Deep Research – Intl Research Security  
Luxembourg: Phase 0–8 Prompt Stack (ChatGPT + Claude Code)

Country-specific prompt templates with variables pre-filled.

# Phase X — Universal Header & Run Controls

## Variables (pre-filled)

COUNTRY = Luxembourg  
TIMEFRAME = 2015–present  
HORIZONS = {2y, 5y, 10y}  
LANG = EN  
REGIONAL\_COMPARATORS = Benelux + Small advanced economies (Switzerland, Singapore)

## Toggles (all set to true; change as needed)

INCLUDE\_EXPORT\_CONTROLS = true  
INCLUDE\_US\_NATSEC\_FRAMEWORK = true  
INCLUDE\_EWI\_CHECKLIST = true  
INCLUDE\_DATA\_PULLS = true  
INCLUDE\_COLLAB\_MAPPING = true  
CITE\_SOURCES = true

## Evidence Priority Order

1) Primary government/regulatory docs; 2) EU/official databases (CORDIS, OpenAIRE, eCORDA); 3) Reputable think-tanks/academia; 4) Major media; 5) Organization websites/press; 6) Social/open web (lowest confidence).

## Style & Output Rules (both models)

• Precision over breadth; avoid boilerplate; date-stamp key facts.  
• Explicitly mark assumptions vs. evidence.  
• Prefer structured artifacts: tables, matrices, JSON/CSV schemas.  
• If data conflicts, log both and note a likely resolution path.  
• Do not include PII or non-public sensitive details.

## Quick Run Instructions

1) Confirm variables/toggles. 2) Run Phase 0 → 8 sequentially; reuse outputs. 3) For Claude Code, request CSV/JSON where specified; save GraphML. 4) Compile a country pack: Exec Summary + Phases + Annexes.

# Phase 0 — Scoping & Framing

## ChatGPT — Prompt

You are a senior research-security analyst scoping Luxembourg.  
Deliver a 3-page max scoping brief that:  
- Positions Luxembourg in advanced/emerging tech & dual-use research.  
- Lists 5–8 priority tech areas (AI, quantum, semiconductors, biotech, space, advanced materials, smart-city/IoT, robotics).  
- Summarizes R&D governance (ministries, funders, national strategies) with dates.  
- Maps international posture (EU, U.S., PRC, regional blocs) and key agreements/MoUs.  
- Flags strategic strengths & vulnerabilities and likely foreign-interest vectors.  
- If INCLUDE\_US\_NATSEC\_FRAMEWORK=true, add a 1-page annex rating the 8 categories (Critical/High/Moderate/Low) with 1–2 justifications each.  
  
Outputs: Executive bullets; one situational table/map; optional Annex A (8-dimension U.S. framework).

## Claude Code — Prompt

Produce a single JSON object for the Phase-0 dossier for Luxembourg with keys:  
- sectors[]  
- gov\_actors[]  
- funders[]  
- intl\_links[]  
- agreements[]  
- strengths[]  
- vulnerabilities[]  
- open\_questions[]  
- (optional) us\_natsec\_ratings[{dimension, rating, rationale}] if INCLUDE\_US\_NATSEC\_FRAMEWORK=true  
  
Use YYYY-MM date strings where relevant. Ensure valid JSON (no comments).

# Phase 1 — Research Ecosystem Baseline

## ChatGPT — Prompt

Map Luxembourg’s research ecosystem. Include:  
- Top institutions (universities, RTOs, academies, labs) with sector focus and notable centers.  
- Public funders (ministries, councils) and major programs/calls since 2015 (with amounts if public).  
- Private sector: leading firms/startups in dual-use spaces; public-private labs.  
- International collaborations (EU joint centers, PPPs, MoUs).  
- Openness to foreign engagement and any screening mechanisms.  
Provide: a master table; a short narrative per sector; a list of data gaps.

## Claude Code — Prompt

Create a CSV for institutions with columns:  
name, type{univ,gov,private,RTO}, sectors(list), key\_centers, intl\_collab{Y/N}, flagged\_red\_flags(list), url  
  
Return the CSV content as a code block and a JSON array reflecting the same rows.

# Phase 2 — Targeted Data Pulls (CORDIS, OpenAIRE, Crossref, Patents, News)

## ChatGPT — Prompt

Using INCLUDE\_DATA\_PULLS, compile structured tables for Luxembourg:  
- CORDIS: project id, title, dates, amount, country\_partners[], keywords[], lead/beneficiaries.  
- OpenAIRE/Crossref: top outputs (since 2015), co-author countries, venues, dual\_use\_keywords hits.  
- Patents (WIPO/EPO): assignees, IPC/CPC codes, co-inventors’ countries.  
- News (3–5y): relevant research-security stories; include headline/date/outlet/link.  
Prioritize dual-use relevance; mark any PRC/RF joint items.

## Claude Code — Prompt

Generate API-ready query specs for each source for Luxembourg. For each, output JSON:  
{source, endpoints[], query\_params{date\_range, keywords[], country\_filters[], fields[]}, pagination\_notes, rate\_limit\_notes}  
Add a validation\_plan (dedupe, normalize names, entity-resolution hints).

