



Monitoring and Result Measurement for Adaptive Programming

How to Use Data to Manage a Market Systems Development Program: **Lessons from PRISMA**







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Using monitoring data to improve interventions is harder than it seems. Decision-makers are often busy implementing activities, unclear about their roles in data collection and analysis, and uncertain what data matters most or when. PRISMA, an AUD77 million agricultural Market Systems Development (MSD) programme funded by DFAT Australia, has encountered these challenges. With the programme completing its first five-year phase, this case study shares ten key lessons divided into three sections: shaping the culture, developing systems, and top management decisions. These lessons aim to help program, sector and intervention managers make better use of monitoring data to improve interventions.

Shaping the culture

1. Explain to sector teams what PRISMA means by 'data' and what they gain from gathering it. When PRISMA began, sector teams were unsure if data gathering was part of their job or the responsibility of the program's measurement team. As a result, they gathered little monitoring data.

One reason for this was that sector teams misunderstood what PRISMA's managers meant by 'data'. Sector teams thought of 'measurement' and 'data' only as baseline studies and impact assessments, which in many programmes are led by measurement specialists. To change this, PRISMA started explaining as part of its induction training that 'data' also includes information about the progress and quality of PRISMA's interventions. As such, data about the progress and quality of interventions is best gathered by sector teams.

- 2. Give sector teams clear roles in gathering data. Even when sector teams are willing to collect and analyse data, role ambiguity can reduce their involvement. For each indicator therefore, PRISMA now makes an individual staff member responsible for data gathering². Sector teams (as opposed to measurement specialists) are expected to gather data sourced from the businesses and government agencies PRISMA works with (the program's results measurement manual states this explicitly). More importantly, senior managers reinforce this expectation in their day-to-day conversations with sector teams.
- 3. Let sector teams decide when data gets gathered. PRISMA's sector teams manage their budgets for monitoring and impact assessment activities, and decide when to monitor and assess the impact of their interventions. They obtained this responsibility when their managers recognised the value of them getting data on time to make decisions. Sector teams now integrate regular monitoring with regular field visits, and during partner meetings. With many of PRISMA's target sectors involving one annual planting season, sector teams have 1-3 month windows after harvest time in which to gather yield data (one of the major components of impact assessments) and use it to improve their interventions. Greater involvement in

¹ This is firstly because sector teams, who are the core implementation staff divided into teams based on different commodities (e.g. Maize, Coffee) or cross functions (e.g. ICT, Finance) regularly meet with the sources of this data – that is, the businesses and government agencies PRISMA partners with. It is therefore the sector teams – not measurement specialists – who gain the trust needed to access sensitive information from partners. Secondly, when sector teams gather this data themselves, they are more likely to use it to improve their interventions.

² Indicators PRISMA wishes to track are recorded in intervention-specific Measurement Plans, which sector teams are responsible for updating.



4. Encourage sector teams to add questions to impact assessments. Early in its first phase, PRISMA faced another challenge: sector teams were rarely using impact data for decision-making. Managers set out to uncover the reasons why.

It emerged that impact assessments were simply not providing the information that sector teams needed to improve their interventions. Looking deeper, PRISMA found that its measurement specialists, like those of most programs, were preparing impact assessment questionnaires which tended just to quantify and attribute an intervention's impact. They rarely included questions aimed at improving the intervention, seeing this as the sector team's role. At the same time, they were less likely than sector teams to know what information was required to improve the intervention. Realising this, PRISMA changed the way of designing impact assessments. Sector teams are now encouraged to add their questions. By doing this, PRISMA has made its impact assessments a key source of sector team insight, as demonstrated below in Boxes 1 and 2.

5. Sharing lessons from field reports and impact assessments should be part of someone's job. Sector teams lack time to read each other's field reports and impact assessments. However, sharing key transferable insights across sectors is an important part of helping the program to improve its interventions. PRISMA is therefore considering whose responsibility this cross-sector information sharing should be, and how to incentivise it.

