National Bowel Cancer Screening Program Register Blueprint

BUSINESS SOLUTIONS DESIGN CENTRE

Table of Contents

1 PURPOSE AND TARGET AUDIENCE

Vision

The National Bowel Cancer Screening Program Register (NBCSPR) supports the successful implementation of the Program including the active participation of eligible Australians and health professionals through the screening pathway, the provision of timely and relevant information to stakeholders and the evaluation and monitoring of the Program.

Purpose

The purpose of this document is to provide the high level requirements and high level design for the National Bowel Cancer Screening Program Register.

Audience

The intended audience for this document is:

- Cancer and Palliative Care Branch, Population Health Division
- Business Solutions Design Centre, ICT& Corporate Support Division

2 BACKGROUND AND CONTEXT

Program Background

Bowel cancer is the second most common form of cancer in Australia and causes the second highest number of deaths. Bowel cancer accounts for 9.3% of all death from invasive cancers in Australia, making it the second most common cause of cancer-related death. However bowel cancer can be treated successfully if detected early. Trials have clearly established that screening asymptomatic populations for bowel cancer reduces mortality from the disease through early detection. Screening for bowel cancer has the potential to:

- Reduce bowel cancer mortality rates by early detection; and
- Prevent the development of bowel cancer.

In 2005 -06 the National Bowel Cancer Screening Program (NBCSP) was implemented by the Australian Government in partnership with the State and Territory governments to address the rise in incidents and mortality from Bowel Cancer.

The National Bowel Cancer Screening Program (the Program) is an Australian Government initiative administered by the Commonwealth Department of Health which aims to help detect bowel cancer early and reduce the number of Australians who die each year from the disease.

The Program is supported by a Program Register (the Register) which is currently administered by the Department of Human Services under a formal arrangement with Health. The Register holds personal information about persons who are invited to take part in the Program with information from the Medicare or Department of Veterans' Affairs enrolment records being used to invite eligible Australians and to populate the Program Register.

Where a person agrees to participate in the Program, the Register will also hold the name of health professionals (if provided) who provide screening pathway services as well as the clinical results of screening and follow up diagnostic procedures/tests. This information is provided to the Program Register on a voluntary basis by Healthcare Professionals and to encourage the provision of information to the Program Register, an incentive payment is made to Healthcare Professionals who provide a complete report to the Program Register.

In 2013, the government announced that it would introduce biennial screening for Australians aged between 50 and 74 years of age as from 2015.

2.1.1 Program Goal

To reduce the morbidity and mortality from bowel cancer by actively recruiting and screening the target population for early detection or prevention of the disease.

2.1.2 Program Objectives

1. To achieve participation levels that maximise the population benefit of early detection of bowel cancer in the target population.
2. To enable equitable access to the Program for men and women in the target population, irrespective of their geographic, socioeconomic, disability or cultural background, to achieve patterns of participation that mirror the general population.
3. To facilitate the provision of timely, appropriate, high quality and safe diagnostic assessment services for Program participants.
4. To maximise the benefits and minimise harm to individuals participating in the Program.
5. To ensure the Program is cost effective and maintains high standards of program management and accountability.
6. To collect and analyse data to monitor participant outcomes and evaluate Program effectiveness.

The National Bowel Cancer Screening Program Register

The AHMAC endorsed Population Based Screening Framework (2008) identifies that a screening program must have a database capable of providing a population register for people screened that can be used to issue invitations for initial screening, track and recall individuals for repeat screening, follow those with identified abnormalities, correlate with morbidity and mortality results and monitor and evaluate the Program and its impact.

The current Program Register was established as part of the Pilot Screening Program (2002-2004), through the then Health Insurance Commission, and has been expanded incrementally as each new cohort has been added (55 and 65 year olds in 2006, 50 year olds in 2008 and 60 year olds in 2013).

The National Bowel Cancer Screening Program Phase Two Program Review (2012) identified that current data capture through the Program Register was not satisfactory and that efforts needed to be made to progress moves to electronic data capture and to link program performance and outcomes data to the national cancer database to assist in measuring program impact on morbidity and mortality over time.

The Department's National Bowel Cancer Screening Program Biennial Screening Working Group (including state and Territory governments, screening experts and clinicians) has also identified the need for a fully functioning Program Register and system to meet the anticipated demands of biennial screening.

A fully implemented biennial screening interval will require a four-fold increase in invitations and participant/health professional interactions with the Program Register by 2020. The current Register system (provided through the Department of Human Services) is paper based and resource intensive, with manual processing of forms and the maintenance of a large call centre facility. The current operational model (based on the allocation of FTE per volume of invitation) is not deemed sufficiently scaleable to deliver the efficiencies required to enable a sustainable ongoing Program. Additionally the Register does not currently link across government's ehealth platform or provide the scope of services needed.

2.1.3 Purpose of the Program Register

The Program aims to detect bowel cancer and the measurement of this objective relies on information that is provided to the Program Register by health professionals who deliver screening and diagnostic services to Program participants.

The purpose of the Program Register is to hold personal and clinical data which is used for a range of Program delivery functions but importantly it is used to monitor and evaluate the effectiveness of the Program and its impact on the incidence and mortality of bowel cancer.

The National Bowel Cancer Screening Program Register is currently housed in DHS.

Along the National Bowel Cancer Screening Program pathway, healthcare professionals (the Contracted pathologist, GP, Colonoscopist, histopathologist) are asked to report to the Register about results and progress of the participant along the pathway.

When a GP or Colonoscopist has not reported to the Register for a participant that has received a positive FOBT result, reminders from the Register are issued and then manual follow up activities are undertaken by Participant Follow-up Function (PFUF) officers.

2.1.4 Register Issues

In order to meet the demand of biennial screening in an efficient and cost effective way, the Program Register and system needs to be redeveloped to provide up-to-date services to Government, participants and health professionals.

The manual nature of the system is expensive to maintain and is inefficient and lacks data integrity. The current system does not talk to other systems that it should and it cannot support the current data lodgement and reporting needs of the stakeholders.

- The Department of Health pays for 62 persons annually to DHS to manage the Register. This is expected to grow to 83 FTE by 2016 with the introduction of biennial screening.
- There is currently an inability to make systems changes in a timely and cost effective manner limiting the ability to quickly adapt policy of procedures to Program needs.
- The screening selection and invitation process does not currently target participants in a cost effective manner or in a sensitive manner as it does not recognize participants that are already undergoing treatment for cancer or have had a colonoscopy recently. This selection process will increase with the introduction of biennial screening.
- All data capture for the Register occurs by receiving paper forms and then manually keying those forms into the Register (except for the FOBT result which is transmitted electronically by the Contracted Pathologist). All healthcare professionals that are asked to report to the Register have to manually complete a form and send the form into DHS. This leads to reporting burden, data integrity and data quality issues.
- All reporting out of the Register is currently manually transcribed into excel spreadsheets by the DHS staff. The reporting is provided monthly and is able to be categorized by state, but not down at the regional level required by the external Stakeholders.
- The Listings of information that are sent to the participant follow-up function officers contains information that is 6 weeks in arrears leading to unnecessary manual follow up activity.

3 DRIVERS FOR CHANGE

The intention for change is to build a new Register that will address all the issues raised and support the identified drivers for change.

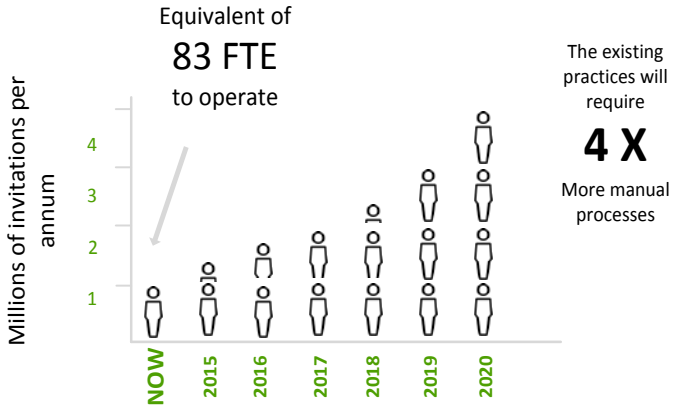
The new Register will support the screening pathway in a more cost effective manner that supports the introduction of biennial screening and removes the high operational costs that support the current Register with its manual processes.

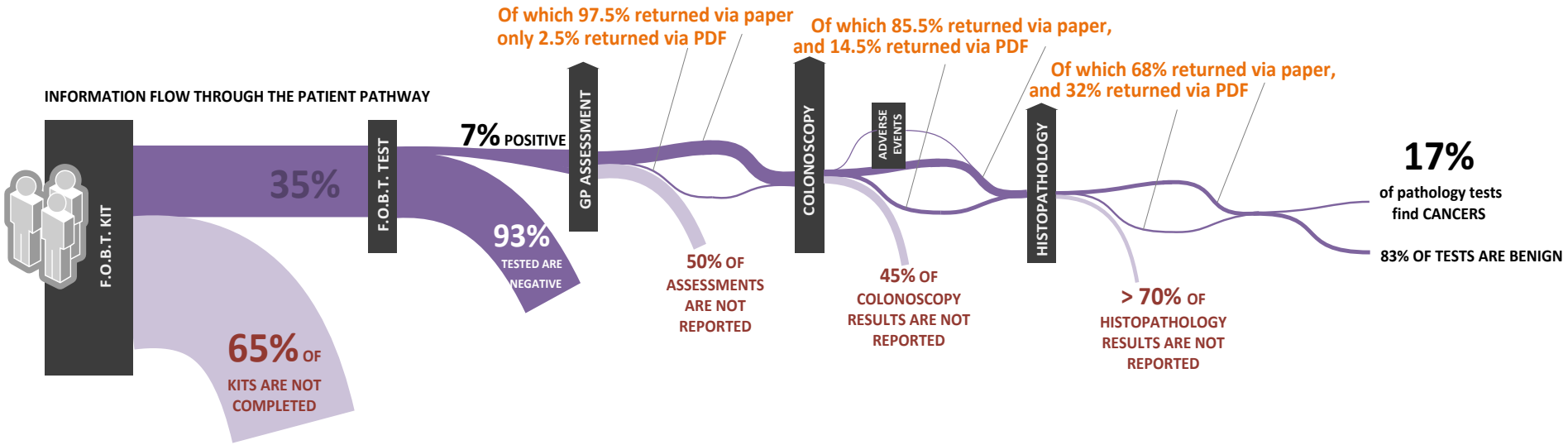
The new Register will:

- Improve data quality and data lodgement by allowing healthcare professionals to lodge data electronically via B2G where appropriate and reduce costs involved with manual data capture;
- Improve information captured about participants by allowing them to provide information electronically. This will capture information earlier in the process and better inform why a participant is choosing to 'opt out'. It will also reduce costs involved with manual data capture and reduce the costs of issuing kits that are not required;
- Improve the rate of data capture from healthcare professionals by providing the ability to identify that the patient is a participant in the Program;
- Provide a business intelligence capability to provide better reporting, transparency and effectiveness of the Program;
- Support the need to increase participation by engaging GP's earlier in the process;
- Improve its data matching and invitation selection rules so that participants that are currently undergoing cancer treatment are no longer (redundantly) invited into the Program.
- Provide feedback loop to GP's and specialists and stakeholders.

DRIVERS

- **D1** LOW PARTICIPANT UPTAKE
- **D2** INCREASED SCREENING RATE
- **D3** DATA INTEGRITY/QUALITY ISSUES
- **D4** HIGH OPERATIONAL COST
- **D5** INDEQUATE PROGRAM DATA CAPTURE
- **D6** POOR REPORTING & INABILITY TO TRULY ASSESS PROGRAM EFFECTIVENESS
- **D7** INCONSISTENT & OUTDATED TECHNOLOGY
- **D8** MINIMAL PARTICIPANT SELECTION CRITERIA





Drivers for change explained

D1	D2	D3	D4	D5	D6	D7	D8
Low participant uptake	**Increased screening rate**	**Manual administration leading to data integrity and data quality issues**	**High operational cost**	**Inadequate program data capture**	**Poor reporting & inability to truly assess program effectiveness**	**Inconsistent and outdated technology**	**Minimal Participant selection criteria**
There is no solid evidence of the reason for the low uptake rate. Studies have identified that engaging the GP early in the process increases the uptake rate.	The Program has committed to biennial screening for all Australians between the ages of 50 and 74 by 2020. Currently the Program is only available to those persons aged 50, 55, 60 and 65. The increased screening is exacerbated by the increasing percentage of Australians aged between 50 – 74.	The current register has paper based/manual data capture. Lack of automated processes. Manual keying of data leading to high risk of poor data quality. Requires manual (& duplicate) data entry. These operational practices are not sustainable from a cost benefit perspective – particularly with an increasing screening rate.	The high cost of operating the register is largely attributed to manual data entry activities. With a workforce of 62 (currently) FTE to operate current register. This will grow to 83 by 2016/2017.	An inadequate ability to identify that a patient is a program participant. Time consuming and manual data lodgement processes. There is a lack of mandate to report due to the absence of legislation, for this reason the solution needs to provide attractive incentives, and should not have a negative impact to the natural business process of providers. Currently the incentives are insufficient.	Recognition that "D5" is a contributor to the reporting problem: "Poor data in = poor intelligence out". There is an increased drive to improve transparency of the program and its operations for government, the health care provider community and the general public.	There has been significant progress made over recent years in the approach to modernising health sector related ICT enablement. The current register does not take advantage of these approaches. As an example, utilisation of the HI service, PCeHR and secure electronic messaging could be utilised to achieve a current and consistent approach to service delivery.	Characteristics of an individual's current health situation is not considered during selection. Those persons undergoing cancer treatment are incorrectly invited to participate. Those persons that have recently undergone a colonoscopy not identified.

