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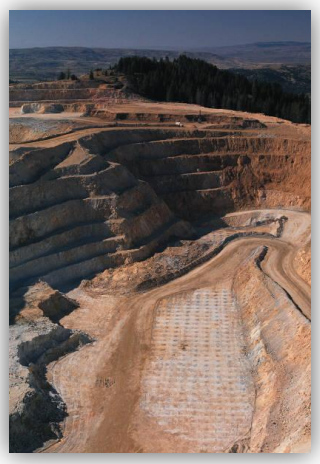
Finding Meaningful Measures for a Hard-to-Measure Discovery Team

This case study is for educational purposes only and shouldn't be adopted as an off-the-shelf performance measurement solution. Each team's performance results and measures are unique to their own purpose and priorities. All details have been changed to preserve anonimity.

About the team

The discovery team is a team of geological engineers whose primary focus is to find new potential resource discoveries in new locations (that is, not from existing known deposits) for its multi-national mining company.



The discoveries include such resources as diamond, copper, iron ore, nickel, bauxite, gold and aluminium.

This team resisted measurement for a long time, their argument being that it's unfair to measure them on outputs they can't predict or control, and that can take many years to reach maturity. Often it can take 15 years or more to determine the viability of a new discovery. How can they guarantee profitable discoveries when they don't know what's actually in the ground until it's mined?

STEP 1: Get your team customer-focused

Step 1.1: What are the team's outputs?

The primary outputs of the discovery team are:

- New discoveries (the sites themselves)
- Reports on the resource profile of new discoveries

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Step 1.2: Who do they give these outputs to?

The discovery team provides their output to different product groups within the corporation, depending on the nature of the mineral deposits in the new discoveries. Each product group focuses on a specific type of resource, e.g. the Diamond Product Group, the Aluminium Product Group, the Bauxite Product Group.

Output	*Product Groups*
New discoveries (the sites themselves)	✓
Reports on the resource profile of new discoveries	✓

Step 1.3: Create "Customer Personas"

For their key contacts within each of the Product Groups, who the discovery team provide their outputs to, they created a Customer Persona to “bring these customers to life”:

Customer Persona	*Description*
Mike Greenfield 	Mike is the Director of a Product Group within the Mining Corporation. He has an entrepreneurial spirit, a track record of managing highly profitable mines and a genuine growing interest in social sustainability. Mike believes in providing long-term jobs for people, supporting the local economies that his mines are located in. He certainly won’t tolerate an unprofitable mine, but he spends almost half his time working with local community groups to engage them in managing the impacts of commissioning, operating and decommissioning mines affecting their communities.

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STEP 2: Narrow down the team's most important outcomes

Step 2.1: What matters most to customers?

The discovery team has only a dozen or so customers, the Directors of each of the Product Groups in their corporation. Once a week for a few weeks, each of the Senior Geological Engineers in the team visited or called a Director and simply asked them to list the top 3 to 5 most important outcomes they want from a discovery team.

Collating their data, the discovery team identified six unique 'service attributes' important to their customers:

- Enough opportunities in the discovery pipeline
- Being kept informed about opportunities in the discovery pipeline
- Value of opportunities in the discovery pipeline
- Profitability of new discoveries
- Turnaround time of a new discovery
- Collaboration between discovery team and product teams

Step 2.2: How well is the team doing these things?

The discovery team constructed a quick survey to get quantitative measures of the relative importance and satisfaction of their customers with these six attributes of service. They then arranged for one of their administrative officers to call each of the Product Group Directors, explain briefly why the discovery team was doing this, and then to ask the Directors to rate their importance and satisfaction.

