

Grant Writing Handbook

ORYX UNIVERSITY

In Partnership with Liverpool John Moores University

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Advanced QRDI Grant Writing Handbook

A Strategic Guide for Academic Staff

Prepared by

Research and Knowledge Exchange Office (RKEO)

Oryx University (in partnership with Liverpool John Moores University)

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“Winning grants is not about luck — it is about reducing reviewer uncertainty and building confidence.”

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Introduction: Grant Writing as Strategic Persuasion

Grant writing is not simply about presenting research — it is about **convincing reviewers to invest in your idea**. You are not asking for permission; you are making a case for investment.

Key Insight

A successful proposal must clearly answer four questions:

1. **Why this problem matters now** — urgency and alignment
2. **Why your approach is credible** — methodological rigour
3. **Why your team can deliver** — proven expertise and capacity
4. **What impact will be achieved** — measurable, scalable, sustainable

Critical Warning

Reviewers are fundamentally **risk-averse**. Your job is to reduce uncertainty and increase confidence in every section of the proposal. Every ambiguous sentence increases perceived risk.

The Mindset Shift

Old Mindset	New Mindset (Strategic Persuasion)
“I need to show how smart I am”	“I need to show how well I will solve a problem”
“Publications are my main output”	“Impact on Qatar’s priorities is my main output”
“My methodology is technically correct”	“My methodology is feasible and credible”
“I deserve funding because my idea is good”	“I will earn funding because my plan reduces risk”

Understanding QRDI Expectations

QRDI is **impact-driven, not purely academic**. Proposals that focus only on knowledge generation — without demonstrating economic or societal value — consistently fail.

Core QRDI Expectations

1. **Alignment with Qatar National Vision 2030** — explicit and demonstrable
2. **Demonstrable economic and societal value** — quantified where possible
3. **Strong innovation component** — novel, not incremental
4. **Evidence of implementation potential** — beyond the research lab

What QRDI Reviewers Look For

Criterion	Reviewer Question
Clear link to national priorities	“Does this address a real Qatari need?”
Practical outcomes	“Will this produce something usable, not just publishable?”
Scalability	“Can this grow beyond a pilot?”
Sustainability	“What happens after QRDI funding ends?”
Team capacity	“Has this team delivered before?”

Key Insight

QRDI is not a research charity. It is an **investment vehicle** for Qatar’s economic diversification. Your proposal must show return on investment.

Understanding Reviewer Psychology

Most QRDl reviewers are:

- **Time-poor** — they read quickly and critically
- **Risk-aware** — they prefer clarity over complexity
- **Impact-focused** — they look for national benefit
- **Skeptical by training** — they assume problems until proven otherwise

The First Impression Rule

Reviewers form an initial judgment within the first 2-3 minutes of reading. The following elements determine that judgment:

1. **Title** — clear, specific, compelling
2. **Abstract** — complete narrative in 250 words
3. **Problem statement** — urgent, evidence-based, aligned

Critical Warning

If your title, abstract, or problem statement is weak, the proposal is already disadvantaged — regardless of the quality of later sections. First impressions are decisive.

How to Reduce Reviewer Anxiety

Table 3.1: Reviewer Fears and Mitigation Strategies

Reviewer Fear	Your Mitigation Strategy
“This might fail”	Show pilot data, proof of concept, and explicit risk mitigation strategies. Demonstrate preliminary results and contingency plans.
“This is not novel”	Provide an explicit gap analysis showing what exists, its limitations, and how your contribution is genuinely new. Include a clear contribution statement.
“This has no impact”	Present a complete impact pathway: Inputs → Activities → Outputs → Outcomes → National benefit. Quantify where possible.
“This team cannot deliver”	Highlight complementary expertise, proven track record (previous grants, publications), defined roles, and institutional support (release time, facilities).

Defining a Fundable Problem

A fundable problem is **specific, evidence-based, and nationally relevant**. Vague problems get rejected.

Example

Weak Example: “Cybersecurity is important in modern systems.”

Strong Example: “Existing intrusion detection systems fail to detect AI-driven polymorphic attacks in real time, exposing Qatar’s critical infrastructure — including energy, finance, and transport sectors — to evolving threats that bypass traditional signature-based methods.”