4 THE NATIONAL BOWEL CANCER SCREENING PATHWAY

The World Health Organisation (WHO) principles for a screening framework, describe the screening pathway as:

- Recruitment
- Screening
- Assessment
- Diagnosis
- Outcome

Currently the NBCSP invites people turning 50, 55, 60 and 65 years of age to be screened.

From 2015 the age cohort will transition to biennial screening from the age of 50.

A transition phase will occur for those persons already screened and due for rescreening.

The screening pathway comprises the following steps:

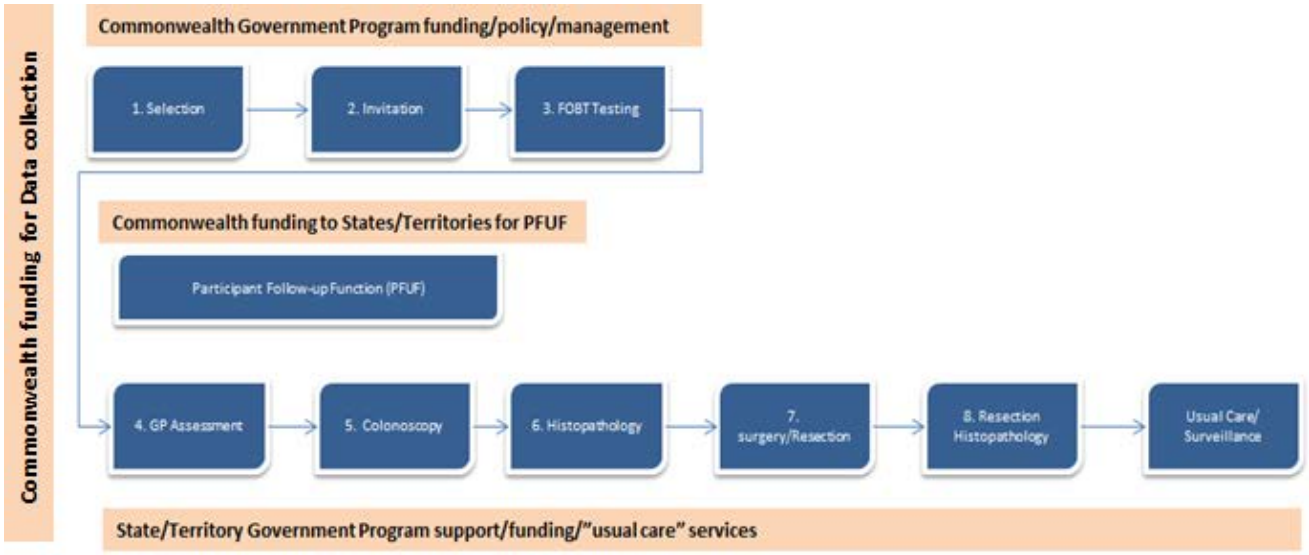
- Selection
- Invitation
- FOBT Testing
- GP Assessment
- Colonoscopy
- Histopathology
- Resection
- Resection Histopathology
- Supported by Participation Follow-up functions (PFUF)
- Rescreening

Screening involves testing for bowel cancer in people who do not have any obvious symptoms of the disease. The aim is to find any polyps, adenomas, and/ or to find cancer early when they are easier to treat and cure.

Bowel cancer can develop without any early warning signs. The cancer can grow on the inside wall of the bowel for several years before spreading to other parts of the body. Often very small amounts of blood leak from these growths and pass into the bowel motion before any symptoms are noticed.

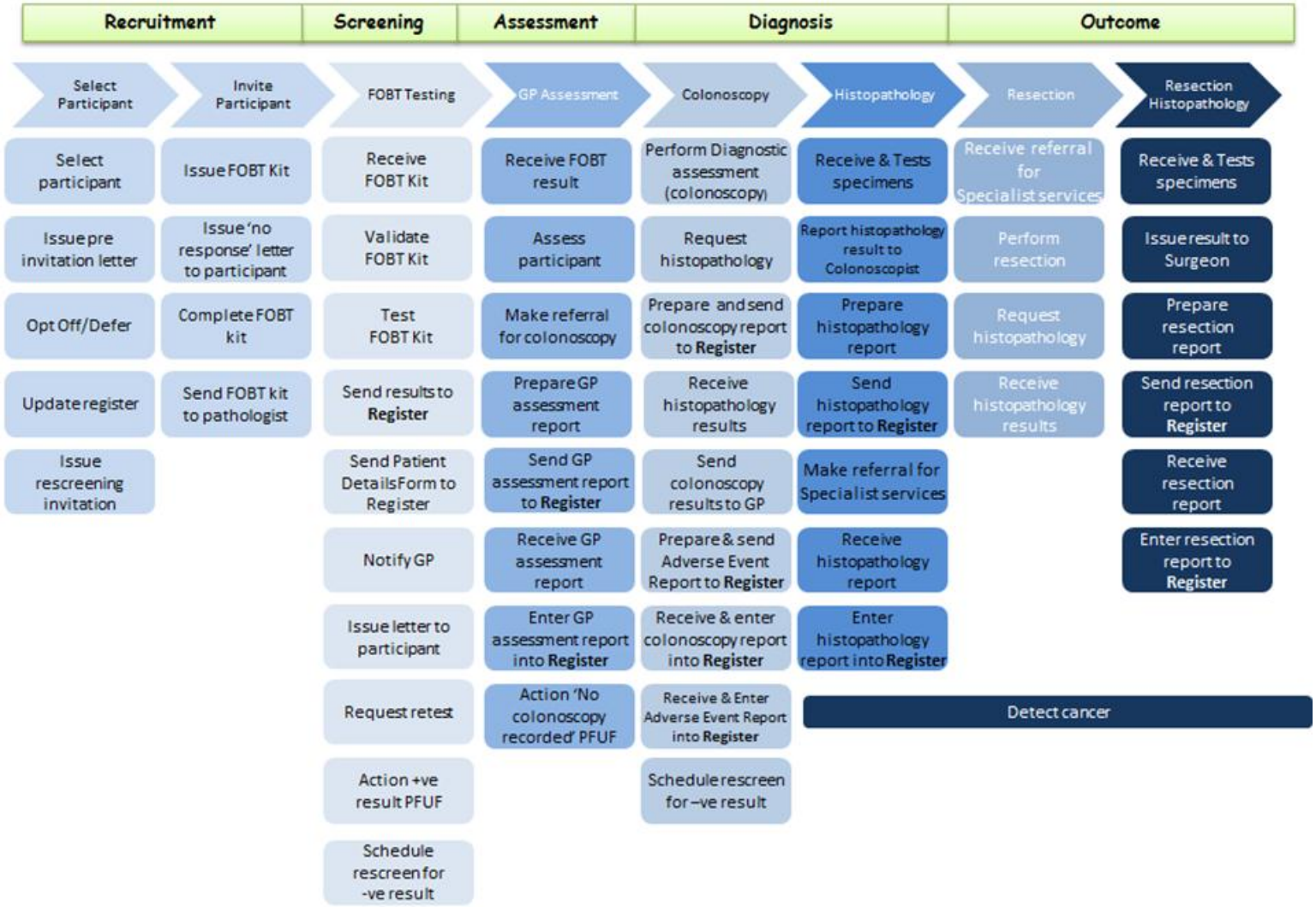
A test called a FOBT can detect these small amounts of blood in the bowel motion. FOBT stands for Faecal Occult Blood Test. The FOBT looks for blood in the bowel motion, but not for bowel cancer itself. Screening for bowel cancer using a FOBT is a simple non-invasive process that can be done in the privacy of your own home. Although no screening test is 100% accurate, the FOBT is currently the most well researched screening test for bowel cancer.

Completing a FOBT every two years, can reduce the risk of dying from bowel cancer by up to one third.



The Screening Pathway Activities:

The following activities are undertaken as part of the screening pathway for the National Bowel Cancer Screening Program.



The Current Screening Pathway Description:

1. Selection process:

Identification of eligible population:

1. The Program Register identifies eligible age cohorts from the Medicare/DVA data. (this data is used to identify those participants that meet the age criteria).
2. Eligible Australians will be identified based on the calendar year of their birth.
3. They will then be invited to participate from 1 July of that year, with invitations reaching people within 6 months of their birthday.
4. Where eligible people live in designated hot zones (those postcodes where the temperature exceeds 30 degrees Celsius for sustained periods of the year), they are invited during the cooler months of the year to decrease possible effects on FOBT performance due to temperature.

Pre-invitation:

1. Direct mail from the Register is the primary means utilised by the Program of recruiting eligible people to participate in bowel cancer screening.
2. Eligible people receive a pre-invitation letter to participate in the Program or to rescreen, two weeks prior to receiving the FOBT kit.
3. Invitees may opt off or suspend participation in the Program.

2. Invitation process:

1. Eligible people receive a FOBT kit by mail. Participants are encouraged to return the completed test, which will be analysed by the Program pathology laboratory.
2. The FOBT results are sent to the Register, the GP (if nominated by the participant) and the participant.
3. The participant has the option to opt out of the Program at any point.

Invitation Reminder:

1. If the participant does not return the FOBT they are sent a reminder letter eight weeks after the invitation date.
2. If a FOBT is not returned the participant is invited to screen at the next eligible age.

3. FOBT Testing:

1. Contracted pathology laboratory analyses the FOBT samples and sends result to the participant, the nominated GP and the Program Register.

Negative FOBT Result:

1. If the patient receives a negative FOBT result, the result notification advises that it is recommended that they rescreen in two years' time.

Positive FOBT result:

1. If the patient receives a positive FOBT result they are advised to visit their GP within two weeks.
2. The GP (if nominated) is also informed of the FOBT result.
3. The GP can then discuss the results and appropriateness of a colonoscopy or other investigative procedure with the patient and refer the patient on where appropriate.

4. PFUF (participant follow up function):

1. The PFUF is delivered by PFUF Officers, who are employed by the State and Territory Governments, whose primary role is to encourage Program participants to progress through the screening pathway where they have received a positive FOBT result and are not recorded on the Program Register as having attended the necessary follow-up including:
   - general practitioner (GP) / primary health care provider appointment; or
   - an assessment colonoscopy or other clinically relevant assessment.

Positive FOBT result Follow-up:

1. If there is no follow up recorded on the register at eight weeks post positive FOBT, the participant and the GP (if nominated) are sent a reminder letter by the Register.
2. Further letters are sent at 6 and 10 months.
3. The Participant Follow-up Function (PFUF) also contacts the participant and the GP (if nominated) by phone if there is no activity at three months, and seven months.

Positive diagnostic result Follow-up:

1. If a GP visit is recorded in the register, but no colonoscopy visit is recorded the participant and GP are sent letters by the Register at four, six and ten months.
2. The Participant Follow-up function also contacts the participant and the GP (if nominated) by phone if there is no activity at five months, and seven months.

5. Colonoscopy:

1. Once referred by a GP, the participant undergoes further diagnostic assessment, usually a colonoscopy, as part of usual care health services within their State/Territory.
2. The histopathologist tests the colonoscopy specimen.

6. Histopathology:

Positive diagnosis:

1. If the participant is diagnosed with bowel cancer or adenoma following colonoscopy or other procedure, their outcome is captured by the Program Register.
2. Further treatment, care and surveillance are provided within the usual care health system.

Negative colonoscopy diagnosis:

1. If the patient receives a negative colonoscopy result, it is recommended that they rescreen with an FOBT in five years' time. (note: this is expected to change with the introduction of biennial screening)
2. Unless a program participant identifies that they do not wish to participate further in the program, they will be invited to rescreen at the next eligible age.

