Summary
Most generally, when it comes to providing support for a learner, three basic decisions must be made: (1) what knowledge is needed by the learner, (2) when to intervene or provide help, and (3) how to go about it. Deciding what can come from a variety of places, such as a curriculum, a student model, or even the learner him/her-self (in the case of self-directed learning). Deciding when is more complex. When a system decides to act unsolicited, it is basically making a claim that the student needs something now and will provide it unilaterally. On the other hand, learners often do not know what is best for them nor when they need help (they are classic poor self-assessors), so clearly a lifelong learning companion would need this ability. Real risks exist when explicit help is provided when it is not wanted or needed, for example. Finally, deciding how to provide support is quite possibly the most complex question of the three. Approaches as simple as pointing the learner to a resource (e.g., a book or class), to helping the learner accomplish a needed task, or as complex as configuring and managing an experience that targets a knowledge gap and provides a memorable, interactive narrative (such as those imagined in The Diamond Age). This working group should focus on these questions, the demands of these activities on a lifelong learner model, and the AI-power necessary to pull them off.

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Potential discussion questions
- What is the full current space on AI systems capabilities to manufacture learning experiences? How large can you see this space becoming? (e.g., one possible answer is a movie through to the holodeck)
- What are the demands on a learner model to provide individualized support? What domain independent properties would be most useful and re-usable to provide guidance, experience, and/or assistance?
- It has been suggested that a learning companion could evolve into a decision-making aid that is aware of one’s tendencies and patterns. What would this evolution look like?
- What techniques are available to promote the development of metacognitive skills (e.g., reflection, self-assessment, self-monitoring)? How could a lifelong learning companion track such growth and teach such skills?