



C3-Cloud Final Conference



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 689181

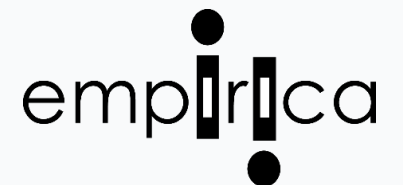


Evaluating C3-Cloud to plan for future development

Malte von Tottleben, empirica



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THE CHALLENGE



- Care planning for patients with multi-morbid chronic conditions is complex and time-consuming

THE SOLUTION




- A widely accepted solution (C3-Cloud) for patients and their Multi-Disciplinary Care Team
- Integrated in the care practitioners IT environment
- Saving time and resources for the stakeholders

RESEARCH PROTOCOL



Is the use of a personalised ICT tool that facilitates coordinated care planning, treatment optimisation and patient self-management acceptable to patients with multiple long-term conditions and their team of health professionals?

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User-centered
design



Acceptance



User
experience



Usefulness

RESEARCH PROTOCOL



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phase 1

Months 1-18

- User centered design is tested with early mock-ups and discussion groups
- The system components are tested for specified technical software requirements



User
experience



Acceptance



Usefulness

RESEARCH PROTOCOL



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phase 1

Months 1-18

- User centered design is tested with early mock-ups and discussion groups
- The system components are tested for specified technical software requirements



Acceptance

phase 2

Months 20-30

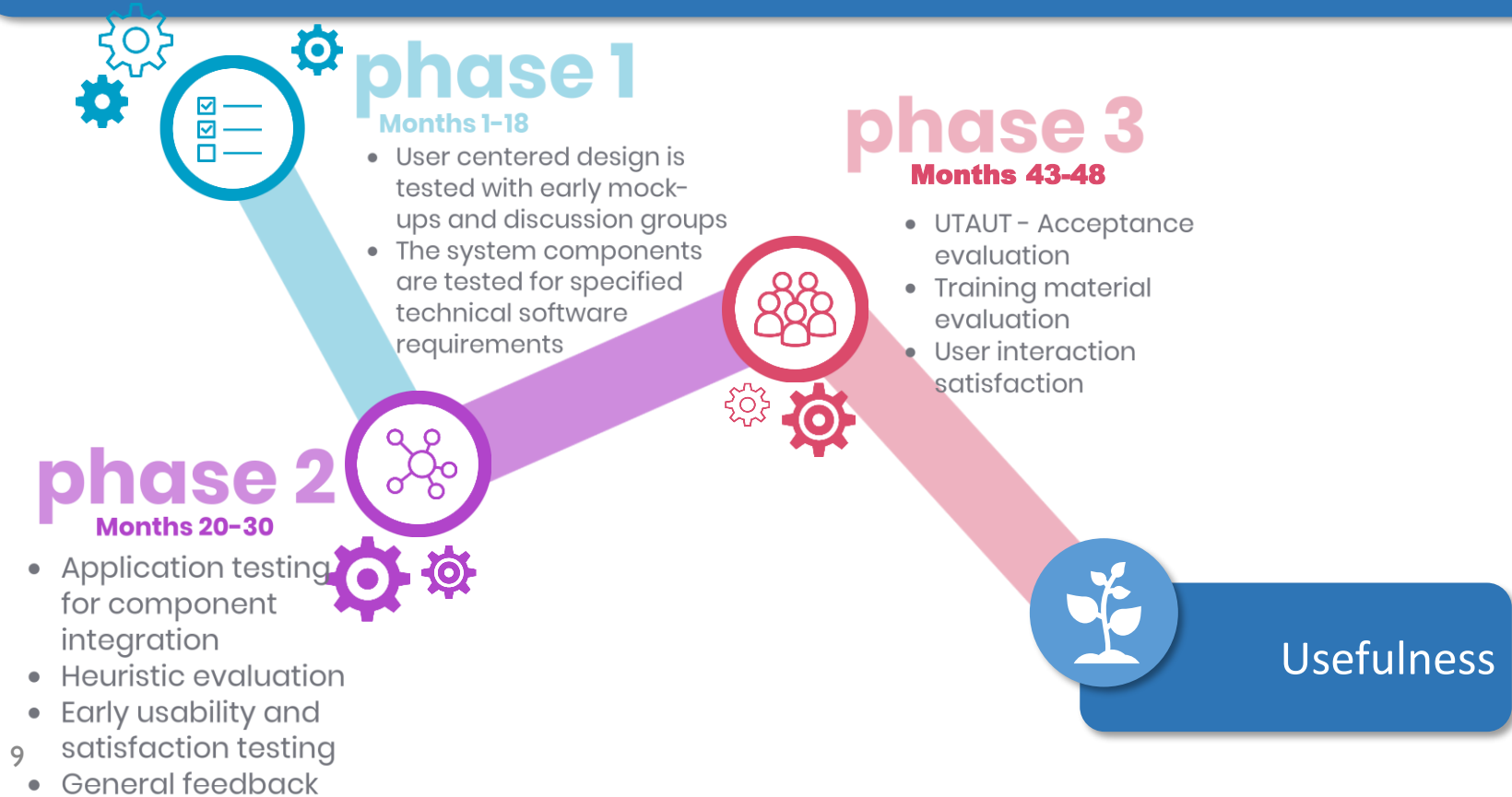
- Application testing for component integration
- Heuristic evaluation
- Early usability and satisfaction testing
- General feedback



