DRAFT: IEEE MGA STRATEGIC INITIATIVE PROPOSAL

STEAM-TEAMS: A Decentralized Leadership and Workforce Development Platform for IEEE Region 5

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Executive Summary

(See Appendix A for live proof-of-work URLs demonstrating execution, outcomes, and scalability.)

IEEE Region 5 proposes **STEAM-TEAMS**, a **region-scalable, decentralized leadership development platform** aligned with the 2026 MGA Strategic Initiative theme of **Membership Development**. Rather than introducing a new program, this initiative strengthens and scales an **existing, documented operating system** that converts outreach into mentorship and mentorship into sustained leadership, membership vitality, and workforce engagement.

The platform is anchored in proven Region 5 Section collaboration patterns (https://r5.ieee.org/pikespeak/r5-section-collaboration/#1765836239496-f5389b3b-e11c), enabling Sections to share tools, content, mentors, and infrastructure while retaining local autonomy. STEAM-TEAMS has already demonstrated measurable impact through coordinated STEM outreach, mentorship pipelines, industry engagement, and digital knowledge sharing, positioning Region 5 to "Think Big" while delivering tangible member value.

Strategic Alignment with MGA 2026: Membership Development

(Supporting evidence available in Appendix A.)

STEAM-TEAMS directly advances MGA's Membership Development priority by addressing **leadership vitality**, **student-to-Young Professional transitions**, and **industry engagement** as an integrated system rather than isolated activities.

Region 5's strategic emphasis on mentorship and workforce readiness is documented in the Pikes Peak Section strategic framework (https://r5.ieee.org/pikespeak/strategic-plan/) and reinforced by Region-wide collaboration practices that encourage Sections to share successful models rather than reinvent them independently (https://r5.ieee.org/pikespeak/r5-section-collaboration/#1765836239496-f5389b3b-e11c).

This initiative strengthens IEEE's role as a **lifelong professional home**, supporting members from K-12 exposure through professional leadership.

The Big Idea: STEAM-TEAMS as a Workforce Multiplier

STEAM-TEAMS functions as a **workforce and leadership multiplier**, grounded in three reinforcing principles:

- **Skillset × Mindset = Success**
- **High Tech × High Touch = Higher Purpose**
- **STEAM × TEAMS = Everyone Accomplishes More**

This philosophy is reflected in the Pyramid-based leadership framework developed and applied by the IEEE Pikes Peak Section (https://r5.ieee.org/pikespeak/pyramid/), which emphasizes values-driven leadership, mentorship, and systems thinking.

System Architecture: Center of Gravity + Pipelines

(See Appendix A for visual and operational proof.)

At the core of the platform, **STEAM-TEAMS serves as the center of gravity**, intentionally linking:

Outreach → Mentorship → Leadership

This architecture is not theoretical. Ongoing STEAM-TEAMS coordination, meeting notes, and evolving documentation demonstrate how activities mature into pipelines rather than ending as one-off events (https://r5.ieee.org/pikespeak/steam-teams-notes/).

The platform scales through a lightweight, sustainable expectation:

One active IEEE member activating one mentee per year.

Strategic Enabler: Photonics 6-Week DOCK Kit

The **Photonics 6-Week DOCK Kit** is a core infrastructure element that empowers *any* IEEE member to conduct hands-on outreach with parents and children. It lowers barriers to participation and converts outreach into mentorship opportunities.

Hands-on photonics demonstrations aligned with K-12 engagement are documented through PhET-based photonics demos and companion materials (https://r5.ieee.org/pikespeak/phet-demos-photonics/). These activities complement no-cost PhET simulations, enabling scalable engagement without recurring licensing costs.

Membership Development Impact

STEAM-TEAMS advances membership development by:

- **Increasing leadership vitality** through distributed mentorship
- **Strengthening the student-to-Young Professional pipeline** via intentional transitions
- **Deepening industry engagement** through participation rather than sponsorship alone

Industry engagement pathways, workforce relevance, and employer participation are documented through Region 5's Industry STEM pathways and future workforce initiatives (https://r5.ieee.org/pikespeak/industry-stem-pathways/, https://r5.ieee.org/pikespeak/future-tech-workforce/).

Community Outreach, Trust, and Inclusion

Large-scale community engagement has been demonstrated through public outreach initiatives such as Cool Science Carnival Day (https://r5.ieee.org/pikespeak/carnival-day/) and partnerships with trusted cultural and community organizations, including the Filipino American Community of Southern Colorado (https://r5.ieee.org/pikespeak/facsc).

These partnerships build trust, increase family engagement, and broaden participation in IEEE-led STEM pathways.

