Joint Submission of the Department of Health and the Department of Corporate and Digital Development

to the

Public Accounts Committee

Inquiry into the Acacia Digital Patient Record System

Letter of transmittal

Ms Julia Knight
Secretary to the Public Accounts Committee
GPO Box 3721
DARWIN NT 0801

By email only: LA.PAC@nt.gov.au

Dear Ms Knight

RE: Submission to the Inquiry into the Acacia Digital Patient Record System

We are pleased to provide you with the Department of Health's and the Department of Corporate and Digital Development's joint submission to the Public Accounts Committee's *Inquiry into the Acacia Digital Patient Record System.*

This submission is suitable for publication by the Committee.

We would be pleased to appear before the Committee, at a time convenient to it, to expand on this submission and answer any questions the Committee may have.

Yours faithfully

[redacted]

Chris Hosking
Chief Executive Officer
Department of Health

[redacted]

Catherine Weber PSM
Chief Executive Officer
Department of Corporate and Digital Development

Glossary of Key Terms

TERM	DEFINITION
Alice Springs Hospital	The public hospital located in Alice Springs in Central Australia
CareSys	NT Health's legacy patient administration system that stores individual patient identification and episode details
Central Administrative Hub (**CAH**)	The temporary unit at Royal Darwin and Palmerston Hospitals responsible for ensuring the translation of patient data between CareSys, which is temporarily used in the Emergency Department, and Acacia 1.0, which is in use elsewhere across the Royal Darwin and Palmerston Hospitals
Clinical Leadership Group (**CLG**)	A group comprising senior representatives from each major clinical profession within NT Health
Clinical Workstation (**CWS**)	NT Health's legacy clinical documents and results reporting system across all hospitals
Community Care Information System (**CCIS**)	NT Health's legacy patient administration and record system used across community-based services
Core Clinical Services Renewal Program (**Program**)	The program responsible for the procurement, development, and implementation of Acacia
Department of Corporate and Digital Development (**DCDD**)	The government department responsible for providing ICT services to government agencies
Department of Corporate and Information Services (**DCIS**)	The former name of DCDD
Department of Health (**NT Health**)	The government department responsible for delivery of all public health services in the Northern Territory
Electronic Medical Record (**EMR**)	A module of Acacia utilised day to day by clinicians and staff to gather, manage and consult patient information and data to inform and record patient care delivery in real time (also sometimes referred to as an Electronic Patient Record (EPR) or Electronic Health Record (EHR))
Electronic Medication Management Application (**eMMa**)	NT Health's legacy electronic system used to prescribe medication in the acute setting
Functional Group (**FG**)	The various phases of the implementation of the Program
Go Live	The deployment event which sees an IT system (or an aspect of an IT system) become operational
Gove District Hospital	The public hospital located in Nhulunbuy in the East Arnhem region
ICT Governance Board (**IGB**)	NT Government governance committee with oversight of investments in digital technologies with membership from multiple agencies at Chief Executive and Deputy Chief Executive level, established by the Treasurer's Directions – ICT Series, and reporting to the Minister for Corporate and Digital Development
InterSystems Australia Pty Ltd (**InterSystems**)	The Program software vendor, a specialist clinical technology company headquartered in the United States which is responsible for the development and marketing of TrakCare
Katherine Hospital	The public hospital located in Katherine in the Big Rivers region
Patient Administration System (**PAS**)	IT system that manages the patient throughout the hospital journey. NT Health's legacy PAS is CareSys
Primary Care Information System (**PCIS**)	NT Health's legacy patient administration and record system used in remote primary care facilities
Procurement Governance Committee (**PGC**)	The committee responsible for coordinating and managing the procurement of the Program's software vendor in DCIS (now DCDD)

Program Implementation Committee (**PIC**)	The committee responsible for providing expert advice and guidance to the PSC and monitoring delivery of the program
Program Steering Committee (**PSC**)	The primary authorising body for key decisions relating to the Program, comprising the Chief Executive Officers of DCDD and NT Health, the Under Treasurer and the NT Health clinical sponsor
Royal Darwin and Palmerston Hospitals	The primary public hospital network in Darwin, comprising both Royal Darwin Hospital campus and Palmerston Regional Hospital campus
Tennant Creek Hospital	The regional public hospital located in Tennant Creek in the Barkly region
TrakCare	The core EMR product underlying Acacia, developed and marketed by InterSystems
User Acceptance Testing	A common software testing process in which end users test the new system in place to ensure it meets their needs and expectations, and to identify issues, before it is deployed at large

Table of Contents

1 Executive Summary 1

2 Background 4

2.1 What is Acacia? 4

2.2 Why is Acacia necessary? 4

2.3 Why did the Territory need a tailored solution? 9

2.4 A fully integrated electronic clinical information system across the Territory 12

3 Program Responsibility, Governance, Quality Assurance and Oversight 12

3.1 Shared Service Model of Delivery 12

3.2 Governance Model of the Acacia Program 14

3.3 Oversight of the Program 15

4 History of the Program 16

4.1 Business Case and Initial Budget 16

4.2 Procurement and Vendor Selection 17

4.3 Program Schedule and Approach 20

4.4 Go Live of FG0: Acacia Read-only Electronic Patient Record (EPR) 22

4.5 Go Live of FG1: Acacia 1.0 at Katherine Hospital 22

4.6 Go Live of FG1: Acacia 1.0 at Top End Renal Units 24

4.7 Go Live of FG1: Acacia 1.0 at Gove District Hospital 24

4.8 Go Live of FG1: Acacia 1.0 at the Royal Darwin and Palmerston Hospitals 24

4.9 Go Live of FG1: Acacia 1.0 at Central Australian Renal Units 26

5 Future of the Implementation of Acacia 26

6 Benefits 27

6.1 The critical role of Electronic Medical Records in contemporary healthcare settings 27

6.2 Realised benefits of Acacia EPR 28

6.3 Realised benefits of Acacia 1.0 in the hospital setting 31

6.4 Realised benefits of Acacia 1.0 in the outpatient setting 34

6.5 Benefits of Acacia following completion of the implementation 35

7 Issues 37

7.1 Increase to Program budget 38

7.2 Royal Darwin and Palmerston Hospital EDs 40

8 Response to Matters Referred to Inquiry 42

8.1 The difference between the initial project budget and the cost of procuring, implementing and managing the Acacia system to date 42

8.2 A timeline of each of these cost revisions with an explanation for each revision 43

8.3 Any issues that were raised during implementation of the system, when the responsible Minister was notified of these issues, how long it took for these issues to be resolved, if they were resolved at all, and their cost 43

8.4 The impact to the health system, and the cost, of any rollbacks/suspensions of using the software in hospitals that occurred during implementation 44

8.5 The current status of implementation against the original staged project plan and the outstanding steps, and their cost, required for project completion 46

9 Conclusion 47

1 Executive Summary

1. Acacia is an information and communication technology (**ICT**) system that is being introduced in healthcare settings throughout the Northern Territory. It is a tailored version of TrakCare, a state-of-the-art healthcare information system developed by InterSystems, with a track record in over 450 hospitals in 29 countries around the world, including in Australia, New Zealand, the United Kingdom, the Americas, Europe, the Middle East and Asia. Once it has been deployed, it will replace five existing systems in the Northern Territory's public hospitals, clinics, primary and community healthcare facilities.

2. The upgrade of the ICT systems used in healthcare in the Northern Territory is necessary because the existing legacy systems, implemented as early as 1989, are outdated and have reached end of life. They are no longer supported by their technology vendors, meaning there is no recourse or support when problems arise. In some cases, the NT is the last remaining customer in the world still using these systems. Failing to replace these systems, or "doing nothing", creates an unacceptable risk of total system failure, which has the potential to lead to compromised patient health and wellbeing.

3. The transition to Acacia will improve the health outcomes of Territorians by equipping clinicians with all the information they need to effectively treat patients. When deployment of the Program is complete, Acacia will provide a single, end-to-end digital patient record in the Northern Territory, covering the Territory's six acute hospitals, 72 primary care facilities, and a number of community-based health services, including renal facilities, correctional centres, palliative care, mental health and alcohol and other drugs, aged care and disease control services. It will also provide an external portal for access by private and interstate healthcare providers, as well as patients themselves.

4. The benefits of integration will be acutely felt in the Northern Territory, where Aboriginal and Torres Strait Islander populations account for approximately 70% of all episodes of care, and nearly 90% in rural and remote areas.[1] The integrated system will address key challenges these communities face, including low health literacy and language barriers that hinder effective communication of critical medical information to healthcare providers. Additionally, the higher burden of disease in these populations leads to greater reliance on medications and frequent transitions between acute and community or primary care settings, further underscoring the value of a connected healthcare system.

5. The procurement process which led to the selection of InterSystems considered 14 tenders and involved a comprehensive assessment of four shortlisted tenderers, including other internationally renowned vendors. TrakCare was and remains the best option given its single-system functionality that allows one system with integrated modules for hospital wards, medication, allied health, pathology and diagnostics, scans, and primary healthcare. Opting for a single system avoids problems that have arisen in some other jurisdictions with fractured systems now requiring additional, expensive investments.

6. The Acacia major transformation Program is being delivered by the Department of Corporate and Digital Development (**DCDD**) in partnership with the Department of Health (**NT Health**). DCDD's expertise in significant ICT-enabled reforms is vital to the project. DCDD works closely with subject matter experts from NT Health, including doctors, nurses, pharmacists, allied health specialists, and hospital administrators, so that Acacia is delivered by clinicians, for clinicians.

---

[1] NT Health, *Morbidity in the Northern Territory 2008–2018* (Fact Sheet, 8 November 2022).

7. In large-scale ICT reform in healthcare related settings, where patient safety is paramount, implementation must be progressed in a considered manner. An implementation program that is too quick will create stress and anxiety within the workforce and put patient health at risk. These risks must be balanced against the risks and costs associated with moving too slowly which, in this context, include the risk of significant or total system failure, increase in cost, and the loss of public confidence in the reform. Striking the right balance between these competing risks is very difficult. Doing so in the context of the COVID-19 pandemic and the stress it placed on the Territory's healthcare system and its staff has made this task even more challenging.

8. To date, while there have been some delays associated with balancing the above risks, the deployment of Acacia has been successful.

   (a) In August and September 2020, a number of soft launches of the Acacia read-only Electronic Patient Record (EPR) were progressed, deploying the Acacia EPR for use by small groups of practitioners. These were a success and feedback was positive. By the end of 2020, the Acacia EPR was fully deployed to over 4,500 practitioners across the Territory and remains in widespread use today.

   (b) In July 2022, Acacia 1.0, comprising the Patient Administration System, was introduced at Katherine Hospital. Katherine was chosen to be the first location for the implementation of Acacia 1.0 on the basis that it was a smaller hospital with lower patient volume than the larger hospitals in Darwin and Alice Springs. A number of steps were taken to support the staff with Acacia 1.0, including the delivery of a significant amount of face-to-face training. It proceeded with minimal issues.

   (c) In October–November 2022, Acacia 1.0 was progressively introduced in the four Top End Renal Dialysis Units. Again, the introduction of Acacia 1.0 proceeded with minimal issues.

   (d) In November 2022, Acacia 1.0 was implemented at the Gove District Hospital. A similar approach was taken to the implementation in Katherine, given the similarity in hospital size and regionality and again, it proceeded with minimal issues.

   (e) On the basis of the experience of staff to these first stages of the transition to Acacia 1.0, a number of necessary improvements to the system were identified, particularly in theatre scheduling and outpatients. Those were actioned by InterSystems and Program staff with improvements delivered to the Acacia system in situ.

   (f) Further, in preparation for the introduction of Acacia 1.0 to the Royal Darwin and Palmerston Hospitals, significant consultation was undertaken with staff, and with the Emergency Department (**ED**) in particular, to ensure the system was suitable to their needs, and further improvement works were undertaken.

   (g) In November 2023, Acacia 1.0 was introduced at Royal Darwin and Palmerston Hospitals, including to the following units: general medicine; renal medicine; respiratory and cardiology; infectious disease and medicine; surgery; ED; maternal and child health; obstetrics; and paediatrics. On the basis of challenges experienced by staff with the system in the ED, a decision was made in March 2024 to suspend the roll-out within the ED to allow further engagement with staff and the customisation of the system to better suit the needs of emergency medicine. This process is ongoing. Acacia 1.0 continues to operate in all other parts of the hospitals, which constitute 90% of system users.

   (h) In February-March 2025, Acacia 1.0 was introduced to four same-day Renal Dialysis Units in Central Australia. It proceeded with minimal issues.

9. The decision to deploy Acacia 1.0 within the Royal Darwin and Palmerston Hospitals, and then temporarily suspend Acacia in the ED, is an example of the Program taking a cautious and considered approach to the introduction of Acacia, while at the same time being sensitive to performance measures such as timeframes and budget, and being responsive to risk as it arises.

10. The full implementation of Acacia will require at least another 2.5 years. While this represents a departure from the original proposed timeframe, the literature makes it clear that the introduction of complex ICT systems in healthcare settings will generally require some flexibility on timing. To illustrate, in South Australia, the introduction of a similar system commenced in 2011 and is ongoing, some 15 years after commencement. Further, the disruptions associated with the COVID-19 pandemic could not be foreseen when milestones were set.

11. Despite the delay, Acacia is already delivering significant clinical benefit at the point of care and once fully implemented, Acacia will transform the delivery of public health care across the Northern Territory.

2 Background

2.1 What is Acacia?

12. Acacia is the name given to a new clinical information technology (**IT**) system that is replacing five existing systems in the Northern Territory's six acute hospitals, 72 primary care facilities, and a number of community-based health services, including renal facilities, correctional centres, palliative care, mental health and alcohol and other drugs, aged care and disease control services.

13. It is a specific suite of customised clinical software that is underpinned by a core system called TrakCare. TrakCare is developed and marketed by InterSystems, a specialist clinical technology company in the United States. TrakCare comprises many modules which can be used individually or which together form a unified and integrated system. It is designed to be a highly configurable system which can be aligned to the specific requirements of a clinical environment to suit different user needs.

14. The procurement, configuration, integration, testing, and deployment of Acacia is the responsibility of the Core Clinical Services Renewal **Program**. The Program is project managed by the Department of Corporate and Digital Development (**DCDD**) and is delivered for, and in collaboration with, the customer, the Department of Health (**NT Health**).

15. When deployment of the Program is complete, Acacia will provide a single, end-to-end digital patient record in the Northern Territory, covering the Territory's six acute hospitals, 72 primary care facilities, and a number of community-based health services. It will also provide an external portal for access by private and interstate healthcare providers, as well as patients themselves. In that way, it will be a one-stop-shop and provide clinicians with access to real-time information from every aspect of a patient's journey through the Territory's healthcare system, no matter where the patient presents.

2.2 Why is Acacia necessary?

16. Currently, NT Health uses the following five core systems:

    (a) **CareSys**: CareSys is the patient administration system which stores individual patient identification and episode details, including patient demographics, appointments, waitlists, hospital episode history, and billing. CareSys records and enables access to all NT Health hospital patient clinical information for hospital services Territory-wide, including in the outpatient, inpatient, ED, theatre, infection control, allied health, maternity and antenatal, rehabilitation, renal dialysis, mental health and radiology units. CareSys was also used across renal clinics and correctional health centres. This system has been in use since 1989.

    (b) **Clinical Workstation (CWS)**: CWS is the clinical documents and results reporting system for all Territory hospitals. It is used to gather demographic and other information, including pathology and imaging results, and live information on patient admissions, discharges and transfers. This system has been in use since the 1990s.

    (c) **Primary Care Information System (PCIS)**: PCIS is the patient administration and record system used in the primary care facilities, including rural and remote clinics, correctional health centres, and renal centres. PCIS allows primary care clinicians to prescribe medications, request and review pathology and radiology reports, send messages to other clinicians, receive discharge and outpatient information, record notes and observations, and generate referrals. This system has been in use in the Territory since 1998, however was established in all primary care centres in the early 2000s.

(d) **Community Care Information System (CCIS)**: CCIS is the patient administration and record system used across community-based services, including palliative care, mental health, alcohol and other drug services, and community health services, and was until recently used for casework management by the Department of Children and Families. CCIS allows clinicians to record and report on client details and demographics, assessments and case management, client service histories, and planned or scheduled services for clients. This system has been in use since 1999.

(e) **Electronic Medication Management Application (eMMa)**: eMMa is the electronic system used to prescribe medication in the acute setting (hospitals), taking the total number of IT systems used in NT Health every day to five distinct and separate systems. eMMa was introduced Territory-wide by 2008.

17. Of those, CareSys, CWS, PCIS and CCIS are all legacy systems and their use is no longer supported by the external provider. NT Health's continued reliance on these legacy systems gives rise to a number of serious and time-critical risks—including most significantly the risk of a catastrophic IT systems failure which could significantly disrupt the delivery of health services in the Territory and place patient health at risk.

Legacy systems have exceeded their operational lifespans and are unsupported by a vendor

18. The four legacy clinical IT systems, CareSys, CWS, CCIS, and PCIS, are technologically outdated, have surpassed their intended lifespans (or 'use by' date), and are unsupported by a third party IT vendor. DCDD is now the sole supporter of each of these systems, including in terms of the cost and expertise required to maintain them. As a result, these systems are no longer suitable to support delivery of contemporary clinical services in the Territory, and continued use of these systems is driving risk in terms of clinical services, business and technology, efficiency in NT Health and cost to DCDD.

19. Prior to the Program, there had been no significant investment by the NT Government into these core health legacy IT systems since 1997.

20. By 2015, there was growing evidence of a heightened risk of serious system failure within the CareSys platform, which operates as the backbone of the NT hospital systems:

(a) the maximum stability size of the database had been surpassed which prevented data archiving and reduced system performance and stability;

(b) because of the system's age, the vendor had a lack of specialist skill and knowledge about the software which reduced its capacity to effectively maintain the system and caused significant delays in upgrades and deterioration of support levels;

(c) there had been a continuing increase in unscheduled IT outages over several years due to the need for the CareSys program to be "rebooted" to resolve performance and stability issues; and

(d) the vendor ultimately requested that NT Health transition off the system due to the vendor's diminishing capacity to maintain the system (including an inability to conduct essential fault fixes and minor enhancements).

21. By 2016, NT Health was the last remaining user of CareSys and CWS in the world, while PCIS was being used in only one other jurisdiction, and CCIS remained in use in just a few places.

22. By 2018, all four of these legacy systems were no longer supported by an enterprise software vendor. This had several serious practical and financial implications for NT Health:

(a) The software underpinning these systems was no longer funded to receive upgrades to hardware and operating systems, or for technical support by the vendor. As a result, NT Health and DCDD became, and remain, responsible for funding all system enhancements, many of which would otherwise be shared between all current users of the software. This is a significant cost for the NT Government to bear.

(b) The substantial cost of upgrading the legacy systems is further compounded by the absence of a broader user base. With few or no other users globally, there is no opportunity for shared investment or collaborative development, meaning all costs associated with software maintenance and enhancements are at NT Health's individual expense.

(c) The absence of a broader user base also means that relevant IT expertise is extremely limited. As these systems continue to age and their software becomes more outdated, the number of professionals with the necessary skills to maintain and recover them in the event of failure has decreased. This increases the risk of a catastrophic system failure, which would come at significant expense and clinical risk to NT Health, with patient health put at risk.

(d) In 2018, to allow the system to continue operating, the NT Government paid $6 million to secure a perpetual legal right to CareSys software.

(e) Ongoing and future changes in NT Health's business needs cannot be accommodated in the legacy systems due to a lack of specialist expertise and limited development capability in the underlying software.

23. Given the outdated technology underlying these core legacy IT systems, and the fact that they are no longer supported by a vendor, the financial, operational, and clinical risks associated with their continued use is significant.

24. The likelihood and potential consequences of a system failure are increasingly severe, including:

(a) adverse clinical outcomes due to unavailable, incomplete or incorrect information including potential loss of patient life;

(b) reduced operational effectiveness due to IT systems not supporting efficient work practices;

(c) reduction and disruption to service delivery across the Territory; and

(d) reduction in revenue collection.

25. In the event of a system failure, currently *no* commercial vendor holds any contractual obligation to provide a remedy for that failure. NT Health and DCDD is solely responsible for addressing and resolving issues that arise pursuant to these systems. This exposes NT Health to significant risk, as a major failure could critically disrupt the delivery of health services across the Territory.

26. The growing risk of a major system failure due to the legacy systems exceeding their operational lifespan is compounded by the uncertainty and instability of a lack of vendor support. This poses a significant risk of major operational, reputational and financial loss to NT Health and, as a result, the continued reliance on the legacy IT systems is untenable.

Inability to integrate clinical information

27. Prior to Acacia, staff accessed and entered clinical information in five different, siloed systems across NT Health, with virtually no interoperability (or sharing of information) between systems. Healthcare staff were required to access these separate platforms to retrieve a comprehensive patient history for the person in front of them, significantly increasing the time required to piece together a patient's history. Clinicians were also required to spend a longer period of time entering information into the separate systems, rather than engaging with a single system. The separate systems also meant that care teams working in different settings (and therefore on different IT systems) were required to manually request patient information from each other in order to have any oversight of care provided in a separate care setting. For example, data from the hospital setting (which relied on CWS and CareSys, among others) was not automatically integrated in real-time with primary health care centre data (which used, among others, PCIS). This created data duplication, information gaps and delays which had the capacity to compromise patient care and increased risks to the patient. Test and assessment duplication also resulted in unnecessary cost to the service.

28. Clinicians are best supported to make the most accurate and efficient decision regarding patient care when *all* relevant medical history is available to them, and the lack of information sharing can have critical impacts at point-of-care delivery, as demonstrated in the below case study.

Immediate access to complete patient records: a critical tool for Code Blue Teams

At Territory hospitals, the clinicians who respond to a patient's sudden and life-threatening deterioration are known as the Code Blue Team—a rapid response unit trained to make critical decisions within seconds.

When working in the Code Blue Team, every second counts. The Team must immediately assess the patient's condition and implement life-saving interventions. Critical to that assessment and decision making is a clear and immediate understanding of the patient's medical history.

In the previous fragmented system, that patient history was scattered across multiple legacy IT platforms, and understanding the full picture took time. For instance:

(a) To understand the patient's medical history and recent pathology, a team member had to access CWS.

(b) To determine their current medications and when the last dose was administered, a team member had to consult eMMa.

(c) A team member may have also needed to locate and sift through a paper-based medical file to review the treating team's notes, to understand more about the patient story and what may have been causing their deterioration.

In the context of a medical emergency, the consequences of relying on these time-consuming systems were real and could mean the difference between patients living or dying.

29. The lack of interoperability at point-of-care also increased the risk of clinical errors, as it increased the likelihood of patient information being overlooked or miscommunicated due to the higher cognitive and administrative burden on staff in having to locate the relevant information. This compromised the quality and safety of patient care and placed an unsustainable burden on NT Health's frontline healthcare staff.

30. From a data analytics perspective, the lack of interoperability also reduced NT Health's capacity to capture accurate information regarding its service delivery, and the health of Territorians more broadly. Without a centralised dataset, NT Health has been unable to accurately store, report and analyse important health metrics, such as patient outcomes, data on disease prevalence, and use of resources. Accurate datasets of this nature are important in a contemporary health service as they support transparency, accountability and improvement across the health service. Accurate data sets are also crucial to ensuring the Northern Territory receives a fair allocation of Commonwealth health funding, as it is tied to service delivery.

31. The progressive implementation of Acacia has begun to resolve these issues by ensuring that all patient data is available to all healthcare providers, in real time. The implementation of Acacia EPR, discussed in more detail at [101]–[106] below, is already providing real clinical benefit in this regard.

Functional issues with legacy IT systems leading to inefficiency and patient risk

32. In addition to the lack of integration across the legacy IT systems, and the risks set out above, each individual system has particular functional shortcomings which lead to inefficiency and patient risk in a modern clinical setting.

33. For example:

(a) CareSys has a complex and counterintuitive interface. It cannot be deployed on mobile devices and cannot readily receive electronic information. Its patient alert system is inefficient and outdated, which has the potential to significantly impact patient management and is not appropriate for contemporary communication regarding critical information and risk. It also cannot record the outcome of outpatient appointments (e.g. those that are not attended, not commenced, cancelled or completed), which leads to ineffective tracking of service delivery and challenges in ensuring appropriate follow-up care or clinical review.

(b) CWS has limited electronic medical record-keeping functionality and therefore clinical notes, assessments and orders generated by hospital staff are managed on paper medical records. Paper-based records reduce clinical productivity and illegible handwriting, misplaced documents, and transcription errors can all lead to clinical errors. It also lacks a functional test result witnessing feature, making it impossible for clinicians to identify which of a patient's results have and have not yet been reviewed by a doctor. This is not in line with contemporary Australian standards of record witnessing.

(c) PCIS requires data to be entered into several disconnected forms multiple times in order to enter, use and manage clinical details, diagnostic orders and treatments. It relies on large volumes of paper-based documents which must be scanned into the system to comply with electronic medical records management, and is widely regarded as particularly cumbersome, time-consuming and complex for clinicians to use.

(d) CCIS has limited capability to record clinical information electronically which results in a reliance on paper-based records that cannot be readily shared. It requires an inordinate number of 'clicks' from the user to complete simple and interrelated tasks, which significantly increases administrative task time and the risk of human error. It is also widely regarded as particularly cumbersome, time-consuming and complex for clinicians to use.