7. Resection

1. The specimen removed from surgery is sent for histopathology.

8. Resection Histopathology

1. The specimen from resection surgery is tested by a histopathologist and the results are sent back to the surgeon.
2. The histopathologist provides the outcome to the Register.

9. The Register

The Register plays an important role in the Program. To assist participants through the screening pathway, the Register will:

- issue a pre-invitation letter followed by an invitation pack to people turning 50, 55, 60 or 65;
- issue reminder letters to people who have not taken up an invitation to participate within a specified time or to rescreen;
- record participants' details, including screening history, the results of the Faecal Occult Blood Test (FOBT), and the results of colonoscopy which follow as a result of a positive FOBT;
- provide confirmation of contact details to the pathology laboratory responsible for analysing FOBT kits;
- issue reminder letters or make telephone calls (where necessary) to participants with a positive FOBT result to urge them to see their doctor for follow up tests, for the purpose of diagnosis;
- issue follow up reminder letters or telephone calls (where necessary) to participants' nominated doctors;
- provide information on participants' screening and detection history to doctors nominated by the participant, Program Coordinators and employees in the bowel cancer screening area of state/territory governments to assist with participants' medical care; and
- check Medicare claims data (prior to issuing a reminder) to determine if a claim for a bowel procedure has been submitted. If a claim has been made the Register will record the procedure and write to the medical service provider seeking the results of the procedure.

5 STAKEHOLDERS OF THE SCREENING PATHWAY

Australian Government Department of Health

The Department of Health has overarching policy development and program implementation responsibility for the Program including:

- providing advice and recommendations to the Australian Government Minister for Health on the development and implementation of the Program;
- developing and implementing policy approaches to underpin Program implementation;
- maintaining a monitoring and evaluation strategy for the Program, including workforce issues and population acceptability and uptake;
- establishing and maintaining Project Agreements with State and Territory Governments to support the Program Participant Follow Up Function in that jurisdiction;
- undertaking tender processes and managing contracts for the delivery of services to the Program, such as the development and maintenance of a Program Register and supply of FOBTs, pathology analysis and associated support services;
- developing and implementing a communication strategy for relevant segments of the health workforce and for the general community, including the production of resources;
- chairing, and providing secretariat services to the Program advisory groups and associated working groups; and
- providing State and Territory Program areas with regular program data to support service planning and implementation.

State and Territory Governments

States and Territories play an important role in the effective implementation of the Program in collaboration with the Australian Government. State and local coordination of Program implementation, workforce and colonoscopy capacity and communications are essential for success of the Program.

Department of Human Services (formerly Medicare Australia)

The Department of Human Services is currently contracted to operate and maintain the National Bowel Cancer Screening Program Register, Mailhouse and associated support services.

DHS currently provide the data required for selecting the invitee. The data used is the Medicare Enrolment data and DVA data.

DHS also provides the authoritative register of Healthcare Professionals that are able to participate in the Program.

Register Support Services

- National Operational Support officers employed by DHS to operate the Register
- Program Information Line officers employed by DHS to operate the call centre.

Australian Institute of Health and Welfare (AIHW)

The AIHW produces comprehensive Program monitoring reports for the Department of Health including annual monitoring reports and periodic Program Phase reports that analyse data extracted from the Program Register and provide an overview of screening participation and outcomes.

Participants

Invited to participate and undertake the FOBT test and subsequent diagnostic testing as required.

Healthcare Professionals

Health professionals such as GPs, Gastroenterologists, Colonoscopists, Surgeons and Pathologists also play a key role in ensuring that program participants progress through the screening pathway. They do this by delivering clinically appropriate advice, services, treatment and care, and by providing data on participants and their outcomes to the Program Register.

Contracted Pathologist

The contracted Pathology provider is responsible for the supply of FOBTs and associated support services, including pathology analysis for the Program. Currently this is Dorevitch Pathology.

PFUF officers

Provide data and appropriate access to the register to enable the States and their subcontracted agencies to undertake the PFUF Function.

6 USER PATHWAYS FOR THE SCREENING PATHWAY

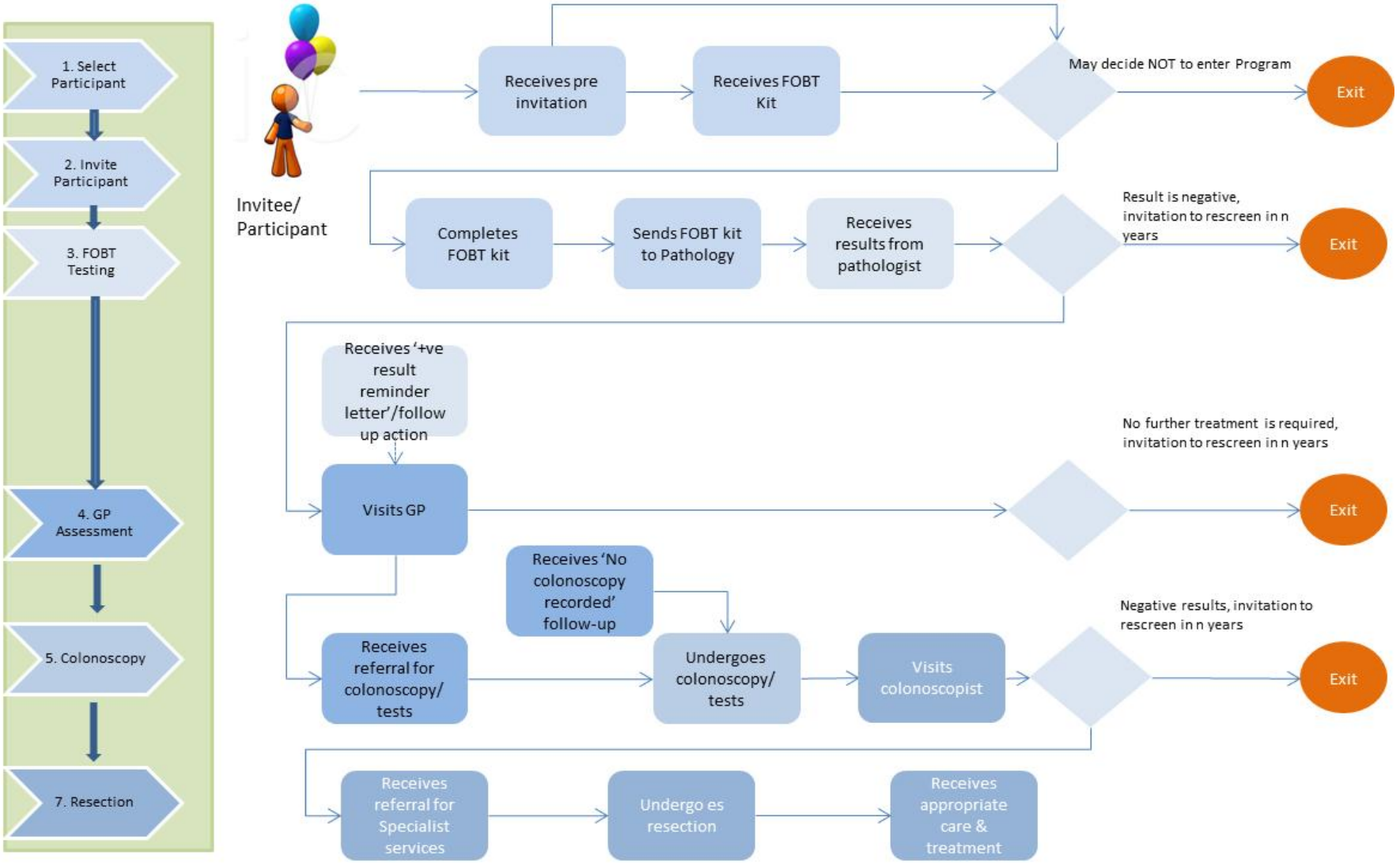
The User pathways are a representation of how a particular stakeholder interacts with the Screening Pathway for the NBCSP.

Not all stakeholders interact with the screening pathway as they may only be a recipient of information such as Australian Government Department of Health, State and Territory Governments, Australian Institute of Health and Welfare (AIHW).

The stakeholders represented by a user pathway are:

- Participants
- Contracted Pathologist
- GPs
- Colonoscopist
- Histopathologist
- Participant Follow-up Function officer
- Register Operator.

User pathway 1: Participant



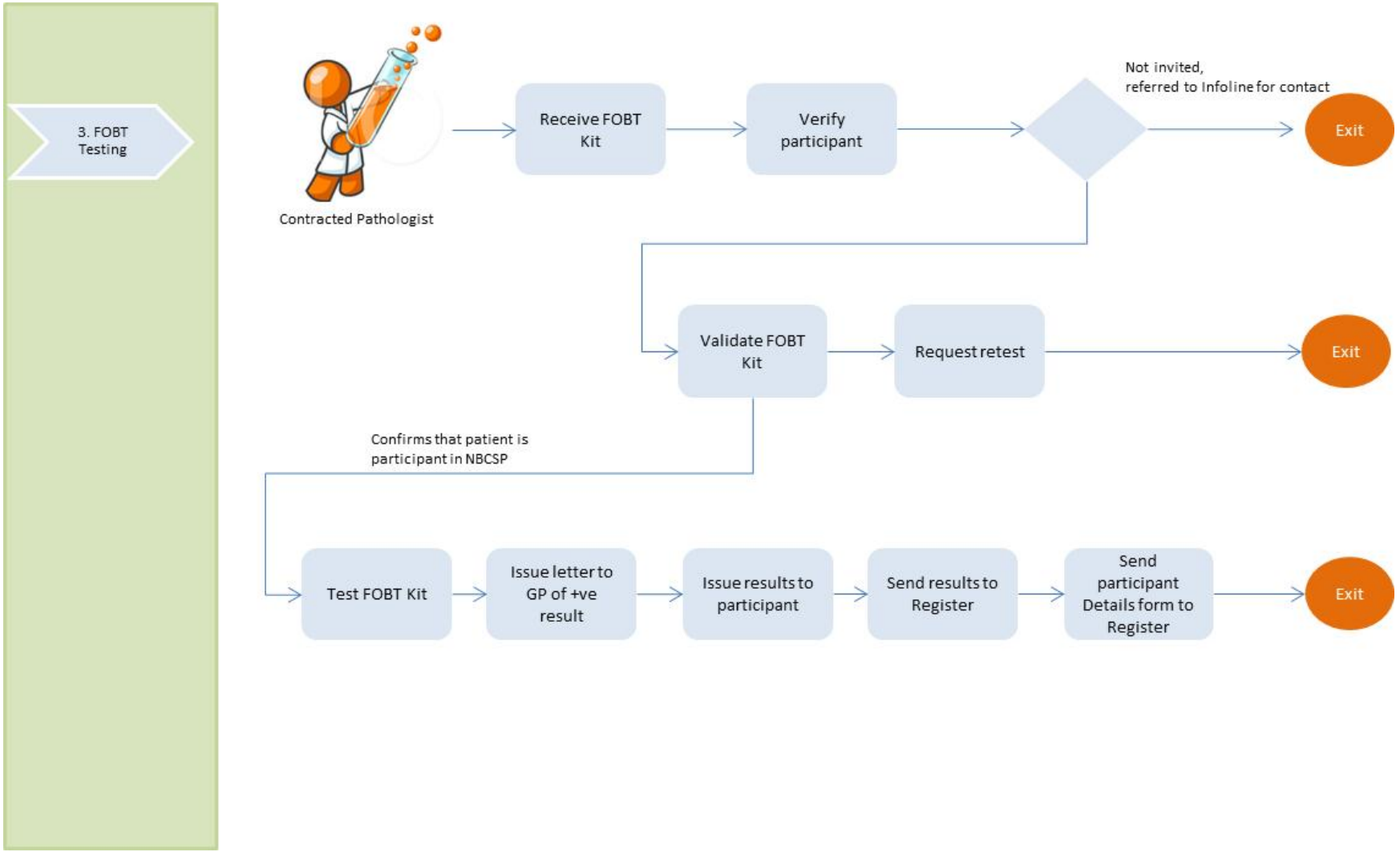
User pathway 1: Participant – Hot Spot Analysis

Overview:

- National Bowel Cancer Screening Program Register (NBCSPR) identifies target population and issues an invitation pack to the Participant. Current population is 50, 55, 60, 65.
- Participant completes FOBT kit and sends for testing. When a positive FOBT result detected, participant is advised to see GP within 2 weeks. If register is not updated with GP recommendation, Participant follow-up activity is undertaken.
- GP makes assessment and decides clinical management. Colonoscopy or other tests are conducted.
- If cancer is detected, then participant is referred for surgical resection. Results are tested and sent to Colonoscopist.

