

Enabling responsiveness of farmers to altering weather patterns: an irrigation bulletin for better planning and adaptation



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CONTEXT

Agriculture in the Mediterranean region is increasingly dealing with the consequences of more frequent and severe drought events and its resulting water shortages, promoted by climate change. This key economic sector is relatively vulnerable to altering weather patterns as heat spells, dry spells and storms as it affects the water balance but also pests and diseases. In the future, farmers have to cope not only with less secured water supply, but also with increasing water demand, as crop requirements are principally driven by climatic conditions. Balancing supply and demand during these periods and anticipating to water deficit requires appropriate information to be available to farmers in a format they can easily access.



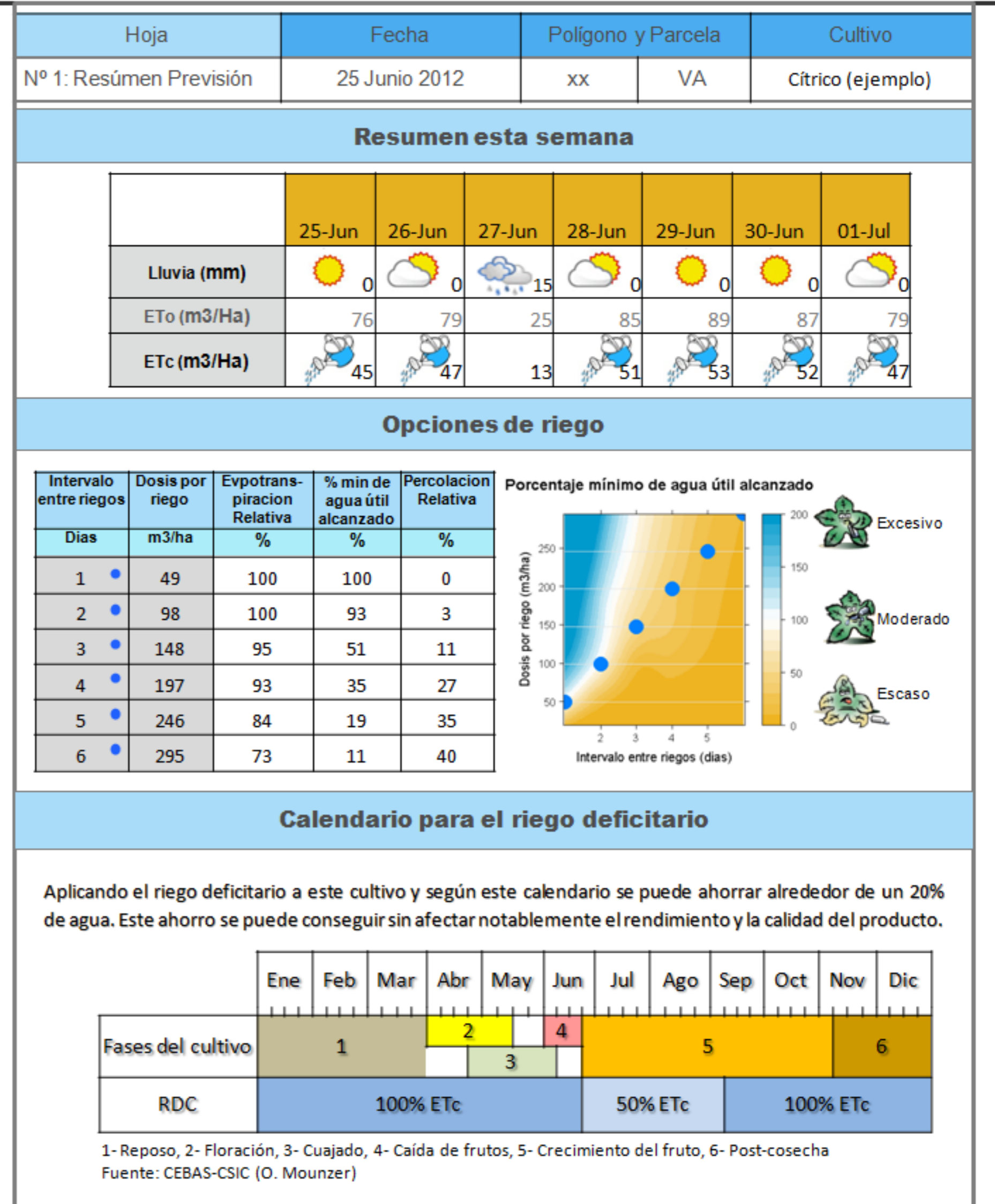
PARADOX

Nowadays, much knowledge is available on how to properly balance water demand and supply on a plot scale. Also, the current state-of-the-art allows fine-tuning irrigation schedules (dose and frequency) without significant water losses. However, the farmers lack several pieces of information to anticipate dry spells and plan irrigation under limited water availability. Although this information exists and is being actively researched (deficit irrigation, risk management, etc), it does not reach the farmer because of a number of barriers (as for example poor alignment with end-user needs, negative impacts on decision making, etc). Therefore, a participatory approach is crucial for the successful design of decision support tools for climate adaptation.

