



Client X Aerospace North America Inc. Digital Readiness Report (Final)

March 24, 2020





Agenda

1. **Introduction & Methodology Overview**
 - a. Summary
2. **Current State**
 - a. Business model & digital ambitions
 - b. Results of digital assessment
 - c. Digital Capabilities Assessment
3. **Digital technology assessment**
 - a. Technology architecture
 - b. Digital technology assessment
 - c. Potential cost savings
4. **Future state digital roadmap**
 - a. Short-term initiatives (“Quick Wins”)
 - b. Medium-term initiatives
 - c. Long-term initiatives
5. **Next steps**
6. **Appendix: Industry trends & resources**



1. Methodology



Introduction

- Client X North America Inc. is a leader in the design, development and manufacturing of advanced composites for the aeronautic, space and defense industries. The company has sustained growth on a mix of legacy and new generation projects and has a target growth objective of reaching \$100M in the next few years. Client X's market has become very global and competition is heavily price-based, limiting the companies opportunity for differentiation. These trends represent a significant risk of stagnation or negative growth.
- Client X's main operating processes have not evolved much over the years and rely heavily on combination of Excel worksheets, paper, a legacy ERP and a variety of other solutions. Knowledgeable and experienced staff are also relied upon to compensate through ingenuity and work arounds. As a result, current processes are not well integrated and cross departmental visibility is limited. Client X's growth is creating additional pressure for increased efficiencies and it is believed that better utilization of technology would be pivotal in realizing these gains.
- This Digital Readiness Report was prepared by BDC for the purpose of providing Client X with an unbiased assessment of their current digital technology infrastructure and their ability to benefit from digital technology in their operations, as well as to develop a practical roadmap that will help Client X to build their digital strategy and execute specific initiatives that are aligned with their strategic objectives.

Methodology

Digital Program



Planning

Assess your digital capabilities and determine how to profit from digital in your business

Digital Readiness

Adoption

Select and implement the right digital technologies to boost sales, reduce costs and improve productivity

System Selection

Website Power

Innovation

Ensure your company's business model continues evolving to stay competitive and relevant

Business Model Innovation

Digital Readiness Project objectives



The objectives of this Digital Readiness project were to:



- define technology adoption priorities based on your business model and strategic objectives
- analyse current technology assets and provide a qualitative assessment of how well they support the business (*strong focus on ERP and related operations applications*)
- uncover technology adoption opportunities through process mapping and requirements analysis of the business
- document your enterprise application architecture to identify the functions and integrations of current software applications and propose a future state architecture
- determine how to leverage digital technologies to boost productivity and reduce costs and increase sales
- prioritize the most relevant and profitable digital investments and projects
- build a roadmap to help steer your business and remain competitive



Digital Readiness Delivery methodology

①

Analysis

Pre-kick-off

- Review client information
- Identify PL on client side
- Industry scan

Kick-off and assessment

- Kick-off meeting
 - Discuss project timelines
 - Discuss digital ambition, concerns and motivations
 - Provide pre-work
- Conduct BMC session
- Review business strategy and drivers
- Digital capabilities assessment

Interviews

- One-on-one interviews with key stakeholders
- Review key processes
- Identify data, integration and reporting requirements
- Identify key gaps and inefficiencies
- Draft current technology architecture

Digital trends scan

- Research and uncover digital trends and technologies specific to their industry and markets
- Identify disruptors, key technologies, risks, new business models

②

Workshops

Workshops: Digital operations

- review key findings from interviews
- identify your operational and process inefficiencies, bottlenecks, interdependencies and critical equipment
- map up to 8 key functional processes (current state)
- prioritize the key productivity factors and wastes
- establish critical data required to make better decisions and optimize your operational efficiency
- determine real-time performance and process indicators (what needs to be measured)

Workshops: Digital infrastructure

- review your list of processes and identify shortcomings
- validate and review current and target systems architecture
- review high level data management strategy
- recommend digital tools to improve internal interactions and with your clients
- map your target systems architecture
- develop a detailed list of system functionalities needed to support your operations

③

Digital roadmap

Solution research

- research and identify potential applications for key digital initiatives (up to three vendors and solutions)

Prep for final presentation

- Identify transformation roadblocks (cultural, financial, skill and talent, leadership)
- Digital roadmap report development

Final presentation

- present the results of the digital audit as described above
- present prioritized digital initiatives with preliminary budgetary guidance, timelines, expected benefits and impacts
- discuss potential roadblocks

Follow-up

- two weeks after the final presentation, a BDC consultant will conduct a follow-up call to answer questions and validate the project impact

Week 1-4

Week 5-8

Week 9-12





Summary



Executive Summary

- Client X is currently at a conservative state of digital maturity. The majority of Client X's enterprise technology is legacy (ERP, servers, database, document management, Microsoft Office)
- As a result of Epicor's limitations, Client X staff have become highly reliant on Excel and data management. Some departments spend as much as 90% of their time in Excel. There are many manual, time consuming processes that should be automated.
- In Client X's business, changes are happening constantly and quickly. The ability to respond in a timely manner is impeded by the limited functionality of their ERP and other key systems
- The current systems offer little or no workflow automation or integrations and the same data must be entered multiple times, slowing the process and increasing the chances of error. Key functions like MRP have a significant time lag.
- Client X staff have identified that potential annual savings realized from upgrading key business systems (including an ERP) would be over **\$1M per year**.
- Client X staff have identified that the projected savings realized from the adoption of **Quality Management System** (software) would be approximately **\$380,000 per year**.
- BDC has identified 7 digital initiatives (short, medium, long-term) that will help Client X move from a conservative to an advanced state of digital maturity and achieve their objectives.



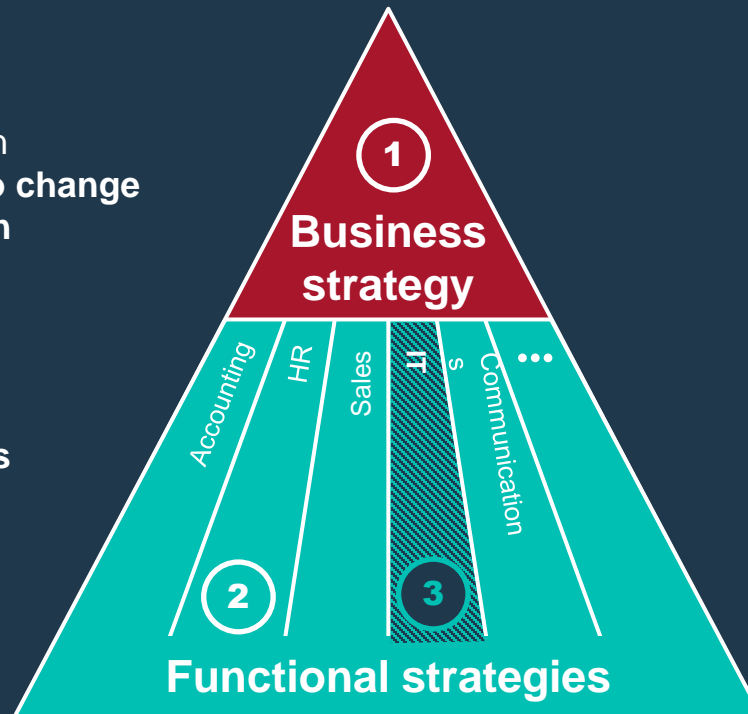
Traditional approach to digital technology adoption

Less digitally mature organizations tend to use the traditional ad-hoc approach to technology adoption, focusing on individual or silo technologies and services. The traditional digital strategy approach no longer works in a digitally connected world and for companies seeking to increase digital maturity in their organizations.

