Engaging Scientists in the Adoption of Automation

Coleen Robinson, AstraZeneca

2017 Annual Meeting of the Dial-a-Molecule Network

Why?

Agenda

- Why Automation?
- What is Effective Automation?
- Importance of Equipment Evaluation
- Automation at AZ
  - Range of Approaches
  - Range of Equipment
  - Range of Users.
  - Automation Adoption.

Why?

Increase productivity

Enabling unattended operation

Increase throughput

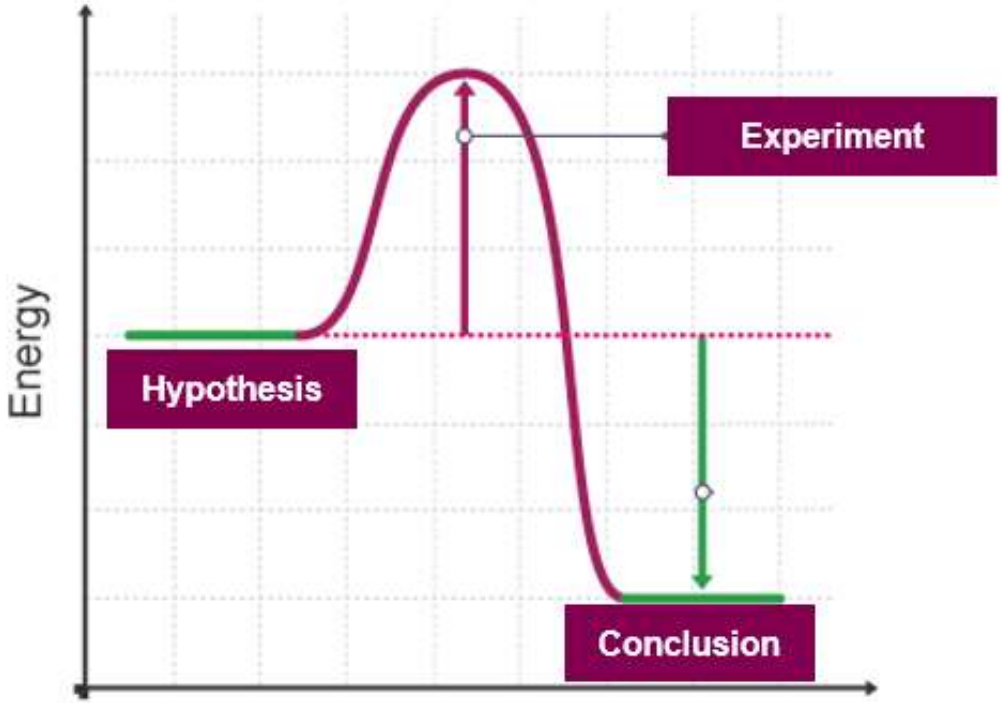
Minimising human intervention

Produce higher quality data

Obtain a greater density data

And much more …….