The Problem Statement Formula

A strong problem statement includes:

1. **What is the current state?** (evidence required)
2. **What is the gap or failure?** (specific limitation)
3. **Why does this matter for Qatar?** (national alignment)
4. **What happens if unsolved?** (cost of inaction)

Template

Template: “Despite advances in [field], current [methods/technologies] cannot [specific limitation], leading to [negative consequence]. This is particularly critical for Qatar because [national relevance]. Without intervention, [projected cost or risk] will increase by [X%] over [timeframe].”

Objectives: From Ideas to Measurable Outcomes

Weak objectives are vague and unverifiable. Strong objectives are **Specific, Measurable, Achievable, Relevant, and Time-bound (SMART)**.

Example

Weak: “Improve system performance”

Strong: “Develop a real-time intrusion detection model achieving >95% detection accuracy with <5% false positive rate within 12 months, validated on Qatar-specific network traffic data.”

Objective Writing Template

Template

Template: “Develop [specific solution] using [method/technology] to achieve [quantifiable metric] by [timeline], validated through [evaluation method].”

SMART Objectives Checklist

Strategic Checklist

Specific — exactly what will be delivered

Measurable — quantifiable success criteria

Achievable — within team capacity and resources

Relevant — aligned with QRDI and QNV 2030

Time-bound — clear delivery milestones

Literature Review: Strategic Positioning

Your literature review is **not a summary** — it is your argument for novelty and necessity.

Strategic Structure

1. **What exists** — current state of the art (cited)
2. **Limitations** — what current approaches cannot do
3. **Gap** — the specific unresolved problem
4. **Your contribution** — how you will fill the gap

Critical Warning

Avoid generic summaries and irrelevant citations. Every cited paper should serve a strategic purpose — either establishing the problem, demonstrating the gap, or justifying your approach.

Literature Review Checklist

Strategic Checklist

- Have I cited the key QRDI-funded projects in this area?
- Have I shown why existing solutions are insufficient?
- Have I positioned my work as novel, not incremental?
- Have I avoided over-citation of my own work?

Methodology: The Deciding Factor

Your methodology is often the **deciding factor** between fund and decline. Reviewers ask three questions:

1. Is it **rigorous**? (technically sound)
2. Is it **feasible**? (doable with resources and timeline)
3. Can the **team deliver** it? (aligned with expertise)

Strong Methodology Includes

Component	What to Include
Clear approach	Overall research design and paradigm
Justification of methods	Why this method over alternatives
Tools and datasets	Specific platforms, data sources, access confirmations
Validation strategy	How you will measure success
Limitations and mitigation	Honest acknowledgment + contingency plans
Reproducibility	Code, data, and method transparency

Example

Weak: “We will use machine learning techniques to analyse data.”

Strong: “We will develop a hybrid deep learning model combining Convolutional Neural Networks (CNN) for feature extraction and Long Short-Term Memory (LSTM) networks for temporal pattern recognition. The model will be trained on the Qatar-specific network traffic dataset (provided by partner NCSA), validated using 5-fold cross-validation, and evaluated using precision, recall, F1-score, and AUC-ROC metrics. A baseline comparison will be conducted against three state-of-the-art models: Random Forest, XGBoost, and standard LSTM.”

Work Plan and Work Packages

A clear work plan demonstrates **feasibility and project management maturity**.

Example Work Package Structure

WP	Tasks	Deliverables	Milestones
WP1	Data collection, cleaning, annotation	Curated dataset (10,000+ samples)	M1: Data ready (Month 3)
WP2	Model development, hyperparameter tuning	Trained model (v1)	M2: Prototype (Month 6)
WP3	Validation, benchmarking, iteration	Validation report + optimised model	M3: Validation complete (Month 9)
WP4	Deployment testing, documentation, handover	Deployment guide + final report	M4: Handover (Month 12)

Key Insight

Each work package must have a **single responsible lead**, clear **entry and exit criteria**, and **explicit dependencies** between packages.

