发展中世界工程技术科学院 (AETDEW)

虚拟一带一路文明博物馆提案

1.0 全球文明倡议

2023 年 3 月 15 日，中国国家主席习近平在 “与世界政党高层对话会”开幕式上发表主旨演讲时提出 “全球文明倡议”。这是习近平主席的第三项重大全球倡议。习主席在 2021 年提出的“全球发展倡议”和在 2022 年提出的 “全球安全倡议”。习主席呼吁尊重文明多样性、倡导人类共同价值，重视文明传承和创新，加强国际人文交流与合作。 世界各国尽管历史、文化、政治制度、发展阶段不同，但有追求和平、发展、公平、正义、民主、自由的共同愿望。 各国和各国文明迫切需要携手应对影响人类未来和命运的全球性挑战。

全球文明倡议、全球发展倡议、全球安全倡议源自中国现代化的成功经验。 中华五千年文明是这些伟大事业的支柱。 中国愿意毫无保留地与世界分享，在相互交流学习中实现共同发展。

2.0 一带一路倡议

2013 年习主席在哈萨克斯坦提出的 “一带一路” 倡议, 唤醒了发展中国家的不同文明共同价值意识。古老的陆上和海上丝绸之路绵延万里，体现了 “一带一路” 合作,互学,互利 精神。 通过陆上丝绸之路, 中国人民与印度次大陆、中亚、中东、欧洲各国人民以及 通过海上丝绸之路, 中国人民与东南亚、印度洋、阿拉伯海、东非各国人民合作,互学, 和互利。 “一带一路”倡议取得了丰硕成果，赢得了广大发展中国家的广泛支持和参与。特别是在发展中国家, 它创造了就业机会，改善了基础设施，促进了共同发展和社会经济进步。 2023 年 是“一带一路”倡议 10 周年。 “一带一路” 给沿线国家人民带来了实实在在的利益，增进了人文交流互动，真正为 “全球发展倡议”奠定了基础。

中国本身就是“一带一路”成功的杰出典范。 2021 年，中国宣布了 8 亿人口脱贫的伟大成就。 这在人类历史上是绝无仅有的！ 更令人惊奇的是，8 亿人已经进入小康社会。 即使在最偏远的农村地区，中国也能满足人民的衣食住行、教育、基本医疗、就业等基本需求。 在此过程中，中国不断改善环境，退沙还林还耕，整治河流湖泊，保护湿地，从而保护了动植物群。 中国消除贫困的成功得益于遍布全国各地的实体和虚拟基础设施建设。 习主席经常引用一句中国古话: “要想富，先修路”。 随着中国人民变得更加富裕，他们将资源投入到提高生活质量上，正如中国俗话所说的 “琴棋书画”。 全国广泛开展对中华文明的学习和研究. 中华文明是中国现代化成功的一个重要因素。 历代 “一带一路”沿线国家文明对中华文明的贡献也正在为中国所承认。

要实现 “全球文明倡议”，最重要的是让包括中国在内的各国儿童和青少年认识到其他文明对自己文明的贡献，认识到地球上所有文明、各国人民对和平, 、发展、公平、正义、民主、自由的共同渴望。没有比了解 “一带一路”沿线国家的文明更好的起点。

3.0 博物馆作为文明的守护者

博物馆的目的是收集、保存、解释和展示具有艺术、文化或科学意义的物品，以供公众研究和教育。 活跃的博物馆群可以被视为一个国家文化和经济健康状况的衡量标准。 首先，博物馆是文明知识的宝库。 国际博物馆理事会对博物馆的定义（2022 年通过）是这样的:“博物馆是一个为社会服务的非营利性常设机构，研究、收集、保存、解释和展示物质和非物质遗产。博物馆面向公众、开放性和包容性，促进多样性和可持续性。它们以道德、专业的方式运作和交流，并在社区的参与下，提供各种教育、享受、反思和知识共享的体验。”

