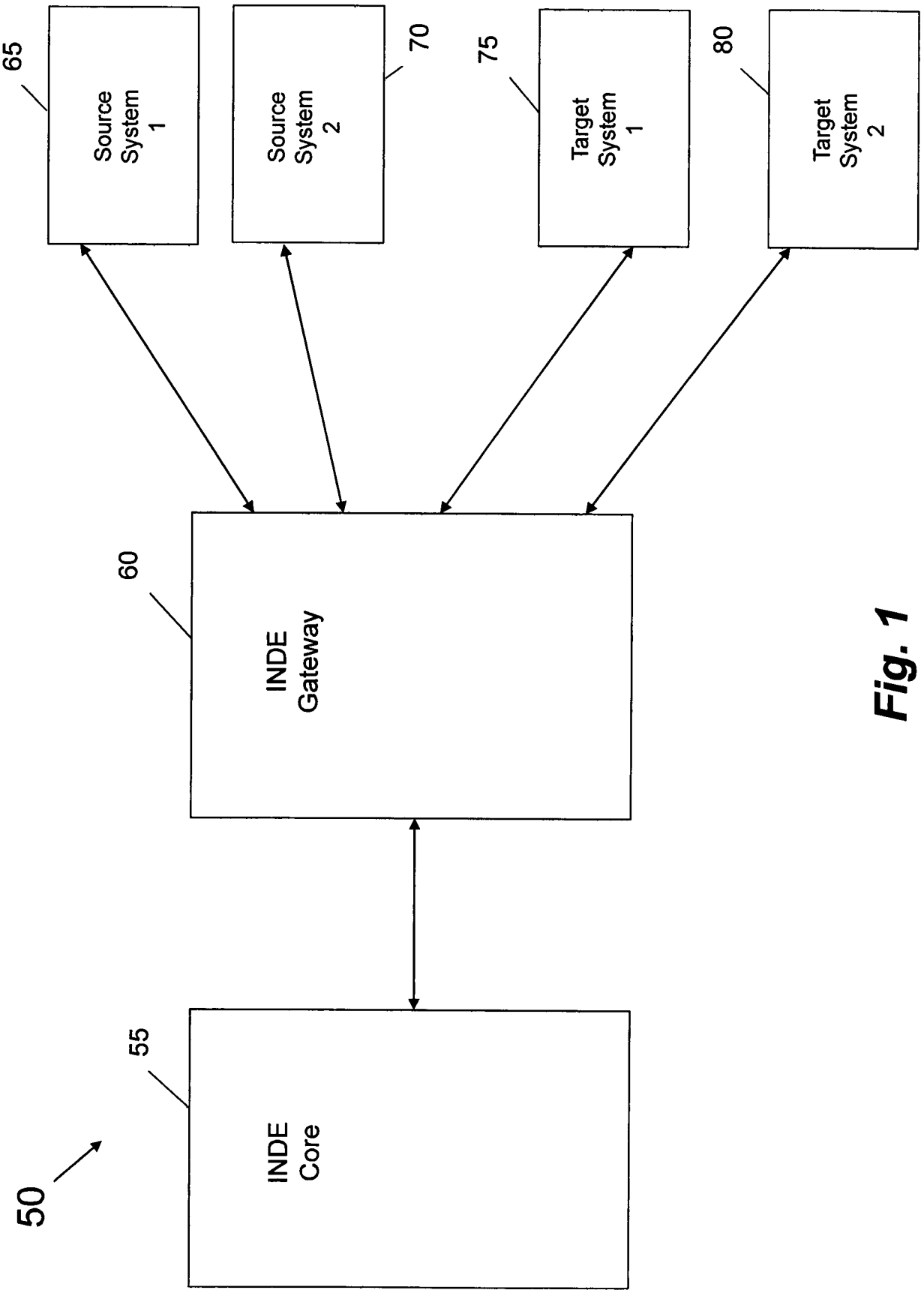

65
Source System 1
70
Source System 2
75
Target System 1
80
Target System 2
60
INDE Gateway
55
INDE Core
50

Fig. 1

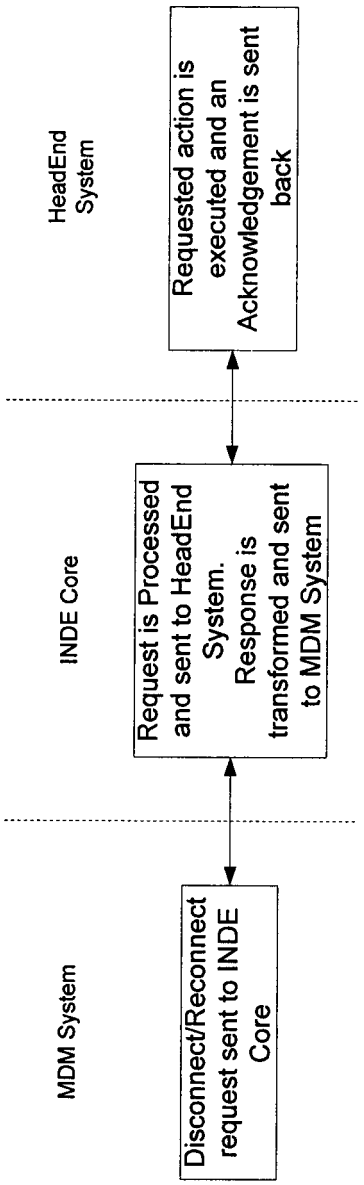

HeadEnd System
Requested action is executed and an Acknowledgement is sent back
INDE Core
Request is Processed and sent to HeadEnd System. Response is transformed and sent to MDM System
MDM System
Disconnect/Reconnect request sent to INDE Core