Usefulness

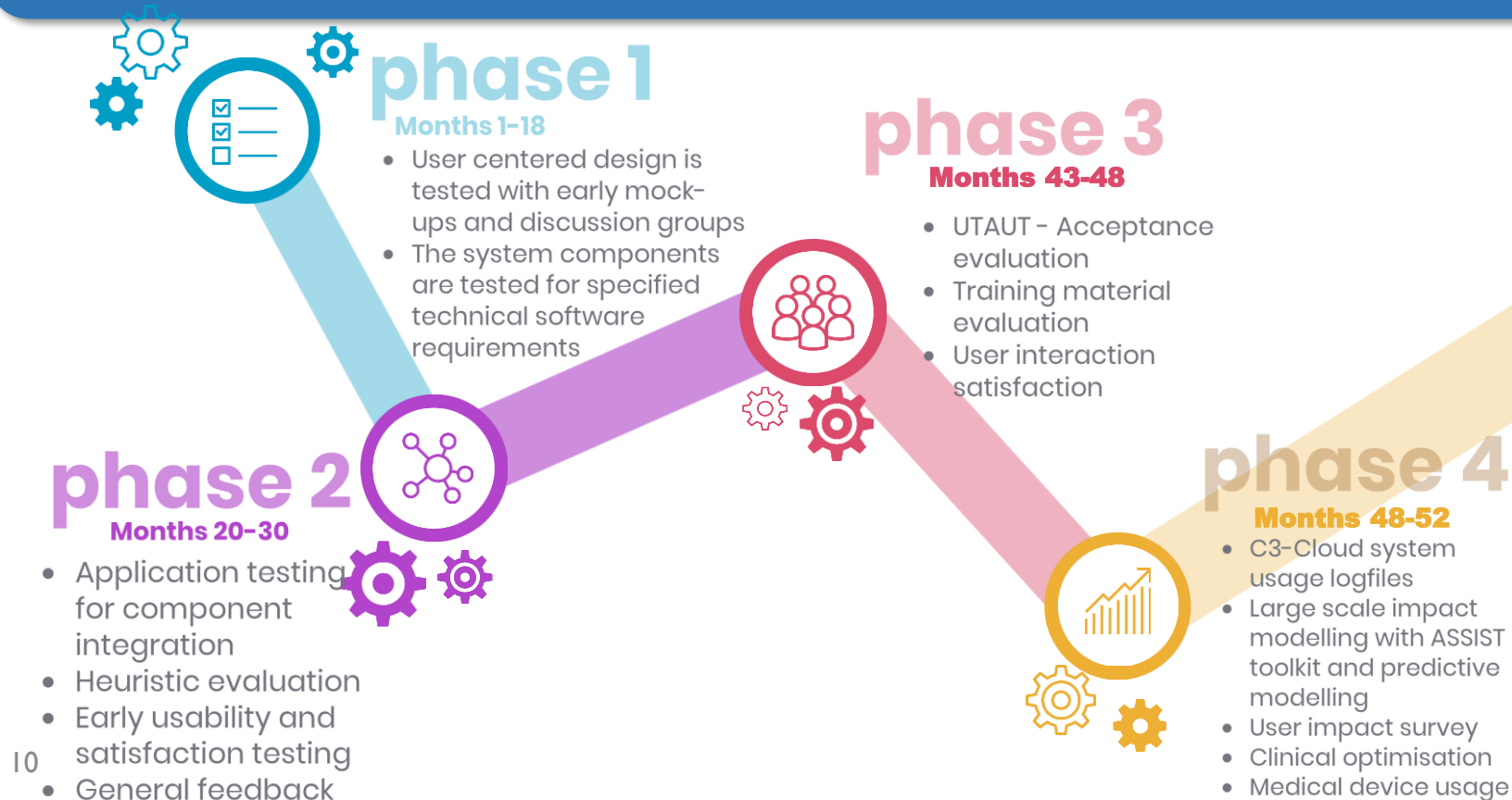
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