

United States Transuranium and Uranium Registries
2020 Scientific Advisory Committee Meeting
Teleconference, Richland, WA, April 23 – 24, 2020

Database Harmonization

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“Learning from Plutonium and Uranium Workers”

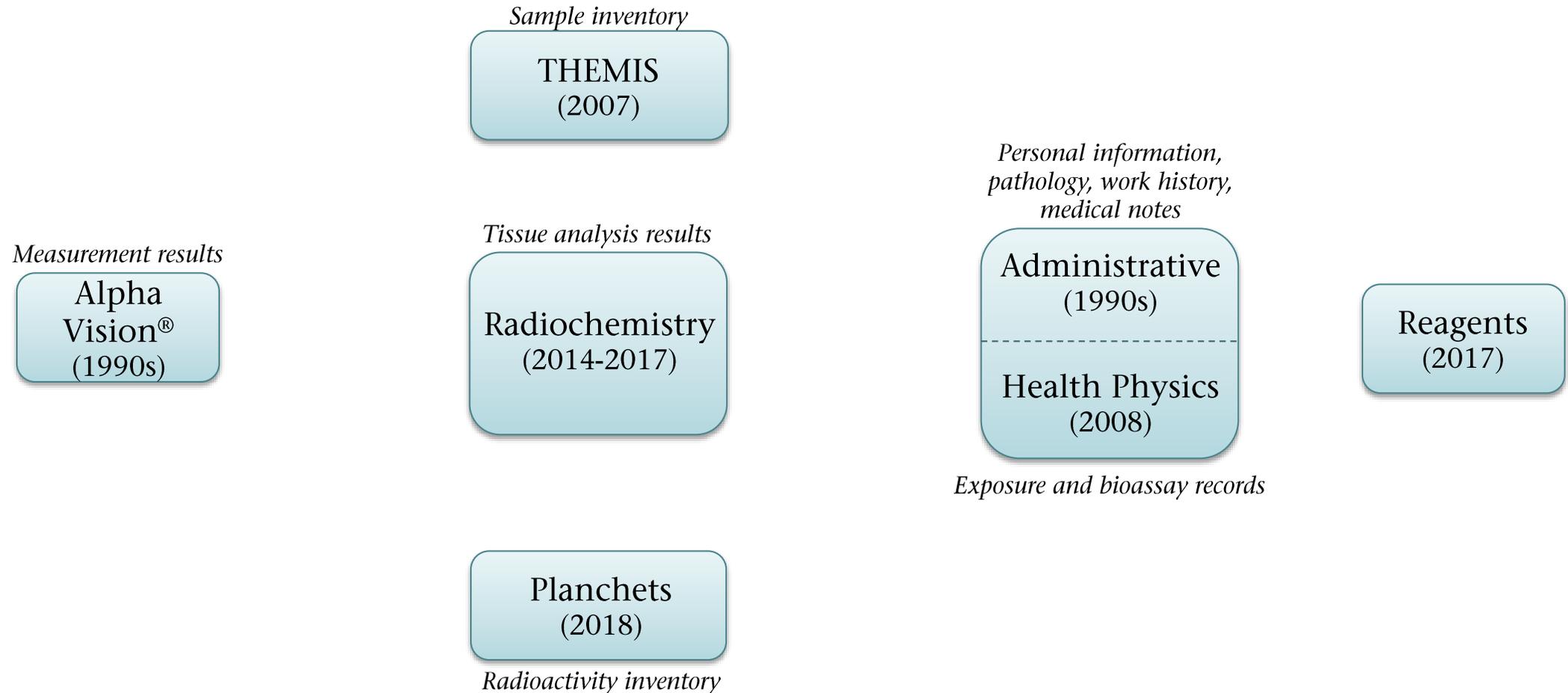


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USTUR Databases

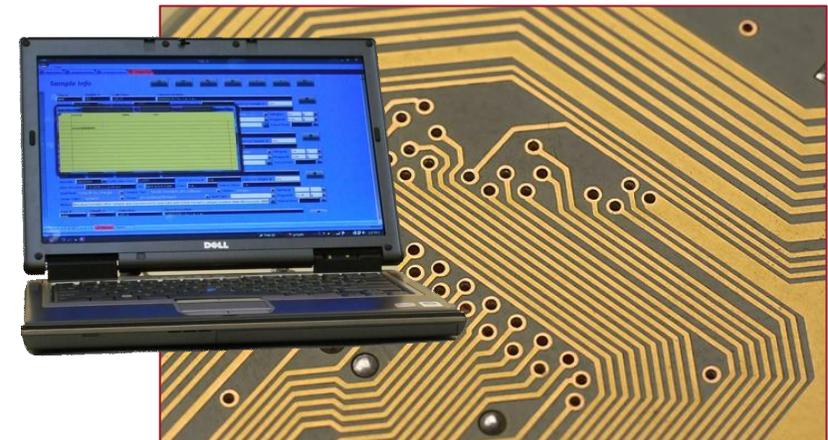
- Seven individual databases





USTUR Database System

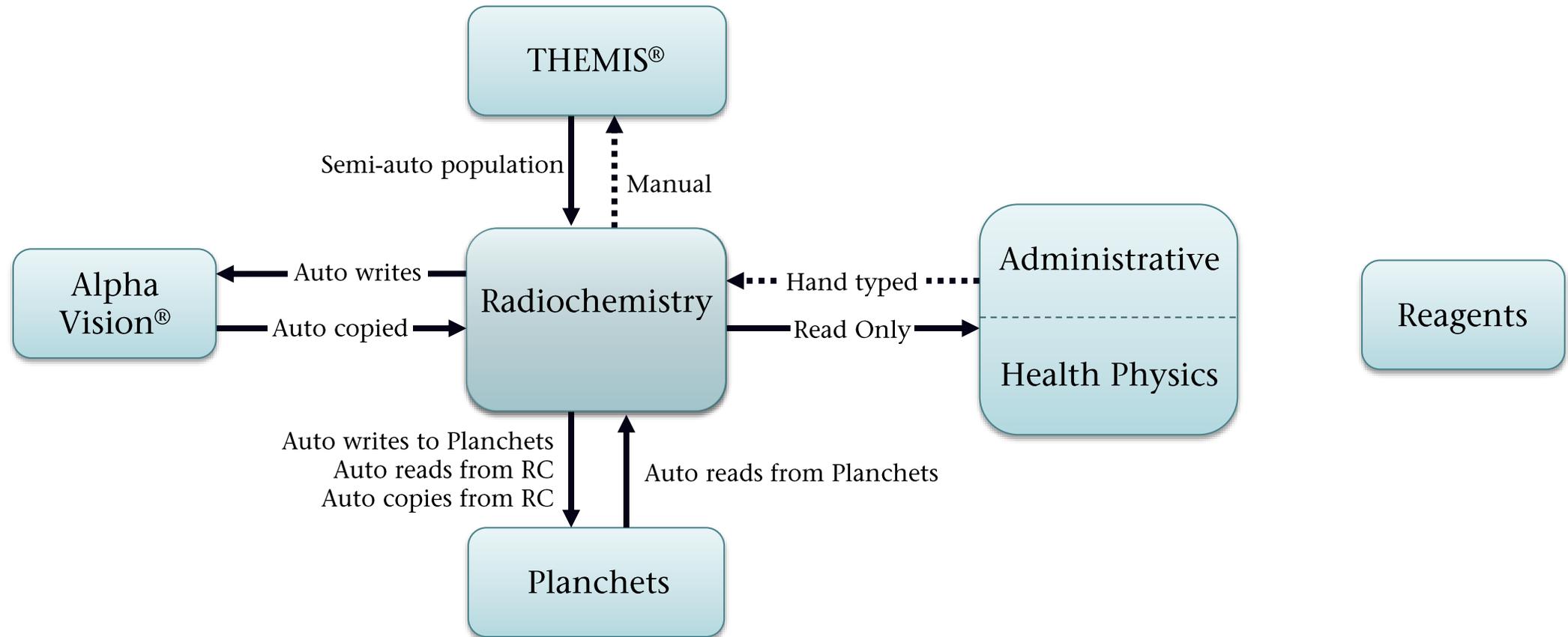
- Most databases started out as standalone databases, to meet a specific needs
- Tables associated with each database are completely separate
- Exceptions:
 - ✓ Administrative and Health Physics: Fully integrated
