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How to accelerate the development of enterprise grade software applications

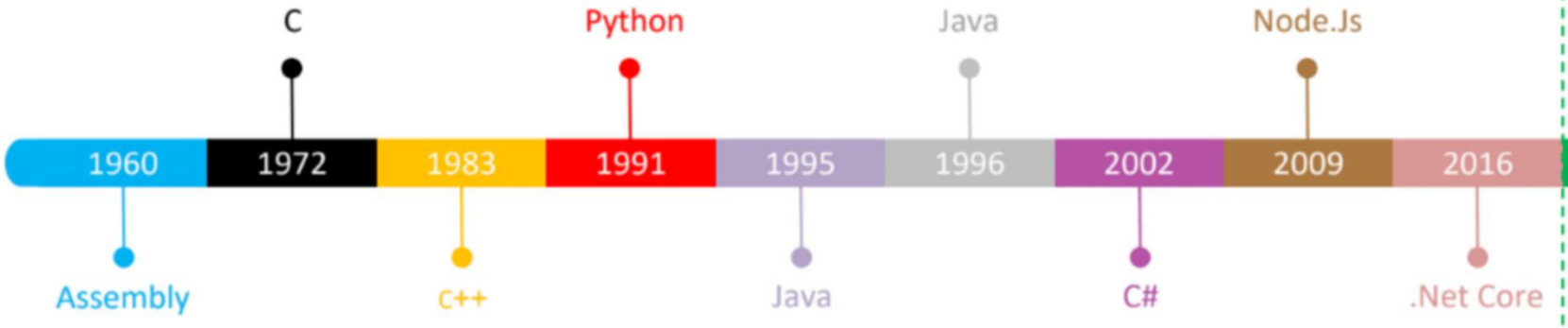
The promise of no code low code platforms

Agenda

- Thanks
- Introduction
- Thematic development
- Question & Answers

Introduction

```
private static boolean checkCriterion(ArrayList<MyComplex> neighbors,
                                      double noiseLevel, double ratio){
    if (neighbors.size() > 2){
        double mean = neighbors.get(0).getAbs();
        for (int i=1; i<neighbors.size(); i++)
            mean += neighbors.get(i).getAbs();
        mean /= neighbors.size();
```



WEM No-Code Enterprise Application Platform

2017 Future

- ***Traditional computer languages require programmers to translate their thinking process into code built for the CPU and memory***
- ***Evolution from FULL code to LOW and NO code***

Optimized for how we humans think. Converting natural thinking process into working software.

Low Code Platform

A low code development platform is an application development platform which uses graphical wizards to create and build software.

Hand Writing ~~~

Low Code Platform Types

- Development Frameworks **(OpenXava, Boost, etc.)**
- NCLC software development platforms **(WEM, etc.)**
- BPM-NCLC software development platforms **(Mendix, Aurachain, OSBP Software Factory, etc.)**
- IoT NCLC software development platforms **(Red Node, etc.)**
- RPA no code low code (robotic process automation) **(Uipath, Automation AnyWhere, etc)**
- BigData NCLC **(Rapid Miner, What-If Tool, DataRobot, Alpha Anywhere, etc)**
- AI NCLC **(PyCaret, etc)**
- Etc…

Evolution of Low Code

01 Gen

TOOLS FOR IT

Help IT accelerate delivery

PROS

- Wide range of capabilities of what you can build
- Built in Governance Controls
- Follows long standing Dev Methods

CONS

- Designed as IT Intuitive, not business
- Continuance of single threaded delivery model (CR Cycles remain)
- Continued problem of translation from business requirements to system outputs
- Hard for business to understand what is behind the scenes when altering operational functionality

02 Gen

TOOLS FOR CITIZEN DEVELOPERS

Liberate the Business
Automate for Purpose
Microsoft accelerated the thinking

PROS

- Quick automation for the work group
- More intuitive to businesses
- Faster changes for operational alignment

CONS

- Problems with scale (can't or costly)
- Fear of anarchy
- Lack of built-in monitoring and governance tools, interoperability design and testing
- Struggle with advanced business logic (not enterprise suitable)

03 Gen

TOOLS FOR COLLABORATION

Acceleration through Democratization of work across all relevant subject matter experts

The 3rd generation combines the best of both

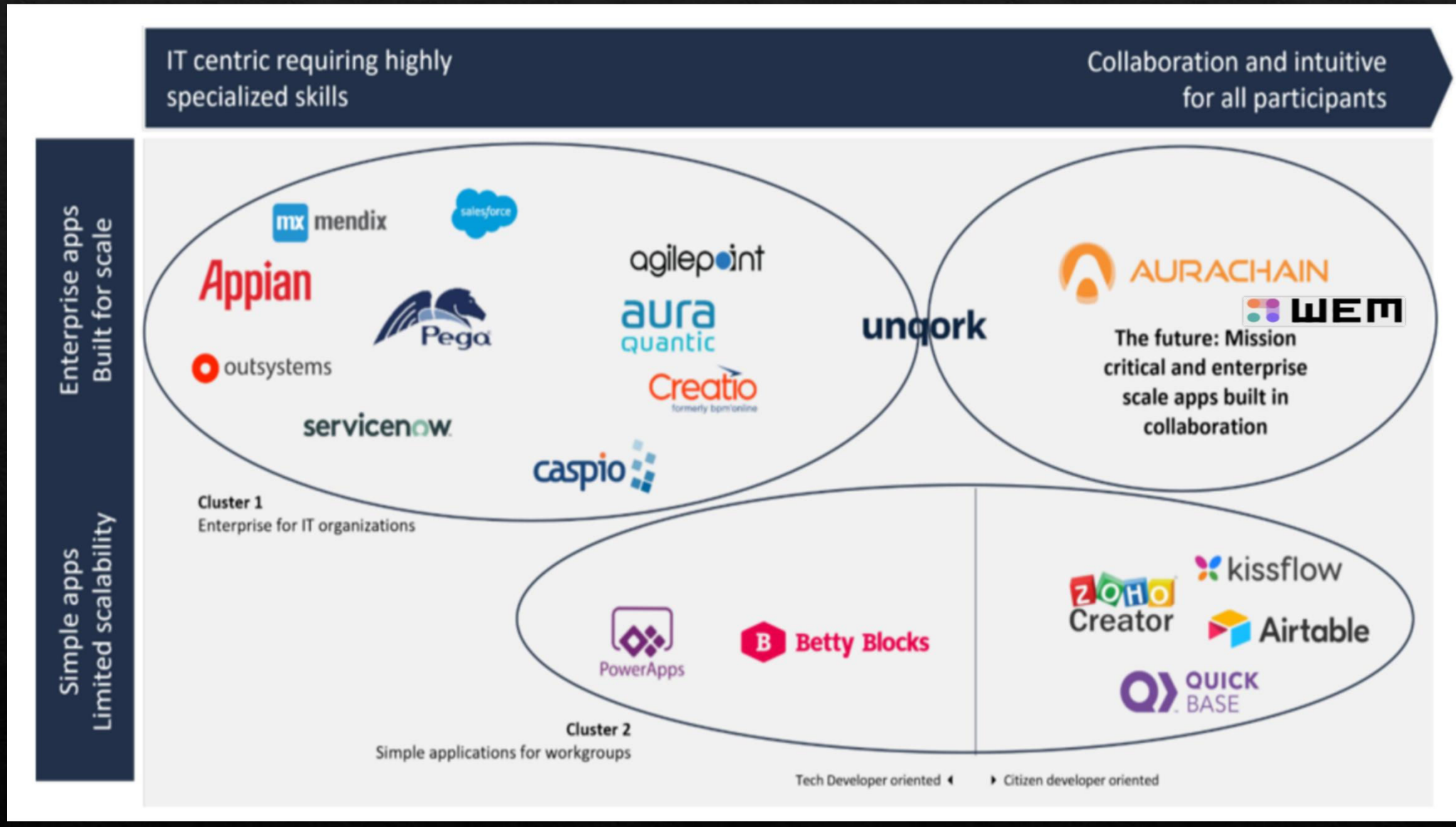
Intuitive to all

Built-in governance

Enterprise grade

Scalable

Competitive Landscape



No Code - Low Code Drivers

- Digital transformation as an imperative to keep and increase competitive advantages
- Nowadays every business is a software business (Daniel Kirsch, co-fouder of Techstrong Research) – Software runs your business
- Every person should and can be a system developer (Citizen Developer)
- BUSINESS INNOVATION (is critical), it can be achieved faster in a system development collaborative environment