3.1 博物馆在中国教育中的作用

当前，中国正致力于学习、理解和研究其丰富的文明，这是世界上唯一不间断的五千多年文明. 博物馆的作用对于儿童和青少年的教育非常重要。 中国教育部和国家文物局于 2020 年 10 月联合发布了《指导意见》，阐述学校如何更好地利用博物馆资源。 《指导意见》指出，学校应根据当地博物馆的藏品设计与历史、自然科学和技术相关的新活动。 语文、历史、地理、美术、物理、化学、生物等课程将包含博物馆藏品内容。 鼓励开展更多以博物馆为特色的课外活动。 不仅需要博物馆导览，还需要通过讲座、角色扮演游戏、博物馆漫画书等创意形式来提高学生的兴趣。 教师培训计划将涉及相关博物馆藏品内容，后续地方政府各部门将加强协调，确保博物馆相关教育活动的资金支持和适当评估。 虽然重点仍然是如何帮助学生在学校更好地学习，但与博物馆相关的活动可以更具互动性、吸引力和沉浸感。

改革开放后中国博物馆的蓬勃发展令人惊叹。 据国家文物局统计，截至 2019 年底，中国大陆已登记博物馆 5535 家，如果包括大学等机构所属博物馆，实际总数约为 7000 家。 中国 76%的县级行政区至少拥有一个博物馆。 据国家博物馆统计，近五年来，中国博物馆平均每年有 2.6 亿未成年人参观人次。 博物馆在中国之所以受欢迎，是因为它们的展示越来越具有互动性、吸引力和沉浸感。

3.2 数字技术在中国博物馆的应用

近年来，中国国内各大博物馆加快数字化转型。 技术在工件的实时管理中发挥着巨大作用。 传感器监控工件仓库的温度、压力、湿度和其他条件，从而可以优化每个工件或一组工件的环境条件。 博物馆使用 射频识别 芯片来标记文物并收集数据，使智能博物馆管理软件能够自动为员工创建工作指令，从而优化他们的时间和精力。 博物馆物联网 生态系统中的 射频识别 和传感器 在博物馆如何管理其文物的安全方面也发挥着重要作用。 值得注意的是，博物馆目前使用的大多数技术以及预计在不久的将来实施的技术都是由强大的 5G 基础设施支撑的。

技术在博物馆中的应用为人们带来了高清、立体、互动、虚拟的体验。 例如，2019 年，**中国国家博物馆**联合另外 15 家各国博物馆发起了“寻宝接力:全球博物馆馆长之选”线上活动。 在为期 9 天的活动中，中国国家博物馆通过 8K 馆藏视频、增强现实技术、动画和基于 5G 的直播为观众提供身临其境的体验，吸引了全球约 2 亿观众。 **天津博物馆**近年来启动了文物数字化保护工程，完成了文物数字化影像工作。 一些博物馆在数字化发展过程中还与互联网公司合作。 2019 年，一款**微信**软件项目提供了中国敦煌莫高窟的在线游览服务，访问量约为 1900 万。**湖南省博物馆与中国移动、华为**合作，成为国内首家 5G 全覆盖的博物馆。 4K 高清直播、虚拟现实导览、5G 全息时装秀……

这些全新的体验都可以在这里的一馆找到。 在武汉**湖北省博物馆**，华为和中国移动利用 5G 和 5G 帮助历史学家和博物馆管理人员为拥有 2400 年历史的青铜编钟注入新的生命。 参观者可以在虚拟环境中敲击博物馆的镇馆之宝——**曾侯乙编钟**，其历史可以追溯到战国时期（公元前 475-221 年）。 编钟于 1978 年出土后，仅被敲击过 3 次，这使得这种虚拟现实体验吸引了大批观众，也是博物馆的一大亮点。 还安装了全景摄像头来捕捉钟声的实时视频，然后通过 5G 网络传输到博物馆的移动应用软件项目和屏幕。 湖北省博物馆携手合作伙伴中国移动、华为打造 5G 智慧博物馆。 历时两个月，博物馆完成了馆藏每一件文物的三维数据采集。 充分利用 5G 高带宽、低时延、海量连接等先进技术，湖北省博物馆全面迈入 5G 智慧时代。 越王勾践剑是中国最珍贵的历史珍宝之一，自春秋时期就保存至今，距今已有 2500 多年的历史。 它见证了几个世纪的历史，但仍然尖锐而危险。 创建了传奇武器的数字模型并将其存储在云端。 现在，有了 虚拟现实眼镜和合适的软件项目，用户就可以这样或那样地旋转剑，甚至可以放大和缩小。

