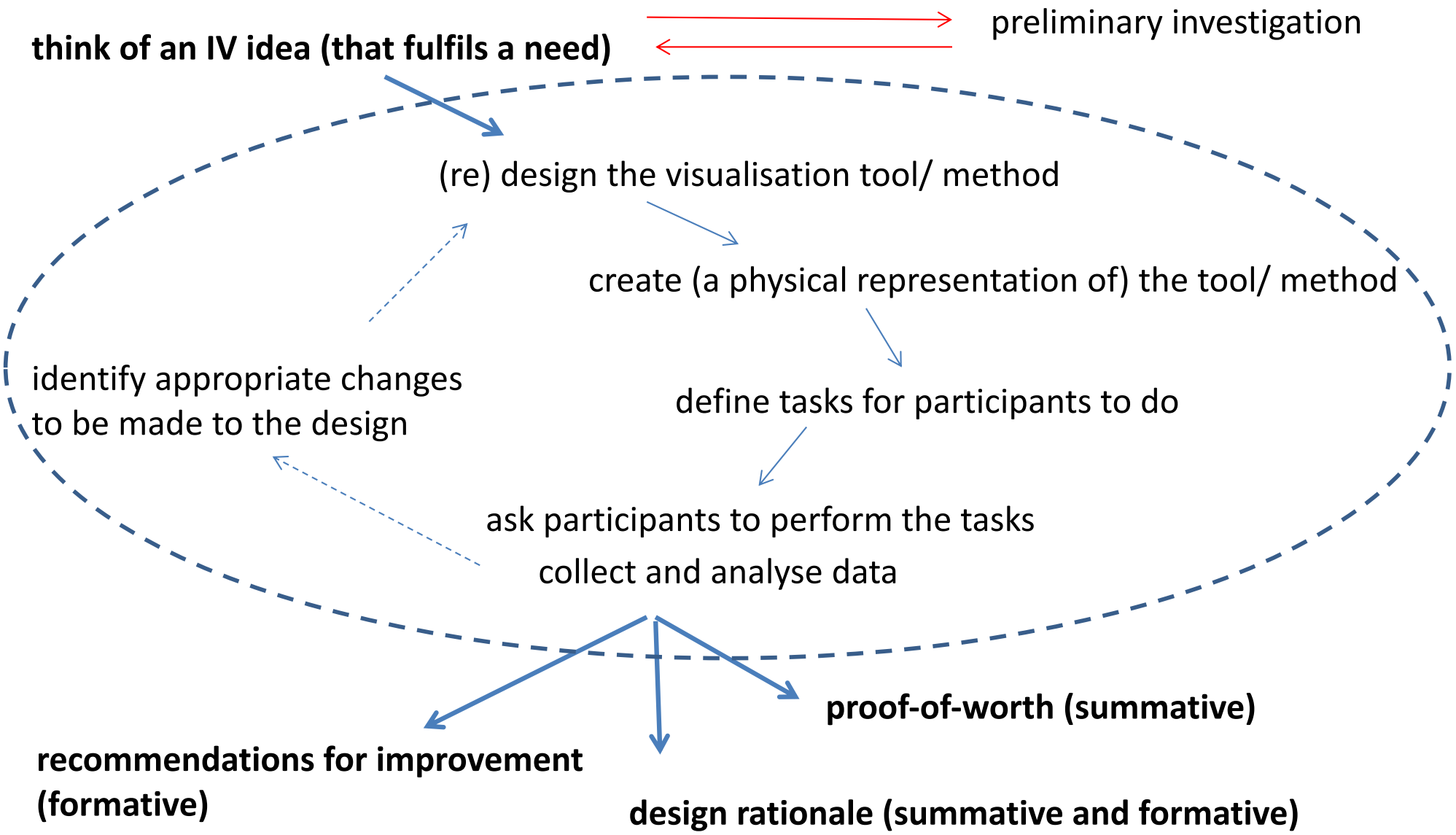
Design and Evaluation

Iterative design



Formative *vs* Summative Evaluation

	Formative	Summative
Aim	Improvement	Proof of worth
Frequency	Often	Once
Participants	A few each iteration	Many
Participants	Typical users	Typical users
Output	Suggestions (weighted or prioritised)	Evidence of worth
Data and Analysis	Qualitative, thematic	Quantitative, statistics

