1. Objectives

ACME Manufacturing is an SME (Small/Medium Enterprise) that requires an ERP (Enterprise Resource Planning) system to manage its supply chain. The company produces sporks for niche industries. The current solution involves the use of spreadsheets (Microsoft Excel) which is becoming inefficient. A status report is required which includes assumptions, scope of requirements as well as business risks based on 3 shortlisted options viz.

1. A COTS (Commercial Off the Shelf) solution (purchase cost $100k, support cost $50k p.a.).
2. An Open-Source solution supported by their I.T department.
3. An in-house solution created by a student and developer, supported by their I.T department.

2. Assumptions and Scope of Requirements

- ACME Manufacturing has a total of 150 employees. The IT department accounts for approximately 10% of the total employee base.
- The business has an existing, complex and comparatively rudimentary IT system.
- The IT department may not necessarily possess the skills required to maintain an ERP system i.e., training of IT personnel would be required.
- The company is based and operates in the UK and is currently profitable and stable. However, they do not possess significant capital reserves.
- The median profit of SME's (employee base between 50-249) operating in the UK is around $328 000 (Clark, 2022). It is assumed that ACME manufacturing average profit is within this range.

- The implementation of an ERP system would usually involve assessing the entire company's operations, and as a result theoretically requires input from employees in different departments.

- The ERP system should be able to integrate into various other systems viz. finance, HR, purchasing and procurement systems, manufacturing, warehousing systems, amongst others (Crowter, N.D.).

- The company has a low appetite for risk (Rittenburg & Mertens, 2012) and cannot afford or tolerate any interruption or downtime in its production line and subsequently affecting its revenue stream.

3. Business Risks

- Project overrunning

- Purchasing an ERP system that does not cater for all the company's requirements (Ojala et al., 2006).

- Purchasing an ERP system that is not easily customisable and are not flexible to business changes (too rigid).

- Purchasing an ERP system that does not integrate with existing systems.

- Change management challenges i.e., users are often hesitant to make use of new systems and may fallback to old procedures (Ojala et al., 2006).

- Lack of human resources (including project managers and IT staff) involved in the ERP implementation project (Kettunen & Simons, 2001).

- Lack of technological resources to support ERP system.

- Managers and end-users have different perspectives on ERP solutions (Amoako-Gyampah, 2004).

- Lack of support and communication between company executives and IT department.

- Inadequate system reliability and stability (Iskanius, 2009).

- Implementation of ERP system affects 'business as usual' tasks.

- Inadequate or lack of documentation of ERP systems.

- Risk around disposal of secure data from the retired/old system (Roy et al., 2015).

- Miscalculation of the planned financial plan / budget (Shahzad et al., 2010).

- Incomplete recording of ERP requirements (Shahzad et al., 2010).

- Unrealistic expectations or requirements for the ERP (Sommerville, 2011).

- Insufficient planning of future system requirements (Wallace et al., 2004).

4. Solution Analysis

Table 1 below represents a Solution Analysis table which includes Assumptions, Risks and Costs for the 3 solutions identified.

