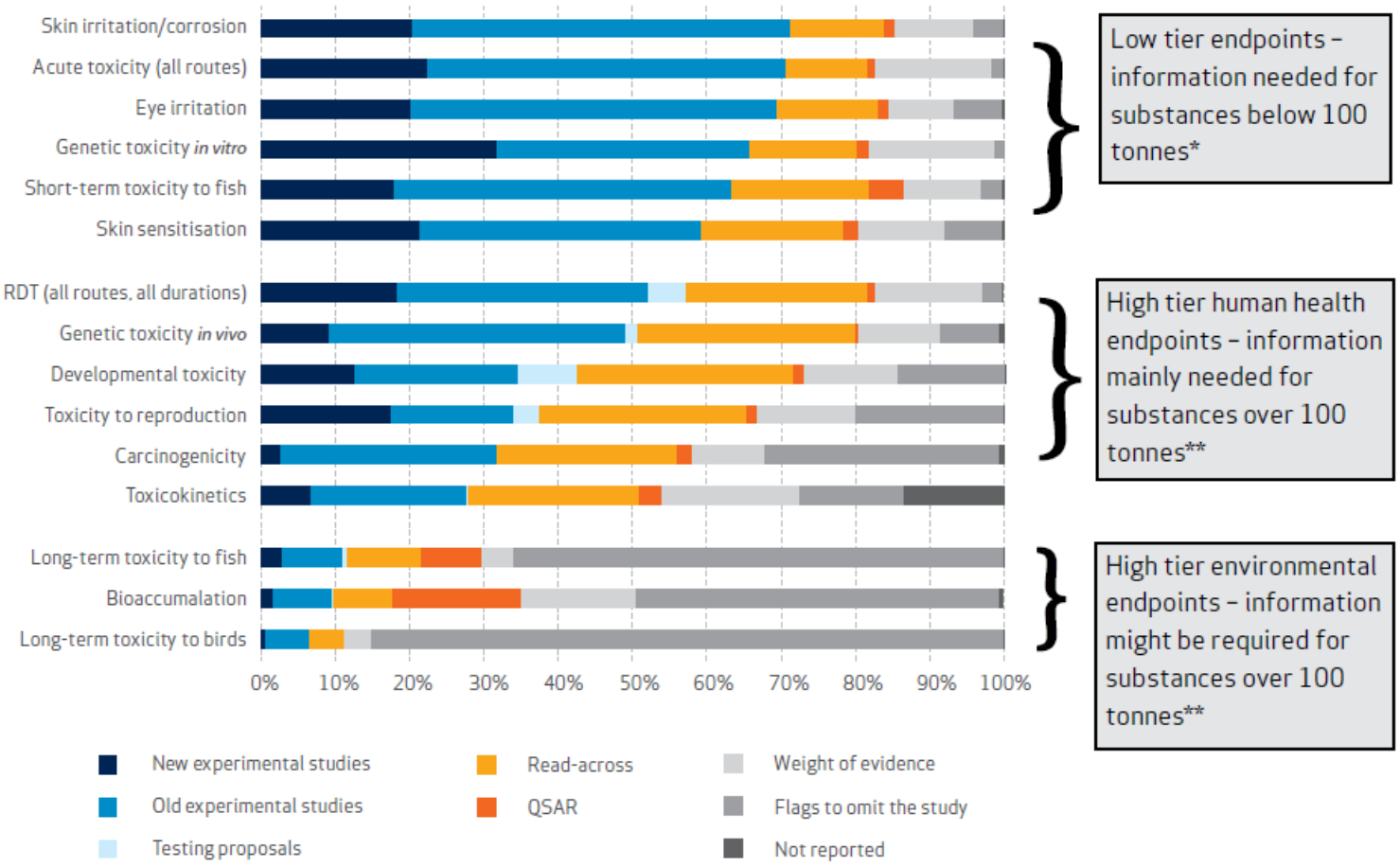
Workshop on CEFIC LRI Project EEM9.4
LRI AMBIT with IUCLID6 support and extended search capabilities

Why AMBIT2 is good

General aspects on non-testing approaches



Options that registrants use to cover REACH information requirements for different data endpoints