Privacy and security issues

34. In addition to the significant clinical risks, and the functionality shortcomings of the legacy systems, they are not up to date with modern clinical data privacy and security requirements. For example, the legacy IT systems rely on generic logins for users across all systems, rather than assigning unique login credentials to individual staff. Due to these limitations of legacy systems, it is not possible to implement individualised logins.

35. The use of generic logins raises privacy concerns and is not consistent with the standards expected of modern Australian health services. Access to patient information should be clearly recorded and traceable in these systems. Generic logins also increase exposure of the health services to security and data integrity breaches as a system user's activity, in terms of which patient's record is accessed and what information is recorded, is not linked to the employee's unique user ID. From an audit perspective, this is very poor practice and does not align with appropriate clinical standards of care.

2.3 Why did the Territory need a tailored solution?

36. The delivery of health services in the Northern Territory is unique and incomparable to any other Australian jurisdiction. Implementing a standard, off-the-shelf EMR with no modification would fail to meet the needs of the Territory's clinicians and patients and would provide limited value for money.

37. The Territory covers approximately 1.42 million square kilometres and has a population of 255,559. Of the Territory's population, 30.8% identify as Aboriginal, 74.6% of whom reside in remote or very remote areas.[2]

38. NT Health delivers public health services in the Territory through a service network of six public hospitals, 72 primary health clinics, renal dialysis units, and a number of community-based health services, including correctional centres, palliative care, mental health and alcohol and other drugs, aged care and disease control services.

39. NT Health operates as a centralised public health system and is the only major health care provider across the Territory. This is distinct from other Australian jurisdictions, where public health systems are typically divided into multiple service networks and supported by a large private health sector.

40. Due to its remoteness, the Territory experiences ongoing recruitment and retention challenges across its clinical workforce, which leads to reliance on locum and short-term staff. Staffing is particularly challenging in remote communities.

41. The Northern Territory population experiences disproportionately high rates of communicable, infectious, comorbid and chronic disease compared to the rest of Australia. The burden of disease and injury is 70% and 80% higher for males and females respectively, compared to national age-standardised rates (measured in disability adjusted life years).[3] Three in four (74.3% or 134,800) people in the Territory have at least one long-term health condition.[4]

42. This is primarily driven by poorer health outcomes among Aboriginal people in the Territory. The burden of chronic conditions such as diabetes, heart, lung and kidney disease is more than five times greater than the Australian average for Aboriginal people in the Territory.[5] Hospitalisation rates due to preventable chronic conditions are four times higher among Aboriginal Territorians[6] and 55.7% of Aboriginal people have multiple chronic conditions.[7] The Northern Territory also has the highest hospitalisation rate for Aboriginal people in the country (531 per 1,000).[8]

---

2 Department of Treasury and Finance, Northern Territory Government, *Northern Territory Economy: Population* (Economic Brief, September 2024).

3 Yuejen Zhao et al, *Morbidity burden of disease and injury in the Northern Territory 2014–2018* (Department of Health, Darwin, 14 August 2023), 7.

4 Australian Bureau of Statistics, Australian Government, Health Conditions and Risk, *National Health Survey: State and Territory findings* (June 2024).

5 Xueqin Zhang et al, *Burden of Disease and Injury Study: Impact and Causes of Illness, Injury and Death in the Northern Territory 2004–2013* (Department of Health, Darwin, 2018).

6 Xueqin Zhang and Yuejen Zhao, *Potentially Preventable Hospitalisations in the Northern Territory 2005–06 to 2017–18* (Department of Health, Darwin, 2021).

7 NT Health, *Prevalence of Chronic Diseases in the Northern Territory* (Fact Sheet, 2019).

8 Australian Institute of Health and Welfare, Australian Government, *Aboriginal and Torres Strait Islander: Health Performance Framework: 1.02 Top reasons for hospitalisations* (July 2024).

43. As a result of this higher disease burden, there is a greater reliance on and engagement with acute health services; the Northern Territory reported the highest proportion of Aboriginal and Torres Strait Islander Emergency Department presentations (45%).[9] This means that the patient flow between care settings (including hospitals, clinical and community health services) is high. For example, a large number of presentations to remote primary health clinics require transfer to acute health services due to the severity or complexity of patient conditions. Those patient transfers between remote primary health clinics and hospitals often depend on non-government retrieval services, such as CareFlight or the Royal Flying Doctor Service. In addition, the high prevalence of complex, chronic, and comorbid conditions contributes to longer hospital stays and increased hospital readmission rates for Territory patients.

44. Delivering primary health services to remote or very remote communities is also unique. Low levels of health literacy in remote Aboriginal communities can delay initial engagement with health services which increases illness severity. This can also impact effective and coordinated follow-up care, with traditional 'recall' methods of follow-up care being far less effective.

45. Language barriers can make effective communication between clinicians and patients more difficult. Movement of people, both between remote communities and to and from urban centres, is common and can cause a dispersed and sporadic pattern of healthcare engagement. In addition, infrastructure challenges such as unreliable internet access, seasonal inaccessibility, and high transport and outreach costs further complicate service delivery.

46. Given this unique healthcare landscape, adopting a standard, off-the-shelf hospital EMR system with no modification would not adequately meet the Territory's needs. Typical EMRs are designed for limited application in a single, specialised health facility with very high patient counts. They are not designed to traverse thousands of kilometres across primary, sub-acute and acute care facilities. Investment in such a solution without further work to customise it would not be a worthwhile undertaking and would result in a net negative effect on health outcomes in the Territory.

47. Instead, an integrated and configurable EMR like Acacia, built on a proven product foundation, can be adapted to meet local processes and workflows in a range of health contexts and care models. This is critical where the velocity of patient flow through various elements of the health system is high and care settings are diverse — both of which are particularly true for the Territory.

---

[9] Australasian College for Emergency Medicine, *Aboriginal and Torres Strait Islander and Non-Indigenous Presentations to Australian Emergency Departments* (Report, May 2018). Aboriginal and Torres Strait Islander ED presentations in other states ranged between 2% and 8% of the total ED presentations.

Acacia Theatre Scheduling: a tailored approach to meet unique clinical demand

In the context of a highly comorbid population, the Territory (and particularly Royal Darwin and Palmerston Hospitals and Alice Springs Hospital) has a significant emergency surgery caseload. There are also high rates of elective surgery cancellations and patient no-shows, which contribute to complexities in theatre utilisation and scheduling. Whereas typical non-attendance rates for appointments and procedures in other jurisdictions are approximately 5–10%, in the Territory it is much higher at 30–40%.[10] These challenges exacerbate the already high-pressure clinical environment, placing considerable demands on the surgical staff within NT Health.

During the early stages of consultation in relation to theatre scheduling functionality, clinicians and schedulers identified a number of functional issues in the TrakCare system which were not aligned with clinical procedures in the Territory, and which had the capacity to impact user efficiency.

Extensive consultation was undertaken with surgical clinicians and scheduling staff to identify the key areas requiring enhancement. InterSystems subsequently carried out a substantial redevelopment of the theatre scheduling functionality, aligned with the reported user issues and requirements, with key improvements including:

(a) Improving visibility of theatre sessions and booked patients over extended scheduling periods.

(b) Enhanced ability to transfer bookings between theatres, days and facilities.

(c) Improvements to the workflow to better manage pre-admission appointments, wait lists and surgical bookings.

(d) A graphical view of expected theatre capacity.

(e) A streamlined function to transfer patients between facilities.

(f) Ability to record additional information following a patient's death.

(g) Developing capacity to send information to patients via SMS.

(h) Improving outpatient scheduling, to allow a view of multiple appointments across the facilities.

(i) Additional outpatient follow-up functionality to support transfers across facilities and manage patients waiting for follow-up.

Following this redevelopment, comprehensive testing and validation was conducted to ensure that the revised functionality met clinical and operational requirements. In July 2023, two User Acceptance Testing sessions were conducted with 16 clinicians across the Territory to evaluate the updated theatre scheduling functionality prior to its implementation in hospitals. The enhanced functionality was accepted by clinicians and the Acacia theatre scheduling function has since been successfully deployed across Royal Darwin and Palmerston Hospitals, Katherine Hospital and Gove District Hospital.

[10] See, e.g., Lauren Thomas, Claire Felmingham, and Dev Tilakaratne, 'Dermatological services; patient profiling in a rural tertiary hospital' (2021) 62 *Australasian Journal of Dermatology* 195–198; Scott Carruthers et al, 'Measuring (and narrowing) the gap: The experience with attendance of Indigenous cancer patients for Radiation Therapy in the Northern Territory' (2019) 63 *Journal of Medical Imaging and Radiation Oncology* 510–516.

2.4 A fully integrated electronic clinical information system across the Territory

48. Once fully implemented, Acacia will operate as a single integrated electronic clinical information system across primary, secondary and tertiary care settings in rural, remote, community and hospital environments.

49. In practical terms, the integrated system will enable clinicians to access and contribute to a single patient record from any hospital, clinic or community care centre across the Territory. This electronic health record will be maintained in real-time, meaning that record entries such as pathology test results or clinical notes made by a clinician in a hospital will be instantly accessible to a remote area nurse or general practitioner in a remote community.

50. The Northern Territory will be the first jurisdiction in Australia to provide this end-to-end clinical information to all healthcare providers, accessible across the entire health system at the time and place of care delivery.

51. This approach is also beginning to be adopted by other jurisdictions. For example, the New South Wales Government, which has a wide range of separate hospital-based EMRs in place across the state, has recently commenced a $1 billion project to integrate all EMRs into a single digital patient record.[11] Acacia achieves that outcome from the outset. That delivers cost savings to the Territory and delivers clinical benefits immediately.

52. In the context of the Territory's unique healthcare landscape, a single, integrated EMR will substantially enhance the capacity for early intervention, coordination and continuity of care, discharge planning, and follow-up care, across the Territory.

3 Program Responsibility, Governance, Quality Assurance and Oversight

3.1 Shared Service Model of Delivery

53. In 2016, the (now former) Department of Corporate and Information Services (**DCIS**) was tasked with delivering the Program. That decision followed the centralisation of ICT service delivery into DCIS, which was hitherto delivered by each line agency.

54. In May 2014, the Public Accounts Committee handed down its Final Report following its *Inquiry into the Management of ICT Projects by Government Agencies* (**ICT Projects Inquiry**).[12] The Committee investigated issues with several individual ICT-enabled projects being implemented by separate departments. It noted that:

> The projects the committee has examined demonstrate that delivering ICT projects, or more precisely, ICT-enabled business improvement, is complex. It entails business analysis, organisational change management, project management and ICT expertise, including systems design and data management. This complexity is increased as more stakeholders and needs are involved, such as with multi-agency projects.[13]

---

11 Department of Health (NSW), 'Consistent, timely and secure health information: NSW Government to deliver single digital patient record' (Media Release, 19 October 2023); NSW Government, 'Agreement for the provision of a Single Digital Patient Record (SDPR) solution, including associated services (Contract Award Notice No HT21026, 31 October 2023).

12 Public Accounts Committee, Northern Territory Legislative Assembly, *Inquiry into Management of ICT Projects by Government Agencies* (Final Report, May 2014).

13 Public Accounts Committee, Northern Territory Legislative Assembly, *Inquiry into Management of ICT Projects by Government Agencies* (Final Report, May 2014), 87 [4.1].

55. Some of the key lessons arising from the ICT Projects Inquiry included that:

(a) governance frameworks for the delivery of large ICT projects were not robust in individual agencies;[14]

(b) a lack of expertise in ICT project delivery "*sometimes resulted in a lack of ownership, with agencies placing too much unquestioning reliance on the vendor which is perceived as the party with the expertise*";[15]

(c) "*the ability of staff to effectively develop and manage ICT projects was hampered by a lack of experience and expertise in both project management and ICT*";[16]

(d) operational business managers in the departments undertaking the reform, though they understood the business requirements of the new system well, "*[did] not necessarily have the skills required to manage an ICT-enabled project*";[17] and

(e) the lack of provision for staged implementation reviews (called gateway reviews) meant that "*projects have either received no external oversight or the oversight has been flawed in some way*".[18]

56. The Committee made a number of recommendations to improve governance, staff capacity, and project management methodology in government when delivering ICT-enabled projects.[19] In response to those recommendations, the Northern Territory Government centralised responsibility for the delivery of ICT projects across Government into DCIS (now DCDD).[20]

57. That arrangement remains in place today. It is codified by a decision of Government and enacted through the Treasurer's Directions – ICT Series, which apply to all NT Government agencies. This model of shared service delivery ensures better outcomes for the end user and more efficient and effective use of Government funds:

(a) First, it improves the recruitment and retention of ICT technical experts. Whereas previously each department would have to recruit specific technical experts for limited periods for each project it undertook, which it might only do every five or ten years, DCDD now maintains a pool of technical expertise which can be applied to various projects.

(b) Second, it means project management expertise is better developed and kept in Government in a single agency, which in turn ensures strong governance and oversight of projects. Delivering complex, ICT system-changing projects is not every agency's core business, and it requires a robust project management framework and staff with specific experience and qualifications. By centralising delivery of those projects into one agency, those staff and that experience are embedded in the agency's institutional knowledge. That expertise strengthens through a constant stream of ICT projects.

---

14 Public Accounts Committee, Northern Territory Legislative Assembly, *Inquiry into Management of ICT Projects by Government Agencies* (Final Report, May 2014), 88–89, [4.7]–[4.10].

15 Public Accounts Committee, Northern Territory Legislative Assembly, *Inquiry into Management of ICT Projects by Government Agencies* (Final Report, May 2014), 89 [4.16].

16 Public Accounts Committee, Northern Territory Legislative Assembly, *Inquiry into Management of ICT Projects by Government Agencies* (Final Report, May 2014), 91 [4.29].

17 Public Accounts Committee, Northern Territory Legislative Assembly, *Inquiry into Management of ICT Projects by Government Agencies* (Final Report, May 2014), 91 [4.30].

18 Public Accounts Committee, Northern Territory Legislative Assembly, *Inquiry into Management of ICT Projects by Government Agencies* (Final Report, May 2014), 92 [4.38].

19 Public Accounts Committee, Northern Territory Legislative Assembly, *Inquiry into Management of ICT Projects by Government Agencies* (Final Report, May 2014), 18–21.

20 On 8 September 2020, following the 2020 Northern Territory General Election, the Department of Corporate and Information Services became the Department of Corporate and Digital Development: Administrator (NT): *Administrative Arrangements Order (No. 3) 2020* (8 September 2020).

(c) Third, it improves project accountability, as the DCDD CEO remains the central accountable officer for all ICT projects being delivered. This ensures that for every project, there is a clear point of responsibility for decision-making.

(d) Fourth, it delivers better value for money by capturing the benefit of economies of scale, in which the cost of project inputs (particularly labour) is reduced by preventing duplication of resources across projects, and by sharing the cost burden across different projects. For example, whereas previously two departments undertaking separate ICT reforms might have engaged two separate specialist contractors with the same or similar expertise, DCDD can now engage one specialist and share their expertise across multiple projects.

58. Naturally, the shared services model of delivering ICT reforms *on behalf of* other agencies means that DCDD does not directly employ the subject matter experts who will be the end users of the reform or project on a day-to-day basis. Because of that, participation and collaboration between DCDD and the customer (in this case, NT Health) is essential. That collaboration is embedded at every level of the Program's decision-making framework, from individual working groups through to the PSC, discussed in more detail immediately below.

3.2 Governance Model of the Acacia Program

59. The Program is subject to a structured governance model which ensures that critical decisions are well informed and made by the appropriate authorising bodies with clear accountability, and that the Program is strictly monitored and performance reported. It is established in line with the Northern Territory Government's ICT Governance Framework. Annexed to this submission and marked "**Annexure 1**" is a diagram illustrating the overarching governance model for the Program.

The Program Steering Committee

60. The primary decision-making authority for the Program is the Program Steering Committee (**PSC**). The PSC membership comprises the Chief Executive Officers of DCDD and NT Health, along with the Under Treasurer and the NT Health clinical sponsor. The PSC meets monthly and is the central authorising body for key decisions relating to the Program. Annexed to this submission and marked "**Annexure 2**" is the PSC's Terms of Reference.

The Program Implementation Committee

61. The Program Implementation Committee (**PIC**) reports to the PSC. It is responsible for tracking the delivery of the Program, identifying issues as and when they arise, and escalating matters to the PSC when appropriate.

62. Its membership comprises a number of senior executives from DCDD, NT Health and the Department of Treasury and Finance (**DTF**), and it meets monthly. Annexed to this submission and marked "**Annexure 3**" is the PIC's Terms of Reference.

The Clinical Leadership Group

63. In turn, the PIC receives expert clinical advice from the Clinical Leadership Group (**CLG**). The CLG membership comprises senior representatives from each major profession in NT Health, including medical, pharmacy and allied health disciplines.

64. The CLG is chaired by the Program's clinical sponsor and is responsible for providing expert clinical advice to the PIC and PSC. It is the key forum through which clinicians are directly involved in critical decisions, updates, and tracking of the Program, though it is not the *only* forum. Annexed to this submission and marked "**Annexure 4**" is the CLG's Terms of Reference.

65. One of the CLG's responsibilities is establishing relevant working groups, as necessary. Working groups ensure the Program software is designed to meet the needs of its users, and that specific issues are identified, escalated, and resolved.

66. Working groups are established in each region prior to implementation or "Go Live" to support the deployment of the Program in those regions, and several discipline-specific working groups have also been stood up. For example, working groups have been established for the following disciplines:

    (a) medicine;

    (b) mental health and alcohol and other drugs;

    (c) primary health and care coordination;

    (d) renal;

    (e) surgery and anaesthetics;

    (f) women's and children's health;

    (g) critical care;

    (h) ED (includes trauma);

    (i) patient administration and clinical documentation;

    (j) reporting and analytics; and

    (k) e-Medication.

67. The Program's governance model was independently reviewed by Mr John Kost from Gartner, an internationally renowned government information technology and procurement expert. Mr Kost reviewed the membership and terms of reference of each level in the governance model and concluded that:

> Overall, they are well written in that membership is clear, the right people with decision rights from across the business are appropriately placed on committees, responsibilities are clearly delineated and they are all chaired by someone who sits on the superior body immediately above them.[21]

3.3 Oversight of the Program

68. The entire Program is also subject to oversight by the Northern Territory Government's ICT Governance Board (**IGB**). The IGB is a very senior (Chief Executive and Deputy level) cross-agency board with membership from multiple agencies. It is chaired by the Commissioner for Public Employment.

69. The IGB receives quarterly reports on the status of the Program, along with all other ICT-enabled projects delivered by Government, and reports directly to the Minister for Corporate and Digital Development.

---

[21] John Kost, *Review of Northern Territory Electronic Health Record Program Governance* (12 June 2019), 2–3.

4 History of the Program

70. In Budget 2015–16, the Northern Territory Government appropriated $10 million to the Department of Health to support planning, analysis, market testing and foundation programs of the Program.[22]

71. By 17 January 2016, the Department of Health had completed a comprehensive business case for the procurement, development and introduction of a new end-to-end digital solution which would replace the Northern Territory's obsolescent clinical systems.

4.1 Business Case and Initial Budget

72. In 2016, the Northern Territory Government approved the Program business case, which included cost modelling based on detailed industry research. The business case estimated a $242 million budget to procure, develop, and introduce the Program. DCIS was assigned responsibility for the Program.

73. At that time, the Northern Territory Government partially funded the Program, appropriating $185.9 million over five years in the 2016–17 Budget. In Budget Paper No.1, the Treasurer's speech observed that the Program would be:

> …the largest ICT reform in the Territory's history. This investment over five years includes the introduction of real-time, individual electronic health records and will result in the provision of end-to-end clinical information to all health providers at the point of care.
>
> This means the Northern Territory will be the only place in the country where, for example, a patient from a remote area could visit a private GP in Darwin and have instant access to their medical records. This will provide more comprehensive information for the GP, which will result in better outcomes for the patient.[23]

74. During the initial tendering process in mid-2016 for the core product which would underpin Acacia, information provided by tenderers made apparent that the initial budget planned in the business case would be insufficient to cover the full cost of the Program. Based on detailed information provided by the tenderers, DCIS forecasted that an increase in the Program budget of $17 million would be necessary to fully fund the Program. That represented a modest 7% increase from the initial business case.

75. The Northern Territory General Election on 27 August 2016 resulted in a change of government. Following the election, a revised business case with the new Program budget was submitted to the new Northern Territory Government for its consideration. The Government committed its support to the Program, and fully funded it in the 2017–18 Budget for $259 million.

---

22 Northern Territory Government, *Budget 2015–16* (Budget Paper No 3), 151.
23 Northern Territory Government, *Budget 2016–17* (Budget Paper No 1), 5-6.

76. **Deloitte** Consulting Pty Ltd conducted a formal review of both the initial and revised business cases in "stage gate" reviews. These reviews, which are common in project management, are conducted at each critical step of a project and determine whether the project is ready to proceed to the next step. The importance of stage gate reviews was highlighted by the Public Accounts Committee in the ICT Projects Inquiry, which noted that:

> There is substantial evidence to suggest that staged implementation of ICT-enabled projects, coupled with an independent review of the project at each stage, reduces project risk because it enables informed decisions to be made at key points, including whether the project should continue or be terminated.[24]

77. Both of the Deloitte reviews identified no issues with the business cases.

4.2 Procurement and Vendor Selection

78. The selection of InterSystems as the vendor for the Program was made following a comprehensive procurement process.

79. On 29 June 2016, ahead of the release of a Request for Tender, the Program conducted an industry consultation session, which was held jointly in-person and online. The briefing was attended by 54 parties, including representatives from major vendors, as well as local suppliers. The Program's clinical sponsor, Associate Professor Doctor Nadarajah Kangaharan, a cardiologist at the Royal Darwin Hospital, addressed the briefing from a clinical perspective. The briefing was intended to inform potential vendors about the Northern Territory's unique health environment, the procurement process which would follow and the mandatory local content weighting.

80. A dedicated Procurement Governance Committee (**PGC**) was established to coordinate and manage the procurement process. Over 100 workshops were held with more than 500 end users—largely clinicians—to determine the requirements of the new system. That included identifying the precise features, processes and outcomes which the new system would need to deliver, and informed the requirements set out in the Request for Tender. The formal procurement process was then conducted in two stages.

First Stage – Initial Tender

81. First, an open request for tender was released to the public on 8 July 2016 and closed on 12 August 2016. A comprehensive Request for Tender (**RFT**) pack was provided, setting out the core requirements that the new system would need to meet. An independent review of the RFT was conducted by Deloitte prior to the release of the Initial Tender, which found that the RFT:

> …provides vendors with a comprehensive understanding of the intent of the [Program], the requirements of the system that is being sought, the existing ICT environment into which the vendor must integrate and operate and the implementation and ongoing maintenance services to be provided.[25]

82. During the Initial Tender period, the Program staff hosted a tender briefing session on 18 July 2016, attended by over 75 representatives from prospective tenderers. By the closing date, the Program received 14 tenders.

---

[24] Public Accounts Committee, Northern Territory Legislative Assembly, *Inquiry into Management of ICT Projects by Government Agencies* (Final Report, May 2014), 13 (emphasis added).

[25] Deloitte, *Northern Territory Government CCSRP RFT Stage Gate Review – Findings and Recommendations* (4 July 2016).

83. The PGC assessed the 14 tender submissions and four were shortlisted as potential preferred tenderers. The four shortlisted tenderers were:

(a) Epic Systems Melbourne Pty Ltd;

(b) Telstra Corporation Limited;

(c) Allscripts Healthcare IT Pty Ltd; and

(d) InterSystems Australia Pty Ltd.

Second Stage – Invited Tender

84. The four shortlisted tenderers were invited to participate in a second, more detailed round which opened on 30 September 2016 and closed on 14 November 2016. Shortlisted tenderers were provided with a comprehensive set of over 2,700 requirements, and provided detailed written submissions explaining how their solution met those requirements. Tenderers were required to provide presentations and system demonstrations, and were required to show how their solution would navigate a number of clinical scenarios. Those scenarios were developed with input from clinicians on the CLG.

85. Given the size and complexity of the tender, the PGC was supported by five panels, which were comprised based on areas of expertise, and each assessed the tenders against the criteria most relevant to their expertise. Those panels were:

(a) A clinical panel with senior experts from pharmacy, surgery and critical care, nursing and midwifery, ED, and nephrology (renal). This panel was responsible for assessing each tender against the functional requirements needed by clinicians, hospital administrators and primary care clinics. This panel was in turn supported by three specialist sub-panels: medical and pharmacy; nursing and allied health; and service management and administration.

(b) A panel comprising senior technical experts from DCDD and NT Health, which was responsible for assessing the tenders against technological (rather than clinical) requirements.

(c) A project management and implementation panel, which assessed each tenderer's proposed implementation plan, governance structures, and accountability mechanisms.

(d) A support services panel, which assessed each tenderer's ability to provide training, technical support, and ongoing operations support.

(e) The overarching Core Panel, chaired by the DCIS Deputy Chief Executive, which was responsible for assessing the remaining criteria (including cost, commercial risk, past performance and local content). The Core Panel was informed by input from subject matter experts, including legal and financial advisers.