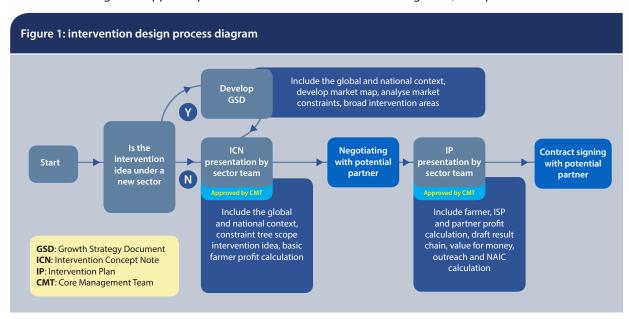
As part of its research into a new target sector, PRISMA compiles a Growth Strategy Document (GSD)³ which presents its diagnosis of constraints and a strategy for tackling these constraints. Sector teams generally find the GSD helps them decide where and how to intervene. However, many staff feel obliged to keep updating these long documents, which is of limited usefulness and becomes a time-consuming burden. PRISMA is considering changing this requirement.

For each intervention, the program also creates a 'constraint tree' diagram (sometimes called a 'problem tree'), summarising constraints and guiding staff towards interventions which tackle the most significant constraints by addressing their root causes. Updating constraints trees would be (1) quicker than updating long sector strategy documents, especially for non-native English speakers, and (2) more useful, as the target audience (senior managers and programme reviewers) are more likely to find time to read a diagram than a twenty-page document. It could include footnotes explaining the sources of the data for each box in the constraint tree, so that the diagram remains evidence-based.

³ The GSD presents the rationale behind working in a particular sector or commodity, including an analysis of the market actors, constraints and opportunities for pro-poor growth and intervention areas. It tends to be a 25-30-page document.

Developing systems

6. Clear, collaborative intervention designs help sector teams to accept scrutiny and failure. Sector teams often resent being "policed" by a program's measurement team, and challenge the latter's data when it identifies issues, rather than using it to improve the intervention. To address this, PRISMA has made its intervention design and approval process more collaborative and more rigorous, as explained below.



As already discussed, PRISMA's measurement specialists and sector teams have identified several ways to collaborate during the intervention design and approval process. Measurement specialists help sector teams to analyse market constraints, scope intervention ideas, and draw results chains. They also work together to estimate how many farmers will profit from changes brought about by the intervention, and by how much. PRISMA's intervention design process also contains several features which ensure interventions are rigorously designed. Firstly, sector teams are required to draw a constraint tree and a results chain, which articulate the teams' assumptions and show how the proposed intervention addresses the root causes of farmers' low incomes. Sector teams further develop their intervention plan by calculating the profits farmers can expect to make by applying a new agricultural input or practice, and by presenting the intervention concept to PRISMA's Core Management Team for approval.

Designing interventions with this level of collaboration and rigour has a cost; it takes six to nine months to get an intervention from the idea stage to final approval. However, PRISMA's staff believe time invested here is worthwhile. Firstly, better-designed interventions tend to achieve better results. Secondly, as explained by PRISMA measurement specialist Arif Kurniawan, "When the results measurement team understands sectors and interventions better, we're better at developing monitoring tools and measurement plans, and interpreting what we see in the field while monitoring." Finally, rigorous, collaborative intervention design reduces the concerns of sector teams about being held responsible for bad intervention design. As a result, when monitoring data uncovers an issue with an intervention, team members find it easier to identify the problem and use the data to improve address it and improve their intervention.

7. Quality management tools allow programs to compare intervention performance objectively. MSD programs necessitate building strong relationships with businesses and government actors in target sectors. A disadvantage of this is the potential for staff to become too attached to interventions and partners, which can make ending an intervention difficult and exiting a sector altogether even harder.

PRISMA has often faced this challenge. Seventeen of its 32 sectors have underperformed at some point, and to make best use of its resources the program needed a process for reviewing performance in each of its target sectors. This sector review process also needed to be annual, rigorous and objective, aimed at allowing managers to decide when to exit a sector and when to continue or increase investing, while minimising mistakes and internal disagreements.

Figure 2: How PRISMA categorises subsectors using Quality Management Tool (QMT) scores

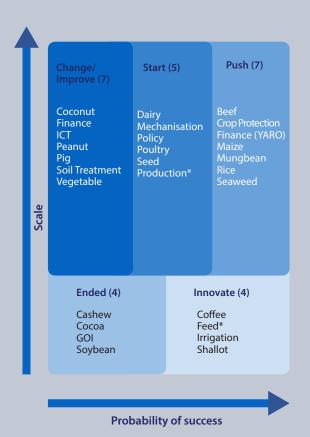


Illustration of additional results because of dropping and adding sectors using QMT



The process PRISMA created has one especially interesting feature: its use of data. Each sector receives a score against the same criteria, allowing managers to compare costs and results between sectors objectively. PRISMA calls its criteria and scoring process the 'Quality Management Tool'. The criteria, and an example of a sector scored against the criteria, are shown in the Annex.