Process step	Problem	Desired outcome
1. Receives pre invitation letter	a selecting patients already being screened/treated	improved de-selection/data matching
	b manual/costly opt-out process	reduce manual processing for opt out
	c manual data entry for managing patient details	reduce costs of processing for Patient Details
2. Receives invitation kit	d Kits issue when patient not requiring/wanting screening	Reduce costs of issuing kits that are not required
3. Completes kit and Patient Details Form	e Low uptake rate	Increase participation rate
4. Sends kit and Patient Details Form to pathology	f costly data entry for patient details	Reduce costs of data entry/Improve data integrity
	g Incorrect data entry	Improve data integrity
5. Receives result from pathology	h Inconsistent delivery of pathology results	Provide electronic communication channel
6. The remaining steps	✓ the remaining steps are medical steps	N/A

User pathway 2: Contracted Pathologist



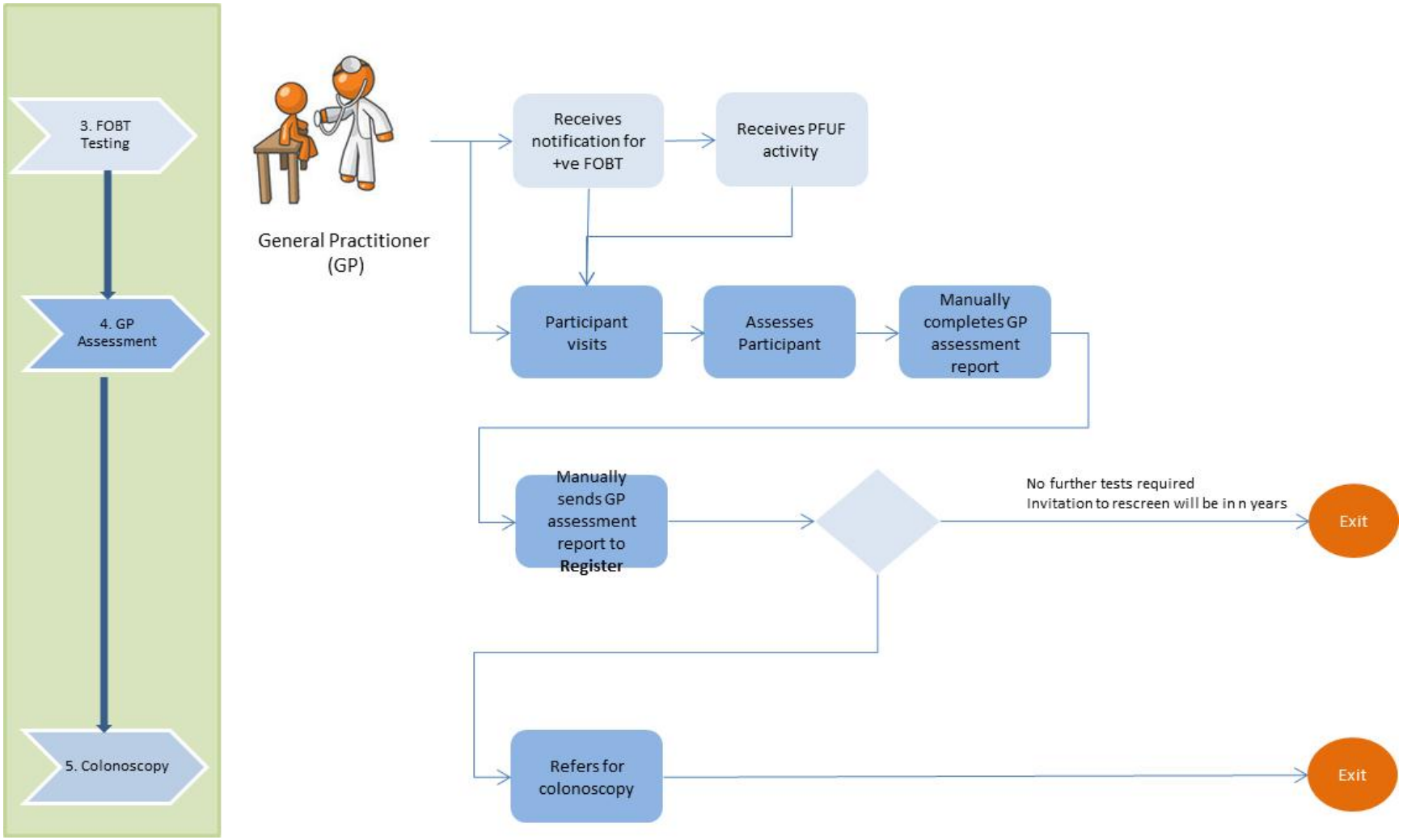
User pathway 2: Contracted Pathologist – Hot Spot Analysis

Overview:

- Contracted pathologist receives FOBT kit from participant and checks that the kit is valid.
- Contracted pathologist may request participant undertake a restest if there is a problem with the FOBT kit sent in.
- Contracted pathologist verifies that the participant is a participant of the NBCSP .
- Once the kit is tested, the Contracted pathologist sends the results to the Register electronically and sends the Participant Details form to the Register manually for keying into the Register.
- The contracted pathologist notifies the Participant's GP of any positive result and also sends a results letter to the Participant.

Process step	Problem	Desired outcome
1. Receives FOBT Kit	✓ No problem identified	N/A
2. Verify Participant	✓ No problem identified	N/A
3. Validate FOBT Kit, Request Retest and test FOBT kit.	✓ medical step	N/A
4. Issue Result to GP	a Partially electronic - inconsistent	Improve rate of electronic delivery
5. Issue result to Participant	b No ability to nominate communication channel	Provide electronic delivery option
6. Send result to Register	✓ No problem identified	N/A
7. Send Participant Details Form to Register	c Costly manual paper process	Reduce costs/reduce manual entry

User pathway 3: General Practitioner



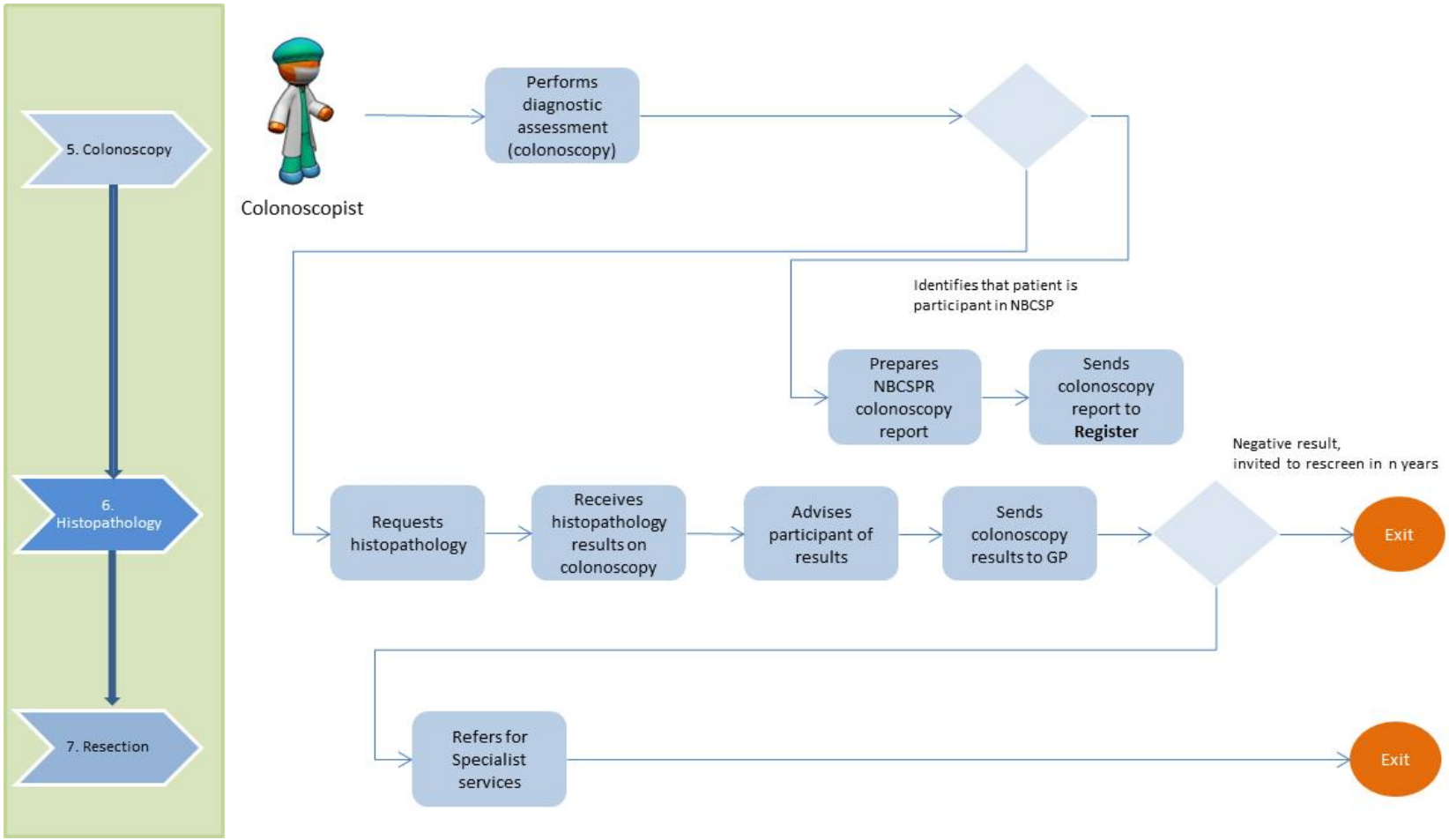
User pathway 3: General Practitioner – Hot Spot analysis

Overview:

- The GP receives notification of positive FOBT result from Contracted pathologist. This is either by paper or electronic.
- National Bowel Cancer Screening Program Register (NBCSPR) follows up with nominated GP if GP assessment report not received
- The GP makes an assessment and decides clinical management and reports to the Register. The GP can either print out the Assessment Report and complete and send to the
  Register or access the form electronically which will send through an email to DHS for manual entry.
- After assessment, the GP may refer for colonoscopy

Process step	Problem	Desired outcome
1. Receives notification of positive FOBT	a Low participation rate	Need to involve the GP earlier to improve take up rate
	b Notification not always electronic	Improve rate of electronic transmission
2. Receives Follow-up action (PFUF)	✓ No problem identified	N/A
3. Participant visits	✓ this is a medical step	N/A
4. Assesses participant	✓ this is a medical step	N/A
5. Completes GP assessment form	c Low reporting rate due to manual process	Improve reporting rate
6. Send GP assessment form	d Low reporting rate due to manual process	Reduce effort, provide electronic reporting
7. Refers for colonoscopy	✓ this is a medical step	N/A

User pathway 4: Colonoscopist



User pathway 4: Colonoscopist – Hot Spot analysis

Overview:

- Colonoscopist performs colonoscopy and sends any specimen to histopathologist
- Colonoscopist advises Register of completion of colonoscopy via Colonoscopy Report. Colonoscopist can either print out the Colonoscopy Report and complete and send to the Register or access the form electronically which will send through an email to DHS for manual entry.
- Colonoscopist reviews histopathology results and advises participant of the results.
- Colonoscopist may refer participant for surgical resection (if cancer is detected).
- Colonoscopist reviews histopathology results and advises participant

Process step	Problem	Desired outcome
1. Performs diagnostic assessment/colonoscopy	✓ medical step	N/A
2. Prepares colonoscopy report	a Low reporting rate	Increase Data Lodgement rate
	b Not always identified that patient is a participant	Improve identification that patient is a participant
3. Sends colonoscopy report to Register	c Low reporting rate due to manual process	Improve Data Lodgement rate
4. The remaining steps	✓ medical steps	No register specific problems have been identified

