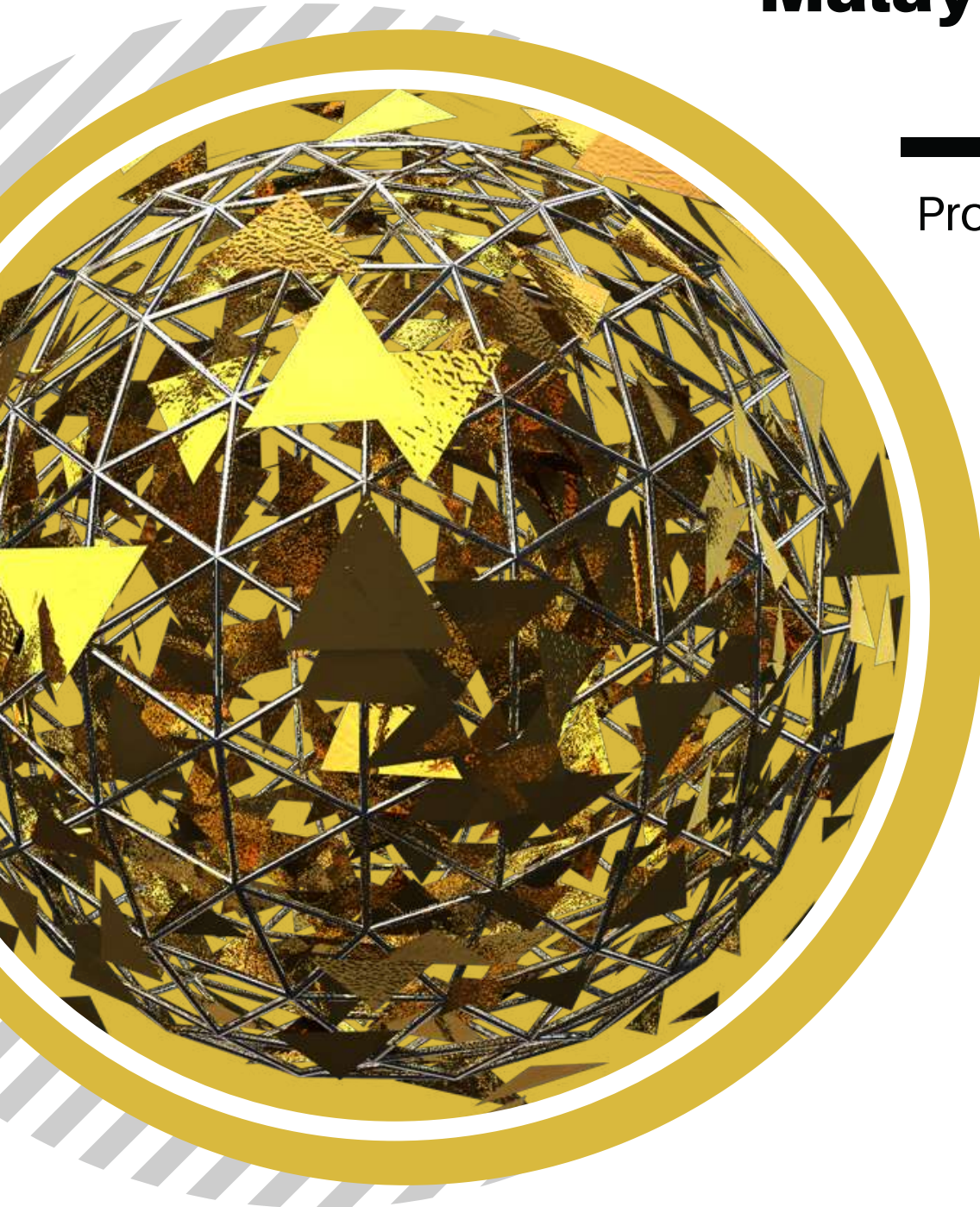




The Zero to Maker Innovation Competition for the State of Kedah, Malaysia (Z2M Kedah)

Project Proposal



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Project Title



The Zero to Maker Innovation Competition for the State of Kedah, Malaysia (Z2M Kedah)

Z2M Kedah is a project that falls under the umbrella Innovation and Entrepreneurship Programme for the ASEAN Region that is being implemented by Green Growth Asia Foundation, Asia School of Business and the IMT-GT University Network. The initial focus for this programme is the Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT).



