

Presentation for SmartLog 2022

Using ERP-systems for production planning in the Smart Factory

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About me

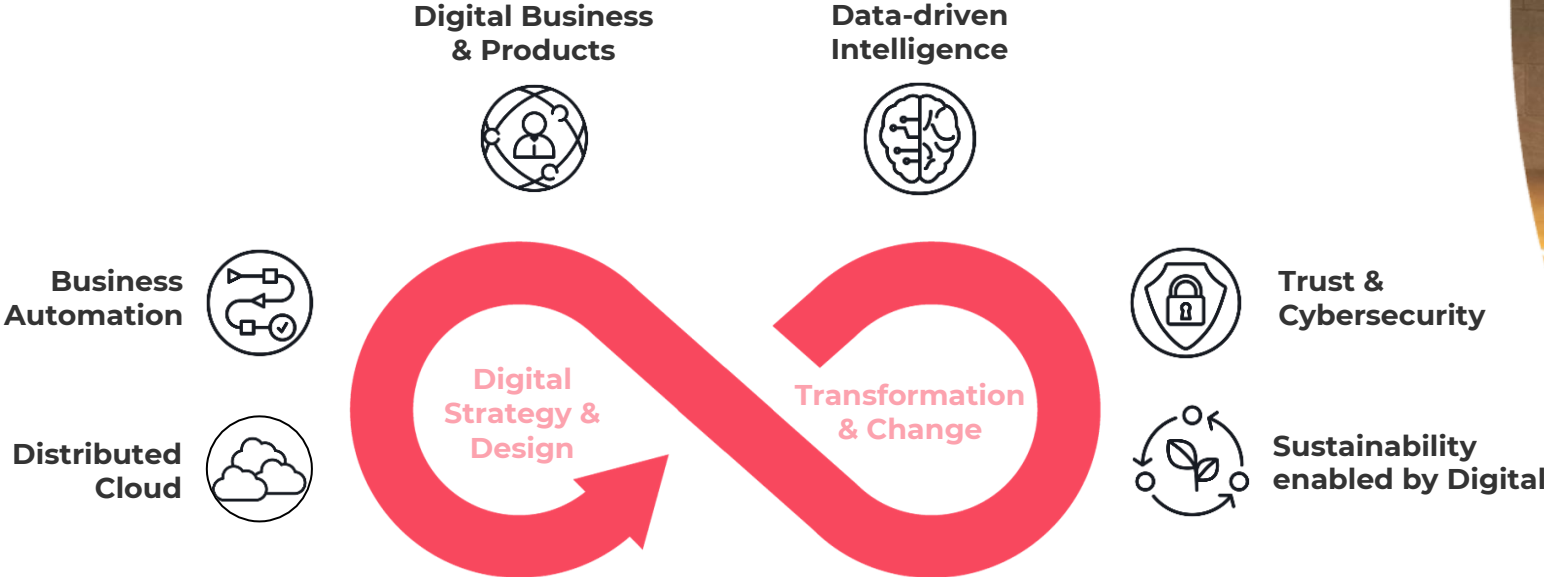


- Dr. Odd Jøran Sagegg, Devoteam Norway
- + 20 years with digital transformation for management- and technology consulting for firms like CGI, Cap Gemini, KPMG and Devoteam
- Involved in a large number for digital transformations projects in both the public- and private sector
- Professional interest lies in application of information technology in the industry, and especially application of ERP-systems in Manufacturing and Supply Chain area
- Co-author with Dr. Erlend Alfnes (NTNU) on the book “ERP Systems for Manufacturing Supply Chains; Applications, Configuration, and Performance“