Citizen developers + IT Developers

No Code - Low Code Drivers

- Less skilled people can develop information systems
- Low Code helps solve the skill shortage/turnover
- Low Code development enables flexibility, agility
- Faster go market
- Increased customer satisfaction
- Low IT infrastructure cost (cloud based platforms, all in one solutions)
- More efficient and better IT governance

- All apps in a single platform
- Extensive permission system
- Real time view of process performance
- Built in monitoring tools
- Multiple environments with governed promotions
- Full business and technical process and data auditability

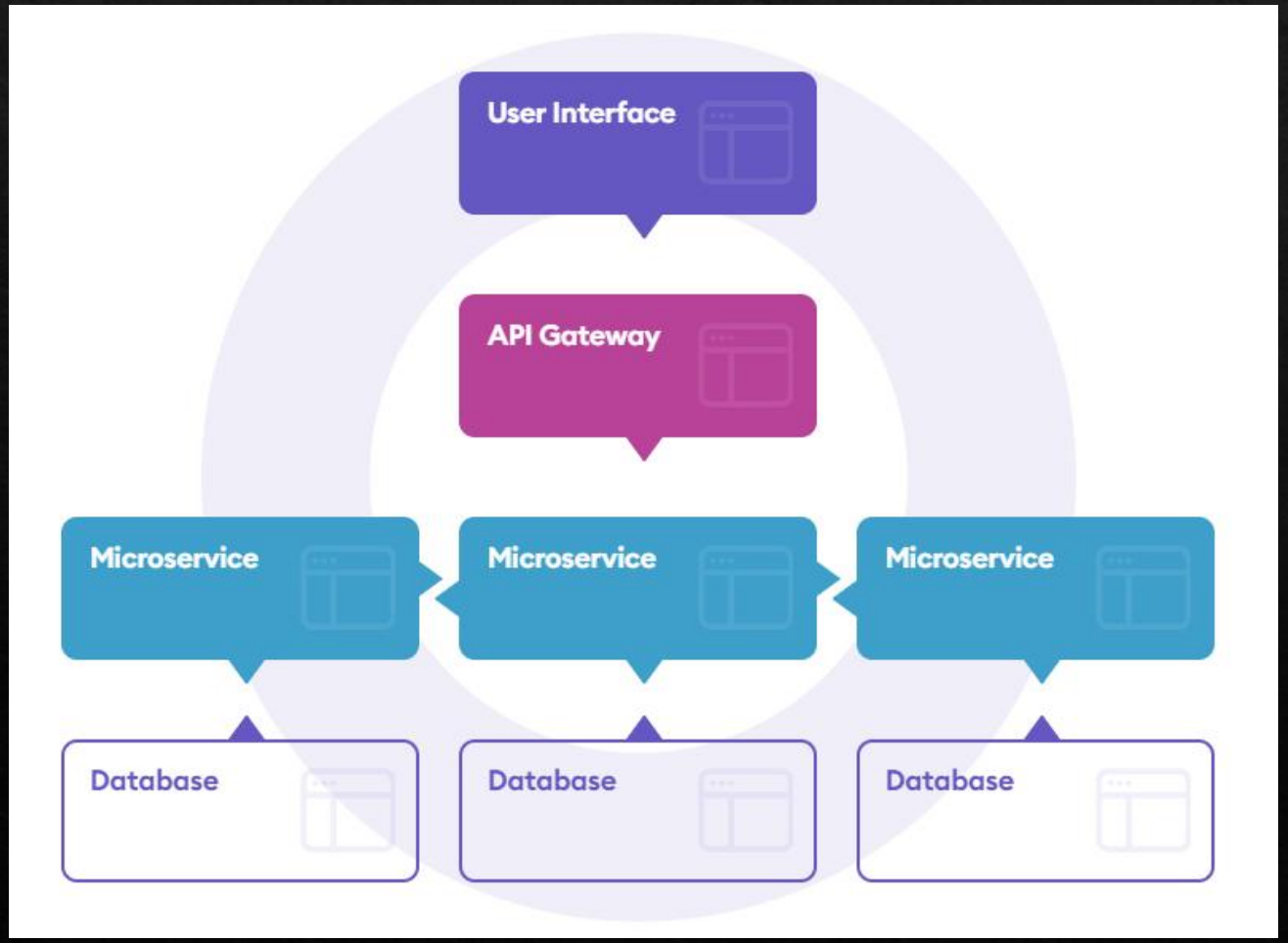
Trending Drivers

- Gartner, by 2025, 70% of new applications will use low code/no code technologies
- Growth of business technologiest who report outside IT
- Nearly 6 in 10 (57%) the number of staff needed for SD is increasing while the cost of SD is rising (61%)
- 75% of of IT leaders say it's a tren they can't afford to miss
- In organizations that use low code, 56% of employees use apps built on NCLC platforms

Trending Drivers

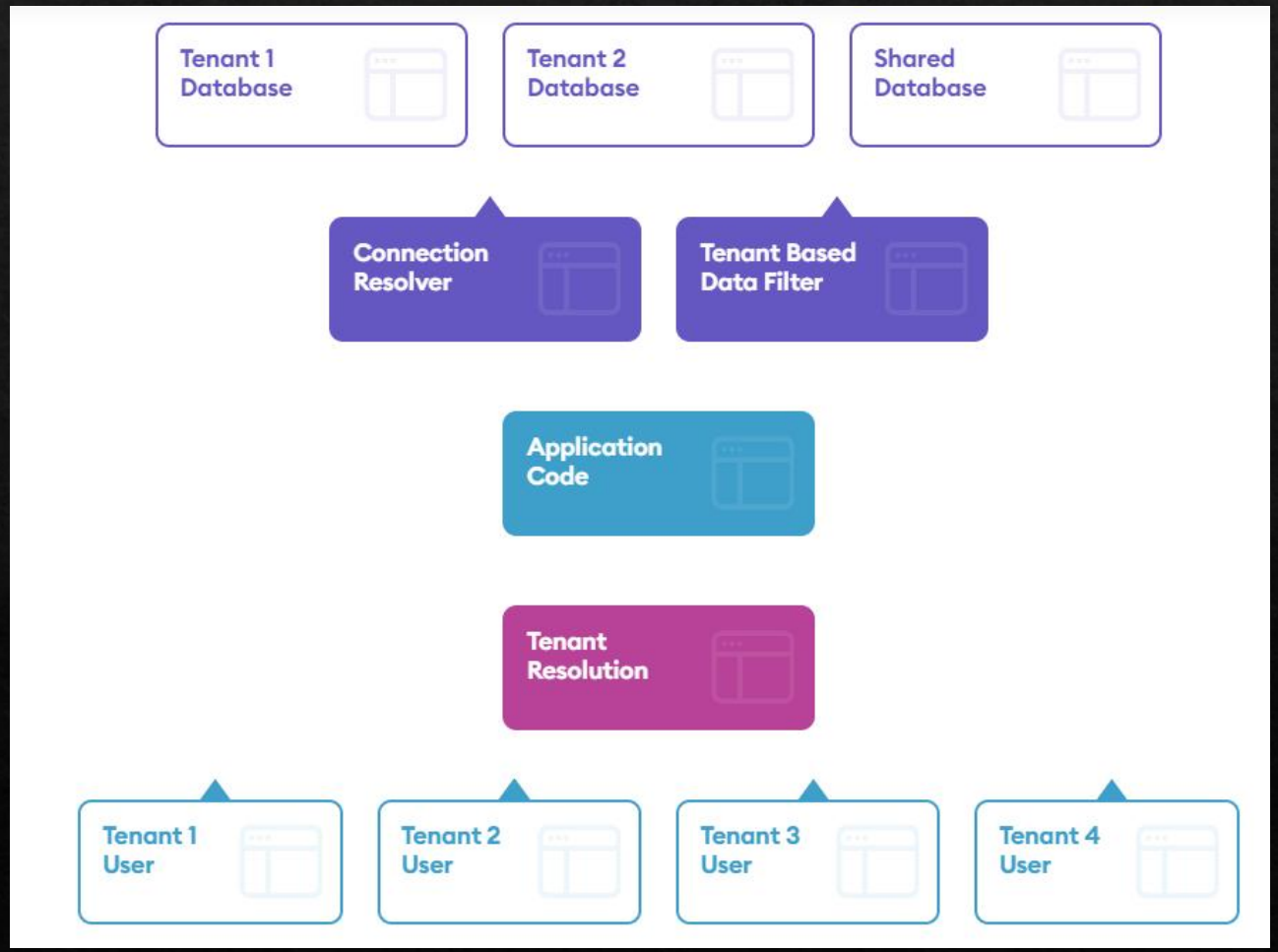
- Projects reduce costs by 53%
- Ease of software maintenance and less software maintenance costs
- Among those using low code, 33% have used it to build mission critical apps
- Developers recognize that 51% of their work could be done on a low code platform