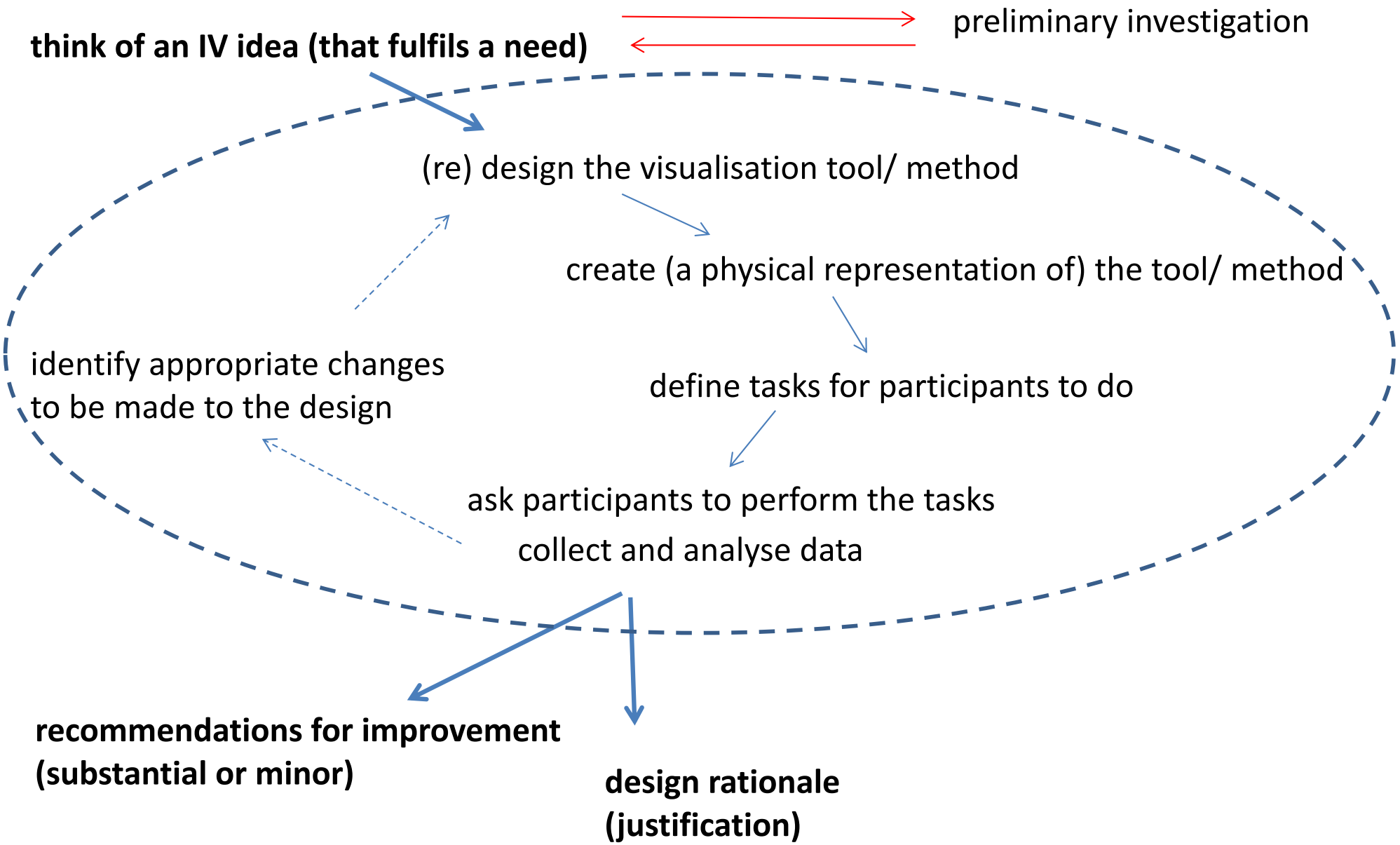
Formative Evaluation

Purpose: to identify improvements

“What can I do to make it better?”

(nothing to prove, everything to learn!)