Partnerships and Ecosystem Collaboration

STEAM-TEAMS operates within a **multi-stakeholder ecosystem** that includes Sections, industry partners, educators, nonprofits, and community organizations. Evidence of this collaboration is documented at https://r5.ieee.org/pikespeak/steam-teams-partnerships/.

Region-level collaboration practices ensure that successful models, content, and tools can be shared across Sections without centralized control (https://r5.ieee.org/pikespeak/r5-section-collaboration/#1765836239496-f5389b3b-e11c).

Prior Results and Credibility

The IEEE Pikes Peak Section has demonstrated disciplined execution and reporting through prior IEEE grant awards, including a fully documented 2025 IEEE STEM Grant Final Report (https://r5.ieee.org/pikespeak/2025-ieee-grant-report/). Recognition and awards further confirm credibility and stewardship (https://r5.ieee.org/pikespeak/recognition-and-awards/).

Measurement and Accountability

(Supporting evidence in Appendix A.)

To minimize administrative burden while ensuring accountability, the initiative tracks:

- **Leadership Vitality** → Active mentors
- **Pipeline Growth** → Mentees activated
- **Industry Engagement** → Industry participants
- **Community Impact** → Family touchpoints

Progress will be reported through Director reports in accordance with MGA requirements.

Scalability and Replicability

STEAM-TEAMS is designed for **replication by pattern, not prescription**. Sections retain autonomy while adopting shared infrastructure, documentation, and metrics. The platform's documentation and mini-site constellation demonstrate transferability suitable for Region-wide and global adoption (https://r5.ieee.org/pikespeak/steam-teams-notes/).

Conclusion

STEAM-TEAMS provides MGA with a **strategic, values-aligned, and evidence-backed model** for membership development. By investing in a decentralized leadership development platform rather than isolated activities, MGA empowers Region 5 to deliver sustained member value at scale.

(See Appendix A for consolidated proof-of-work mapping.)

Appendix A — Proof-of-Work & Evidence Mapping Table

(Referenced throughout proposal narrative as "See Appendix A for supporting URLs.")

Proposal Section	Purpose in Proposal	Primary Proof-of-Work URL(s)	Reviewer What to Look For
Executive Summary	Establish credibility and readiness	https://r5.ieee.org/pikespeak/2025-ieee-grant-report/	Prior IEEE grant execution, outcomes, fiscal responsibility
Strategic Framework & Big Idea	STEAM-TEAMS as leadership & workforce OS	https://r5.ieee.org/pikespeak/pyramid/	Conceptual framework, leadership philosophy, systems thinking
Region 5 Collaboration Model	Demonstrates regional scalability	https://r5.ieee.org/pikespeak/r5-section-collaboration/#1765836239496-f5389b3b-e11c	Evidence of cross-section coordination and shared learning
STEAM-TEAMS Center of Gravity	Core initiative and operating model	https://r5.ieee.org/pikespeak/steam-teams-partnerships/	Active partnerships, sustained coordination
Mentorship Pipeline	Student → YP → Professional pathway	https://r5.ieee.org/pikespeak/industry-stem-pathways/	Workforce pathways, mentorship logic
Photonics DOCK Kit Enablement	Member empowerment mechanism	https://r5.ieee.org/pikespeak/phet-demos-photonics/	Hands-on STEM tools, no-

Proposal Section	Purpose in Proposal	Primary Proof-of-Work URL(s)	Reviewer What to Look For
			cost simulation leverage
Community Outreach & Inclusion	Family-centered, inclusive engagement	https://r5.ieee.org/pikespeak/carnival-day/	Large-scale public outreach evidence
Cultural & Community Leadership	Trusted community presence	https://r5.ieee.org/pikespeak/facsc	Long-term community credibility and engagement
Industry Engagement Strategy	Industry participation beyond sponsorship	https://r5.ieee.org/pikespeak/industry-stem-pathways/	Industry as mentors and investors
Future Workforce Vision	Alignment with national workforce priorities	https://r5.ieee.org/pikespeak/future-tech-workforce/	Forward-looking workforce development framing
Platform & Digital Infrastructure	Decentralized leadership platform	https://r5.ieee.org/pikespeak/	Evidence of sustained website management and content curation
Assessment & Metrics	Outcome-focused evaluation	https://r5.ieee.org/pikespeak/2025-ieee-grant-report/	Quantitative + qualitative reporting practices

Appendix B — Budget & Cost Justification

IEEE Region 5 STEAM-TEAMS Membership Development Platform

B.1 Budget Overview (One-Year MGA Cycle)

The proposed budget combines **direct cash expenditures** with **documented in-kind contributions** to ensure scalability, fiscal responsibility, and strong Region/Section alignment. Funding emphasizes **capacity-building infrastructure**, not one-time events.