Annually, PRISMA's Core Management Team uses data from the Quality Management Tool scores to review its portfolio of sectors and put them into one of the following categories:

- Push: the market analysis of these interventions is good, as is their impact; they show signs of effecting systemic change.
- Let flow: interventions are designed well, based on good market analysis. Too early to detect positive impact (mostly applicable for interventions less than six months old).
- Change or improve: interventions have sufficient market analysis and mediocre impact; they need modifying or replacing.
- Under observation or innovate: interventions need further market analysis and/or major revisions. Intervention activities, results chains and/or choice of partners may need revising.
- **Drop or end:** interventions have failed, in terms of innovation and partner. No further investment.

The Quality Management Tool has brought PRISMA several benefits, the first being improvements to its results and value for money. Figure 3b is a hypothetical illustration of the impact if PRISMA had not dropped and added sectors using QMT. Up to the end of 2017, PRISMA dropped 15 full sectors⁴ (or most of the interventions in the sector). These sectors benefited 21,000 households up to June 2017, with a further projection of 11,000 till the end of 2018. If PRISMA had not dropped some sectors and continued with others, an additional 10,000 households would have benefited, making a total projection of 21,000. However, PRISMA added or reinforced 12 sectors⁵ during that time, resulting in a projection of 65,000 households till end of 2018. This adaptive approach resulted in 55,000 more households benefiting.

Secondly, PRISMA's Quality Management Tool makes the program's investment criteria transparent. As a result, investment decisions cause less controversy among staff, and

⁴ Dropped sectors are: Anggur Merah, Beef, Cashew, Cassava, Coconut, Feed (all NTT); Coconut, Extension Services, Mango, Soyabean (all NTB); Cassava, Extension Services, Fish, Mango, Soybean (all EJ). Not all sectors were dropped at the same time.

⁵ New sectors are Beef, GOI, Maize, Vegetable (all NTB), Coffee, GOI, Rice, Vegetable (all EJ), GOI, Vegetable (both NTT), Rice (P), Rice (WP). Not all sectors were added at the same time.

although some sector team staff still cling to failing interventions, more want to move to sectors which can deliver higher results. High quality management scores have become a source of prestige among colleagues.

A third benefit of PRISMA's review process is that sector teams know what results their sectors will be assessed on and when, incentivising them to monitor these results. PRISMA has therefore given serious consideration to which indicators to include in its Quality Management Tool.

Notably, systemic change and gender-related indicators encourage sector teams to focus on sustainability and women's empowerment, not just outreach. At the same time, process indicators assess the quality of an intervention's results chain, constraint tree and risk assessment, and how up to date these are. This frees up time for the sector teams to reflect on strategy and to document changes.

8. Management information systems help to analyse, aggregate and share data. A recurring issue raised by program staff is that they gather large volumes of data but fail to spot key trends. For PRISMA's Core Management Team, which oversees 145 interventions across 24 sectors⁶, digesting the quantity of available information has been particularly challenging.

Identifying program-wide issues is essential to project success. To do this, rather than having to read reports on each intervention, senior managers wanted visuals which illustrate succinctly actual and projected results, spending data, and key HR data. They needed to analyse this data by target region, gender (to ensure that women benefit from interventions as well as men) and sector, and to save time and enable comparisons they wanted to view it all on the same platform. In short, PRISMA wanted a Management Information System (MIS).

To turn results and spending data into graphics and dashboards, PRISMA chose Microsoft software, Power BI. Power BI allows users to combine data from various sources (e.g. from a Microsoft Access database and accounting software). PRISMA has found the visuals it produces easy to interpret, with one-click filtering of information, as illustrated below.



