

A7 Table. Description of best practices components ("the toolbox")

A sample of industry best practice components for performing digital transformation	Short description of the component in this context [based on main author A.F. experiences, and other source if identifiable]	Requirement to which the component serves (fully or partly) as a solution
5 WHYs	Ask WHY five times to find the root cause of a problem [13].	19. Involve frontline employees
Benchmark	Compare the objective / performance in a selected area with industry best practices [16, 17].	1. New IT solution to match intent of digitalization strategy, 12. Set goals and visualize progress
Build on strengths	Leverage the strengths and capabilities that already exist in the organization to motivate people and build a culture for change. Strengths can be identified by performing a SWOT (Strength, Weakness, Opportunity, Threat) analysis [17, 27].	7. Motivate people to commit, 14. Build healthcare culture for change
Business case	A business case [4, 17] is a justification of cost versus gain that helps evaluate [21] how much time and effort can be spent to perform a change.	3. Allocate time and resources to run pilot and deploy new IT solution
Business objectives	The business objectives (or strategic objectives [17]) are defined as part of the business strategy and are the goals that the business aim to achieve. Those can be in a variety of areas such as market share, financials, quality, client satisfaction, employee satisfaction.	2. New IT solution to support the medical business
Business strategy	A business strategy defines the organizational objectives and how to realize those [17].	1. New IT solution to match intent of digitalization strategy
Communication plan	A communication plan outlines by audience the main messages, schedule, and channel for the communication [4].	8. Communicate to understand, 14. Build healthcare culture for change
Compatibility confirmation / standard interface	Check that the new IT solution is compatible with existing systems or/and has a standardized interface to fit into	18. Enable interoperability

	applicable technical environments.	
Competitive analysis	A competitive analysis [17] identifies and evaluate competitors on the market, including their objectives and capabilities. This is to be able to make a strategy and plan for how to act on the market.	13. Understand society and patient needs
Compliance	Check that what has been decided is really followed, by monitoring and evaluation [5].	11. Adjust the management system
Continuous improvements training	Educate and train professionals in ways (methods, tools, processes) that enable and motivate them to continuously look and aim for improvements [17].	16. Practice continuous improvements on daily basis
Coordinator of initiatives	A role which can identify, coordinate, and monitor initiatives to share experiences, best practices, and avoid unnecessary duplicates and further fragmentation [20].	4. Coordinate initiatives
Culture for change	In a culture for change the team is commonly open-minded [2, 5], less hierarchical, appreciate cross-scientific thinking and learning. There are many methods to change culture and behaviours, e.g., related to setting goals, monitor, feedback, motivation, regulation, and training [5].	7. Motivate people to commit, 14. build healthcare culture for change
Digitalization strategy	A digitalization strategy [20] is a longer-term plan for IT in the organization.	1. New IT solution to match intent of digitalization strategy
Educate resources	Education and training are ways to acquire new skills to fulfill the needs of the organization [17] and close identified skills gaps.	15. Plan, acquire and leverage skills
Evangelist / project champion	Evangelists / project champions are persons that talk well about a project [11, 17], e.g., the originator of the idea to a change.	9. Use role model from the medical practice
Follow up	Follow up the progress of a target, e.g., by measuring and monitoring [17].	11. Adjust the management system

		12. Set goals and visualize progress
Recruit resources	Part of the human resource (HR) process [17]. Recruitment can be to employ or hire new resources to fill an identified skills gap in a capacity plan.	15. Plan, acquire and leverage skills
Hire resources	Part of the human resource (HR) process [17]. Recruitment can be to employ or hire new resources to fill an identified skills gap.	15. Plan, acquire and leverage skills
Integrate solution	Make the new IT part of the totality, this is to enable interoperability and avoid manual handling. Integration may involve special programming of the interfaces, use of standardized interfaces (e.g., Application Programming Interfaces [20]), or transformation of existing IT systems to support the new solution.	17. New IT solution to meet healthcare requirements, 18. Enable interoperability
IT security	IT security encompasses several disciplines (strategy, risk analysis, policy, processes, methods, training, awareness, security mechanisms) to ensure confidentiality, integrity, availability and privacy [33].	17. New IT solution to meet healthcare requirements
Leadership for change	Leadership for change requires the leader to set objectives, follow up, get involved, communicate, motivate people, and show that the initiative is important by constantly having the topic on the agenda in meetings and progress reports [22] and personally get involved by trying the new IT.	6. Leadership for change
Leadership, and management practices	A broad scope of activities, including planning, setting objectives, execution, follow up, communication, motivation and much more.	6. Leadership for change 7. Motivate people to commit
Lessons learned	Evaluates a pilot / project to learn what went well and what can be improved the next time [17].	10. Structure the work, start with a pilot

