What are the most difficult areas of Infrastructure to automate, and how would you go about doing it?

Re-reading the title of the question over, I could produce a myriad of explanations of the various difficulties in automating infrastructure or in-fact many aspects of application, system or business process

- Predominantly manual processes
- Inconsistent environments
- Lack of continual (rather than disaster related) feedback
- Adoption or desire for automation on part of the process
- Code "Ownership" held by small teams or individuals unreceptive to change
- Monolithic entangled applications or infrastructure

While I list a number of reasons I feel that Organisations have stuttered when attempting to move into a DevOps culture or more continuous method of delivery, it occurs that the over-arching impediment to CI/CD is often **the over-statement of participating disciplines state of readiness – creating an ill-defined plan of implementation**

For example;

Should the implementation define that the code base be retrieved from source control, build, tested and deployed to testing environments, but the testing teams rely heavily on manual checking, the testing team becomes a delay for not only the move to automation, but also can impact manual releases while staff are upskilled

- Understanding the key stakeholders to provide input into the process, their skills and level of maturity with regards to tools and technologies for automation are key
- Ensuring that the individual contributing disciplines understand clearly their responsibilities
- Ensuring that the contributors are comfortable with tools and automation within their discrete area (such as automated builds, or automated environment deployments) are well understood separately before coming together to produce a full end to end pipeline

Understanding each component in the product lifecycle – each step – and ensuring that the disciplines have the skills to move manual processes onto automation are the foundations on which a business can become more cohesive in their delivery are as key as continual feedback and improvement in the lifecycle and while no single factor will often stop the progression of the business to this methodology, a poor foundation can drastically impede its inception and its success