20 世纪 90 年代末，**故宫博物院**的建筑和藏品开始数字化，帮助故宫博物院与游客建立更紧密的联系，同时最大限度地减少对文物的伤害。**故宫博物院与华为**签署战略合作协议，打造“智慧故宫”。故宫博物院愿意与各方特别是 21 世纪海上丝绸之路沿线国家共同推动博物馆和世界遗产地址的数字化。 拥有 1500 年历史的**云冈石窟**是中国最大的文化景点之一。 这中国古代佛教寺庙石窟位于大同市以西约 16 公里处，是中国 5 世纪和 6 世纪石刻的杰出典范。 以前，探索它的神秘、欣赏它的美丽的唯一方法就是亲自参观石窟，2021 年在上海举办了一场有趣的展览。借助三维扫描和打印技术，**浙江大学和云冈石窟研究院**历时近三年，按照云冈石窟第 12 窟一比一的比例复制了古石窟模型。 为了让原现场场景尽可能真实，团队煞费苦心地再现了洞内的每一个细节，包括时间侵蚀下的残缺，比如缺失的手、褪色、墙壁上的涂鸦等。采用装置、雕塑、影像、摄影、行为、绘画、书法等多种艺术媒介，为这座古老的佛教遗址提供了新的视觉视角。 当游客走近时，那些沉默的古老人物仿佛从梦中醒来，开始表演。 在这里，现实与未来、传说与信仰、物质与意识，通过一场各自旋律的“音乐会”在不知不觉中碰撞在一起。

与我提出的虚拟一带一路文明博物馆的建议更相关的是**中国对外文化集团有限公司**的数字沉浸式艺术展览“**走进敦煌故事**”，它通过数字技术来介绍甘肃敦煌莫高窟的神秘历史，通过多个数字展品向公众展示。 **敦煌艺术展**的亮点(首个多媒体石窟展)是第 220 窟的微缩复制品，这是一个初唐（618-907）石窟，包含许多充满色彩和艺术性的杰作。 **敦煌艺术展**还利用多种数字化手段展示了洞内描绘的音乐、歌舞，通过在 63 米长的 360 度围绕着游客的数字屏幕全景上展示洞内实景的高清数字图像，为观众提供身临其境的参观体验。 游客在探索数字化洞穴时手持灯，就好像他们真的在那里一样。2023 年，敦煌艺术展在中国四个城市同时展出。 **敦煌艺术展**正安排在国外举办。

3.3 发展中国家的博物馆

大多数发展中国家几个世纪以来一直是包括日本在内的西方的殖民地或半殖民地。事实上，1784 年詹姆斯·瓦特发明蒸汽机引发的第一次工业革命导致西方国家开发和部署炮舰，以殖民

和剥削全球各个角落的土著居民。 殖民列强在攫取本国自然资源的过程中，也掠夺了本土文明的大部分最珍贵的文物，以丰富自己的博物馆。

当我第一次参观中国敦煌莫高窟时，莫高窟研究院院长告诉我，研究莫高窟造像和壁画所描绘的文化和文明的最佳场所是伦敦大英博物馆和 巴黎卢浮宫博物馆！ 被英法联军烧毁的北京圆明园被抢走的十二生肖头像，寻找失踪的头像的工作仍在继续！ 事实是，大多数发展中国家的文化和文明的无价文物都在西方的博物馆中展出或保存。 尽管在第二次世界大战后摆脱殖民统治而获得独立，每个发展中国家政府都在其国家博物馆中扩大了本国文明和文化的展览和展示。 由于资金短缺以及缺乏对其他文明和文化对自己文明和文化的贡献的重视，国家博物馆的展品中很少有除了她的殖民统治者以外的其他文明和文化的展品。

4.0 虚拟一带一路文明博物馆

中国媒体对中国“一带一路”倡议的报道似乎主要集中在中国建筑企业在“一带一路”沿线国家建设和完成的基础设施项目上。 “一带一路” 的文明、文化、人文等方面没有得到广泛宣传。

中国有关“一带一路”的书籍涉及文明和文化方面，往往侧重于中国像汉代张骞和唐代玄奘沿着陆地丝绸之路向西旅程。 事实上，直到十三世纪蒙古人入侵东欧之前，还没有中国外交官或商人冒险走出中亚。 如果没有精通商业的中亚粟特人，以撒马尔罕为中欧贸易的中心，陆上丝绸之路就不会成为现实。 就海上丝绸之路而言，所有的注意力都集中在明朝郑和七次下西洋的史诗般的航程上，而没有关注到东南亚和阿拉伯的人民，他们通过广东和福建两省进行了双向贸易, 海上丝绸之路交流成为现实。