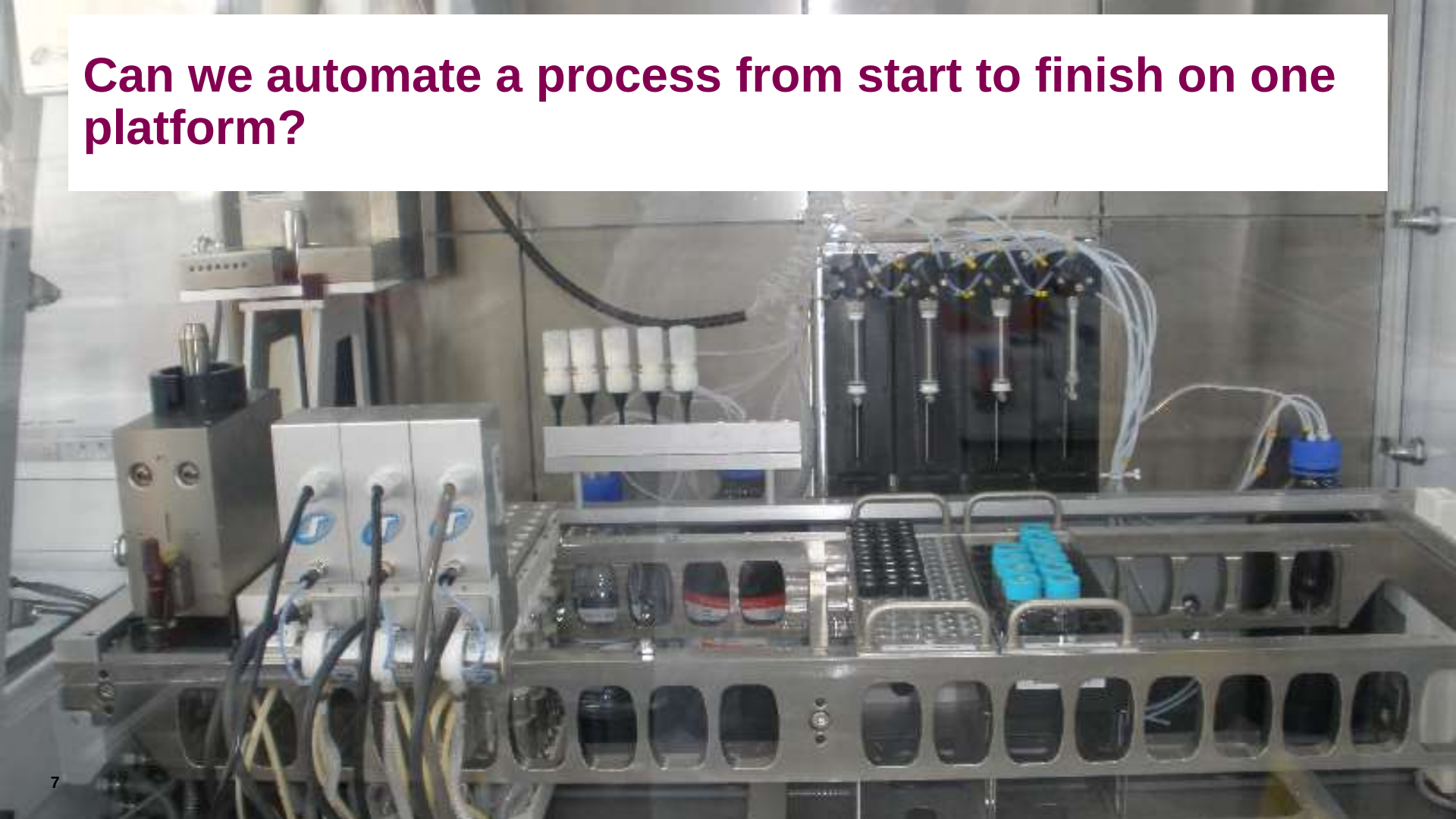
What is Effective Automation.



Importance of Equipment Evaluation

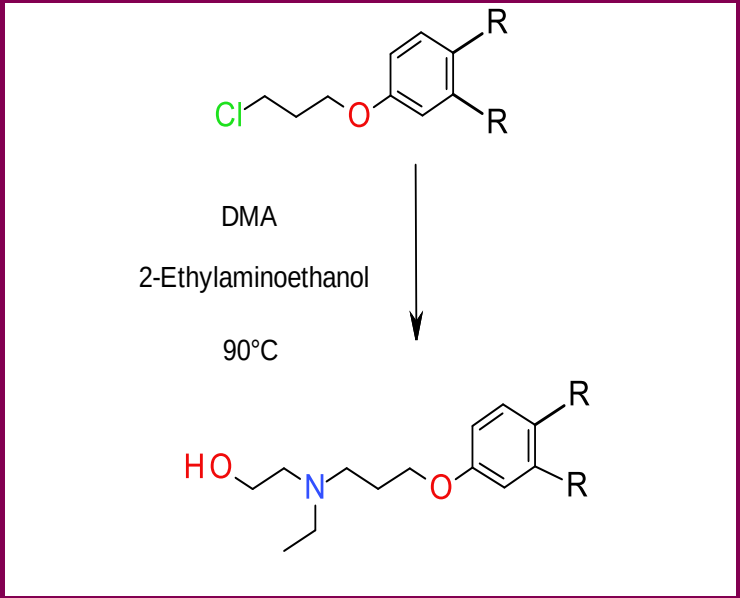
- Understand costs vs benefits
- Resource required
- Engage end users
- Support change management
- Define specific configuration
- Compare alternatives
- Use real-case examples
  - Chemistries / processes
  - User groups