Within 3 weeks (after a bit of chasing around to pin down the busy Directors) the adminstrative officer collated the data for the discovery team:

Key	Attribute of Service	Satisfaction	Importance
1	Enough opportunities in the discovery pipeline	5.62	5.54
2	Profitability of new discoveries	5.08	6.31
3	Value of opportunities in the discovery pipeline	4.08	5.62
4	Turnaround time of new discoveries	3.08	6.31
5	Being kept informed about opportunities in the discovery pipeline	3.62	4.46
6	Collaboration between discovery team and product teams	4.69	5.15

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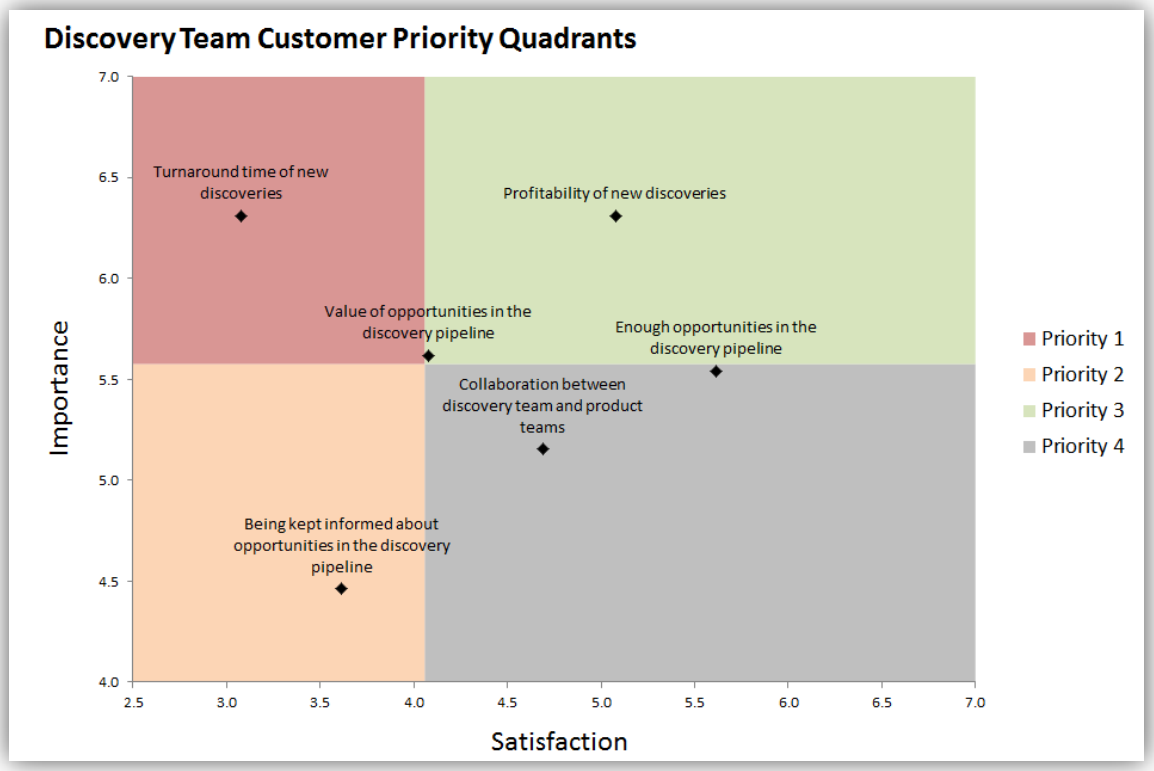
Step 2.3: What are the team's priorities?

Even though there were only six attributes of service, it was still clear to the discovery team what their priorities were:



Priority number 1 was the turnaround time of new discoveries. This needed to speed up somehow. Priority number 2 was value of opportunities in the discovery pipeline. They needed to produce better quality opportunities and more quickly weed out the opportunities that were too small, too costly to commission and operate, or had deposits of lower quality.

STEP 3: Uncover the team's points of highest leverage

Step 3.1: Outline the team's process

The discovery team's process is:

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Process name:	New Discovery Exploration
Purpose:	To add value to the company by discovering new mineral resource deposits that become long term profitable mines.
Owner:	Chief Exploration Engineer
Start point:	Desktop analysis of geological data to identify potential deposits
End point:	Hand over the new discovery to the appropriate Product Group
Stages in the process:	1. Identification of potential sites to explore 2. Assessment of the existence of targeted mineral deposits and shortlisting best prospects 3. Testing of targeted mineral deposits to identify mineral profile 4. Estimation of quantities and extent of mineral deposits 5. Evaluation of economic viability to develop the site 6. Hand over the new discovery for commissioning
Process outputs:	• New discoveries (the sites themselves) • Reports on the resource profile of new discoveries
Stakeholders:	• Product Groups • Partner Exploration Companies • Local communities • Local ecologies and environment • Mining Corporation