- ① → Long-term direction
- Operational orientation
- Rigid, slow and **hard to change**
- No room for **innovation**

- ② → Focused on **operations**
- **Little or no impact** on the business model

- ③ → **IT-focused** view of the business
- Silo approach
- **Inward looking**

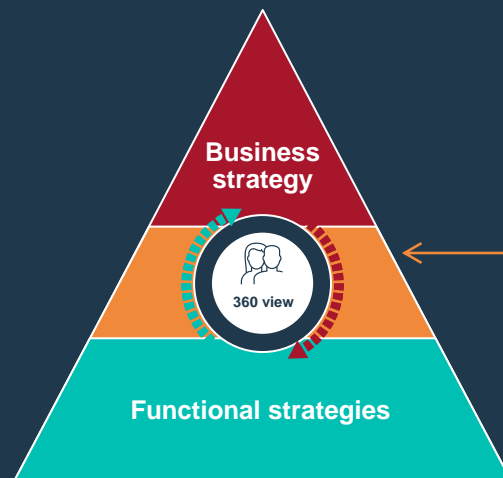




Digital strategy

A digital strategy is necessary to act as a bridge between the organization's business strategy and the functional and operational requirements of the business.

- give agility to the commercial strategy and be able to adopt a new culture, new technologies, new services, new commercial models and to facilitate a transformation, if necessary.
- The digital strategies of maturing organizations go beyond technologies. They target innovation improvements and the adoption of a new culture, automated decision making, business intelligence, connectivity, mobility, agility, and lastly transformation.
- Sticking with old-school technology and approaches and manual systems will complicate the capacity for change and the ability to integrate clients into their business processes.












Digitally align your business objectives.

- Client-focused
- 360 view of your business
- Engage your partners
- End-to-end process automation
- Promote a culture of change
- Adopt new technologies
- Business intelligence through reporting and analytics
- Strengthen the capacity for innovation



Business model

Digital Readiness Project, January 2020

<p>8. Key partners </p> <ul style="list-style-type: none"> > Owned by Airbus > External suppliers > Investment & funding partners > Material suppliers > NRC > Dalhousie University > Nova Scotia – Provincial Gov. > BDC > Associations > Customers > Local community > BMI 	<p>7. Key activities </p> <ul style="list-style-type: none"> > Fabrication > Design & development > Testing > Supply chain management (materials acquisition) > Documentation (for traceability) > Consignment inventory mgmt. > Sales & proposal activities <p>6. Key resources </p> <ul style="list-style-type: none"> > Employees > Equipment and machinery > Lab testing equipment > External suppliers > Investment & funding partners > Material suppliers 	<p>2. Value proposition </p> <ul style="list-style-type: none"> > Highly competent and qualified, approved integrated composite manufacturer > Assembly and systems integration > Extensive range of certifications and qualifications, able to offer a broad range of processing capabilities for composite mfg. > High-quality at competitive cost (mid to high range) > Responsive to changing customer needs > Offer schedule flexibility & responsive service > Able to work without detailed models (for older aircraft and legacy parts) > Partnerships, risk sharing and investment with customers in tooling 	<p>4. Customer relationships </p> <ul style="list-style-type: none"> > Ownership by Airbus > Listing of qualified suppliers > Diverse customers with diverse needs > Customer RFP participation > Contract management, with dedicated contract manager & project managers > Customer partnerships > Trade shows > Auditing, scorecards > “Client X” name not yet widely recognized <p>3. Channels </p> <ul style="list-style-type: none"> > OEM & Tier 1 customers > Response to customer RFP > Existing contracts > Listing of qualified suppliers 	<p>1. Customer segments </p> <ul style="list-style-type: none"> > Aeronautics (75%) > Defence (16%) > Space (5%) > Other (4%)
<p>9. Cost structure </p> <ul style="list-style-type: none"> > Materials > Labour (location) > R&D > Tooling > Energy Costs > Transportation > Compliance & regulations > Diversity of customers supported & diversity or changing needs tends to add cost 		<p>5. Revenue streams </p> <ul style="list-style-type: none"> > Products & Services > Design & development work > Production > Spares manufacturing 		



Digital ambitions, concerns and motivations

Client X NA's "WHY" = "Making people around the world safer"

Digital objectives

- **#1** Increase competitiveness in a global market with price-based competition.
- **#2** Make Client X (Lunenburg) a show-case in the transformation of manufacturing plant to a world class operation.
- **#3** Digitize main operating processes for greater integration and visibility (reduce paper).
- **#4** Reduce overhead costs to become more competitive.
- **#5** Satisfy customer expectations and demands (ease of access, in customer format) for data management, security, traceability.
 - Security requirements: ITAR, Controlled Goods, NIST (multiple and increased levels).
 - Controls audits & self audits.
 - Customer/contracts: NIST compliance is required.
 - Environmental regulations: ISO14000 (manufacturing process related)
 - AS9100, NADCAP regulations compliance



Digital ambitions, concerns and motivations

- **#6** Enable configuration and document management (BOM, BOP, Revisions, Controls) flow down by various customers (current ERP does not have mechanism to deal with these requirements).
- **#7** Use visual work instructions to streamline training, operations and ensure greater consistency (possibly integrate with ERP).
- **#8** Production planning and scheduling is currently not integrated with ERP (primarily managed in Excel).
- **#9** Improved communication and transfer of customer requirements to suppliers (currently, requirements are not always transferred in complete detail).
- **#10** Change control and tracking of each revision change.
- **#11** Customer experience for OEMs, Tier 1 (primary) & 2 companies
 - Reputation enhancement & recovery from previous issues
 - Responsiveness to request for information with complete data
- **#12** Attract and retain the best talent (enhance the internal/external employer brand)



Current state

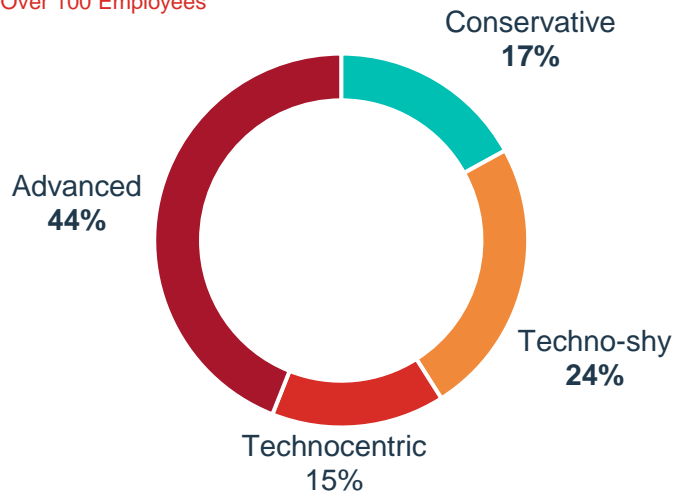
Digital maturity assessment

How do you compare to your peers?

