

# OpEx calculation methodology and application on FTTH networks

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***Econ@tel, WG1, Helsinki, May 2008***

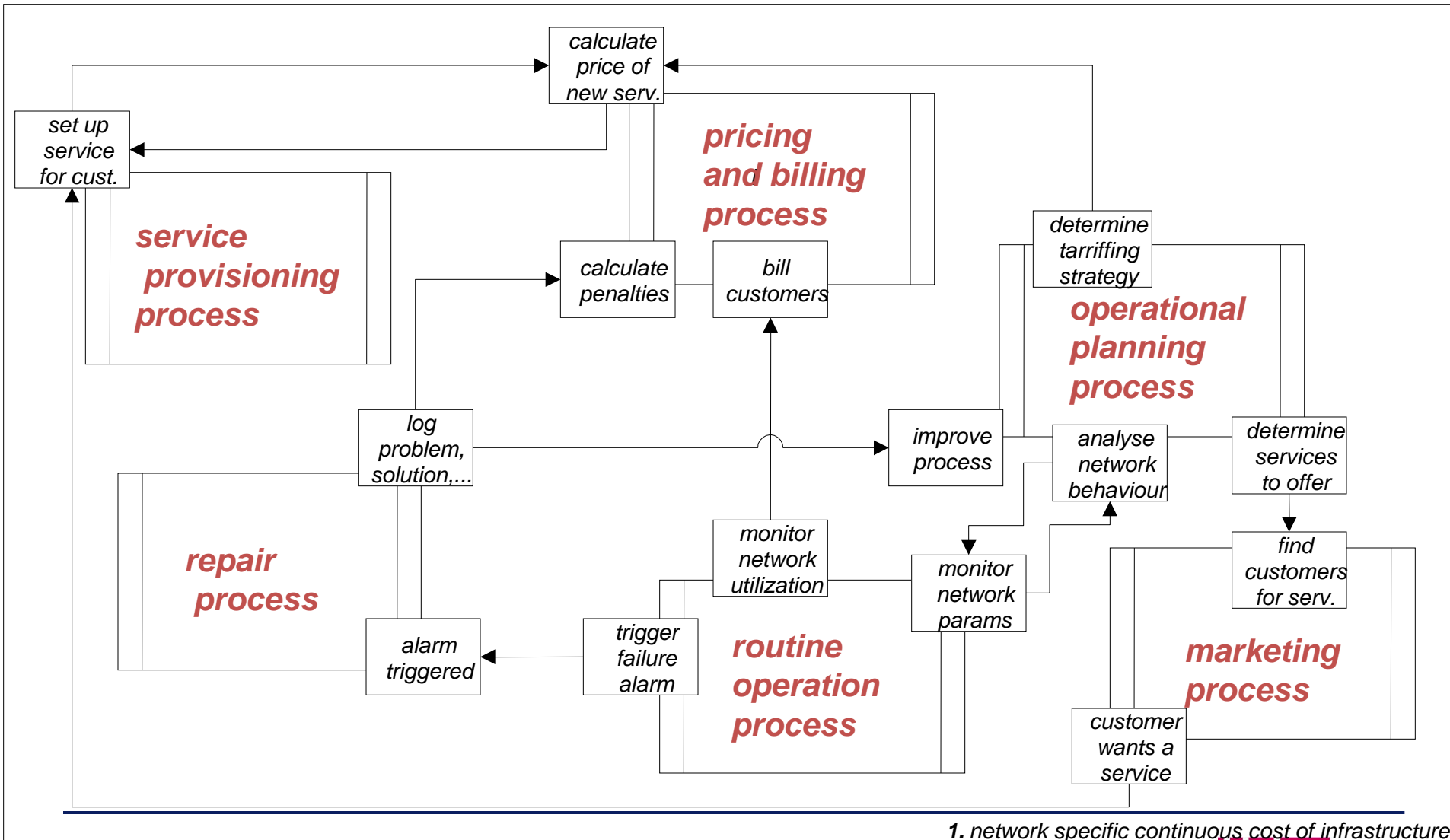
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OpEx calculation methodology and application on FTTH networks