Leverage skills	Leverage acquired skills by good management practices (resource planning, set objectives, motivate, manage performance etc).	15. Plan, acquire and leverage skills
Management system / Management system review and adjustment	A technology change might require an update of the management system to reflect the new operating model. The update might need to cover organizational structure, processes, methods, objectives, measurements, mode of operation.	11. Adjust the management system
Market research	Market research with competitive analysis [17] can help visualize current market situation and be a vehicle for planning on how to meet future needs and expectations.	13. Understand society and patient needs
Measure	Measure to find out if an initiative makes a difference. Start measures before the initiative has started. Continue measure to show the progress. Identify a few measurements that can serve as key indicators for the initiative (key performance indicators) [17].	12. Set goals and visualize progress
PDCA	Plan-Do-Check-Act is commonly used for continuous improvements [5, 17]. After each cycle of change the result is evaluated and new opportunities for improvement are identified.	16. Practice continuous improvements on daily basis 19. Involve frontline employees
Pilot / Structured pilot	A smaller scale project that tests and evaluates the new technology. The pilot should be structured with a well-defined aim.	10. Structure the work, start with a pilot
Power vs interest grid	A power versus interest grid can be used to decide the communication approach for each stakeholder group - who to satisfy, monitor, involve or inform. It serves as input to the communication plan [4].	7. Motivate people to commit 8. Communicate to understand
Preparation for broader deployment	Broader deployment is a common objective for	10. Structure the work, start with a pilot

	leveraging new technology. A pilot can serve as preparation for a broader deployment.	
Procurement	The procurement process regulates what steps to take to buy a product/service (the new technology). Commonly includes request for proposal, proposal, and agreement / contract (or alternative path for reaching a clinical test agreement for a pilot).	2. New IT solution to support the medical business
Product review / technology review	Review a product / technology to find out how well it meets the requirements of the organization. The requirements can cover several aspects: product background, ownership, functionality, integration needs, safety, IT-security, services delivery commitments, liabilities, certifications, standards used, usability, training needs, impact on operating model, legal and financial aspects.	17. New IT solution to meet healthcare requirements
Project charter	A project charter can be used to document objectives, business case, deliverables, high level plan, and resources for a project/pilot [17].	10. Structure the work, start with a pilot
Project handover	If the digital transformation is run as a project, it is important to perform a handover to the line organization (i.e., the receiving organization that will continue to use and manage the product / service).	10. Structure the work, start with a pilot
Project management /program management	Includes a variety of methods and tools to manage a project or program, e.g., opportunity definition, forming team, understanding of current state, future state objectives, project exit criteria, project plan, execution, and handover.	10. Structure the work, start with a pilot
Proposal, Request for Proposal (RFP)	A proposal is an important element of the procurement process where proposals are requested (Request for	2. New IT solution to support the medical business, 17. New IT solution to meet healthcare requirements