abp framework (for ASP.NET)

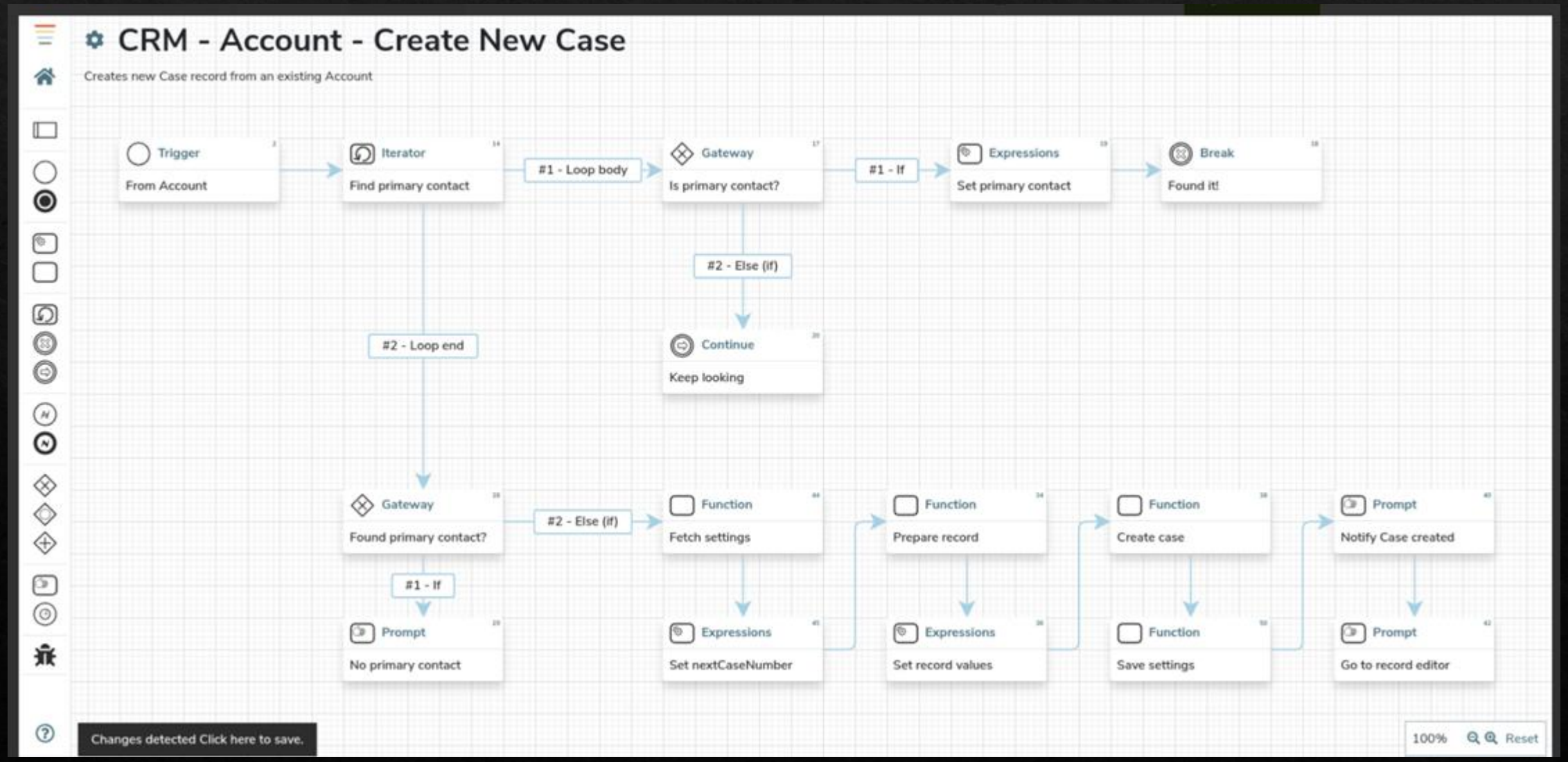


- Multiple UI Options
- Multiple Database Providers
- ABP CLI
- Modularity
- Multi-Tenancy
- Bootstrap Tag Helpers
- Dynamic Forms
- Authentication & Authorization
- Cross Cutting Concerns
- Bundling & Minification
- Virtual File System
- Theming
- Background Jobs
- DDD Infrastructure
- Auto REST APIs
- Dynamic Client Proxies
- Distributed Event Bus
- BLOB Storing
- Text Templating
- Test Infrastructure
- Audit Logging
- Object to Object Mapping
- Email & SMS Abstractions
- Localization
- Setting Management
- Extension Methods
- Aspect Oriented Programming
- Dependency Injection
- Data filtering