86. In total, over 64 individuals, including 33 clinicians, procurement experts, legal advisors, technical specialists, project management experts and financial advisers were directly involved in the assessment of the tenders and the identification of InterSystems as preferred tenderer.

87. Following the identification of InterSystems as preferred tenderer, three reference site visits were conducted to other sites in which TrakCare was deployed: one in New South Wales, one in Victoria, and one in Scotland. As part of those site visits, a number of senior clinicians and Program experts travelled to experience TrakCare in use, learn about other clinicians' and users' experiences, and better inform their decision. The report from those visits found that "*[TrakCare] effectively supports the needs of the health services at each reference sites*" and that there were "*significant benefits associated with adopting a single system approach over maintaining multiple disparate systems*".[26] Ultimately, although issues were identified and lessons learnt which were addressed during commercial negotiations, the panel concluded at that time that TrakCare was "*functional, configurable and fit for purpose.*"[27]

88. InterSystems was then invited to enter into commercial discussions, and in April 2017 it was formally awarded the tender.

89. InterSystems is a large, multinational clinical technology company headquartered in the United States, with Australian headquarters. TrakCare is InterSystems' signature EMR product. It is deployed in over 450 hospitals in 29 countries across five continents including in the Americas, Australia, Asia, Europe (including the United Kingdom) and the Middle East.

90. InterSystems has a proven track record for delivering large-scale EMR systems to a high standard in varied healthcare environments. The leading industry research firm consistently places it among the top EMR providers in the world. In 2015-16, 2017, 2020, 2021, 2022, and 2025, it was awarded the leading Global Acute Care EMR for the Asia/Oceania region.[28]

91. The key reasons for selecting InterSystems as the preferred tenderer for the Program were:

    (a) InterSystems' proposed solution was the only true enterprise-wide solution, whereas other tenderers were strong in some settings (e.g. acute hospitals) but poor in others (e.g. remote and urban primary care clinics).

    (b) While other tenderers performed well against some specific clinical requirements, they performed poorly against others and did not demonstrate the capability to adapt their systems to better meet those needs, while InterSystems' proposed solution demonstrated comprehensive configurability.

    (c) InterSystems was the only tenderer which provided a complete solution using one system, whereas other tenderers relied upon a combination of their own and third party products. For example, one tenderer did not propose to replace the legacy CareSys at all, meaning a new system would need to be separately procured, developed and integrated by NT Health.

---

[26] Department of Corporate and Digital Development, Northern Territory Government, *Interstate Reference Site Visit Report* (20 April 2017), 4.

[27] Department of Corporate and Digital Development, Northern Territory Government, *Interstate Reference Site Visit Report* (20 April 2017), 5.

[28] KLAS Research, *2015/2016 Best in KLAS Awards – Global Software (Non-US)* (28 January 2016); *2017 Best in KLAS Awards – Global Software (Non-US)* (31 January 2017); *2020 Best in KLAS Awards – Global Software (Non-US)* (31 January 2020); *2021 Best in KLAS Awards – Global Software* (2 February 2021); *2022 Best in KLAS Awards – Global Software* (8 February 2022); *2025 Best in KLAS Awards – Global Software* (5 February 2025).

4.3 Program Schedule and Approach

92. Initially, the Program schedule contemplated a "big bang" approach, in which all the legacy systems would transition to the new system at the same time. As part of that approach, the entire functionality of Acacia was planned to be delivered in Katherine first, followed by Darwin, Alice Springs, Tennant Creek and Nhulunbuy. This approach, which is common in ICT reform, has a number of advantages, including a shorter implementation timeline; potential cost savings from less time being spent maintaining two systems concurrently; and a concentration of resources on change management at one time, which can make the transition smoother for users.

93. The big bang approach is particularly suited to and is commonly employed in smaller projects.[29] For example, DCDD recently successfully deployed the new SerPro system for Northern Territory Police using a big bang approach.

94. In this case, because the Program involved the replacement of five IT systems, across five hospitals, 72 primary health clinics and many community health facilities involving more than 7,000 users, the Program staff developed a *Deployment and Adoption Strategy and Plan* with comprehensive input from the Clinical Leadership Group. The principles guiding its development were to:

    (a) minimise client safety risks and operational impacts;

    (b) adopt the read-only version of Acacia first, which would be Territory-wide;

    (c) embed administrative workflows prior to clinical workflows;

    (d) achieve full clinical functionality at the largest hospital sites as early as possible;

    (e) keep Katherine Hospital as the first deployment site; and

    (f) deploy full functionality at each primary health care site.

95. As part of the *Deployment and Adoption Strategy and Plan*, the deployment approach changed from big bang to phased implementation. In November and December 2019, each of the CLG, PIC and PSC endorsed the phased implementation.

96. As part of the phased implementation, the Program was divided into six phases, called Functional Groups. Each phase has a specific objective, and allows the departments to retire those obsolete legacy systems being replaced in a staggered approach. That approach minimises disruption and allows users to familiarise themselves with each new tranche of functionality, one at a time.

---

[29] See, e.g., Piotr Soja, 'The Role of Implementation Strategy in Enterprise System Adoption' in Jaroslav Pokorny et al (eds), *Information Systems Development* (Springer, 2011) 709, 714–15.

97. Table 1 provides an overview of the Functional Groups, and the legacy systems to be replaced.

Table 1. Description of Functional Groups which comprise the Acacia Program

FG	Title	Description	Legacy system replaced
FG0	Acacia: Electronic Patient Record (**EPR)**	Electronic, read-only patient record containing over 20 years of longitudinal patient data from legacy systems.	New functionality
FG1	Acacia 1.0: Patient Administration+	Patient administration system for the management of patients throughout their hospital journey, including through wards, renal clinics and correctional health centres.	CareSys
FG2	Acacia 2.0 & 3.0: Hospital Care	Introduces native TrakCare functionality to support the ordering and receipt of pathology and radiology scans and tests, and other clinical documentation.	CWS
FG3	Acacia 2.0 & 3.0: eMedication	Introduces native TrakCare functionality to support digital patient medication management.	eMMa
FG4	Acacia 4.0: Remote and Urban Primary Care	Introduces Acacia to remote clinics and other primary healthcare centres.	PCIS & CCIS
FG5	Client and Healthcare Provider Portal	Provides private, interstate, and non-government clinical access, and patient access, to patient records through a secure public portal.	New functionality

98. Initially, FGs 2 and 3 were planned to be delivered in one stage, covering orders of testing and results, digital medications and clinical specialties. However, following extensive consultation with end users through the CLG, the PSC decided to split the implementation into two separate phases, with FG2 (pathology, radiology and documentation) to be followed by FG3 (eMedication).

99. Deloitte performed a health check of the Program in April 2019, involving review of Program documents and interviews with 27 employees, including senior clinicians from nursing, critical care, anaesthetics, and ED units. It found that:[30]

(a) the Program "*exhibits an appropriate and consistently understood project management methodology, and a project plan that defines how the [Program] will deliver on scope and on budget*";

(b) the Program's investment of "*considerable effort in its clinical engagement activities*" was "*reflected in the positive feedback provided by interviewees about stakeholder engagement*"; and

(c) "*the program is in alignment with the NTG's whole of government ICT Governance Framework; and that overall, the program remains on track*".

[30] Deloitte, *Northern Territory Government Assessment 2: Program Health Check* (18 May 2018), 10.

100. The health check provided a number of targeted, useful recommendations to further strengthen the Program.

4.4 Go Live of FG0: Acacia Read-only Electronic Patient Record (EPR)

101. The first Functional Group of the Acacia implementation provided clinicians with read-only access to a patient's electronic patient record (**EPR**).

102. More than 20 years' worth of longitudinal patient data from all the Northern Territory's legacy systems were imported into Acacia so that clinicians could access Acacia and view a patient's entire clinical history without needing to check each legacy system. Although those legacy systems are still used to add new information to patient records, that information is automatically imported into Acacia in real-time, so that the EPR is current and remains a complete and accurate record.

103. The implementation of the Acacia EPR commenced with a soft launch in early August 2020, in which the Acacia software was made available to approximately 30 NT Health staff. Those end users then completed User Acceptance Testing scenarios.

104. Following the first soft launch, a subsequent soft launch occurred on 31 August 2020, with approximately 200 NT Health staff provided access. From 16 September 2020, the Acacia EPR was progressively implemented across the Territory, with clinical users provided access to patients' complete records.

105. The delivery of the Acacia EPR was a significant milestone in the Program, particularly for primary healthcare facilities such as remote community clinics and renal dialysis units.

106. In June 2023, the Chief Executive Officer of DCDD gave evidence to the Estimates Committee of the Legislative Assembly that:

> The read-only version of this system—which our clinicians have had available for two years—in and of itself is an Australian first. There is no other state in Australia that has the entire public health system and all of their patient data—20 years' worth—in one system so that remote doctors in the bush or in acute hospitals can see, at the click of a mouse, the treatment that patient has received, their medications and care. Patients with complex comorbidities from Aboriginal communities with really detailed care plans—that gets managed in one system, and the tertiary hospitals get managed in another. There has never been any visibility of all of that until Acacia.
>
> In terms of a tool for frontline clinicians, the read-only was an Australian first and a really powerful digital tool. We are getting the production system into the hands of our treating clinicians as fast as we possibly can. The keys things that we are measured on—getting it right, delivering a solution that is clinically safe and has clinicians trained in how to use it—is always the most important thing that will be remembered long after the project is finished. It has been in steady state.[31]

4.5 Go Live of FG1: Acacia 1.0 at Katherine Hospital

Initial selection and preparation

107. Katherine Hospital was the first site selected for the implementation of Acacia 1.0. It was selected as the ideal site to receive the first deployment of Acacia 1.0 given its relatively smaller size of 60 beds, the breadth of acute services provided, and its proximity to Darwin.

---

[31] Evidence to Estimates Committee, Northern Territory Legislative Assembly, Darwin, 21 June 2023, 98 (Chris Hosking).

108. Initially, the deployment of Acacia 1.0 at Katherine Hospital was scheduled for November 2020. Given the onset of COVID-19, and the suspension of access to clinicians (addressed in more detail in section 7.1 of this submission below), the Go Live date was postponed to July 2021.

109. A number of ICT infrastructure upgrades were required to be made to the Katherine Hospital campus to support the deployment of Acacia 1.0, including to the campus' Wi-Fi coverage, speed and throughput. Because Acacia sends and receives substantially more information than the legacy systems, the physical network infrastructure to support it needed to be upgraded. Those upgrades were audited by Program staff in early 2021 and completed in June-July 2021.

110. In addition, a specific Katherine Implementation Working Group (**KIWG**) was established in March 2021 to provide expert local oversight regarding the readiness of the hospital and clinicians for the deployment. Two rooms on the Katherine Hospital campus, and a conference room at a nearby facility, were made available for staff training. Nominated "super users", which are end users who are selected to be comprehensively trained in the workings of the system so that they can assist other users and answer questions, were inducted.

111. Unfortunately, community transmission of COVID-19 in Darwin and Katherine meant unforeseen lockdowns or lockouts occurred in June 2021, August 2021, and November 2021, all of which affected the delivery of training, User Acceptance Testing, and readiness assessments for the Go Live.

112. In the circumstances, the Go Live of Acacia 1.0 at Katherine Hospital was postponed to July 2022.

Effect on other deployments

113. Some preparatory activities for subsequent Acacia 1.0 deployments occurred in parallel with preparation for the Katherine Go Live. For example, between 4 October 2021 and 22 October 2021, User Acceptance Testing for Acacia 1.0 took place across Katherine, Gove, Tennant Creek, Alice Springs, Royal Darwin and Palmerston Hospitals. 268 clinicians participated. 88% of those sessions passed testing, with the failures attributable to both new and existing defects, and resulted in requests to change the system workflow — that is, the layout and processes which users engage with to navigate the system.

114. However, the delays in Katherine had unavoidable flow-on effects for the remaining Program schedule. That is both because a critical part of the subsequent deployments was reviewing and learning from the Go Live at Katherine Hospital to better inform those deployments, and because a number of Program staff dedicated to the Katherine Go Live were also required to progress subsequent deployments.

Go Live

115. In the weeks leading up to the Go Live in July 2022, further training was delivered by Program staff, DCDD, and nominated super users, with support provided by InterSystems. By Go Live, 92% of Acacia users had completed training.

116. In addition, a *Play and Learn* icon was installed in the Katherine Hospital software library, so that users could download and "play" with the system in a "sandbox" environment to get used to it prior to its implementation. Twelve further User Acceptance Testing sessions were held between 23 June 2022 and 8 July 2022 covering palliative care; operating theatres; allied health; patient flow and bed management; outpatients; patient flow from ED to inpatient; walk-ins; and clinical coding.

117. A pre-Go Live assurance review was conducted by Deloitte which concluded that there were "*strong indications that the CCSRP Program is well prepared for the FG1 go-live into Katherine*".[32]

118. On the morning of Saturday, 30 July 2022, Acacia 1.0 went live at Katherine Hospital. Following the Go Live, the Program executive team met daily to receive and resolve any issue reports. In addition, for five weeks following Go Live, support was provided 24 hours per day, 7 days per week by technical Program staff during the "stabilisation" phase.

119. As expected with any large ICT system replacement, a number of further issues were identified by users following the Go Live, particularly in the theatre scheduling and outpatients teams. Those issues were addressed with the Acacia system in situ, with support provided by Program staff and InterSystems product specialists to workshop, test and implement fixes.

4.6 Go Live of FG1: Acacia 1.0 at Top End Renal Units

120. There are four same-day dialysis sites across the Top End region. The Renal Implementation Working Group identified the renal units as a prime recipient of early deployment of Acacia 1.0 given the user requirements were straightforward and did not warrant further material product development. In addition, the clinical risk was relatively lower than deployment into full-service acute care facilities.

121. The Go Live was staggered, with the Palmerston dialysis unit the first to receive Acacia 1.0 on 31 October 2022. The Nightcliff and Tiwi Islands dialysis units went live on 7 November 2022. The dialysis units at Royal Darwin Hospital went live on 14 November 2022. Feedback from the users was positive, with minimal disruption and no significant issues reported.

4.7 Go Live of FG1: Acacia 1.0 at Gove District Hospital

122. Gove District Hospital was selected as the next most appropriate tertiary site for deployment of Acacia 1.0 given its similarity to Katherine Hospital. From September 2022, Program staff travelled to Nhulunbuy to remain on site full time in preparation for the Go Live on 26 November 2022.

123. By 4 November 2022, training nominated Super Users was completed, and end user training had commenced on site in Nhulunbuy. By Go Live, training uptake had exceeded the target of 80%. Throughout, implementation was supported by the Gove Implementation Working Group. On the morning of Saturday, 26 November 2022, Acacia 1.0 went live at Gove District Hospital. No significant issues were reported, and the deployment was smooth.

4.8 Go Live of FG1: Acacia 1.0 at the Royal Darwin and Palmerston Hospitals

124. Following deployment of Acacia 1.0 in Katherine and Gove, Royal Darwin and Palmerston Hospitals were initially scheduled to go live in July-August 2023. A service-based staggered approach was adopted, in which the outpatients unit of the Royal Darwin and Palmerston Hospitals would go live first, with the remaining inpatient units to go live a week later.

125. Prior to Go Live, a number of significant enhancements were made to Acacia 1.0, particularly in the ED-to-inpatient patient journey workflow, and the theatre scheduling functionality. Those improvements were identified as necessary following the Katherine Hospital Go Live, and by the Top End Implementation Working Group. Whereas Katherine Hospital could safely manage Acacia 1.0 while those improvements were made in place, they were required prior to the Royal Darwin and Palmerston Hospitals Go Live given their significantly higher bed pressures compared with the smaller regional hospitals. Those improvements included:

---

[32] Deloitte, *CCSRP Pre-Implementation Assurance Review of FG1 for Katherine Roll-out – Findings and Recommendations* (23 November 2021), 8.

(a) enhanced identification and prompting of patients with similar names;

(b) including the ability to search and manage patients using their localities and suburb information across waitlists and appointments, to allow more efficient management of patient travel and attendance for care;

(c) complete restructure of the ED-to-inpatient functionality to ensure correct representation and efficient management of patient care and clinical responsibility;

(d) enhanced bed management functionality to support management of patients across facilities; and

(e) rebuilding the theatre scheduling functionality to allow schedulers and clinicians to manage patients through booking and subsequent admission of the patient for surgery.

126. Those functionality enhancements were required to be thoroughly tested, validated, and assessed in User Acceptance Testing scenarios. In addition, recurrent Code Yellows at Royal Darwin and Palmerston Hospitals and staffing pressures limited the pace at which preparatory work for the Go Live could be completed. For those reasons, the Go Live was postponed to November 2023.

Pre-Go Live

127. In September 2023, prior to the revised Go Live, Deloitte completed a Top End pre-Go Live assurance review. As part of the review, Deloitte conducted focus group sessions with senior clinicians from various areas within the Royal Darwin and Palmerston Hospitals including ED, patient administration, theatre (including surgery, anaesthetics and critical care), and maternity. That review noted concerns in ED that a dashboard which displayed the status of all the ED patients and gave clinicians situational awareness was essential prior to Go Live.

128. By 9 November 2023, prior to the Go Live, two dashboard options were developed by Program staff and presented to ED staff, with ED staff electing to proceed with one. That dashboard provided an ED floor plan view, inclusive of floor plan notes and diagnosis, using real-time data.

129. More broadly, a large body of work had been completed by the Program team, alongside clinical leaders and InterSystems staff to prepare for Go Live. In particular:

(a) Face-to-face and online training sessions were made available to all users for the new Acacia system. At the time of Go Live, training uptake was above target at 81%.

(b) User Acceptance Testing scenarios were facilitated with ED clinicians to simulate the ED to Inpatient patient journey, and with theatre scheduling staff to simulate the day-to-day activities of theatre scheduling.

(c) Eight weeks of face-to-face training was specifically made available to ED staff.

(d) 39 super users were trained.

Go Live

130. Acacia 1.0 went live at the Royal Darwin and Palmerston Hospitals outpatient units on Saturday, 4 November 2023, followed by the inpatient units on Saturday, 11 November 2023. It remains the largest deployment of Acacia to date.

131. The following services across the Royal Darwin and Palmerston Hospitals transitioned to Acacia 1.0:

(a) general medicine;

(b) renal medicine;

(c) respiratory and cardiology;

(d) infectious disease medicine;

(e) surgery;

(f) maternal and child health;

(g) obstetrics;

(h) paediatrics; and

(i) ED.

132. Most of those areas experienced minimal issues with Acacia 1.0 and continue to use it today. Particular challenges were experienced by ED, which are addressed in further detail in section 7.2 below.

4.9 Go Live of FG1: Acacia 1.0 at Central Australian Renal Units

133. There are three same-day dialysis sites across the Central Australia and Barkly regions. Based on the success of the implementation at the Top End renal units, a similar approach was adopted for the roll-out to the Central Australian renal units. On 24 February 2025, Acacia 1.0 went live at the Flynn Drive and Gap Road clinics in Alice Springs. On 3 March 2025, it went live at the renal dialysis centre at Tennant Creek Hospital. Feedback from the users was positive, with minimal disruption and no significant issues reported.

5 Future of the Implementation of Acacia

134. As set out above, the full deployment of Acacia is split into six phases, each of which will unlock and deliver additional functionality, and allow the retirement of specific legacy systems. The delivery of each functional group adds to the integration of the entire Acacia environment, and the delivery of the entire Program is therefore essential to achieving the full benefit. FG0, the Acacia EPR, is complete. FG1, being Acacia 1.0 comprising the Patient Administration System which replaces CareSys, has successfully been deployed in four of the Territory's six acute hospitals, save for the Royal Darwin and Palmerston Hospitals EDs. The Program is on track for the ED remediation works to be complete and Acacia 1.0 to be redeployed into the Royal Darwin and Palmerston Hospital EDs once deployment into Alice Springs Hospital and Tennant Creek Hospital has been completed.

135. Functional Groups 2-5 will follow thereafter. Importantly, much of the preparatory work for the deployment of Functional Groups 2-5, primarily including the procurement and configuration of the relevant parts of the TrakCare software, has been proceeding in parallel to the work done to date and is well progressed. The completion, testing, training and deployment of the remaining functional groups will not require the same time nor investment as to date.

136. The exact budget and timeframe for the completion of the Program is subject to decisions that will be codified in the 2025-26 Budget, scheduled to be delivered 13 May 2025. Once the 2025-26 Budget is published, re-casting of timeframes to deliver the remaining stages of Acacia can be undertaken with precision.

6 Benefits

6.1 The critical role of Electronic Medical Records in contemporary healthcare settings

137. Electronic medical record (**EMR**) systems are no longer considered a convenience in contemporary healthcare services. As the delivery of healthcare in Australia becomes increasingly more complex, driven by larger patient numbers, growing workforces, rising healthcare costs and a focus on multidisciplinary models of patient care, EMRs are now seen as the only appropriate record solution for supporting the delivery of safe and efficient healthcare.

138. Over the past decades, the use of EMRs in acute facilities around the globe has increased. In Australia, other states have recently implemented EMRs. For example, in 2011, the South Australian Government commenced a $450 million program to implement an EMR and accompanying patient administration system (PAS) across the state. Similarly, in 2015, the Queensland Government commenced a $1.26 billion program to digitise 27 hospitals across the state over five years, which includes the deployment of a state-wide integrated EMR.

139. National and international experience shows EMRs offer benefits across patient outcomes, quality and safety, operational efficiency, staff satisfaction, and organisational risk.[33] They deliver these benefits in three principal ways:

    (a) centralising a patient's information, so that all clinicians involved in that patient's care can simultaneously access it, review it, and contribute to it in real-time;

    (b) automating routine care processes, including prescribing medication, and ordering and reviewing tests and scans for pathology and radiology; and

    (c) reducing human error through decision-support systems (e.g. drop-down boxes, prompts, and workflows), and built-in alerts.

140. A recent review of digital hospitals (hospitals that use an EMR and other IT functionality, such as patient tracking, alerts and public portals) in Queensland highlighted four main benefits: faster record access, improved safety through alerts, better management transparency, and potential healthcare improvements through analytics.[34]

141. These benefits are equally relevant to the Territory and, given the unique challenges of delivering healthcare across remote areas and to a medically complex population, the advantages of a fully integrated digital system are even more pronounced.

142. A number of clinicians have provided testimonials to provide the Committee with first-hand perspectives on Acacia's impact across different parts of the Territory's health service. They include as follows:

    (a) Respiratory and Sleep Specialist at the Royal Darwin Hospital.

    (b) Specialist Anaesthetist and Acacia Clinical Lead for Perioperative Medicine.

    (c) Nursing Director of Clinical Operations at the Royal Darwin and Palmerston Hospital.

    (d) Acting Director of Medical Services at Gove District Hospital.

---

[33] See, eg, Shane Solomon, Chris Baggoley and Malcolm Thatcher, *EPAS Independent Review: Advice to the Minister for Health and Wellbeing, Government of South Australia* (Final Report, version 2, December 2018) 21–23.

[34] Andrew Burton-Jones, *Is the digital hospital roll out helping to improve patient care, or is it a waste of public money?* (University of Queensland, 2018).

(e) Executive Director of Medicines Management.

(f) Director of Renal Services in Central Australia.

(g) Director of Renal Services in the Top End.

(h) Staff Specialist Gastroenterologist, Alice Springs Hospital.

(i) Director of Medical Oncology, Alan Walker Cancer Care Centre.

(j) Top End Renal Nurse.

(k) Opthamology Fellow at the Royal Darwin and Palmerston Hospital.

143. These are annexed to this submission and marked "**Annexure 5**". We have included extracts, below, where relevant.

6.2 Realised benefits of Acacia EPR

144. The Acacia EPR was successfully deployed as part of FG0 across the Territory's care settings by October 2020.

145. The implementation of the Acacia EPR was an extensive undertaking and involved the migration of over 20 years of key clinical data from the legacy systems onto Acacia. The migration of more than 20 years' worth of longitudinal legacy patient data is an innovative process in the context of EPRs, with many other EPR roll-outs excluding the migration of legacy clinical data stored on previous systems and starting from a blank page. This is a key point of difference with the Northern Territory's approach to its new EMR and is a great example of the Territory's progressive and innovative approach.

146. The Acacia EPR provides clinicians from across the Territory with immediate access to a patient's clinical history, as it is recorded in the legacy IT systems, without the need to check those various systems. Now, as information is added to the legacy IT systems, it is automatically and imported into the Acacia EPR in real time, so that the Acacia EPR is always a contemporary and accurate record of patient information. Both primary and acute care information is consolidated in the platform, providing visibility for clinicians across the continuum of care. Any NT Health clinician with appropriate access to Acacia can access the Acacia EPR.

147. The EPR was a critical tool in NT Health's response to the COVID-19 pandemic, as it allowed clinicians to access patient data from remote locations, as well as supporting telehealth consultations and remote case conferences between acute and primary care providers, at a time when travel to remote locations was not possible. The EPR was also the primary tool used by NT Health for assessing the vaccination status of patients and staff throughout the pandemic.

148. Since that time, the Acacia EPR has continued to deliver system-wide benefits for NT Health. As of November 2024, user reports indicate Territory-wide uptake of the read-only EPR, with a total of 6,460 active users.

149. The EPR has improved support for remote primary care teams by streamlining case coordination and management between clinicians in different locations.