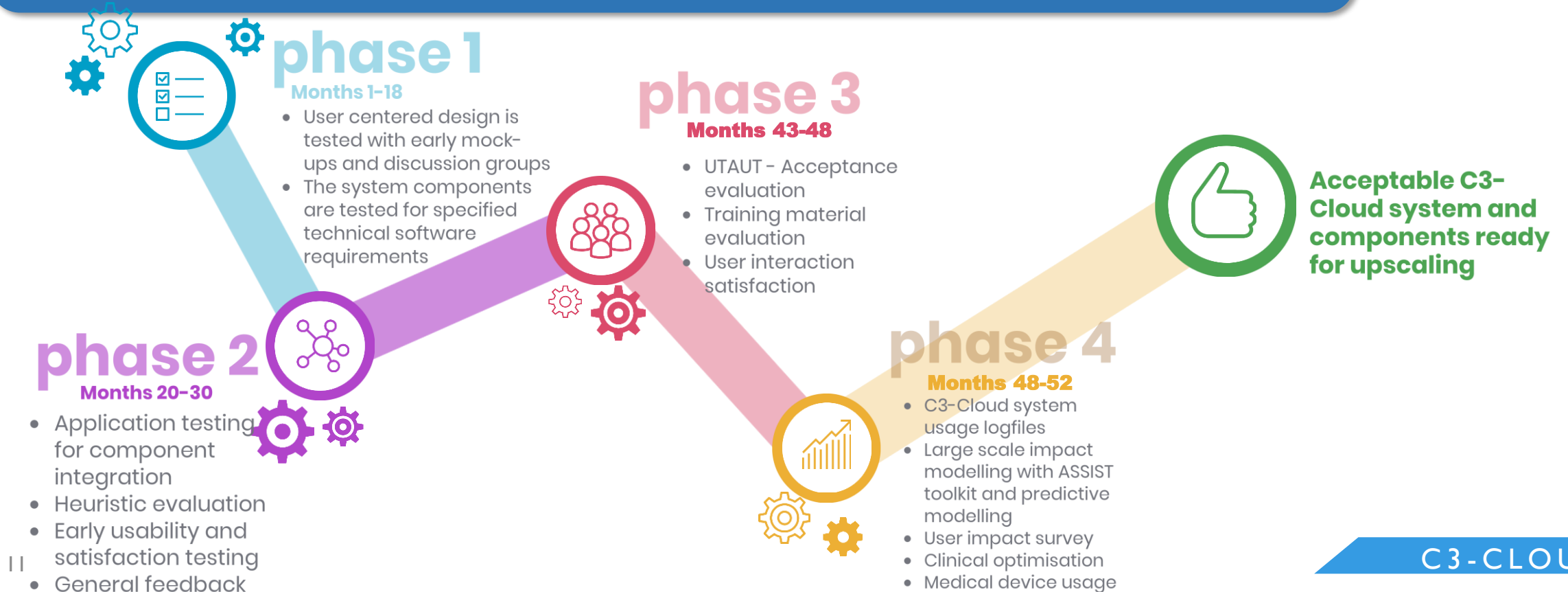
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INTERIM RESULTS PHASES I AND II

