Project Overview-

The project involves the integration of virtual reality (VR) technology with state-of-the-art software, marking an exemplary breakthrough for the software company. State-of-the-art software basically incorporates best practices and carefully selects appropriate tools and techniques that allow business to create or maintain competitive advantage.[1]

State-of-the-art software is [1]:

- Built for change
- Self-repairing
- Cloud-native
- Secure and compliant by default
- Interoperable
- Making good use of AI and ML tools

The project aims to fuse cutting-edge virtual reality technology with advanced software systems to create a new ground-breaking VR experience. The objectives of the project are to create a seamless and **immersive user experience**, **increase user engagement** and **improve the software's marketability.**

The scope of the project includes designing and developing the VR hardware, building realistic 3D environments, coding intricate software interactions, and guaranteeing complete compatibility and integration between the hardware and software components, rigorous testing, and seamless deployment of the final product.

The key stakeholders of the project are the software engineering team, VR hardware developers, project sponsors at the executive level and the end-users who will experience the new VR system.

If the project is successful, the company may gain a considerable competitive advantage as it represents a substantial investment in the world of progressive technologies. However, the innovative nature of the project also carries significant risks that need to be controlled.

Risk Identification-

1. **Technical complexity-** Unexpected technical difficulties are frequently encountered when integrating complex software with the high-end VR gear. There is a chance that the parts will not come together exactly as planned. It may potentially lead to delays in project timelines.
2. **Financial constraints-** The project budget may be strained by unanticipated costs associated with the acquisition of VR technology, license fees, or other unforeseen expenses.
3. **Skill Shortages -** The project requires developers with extensive VR knowledge and specialized software skills who are short in supply.
4. **Hardware compatibility issues-** Prototype VR hardware is more prone to defects. Problems would cause the software integration and the project to be delayed. Compatibility problems between the developed software and existing VR hardware may affect the overall user experience.
5. **Market acceptance-** The target market could not be prepared for VR technology to be widely used, which would affect consumer compatibility and commercial success.

6. **Data Security concerns-** The software may be prone to hacking. There is a risk of phishing attacks with virtual environments. The integration of VR technology may present new data security risks, endangering user privacy and perhaps resulting in legal repercussions.
7. **Scope Creep-** The stakeholders may expand the project scope beyond the original plans, increasing costs and delays.
8. **Vendor reliability-** Third-party vendors providing key software libraries or VR components may miss deadlines. Dependence on external vendors may introduce risks related to reliability and delivery timelines.
9. **User resistance-** The success of the project may be hampered by end users' resistance to adopting VR technology because of discomfort or unfamiliarity. VR can cause fatigue and motion sickness for some users.
10. **External risk-** Unexpected outside variables, such as a shift in the market or a natural disaster, could have an influence on the project.
11. **Regulatory Compliance-** Modifications to the project may be necessary due to changes in VR or software rules, which could result in delays and higher costs.

Risk Assessment-

Risk Score = Impact * Likelihood

Likelihood metrics

1-Low, 5-High

Sr No.	Risk	Impact (1-5)	Likelihood (1-5)	Risk Score	Potential consequences
1.	Technical complexity	5	4	20	Project timetable delays and cost increases
2.	Financial constraints	5	2	10	Overspending on projects and possible project termination
3.	Skill shortages	3	4	12	Development lags and higher labor expenses
4.	Hardware compatibility issues	4	3	12	Compromised user experience, delayed release
5.	Market acceptance	4	4	16	Reduced user adoption, potential rebranding
6.	Data Security concerns	5	3	15	User data compromised, potential legal repercussions

Sr No.	Risk	Impact (1-5)	Likelihood (1-5)	Risk Score	Potential consequences
7.	Scope creep	3	4	12	Project completion delays and cost increases
8.	Vendor reliability	4	3	12	Delayed deliveries, potential component failures
9.	User resistance	3	4	12	Reduced user uptake and possible bad feedback
10.	External risk	3	1	3	Unforeseen external factors could impact the project, leading to delays, increased costs, or even failure
11.	Regulatory Compliance	3	2	6	Implementation setbacks and elevated legal expenses

Risk Table-

Sr No.	Risk	Probability	Impact	Risk Exposure
1.	Technical Complexity	80% (0.8)	5	4
2.	Market Acceptance	80% (0.8)	4	3.2
3.	Data Security Concerns	60% (0.6)	5	3
4.	Skill shortages	80% (0.8)	3	2.4
5.	Vendor reliability	60% (0.6)	4	2.4
6.	Scope creep	80% (0.8)	3	2.4
7.	Hardware Compatibility Issues	60% (0.6)	4	2.4
8.	User resistance	80% (0.8)	3	2.4
9.	Financial constraints	40% (0.4)	5	2
10.	Regulatory compliance	40% (0.4)	3	1.2
11.	External risk	20% (0.2)	3	0.6

References-

[1] https://xpirit.com/insights/engineering-culture/state-of-the-art-software-engineering/