DEVELOPMENTS IN PLANNING LANGUAGES IN ARTIFICIAL INTELLIGENCE

We can use specification languages like STRIPS (**ST**anford **R**esearch **I**nstitute **P**roblem **S**olver), ADL (Action Description Language), or PDDL (Planning Domain Definition Language).

STRIPS was the planner used in Shakey the first mobile robot to reason out it's action (Computerhistory.org, 2017). It was developed by Richard Fikes and Nil Nilsson in 1971, the problem space is defined by – An initial world model (defined by some conditions). – A set of operators including a description of their effects on initial world state. –A goal. (Fikes and Nilsson, 1971)

ADL (Action Description Language) was developed by Pednault as an improvement over STRIPS to mainly relax some of the inherent constraints associated with Strips to make the language more suitable for solving real life problems, it has the following advantage over STRIPS.

-STRIPS only allowed positive literals in states while ADL allows negative literals in states.
-STRIPS assumed unmentioned literals are false while ADL assumed them as unknowns.

-Goals in STRIPS are conjunctions (e.g. Rich ^ Famous) while ADL allows conjunction and disjunction (e.g. ¬Poor^ (Famous ˅ Smart)).
-ADL also allowed conditional effects and provided support for equality.
(Russell and Norvig, 2010).

The Planning Domain Definition Language (PDDL) was first developed by DREW McDermott and his colleagues in 1998 (En.wikipedia.org, 2017). It was introduced as a computer-parsable, standardized syntax for representing planning problems and has been used as the standard language for the International Planning Competition since 1998. (Russell and Norvig, 2010). Even though PDDL also assumed a closed world (unmentioned literals are false) as STRIPS language did it was adopted to allow for more direct comparison of systems and approaches and therefore support faster progress.

Reference.

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2. Fikes, R. and Nilsson, N. (1971). Strips: A new approach to the application of theorem proving to problem solving. *Artificial Intelligence*, 2(3-4), pp.189-208
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