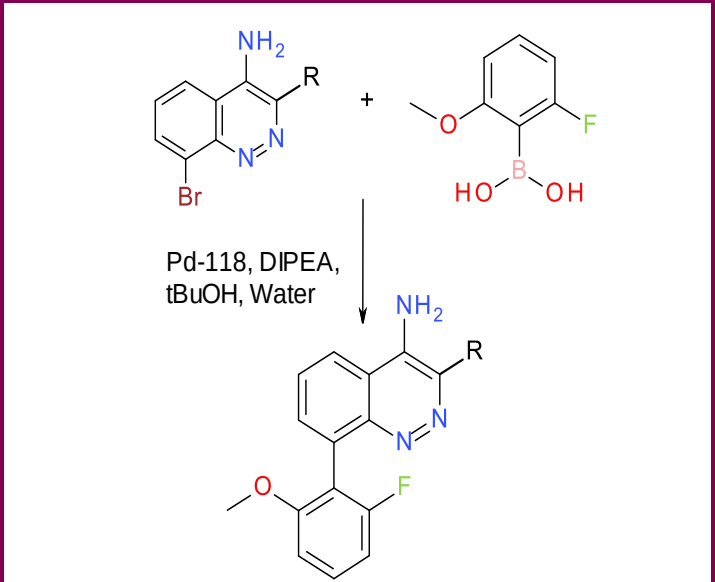
Can we automate a process from start to finish on one platform?



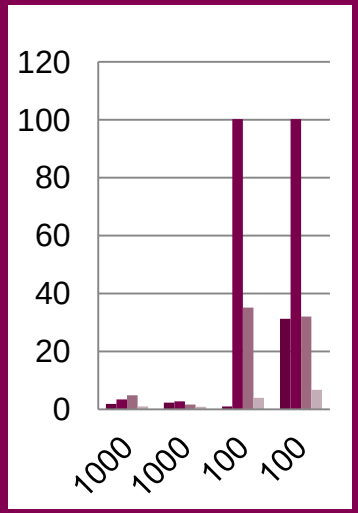
Aim

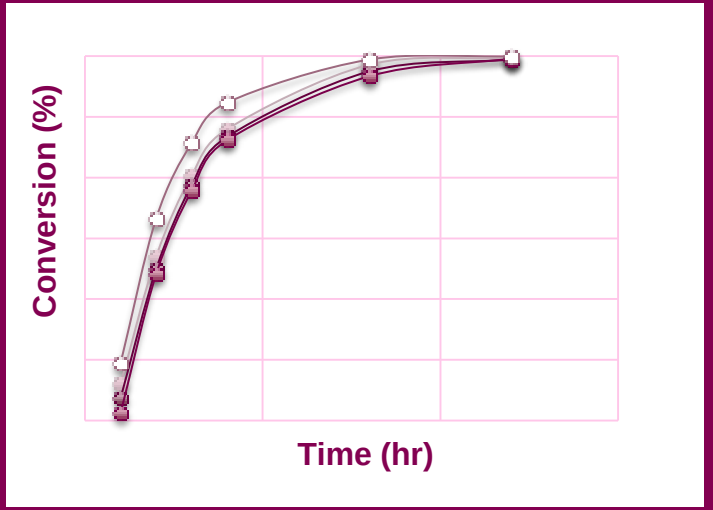
- To evaluate the possibility to investigate process from start to end
- Weighing / Work-up / Filtration
- Use project examples
- Investigate a number of experimental variables, using a statistically designed set of experiments





Fully Automated?