In this manufacturing group with over 100 employees, a total of 17% of these companies are conservative businesses, while 24% are techno-shy, 15% are technocentric and 44% are advanced.

Good producing sector

Over 100 Employees



Why does digital maturity matter

Our research shows that businesses with high digital intensity enjoy faster sales growth, while **companies with a strong digital culture are better at increasing profits.**

Businesses that score high on both aspects are more likely to export and innovate

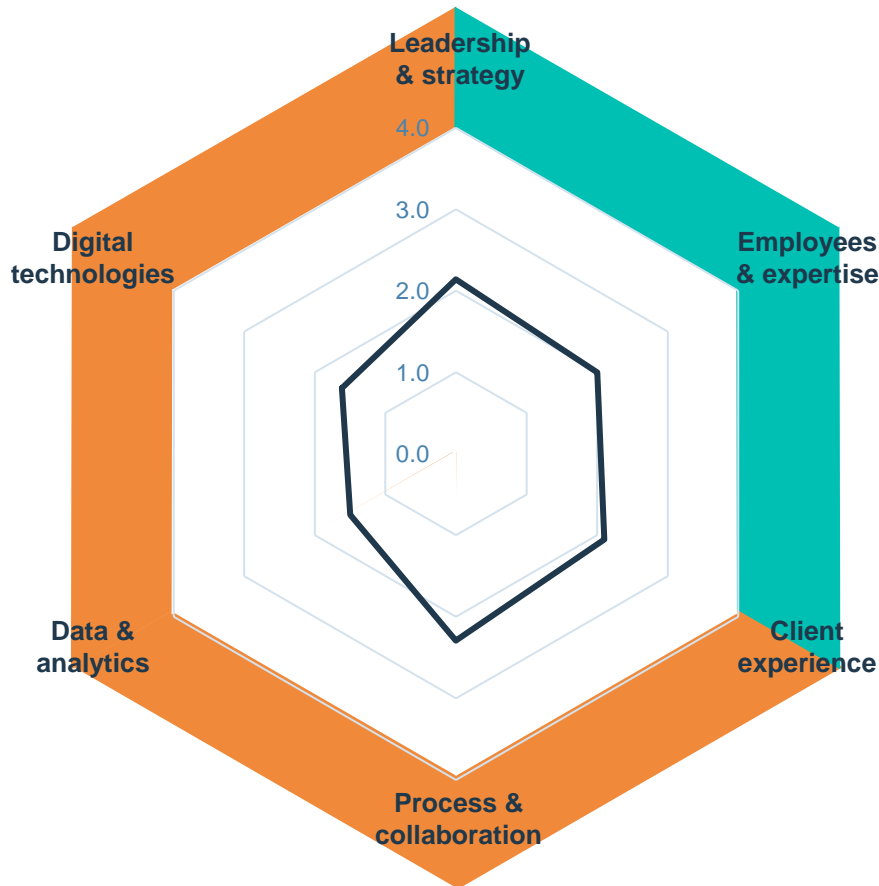
Our research shows that if a conservative business were to move into the advanced category, it would see a:

- 101% increase in its likelihood to achieve strong revenue growth
- 84% increase in its likelihood to achieve strong profit growth
- 80% increase in its likelihood to export
- 502% increase in its likelihood to innovate



Current state

Digital capabilities assessment



Component: Digital culture

→ Leadership and strategy

- Business objectives and digital strategy
- Change management

→ Employees and expertise

- Attracting and retaining competent employees
- Continuous learning and training, knowledge management

