A Note from the Head - Department of Heritage Science & Technology

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The Department of Heritage Science and Technology (HST) at IIT Hyderabad is a groundbreaking academic initiative that merges scientific and technological disciplines with the study and preservation of India's cultural heritage. It addresses both tangible heritage—such as monuments, architecture, and artifacts—and intangible heritage, including traditional knowledge systems, classical languages, music, and wellness practices like Yoga and Ayurveda. The department started its operations in June 2022 and has moved from strength to strength. The department boasts of fifteen allied faculty from various departments of IITH, ten adjunct faculty, and several research partners from premier academic institutions in the country.

India’s Indigenous Knowledge Systems and Heritage (IKS&H) industry spans diverse sectors such as culinary tourism, textiles, Ayurveda, yoga, handicrafts, publishing, and architecture, all unified by a shared cultural ethos and strong domestic demand. Despite their variety, these sectors are driven by common factors—Indic identity, consumer enthusiasm, and heritage appeal—which justify viewing them as a collective industry. While current market estimates focus solely on domestic potential, projections suggest that with rising Compound Annual Growth Rates (CAGRs), the IKS&H industry could surpass $1 trillion (₹92 lakh crore) within the next decade. This underscores the need for strategic investment, policy support, and global positioning to fully realize its transformative economic and cultural impact.

HST department's core mission is to build a multidisciplinary ecosystem that fosters research, education, and innovation in heritage domains. It aims to empower professionals and entrepreneurs by offering academic programs and technological tools that support the conservation, digitization, and commercialization of heritage assets. The department currently offers the Master of Technology and Doctor of Philosophy programs with four key specializations: Yoga Technology, Indic Language Processing, Conservation & Reconstruction and Archaeometry. These programs are designed to cultivate interdisciplinary expertise across engineering, science, design, linguistics, neuroscience and digital media and their corresponding ancient knowledge resources.

A major institutional milestone was the establishment of the Takshashila Center for Multidisciplinary Heritage Science and Technology, funded by DST-SHRI, which served as a nucleus for advanced research and collaborative projects. HST has taken a lead in organizing workshops, lecture series, and conclaves that convene experts from diverse fields to explore heritage-related innovations bringing together civilizational knowledge and modern science and technology. Some important events are noted below:

Yoga-tech conclave

The Dept of HST, IIT Hyderabad, hosted the "Yoga Tech Conclave", in collaboration with the Indian Yoga Association (IYA), along with our associate partners - Sri Visweswara Yoga Research Institute (SVYRI), Kathmandu University & Yogavijnana, curating this conclave as a confluence of Yoga and Technology. Panelists from eminent Yoga Schools across India were invited to share their insights in the brainstorming sessions on topics of essential importance to the Indian Yoga Schools, such as "Online Yoga Pedagogy - pros and cons", "Addressing challenges of small-scale Yoga centres in adopting technology", "Can Yoga philosophy and running it as a business co-exist?", "Alternate revenue models in Yoga", "Social Media Strategies for globalisation", "Tech-enabled global expansion strategy for Indian Yoga teachers and schools".

Indic architecture conclave

With the theme "Reviving Practice of Indic Architecture from Libraries to Laboratories", the Indic Architecture Conclave by the Dept of HST was an endeavor of framing a design curriculum to bring the grandeur of Indic knowledge from libraries to laboratories, and eventually to practice. The department and the event were supported by the DST-SHRI (Science Heritage Research Initiative) and the Ministry of Education, Govt of India.

Maritime Heritage Revival

A lecture hosted by the HST dept. by Shri Sanjeev Sanyal, Member of the Economic Advisory Council to the Prime Minister, focused on reviving India's maritime legacy. The event included discussions on recreating ancient stitched ships, highlighting traditional naval craftsmanship.

Indian music workshop

The Indian Music Workshop was a two-day event focused on AI applications in Indian music. It featured expert talks, hands-on tutorials, and a hackathon. Topics included Carnatic and Hindustani music analysis, AI in music generation, rhythm and percussion modeling, and source separation challenges. Speakers included leading researchers and technologists from IITs, UPF Barcelona, MIT Media Lab, and industry. The workshop was meant to foster collaboration between musicians, technologists, and researchers to develop innovative tools for music understanding and performance.

Indic Heritage Champions workshop

The “Indic Heritage Champions” initiative was a national workshop designed to engage students passionate about preserving India’s cultural heritage. Participants presented local heritage projects, explore cutting-edge technologies like AI/ML in heritage applications, and received mentorship from IIT faculty to become regional “techno-ambassadors.”

The program included expert talks, lab visits, and hands-on demos, with financial support provided for travel and basic expenses.

Book Launch: Elements of Indic Knowledge Systems & Heritage

On International Yoga Day 2023, HST founding head Dr Mohan Raghavan and his collaborators, Dr. Harsha Simha and Dr. C.R. Ramaswamy, launched a book titled Elements of Indic Knowledge Systems & Heritage. The book offers a structured framework of ancient Indian wisdom to guide modern life toward peace and purpose.

Collaboration with the Ministry of Tourism

The department was invited to the UNESCO World Heritage Site at Ramappa Temple, Warangal, by the Ministry of Tourism. The visit explored technology-driven strategies to improve local livelihoods and heritage site management, with support from the Mulugu District administration.

Sanskrit Day Celebration

IIT Hyderabad celebrated International Sanskrit Day (Samskrita Dinotsava) on Shravan Poornima in collaboration with Samskrita Bharati, the MOE-IKS Cell, and NFSE. The event featured a Sanskrit quiz, promoting engagement with classical language and heritage.

The department has initiated several new research initiatives in areas of archaeometry, Indic language processing, and Yoga technology.

Some of these initiatives include the study of ancient Indian alloys (panchadhatu/asthadhatu) for modern applications, AI-driven analysis of Indian music, and digital reconstruction of heritage architecture.

The department collaborates actively with industry, government bodies, and cultural institutions to ensure that its research translates into real-world impact. It also supports startups and small enterprises in the heritage sector by providing access to technology and skilled professionals to strengthen the microeconomies and human resource involved in heritage assets.

HST's approach is rooted in Indian civilizational knowledge while embracing cutting-edge technologies such as artificial intelligence, neurotechnology, and gamification with the intent to position India as a global leader in heritage innovation. Overall, HST at IIT Hyderabad represents a strategic effort to blend tradition with technology, opening new avenues for cultural preservation, economic development, and global engagement. In the future, we intend to expand collaborations in more areas where science and technology interventions are crucial to build and scale microeconomies around heritage assets.

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Yoga-tech conclave