Smart Education Recommendation Framework Ecosystems (SERFE)

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Abstract

This doctoral research addresses a critical gap in the absence of standardised, ISO/IEC-aligned frameworks for a Smart Education Recommendation Framework with Dashboard (SERFD) within Smart Cities. Current frameworks are thoroughly analysed to identify their limitations, and enhancements are proposed based on datasets sourced from reputable institutions, including the World Bank, Open-Data Initiative, UK Data Service, UNESCO, UN-STAT, WEF and EU-STAT. In conjunction with these datasets, in-depth case studies inform the development of a novel Smart Education Recommendation Framework with Dashboard that incorporates stakeholder perspectives while aligning with broader Smart City initiatives and international standards.

Using data analytics and Open Data-driven evaluations, this research introduces methodologies aimed at evaluating and optimising educational experiences within Smart City ecosystems. Real-world case studies are critically analysed to establish clear metrics and thresholds for operational efficiency, thereby promoting transparency and informed decision-making. The user-friendly visualisation dashboard developed through this research empowers stakeholders to assess the impact of various educational interventions, facilitating continuous improvement.

This study makes a significant contribution to the field by proposing globally recognised metrics and thresholds for Smart Education within Smart Cities, derived from reliable datasets and real-world case studies. The research offers valuable recommendations for stakeholders and identifies potential areas for future research, including the refinement of the framework's adaptability and the exploration of XR and AI-driven personalised learning. The practical implications of this framework provide actionable guidance to policymakers, educators, and administrators with the aim of maximising educational experiences and infrastructure within Smart City environments.

Keywords: Smart City, Smart Education, Recommendation Framework, Big Data Analytics, Operational Efficiency, Standardisation, Accreditation, ISO/IEC JTC, ICT Framework, Open Data, Transparency, Visualisation Dashboard, Productivity, Performance Enhancement, Global Metrics, Educational Ecosystems, SERFD.

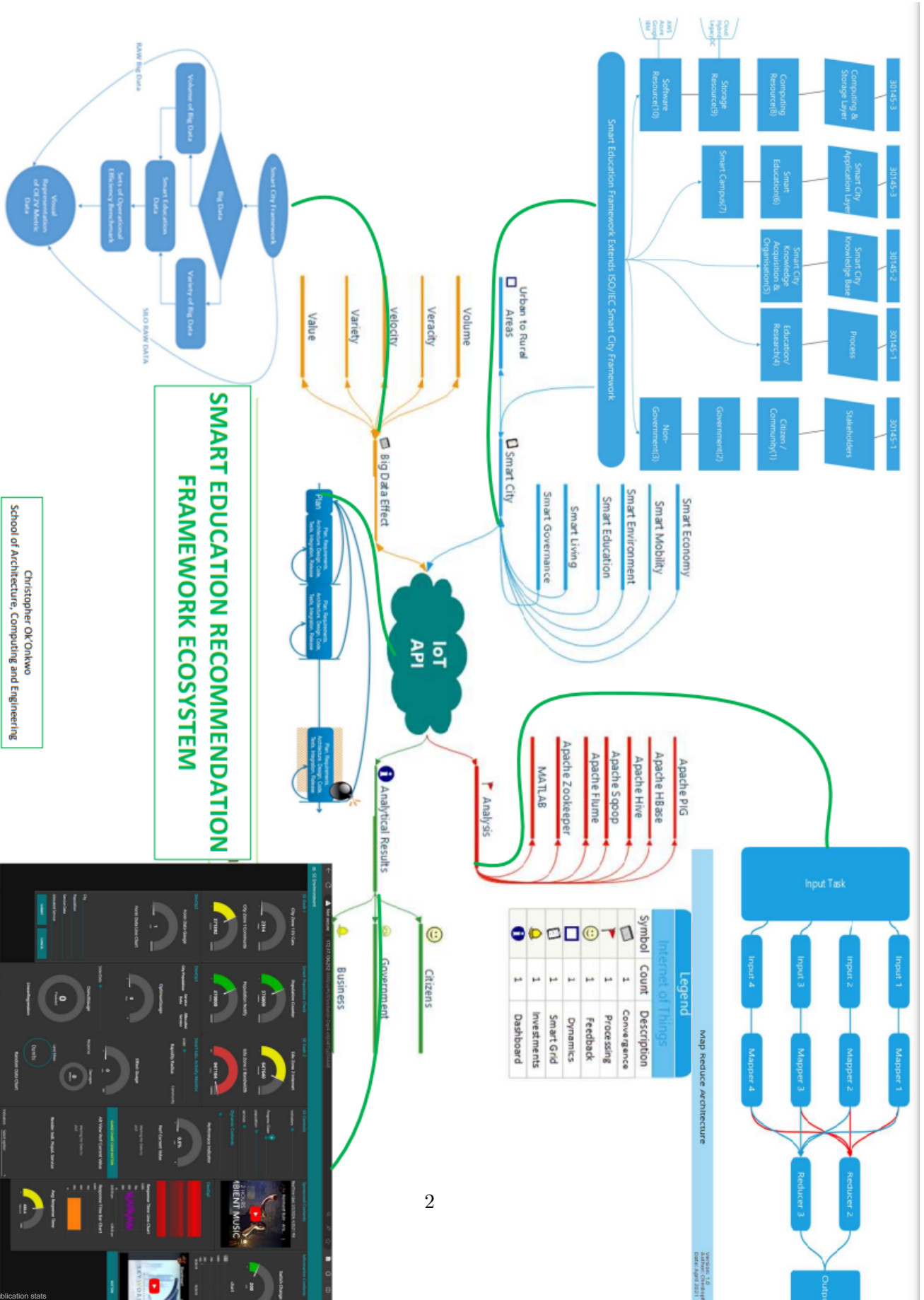The Smart Education Recommendation Framework, Ecosystems representation shown in Figure 1.

Fig. 1. Smart Education Recommendation Framework Ecosystems.

2