Extract from “The use of alternatives to testing on animals for the REACH Regulation” Third Report under Article 117(3) of the REACH Regulation

Computational Toxicology

- **Non-testing approaches are used to fill gaps in Human and Environmental Safety Assessment (ECETOC, 2012 TR116) :**

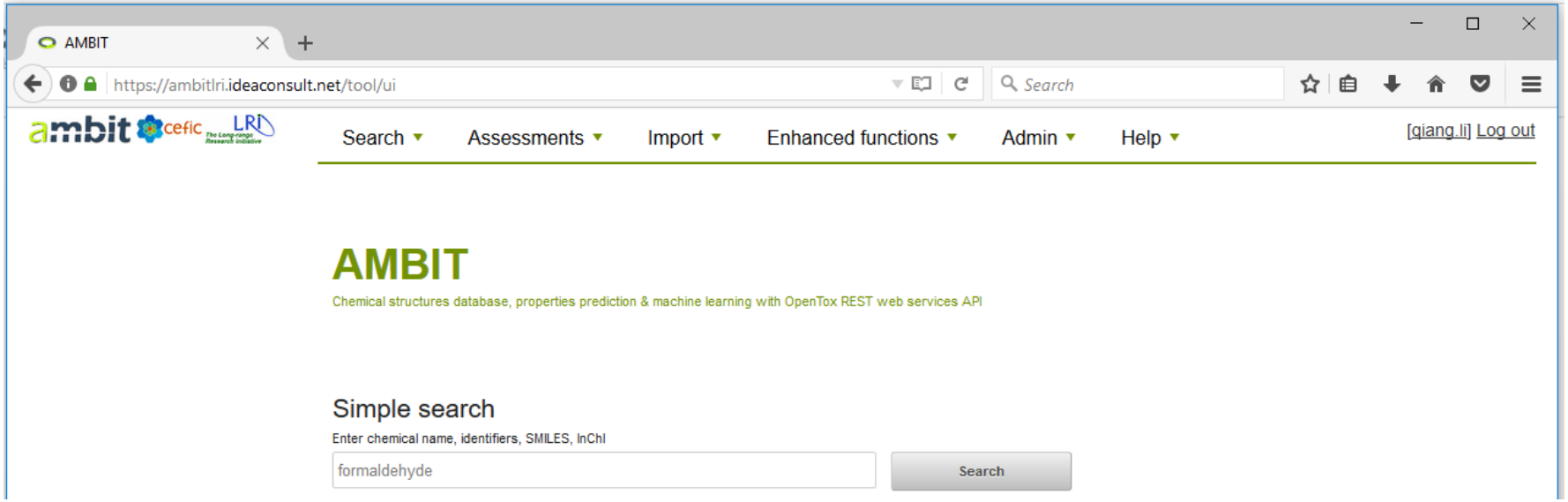
  - To avoid animal testing
  - Reduce resource costs
  - Bridge the gap of laboratory capacity availability

- **Read-across and Category formation**

  - Are Non-testing methods which are regularly applied to assess the safety of Chemicals and are accepted by most Regulatory Bodies if the approach taken is sufficiently justified and documented
  - Is supported by in-silico tools (see ECETOC, 2012, TR 116) using various methodologies like
  - QSARs, Expert systems allowing rule-based predictions , databases, etc.

What is AMBIT2?

- **Cheminformatics Data Management System**
- **Developed within the CEFIC LRI EEM9 Project and is part of the LRI Toolbox (http://www.cefic-lri.org/lri-toolbox).**
- **Free software**
- **AMBIT2 consists of a database including more than 450.000 chemical structures and REACH dataset of 14.570 substances**