Project Summary



IMT-GT is one of ASEAN's fastest growing economic corridors. The IMT-GT Vision 2036 highlights promoting growth among the three countries through greater regional economic integration and innovation. The Innovation and Entrepreneurship Programme (IE Programme) is a multi-stakeholder further education programme organized by Green Growth Asia Foundation (GGAF), IMT-GT University Network (UNINET), and Asia School of Business (ASB) that is directed at the IMT-GT region. It is intended to initially implement the IE Programme within the IMT-GT subregion before considering expanding the programme into other ASEAN countries.

The IE Programme will be implemented over the next 5 years through a series of projects that will be differentiated through their individual design to meet specific geographic, schools and university partnering and thematic area criteria. The IE Programme will reach universities and schools within the IMT-GT subregion. This will establish the foundational innovation and entrepreneurship framework required to successfully promote innovation and entrepreneurship amongst the youth within the IMT-GT subregion.

To support the implementation of the umbrella IE Programme, it is proposed to launch a Zero to Maker Innovation Competition project (Z2M) in the State of Kedah (Z2M Kedah), Malaysia working alongside Menteri Besar Kedah Incorporated (MBI Kedah) as a partner.

Z2M Kedah will be a multi-stakeholder training project organized directly by Green Growth Asia Foundation (GGAF) and Asia School of Business (ASB). MBI Kedah represents a highly strategic partner for the successful implementation of the Z2M project in Kedah.

Z2M Kedah aims to develop the innovation and entrepreneurship skills and attitudes of youth living in Kedah to enable them to contribute to the continuing development of the state. In its first year, Z2M Kedah will engage 10 participating secondary schools. By supporting the umbrella IE Programme, Z2M Kedah will be contributing directly to achieve the long-term goal of the IE Programme; in this case to accelerate economic development, significantly reduce unemployment, promote job creation, and build the innovation and entrepreneurship ecosystem within Kedah.

Through a series of workshops focused on Making, Innovation, and Entrepreneurship, Z2M Kedah is designed to be a continuing strategy that provides youth in Kedah with added opportunities to unleash their creative potential.

Z2M Kedah represents an opportunity to develop a successful Z2M model project that is intended to be upscaled and replicated further in Kedah and to other Malaysian States, the IMT-GT subregion and ultimately the entire ASEAN region. There is a role for MBI Kedah in supporting this roll out within the IMT-GT subregion.

Project Rationale



A key rationale for Z2M Kedah project is that the successful implementation of this project will serve to create a Z2M model that can be upscaled and replicated, not just further in Kedah and Malaysia as a whole, but importantly within the IMT-GT subregion. The following analysis sets out why Z2M represents a pressing response to the prevailing challenges being experienced amongst the youth cohort in the IMT-GT subregion. MBI Kedah has an opportunity to lead the way for Z2M projects to be rolled out in the IMT-GT subregion and to even become a strategic partner in this journey.

A. Status of Youth in the IMT-GT Subregion

The subregion of Indonesia, Malaysia, and Thailand (IMT-GT), often referred to as a “Growth Triangle” is home to some of the fastest growing economies in the world. In 2018, the GDP of Indonesia, Malaysia, and Thailand are expected to grow at 5.1%, 5.9%, and 3.1%^[1], respectively, outpacing that of European Union and United States’ GDP growth estimated at 2.52%^[2] and 2.93%^[3]

Table 1: GDP Growth Rates 2017 and 2018

Country	GDP Growth Rate (2017)	GDP Growth Rate (2018)
Indonesia	5.3%	5.1%
Malaysia	5.3%	5.9%
Thailand	3.9%	3.9%
European Union	2.65%	2.52%
United States	2.27%	2.93%
Global Average	3.76%	3.94%

Source: Statista

A dynamic, vibrant, and young population drives this continuing economic development in this growth triangle. The United Nations defines “youth” as individuals aged 15 to 24 years while “children” are below 15 years old.

