



ASTEMI

SCIENCE TECHNOLOGY ENGINEERING
MATHEMATICS INNOVATION

OLYMPIADS & COMPETITIONS

Business Model

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Planning Schedule for finalizing ASTEMI Business Model

Description of task	Date of delivery	Person Responsible
FIRST DRAFT		
First draft on ASTEMI Business Model sent to the ASTEMI Working Group (1 week to do changes)	28 August 2015	Working Group
Integrate Working Group's additional information (1 week)	4 September 2015	Working Group
Send First draft on ASTEMI Business Model to Steering committee	6 September 2015	Steering Group
Comments on first draft received back from Steering Committee (2 weeks) Closing time 18 September 2015 at 17h00	18 September 2015	Steering Group
SECOND DRAFT		
Second draft on ASTEMI Business Model sent to the ASTEMI Working Group (1 week to do changes)	Marinda out of office	Working Group
Integrate Working Group's additional information (1 week)	2 October 2015	Working Group
Send Second draft on ASTEMI Business Model to Steering committee	9 October 2015	Steering Group
Comments on second draft received back from Steering Committee (2 weeks) Closing time 23 October 2015 at 17h00	23 October 2015	Steering Group
ASTEMI COP Steering Committee meeting (2 days)	26-27 October 2015	Steering Group to attend SAASTA to arrange
THIRD DRAFT		
Third draft on ASTEMI Business Model sent to the ASTEMI Working Group	24 October 2015	Working Group
ASTEMI Business Model Version 3.1 worked on during 26-27 Oct 2015 Workshop	26 October 2015	Steering Group
Send updated draft Version 3.1.1 on ASTEMI Business Model to Steering committee	28 October 2015	Steering Group
Integrate Working Group's additional information (1 week) Version 3.1.2	6 November 2015	Working Group
Send Third Draft Version 3.1.3 on ASTEMI Business Model to Steering committee	23 November 2015	Steering Group
ASTEMI COP Steering Committee Meeting (2 days) Final circulation of Final Draft (Version 3.1.3) to Steering Committee	25-27 November 2015	Steering Group to attend SAASTA to arrange
Comments on third draft received back from Steering Committee (2 weeks) Closing time 27 November 2015 at 17h00	27 November 2015	Steering Group
FINAL DRAFT		
Version 4.0 Business Model send to NRF Legal Department	4 December 2015	Broader Group
Version 1.1 Constitution send to NRF Legal Department	4 December 2015	Broader Group
Version 4.1 Business Model received back from NRF Legal Department. Updates made and returned to SAASTA to sign off	23 December 2015	Broader Group
Version 1.2 Constitution received back from NRF Legal Department. Updates made and returned to SAASTA to sign off	23 December 2015	Broader Group
Version 4.2 Business Model received back from NRF Legal Department. Updates made and returned to SAASTA to sign off	19 January 2016	Broader Group
Final, Version 1.3 Constitution received back from NRF Legal Department. Updates made and returned to SAASTA to sign off	19 January 2016	Broader Group
Next STEMI Community of Practice Conference	14 - 16 March 2016	Broader Group
Final, Version 4.3 Business Model received back from NRF Legal Department. Necessary updates were made and returned to SAASTA. Signed off.	15 February 2016	Broader Group

1. Introduction

ASTEMI is a national non-profit organization of independent organizations; teachers, public organisations and volunteers dedicated to improving and promoting science education and providing recognition for outstanding achievement by both learners and teachers.

These goals are achieved by participating in Olympiad and Competitions, incorporating Science Olympiads and Competitions into classroom curriculum and into hands-on, science project-based competitions.

2. Executive Summary

Olympiad and Competitions are recognised internationally as highly effective means of promoting awareness, interest and achievement in Science, Technology, Engineering and Mathematics in schools, both primary and secondary.

The phrase “*Olympiads and Competitions*” embraces a wide range of activities that normally take place outside the formal school curriculum. These include:

- 2.1 Local, regional and national competitions with thousands of entries.
- 2.2 Multi-level events of two or more rounds that become increasingly challenging and culminate in top-level Olympiads.
- 2.3 Enrichment programmes to inspire promising young South Africans to pursue STEMI careers.
- 2.4 Talent searches and similar programmes to select and train national teams to represent the country in international events.
- 2.5 Organisation of international Olympiads in South Africa.