 - ✓ Radiochemistry and Planchets: Some shared tables





Ad Hoc Merging of the Databases

- Over time, a patchwork of links have been forged between the databases





Ad Hoc Merging of the Databases

- Sometimes, an automated process is used (e.g. press of a button)
- Often, data is copied between databases by hand (copy and paste)
- Some data can't be shared between databases, due to design

Example:

- ✓ Initial information is imported from THEMIS into Radiochemistry at the click of a button
- ✓ However, it is impossible to automatically move information from Radiochemistry back into THEMIS





A Cluttered Information Structure



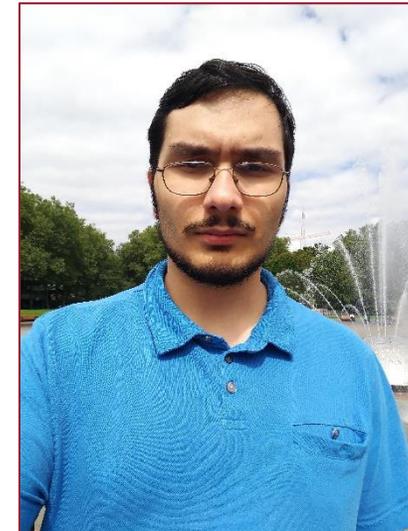
<https://pixabay.com/photos/telephone-telegraph-pole-wire-1822040/>