Step 3.2: Draw the cross-functional process

The process flowchart in more detail:

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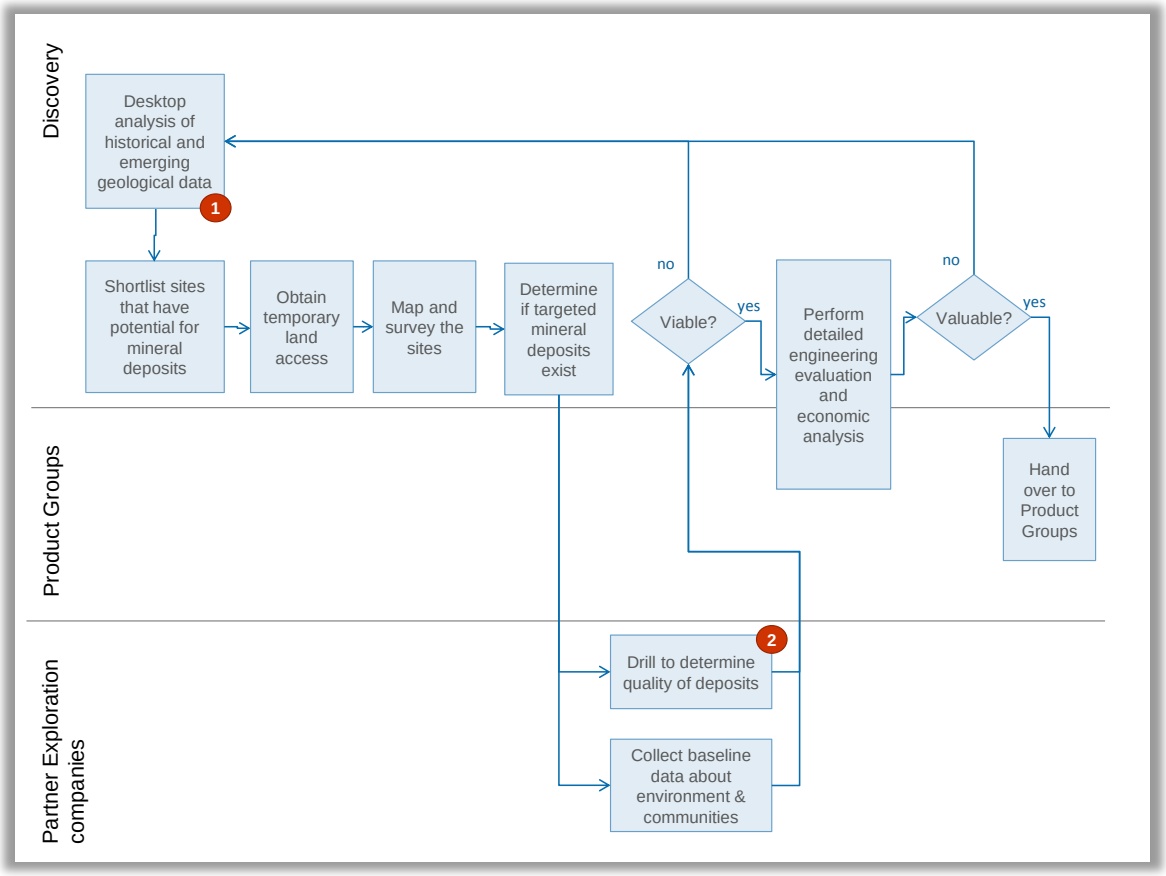

Step 3.3: Analyse the process for disconnects

The discovery team identified four disconnects they believe have highest leverage in moving higher value opportunities more quickly through the opportunity pipeline:

1. Some targeted minerals are typically hard to find potential sites for.
2. A lot of opportunities prove to be not viable, but it takes a lot of work and a lot of time to find this out.

STEP 4: Clearly map the team's most measure-worthy results

Step 4.1: Translate the process purpose into results language

The discovery team's process purpose focused them on the ultimate result of their work:

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Process purpose	*Performance Results*
To add value to the company by discovering new mineral resource deposits that become long term profitable mines.	New discoveries contribute disproportionately to global production of their target resource.