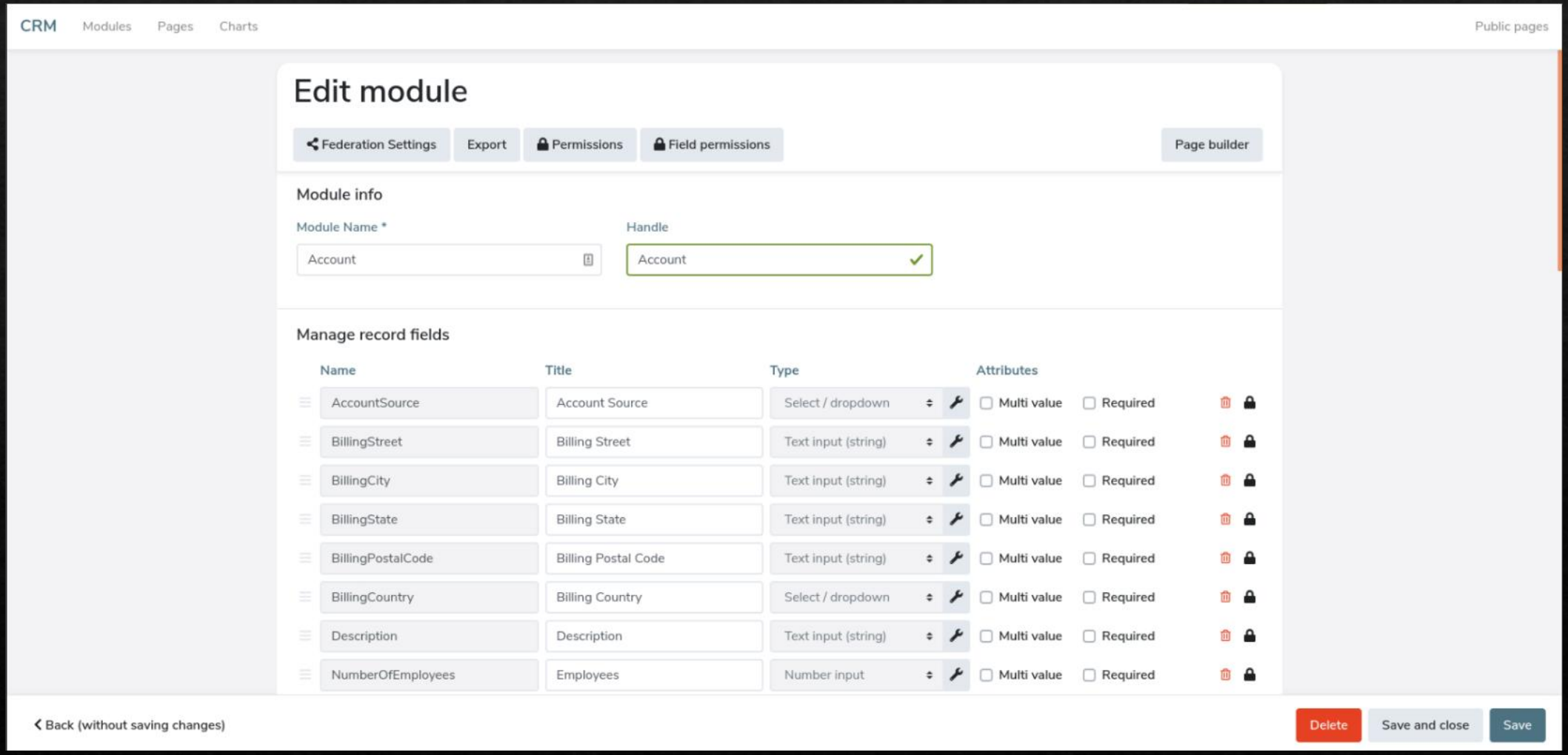
abp framework



Corteza Low Code



Corteza Low Code



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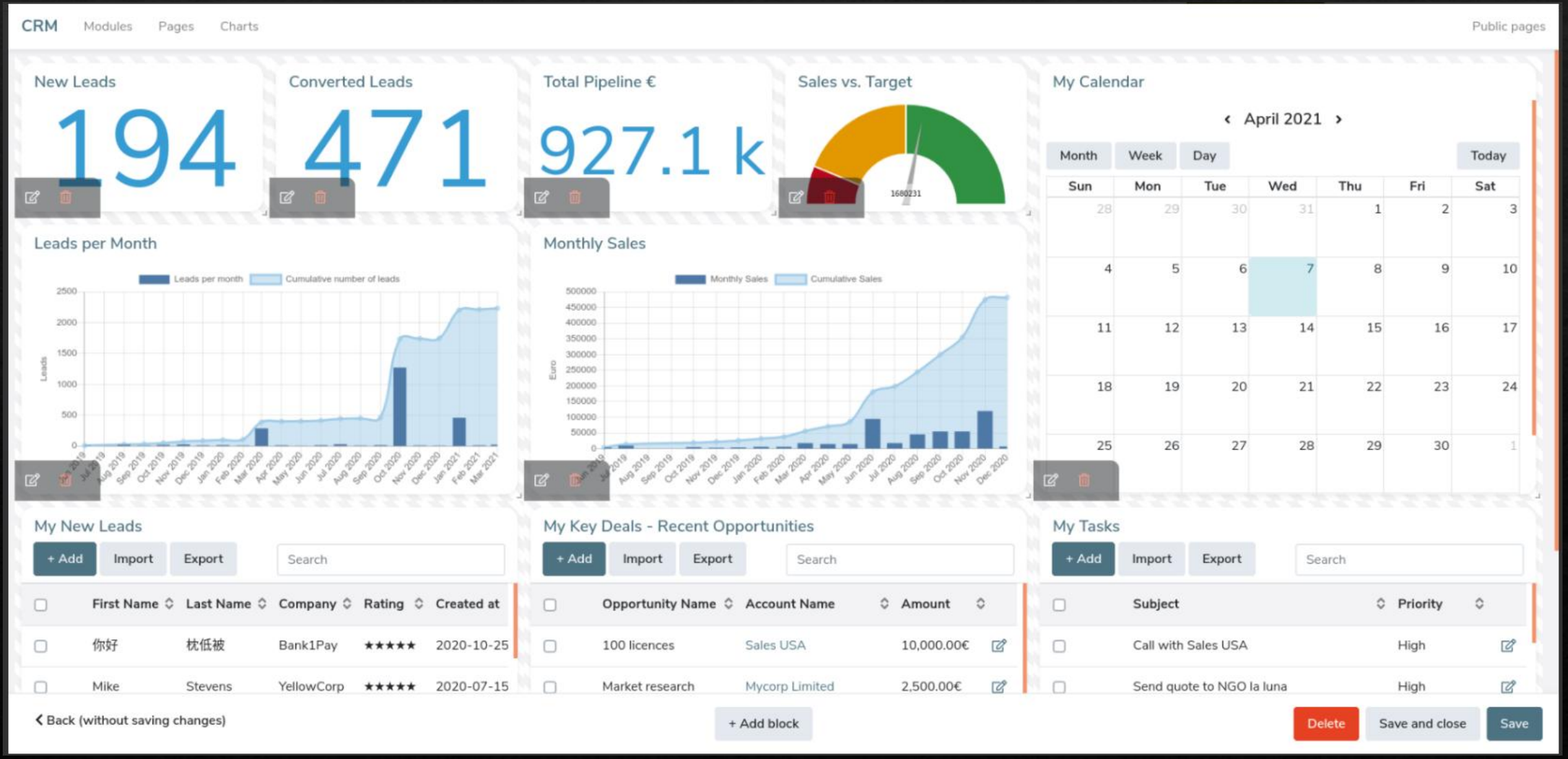
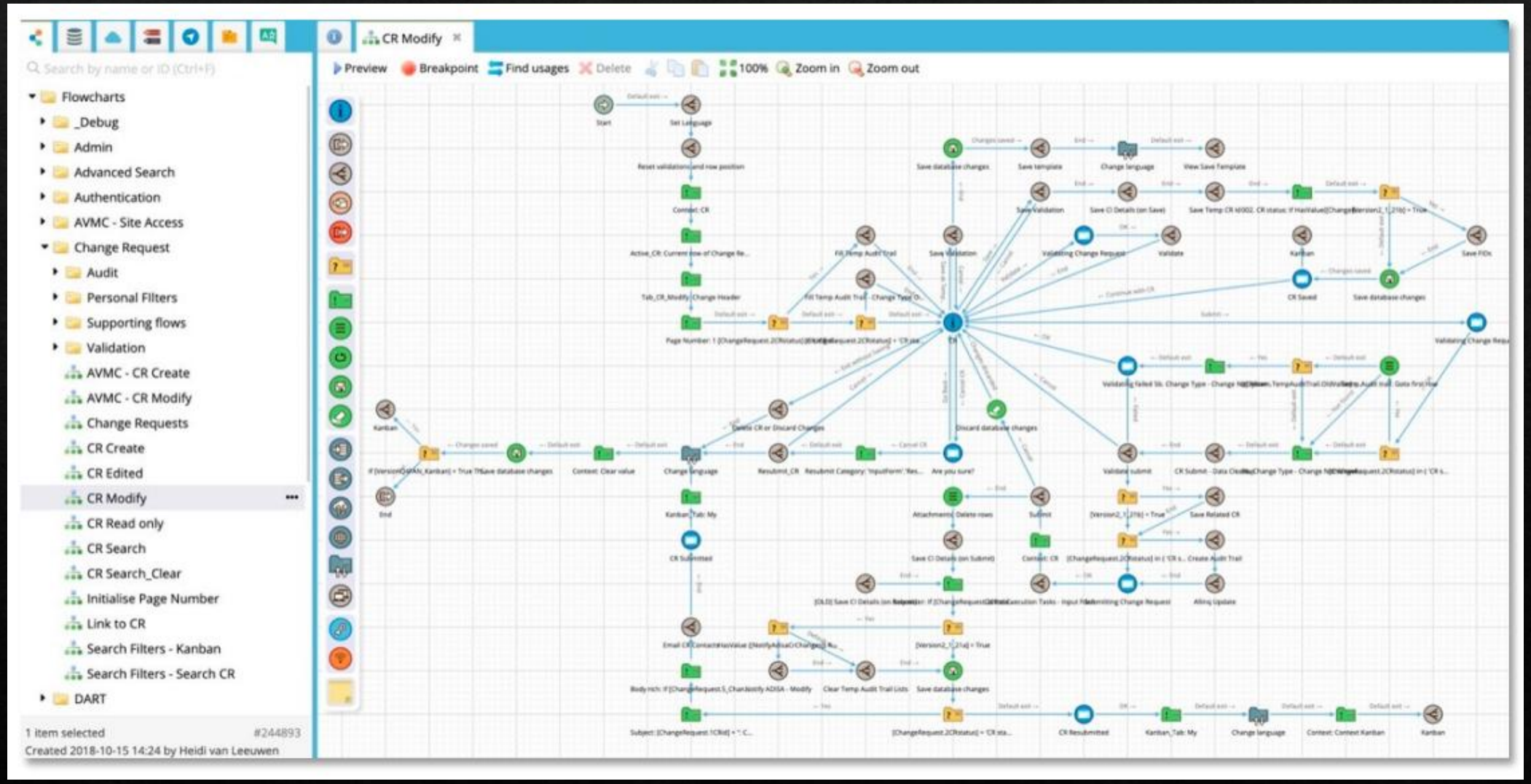