Formative Evaluation



Example Formative Evaluation output

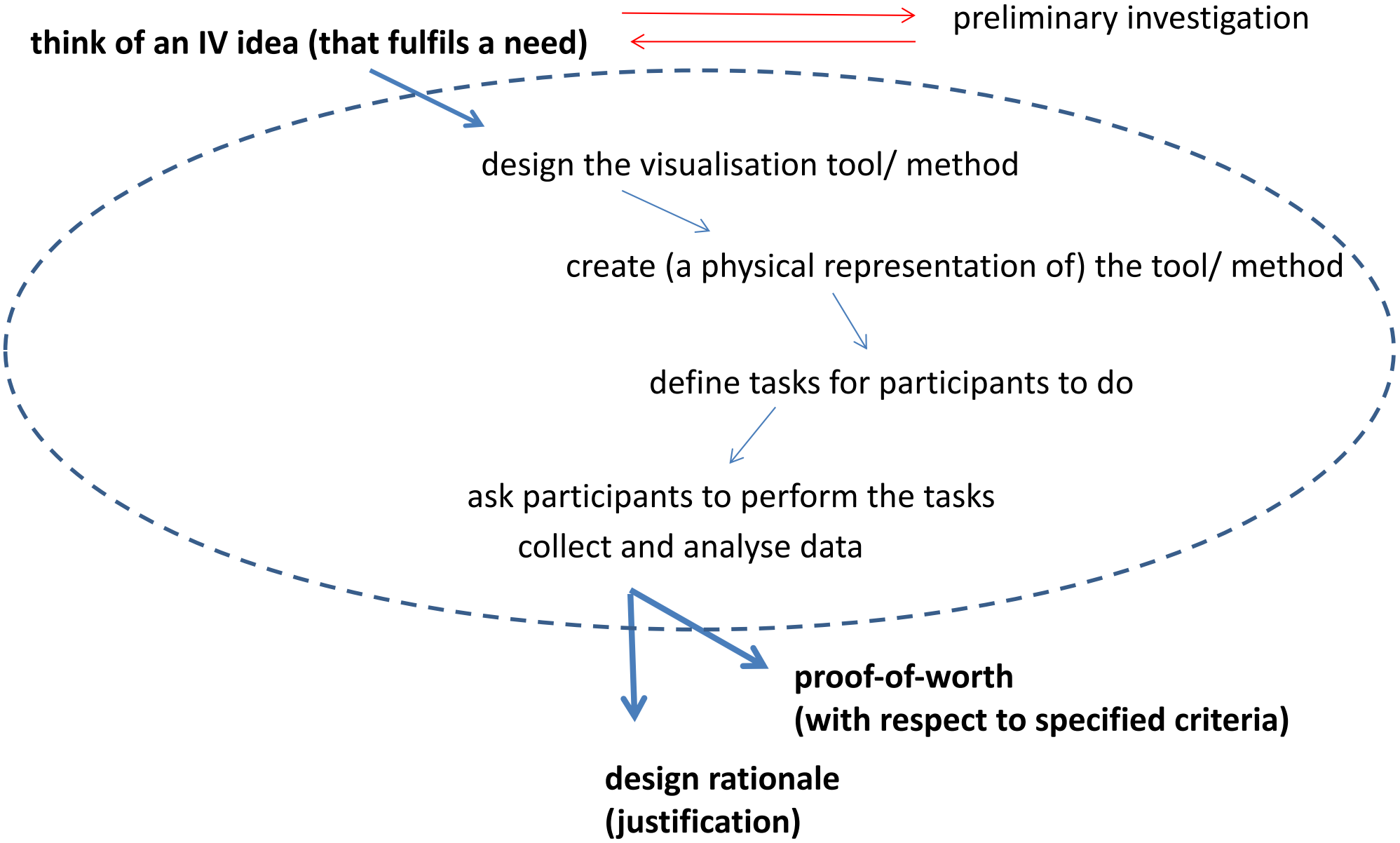
task	problem	recommendation
creating the initial visualisation	the interface does not clearly indicate the steps to be taken	redesign the menu and the interaction process required for this task
loading data	any data set of more than 100 cases takes over 10s to load	review and redesign the data structure
saving data	any data set of more than 100 cases takes over 10s to save	review and redesign the data structure
reading data values	difficult to see the differences between clustered bars	reconsider colour palette used
reading data values	mis-interpretation of pie charts	consider the situations (with respect to form of data) where pie charts are essential, and only allow use of them where essential

