Digital Reactors - A new solution for experiment automation

Initiative brief

Readme

* Required information

- Project details
- Phase 1: Envision - High level initiatives
  - First, let´s start with the Problem space
    - 1.1. Reason
    - 1.2. Benefits
    - 1.3. Target users
    - 1.4. Value proposition
    - 1.5. Business goals
    - 1.6. Challenges
    - 1.7. Business metrics
    - 1.8. Cybersecurity
    - 1.9. Up to investment
    - 1.10. Resources
- Phase 2: Strategize
  - 2.0 Scope / Deliverables
  - 2.1. Actions to complete
  - 2.2. User's needs
  - 2.3. Risk Analysis
  - 2.3. Solvay One Planet Objectives
  - My tasks

Project details

Phase	☑ Envision ☑ Strategize
Status	-> IN PROGRESS UNDER REVIEW APPROVED NOT APPROVED
Start Date	*Enter the starting date of your initiative, by clicking on the calendar icon bellow - when you started to work on different step of the initiative* 13 Mar 2023
Initiative name	Digital reactors : a new solution for experiment automation
ID Provided by DT PMO	
Description of the initiative	What : Provide a new technical solution for R&I experiment automation and automated data collection Why : No solution is available for experiment automation since WinsupLab has been decommissioned.Thus, new requests for new installations are blocked, particularly for 5 Novecare reactors What if : 1. Current decrease of the overall productivity for Novecare Coatings 2. No support for current installed instrument 3. Labs will choose non standard solutions leading to no data structuration and unknown technologies & cybersecurity. 1st Reactor : Study and build the new solution based on a first case : Budget estimated , for the first reactor : 60K€, 5 sites roll out 2023 : 100K€
Domain & Product	

My tasks

- ☐ Enter your task here, using « @ » to assign it to a user and « // » to select a due date
- ☐ Enter your task here, using « @ » to assign it to a user and « // » to select a due date
- ☐ Enter your task here, using « @ » to assign it to a user and « // » to select a due date

Requested Domain Journey / Platform	☐ Platf1- Data & Analytics & AI Platform ☐ Platf2 A- Develop, Test & Deploy Platform ☐ Platf2 B- Multi experience Platform ☐ Platf2 C- Ent. Business Systems Platform ☐ Platf3 A- Ecosystem Platform ☑ Platf3 B- Hybrid & Cloud Platform ☑ Platf3 C- Intelligent Asset Platform ☑ Platf4- Info Security and Compliance Platform ☑ Platf5- Workplace Platform ☐ Journ1- Digital Customer Journey ☐ Journ2- Digital Ops & Corporate Enablement Journey ☐ Journ3- Digital Employee Journey ☑ Journ4- Prepare the Future & Connected Research Journey ☐ DTmng3- DT Enablement & Transformation
Involved Domain Journey/ Platform	☐ Platf1- Data & Analytics & AI Platform ☐ Platf2 A- Develop, Test & Deploy Platform ☐ Platf2 B- Multi experience Platform ☐ Platf2 C- Ent. Business Systems Platform ☐ Platf3 A- Ecosystem Platform ☑ Platf3 B- Hybrid & Cloud Platform ☑ Platf3 C- Intelligent Asset Platform ☑ Platf4- Info Security and Compliance Platform ☑ Platf5- Workplace Platform ☐ Journ1- Digital Customer Journey ☐ Journ2- Digital Ops & Corporate Enablement Journey ☐ Journ3- Digital Employee Journey ☑ Journ4- Prepare the Future & Connected Research Journey ☐ DTmng3- DT Enablement & Transformation
Initiative Ownership	
Digital Technology Partner	COLEGRAVE, Vincent
Product Manager / Service Delivery	PUZENAT, Christophe
Roadmap & Key objectives	

Roadmap	• EPIC 1: Focus EWHA as a pilot:
	  ◦ Book of specifications
	  ◦ Supplier identification
	  ◦ Installation
	  ◦ Return on experience
	• EPIC 2: roll out to 4 other Novecare sites
	• EPIC 3: Winsuplab replacement plan

2023 Digital Technology Key objective	• Standardization • Prevent shadow it • Cybersecurity
Priority	P1 : Must do

Phase 1: Envision - High level initiatives

Do

- Create Envision brief if the initiative is part of the validated roadmap
- Highlight roadmap value
- Request a budget for Strategize if you need one
- Security scoring
- RADAR/SENTRI
- https://radar.solvay.com/

Don´t

- Request platform resources if the business capability is already identified and clear
- Write portfolio epics, epics and user stories
- Identify squad resources

First, let´s start with the Problem space

1.1. Reason

*** Why is this initiative proposed today?**

No more possibilities to deploy Winsuplab solution for new reactor and associated experiment needs, and support to existing reactors will end soon. Winsuplab story here but main point to not be able to continue using Winsuplab

- Obsolete Visual Basic development environment (support , compatibility and security)
- In house development support only by one DT expert
- Development frozen : no more new feature
- Can stop working with a new security or patch update rollout
- Only in French

Currently Solvay is running 15 reactors for Coatings and Novecare techno centers.