我建议中国馆群设立虚拟“一带一路”文明博物馆，适当重视那些曾经并仍在为中华文明作出重大贡献的“一带一路”文明。凭借数字技术的应用经验以及技术先进的多媒体企业和大学的协助，中国的智慧博物馆群应该不难实现这一任务。 以中华文明和朝代为时间顺序，以数字方式记录 “一带一路”文明的发展，从而完成虚拟“一带一路”文明博物馆。

除了中亚和东南亚的文明外，还应该考虑 i）印度文明，特别是巴基斯坦的印度河流域文明，以及印度莫卧儿帝国以及中亚的许多帝国征服者的诞生地阿富汗的文明； ii) 在非洲，埃及和苏丹的努比亚文明、西非的马里文明和南非的人类起源于约翰内斯堡西北部地区文明； (iii)突尼斯的迦太基文明，它将古希腊和特洛伊的荷马的《伊利亚特》和维吉尔的《埃涅阿斯纪》的传说与罗马的诞生联系起来。 一举之间，我们就连接起来了希腊、特洛伊、提尔、北非和罗马的整个地中海文明，马格里布是伊斯兰文明通过伊斯兰西班牙注入欧洲的渠道，引发了欧洲文艺复兴； (iv) 美洲的玛雅文明、阿兹特克文明和印加文明以及 (v) 太平洋岛屿文明。

我想进一步建议，上述“一带一路”文明的虚拟数字展示可以围绕相关一带一路国家的**联合国教科文组织世界遗产地点**地进行，因为它们已经得到了充分的研究和认证。

作为 “全球文明倡议”的一部分，中国可以向“一带一路”沿线国家的国家博物馆提供虚拟“一带一路”博物馆。 正如敦煌数字艺术展所展示的那样，所需要的只是一带一路国家国家博物馆内的一个房间或大厅，有一个 360 度数字屏幕围绕着参观者，

5.0 发展中国家工程技术学院 (AETDEW)

2005 年，77 国集团+中国在多哈举行第二次峰会，敦促教科文组织加强发展中国家工程技术人员和机构能力。 因此，联合国教科文组织南南合作国际科学、技术与创新中心（ISTIC）于

2008 年 5 月在吉隆坡成立。 ISTIC 由马来西亚政府科学、技术和创新部（MOSTI）主办，旨在通过科学、技术和创新协助姐妹发展中国家的可持续发展。

由于实现包容性的 17 个联合国可持续发展目标（SDG）需要南方国家通过南南合作做出更大的协作，ISTIC 于 2015 年提议成立发展中国家工程技术科学院（AETDEW）来动员 77 国集团国家的政府、工业界、学术界和民间社会组织的工程、技术和科学界，帮助国家实现联合国可持续发展目标。 AETDEW 在马来西亚注册，并于 2017 年 5 月在吉隆坡成立。目前 AEDTEW 会员包括 5 名荣誉院士、约 200 名院士。 他们是联合国教科文组织、联合国南南合作办公室、ISTIC 等国际政府组织的高层管理人员和前任负责人； 东盟和 ECO 科学基金会等区域政府组织； 国际科学和工程组织，如科学院间合作伙伴（IAP）、东盟工程技术科学院（AAET）； 各国政府、国家科学院、国家工程师协会、国家注册委员会和工程师理事会以及主要国家企业领导者。

AETDEW 的主要目的是使所有发展中国家都能够接受"一带一路"倡议来增强 77 国集团国家的本土工程技术、人力和机构能力。 一带一路沿线国家的 AETDEW 院士将尽最大努力确保虚拟一带一路文明博物馆的成功和可持续发展。

马来西亚拿督李怡章院士
AETDEW 院长
2023 年 6 月 30 日 吉隆坡

Academy of Engineering and Technology of the Developing World (AETDEW)

Proposal for Virtual Belt & Road Civilization Museum

1.0 Global Civilization Initiative

Chinese President Xi Jinping proposed the Global Civilization Initiative when he delivered a keynote speech at the opening ceremony of the Dialogue with World Political Parties High-Level Meeting on 15 March 2023. This is the third major global initiative of President Xi after the Global Development Initiative in 2021 and the Global Security Initiative in 2022. President Xi called for respecting the diversity of civilizations, advocating the common values of humanity, valuing the inheritance and innovation of civilizations, and strengthening international people-to-people exchanges and cooperation. In spite of differences in histories, cultures, political systems and development phases, countries around the world share the common aspiration for peace, development, equity, justice, democracy and freedom. Countries and civilizations urgently need to work together to deal with global challenges that affect the future and destiny of humankind.