150. For example, specialist physicians based in urban centres, and primary care providers in remote communities and correctional facilities, regularly participate in multidisciplinary meetings to manage patients with complex and comorbid conditions. Using the Acacia EPR, all clinicians can access the same up-to-date clinical information in real time. A cardiologist at the Royal Darwin Hospital, and the clinical sponsor of Acacia, described this from a specialist's perspective:

> … the EPR has become an indispensable tool. As a cardiologist, I routinely use the system to obtain a holistic view of patients—particularly those from remote communities—by accessing primary care information without needing to log into a separate system. This capability has greatly enhanced the quality and timeliness of care.
>
> Recently, we introduced a new multidisciplinary model of care for complex remote Aboriginal patients with comorbid heart disease, diabetes, and kidney disease. This involves virtual clinics where two specialists (e.g., a cardiologist, endocrinologist, or nephrologist) join with a remote GP and nurse to collaboratively formulate a consensus care plan. These clinics are created within Acacia 1.0 (Outpatient), and clinical information is accessed via the read-only EPR, with direct integration to other systems such as Territory Kidney Care and My Health Record. The efficiency and safety of these clinics would not be possible without a contemporary EMR like Acacia. The read-only EPR has become a key enabler for cardio-renal telehealth consultations and remote case conferences, significantly strengthening the specialist support available to primary care teams across the Northern Territory.

151. The Executive Director of Medicines Management at NT Health provided further insight into the benefits of the Acacia EPR from a pharmacy perspective (a complete copy of this testimonial is included at Annexure 5):

> The primary purpose for which clinical pharmacists use Acacia is for the completion of admission medication histories and reconciliation. The direct links to a patient's PCIS file from within Acacia allows access to primary care information for remote patients and also those within correctional and renal services.
>
> The simpler mechanism of accessing Acacia via the linking with CWS and the ease of not needing another program with another password (that expires frequently) makes it more efficient for pharmacists completing medication histories. I am certain that this feature is the key contributor as to why pharmacist use of Acacia is so high.

152. The Acacia EPR also ensures that clinicians in hospital settings have comprehensive visibility of medications administered in community or primary care settings, which provides oversight of treatments of which they might otherwise be unaware. This oversight has the capacity to be lifesaving.

A hypothetical case study: end-stage kidney disease patient presenting to the ED

Chronic kidney disease (**CKD**) is a major health burden in the Northern Territory, particularly among remote Aboriginal communities. Hospitalisation and mortality rates due to CKD among Aboriginal people are higher in the Northern Territory than in any other Australian jurisdiction.[35]

A patient with end-stage kidney disease (**ESKD**) requires ongoing dialysis and is typically case-managed through a renal dialysis facility, which is an outpatient service. Their care is coordinated by a consultant nephrologist and renal nurses, with clinical documentation, including any medication changes, recorded in NT Health's legacy primary care system, PCIS.

Patients with ESKD are at significant risk of becoming critically unwell if a dialysis session is missed in the community. Due to lower health literacy and access issues, among many other factors, it is not uncommon for patients to miss a dialysis session.

One such risk of not receiving dialysis when needed is acute hypertension, a potentially life-threatening condition requiring urgent intervention. Notably, not all antihypertensive medications are suitable for patients with kidney failure, and their administration must be carefully guided by the patient's current medication schedule.

Prior to the implementation of Acacia EPR, if such a patient presented to the ED with acute hypertension and was unable to recall their exact medication regimen, ED clinicians would be unable to access PCIS to view the patient's current prescriptions, to make quick and informed decision as to which medication to proceed with in the hospital setting.

As a result, clinicians may have been forced to delay the hypertensive treatment or proceed without complete information. This created serious risks in what was often a time-critical situation.

With the implementation of the Acacia EPR, the patient's renal medication schedule, which was entered onto the PCIS system at the renal facility, became accessible to the ED team. Once Acacia is completely implemented, this data will be directly entered into Acacia at all care sites (and will not be required to enter the legacy system first).

The benefits of this integration of care sites is realised are unique to the Territory, owing to several key factors:

(a) Low health literacy and language barriers within the population, which means patients may be unable to accurately communicate the details of their prescriptions or other relevant medical information to a new treating team.

(b) Higher burden of disease, leading to increased reliance on medications and greater susceptibility to acute deterioration, that often requires a hospital admission.

(c) Significant patient flow between the acute and community/primary care settings, driven by the high burden of disease and the prevalence of rural and remote populations.

---

[35] Australian Institute for Health and Welfare, 'Measures – 1.10 Kidney disease', *Aboriginal and Torres Strait Islander Health Performance Framework* (Web Page) <https://www.indigenoushpf.gov.au/measures/1-10-kidney-disease>.

6.3 Realised benefits of Acacia 1.0 in the hospital setting

153. To date, Acacia 1.0 in the hospital setting has delivered the following operational and clinical benefits:

(a) The web-based Acacia system allows clinicians across the hospital to instantly access clinical letters, triage information, discharge summaries, laboratory reports, general practitioner information and patient demographics through a single interface. This eliminates the need to navigate multiple modules and screens, as was required under the CareSys platform. This streamlined access to clinical information results in more efficient and better informed clinical decision-making, as clinicians are less likely to overlook important details, which reduces the risk of incomplete or delayed information.

(b) There is a sophisticated built-in alert system within Acacia which requires an alert to be considered by a clinician prior to any interaction with the patient's Acacia file. Alert systems are well understood to significantly increase patient safety and informed clinical decision-making. This includes administrative and clinical alerts such as upcoming appointments, pending paperwork requirements, or changes in demographic information.

(c) Triaging all referrals across the hospital setting now occurs electronically via Acacia, which has streamlined triaging processes by significantly reducing the frequency of misplaced referrals, removing complications of paper-based triaging notes, and facilitating a proper triaging audit trail, which significantly reduces clinical risk.

(d) Acacia has a mobile-enabled user interface which allows clinicians to access patient information securely and simply from a range of devices, including mobile devices. This has the capacity to improve responsiveness and workflow efficiency and will be particularly useful in the context of rural and remote clinical staff.

(e) The 'movement screen' feature of Acacia has significantly improved bed management and patient flow by allowing comprehensive oversight of patient location and movement within the hospital. This allows clinical leaders and patient flow teams to manage hospital capacity more effectively. As Acacia 1.0 also provides interhospital bed visibility between Royal Darwin and Palmerston Hospitals, it has improved hospital transfer processes and streamlined handovers and coordination of waitlists.

(f) The 'surgical waiting list' functionality within Acacia allows teams to view pertinent patient information including the classification of the surgery (i.e. category 1, 2 or 3), the type of surgery, and other pertinent patient information. This interface supports efficient and accurate prioritisation of the surgical list and resource coordination, in line with clinical urgency and complexity.

(g) Acacia has automated SMS reminder functionality for patient appointments which will improve attendance rates and enhance service efficiency.

154. These benefits are not only reflected in measurable improvements to workflow and clinical safety but are also strongly endorsed by senior NT Health clinicians who use Acacia 1.0 on a daily basis.

155. The Acting Director of Medical Services at Gove District Hospital explained that Acacia has significantly improved the ED's ability to prepare for incoming patients by providing timely access to clinical information from primary care facilities and non-government transfer services, prior to patient arrival at hospital (a complete copy of this testimonial is included at Annexure 5):

> Often, the first contact ED has with a patient is through their name being recorded as an 'expected patient' on the ED screen, prior to their arrival in the ED. This process occurs when the rural generalists liaise with CareFlight and the District Medical Officer (**DMO**) Service regarding patients identified as suitable to receive treatment at Gove District Hospital. Following this liaison, the rural generalists will call the ED to discuss and accept these patients. Once a patient is accepted, their expected arrival is recorded in Acacia, and they are listed on the ED screen under "*Not assigned a room or Bed*" ... Once expected patients arrive at Gove District Hospital, they are triaged from that screen into the Acacia "waiting room" screen.
>
> Having the list of expected or anticipated patients assists by:
>
> 1. Managing the expected admission numbers.
>
> 2. Allowing ED staff to prepare for incoming patients, including by incorporating the list of expected patients into our hospital handover each morning so that incoming day ED team are aware of who is likely to be transferred to Gove.
>
> 3. Managing reverse patient flow by identifying patients that can be treated within Gove District Hospital rather than transferred to RDH.

156. A respiratory and sleep specialist at the Royal Darwin Hospital also provided the following perspective (a complete copy of this testimonial is included at Annexure 5):

> In my opinion, the current functionality available to Acacia users is a significant improvement compared to our legacy infrastructure (CareSys).
>
> Previously, triage of referrals was done using pen and paper. Referrals frequently went missing and sometimes the triage instructions were not legible. With Acacia, all referrals are scanned into a central system, and triaging occurs electronically with a proper audit trail – this significantly minimises clinical risk…
>
> Prior to the ED rollback of Acacia, ED clinician notes were visible within the Acacia EPR. As someone who regularly sees patients in the ED and also is involved in the general medicine 'take' process, I found this easy visibility of notes to be invaluable.[36] It was easy to identify which patients were sick and needed to be prioritised and also which investigations had been performed/not performed.
>
> … From my experience in other hospitals, electronic documentation of clinical notes is vastly superior to documenting in patient charts… Currently, we are frequently missing critical information on patients as the patient charts are not available when we are assessing patients in the acute setting. Further, more than one person can read the notes at the same time.

[36] The 'take process" is the process by which patients who present to ED with a particular medical or surgical need are admitted and transferred into the care of that particular team in the hospital.

157. A specialist anaesthetist, and Acacia clinical lead for perioperative medicine,[37] outlined the benefits of Acacia in the perioperative setting as follows (a complete copy of this testimonial is included at Annexure 5):

> For anaesthesia and perioperative medicine, [the] access [provided by Acacia] has improved both the quality of patient care and the efficiency of clinical workflows across elective and ED pathways.
>
> Timely access to comprehensive clinical information … supports accurate risk stratification and proactive optimisation. Clinicians can more readily determine whether early referral to the high-risk preassessment clinic … and/or perioperative multidisciplinary team discussion is required, facilitating patient-centred surgical planning.
>
> The surgical waiting list functionality allows teams to view procedure category, type, and related notes, supporting prioritisation and resource coordination in line with clinical urgency and complexity. Acacia also enables clinicians to confirm whether patients have attended preassessment clinic, and to view pre-operative health questionnaires and nursing/clinician assessments. This ensures that optimisation steps have occurred and helps reduce the likelihood of same-day cancellations or perioperative complications.

158. From a clinical operations and patient flow perspective, the Nursing Director of Clinical Operations at Royal Darwin and Palmerston Hospitals described the benefits of Acacia as follows (a complete copy of this testimonial is included at Annexure 5):

- Improving the ability to track a person's movements across the NT Health system longitudinally, which provides greater understanding, particularly for those with chronic disease and multiple comorbidities.
- Introducing "Acacia Patient Flow", which has allowed increased situational awareness across not only the Royal Darwin and Palmerston Hospitals, but also the regional hospitals. When the Royal Darwin and Palmerston Hospitals EDs were utilising Acacia, this allowed Patient Flow [unit] the ability to rapidly assess overall hospital pressure points, demand and capacity, without needing to log onto multiple systems. I am looking forward to when ED re-commences using Acacia to have these benefits from a patient flow perspective back…
- Introducing detailed information regarding the rooms and beds on the wards, which has allowed a wider understanding and shared knowledge of where the single rooms are on each ward. This was not visible on CareSys as all wards had to be viewed separately and there was no way to differentiate single rooms from shared rooms.
- Enabling clinicians to clearly identify patients with infectious precautions (and hence requirement for single room/negative pressure room) which has increased efficiency by having this requirement clear for Patient Flow to take into consideration when allocating beds.
- Enabling pre-allocation of patients to the wards. This has significantly decreased phone traffic into the Patient Flow office and has allowed for capacity to make timely phone calls to clinical areas with critical patient information…

[37] Perioperative medicine refers to the care provided to patients before, during, and after surgical procedures.

- Finally, the reports that can be produced from Acacia allow for a more accurate understanding of hospital activity, from a patient flow perspective, allowing for more data analysis, which can be easily exported into an Excel spreadsheet. Previously reports from CareSys had to be printed which resulted in very lengthy analysis of any data.

6.4 Realised benefits of Acacia 1.0 in the outpatient setting

159. Acacia has been particularly transformative in the delivery of outpatient services across the Territory. To date, Acacia 1.0 has delivered the following operational and clinical benefits to outpatient services:

(a) The outcome of an outpatient appointment can now be electronically recorded on Acacia immediately following an appointment, which improves communication with booking and administrative staff and reduces the risk of miscommunication or failure to effect patient follow up.

(b) Referrals are now completed electronically, eliminating the risk of paper-based referrals being lost.

(c) Triaging is completed electronically which streamlines the process and improves accuracy of the triaging process.

(d) Doctors now have the referral information (including blood test results and other diagnostic tests) electronically available without having to wait for the provision or uploading onto the system of charts or paper-based documents.

(e) There is in-built reporting ability to capture appointment attendance, which ensures appointment schedules are adhered to and missed appointments are not overlooked.

(f) There is capacity to transfer all outpatient referrals relevant to a particular service to one referral point within a region. This allows the creation of a master list which facilitates more accurate triaging of patients for that service.

(g) Outpatient follow-up instructions are now electronically recorded on Acacia, rather than being handwritten, which has streamlined follow-up processes.

160. A Top End renal nurse provided the following perspective on the real-life impacts Acacia has had on the day-to-day functioning of the Top End's renal service (a complete copy of this testimonial is included at Annexure 5):

> Acacia has enabled in-hospital dialysis to be recorded clearly, with the nurse able to document where the dialysis occurred, and if the patient was classed as acute dialysis (expected kidney recovery) or chronic (new start or maintenance patient). A rounding clinician within the hospital setting does not need to call the dialysis unit to know when the patient completed their last dialysis – as the order is viewable in Acacia.[38] This information is critical when looking at future needs for the hospital infrastructure and dialysis needs for patients in hospital.

[38] A "rounding clinician" is a short hand way of referring to a clinician who is undertaking "rounds" which is the process by which medical teams visit each patient on the ward (daily or more regularly) to review and optimise their care plan: Victoria Walton et al, 'Ward rounds, participants, roles and perceptions: literature review' (2016) 29(4) *International Journal of Health Care Quality Assurance*, 364–379.

A common issue faced in the acute space that has been eliminated with Acacia was the lack of visibility of patients in hospital under the care of a different speciality. Nephrologists and dialysis coordinators were blind to who was in acute care or in the ED until they were notified. By way of example, on the current systems, where a patient is transferred from Katherine and they are not under the care of the renal team, there is no straightforward way for the renal team to identify that the patient requires renal dialysis – the system relies on practitioners undertaking very manual checks. On Acacia, users are now able to run a report to see all current haemodialysis/peritoneal dialysis/home haemodialysis/transplant patients who are in hospital. This has resulted in better awareness and improved planning of dialysis treatments in hospital. In CareSys, a user would have to go through every ward to find which patients were in hospital – and this wasn't always completed, nor noted if the patient wasn't under their care (i.e. Katherine haemodialysis patients are managed by private provider) …

… ED staff now have information regarding a patient's last dialysis, nonattendance, dry weight and post dialysis observation items and complications during dialysis.

Staff are adding alerts for patients who are on the active renal transplant list, enabling any interaction with the patient to be considerate of this factor when treating.

A report has been created to show when a patient was last seen in clinics (home haemodialysis/peritoneal dialysis/haemodialysis/transplant) to ensure we don't lose the patients and they are maintained with their 3-monthly minimum reviews.

6.5 Benefits of Acacia following completion of the implementation

Complete integration between acute, primary and community settings

161. Once fully implemented, Acacia will serve as the single, comprehensive source of truth for all patient information across the Northern Territory. NT Health clinicians, regardless of their location or care setting, will have immediate access to the most up-to-date medical history, current treatment plans, and relevant clinical data for every Territorian. All functionality relevant to NT Health will be completed and stored on the one system.

162. This integration will transform the delivery of health services in the Territory and improve the health outcomes of people living across the Territory, including by:

    (a) reducing hospital readmissions;

    (b) reducing adverse drug events, as one alert system will be implemented across all care settings;

    (c) reducing patient discharge time;

    (d) reducing ED wait time, as interoperability between hospitals, community, primary and acute care settings will mean clinicians will need to spend less time collating information from various places, and will be able to triage, diagnose and treat presenting patients faster;

    (e) reducing average admission lengths;

    (f) reducing surgical and other wait times;

    (g) reducing duplicated diagnostic testing;

    (h) improving coordination between acute and primary/community based settings; and

    (i) increasing capacity for direct patient care.

163. Critically, each of the above will result in improvements to the level of care that the Northern Territory delivers to patients. By way of example, it is expected that the improved capacity to consistently identify risk factors for and treat chronic diseases, such as chronic kidney and heart disease, will have a significant positive impact on the health of Aboriginal persons, particularly those living in remote regions.

A paperless health service

164. Acacia will be the electronic source for, and will record, all patient information, including clinical documentation, medication management, referrals, assessments and orders. This will significantly reduce and, ultimately in time, eliminate the need for paper medical records.

165. The risks associated with paper-based medical notes are well documented. Challenges such as illegible handwriting, misplaced or misinterpreted notes and transcription errors are common. These errors can and do compromise the accuracy and continuity of patient care. Paper-based records stored across hospital settings also make information sharing between locations cumbersome, as the manual sharing of information (e.g. through email or postage) can present privacy issues and impose a significant administrative burden on administrative staff.

Integrated medication and results alert system

166. Acacia will support a comprehensive alert system across the entire platform which will reach all NT Health clinicians engaging with a patient record, including:

(a) allergy alerts;

(b) medication interaction alerts;

(c) medication dosage alerts; and

(d) abnormal test result alerts.

167. The sophisticated alert system will improve patient safety by reducing the risk of adverse events resulting from missed test results, dosage errors, and allergy-related reactions.

Patient-accessible Acacia portal

168. Acacia will have a public interface which allows clients to access parts of their medical record. This feature will improve patient engagement, enhance capacity for self-management, and increase transparency and shared decision-making within the health system.

Non-government provider portal

169. With patient consent, non-government healthcare providers across the Northern Territory will have access to parts of a shared patient's medical record through the online portal. This will improve patient continuity of care and collaboration between Aboriginal community-controlled health organisations and NT Health, and ultimately improve patient safety by ensuring all providers involved in a patient's journey have access to critical health information.

Data collection and analytics capacity

170. Acacia will transform NT Health's capacity for understanding health service delivery and cost patterns across the Territory by providing current and accurate population health data. Analytics of this nature are critical to guide policy and investment decision-making, to improve the overall performance of the health service, and to ultimately reduce the cost of healthcare delivery in the Territory.

171. Currently, NT Health relies on clinicians manually inputting data from other sources, which requires numerous clinical hours. Much of this data collection is mandatory, pursuant to broader Australian health reporting standards. Manual entry of clinical data will be eliminated with the use of Acacia as the data will be part of day-to-day workflow, and reports will be able to be automatically generated through Acacia. This will support compliance with national health reporting obligations while also enabling NT Health to generate real-time insights into system performance, resource utilisation, and patient outcomes.

172. Data collected by NT Health in relation to healthcare service delivery informs the level of Commonwealth Government funding received by the Northern Territory. Improvements to data collection that result from the implementation of Acacia will ensure the Northern Territory receives a fair allocation of Commonwealth health funding.

Improved privacy and security of medical information

173. Acacia will strengthen the security of patient information by ensuring access to medical information is only available by staff with the appropriate authorisation. The implementation of individualised login credentials as the only means to access Acacia will also ensure access to, and modification of, information is recorded and traceable within the system, in line with Australian health privacy standards.

7 Issues

174. The departments acknowledge that the development and implementation of the Program has encountered challenges. This is unavoidable, and to be expected, in delivering a Program of this size, scope and complexity. The Program is a more than $300 million undertaking which involves over 7,000 system users across the breadth of the Northern Territory. For comparison, two digital reforms nearest in scale recently delivered by the Northern Territory Government are:

(a) the CARE client management system for the Department of Children and Families, which was a $64 million project that was delivered $10 million under budget and implemented in April 2023; and

(b) the SerPro police system, a $59 million project, rolled out to 1,900 users in November 2023.

175. Although encountering challenges is par for the course when undertaking complex digital reform such as this, there are two particular matters which the departments wish to address:

(a) the increase to the Program budget; and

(b) the temporary withdrawal of Acacia in the Royal Darwin and Palmerston Hospital EDs.

7.1 Increase to Program budget

176. The literature reveals that time and cost overruns in ICT-enabled projects are common. Evidence published by Standards Australia,[39] and previously cited by the Public Accounts Committee,[40] showed that 30–40% of Australian ICT projects experience some form of cost escalation, with average overruns between 43% and 189%. That experience is reflected across the world,[41] and particularly in relation to healthcare-related ICT projects.[42]

177. It is particularly critical when delivering ICT reform into healthcare settings to appropriately balance the need to meet planned milestones with the need to respond to complexity and risk, as it inevitably arises. Patient safety is paramount, and decisions relating to deployment, including when to go live, and when and how necessary remediation works are to be undertaken, are made in that context.

178. The single biggest contributor to the Program budget variation is staffing and resource costs due to extensions to timelines. The Program employs a large number of specialist ICT contractors, which attract daily rates for work performed. The number of contractors rises and falls with each phase of the Program.

179. Helpfully, the agreement with InterSystems is predicated on a milestone-based payment arrangement, in which InterSystems is paid per delivery of each development milestone, not per time period. On that basis, the software costs are essentially fixed and are not a primary contributor to the Program budget variation.

180. There have been four particularly pronounced time delays which resulted in growth to the Program costs:

    (a) First, in 2018, NT Health commissioned and opened the Palmerston Regional Hospital. This diverted a number of clinical resources who had been assisting the Program, reducing access to clinicians and the ability of the Program staff to progress the development of the system, resulting in a nine-month delay.

    (b) Second, revising the implementation approach from big bang to phased implementation in 2019 led to a four-month delay to the Program timeframe.

    (c) Third, the onset of the COVID-19 pandemic effectively required the suspension of clinical engagement for large portions of 2020, as frontline resources were diverted to responding to the global pandemic and its threat in the Northern Territory. This had a twofold impact: first, the temporary reduction in service delivery to minimise transmission meant the Program's business as usual approach was disrupted, meaning progress on the Program slowed; and second, the diversion of clinical resources to responding to the pandemic reduced Program access to subject matter experts, further delaying the Program schedule.

    (d) Fourth, the scheduled Go Live in Katherine Hospital in 2021 was delayed by the outbreak of community transmission of COVID-19 in Katherine and the Big Rivers region leading to lockdowns and lockouts, further delaying the Program schedule.

---

39 Raymond Young, *Case Studies—How Boards and Senior Management Have Governed ICT Projects to Succeed (or Fail)* (Standards Australia, HB 280–2006).

40 Public Accounts Committee, Northern Territory Legislative Assembly, *Inquiry into Management of ICT Projects by Government Agencies* (Final Report, May 2014), 11.

41 See, e.g., Bent Flyvbjerg et al, 'The Empirical Reality of IT Project Cost Overruns: Discovering A Power-Law Distribution' (2022) 39(3) *Journal of Management Information Systems* 609; Brent Flyvbjerg and Alexander Budzier, 'Why Your IT Project May Be Riskier than You Think' (2011) 89(9) *Harvard Business Review*, 23; Muhammad Ayat et al, 'Current trends analysis and prioritization of success factors: a systematic literature review of ICT projects' (2021) 14(3) *International Journal of Managing Projects in Business* 652, 653; KPMG, *Global IT Project Management Survey* (2005).

42 Bent Flyvbjerg et al, 'The Empirical Reality of IT Project Cost Overruns: Discovering A Power-Law Distribution' (2022) 39(3) *Journal of Management Information Systems* 609.

181. Each of these delays was reported regularly to the CLG, the PIC, the PSC, the IGB as well as to the responsible Ministers and Government. Program leadership made every effort to contain the impacts and keep the Program on schedule to the greatest extent possible. However, by early 2022 it became apparent that the remaining budget, while sufficient to sustain the Program for another couple of years, would not be sufficient to complete the Program. That was reported as part of the Program's ongoing quarterly financial reporting to Government.

182. It was also acknowledged publicly. In June 2022, the Chief Executive Officer of DCDD gave evidence before the Estimates Committee.[43] When asked about the status of the Program, he said:

> [the Program] has had a number of impacts to the timeframe related to COVID. Primarily, that is related to the availability of clinicians. We cannot deliver a major software solution without being heavily engaged with clinical stakeholders. For a long time that was suspended due to the pandemic.
>
> We have had some delays to the timeframe. The initial scope of the solution will still be delivered in its totality. We are at a point where we will probably have some funding pressures later in the program because there is a cost to keep the project afloat.[44]

183. Subsequent detailed financial modelling anticipated a shortfall of $63.4 million to the Program. As part of the Program leadership's efforts to manage the growth in the Program budget and to minimise the effect of any budget increases, in August 2022 the PSC endorsed the Chief Executive Officers of DCDD and NT Health exploring options to meet the increased costs from within their existing budget appropriations, without needing to seek additional appropriation from Government as part of the annual budget process.