Fig. 2

Fig. 3

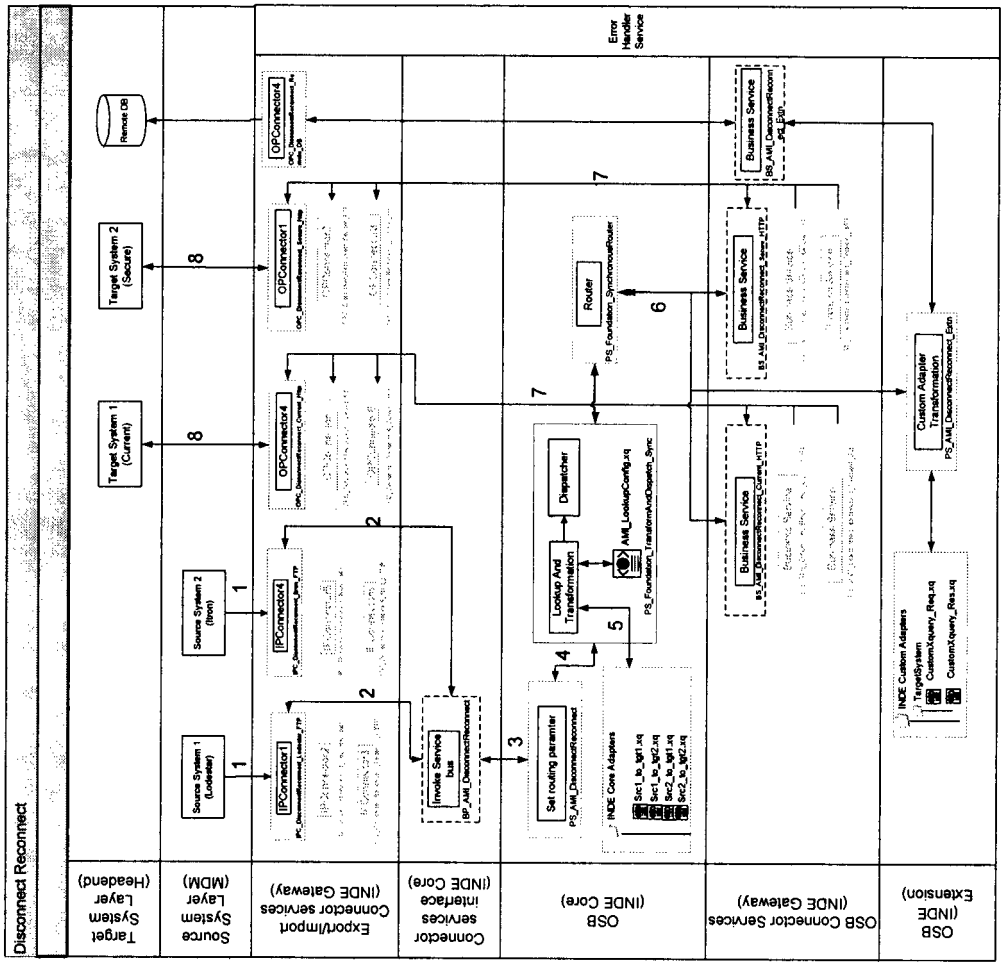

Disconnect Reconnect
Error Handler Service
Target System (Headend)
Source System Layer (MDM)
Export/Import Connector services (INDE Gateway)
Connector services interface (INDE Core)
OSB (INDE Core)
OSB Connector Services (INDE Gateway)
OSB (INDE Extension)
Remote DB
Target System 1 (Current)
Target System 2 (Secure)
Source System 1 (Ludester)
Source System 2 (Ibon)
IPConnector1
IPConnector4
OPConnector1
OPConnector4
Invoke Service bus
Set routing parameter
Lookup And Transformation
Dispatcher
Router
Business Service
Custom Adapter Transformation
INDE Core Adapters
INDE Custom Adapters

