Projet FET Open ONE-FLOW

https://one-flow.org/

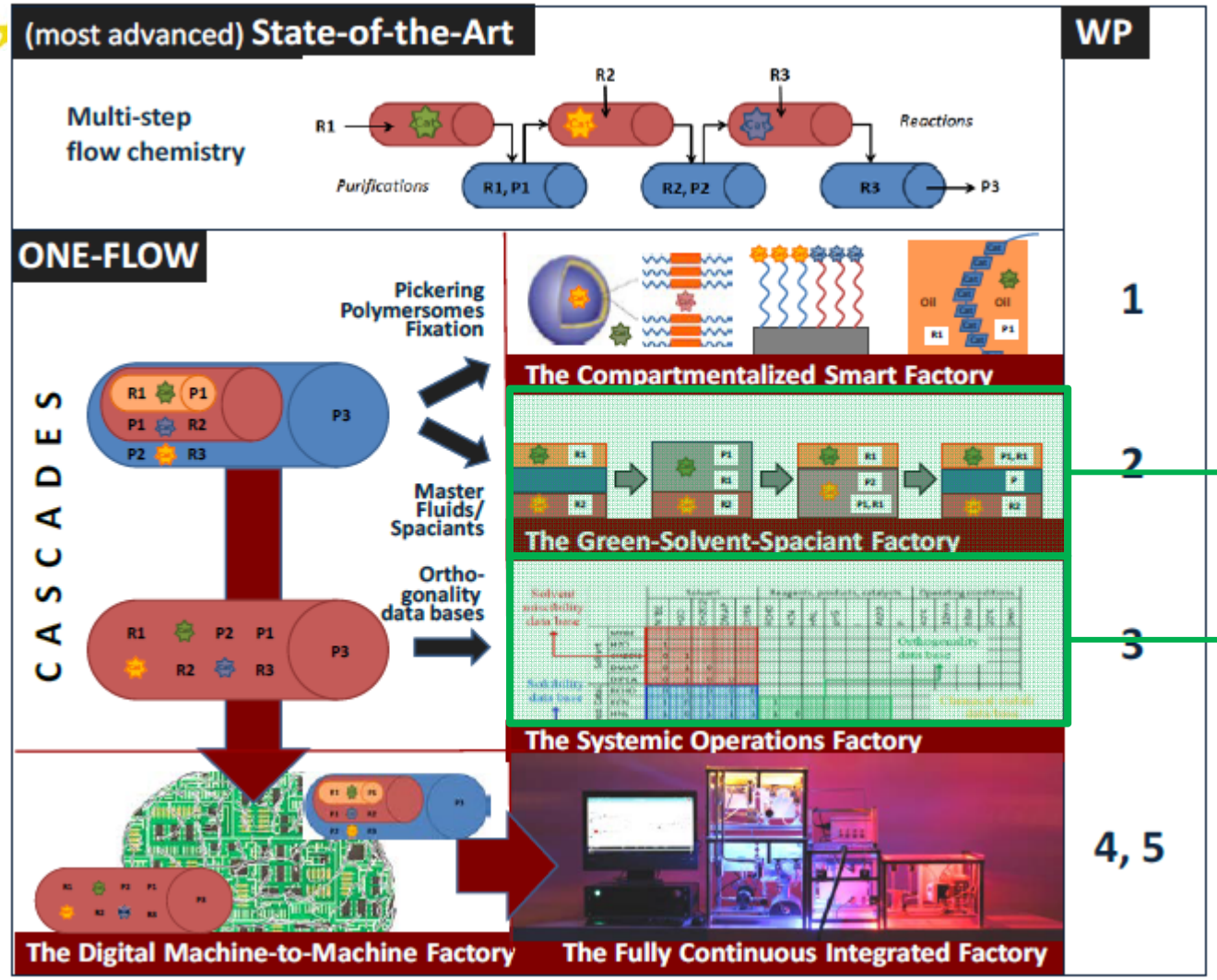
Claude DE BELLEFON

ONE-FLOW

- **Title:** Catalyst Cascade Reactions in 'One-Flow' within a Compartmentalized, Green-Solvent 'Digital Synthesis Machinery' – End-to-End Green Process Design for Pharmaceuticals.
- **ID:** proposal 737266 - ONE-FLOW. Start 1 January 2017. Duration 48 months.
- **Partners:** 9 from 5 countries **Budget:** 3.9 M€

No	Participant organisation name	Key Researcher	Country
1	**Eindhoven University of Technology**	Hessel V.*	The Netherlands
2	**Graz University of Technology**	Gruber-Wölfler H.	Austria
3	**Delft University of Technology**	Arends I.W.C.E.	The Netherlands
4	**Eindhoven University of Technology**	Van Hest J.C.M.	The Netherlands
5	**Bielefeld University**	Gröger H.	Germany
6	**CNRS – CPE Lyon**	de Bellefon C.	France
7	**University of Cambridge**	Ley S.V.	United Kingdom
8	**University of Hull**	Binks B. P.	United Kingdom
9	**MicroInnova**	Hirschegger, L.	Austria

ONE-FLOW – CNRS Lyon



WP2: compartmentation using multiphase flow

WP3 (WP leader): methodology for batch to continuous flow cascades

Project building

- As a “simple partner” CNRS Lyon didn’t ask for support to built the project.
- Consortium built from aggregation of renewed teams having complementary expertise.
- The work of the Coordinator was determining.
- A first submission was rejected by the EC.
- The project was rewritten with new ideas albeit with the same concepts.
- Overall, ca. 2 years between the first discussions and the project acceptance by the EC (September 2015 to October 2016).

Gatekeepers

- Long-term vision:

  => mimic living cells "one device, several compartments"

- Breakthrough scientific and technological target

  => Use cutting edge millifluidic, compartmentation targeted at different scales, from nm to mm.

- Novelty

  => Reducing multistep organic synthesis from multiple steps to one operation + from weeks to hours

Gatekeepers

- Foundational

  *=> Foundation of the new concept of **compartmented reactors** able to manage "antagonist" chemical reactions in one device.*

- High-risk

  => The project requires the in depth integration of many expertise thus calling for highly motivated partners and open collaboration.

- Interdisciplinary

  => From biochemistry (enzymes) to chemical engineering and computer sciences (A.I.).

“Recommandations”

- Pourquoi un FET-OPEN (taux de succès de 1,5 à 7 %) ?
- Avoir un réseau de collègues européens ayant les mêmes motivations que vous.
- Avoir le soutien de son établissement et pas seulement un soutien moral.
- Avoir l’engagement de son établissement pour la Coordination du projet.
- Overheads = flexibilité
- Partenaires académiques + PME « high-tech » + Club utilisateurs (industriels)