- It is better than no links between databases, but...
- A lot of information has been copied back and forth between databases
- Data was duplicated in multiple places



The Path Forward

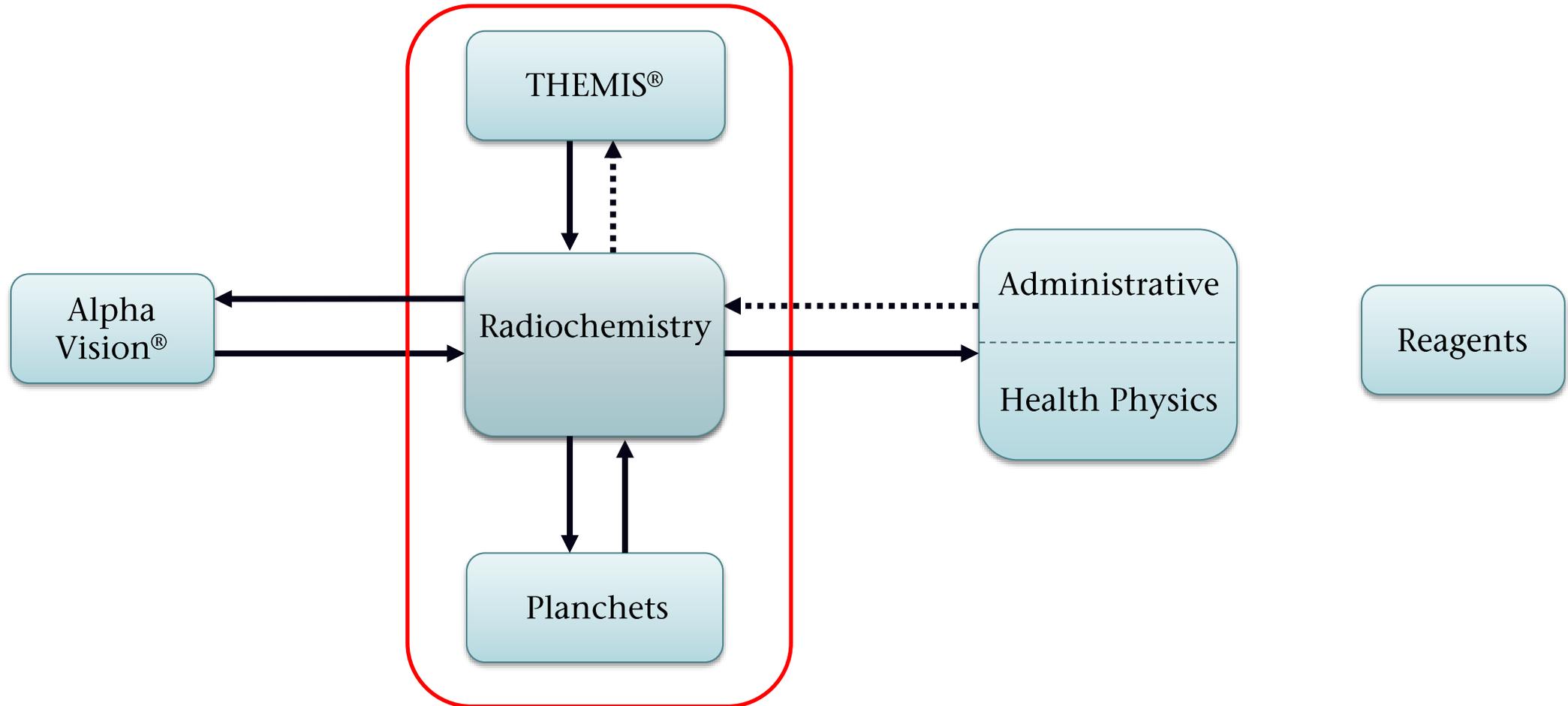
- Two goals:
 - ✓ Goal 1: Automate data entry
 - ✓ Goal 2: Eliminate situation where information is duplicated in multiple databases
- Requires that the databases be harmonized
- Alex Tabatadze has been hired at 0.5 FTE to achieve these goals