Timeline and Milestones

Use Gantt charts to visualise your timeline. Strong milestones are:

- **Quantifiable** — measurable completion criteria
- **Time-bound** — specific month or quarter
- **Linked to deliverables** — clear outputs

Strategic Checklist

Weak Milestone: “Complete data analysis”

Strong Milestone: “Complete analysis of 5,000 network traffic samples with precision >90% (Month 6)”

Budget Strategy (Advanced)

A weak budget undermines a strong proposal. Every cost must be **justified, aligned with activities, and defensible**.

Example

Weak Budget Justification: “Equipment: \$50,000”

Strong Budget Justification: “High-performance GPU server (NVIDIA A100, \$45,000) required for deep learning model training, enabling real-time processing of large-scale network traffic datasets (estimated 10TB). Without this, training time would exceed project timeline by an estimated 400%. Remaining \$5,000 for maintenance and cloud backup.”

Budget Principles

1. **Justify every cost** — link each line item to a specific work package
2. **Align with activities** — costs should follow the work plan
3. **Avoid inflation** — realistic, market-rate costing
4. **Include in-kind contributions** — institutional support demonstrates commitment

Team Strength and Roles

Key Insight

Reviewers fund **teams**, not ideas. A mediocre idea with a strong team is fundable. A brilliant idea with a weak team is not.

What Reviewers Look For

Quality	Evidence
Complementary expertise	PI + Co-Is cover all methodological areas
Proven track record	Previous grants, publications, industry collaborations
Clear leadership	Defined roles, responsibilities, decision-making
Institutional support	Release time, facilities, administrative backing
Industry partners	Letters of support, active involvement

Team Section Template

Template

For each team member, include:

- Role and responsibility (specific to this project)
- Percentage of time commitment
- Relevant expertise (2-3 sentences)
- Track record (2-3 relevant achievements)
- Previous QRDI or similar grant experience (if any)

Writing a Winning Abstract

Your abstract is the **single most read section**. It must stand alone.

Mandatory Abstract Components

1. **Problem** — what is the urgent need?
2. **Gap** — what is currently missing?
3. **Solution** — what will you do?
4. **Method** — how will you do it?
5. **Impact** — what will change for Qatar?

Critical Warning

Write the abstract **last** — after every other section is complete. Then refine it **most**. A weak abstract is the 1 predictor of rejection.

Example

Strong Abstract Example (150 words): “Qatar’s critical infrastructure faces an emerging threat: AI-driven cyberattacks that evade traditional intrusion detection systems (IDS). Current IDS rely on signature-based methods, which fail against polymorphic and zero-day attacks. This project develops a hybrid deep learning IDS combining CNN and LSTM architectures, trained on Qatar-specific network data provided by the National Cybersecurity Authority. Within 12 months, we will deliver a prototype achieving >95% detection accuracy with <5% false positives. The system will be validated on live infrastructure and transitioned to partners for deployment. Expected outcomes include a 40% reduction in undetected attacks, enhanced national cybersecurity resilience, and a scalable model for other Gulf states. This aligns directly with QNV 2030’s digital transformation and economic diversification pillars.”

Impact: The Core of QRDI Proposals

QRDI funds **impact**, not activity. Your proposal must show what *changes* as a result of your work.

Types of Impact

Impact Type	Examples
Economic	Cost savings, new revenue streams, market entry, job creation
Societal	Improved safety, health outcomes, quality of life
Industrial	New processes, products, services, supply chain improvements
Policy	Regulations, standards, government adoption
Environmental	Reduced emissions, resource efficiency, climate resilience

Example

Weak: “This research contributes to knowledge.”

Strong: “This research enables real-time threat detection, reducing national infrastructure vulnerability by an estimated 40%, preventing an average of 12 successful attacks annually, and saving an estimated \$15M in potential damages — directly supporting Qatar’s digital transformation agenda under QNV 2030.”