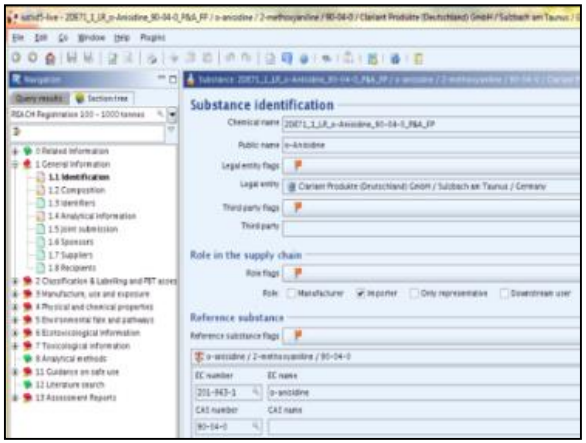


AMBIT2 main functions

- ***Search structures & Data***
  - exact, similar, substructure
  - combined with data search
- ***Retrieval and management of IUCLID6 substance data*** New
  - substance identification and composition
  - Assigning structures to constituents, impurities …
  - 43 data endpoints of 14.570 substances New
- ***Read across/category formation***
  - Workflows facilitates search for target and source structures, generating data matrices, gap filling and generating assessment reports with predefined formats automatically
- ***Prediction tools / databases***
  - **VEGA models**, Toxtree, Cramer rules, Protein binding / **OpenFoodToxData** New New
- ***Data management & exchange***
  - flexible import/export of dataset
  - manual upload of **i6z files** exported from IUCLID or semi-automatic import via IUCLID Web services. New

