



Civilution

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Focus on: National Treasury Standard for Infrastructure Procurement and Delivery Management



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Guidance on portfolio, programme and project management

The *Standard for Infrastructure Procurement and Delivery Management (SIPDM)* defines the following two generic terms:

- **Portfolio:** collection of projects or programmes and other work that are grouped together to facilitate effective management of that work to meet a strategic objective.
- **Programme:** the grouping of a set of related projects in order to deliver outcomes and benefits related to strategic objectives which would not have been achieved had the projects been managed independently.

Projects can be linked to programmes and portfolios. It is therefore important to understand how projects are managed within an infrastructure context at a project, programme and portfolio level, and what the linkages are between these different types of management.

INTRODUCTION

Organisations generally establish strategy based on their mission, vision, policies and factors outside the organisational boundary. Organisational strategy identifies opportunities which are then evaluated and documented. Selected opportunities are further developed in a business case or other similar document, and can result in one or more projects that provide deliverables which are used to realise benefits, as illustrated in Figure 1.

Projects are often the means to accomplish strategic goals. SANS 21500 (Guidance on Project Management) suggests that a project “consists of a unique set of processes consisting of coordinated and controlled activities with start and end dates, performed to achieve project objectives. Achievement of the project objectives requires the provision of deliverables conforming to specific requirements”.

Projects may be organised within:

- programmes – the grouping of a set of related projects in order to deliver outcomes and benefits related to strategic objectives which would not have been

achieved had the projects been managed independently; and

- portfolios – the collection of projects or programmes and other work that are grouped together to facilitate effective management of that work to meet a strategic objective.

The contribution of projects, programmes and portfolios to organisational goals are highlighted in Table 1 and Figure 2.

PORTFOLIO MANAGEMENT

Generic principles

Although there are many similarities between portfolio and programme management, there are significant differences. Programme management relates to the coordinated management of a set of related projects where projects are typically mutually dependent on one another, and are all required to create the required capability and project benefits. On the other hand, portfolio management is generally applied to unrelated projects.

Portfolio management refers to the centralised management of one or more

portfolios, which includes identifying, prioritising, authorising, directing and controlling projects, programmes and other related work, to achieve specific strategic goals. Portfolio managers help translate an organisation's strategy into a portfolio of project benefits and results, which are delivered by programme and project managers and their teams. Portfolio managers accordingly work in a synergic way with programme and project managers to realise strategic goals through projects.

Portfolio managers are responsible for monitoring and managing assigned portfolios by (PMI 2013):

- establishing and guiding the selection, prioritisation, balancing and termination processes for components to ensure alignment with organisational strategy;
- providing key stakeholders with timely assessment of portfolio and component performance;
- assisting decision-makers with the review, reprioritisation and optimisation of the portfolio;
- ensuring timely and consistent communication to stakeholders on progress,

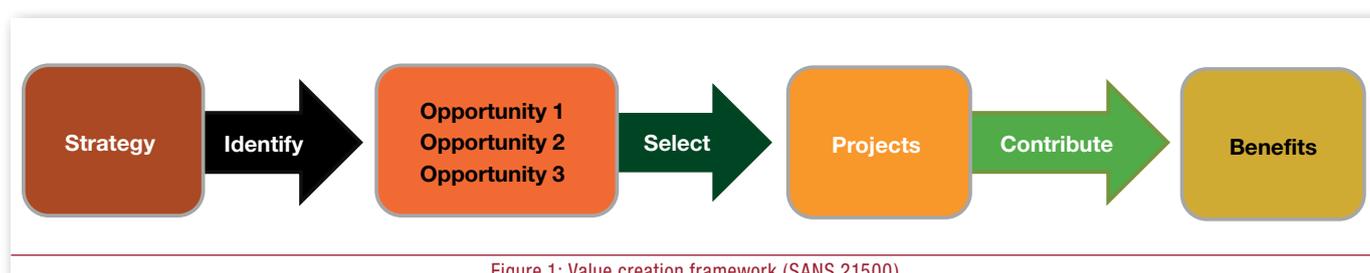


Figure 1: Value creation framework (SANS 21500)

impacts and changes associated with management of the portfolio; and

- participating in programme and project reviews to reflect senior level support, leadership and involvement in important matters.

