



# The Self-Driving Enterprise: To Bring AI to Your Processes, Start With the EMS



by [Wil van der Aalst](#)

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When it comes to AI, the future was supposed to be now. Companies like Tesla, General Motors, Toyota, or Honda promised years ago they would be making self-driving cars by 2020. All of them failed. Neural networks like Siri and Alexa were supposed to inject AI into our daily lives, but all they are able to tell us is the weather forecast or look up a recipe.

And yet, the buzz about AI hasn't worn off. Every big company, every industry it seems, is into AI now. They talk about creating a digital twin of their organization, predicting future scenarios, and becoming an intelligent company with the help of AI. And yet, they have no tangible results to show for it.

In fact, most of what is currently being branded as AI in the market and media is not AI at all, but rather just different versions of machine learning where systems are being trained to do a specific, narrow task.

Don't get me wrong.

AI certainly merits our research and development efforts both in academics and in software companies. But artificial intelligence that can solve many broad business process problems most likely is still years away. That's why I would urge companies to invest more carefully in technologies that deliver real results over empty promises.

### **EMS takes us from process insights to action**

One of those technologies is an Execution Management System. Introduced by Celonis in October 2020, the software company takes the next logical step linking process diagnostics to taking actions. Still relying on Process Mining technology at its core, the software company [acquired automation platform Integromat](#) to integrate easy automation of process workflows.

(Read the first part of this series: [Bringing Data Insights and Automation Together: The Next Big Thing in Process Mining](#))

Simply put: The EMS couples the capabilities of Process Mining to detect compliance and performance problems with taking automatic actions to resolve them. Process modelling and workflow automation alone both had rather limited success in the past. Process modelling without data just didn't reflect reality, workflow automation would neither streamline nor fix a broken process. Process Mining plays a key role in connecting those two worlds to enable solid, data-based business decisions.

How does it work?

1. **The EMS Platform** connects with transactional systems (ERP, CRM, SCM, HRM/HCM, etc.) in real-time.
2. **Execution Instruments** continuously monitor and assess process performance (execution capacity) and identify process and compliance issues (execution gaps) and their root causes.
3. **Execution Applications** use machine learning to know which gaps have the biggest business impact and the best-in-class approach to fix them. They act by automating routine decisions and actions across multiple systems and, when necessary, they activate the right people to take action by providing next-best-action recommendations. ML-algorithms learn from the outcomes of each recommended action to improve future recommendations — ultimately improving process performance over time.
4. **Celonis Studio:** The new Celonis development studio allows ecosystem partners and customers to create Execution Instruments and Apps. Celonis already has a number of first Execution Apps built by partners.

### **What's my take on the EMS?**

I've said many times that Process Mining is not a one-time initiative, but rather an ongoing activity. If you stop at diagnostics, you won't see a return on investment. Your insights have to lead to actions. With the EMS, Celonis has found a way to bring two areas together that have long been disconnected: Process Mining and workflow automation.

Relying on smaller automation workflows to target specific process problems across multiple systems, Celonis' EMS can overcome system complexity that has created invisible bottlenecks. To be clear, it will never replace systems like SAP or Oracle. But the EMS can orchestrate systems and people to address inefficiencies automatically and continuously. In that sense, it does lead to smarter execution.

A challenge Celonis has to tackle in the future is to evolve the EMS from being system-specific (think SAP, Oracle, etc.) to being truly domain-specific (think Accounts Payable, Order Management, etc.). The Process Mining core and automation capabilities are a powerful base to work from, but as soon as you connect an EMS to “unchartered territory” (a system Celonis hasn’t built execution instruments and apps for), you need to rebuild everything from scratch. Celonis is working on a translation layer between the data model and the actual business logic but it will take them some time to do that.

### **Where are we going in the future?**

While Celonis has certainly reached another milestone in their history, there’s still a lot of untapped potential in execution management. Right now, the automated actions in the EMS are mostly based on single instances and separate processes. You pick one perspective, one department, one outcome — for example, “update the payment terms to pay an invoice at the optimal moment” — and execute an automated action to resolve a specific, process-related bottleneck.

In the future, we need to look at processes in a more holistic way. Processes, although we tend to look at them separately, are intertwined, and interdependent. A bottleneck in one process might have its root cause in another one. Multiply this by the number of processes in a company and you get thousands of interdependent process issues waiting to be solved.

In ten years’ time, we will hopefully have a new kind of intermediate storage layer, in which process data is stored in such a way that you can generate multiple process models that are more holistic in nature.

And by then, we also might have the first self-driving cars on the road. Who knows?



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