184. By October 2022, the Chief Executive Officers of DCDD, NT Health and officials from the Department of Treasury and Finance had identified and agreed a remediation solution to be achieved from within DCDD's and NT Health's existing budgets. The $63.4 million shortfall was met by:

    (a) $23.2 million from internal reprioritisation of DCDD's budget appropriation;

    (b) $10 million resulting from the CARE project being delivered under budget;

    (c) $6.2 million from surplus cash balances held by DCDD; and

    (d) $24 million from internal reprioritisation of NT Health's budget appropriation.

185. In total, DCDD contributed $39.4 million, and NT Health contributed $24 million. That solution was reported to and endorsed by the Minister for Corporate and Digital Development in October 2022, and reported to Government as part of the Program's ongoing quarterly financial reporting to Government.

186. The internal remediation solution was also foreshadowed publicly. On 21 June 2023, the Chief Executive Officer of DCDD gave evidence before the Estimates Committee.[45] When asked if the Program was tracking to come in on budget, he said:

> We have been repurposing internally to give ourselves some more capacity to address that [budget pressure due to delay]. You touched previously on the fact that there was a $10 million residual in the CARE budget.

---

43 Evidence to Estimates Committee, Northern Territory Legislative Assembly, Darwin, 22 June 2022, 52–75.
44 Evidence to Estimates Committee, Northern Territory Legislative Assembly, Darwin, 22 June 2022, 67 (Chris Hosking).
45 Evidence to Estimates Committee, Northern Territory Legislative Assembly, Darwin, 21 June 2023, 85–107.

> One of the positive elements of the model we are in these days where DCDD manages all these reforms on behalf of agencies is all of those funds sit in my department's budget, so we have the ability to repurpose across. Had those funds existed in the individual agencies it would have been a lot more difficult to have the ability to share money across agencies.
>
> We are taking steps to address that now so we are on the front foot with it. At this stage, I can say with certainty that we will exceed that $259 million, but I am confident we can do it by managing within our own overall allocation between ourselves and NT Health. I do not anticipate having to seek any additional funding from the government.[46]

187. The increase in the Program budget of $63.4 million, from the initial fully-funded Program cost of $259 million to $323 million, represents an increase of 24.7%. That is regrettable but was unavoidable. Further, according to the literature, an increase of this level is not uncommon in the delivery of a project of this nature.

7.2 Royal Darwin and Palmerston Hospital EDs

188. By the time of Go Live in the Royal Darwin and Palmerston Hospitals, Acacia 1.0 had been in use in Katherine Hospital for over 18 months, Gove District Hospital for over 12 months, and the Top End renal dialysis units for over 12 months. Although Acacia 1.0 was settled and operating relatively well across Katherine, Nhulunbuy and the renal units, their patient volume — particularly in Katherine and Gove EDs — is significantly lower than in Royal Darwin and Palmerston Hospitals. For that reason, those earlier deployments — although informative — were not a like-for-like test of how the Royal Darwin and Palmerston Hospitals Go Live would go.

189. Given the fast paced and high-pressure nature of the ED at the Royal Darwin and Palmerston Hospitals, it was anticipated that there would likely be challenges with the implementation of Acacia 1.0. As detailed above, it was for this reason that a number of steps were taken to facilitate and support implementation. By way of example:

    (a) Acacia 1.0 was implemented at the Katherine and Nhulunbuy Hospitals and the lessons learnt from those roll-outs were used to make changes to Acacia to accommodate the issues that arise both generally and in the emergency medicine context.

    (b) The approach to implementation of Acacia 1.0, including the training delivered and the supports relied on that were successful in Katherine and Nhulunbuy, were appropriately modified and scaled up for deployment into the much larger Royal Darwin and Palmerston Hospitals.

    (c) Extensive consultation was undertaken with staff from the EDs at the Royal Darwin and Palmerston Hospitals prior to Go Live and their feedback was actioned — for example, ED clinicians expressed concern that the new Acacia system did not replicate the CareSys dashboard which allowed them to see each patient in the ED and their status in one workflow. This limited their situational awareness and increased the risk of patient needs being missed. In response, InterSystems commenced work developing a custom functionality within Acacia to allow this. While that work was underway, the Program technical team developed two dashboard options using other software code. Those dashboards provided clinicians with an ED floor plan view, inclusive of floor plan notes and diagnoses using real-time data. Both options were presented to ED prior to Go Live, and one was selected, tested, and accepted.

---

[46] Evidence to Estimates Committee, Northern Territory Legislative Assembly, Darwin, 21 June 2023, 101–102 (Chris Hosking).

(d) In the weeks following Go Live, expert Program staff were on-site 24 hours per day 7 days per week to provide technical support to users, answer questions, and address any issues.

190. However, despite the comprehensive preparatory work done, the deployment continued to present certain difficulties for clinicians in ED. Those challenges were not necessarily unique to the Royal Darwin and Palmerston Hospitals EDs, but that was where the most significant negative operational impact was felt. There were four particular factors which assist in explaining why the challenges were more serious in ED and required further action.

191. First, when Acacia 1.0 replaced CareSys, there was an initial negative effect on productivity, as clinicians were slowed getting used to the new system relative to the old system, resulting in delays in attending to patients. That increased clinical risk. It is expected that once staff are used to the new system, this issue will resolve.

192. Second, the Royal Darwin and Palmerston Hospitals have been experiencing significant resource and bed pressures for a long time and, at the time Acacia was being implemented, Code Yellows were a frequent occurrence. A combination of high patient volumes, which persistently exceed bed capacity, and a deficit in nursing positions meant that clinicians were already overstretched and remain so. That meant the time and capacity they have to adapt to new systems was reduced, and further made the transition to Acacia more burdensome.

193. Third, Acacia is a more comprehensive digital system than the legacy CareSys system, in that it can receive and process much more information, and offers many more features. That means workflows, being the processes which users see and interact with to do particular tasks in the system, involve entry of more data, more screens, more keystrokes and more clicks than before. It takes time for users to become familiar with, and accustomed to, the new process. That initial burden was anticipated, and is documented in the literature.[47] However, where patient volumes are more moderate, and clinicians have more time to adjust to the new systems, that burden can be managed more effectively without unacceptable increase in clinical risk. Because of the particularly pressing resource constraints in the Royal Darwin and Palmerston Hospitals EDs, that burden was not able to be safely managed while improvements were made to the system in place.

194. Fourth, in the circumstances described above, the deployment of Acacia 1.0 was negatively affecting staff morale. The combination of high workloads, staff shortages and other non-Acacia operating pressures was compounded by the transition to Acacia. The Director of Emergency Medicine at Royal Darwin and Palmerston Hospitals surveyed senior clinical professionals in the ED and reported that the strain of the operating environment was at a point where intervention was necessary to ensure the ongoing wellbeing of the ED workforce.

195. For those reasons, following the Go Live, a number of co-design workshops were held with the Program team, InterSystems and ED clinicians to understand the challenges and further improvements which were required to be made. Additionally, InterSystems software specialists spent time 'shadowing' doctors on the ED floor, documenting issues as they appeared in real time and assessing how those issues could be resolved.

196. Ultimately, 34 separate issues were identified which needed to be addressed to materially improve the use of Acacia 1.0 in the Royal Darwin and Palmerston Hospitals EDs. A number of options were considered to enable the ED remediation project to take place, including enhancing Acacia 1.0 in situ, or reverting to CareSys while enhancements were made.

---

[47] See, e.g., Hawyoung Cho et al, 'Electronic health record system use and documentation burden of acute and critical care nurse clinicians: a mixed-methods study' (2024) 31(1) *Journal of the American Medical Informatics Association* 2540.

197. On 24 January 2024, acting on the expert advice of clinicians in the EDs, the PSC resolved to temporarily suspend Acacia in Royal Darwin and Palmerston Hospitals EDs while improvements were made to the system. The suspension occurred on 20 March 2024.

198. That decision was made with patient safety and clinical risk at the front of mind, as was appropriate when making significant change to technology systems in acute care settings.

199. The temporary suspension of Acacia in the Royal Darwin and Palmerston Hospitals EDs has led to a dual-system environment, in which 90% of the Royal Darwin and Palmerston Hospitals continued using Acacia while ED reverted to CareSys while further improvements were made. Immediate work was required to ensure seamless operation of the two systems, by manual data entry and document handling, so that a patient's journey through the hospital was not interrupted and patient safety could be preserved.

200. To support this, a Central Administrative Hub (**CAH**) was stood up within the Royal Darwin and Palmerston Hospitals comprising 20 trained staff on a 24 hour, 7 days per week service. A team leader has been overseeing staff located in:

    (a) Palmerston Regional Hospital;

    (b) Royal Darwin Hospital Triage Unit;

    (c) Royal Darwin Hospital ED flight deck;[48] and

    (d) Royal Darwin Hospital Patient Flow Unit.[49]

201. The delays and expense related to the ED remediation work are regrettable, but are explicable in the context of the project's scope and complexity, and the need to prioritise patient safety.

202. The remediation work that was identified in early 2024, and re-introduction of Acacia into the Royal Darwin and Palmerston Hospitals EDs, are on track to be ready for Go Live in the September 2025 quarter.

8 Response to Matters Referred to Inquiry

203. This section responds to the each of the five individual matters referred to the Committee. Each response should be read in conjunction with the information already outlined in this submission.

8.1 The difference between the initial project budget and the cost of procuring, implementing and managing the Acacia system to date

204. The initial Program budget estimated in the business case presented to government was $242 million, based on detailed industry research. Government approved $186 million in the 2017–18 Budget.

205. The total Program spend to 1 March 2025 is $291.1 million.

---

[48] The flight deck is the elevated main staff area on the ED floor, and is the central decision making hub for patients in the ED.
[49] Unit within the hospital that manages the movement of patients.

8.2 A timeline of each of these cost revisions with an explanation for each revision

206. A timeline of each cost revision, with an accompanying explanation, is provided in Table 2 below.

Table 2. Timeline of cost revisions of the Program

Date	Program Budget ($M)	Variation ($M)	Explanation for variation
May 2016	186	0	Initial Program budget estimated in the business case was $242M, based on detailed industry research. Government approved $186M in the 2016–17 Budget.
May 2017	259	73	Revised business case based on tenders received as part of open market process. Fully funded in the 2017–18 Budget.
October 2022	323	63	Increase due to delays arising as a result of commissioning of Palmerston Regional Hospital; COVID-19; and reduced access to clinicians. Funded by internal reprioritisation by the Departments of Health and Corporate and Digital Development.

8.3 Any issues that were raised during implementation of the system, when the responsible Minister was notified of these issues, how long it took for these issues to be resolved, if they were resolved at all, and their cost

207. The issues raised during the implementation of the Acacia system, and the cost to resolve them, are addressed in the relevant sections above.

208. Throughout the life of the Program, reports have been provided to Government every quarter which set out the status of the Program, whether it is on track with respect to budget and timeframe, the delivery of key achievements, and any issues or challenges affecting or likely to affect the Program.

209. In addition to those regular reports, the Ministers for Health and Corporate and Digital Development were (and continue to be) regularly briefed by their respective chief executives:

    (a) by written ministerial briefs, both when requested by a minister and of the departments' own motion; and

    (b) during regular meetings between ministers and their chief executives, usually weekly or fortnightly.

210. In addition to those regular reporting avenues, the departments briefed either or both Ministers for Health and Corporate and Digital Development on the following occasions in relation to the Program:

    (a) 18 June 2021 in relation to postponement of the Katherine Go Live of Acacia 1.0 due to COVID-19 delays;

    (b) 14 November 2021 in relation to further postponement of the Katherine Go Live of Acacia 1.0 due to COVID-19 lockdowns and lockouts in Katherine and Darwin;

    (c) 28 July 2022 in relation to the upcoming Katherine Go Live of Acacia 1.0 on 29 July 2022;

(d) 18 October 2022 and 9 November 2022 in relation to the shortfall in the Program budget, and the solution from internal reprioritisation of DCDD's and NT Health's existing budget appropriations;

(e) 22 November 2022 in relation to the upcoming Gove Go Live of Acacia 1.0 on 25 November 2022;

(f) 16 December 2022 on the general background to the Program and the status of its delivery;

(g) 28 August 2023, 20 October 2023, and 10 November 2023 regarding the upcoming Royal Darwin and Palmerston Hospitals Go Live on 11 November 2023; and

(h) 28 December 2023, 13 January 2024, 17 January 2024, 25 January 2024, and 20 March 2024 regarding the issues identified in the RPDH EDs and the reversion to CareSys to enable remediation works to be undertaken.

8.4 The impact to the health system, and the cost, of any rollbacks/suspensions of using the software in hospitals that occurred during implementation

211. The suspension of Acacia 1.0 is limited to the Royal Darwin and Palmerston Hospitals EDs. It has been successfully implemented in the following areas:

(a) all of Katherine Hospital including the ED;

(b) all of Gove District Hospital including the ED;

(c) Top End renal units;

(d) Central Australian renal units; and

(e) outpatient and inpatient units of the Royal Darwin and Palmerston Hospitals other than ED, including:

i. general medicine;

ii. renal medicine;

iii. respiratory and cardiology;

iv. infectious disease medicine;

v. surgery;

vi. maternal and child health;

vii. obstetrics; and

viii. paediatrics.

212. The only direct cost to the Program incurred as a result of the temporary suspension is the ongoing maintenance of the Central Administrative Hub (**CAH**), which is staffed 24 hours per day, 7 days per week. The operation of the CAH has required 20 FTE at around the AO4 level, at a cost of $2.1 million since inception.

213. There are no direct costs from the software vendor. The contract with InterSystems is predicated on a milestone-based payment arrangement, in which InterSystems is paid per delivery of each development milestone, not per time period. For that reason, all the ED remediation works to the TrakCare software have been undertaken at InterSystems' own expense. Whereas software vendors might typically seek a contract variation to account for the additional costs incurred, InterSystems has not done so and has borne these additional costs.

214. In addition to direct costs, there are further indirect costs due to the associated changes to the Program schedule, though these cannot be precisely quantified.

8.5 The current status of implementation against the original staged project plan and the outstanding steps, and their cost, required for project completion

215. The current status of the Program implementation is set out in Table 3 below.

Table 3. Implementation of the Acacia Program as at 1 April 2025.

FG	Title	Description	Status
FG0	Acacia: Electronic Patient Record (**EPR**)	Electronic, read-only patient record containing over 20 years of longitudinal patient data from legacy systems.	Completed
FG1	Acacia 1.0: Patient Administration+	Patient Administration System for the management of patients throughout hospital journey, including through wards, renal clinics and correctional health centres. Replaces the legacy CareSys system.	Delivery in progress: **Location** / **Date** Katherine Hospital — 30 July 2022 Top End Renal Units — Oct-Nov 2022 Gove District Hospital — 26 Nov 2022 Darwin Correctional Centre — 9 Oct 2023 Royal Darwin and Palmerston Hospitals (except ED) — 11 Nov 2023 Central Australia Renal Units — Feb-Mar 2025 Alice Springs Hospital — TBC Tennant Creek Hospital — TBC Royal Darwin and Palmerston Hospitals ED — TBC
FG2	Acacia 2.0 & 3.0: Hospital Care	Adds a module to support the ordering and receipt of pathology and radiology scans and tests, and other clinical documentation. Replaces the legacy CWS module.	To be confirmed
FG3	Acacia 2.0 & 3.0: eMedication	Adds a module to support patient medication management. Replaces the eMMA program.	To be confirmed
FG4	Acacia 4.0: Remote and Urban Primary Care	Introduces Acacia to remote clinics and other primary healthcare centres. Replaces PCIS and CCIS.	To be confirmed
FG5	Client and Healthcare Provider Portal	Provides private, interstate, and external clinical access, and patient access, to patient records through a secure public portal.	To be confirmed

216. Detailed financial modelling undertaken by the departments suggests the cost to fully deploy all five functional groups and deploy the Acacia end-to-end system across the Territory will require additional funding. The departments forecast at least 24–30 months (2–2.5 years) of further work would be required to complete the Program.

9 Conclusion

217. The Program remains the single biggest information technology project that the Northern Territory Government has ever undertaken, involving over 130 staff directly engaged in delivery of the Program and many hundreds more across the spectrum of NT Health, Territory-wide.

218. The Program was and remains necessary for two key reasons:

    (a) to mitigate the significant risks of failure presented by the Territory's legacy software systems, which are obsolescent and at end of life; and

    (b) to improve health outcomes for patients across the Territory by delivering a contemporary and fit-for-purpose system which equips clinicians with all the information they need.

219. It has been successful so far, despite challenges along the way. Challenges are to be expected of a Program of this size, scale, and complexity. Significant progress has been made to date to implement Acacia within the Northern Territory's public hospitals and primary health care settings, and Acacia is already delivering significant clinical benefit at the point of care, as supported by testimonials from senior clinicians. Once fully implemented, Acacia will transform the delivery of public health care across the Northern Territory.

Joint Submission of the Department of Health and the Department of Corporate and Digital Development

to the

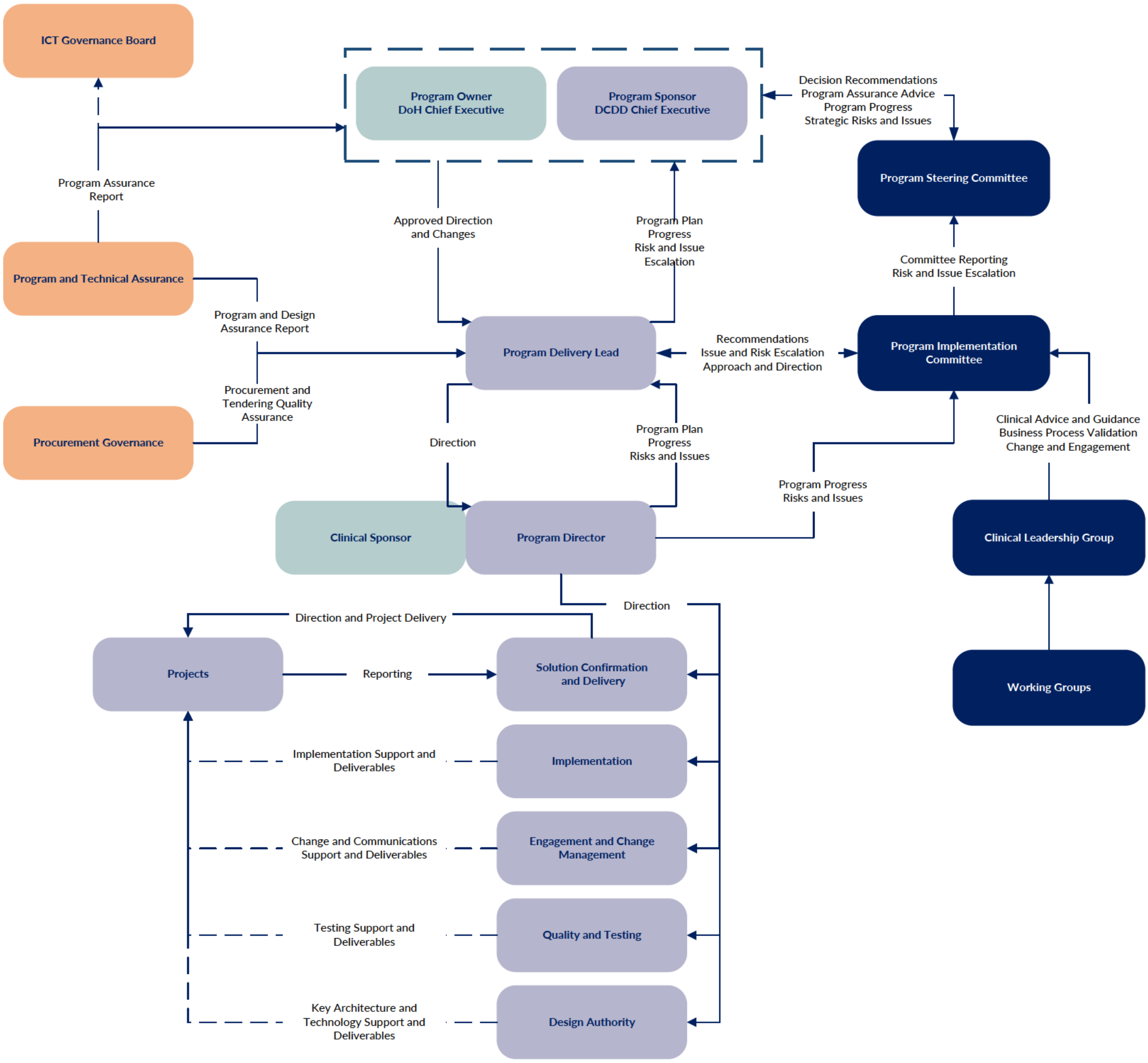
Public Accounts Committee

Inquiry into the Acacia Digital Patient Record System

ANNEXURE 1

CCSRP Governance Model

May 2024



CCSRP Governance Pathways and Escalations

Highest Executive influence, the PSC membership is inclusive of the DCDD and Health Chief Executives, Treasury and the Clinical Sponsor
(Highest level escalation)

Program Steering Committee

PIC membership is all REDs who are Chairs of the IWG, and the Deputy CE's. This forum is DCDD and Health Executive Leadership
(This is an escalation pathway from CLG, also direct feed from the IWG by REDs)

Program Implementation Committee

Members of the CLG are made up of the working group 'Stream Leads'.
Note members are from all sites and will be included on the relevant IWG's
(Therefore CLG is the escalation pathway for NTG wide)

Clinical Leadership Group

NT Health Governance Committees
Note: Escalations will be supported by the OCCIO

- NT Health Acacia Implementation Group
- NT Health Clinical Governance Committee
- Int. Top End Implementation Working Group
- Executive Leadership Group (All sites)
- SETS
- Joint NT Health Privacy Working Group

Specialty Working Groups
Chair: 2 x NTH Specialty Leads
Support: CCSRP Governance/SME/BA

- Allied Health Working Group
- Alcohol and Other Drugs Working Group
- Alerts and Allergies Working Group
- Communications Working Group
- Clinical Documentation Working Group
- Critical Care Working Group
- Device Enablement Provisioning Working Group
- Emergency Working Group
- Electronic Medications Management Working Group
- Mental Health Working Group
- Infection Control Working Group
- Medicine Working Group
- Obstetrics and Gynaecology Working Group
- Orders and Results Working Group
- Outpatients and Referrals Working Group
- Patient Administration Working Group
- Patient Flow Working Group
- Paediatrics Working Group
- Primary, Remote, Custodial Health Working Group
- Reporting Working Group
- Theatre and Anaesthetics Working Group
- Community Health and Remaining Working Group

Implementation Working Groups
Chair: NTH Site Regional ED
Support: Governance / SLT

- **Acacia Live Sites Working Group**
  All active Acacia Sites: communicate changes and inform of issues NTG wide
  CHAIR: Satpinder Daroch/Bob Creek
- **Alice Springs and Tennant IWG**
  Site Specific
  CHAIR: Karyn Cook/Lisa Barnes
- **Gove IWG**
  Site Specific
  CHAIR: Mary-Clare Arkoll
- **Katherine IWG**
  Site Specific
  CHAIR: Angela Brannelly
- **Top End IWG**
  Site Specific
  CHAIR: Luke Butcher

Internal Program Working Groups
Chair: Multiple
Support: Governance / SLT

- **Functional Review Board**
  Review of items pre CLG
  CHAIR: Andrew Bell
- **Visual Rules Working Group**
  Ensure standardised/consistent review of visual rules pre WG
  CHAIR: Emma Flower
- **Design Working Group**
  Review of clinical infrastructure
  CHAIR: Shaun Joyce/Claire Tieleman
- **Transition Oversight Group**
  Provide oversight and review of transition to business as usual
  CHAIR: Bob Creek
- **Clinical Pathways**
  Ensure standardised and consistent review of clinical pathways prior to working group consideration.
  CHAIR: Andrew Bell
- **Order Sets / Favourites Working Group**
  Ensure standardised and consistent review of orders sets / order favourites prior to working group consideration
  CHAIR: Emma Flower

Joint NT Health and CCSRP Committees	27
Internal Program Governance Committees	6
NT Health Escalation Committees	6

Acacia
One Client, One Record, Territory Wide...
NORTHERN TERRITORY GOVERNMENT

Joint Submission of the Department of Health and the Department of Corporate and Digital Development

to the

Public Accounts Committee

Inquiry into the Acacia Digital Patient Record System

ANNEXURE 2

Program Steering Committee

Core Clinical System Renewal Program (CCSRP)

2024 Program Steering Committee Terms of Reference

The Core Clinical Renewal Program (CCSRP) will deliver an integrated, clinical system that supports public health services (acute, primary and community) for patients and clients across the NT. The program includes a major project for a new clinical system and a number of foundation projects that cover related systems and health business process requirements necessary to implement and effectively utilise the new clinical system across the span of NT Health's operations. NT Health's current legacy clinical systems are technologically obsolete and at end of their effective working life, hence transition to the new Acacia solution is time critical.