Corteza Low Code

- Module Builder
- Drag-and-drop Page Builder
- Chart Builder
- Visual Workflow Builder
- Pre-built Apps
- User Management
- Sign-up and Login System
- Record Federation
- Template Builder
- PDF Generation
- Emails
- Notifications
- Social Media Integrations
- Responsive Design
- REST API
- Action Log
- SSL Security
- Scalable Architecture
- Online Documentation
- Community Forum
- Self Hosted

ZoomBim WEM Modeler



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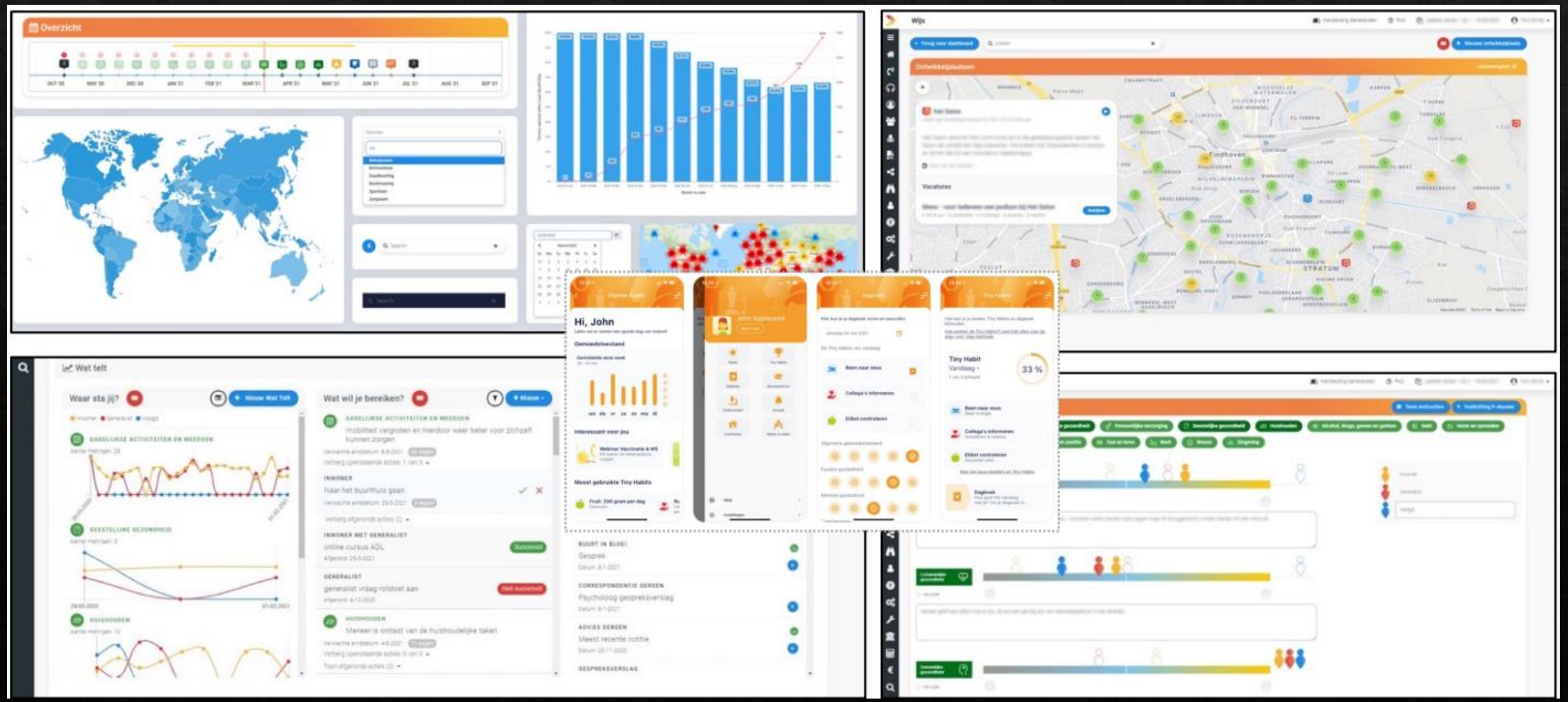