# OPEX MODEL

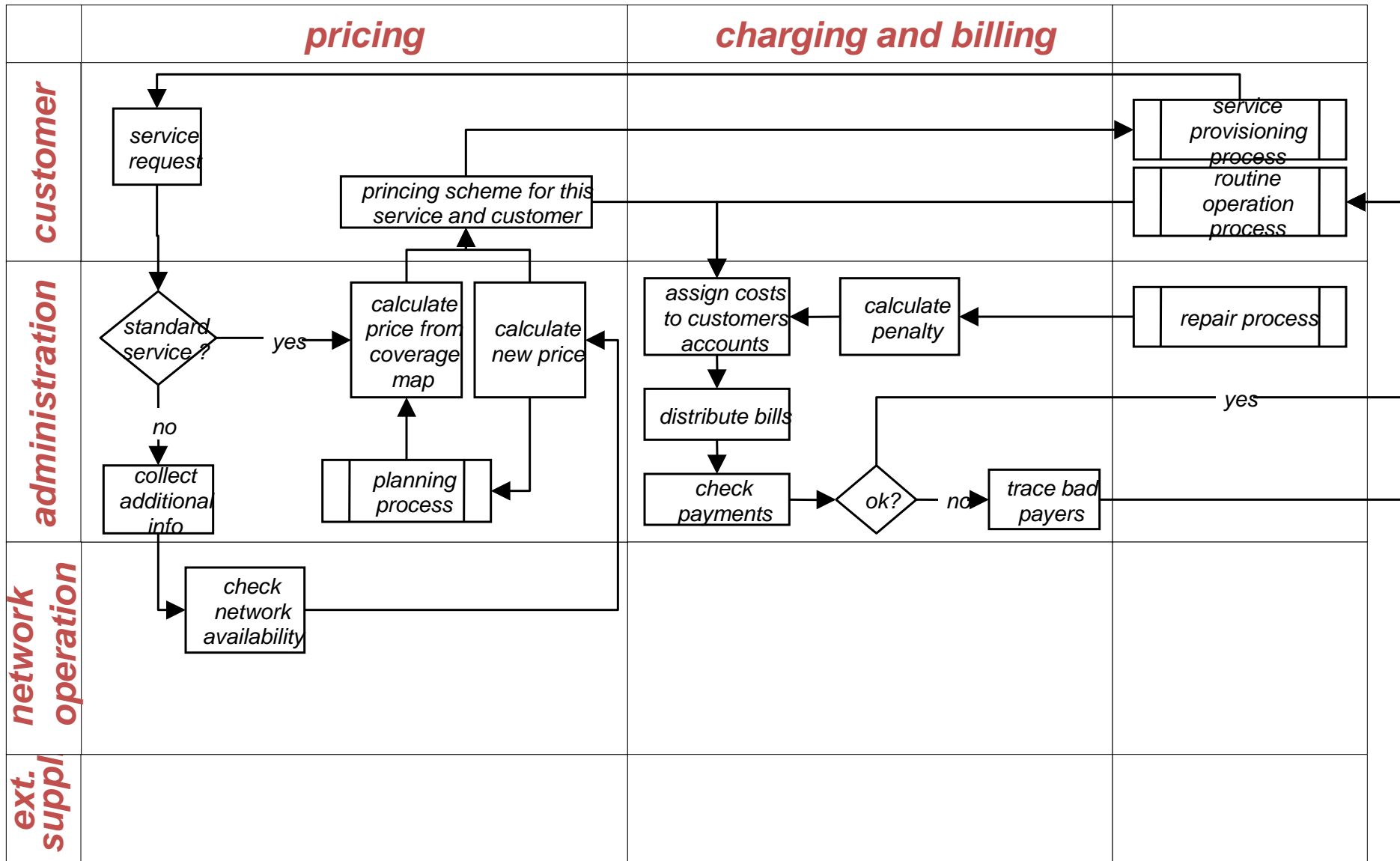
# IBBT opex classification model

GOAL = what you do	telco specific O pEx for network which is up and running							O pEx eq. inst.		general O pEx	
	telco spec. continuous cost of infrastructure	maintenance	reparation	service provisioning	pricing and billing	operational network planning	marketing	first time installation	up-front planning	non telco specific cost of infrastructure	non telco specific administration
MEANS = what you pay											
personnel											
training											
tools & transport											
space											
energy											
rental, leasing											

