

Buy or Build? Comparison of commercially available data capture systems for cancer against a specifically designed platform



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Cancer is the largest contributor to disease burden in Australia and a leading cause of death in elderly Australians

Increased levels of cancer related hospitalisations (up 44%, 2001-2014) and expenditure on hospital based care (\$800m more in 2013 vs 2005)

Rising health care costs do not necessarily correspond with better patient outcomes

We are...

The Continuous Improvement in Care – Cancer (CIC Cancer) Project brings value based healthcare (VBHC) into cancer care, using International Consortium for Health Outcomes Measurement (ICHOM) standard datasets for breast, prostate, colorectal, and lung cancer and developing tools for ovarian cancer.

Our needs...

Implementation of the CIC Cancer Project requires a single informatics system to capture both clinical and patient-reported outcomes. Flexibility to incorporate additional data elements to support clinical work or research questions is also required. Functional integration with multiple, differing health services information platforms used within our public and private health sectors is also necessary. To ensure effective use of resources and long-term sustainability, the system must push/pull data necessary to capture information from across the care pathway, and allow external analysis, whilst adopting open data standards. We had to decide whether to develop a specifically designed platform or procure a commercially available product – build or buy.

Methodology...

A system needs analysis was undertaken and critical, desirable and potentially useful requirements were identified (Table 1). A review of commercially available ICHOM dataset capture platforms was completed between May and July 2018 with comparison to these criteria (Table 2). Concurrently, a proposal was sought to customise an existing open source platform developed by one of the project partners.

Table 1: Review criteria

	Critical	Desirable	Potentially Useful
ICHOM cancer datasets in place and fully functioning	●		
Business operations within Australia/NZ	●		
Australian health services users	●		
Open source nature of the site	●		
Connectivity to other systems (API)	●		
User numbers	●		
Acceptable system/user/licensing costs	●		
Adaptability/customisability to meet user needs	●		
Separation of PROMs and Clinical Modules	●		
Data storage options – possibility of hosting by user	●		
Cloud hosting in Australia		●	
Delivery timeframes		●	
Availability in other languages		●	
Possibility of conferring with current users			●
ICHOM tech hub user rating (where available)			●
ICHOM user reviews (where available)			●

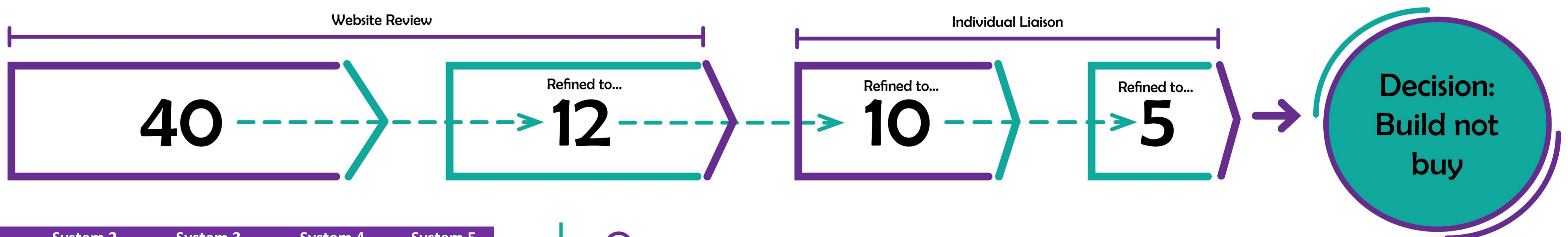


Table 2: Systems review

	System 1	System 2	System 3	System 4	System 5
Fully developed at demo	x	x	✓	✓	✓
ICHOM Data captured	PROMs	Clinical & PROMs	Clinical & PROMs	Clinical & PROMs	PROMs
Fully developed	x	x	✓	✓	✓
Critical criteria					
Cancer datasets in use	All	All	All	1 only	All
Operations in Aust/NZ	✓	✓	✓	✓	✓
Other Australian users	2 + planned	1 planned	2	3	3
Open source	x	x	x	x	x
Connectivity to other systems (API)	x	x	Not yet	✓	✓
Projected min. total cost	Medium	High	Low	High with potential for very high	Medium
Dynamic configuration Adaptable/customisable	✓	x	✓	X (not yet)	x
Separation of PROMs and Clinical Modules	N/A (PROMs only)	Not clear	✓	✓	N/A (PROMs only)
Options for data storage by CIC Cancer/site	✓	x	✓	x	x
Data storage	Public Cloud	Public Cloud	Options	Public Cloud	Public Cloud
# users allowed	Unlimited	Restricted	Unlimited	Unlimited	Unlimited
Desirable criteria					
Time to delivery	N/A	N/A	Awaiting API	2 months	2 months
Other languages	✓	x	x	Unknown	✓
CIC Cancer needs met	No	No	No	No	No