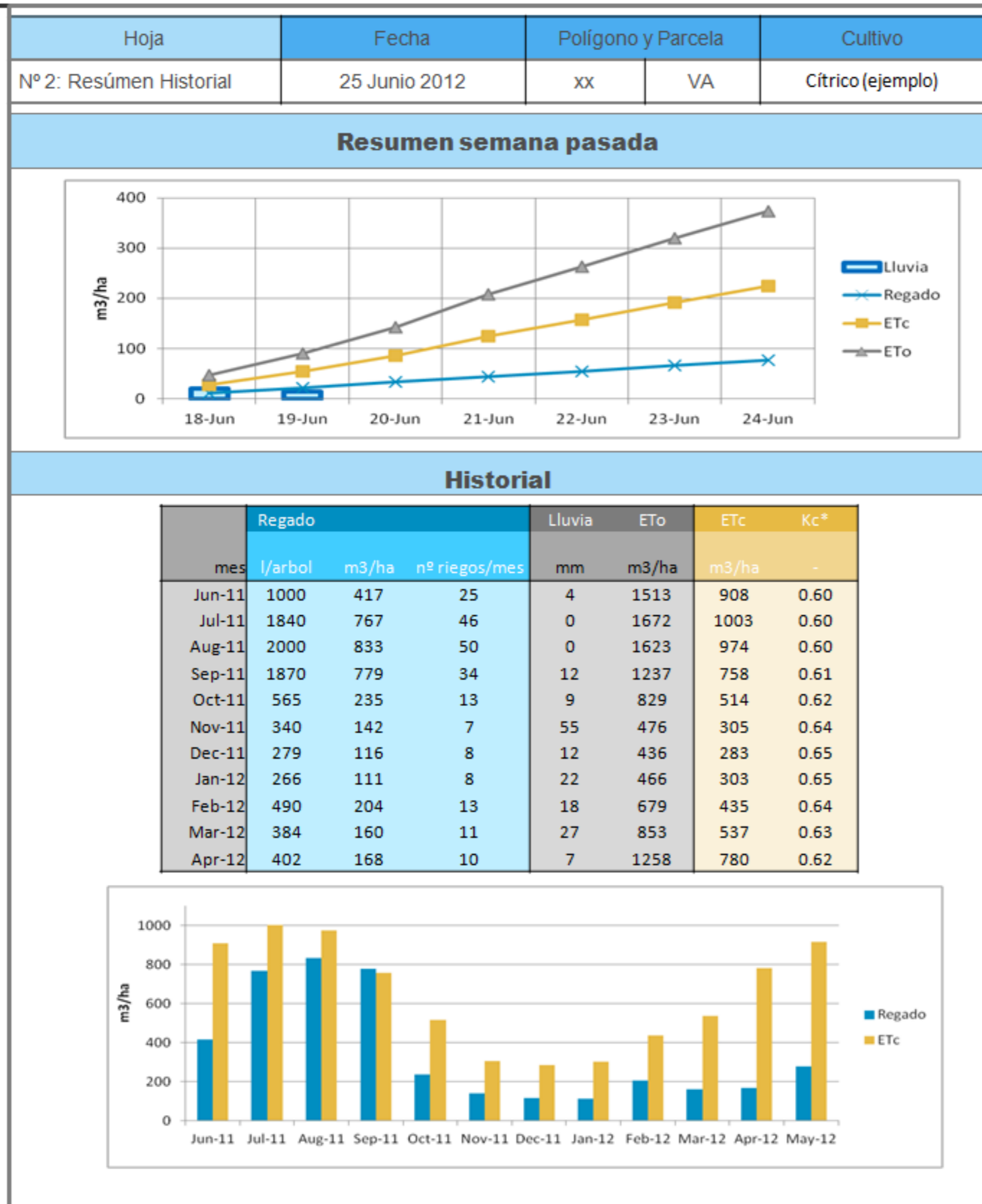
GETTING VALUE OUT OF DATA

A weekly irrigation advisory bulletin was developed together with end-users, joining different pieces of up-to-date information into a single document to support farmers in their weekly decisions on irrigation planning, keeping under consideration the full planning horizon. The bulletin contains (i) weather forecasting information, including forecasted crop water demand, (ii) options for irrigation dose and frequency to meet the forecasted demand, and their impact on water losses and crop-available soil water, and (iii) reference information on irrigated amounts compared to optimal local crop water requirements.