By this definition, the IMT subregion has an estimated 144.8 million children and youth – that is more than 40% of the population of the three countries. Malaysia has the youngest population as its median age is 28.5 years, then at Indonesia at 30.2 years[1], and lastly Thailand at 37.7 years.[2] Although a state's younger population is often cited by economists as an important determinant of economic growth, this is only true if the young segment is productive.

Table 2: Children and Youth Population in IMT

Country	Total Population (2017)	Children and Youth Population (24 and below)	Median Age	Young People as Percentage of Population (24 and below)
Indonesia	260,580,739	109,496,027	30.2 years	42.02%
Malaysia	31,381,992	14,008,921	28.5 years	44.64%
Thailand	68,414,135	21,276,796	37.7 years	31.1%

Source: Index Mundi

Despite the sheer size of the youth population in the subregion, youth remains to be an untapped resource for IMT's growth with youth unemployment rates being 3 to 5 times than average unemployment rates. In 2017, youth unemployment in Indonesia, Malaysia, and Thailand[1] was a massive 15.6%, 10.9%, and 5.9% respectively, while average unemployment rate were recorded at 4.28%[2], 3.42%[3], and 1.08%[4] only. In 2017, PwC released the Young Workers Index report that estimated a \$1.2 trillion loss among OECD countries. The same report highlights the critical role of Technical Vocation Education and Training (TVET) programmes to curb this challenge.

Table 3: Average Unemployment Rate vs. Youth Unemployment Rate in IMT

Country	Average Unemployment Rate	Youth Unemployment Rate	Multiple
Indonesia	4.28%	15.6%	3.64
Malaysia	3.42%	10.9%	3.19
Thailand	1.08%	5.9%	5.46

Source: Statista

Indonesia has the highest number at 6,906,536 while Malaysia and Thailand has 575,009 and 571,963 respectively. Youth unemployment has major costs to society, the economies of IMT and the individuals themselves. Unemployed youth are struggling to find their place at a critical age of transitioning to productive members of society.

Unemployment and poverty are also potential sources of social and political unrest. Recent developments in the political and economic fronts have placed the spotlight on young people, such as the Arab spring, the Occupy movement, the recruitment of youth to ISIS (Islamic State of Iraq and Syria), and the teen-led Umbrella protest in Hong Kong. These political economic shifts have both gradually and dramatically convinced state actors and policymakers to deliberately create spaces of political participation and economic interventions focused on young people.

B. Entrepreneurship and Maker Education

As a response, Entrepreneurial education and training (EET) is seen as a legitimate and effective TVET strategy that universities and governments have strongly supported.[1] Studies have demonstrated and established the significant relationships between EET and entrepreneurial human capital assets and outcomes.[2] Moreover, soft skills that are critical in entrepreneurship are also seen as life-long competitive assets that link to better employment outcomes. This is particularly true with the onset of the Fourth Industrial Revolution (4IR) that will inevitably shift labour market dynamics towards, putting increasing importance in soft skills.

Maker Education is an effective approach to develop 21st century skills of communication, collaboration, critical thinking, problem solving, and creativity. It builds important skills through problem-based and project-based learning and through hands-on and collaborative learning experiences as a method for solving real-world problems. These programmes also encourage youth to explore science, technology, engineering, and mathematics (STEM) concepts that are increasingly in demand in the IMT labour market and aligned to government policy directions. Maker Education often takes place in a Makerspace (or Innovation Lab), which is a creative space equipped with various tools such as 3D printers, software, electronics, craft and hardware supplies and tools, and more.

Project Promoters



Green Growth Asia Foundation (GGAF) is a nonprofit organization incorporated in Malaysia to provide a platform for leadership, thought and action in responding to sustainability challenges in Asia. GGAF is taking a lead in promoting a new green growth strategy that strikes a balance between economic development, social inclusivity and environmental sustainability. GGAF is achieving its vision and goals through cutting edge 'green growth' strategies, programmes, projects and activities that drive economic prosperity within a socially inclusive context, underpinned by a strong sense of responsibility towards the environment and advanced through education for sustainable development initiatives. Green Finance is viewed as a crucial component for the successful implementation of GGAF's programmes and projects.