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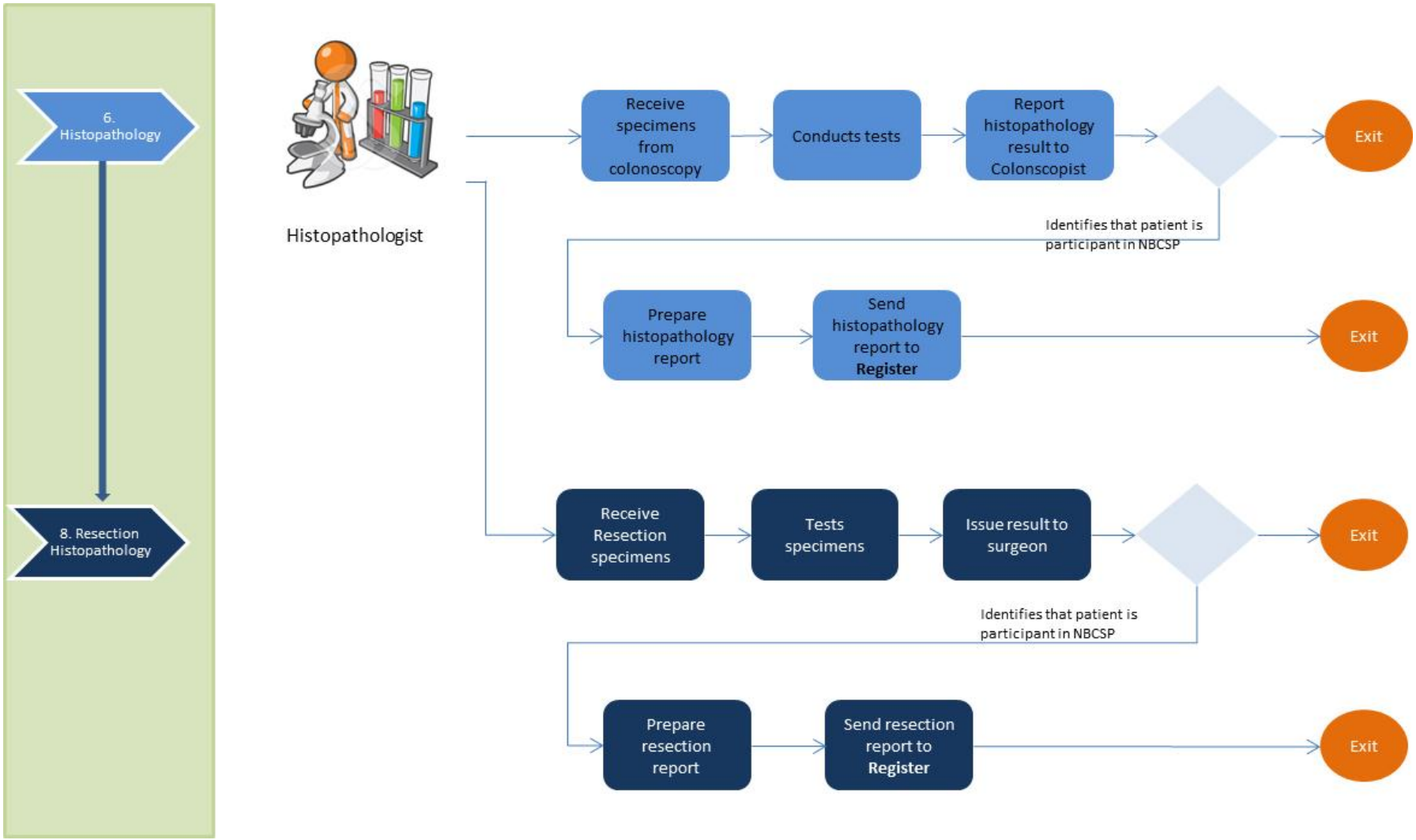
User pathway 5: Histopathologist



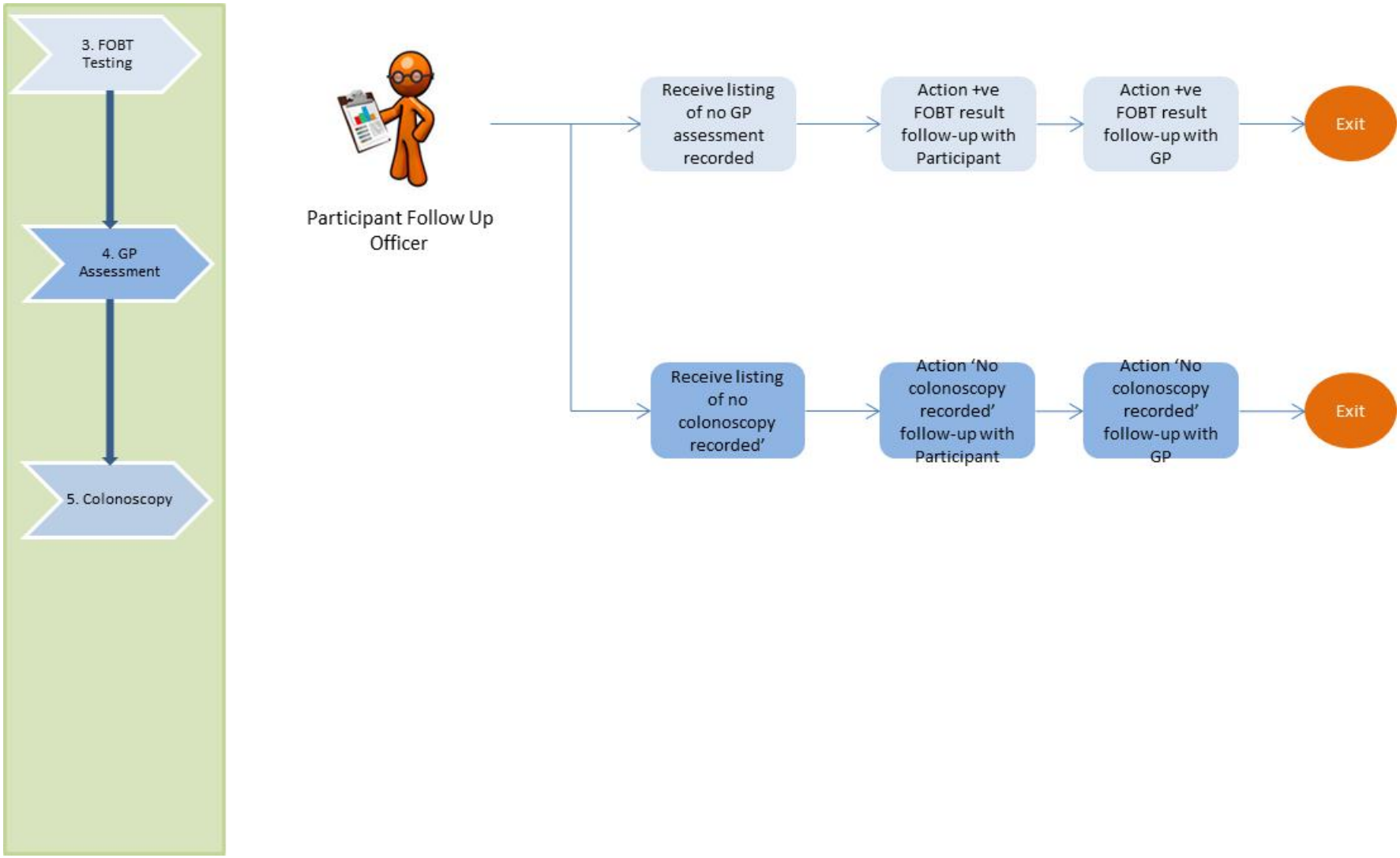
User pathway 5: Histopathologist – Hot Spot analysis

Overview:

- The Histopathologist receives the specimen post colonoscopy and performs tests.
- If the Histopathologist identifies that the patient is a participant in the NBSCP, they then prepare the Histopathology Report and send to the Register.
- The Histopathologist receives specimen post resection and tests.
- If the Histopathologist identifies that the patient is a participant in the NBSCP, they then prepare the Resection Report and send to the Register

Process step	Problem	Desired outcome
1. Receive specimens from colonoscopy, 2. conducts tests, 3. report histopathology result to colonoscopist	✓ Medical steps	N/A
4. Prepares Histopathology report	a Low reporting rate	Increase Data Lodgement rate
	b Not always identified that patient is a participant	Improve identification that patient is a participant
5. Sends Histopathology report to Register	c Low reporting rate due to manual process	Improve Data Lodgement rate
6. Receive specimens from resection, 7. conducts tests, 8. report histopathology result to surgeon	✓ Medical steps	No register specific problems have been identified
9. Prepares Resection report	a Low reporting rate	Increase Data Lodgement rate
	b Not always identified that patient is a participant	Improve identification that patient is a participant
10. Sends Resection report to Register	c Low reporting rate due to manual process	Improve Data Lodgement rate

User pathway 6: Participant follow-up function officer



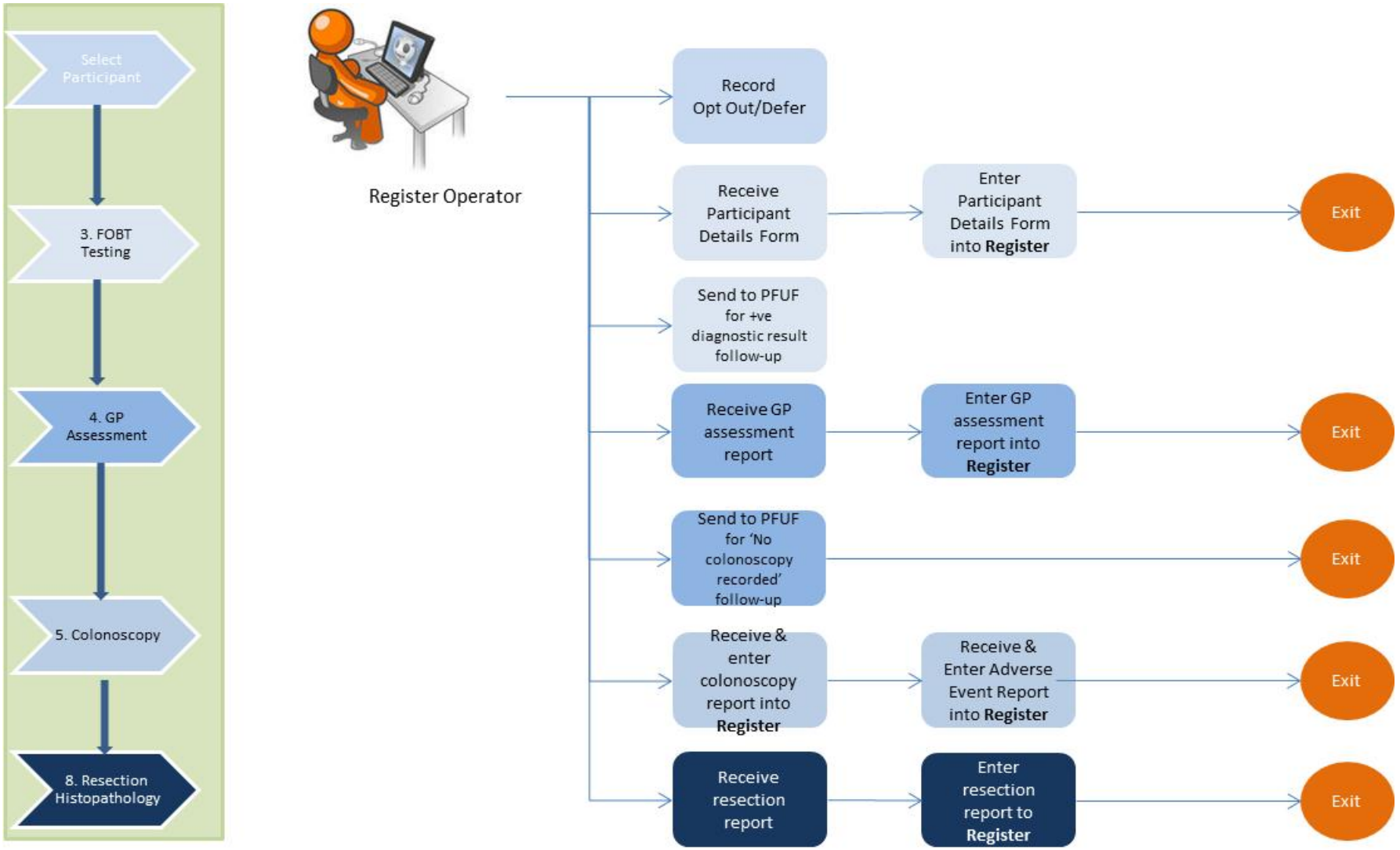
User pathway 6: Participant follow-up function – Hot Spot analysis

Overview:

- A GP Reminder letter is sent to the Participant and GP when a positive FOBT result is recorded by no GP Assessment is recorded.(61 days from the FOBT test). After 90 days from FOBT test, if there is no GP assessment report recorded, a listing is sent for PFUF
- PFUF access the Register and confirm that there is no GP Assessment recorded and then contact the participant and the GP. The Register is updated
- A Colonoscopy Reminder letter is sent to the Participant and GP when a positive FOBT result is recorded but a Colonoscopy Report is not yet recorded. (122 days from the FOBT test). A listing is sent for PFUF.
- PFUF access the Register and confirm that there is no colonoscopy recorded and then contact the participant and the GP. The Register is updated

Process step	Problem	Desired outcome
1. Receive listing from Register – No GP Assessment recorded	a Current information is not timely	Improve the provision of information
2. Follow-up Action - positive FOBT result with Participant	✓ No problem identified	N/A
3. Action positive FOBT result with GP	✓ No problem identified	N/A
4. Receive listing from Register- no colonsocopy recorded	b Current information is not timely	Improve the provision of information
5. Action 'no colonoscopy recorded' with Participant	✓ No problem identified	N/A
6. Action 'no colonoscopy recorded' with GP	✓ No problem identified	N/A

User pathway 7: Register operator



User pathway 7: Register operator – Hot spot analysis

Overview:

- All reports are received by paper and manually entered into the Register. Some forms are received as smart forms but need to be printed out and keyed into the Register.
- FOBT results are received electronically from the Contracted Pathologist.
- PFUF reports are manually generated and sent to PFUF
- Register operators update the register in response to contact from Participant.