Fig. 4

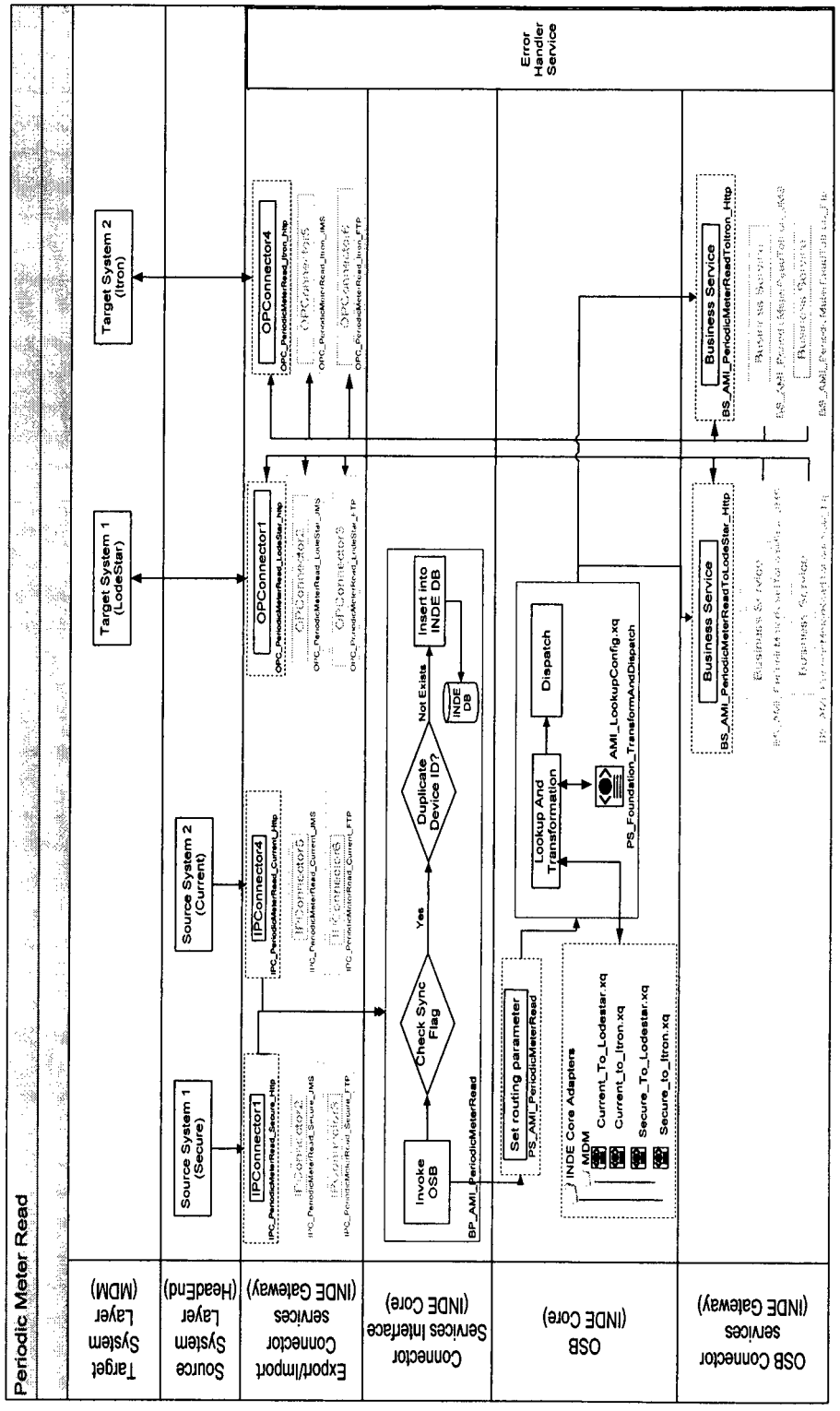

Periodic Meter Read
Target System Layer (MDM)
Source System Layer (HeadEnd)
Export/Import Connector services (INDE Gateway)
Connector Services Interface (INDE Core)
OSB (INDE Core)
OSB Connector services (INDE Gateway)
Target System 2 (Itron)
Target System 1 (LodeStar)
Source System 2 (Current)
Source System 1 (Secure)
Error Handler Service
IPConnector4
IPConnector1
OPConnector4
OPConnector1
Invoke OSB
Check Sync Flag
Yes
Duplicate Device ID?
Not Exists
Insert into INDE DB
INDE DB
BP_AMI_PeriodicMeterRead
Set routing parameter
PS_AMI_PeriodicMeterRead
Lookup And Transformation
Dispatch
AMI_LookupConfig.xq
PS_Foundation_TransformAndDispatch
INDE Core Adapters
MDM
Current_To_Lodestar.xq
Current_to_Itron.xq
Secure_To_Lodestar.xq
Secure_to_Itron.xq
Business Service
BS_AMI_PeriodicMeterReadToLodeStar_Http
Business Service
BS_AMI_PeriodicMeterReadToItron_Http

