More on halld_recon, reconstruction launches, and analysis launches

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Problem statement

- Reconstruction launch uses one version of halld_recon, analysis launch uses another version of halld_recon.
- Monte Carlo should reconstruct with the one and analyze (make ROOT trees) with the other.
- In summary: two versions of halld_recon needed for some tasks, version set scheme (version.xml) only provides one.

Possible Solutions

1. Separate ANALYSIS, KINFITTER, and PID into a **separate repository**
    - Version control new repository separately
    - Not easy, perhaps not possible
2. Version sets (version.xml files) with **two halld_recon package elements**
    - For example halld_recon_recon and halld_recon_ana
    - Requires changes in build_scripts paradigm
3. **Two version sets**, one for reconstruction, one for analysis
    - Easily implemented in MCwrapper
    - Naturally aligns with what is really done in reconstruction and analysis launches
    - Question: which reconstruction halld_recon goes with with which analysis halld_recon
4. Variations
    - Analysis libraries as plug-ins
    - MCwrapper ships a special binary along with the job for analysis only
    - Stripped-down versions of builds to save disk space

Near-Term Solution: Two Version Sets (#3)

- Introduce new XML file to identify correlations, version_set_correlations.xml:

```
<gversion_correlations>
  <correlation date="2019-05-31">
    <analysis_launch version_set="analysis-2018_08-ver00.xml"/>
    <recon_launch version_set="recon-2018_08-ver00_1.xml"/>
  </correlation>
  <!--...correlation blocks repeat...-->
</gversion_correlations>
```

- User sets up one environment for reconstruction, another for analysis
- Already implemented in MCwrapper
- Human readable if we provide comprehensive set of version sets that respect standard naming convention

Summary

- Need to identify pairs of halld_recon versions for some tasks
- Discussed solutions at the last meeting
- One such solution, two version sets, implemented in MCwrapper
- Introduced new file, version_set_correlations.xml, to indicate valid pairs of version sets
- Features:
  - Very little re-coding needed
  - Preserves build_scripts paradigm: a compatible set of tagged releases of software packages
  - Mechanism provided for identifying correlation between reconstruction halld_recon and analysis halld_recon: new “version set correlation” XML file