Boletín Semanal



Boletín Semanal



GUIDANCE UNDER DEFICITS

The bulletin also provides clear-cut information on how to irrigate the crop under water scarce periods, using regulated deficit irrigation. This synthesized information source should enable farmers to consider various factors jointly when making decisions on the appropriate amount of irrigation water applied each week. Therefore, an updated version of this bulletin is provided every week by email to the farmer.



PARTICIPATORY APPROACH

A formative evaluation procedure was applied to obtain farmers' feedback on the advisory bulletin during the design and trial run of the bulletin. Farmer feedback was later used to improve the design of the bulletin in order to enhance its usability.

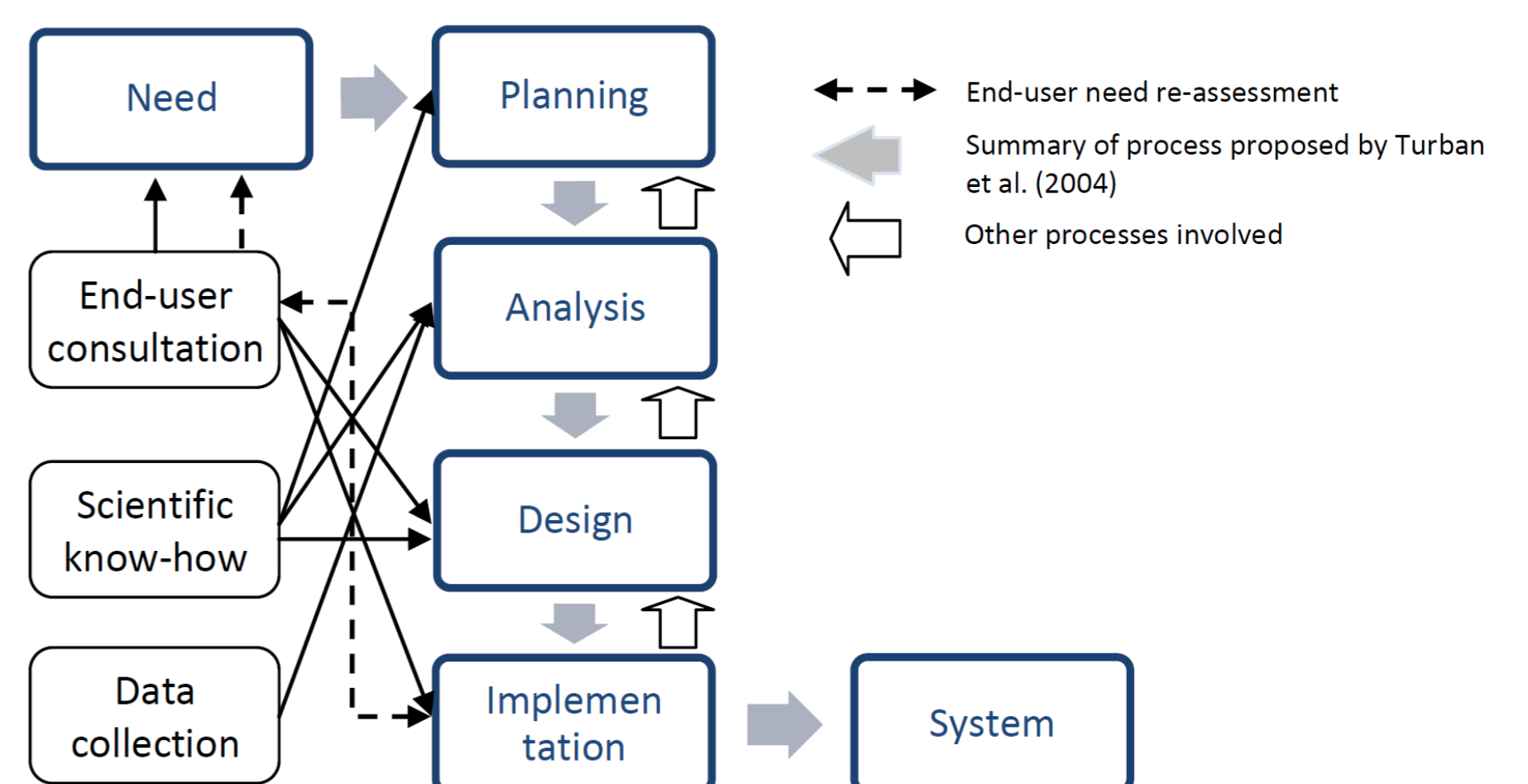


Figure. Decision support tool development lifecycle and elements (based on Turban et al. 2004)

Acknowledgements

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