Step 4.2: Translate the customer priorities into results language

The discovery team translated their customers' priority service attributes into the following performance results:

Customer Priority Attributes	*Performance Results*
Value of opportunities in the discovery pipeline	Opportunities in the pipeline represent large deposits of targeted minerals. Opportunities in the pipeline represent high quality deposits of targeted minerals.
Turnaround time of a new discovery	Opportunities move quickly through the pipeline from initial testing to handover.

Step 4.3: Translate the process disconnects into results language

The discovery team translated their process disconnects into the following performance results:

Process Disconnects	*Performance Results*
Some targeted minerals are typically hard to find potential sites for.	Elusive targets are easier to find.

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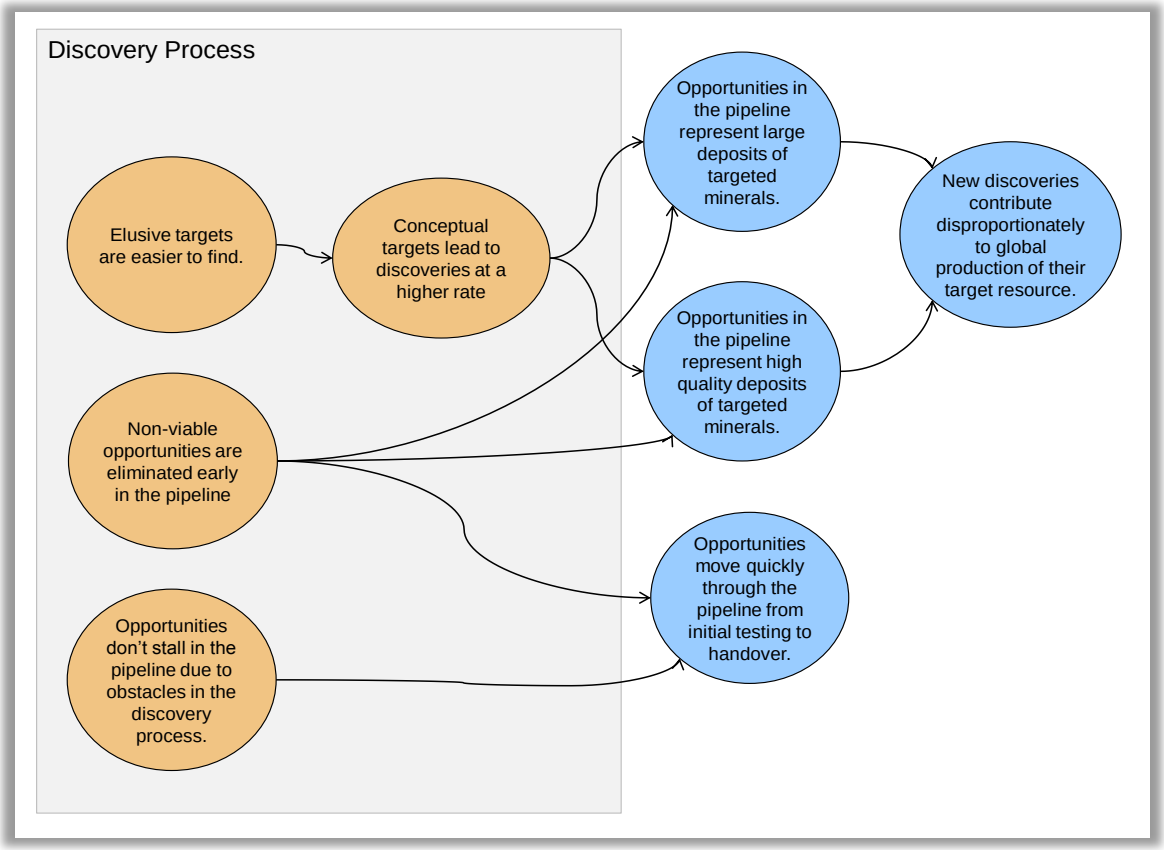
A lot of opportunities prove to be not viable, but it takes a lot of work and a lot of time to find this out.	Non-viable opportunities are eliminated early in the pipeline. Conceptual targets lead to discoveries at a higher rate. Opportunities don't stall in the pipeline due to obstacles in the discovery process.