Component: Digital intensity

→ Customer experience

- Customer integration
- Customized and digital marketing

→ Processes and collaboration

- Process management and best practices
- Collaboration and external partners

→ Data and analytics

- Data management
- Analytics and decision making

→ Digital technologies

- Systems integration
- Tools, infrastructure and architecture



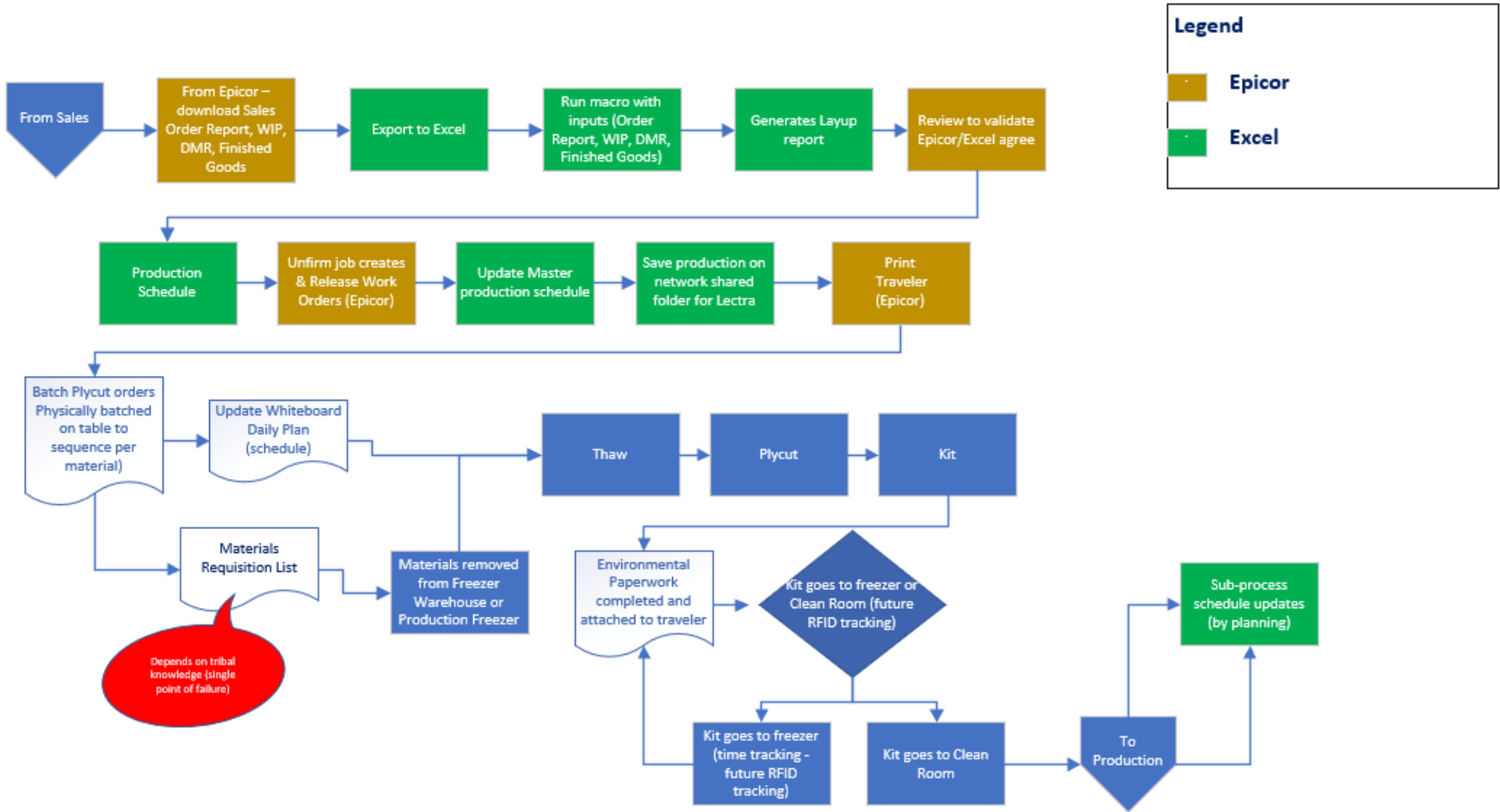
3. Manufacturing and Planning

#	Description of observations
1	Current configuration does not support constraints to support finite capacity planning, so planning is manual)
2	MRP usually takes 24-36 hours to run (full regeneration) and can only run over a weekend because of demand on server resources. Often it is an absolute failure
3	No batch scheduling
4	No labour planning
5	There are 29 individual Excel spreadsheets associated with the manufacturing process
6	There are so many notifications that they are being ignored
7	Current backlog is over \$7M
8	No notifications of tools removed for calibration
9	No visibility into what tools need to be calibrated or are expiring
10	Tracking “out of freezer” time lacks accuracy, leading to spoilage (currently in the process of improvement)
11	Line of Balance is all done manually on a daily basis
12	Daily Work Center schedules are all done manually by a single resource
13	No capacity analysis (by Work Center, workload)
14	Limited visibility into training/certification of layup operators leads to unpredictable task times, poor quality
15	Cannot plan for tooling, downtime, vacations, etc.
16	Absenteeism (8-10%) creates scheduling issues and spoilage (leaving out materials)
17	Transcription of job/part numbers is manual, leading to errors
18	No visibility into part status (DMR, on hold)
19	Too many manual, paper-based processes
20	Currently the plant is on a “pull” system (from preceding operation), instead each operation should setup for the next

Current state Digital technology summary



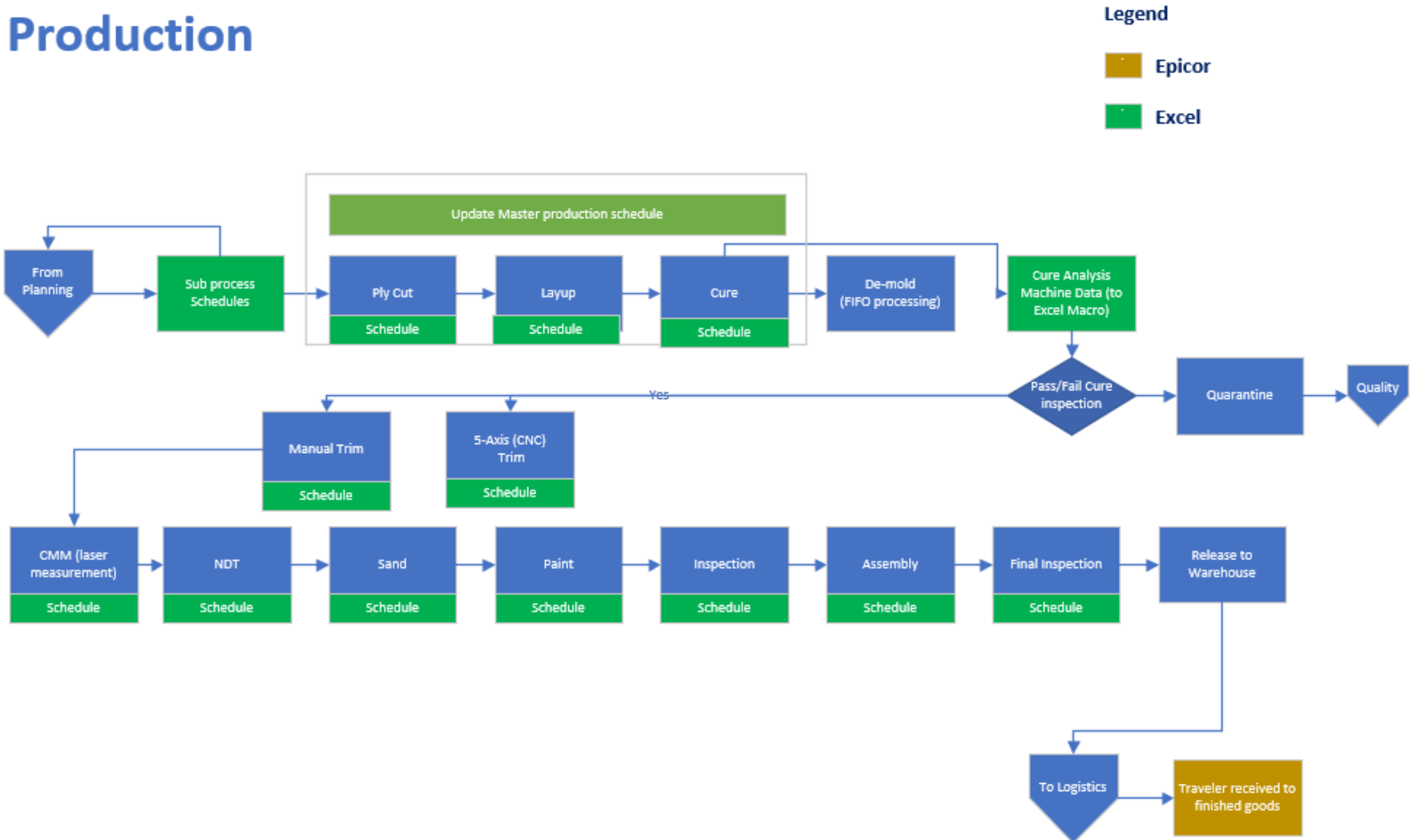
Planning (Layup)