Application in an infrastructure delivery context

Portfolio management, in an infrastructure context, is the combination of management practices applied to various aspects of infrastructure with the objective of developing, implementing, monitoring and controlling works based on long-term plans and available budgets. It includes the identification and managing of non-asset solutions to provide the required environment for the delivery of an organ of state’s services.

Portfolio management needs to be linked to and aligned with an organ of state’s strategic plan to provide its mandated services. It needs to link an organ of state’s strategic service delivery plan with the infrastructure that it will require to deliver those services in an efficient, effective and reliable manner. Portfolio management plays a major role within Stage 1 (infrastructure planning) and Stage 2 (strategic resourcing) of the control framework included in the National Treasury SIPDM. It is nevertheless a continuous management function throughout the project life cycle that produces plans, reports and management actions linked to asset registers, budget allocations, service delivery mandates, performance management, infrastructure strategy, long-term asset priorities, legislation and policies, asset management plans, infrastructure plans, feedback from the implementation of projects, risk mitigation, etc.

PROGRAMME MANAGEMENT

Generic principles

Programmes are the means by which strategy is delivered through a number of projects which are typically reliant on one another in order to achieve a single overall larger objective or vision. Programmes typically have three stages:

- An initiation phase during which the necessary governance arrangements are established, key members of the programme management team are appointed, programme-wide processes are established, programme assurance and audit arrangements are agreed, training needs are agreed, programme management offices which offer strategic

support are established, programme support and resources are established, financial and reporting arrangements are established, special management techniques are identified, programme plans are prepared, etc.

- An execution phase during which component projects are defined and initiated by the programme team and delegated to individual project teams, project plans and schedules are coordinated, risks, issues, stakeholders and communications are managed, progress is reported, programme plans are reviewed and updated, and progress reviews are undertaken.
- A closure phase when all projects have been completed and the new capabilities have been handed over to and accepted, all necessary records are in place and lessons learned and other valuable knowledge have been captured.

Programme management refers to the centralised and coordinated management of a programme to achieve the programme’s strategic goals and benefits. Programme management as such straddles

the interface between those responsible for deciding strategy and those responsible for managing the component projects and activities. Accordingly, programme management responsibilities typically include:

- interpreting organisational strategy in a manner which creates practical programmes of improvement and change;
 - selecting, initiating and monitoring projects which make up a programme, including the definition of the scope of individual projects;
 - coordinating between component projects in order to maximise the value of the combined deliverables of the constituent projects into fully usable capabilities that may be used to deliver the desired benefits;
 - cancelling projects or changing the scope of projects in response to changes to the organisational strategy and environment; and
 - identifying, supporting, measuring and monitoring the delivery of benefits.
- Project management is focused on the delivery of specific outputs, whereas

Type of management	Contributions to organisational goals
Project	Develops and implements plans to achieve a specific scope that is driven by the objectives of its programme and, ultimately, organisational strategy. It is largely concerned with achieving specific deliverables that support specific organisational objectives.
Programme	Harmonises its project and programme components, and manages their interdependencies in order to realise specified benefits. It focuses on achieving the cost, schedule and performance objectives of the projects within the programme or portfolio.
Portfolio	Aligns with organisational strategies by selecting the right programmes or projects, prioritising the work, and providing the needed resources. It balances conflicting demands between programmes and projects, allocates resources based on organisational priorities and capacity, and manages so as to achieve the benefits identified.

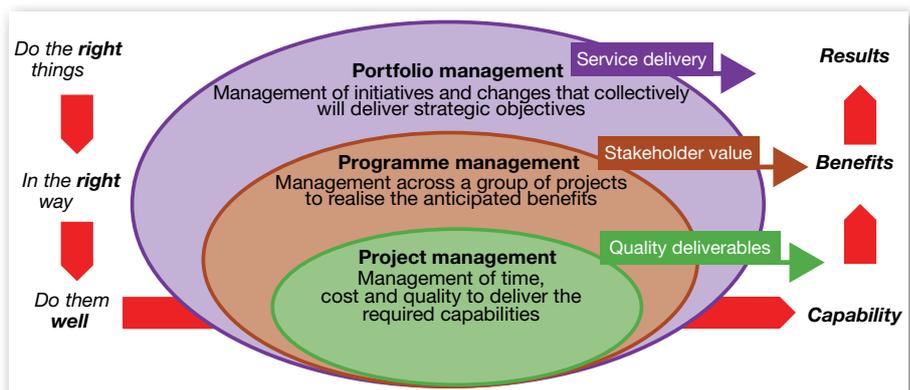


Figure 2: Contributions of the different types of management to strategic goals

programme management is focused on outcomes. The key differences between these types of management are outlined in Table 2.

