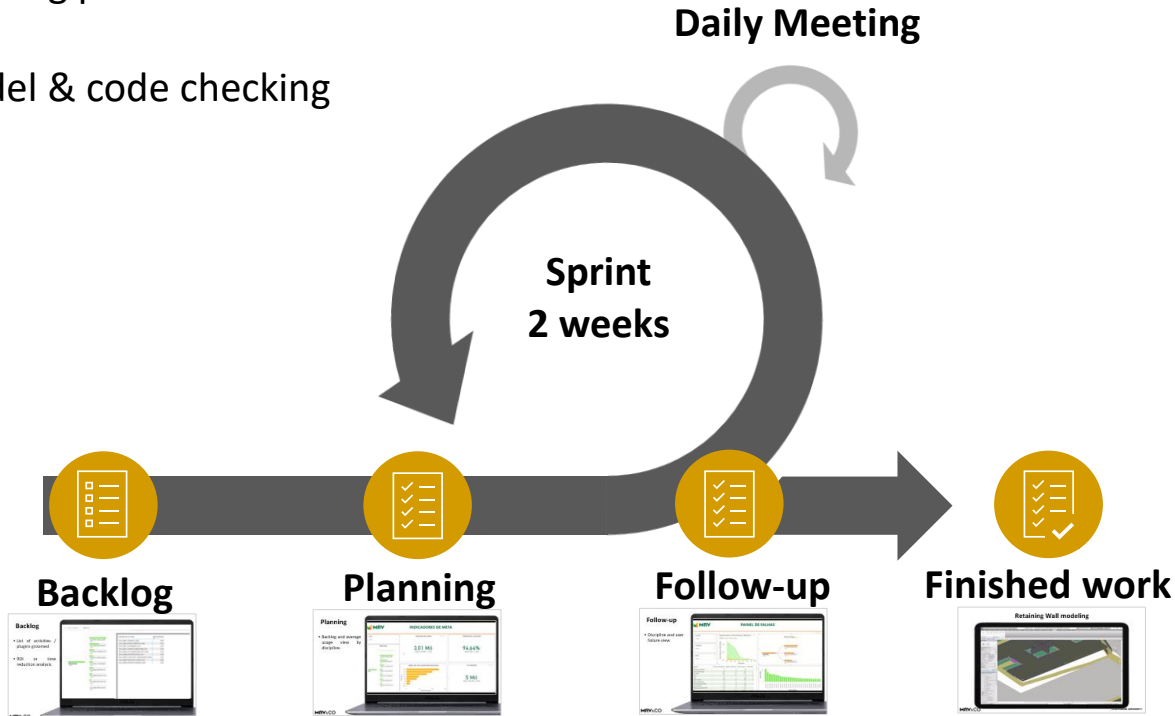




# Automation

## AGILE FRAMEWORKS FORMAT FOR DEVELOPMENTS

- 50 - modeling process
- 130 - model & code checking



# Automation

## KPI's

- Unmeasurable: greater assertiveness, quality of information & consistency.



## KPI'S & GOALS

MONTHLY AVERAGE SAVINGS

3,500 hours

ANNUAL AVERAGE SAVINGS

42,000 hours

ANNUAL AVERAGE FINANCIAL SAVINGS

\$ 250,000

GOAL OF 2022

Increase total time gain by **10% per quarter**

# Automation

## NEXT STEPS



### Forge and Design Automation

Go beyond Revit API and connect businesses with Forge and Design Automation;

- ✓ Cloud modeling and analysis through forge
- ✓ SAP integration
- ✓ Salesforce integration

### Savings increase

In 2 years reach a saving of 10K hours of working hours monthly;

### Invest in knowledge

Invest more in algorithms for AI and Generative Design;

### Moonshot

Moonshot: In 5 years spend only 10 to 20% of current project time (for designs done in-house).

SHORT-TERM

MEDIUM-TERM

LONG-TERM



Autodesk and the Autodesk logo are registered trademarks or trademarks of Autodesk, Inc., and/or its subsidiaries and/or affiliates in the USA and/or other countries. All other brand names, product names, or trademarks belong to their respective holders. Autodesk reserves the right to alter product and services offerings, and specifications and pricing at any time without notice, and is not responsible for typographical or graphical errors that may appear in this document.

© 2022 Autodesk. All rights reserved.