Support using complex CMake projects as dependencies from AGP

Assigned Bug P3 + Add Hotlist

STATUS UPDATE No update yet. Edit

DESCRIPTION sf...@google.com created issue #1

Native dependencies built in CMake can be referred to from AGP with something like:

```
buildFeatures {
    prefabPublishing = true
}

prefab {
    create("mylibrary") {
      headers = "src/main/cpp/mylibrary/include"
    }
}
```

This works for small, self-contained libraries, but it's insufficient for complex projects:

- b/228496688 - The Gradle config needs to list each CMake target individually, which is hard to maintain if there are a large number of targets.
- b/168775349 - The headers for each target must isolated in a single source directory. This requires a lot of setup to shuffle the source directory to provide an individual include dir for each
- b/214034366 - AGP's CMake integration doesn't account for the dependencies of each target, for example by setting the `export_libraries` field in the prefab module metadata.

CMake specifies all of these things in a structured way. The set of exported targets to install are described by export rules:
https://cmake.org/cmake/help/latest/command/export.html#export

For example, Abseil (used for the sake of example, this applies to any similarly complex C++ project with granular targets) has:

```
install(EXPORT ${PROJECT_NAME}Targets
  NAMESPACE absl::
  DESTINATION "${CMAKE_INSTALL_LIBDIR}/cmake/${PROJECT_NAME}"
)
```

So that `AbseilTargets` refers to all of the non-test targets to install. (If that information isn't exposed in a sufficiently easy-to-use format, even being able to refer to groups of targets by name (e
individually.)

Header files and dependencies are already specified for individual CMake targets, and AGP could use those to appropriately populate the `include/` subdir for each module and the `export_libr`

✓ Mentioned issues (3)

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P2 Allow Prefab to package exported targets and their dependencies from CMake automatically "b/228496688 - The Gradle config needs to list each CMake target individually, which is hard to ma
P3 Multiple header paths for prefab-publishing "b/168775349 - The headers for each target must isolated in a single source directory. This requires a lot of setup to shuffle the source directory to p
P3 Allow prefab module metadata to be set from AGP "b/214034366 - AGP's CMake integration doesn't account for the dependencies of each target, for example by setting the export_libraries fiel

COMMENTS

ad...@google.com <ad...@google.com>

Assigned to an...@google.com.

em...@google.com <em...@google.com> #2

This looks like a parent tracker bug for three child bugs. Dan/Jomo what can we do about these prefab/CMake issues?

em...@google.com <em...@google.com>

Reassigned to jo...@google.com.

da...@google.com <da...@google.com> #3

2 just needs someone free to do it. 1 and 3 are the same bug and we don't yet know if CMake exposes the information to make it possible. If it's possible it also "just" needs someone free to

sf...@google.com <sf...@google.com> #4

I guess this turns out to be less significant because we don't need to deal with prefab or headers for a single shared library where the whole interface is via JNI bindings.