ASTEMI plans to bring together all role players in the field of Olympiads and Competitions – including professional and academic societies, universities and other tertiary institutions, private enterprise and government – to promote, coordinate and extend STEMI Olympiads in South Africa.

3. Business Model

3.1 Name

ASTE MI is a collaboration that brings organisers of STE MI Olympiads and Competitions together to expand Olympiads and Competitions to a broader base of learners and educators.

4. Preamble

The ASTEMI business model's purpose and underlying philosophy is:

1. To focus on developing and researching Olympiads and Competitions.
2. To form alliances with the Department of Science and Technology, the National Research Foundation, the Department of Basic Education and the government in general.
3. To be aware of and coordinate activities in line with the National Development Plan.
4. To be aware of and coordinate activities in line with the Youth into Science and Science Engagement strategies.
5. To establish contacts with appropriate International Olympiads and Competitions.
6. The issue of transformation is central to ASTEMI.

4.1 Vision

To promote excellence in Science, Technology, Engineering, Mathematics and Innovation in South African schools.

4.2 Mission Statement

To use Olympiads and Competitions:

- 4.2.1 To contribute to high-quality STEM education for all school learners from Grades R-12.
- 4.2.2 To assist in identifying and nurturing talent of promising young South Africans and to encourage them to pursue careers in science, technology, engineering and mathematics.
- 4.2.3 To encourage as many schools as possible to achieve excellence in STEM.
- 4.2.4 To help instil a passion for teaching and learning of STEM subjects.
- 4.2.5 To encourage learners to become potentially more employable.

4.3 Aims and Objectives of ASTEMI

Members will be encouraged:

- 4.3.1 To give as many learners as possible the opportunity to develop their potential in resourced, under-resourced and rural schools.
- 4.3.2 To introduce ideas that are outside the confines of the school curriculum.
- 4.3.3 To publish training material, both in print and online.
- 4.3.4 To provide a platform for research into the performance of STEMI Olympiads and Competitions.
- 4.3.5 To popularise Olympiads and Competitions at schools especially with girl learners.
- 4.3.6 To support/organise teacher and learner programmes in STEMI Olympiads and Competitions.
- 4.3.7 To bridge the gap between secondary school and tertiary education.

- 4.3.8 To provide common ground for university academics and school teachers to discuss their mutual interests.
- 4.3.9 To improve the public's awareness of science and pursue opportunities for media coverage (press, radio, television and social media) to promote Olympiads and Competitions, and to profile high achievers who will be role models for their communities.
- 4.3.10 To provide incentives to participating learners in Olympiads and Competitions so that they are motivated to reach greater heights.
- 4.3.11 To prepare South African learners to become globally competitive in international Olympiads and Competitions.
- 4.3.12 To identify, nurture and track learners who are high achievers in Olympiads and Competitions.
- 4.3.13 To collaborate with partners that will improve the efficiency in promoting Olympiads and Competitions.

4.4 Strategies

- 4.4.1 ASTEMI will use Olympiads and Competitions to promote the sharing of resources in local communities.
- 4.4.2 ASTEMI will encourage university scientists and engineers to play an active role in organising and supporting STEMI Olympiads and Competitions that provide a common ground for university academics and school teachers.
- 4.4.3 The cooperation of scientific societies and professional organisations in supporting STEMI Olympiads and Competitions should be actively pursued.
- 4.4.4 ASTEMI will support STEMI improvement by collecting and disseminating information about evidence-based best practices.

4.5 Keys to Success

- 4.5.1 Building an ASTEMI Network to connect tertiary education, business and community resources with schools and teachers through Olympiads and competitions.
- 4.5.2 Forming a learning community to identify effective practices among the school districts and community partners, and training teachers in effective instructional practices through proficiency-based teaching and learning, as well as contextualised, experience-based teaching and learning methods.
- 4.5.3 Increasing STEMI participation, persistence and achievement based on ethnic/cultural and/or socio-economic background, limited English language proficiency, gender and disability.
- 4.5.4 Improving business and industry access to a South African-educated STEMI talent pool that is highly skilled, motivated and globally competitive.

4.6 Action Plan and Timelines

Four-Year Process of Regional Engagement and Transformation in STEM Education.