Fig. 5

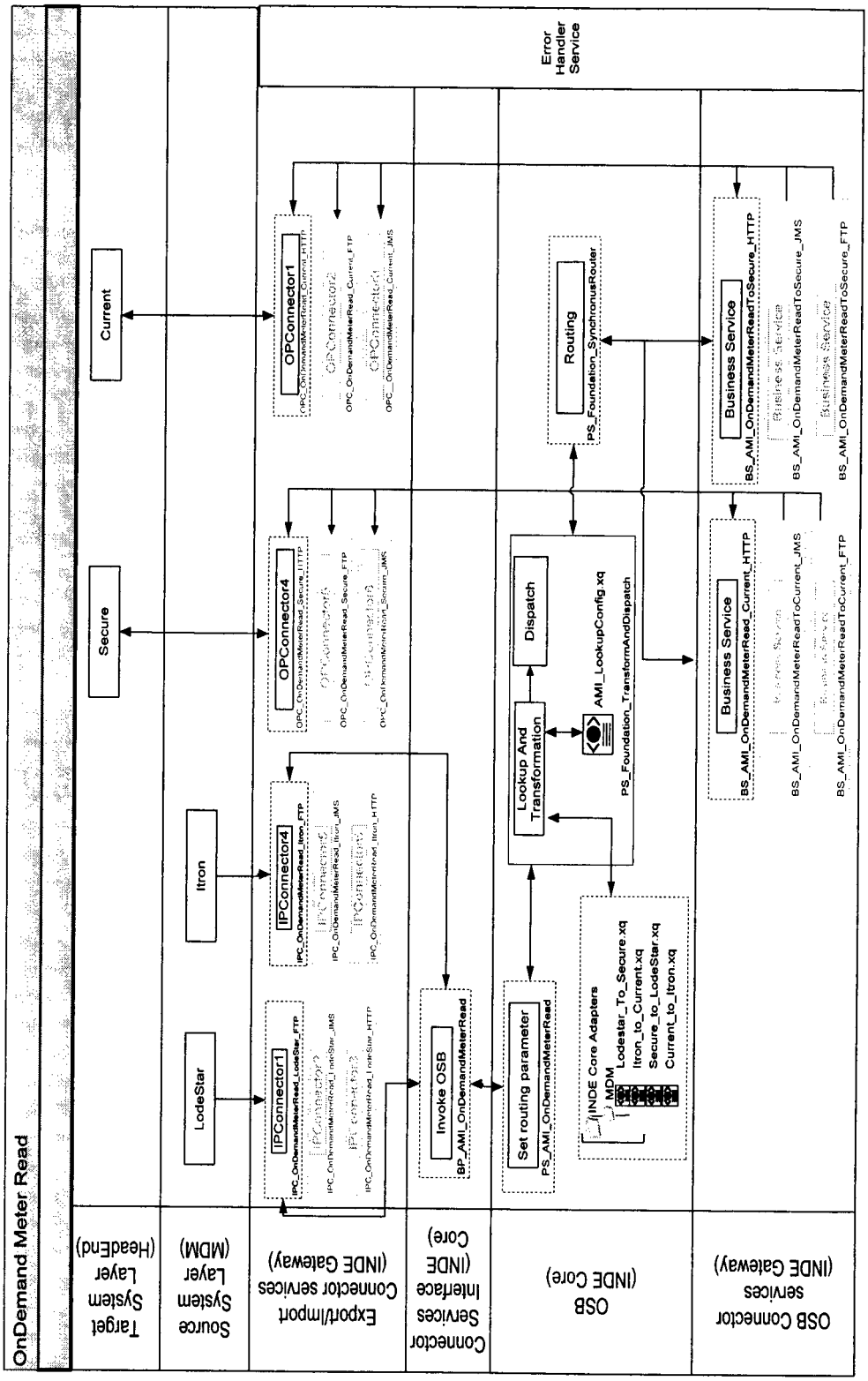

OnDemand Meter Read
Target System Layer (HeadEnd)
Source System Layer (MDM)
Export/Import Connector services (INDE Gateway)
Connector Services Interface (INDE Core)
OSB (INDE Core)
OSB Connector services (INDE Gateway)
Error Handler Service
Current
Secure
Itron
LodeStar
IPConnector1
IPConnector4
OPConnector1
OPConnector4
Invoke OSB
BP_AMI_OnDemandMeterRead
Set routing parameter
PS_AMI_OnDemandMeterRead
Lookup And Transformation
Dispatch
AMI_LookupConfig.xq
PS_Foundation_TransformAndDispatch
Routing
PS_Foundation_SynchronusRouter
INDE Core Adapters
MDM
Lodestar_To_Secure.xq
Itron_to_Current.xq
Secure_to_LodeStar.xq
Current_to_Itron.xq
Business Service
BS_AMI_OnDemandMeterReadToSecure_HTTP
BS_AMI_OnDemandMeterReadToSecure_JMS
BS_AMI_OnDemandMeterReadToSecure_FTP
BS_AMI_OnDemandMeterRead_Current_HTTP
BS_AMI_OnDemandMeterReadToCurrent_JMS
BS_AMI_OnDemandMeterReadToCurrent_FTP

