Major developments in AI first pointed out to domain of **language development**. **STRIPS** (Stanford Research Institute Problem Solver, automated planner developed by Richard Fikes and Nils Nilsson in 1971 at SRI International, source; https://en.wikipedia.org/wiki/STRIPS) is the first major planning system for Shakey Robots at SRI. Its software in visual analysis, route finding, object manipulation, and representational language used by STRIPS put significant development in AI field by analyzing the goal, break them into plan of all needed action. {source; https://machinelearnings.co/historical-intro-to-ai-planning-languages-92ce9321b538}. Later, **ADL** (Action Description Language) developed by Pednault,1986, the **STRIPS** extensions which improved STRIPS by not assumed unmentioned literal as false but rather unknown. Also, ADL supports negative literals, quantified variables in goals, and conditional effects and disjunction in goals. These developments lead to **PDDL** (Planning Domain Definition Language) by Ghallab et al.,1998. PDDL is computer-parsable and has standardized syntax for representing planning problem. This leads to planning competition since 1998 until now. {source; Norvig and Russel Chapter 10) The development of Language development dramatically in providing tools for AI to recognize, classify, and identify goal accomplishment in which later support the development of action schema for planning algorithm.

Next development of AI domain is on **planning order**. Planning has emerged as totally ordered planning in which defined as linear planning by Sacerodoti(1975) in which later considered incomplete. Main development is innovation of partial order planning. It is done by performing goal-regression planning introduced by Waldinger(1975) and being used by Warren's(1974) WARPLAN. {source; Norvig and Russel Chapter 10). The development of partial order planning leave option of the action sequence and will be done only if necessary. This has largely introduce efficiency in planning system. However, Partial-order-planning do have one disadvantage that it consumes higher power in calculation task at the cost of speed when comparing with total-order planning. This disadvantage may need to take into account when energy consumption is considered for robot creators. In summary, development of planning order has benefited AI field in the way that it utilized "principle of least commitment" which later contributes to efficiency of planning system as a whole. (source; https://en.wikipedia.org/wiki/Partial-order_planning)

Final domain that is recognized as important domain for AI field is **heuristic**. Without heuristic, uninformed search would took considerable time in search problem. By having heuristic, Nguyen and Kambhampati(2001) introduces heuristic derived from planning graph, the extensible data structure called planning graph is relaxed problem heuristic with high flexibility. This leads to improvement of its performance such that REPOP planner could scale up with other fastest state-space planners at that moment. Up to now, faster planner is emerged along in planning competition with improves in heuristic such as LAMA (Richter and Westphal, 2008) that won 2008 planning competition had proven the development in heuristic that leads to superior performance in AI field. {source; Norvig and Russel Chapter 10).