Recommendations for NIEM Compliance
PESC Technical Advisory Board
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As the result of the CAM analysis of core-main NIEM compliance, several steps are recommended to bring ACT Schemas into better alignment with NIEM:

Task	Schema doc	Schema structure	Instance processing	App impact (1-5)	Difficulty (1-5)	Effort (1-5)	Notes
1. Perform the CAM Analysis on all PESC and FSA sector libraries to obtain violations of NIEM rules.							
2. Declare all elements as global and reference these elements in complex type definitions instead of defining them within the complex type.		X					Can be automated by CAM. No impact on instance docs
3. Add annotation documentation to every element and type that contains the definition of that element or type.	X						Transfer from workbook to CAM for schema creation
4. Add annotation documentation to every enumeration code value with the definition of that code value. (Note: This may be as simple in some cases as expanding the camel case where self-evident.)	X						Transfer from workbook to CAM for schema creation
5. Remove xsd:group from PESC schemas	X	X	?				Choice may be lost among group elements. Automate with CAM
6. Evaluate all elements that are nillable and		X	X				

determine if this has special meaning that requires nillable= “true”. Remove attribute where not needed							
7. Identify the representation terms to be used by PESC in naming simple content elements. These would include, but would not be restricted to, NIEM and XML R&R representational terms.							
8. Evaluate all elements that are flagged by CAM to not have a representation term in the name using the approved list. Change those that 1)should use a representation term already defined, or 2) the representation term is wrong for the type (e.g., an enumeration code with representation term List)		X	X				
9. Rename those elements that do not start with a letter.		X	X				
10. Evaluate all simple elements that have a character length defined and determine if this is needed. This could create problems with interoperability. Remove this restriction where not needed		X	?				Existing applications may get longer content.
11. Evaluate all the CAM identified simple elements that have no restrictions or types at all. Change where the restrictions needed.		X	X				If using a type not intended these elements would not validate
12. Evaluate all the CAM identified simple elements with numeric name representation but not typed as a number. Change the representation term unless it is a proper noun.		X	X				If not using a number then these elements would not validate
13. To insure backward compatibility of instance documents, elements that need to be renamed can be added to the schema and the replaced elements redefined as a part of the		X					

substitution group with the new element as the group head. The older elements would be deprecated and removed over time when no longer I use.							
14. Evaluate NIEM core objects to determine if we should use any of these instead of PESC core or sector objects	X	X	X				Not required
15. Start using abstract elements and substitution groups where different sectors need to define complex elements with the same meaning but this slightly different content (e.g., Address): http://www.xfront.com/ElementHierarchy.html		X					Not required