”
“

Very promising

”
“

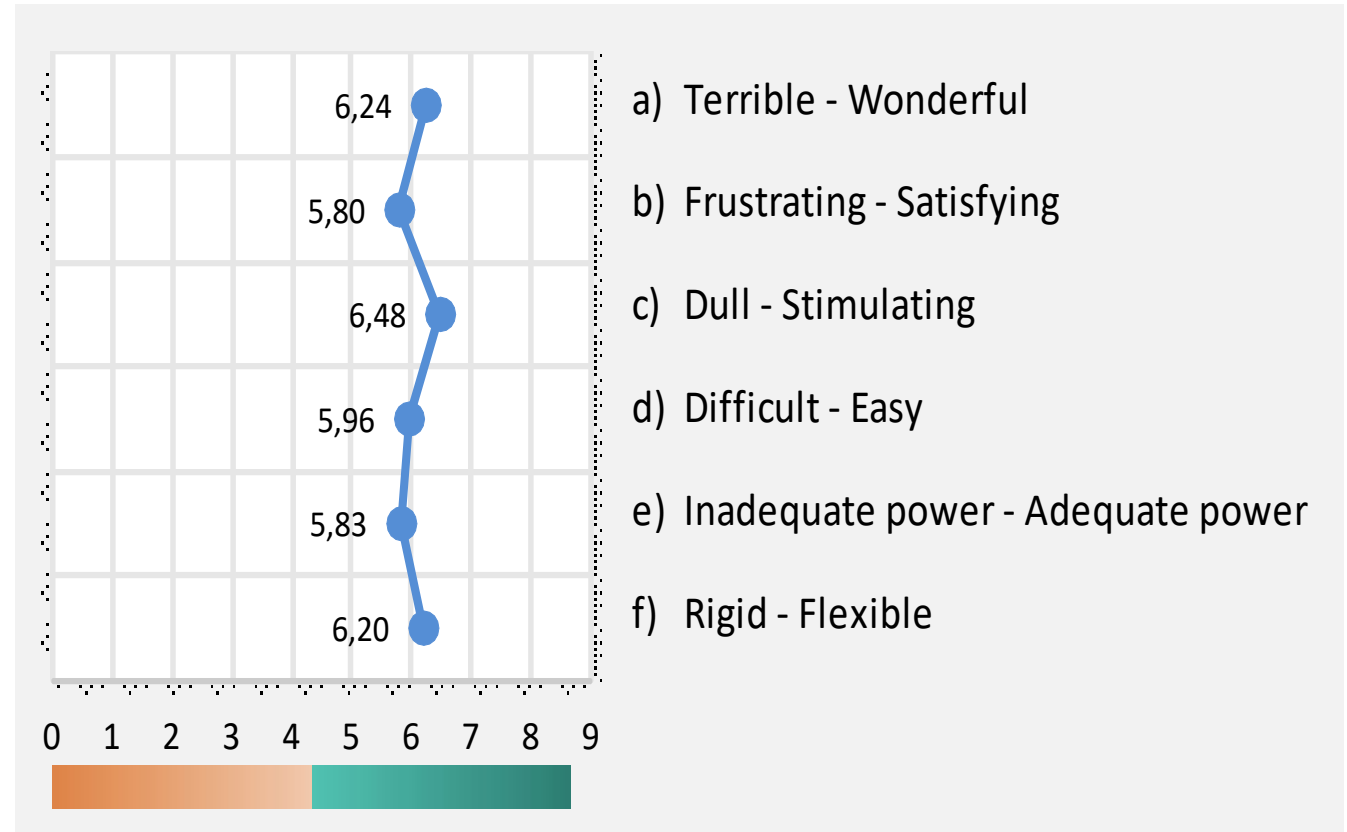
**Suggested care plan goals
and activities meaningful**

