CERNAL
COMPILER-LIKE ENGINE FOR RNA LOGIC

Design-Partner Customer Profile (Example)

Overview

Profile ID	CERNAL-DP-0007
Date	____ / ____ / _____
Design partner	Mammalian gene-therapy developer (representative example)
CERNAL leads	Scientist-engineer + Customer-success lead
Target chassis	HEK293T

Purpose. This profile captures everything CERNAL needs to design the partner's circuit. Sections 1-6 are completed with the partner during the intake meeting; Section 7 is scoped by CERNAL. A complete profile is the input to Stage 2.

1 Partner & Application

Organization type	Gene-therapy developer - academic translational group
Application	Conditional transgene expression in a producer / therapeutic cell
Problem today	State-specific targeting is designed by hand - slow, iterative, low specificity

2 Cell System & Methods

Cell type / chassis	HEK293T
Delivery / transfection	Transient - Lipofectamine 3000 (plasmid)
Readout	FACS · dual-fluorescent reporter
Culture conditions	DMEM + 10% FBS, standard

3 Input Data - RNA-seq (provided by partner)

States to distinguish	Target state vs. control state
Replicates	3 per condition
Format	Raw FASTQ + count matrix
Note	CERNAL reads the cell-state signature from this data; the partner supplies data, not interpretation

4 Target Definition - partner-specified, exact

Target type	Endogenous promoter / locus -or- engineerable sequence
Target	Exact promoter locus of the gene of interest, or transgene cassette
Sequence / coordinates	Provided by partner (exact)

Note	The target is the one input the partner must pin down exactly; CERNAL does not infer it

5 Desired Output

Output module	Reporter (GFP) for the MVP → payload later
Logic behavior	ON only in the target state; OFF in the control state
Specificity	Multi-input (combinatorial) across several markers

6 Constraints

Allowed / forbidden parts	e.g. vector size limit; specific promoters to avoid
Delivery method	Transient transfection (plasmid)
Timeline	Partner's required build-and-test window

7 Scoped Solution Plan

Proposed approach	Multi-input RNA logic circuit; gate types drawn from the HEK293T library
Deliverable	Design Report - interpreted signature + triggers, circuit, full sequences, predicted OFF/ON behavior
Feedback expected	Partner builds & tests; returns results in their own metrics (per Feedback Protocol, Stage 3)
Estimated timeline	~1 week to compile & deliver

Prepared by: _____ **Partner sign-off:** _____

Representative example for illustration. CERNAL - compiler-like engine for RNA logic.