While data visualisation software itself is available at low or no cost,⁷ the time cost of setting up such an MIS is significant. IT experts are required to link the software to the program's data sources. Program managers need to invest time in deciding which data to present and how.⁸ In total, PRISMA invested around 100 days of management time in setting up the MIS. The program invests further time in maintaining it; three of PRISMA's 146 staff work full-time on maintaining and improving the system.

For Daniel Nugraha, former Program Director, the investment has been worthwhile: "The development and institutionalisation process of the MIS was indeed time- and resource-intensive and challenging, because it was not only about a technological solution, but also changing people's perception and behaviour. Had PRISMA not invested in the MIS, it would not have been able to respond to DFAT's evolving reporting requirements, ensure seamless and systematic cross-project aggregation of intervention results, and establish goal-oriented, active management of portfolio and program resources."

The MIS has brought other benefits. It saves staff time by automating the aggregation of results across interventions⁹; it also makes responding to information requests from PRISMA's donor easier and faster. A sole source improves the accuracy of the data provided to the donor. Before the MIS was operational, this task took up 20-25% of the senior measurement manager's time; this has been reduced to just 5%, especially since PRISMA gave its funder (DFAT) access to the MIS and training on how to use it. For the funder, this means instant access to information about the program, and added transparency which can help to foster trust. At the same time, interpretation and appropriate use of the data by staff remains a challenge. PRISMA has developed a reporting protocol interpreting the data for major KPIs¹⁰ and plans to expand this to incorporate other data available in the MIS.

Box 1: Measurement data prompts major strategy shift

In mid-2017, PRISMA's MIS dashboard was showing a clear trend: the program's overall projected outreach was 231,000 farming households, which was 23% below the program's target of 300,000. Managers needed to understand the reasons for this. They knew that PRISMA was focused on persuading agricultural input suppliers to inform farmers about their products. Farmers were learning about new agricultural products and practices at 'demonstration plots' organised by the input suppliers.¹ Analysing impact assessment data, PRISMA found that the number of farmers benefiting from these demonstration plots was small. To benefit larger numbers of farmers, PRISMA needed to change its strategy.

Sector teams started encouraging agricultural input suppliers to introduce diverse product promotional tactics, providing support with more strategic planning, finding more distributors, use of ICT and developing new business plans. From the re-strategising exercise, PRISMA outreach projection jumped to 354,000, 18% above the target. Up to June 2018, a total of 318,000 farm households have used these new products or services, and 221,000 have already increased their income as a result. The major strategic shift behind these results has assisted PRISMA to keep on track to meeting its target.

⁷ The authors found over 20 data visualisation software packages available online, free-of-charge. Power BI has a free version, and an advanced version which at the time of writing costs AUD12.70 per user per month.

⁸ PRISMA also spent AUD110,000 on Microsoft GP Dynamics accounting/enterprise resource planning software. However, it would have bought the software even if it had not invested in data visualisation; like every program, PRISMA needed accounting software. With 146 staff based in five different locations, it also chose this software to enable travel requests to be viewed and approved online.

⁹ When staff update PRISMA's spreadsheets with new results from an intervention, these are automatically added to the results of other interventions to calculate the program's latest overall results. However, PRISMA sometimes needs to make additional adjustments to these figures, where it believes that two interventions may have benefited the same farmers (often called 'overlap' or 'double-counting').

¹⁰ Key performance indicators. PRISMA reports progress every six months on eight KPIs, defined at the beginning of the program.



Box 2: Using data to improve impact - Shallot

Top management decisions

9. When senior managers and advisers understand the value of data, the wider team is more likely to follow. Senior managers greatly influence a program's culture, including to what degree evidence is considered important to decision-making. With support from the funder (DFAT Australia), PRISMA's Team Leader has encouraged rigour by pushing sector teams to comply with the Donor Committee for Enterprise Development (DCED) Standard for results measurement. He has also invested time in understanding and improving measurement, and led by example in using data from the program's MIS to inform decision-making.

With many other programs being led by managers who do little to encourage the use of data for decision-making, there is a lesson here for funders and managing contractors about the importance of hiring program managers who value and use credible data, and who understand what is needed to gather it. Training in the DCED Standard is an effective way for program and intervention managers to gain this knowledge.

