

ASSK PRODUCT DEVELOPMENT (PDC) GUIDE

1. Introduction

The Actuarial Students Society of Kenya (ASSK) Product Development Competition (PDC) is an innovation and research platform that challenges actuarial students to apply their knowledge, creativity, analytical skills and problem-solving abilities to real-world challenges.

The competition gives students an opportunity to develop innovative products, design practical solutions and conduct research that can improve existing products, business processes, and decision-making across insurance, financial services, healthcare, technology and other relevant industries.

Through regional and national competitions, participants present their work to qualified actuaries, industry professionals and experienced academics. They gain feedback, professional exposure and opportunities to connect with potential mentors, partners and investors.

PDC is more than a competition: it is a platform for translating classroom knowledge into practical solutions and demonstrating the value of actuarial science beyond numbers.

2. Objectives of the Competition

- Promote innovation by encouraging original, relevant and practical solutions to real-world challenges.
- Apply actuarial knowledge through risk analysis, mathematical modelling, statistics, financial analysis and data-driven decision-making.
- Bridge theory and practice by connecting classroom learning with industry challenges.
- Strengthen research capacity through evidence-based studies that improve products, services, and business decisions.
- Develop entrepreneurial thinking, including market assessment, financial feasibility, sustainability and scalability.
- Build professional confidence, presentation skills, teamwork, communication and critical thinking.
- Promote industry collaboration with actuaries, academics, corporate leaders, mentors and potential investors.
- Recognize exceptional student talent at regional and national levels.
- Encourage solutions that improve financial inclusion, insurance access, healthcare, wellness, business performance and social well-being.
- Support continued development of promising ideas into viable solutions.

3. Competition Categories

3.1 Product Development Category

This category challenges participants to develop an innovative product, service, system, or technology-driven solution that addresses a clearly identified problem or unmet market need. Participants should explain what the product does, who it serves, how it works, what makes it different, how it can be implemented and how it can remain financially and operationally sustainable.

Illustrative areas include:

- FinTech: digital payments, savings, credit, investment, financial inclusion and personal finance.
- InsurTech: insurance products, claims automation, fraud detection, risk assessment, pricing and distribution.
- HealthTech and wellness: healthcare access, health financing, preventive care, wellness technology and health risk management.
- Technology and data analytics: artificial intelligence, predictive analytics, automation, digital platforms and decision-support systems.
- Climate and sustainability: climate risk, agricultural insurance, environmental risk and sustainable finance.
- Other relevant areas where a well-designed solution can address a genuine problem.

What a product submission should demonstrate?

- Problem statement: the specific problem and why it matters.
- Proposed solution: the product, service, or system being introduced.
- Target market: intended users, customers, or beneficiaries.
- Market validation: evidence that the problem exists and that the solution is needed.
- Uniqueness: how the idea differs from existing alternatives.
- Product functionality: how the solution works in practice.
- Actuarial framework: relevant risk analysis, probability, statistics, pricing, forecasting, reserving, financial modelling, or other actuarial techniques.
- Technology and implementation: required technology, infrastructure, partnerships and resources.
- Pricing and revenue model: how the product will be priced and generate revenue or cover costs.
- Financial feasibility: expected costs, revenues, cash flows, and financial risks.
- Sustainability and scalability: whether the product can operate over time and grow.
- Accessibility: affordability, inclusion, usability, and access for intended users.
- Risk and compliance: relevant operational, financial, technological, ethical, privacy and regulatory risks.
- Expected impact: measurable benefits for users, organizations, or communities.
- Prototype or demonstration: where possible, a prototype, model, simulation, mock-up, or working system.

The central question is: Why is this product needed, why is the solution better and how can it work sustainably in the real world? Participants should use methods appropriate to their product rather than adding technical complexity and how can it work sustainably in the real world? Participants

should use and how can it work sustainably in the real world? Participants should use methods appropriate to their product rather than adding technical complexity without purpose.

3.2 Research Paper Category

This category focuses on evidence-based investigation of an existing problem, product, organization, business process, or industry practice. Research may identify how a product can be improved, how a company can strengthen profitability, how risk can be managed more effectively, or which models can improve decision-making.

Illustrative research opportunities

- Investigating why an insurer experiences underwriting losses despite growing premium income.
- Assessing how inaccurate risk classification affects premium adequacy and profitability.
- Comparing pricing models to improve risk differentiation.
- Examining claims data to identify fraud, inefficiencies, or opportunities to improve claims management.
- Studying customer retention and factors contributing to policy lapses.
- Developing models to improve pension forecasting, investment decisions, or long-term sustainability.
- Analyzing the financial viability of microinsurance for underserved populations.
- Evaluating machine learning for risk prediction while considering bias and explain ability.
- Investigating ways to optimize capital allocation, operational costs, or risk exposure.

What a research paper should contain?