Impact Pathway Model

Structure your impact as a logical chain:

Inputs → Activities → Outputs → Outcomes → Impact

Impact Pathway Example

Stage	Example (Cybersecurity Project)
Inputs	Research team, GPU server, NCSA data access, £80k funding
Activities	Data collection, model training, validation, deployment testing
Outputs	Trained IDS model, validation report, deployment guide, 3 publications
Outcomes	NCSA adopts prototype; 5 engineers trained; detection time reduced by 40%
Impact	National infrastructure resilience improved; \$15M annual savings; Qatar positioned as regional leader in AI-driven cybersecurity

Key Insight

For each outcome and impact, ask: **“How will we measure this?”** If you cannot measure it, revise it.

Industry and Stakeholder Engagement

QRDI strongly values:

- **Industry collaboration** — co-funding, data access, deployment pathways
- **Real-world deployment** — beyond the research lab
- **Stakeholder buy-in** — letters of support, advisory roles

What to Show

Strategic Checklist

Who benefits — specific organisations or sectors

How they are involved — active roles, not passive endorsements

What they gain — quantified where possible

Evidence of commitment — signed letters, data access agreements, co-funding

Risk Management

Explicit risk management **demonstrates maturity and planning**. Reviewers trust teams that have thought about what could go wrong.

Risk Management Table Example

Risk	Probability	Impact	Mitigation
Data access delayed	Medium	High	Alternative dataset identified; data sharing agreement drafted pre-submission
Key personnel leave	Low	High	Named replacement; knowledge transfer plan
Model underperforms	Medium	Medium	Baseline models as fallback; iterative development
Computational resource limit	Low	Medium	Cloud backup (budgeted); institutional HPC access

Key Insight

A proposal **without a risk section** signals naivety. A proposal **with credible mitigations** signals expertise.

Ethics and Data Governance

QRDI requires explicit attention to:

- **Ethical approvals** — institutional and national
- **Data privacy** — compliance with Qatari law and GDPR where applicable
- **Security measures** — for sensitive or critical data
- **Informed consent** — for human participants

Critical Warning

Do not assume ethics approval will be granted after funding. Show evidence of **pre-approval or a clear pathway** to approval.

Dissemination and Exploitation

Your dissemination plan must cover:

1. **Academic** — journals, conferences, open data/code
2. **Industry** — workshops, whitepapers, pilots, licensing
3. **Public** — policy briefs, media, stakeholder briefings
4. **Commercial** — patents, spin-outs, software licensing

Strategic Checklist

QRDI prioritises **exploitation** over pure dissemination. What will happen to your research *after* the grant ends?

Writing Style and Structure

Do's and Don'ts

Do	Don't
Use short sentences (15-20 words)	Use jargon or acronyms without definition
Use descriptive headings	Write long, dense paragraphs
Define all acronyms on first use	Assume reviewer expertise in your niche
Use bullet points for lists	Be vague or ambiguous
Write in active voice	Hide your contribution in passive constructions
Show, don't tell (evidence)	Make unsupported claims

Common Reasons for Rejection

Based on analysis of unsuccessful QRDI proposals:

1. **Misalignment with call** — proposal does not address stated priorities
2. **Weak methodology** — not rigorous, not feasible, not justified
3. **Lack of impact** — academic outputs only, no national benefit
4. **Poor structure** — hard to follow, missing sections
5. **Unrealistic budget** — inflated or insufficiently justified
6. **Weak team** — missing expertise, no track record
7. **No industry engagement** — academic silo
8. **Poor writing** — unclear, ambiguous, error-ridden

Critical Warning

Most proposals fail not because the science is bad, but because the **case for investment** is poorly made.

QRDI Scoring Rubric (Detailed Insight)

Criterion	Weight	What Reviewers Want
Relevance	20%	Explicit, evidence-based alignment with QNV 2030 and QRDI priorities
Excellence	30%	Novel, rigorous methodology; clear gap; credible approach
Impact	25%	Measurable outcomes; economic/societal value; scalability
Feasibility	15%	Realistic timeline; appropriate resources; risk mitigation
Team	10%	Complementary expertise; proven track record; institutional support

Key Insight

A score of 3/5 on any criterion is a **rejection risk**. Aim for 4 or 5 on all criteria.