”
“

Intuitive

”
“

**Elderly patients may
struggle with technology**



TECHNOLOGY TRIAL

Sweden



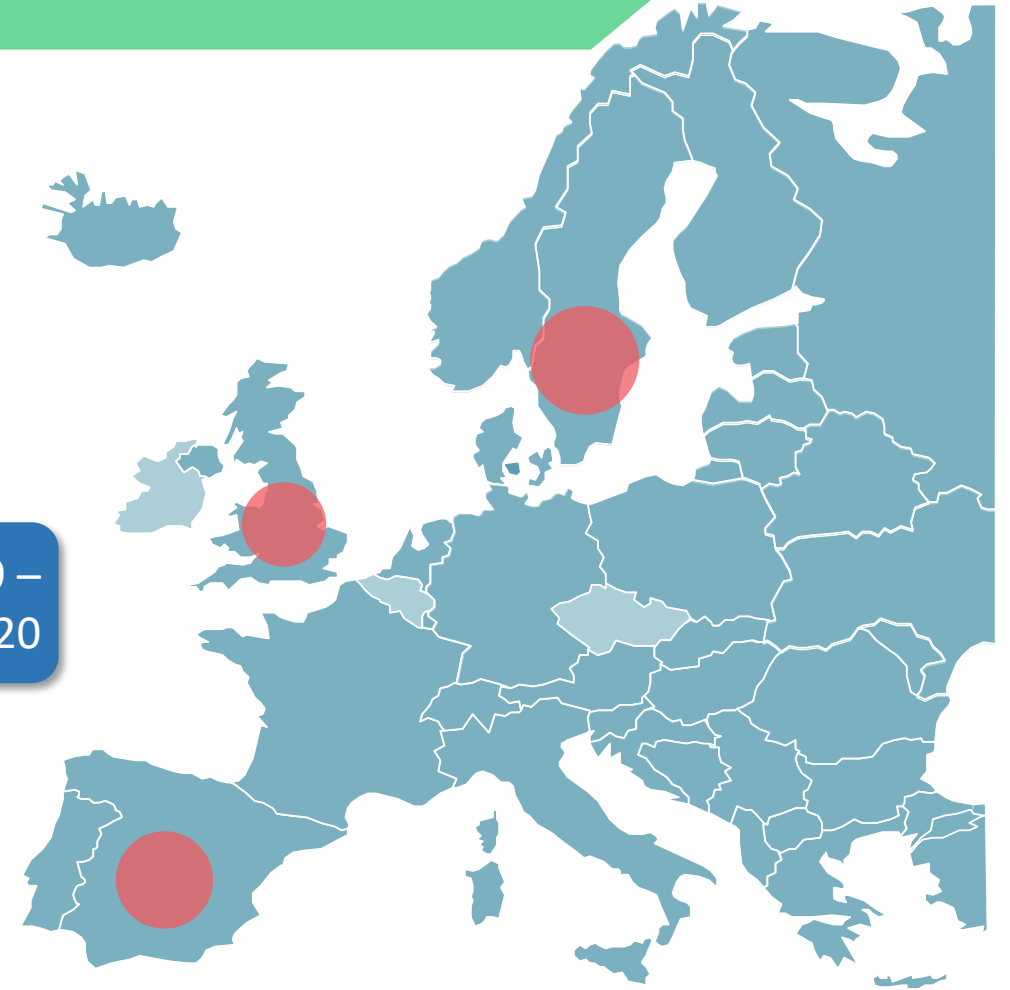
United Kingdom



Spain



NOV 2019 –
APR 2020



CHALLENGES WITH THE TRIAL – DEVELOPMENT DELAY

”
“

Several months deployment delay



Deliberate tests and corrections to ensure that systems were save



Pilot sites convinced that C3-Cloud was well integrated in their IT landscape

CHALLENGES WITH THE TRIAL - RECRUITMENT

”
“

70% non-responders



Increased the number of patients that were approached

”
“

**Mild and moderate
conditions only**



Reduced age range to 55

”
“

**Patients feared
too much effort**



Too detailed recruitment information packs

CHALLENGES WITH THE TRIAL – COVID-19



Platform usage went down
from February 2020

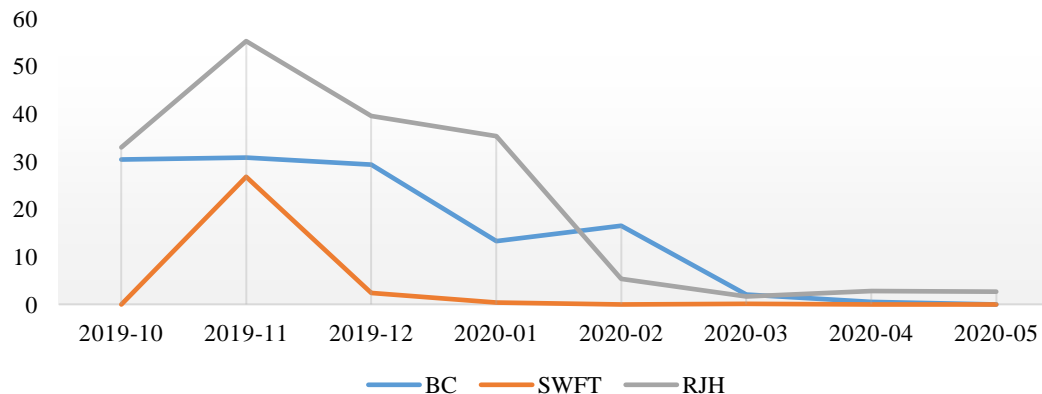


Clinical staff focused on provision of front-line services



Patients felt left alone

Average duration of user sessions in minutes per month



CHALLENGES WITH THE TRIAL – SURVEY RETURN RATES

”
“

Evaluation survey return rates very low



Reminders sent



61 surveys from 355 users