Process step	Problem	Desired outcome
1. Records Opt Out/defer	a Manual data entry –costly, errors, human resource intensive	Automate where possible
2. Receives Participant Details form	b Manual process	Automate where possible
3. Enters Participant Details form	c Manual data entry –costly, errors, human resource intensive	Automate where possible
4. Refers for positive result follow up activity	d Manual process	Automate where possible
5. Receives GP Assessment Report	e Manual process	Automate where possible
6. Enters GP Assessment Report into the Register	f Manual data entry –costly, errors, human resource intensive,	Automate where possible
7. Refers for 'no colonoscopy recorded' follow up activity	g Manual process	Automate where possible
8. Receives Colonoscopist report	h Manual process	Automate where possible
9. Enters Colonoscopist report into the Register	i Manual data entry –costly, errors, human resource intensive	Automate where possible
10. Receives Histopathology report	J Manual process	Automate where possible
11. Enters Histopathology report into the Register	k Manual data entry –costly, errors, human resource intensive,	Automate where possible
12. Receives Resection Histopathology report	l Manual process	Automate where possible
13. Enters Resection Histopathology report into the Register	m Manual data entry –costly, errors, human resource intensive,	Automate where possible

7 KEY THEMES FROM STAKEHOLDER CONSULTATION

The following key themes were identified as part of the blueprint analysis when a group of stakeholders (representing health care professionals, government, AIHW and some advisory bodies) met to discuss the current program issues and opportunities to improve the register. Common terms were extracted from the minutes of this meeting and makeup the pool of words in the word cloud below. Members of the Bowel Screening Section were then asked to weight these terms as a measure of their importance. It can be seen that high weighting words are larger and signify a term that is of greater interest or concern. This technique was used to extract the following key themes that the blueprint should address:

1. Complete data

   That all program data is captured for participants, and that it is of good quality. Lack of complete good quality data is commonly recognised as the key reason that the effectiveness of the program is difficult to measure – Poor data as an input to reporting will always lead to poor intelligence out.

2. Accessible and transparent

   Program principles of accessible and transparent emphasises the intent of the program to provide access to information, access to the program services and openness in objectives and operations. Provide better feedback loop.

3. Automatic (& electronic) data capture

   Inefficiencies in manual paper based processes has increased motivation to a shift to electronic and automated capture and processing where possible. The theme is strengthened by the significant increase in screening beginning in 2015.

4. Identify participants

   One of the shortcomings of the current screening process is the inability for healthcare professionals to identify a program participant during the course of normal care.

5. Easy & minimal impact

   Without legislative mandate for participation there is an even greater impetus to define ICT enablement of the program that is simple, fast and non-disruptive.

8 BUSINESS REQUIREMENTS

#	Need	Rating
General		
1.	Provide interactive information and reporting back to stakeholders from the Register	Highly desirable
2.	The Register must support the National Bowel Cancer Screening Program Pathway incorporating: • Selection processing, • Invitation processing • Data capture/lodgement from external Healthcare Professionals • Data lodgement from contracted pathologist	Mandatory
3.	The Register must be able to Identify the target population to support a Population Based Screening Framework	Mandatory
4.	The Register must support B2G electronic data lodgement capability for external Healthcare Professionals	Mandatory
5.	The Register must support an alternate data lodgement mechanism for those users that are not able to utilise electronic reporting	Mandatory
6.	The Register must support the management of information relating to participants of the Program (e.g.– name details, address details, GP details)	Mandatory
7.	The Register must provide configurable invitation rules to support an invitation process to screen or rescreen (e.g. biennial invitation to rescreen from age 50 (2 yearly intervals))	Mandatory
8.	The Register must provide the ability to track the participants status through the pathway	Mandatory
9.	The Register must provide data out to support Program monitoring and evaluation and research (e.g. AIHW)	Mandatory
10.	The Register must provide configurable invitation rules to support a transition rescreening period for those aged 55 and 65 as we move to biennial screening	Mandatory
11.	The Register must provide correspondence out and the ability to manage the correspondence	Mandatory
12.	The Register must provide correspondence communication channel preferences for identified stakeholders	Highly desirable
13.	The Register must provide electronic reporting out to identified stakeholders	Mandatory

#	Need	Rating
14.	The Register must provide the ability to manage the status of a participant under exception based circumstances – (e.g. return mail, deceased processing, overseas etc). This may result in communications, closing of the participant record or manual follow-up activities.	mandatory
15.	The Register must provide authorised users with the ability to interrogate collected data to assist with policy development, Program monitoring and other Program reporting obligations. This must be consistent with the Data Release Policy for the Program.	mandatory
16.	Where electronic interaction is performed, the user must be identified and authorised to perform the function.	mandatory
17.	The Register must support the activities undertaken by Info line Operators and Register Operators	mandatory
18.	The Register must support the activities undertaken by PFUF	mandatory
19.	The Register must support Incentive payments to those Healthcare Professionals that lodge data for participants in the Program.	mandatory
Participant activities		
20.	The Register must allow participants to enter and update their own details (e.g name, address, GP details, communication preferences)	Highly desirable
21.	The Register must allow participants the ability to accept the invitation for the Program, electronically.	Highly desirable
22.	The Register must allow participants the ability to accept the invitation for the Program by paper.	Highly desirable
23.	The Register must allow the ability to record that a participant has elected to 'opt off' the Program and capture some details about why.	Mandatory
24.	The Register must allow participants to Opt off the Program electronically.	Highly desirable
25.	The Register must allow the ability to record that a participant has elected to 'defer' participation in the Program and capture some details about why.	Mandatory
26.	The Register must allow participants to defer participation in the Program electronically	Highly desirable
Selection & invitation activity		
27.	The Register must support the selection of participants to screen or rescreen based on specified criteria such as age. (The screening program applies to participants that have reached the age of 50 and they will then be invited to rescreen every 2 years.)	mandatory

#	Need	Rating
28.	The Register must provide the ability to not invite certain selected participants to screen or rescreen, based on information known about the participant (e.g. participant is already undergoing cancer treatment, participant has recently undergone a colonoscopy) (This data is available in state cancer registers and MBS)	mandatory
29.	The Register must provide the ability to pre invite selected participants	mandatory
30.	The Register must provide the ability to invite participants to screen or rescreen by their preferred communication channel	Highly desirable
31.	The Register must support the issue of the invitation kit including the FOBT kit	mandatory
32.	The Register must provide the ability to manually invite a participant to screen or rescreen	mandatory
33.	The Register must provide the ability to notify the GP (where known) when a participant has been invited to screen/rescreen	Highly desirable
FOBT Testing		
34.	The Register must provide the ability for the Contracted pathologist to identify and verify that the person is a participant of the Program	mandatory
35.	The Register must allow for electronic data lodgement of FOBT results from the contracted pathologist	mandatory
36.	The Contracted pathologist should provide results to GP electronically in most instances.	Out of scope
37.	The Register must provide the ability to issue reminders to continue along the pathway. These reminders issue to both participants and GP's based on the status of the participant's information.	mandatory
38.	The Register must provide the ability to record the acceptance of the invitation where paper acceptance has been provided	mandatory
GP Assessment		
39.	Provide the ability for a GP to identify that a patient has been invited to participate in Program and learn their status in the Program	mandatory
39 a	Provide the ability for a GP to reissue the FOBT kit for an invited participant.	mandatory
39 b	Provide the ability for a GP to bring forward a rescreen date.	mandatory
39 c	Provide the ability for a GP to 'opt on' a participant.	mandatory

#	Need	Rating
40.	Provide the ability for the GP to provide data to the register. This data should be provided electronically via B2G and not require the GP to log in to a separate interface.	mandatory
Colonoscopy		
41.	Provide the ability for the Colonoscopist to provide data to the register. This data should be provided electronically via B2G and not be required to log in to a separate interface	mandatory
42.	The Colonoscopist must be able to identify that a patient is a participant of the Program	mandatory
Histopathology		
43.	The Histopathologist must be able to identify that a patient is a participant of the Program	mandatory
44.	Provide the ability for the Histopathologist to provide data to the register. This data should be provided electronically via B2G and not require the Histopathologist to log in to a separate interface	mandatory
Resection histopathology		
45.	The Histopathologist must be able to identify that a patient is a participant of the Program	mandatory
46.	Provide the ability for the Histopathologist to provide data to the register. This data should be provided electronically via B2G and not require the Histopathologist to log in to a separate interface	mandatory
PFUF		
47.	Provide real time reporting to PFUF officers	mandatory
48.	Provide the ability to manage the participants case in the Register to ensure the Program's a duty of care in accordance with the Policy Framework PFUF guidelines.	Mandatory
Reporting		
49.	Provide information out to Healthcare Professionals about their participation in the Program such as benchmarking.	Highly desirable
50.	Allow Medicare Locals the ability to view and extract summarised data from the Register	Desirable
51.	The Register must provide activity based data to the NHPA in accordance with the Program policy framework	Mandatory
52.	The Register must provide activity based data to the State and Territory Government Health Departments in accordance with the Program policy framework	Mandatory
53.	The Register must provide activity based data to the AIHW in accordance with the Program policy framework	Mandatory

#	Need	Rating
54.	The Register must provide access to information about the Program to the general public to meets its Programs principles of openness and transparency.	Highly desirable
55.	The Register must provide the ability to analyse data for monitoring participant outcomes and evaluating Program effectiveness.	Mandatory
Data Lodgement		
56.	The Register must confirm that the Health Care Professional is authorised to lodge data for the Program. DHS is the registration authority	Mandatory
57.	Where B2G data lodgement is not possible an alternative electronic data lodgement function is required. This must support web based online lodgement of data by Healthcare Professionals.	Mandatory
58.	Where B2G system integration is not possible, the register must support an alternate participant verification mechanism	Mandatory
Operational Support		
59.	Provide filtered access to the Register for both Info Line operators and Register Operators to manage participants through the pathway such as: • Ability to lodge, view and update participant data • Ability to record communications and complaints • Ability to manage administrative functions • Ability to undertake business activity monitoring to support audit and compliance	Mandatory
60.	The Register must provide operational reports to support the operation of the Register,	Mandatory
Case management		
61.	A participant will be reinvited to participate in the Program on a biennial basis. Therefore a participant will have multiple screening records and each screening instance can to be tracked.	Mandatory
62.	The Register must support a phasing in of cohorts to transition to Biennial screening.	Mandatory
63.	The Register must support the management of rescreening dates on an individual basis.	Mandatory

9 DESIGN PRINCIPLES

Utilise natural processes

Incorporating themes of accessibility and usability, utilising natural processes embraces the concept of introducing ICT enablement capability that is “Zuhanden” – Something that *falls naturally to hand*. i.e. Not introducing complex cumbersome tasks that deviate from the task at hand.

Reusable

Components of the system and patterns of business practice should be composed to be continually reused by different consumers. Components that already exist should also be reused. Maximising reuse will aid in reducing costs, aligning common business practices, reducing time to market and increasing return on investment.

Interoperable

The areas of integration of the system should be based on industry best practice and incorporate open standards. This will allow for more flexible extension and change in the future and avoid locking the system into proprietary interface definitions or software vendor specific interfaces.

Manageability

Design for flexibility in operation and management. The future operating model may be multi-tenanted. In addition there will be tasks that the program owner may want active involvement in (such as reporting, auditing or policy development), and that other tasks (such as day-to-day operation) may be outsourced as a managed service.

Design for continuous evolution

Design with the recognition that change is inevitable. Business practices, business processes and program policies change - as such the system must be designed to be agile, flexible and change must be cost effective.

Automate and abstract

Automate tasks that are common, have a cost benefit, need to be defendable, are well defined and do not require human judgement. Abstract the decision steps in such a way that allows for transparency of decision making and easy management.

