

Building an Effective Cross-Technology Problem Solving Group

*Why current 3rd line support arrangements are inadequate
and what to do about it*

An Advance7 White Paper

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EXECUTIVE SUMMARY

The demand for increasingly sophisticated IT applications is leading to complex systems that are interconnected with other complex systems. This in turn is driving an increase in the number of difficult performance and stability problems.

The cause of such problems is frequently obscure, which makes it difficult to allocate the problem to the correct technology team. Consequently the problem bounces from team to team, as each in turn 'proves' that their technology is not to blame.

Many organisations are aware of this issue and are tackling it by creating a service-orientated Problem Solving Group (PSG).

In this paper we outline the need for PSGs, the benefits they deliver, their structure and strategies to optimise their effectiveness.

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THE NEED FOR A PSG

Anyone who has spent time in IT operations will have first-hand experience of issues that drive the need for a PSG. The typical scenario is:

- A recurring performance, fault or incorrect output problem arises
- The causing technology is not obvious
- By default the problem is passed to the application or network support team
- The problem is then repeatedly passed from team to team as each 'conclusively proves' that their technology is not the cause

In this scenario, the troubleshooting activity occurs within each technology silo with the objective of proving that the particular technology is not to blame.

These issues are often referred to as *grey problems* in that the causing technology is not a black-or-white issue.

Rather than look at a grey problem in isolated vertical silos, what's needed is a service-orientated investigation across the silos. This calls for a team with the skills, tools and remit to investigate problems in this way. That team is a Problem Solving Group (PSG).

The objective of the PSG is to determine what *is* causing the problem rather than focusing on what *isn't* causing it. The difference seems subtle, but actually it is fundamental to the operation of the group. It's very difficult to prove conclusively that a component of a system is not causing a problem unless you prove what *is* causing it.

Many IT departments pull together ad-hoc groups to solve problems. However, these arrangements are often very informal; a few people are invited to attend a 'brainstorming' session where ideas are tossed around until a solution to the problem is found. Some of the issues that arise with this approach are:

- The brainstorming sessions may not be well structured
- Proposed solutions are unlikely to be based on proof of root cause
- There may be little commitment to attending the session
- Different people of differing skill levels turn up to the sessions
- The group may not have access to necessary data and/or tools
- The group may not have the remit or consent to delve into certain areas
- Whilst a group member may be expert in a particular technology they may not be willing or able to undertake broader problem analysis

To improve the effectiveness of the team steps must be taken to enable its operation, an area we cover later in this paper.

THE BENEFITS OF A PSG

The benefits of operating a PSG fall broadly into six areas:

- Reduced time to problem resolution and hence improved service levels
- Reduced IT workload
- Reduced time and capital expenditure on unnecessary upgrades
- Smoother project execution
- Improved IT department reputation
- Addition of a career step for senior technical support staff

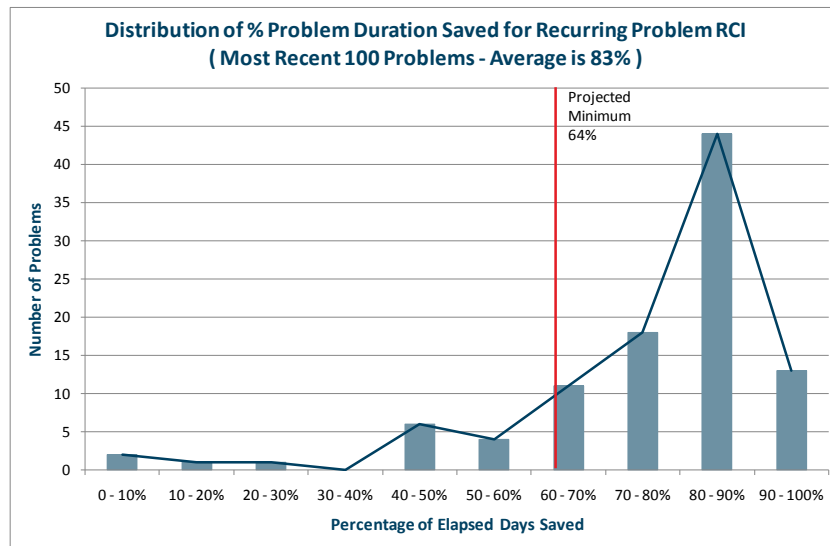
Reduced Downtime

Downtime is a widely-used term that covers a variety of service situations. Grey problems rarely cause a true 'service down' condition. In those situations the cause is often quite obvious and so the problem is not grey. Grey problems mainly cause recurring service impairments such as slow performance or intermittent faults. The fact that a service is not completely unavailable has several negative consequences:

- Grey problems are often dealt with as low priority¹
- Although a service is available it may be so impaired that the business adjusts around the problem
- IT may put the problem on the 'too difficult to deal with' pile
- These 'low priority' issues cause confusion when higher priority problems occur

These factors mean that grey problems can be ongoing for weeks, months or years.

¹ Ironically, long-running, recurring problems cause much greater dissatisfaction with IT than occasional major incidents.



Advance7 reviewed 100 projects where our Problem Analysts had helped clients create a PSG to deal with a difficult problem. We found that the average downtime saving through the operation of a PSG was 83%.

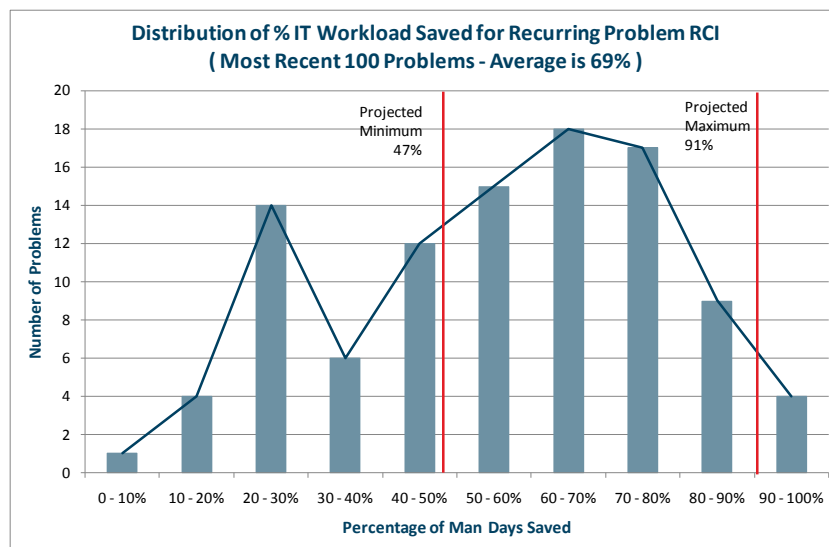
An insurance company that manages group health policies for large organisations ran into a problem with their core business system. Changes to policy terms and actuarial rates required a recalculation of policy costs. Unfortunately this recalculation intermittently caused all users to be locked out of the system for 20 or more minutes. This in turn caused a backlog in writing new business.

To avoid the problem, the business adjusted its processes so that policy changes were only processed at certain times of the day. Although this reduced the new business backlog, it caused operational difficulties and inefficiencies in many parts of the business.

Reduced IT Workload

Grey problems cause a disproportionately high workload for IT people. Most large organisations respond to such problems by creating a large team of people to investigate the problem. Unfortunately, often the members of these large teams continue to operate with a silo approach.

In contrast, a PSG operates as a cohesive team, and its effectiveness reduces the overall IT workload. In the same study of 100 projects described earlier we found that the average workload saving produced by a PSG was 69%.



One of the UK's major banks had a problem with a customer facing reporting system. The problem affected around 100,000 users and had been ongoing for about 3 months. The bank's IT team and several service partners had invested more than 350 man-days into the investigation of the problem.

By pulling together a PSG that had a service-orientated remit and restructuring the investigation with RPR^{®2}, the group determined root cause within 4 days through a total effort of 17.5 man-days.

² RPR[®] is a Rapid Problem Resolution method developed by Advance7.

Reduced Wasted Capital Expenditure

In too many cases it's decided that a problem will be resolved by an upgrade or a new piece of equipment even though the root cause is unknown. Such decisions are typically based on tenuous reasoning such as:

- The problem was resolved elsewhere through an upgrade
- A piece of equipment is believed to be overloaded, although no evidence has been produced
- Rumour that a product or technology is problematic

Our review of 100 recent grey problems revealed that only 10% required upgrades for resolution of the problem.