PRISMA's Shallot intervention illustrates the program's approach in practice. In 2014, PRISMA began supporting a private company to introduce and promote an improved shallot seed in Nusa Tenggara Barat province. Impact assessments in 2015 and 2016 revealed that few farmers were buying and benefiting from the shallot seed – just 427 in 2016. Fortunately, PRISMA's monitoring also revealed why: import restrictions were the main bottleneck, with farmer demand for the seed outstripping supply. The program used this insight to adapt its intervention. Instead of helping the private company to create more demand, PRISMA and the company worked with government policymakers to facilitate an increased supply of the seed.

When pursuing this new intervention strategy, PRISMA's measurement data again became useful. The data revealed that the private company's shallot seed had improved farmers' incomes by an average of 64%. Sharing this information with the Ministry of Agriculture helped convince the Ministry to raise the private company's import quota, starting with the 2017 season. PRISMA could have discarded this intervention based on its initial low impact. Instead, it used measurement data to adapt it, with the result that 5,859 additional farming households have increased their incomes. For more examples of how PRISMA's Core Management Team encourages colleagues to recognise and learn from failure, see the Adaptive Management case1.

¹ Kevin Seely (2018) "Managing and adapting a development program: lessons from PRISMA," AIP-Rural and the Springfield Centre.

10.Reward sector teams for identifying problems early. Program staff often hesitate to acknowledge setbacks in an intervention, apprehensive of a negative reaction from senior management, or fearing it being dropped before having a chance to rectify it. PRISMA has taken steps to reduce this concern among sector teams. Senior managers can accept an intervention continuing despite disappointing results if three main conditions are fulfilled. Firstly, it must be clear what needs fixing and it must be feasible to fix it. Secondly, the intervention's results projections should be updated, and checked for quality by PRISMA's Measurement Specialists. Finally, the projected results should inspire confidence that the intervention's goals can still be achieved.

Concluding thoughts

After five years, 320,833 farming households have increased their income due to PRISMA interventions; out of the total population benefited, 42% of these farmers are women. Goetz Ebbecke, PRISMA's Team Leader, attributes this success in part to the program's use of data for decision-making: "Data has been an important factor. With data, I understand better how we are performing in different areas and take better decisions. Not all my senior managers instinctively use data as their basis for decision-making, so we reinforce this behaviour with systems. Another way I challenge them to use data is by using data myself."

Annex:

PRISMA's Quality Management Tool, with scores (illustration only) from the program's Pig interventions.