Category	Description	Cash (MGA / Region / Section)	Comments
STEAM-TEAMS DOCK Kits	Photonics outreach kits (Snap Circuits Light–based)	See B.2	https://r5.ieee.org/pikespeak/ 2026-ieee-region-5-mga-proposal
Multimedia Enablement	Camtasia licenses (1 per participating Section)	See B.3	https://r5.ieee.org/pikespeak/ 2026-ieee-region-5-mga-proposal-
Digital Content Development	AI-assisted videos, editing, publishing	—	https://r5.ieee.org/pikespeak/ 2026-ieee-region-5-mga-proposal-
Website & Platform Management	Mini-site constellation, content curation	—	Included
Coordination & Reporting	Regional coordination, documentation	Minimal	Included

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B.2 STEAM-TEAMS DOCK Kit Costs

Deployment Assumptions

- Region 5 has **26 Sections**
- Target participation: **25% of Sections (≈ 6–7 Sections)**
- **2 DOCK Kits per Section** for flexibility and local deployment
- Sections may opt for 1 kit, allowing redistribution to other Sections

DOCK Kit Configuration

Each DOCK Kit consists of:

- **10 × Snap Circuits® Light Kits**
- Supplemented by:
    - **PhET Interactive Simulations (no cost)**
      https://r5.ieee.org/pikespeak/phet-demos-photonics/
    - Section-generated multimedia content

Cost Estimate

- Estimated cost per Snap Circuits Light kit: **~$35**
- Cost per DOCK Kit (10 units): **~$350**
- Cost per Section (2 kits): **~$700**

Estimated Total (7 Sections):

- 14 DOCK Kits × $350 ≈ **$4,900**

This low per-Section cost enables equitable participation while supporting hands-on, family-engaged outreach.

B.3 Multimedia Enablement — Camtasia Licensing

To support **content sharing, documentation, and Proof-of-Work generation**, each participating Section will be offered:

- **1 Camtasia software license per Section**
- Used to create:

    - Short STEAM explainer videos
    - Mentorship reflections
    - Deployment documentation

Estimated Cost

- Camtasia individual license: **~$300–$350**
- Estimated for 7 Sections: **~$2,100–$2,450**

All content may be shared across Sections via:

- **YouTube**
- **IEEE Pikes Peak mini-sites**
- Google-account–based collaboration (no additional cost)

B.4 In-Kind Contribution — AI-Assisted Multimedia & Platform Development

Declared In-Kind Value: $60,000 (Conservative)

This valuation reflects **professional-equivalent services** donated by Dr. John Santiago in his volunteer capacity.

Basis of Estimate

- **60 minutes of AI-assisted educational video content**
- Conservative professional market rate: **$1,000 per finished minute**
- Includes:
    - Script development
    - Visual design
    - Editing
    - Publishing

Additional In-Kind Contributions (Included)

- Ongoing website management and hosting

- Development of a constellation of STEAM-TEAMS mini-sites (e.g., PyramidX-OS, Workforce Pathways, Partnerships)
- Eight years of self-taught expertise applied as a volunteer

Comparable professional contracts for equivalent scope typically exceed $90,000–$120,000 when outsourced.

B.5 Alignment with MGA Budget Principles

This budget aligns with MGA expectations by:

- Prioritizing **capacity-building over events**
- Leveraging **in-kind contributions to amplify impact**
- Maintaining **low per-Section barriers to participation**
- Supporting **scalable, repeatable membership development**

The budget avoids:

- Excessive administrative overhead
- Ongoing operational dependency
- Duplication of existing IEEE infrastructure

B.6 Cross-Reference to Appendix A (Proof-of-Work)

All budget elements are supported by existing documented activity and outcomes, including:

- STEAM-TEAMS partnerships https://r5.ieee.org/pikespeak/steam-teams-partnerships/
- 2025 IEEE STEM Grant Report https://r5.ieee.org/pikespeak/2025-ieee-grant-report/
- Workforce pathway content https://r5.ieee.org/pikespeak/future-tech-workforce/
- Industry engagement models https://r5.ieee.org/pikespeak/industry-stem-pathways/

(See **Appendix A** for full URL mapping.)

B.7 Summary Statement (Reviewer-Safe)

This budget reflects a disciplined, scalable approach to membership development that combines modest cash investment with substantial documented in-kind contributions. The result is a high-leverage model that strengthens leadership vitality, expands the student-to-Young Professional pipeline, and deepens industry engagement across Region 5.