The real drivers to support such decisions may be as diverse as:

- Supplier sales targets
- IT professionals wanting to add a technology to their CV
- Perceived competition between IT departments in a particular industry
- The IT department wants to be seen to be doing something about a problem

The outcome from these upgrades varies considerably. Sometimes the upgrade resolves the problem; sometimes the upgrade simply masks the problem. For example, the performance of a badly-written database call might be improved by installing a faster server. Although this gives temporary relief, it's likely that the problem will return at some time in the future as the workload on the server increases.

Smoother Project Execution

During the development of a new IT solution, problems will arise and in most cases these can be dealt with quickly. However, if a grey problem arises it can create significant delays, often resulting in expensive contractors having to sit and wait while the problem is resolved.

Moreover IT projects cause business process change; a new way of doing things, a new system to use, etc. Most people don't like change and their resistance can be compounded if a newly-introduced IT system has a recurring problem.

Finally, in our service-orientated world, the CIO is under pressure to provide an agile IT service that can respond quickly to changing business needs. A recurring problem that arises during development or testing can increase the 'time to market'.

The availability of a PSG to deal quickly and effectively with grey problems can greatly ease the way to a smooth and timely project delivery.

An investment bank had built a new trading floor but had run into a problem during final testing; the workstations would intermittently lock-up for no apparent reason. After several days of investigation the blame was laid at the door of the network team, who then spent weeks testing equipment, cabling and power.

This caused a big and costly problem. The project was part of a larger programme of work that involved moving various departments into different buildings. The programme stalled, resulting in lease and contract penalties.

Eventually the bank created a PSG which solved the problem within days – it was caused by a missing software patch on the workstations.

IT Department Reputation

For all of the reasons above, grey problems can damage the reputation of an IT team. Not only does the availability of a PSG reduce the time needed to deal with difficult problems, it can also provide a visible extra level of support that improves the standing of the IT team.

Additional Career Step

Many senior technical people do not want to move into a management role, but they come to a point where 3rd line support or design roles are just not challenging enough. Membership of a PSG, and then leadership of the group, provides further options.

BUILDING A TEAM

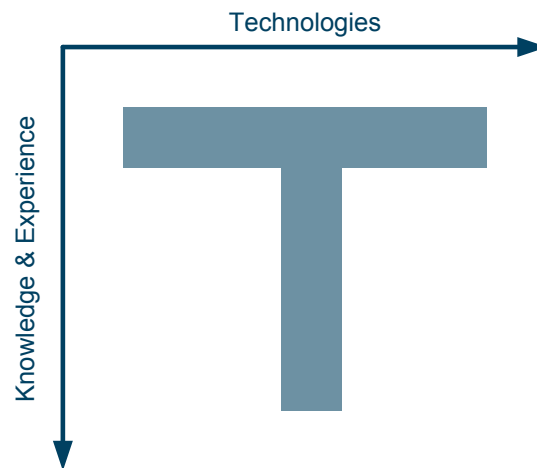
Types of People

There are three different roles in the PSG:

- Facilitator – someone who manages execution of the method being used, arranges meetings, marshals resources, liaises with technical teams and liaises with service operations groups such as Change Management
- Subject Matter Expert (SME) – technical support people with a good fundamental understanding of one or more of the technologies in use in the business
- Technical Lead – a well-respected SME who has the strength of character and technical knowledge to lead discussions and keep the PSG on track

It may appear self-evident that a PSG should be staffed by the very best Subject Matter Experts in the organisation. However, these people may not be ideal if they have a strong silo mentality. A UNIX server specialist who is not prepared to think about other areas of IT is of little use.

'T-shaped' people are ideal PSG members.



These people may specialise in one area but have a good broad background in IT.

They should also have:

- Problem solving skills – an obviously useful character trait
- An inquiring mind – a real passion for understanding how things work
- Determination and stamina – pursuing a tough problem can be very wearing

Subject Matter Experts (SMEs) will come from various areas, such as:

- In-house 3rd line support teams
- Technical support people from key technology providers
- Technical support people from Managed Service Providers (MSPs)
- Consulting partners

One of the SMEs or the Technical Lead may assume the role of Facilitator. However the importance of this role and the work involved can be underestimated. Typically Problem Managers³ are ideal for this role since:

- They probably have the necessary wide-ranging relationships within the organisation
- It fits neatly alongside their existing responsibilities
- Facilitating a PSG is an ITIL-defined role for Problem Managers
- They are ideal people to monitor adherence to the agreed problem diagnosis method

If the Problem Manager has strong technical skills, he or she could also assume the Technical Lead role, although such a combination of skills is unusual.