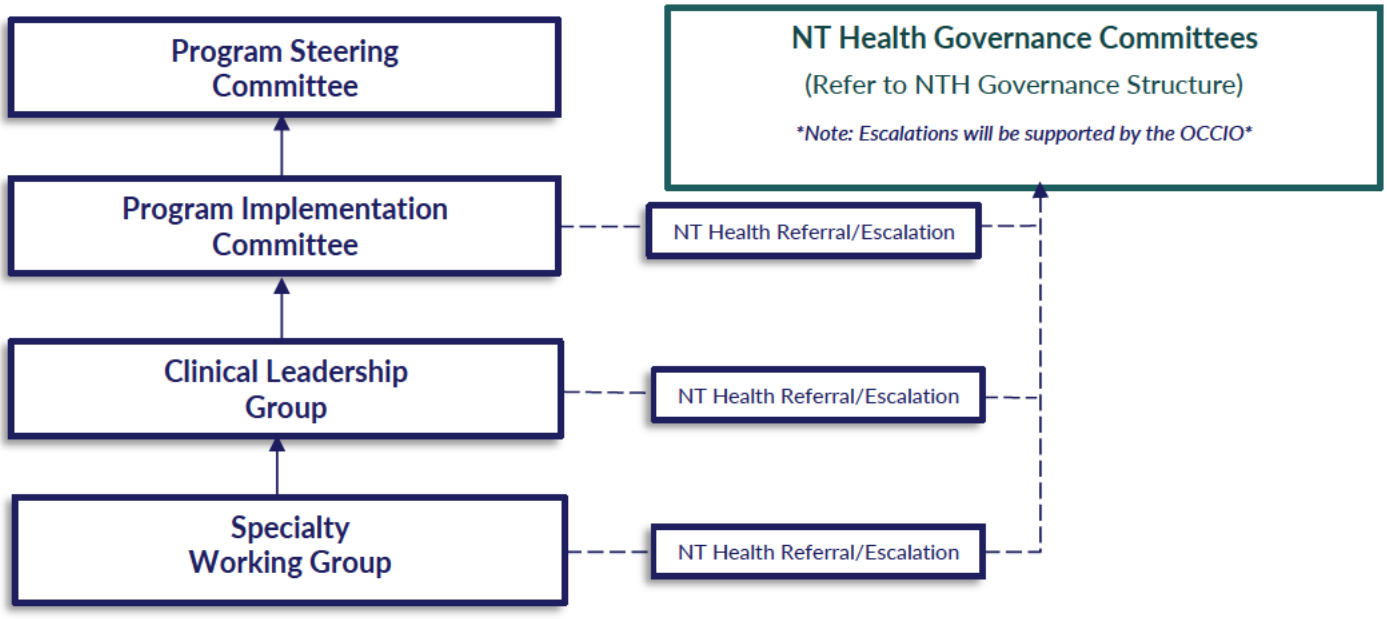
The implementation of an end to end Acacia solution is occurring in a phased approach, currently aligned to five Functional Groups, as below;

- FG0 - Acacia Read Only Electronic Patient Record (EPR)
- FG1 - Acacia 1.0: Patient Administration+ (PAS and replacement of CareSys functionality
- FG2 - Acacia 2.0 & 3.0 Hospital Care (Clinical process support Medication Management and Orders and Results)
- FG3 - Acacia 2.0 & 3.0 Hospital Care (Clinical process support and replacement of CWS modules)
- FG4 - Acacia 4.0 Primary Healthcare (Community, Urban and Remote support)
- FG5 - Acacia 5.0 Client & healthcare provider portal (Client Portal and External Provider Access)

Accountability for the delivery of the CCSRP is assigned to the Department of Corporate and Digital Development (DCDD) via decision of Cabinet with the Department of Health (DoH) the customer and beneficiary of this major investment in digital technology. The governance model is agreed by the DoH and DCDD Accountable Officers. Regular progress reporting to Cabinet is via the Minister for Corporate and Digital Development.

Governance Escalation Pathways

There are currently four tiers to the Program Governance Structure, which supports appropriate escalation pathways.



Roles

DoH and DCDD have clearly identified roles and accountabilities:

- DoH will use the system in production to support its core business providing health services to Territorians and is accountable for program ownership and acceptance of program outcomes.
- DCDD will deliver the digital solution for NT Health, the agency is accountable for program budget, project management, procurement, performance reporting and will manage the end-state systems.

Responsibilities

- Oversight the delivery of the CCSRP and adjunct projects.
- Evaluate and provide recommendations of go/no-go decisions at key points[1] in the Program to the Program Sponsor.
- Ensure the Program is implemented within a clinical safety assurance framework.
- Receive timely advice from the CCSRP Program Implementation Committee (PIC) and the CCSRP Program Delivery Lead to ensure the Program stays on track and on budget and will deliver the intended solution.
- Endorse the completion of Program stages and provide recommendations to the Accountable Officers regarding the authorising of the next stage.
- Oversight progress of the Program to ensure strategic objectives, key performance indicators and projected benefits are realised; risk mitigations are effective and the business is ready and prepared for the necessary changes.
- Manage strategic risks and issues and resolve conflicting priorities impacting on the Program. Also consider and, where a matter is beyond the remit of the PIC, manage extreme operational risks advised by the PIC.
- Oversight financial and program performance through regular finance reports.
- Endorse Program milestone and assurance reviews to be undertaken and provide input to independent governance reviews commissioned by the NT Government ICT Governance Board. Oversight delivery of actions that address agreed governance review recommendations.
- Consider and approve regular Program dashboard reports to the ICT Governance Board and note quarterly Program update reports to Cabinet.
- Provide leadership and support for the CCSRP Program Delivery Lead and the CCSRP Program Director.

Expectation of Members

Members of the PSC are required to:

- Members are required to attend all meetings or seek Chair's approval for a proxy to attend on their behalf.
- Actively contribute to the Committee discussions and decision-making.
- Undertake actions assigned by the Committee.

- Participate in accordance with the Committee's Terms of Reference.
- Maintain confidentiality and privacy.

Outputs

At the conclusion of the CCSRP, it is expected that the following outputs will have been delivered:

- New, integrated, client-centric, clinical information systems.
- Mitigation of risks associated with existing NT Health clinical systems.
- Contemporary and improved health service processes to deliver better health outcomes.
- Capacity for the health service consumer to manage their own engagement and consent to share their information with NT Health services.
- Mitigation of clinical risk, including sentinel events, caused by the unavailability of essential clinical information at point-of-care delivery.
- Support for a whole-of-service business analytics to understand and improve service and cost inefficiencies.
- Reduction of the administrative burden and improved productivity for clinicians and other staff.

Membership

The DCDD Chief Executive, as Program Sponsor and the DoH Chief Executive, as CCSRP Program Owner, Co-Chair the Committee.

Membership (defined at Attachment A) is approved jointly by the DCDD Chief Executive and the DoH Chief Executive.

The Committee may invite business representatives or subject matter experts to brief and attend meetings as required.

The Committee may invite an independent advisor, agreed by both Co-Chairs, to attend meetings as an observer. An advisor should have significant experience in health service delivery, digital health and clinical systems. Any such advisor may provide input and guidance to assist the Committee and the Accountable Officers, but has no decision-making role.

Attendance via proxy must be approved by a Chair prior to the meeting through CCSRP Governance.

Note: Members must attend an induction session, for 1 hour, upon commencement.

Meetings

The Committee will meet monthly with supplementary meetings held as required. A quorum consists of the Chair (or proxy) and a majority of members.

A meeting record, actions and decision are a required output. All Governance documents are available on SharePoint: Governance - Home (nt.gov.au)

Meeting papers will be distributed electronically to members prior to each meeting and will include the meeting agenda, previous meeting record, action items list, finance report, and project status reports, including applicable strategic risks and issues. CCSRP Governance will coordinate meetings and papers.

Reporting

The DCDD Chief Executive reports to the Minister for Corporate and Digital Development on CCSRP program plans, budget and project delivery, including risks and issues.

The DoH Chief Executive reports to the Minister for Health on the CCSRP Program Steering Committee's activities, program performance and business related matters.

Progress reports and briefings will be provided to respective Ministers as required.

CCSRP is subject to oversight by the NT Government ICT Governance Board (IGB) which reports to the Minister for Corporate and Digital Development. The CCSRP reports quarterly to the IGB

DCDD is required (by decision of Cabinet) to provide a quarterly report to Cabinet on the status of CCSRP including updated financial information, requirements, issues, risks and timing. DCDD will obtain the Program Steering Committee's endorsement of Cabinet reports.

CCSRP (Program) DCDD Chief Executive
Ms. Catherine Webber
Program Sponsor
September 2024

NT Health (Business) Chief Executive
Mr. Chris Hosking
Business Sponsor
September 2024

2024 Membership

Members		Delegate
1	Chief Executive, Department of Corporate and Digital Development (Co-Chair)	Catherine Webber
2	Chief Executive, Northern Territory Health (Co-Chair)	Chris Hosking
3	Treasurer, Department of Treasury and Finance	Timothy McManus
4	Program Implementation Committee Chair	Catherine O'Connell / Greg Connors (Co-Chair)
5	Clinical Sponsor, Northern Territory Health	Dr. Nadarajah Kangaharan

Ex-Officio		
6	CCSRP Senior Program Director, Program Delivery Lead	Bob Creek
7	CCSRP Governance Lead (secretariat)	Monique Kenney

Joint Submission of the Department of Health and the Department of Corporate and Digital Development

to the

Public Accounts Committee

Inquiry into the Acacia Digital Patient Record System

ANNEXURE 3

Program Implementation Committee

Core Clinical System Renewal Program (CCSRP)

2024 Program Implementation Committee Terms of Reference

The Core Clinical Renewal Program (CCSRP) will deliver an integrated, clinical system that supports public health services (acute, primary and community) for patients and clients across the NT. The program includes a major project for a new clinical system and a number of foundation projects that cover related systems and health business process requirements necessary to implement and effectively utilise the new clinical system across the span of NT Health's operations. NT Health's current legacy clinical systems are technologically obsolete and at end of their effective working life, hence transition to the new Acacia solution is time critical.

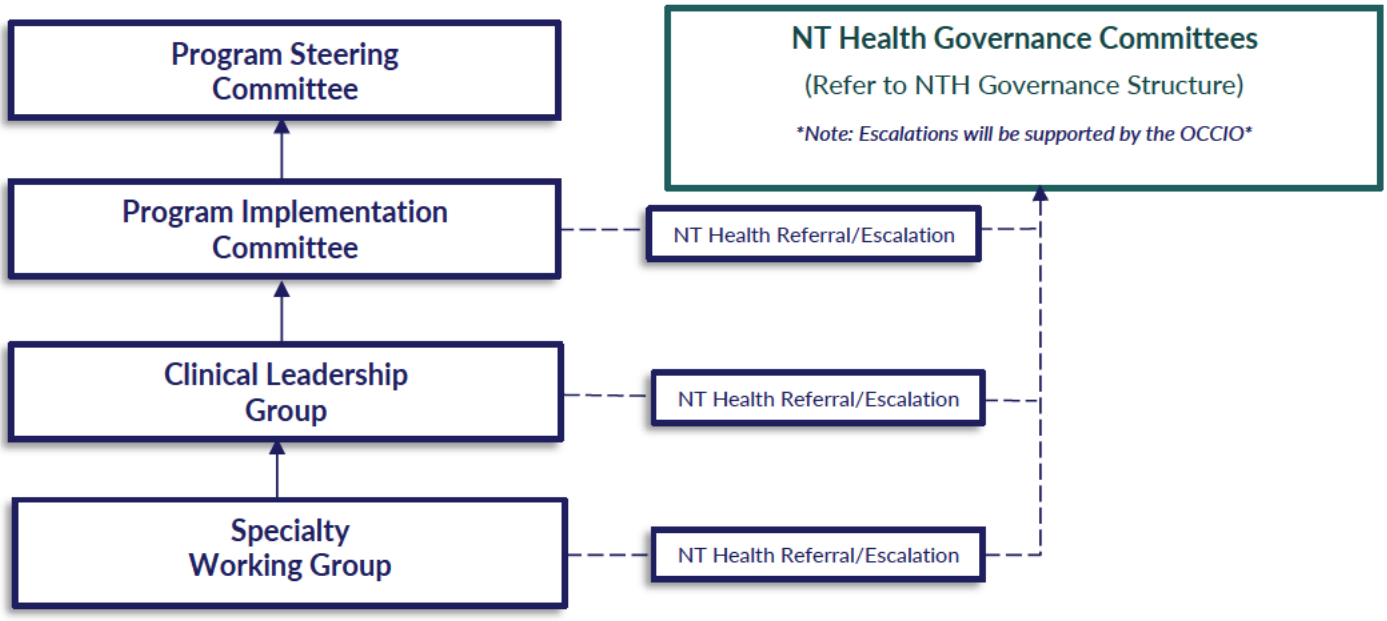
The implementation of an end to end Acacia solution is occurring in a phased approach, currently aligned to five Functional Groups, as below;

- FG0 - Acacia Read Only Electronic Patient Record (EPR)
- FG1 - Acacia 1.0: Patient Administration+ (PAS and replacement of CareSys functionality
- FG2 - Acacia 2.0 & 3.0 Hospital Care (Clinical process support Medication Management and Orders and Results)
- FG3 - Acacia 2.0 & 3.0 Hospital Care (Clinical process support and replacement of CWS modules)
- FG4 - Acacia 4.0 Primary Healthcare (Community, Urban and Remote support)
- FG5 - Acacia 5.0 Client & healthcare provider portal (Client Portal and External Provider Access)

Accountability for the delivery of the CCSRP is assigned to the Department of Corporate and Digital Development (DCDD) via decision of Cabinet with the Department of Health (DoH) the customer and beneficiary of this major investment in digital technology. The governance model is agreed by the DoH and DCDD Accountable Officers. Regular progress reporting to Cabinet is via the Minister for Corporate and Digital Development.

Governance Escalation Pathways

There are currently four tiers to the Program Governance Structure, which supports appropriate escalation pathways.



Roles

DoH and DCDD have clearly identified roles and accountabilities:

- DoH will use the system in production to support its core business providing health services to Territorians and is accountable for program ownership and acceptance of program outcomes.
- DCDD will deliver the digital solution for NT Health, the agency is accountable for program budget, project management, procurement, performance reporting and will manage the end-state systems.

Responsibilities

The Program Implementation Committee's role is to provide expert advice and guidance to the Program Steering Committee (PSC); provide business and program input; and ensure alignment of program deliverables with NT Health's business requirements for health service delivery.

- Monitor, advise and inform implementation of the suite of projects within the CCSRP, including adjunct projects being delivered by DCDD and NT Health.
- Provide expert advice and subject matter input to the CCSRP PSC to assist the Committee to govern the Program.
- Agree and advise NT Health business processes and information management approaches to be executed by stakeholders within NT Health.
- Report to the CCSRP PSC on achievement of project milestones and deliverables.
- Receive and consider advice from the CCSRP Clinical Leadership Group.
- Provide expert advice to the Program teams to ensure solutions delivered align with NT Health's business requirements and are implemented within a clinical safety assurance framework.
- Identify and analyse risks, manage operational risks and advise extreme operational risks to the PSC, including recommended mitigation actions for consideration by the PSC and the CCSRP Program Sponsor.
- Review and endorse proposals from the CCSRP Program Director and Program Delivery Lead for consideration by the PSC.
- Champion the CCSRP to a broad range of internal and external stakeholders across the NTG and NT Health to support the adoption and effective implementation of Acacia.
- Monitor the realisation of benefits identified in NT Health's CCSRP Business Case and subsequent CCSRP Benefits Realisation Strategy and related plans.

Expectation of Members

Members of the PIC are required to:

- Members are required to attend all meetings, or seek Chair's approval for a proxy to attend on their behalf.
- Actively contribute to the Committee discussions and decision-making.
- Undertake actions assigned by the Committee.
- Participate in accordance with the Committee's Terms of Reference.
- Maintain confidentiality and privacy.

Outputs

At the conclusion of the CCSRP, it is expected that the following outputs will have been delivered:

- New, integrated, client-centric, clinical information systems.
- Mitigation of risks associated with existing NT Health clinical systems.
- Contemporary and improved health service processes to deliver better health outcomes.
- Capacity for the health service consumer to manage their own engagement and consent to share their information with NT Health services.
- Mitigation of clinical risk, including sentinel events, caused by the unavailability of essential clinical information at point-of-care delivery.
- Support for a whole-of-service business analytics to understand and improve service and cost inefficiencies.
- Reduction of the administrative burden and improved productivity for clinicians and other staff.

Membership

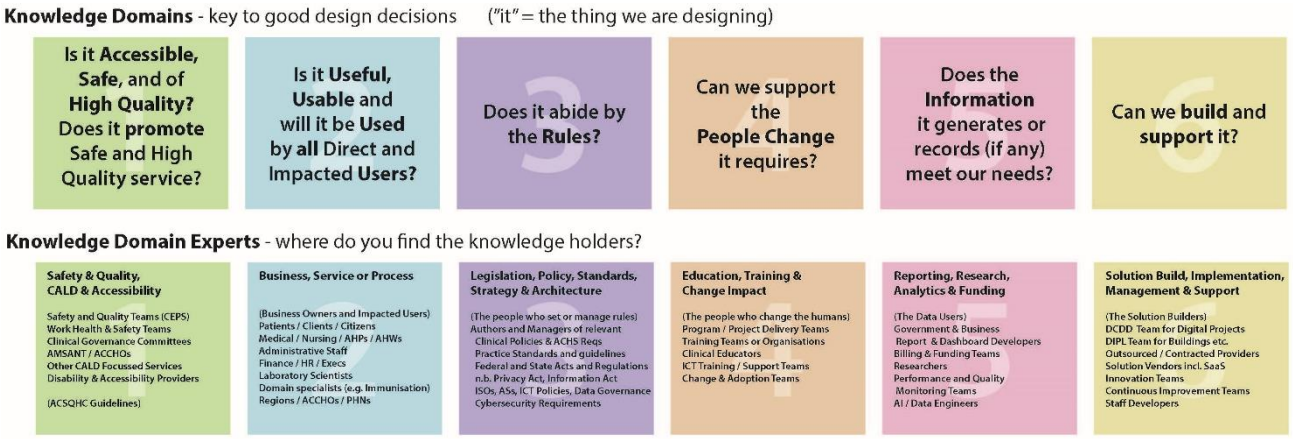
The Deputy Chief Executive (DCDD) is the Chair. The Deputy Chief Executive, NT Regional Health Service (DoH) is the alternate Chair. Membership (defined at Attachment A) is approved jointly by the DCDD Chief Executive and the DoH Chief Executive.

The Program Implementation Committee Chair may invite business representatives or subject matter experts to attend meetings as required. Attendance via proxy must be approved by the Chair prior to the meeting through CCSRP Governance.

The membership comprises;

- NT Health Deputy Chief Executive(s)
- Senior CCSRP program delivery representation (DCDD)
- NT Health Regional Executive Directors (REDs)
    - Top End
    - Central Australia
    - Barkly
    - East Arnhem
    - Big Rivers
- Business As Usual system manager representation, (DCDD Agency Business Systems).
- CCSRP Governance to support secretariat duties.

Wherever practicable, membership will endeavour to include representation from the below six knowledge domains.



Note: Members must attend an induction session, for 1 hour, upon commencement.

Meetings

The Committee will meet monthly with supplementary meetings able to be held as required. A quorum consists of the Chair (or proxy) and a majority of members.

A meeting record, actions and decision are a required output. All Governance documents are available on SharePoint: [Governance - Home (nt.gov.au)]

Meeting papers will be distributed electronically to members prior to each meeting and will include the meeting agenda, previous meeting record, action items list, finance report, and project status reports, including applicable risks and issues. CCSRP Governance will coordinate meetings and papers.

Reporting

The Program Implementation Committee reports to the Program Steering Committee on a monthly basis, via the Chair(s).

CCSRP (Program) DCDD Chief Executive
Ms. Catherine Webber
Program Sponsor
September 2024

NT Health (Business) Chief Executive
Mr. Chris Hosking
Business Sponsor
September 2024

2024 Membership

Members		Delegate
1	Deputy Chief Executive, NT Regional Health Service (DoH) (Co-Chair)	Catherine O'Connell
2	Deputy Chief Executive (DCDD) (Co-Chair)	Greg Connors
4	Deputy Chief Executive, Enabling Services (DoH)	Kim Charles
6	Executive Director, Royal Darwin and Palmerston (DoH)	Sara Watson
7	Regional Executive Director, Central Australia (DoH)	*Pending*
8	Regional Executive Director, Barkly (DoH)	*Pending*
9	Regional Executive Director, East Arnhem (DoH)	Mary-Clare Arkcoll
10	Regional Executive Director, Big Rivers (DoH)	Angela Brannelly
11	Clinical Sponsor (DoH)	Dr Nadarajah Kangaharan
12	Executive Director, Healthcare Improvement (DoH)	Alison Jeanne
13	Executive Director Finance, Department of Treasury	Tarrant Moore
14	Senior Director, Human and Shared Services (DCDD)	Satpinder Daroch
15	Senior Program Director, Program Delivery Lead (DCDD)	Bob Creek
16	Director, ICT Enterprise Architecture (DCDD)	Joshua Gooding
17	Chief Clinical Information Officer (DoH)	Dr, John Lambert
18	Chief Medical Officer (DoH)	Dr. Jeremy Chin
19	Deputy Director Medical Services (DoH)	Dr. Didier Palmer

Ex-Officio		Delegate
20	CCSRP Governance Lead (secretariat)	Monique Kenney
21	CCSRP Implementation Lead	Grace Johnson
22	CCSRP Change and Engagement Lead	Nancy Libien

Joint Submission of the Department of Health and the Department of Corporate and Digital Development

to the

Public Accounts Committee

Inquiry into the Acacia Digital Patient Record System

ANNEXURE 4

Clinical Leadership Group

Core Clinical System Renewal Program (CCSRP)

2024 Clinical Leadership Group Terms of Reference

The Core Clinical Renewal Program (CCSRP) will deliver an integrated, clinical system that supports public health services (acute, primary and community) for patients and clients across the NT. The program includes a major project for a new clinical system and a number of foundation projects that cover related systems and health business process requirements necessary to implement and effectively utilise the new clinical system across the span of NT Health's operations. NT Health's current legacy clinical systems are technologically obsolete and at end of their effective working life, hence transition to the new Acacia solution is time critical.

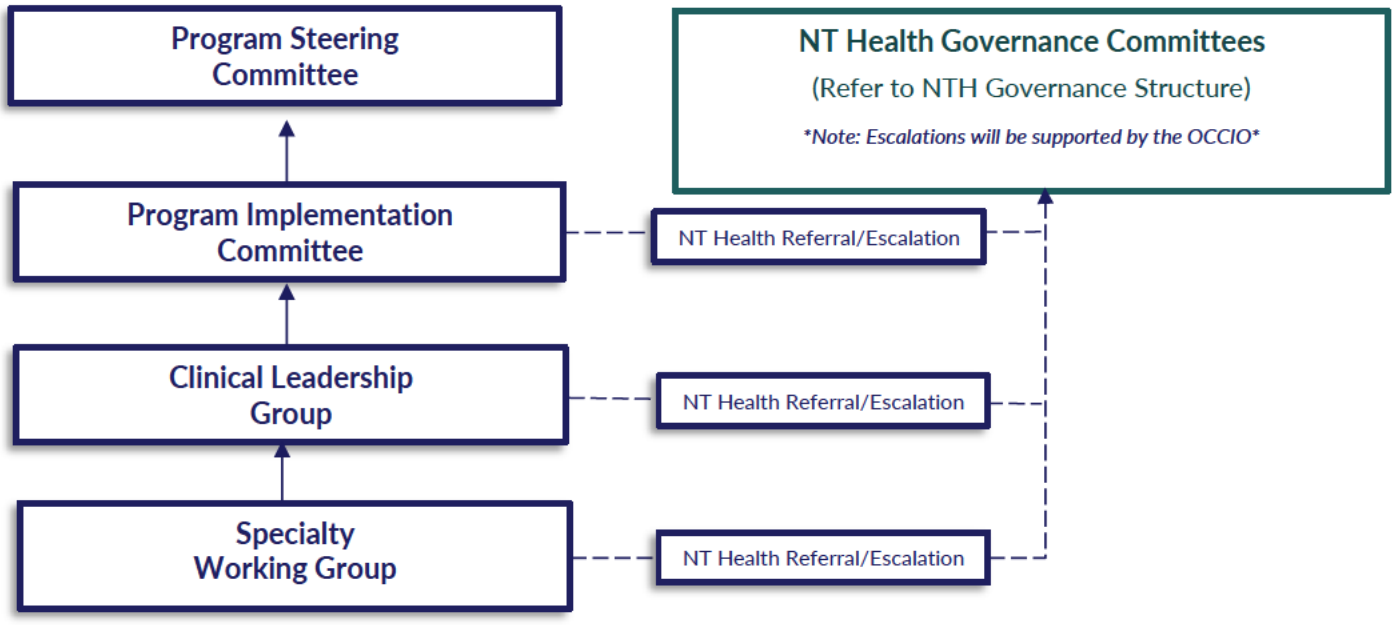
The implementation of an end to end Acacia solution is occurring in a phased approach, currently aligned to five Functional Groups, as below;

- FG0 - Acacia Read Only Electronic Patient Record (EPR)
- FG1 - Acacia 1.0: Patient Administration+ (PAS and replacement of CareSys functionality
- FG2 - Acacia 2.0 & 3.0 Hospital Care (Clinical process support Medication Management and Orders and Results)
- FG3 - Acacia 2.0 & 3.0 Hospital Care (Clinical process support and replacement of CWS modules)
- FG4 - Acacia 4.0 Primary Healthcare (Community, Urban and Remote support)
- FG5 - Acacia 5.0 Client & healthcare provider portal (Client Portal and External Provider Access)

Accountability for the delivery of the CCSRP is assigned to the Department of Corporate and Digital Development (DCDD) via decision of Cabinet with the Department of Health (DoH) the customer and beneficiary of this major investment in digital technology. The governance model is agreed by the DoH and DCDD Accountable Officers. Regular progress reporting to Cabinet is via the Minister for Corporate and Digital Development.