The Global Civilization Initiative, Global Development Initiative and Global Security Initiative are derived from of China's successful experiences of modernization. China's 5,000-year civilization is the backbone of these great initiatives. China is willing to share them with the world without reservation to achieve common development through mutual exchange and learning.

2.0 The Belt and Road Initiative (BRI)

The consciousness in developing countries about the common values of different civilizations was awakened by the Belt and Road Initiative (BRI) that was pronounced by President Xi in Kazakhstan in 2013. Spanning thousands of miles, the ancient Land and Maritime Silk Roads embodied the spirit of cooperation, mutual learning and mutual benefit among the peoples of China, the Indian Subcontinent, Central Asia, the Middle East and Europe in the Land Silk Road and among the peoples of China, Southeast Asia, the Indian Ocean, the Arabian Sea and East Africa through the Maritime Silk Road. The BRI has delivered fruitful outcomes and won widespread support and participation in the developing world. It has created jobs, improved infrastructure and promoted common development, social and economic uplift, especially in developing countries. 2023 marks the 10th anniversary of BRI. The BRI has brought such tangible benefits to peoples of participating countries and enhanced people-to-people exchange and interaction that BRI has truly laid the foundation of the Global Development Initiative.

The outstanding example of the success of BRI has been China herself. In 2021, China announced the spectacular achievement of lifting 800 million of her population out of poverty. This is without parallel in human history! What is even more amazing is that the 800 million people have joined China’s society of moderate prosperity (小 康 社 会). China has thus been able to take care of all the basic needs of her population like clothing, food, housing and transport (衣食住行) as well as access to education, basic medical services, and gainful employment even in her remotest rural regions. In the process, China has been improving her environment in turning desert into forest and farmland, cleaning up her rivers and lakes, and conserving her wetland, thus protecting its flora and fauna. China’s poverty eradication success has been anchored by the building of physical and virtual infrastructure throughout the length and breadth of China. There is an old Chinese saying often quoted by President Xi Jinping: “to get rich, build road first” (要想富先修路). As the Chinese people have become more prosperous, they have devoted their resources on improving their quality of living as per Chinese saying (琴 棋 书 画) or “music, chess, book, painting”. There has been a widespread nationwide learning, study and research of Chinese civilization as a major contributing factor to China’s modernization success. The contributions of other B&R civilizations to Chinese civilization through the ages are also being acknowledged in China.

To assure the achievement of the Global Civilization Initiative, it is most important for children and youth of all nations including China to appreciate the contributions of other civilizations to their own and to realize that all civilizations and all peoples on earth share the common aspiration for peace, development, equity, justice, democracy and freedom. There is no better place to start than to know, understand and appreciate the civilizations in Belt and Road countries.

3.0 Museums as Custodians of Civilizations

The purpose of museums is to collect, preserve, interpret, and display objects of artistic, cultural, or scientific significance for the study and education of the public. An active museum community can be seen as a gauge of the cultural and economic health of a nation. Museums are, above all, storehouses of knowledge about civilizations. The International Council of Museums defines a museum (adopted in 2022) thus: "A museum is a not-for-profit, permanent institution in the service of society that researches, collects, conserves, interprets and exhibits tangible and intangible heritage. Open to the public, accessible and inclusive, museums foster diversity and sustainability. They operate and communicate ethically, professionally and with the participation of communities, offering varied experiences for education, enjoyment, reflection and knowledge sharing."