Table 1: Solution Analysis

Solution	Assumptions	Risks	Cost
COTS (Commercial Off the Shelf)	1. It is a trustworthy and industry recognised vendor.	1. The company liquidates or is acquired and the product becomes EOL (End of Life).	Once-off $100k Telephone support $50k pa
	2. ACME would have an SLA in place to ensure contractual agreements are met.	2. ERP solution is generic and does not align or fit with existing business processes (Buonanno et al., 2005).	
	3. Software available to business rivals and competitors.	3. Competitive disadvantage	
	4. Vendor offers a POC (Proof Of Concept) where the solution can be tried and tested for a limited period.	4. Features and functionalities is dependent on the company's roadmap.	
Open-Source solution supported by internal IT department	1. ERP solution meets scope requirements defined in 'Assumptions and Scope Requirements' section.	1. Possibility of not being from a trustworthy source.	Free
	2. ACME would require additional skilled staff to be able to support the Open-Source software.	2. No dedicated enterprise support in the event that urgent support is needed.	
	3. Software application source code can be modified to suit business needs.	3. Data Security and confidentiality	
	4. Software is constantly being updated (application functionality & security) by active developer community.	4. Software not clearly documented explaining features and functionality.	
		5. Difficult to refactor or modify source code (Roy et al., 2015).	
In-house created solution by a student supported by developer and internal IT department	1. Student has the knowledge of implementation and a good understanding of the scope requirements defined in 'Assumptions and Scope Requirements' section.	1. ERP software is complex and often designed with business processes in mind. It is also linked closely with other external systems. The student may lack experience in these integrations and processes (Iskanius, 2009).	Free
	2. ACME would require additional skilled staff to support the in-house designed software.	2. Risk of ERP software development being abandoned (student drops out of course).	
	3. Sufficient budget available to develop and maintain software	3. Risk of developer resigning and insufficient knowledge transfer to existing staff (code changes not possible).	
	4. Student will follow the Software Development Life Cycle (SDLC) process to develop software.	4. Student lack of experience in programming may lead to incorrect architecture and/or design flaws (Roy et al., 2015).	
	5. Sufficient hardware and software resources (LAB & Production environments) are available in-house to be able to develop, maintain and test application.	5. Inexperienced test teams may lead to issues picked up late in the project, comprising completion times (Roy et al., 2015).	

4

5. Gantt Chart

Figure 1 below represents the timeline for the risk assessment process in the form of a Gantt chart. The process is derived from the ISO 31000 standard (ISO, 2009) and applied to this case study which is specific to Supply Chain Management (SCM) processes in SME's (De Oliveira, 2017). In summary this process is estimated to be completed within 6 weeks (+/- 42 days).
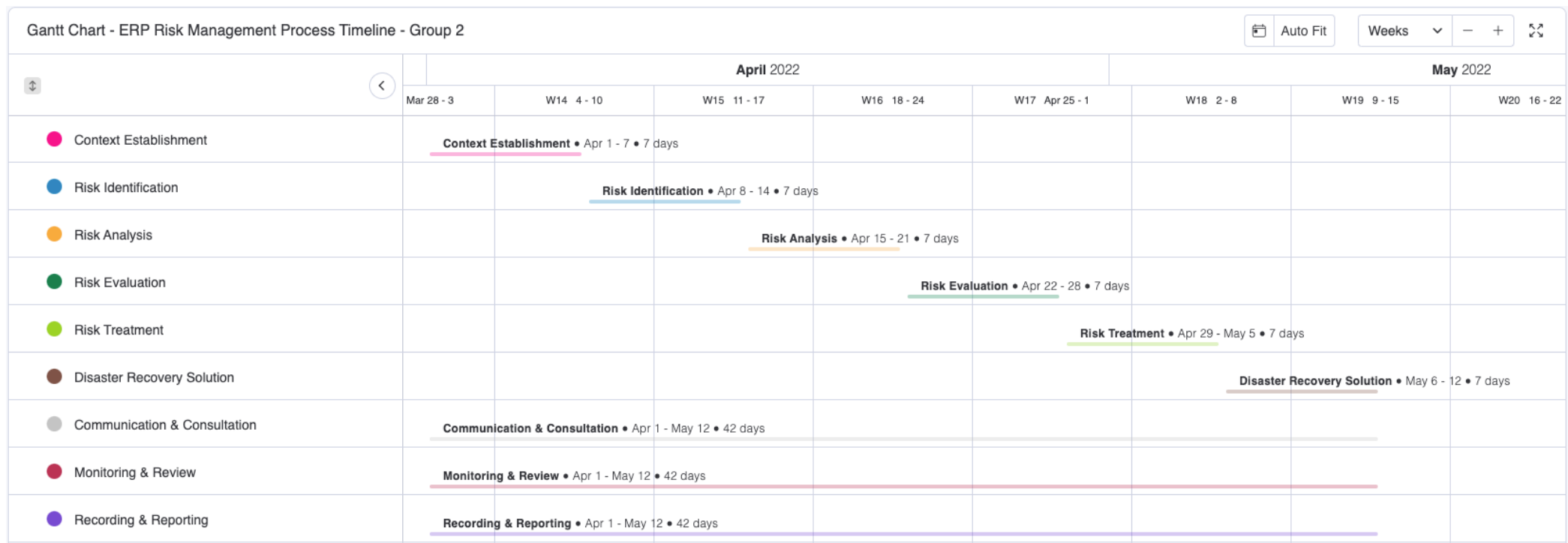