Governance Escalation Pathways

There are currently four tiers to the Program Governance Structure, which supports appropriate escalation pathways.



Individual Escalation Contact

If an escalation through a governance committee is not appropriate, declined, or a member is seeking independent advice, the below escalation contacts are available.

Area	Nominee	Contact
CCSRP Governance (DCDD)	Ms Monique Kenney	0477 012 171 Ccsrp.governance@nt.gov.au
NT Health CCSRP Clinical Sponsor (DoH)	Dr. Nadarajah Kangaharan	0421 549 076 Nadarjah.kangaharan@nt.gov.au
Chief Clinical Information Officer (DoH)	Dr. John Lambert	08 8999 2561 John.lambert@nt.gov.au

Role and Responsibility

The Clinical Leadership Group will:

1. Provide expert clinical and administrative advice and recommendations to the PIC and the CCSRP team via the Program Director, for the successful implementation of Acacia.
2. Facilitate CCSRP team engagement with clinical and administrative stakeholders, business managers and colleagues internal and external to NT Health.
3. Review and endorse NTG wide processes and workflows that impact more than one specialty, requiring cross functional consideration. Their role is to ensure that the NT Health processes are fit for purpose and clinically safe, as well as assisting with the configuration and testing of Acacia.
4. Actively undertake duties as an Acacia Change Champion by advocating, supporting and facilitating successful change management, particularly within their areas and across NT Health to support the implementation and uptake of Acacia.
5. Provide input to CCSRP projects (device enablement and provisioning, enterprise master person index, health interoperability platform, legacy data conversion, core ancillary systems, etc.) and adjunct projects where necessary.
6. Communicate updates and promote the CCSRP to internal and appropriate external stakeholders.
7. Determine and analyse clinical and business risks pertaining to CCSRP, and provide options to mitigate these risks for consideration by the CCSRP Team and the PIC.
8. Establish Working Groups, to assist with delivering these responsibilities. The Working Group must report monthly to the Clinical Leadership Group and Northern Territory Health Acacia Implementation Group. The working groups will, in relation to their subject area;
    - Approve or advise on design requirements, workflows, content or changes (in current production, or future state environments) to ensure that NT Health delivery is fit for purpose and clinically safe.
    - Approve solution confirmation, including scope and approach for the Build and Configuration phase or prototype delivery.
    - Participate in User Acceptance Testing to validate and ensure the software application meets the intended requirement and use, prior to release into a production environment. This includes validation of usability, and alignment with real-time scenarios.
    - Advise on best approaches and key personnel required for configuration and testing.
    - Advise on clinical risk and safety issues (RiskMan, ABS tickets, CCSRP and NT Health Risk and Issue Registers). This information is provided to NT Health for appropriate action.

- Advise of existing or additional NT Health policies and legislation, that impact or support the implementation of a digital solution. These items are referred to NT Health for appropriate action.
- Resolve issues of clinical variation across NT Health sites. The Clinical Leadership Group is the escalation pathway for consideration of these items.
- Support capacity as an Acacia Change Champion by advocating, supporting and facilitating successful change management.
- Provide feedback on the experience and effectiveness of Acacia throughout a phased delivery approach.

Expectation of Members

Members of the CLG are required to:

- Provide leadership and guidance to members regarding their working group, and facilitate communication between their area and the Program.
- Prioritise attendance at meetings.
- Actively contribute to the Committee discussions and decision-making.
- Undertake actions assigned by the Committee.
- Participate in accordance with the Committee's Terms of Reference.
- Maintain confidentiality and privacy.

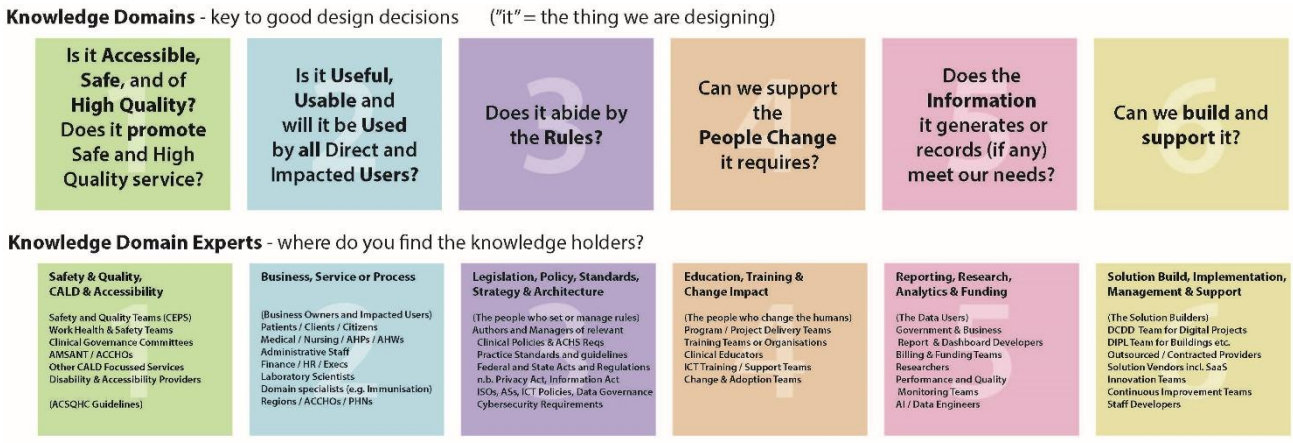
Membership

The CLG is chaired by the Clinical Sponsor, and memberships will be agreed by the Chair, CCSRP Program Delivery Lead and PIC Chair. Changes to membership are formally approved at PIC meetings quarterly.

The CLG will comprise senior representatives from each major profession within NT Health. Membership must include members who can represent the major areas, and span the acute care, primary care and community care domains. The Chair may invite additional business representatives, subject matter experts, or guests to attend meetings as required. Proxy attendance must be approved by the Chair on a case by case basis.

Membership comprises;

- Specialty specific business representatives from all NT Health Regions (Top End, Central Australia, Barkley, East Arnhem and Big Rivers).
- Business As Usual representation, being ABS.
- CCSRP Governance to support secretariat duties.
- Wherever practicable, representation from the below six knowledge domains. Noting the membership list will define the allocation of a 'knowledge domain' for each member.



Note: Members must attend an induction session, for 1 hour, upon commencement.

Meetings

The CLG will meet monthly with supplementary meetings able to be held as required. A quorum consists of the Chair (or proxy) and a majority of the number of votes.

A meeting record, actions and decision are a required output. All CLG and Working Group documents are available on SharePoint: Governance - Home (nt.gov.au)

A meeting agenda will be circulated at least three working days prior to each meeting. CCSRP Governance will coordinate meetings and papers.

CCSRP (Program) DCDD Chief Executive
Ms. Catherine Webber
Program Sponsor
September 2024

NT Health (Business) Chief Executive
Mr. Chris Hosking
Business Sponsor
September 2024

Membership		Vote	Knowledge Domain
1	Clinical Sponsor (Chair)	1	*Pending confirm
2	Chief Clinical Information Officer	1	*Pending confirm
3	Clinical Safety & Quality	1	*Pending confirm
4	Allied Health Lead	1	*Pending confirm
5	Alcohol & Other Drugs Lead	1	*Pending confirm
6	Clinical Documentation Lead	1	*Pending confirm
7	Critical Care Lead	1	*Pending confirm
8	Electronic Medication Management Lead	1	*Pending confirm
9	Emergency Lead	1	*Pending confirm
10	Infection Control Lead	1	*Pending confirm
11	Medicine Lead	1	*Pending confirm
12	Mental Health Lead	1	*Pending confirm
13	Obstetrics and Gynecology Lead	1	*Pending confirm
14	Orders & Results Lead	1	*Pending confirm
15	Pediatrics Lead	1	*Pending confirm
16	Patient Administration Lead	1	*Pending confirm
17	Patient Flow Lead	1	*Pending confirm
18	Remote & Custodial Primary Health Care Lead	1	*Pending confirm
19	Reporting & Analytics Lead	1	*Pending confirm
20	Theatre & Anesthetics Lead	1	*Pending confirm
21	CCSRP Senior Program Director (DCDD)	1	*Pending confirm
22	Senior Director, Human and Shared Services (DCDD)	1	*Pending confirm
	Attendance to Reach Quorum (inclusive of Chair)	***12***	

Ex-Officio		Delegate
39	CCSRP Governance Lead	Monique Kenney
40	CCSRP Clinical Safety Officer	Dave Wallace
41	CCSRP Implementation Lead	Grace Johnson
42	CCSRP Change and Engagement Lead	Nancy Libien
43	CCSRP Secretariat	Taylor Kennedy

Joint Submission of the Department of Health and the Department of Corporate and Digital Development

to the

Public Accounts Committee

Inquiry into the Acacia Digital Patient Record System

ANNEXURE 5

NT Health
Staff Testimonials
2025

Acacia
One Client, One Record, Territory Wide...

NThealth
Safe · Responsive · Kind

NORTHERN TERRITORY GOVERNMENT

Professor Sandawana William Majoni

Director of Renal Service

Top End Region

Acacia has been in use at the Katherine Hospital and Katherine Dialysis Clinic since 2021 and has now spread across the whole renal service in the Top End. We have been using Acacia for more than 2 years now and its extensive benefits have been outstanding to the service.

In the outpatient area, access to Acacia has proven to be highly efficient, providing immediate access to all necessary information, including data that was previously unavailable through legacy systems like CWS, JCCB, PCIS, PCIS MedChat, EMMA, EMMA MedChat, and other systems. Management of clinics is now very efficient across all clinical areas. Having all the information in one place has improved patient safety, workflow control, and the efficiency of patient reviews and clinic operations. The combination of simultaneous access to Acacia and Territory Kidney Care has added a significant layer of efficiency to the system.

In the dialysis service, Acacia has improved patient and client safety by enabling easy tracking of dialysis treatment details and patients who miss dialysis sessions, which was previously difficult with other systems. It also allows for capturing reasons for missed dialysis and cancellations, generating reports on demand and capacity, and facilitating effective communication among staff involved in patient care across the whole renal service.

Although the medication system in Acacia is not yet fully functional, the transfer of data from PCIS has made it easier to access medication lists, patient history, and recent activities in one place, unlike the scattered nature of information in current systems. The versatility of the system and easy of use has made the work not only efficient but enjoyable and satisfying for all staff.

Acacia has enabled the use of supported renal charts and forms for capturing dialysis information, patient movements, and tracking patients across the entire service, which is crucial given the current pressure on the renal service's capacity. This will be even more beneficial when Central Australia fully implements Acacia, as our patients move across the service. It has enabled us to easily track patient movement across all the renal units and generate reports which we use to analyse the efficiency of the use of our under-pressure dialysis resources.

The system has also provided benefits such as preventing missing patients, improving visibility of patient activities, easily finding dialysis modalities, and capturing information related to transplantation and transplant wait-listing preparation, which was previously done on siloed spreadsheets.

It is important to be able to track patients across the whole service when they are admitted in hospital. Acacia provided us with this quite efficiently when we briefly used it for the inpatient service at the Royal Darwin Hospital before it was put on hold in the ED. It also provides the opportunity to expand these efficiencies in other areas of the inpatient service.

Once implemented, the activation of the medication module will also improve medication safety and tracking across the service.

All renal staff have embraced Acacia with enthusiasm which has helped to realise its expansive potential. It has also been great to have a knowledgeable and effective subject matter expert helping with the development, education of staff and implementation.

Overall, Acacia has improved documentation, communication, workflow, and patient safety significantly. The expansion of this single electronic record system across the renal service is expected to provide efficient care for complex patients and support the expansive service area across the Top End and potentially the entire Northern Territory.

Ms Amanda Elzini
Renal Nurse
Top End Region

Renal services currently use Clinical Workstation, PCIS, eMMA medchart, PCIS medchart, Territory Kidney Care, paper charts and Acacia. In a service where capacity to treat every patient every day requires constant movement of patients, the need to scan and send documentation frequently is burdensome and in some cases, has delayed treatment. Renal is managing thousands of patients on minimal resources. In order to appropriately manage and be informed of all of our patients, it is imperative we move to one documentation tool, which is accessible at any location and time.

Realised benefits

Acacia, even in its initial stages, is already improving patient care by improving visibility of patient movement and capacity for planning. We now have data points which allow us to pull data on activities, create patient lists for renal replacement, and operational activities. We have created reports that capture Top End as one, making our data accessible and transparent.

Caresys was not able to record non-attendance (DNA) for same day dialysis or distinguish from the episode detail if a patient had completed their treatment, arrived and not commenced their treatment, or needed to cancel their treatment due to service insufficiencies. Cancellations of treatments, or where a patient presented and was not treated, were not required to be captured in Caresys. A clinician would document the review of the patient in the system used for documentation, however would not understand that Caresys is where the funding is provided for care given, therefore our absence of recording this information has lost considerable amounts of money. Acacia has been designed specifically to capture our different discharge conditions by enabling the user to select the appropriate discharge classification without affecting Meteor data. Therefore, as Acacia episodes are created, staff proactively capture these attendances and apply a correct discharge condition. This in turn helps coders recode the dialysis auto code and creates funding for the time given and review completed.

Acacia has enabled clinicians to run reports as needed to see day to day information, with reports built for our needs, including reports specifically tailored to where our gaps were previously, as we have utilised the systems ability and enhanced our data naturally within our workflows.

Acacia has enabled in-hospital dialysis to be recorded clearly, with the nurse able to document where the dialysis occurred, and if the patient was classed as acute dialysis (expected kidney recovery) or chronic (new start or maintenance patient). A rounding clinician within the hospital setting does not need to call the dialysis unit to know when the patient completed their last dialysis – as the order is viewable in Acacia. This information is critical when looking at future needs for the hospital infrastructure and dialysis needs for patients in hospital. It also supports nurse managers to display where the staffing is needed, as off ward dialysis is a 1:1 ratio.

A common issue faced in the acute space that has been eliminated with Acacia was the lack of visibility of patients in hospital under the care of a different speciality. Nephrologists and Dialysis Coordinators were blind to who was in acute care or in the Emergency Department until they were notified. By way of example, on the current systems, where a patient is transferred from Katherine and they are not under the care of the Renal Team, there is no straightforward way for the Renal Team to identify that the patient requires Renal Dialysis – the system relies on practitioners undertaking very manual checks. On Acacia, users are now able to run a report to see all current Haemodialysis/Peritoneal Dialysis/Home Haemodialysis/Transplant patients who are in hospital. This has resulted in better awareness and improved planning of dialysis treatments in hospital. In Caresys, a user would have to go through every ward to find which patients were in hospital – and this wasn't always completed, nor noted if the patient wasn't under their care (i.e. Katherine haemodialysis patients are managed by private provider).

Alice Springs and Tennant Creek dialysis units have commenced using encounter record with 3 items – the Haemodialysis regimen, haemodialysis summary and a clinical note. With just this partial documentation implemented in Acacia, significant benefits have been observed with accessibility and oversight of patients. The benefits are not just for Renal; Emergency Department staff now have information regarding a patient's last dialysis, nonattendance, dry weight and post dialysis observation items and complications during dialysis. It is hoped we can implement this in Top End within months.

Staff are adding alerts for patients who are on the active renal transplant list, enabling any interaction with the patient to be considerate of this factor when treating.

A report has been created to show when a patient was last seen in clinics (Home Haemodialysis/Peritoneal Dialysis/Haemodialysis/Transplant) to ensure we don't 'loose' the patients and they are maintained with their 3-monthly minimum reviews.

Outcomes are added to clinic appointments so that admin do not have to wait for follow up requirements from the CWS letter and nursing staff can action needs immediately from the outcome. Previously, in some cases, a doctor may have wanted a follow up appointment and tests completed, before the nurse and admin had received the CWS letter.

Future benefits

We are hoping to implement the Acacia clinical notes to all teams (including pre transplant, transplant, PD and HHD teams), as much of our nurse workflow consists of phone calls with patients and it would be useful to be able to directly record notes against the appointment created on Acacia. This small piece of work improves visibility, awareness and patient safety as the information is communicated clearly and is accessible to everyone.

Transplant workup notes and results are currently grouped and stored in patient folders at the Renal Home Therapies building. It is planned to scan the documents against the outpatient episode so that Nephrologists can review the patient status at the Haemodialysis clinic.

Conclusion

Renal services have only benefited from Acacia. Our management of CKD patients in the legacy system and waitlisting meant visibility and accuracy of who is waiting for an appointment and who has been seen or lost to follow up was non-existent. Acacia has exposed all of the failures with outpatient referral and appointment management with its enhanced reporting features, waitlist/referral workbenches and appt workbenches. We now have redesigned the nursing model and are in the midst of 'cleaning up' our CKD outpatient referrals and waitlists, endeavouring to not lose any patient to follow up again.

Acacia provides the tools to create transparency and safety through reports and the documentation within the system. Doctor triage is simplified, referral paperwork is no longer getting lost, and doctors have the referral information at the appointment and do not have to wait for charts and paperwork.

We now have the ability to have all referrals managed under RDH and therefore are slowly transitioning to one referral entry point which means that all patients can be appropriately triaged according to acuity.

We will no longer have referrals for patients at multiple sites and therefore can accurately view which patients are genuinely waiting and can assign the correct clinic to them.

It cannot be underestimated how one documentation tool can vastly improve patient outcomes. It has connected our service, improved patient flow, transparency, and removed communication errors.

We currently put a puzzle together before concluding our plan for the patient, reviewing all systems and information – although easier now with the EPR chart book, documentation within Acacia is still needed to fully experience the benefits.

Renal clinicians are time pressured and the burden multiple systems places on them adds room for error. Even in its earliest of stages, Acacia has already significantly benefited our service, and everyone is waiting and wanting to commence documenting in Acacia. Many of our current frustrations as clinicians are due to our current constraints and limitations of our documentation, which introduction of documentation on Acacia will eliminate.

I have included four tables with additional information relevant to renal services below.

Table 1 – Same Day Dialysis data and documentation entry (CareSys vs Acacia)

SAME DAY DIALYSIS / IP ACUTE DIALYSIS		
SCENARIO	**CARSYS**	**ACACIA**
Record Non-Attendance	No	Yes - benefit
Record treatments not commenced/completed/cancelled	No	Yes - benefit
View across the service activity	No	Yes - benefit
Run attendance and operational reports specifically to renal	No	Yes - benefit
Clinician – see when last dialysis was Hospital	No	Yes - benefit
Clinician – see where the dialysis in hospital occurred (bedside or unit)	No	Yes - benefit
Manager – report on (from a system) where the dialysis occurred in hospital	No	Yes - benefit
Manager- report on dialysis pt type in hospital (acute or chronic pt in hospital) – from a system	No	Yes - benefit
Visibility of HHD/HD/PD/Transplant pts in hospital under another speciality	No	Yes - benefit
Clinician – easily see attendance and DNA for dialysis	No	Yes - benefit
Documentation – Haemodialysis summary	No (on paper)	Yes - benefit
Documentation – HD regimen	PCIS – yes- but not easily	Yes - benefit
Documentation – Clinical notes from dialysis	No (on paper)	Yes - benefit
Able to schedule future dialysis (pre admit)	No	Yes - benefit
Able to admit a dialysis pt for treatment when they have a theatre preadmission – not able to do so before, theatres had to cancel their booking	No	Yes - benefit

Table 2 – General benefits of Acacia

GENERAL- BENEFITS, NOT EXHAUSTIVE
Transparency across units – do not need to log in and out for different sites to review patients
Easy to use and navigate
Improved visibility
EPR chart book improving patient review – able to review without going into every different system
Easily review specialist letters, in one PDF
Ability to review PCIS medications without the need to go to PCIS – breaking down a barrier for ED and pt presentations

Table 3 – Future benefits of Acacia related to Renal

FUTURE BENEFITS – RELATED TO RENAL, NOT EXHAUSTIVE
1 documentation tool – remove risk for miscommunication.
Remove risk when sending confidential items through email or fax going to the incorrect person – as it will no longer be required;
The whole renal patient journey documented in the same way, irrespective of location. Information is not with held on you log in location – what happens to a patient in Alice Springs renal units is accessible to Top End units, allowing an accurate history of the patient to be reviewed and a continuity of care for the patient;
All medications in one system, reducing time for transcribing
Device integration and reduction in transcription errors, ability to have real time events recorded
Potential to have Home Haemodialysis patient's treatments recorded in real time to reduce negative outcomes and provide appropriate, timely intervention
Reduction in systems used and accessed
ANZDATA information will be sourced from one truth and not reliant on clinicians inputting the data from other sources of where the information may be found. Numerous clinical hours are spent every year on completing the ANZDATA yearly collection – this will be eliminated with the use of Acacia and its ability to pull reports as the data will be part of our day-to-day workflow and has been specified in our build for documentation.

Table 4 – Outpatient benefits of Acacia

OUTPATIENT – BENEFITS, NOT AN EXHAUSTIVE LIST
Improved waitlist management – across the service
Improved visibility of appointments in order to book follow up
Upload of transplant documentation workup
Doctors no longer have to carry lists – direct, easy access to lists and outcomes
Immediate communication of follow up needed – no longer waiting for CWS letters
Reporting ability to capture appointment attendance to ensure 3 monthly review is adhered to
Ability to transfer all referrals under RDH and manage one list – Drs will only need to triage 1 list and can do so from any location
Episode documents attached – no need to wait for charts or have papers lost
Meetings – able to review patients from one system and provide information that previously was not visible or easily accessible during the meeting, creating wasted time in the review searching for the information, or having clinician questions unanswered and for follow up

Dr David Ferenandes
Director of Renal Services
Central Australian Region

This was a very good exercise for us at the Department of Renal medicine in the Central Australian Health Service to talk about Acacia and assess about how things are going with the introduction of the same day dialysis component to the Acacia. I took the opportunity to interview the end users at the Flynn Drive Dialysis facility, renal ward, and Dialysis facility at the Alice Springs Hospital and the Tennant Creek Dialysis Facility.

The persons interviewed included administrative staff, team leaders and nurses at the various dialysis facility and the wards, as well as the junior and senior medical staff.

It was very pleasing to note that the overall impression I got was a very positive one across the board. Some of the comments included:

1. *"Change is very painful at times and the people driving change will need to take lot of flak, ultimately if it works the people driving change may or may not get their share of glory"*
2. *"I am loving it, it has made by life so much easier"*
3. *"Oh Yes it has saved us so much of time, it has reduced patient wait time as we can start lining dialysis machines and start dialysis as prescriptions are available real time. I do not need to wait for the file or the dialysis prescription to arrive."*
4. *"It will be fantastic if everything is transitioned to Acacia"*

The summary of the advantages which have been listed consistently is as follows.

1. Time saving- The admin staff find it very helpful as they can enter patient admission and discharge times with a few clicks. They do not need to move away from their desk and can generate heaps of data including waiting time, dialysis time and attendance which was very time consuming previously. The nursing time is also saved as all dialysis prescriptions and medication changes are available real time. This has saved nursing time by saving multiple phone call to various units to get a paper based prescription. The treatment summary gives a sense of the trends of blood pressures and other observations, instead of rummaging through heaps of paper in a paper based system.

2. One Stop Shop – Our transplant co-ordinator is very happy as she is able to get all her information regarding a patient from Acacia, including medication changes and lab reports.

3. Real time - the changes in prescription on Acacia can be viewed in real time and can be accessed by units across the Territory.

4. Exciting platform - Most of the users are hopeful that it has a potential to grow to a point where we can go completely paperless and use only one system for all their admin and clinical needs. The other hope is that we will be able to generate lots of data to improve our services across the board.

Dr Megan Yannakouros

Rural Generalist at Gove District Hospital

Gove District Hospital, East Arnhem Region

We utilise Acacia in our emergency department, and often the first contact we have with Acacia is recording expected patients on the ED screen. The Rural Generalists liaise with Careflight and the DMO service regarding patients they identify as suitable to receive treatment in Gove and call us to discuss and accept these patients. Once accepted we record their expected arrival in Acacia and they are then listed on the ED screen under "Not assigned a room or Bed". We also use this screen to record patients who have attended ED and are required to come back for a review in coming days. Once expected patients arrive at GDH, they are triaged from this screen into the waiting room. Having the list of expected patients also helpss by manage the expected admission numbers.

We incorporate this list of expected patients into our hospital handover each morning so the incoming day team are aware of who is likely to be transferred to Gove. We also use this list in reverse patient flow discussions to identify patients that can be treated within regions rather than transferred to RDH.

All our clinical notes at GDH are written in Acacia as ED progress notes, and these notes are written to become our admission notes if a patient requires an inpatient stay. At present these are printed and inserted into the paper medical record as the admission for the ward inpatient stay. From this point the notes are handwritten on progress notes. However through the ED Summary we are able to easily access all the clinical notes that have been written for a patient who has been seen in the GDH Emergency Department.

Whilst there are some minor improvements that would improve the system's efficiency, the clinicians at GDH have been using Acacia for over 2 years and have developed processes and systems to manage the workflow of patients being transferred from remote communities for further investigation and management.