IUCLID and Ambit2

IUCLID 6

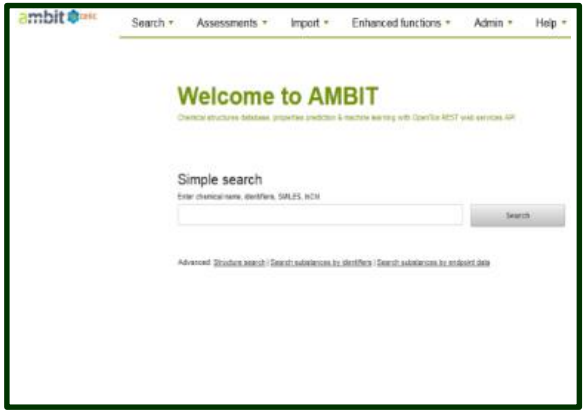


Company IUCLID DB
ECHA IUCLID DB
As
Major Data Source

Search for data
possible but
not for structures

Data
transfer

ambit cefic



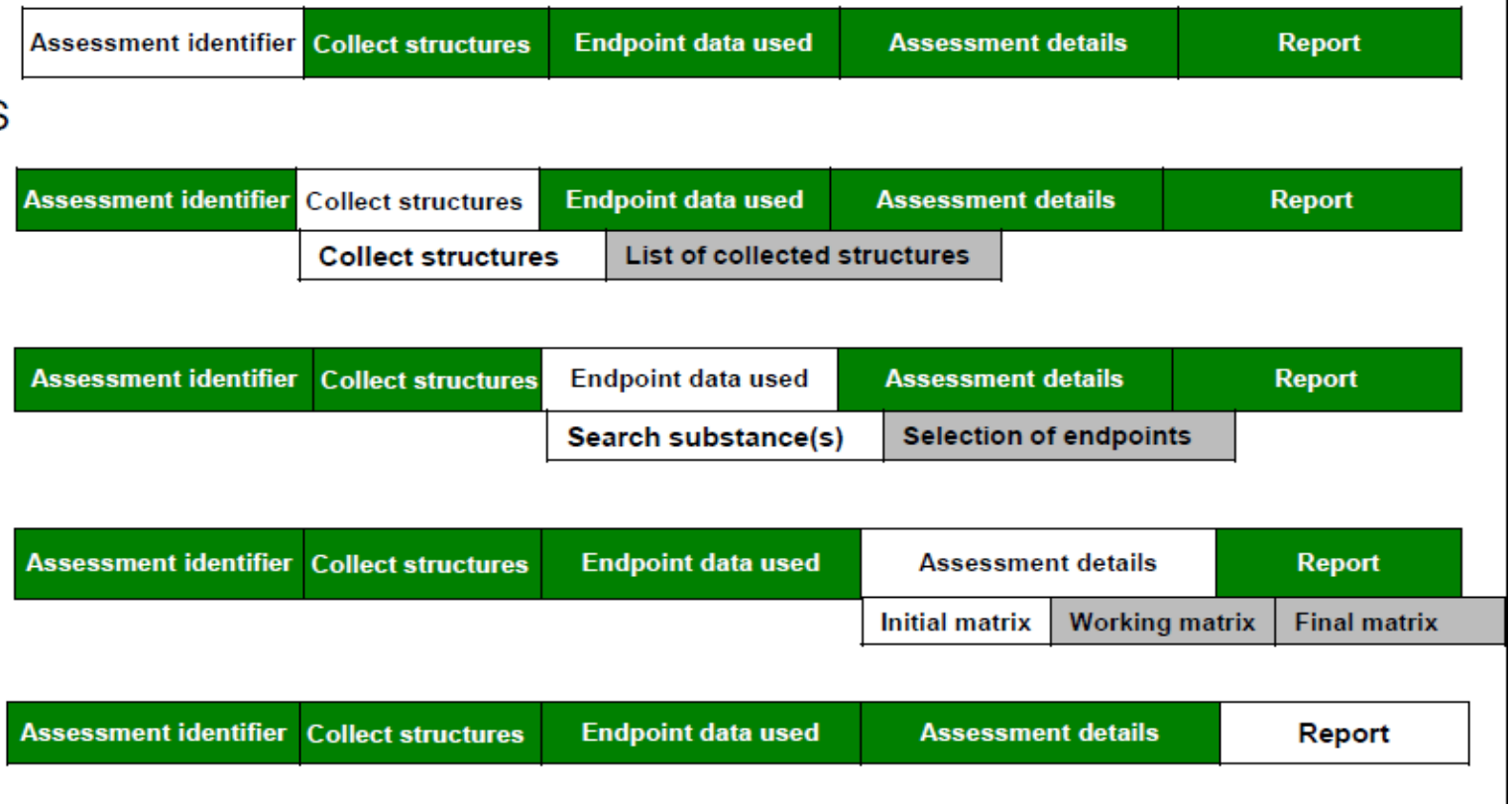
CEFIC LRI AMBIT
Chemoinformatics
System

Supporting
Read across
& Category formation

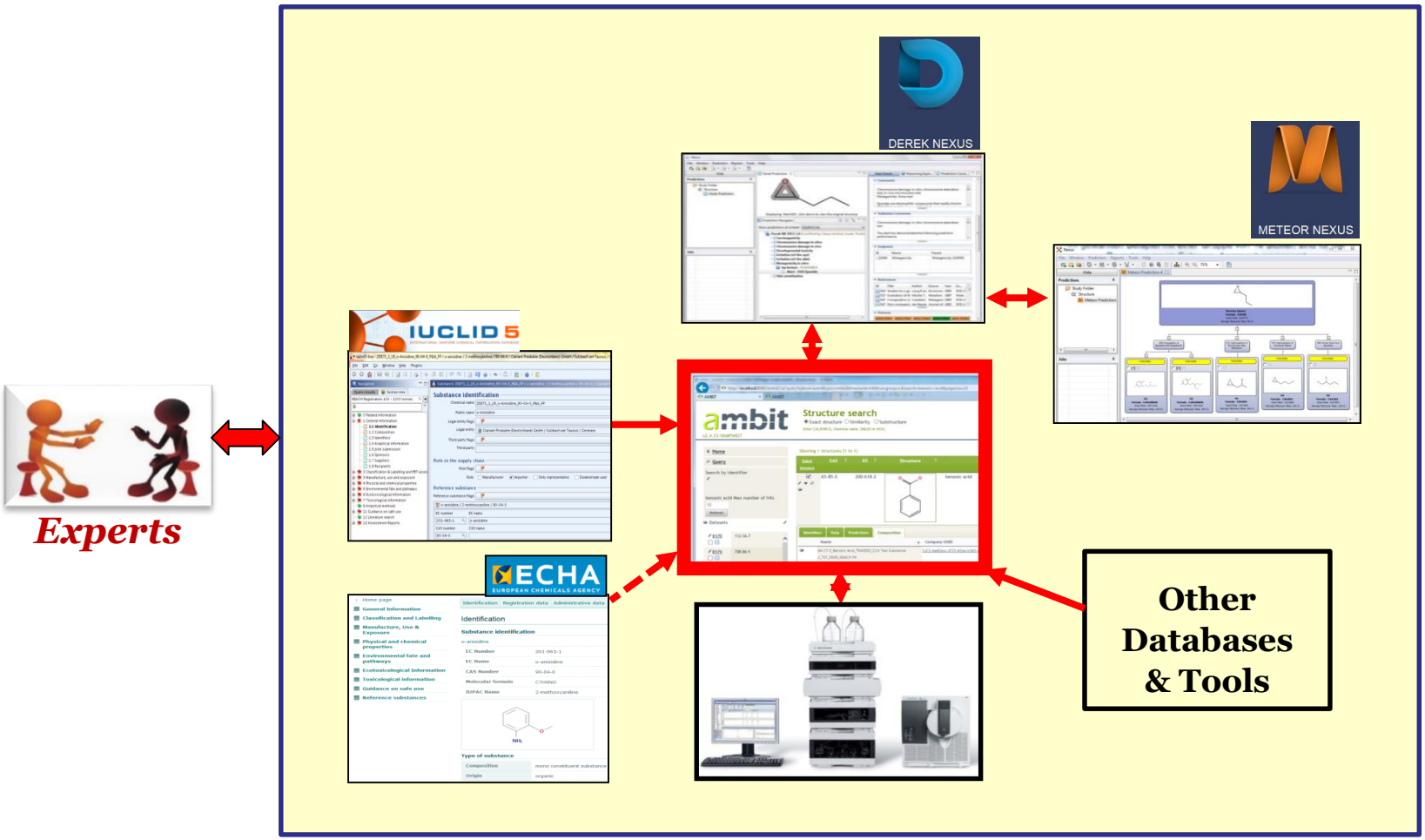
Workflow for read across and category formation