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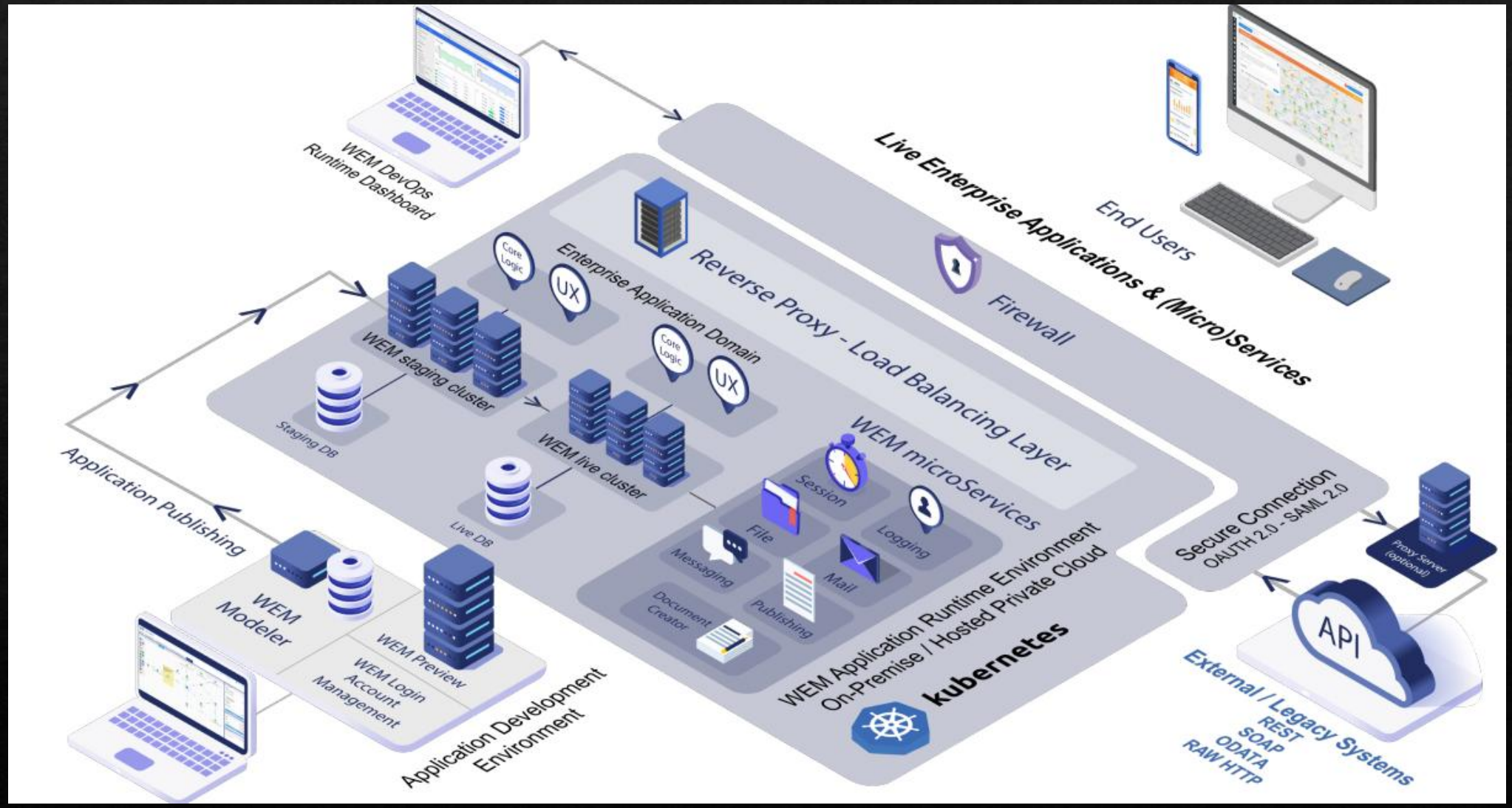
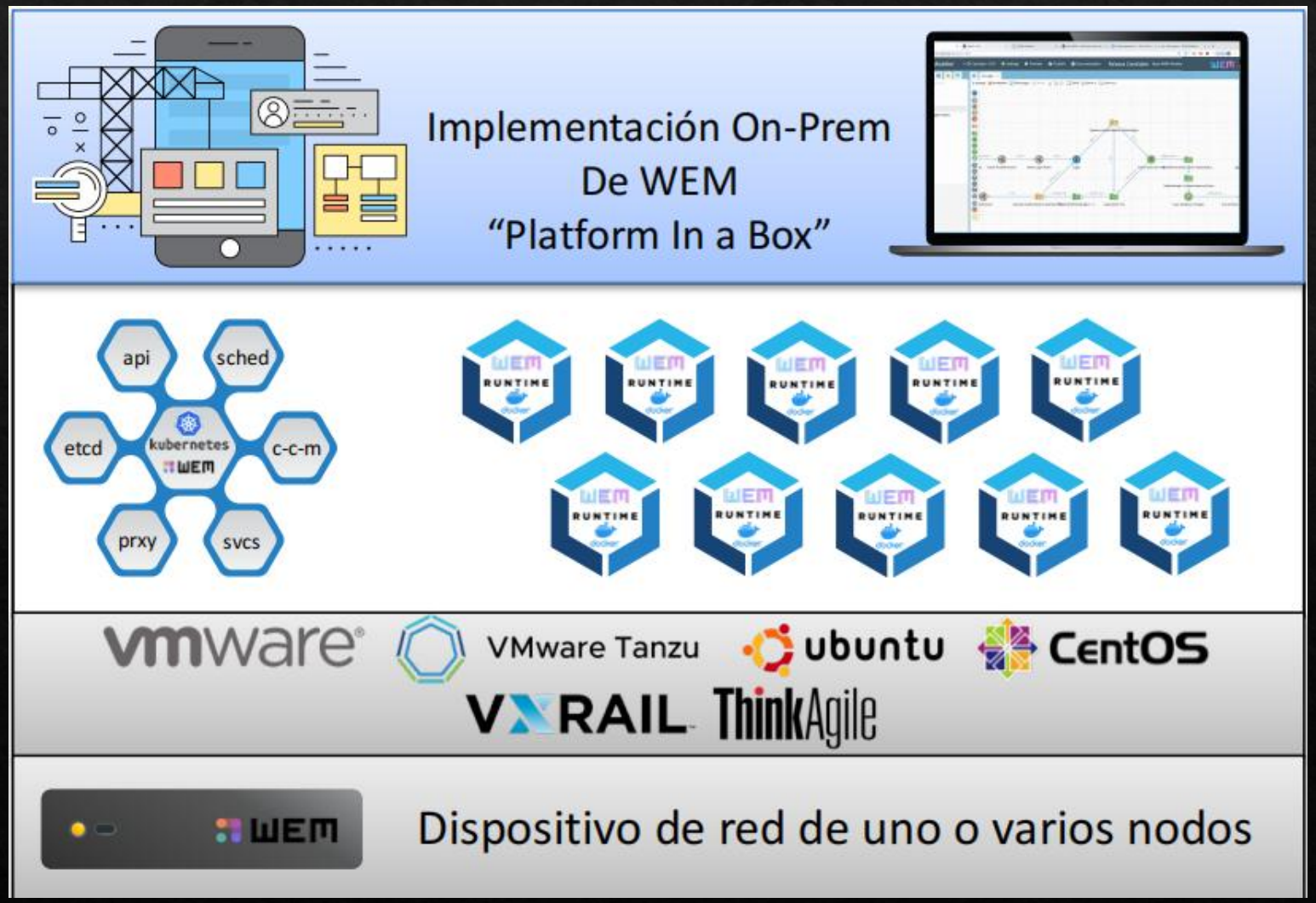
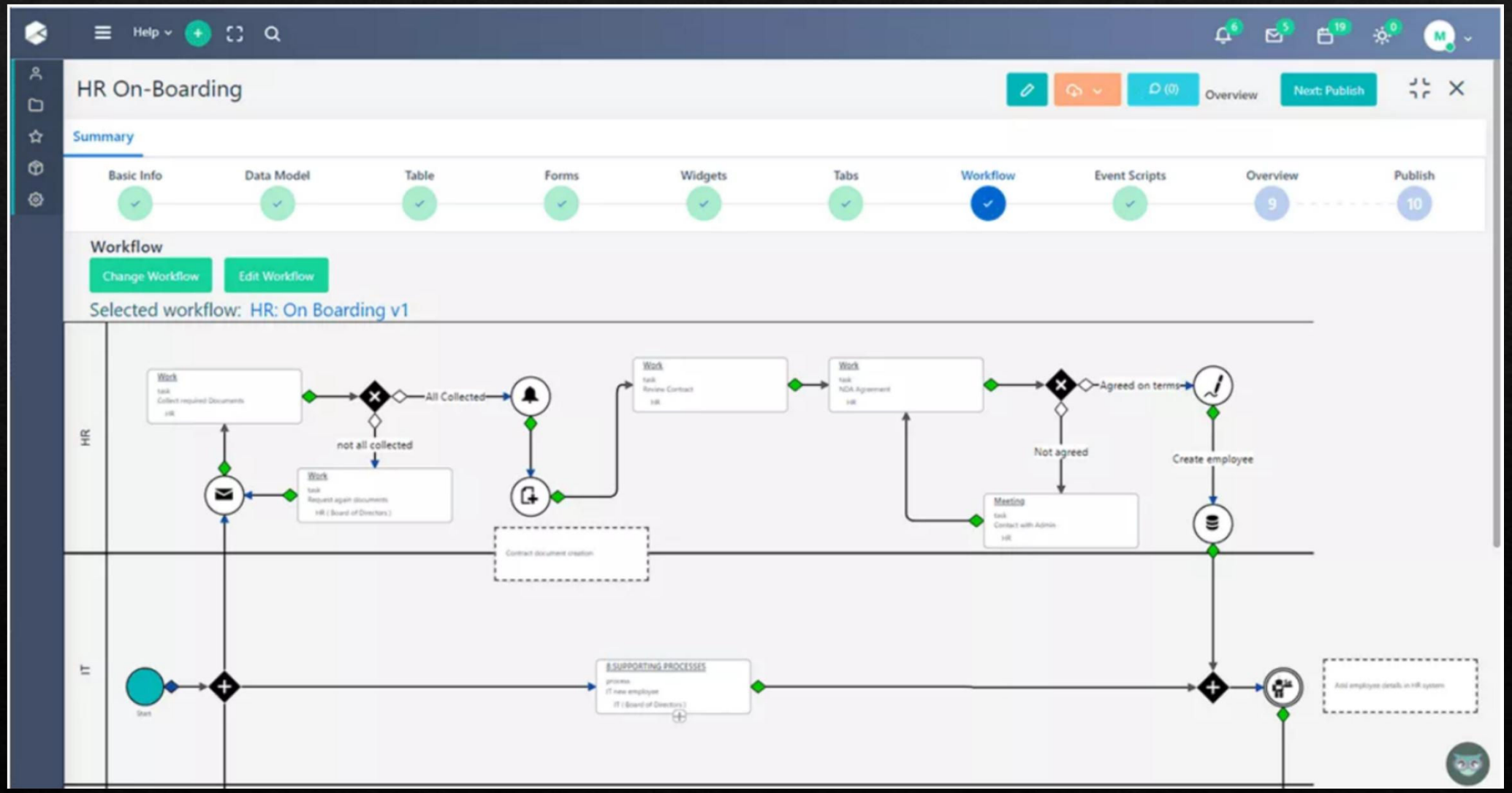