Real Case Study: Winning Pattern

A successful QRDI proposal (anonymised) included:

Strategic Checklist

Problem: Smart city cybersecurity vulnerability in Qatar

Partner: Industry partner (Qatari tech company) with letter of support

Deployment: Real-world pilot on partner infrastructure

KPIs: Measurable (40% detection improvement, 30% false positive reduction)

Sustainability: Post-funding commercialisation pathway

Team: PI (previous QRDI grant), Co-I (industry), postdoc (technical delivery)

Why It Won

1. **Aligned perfectly** with QRDI smart city priority
2. **Reduced reviewer risk** via industry partner commitment
3. **Quantified everything** — no vague claims
4. **Showstopper demonstration** — reviewers could see the end product

Templates for Academics

Objectives Template

Template
“Develop [specific solution] using [method] to achieve [quantifiable metric] by [time-line], validated by [evaluation method] and contributing to [national priority].”

Methodology Template

Template
“Data: [source, size, access] → Model: [architecture, training approach] → Validation: [metrics, baseline comparison] → Deployment: [context, handover plan]”

Impact Template

Template
“Short-term (0-12 months): [immediate outputs] Medium-term (12-36 months): [outcomes, adoption] Long-term (3-5 years): [societal/economic impact, QNV 2030 contribution]”

Work Package Template

Template
WP[X]: [Title] Lead: [Name] Months: [Start–End] Tasks: [List] Deliverables: [List with completion criteria] Milestones: [List with dates] Dependencies: [On WP X-1 etc.] Risks: [Specific to this WP]

Internal Review Strategy

Before submission, conduct:

Three-Level Review

1. **Peer review** — 2-3 colleagues not on the team
2. **Consistency check** — same terms, metrics, timeline across sections
3. **Alignment check** — does every section answer “why Qatar?”

Strategic Checklist

The “Stranger Test”: Give your proposal to a colleague outside your field. If they cannot understand your problem, gap, solution, and impact in 10 minutes, rewrite.

Submission Readiness Checklist

Strategic Checklist

- Aligned with QRDI priorities and QNV 2030
- Clear, specific problem statement
- SMART objectives (all five criteria)
- Rigorous, feasible methodology
- Realistic, justified budget
- Impact clearly defined and measured
- Risk management included
- Ethics and governance addressed
- Team expertise clearly articulated
- Industry partner engagement evidenced
- Peer reviewed by at least two colleagues
- Proofread for clarity, grammar, consistency
- Format follows QRDI guidelines
- Submitted before deadline (not at 11:59pm)

Responding to Reviewer Feedback

Golden Rules

1. **Be professional** — never defensive or dismissive
2. **Address every point** — even if just to acknowledge
3. **Provide evidence** — show, don't just assert
4. **Use a response table** — reviewer comment → your response → changes made

Response Table Template

Reviewer Comment	Your Response	Changes Made
"Methodology lacks detail on validation."	Agreed. Added cross-validation protocol.	Section 4.2, page 12: Added 5-fold cross-validation description.

Key Insight

Most successful grants are funded on the **second or third submission**. Persistence + improvement = success.

Resubmission Strategy

If rejected, do not simply resubmit the same proposal.

Improvement Priorities

1. **Clarity** — address every reviewer comment explicitly
2. **Alignment** — strengthen links to QRDI priorities
3. **Impact** — quantify more, specify more
4. **Partners** — add or strengthen industry letters

Critical Warning

A resubmission that ignores reviewer feedback is almost always rejected again. Reviewers can see previous reviews.

Final Strategic Advice

Ten Commandments of QRDI Grant Writing

1. **Start early** — great proposals take weeks, not days
2. **Think like a reviewer** — read your proposal as they would
3. **Focus on impact** — QRDI buys outcomes, not activity
4. **Reduce risk** — every ambiguous sentence is a risk
5. **Quantify everything** — numbers build confidence
6. **Show, don't tell** — evidence, not assertions
7. **Involve industry** — letters, data, co-funding
8. **Iterate** — 5-7 drafts minimum
9. **Peer review** — fresh eyes catch blind spots
10. **Submit early** — last-minute submissions have more errors

Remember: QRDI reviewers want to fund you.
Your job is to give them **confidence** and **evidence** to do so.
Make their decision easy.

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