3.1 Role of Museums in Education in China

In China’s current national preoccupation with the learning, understanding and research into her rich civilization which is the only uninterrupted civilization of more than 5000 years in the world, the role of museums is very important for the education of children and youth. The Chinese Ministry of Education and the National Cultural Heritage Administration co-released a **Guideline** in October 2020 to illustrate better use of museum resources for schools. As the **Guideline** states, schools are urged to design new activities related to history, natural science and technology, based on collections in local museums. Syllabuses like Chinese language, history, geography, fine arts, physics, chemistry, biology etc will include museum content. More extracurricular activities are encouraged to feature museums. Not only guided tours to museums, but also creative formats like lectures, role-play games, and comic books on museums, are needed to increase student interest. Training programs for teachers will involve relevant content, and better coordination concerning different departments of local governments will follow to ensure financial support and proper evaluation of the educational activities related to museums. Whilst the focus remains on how to help students study better at school, museum-related activities can be more interactive, attractive and immersive.

The booming development of Chinese museums after the reform and opening up has been amazing. According to the statistics of the National Cultural Heritage Administration, 5,535 museums had been registered on the Chinese mainland by the end of 2019. The actual total number could be around 7,000 if it includes the museums affiliated to universities and other institutions. 76 percent of China's county-level administrative regions had at least one museum. According to Administration statistics, over the past five years, minors accounted for 260 million visits annually to Chinese museums on average. The popularity of museums in China is due to their displays being increasingly more interactive, attractive and immersive.

3.2 Application of Digital Technologies in Museums in China

In recent years, major museums in China have accelerated their digital transformation. Technology plays a massive role in the real-time management of artifacts. Sensors monitor artifact warehouses for temperature, pressure, humidity, and other conditions that make it possible to optimize the environmental conditions for each artifact or set of artifacts. museums use RFID chips to tag artifacts and collect data, allowing the smart museum management software to automatically create work orders for staff, optimizing their time and efforts. RFID and sensors in the museum's internet of things (IoT) ecosystem play a significant role in how the museum manages the security of its artifacts as well. It is important to note that a majority of the technologies currently in use at the museum, and those expected to be implemented in the near future, are enabled by a robust 5G infrastructure.

The application of technologies in museums have brought high-definition, three-dimensional, interactive and virtual experiences for people. For example, in 2019, an online campaign "Treasure Hunt Relay: Global Museum Director's Choice," was initiated by the **National Museum of China** in collaboration with another 15 museums from various countries. Attracting about 200 million audiences worldwide, during the nine-day event the National Museum of China offered audiences an immersive experience through 8K videos of its collections, augmented reality (AR) technology, animation, and 5G-based live broadcast. **Tianjin Museum** has launched a digital protection project for cultural relics in recent years and completed the digital image of cultural relics. Some museums have also worked with internet companies in the process of their digital development. A WeChat mini-program in 2019 offered online tours of China's Dunhuang Mogao Grottoes and recorded about 19 million visits. **Hunan Museum has partnered with China Mobile and Huawei to become China's first museum with complete 5G coverage.** 4K high-definition livestreaming, VR tours, 5G holographic fashion shows... all of these brand-new experiences can be found in this one museum here. In the **Hubei Provincial Museum** in Wuhan, **Huawei and China Mobile** helped historians and museum administrators breathe new life into a 2,400-year-old bronze chime using 5G and virtual reality (VR). Visitors were able to strike the Zenghouyi chime-bells, a treasure of the museum dating back to the Warring State Period (475-221 BC), in a virtual environment. The chime, after excavation in 1978, has only been physically struck three times — making this VR experience a massive crowd pleaser and a major attraction for the museum. Panoramic cameras were also installed to capture real-time videos of the chime, which were then transmitted via the 5G network to mobile applications and screens at the museum. With its partners China Mobile and Huawei, Hubei Museum has created a 5G smart museum. Over a period of two months, the museum completed the 3D data collection of every artifact in its collection. Taking advantage of the key features of 5G – high bandwidth, low latency, and massive connections – as well as other advanced technologies, Hubei Museum has catapulted itself into the 5G smart era. The sword of King Goujian is one of China's most precious historical treasures, preserved since the Spring and Autumn period, 2,500 or more years ago. It has witnessed centuries of history, and yet remains keen and dangerous. A digital model of the legendary weapon was created and stored on the cloud. Now with a VR handset and the right app, users can spin the sword this way and that, and even zoom in and out.