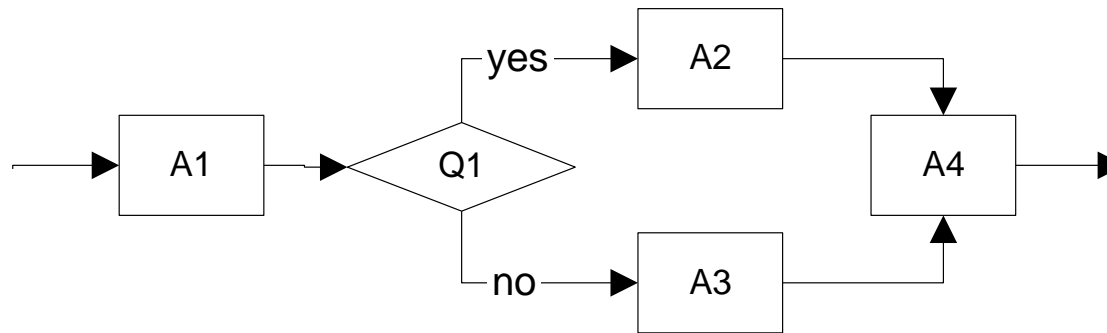


1. network specific continuous cost of infrastructure

# Pricing and billing process



1. fix the time frame to be considered
2. attach costs to the rectangles (actions)
3. attach probabilities to the diamonds (questions)
4. calculate cost of an entire process



$$\text{cost}A1 + p \cdot \text{cost}A2 + (1-p) \cdot \text{cost}A3 + \text{cost}A4$$

5. calculate total OpEx cost for network scenario  
 = cost of continuous processes + cost of event driven processes \* #  
 occurrences over time frame

- straightforward approach:  
cost of action = time needed to perform action \* wages of person taking care of it (incl. taxes)
- several employee categories involved, with wages
  - **administrative personnel**
  - **technicians**
  - **engineers**
  - **sales people**
- total cost of personnel  
= wages + training + tools and transport  
= wages (1 + weight factor)  
**weight factor per category:**  
**e.g technicians need more tools than administrative personnel**

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# FRAMEWORK: BPMN

AS-IS		TO-BE	
Analysis	Evaluation	Analysis	Evaluation
What is done?	Why is it done?	What could be done?	What should be done?
When is it done?	Why then?	When could it be done?	When should it be done?
Who does it?	Why them?	Who could do it?	Who should do it?
Where is it done?	Why there?	Where could it be done?	Where should it be done?
How is it done?	Why that way?	How could it be done?	How should it be done?

- **Business Process Modeling Notation**
  - **a standardized graphical notation for drawing business processes in a workflow**
  - **developed by Business Process Management Initiative (BPMI)**
  - **now being maintained by the Object Management Group since the two organizations merged in 2005**

- **Core BPMN Elements**
- **Complete BPMN Elements**
  - *Activities*
  - *Events*
  - *Gateways*
  - *Connections*
  - *Artifacts*
  - *Swimlanes*
  
- [www.bpmn.org](http://www.bpmn.org) !

## Flow Objects

### Events



### Activities



### Gateways



## Connecting Object

### Sequence Flow



### Message Flow



### Association



## Swimlanes

### Pool



### Lanes (within a Pool)



## Artifacts

### Data Object



Name  
[State]