FIG. 6
FIG. 6A FIG. 6B FIG. 6C

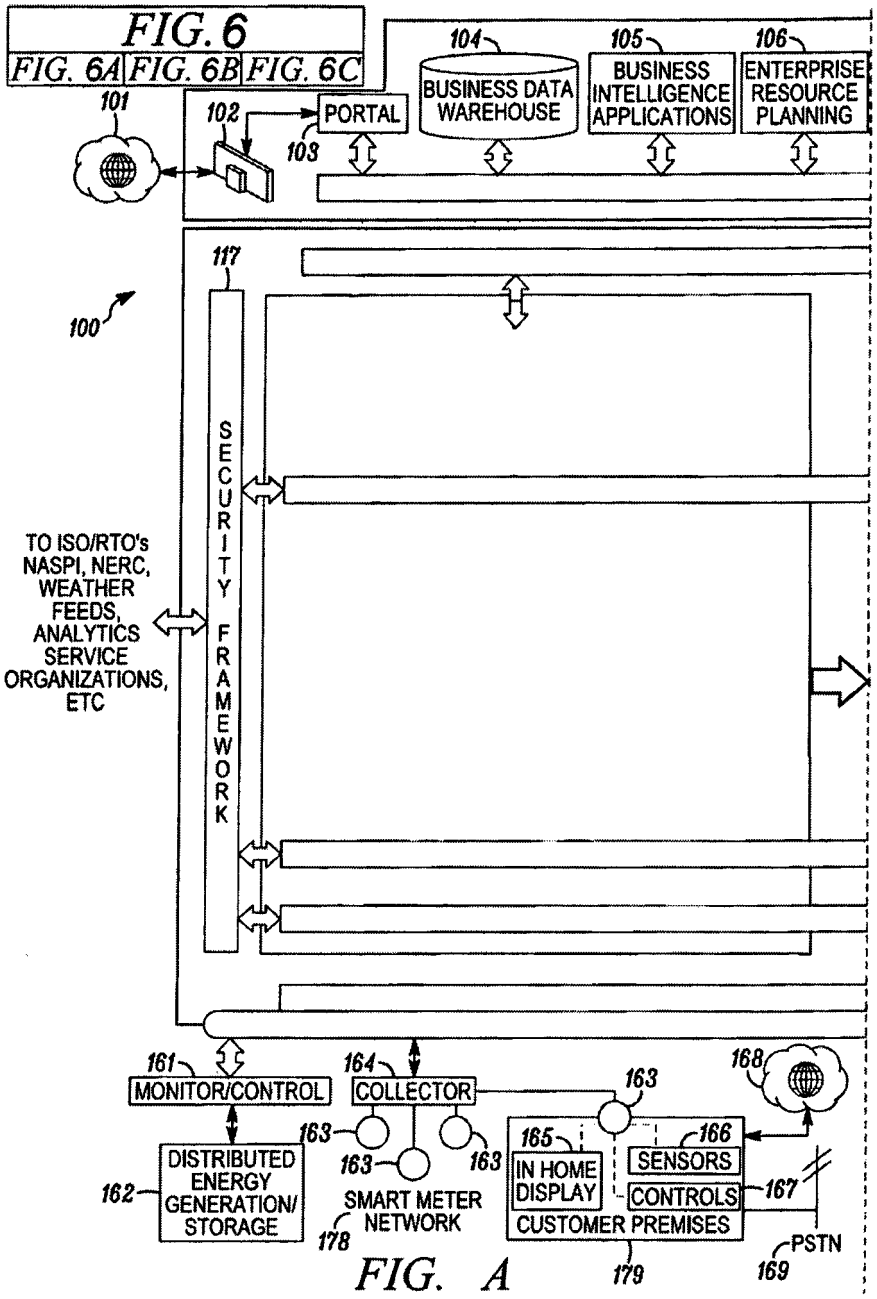


FIG. A

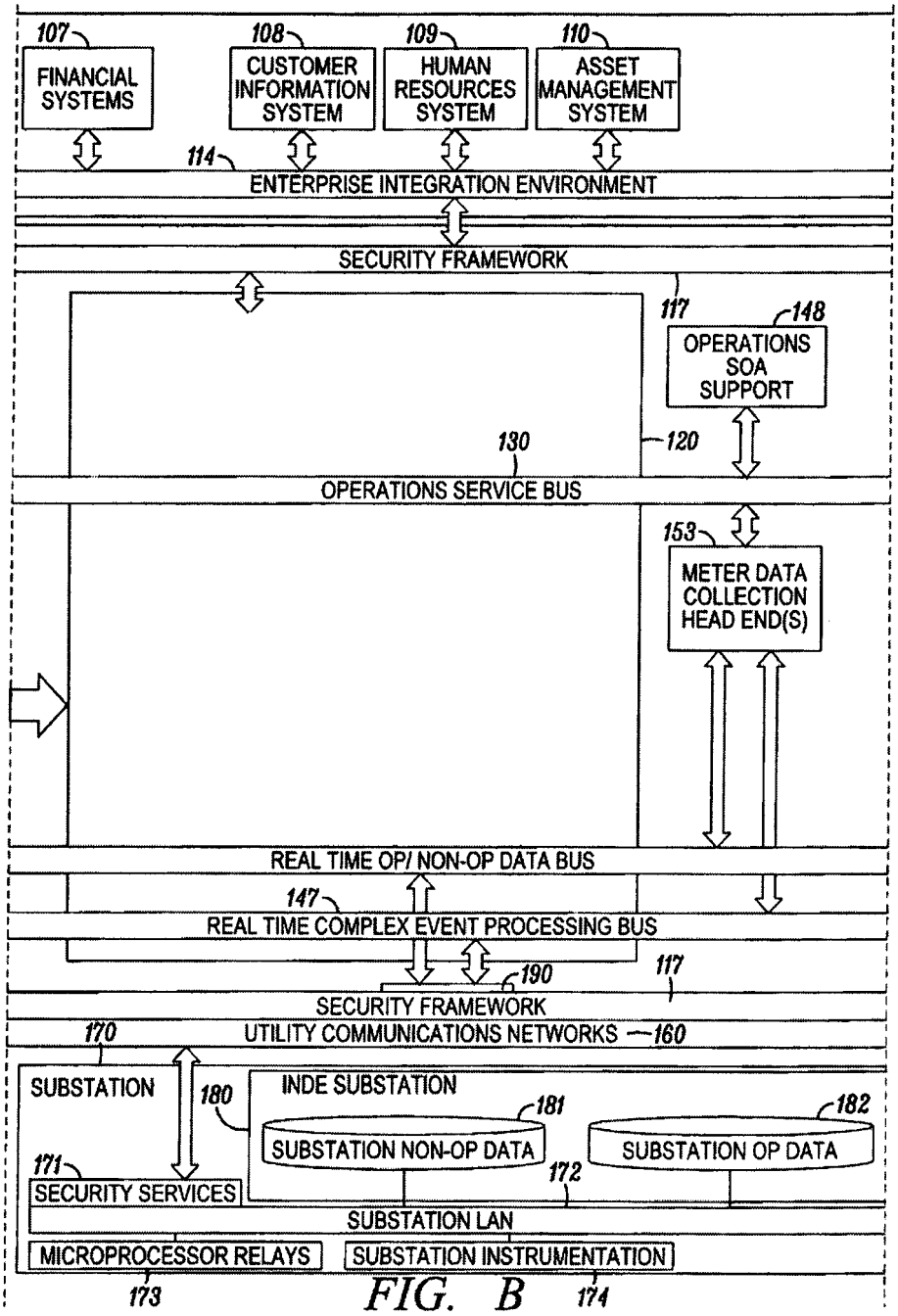

107
FINANCIAL SYSTEMS
108
CUSTOMER INFORMATION SYSTEM
109
HUMAN RESOURCES SYSTEM
110
ASSET MANAGEMENT SYSTEM
114
ENTERPRISE INTEGRATION ENVIRONMENT
SECURITY FRAMEWORK
117
148
OPERATIONS SOA SUPPORT
130
120
OPERATIONS SERVICE BUS
153
METER DATA COLLECTION HEAD END(S)
REAL TIME OP/ NON-OP DATA BUS
147
REAL TIME COMPLEX EVENT PROCESSING BUS
190
117
SECURITY FRAMEWORK
170
UTILITY COMMUNICATIONS NETWORKS
160
SUBSTATION
180
INDE SUBSTATION
181
SUBSTATION NON-OP DATA
182
SUBSTATION OP DATA
171
SECURITY SERVICES
172
SUBSTATION LAN
MICROPROCESSOR RELAYS
SUBSTATION INSTRUMENTATION
173
174