Planning and Design

Statistical or Kinetic

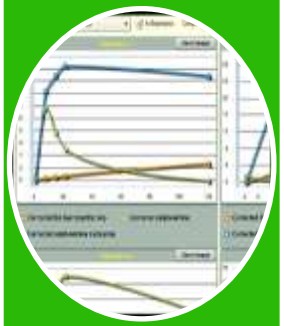
Reaction Preparation

Solid Handling

Liquid Addition and Reaction

Analysis

HPLC GC UPLC



Interpretation

Analytical data

Data Handling Conclusions Reporting

Semi – Automated Workflow

Would chemists carry out a number of experiments in parallel if it was as easy as carrying out one?

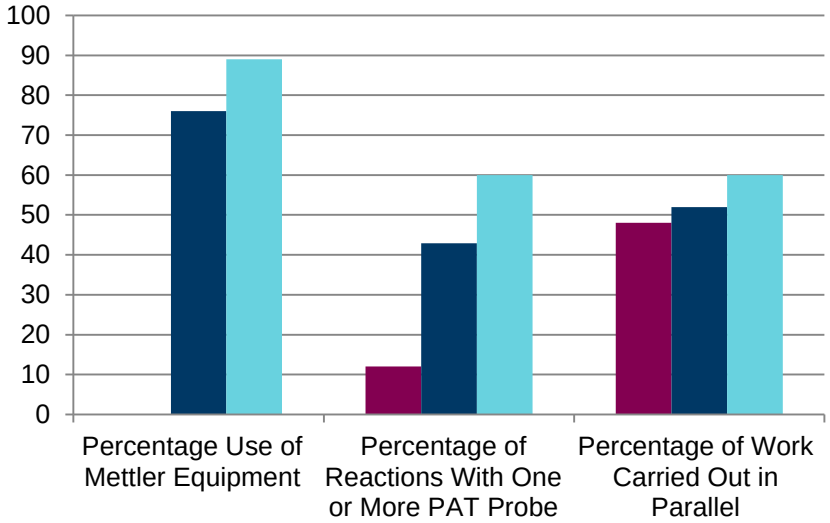

Parallel
Auto-MATE Reactor System

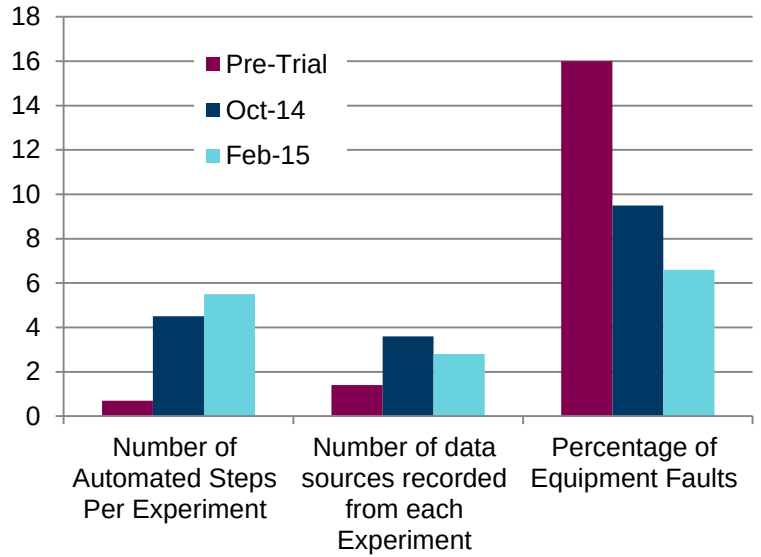

Auto-MATE Reactor System

Do we want to carry out more experiments in parallel or collect more data from each experiment?