Asia School of Business (ASB) is a new premier business school in Kuala Lumpur, Malaysia established in 2015 by MIT Sloan School of Management and Bank Negara Malaysia with a mission to combine MIT's academic rigor with expertise in the Asian region and emerging economies. Its world-class faculty is comprised of MIT Sloan professors, MIT International Faculty Fellows, and ASB resident faculty teaching a curriculum that is based in projects across Asia and in Cambridge, Massachusetts, USA. A critical part of ASB since inception, the ASB Innovation and Entrepreneurship Center undertakes innovation and entrepreneurship programmes for ASB students, corporate partners, and communities.



Menteri Besar Kedah Incorporated (MBI Kedah) is a state organization that seeks to reinforce the development strategies being implemented within Kedah at a federal level. In order to fulfil its vision to attain sustainable economic prosperity that is shared by all Kedahan, MBI Kedah creates economically-sound projects to derive maximum benefits for Kedah and its people, striving to bridge the societal gap and bring economic prosperity for all. MBI Kedah's key areas of activity include business consultancy, economic development, energy, telecommunications, plantations, property development, agriculture and mining. It seeks to engage with the local industry and business owners to help in the creation of jobs across Kedah so that our communities are able to thrive. MBI Kedah has a detailed understanding of the state second to none and is leading the way in bringing social and economic development to people of Kedah.

Project Description



A. Importance of Innovation and Entrepreneurship Workshops

Soft skills that are critical in entrepreneurship are equally important as life-long assets that lead to better outcomes in youth productivity. Z2M aims to expose participants to 21st century skills of communication, collaboration, critical thinking, problem solving and creativity through an entrepreneurship-focused training programme.

Using Making as an entry point, the Z2M encourages its participants to explore science, technology, engineering, arts, and mathematics (STEAM) concepts that are increasingly in demand in the IMT-GT labour market. Maker Education often takes place in a Makerspaces (or Innovation Lab), which is a creative space equipped with various tools such as 3D printers, software, electronics, craft and hardware supplies and tools, and more.

A. Zero to Maker Workshop

The goal of this immersive and interactive course is to take participants out of linear single-discipline experiences, and instead through multi-dimensional technical and human centered learning. The course covers the basics of design, product fabrication, identification of unmet human needs through empathy and immersion, development of solutions that are feasible and viable, and fundamentals of entrepreneurship thinking.

C. Zero to Entrepreneur Competition

The first year of the Z2M will culminate through a competition that recognizes top-performing students from universities and schools who display exemplary commitment to promoting innovation and entrepreneurship in their communities. Moreover, a design challenge will be released in June 2019 that will allow participating schools to engage in healthy competition to collectively sharpen innovation and entrepreneurship capacities in the IMT-GT.

The competition will be undertaken on a provincial, national and IMT-subregion level among participating universities and schools.



D. Roll Out in Kedah and Target Participants

Z2M Kedah will engage with Menteri Besar Kedah Incorporated (MBI Kedah) who will arrange collaboration with 10 secondary schools each to implement the workshops in Kedah, Malaysia. In each secondary school, a total of 10 participants will be selected from a pool of applicants. Z2M Kedah will therefore ultimately reach



10 schools



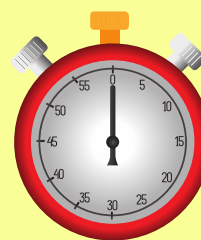
100 students



20 teachers.

The Z2M Kedah will create an enabling ecosystem to develop innovation and entrepreneurship for its participants. The programme will reach out primarily to secondary school students aged between 13 and 18 years old. By engaging younger participants, Z2M also hopes to cultivate a community of passionate innovators who will champion Z2M in their schools and communities in Kedah.

Project Activities and Timeline



The following table sets out the project activities and timeline for Z2M Kedah.