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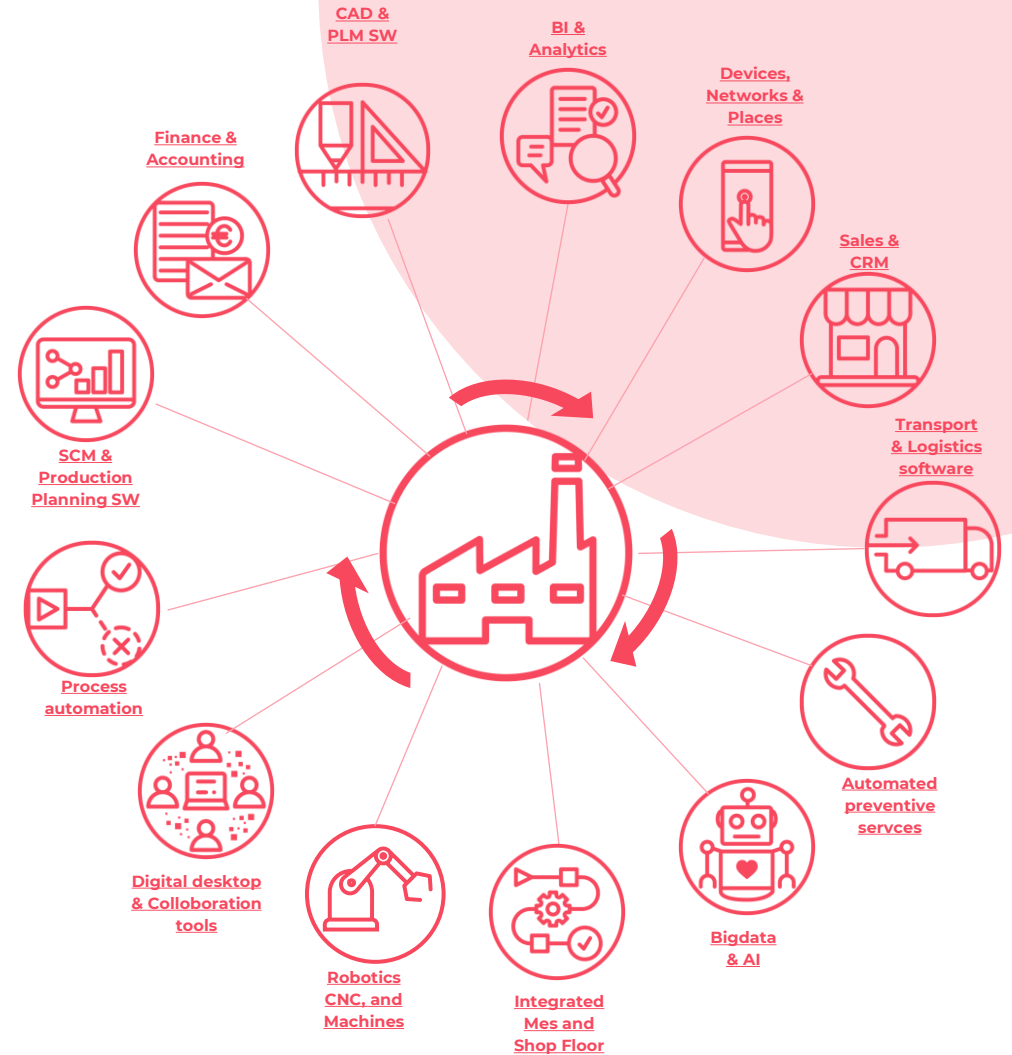


Smart Factory

*“The smart factory is a concept used to describe the **application of different combinations of modern technologies to create a hyperflexible, self-adapting manufacturing capability.***

*Smart factories are an opportunity to create new forms of **efficiency and flexibility by connecting different processes, information streams and stakeholders (frontline workers, planners, etc.) in a streamlined fashion.***

Smart factory initiatives might also be referred to as “digital factory” or “intelligent factory.””