- To investigate using Automated Lab Reactors (EasyMax/OptiMax) and associated software to automate part of the process of experimental write up and data capture.
- LabConnect Trial on AZ project to:
  - Evaluate the ability of scientists to use the EasyMax as a personal reactor to carry out all chemical operations.
  - To enable effective re-use of experimental details and data.
  - To work with vendor and other companies to direct and exploit the development of the software.
  - Engage scientists to help devise a fit for purpose solution.

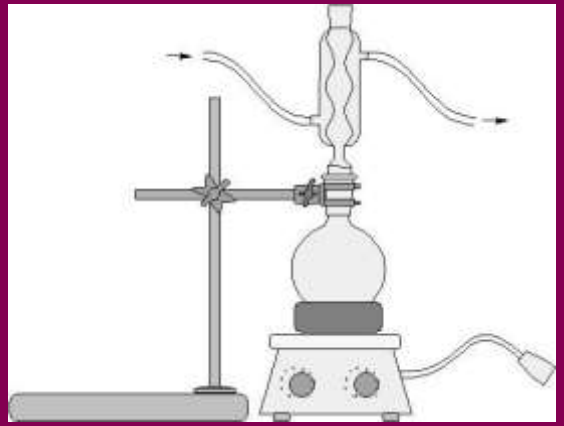
Increase in the number of parallel reactions?