Katie Sykes

Nursing Director of Clinical Operations and Acacia Subject Matter Expert
Royal Darwin and Palmerston Hospital, Top End Region

I am the Nursing Director of Clinical Operations at the Royal Darwin and Palmerston Hospital (RDPH). The introduction of Acacia has benefitted clinical operations across the hospitals in the following ways:

1. Improving the ability to track a person's movements across the NT Health system longitudinally, which provides greater understanding, particularly for those with chronic disease and multiple comorbidities.

2. Allowing clinicians to view a patient's active diagnosis, lab results and pathology from one screen.

3. Allowing CCIS and PCIS documentation to be viewable , which improves continuity of information for our patients.

4. Introducing "Acacia Patient Flow", which has allowed increased situational awareness across not only RDPH, but also the regional hospitals. When the RDPH ED was utilising Acacia, this allowed Patient Flow the ability to rapidly assess overall hospital pressure points, demand and capacity, without needing to log onto multiple systems. I am looking forward to when ED re-commences using Acacia to have these benefits from a patient flow perspective back.

5. Introducing the "ward summary list", which also allows Patient Flow and the director of clinical operations the ability to rapidly review the capacity of each ward on a single screen.

6. Introducing detailed information regarding the rooms and beds on the wards, which has allowed a wider understanding and share knowledge of where the single rooms are on each ward. This was not visible on Caresys as all wards had to be viewed separately and there was no way to differentiate single rooms from shared rooms.

7. Enabling clinicians to clearly identify patients with infectious precautions (and hence requirement for single room/negative pressure room) which has increased efficiency by having this requirement clear for Patient Flow to take into consideration when allocating beds.

8. Enabling pre-allocation of patients to the wards. This has significantly decreased phone traffic into the Patient Flow office and has allowed for capacity to make timely phone calls to clinical areas with critical patient information. There are usually only 2 staff in the patient unit/office so a reduction in the volume of wards calling to find out which patients they have been allocated from ED or theatre has had a significant and positive impact, not just on efficiency but patient safety and staff morale.

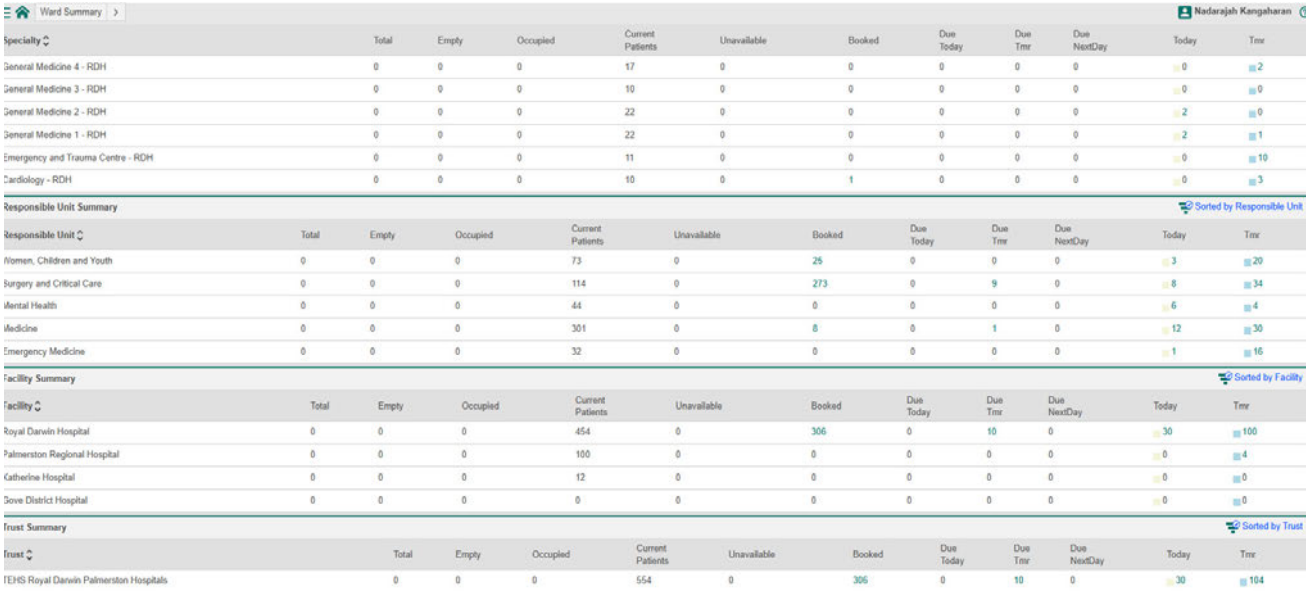
9. Finally, the reports that can be produced from Acacia allow for a more accurate understanding of hospital activity, from a patient flow perspective, allowing for more data analysis, which can be easily exported into an excel spreadsheet. Previously reports from Caresys had to be printed which resulted in very lengthy analysis of any data.

Once Acacia is fully implemented, the automation of the 'Hospital Wide Huddle Dashboard' on Acacia will allow Patient Flow to have near-real time data available 24/7 for the first time ever. Currently this data is manually collected by Patient Flow staff once a day which takes approximately 2 hours. Not only will this give the team time to focus on their core work, but will allow Patient Flow to accurately track demand and capacity through the day, as and when required. This will be a game changer.

Acknowledging that this experience is not the same for all streams, Acacia has improved the management of patient flow across RDPH.

I have attached two screenshots to highlight the visibility within hospital and across the Top End hospitals. I routinely review this to understand the capacity and pressure points within the health system, which takes only a few minutes. The only blind spots are the RDH and PRH Emergency Department, which are still using Caresys.

Attachment 1: Visibility of patient number across Top End Hospitals



Ward Summary

Nadarajah Kangaharan

Specialty	Total	Empty	Occupied	Current Patients	Unavailable	Booked	Due Today	Due Tmr	Due NextDay	Today	Tmr
General Medicine 4 - RDH	0	0	0	17	0	0	0	0	0	0	2
General Medicine 3 - RDH	0	0	0	10	0	0	0	0	0	0	0
General Medicine 2 - RDH	0	0	0	22	0	0	0	0	0	2	0
General Medicine 1 - RDH	0	0	0	22	0	0	0	0	0	2	1
Emergency and Trauma Centre - RDH	0	0	0	11	0	0	0	0	0	0	10
Cardiology - RDH	0	0	0	10	0	1	0	0	0	0	3

Responsible Unit Summary — Sorted by Responsible Unit

Responsible Unit	Total	Empty	Occupied	Current Patients	Unavailable	Booked	Due Today	Due Tmr	Due NextDay	Today	Tmr
Women, Children and Youth	0	0	0	73	0	25	0	0	0	3	20
Surgery and Critical Care	0	0	0	114	0	273	0	9	0	8	34
Mental Health	0	0	0	44	0	0	0	0	0	6	4
Medicine	0	0	0	301	0	8	0	1	0	12	30
Emergency Medicine	0	0	0	32	0	0	0	0	0	1	16

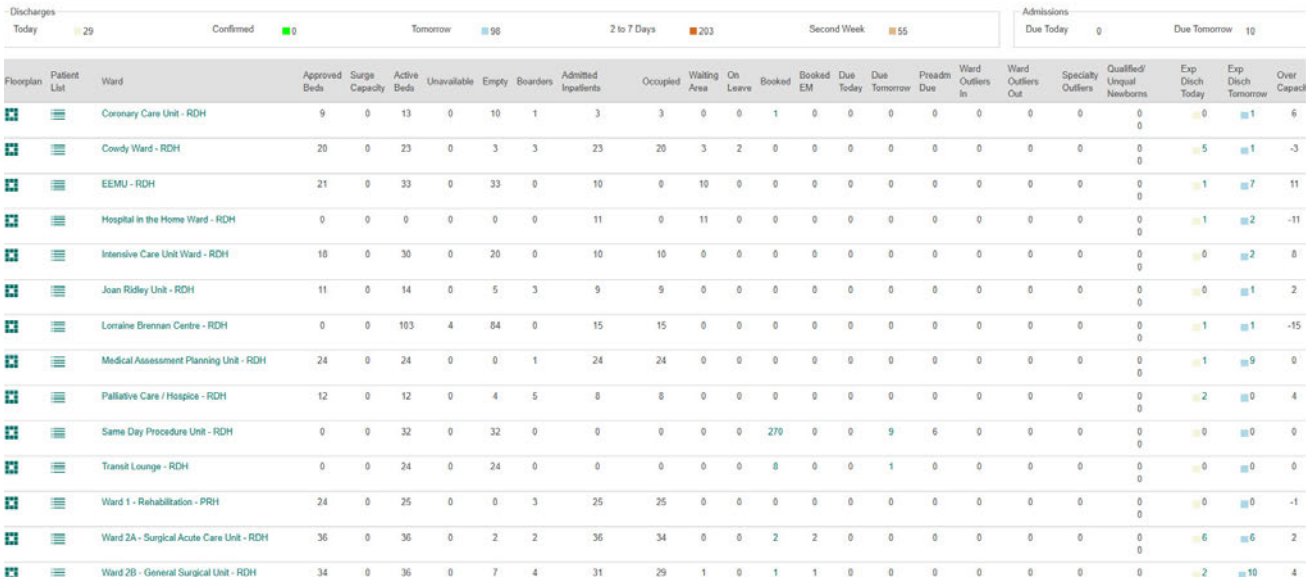
Facility Summary — Sorted by Facility

Facility	Total	Empty	Occupied	Current Patients	Unavailable	Booked	Due Today	Due Tmr	Due NextDay	Today	Tmr
Royal Darwin Hospital	0	0	0	454	0	306	0	10	0	30	100
Palmerston Regional Hospital	0	0	0	100	0	0	0	0	0	0	4
Katherine Hospital	0	0	0	12	0	0	0	0	0	0	0
Gove District Hospital	0	0	0	0	0	0	0	0	0	0	0

Trust Summary — Sorted by Trust

Trust	Total	Empty	Occupied	Current Patients	Unavailable	Booked	Due Today	Due Tmr	Due NextDay	Today	Tmr
TEHS Royal Darwin Palmerston Hospitals	0	0	0	554	0	306	0	10	0	30	104

Attachment 2: RDH-PRH -Situational Awareness for patient flow – Ward Summary



Discharges — Today 29 | Confirmed 0 | Tomorrow 98 | 2 to 7 Days 203 | Second Week 55

Admissions — Due Today 0 | Due Tomorrow 10

Floorplan	Patient List	Ward	Approved Beds	Surge Capacity	Active Beds	Unavailable	Empty	Boarders	Admitted Inpatients	Occupied	Waiting Area	On Leave	Booked	Booked EM	Due Today	Due Tomorrow	Preadm Due	Ward Outliers In	Ward Outliers Out	Specialty Outliers	Qualified/ Unqual Newborns	Exp Disch Today	Exp Disch Tomorrow	Over Capacity
		Coronary Care Unit - RDH	9	0	13	0	10	1	3	3	0	0	1	0	0	0	0	0	0	0	0 0	0	1	6
		Cowdy Ward - RDH	20	0	23	0	3	3	23	20	3	2	0	0	0	0	0	0	0	0	0 0	5	1	-3
		EEMU - RDH	21	0	33	0	33	0	10	0	10	0	0	0	0	0	0	0	0	0	0 0	1	7	11
		Hospital in the Home Ward - RDH	0	0	0	0	0	0	11	0	11	0	0	0	0	0	0	0	0	0	0 0	1	2	-11
		Intensive Care Unit Ward - RDH	18	0	30	0	20	0	10	10	0	0	0	0	0	0	0	0	0	0	0 0	0	2	8
		Joan Ridley Unit - RDH	11	0	14	0	5	3	9	9	0	0	0	0	0	0	0	0	0	0	0 0	0	1	2
		Lorraine Brennan Centre - RDH	0	0	103	4	84	0	15	15	0	0	0	0	0	0	0	0	0	0	0 0	1	1	-15
		Medical Assessment Planning Unit - RDH	24	0	24	0	0	1	24	24	0	0	0	0	0	0	0	0	0	0	0 0	1	9	0
		Palliative Care / Hospice - RDH	12	0	12	0	4	5	8	8	0	0	0	0	0	0	0	0	0	0	0 0	2	0	4
		Same Day Procedure Unit - RDH	0	0	32	0	32	0	0	0	0	0	270	0	0	9	6	0	0	0	0 0	0	0	0
		Transit Lounge - RDH	0	0	24	0	24	0	0	0	0	0	8	0	0	1	0	0	0	0	0 0	0	0	0
		Ward 1 - Rehabilitation - PRH	24	0	25	0	0	3	25	25	0	0	0	0	0	0	0	0	0	0	0 0	0	0	-1
		Ward 2A - Surgical Acute Care Unit - RDH	36	0	36	0	2	2	36	34	0	0	2	2	0	0	0	0	0	0	0 0	6	6	2
		Ward 2B - General Surgical Unit - RDH	34	0	36	0	7	4	31	29	1	0	1	1	0	0	0	0	0	0	0	2	10	4

Dr Lin Mo

Respiratory and Sleep Specialist and Acacia Subject Matter Expert
Royal Darwin Hospital, Top End Region

I am one of the subject matter experts working at Acacia on a part time basis, and I am also a Respiratory and Sleep specialist working at the Royal Darwin Hospital.

We are currently in the year 2025. Health networks across Australia have seen wide adoption of Electronic Health Record systems, yet the Northern Territory is still relying on outdated applications designed in the 90's. This is unsustainable, and failure to move into the digital age like the rest of Australia will subject us to increasing clinical risks.

In my opinion, the current functionality available to Acacia users is a significant improvement compared to our legacy infrastructure (Caresys).

Previously, triage of referrals was done using pen and paper. Referrals frequently went missing and sometimes the triage instructions were not legible. With Acacia, all referrals are scanned into a central system, and triaging occurs electronically with a proper audit trail - this significantly minimises clinical risk.

During outpatient clinic days, follow up instructions were previously written on printed patient lists. Unsurprisingly, this led to problems as sometimes the lists went missing and sometimes the follow up instructions were misinterpreted. In Acacia, the follow up instructions are documented clearly, and the status of follow ups is clearly visible in a clinical report.

Prior to the Emergency Department (ED) rollback of Acacia, ED clinician notes were visible within the Acacia EPR. As someone who regularly sees patients in the ED and also is involved in the General Medicine 'take' process, I found this easy visibility of notes to be invaluable. It was easy to identify which patients were sick and needed to be prioritises and also which investigations had been performed/not performed.

With the upcoming rollout of Acacia FG2 Tranche 1, the encounter record functionality will replace our current reliance on paper folders. It is clear to me from my experience in other hospitals that electronic documentation of clinical notes is vastly superior to documenting in patient charts. Firstly, all notes will be clearly typed and legible as well as searchable via keyword search. The date and time of each entry is clearly recorded (not always the case on paper) and it is easy to access the notes from anywhere in the hospital.

Currently, we are frequently missing critical information on patients as the patient charts are not available when we are assessing patients in the acute setting. Further, more than one person can read the notes at the same time.

I acknowledge that the implementation of Acacia has been challenging, but at the same time we cannot afford to continue relying on our outdated legacy IT infrastructure. For example, our current results viewing system (CWS) does not have a functional results witnessing component. There is no way for clinicians to clearly see which important results have not been viewed yet, for example PET scan reports or biopsy reports. Witnessing within Acacia would close this loop and ensure that all important patient results are acted upon and not missed.

I strongly support ongoing work to roll out Acacia in its full capacity. The potential benefits to NT health, in my opinion, strongly outweigh any challenges we have faced in the implementation process so far.

Dr Edith Waugh

Anaesthetist and Clinical Lead for Perioperative Medicine
Royal Darwin Hospital, Top End Region

Acacia significantly enhances perioperative care by providing timely, integrated, view-only access to the Electronic Patient Record (EPR) and Patient Administration System (PAS). For anaesthesia and perioperative medicine, this access has improved both the quality of patient care and the efficiency of clinical workflows across elective and emergency pathways.

Timely access to comprehensive clinical information—including allergies, medication histories, active problems, past procedures, pathology and radiology results, and discharge summaries—supports accurate risk stratification and proactive optimisation. Clinicians can more readily determine whether early referral to the high-risk preassessment clinic (P-CROC: PreAssessment Comprehensive Review and Optimisation Consultation) and/or perioperative MultiDisciplinary Team discussion is required, facilitating patient-centred surgical planning. The surgical waiting list functionality allows teams to view procedure category, type, and related notes, supporting prioritisation and resource coordination in line with clinical urgency and complexity. Acacia also enables clinicians to confirm whether patients have attended preassessment clinic (PAC), and to view pre-operative health questionnaires and nursing/clinician assessments. This ensures that optimisation steps have occurred and helps reduce the likelihood of same-day cancellations or perioperative complications.

Links to external platforms such as Territory Kidney Care (TKC), NT My eHealth Record (NT MeHR), the Rheumatic Heart Disease Registry, and the national My Health Record provide essential cross-sector visibility of comorbid conditions, chronic disease management, and primary care engagement—particularly important for rural and remote patients with complex medical histories.

Acacia also improves workflow efficiency by ensuring documentation is accessible when physical medical records are delayed. Scanned anaesthetic assessments and surgical consent forms are readily available, enhancing continuity of care.

By consolidating critical data in one platform and maintaining electronic records on file, Acacia reduces time spent navigating disparate systems, allowing clinicians to focus on delivering coordinated, culturally responsive, and patient-centred perioperative care.

Associate Professor Bhavini Patel

Executive Director Medicines Management
NT Health

The primary use of Acacia with clinical pharmacists is for the completion of admission medication histories and reconciliation. The links to PCIS from within Acacia allows access to primary care information for remote patients and also those within correctional and renal services. The other reason is accessing information contained in the MyHealthRecord which has a link within Acacia. Feedback suggests that the MyHealthRecord loads faster and the information is much clearer in comparison to the traditional use of the "Green Kangaroo" through Clinical Work Station.

There may be other reasons/information that individual pharmacists use Acacia for, however I am certain the use of Acacia to access information normally found on PCIS is the key contributor as to why pharmacist use is so high. I think just the simpler mechanism of accessing Acacia via the linking with CWS and the ease of not needing another program with another password (that expires too often) makes it more efficient for pharmacists completing medication histories.

Onboarding resources for clinical pharmacists explicitly state to use Acacia as a primary clinical information source.

Dr Michail Charakidis

Director of Medical Oncology

Alan Walker Cancer Care Centre, Top End

The Alan Walker Cancer Care Centre has long now adopted certain aspects of the Acacia system that are operational, such as patient scheduler, outpatient follow up requests, chemotherapy bookings and triaging referrals. This has allowed us to have electronic trail and optimise some of our services.

However, given that the full adoption of the system has been delayed, we are restricted in its use, and we are still bound to use the old patient record systems. We utilise the various legacy systems for different purposes: Synapse to access x-rays, CareSys to access results and correspondence letters, and Mosaiq for our internal documentation and chemotherapy prescribing. As a result, we are now using four different software that complicate and delay our already heavy clinical workload and increase the risk of an error. The full rollout of Acacia will simplify our work, considerably.

Finally, we are in the process of creating a minimum dataset on Acacia, that would allow us to set up a preliminary clinical cancer registry. This registry is of crucial importance in cancer care, given that it can provide immediate access to valuable data, allowing service audits, benchmarking, assessing adherence to national protocols and finally enhance research and clinical trials.

Implementing Acacia at full capacity will improve cancer care in the Top End.

Dr Rajesh Sanjeevi
Staff Specialist Gastroenterologist
Alice Springs Hospital, Central Australian Region

I am writing to share my positive experience and highlight the benefits of the Acacia 1.0 system, based on my usage across various sites in the Northern Territory. While I currently use the older Clinical Workstation at Alice Springs Hospital, I also regularly use Acacia at the Darwin and Palmerston hospitals. This contrast has allowed me to fully appreciate the many advantages Acacia offers in supporting clinical workflows.

One of the most significant benefits is that Acacia is a web-based system, enabling instant access without delays. It serves as a one-stop solution where clinical letters, discharge summaries, and laboratory reports are all easily accessible from a single interface.

As an outpatient clinician, I find the system particularly well-suited to my needs. Acacia provides comprehensive access to referral details, triage information, patient demographics, and general practitioner information—all within a single view. One of the standout features is the ability to triage referrals online. This has significantly streamlined my workflow and saved considerable time compared to previous manual processes.

Another key advantage is the ability to electronically record the outcome of appointments. This greatly improves communication with booking and administrative staff and reduces the risk of miscommunication or data loss, which was a common issue with the earlier paper-based system.

Importantly, while using Acacia, I have never required access to the physical patient file. This is a major improvement, as it allows me to schedule or reschedule clinics at short notice without depending on administrative staff to trace and deliver files to the outpatient rooms. It also makes same-day multidisciplinary consultations much more feasible. Previously, this process was logistically challenging as the physical file had to be moved between departments, often resulting in delays or the need for multiple patient visits. Acacia eliminates this issue entirely, offering a more efficient process and a significantly improved experience for patients.

Even with my relatively limited use of Acacia at Alice Springs Hospital, the following advantages are already evident:

1. Integration of health systems – Acacia brings together primary health care data, retrieval notes, and hospital summaries into a unified platform.
2. Ease of use – As a browser-based system, it allows for seamless access and offers the potential for continuous upgrades without significant downtime.
3. Electronic capture of tracking data – The system facilitates documentation of patient activity across multiple touchpoints, helping to deliver better coordinated and safer care.
4. Reduced reliance on physical files – This supports more agile scheduling, streamlined departmental workflows, and fewer hospital visits for patients.

Dr Mei Chuen Tay
Ophthalmologist and Acacia Subject Matter Expert
Royal Darwin and Palmerston Hospital, Top End Region

Feedback on Electronic Patient Record System (Acacia 1.0)

Since the rollout of Acacia 1.0, there have been significant improvements in clinical workflow across Outpatient, Inpatient, and Theatre settings. The system has enhanced access to information, reduced reliance on paper records, and improved overall efficiency and patient safety.

Outpatient Clinics

1. **Advance Clinic Overview:** Acacia provides an excellent overview of upcoming clinics, which supports proactive planning and scheduling. This has been especially valuable in managing emergency reviews and avoiding overbooking by aligning patient needs with available resources.
2. **Centralised Access to Patient Information:** Acacia serves as a one-stop platform for viewing patient alerts, allergies, pathology and radiology results, specialist clinic letters, ED presentations, and inpatient discharge summaries. The need to switch between Clinical Work Station and PACS has been eliminated, streamlining the workflow significantly.
3. **Improved Triage and Decision-Making:** Access to previous visit notes, investigations, and clinical summaries supports more accurate triage of outpatient referrals and assists in prioritising care delivery.
4. **Efficient Follow-Up Documentation:** Recording patient follow-up outcomes directly in Acacia is more reliable than the previous paper-based slips. This reduces the risk of patients forgetting to book follow-ups after leaving the room, helping to prevent loss to follow-up.

Inpatient Settings

1. **Customisable Inpatient Lists:** Users can now personalise inpatient lists to suit their workflow. This flexibility allows for better tracking and continuity of care.

2. **Access to Procedural Documents:** Key documents such as TWAITs, consent forms, and A-scans are viewable within Acacia. This greatly improves theatre planning efficiency, replacing the need for physical chart retrieval or manual workarounds like shared drives.

Theatre Planning

1. **Theatre Planner Overview:** The theatre planner feature allows for advanced planning and clearer coordination of operating theatre schedules.

2. **Real-Time Operating Room List:** Real-time visibility of theatre activity helps surgeons track the progress of emergency cases and plan their time more effectively around surgical priorities.

Observations from Surgical Team Feedback

A small sample survey of doctors within the surgical team at RDH highlighted a key challenge: while Acacia houses a wealth of information, many users are not fully aware of how to navigate or utilise the system to its full potential. For example:

1. **Limited Familiarity:** Many SHMOs and registrars rely on workflows inherited from colleagues familiar with legacy systems. Their interaction with Acacia is limited to basic functions rather than exploring its broader capabilities.

2. **Underutilised Custom Settings:** Preference settings that could customise views by specialty are often unused, leading to cluttered interfaces and less efficient information access.

3. **Accessing Referral Letters:** Some users are unaware of where to locate outpatient referral letters within Acacia, despite the system offering a more reliable and accessible alternative to paper-based referrals, which were often misfiled in physical charts.

Conclusion

Acacia 1.0 has undoubtedly streamlined many clinical processes and centralised patient data access. However, more structured orientation or user training—particularly for junior medical staff—may help unlock the system's full potential and improve user experience. Addressing the knowledge gap in system navigation could significantly enhance efficiency and reduce reliance on outdated practices.

Nicole Mathewson

A/Nurse Unit Manager

Royal Darwin and Palmerston Hospital, Top End Region

The benefits of using Acacia in the Maternity work stream include:

- Admitting newborns immediately after birth is accessible whether it is in the birth room or theatre, where the process is quick and easy.
- Midwives like the easy to use 'drop down' options when entering labour and birth details.
- The Acacia floor map has a good layout to find patients on the ward. It's also easy to 'move' patients between Ward 6A, Delivery Suite and the Special Care Nursery.
- The 'Perinatal Data' is very useful, especially if the data has all been entered correctly.
- Ordering and changing of ward diets is easy.
- Discharging of maternity patients is also easy to use. The maternity discharge is also linked to any newborns and boarders, as a reminder to also discharge (if required).