Application in an infrastructure programme context

Programme management involving infrastructure projects is more complex than project management, design management or construction management, as it straddles all three these types of management across multiple projects on a single site or several sites. The programme manager, as the client's single point of contact, integrates the activities of all participants in the delivery process to ensure the overall success of the programme, which typically revolve around limited staff resources, tight schedules and strict budgets, and in the public sector the three-year medium term expenditure framework. Each infrastructure project within a programme has its own restraints of time, cost and resources which must be seen in terms of its effect on other projects and resources. Programme management accordingly differs from project management in that it aims to develop growing synergy in respect of time, cost and performance across a number of projects, as illustrated in Figure 3.

Programme management combines the ability and resources to define, plan,

implement and integrate every aspect of a comprehensive programme of multiple projects from concept to completion, using a team whose sole focus is to achieve the client's design and build requirements according to pre-set performance indices, milestones, specifications and budget. The main role of a programme manager – often referred to as a programme director, programme leader or projects director – is to oversee multiple project managers who are executing various aspects of works. Such a person functions at a higher level of authority than a project manager and, apart from overseeing project managers simultaneously, also supervises the procurement process, technical aspects of the programme (such as quality, planning, scheduling, reporting, communication, updating and cost control), manages a range of stakeholders and resolves issues amongst delivery team participants and those raised by stakeholders.

Programme management in an infrastructure context:

- is performed either by the client or on behalf of the client;
- is applied to many projects simultaneously within a defined budget and schedule and stated or implied performance requirements; and
- combines the ability and resources to define, plan, implement and integrate

every aspect of multiple infrastructure projects from conception to completion with the sole focus of achieving the client's requirements according to key performance indices, milestones, specifications, schedule and budget.

Programme management in infrastructure projects accordingly focuses on:

- scope management, which sets the boundaries for the projects to meet a client's programme goals for space, function, features, impacts and level of quality;
- cost management, which measures and analyses costs at each stage of the project life cycle, establishes control budgets for projects, monitors programme expenditure against control budgets, manages programme contingencies and manages programme annual expenditure against an annual budget;
- schedule management, which establishes a time line for delivering projects within a programme against programme objectives and performance requirements, tracks progress and takes corrective action where necessary to avoid the missing of deadlines for key project components within a programme.

Programme managers also need to inform procurement tactics that are adopted, plan the commissioning of the works so that

Table 2: Key differences between programmes and projects (APM 2007)

Aspect	Programmes	Projects
Clarity of scope	Programmes involve uncertainty in funding, impact and range.	Projects require clearly defined scope, budget and time frames.
Clarity of deliverables	Specific deliverables to be created are usually unclear at the start.	The required deliverables are usually clearly defined at the start.
Structure	Separately managed projects, which must be coordinated. This structure may be unclear at the start and may change throughout the life of the programme.	Projects form a single managed entity, which is clear at the start and will not usually change significantly during the life of a project.
Methodologies or approaches	Frequently involves coordinating and managing several different organisations, each of which is responsible for one or more discrete projects, and each of which may be used with a different methodology or project approach.	A single project is normally the responsibility of a single organisation, working to a single methodology or project approach.
Clarity of budgets and time scales	At the start, the time and budget required will often be unclear, and part of the role of the programme will be to define these.	Projects start with a project initiation document, project management plan, business case or equivalent that defines expected costs and time scales.
Approach to change	Because the scope and deliverables are unclear, change to priorities and requirements is constant and a major feature of the programmes.	Changes to scope or desired deliverables are generally unwelcome and subject to rigorous control.
Critical activities	A major element is managing people and organisational issues necessary to ensure that the new capabilities will be used to deliver the desired benefits.	The major element is managing the technology or specialist skills necessary to create the deliverables.
Measure of success	The creation of useable capability and/or the delivery of business benefits.	The creation of the specified deliverables within agreed time and cost constraints.

benefits are realised in accordance with schedule requirements, manage statutory compliances and manage risks across the programme. They need to track projects and to report to the portfolio manager and governance structure at regular intervals on progress against defined milestones, financial progress (expenditure against budget and cash flow projection), physical progress once a project is in the works stage, developmental impact, problems encountered and the actions proposed to solve the problems, and information required which has an impact on the projects, etc. They also need to monitor progress made in respect of each project within the life cycle of projects and track planned versus actual completion, and quickly formulate corrective action to resolve delays and get back on programme.