Digitalisation started on the **Palace Museum**'s architecture and collections in the late 1990s, helping the Palace Museum (The Forbidden City) to build a stronger connection with visitors while minimizing harm to relics. The Palace Museum has signed a strategic partnership agreement with Huawei to create a "Smart Forbidden City". The Palace Museum is willing to work with others, especially those situated along the 21st Century Maritime Silk Road to promote digitalization in museums and world heritage sites. The 1,500-year-old Yungang Grottoes is one of China’s biggest cultural attractions. The ancient Chinese Buddhist temple grottoes, sited about 16 kilometers west of the city of Datong are a distinguished example of Chinese stone carvings from the 5th and 6th centuries. Previously, the only way to explore its mystery and enjoy its beauty is to visit the grottoes in person, Now there is an intriguing exhibition that ran in Shanghai in 2021. Thanks to 3D scanning and print technology, the **Zhejiang University and the Yungang Grottoes Research Institute** collaborated over almost three years to replicate the ancient grotto with a one-to-one scale model of Cave 12 of Yungang Grottoes. In order to make the original on-site scene as real as possible, the team painstakingly recreated every detail inside the cave, including the imperfections under the erosion of time, such as the missing hands, fading colors and graffiti on the wall. A variety of art media, including installation, sculpture, video, photography, performance, painting and calligraphy, give a new visual perspective toward the ancient Buddhist site. When visitors get close up, the silent ancient figures seem to wake up from their dream and begin to perform. Here, reality and future, legend and belief, material and conscious unwittingly collide through a “concert” of their own melodies.

Of more relevance to my proposal of the Virtual Belt & Road Civilization Museum is a digital immersive art exhibition “Into the Dunhuang Tales” of the China Arts and Entertainment Group Ltd that is powered by digital technologies to introduce the mysterious history of the Dunhuang Mogao Grottoes in Gansu Province to the public through multiple digital exhibits. The highlight of the **Dunhuang Art Exhibition** - the very first multimedia grottoes show - is a miniature replica of Cave No.220, an early Tang Dynasty (618-907) cave that contains many masterpieces full of color and artistry. Using various digital means, the **Dunhuang Art Exhibition also** showcases music, song and dance depicted in the Cave that provides audiences with an immersive visiting experience through high-definition digital images of the actual location inside the cave displayed on a 63-meter-long 360 degree digital screen that surrounds visitors, who hold lamps as they explore the digitized cave as if they were there for real. In 2023, the Dunhuang Art Exhibition was shown simultaneously in four cities in China. Arrangements are being made for holding the **Dunhuang Art Exhibition** in foreign countries.

3.3 Museums in Developing Countries

Most developing countries were colonies or semi-colonies of the West including Japan for several centuries. In fact, the first industrial revolution of 1784 with the invention of steam engine by James Watt led to the development and deployment of gunboats by the West to colonize and exploit the native populations in all corners of the globe. In the process of extracting their natural resources, the colonizing powers also robbed most of the most precious relics of native civilizations to enrich their own museums.

When I first visited the Mogao Grottoes in Dunhuang, China, I was told by the Director of the Mogao Grottoes Research Institute that the best places to study the culture and civilization depicted by the statues and wall paintings of Mogao Grottoes are the British Museum London and the Louvre Museum Paris! The search goes on for the missing heads of the 12 Chinese zodiac looted from the Beijing Imperial Garden that was torched by English and French troop! It is a fact that the priceless actefacts of the cultures and civilizations of most developing countries are exhibited or stored in museums in the West. Though with independence form colonial rule after the Second World War, every developing country government has been expanding exhibits and displays of her own civilization and culture in her national museum. Due to shortage of fund and lack of appreciation of the contributions of other civilizations and cultures to her own, few exhibits of other civilizations and cultures other than those of her colonial masters are included in exhibits in the national museum.

4.0 Virtual Belt & Road Civilization Museum

Media reports in China on the Belt and Road Initiative (BRI) in China seems to be focused on infrastructure projects being built and completed by Chinese construction corporations in Belt and Road countries. The civilization, cultural and people-to-people aspects of BRI receive no widespread publicity.

