Pluggable boot addons

WIP document - please take part and add comments, thoughts and any feedback

Context:

Today a boot config repo (example) contains a number of helm requirements that are installed at different steps via a pipeline and often into different namespaces.

Problem:

The boot config repo has become quite complex and hard to manage upgrades to and share common config between different flavours of base boot config repos. It's also hard to experiment by adding new helm charts / features / applications that require changes to the boot install pipeline.

We want a simpler more modular system that lets us, say, swap out *nginx-controller* and use *gloo/knative/istio* for ingress without a deep knowledge of the *jenkins-x.yml* pipeline for boot.

What we'd really like is for folks to type commands like…

```
jx add addon istio
jx delete addon knative
```

And for it to just work and generically add those to the right namespace (via an automated PR on the dev git repo).

You could argue this is what the App framework tried to do but...

Limitations of the current apps/addons model

The current *apps* model (now called *addons*) lets you add/remove charts fine - but there are a number of limitations:

Only works in 1 namespace

Currently apps can only work inside the dev namespace - we can't support things like knative, gloo, cert-manager, nginx, velero which tend to be installed in separate namespaces.

Does not handle boot phases

This is not surprising as we created the App/Addon extension model before boot. But right now boot has a number of distinct phases with pipeline steps between them where we may want to add addons:

- pre/post ingress setup (in the case of nip.io / nginx-controller)
- pre/post vault setup
- pre/post vault population of parameters
- pre/post setup of certmanager/external dns

There is currently no way for an addon to specify a namespace + specify which phase its to be installed in & have (say) the domain / certs / secrets injected easily.

So rather than adding steps at the right point in a list of steps in the *jenkins-x.yml* it would be nice to have a more declarative YAML file to describe which apps are to be enabled.

E.g. we need a new YAML file with list of charts to be installed along with metadata for which phase to install them. We also want to invoke a selection of those addons to be installed at the different phases of the boot pipeline.

Proposal:

We combine the extensibility of Jenkins X using Addons with jx boot.

Using a yaml file in a boot config repo we list the addons that should be installed. This means we can instead have a bare minimum base boot config repo and list the addons we want installed and different points of the installation process.

Open questions:

1. How do we describe at what step in the boot pipeline we want a specific addon to be installed. I.e. we might want to install an ingress controller before or after vault.
2. What does the addon yaml file look like? What info does it need?

Possible solutions:

- Helmfile see https://github.com/jenkins-x/jx/issues/6442

Discovery:

- Look into helmfile and try using it with a stripped back boot config repo to see how things might fit together