5 MAIN STEPS

7 SUB STEPS



Clariant CompTox Architecture



Concept for a AMBIT2 supported substance screening during the R&D process

Research candidates for a designated application:				
Substance 1	Substance 2	Substance 3	Substance 4	Substance 5
Rest 1	Rest 2	Rest 3	Rest 4	Rest 5
AMBIT2 looks for existing substances with similar structures and with known toxic properties. Experts assess plausibility and refine selection.				
Rest 1a	Rest 2a	Rest 3a	Rest 4a	Rest 5a
Rest 1b	Rest 2b	Rest 3b	Rest 4b	
Rest 1c	Rest 2c		Rest 4c	
Rest 1d			Rest 4d	
QSAR-Predictions.				
Causes skin burns, Toxic to aquatic life	May cause cancer	Causes skin irritation	Impairs fertility	Toxic if swallowed
Experts assess plausibility and make refinements. Experts consider the need of animal testing. Experts make ranking and provide advice.				
Not recommended for further development	Not recommended for further development	**First rank: Most promising candidate for the intended application**	Not recommended for further development	**Second rank: acceptable candidate for the intended application**

Benefits by AMBIT2

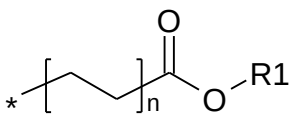
- **Supporting effective product development**
  - Linking all relevant databases for assessment of chemicals enables initial toxicological assessments before actual product development.
- **Prevention of the development of substances that serve the purpose but can not be used due to hazardous properties**
  - Improved product safety and cost saving by avoidance of unsuccessful development work.
- **Improved animal welfare by reduced animal testing**
  - Cost saving by reduced (omitted) animal testing

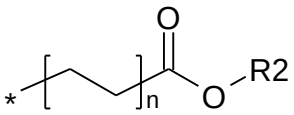
THANK YOU
for your
ATTENTION!