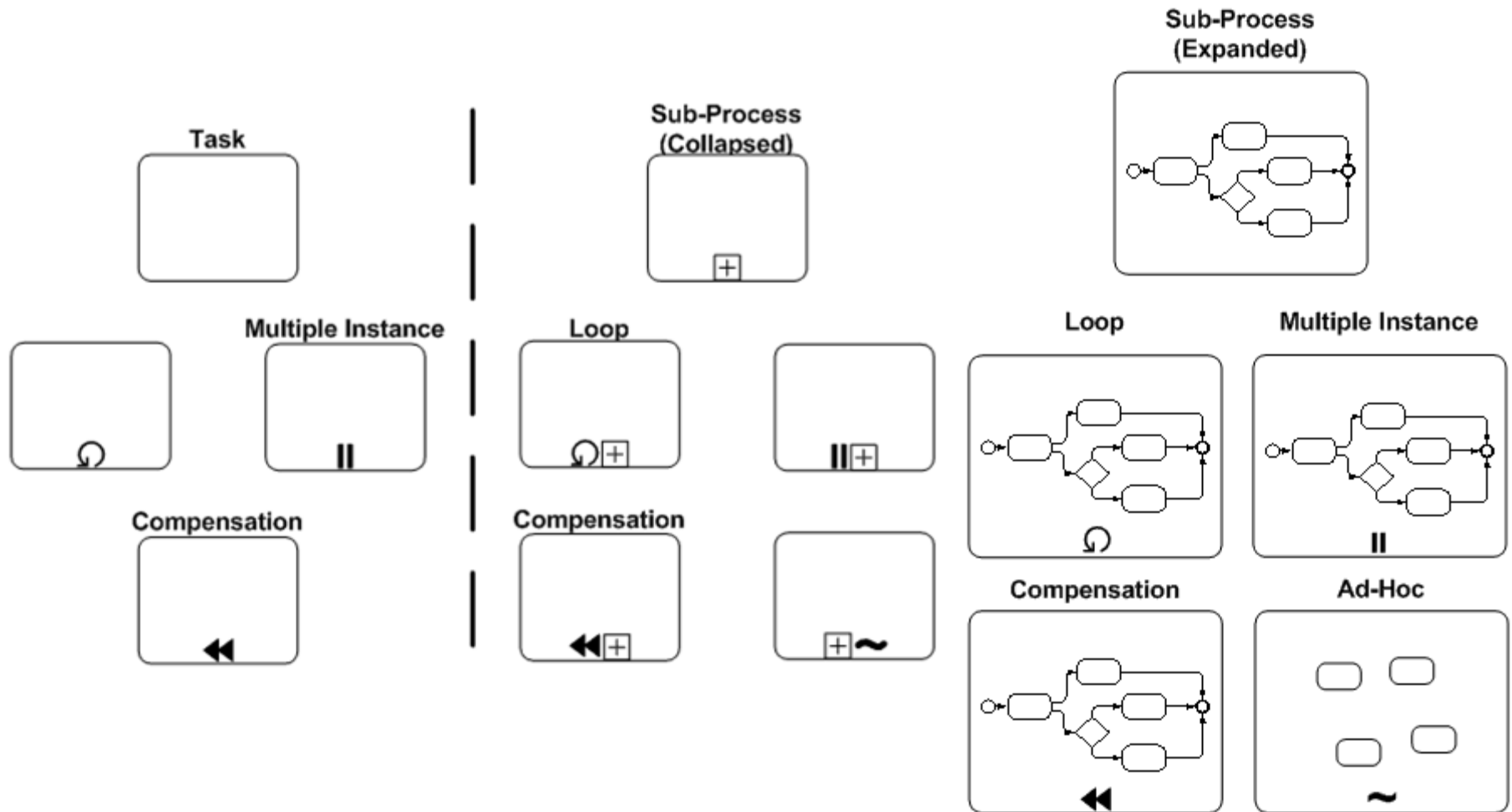
### Text Annotation

#### Text Annotation

Text Annotation Allows a Modeler to provide additional Information























### Group

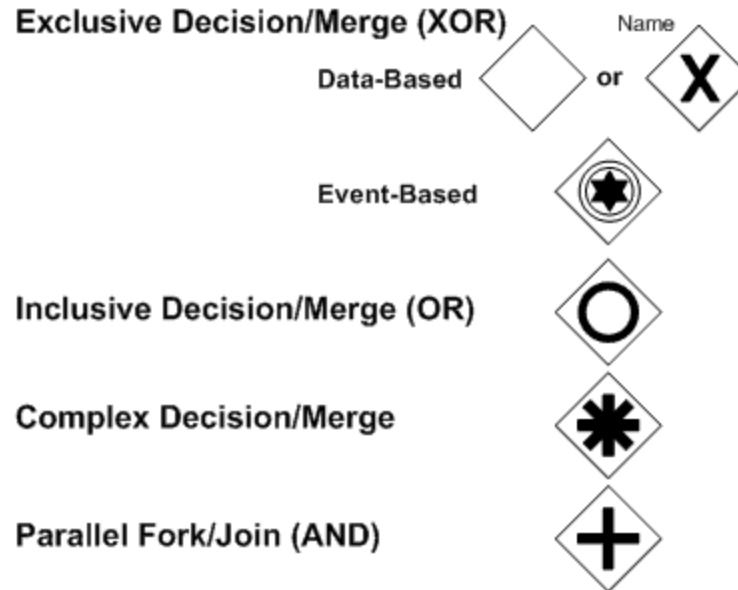




# Events

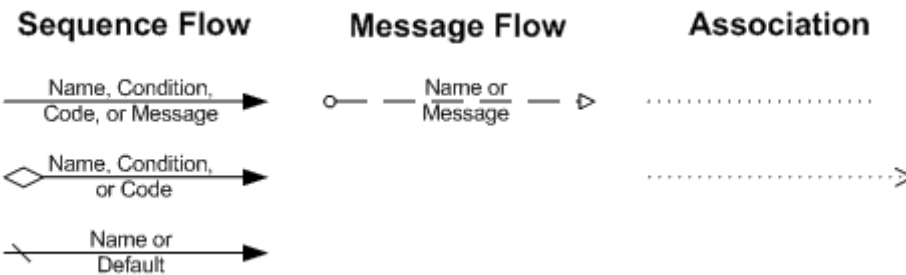
## from Complete BPMN Elements

	Start	Intermediate	End
			
	<b>Event Types</b>		
Message			
Timer			
Error			
Cancel			
Compensation			
Rule			
Link			
Terminate			
Multiple			





# Connections from Complete BPMN Elements

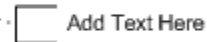


## Data Object



Name  
[State]

## Text Annotation



## Group





# Pools from Complete BPMN Elements

Pool



Lanes (within a Pool)



- XML Process Definition Language
  - XML schema for specifying the declarative part of workflow
- format to interchange Business Process definitions between different workflow tools
  - **exchange the process design**
    - ◆ both the graphics and the semantics
  - **contains elements to hold the X and Y position of the activity nodes as well as the coordinates of points along the lines that link those nodes.**
    - ◆ BPEL focuses exclusively on the executable aspects of the process. BPEL does not contain elements to represent the graphical aspects of a process diagram.
- standardized by the Workflow Management Coalition (WfMC)
- <http://www.wfmc.org/standards/xpdl.htm> !

- Captures the diagram