2015/2016 Phase 0: Envision

- Constitution of ASTEMI as a legal entity ✓
- Launch of ASTEMI ✓
- Election of Office Bearers ✓
- Establish a shared vision for STEMI transformation ✓
- Establish ASTEMI business model as the framework ✓
- Identify funding sources and secure STEMI investment commitments
- Marketing and advocacy strategy

2017 Phase 1: Plan

- Develop STEMI Partnership - Strategic Investment Plan
- Identify key strategies and work plan
- Develop monitoring and evaluation framework including impact indicators
- Identify funding sources and secure STEMI investment commitments
- Identify existing STEMI programmes/activities and participating schools
- Conceptualisation of coaching and mentoring programme
- Annual conference
- Marketing and advocacy strategy

2018 Phase 2: Build

- Engage teachers and volunteers in the schools
- Make infrastructure investments
- Identify funding sources and secure STEMI investment commitments
- Annual conference
- Coaching and mentoring programme
- Marketing and advocacy strategy
- SWOT analysis

2019 Phase 3: Implement

- Showcase effective practices from learning community and assess scalability
- STEMI impact measurement
- Expanding volunteer pool
- Identify funding sources and secure STEMI investment commitments
- Annual conference
- Coaching and mentoring programme
- Marketing and advocacy strategy

2020 Phase 4: Refine

- Use assessment data to revise programmes
- Transition to sustainable programme partnerships
- Report on STEMI Impacts
- Annual conference
- Coaching and mentoring programme
- Marketing and advocacy strategy

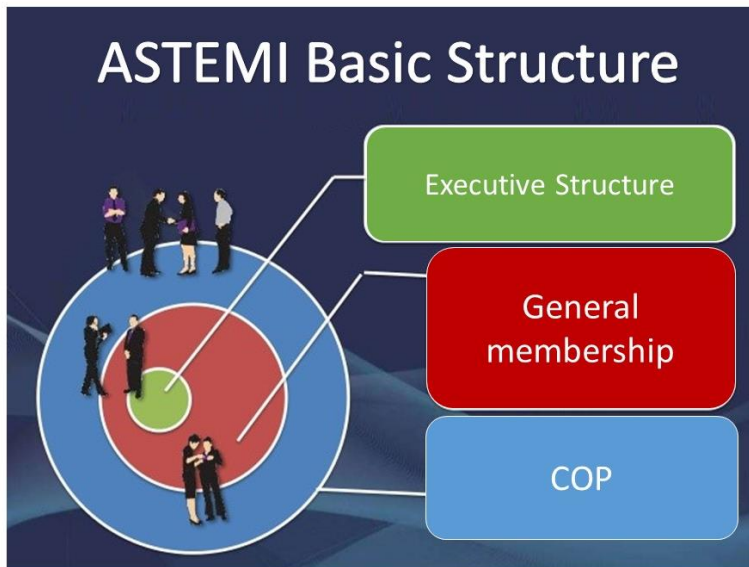
5. Description of Business

This business model describes proven strategies for using Olympiads and Competitions to transform STEM education in primary and high schools.

Mathematics and science Olympiads and Competitions, together with the people and organisations engaged with them, form an important part of a national network. Each individual organisation's Olympiads and Competitions have a unique way of identifying, motivating developing and steering young talent towards careers in science. All these Olympiads and Competitions have a positive impact on education and on educational institutions in South Africa, but there is still a need to build stronger collaboration among teachers, schools, universities and educational authorities in order to meet the challenges of STEM education in South Africa today.

Through the network of Olympiads and Competitions and competition-related activities, these organisations play a significant part in STEM education in South Africa.

5.1 Structure



5.2 Management function

A constitution drawn up guide how the organization is governed.

6. Funding

In order to achieve our aims and objectives it is necessary for the association to raise funds. Funds will be used for the common good of all members of ASTEMI and to promote Olympiads and Competitions jointly.

ASTEMI is a platform where potential funders can be made aware of the range of Olympiads and Competitions.

7. Marketing

Marketing will be done to inform the COP, schools, learners, educators and parents on the options available to them and the importance of the use of Olympiads and Competitions in improving performance and education in the country.

Any specific, target-orientated marketing will be done by the individual members in their own right. Such marketing costs shall be carried by the individual members concerned.

9. Appendices

Appendix A: Acronyms

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ASTEMI – The Association of Science; Technology; Engineering; Mathematics and Innovation

DST – Department of Science and Technology

NRF – National Research Foundation

DBE – Department of Basic Education

STEMI – Science Technology Engineering Mathematics and Innovation

SWOT – Strengths Weaknesses Opportunities Threats