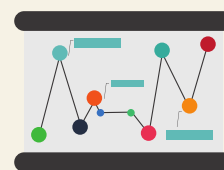
Date	Activities	Targets
March 2019	Preparatory Activities Throughout March, GGAF, MBI Kedah, and ASB will form an advisory committee that guides the selection of schools. Moreover, the committee will also agree on the general operational approach of the competition.	<ul style="list-style-type: none">• Criteria for selection of schools finalized;• Call for schools released through MBI Kedah.
March 2019	Selection of Participating Schools Once the selection criteria is agreed upon, MBI Kedah will commence the selection of schools who will participate in Z2M's. In total, there will be 10 schools selected. The selection criteria can be found in Appendix I.	<ul style="list-style-type: none">• 10 participating schools and representatives selected;• MOUs finalized with each school.

Date	Activities	Targets
April 2019	<p>Zero to Maker Workshop: Training of Trainers</p> <p>From April 21 to 26 (to be finalised), representatives from schools will participate in the Zero to Maker training program that they will deliver to their communities. The workshop design can be found in Appendix II. The last day of this workshop focuses on practical tips on facilitating workshop sessions, maintaining a maker lab, and developing a community of innovators and entrepreneurs.</p> <p>In total, 120 participants will attend. The invited participants will be:</p> <ol style="list-style-type: none"> 1. 10 students per school (100 total). 2. 2 teachers per school (20 total). <p>Further guidelines will be released on who will participate in the April workshop, closely coordinated with the advisory committee.</p> <p>After the workshop, the mechanics of the Z2M competition will also be released by the committee.</p>	<ul style="list-style-type: none"> • Zero to Maker workshop implemented; • MOUs signed with each school; and • Schools trained on workshop delivery and maker lab management.

Date	Activities	Targets
May to June 2019	<p>Setting up the Zero to Maker Labs and Online Learning Platform</p> <p>Schools will be given two months to set up maker spaces in their communities, the guidelines of which are consistent with the selection criteria.</p> <p>The advisory committee, led by ASB and GGAF, will support each schools throughout this process and ensure that all commitments are fulfilled. Further, ASB and GGAF will also participate in a dry-run of workshops conducted by each school to ensure programme quality.</p> <p>A pilot launch of an online website and application based learning platform will also be implemented to improve the committee's ability to scale the programme and track the progress of schools and students.</p>	<ul style="list-style-type: none"> • Maker Spaces established in each school; • Access to online learning platform granted to participants; and • Dry-run of workshops conducted by each school.

Date	Activities	Targets
June to October 2019	<p>Community-level Workshops</p> <p>Each school will implement their own workshops, based on a common model, to enhance the innovation and entrepreneurship skills and attitudes of their students. Appendix I serves as a guide for schools in the selection of participants.</p> <p>Each school will ensure that participants accomplish surveys provided by ASB to allow the committee to adequately monitor and evaluate the impact of the programme.</p>	<ul style="list-style-type: none"> • Community level trainings implemented; and • Baseline surveys administered.
November 2019	<p>Zero to Maker Competition Culmination</p> <p>The advisory committee will recognize universities, schools, and participants that show great progress in developing a community of innovators and entrepreneurs.</p> <p>Criteria and guidelines for awarding will be decided by the advisory committee and announced by August 2019.</p>	<ul style="list-style-type: none"> • Awards given to exemplary universities, schools, and students; • Launch of Z2M Year 2.

Key Project Outcomes and Impact



The proposed Z2M Kedah projects represents an important first stage in implementing a broader IE Programme and a vision of enhancing socioeconomic growth through greater regional economic integration and innovation. Z2M Kedah's direct contribution is targeted towards increased innovation and entrepreneurial capacities of youth in the State of Kedah.