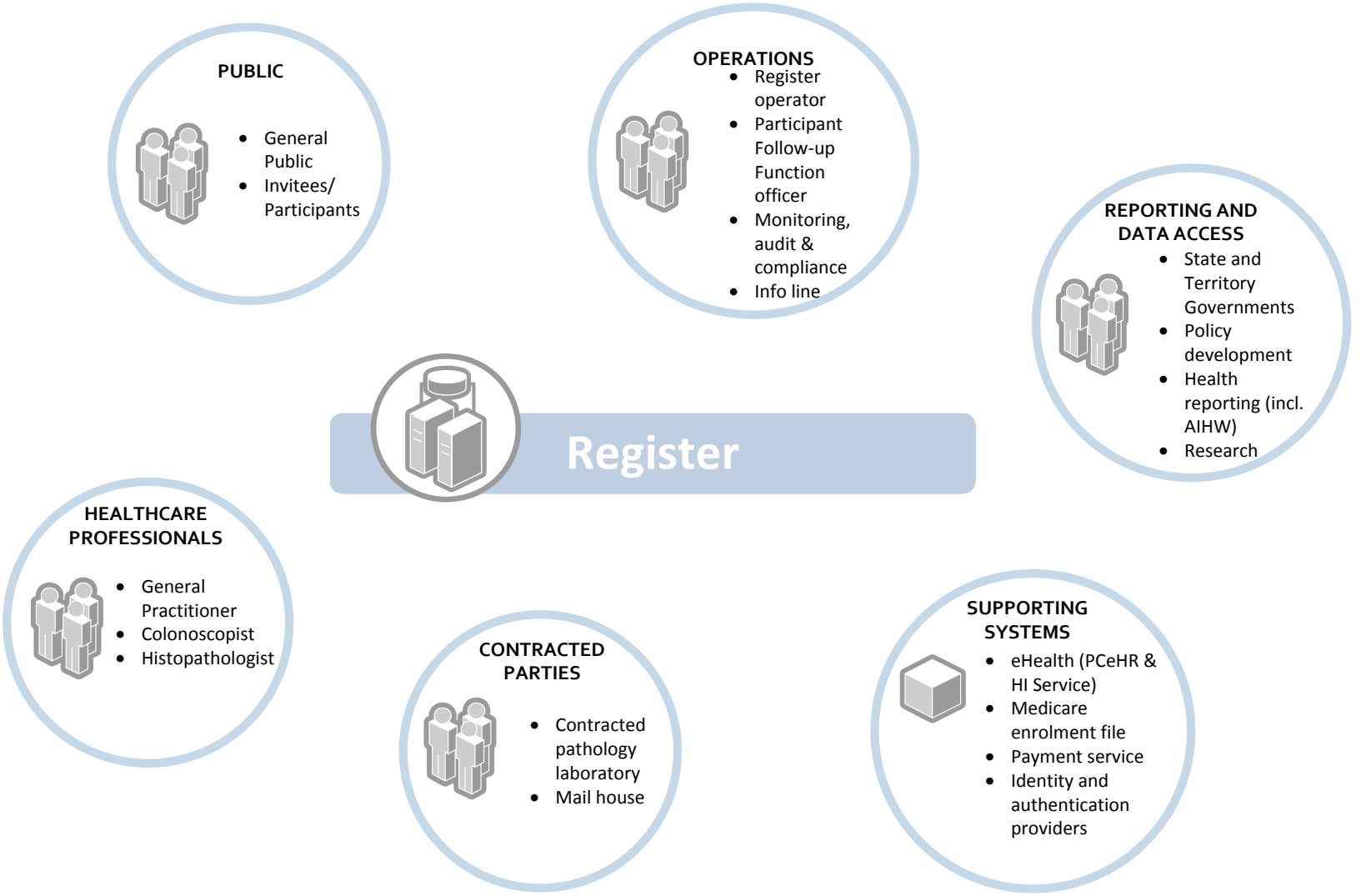
Consistent and current

Align with current health industry strategic practices and initiatives to ensure that the implementation is consistent and aligned with other activities and to ensure that the solution is up-to-date with current practices. This principle incorporates evidence based approach to *what works* and lessons learnt.

Quality and efficiency

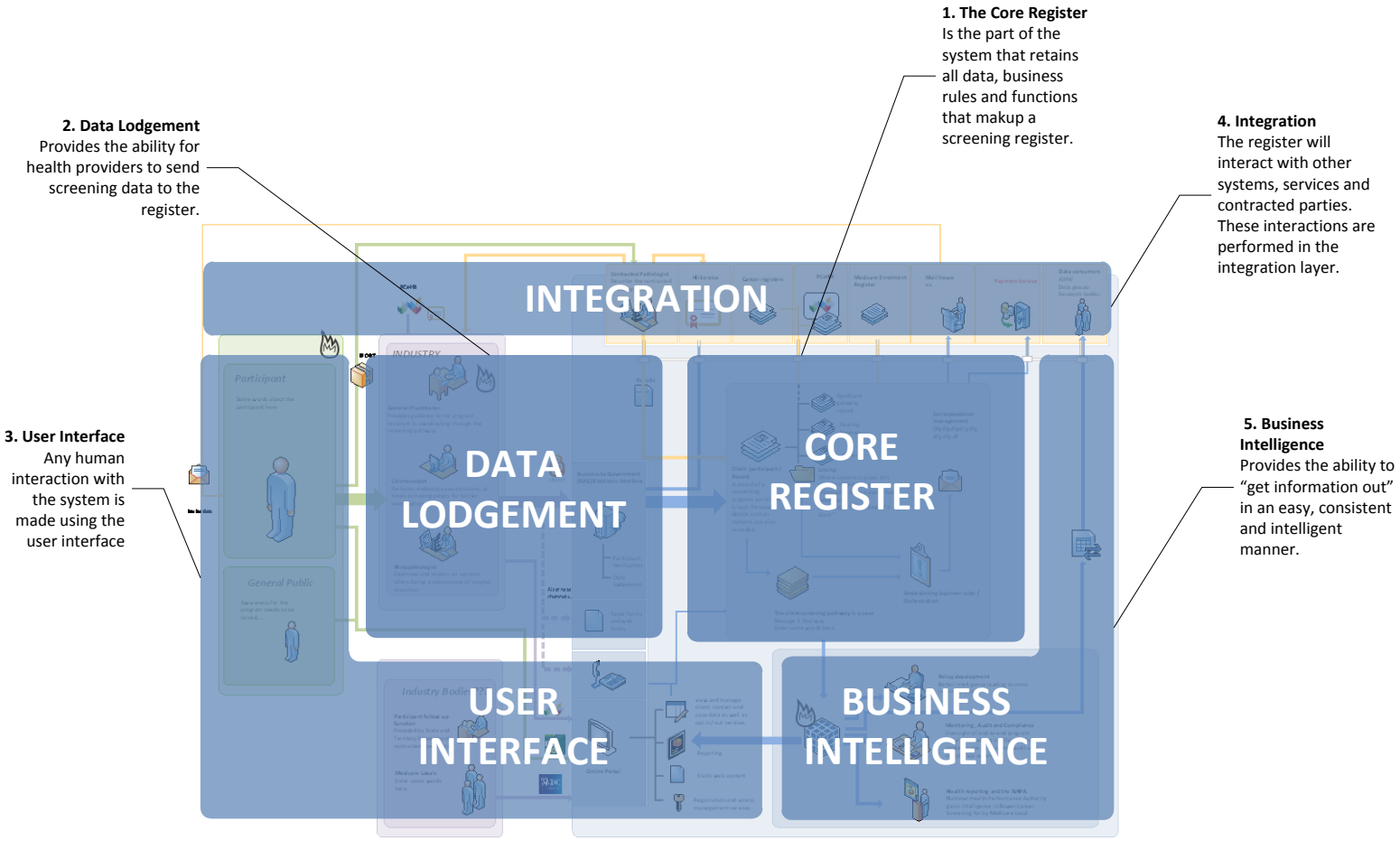
Design in consideration of emotive words such as: Seamless; accurate; high-quality; non-intrusive. Design should consider the avoidance of duplication, efficiency and cost effectiveness to gain the best outcome for the community, heath providers and the Government.

10 REGISTER USERS



11 SYSTEM DESIGN CAPABILITIES

The system design can be described as five distinct capability groupings as identified below. This section will describe each of these capability groupings in detail, describing the function, interaction with other components and how the solution will address the design drivers and principles.



Design capability 1: The Core Register - overview

Overview

The core register describes the primary elements of the system which are used to support the register functions. These elements include:

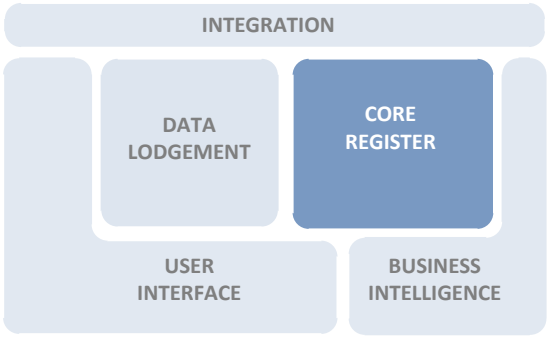
- Client (participant) record;
- Screening cases;
- Information linking;
- Underpinning business rules and workflow/process orchestration, and
- Correspondence management.

The core register is managed via the following channels:

- user interface
- Electronic business to Government (B2G) interface, and
- Paper and telephone is managed by the register operator and uses the user interface.

The core register integrates with:

- other systems to provide enabling functions (such as mail house), and
- a reporting and analytical environment.



Objectives

- Linking client data holdings to provide accurate and targeted decision making and reporting
- Automate common tasks to reduce the human resource reliance on standard register operation
- Provide flexibility in the screening process. Detaching the client record from the screening case and underpin with externally managed business and workflow rules

Characteristics of the current process

- Data is manually entered into the register
- The register does not exhibit flexible characteristics; significant system changes are needed to keep the system in alignment with program changes.

Relevant change drivers and pain points

D2 Increased screening rate

D3 Data Integrity/Quality Issues

D4 High operational cost

D7 Inconsistent and outdated technology

Relevant requirements

- R2, R3, R6, R7, R8, R10, R11, R12, R14, R16, R17, R23, R25, R27, R28, R29, R30, R31, R32, R33, R37, R38, R47, R48, R59, R60, R61, R62, R63,

Design capability 1: The Core Register - components

The core register is comprised of the following components. They provide the centralised data holdings of the register, and the business rules and process rules around the management of a screening case as well as the creation, modification, deletion and presentation of register information.

Client (Participant) record

The client record contains information on a consenting program participant. Information that is kept against the client record includes personal information (such as name, gender, age), location information, contact information including alternate contacts and correspondence preferences and linkage to GP. The client participation record will provide a single view of the client across multiple screening cases. This model will support screening cases that cross programs, such as cervical, or breast screening.

The client pathway is a case

Information collected against the client with regard to the screening pathway will be tracked and managed as a case. A case has a finite lifespan. That is, an event triggers the creation of a case and the case is managed until it is closed. The Government has commitment to an extension of the program by introducing biennial rescreening. As such, the case model will work well with each screening being handled as a separate case. If other screening programs adopt this solution in a multi-tenanted model then each can be treated as a separate case under the same principle. Data structured in such a way will provide the register with a "whole of life" perspective of the client which would be advantageous from the perspective of provision of targeted services.

Linking

Where privacy allows, client information will be linked with other information known about the individual. This will form the single logical view of a client and will allow for intelligent decision making regarding the services that the client is offered and the timing of those services.

Underpinning business rules & workflow/process orchestration

The register will utilise an underpinning business rules and workflow engine to "manage" events within the system.

Correspondence management

Notifications and letters generated during the screening pathway will be managed by a core correspondence management capability. Templates will be able to be authored by authorised personnel in a non-technical authoring environment.

Design capability 1: The Core Register -integration points

Integration with supporting systems

The core system will integrate with a number of supporting systems in order to achieve its objectives. As an example, the core system will integrate with the mail house in order to send correspondence.

Updates to the client record – Healthcare Professional data lodgement: Business to Government (B2G) Electronic Interface

Adoption of an electronic interface for updates to the client record will be encouraged. This will provide a simpler and less intrusive mechanism for the register to maintain information regarding program participants.

User Interface

Any human interaction with the register will be via the user interface.

Business Intelligence

A dedicated reporting and analytics platform will provide the ability to use a single common information repository to provide targeted reporting and analytics capability to program stakeholders.