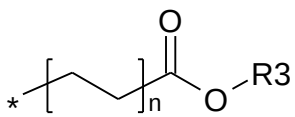
Backup

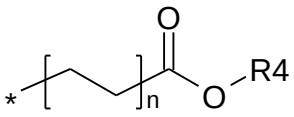
Development of new ingredient for a detergent

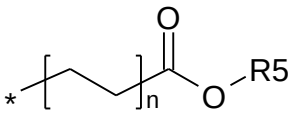
– The following chemical molecules are considered as candidates





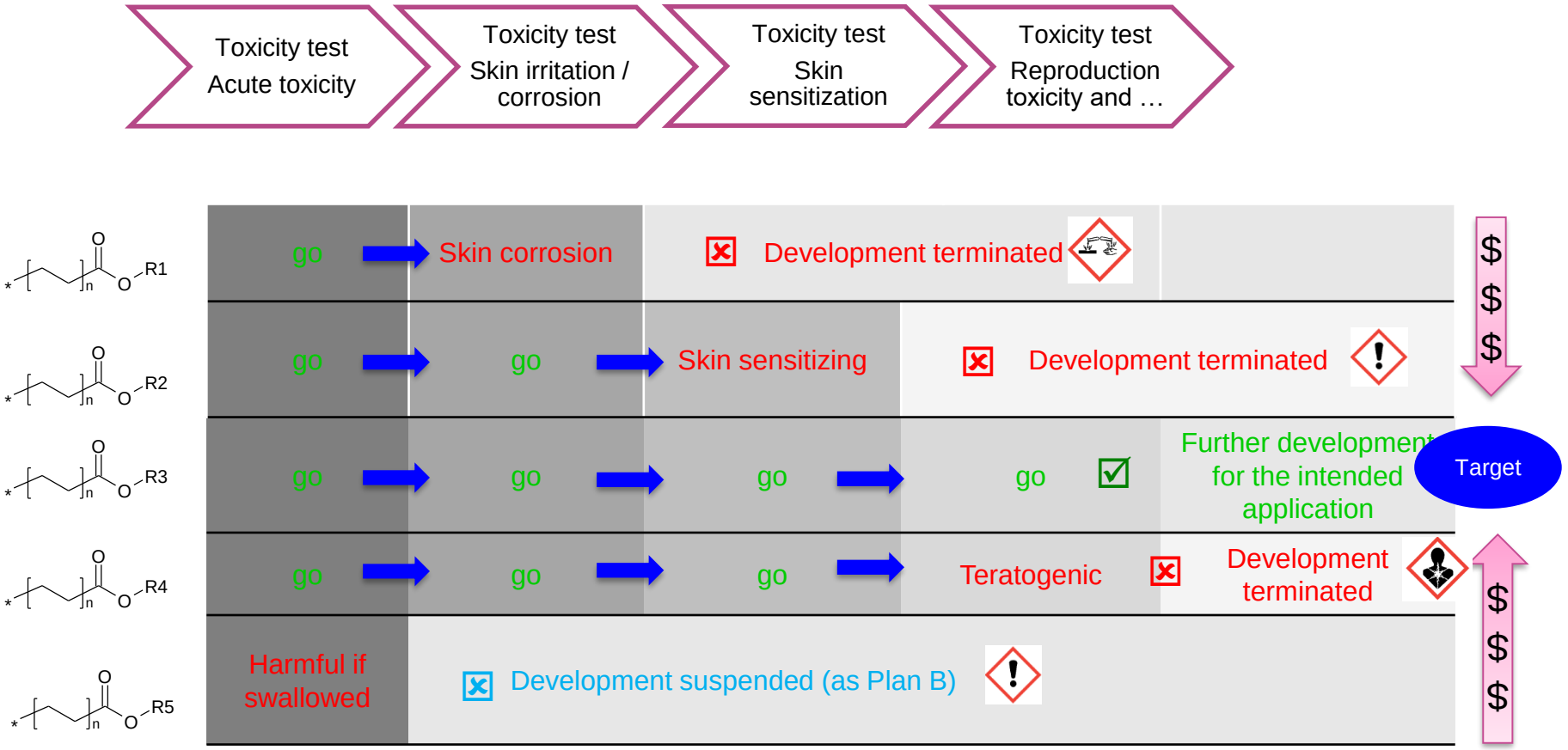






CLARIANT

Traditional substance screening during the R&D process



CompTox supported substance screening during the R&D process