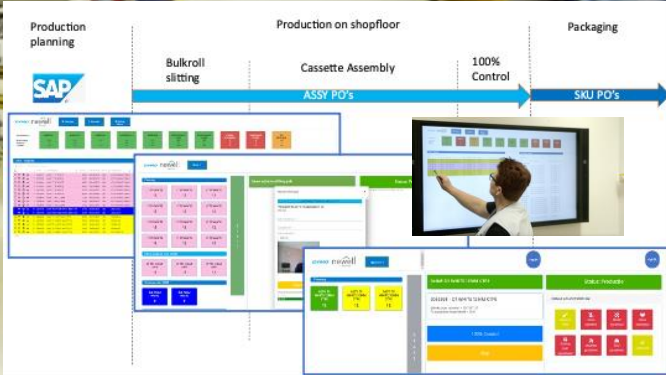
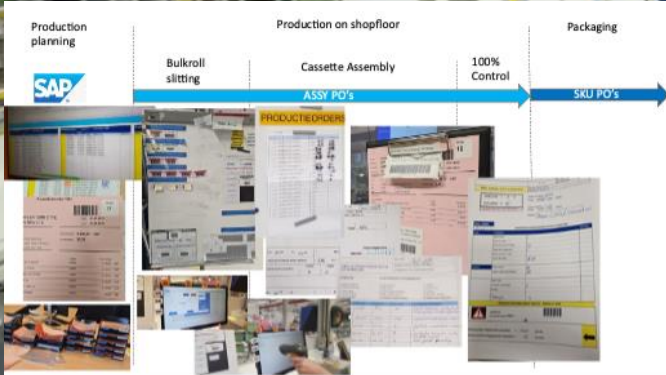
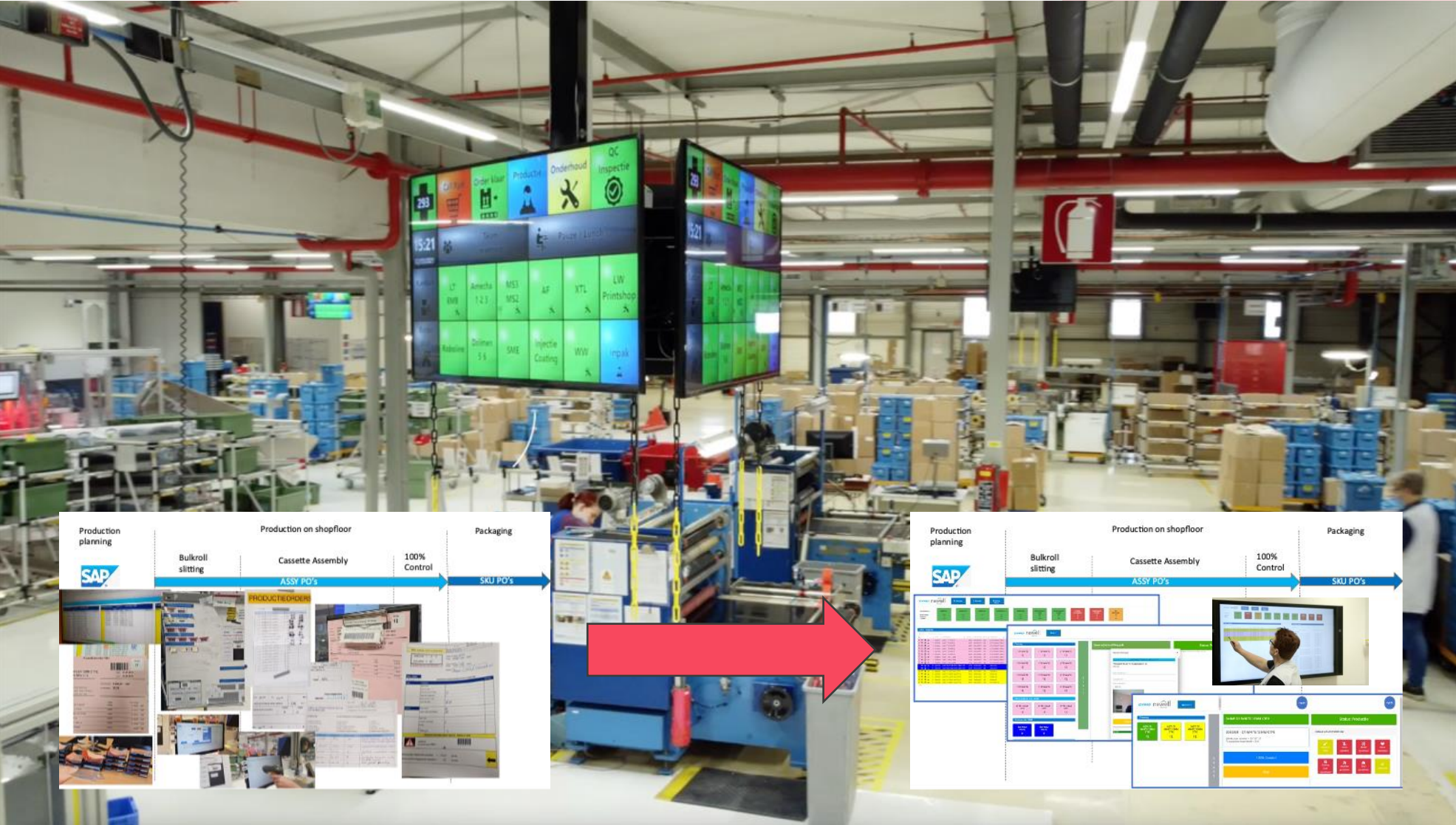


