Greenfield Approach

This includes starting with afresh SAP S/4HANA Box, complete re-engineering of process with required process simplification.

Pros

Benefit of new innovations
Implementation of SAP S/4HANA comes along with some great benefits like In-memory HANA Database, simpler Landscape, advance ATP, Fiori (just to name few).

Industry best practices
SAP S/4HANA incorporates the best industry practices which assists the companies to improve & optimize their processes.

Scope for process re-design and optimisation
Since it is implemented from scratch it opens the whole world of opportunities to re-design and correct the past glitches of the system. In short it offers an opportunity to implement the "lessons learn" from past projects.

Cons

Change management
Substantial Change Management Effort as people will be reluctant to come out of their comfort zone (of knowing the system) and adopt new changes.

High implementation cost
The Greenfield approach is more costly and with longer implementation timelines.

Longer timelines
Gestation period is high as compared to other migration approaches.

Brownfield Approach

This approach reuse of existing (as-is) processes with minimum business disruption, System Conversion with required SAP S/4HANA simplification/mandatory innovations.

Pros

Pick what you want
It migrates your ECC version to SAP S/4 HANA platform with selective picking of the components (TM/EWM/AATP etc) from SAP S/4HANA.

Minimum business disruption
Since current processes are adopted, minimum impact is felt as far as end users and business transition is concerned

Shorter timelines
Usually can be implemented much faster as compared to Greenfield approach.

Cons

Old flaws die hard
Limited scope for process re-engineering as existing processes are adopted without giving much emphasizes on best practices or process reengineering.

Compatibility
Less compatible to future facing technology. More cost will be incurred later to adopt to standard processes and moving "Back to Standard".

Technical Impediments
Will be more as compared to GF approach

Hybrid Approach

Combination of Greenfield & Brownfield includes client bonsolidation, process reuse for whole existing ERP customising as baseline & build new customising on top which will include SAP S/4HANA simplification/mandatory innovations (perhaps few new innovations as well).