Our Vision: Before

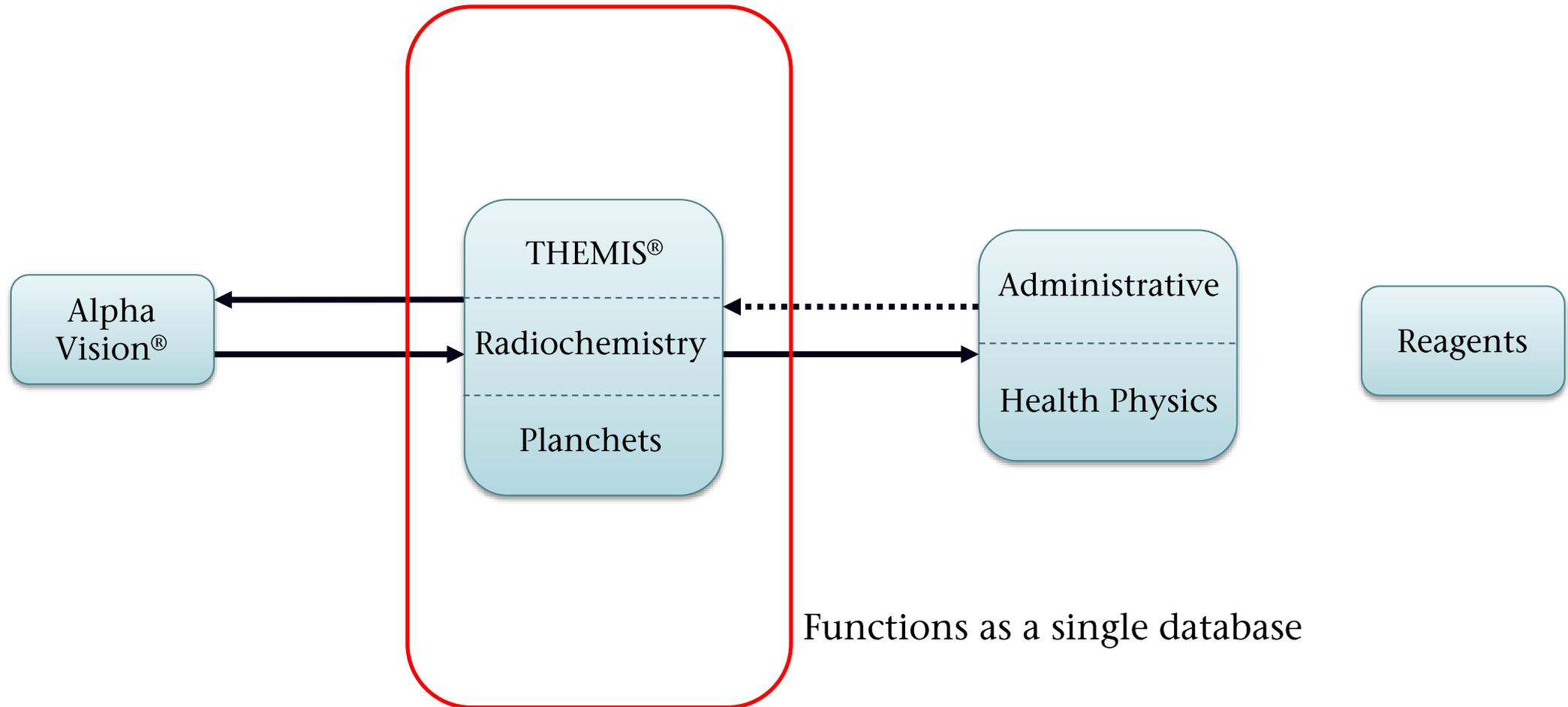
- Integrate THEMIS, Radiochemistry, and Planchets databases





Our Vision: After

- Integrate THEMIS, Radiochemistry, and Planchets databases





THEMIS Inventory Database

- Re-structure data tables, so that..
 - ✓ It can talk to the Radiochemistry and Planchets databases
 - ✓ The user interface can be integrated into the Radiochemistry database's front end
- This involves
 - ✓ Re-structuring data tables
 - ✓ Migrating data to the new tables such that nothing is lost
 - ✓ Re-designing the user interface
 - ✓ Quality assurance



So Why Re-design THEMIS?

- Tables must be restructured to integrate with other databases
- THEMIS uses code instead of table properties to define relationships between tables
- Improve speed





Harmonization Examples

- Data entered into one database will be automatically updated in the other two databases
 - ✓ E.g. if a sample is changed from 'Lung (R)' to 'Lung (L)' in THEMIS, it will immediately display as 'Lung(L)' in both the Radiochemistry and Planchets databases.
- Mass tracking
 - ✓ Currently, THEMIS does not track changes in a sample's mass
 - ✓ A single system of tables will be established
 - ✓ To track mass changes as samples change physical form
 - ✓ All three databases will pull mass information from this single system of tables
- If we need to change the case #, sample #, or tissue
 - ✓ The sample must be deleted from THEMIS and re-inventoried
 - ✓ This assigns a new barcode to the same sample!
 - ✓ This is inconvenient, at best





Thank you!