FIG. B

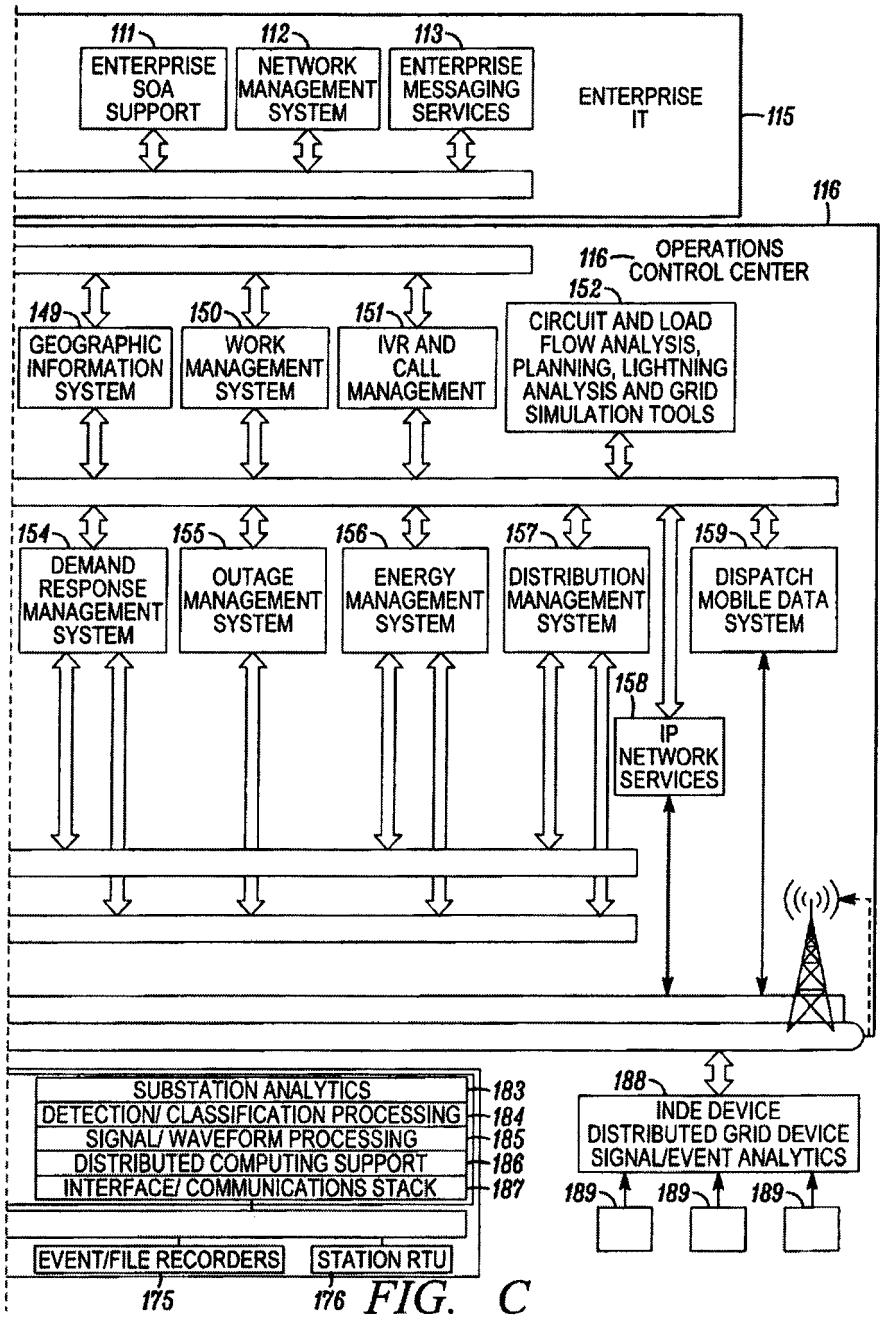

111
ENTERPRISE SOA SUPPORT
112
NETWORK MANAGEMENT SYSTEM
113
ENTERPRISE MESSAGING SERVICES
ENTERPRISE IT
115
116
116 OPERATIONS CONTROL CENTER
152
CIRCUIT AND LOAD FLOW ANALYSIS, PLANNING, LIGHTNING ANALYSIS AND GRID SIMULATION TOOLS
149
GEOGRAPHIC INFORMATION SYSTEM
150
WORK MANAGEMENT SYSTEM
151
IVR AND CALL MANAGEMENT
154
DEMAND RESPONSE MANAGEMENT SYSTEM
155
OUTAGE MANAGEMENT SYSTEM
156
ENERGY MANAGEMENT SYSTEM
157
DISTRIBUTION MANAGEMENT SYSTEM
159
DISPATCH MOBILE DATA SYSTEM
158
IP NETWORK SERVICES
SUBSTATION ANALYTICS
DETECTION/ CLASSIFICATION PROCESSING
SIGNAL/ WAVEFORM PROCESSING
DISTRIBUTED COMPUTING SUPPORT
INTERFACE/ COMMUNICATIONS STACK
183
184
185
186
187
188
INDE DEVICE DISTRIBUTED GRID DEVICE SIGNAL/EVENT ANALYTICS
189
189
189
EVENT/FILE RECORDERS
STATION RTU
175
176

FIG. C