Source: Gartner 2020

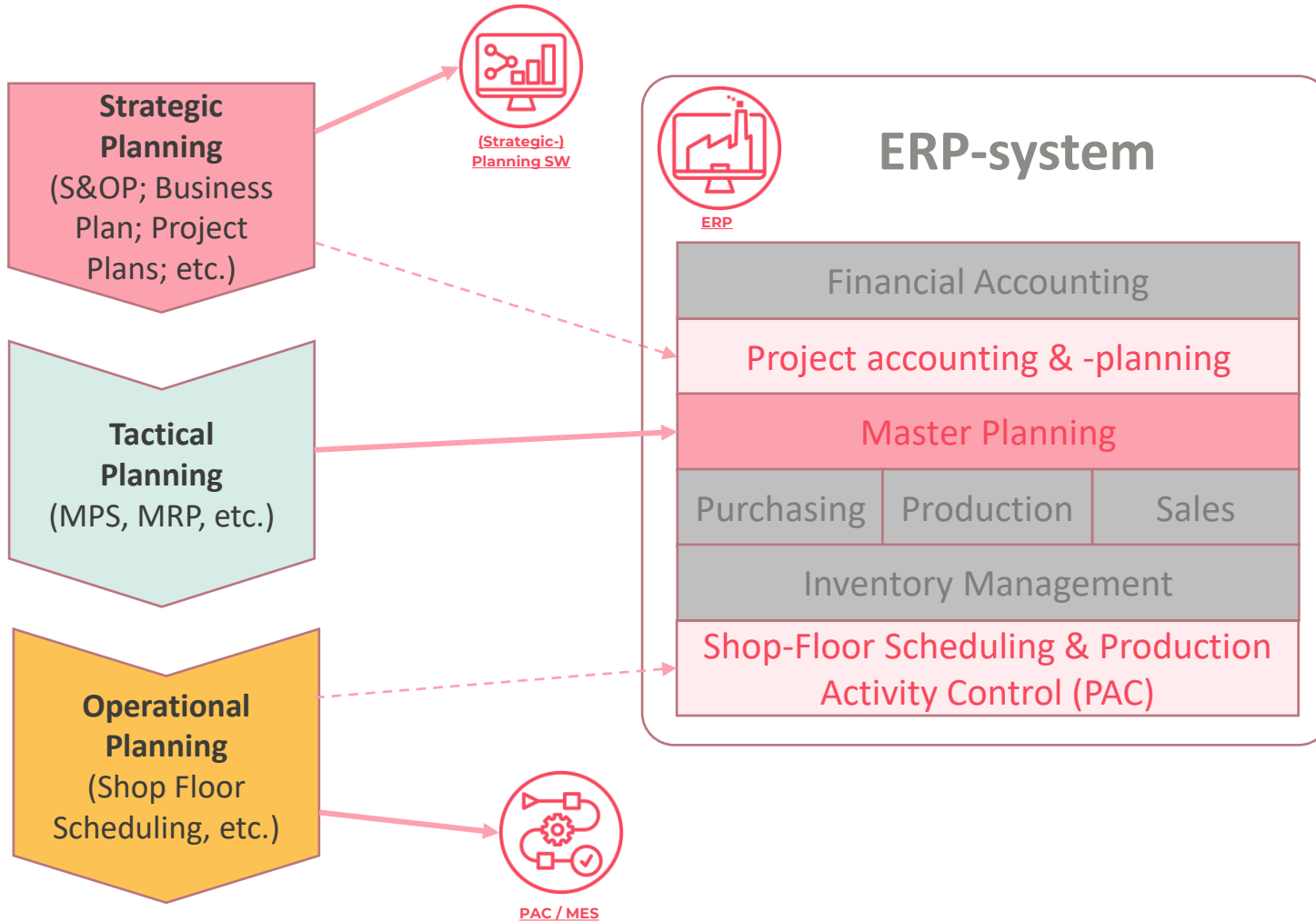
[Definition of Smart Factory - Gartner Information Technology Glossary](#)