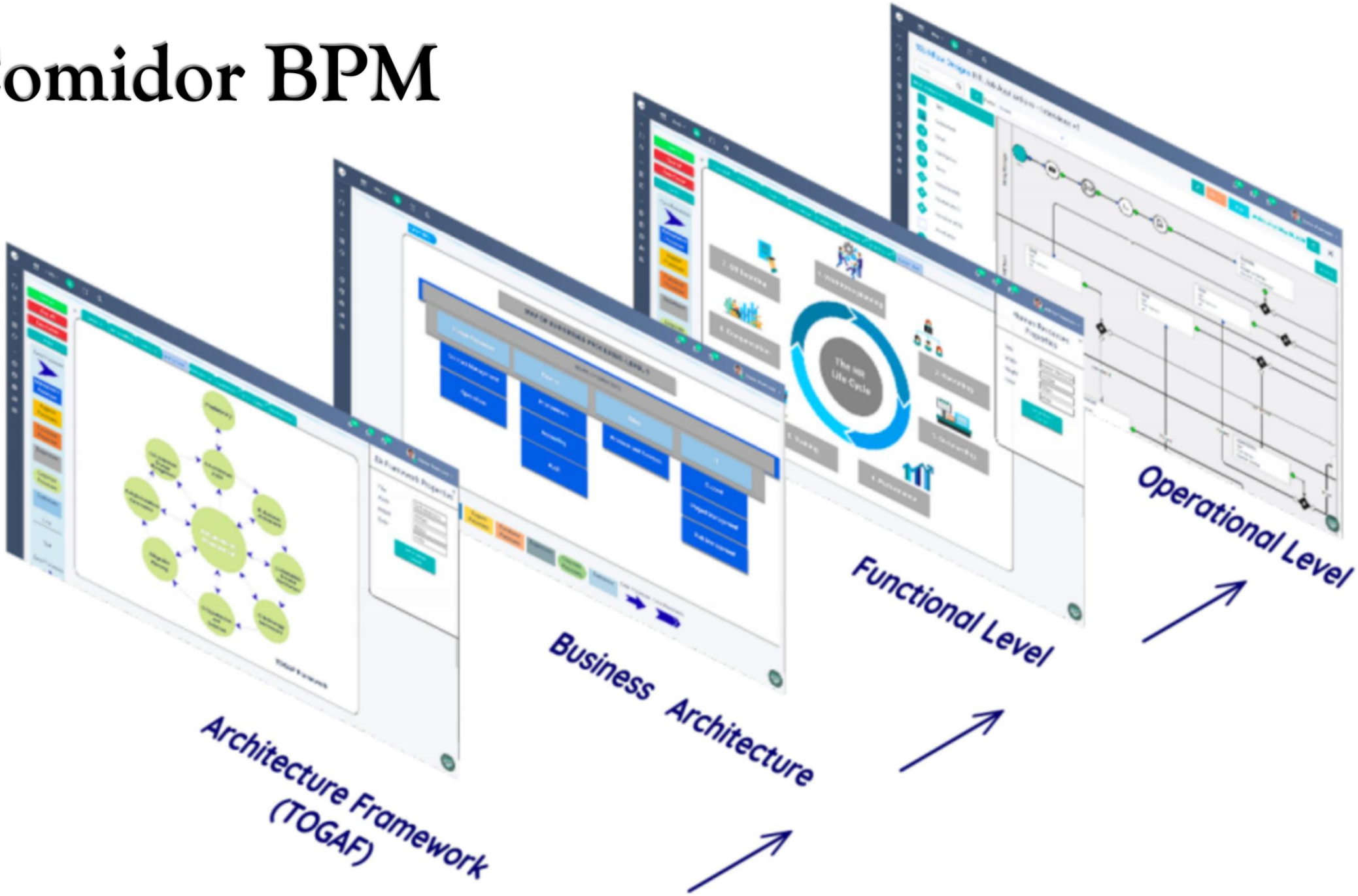
ZoomBim WEM Modeler



Comidor BPM-RPA



Comidor BPM


Architecture Framework
(TOGAF)
Business Architecture
Functional Level
Operational Level

THE EVOLUTION OF RPA

the current status of RPA

Assisted RPA

automation of desktop-run activities with human intervention

Unassisted RPA

machines trigger the processes, robots replace human interaction

Autonomous RPA

convergence of Robotic Process Automation, cognitive automation, AI and Machine Learning

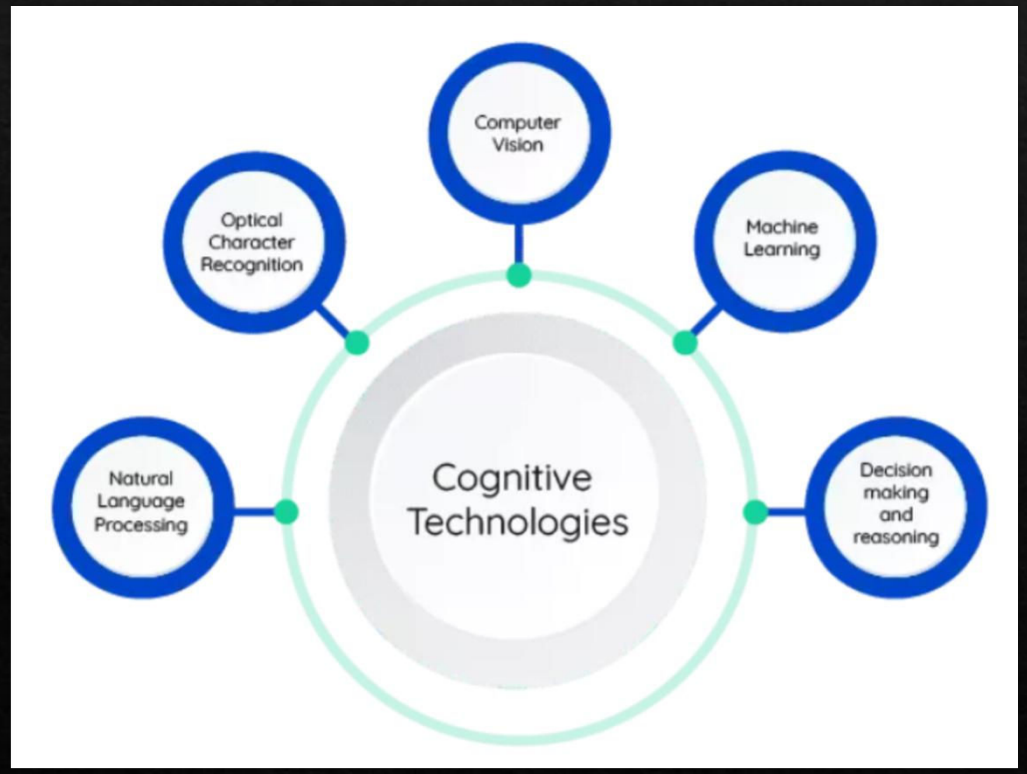
Cognitive RPA

with natural language processing, data mining, semantic technology, text analytics, machine learning