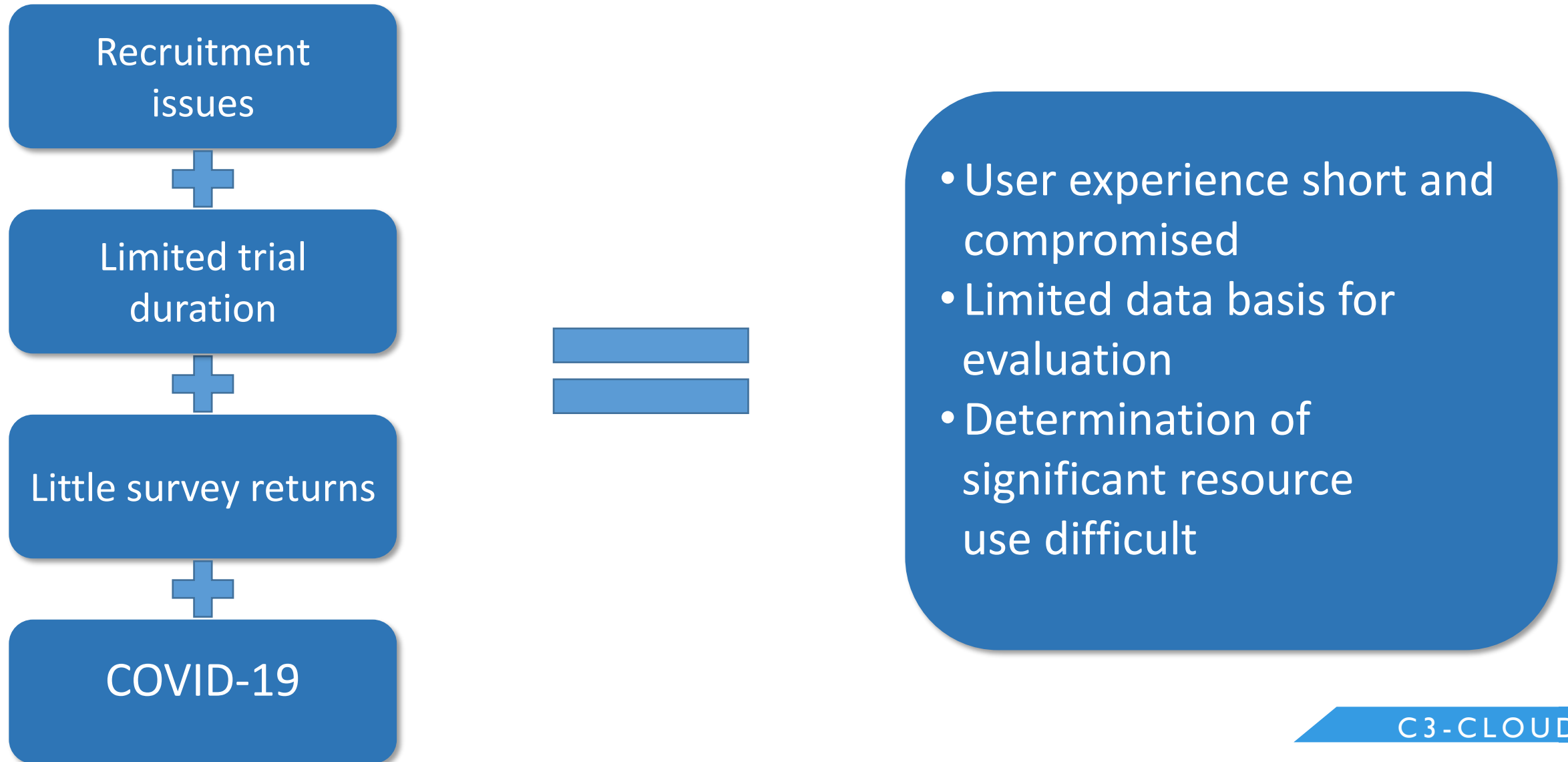


Anonymization did not enable sending targeted reminders



Basis for survey evaluation is limited

CHALLENGES WITH THE TRIAL – LIMITED DATA BASIS



RESULTS - CORE TRAINING MATERIAL

- C3-Cloud Introductory video
- Online video tutorials
- Wallet card
- Project user Guidebooks
- User manual
- Demo version
- User Manual for Pilot Site Coordinator
- Technical manuals



Trusted



Helpful



**Easy to
understand**



**Make more
concise**

RESULTS – ACCEPTANCE, USER EXPERIENCE AND USEFULNESS

”
“

Easy to learn
C3-Cloud

”
“

Want to use
C3-Cloud in the future

”
“

Supportive
organizations

”
“

Large potential
for care planning

”
“

Useful for the
daily job

”
“

Could not put
C3-Cloud to full use

”
“

Worth the effort

”
“

May not enhance
productivity

RESULTS – BUDGET IMPACT ANALYSIS

- Discrete event simulation was developed
- Statistical analysis of collected data to find significant differences in healthcare resource consumption
- Projection of the significant differences over time
- Monthly cost model for C3-Cloud patients to feed ASSIST cost-benefit model.



