An Approach for Tracing and Understanding Asynchronous Systems

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Abstract: Applications built in a strongly decoupled, event-based interaction style have many commendable characteristics, including ease of dynamic configuration, accommodation of platform heterogeneity, and ease of distribution over a network. It is not always easy, however, to humanly grasp the dynamic behavior of such applications, since many threads are active and events are asynchronously (and profusely) transmitted. This paper presents a set of requirements for an aid to assist in exploring the behavior of such applications, with the aim of assisting in the development and understanding of such applications. A prototype tool is presented, indicating viable approaches to meeting requirements. Experience with the tool reinforces some of the requirements and indicates others.