Summative Evaluation

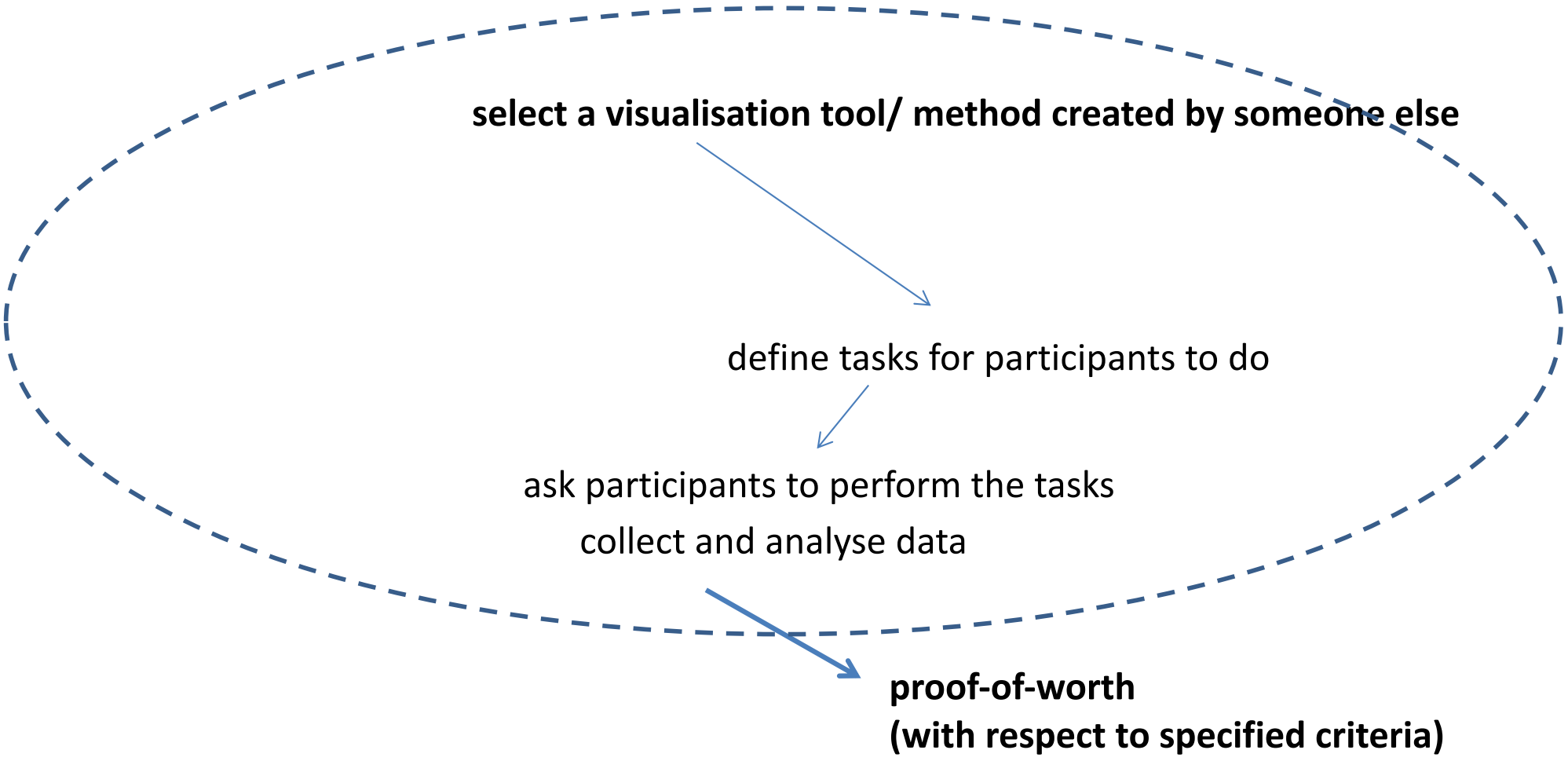
Purpose: to present proof-of-worth

“How good is it?”

Summative Evaluation



Summative Evaluation



Example Summative Evaluation output

criterion	Quantitative data	Qualitative data
ease of use	75% of participants thought the tool was easy to use	“Rather clumsy”; “Quite usable if you know what you are doing”
quick	90% of participants completed the data interpretation tasks in 2 minutes	“Got through the tasks quite quickly – did I get it right?”
intuitive	40% of participants took an incorrect navigation path to the ‘create a multivariate visualisation’ page	“Not sure where I was”; “wasn’t’ sure of the importance of the word ‘multivariate’”
fun	85% of participants said they would like to use the tool again	“That was great!”; “Can I do it again, please?”
lucrative	72% of participants paid the required £1.50 for the extra data analysis features	“Not sure why I had to pay, but I did anyway”; “very cheap”
supports task	No participants made any errors	“The tasks were really easy to complete”

Example Design Rationale output

design choice	Rationale
colour palette used for map visualisation	As suggested by Boren and Smit (2013), the palette was chosen so as to emphasise values both above and below the mean
icons used to depict the various animals	A Design Space exercise was conducted using dimensions of colour, shape, size, texture so as to identify appropriate icons that show both similarity and differences between the animals
icons used to depict the various animals	10 participants were asked to identify the animals from their icons, with 65% success. Suggestions from the participants were incorporated into redesign, and validated with the participants afterwards
visual variables used for representing quantitative data	A QOC exercise was conducted based on the criteria of pre-attentive perception, so that the most important information 'pops out'

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