

Business Requirement Document (BRD)

Project name: ytcertificate.

Stakeholders: Product Owner, BA (you), Engineering Lead, ML Engineer, QA Lead, Legal, Content Creator Partners

Problem statement: Learners cannot easily prove knowledge obtained from scattered YouTube content;

employers and platforms lack a lightweight, verifiable certificate tied to specific video learning.

Objectives: 1) Enable automated checks of comprehension for a YouTube video;

2) Issue verifiable micro-certificates;

3) Ensure *trustworthy* evaluation using LLM + evidence from video transcripts/captions.

Success metrics (KPIs): Certificate completion rate, quiz pass rate, false-positive rate (unjustified passes), user satisfaction (NPS), share-click-through.

Scope in: Ingest YouTube video metadata & transcript, generate questions, run assessments, issue certificates, basic user accounts and sharing.

Scope out: Full course accreditation, proctoring via webcam, paid payments (phase 2).

Functional & Non-Functional Requirements(FRD)

Functional Requirements (sample list):

FR-01: System shall allow users to sign up and log in (email, Google OAuth).

FR-02: System shall accept a YouTube video URL and fetch video metadata and available captions/transcript.

FR-03: System shall generate a context-aware quiz (MCQs, short answer, true/false) from the video transcript.

FR-04: System shall present the quiz to the user with timing rules and attempt limits.

FR-05: System shall evaluate answers using a combination of deterministic grading (MCQ) and LLM-based grading for short answers.

FR-06: System shall issue a signed certificate (PDF/PNG) with user name, video id, score, timestamp, and verification link.

FR-07: System shall maintain audit logs for each certificate (source video id, transcript snapshot, question set id).

Non-Functional Requirements:

NFR-01: Availability — 99.5% uptime for core quiz flows.

NFR-02: Latency — question generation ≤ 8 seconds for a video ≤ 15 minutes (baseline).

NFR-03: Security — use HTTPS; store PII encrypted at rest; follow OAuth best practices for Google sign-in.

NFR-04: Scalability — support 10k monthly active users in Phase 1.

NFR-05: Accuracy — LLM grading agreement with human graders $\geq 85\%$ (measured on sample set).

NFR-06: Compliance — follow YouTube API Terms of Service when accessing captions and metadata.