Digital technology summary

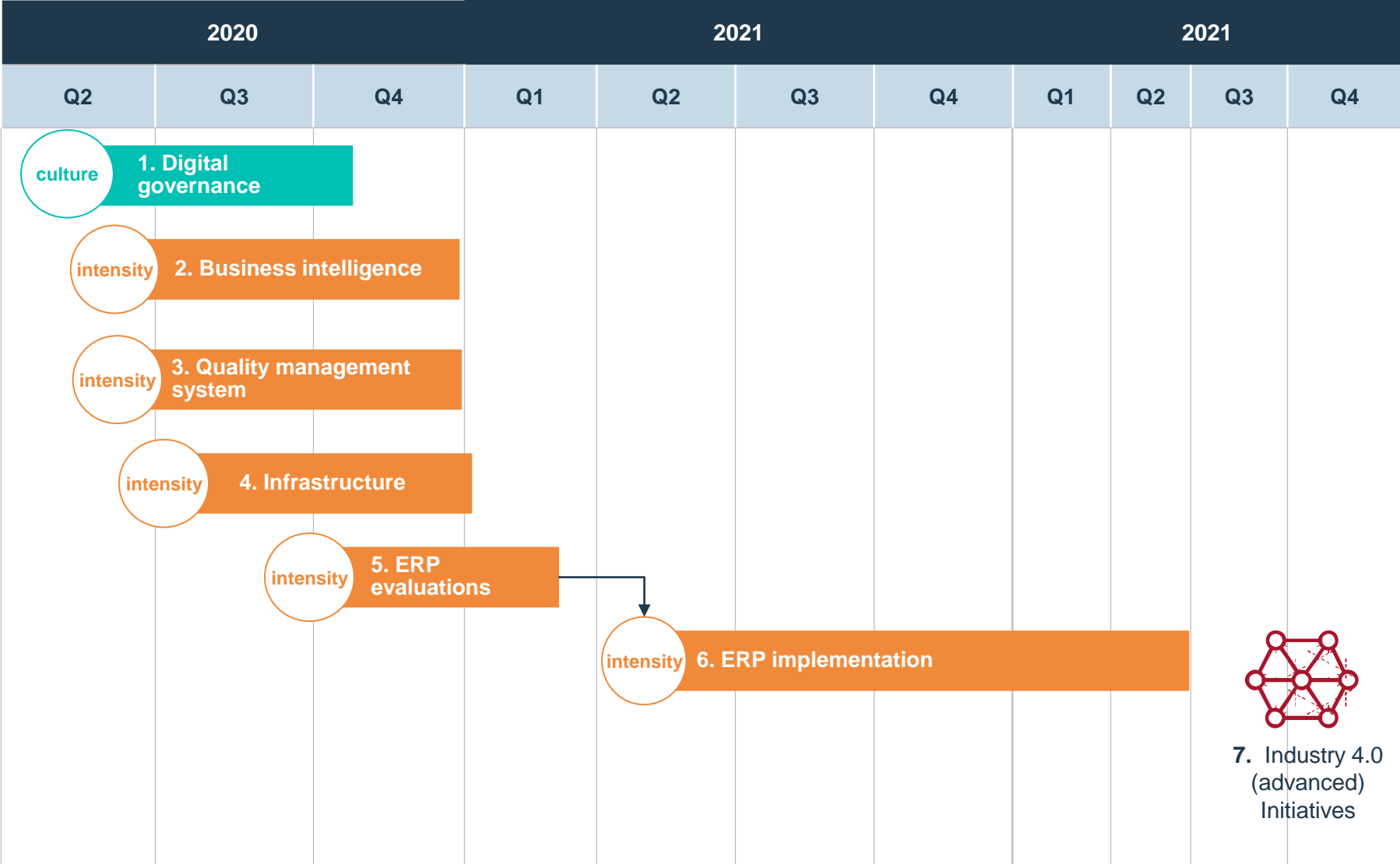


Production



Digital roadmap initiatives

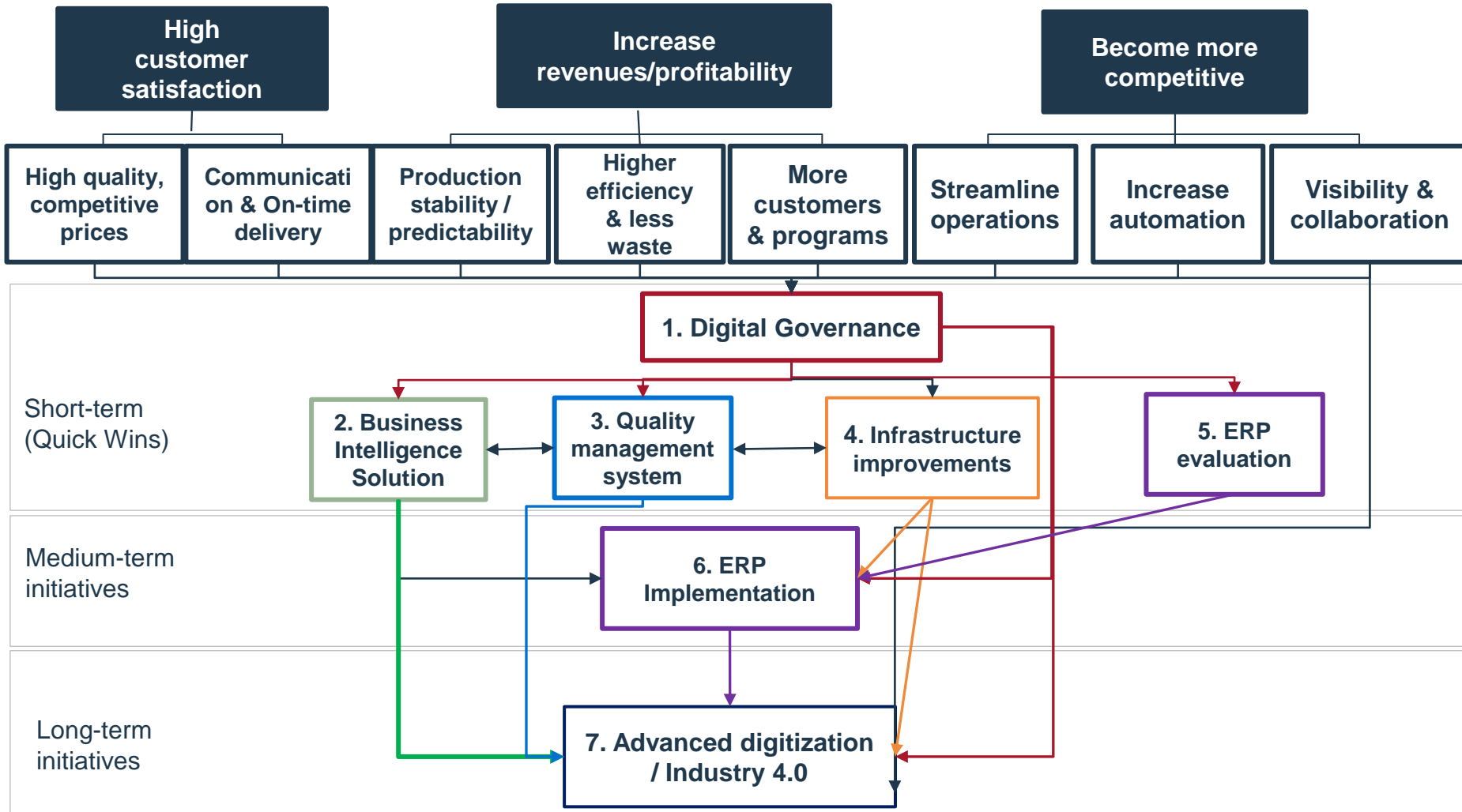
Initiative timelines





Executive summary

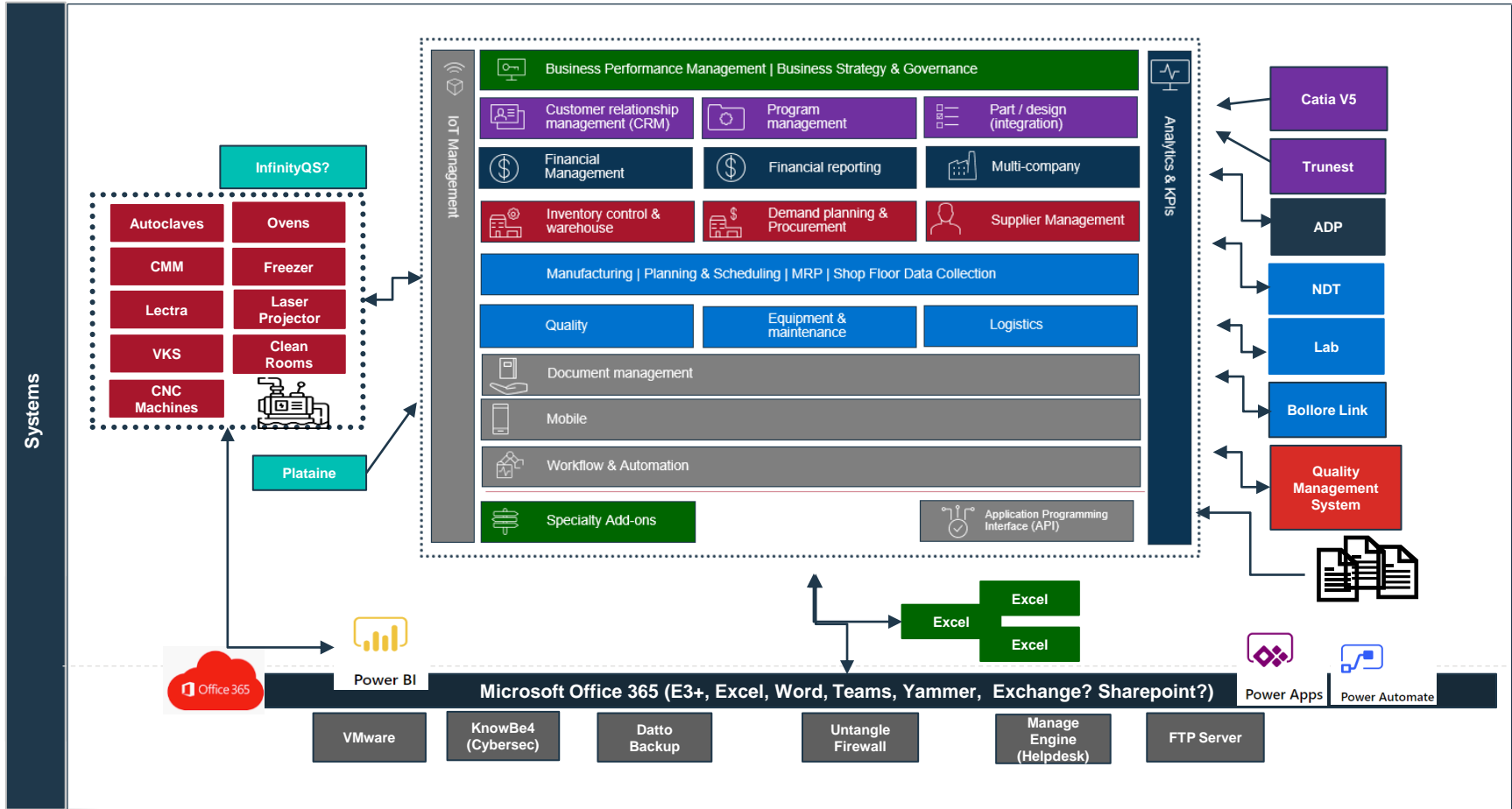
Strategic alignment





Future state

Potential target architecture



1. Digital Governance



a. Form a Digital Steering Committee

Description of the initiative

- Digital strategy is a critical component of the business strategy. It requires a **top-down** approach and considerable oversight.
- A Digital Steering Committee (DSC), should be formed to formulate/assess plans and priorities, make recommendation and assess results.
- The DSC reports to the CEO and should be limited to 3 or 4 (max) executives or senior managers from key departments (wider representation).
- An executive sponsor (preferably C-level) should be assigned to support and guide the committee.
- The DSC should meet on a regularly (at least monthly) to ensure continuous progress.
- Confirm a long term plan (Years 1-3) for new or replacement technology to ensure most critical priorities are addressed.
- Develop a comprehensive list of immediate projects (this year) to be completed, with specific objectives, targets, resources and timelines.

Expected benefits

- Leadership speaks with **“one voice”** to the rest of the organization (each department, IT) and the same message is reinforced.
- More effective planning, oversight and control on digitization projects.
- Ensures technology policies and procedures originate from a single source.
- Cross-department collaboration and expertise for better planning and execution.
- Allows for distributed work load and simultaneous projects while maintaining alignment to strategy.
- Provide coordinated guidance and advice to leadership.