Smart Factory

Example Connecting SAP ERP with machines - Dymo's paperless shop floor (Devoteam Belgium)



Production Planning in ERP (Low volume MTO/ETO)



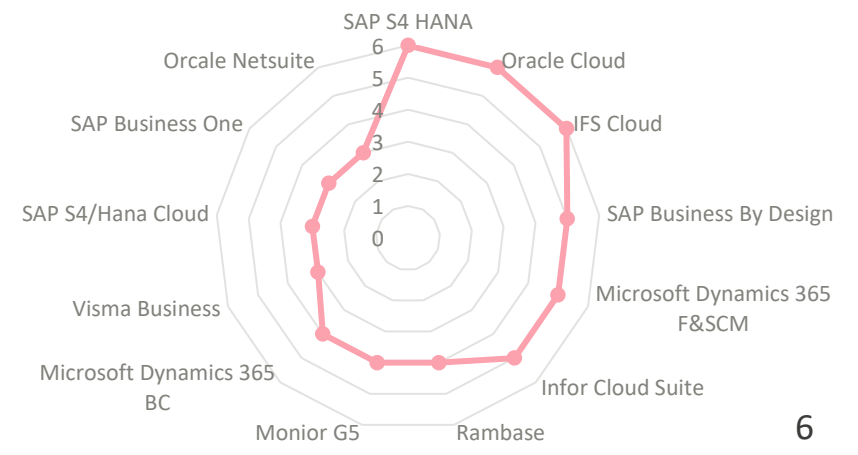
ERP-planning functions often used by ETO/MTO enterprises