Chinese books on BRI that deal with the civilization and cultural aspects tends to focus on China reaching out like that of Zhang Qian of the Han Dynasty and Xuanzang of the Tang Dynasty as far as the Land Silk Road is concerned. In fact until the Mongol invasion of Eastern Europe in the thirteenth century, no Chinese diplomats or merchants ventured beyond Central Asia. If not for the commerce-savvy Sogdian people of Central Asia with Samarkand as their capital trading between China and Europe, the Land Silk Road would not have been a reality. In the case of the Maritime Silk Road, all attention is given to the seven epic voyages of Admiral Zheng He of the Ming Dynasty without giving attention to the peoples of Southeast Asia and Arabia who made their way to Guangdong and Fujian provinces that made two way exchanges in the Maritime Silk Road a reality.

I would like to suggest that the Virtual Belt & Road Civilization Museum should be set up in Chinese Museums to properly give importance to those Belt & Road civilizations that made and continues to make significant contributions to Chinese civilization. As shown above, smart museums in China should have little difficulty in achieving this task with their experiences in the application of digital technologies and with the assistance of technology advanced multimedia corporations and universities. Using the Chinese civilization and dynasties as chronological reference, developments in Belt & Road civilizations can be documented digitally to complete the canvas of the Virtual Belt & Road Civilization Museum.

Besides the civilizations in Central Asia and Southeast Asia, consideration should be given to i) the Indian Civilization, especially that of the Indus Valley Civilization in Pakistan and also of Afghanistan which was the birth place of empire builders like that of the Mughal empire of India and many empires in Central Asia; ii) In Africa, the Nubian civilization of Egypt and Sudan, the Mali civilization of West Africa and that of South Africa as homo sapiens originated from the region North West of Johannesburg; (iii) the Carthage civilization of Tunisia as it linked the legend of Homer's Iliad and Virgil's Aeneid from ancient Greece and Troy to the birth of the Romans. In one fell swoop, we would have connected the whole of the Mediterranean civilizations of Greece, Troy, Tyre, North Africa and Rome, and the Maghreb was the conduit for the infusion of Islamic civilization through Islamic Spain that sparked the European Renaissance; (iv) the Mayan, Aztec and Incas civilizations of the Americas and (v) the civilization of Pacific Islands.

I would like to further suggest that virtual digital displays of the above Belt & Road civilizations can be built around relevant **UNESCO World Heritage Sites** as these have been properly researched and authenticated.

The Virtual Belt & Road Museum can be offered by China to national museums in Belt & Road countries as part of the Global Civilization Initiative. As demonstrated by the Dunhuang Digital Art Exhibition, all that is required physically is a room or hall inside the national museum of a Belt and Road country with a 360 degree digital screen that surrounds visitors,

5.0 The Academy of Engineering and Technology of the Developing World (AETDEW)

As the achievement of the inclusive 17 UN Sustainable Development Goals (SDGs) would require greater collaborative efforts by South countries through South-South Cooperation, In 2005, the Group of G77 +China held the 2nd Summit in Doha and urged UNESCO to enhance engineering and technological human and institutional capacity in developing countries. As a result, the UNESCO International Science, Technology and Innovation Centre for South-South Cooperation (ISTIC) was launched in 2008 in Kuala Lumpur. ISTIC was hosted by the Malaysian Government under the Ministry of Science, Technology and Innovation (MOSTI) as her contribution to assist sustainable development of sister developing countries through science, technology and innovation. ISTIC in 2015 proposed the formation of the Academy of Engineering and Technology of the Developing World (AETDEW) to mobilize the engineering, technological and scientific communities in government, industry, academia and civil societal organizations of G77 nations to help them achieve the UN SDGs. AETDEW was registered in Malaysia and launched in Kuala Lumpur in May 2017. Currently AEDTEW membership includes 5 Honorary Fellows, some 200 Fellows. They are top executives and former office bearers of international governmental organizations like UNESCO, the UN Office for South-South Cooperation (UNOSSC) and ISTIC; regional governmental organizations like ASEAN and ECO Science Foundation; international scientific and engineering organizations like the InterAcademy Partnership (IAP), the ASEAN Academy of Engineering and Technology (AAET); national governments, national academies, national institutions of engineers, national registration boards and councils of engineers and major national enterprises.

AETDEW primary focus has been to enhance the indigenous engineering and technological human and institutional capacities of G77 nations through the Belt and Road Initiative (BRI) that has been embraced by nearly the whole of the developing world. AETDEW Fellows in Belt & Road countries will do their very best to assure the success and sustainability of the Virtual Belt & Road Civilization Museum.

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