- Title and abstract.
- Background and a clearly defined problem statement.
- Research objectives and questions.
- Literature review and relevant industry context.
- Methodology, data, models, assumptions and analytical methods.
- Analysis, findings and appropriate tables or visualisations.
- Actuarial application and explanation of relevant methods.
- Practical, evidence-based recommendations.
- Business or industry implications.
- Limitations, uncertainties and assumptions.

- References and acknowledgement of sources.

Where confidential company data is unavailable, participants may use public datasets, published reports, appropriately anonymised data, or well-designed simulations. Actual observations must be distinguished clearly from assumptions and simulated results.

The central question is: What does the evidence reveal, why does the problem exist, and what practical action could improve the outcome?

4. Participation Criteria

The competition is designed for actuarial students participating through member institutions and ASSK's recognized regional competition structure.

Team composition

- Participation may be individual or in teams of up to three students.
- Each participating institution may submit up to three entries per category, subject to the applicable competition rules.
- Entries must be submitted under the correct category: Product Development or Research Paper.

General submission expectations

- Identify a clearly defined problem or research opportunity.
- Demonstrate relevance to the selected category.
- Apply appropriate analytical and actuarial principles.
- Support claims with evidence, justified assumptions or clearly labelled simulations.
- Meet announced deadlines and follow submission and presentation instructions.
- Observe research ethics, data privacy, intellectual property requirements and academic integrity.
- Disclose external assistance and use of third-party tools where required.

5. Regional-to-National Competition Structure

There are three (3) regions which are classified as follows.

a) Western Region: Kisii University, Maseno University, Egerton University, Kabarak University, Jaramogi Oginga Odinga University, Tom Mboya University, University of Eldoret, Kabianga University, Moi University, Masinde Muliro University

b) Mount Kenya Region: Murang'a University, Meru University of Science & Technology, Chuka University, Kirinyaga University, Tharaka University, Dedan Kimathi University of Technology, Karatina University, University of Embu,

c) **Nairobi Region:** Kenyatta University, Jomo Kenyatta University of Agriculture and Technology, University of Nairobi, Daystar University, Multimedia University of Kenya, Cooperative University, Catholic University of East Africa, Strathmore University, KCA University, South Eastern Kenya University, Mt. Kenya University, Machakos University.

Stage 1: Institutional preparation

Students identify problems, develop products or research papers, form eligible teams and prepare submissions.

Stage 2: Regional competitions

Participants present their entries in their respective regions and are assessed against the applicable criteria.

Stage 3: Regional recognition and qualification

The first-, second- and third-ranked entries in each category at each regional competition qualify for the national stage, subject to official rules.

Stage 4: National competition

Regional qualifiers compete against entries from the other regions before the national judging panel.

Stage 5: Post-competition opportunities

Participants may use feedback, recognition and professional connections to refine their work and pursue further development.

Under this structure, each region may send up to three Product Development entries and three Research Paper entries to the national competition. Regional recognition is an achievement in itself and provides a pathway to broader professional exposure.

6. Why Participate in PDC?

- **Showcase innovation:** Present ideas and demonstrate how actuarial knowledge can solve practical challenges.
- **Gain recognition:** Compete at regional and national levels and potentially gain visibility through ASSK channels.
- **Connect with industry leaders:** Receive feedback from actuaries, insurance professionals, financial services practitioners and academics.
- **Explore partnerships and investment:** Promising ideas may attract mentors, partners, or investors, although funding is not guaranteed.
- **Build professional confidence:** Practice defending assumptions, explaining models and communicating to a professional audience.
- **Strengthen actuarial skills:** Apply risk, pricing, forecasting, financial modelling, data analysis and decision-making methods.
- **Improve your idea:** Use feedback from judges, peers and professionals to refine the solution or research.
- **Earn recognition and awards:** Certificates, awards, prizes, or other benefits

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- **Build a professional network:** Connect with students, researchers, alumni, actuaries and industry representatives.
- **Create a portfolio of work:** Demonstrate initiative, analytical ability, research, innovation, and communication skills.

7. Judging Criteria

Presentations are evaluated by qualified actuaries, insurance professionals and experienced academicians in the actuarial field. Judges consider the quality of the work and the participant's ability to explain, justify and defend it. The official rubric and scoring weights issued for each competition take precedence over this guidance.

7.1 Product Development judging framework

- **Problem definition and relevance:** Is the problem clear, important and supported by credible evidence?
- **Innovation and uniqueness:** Does the product offer a new approach or a meaningful improvement over alternatives?
- **Actuarial and technical soundness:** Are the methods, models and assumptions appropriate and justified?
- **Market potential and user value:** Is the target market clear and does the solution address user needs?
- **Financial viability and business model:** Are pricing, costs, revenue streams and financial risks considered?
- **Feasibility and implementation:** Can the solution realistically be developed and implemented?
- **Accessibility, sustainability and impact:** Is it accessible, sustainable, scalable and likely to deliver measurable benefits?
- **Presentation and defence:** Is the presentation clear, professional and supported by accurate answers to questions?