1.2. Benefits

What are the new capabilities expected?

- Automation, security, automated data collection from experiment for current and further data consumption.
- Use a uniform/standard tool in the different labs around the world (absolute must have AND corner stone of Lab Booster initiative). This initiative was in 2022 budget, but not implemented.

What will it replace? Is it a new solution or an existing one?

New solution to find and roll out what will replace Winsuplab for all connected reactors in Novecare in a first place, then for Solvay global.

1.3. Target users

Who are the future users?

Priority 1:

- Korea, EWHA reactor for Datacoat (Application Lab Booster) - Novecare, 3 users
- Aubervilliers to be finished : 10 users

Priority 2:

- Bristol: 10 users
- Shanghai: 9 users
- Vadodara: 5 users

Priority 3: Novecare technocenter teams (13 users)

What is the number of users impacted?

~ 50 users

What about the Business Needs?

1.4. Value proposition

What is the value of the initiative?

Value for R&I:

- Automatisation of experiments
- Embedded into **Lab Booster** initiative (harmonization of polymerization experiments)
- More security - automatic emergency stop, no need of human involvement
- Data collection from synthesis experiment - new data for more knowledge and understanding
- More precision - replace human read
- Less manual operations
- More traceability

=> Increase of the productivity -> Time saved (**4** FTE/year) -> **0.9 M€**

Value for DT:

- Standardization of a solution to automate any kind of synthesis experiment that will replace Winsuplab and could be deployed for other reactors globally (potential in Materials…)
- Costs
- Cybersecurity: Data is stored in Solvay Network instead of paper

1.5. Business goals

How does the product / deliverable align with the business goals?

Business goal is to sell additives to customers.

To confirm the efficiency of Solvay's products, researchers need to make trials using reactors. Currently, the amount of tests they can make is decreasing because some reactors are waiting for a replacement solution for Winsuplab. Thus, it decreases their capacity to test, so their ability to answer customers.

Replacement solution to Winsuplab = more operational reactors + more precise data
= more reactivity to answer customers + more quality in the data we share.

In addition, **Lab Booster** initiative aims at collecting harmonized data between different labs. Reactor digitalization is a key enabler.

1.6. Challenges

Are there any challenges in developing the product?

- Several solution possibilities, need to study carefully the solution
- Make clear the split of work between R&I, sites, A&R and DT
- Timeline
- Find provider able to develop either Labview automation and recipes
- Find availability from R&I key stakeholders for book of specifications, testing & feedback
- Be able to provide support to users when in the RUN phase

1.7. Business metrics

How will we measure success?

Number of experiments run on these reactors (+25%).

1.8. Cybersecurity

Please duplicate this template in this folder. Then, for the envision phase, answerto the initiative card tab and to the 7 high-level questions in the "Security Scoring" tab. These questions will help the SIP team to determine the level of cybersecurity & compliance support you will need. Please contact the team by email: *@SIP_team@solvay.com*

Link

1.9. Up to investment

What is the coherent time to commit on the initiative?*

Estimated Delivery phase start date*	**Estimated Delivered end Quarter***
02 Oct 2022	Q4 2023

What is the coherent money to commit on the initiative?*

	2023 (in K€)*	**2024 (in K€)***	**2025 (in K€)**
Estimated size of investment (high level)	155K€	600 *(20k/reactor)*	

What is the coherent run and build commit on the initiative?

Estimated run costs (estimation high level) - on 10Y (if already known)	Type of savings expected /year for DT (Ex: Contracts, FTE, ...)
10k in 2024, 70k in long-term vision *(2k /reactor)*	0

1.10. Resources

What skills and talents do we need?

- Labview programmation skills
- Synthesis skills (R&I) to explain the needs
- English language
- Network connection

1.11. Methodology to apply (refer for Accolade)

Do you think if your initiative is compatible with a waterfall approachor with an agile approach?