A. Outcomes and Impact for Kedah

The Z2M Kedah project can generate the following key outcomes:

The project's Key Performance Indicators for the State of Kedah include the following:

- Increased skills in innovation and entrepreneurship demonstrated among 100 youth and 20 teachers;
- 10 schools capacitated on the conduct of maker trainings;
- A Project Advisory Committee will be established
- Working with 10 schools with the relationship being established through an MOU signed with each school individually
- A Z2M Training of Trainers Workshop will be conducted with 80 participants attending and comprised as follows
 - 2 teachers per school (20 total)
 - 10 students per school (100 total)
- A Zero to Maker Labs and Online Learning Platform will be setup in each school
- A pilot website and application based learning platform will be launched
- Community-level Workshops will be conducted by each school
- Baseline surveys administered
- A Zero to Maker Competition will be established with awards being made at the end of the project

A. Broader Outcomes and Impact

The Z2M Kedah project represents a key strategic response for Green Growth Asia Foundation under their Education for Sustainable Development Pathway. Specifically, the programme responds to Thematic Action Area Challenge 1: Primary and Secondary Schools and Thematic Action Area Challenge 2: Universities and other Institutes of Higher Education. The project also provides a response under GGAF's Inclusive Growth Pathway, specifically the Inclusive Social Development Thematic Action Area, where livelihoods can be pursued through entrepreneurship and innovation and not just through the traditional corporate and government job market.

The programme contributes towards UNINET's Strategic Action Plan 2017-2021 vision and goals; specifically Goal 1: Sustainable Economic Transformation - Objective 1: To produce entrepreneurs among academia in the subregion.

Importantly, the Z2M Kedah project also contributes at a global level towards the UN's Sustainable Development Goal 8: Decent Work and Economic Growth, specifically the target that aims by 2030 to substantially reduce the proportion of youth not in employment, education or training.

The Z2M Kedah project is also highly supportive of UNESCO Education for Sustainable Development goals, which amongst other objectives, establishes Behavioural Learning Objectives. This includes objectives: 3 - The learner is able to develop and evaluate ideas for sustainability-driven innovation and entrepreneurship, and objective 4 - The learner is able to plan and implement entrepreneurial projects.

Z2M Kedah represents the first project to be implemented under the umbrella IE Programme and as such will seek to inform on the design and adaptation of the IE Programme Framework. The lessons learned will be a valuable input into the design of future Z2M projects implemented under the IE Programme. Z2M Kedah therefore represents an opportunity to develop a model Z2M project that can be upscaled and replicated in other Malaysian states, the IMT-GT subregion and ultimately the entire ASEAN region.

Appendix I:



Selecting Partner Schools and Student Representatives

1. Applications for Z2M first year will be decided in close coordination with the project's advisory committee, composed of GGAF, MBI Kedah, and ASB.
2. Schools will be selected based on their commitment to maintain:
 - I. A fully functioning Maker Space. Each lab must be
 - 50% of a full-time teacher's work hours dedicated to running the lab
 - Suitable space measuring at least 500 sqft equipped with 10 computers/laptops, 2 - 4 heavy duty workbenches, storage units, and min 10 power sockets
 - Lab operating hours beyond normal school schedule i.e. can be accessed after school has finished. If at all possible, also accessible on non-school days
 - Plan training for multiple successive batches of students (example: new students starting secondary school) to ensure continuity when initial batch graduates
 - School management agrees to source for additional funds for more equipment beyond the starter lab.
 - II. Full participation in on-going research initiatives led by ASB:
 - Conduct all surveys provided by ASB
 - Allow the Z2M advisory committee access to participant's past school records and information
3. In selecting participants, schools must be guided by the following parameters:
 - Full-time student of the school
 - Student is willing to actively participate in workshops and subsequent course work
 - Selected participants must be balanced in terms of gender, socio-economic background, and year level.

Appendix II:



Zero to Entrepreneur Workshop Design

	DAY 1	DAY 2	DAY 3	DAY 4
AM Session	<p>Introduction to Design, Making, and Disruptive Thinking</p> <p>Digital Design</p>	<p>Prototype</p> <ul style="list-style-type: none">• Presentation• Demo	<p>Design Thinking</p> <ul style="list-style-type: none">• Field-trip• Empathy exercise• Problem identification• Solution development	<p>Ideating Sustainable Business Ventures</p>
PM Session	<p>Coding and Programming</p> <p>Team Challenges Released</p>			<p>Applying lessons to your role in the organization</p>



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