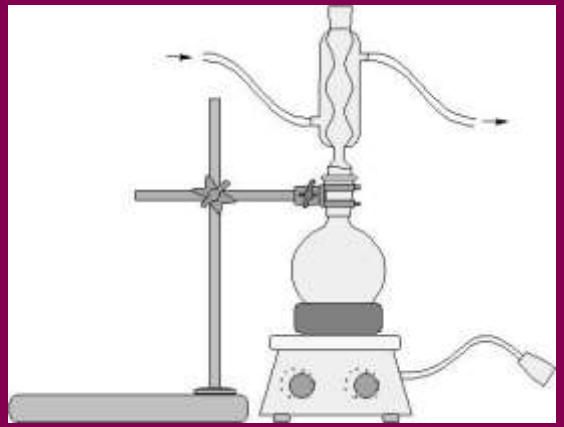



EasyMax
EasyMax
OptiMax

2006 2017

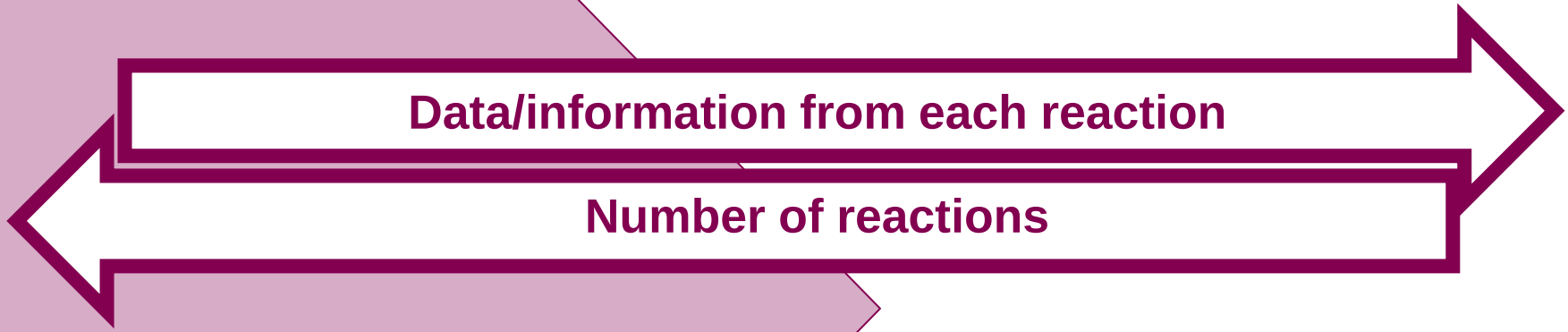


2006 2017



Specialist

Generalist



Flow

Crystallisation

Screening

PAT

Scale-Up

FED / DoE

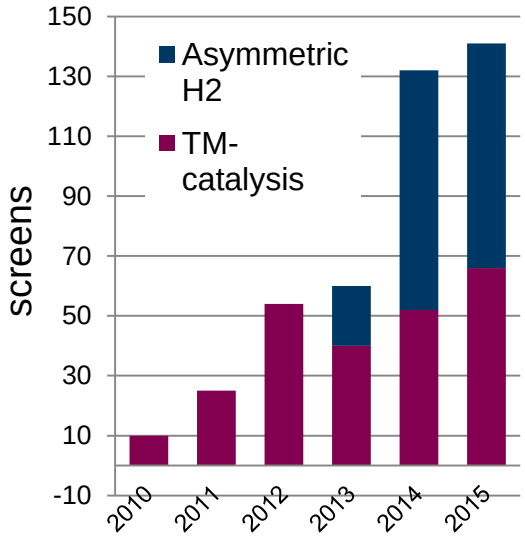
Specialist

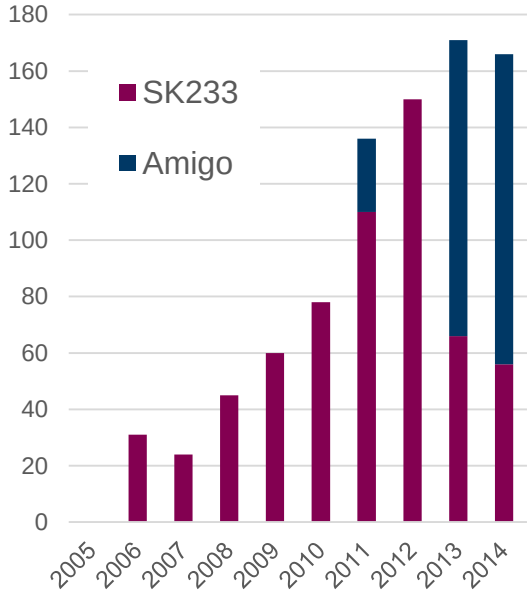
Generalist

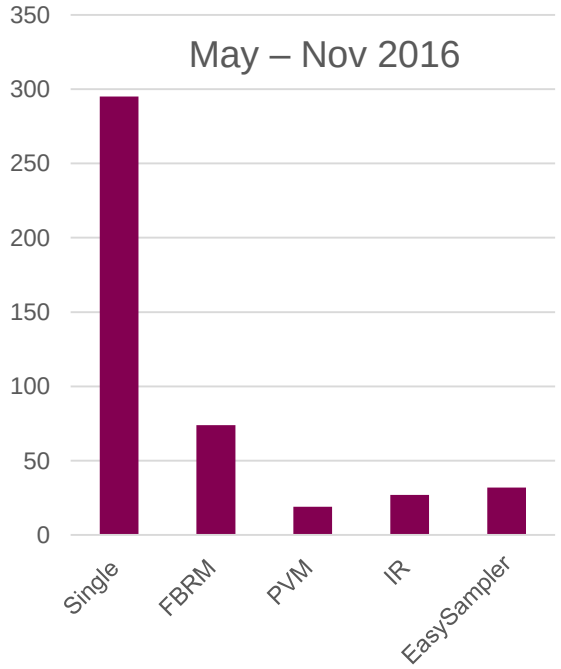
Data/information from each reaction

Number of reactions

Automation Uptake







Why?