ERP-planning functions sometime used by ETO/MTO enterprises

Modules that relates to the production planning functions

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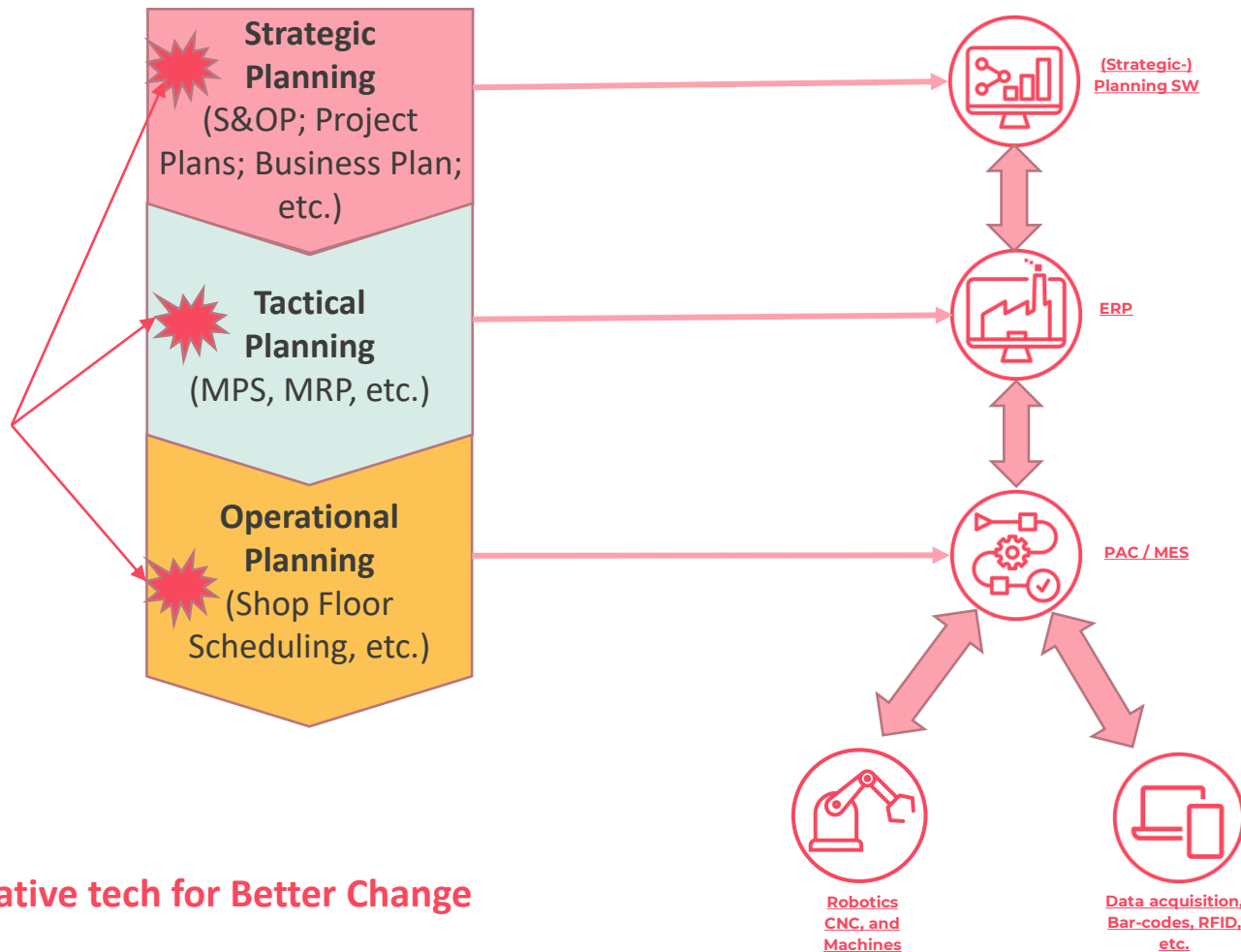
ERP-systems supporting project manufacturing



Production Planning in ERP (Low volume MTO/ETO)

If the integrations is done incorrectly: What often happen is that a change in one planning level triggers a requests for re-planning in other the levels

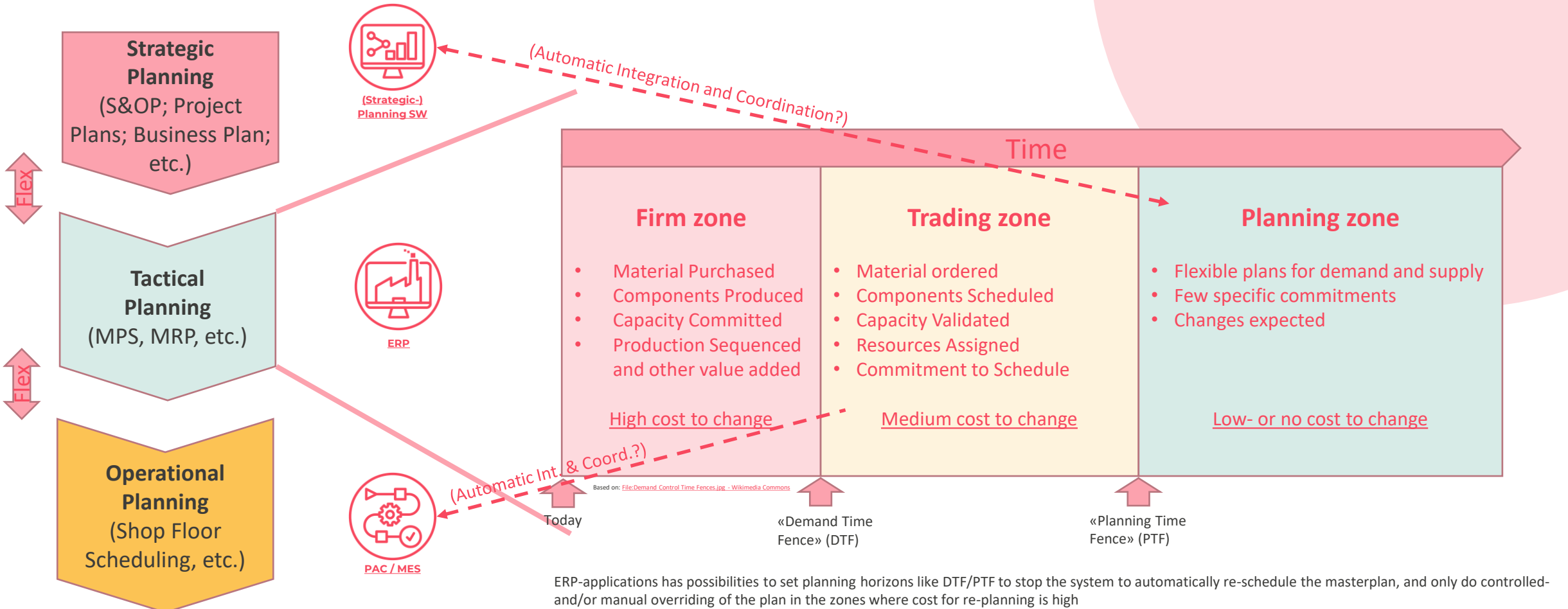
=> this will trigger nervous plans that requests constant needs for re-planning in all planning levels...!