	Proposal) that meet the various requirements that a product or service should meet (can be functional, financial, legal, services, etc.). The response to a proposal request is a proposal. The outcome of the process is commonly a contract or other agreement	
Quality assurance (QA)	Quality assurance is performed to review/confirm compliance to a certain way of working (a process) [5].	11. Adjust the management system
Quality management methods	A variety of methods and tools for improving and managing quality, e.g., Total Quality Management [16], Lean [13, 16–18], and Lean six sigma [5, 17, 19].	16. Practice continuous improvements on daily basis
Resource capacity plan	A resource capacity plan is developed to know how many and what type of skills (roles) are needed by when to be able to acquire and develop skills for the purpose (e.g., digital transformation). The information serves as input to into the Human Resource program to build, recruit or hire new skills [11, 20].	15. Plan, acquire and leverage skills
Resource management	Plan resources and skills (people or other resources) by resource capacity planning, deploy and redeploy resources to projects / assignments / activities to optimize utilization, development needs and employee satisfaction. Interact with the Human Resource (HR) function and people managers to acquire, hire, develop [17], redeploy skills, and manage availability, performance, and employee satisfaction.	15. Plan, acquire and leverage skills
Role model	Role models are formal or informal leaders. Other people tend to follow their way of thinking, talking, and acting [13].	9. Use role model from the medical practice 14. Build healthcare culture for change

Scorecard	A balanced scorecard can visualize several key performance indicators (measurements for different areas in the organization) [17].	12. Set goals and visualize progress
Sharing of experiences	Sharing of experiences including success-stories can motivate others to change and the information can be used to avoid repeated mistakes. The sharing can be internal, interaction with academia [11] or with external players [22] to learn what can be done and to get a cross-scientific perspective.	4. Coordinate initiatives 20. Inspire the team
Sponsor of initiatives	A sponsor can be someone in the local or executive management that supports the initiative [17].	5. Have an active sponsor
Stakeholder analysis of their commitment to change	The stakeholder commitment to change can be assessed in a stakeholder analysis [14]. By knowing where the stakeholders have their mind, it is possible to create a plan of actions to get them where it is needed to reach desired outcome of the project.	7. Motivate people to commit 8. Communicate to understand 14. Build healthcare culture for change
Stakeholder readiness	The stakeholder change readiness can be assessed, e.g., how open they are to change, to learn what effort and actions are required to perform a change in this environment.	14. Build healthcare culture for change
Steering committee	A steering committee has the responsibility to supervise a project and serve as a forum for escalations with authority to make decisions and resolve issues.	5. Have an active sponsor
Structured idea program / continuous improvement program	A structured idea program can be used to continuously drive change. Methods and tools from the quality management arena can be used to look for wrong (root causes to problems) or areas for improvement, e.g., LEAN, PDCA [17] or 5 WHYs [13].	19. Involve frontline employees

Structured sharing of success-stories	The sharing of success-stories and other experiences should be performed in a structured way and where the task to share is one defined activity of a project or pilot.	20. Inspire the team
Success stories	A prior initiative/project that was successful.	4. Coordinate initiatives 20. Inspire the team
SWOT	Identifies Strengths, Weaknesses, Opportunities and Threats to leverage, overcome, explore or mitigate in an organization [27]. A SWOT analysis can be used as a tool in a strategic planning. The result can be visualized in a diagram [17].	1. New IT solution to match intent of digitalization strategy
Technology readiness assessment	Assessment of the maturity of the new technology (to verify if it can be used for the desired purpose) and/or the readiness to integrate it into a receiving technical environment.	17. New IT solution to meet healthcare requirements
Temporary roles	By promoting people into temporary roles that reports directly to management / top management, the importance of an initiative can be highlighted.	15. Plan, acquire and leverage skills
Train resources	Education and training [17] are ways to acquire new skills to fill identified skills gaps.	15. Plan, acquire and leverage skills
Transformation objectives	Decide the objectives of the initiative (can be related to client satisfaction, employee satisfaction, quality, security, safety, cost, revenue, etc..), measure and follow up how objectives are being met.	12. Set goals and visualize progress
Transformation of existing IT systems to support the new solution	The new technology might require a change of the existing platforms and interfaces to enable an integration.	18. Enable interoperability
Value proposition	The value proposition describes what is claimed to be the benefits of a product or service [21]. It can be matched to the organization's strategy and requirements (e.g., functionality, services, financial aspects) [15, 21].	2. New IT solution to support the medical business 17. New IT solution to meet healthcare requirements

Visualize progress	Progress can be visualized in a scorecard [17] or be shown in reports or presented in meetings.	12. Set goals and visualize progress
Voice of Customer	A part of the business strategy and marketing process where customers' views are captured to understand their needs and expectations [17].	13. Understand society and patient needs