Full Time, Virtual or Purchase?

The justification for a full-time team will depend on the number of grey problems that arise in the course of a year, as well as the type of business.

A part-time (virtual) PSG is a good first step and, if it delivers results, a business case can then be built for a full-time team.

A virtual PSG can be difficult to operate without a cast-iron commitment from technical support teams to make appropriate people available. It's also important to remember that an informal gathering of technical people to brainstorm a problem is not the same as a virtual PSG. A virtual group operates in an enabled environment i.e. barriers to the successful operation of the group have been removed (or at least lowered). Just like its full-time counterpart, a virtual group should have a structured approach to problem diagnosis.

³ Here we mean Problem Manager in the ITIL sense, and therefore may be a similar role with a different title.

Smaller organisations are unlikely to have enough grey problems to be able to support the formation of a virtual team because:

- The total support team may be small and may not be able to cope with the additional workload
- Supporting a small business often means that the IT team must deal with a wide range of technologies and so are unable to gain in-depth knowledge of any one area
- The low rate of problems means that the team develops too slowly to be effective

In this case it will be more effective to purchase the problem analysis and diagnosis expertise as needed. The external team will need to collaborate with the in-house staff – it's almost impossible to diagnose a problem otherwise, since the in-house team have the local knowledge. It's also useful to discuss the approach of the external problem diagnosis service provider so that the IT team can prepare the environment by removing inhibitors. Inhibitors are discussed below.

CREATING A PSG

Method

The key objective of a PSG is to determine the technical root cause of a problem i.e. what hardware, software or service component of a system is causing the problem, how is it causing the problem and under what circumstances. The technical root cause will lead the SMEs to a resolution.

The fastest way to determine technical root cause is by taking a structured, methodical approach. Organisations with a PSG are structuring their activity around formal approaches such as Advance7's RPR method. Others invest in developing their own structured approach in-house.

Without a methodical approach, a PSG will struggle to be effective and find it almost impossible to measure its effectiveness and hence prove its worth.

Removing Inhibitors

The problem diagnosis method and the other practicalities of operating a PSG, may be inhibited by issues relating to:

- People – e.g. who will be the members of the PSG and what is the commitment from their managers
- Policies, Processes and Procedures – e.g. the activation of a diagnostic tool requires a Change Request and approval takes 5 days
- Tools, Utilities and Systems – e.g. the PSG is unaware of the full range of tools available and who controls each of them
- Other Resources – e.g. where will the PSG meet and what facilities are needed

For efficient operation of the PSG, these inhibitors should be dealt with when the group is formed. A PSG can operate in an environment with these inhibitors, but reaching root cause will take longer and more resources will be used than would otherwise be necessary.

Skills

There is a widespread misconception that problem diagnosis skills are directly related to technical knowledge about a product or technology, and so training becomes focused on these areas. Problem analysis and diagnosis requires an additional set of skills that relate to:

- Problem analysis and diagnosis methodology
- Structured thinking
- Diagnostic tools and techniques
- Diagnostic data capture and analysis

At this stage in the development of a PSG as a concept, there may be some resistance from technical staff to this type of training. The PSG concept is not mature and so technical people are often far more interested in learning about a new technology or product than gaining an understanding of a method that they believe to be only vaguely relevant to their job.

To build an effective PSG you need to overcome the resistance to problem analysis and diagnosis methods and skills.

ADDITIONAL RESOURCES

ITIL definition of Problem Management:

David Cannon and David Wheeldon (2007). ITIL Service Operation. The Stationery Office. ISBN 978-0-1133-1046-3.

Problem resolution statistics:

<http://www.advance7.com/info/factsheets/RPR%20Statistics.pdf>

The RPR® Method description:

<http://www.advance7.com/info/factsheets/RPR%20Prob%20Method.pdf>

Definition of the RPR® Method:

Offord, Paul (2011). RPR: A Problem Diagnosis Method for IT Professionals. Advance Seven Limited. ISBN 978-1-4478-4443-3.

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