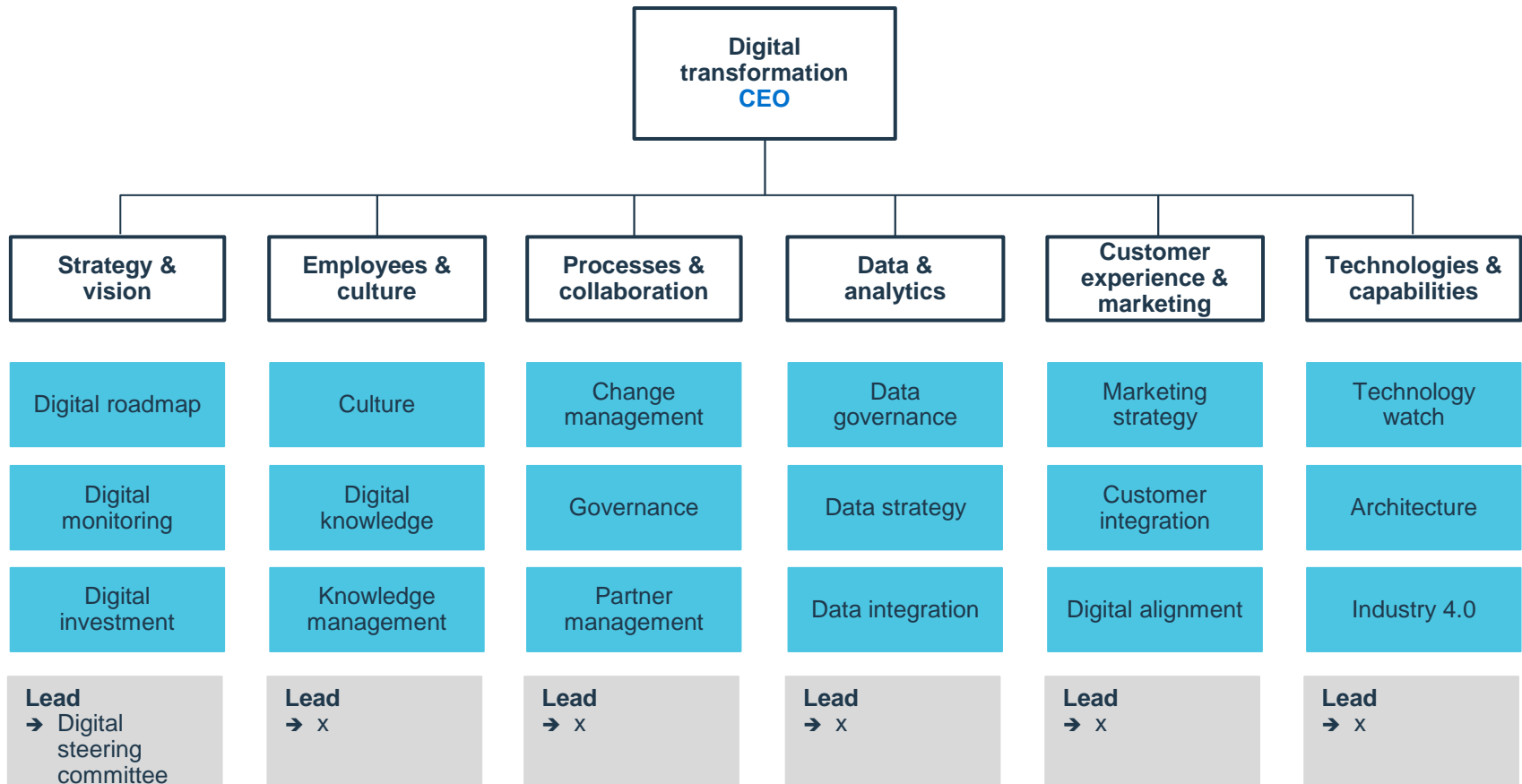
Effort

- Additional responsibilities for members of DSC, to support planning, oversight and execution of digitization projects.

“Digital transformation is an **all-hands-on-deck** priority” *Source: Gartner*

Digital governance

Areas of responsibility



Potential ERP platform solutions



Assumptions

- In an effort to assist Client X with planning, BDC contacted (with Client X's permission) several vendors for the purpose of collecting preliminary information and estimates for a new ERP system. BDC has not audited or otherwise validated the information provided by each vendor and makes no assurances on behalf of solution vendors, the quality of their submissions or the suitability of their solutions.
- Preliminary estimates provided by vendors are based only on a high-level scope, a sample user count (249 named, 62 full concurrent and 57 concurrent shop floor), and their experience with similar client projects, to assist Client X to better understand the possible costs involved, with the disclaimer that additional requirements analysis and scope definition will be required, which may affect costs.
- Each solution offers multiple options for licensing, functionality, add-on tools, deployment, integration and customization. In addition, each vendor offers multiple options for implementation, training, integration and customization services, technical support and other services. Final system pricing will depend on the options, scope of work, services and timing selected.
- Price estimates provided are for software and implementation only and do not include infrastructure (hardware, servers, hosting). Estimates do not include internal costs (resources, time, salaries).
- The vendors contacted do not represent an exhaustive list of available options.
- *A thorough system evaluation (system selection) process is recommended during which additional vendors should be considered and detailed can be refined.*



Potential ERP platform solutions

Epicor



- ➔ Implementation services: [Epicor](#) (corporate)
- ➔ Proposed deployment: [On-premise](#)
- ➔ Proposed licensing: [Perpetual](#) (annual maintenance, Client X already owns licenses (re-purchase not required))
- ➔ Current version of Epicor offers significant functionality improvements and enhancements.
- ➔ *Additional modules/add-ons will be required to for some new or advanced features (e.g. Doc mgmt., Adv. reporting) which will increase the licensing and implementation costs.*
- ➔ *Existing customizations may need to be rebuilt (not included)*
- ➔ Vendor has provided preliminary pricing information, product brochures and recommended system specifications (infrastructure).

Preliminary budgetary estimates*

Additional software:	TBD
Software (Maintenance)	\$ 178,000
Professional Services	\$ 304,000
Estimated initial cost*	\$ 482,000
Estimated 3Y TCO*	\$ 764,000
Estimated 5Y TCO*	\$1,050,000

Links

- ➔ [Epicor A&D](#)
- ➔ [Customers & videos](#)

*Note: This is only an estimate and may change depending on scope. See "Assumptions" (page 96), "Preliminary Budgetary Estimate Summary" and vendor documents for more details.

Staffing required to implement ERP



You will need team members from each functional area of your organization for the implementation of an ERP.

1 | Executives (Digital Steering Committee)

DSC provides guidance, makes executive decisions, manages priorities and monitors progress

2 | HR Team

Key member if outsourcing needed for the ERP project implementation/management

3 | IT Team

Essential for the installation and maintenance of the ERP system infrastructure

4 | Employees who can help with the ERP selection

Responsible for gathering all needed requirements for the selection of the ERP

5 | Employees responsible for change management

Responsible for communicating updates and goals to the rest of the employees

6 | Employees responsible for training

Provide assistance and guidance to other staff members

Steps to ensure optimal staffing for a new ERP project.

Step 1 | Good vendor planning and communications

Good planning and communication with the vendor is critical since they will be working with you closely from the beginning to the end of the project (and beyond).

Step 2 | Identification of the right resources

Identify the key staff members (functional experts) based on their skillset, experience, and knowledge within different departments of your organization.

Step 3 | Distribution of key responsibilities

Once key team members are identified, it is important to distribute responsibilities and ensure each member is liable for their respective goals.

Step 4 | Keeping the organization steady

Employees will likely have to balance daily operations and the management of their responsibilities around the ERP implementation. Providing adequate support (“back fill”) so they can dedicate enough time to the ERP project is crucial.

4. Infrastructure Upgrades



Description of the initiative

- Much of Client X's core infrastructure, including servers and business applications, are outdated.
- The current infrastructure will not support new systems like an ERP or QMS (see vendor provided System Specification documents)
- In anticipation of the new systems and to better support the business in the interim Client X should consider the following infrastructure initiatives:
- Servers – the servers are antiquated. IT should look at a replacement campaign over the next year.
 - **Office 365:** – Moving from Office 2010 to Office 365 will stabilize existing applications (Excel, Access, Word, Outlook) and deliver new features and functionality.
 - **Collaboration tools:** solutions like Microsoft Teams or Slack can replace the chat/messaging capabilities of WhatsApp. In addition, the collaboration and communication functionality offered by such solutions will far surpass WhatsApp.

Expected benefits

- A solid infrastructure foundation that will allow Client X to build roll out the future technology stack
- New features and functionality that can improve productivity and communication.
- Improve employee collaboration and engagement
- A secure, auditable communication platform that keeps conversations within the corporate domain.

Effort

- Review system specification requirements for some of the potential solutions under consideration (e.g. ERP, QMS, BI, etc.)
- Incremental implementation, testing and training for new tools
- Enhancement and optimization

5. ERP Evaluations



Description of the initiative

- Modern ERP systems offer new and innovative technology and functionality (e.g. built-in dashboards and automated analytics) that can be extremely useful.
- However, they are also very complex and carry a significant risk of failure and missed expectations (e.g. wrong system, vendor, misaligned scope, unexpected costs and expensive customizations).
- A new ERP system represents a significant investment of money, time and resources and it should be expected that the new ERP solution will need to support Client X for at least the next decade.
- To mitigate the above risks, Client X should undertake a formal evaluation project to evaluate potential solutions and vendors, confirm a scope of work, implementation plans, costs and other details before selecting a system.
- A small team should be selected to lead the ERP evaluation project and to work in conjunction with functional experts from each department to ensure their needs will be met.