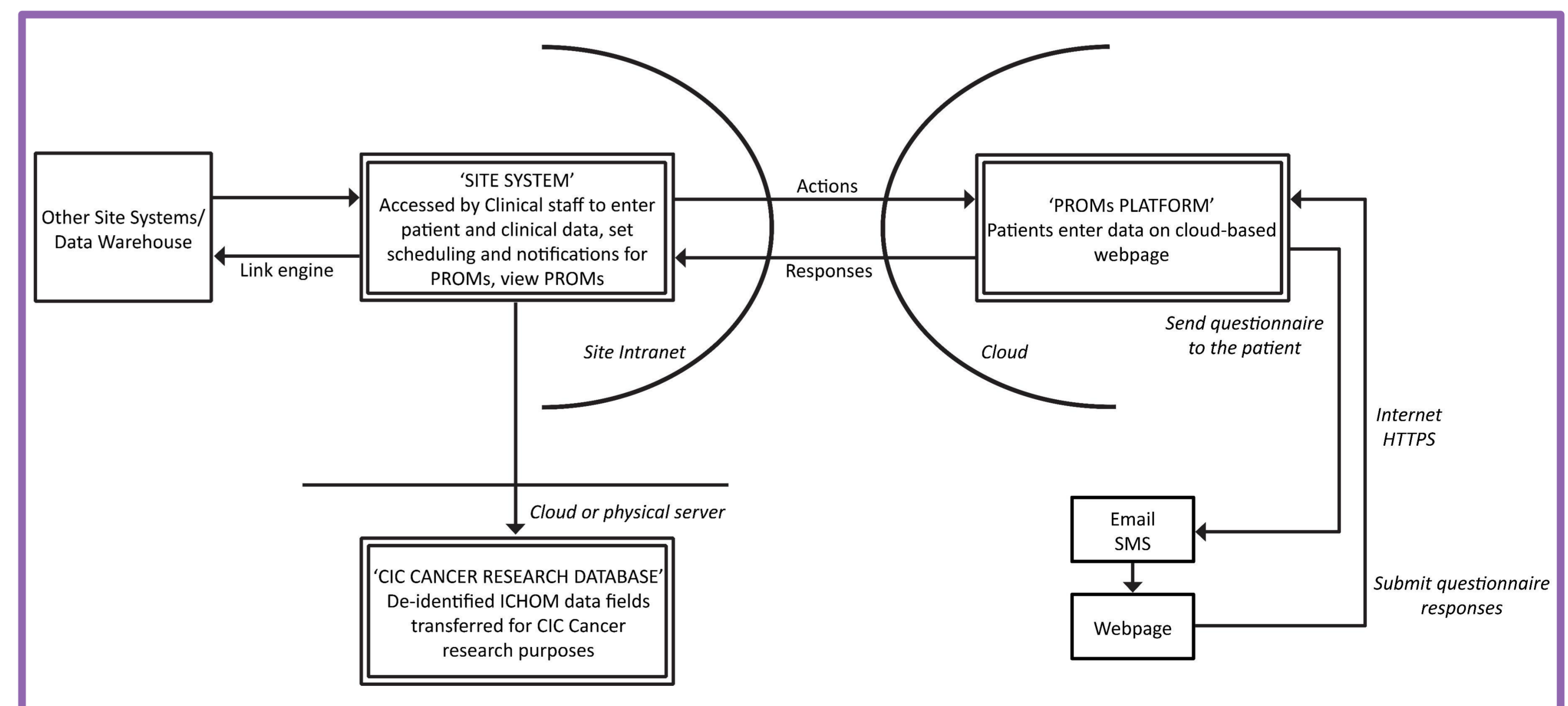
Results...

- 40 commercially available systems indicated inclusion of all ICHOM datasets.
- 12 operated within Australia and New Zealand. Website review was undertaken for all, with 2 discounted because of non-development of the advertised system at the time of review.
- 10 companies were contacted. 5 of these were discounted through: inability to contact; non-inclusion of cancer datasets; or very high cost.
- 5 products proceeded to live demonstration phase (Table2).
- The key finding was **that none of the commercial systems reviewed met all essential criteria**. System 3 most closely met our needs but their application programming interface (API) was not yet developed and the product is not open source. It was unknown if the planned API would expose the exact functionality needed and any additional development on the part of the commercial systems team may require coordination by our systems development team. It was also likely that additional system development expertise would be required to integrate the systems into WA hospitals.
- Whilst several of the systems have the ability to collect both clinical and patient-reported outcome measures (PROMs), modifications to include clinicians' additional requirements were not possible outside the producer's development team and would incur an additional cost.

We decided...

- The needs of the CIC Cancer Project are complex, multidimensional and the **implementation of an effective informatics system is integral to its success**. None of the commercially available systems reviewed appeared capable, at the time of review, of fully meeting the complex needs of the project. To ensure **sustainability** and allow for **future, long-term uptake and ownership** by the public and private health services a **low cost, easily adaptable, open source system is required**.
- Commercial systems required supplementary work to integrate into the differing needs of sites and information flows, reducing the cost effectiveness of any commercially available application.
- A **bespoke, open source solution** that incorporates the full ICHOM standard dataset, as well as customisation and adaptation to meet specific clinical needs per tumour stream or site, and potential to be fully integrated, was found to best meet the requirements of the project (Figure 1).

Figure 1: Bespoke CIC Cancer informatics solution



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