AIP-Rural					QMT IP	Kementerian PPN/ Bappenas		Austra	lian Govern
Summary of Indicator	Value	Rating	Weight	Total	Indicator & Sub-Indicator	>		4.	
Sector Story & Market Map	222222	3.9	1.0	3.9	IP01 - Sector Story & Market Map	Assessor 1	Assessor 2		
Gender & WEE		3.7	4.0	14.8	Growth & access opportunities are identified & analyzed	A	A		
Constraints	92253322	4.0	2.0	8.0	Link between international & national context is analyzed	A	ĀĀ		
ntervention									
	000000000000000000000000000000000000000	5.0	1.0	5.0	Link between national & regional context is analyzed		A A		
usiness Model		3.2	1.0	3.2	Actors are backed with numbers to identify bottleneck	A A			
nvironment	990909999	4.8	2.0	9.6	Actors of core transaction & value added are portrayed				
ho Does Who Pay		4.0	1.0	4.0	Functions from business enabling environment are identified	A	•		
esult Chain		3.8	1.0	3.8	Supporting functions & interconnected markets are identified	A	A		
stemic Change		4.7	1.0	4.7	Linkages are described	A	A		
lculation & Projection		4.3	0.4	1.7	IP02 - Gender & WEE	Assessor 1	Assessor 2	Team	
sk		4.0	1.0	4.0	Gender level of control & effort in the household is identified	A	A		
cial Return on Investment	270%	2.0	1.0	2.0	Gender commercial case is elicited	_	A	A	
oject Investment/Beneficiary	166,700	1.0	1.0	1.0	Potential impact (positive & negative) on WEE is identified	_			
					IP03 - Constraints	_		_	
rtner Investment Leverage	0.75×	4.0	1.0	4.0		Assessor 1	Assessor 2	Team	
eneficiary/Population	12.0%	3.0	0.3	0.9	Constraints are inquired to root causes		A .	A A	
AIC Percentage	321%	5.0	0.3	1.5	Strong causal links between constraints	**	A	.	
cess/Population	25.0%	2.0	0.3	0.6	Constraints of farmer are covered (incl. gender & disability)	**	A	•	
neficiary/User	92%	5.0	0.2	1.0	Constraints of ISP are covered (incl. gender & disability)	A	A	A	
er/Access	52%	4.0	0.2	8.0	Constraints of partner is covered	A		A	
.5 PPI Baseline	89%	5.0	0.3	1.5	Constraints of interconnected markets & supporting functions are covered	**	A	A	
nstruction : Fill in the green cells			Save to		IP04 - Intervention	Assessor 1	Assessor 2		
			MIS	76	Intervention proposed is feasible & has scale-potential	A	A		
								T	
eneral Information	20.00				IP05 - Business Model	Assessor 1	Assessor 2	Team	
tervention Code	3PGB				Incentive of male & female farmer is viable	<u> </u>	•		
ervention Short Name	PIG SNV				Incentive of male & female ISP is viable	A	•	•	
riod	Y19S1				Incentive of partner is viable	A	•		
mmodity Type	Livestock				IP06 - Environment	Assessor 1	Assessor 2	Team	
					Reduction of harmful chemical usage	A	A	A	
ssessor & Reviewer					Prevention of deforestation	A	A	A	
ssessor 1	KHALED KH	IAN			Promoting soil recovery practices	**	A	•	
sessor 2	PRAJWAL S				Promotion of better animal welfare		_		
						ĀĀ	-		
2 Reviewer	ZULKERNA	EN			Promotion of healthier living				
					Reduction of non-degradable waste	**		**	
IP-RURAL Personnel					Reduction of water usage			A	
oP/Program Manager	MOHASIN I	KABIR			IP07 - Who Does Who Pay	Assessor 1	Assessor 2		
ask Leader	TAYA KADI	ATIH			Project & partner have clear plan for exit strategy	A	A		
M Focal	ANGGARA	WIBISONO			Project supports only facilitative functions	A			
tervention Leader	VINCENT LI	IMPUTRA			IP08 - Result Chain				RC Re
	IKE SEPTI YA				Result chain covers actors (male & female) & transactions in business model				-
	SATKAR UL				Result chain covers activities (incl. gender & disability if any)				
	JAT IOAN OL	riviri							Á
- Filit-t DI					Result chain box is well-defined (who does what to/for whom)				
o-Facilitator Personnel					Result chain shows sensible causal relationship between boxes				
o-Facilitator	YUNI CHAIF				Result chain captures wider systemic change				•
ogram Manager	ATIKA LUTI				IP09 - Systemic Change	Assessor 1	Assessor 2	Team	
/I Focal	DITTA MON	VIKA			Probability to adapt is viable	A			
tervention Leader	WILLIAM SO	DE			Probability to expand is viable	A		A	
	BODHIYA V	VIJAYA MU	ILYA		Probability to respond is viable			A	
	PUTU APRI	PRIMA SW	/AJAYA		Probability of gender/WEE systemic change is viable	**		A	
	AGNES LAU	IRENS			IP10 - Calculation & Projection	Assessor 1	Assessor 2		
	DEVIN MAR				Calculation is based on a set of sound assumptions & generalized from sufficient evidence		A		
	DETHI NAM				Calculation components are complete & sufficiently detailed				
uantitative Indicator					i i	_			
					Ideal scheme is provided as comparison		**		
b-Sector Population (HH) ²				20,000		**	AA		
ervention Duration (Semester)1				7		Assessor 1	Assessor 2		
neficiary (HH) ¹				2,400	Threat to intervention is identified (incl. gender & disability)	**	A		
er (HH) ¹				2,600					
cess (HH) ¹				5,000		Acco	ssor 1	Acc	essor 2
AIC/HH (IDR) ³				450,000					
er Net Income at Baseline (IDR) ²				140,000					
tal NAIC (IDR) ¹			1	,080,000,000					
rtner Investment (IDR)				300,000,000					
oject Investment (IDR)				400,000,000	2 - Actual or Estimation				
.5 PPI Baseline (%) ²				89%	3 - Projection	KHALE	D KHAN	PRAJW	AL SHA

PRISMA

Australia-Indonesia Partnership for Promoting Rural Incomes through Support for Markets in Agriculture

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