



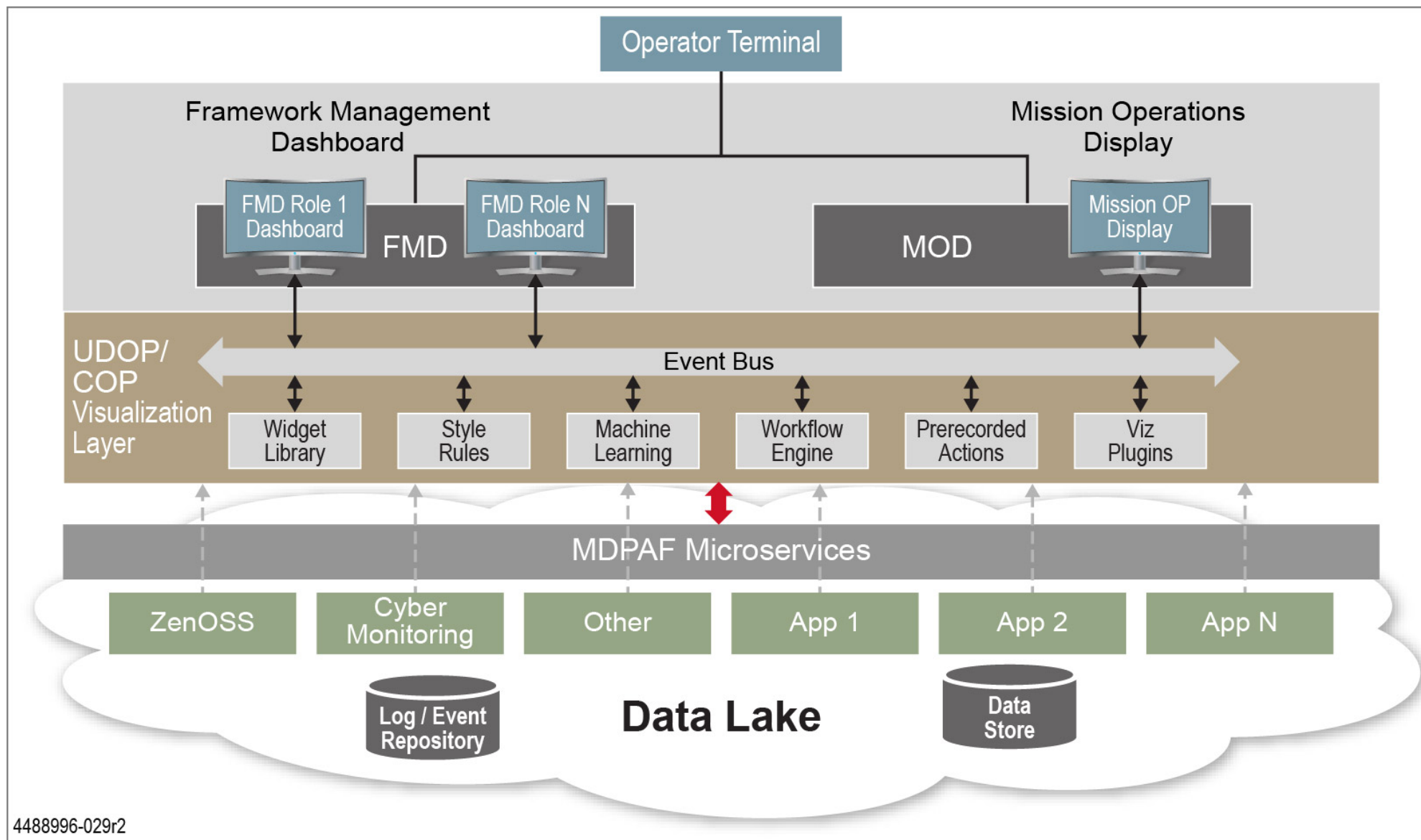
Smart Systems for Space Operations

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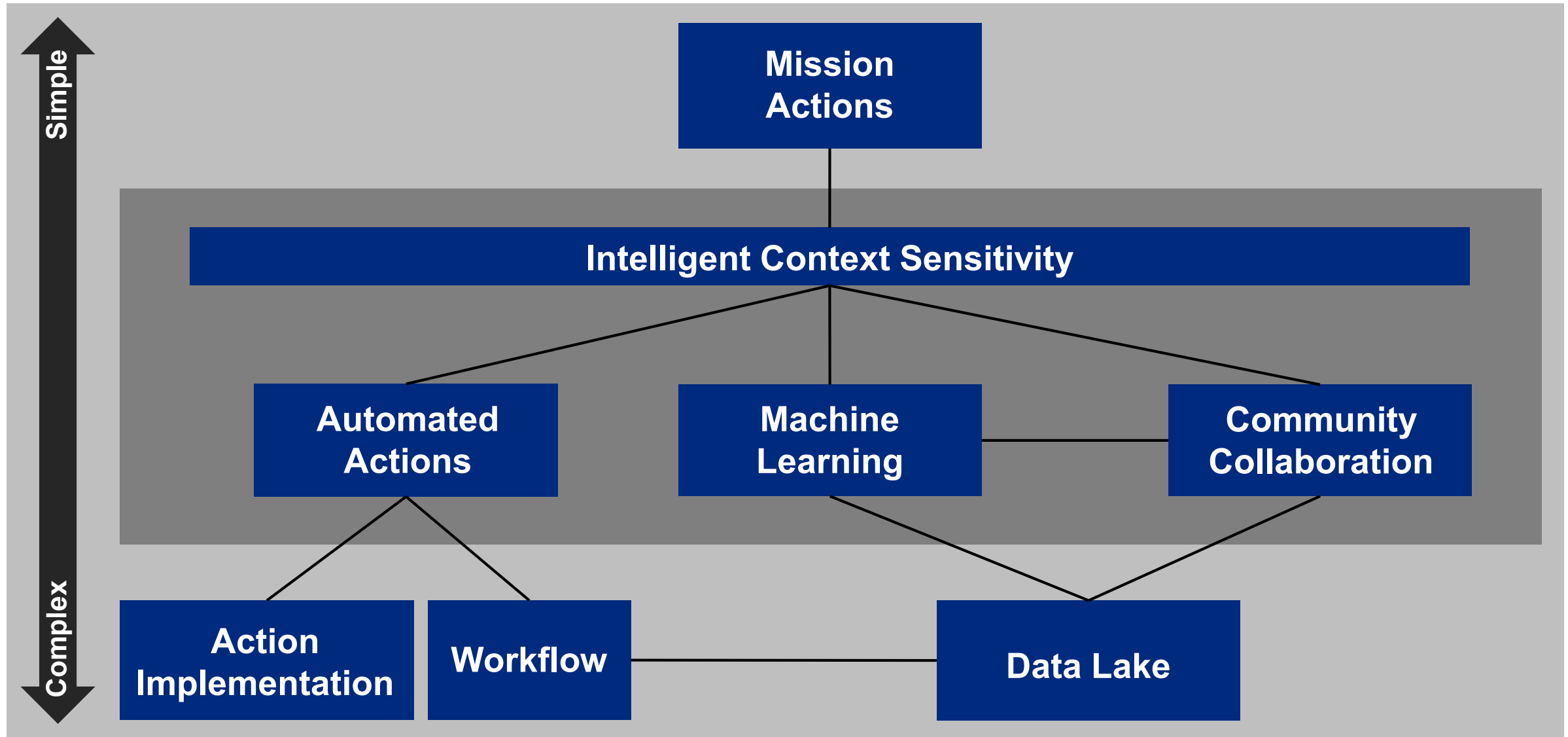
Overview: Smart Systems for Space Operations

- Highly complex space enterprises require correspondingly complex operations systems that create opportunities for operator error
- Future operations systems can leverage new technologies to create smart systems that abstract system complexity from operator input
 - Automation: simple automation steps can implement complex actions to provide operators with significant power over system function without requiring full knowledge of system implementation
 - Data Analytics: Machine Learning and Artificial Intelligence based on community inputs and past operator actions can help select and suggest optimal responses to reoccurring events
 - User Experience: Simple User Experience driven by Automation and Data Analytics can provide operations interfaces that suggest actions and update displays in response to mission context
 - These “Context-sensitive” Smart Systems augment operator experience to optimize operations

Data Analytics Determine Optimal Mission Actions



User Experience Simplifies Operations Interfaces



Context-sensitive Displays Simplify Mission Complexity

Problem	Context-Based Solution	Example
Operator information overload <ul style="list-style-type: none"> • Too much information presented • Pertinent information not made easily accessible 	Contextual displays and suggested actions emphasize relevant information and actions in a comprehensive concise, clear interface	System suggests actions to reconfigure mission data representations based on pre-defined or learned events
New Operators lack mission domain knowledge <ul style="list-style-type: none"> • Minimal experience • Minimal exposure to wide-ranging mission events 	Contextual tips provide insights based on actions of previous operators and accelerate new operator onboarding	System suggests actions in response to an event based on actions that are often taken by other operators for similar events
Operators unaware of relevant data beyond their roles <ul style="list-style-type: none"> • Events identified by other operator roles • Events identified in other communities 	Shareable, archivable mission contexts simplify collaboration and create enterprise-wide knowledge base	Operator captures and shares context configuration applicable to an event so others can see relevant information
Operators accidentally miss standardized steps	Contextual tips provide relevant suggestions based on actions an operator has previously performed	System suggests end-of shift automated actions based on time of day

Context-sensitive displays automate solutions to mission problems and simplify daily operations