# Phase 3 — Researcher & Collaboration Mapping

## ChatGPT — Prompt

From Phase-2 data, identify:  
- Top 20 researchers/institutions by output/impact in dual-use sectors in Luxembourg.  
- Repeat collaboration patterns with PRC/RF/other risk jurisdictions.  
- Academia–industry–government linkages.  
Deliver: a short narrative; a table of top actors; network insights (broker hubs, clusters); and a list of watchlist ties (if any) with cautionary language.

## Claude Code — Prompt

Produce network artifacts from entity lists:  
- Node list: id, label, type{person,institution,country}, sector\_tags[]  
- Edge list: src, dst, relation{coauthor,coproject,coinventor,grant}, weight  
- Compute centrality (degree, betweenness, eigenvector) and return as CSV + JSON.  
- Export GraphML (as a string) for Gephi.

# Phase 4 — Risk & Vulnerability Analysis

## ChatGPT — Prompt

Assess vulnerabilities across sectors in Luxembourg:  
- IP leakage, espionage, talent pipelines, dependency on foreign funding/equipment, cyber posture, research-integrity risks.  
- Build a RAG Risk Matrix by sector with rationales and mitigations (policy, process, technical, training).  
- If INCLUDE\_EXPORT\_CONTROLS, add export-control exposure notes and screening gaps.  
- If INCLUDE\_EWI\_CHECKLIST, map 5–10 top EWIs to sectors.

## Claude Code — Prompt

Return a machine-readable risk table:  
sector, risk\_category, risk\_score(1–5), color{R/A/G}, evidence\_refs[], mitigation\_options[], owner{sponsor/inst}, time\_to\_implement{short/med/long}  
Include a scoring\_method block documenting the rubric.

# Phase 5 — Funding Flow & Collaboration Analysis

## ChatGPT — Prompt

Trace funding and collaboration for Luxembourg:  
- External funders (gov, foundations, corporates), joint centers, industry consortia.  
- Identify leverage points for compliance (due diligence hooks, reporting nodes).  
- Note red-flag patterns (front orgs, opaque philanthropies, equipment grants with unusual terms).  
Provide: a flow diagram description, funder-recipient tables, and 5–8 case vignettes.

## Claude Code — Prompt

Return two artifacts:  
1) funding\_edges.csv: source\_country, source\_entity, amount, currency, year, recipient\_entity, sector, notes  
2) collab\_edges.csv: inst\_A, inst\_B, relation, start\_year, end\_year, sector, high\_risk\_flag{Y/N}  
Include a compliance\_hooks[] list (data fields suitable for automated screening).

# Phase 6 — Capacity-Building Program Design

## ChatGPT — Prompt

Design 1–3 targeted interventions (not awareness 101) for Luxembourg. For each:  
- Format (tabletop, workshop, red-team, procurement due-diligence lab, secure-by-design sprint).  
- Audience (PI/Lab managers, TTOs, compliance, funders, policymakers, sysadmins).  
- Objectives, inputs, outputs, metrics (pre/post checks, adoption indicators).  
- Timeline (single event or 12–18-month limited series) with partners.  
Return a 1-page blueprint per intervention.

## Claude Code — Prompt

Return JSON blueprints:  
{title, type, audience[], agenda\_blocks[{min, activity, artifact}], required\_inputs[], deliverables[], success\_metrics[], risks[], mitigation[]}  
Add an .ics schedule generator spec (dates placeholder) and a materials checklist.

# Phase 7 — Adversarial / Assumption Testing

## ChatGPT — Prompt

Red-team your own conclusions for Luxembourg:  
- For each high-confidence claim, list falsifiers, counter-narratives, and unknowns.  
- Answer: “If this change is so valuable, why hasn’t it happened yet?” (constraints, incentives, politics, capacity).  
- Produce a Top-10 Fragile Assumptions list with evidence rating.

## Claude Code — Prompt

Create a table:  
claim, evidence\_for[], evidence\_against[], testable\_predictions[], falsification\_steps[], fragility(1–5)  
Include a replication\_plan (datasets, scripts, recompute steps) for independent validation.

# Phase 8 — Foresight & Early Warning

## ChatGPT — Prompt

Forecast for Luxembourg at 2y/5y/10y:  
- Tech trajectories (dual-use breakthroughs, adoption constraints).  
- Adversarial interest vectors (target techs, institutions, mechanisms).  
- Policy/market shifts impacting risk posture.  
- If INCLUDE\_EWI\_CHECKLIST, define EWIs (lead signals, confirmatory signals, likely false positives) and tie to monitoring cadences.  
Deliver: three short scenarios + a watchboard (what to track, where, how often).

## Claude Code — Prompt

Return two artifacts:  
1) scenarios.json with keys {horizon, drivers[], uncertainties[], scenario, implications[], EWI\_links[]}  
2) watchboard.csv: indicator, signal\_source, collection\_method, cadence, trigger\_threshold, owner

# Optional Annex Hooks

• Annex A — U.S. NatSec 8-Dimension Definitions & Rating Notes (attach latest version).

• Annex B — Early Warning Indicator Category Checklist (attach universal checklist).

• Annex C — Data Source Query Library (CORDIS/OpenAIRE/Crossref/Patents/news).