Historical Developments in Planning and Search:

1.STRIPS(1971): (**St**anford **R**esearch **I**nstitute **P**roblem **S**olver)

The task of the problem solver is to find a sequence of operators which transform the given initial problem into one that satisfies the goal condition The problem space for STRIPS is defined by the initial world model, the set of available operators and their effects on world models, and the goal statement. [1]

APPLICATIONS AND IMPACT ON AI: Representational language used by STRIPS planner has much bigger impact on field of AI than its algorithms and is the base for the most of languages used to describe planning problems.The STRIPS formulation gave researchers a general framework from which more advanced languages could be built.[2]

2.PLANNING GRAPHS(1997):

The idea is that rather than greedily searching, we first create a Planning Graph object. The Planning Graph is useful because it inherently encodes useful constraints explicitly, thereby reducing the search overhead in the future.[1]

APPLICATIONS AND IMPACT ON AI: The Planning Graph is useful because it inherently encodes useful constraints explicitly, thereby reducing the search overhead in the future. Planning Graphs can be constructed in polynomial time and have polynomial size.lanning Graph construct was a revolutionary data structure which gave a whole new perspective on optimal planning techniques.[1]

3.HEURISTIC SEARCH PLANNER(1998):

A heuristic search provides an estimate of the distance to the goal. In domain independent planning, heuristics need to be derived from the representation of actions and goals.The HSP algorithm instead estimates the optimal value of the relaxed problem.

APPLICATIONS AND IMPACT ON AI: The HSP algorithm gives an automated approach for determining heuristics to general planning problems.It is a shortcut for finding an approximate solution when classic methods fail to find any exact solution.[3]

RELATIONSHIP BETWEEN THE 3 DEVELOPMENTS

STRIPS	PLANNING GRAPHS	HEURISTIC SEARCH PLANNER
STRIPS is the basis for modelling problems as space worlds and actions as operators.. All further improvements including planning graphs are developed from STRIPS. The problem space for STRIPS is defined by the initial world model, the set of available operators and their effects on world models, and the goal statement.	It is the same as STRIPS , but includes a graph object. Instead of greedily searching for a solution from the start, the GraphPlan algorithm constructs a Planning Graph object which can be used to obtain a solution. Graph plan are inspired by STRIPS and leveraged the automated planner.	HSP is based on the idea of heuristic search. A heuristic search provides an estimate of the distance to the goal. The HSP algorithm instead estimates the optimal value of the relaxed problem. The algorithm transforms the problem into a heuristic search by automatically extracting heuristics from the STRIPS encodings.

REFERENCES:
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[2] https://machinelearnings.co/historical-intro-to-ai-planning-languages-92ce9321b538
[3] https://en.wikipedia.org/wiki/Heuristic_(computer_science)