Expected benefits

- Reduce the risk of ERP failure.
- Ensure the detailed functional requirements are well defined and documented.
- Engage each department to ensure their needs are taken into consideration, avoid misalignment or major gaps and gain buy-in.
- Understand various options and possibilities, associated cost and select the “best fitting” (preferred) system at the best price.

Effort

- ERP systems are complex and proper due diligence is required to ensure the needs of the organization will be met, within the expected scope and budget.
- An evaluation project will likely take 6 months to complete.
- A new ERP is so mission-critical that this warrants a significant investment of time by the organization as a whole.
- A selection committee should have representation from across the firm and should be a prime focus of the digital steering committee.

6. ERP Implementation



Description of the initiative

- A new ERP system will enable the access and management of real-time information across the organization.
- Implementation of a new ERP will likely take approx. **9-12 months** to complete (for the initial phase) depending on the scope, vendor and internal resources allocated to the project.
- Implementation of advanced (e.g. MES) or secondary functionality (e.g. HR) will likely take more time.
- Working closely with the ERP vendor, Client X will execute the project plan, typically including:
 - Requirements gathering
 - Data migration
 - Configuration
 - Testing and validation
 - Training
 - Quality assurance
 - Go live
 - Enhancement (e.g. “Phase 2” functionality)

Expected benefits

- A 21st century ERP system that will be the core of your operations and the central repository of mission critical data.
- Company wide data sharing and visibility.
- Eliminate data siloes and automate interdepartmental process, notification and collaboration.
- Enable real-time reporting with modern BI tools.
- Help reduce or alleviate many supply chain issues
- Improved customer service and delivery times.
- Higher employee satisfaction

Effort

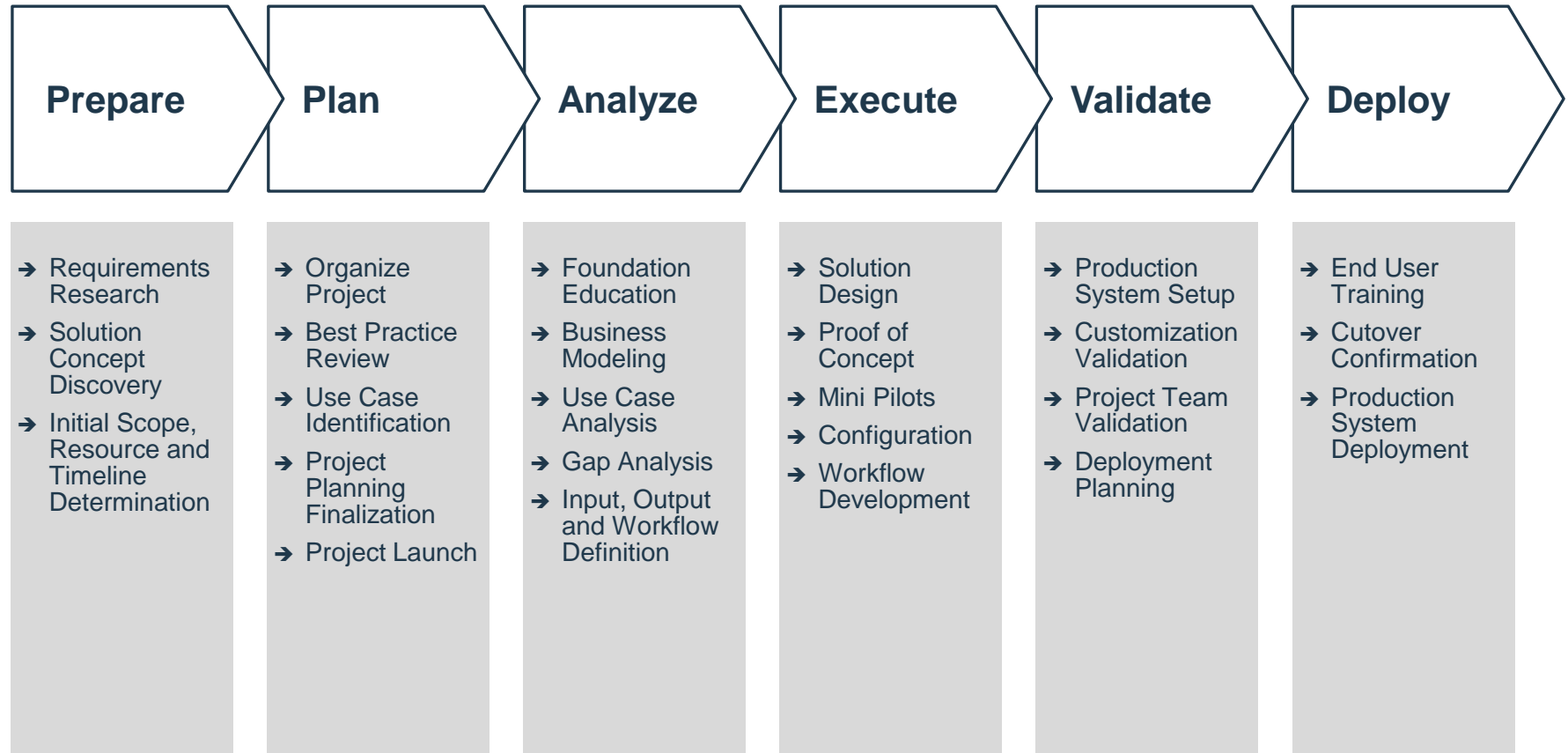
- **The internal effort required to implement a new ERP should not be underestimated.**
- A dedicated full-time **project manager** is required for the duration of the implementation.
- Functional experts from each department will be needed during certain stages of the project.
- **Resource planning** should be undertaken before the start of the implementation.
- The steering committee needs to be actively engaged throughout the project.



ERP Implementation

Implementation methodology for each phase in the project

Phases





Employee education & motivation

Goals

- Set Team goals and a reward system that will motivate everyone to work on increasing New Profits. This may include a profit sharing program.
- Set relevant KPIs (Key Performance Indicators) for the various departments and OKRs (Objective Key Results) for each individual so that they have a clear understanding of how their performance will be evaluated and rewarded.
- Set training opportunities for everyone so they can become more masterful in their area of expertise and move up in the company.
- Continue to develop a culture of “ownership” and implement a more collaborative environment where everyone is involved in the strategy and the implementation. Increase the number of meetings and transparency.
- Create a program to give back to the community.

High Level Action Steps

- Based on desired results from the different departments begin to develop relevant KPIs and OKRs and make sure that these are all understood and agreed upon.
- Pick a cause and begin to plan and promote the event.
- Hold quarterly team meetings



Questions?



Thank you!

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