Appendix C — Outcomes

IEEE Pilot Program: *Empowering Tomorrow's Leadership with the STEAM-TEAMS Challenge*

IEEE Pikes Peak Section
Funded by: TryEngineering STEM Grant (2025)

C.0 Outcomes at a Glance (Quantified Impact)

The STEAM-TEAMS Challenge produced verified outcomes across seven engagement channels:

1. **200+ attendees** — FACSC Independence Day (16 June 2025), IEEE STEAM-TEAMS booth.
2. **178+ attendees** — 2025 FACSC Miss Fil-Am Coronation Ball (Keynote: Dr. John Santiago).
3. **~8,000 visitors / 100+ booths** — Cool Science Carnival Day (27 September 2025), IEEE STEAM-TEAMS booth presence.
4. **37 sign-ups** — Cool Science Carnival Day → follow-on Cool Science Festival sessions (29 September & 6 October 2025).
5. **50% conversion rate** — TryEngineering 2025 Virtual STEM Summit (33 emails / 65 unique visitors).
6. **IEEE volunteer support** — Cool Science at the Space Foundation *Summer of Discovery*.
7. **IEEE–Cool Science school engagement** — Fox Meadows Middle School.
8. **See Appendix D for Mentee Spotlight on consistent mentoring outcome**

Metrics were captured through attendance counts, sign-up lists, email conversions, partner coordination, and vTools Pre-University STEM submissions.

C.1 Overview and Outcome Framing

The *Empowering Tomorrow's Leadership with the STEAM-TEAMS Challenge* pilot successfully transitioned IEEE Pikes Peak Section outreach from isolated STEM events to a

scalable, leadership-centered ecosystem. Rather than focusing solely on activity volume, the program emphasized **conversion, continuity, and documentation**, ensuring outcomes persist beyond the grant period and can be replicated across IEEE Region 5.

The program's outcomes were formally evaluated and reported through IEEE grant reporting and vTools workflows, confirming alignment with TryEngineering objectives and IEEE MGA expectations.

C.2 Proof-of-Work Infrastructure and Scalability

A core outcome of the grant was the creation of a **constellation of IEEE-hosted mini-sites** serving as permanent proof-of-work. These mini-sites document outreach activities, educational assets, partnerships, leadership frameworks, and volunteer workflows, converting the grant into a **reusable operating model** rather than a one-time initiative.

Key infrastructure outcomes include:

- A centralized grant report hub serving as the authoritative outcome record
- STEAM-TEAMS notes, outreach archives, and community event documentation
- AI-assisted multimedia and storytelling artifacts supporting STEM engagement
- Public documentation designed to reduce replication and reporting overhead for other Sections

This infrastructure ensures that future Sections can adopt the model with minimal startup cost while maintaining fidelity to IEEE standards.

C.3 Mentorship and Leadership Development Outcomes

The pilot validated a **multi-level mentorship ladder** connecting Life Members, Young Professionals, university students, and K–12 participants through shared outreach experiences. Mentorship effectiveness was observed through sustained participation, volunteer feedback, and leadership role progression.

The inclusion of **mentee Dileep Rai** represents a concrete leadership development outcome, demonstrating progression from participation to contribution within the Section's operational framework. This mentorship relationship strengthened continuity, knowledge transfer, and resilience within the volunteer ecosystem—directly supporting MGA priorities related to leadership development and succession planning.

C.4 Volunteer Activation and Capacity Building

The STEAM-TEAMS Challenge emphasized **capacity building over ad-hoc volunteering**. Documented workflows, DOCK (Deployable Outreach Community Kit) deployments, and shared instructional assets enabled volunteers to engage confidently across multiple venues.

Based on documented participation and identified pathways, the program established a **projected engagement capacity of approximately 20 IEEE volunteers**, supported by:

- Structured onboarding and defined outreach roles
- Repeatable event kits and lesson frameworks
- Pre-University STEM vTools submissions and reporting alignment

This approach reduced volunteer fatigue while increasing program consistency and quality.

C.5 Partnerships and Community Impact

The program strengthened workforce-aligned and community partnerships, increasing awareness of **District 38 (D38)** career and innovation pathways through hands-on demonstrations and leadership storytelling. Collaboration with **Cool Science** extended IEEE presence into large-scale informal STEM environments and school-based programs.

Additionally, the STEAM-TEAMS ecosystem amplified the visibility of IEEE members—including **Jim Mikkelson** and **Nathan Edwards**—as community STEM leaders, reinforcing IEEE's role as both a technical authority and a trusted civic partner.

