GVIRF 2016 Workshop 3: Total Systems Effectiveness	
Rapporteur: A. Hwang	
Session Outline	**Chair:** C. Mantel **Opening remarks:** C. Mantel **Presentations:** T. Lorenson, D. Zehrung, M. Mvundura **Discussants:** J.P. Amorij, M. Shibeshi, J. Goodson, M. Malhame **Closing Remarks**: C. Mantel
Objectives of the session	*To:* • Introduce the total systems effectiveness (TSE) framework, a holistic approach to assessing the system impact of interventions and innovations. • Explore next steps in refining the TSE framework and applying it in decision making
Main outcomes	• Enhanced awareness of the TSE framework • Agreement that it can support a conversation across broad stakeholders and be a useful tool for decision making • Plans to continue refining the approach and to present to WHO's Immunization Practices Advisory Committee (IPAC) for endorsement
Summary (400-500 words)	The TSE framework is a proposed approach to elucidate and analyse high-level trade-offs between key product and intervention attributes. It is intended to inform product development and implementation priorities and specific choices, and help to focus limited resources on the most beneficial innovations. The five key attributes are Efficacy, Coverage, Safety, Product Cost Efficiency, and Operational Cost Efficiency. Both quantitative and qualitative data are considered to provide a complete assessment of potential benefits. To inform priorities, the TSE framework can be used to compare the potential benefits of alternative approaches. This was illustrated by a vaccine delivery technology prioritization exercise conducted by PATH. To address delivery challenges such as limited human resources, supply chain complexities, and safety risks, a range of technology solutions have been piloted. PATH scored combinations of technology solutions and key vaccines using the TSE framework to understand which have the greatest potential to address delivery challenges: these combinations are high priorities for further evaluation. In particular, microarray patches (MAP) showed significant potential in combination for multiple vaccines. To inform specific choices, the TSE framework can be used to compare the current state (status quo) with a post-intervention future state. This was illustrated by a quantitative analysis of the potential benefits of using microarray patches for the delivery of measles-rubella (MR) vaccines. Using a vaccine technology costs and health impact assessment tool, PATH evaluated the potential benefits of measles microarray patches and identified key drivers of costs and health impact. TSE is intended to serve a range of stakeholders, including product developers and manufacturers, funders, policy makers, and country decision makers. Regardless of the target audience, it is essential that the analysis accurately

	reflect the countries and communities where the intervention will be implemented. Results will be context-dependent, because the value of attributes such as ease of use will vary from setting to setting. Because the TSE approach will capture more accurately what product attributes are most important to a country or group of countries, it will help manufacturers develop business cases for vaccine development and define target product profiles for new and next-generation vaccines. Moving forward, WHO and PATH will continue to refine the TSE approach, including soliciting feedback from more stakeholders. They will continue to explore its utility in informing the development and use of MR-MAP, and seek to expand the application of the TSE framework to additional technologies.
Key references or quotes (up to 5)	"It's overdue that the community starts to converge on a standardized way to look at these considerations. It's essential that this becomes a common language." – M. Malhame "We may need a name change: TSE is not that catchy" – a presenter