Step 4.4: Create a results map

The following Results Map brings together the discovery team's collection of new performance results:



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STEP 5: Engage the team in designing their own measures

Step 5.1: Design measures for each result

The discovery team used the PuMP Measure Design template to find the best measures for their collection of Performance Results. PuMP is a performance measurement methodology. Read more at *http://www.staceybarr.com/pump*.

For example, the Measure Design for "Opportunities don't stall in the pipeline due to obstacles in the discovery process." produced 2 performance measures:

begin with the end in mind	Opportunities don't stall in the pipeline due to obstacles in the discovery process.			
be sensory specific	• Land access does not hold up the progress of an opportunity. • Equipment not being available does not hold up progress of opportunities. • Qualified engineering personnel not being available does not hold up progress of opportunities. • Opportunities are actively being researched or drilled or analysed or assessed – something active is always happening to move the opportunity forward in the pipeline			
find potential measures	*potential measures*	*strength*	*feasibility*	✓
	1. Percentage of opportunities held up by land access problems.	M	H	
	2. Percentage of opportunities held up by equipment problems.	M	H	
	3. Percentage of opportunities held up by personnel problems.	M	H	
	4. The average number of days that new opportunities are not actively worked on due to obstacles such as land access or equipment availability	H	M	✓

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check the bigger picture	• The number of days that an opportunity is not worked on might be in the hundreds.
name the measure(s)	Opportunity Stall Time = The average number of days that new opportunities are not actively worked on due to obstacles such as land access or equipment availability

Step 5.2: Prepare the measures for implementation

The complete set of performance measures chosen for the reearch team's Performance Results are:

Performance Results	*Performance Measures*
New discoveries contribute disproportionately to global production of their target resource.	• New Discovery Contribution = The ratio of the percentage of deposits represented by new discoveries to the percentage of global production produced by new discoveries, by commodity
Opportunities in the pipeline represent large deposits of targeted minerals.	• Opportunity Pipeline Deposit Size = The average estimated deposit size of all opportunities currently in the opportunity pipeline
Opportunities in the pipeline represent high quality deposits of targeted minerals.	• Opportunity Pipeline Deposit Quality = The percentage of all opportunities currently in the opportunity pipeline that match all criteria for Tier 1 discovery
Opportunities move quickly through the pipeline from initial testing to handover.	• Opportunity Pipeline Speed = The average number of months it takes for opportunities to move from initial testing (Stage 2 assessment) to handover to a product group
Elusive targets are easier to find.	• Elusive Targets Found = Number of elusive targets identified through Stage 2 assessment • Elusive Target Success Rate = The percentage of non-defect elusive target opportunities that are successful at each milestone in the pipeline
Non-viable opportunities are eliminated early in the pipeline.	• Opportunity Success Rate = The percentage of non-defect new opportunities that are successful at each milestone in the pipeline

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Performance Results	*Performance Measures*
Conceptual targets lead to discoveries at a higher rate.	• Conceptual Target Conversion Rate = The percentage of target opportunities identified at Stage 2 assessment that ultimately become a new discovery handed to a product group
Opportunities don't stall in the pipeline due to obstacles in the discovery process.	• Opportunity Stall Time = The average number of days that new opportunities are not actively worked on due to obstacles such as land access or equipment availability

Next steps…

The next steps for the discovery team were to define the data and calculation requirements for their measures, and begin reporting them and using them in monthly team meetings.

About implementing performance measures…

This case study has demonstrated a process for how to identify what is worth measuring, specifically for hard-to-measure teams whose performance results or goals are not easy to define.

But **there are more steps in the performance measurement process** that follow on from selecting the performance measures, including sourcing the data, computing the measures, graphing them, reporting them and interpreting and using them to improve performance.

The PuMP Blueprint is a methodology to support this entire performance measurement process. When your team has successfully reached this point, **PuMP is a logical next step** for them. For more information:

http://www.performancemeasureblueprint.com/