Assisted RPA	Unassisted RPA
"Attended" RPA bots	"Unattended" RPA bots
RPA bots can work alongside humans	independent of human involvement
automation process trigerred by humans	automation process run on machines
most often for front-office activities	most often for back-office activities

comidor

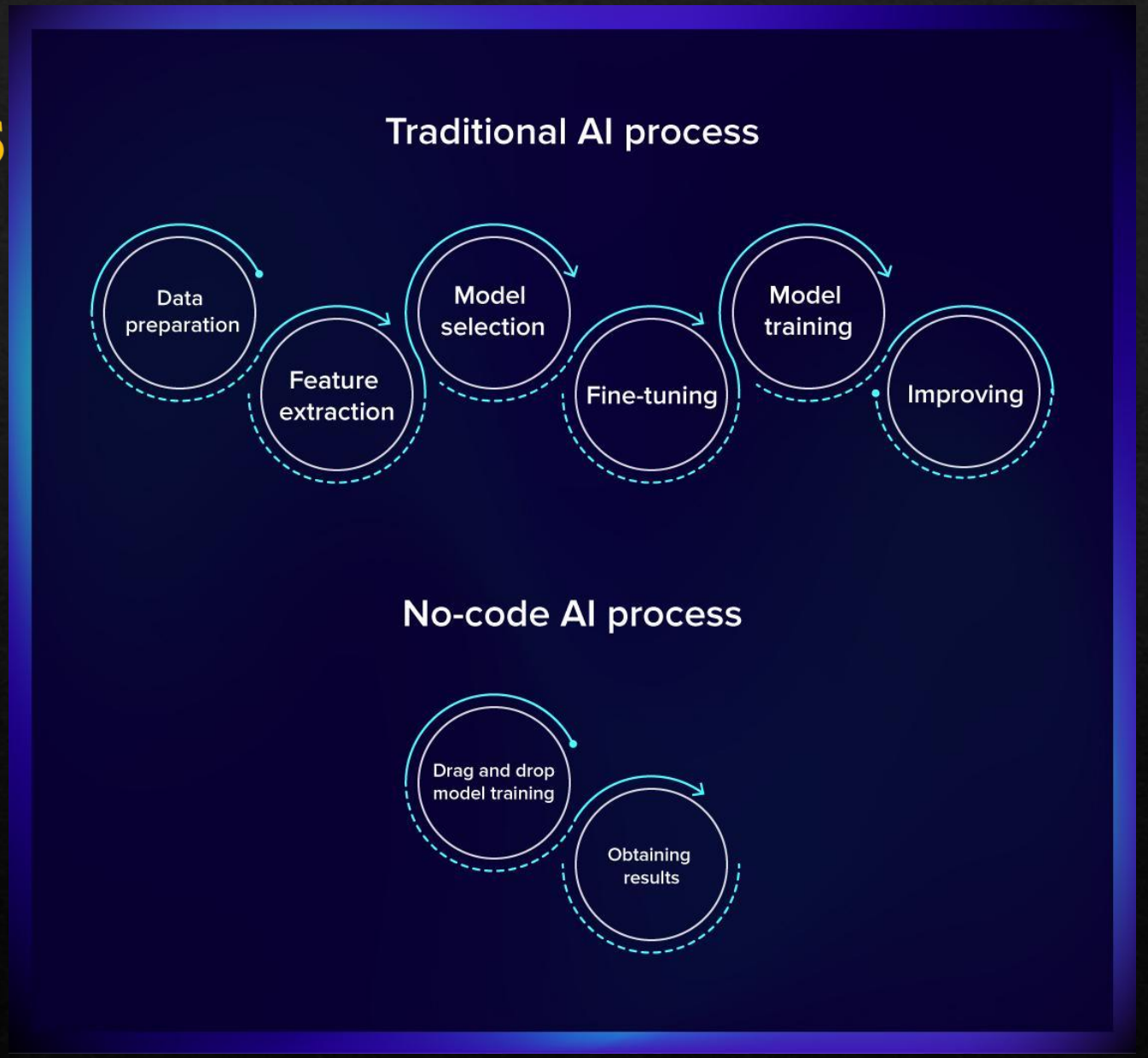
Comidor AI Support



- Sentiment Analysis
- Predictive Models
- Text Classification
- Document Analyzer
- Image Classification
- Leia the AI-enabled Chatbot
- Knowledge Base

No Code AI Process

- PyCaret
- Auto-ViML
- H2O AutoML
- Google Cloud Auto ML
- Google ML Kit
- Teachable Machine
- Runway AI
- Lobe
- Obviously AI
- CreateML
- MakeML
- Fritz AI



Low Code Platform Benefits

- DevOps promotion
- One button push from dev, to stagging, to live
- Less error prone
- Transparent compilation (reduced time)
- Instant Deployment (WEBCON)
- Application documentation
- Use of containers, container monitoring, container orchestration (horizontal and vertical scalability)

Main reasons businesses use low-code according to research from OutSystems

- Accelerate Digital Transformation and Innovation
- Reduce IT Backlog & Increase IT Responsiveness
- Reduce or Avoid Legacy Debt
- Reduce Dependency on Hard-to-Hire Technical Skills
- Protect Technology Against Churn
- Empower Citizen Developers to Improve Processes

Future Research

- Lowcode Engineering Platforms

- Scaling Up Citizen Development with Recommender Chatbots.
- Create a repository able to store and enable the retrieval of heterogeneous modelling low-code artefacts (e.g., models, metamodels, model transformations and code generators)
- No Code Low Code testing.
- Code creation by AI

Future Research

- **Lowcomote** will train a generation of experts that will upgrade the current trend of LCPDs to a new paradigm, **Lowcode Engineering Platforms (LCEPs).**

- LCEPs will be open, allowing to integrate heterogeneous engineering tools, interoperable, allowing for cross-platform engineering, scalable, supporting very large engineering models and social networks of developers, smart, simplifying the development for citizen developers by machine learning and recommendation techniques.

- This will be achieved by injecting in LCDPs the theoretical and technical framework defined by recent research in Model Driven Engineering (MDE), augmented with Cloud Computing and Machine Learning techniques.

Conclusions & Remarks

- Low-Code and No-Code Are NOT the Same
- COVID Fuels Low-Code Adoption
- 26% of executives believe low-code platforms are the most critical investment in automation (up from 10% since the pandemic).
- While 4 out of 5 businesses in the US currently use low-code, there are still 20% that do not. Worldwide, that number is 23%.
- In a 2019 survey from Appian, 79% of IT developers said that low-code can improve job satisfaction by reducing pressure, demands, and stress on departments.

Conclusions & Remarks

- Citizen integrator tools (low-code platforms) will reach mainstream use within 2 - 5 years.
- Global low-code development platform market revenue 2018-2025. The global low-code platform market revenue is valued at almost 13 billion U.S. dollars in 2020 and is forecast to reach approximately 65 billion U.S. dollars in 2027. The market is projected to grow with a CAGR of 26.1 percent over this period.
- The global market forecast for lode is around 65 Billion U.S. by 2027. And it's expected to reach $187 Billion by 2030.w-co That's a CAGR of 31.1% for 2020 - 2030.
- No Code Low Code interesting statistics: **https://quandarycg.com/low-code-statistics/**

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