Infrastructure spending by various organs of state is often characterised by poor expenditure patterns resulting in either under or over-expenditure in a financial year. For example, very little expenditure occurs in the first three quarters of the financial year, followed by a sudden flurry of expenditure in the fourth quarter. This results in what has become known as the “fourth quarter expenditure spike”. Associated with this trend is either under-spending which results in rollovers, or over-spending, which results in organs of state running out of money before the financial year has been completed, or rushed expenditure on goods and services that may not be in accordance with long-term infrastructure management plans. Stages for infrastructure projects may straddle across a number of years in the

medium-term expenditure framework, as illustrated in Figure 4. One of the key functions of a programme manager is to plan infrastructure projects in such a manner that such spikes and under- or over-expenditure are eliminated.

The SIPDM requires that:

- budget submissions for approval to advance a project or package relating to the delivery or planned maintenance of infrastructure in a financial year be broken down into the stages in the control framework for the planning, design and execution of infrastructure projects which have been completed; and
- implementation plans relating to new infrastructure or the rehabilitation, refurbishment or alteration of existing infrastructure be developed for each project or package which is to be delivered in a financial year.

The SIPDM requires that the implementation plan should not only be aligned with the accepted delivery and procurement strategy developed during Stage 2 of the control framework, but should also:

- identify the objectives of each project or programme of projects;
- identify the scope, budget and schedule for each project or package;
- outline the procurement strategy in respect of each project or package;
- provide a time management plan for each project, i.e. the baseline against which progress towards the attainment of milestone (key deliverables) target dates can be measured;
- provide the projected budget and cash flows which will enable planned and actual expenditure to be compared and revisions to the budget to be approved, and multiple project budgets to be managed;
- document the key success factors and the key performance indicators which need to be measured, monitored and evaluated;
- contain a procurement plan which indicates the time line for advertising and closing of tenders, and the obtaining of gate approvals leading up to the award of the contract or the issuing of an order;
- identify the major risks and how such risks are to be mitigated or managed;
- indicate how quality requirements and expectations are to be met and managed;
- outline the controls and measures which will address health, safety, socio-economic or environmental risks;
- provide a communication plan which determines the lines of communication

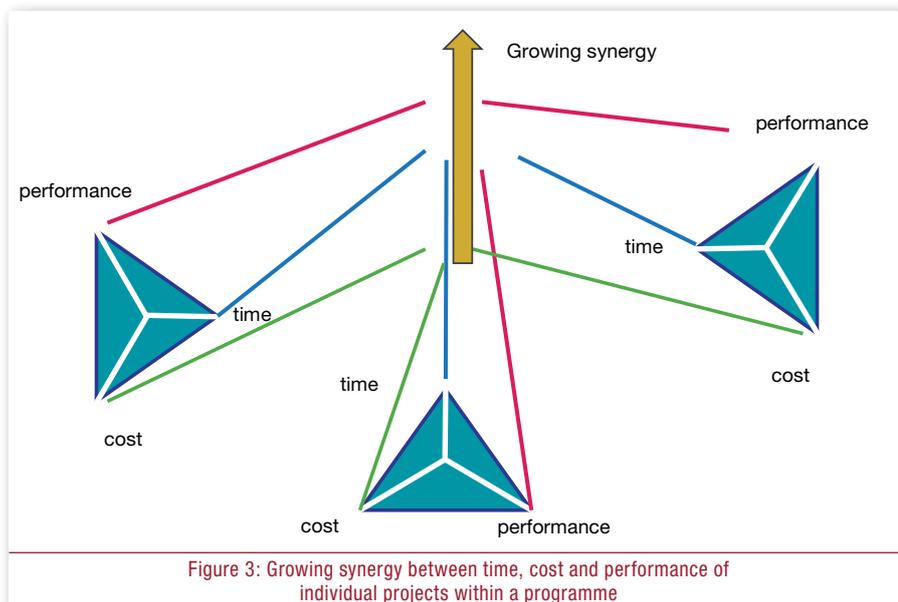


Figure 3: Growing synergy between time, cost and performance of individual projects within a programme

