STRIPS: A New Approach to the Application of Theorem Proving to Problem Solving
http://ai.stanford.edu/~nilsson/OnlinePubs-Nils/PublishedPapers/strips.pdf /
STRIPS - A Retrospective
(https://pdfs.semanticscholar.org/076a/e14bfc68acdbaf2ab24913e152d49540e988.pdf)

- STRIPS (Stanford Research Institute Problem Solver) (Fikes and Nilsson [4]) is a problem solver which is defined as a combination of: Initial State, Goal State, and a series of actions performed so that a problem can "come" from Initial State to Goal State
- The actions defined between initial state and goal state have two things included: Precondition, which means what should exist if we need to perform this action, and postcondition, which means what should happen after an action is performed.
- This is originally developed by Richard Fikes and Nils Nilsson in 1971 at SRI International. This is actually one of the by-product when Richard and Nils want to develop a mobile robot which can move things around in a multi-room environment.
- However, STRIPS was very limited in solving complex problem. One of the problem is that STRIPS assumed that only one action is performed at a time, which is oversimplified and actually not the case in the real world.
- But even if all that, STRIPS laid a foundation of handling AI problem. In the future, according to the paper from Richard and Nils, STRIPS should be able to handle complex problem, and even generate computer program, which affects and inspire the AI industry to do it already.

Fast Planning Through Planning Graph Analysis
(http://www.cs.cmu.edu/~avrim/Papers/graphplan.pdf)

- Graphplan is a new planning approach developed by Avrim L. Blum and Merrick L. Furst and presented in 1997, which is an approach that can always return the shortest possible, partial order plan, and out-perform total-order-planner, Prodigy and partial order planner.
- Graphplan is a STRIP-like domain. The idea behind it is that, during the definition of the problem, we defined a set of constraints so that, during the analysis, a program can reduce a lot of time searching on unnecessary options.
- And because of that, surely it will always gives the shortest path to the problem.
- Because of Graphplan, in the AI industry some problems which needs a lot of time to search for a result can be "solved" in a shorter time.
- However this algorithm has a limitation: it is a STRIP-like domain but only applied to STRIP-like domain. An action in graphplan cannot create a new object and the effect of performing an action needs to be determined statically. However, a lot of situations didn't work that way.

Sussman Anomaly in the block world
(http://www.it.uu.se/edu/course/homepage/aism/st11/Sussman.pdf)

- Sussman Anomaly block problem is trying to point out a problem of sequential planning (or total ordered plan search/non-interleaving)
- In this case, an effect from an action need to be static until a goal is reached.
- Because of that, a problem cannot be decomposed, and it must "run through the end"

- Therefore here a new technique called “Partial Order Plan (POP)” comes up, which allows the decomposition of the problem.
- An action did not need to really know which comes first, and POP is executed by continuously choosing the possible next action.
- Doing this can quickly move the plan from vague/incomplete to correct/complete plan
- In AI industry, further research is actively going on. e.g. Divide & Conquer: break up a problem into small sub-problem, and has its own graphplan.