**Nurse telephone consultations
1.6 times more likely**



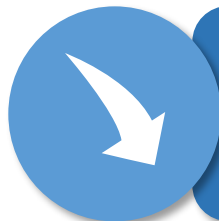
**GP visits 0.63 times
less likely**



**Nurse visits 0.74 times
less likely**

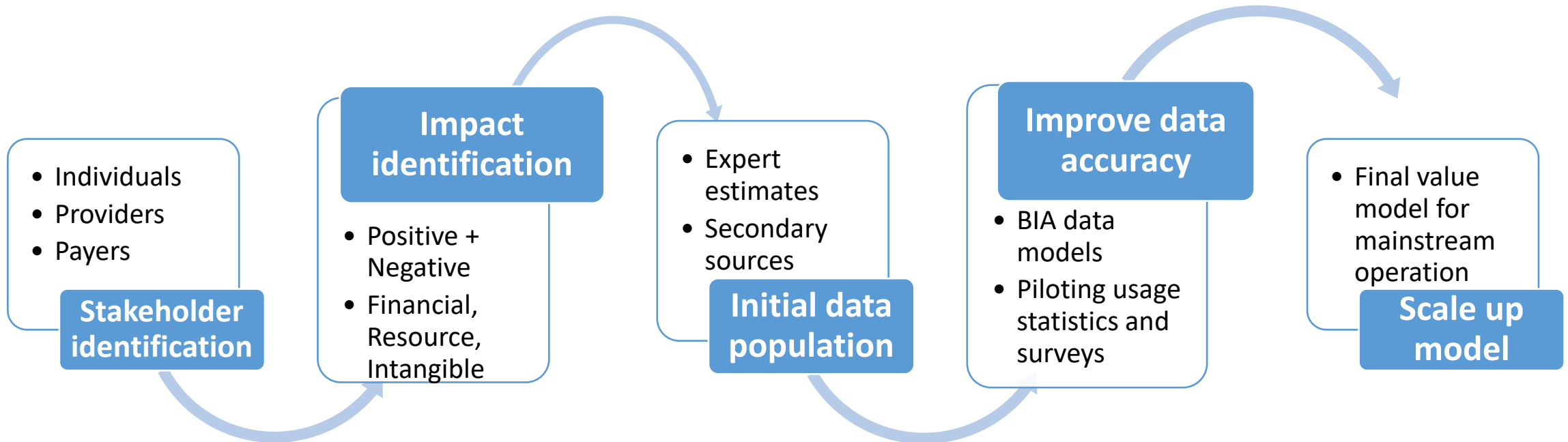


**Nurse home visits 0.45
times less likely**

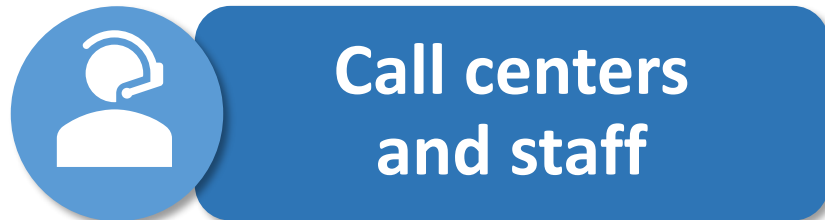
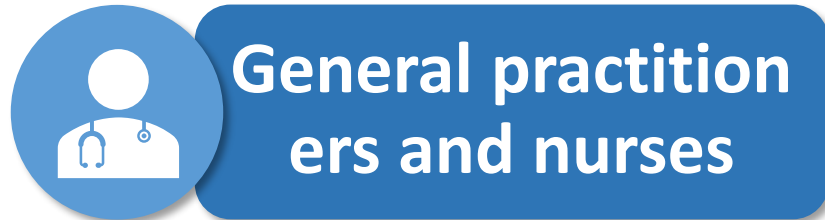


**Use of A&E units 0.57
times less likely**

ASSIST COST-BENEFIT IMPACT ASSESSMENT



ASSIST – STAKEHOLDERS – A SYSTEMS PERSPECTIVE



ASSIST - Costs

Costs	Financial costs Need for extra cash	C3-Cloud development and deployment costs Fewer GP consultations
	Redeployed resources Resources taken away from other activities	4 hours spent on HCP training
	Intangibles loss of status, inconvenience	Inconvenience using C3-Cloud at first
	Total socio-economic costs	