7.2 Research Paper judging framework

- **Research problem and objectives:** Is the problem significant, clearly defined and supported by focused objectives?
- **Literature and context:** Does the paper demonstrate understanding of relevant studies and industry conditions?
- **Methodology and data quality:** Are methods appropriate and data, assumptions and limitations clearly explained?
- **Analytical and actuarial rigour:** Are the models and statistical or actuarial techniques correctly applied?
- **Findings and interpretation:** Are the findings credible and logically derived from the analysis?

- **Practical recommendations:** Do recommendations address the problem and offer a plausible route to improvement?
- **Originality and contribution:** Does the work add meaningful insight or improve existing approaches?
- **Presentation and defence:** Can the researcher communicate findings and justify the methods used?

Participants should obtain and study the official judging rubric once released. The frameworks above are guidance, not substitutes for the official scoring system.

8. How to Develop a Competitive Entry

Step 1: Start with a real problem

Identify a challenge affecting people, businesses, insurers, financial institutions, healthcare providers, or other stakeholders. Establish who is affected and why it matters.

Step 2: Validate the problem

Use credible research, surveys, interviews, public reports, datasets, or other evidence. Do not rely on assumptions alone.

Step 3: Define a focused solution

Explain exactly what you propose and how it addresses the problem. A focused, defensible idea is stronger than an overly broad idea that cannot be demonstrated.

Step 4: Study existing alternatives

Research comparable products, services, studies and business models. Explain where your work adds value and avoid unsupported claims of uniqueness.

Step 5: Demonstrate actuarial value

Use relevant risk assessment, probability, statistics, pricing, claims analysis, forecasting, financial projections, scenario analysis, or sensitivity testing.

Step 6: Establish viability

For a product, explain customers, pricing, revenue, costs and sustainability. For research, show how recommendations could improve a defined outcome.

Step 7: Test assumptions

Where possible, build a prototype, conduct a pilot, test a model, analyse data, or simulate realistic scenarios. Label simulated results clearly.

Step 8: Address risks and limitations

Identify relevant technical, financial, operational, ethical, privacy, regulatory and model risks.

Step 9: Prepare a compelling presentation

Structure the presentation around the problem, its importance, the solution or

research question, methods, evidence, viability or recommendations, impact and next steps.

Step 10: Rehearse the defense

Practise answering questions about assumptions, data, methods, competitors, costs, pricing, feasibility, limitations and impact. Every team member should understand the work.

Submission Requirements

- Every team must provide a PDF document presenting a comprehensive overview of their idea or product. This should clearly describe the problem or concept, objectives, approach or methodology, expected outcomes, potential impact, and, if relevant, sources of data.
- Teams submitting research papers may provide the research paper itself in PDF format instead of a separate document.
- The PowerPoint presentation for the product/research paper should also be submitted.

ii. Presentation Guidelines

a) You should be able to explain:

- What problem you are addressing and why it matters
- What the product is and how it solves the problem identified
- Your objective (what you aim to discover, design, or improve)
- Who will use the product and how it will help them
- How it is relevant to insurance/financial inclusion
- Why it is feasible, potential partners, and market fit

b) Use relevant visuals (charts, diagrams, or tables) where appropriate.

c) Use a maximum of 15 professionally formatted slides.

d) Stay within the allocated presentation time of 15 minutes.

9. Awards, Recognition and Post-Competition Opportunities

Regional recognition

The top three entries in each category at each regional competition qualify for the national stage, subject to official rules. Regional recognition can strengthen a participant's portfolio and provide valuable feedback and exposure.

National recognition

National finalists compete for recognition among leading entries from all three regions. Rankings and awards should be determined by the authorized judging panel using the official rubric and procedures.

Certificates and prizes

Certificates, trophies, cash prizes, sponsored opportunities, or other benefits will be provided where announced by ASSK and its partners. Award details, eligibility and presentation arrangements should be confirmed in the official competition notice.

Industry engagement and commercialization

Industry professionals may offer feedback, mentorship, introductions, technical guidance, or further engagement with promising projects. A product may progress towards piloting, partnerships, incubation, or investment, depending on interest and readiness. Participation or recognition does not guarantee funding, employment, investment, or commercial success.

10. Professional Conduct and Intellectual Property

ASSK encourages originality, responsible innovation, ethical research and respect for the work of others. Participants should:

- Submit original work and acknowledge all contributors.
- Reference research, datasets, models and external sources correctly.
- Obtain appropriate permission to use confidential or restricted data.
- Protect sensitive personal and organisational information.
- Distinguish verified findings from assumptions and simulated results.
- Disclose use of third-party software, artificial intelligence and other tools where required.
- Ensure claims about performance, market validation, partnerships and investment are accurate.
- Review the official rules on ownership, confidentiality, publication and disclosure.

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Participants should not assume that participation automatically transfers ownership of their ideas to ASSK or guarantees exclusive rights. .

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This Years PDC Theme:
The Actuarial Ecosystem:
Students Innovation And Industry
in Convergence

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