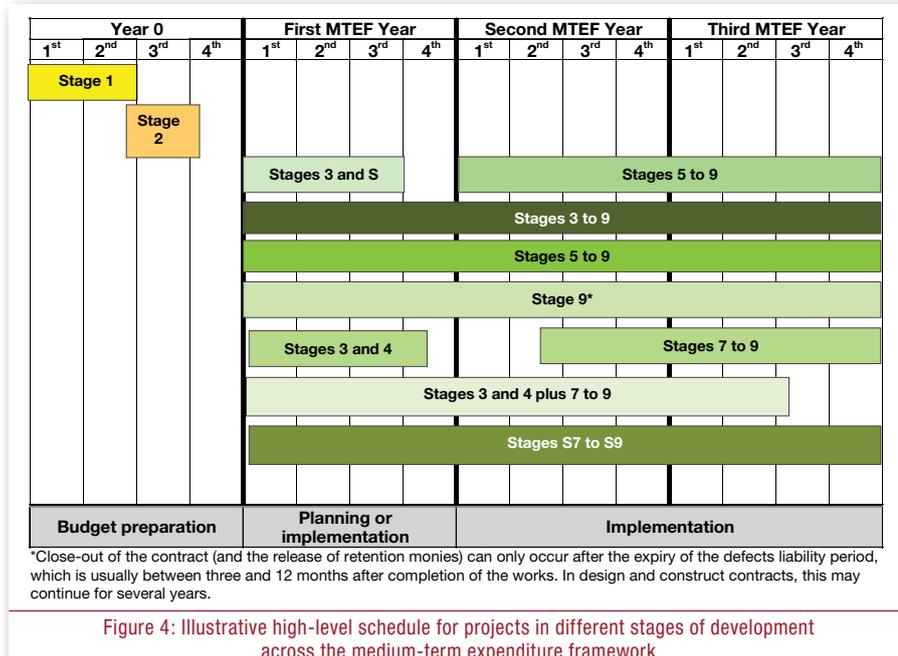


Figure 4: Illustrative high-level schedule for projects in different stages of development across the medium-term expenditure framework

Table 3: Project management process groups (SANS 21500)

Process group	Description
Initiating	Used to start a project phase or project, to define the project phase or project objectives and to authorise the project manager to proceed with the project work.
Planning	Used to develop planning detail sufficient to establish baselines against which project implementation can be managed and project performance can be measured and controlled.
Implementation	Used to perform the project management activities and to support the provision of the project's deliverables in accordance with the project plans.
Controlling	Used to monitor, measure and control project performance against the project plan. Consequently, preventive and corrective actions may be taken and change requests made, when necessary, in order to achieve project objectives.
Closing	Used to formally establish that the project phase or project is finished, and to provide lessons learned to be considered and implemented as necessary.

Table 4: Project management subject groups (SANS 21500)

Subject group	Description
Integration	Includes the processes required to identify, define, combine, unify, coordinate, control and close the various activities and processes related to the project.
Stakeholder	Includes the processes required to identify and manage the project sponsor, customers and other stakeholders.
Scope	Includes the processes required to identify and define the work and deliverables, and only the work and deliverables required.
Resource	Includes the processes required to identify and acquire adequate project resources such as people, facilities, equipment, materials, infrastructure and tools.
Time	Includes the processes required to schedule the project activities and to monitor progress to control the schedule.
Cost	Includes the processes required to develop the budget and to monitor progress to control costs.
Risk	Includes the processes required to identify and manage threats and opportunities.
Quality	Includes the processes required to plan and establish quality assurance and control.
Procurement	Includes the processes required to plan and acquire products, services or results, and to manage supplier relationships.
Communication	Includes the processes required to plan, manage and distribute information relevant to the project.

