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## **Elements of a Personal Learning Environment**

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The personal learning environment (PLE) has been discussed as a concept over the last few years, but as the National Research Council's PLE project progresses, we are learning more about what needs to be developed. Drawing both on survey and research data on the nature of personal learning online, as well as from concrete software development requirements, we can identify the following major components of a personal learning environment:

**Personal profile manager** – this includes a set of systems to manage one's own profile, a portfolio of works and credentials, contacts and friend, and other data of a personal nature. A personal profile manager should also project identity through feeds and logins.

**Aggregator** – this is a mechanism for retrieving information from external data sources. Aggregators are already in wide use as email and RSS readers. A PLE aggregator would in addition retrieve resources from other PLEs, as well as publishers, learning management systems, and automated data feeds.

**Editing and Publishing** – the pedagogy of personal learning depends not only on content consumption but also creative acts and interactions with other people. The PLE would thus need to support an editing capacity, with provision to remix (or 'mash up') aggregated content, to shape or repurpose it, and to publish it to external content management systems.

**Learning Support** – distinguishing a PLE from a content management system or blogging platform is explicit support for learning. Such support consists not merely of the presentation of content but rather of scaffolded learning activities. A PLE needs to support the ability of educators to create these and project them into the student's learning environment.

**External Services** – a great deal of learning does not occur in isolation, but in communication and collaboration with other learners. While PLEs may support forms of direct messaging natively, more complex interactions take place outside the PLE, through the provision of third party services that are accessed through PLEs. Thus a PLE requires an ecosystem of chat engines, conferencing systems, discussion boards, and other external services.

**Intelligence** – learning and authoring in a PLE should be supported with intelligence that learns about the user's reading habits, creative activities, and interactions. This intelligence would then be able to direct the learner toward the appropriate resources, learning activities and external services.

Unlike a learning or content management system, which aggregates learners around a body of content, and which therefore works essentially in isolation from other systems, the PLE aggregates content and resources around a learner, and must therefore operate in concert with other systems. This interaction creates what is essentially a learning and skills network, with each learner accessing a unique set of learners, mentors and resources.