Information Category-Measureable Concept-Prospective Measures						
	Information Categories	**Measurable Concepts**	**Questions Addressed**	**Measures**	**Notes**	**Notes from w/s**
Organization	Schedule & Progress	Milestone Completion	Which projects need management attention (which projects are most behind)?	Completion Status	Milestones mean major milestones. For the organization, want some early indication of whether major milestones will be met, for each project in the organization (or for those most at risk).	Q: Is there a need for management intervention? Need Status of projects with respect to our strategic goals.
		Work Backlog	What is the organization work backlog? What should be scheduled next?	Open Defects (Fielded systems - critical defects) Enhancements Needs	Measure/categorize open defects, enhancements, and needs by priority level for major items	
	Resources & Cost	Financial Performance	Is the organization receiving and spending money as planned? Does the organization financial process support the needs of the projects?	Obligation Rates Disbursement Rates Funding Availability	Is funding available for each project as needed? Consider: - spread of money across the year for multiple projects - color of money and plus-ups for government projects - funding blocks, pull-backs - studies, management reserve, as well as development and maintenance projects	
		Personnel Effort	Within the organization, are there sufficient qualified resources (people) to satisfy commitments?	Effort Experience Level Staff Turnover Workforce Age Profiles Education/Training Profiles	Both a project and organization issue. Consider Resource Capability and Capacity: - turnover rate - military rotations - training, education - motivation - etc.	
	Size & Stability	Physical Size and Stability Functional Size and Stability	How many systems are in development? How many systems are being maintained? What are the trends over time? How many capabilities are addressed within the concept of operations?	Interfaces Interface Complexity Lines of Code Requirements		
	Product Quality	Functional Correctness Dependability-Reliability	Are the projects delivering quality products that meet performance requirements?	Needs/Rqmts Validated/Verified Successfully Defect Density Defect Escapes Components Accepted	At the aggregate level. Do the projects meet: - user expectations (needs, not specifications) - TPMs - delivery criteria - permissible levels of delivered defects?	
		Functional Correctness	Are known problems being resolved?	Defects Resolved Warranty Claims	During warranty or against backlog of issues	
	Process Performance	Process Effectiveness	Are the processes sufficient to accomplish organization objectives?	Process Capability Process Adherence	E.g. Capability (and not level) with respect to CMMI process areas. Getting projects on contract in a timely manner with a sufficient level of quality. Effectiveness includes suitability of the process.	
		Process Efficiency	What are organization norms for completing development activities (schedule, cost, productivity)?	Cycle Time Effort Productivity		
	Technology Effectiveness	Technology Adoption	Does the organization have sufficient technology insertion plans and implementations?	Needs Met by Technology Insertion Technology Refresh Rate		
	Customer Satisfaction		How do our customers perceive the organizations set of products (product lines) ? Are they meeting user expectations?		Might be an aggregation to the organization as a whole, or might be specific to individual systems.	

	Organization Health, Innovation, and Learning	Environment and Support Resources	Is the organization meeting the goals of the organization in terms of its mission? Is the organization operating to stay competitive in its market? Is the organization operating with an environment that is sustainable?	Employee development (inventory, training, skills) Knowledge management Employee satisfaction	Knowledge continuity, expansion, sharing, growth - # patents, papers, articles, books, keynotes, presentations (need to address health)	
	Organization Strategic Focus		Do the organizations set of products (product lines) meet the set of customer mission needs?		portfolio management capital investment market share industry influence (shape the future)	
Project	Schedule and Progress	Milestone Completion	Is the project meeting scheduled milestones? Are critical tasks or delivery dates slipping?	Milestone Dates		
		Critical Path Performance		Slack Time	delete	
		Work Unit Progress	Are specific activities and products completed as scheduled?	Requirements Traced, Tested		
				Problem Reports Opened, Closed		
				Reviews Completed		
				Change Requests Opened, Resolved		
				Units Designed, Coded, Integrated		
				Test Cases Attempted, Passed		
				Action Items Opened, Completed		
		Incremental Capability	Is capability being delivered as scheduled in incremental builds and releases?	Components Integrated		
				Functionality Integrated		
		Risk Status	What is the degree of risk associated the project?	Risk Status	need to research further (AI: Greg)(net factored risks and opportunities) 2 in SE lead indicators (Risk exposure trends and risk handling trends)	move to cost
		Cost and Schedule Feasibility	Is the project realistic within the established cost and schedule parameters?	Schedule Probability	Include updates as schedules and funding changes.	move to cost
				Cost Probability		move to cost
	Resources and Cost	Personnel Effort	Is effort being expended according to plan? Is there enough staff with the required skills?	Staff Level		
				Development Effort		
				Experience Level		
				Staff Turnover		
		Financial Performance	Is spending meeting budget and schedule objectives?	BCWS, BCWP, ACWP		
				Budget		
				Cost		
		Environmental and Support Resources	Are needed facilities, equipment, tools, and materials available?	Quantity Needed, Available		
				Time Available, Used		
	Size and Stability	Physical Size and Stability	How much are the product's size, content, physical characteristics, or interfaces changing?	Database Size	What is business IT term?	
				Elements	formerly components	
				Interfaces	How many interfaces exist in a program? Are all interfaces clearly identified? Are the interfaces stable? Consider both internal and external interfaces.	
				Lines of Code		
		Functional Size and Stability	How much are user needs, requirements, architectures, and associated functionality changing?	Requirements	Should we add architecture volatility? Do we want a separate "needs volatility" or should we have once "requirements volatility" that could be applied at multiple levels (e.g. capabilities, needs, mission requirements, system requirements). Could call it system definition volatility.	
				Functional Changes	what is correct maintenance term?	
				Function Points		
	Product Quality	Functional Correctness	Is the product good enough for delivery to the user? Are identified problems being resolved?	Defects		
				Age of Defects		
				Technical Performance Level		
		Supportability - Maintainability	How much maintenance does the system require? How difficult is it to	Time to Restore		
				Cyclomatic Complexity		
		Efficiency	Does the target system make efficient	Utilization		

			use of system resources?	Throughput	consider broadening definition (production)	
				Response Time	capacity system and business	
		Portability	To what extent can the functionality be re-hosted on different platforms?	Standards Compliance	?? Consider removing	
		Usability	Is the user interface adequate and appropriate for operations? Are operator errors within acceptable bounds?	Operator Errors		
		Dependability - Reliability	How often is service to users interrupted? Are failure rates within acceptable bounds?	Mean-Time-to-Failure	?	
				Mean-Time-to-Repair		
	Process Performance	Process Compliance	How consistently does the project implement the defined processes?	Reference Maturity Rating		
				Process Audit Findings		
		Process Efficiency	Are the processes efficient enough to meet current commitments and planned	Productivity		
				Cycle Time		
		Process Effectiveness	How much additional effort is being expended due to rework?	Defects Contained		
				Defects Escaping		
				Rework Effort		
				Rework Components		
	Technology Effectiveness	Technology Suitability	Can technology meet all allocated requirements, or will additional technology be needed?	Requirements Coverage		
		Technology Maturity	Is the technology ready to be used in this project?	Technology Readiness Level Trend	one of base measures for SE leading indnicators	
		Technology Volatility	Does new technology pose a risk due to too many changes?	Baseline Changes		
	Customer Satisfaction	Customer Feedback	How do our customers perceive our performance for individual projects and	Satisfaction Ratings		
				Award Fee		
		Customer Support	How quickly are customer support requests being addressed?	Requests for Support		
				Support Time		

base measures, derived measures, or indicators?	add service-related measures