ASSIST - BENEFITS

Benefits

Financial benefits

Reducing cash outlays, new revenue

Cashing extra telephone consultations

Fewer GP consultations

Time saved during consultations

Liberated resources

Resources saved from existing activities

Avoided travel time and costs to visit the care center

Intangibles

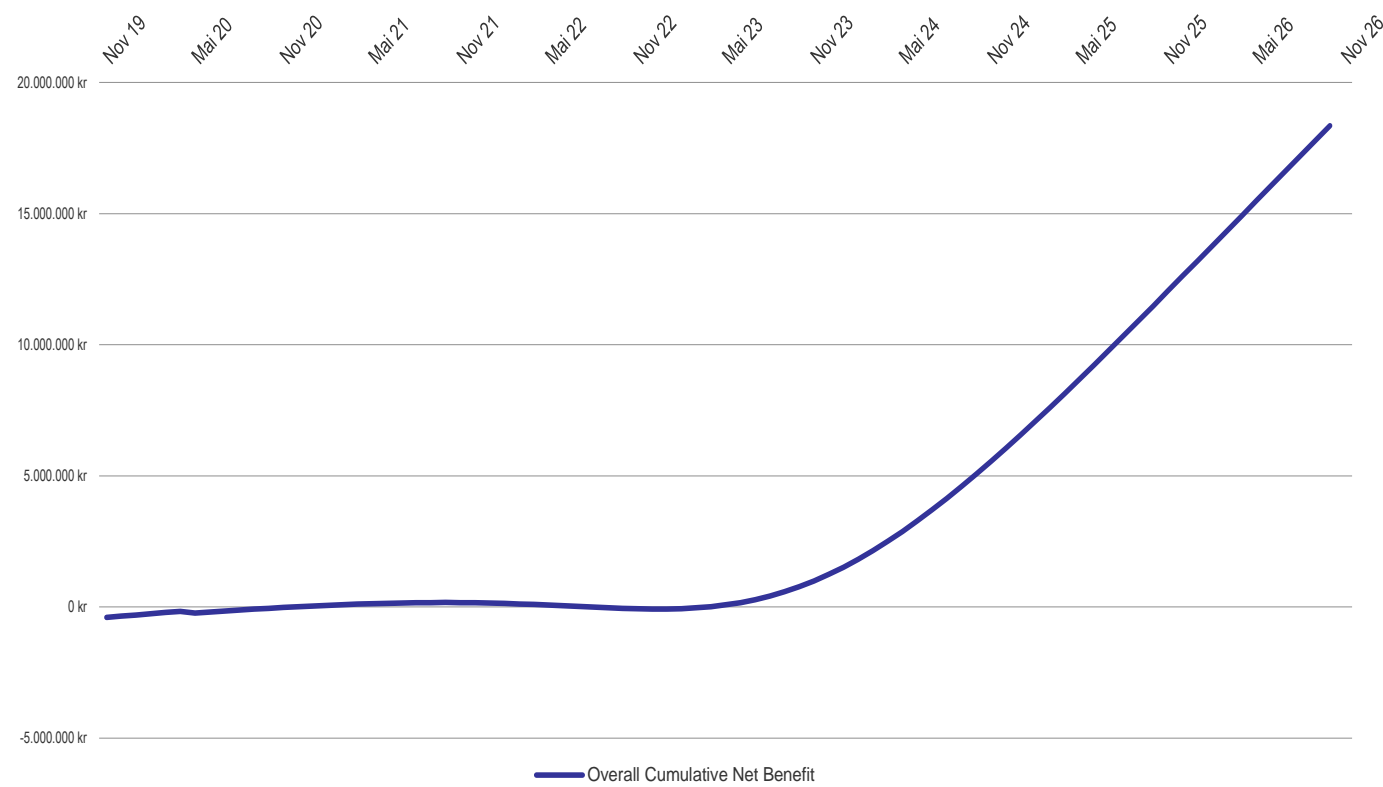
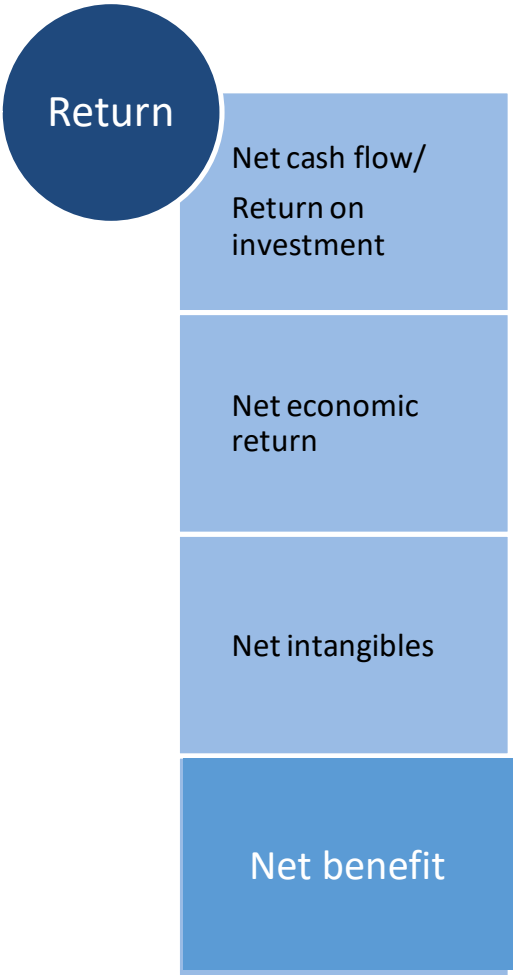
QoL, security, convenience

Satisfaction: "C3-Cloud is worth the effort involved in using it"


















Liberation of time to spend more time with patients

Total socio-economic benefits

ASSIST – OVERALL NET BENEFIT



ASSIST – OVERALL SOCIO ECONOMIC RETURN

				
Sweden, Region Jämtland Härjedalen	 6 %	 9 %	 -79 %	 1103 %
United Kingdom, South Warwickshire	 -1 %	 -23 %	 -29 %	 347 %
Spain, Basque Country	 -10 %	 10 %	 -66 %	 1067 %

TAKE HOME, ADOPT AND SCALE UP



Cautious acceptance



**Satisfaction can
be increased**



Consider benefit shifts



**Healthcare provider
organizations save time**



Payers save money



**Operational benefits
are key**

THANK YOU



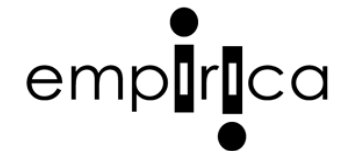
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Osakidetza

