Structured Approach

"The structured approach looks at the system from a top-down view. It is a formalized step-by-step approach to the systems development lifecycle (SDLC) which consists of phases or activities. The activities of one phase must be completed before moving to the next phase. At the completion of each activity or phase, a milestone has been reached and a document is produced to be approved by the stakeholders before moving to the next activity or phase; painstaking amounts of documentation and signoffs through each part of the development cycle is required." The center of the structured approach is the process model, which depicts the business processes of the system, and the primary model that presents the processes is the data flow diagram."
From: http://www.umsl.edu/~sauterv/analysis/termpapers/f11/jia.html

Advantages:

- Good for management control (plan, staff, track)
- Good documentation
- Works well when quality is more important than cost or schedule
- Detailed early analysis cause huge advantages at later phases
- If a bug found earlier, it is much cheaper (and more effective) to fix than bugs found in a later phase
- Requirement should be set before design starts
- Points to importance of documentation
- Disciplined and well-structured approach
- Effective for stable software projects
- Easy to plan from project management point of view (to keep track of progress)

Disadvantages:

- Changes are expensive
- Client does not explicitly know what he or she wants or what possible to have
- Does not reflect iterations or problem solving nature
- Need to finish every phase fully – inhibits flexibility
- Long projects, difficult to keep the plan – can take a lot of time
- Designers may not know in advance how complex a feature's implementation
- Not as flexible / can be rigid

What type of project is best suited for this methodology?:

- Requirements are very well known
- Product definition is stable (e.g., manufacturing)
- Technology is understood
- New version of an existing product
- Little user involvement available
- Team members may come and go

Agile Approach

“The agile methodologies emphasize focus on people; on individuals rather than on the roles that people perform. Unlike the waterfall development methodology, agile forgoes the documentation but is initially difficult to adapt by adding many new facets to the development model that confuse people. "Agile methodologies attempt to capture and use the dynamics of change inherent in software development in the development process itself rather than resisting the ever-present and quickly changing environment." Traditional methods demand complete and accurate requirement specification before development; agile methods presume that change is unavoidable and should be embraced throughout the product development cycle. The individuals who fill those roles are more important than roles that people fill.”
From: http://www.umsl.edu/~sauterv/analysis/termpapers/f11/jia.html
More: http://agilemanifesto.org/

Advantages:

- Provides early indication of insurmountable risks, without much cost
- Users see the system early because of rapid prototyping / development tools
- Critical high-risk functions are developed first
- The design does not have to be perfect – fast results can be improved later on
- Users can be closely tied to all lifecycle steps
- Early and frequent feedback from users
- Cumulative costs assessed frequently
- Addresses changing needs quickly

Disadvantages:

- May be hard to define objective, verifiable milestones that indicate readiness to proceed through the next iteration (may end up assigning too many stories in a particular sprint)
- Requires good planning and design – relies on key people being there the whole time
- Requires early definition of a complete and fully functional system to allow for the definition of increments
- Time spent planning, resetting objectives, doing risk analysis and prototyping may be excessive – lots of user interaction
- Total cost of the complete system is not lower
- Not widely accepted with all governments / organizations
- May need time for worker training (how to do agile)

What type of project is best suited for this methodology?:

- Risk, funding, schedule, program complexity, or need for early realization of benefits.
- Most requirements are known up-front but are expected to evolve over time
- A need to get basic functionality to the market early
- On projects which have lengthy development schedules
- On a project with new technology