- [ ] Agile model
- [x] Waterfall model
- [ ] I do not know at this stage

If the initiative will be done in Agile methodology, please contact during the strategize phase Nicolas LOVAGNINI

Phase 2: Strategize

Do

- Identify portfolio epics and epics within each portfolio epics
- Create a document / slide / spreadsheet to build your epics and put a link in the bief
- Estimate experts and budget by portfolio epics or by increment
- Show SMART KPI (Specific, Measureable, Archievable, Relevant, and Time-Bound)
- Evaluate the impact on Solvay One Planet objectives

Don´t

- Identify squad resources (naming)
- Write user stories

Now, we can move on to the Solution space

2.0 Scope / Deliverables

What is your list of scope if waterfall initiatives (technical, functional & organizational) / deliverables foreseen? What are your list of Epics if Agile initiatives?

2.1. Actions to complete

Mandatory actions * (please contact them together if possible)		
Description of the action / task	**Contact**	**Document & examples (please make your own copy and insert new link here)**
Contact each relevant pool lead to book resources in the capacity planning tool ☐ check once done to inform the contact ARPIN, Florine **06 Jan 2023**	ARPIN, Florine	Complete Capacity planning tool
Complete Accolade ☐ check once done to inform the contact Claire Bazin **06 Jan 2023**	Claire Bazin	Complete Accolade
Review with Enterprise Architect the actual solution answering the objective ☐ check once done to inform the contact Françoise BERGAME**06 Jan 2023**	Françoise BERGAME (Structure)	Complete Architecture Impact Analysis (AIA) ARB & AIA
Check you have confirmed the involvement of each platform		Revert to SDM of each Platform
Identify security needs (Confidentiality, Integrity, Availability) and define security measures to be implemented by the initiative team ☐ check once done to inform the contact Benjamin POISSONNET **06 Jan 2023**	Benjamin POISSONNET	Complete the security questionnaire in "SIP Support tool"
Support for budget estimation (via the Workload & Cost), Financial evaluation (Total Cost of Ownership over 10Y), saving validation ☐ check once done to inform the contact Jill Wilson **06 Jan 2023**	Jill Wilson	W&C: to be filled in to Accolade in preparation phase TCO over 10Y: xxxx - Business Case /Financial evaluation 10Y
Optional		
If any relation needed with a supplier ☐ check once done to inform the contact BLANCHER, Alexis **06 Jan 2023**	BLANCHER, Alexis	
If it concerns a key supplier, a sourcing strategy has to be defined ☐ check once done to inform the contact Isabelle Auboeuf **06 Jan 2023**	Isabelle Auboeuf	
If conformity by design is required ☐ check once done to inform the contact Emmanuelle Bureau **06 Jan 2023**	Emmanuelle Bureau	GMP (pharma), ISO

If Data Governance is required: identify the business objects ☐ check once done to inform the contact Philippa de Glanville 06 Jan 2023	Philippa de Glanville	Data Governance Strategise for Initiative Briefs

2.2. Users needs

What do users dislike about the current solution?

Applicable when a new solution is developed

- No support on the current solution
- Solution is only in French
- Solution is not global
- Solution is not installed on new installation (decommissioned)

What tools or features do your users wish to have?

- Ability to manage the instruments overtime set the parameters for different time duration (e.g. 50°C for 10 minutes then 65°C for 2h)
- Ability to save sequences of parameters in order to reuse them
- Automatic emergency stop for some instruments when dangerous conditions are reached Automatic stop of heater if the temperature reaches 100°C
- Data structuration
- Data available on Solvay's network (able to access it from a personal computer)

What value will it add to the user´s lives?

- Security: no need to go in the lab if the reaction is too exothermic. The reaction stops on his own.
- Time saving: user will not need to come in the lab every ten minutes to check if the temperature is the good one, etc.
- Data quality: real data is measured and available. Without the solution, the user has to manually write the data all day long, so he cannot (lunch break, etc.)
- Comfort & mental health: it will reduce manual actions from the user, so he can schedule his day & lunch break without thinking about all the times he has to do a manual step

What alternative do we have?

No one.

2.3. Risk Analysis

What are the risks (refer to Risk analysis matrix in Accolade)?

2.3. Solvay One Planet Objectives

What is the qualitative assessment of Hardware/ Data processing/ Project's contribution to Solvay One Planet?

- Is the business ambition you will support improving or not sustainability?

- Will you increase or decrease the number of hardware we need to operate? How much ?

- Will you generate or transfer an important amount of data, especially videos? How much?