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Going towards the Smart Factory often include thigh SW-integration between the tools for Strategic, Tactical & Operational production planning

The use of time-fencing in ERP and enabling flexibility between the planning levels is important when integrating the planning tools



...will the Enterprise achieve the goal of becoming a *“hyperflexible and self-adapting Smart Factory”* by only integrating their systems together?

The key to improve production planning in ETO/MTO lays often outside the (integration of) ERP and other planning tools

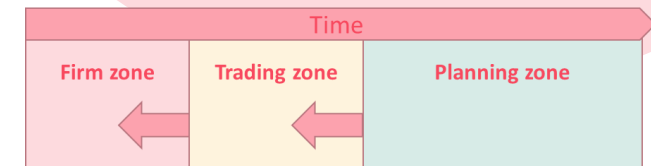


Integration of the planning tools do often reveal the challenges that consists with the current ways for production planning.

Going towards a fully demand driven / flow based supply chain may be ideal, but for many low volume MTO and ETO manufacturers this can this be a challenge due to things like fluctuation in demand, contracting methods, and long lead-times for components and materials

Anyway, some alterations of the operating model can be done to improve the benefits for integrating the tools for production planning. Some examples done by low volume MTO / ETO produces includes:

- Seeking ways to reduce the products and materials throughput- and lead times
- Make the integrations behave correctly, and use the right technology and IT-tools the right way
- Building in flexibility between the planning levels so that a small change in the lower levels do not trigger a request for replanning in the higher levels/overall plans
- Simplify the plans, “flatten” the Bill-of-materials and production routes in ERP so that unnecessary details is not included in the plans
- Separate what (products/components) must be in the plan and what can e.g. be pulled from upstream demand (“Mix-mode” manufacturing, moving the Customer Order Decoupling Point (CODP), use KANBAN/visual control for some product groups, etc.)
- Visualisation of plans, with coordination and communication across of the Supply Chain
- Use a flexible work-force to and self-managed groups to account for small changes on the shop-floor
- Do not re-plan for all minor changes. Visualise and “Run in” lag in plans instead for constantly re-planning
- Etc. etc.



Final thoughts – Smart Factory

It is usually not enough to only connect different processes, information streams and stakeholders through modern technology to achieve the goal of efficiency and flexibility in the Smart Factory.

The organization's whole operation model must be investigated when applying new technologies for going towards the Smart Factory. Including:

- Work processes
- Products & Delivery Models
- People & competence
- Organization, Roles and Responsibilities
- Governance
- Controls, data and KPI's
- Technology

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