C.6 Evaluation, Reporting, and Sustainability

Program success was evaluated using attendance counts, engagement observation, sign-ups, volunteer feedback, and conversion metrics. Notably, the **50% conversion rate** at the TryEngineering Virtual STEM Summit demonstrates effective use of AI-assisted multimedia to drive meaningful follow-through.

All events were submitted via vTools as Pre-University STEM activities, and financial tracking complied with Section and TryEngineering guidelines. Significant in-kind

contributions, including AI-assisted multimedia and volunteer time, substantially increased return on investment.

Conclusion

The TryEngineering 2025 Grant enabled the IEEE Pikes Peak Section to demonstrate a **measurable, scalable, and leadership-focused STEM outreach model**. Quantified outcomes, permanent documentation, and validated mentorship pathways position STEAM-TEAMS as a strong candidate for regional expansion and continued MGA investment.

Appendix D — Mentee Spotlight

Leadership Development Outcomes through the STEAM-TEAMS Mentorship Model

IEEE Pikes Peak Section | TryEngineering 2025 Grant

D.1 Purpose of This Appendix

This appendix documents a **representative leadership outcome** produced through the STEAM-TEAMS mentorship model, demonstrating how structured, virtual mentorship can develop IEEE volunteers into **credentialed, high-impact leaders** capable of contributing at Section, Region, and global IEEE levels.

The spotlighted case illustrates how mentorship within STEAM-TEAMS extends beyond technical encouragement to produce **operational, governance, and industry-facing leadership capacity**, supporting IEEE MGA strategic objectives related to leadership development, volunteer sustainability, and industry engagement.

D.2 Mentee Profile — Dileep Rai

Mentee: Dileep Rai
Mentor: Dr. John M. Santiago Jr.
Mentorship Modality: Structured virtual mentorship
Duration: Over one year

Through sustained mentorship, Dileep Rai progressed from participant engagement to leadership contribution within the IEEE ecosystem. His development reflects the STEAM-TEAMS emphasis on **continuity, responsibility, and measurable contribution**, rather than short-term involvement.

D.3 Leadership Roles and Contributions

As a direct outcome of mentorship through the STEAM-TEAMS operating framework, Dileep Rai currently serves in the following leadership capacities:

- **Section Treasurer**, IEEE Pikes Peak Section
- **Backup Webmaster**, IEEE Pikes Peak Section, supporting digital continuity and risk mitigation

These roles contribute to Section governance, financial stewardship, and operational resilience—areas critical to long-term Section vitality.

D.4 IEEE Industry Content Platform (ICP) Impact

Beyond Section-level leadership, Dileep Rai demonstrated significant impact on IEEE's **global industry engagement infrastructure**:

- Recruited **175+ volunteers** to support the IEEE **Industry Content Platform (ICP)**
- Enabled approximately **54 active ICP reviewers**, contributing to content quality and review throughput
- Participated personally as an ICP reviewer

Notably, **Dileep Rai and several recruited colleagues received formal letters of recognition** from **Marc Beebe, CAE**, Senior Director, Strategic Research, Public Imperatives, & Corporate Development, acknowledging their contributions to IEEE's industry-facing initiatives. This recognition represents **institutional validation** beyond the Section and Region levels.

D.5 Professional Advancement and Peer Recognition

After attaining **IEEE Senior Member status in 2025**, Dileep Rai further contributed to IEEE's professional advancement mission by:

- Reviewing approximately **74 Senior Member applications**, supporting peer evaluation and advancement

This role reflects a high level of trust, professional maturity, and alignment with IEEE's standards of excellence.

D.6 Significance to STEAM-TEAMS and Region 5 Scaling

This mentee outcome demonstrates that the STEAM-TEAMS mentorship model:

- Produces **credentialed IEEE leaders**, not only event participants
- Strengthens **Section operational continuity** through governance and infrastructure roles

- Expands **industry engagement capacity** via recognized contributions to IEEE platforms
- Scales effectively through **virtual, low-cost mentorship** independent of geography

As IEEE Region 5 considers broader adoption of the STEAM-TEAMS operating system, this case provides a **replicable benchmark** for leadership development outcomes achievable within a 12-month mentorship cycle.

D.7 Summary Statement

The leadership progression of Dileep Rai provides concrete evidence that STEAM-TEAMS functions as a **leadership development operating system**, capable of transforming mentored volunteers into recognized contributors across IEEE's technical, governance, and industry-engagement domains. This outcome supports continued investment and regional scaling of the STEAM-TEAMS model.