Table 5: Generic mapping of key actions within subject and group project management processes

Subject group	Process group				
	Initiating	Planning	Implementation	Controlling	Closing
Integration	Develop project charter	Develop project plans	Direct project work	Control	Close project phase or project Collect lessons learned
Stakeholder	Identify stakeholders		Manage stakeholders		
Scope		Define scope Create work breakdown structure Define activities		Control scope	
Resource	Establish project team	Estimate resources Define project organisation	Develop project team	Control resources Manage project team	
Time		Sequence activities Estimate activity durations Develop schedule		Control schedule	
Cost		Estimate costs Develop budget		Cost control	
Risk		Identify risks Assess risks	Treat risks	Control risks	
Quality		Plan quality	Perform quality assurance	Perform quality control	
Procurement		Plan procurement	Select suppliers	Administer procurement	
Communication		Plan communications	Distribute information	Manage communications	

and the key activities associated therewith; and

- indicate the assigned internal and external resources with implementation responsibilities.

The SIPDM furthermore requires that certain financial data needs to be gathered to enable a financial report to be generated at regular intervals. It also requires reporting on a number of key performance indicators.

PROJECT MANAGEMENT

Generic principles

SANS 21500 describes project management as “the application of methods, tools, techniques and competencies to a project” which can be applied to a project as a whole or to an individual phase, or to both. Project management differs from other management disciplines by the temporary and unique nature of projects. Managing a project typically includes:

- identifying requirements;
- addressing the various needs;
- balancing competing project constraints, including:
 - scope (the work that must be performed to deliver a product, service, or result, with the specified features and functions)
 - quality (the degree to which inherent characteristics meet requirements)
 - schedule (the planned dates for performing schedule activities and the planned dates for meeting milestones)
 - budget (the approved estimate for a project)
 - resources (skilled human resources, equipment, services, supplies, commodities, materials, budgets or funds)
 - risk (an uncertain event or condition which, if it occurs, has a positive or negative effect on the project objectives).

Project management is performed through processes. The generic project management processes may be viewed from two different perspectives, namely as process groups (see Table 3) or subject groups (see Table 4). Table 5 provides a generic mapping of the key actions associated with these two groups of processes. The purpose of the key actions of the subject groups and process groups are outlined in SANS 21500.

Application in an infrastructure project context

The generic project management processes need to be made context-specific

and integrated with delivery and support processes which are unique to infrastructure projects, and with the project cycle as defined by the stages and gates within the control framework for planning, design and execution of infrastructure projects provided in the National Treasury *Standard for Infrastructure Procurement and Delivery Management* (SIPDM).

Acceptance of the end-of-stage deliverable in this control framework provides the necessary authorisation to apply resources to the next stage in the project life cycle and provides an opportunity to identify those responsible for taking the project forward during the subsequent stage.

Infrastructure projects are usually packaged during Stage 2 (strategic resourcing) of the control framework, i.e. the works are grouped together for delivery under a single contract or a package order. Accordingly the information at any point in time, following the identification of a package, is contained in one or more of the following documents:

- the brief which is progressively developed from time to time;
- the design documentation, including specifications, data schedules and drawings;
- the schedule which identifies key dates and time periods for the performance of the works and services associated with the package, and
- the cost plan.

The SIPDM defines a control budget as the “the amount of money which is allocated or made available to deliver or maintain infrastructure associated with a project or package, including site costs, professional fees, all service and planning charges, applicable taxes, risk allowances and provision for price adjustment for inflation”. This control budget needs to be established in the strategic brief during Stage 3 (preparation and briefing) and is confirmed at the conclusion of Stage 4 (concept and viability), and reconfirmed at the conclusion of the Stage 5 (design development). A conscious decision is required to revise the control budget at each of these stages, as costs need to be proactively managed through these instruments. Control budgets change the delivery culture from “pay for what is designed” to “deliver infrastructure within an agreed budget”.

Project management services associated with the delivery of works can be assigned to different persons as follows:

- project leader who leads and directs the design team in a non-technical role including the monitoring and integration of the activities, development and maintenance of a schedule, monitoring of progress and facilitation of the client acceptance of an end-of-stage deliverable;
- procurement leader who oversees the development of the procurement documents and manages the procurement process; and
- contract manager who administers a contract or an order on behalf of the employer.

The SIPDM furthermore requires that contract managers gather and report on certain data on a regular basis and maintain risk registers.

NOTE

Further insights and information can be obtained from:

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