Figure 1: Gantt Chart 1

Figure 2 below represents the phases above as well as a breakdown of individual tasks per phase:
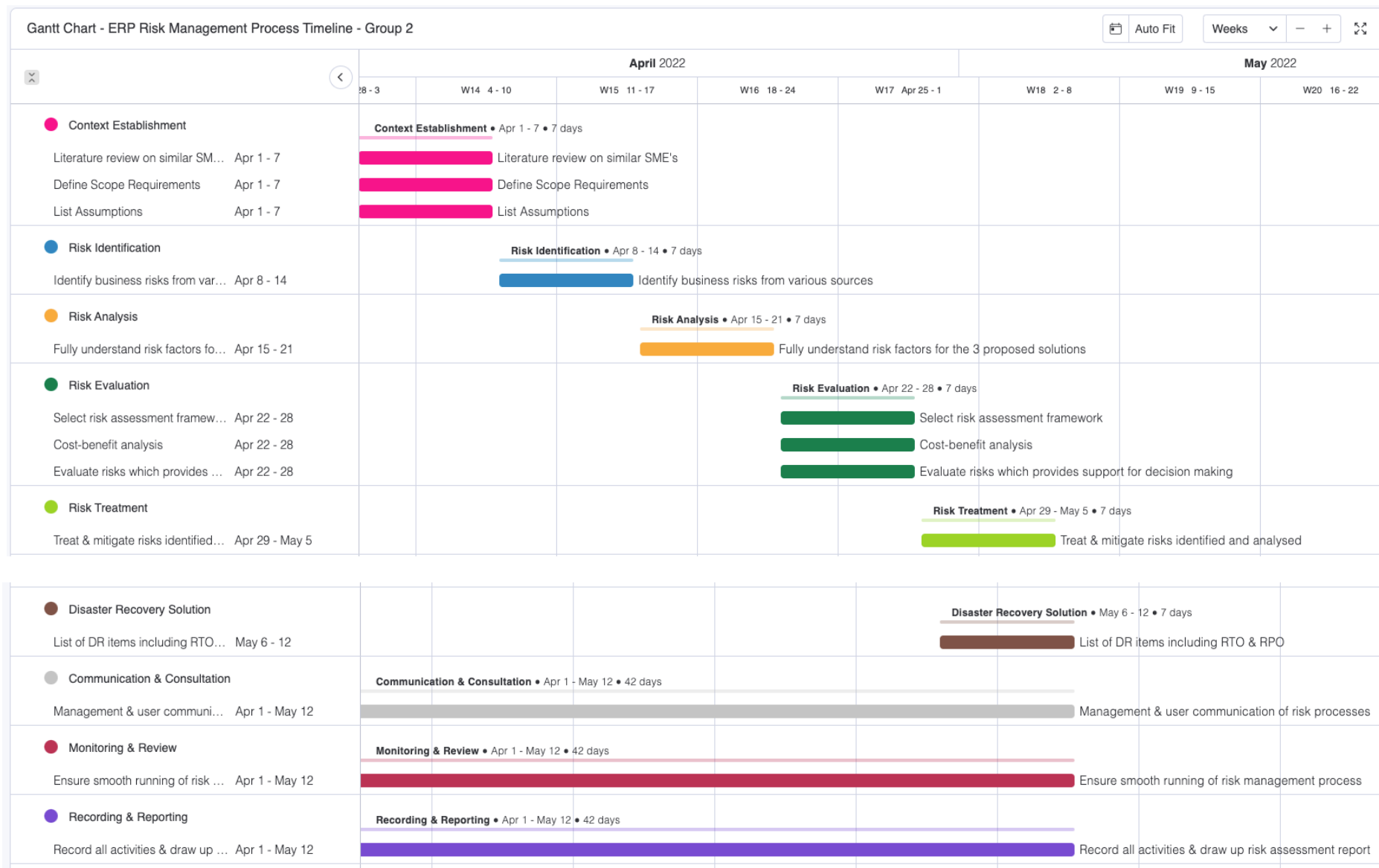

Figure 2: Gantt Chart 2

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