Design capability 2: Healthcare Professional Interaction - Data Lodgement - overview

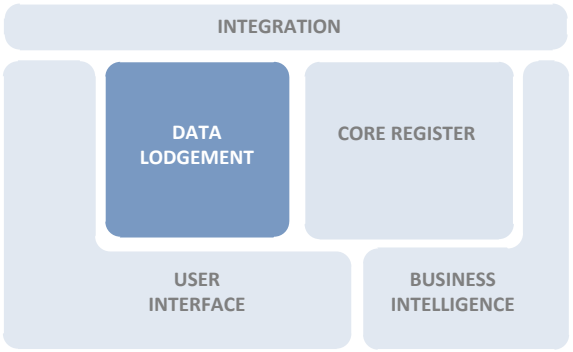
Overview

At several parts of the screening pathway information is collected from general practitioners, colonoscopists and histopathologists. The collection rate for this information to date has been very low and as such poor data collection has been identified as one of the most critical business driver for this blueprint.

It is commonly accepted that better data collection will lead to better reporting, more targeted policy decision making, and the ability to accurately assess the program effectiveness in saving lives through the early detection and prevention of bowel cancer.

The program will work with the software industry to encourage uptake of an electronic business to government (B2G) interface as the primary channel for lodgement of program related data. There will be two aspects of the solution:

- **Program participant identification**
  An electronic interface will allow healthcare providers to validate the participation status of their patients. Some identifying data will be submitted to the service and the response will identify participation as a positive or negative status. The verification can be performed in real-time as transactions are being processed, or in a bulk as a batch style process.
- **Data lodgement**
  The data lodgement electronic interface will allow providers to electronically transfer program related data to the register. The lodgement can be performed in real-time as transactions are being processed, or in a bulk as a batch style process.



Objectives

- Provide a nonintrusive mechanism for health providers to identify participants and lodge register data.
- Align with current health initiatives, and avoid introducing “yet another different software interface”

Characteristics of the current process

- Healthcare professionals use paper forms to send reports back to the register.
- Sometimes PDF “smartforms” are used which allows electronic submission – still with human intervention.

Relevant Requirements

R4, R16, R18, R35, R39, R40, R41, R42, R43, R44, R45, R46, R56,

Relevant change drivers and pain points

D5 **Inadequate Program data capture**

- Human resource intensive process
- Duplicate data entry
- Inefficient paper based process
- Inadequate identification of a program participant
- Lack of program awareness

Design capability 3: User Interface - overview

Overview

Any human interactions with the register will be performed via the user (system portal) interface. Responsibilities of the portal interface are broad, ranging from delivering educational and promotion information for the general public, disseminating reports and analytics material to various stakeholders, and for the maintenance, operational support, governance and day-to-day interaction with the register.

The system portal interface is split into the following high-level categories:

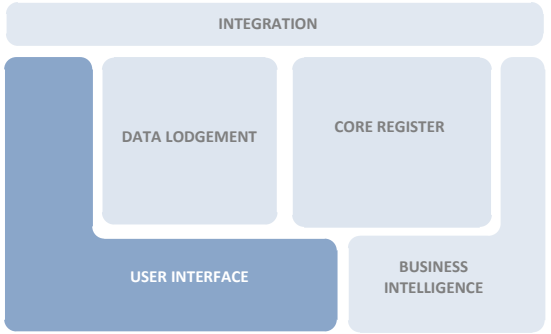
- Public website content
- Reporting & analytics
- View and management of the register

Underpinning these functions is a registration and access management capability.

The portal interface need not be provided solely via a single ICT capability; instead it is likely that each of the high-level categories may be individual systems in their own right. In alignment with the principles of *"Reusable", "Consistent and current"* and *"Quality and efficiency"*, the system portal interface may be composed of existing Government and Whole of Government (WofG) capabilities to form a composite solution that is consistent with other Government capabilities and provides a value for money proposition.

The *reporting & analytics* and *view and management of the register* categories will require the end-user to be known to the system and to have authority to access the information and functions. A roles-based authorisation model will be used which will leverage trusted identity and authentication providers:

- myGov for citizens;
- Vanguard and AUSkey for non-healthcare professional organisations and employees, and
- Nash for Healthcare professional organisations and their employees .



Characteristics of the current process

- There is a disconnect between the current website, the reporting mechanism and the register UI from a consistency, technical and operational support perspective.
- Operational support has a primary focus on "back office information processing"

Objectives

- System user experience across functional capabilities/systems must be seamless. Furthermore business processes must be modeled holistically, that is not limited to system/functional borders, instead crossing functional capabilities to form end-to-end natural processes.
- Disseminate workload to maximize benefit and reduce duplication. Allow data provided by external parties to be validated and lodged automatically, and shift the operational staff workload from redundant data entry to value-adding activities such as business activity monitoring, audit and compliance tasks

Relevant change drivers and pain points

D3 **Data Integrity/Quality issues**

D4 **High operational cost**

Relevant requirements

- R1, R5, R12, R13, R16, R17, R18, R20, R21, R22, R23, R24, R25, R26, R32, R38, R39, R47, R48, R49, R52, R54, R57, R58, R59, R60,

Design capability 3: User Interface - components

The three major components of the user interface:

Public website content

Information about the program will assist in raising awareness of the program and its benefits. To this end, the cancerscreening.gov.au website "look and feel", content and information architecture will be refreshed with a focus on user experience and in particular, providing a consistent experience when viewing web content, reports, or logging in to view or manage the register.

Reporting

Data sourced directly from the reporting environment can be presented in a standard or parameter-driven report format. That is, statically published hypertext (such as high level summarised statistics on program outcomes) and dynamically generated downloadable reports. Access to some reports will be restricted to user communities and organisations to provide targeted information relating to program outcomes and program participation. For example, Medicare Locals and healthcare providers will gain access to benchmarking and activity reporting for their regional area/organisation.

View and management of the register

Clients, program administrators and Participant Follow-Up Function contractors will be able to view and manage client and screening pathway details. All access to the register functions and data will be managed via roles-based access control.

Design Capability 4: Business Intelligence (BI) - overview

Overview

Enhancement of reporting is a major facet of the design of the register system. The key focal points for business intelligence are:

Reporting effectiveness

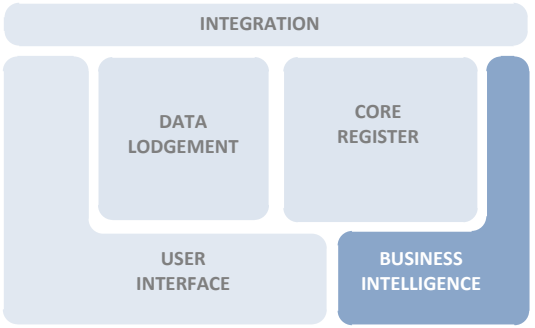
The effectiveness of reporting is dependent on the timeliness, quality and volume of data that is available. Design regarding more effective collection of data can is defined under the data lodgement section.

A single source of BI data accessed via common tools

All data collected will be managed in a single master repository (data warehouse) for use in gaining intelligence for the program. Information will be structured and tools will be provided to allow for regular pre-defined parameter driven reporting, online analytical processing and ad-hoc analytics.

Self-service

Various program stakeholders will have access to current and reliable program data in a self-service fashion



Objectives

As per the overview, the objectives for business intelligence are to focus on:

- Reporting effectiveness considering facets such as timeliness, quality and volume
- A single source of BI data accessed via common tools
- Self-service

Characteristics of the current process

- There is no targeted reporting for health professionals and other industry bodies
- Time delays of reports lead to poor operations (PFUF 12 week delay, jurisdiction reports up to 12 weeks)
- Data completeness and data quality issues lead to less accurate or reliable reporting.

Relevant change drivers and pain points

D6 **Poor reporting & inability to truly assess program effectiveness**

Relevant requirements

- R9, R13, R15, R16, R49, R50, R51, R52, R53, R54, R55

Design capability 4: Business Intelligence – components

Aspects of the design that provides this capability are:

Data Consumers

Authorised entities such as AIHW, Research bodies and Medicare Locals may have access to summarised/de-identified data in a raw format. This will allow for utilisation of the data in other external analytical environments where data can be “mashed-up” for other purposes.

Website reporting

Regular pre-defined reports will be made available through the website portal. This information will assist in increasing the education and awareness of the general public with regard to bowel cancer and the benefits of the program. Healthcare providers and State and Territory Government will also have access to targeted reporting on aspects of their own program participation (benchmarking).

Policy development

Those responsible for the program will have access to “data cubes” providing flexible interrogation of the program data. Access to this data will allow for evidence based policy development.

Monitoring, Audit and Compliance

Business Activity Monitoring (BAM) will allow program operators to have effective oversight of the register operation. Access to business activity data will provide assist with adherence to audit and compliance rules.

Health reporting and the NHPA

Other Health reporting bodies such as the NHPA can gain access to the reporting repository in order to meet their reporting requirements.

Design capability 5: Integration - overview

Overview

Integrate[1]: *To bring together or incorporate (parts) into a whole.*

In order for the register to provide end-to-end functionality there will be elements of the register that make better sense to be integrated as opposed to being built/configured. For example, a print/mail house capability is not a core function of the register and it would also not be cost effective to setup if it was done solely for the purpose of the register. Instead, an external print/mail house is contracted and thus an interface between the register and the print/mail house is needed.

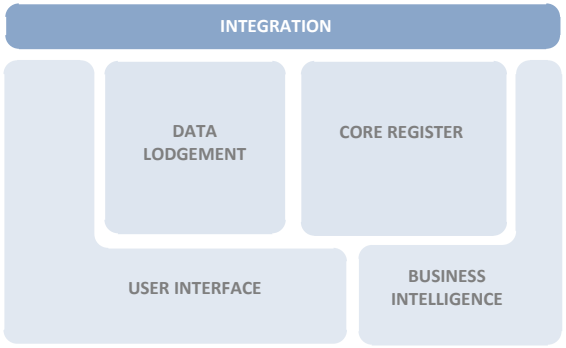
So what are the guidelines for integration?

When to integrate: A. Where the service sought is not core, or is a commoditised service; B. where the service sought is specialised in nature, or C. where the service sought would provide benefits of cost effectiveness, reuse, alignment and/or consistency.

Integration goals and rules: Aim for agility and avoid vendor lock-in, or implementation of proprietary interfaces. Aim for consistency and (open) standards-based approaches.

Identified services needing to be consumed by the register:

- Contracted pathologist laboratory
- Healthcare identifier service
- Other cancer registers (where possible)
- PCeHR
- Medicare enrolment Register
- Mail house service
- Payment service
- Data consumers



Characteristics of the current process

- There is a lack of integration with external data sources such as HI service, PCeHR and/or other registers.

Integration Objectives

As per the integration goals and rules (left): Aim for agility and avoid vendor lock-in, or implementation of proprietary interfaces. Aim for consistency and (open) standards-based approaches.

Relevant change drivers and pain points

D7 **Inconsistent and outdated technology**

Relevant requirements

- R10, R16, R19, R27, R28, R29, R30, R31, R33, R34, R37, R56,

Design capability 5: Integration – integration points

The following integration points have been identified as being required to support the register:

Contracted Pathologist

The Contracted pathologist is responsible for the initial screening steps of the screening pathway - In particular the testing of the FOBT kit. All test results are electronically returned to the register to initiate the monitoring of the screening process. These result will trigger the automatic creation of a client record (where one does not already exist) and will trigger the creation of a screening case. See "The client pathway is a case" under *Design capability 1: Core register*.

Healthcare Identifier (HI) Service

Where legislation permits, the HI service may be used to validate personally identifiable information provided to the register.

External client information (PCeHR & Cancer registers)

The linking service will not be limited to information retained within the register (or host organisation). Where possible, other external information repositories will be linked in order to provide a more targeted approach to managing the screening pathway.

Medicare enrolment directory & DVA client register

The Medicare enrolment directory and the DVA client register are the authorative sources of person data (births & deaths) for invitation to participate in the program.

Mail House

The incumbent mail house provides mailing facilities for the FOBT kit as well as other letters that are sent to clients and providers as a part of the program.

Payment Service

The payment service is a service able to make and reconcile incentive payments to qualified healthcare providers.

Data Consumers

Authorised reporting and research bodies such as the Australian Institute of Health and Welfare (AIHW) will gain access to raw, summarised or de-identified data as per agreed program controls.

12 REFERENCES AND DEFINITIONS

Definitions, Acronyms, and Abbreviations

Term	Description
AIHW	Australian Institute of Health and Welfare
DHS	Department of Human Services (formerly Medicare)
DVA	Department of Veterans Affairs
FOBT	Faecal Occult Blood Test
GP	General Practitioner
Health	Department of Health
HI	Health Identifier
ICT	Information and Communication Technology
NBCSP	National Bowel Cancer Screening Program
NBCSPR	National Bowel Cancer Screening Program Register
PCeHR	Personally controlled eHealth record
PFUF	Participant Follow-up Function.
WofG	Whole-of-Government
WHO	World Health Organisation