- To interchange business process definitions between different workflow products like modeling tools and workflow engines

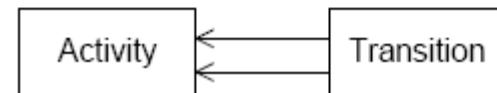
### Example Arc



### XPDL Transition

```
<Activity Id="A"/>  
<Activity Id="B"/>  
<Transition  
  From="A" To="B"/>
```

### UML Representation



	BPMN	XPDL	license
CaseWise	As an extension	As an extension	Expensive, Free for TMForum members
Mega: MegaProcess			
IDS Scheer: ARIS			
MS Visio	yes	no	MS license
Tibco business studio	yes	yes	Free

### Business Studio Developer Center

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Developer Centers

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[TIBCO Business Studio](#)

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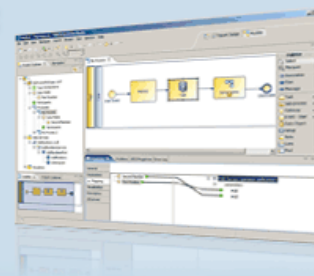
Community

[Developer Forums](#)

[TIBCO User Group](#)

## Download Free Business Modeling Software: TIBCO Business Studio

- ▶ Unifies modeling, management, simulation, and implementation in one environment.
- ▶ Different views of the same process model allow business and IT to collaborate seamlessly to create executable business process models.
- ▶ *"Provides the best quality BPM models by leveraging the know-how of those closest to the business processes without bogging them down with technical details."*  
- Harm Scherpbier, MD, Siemens Medical Solutions



Download

#### LATEST FEATURES



#### TIBCO Business Studio 2.1 Now Available

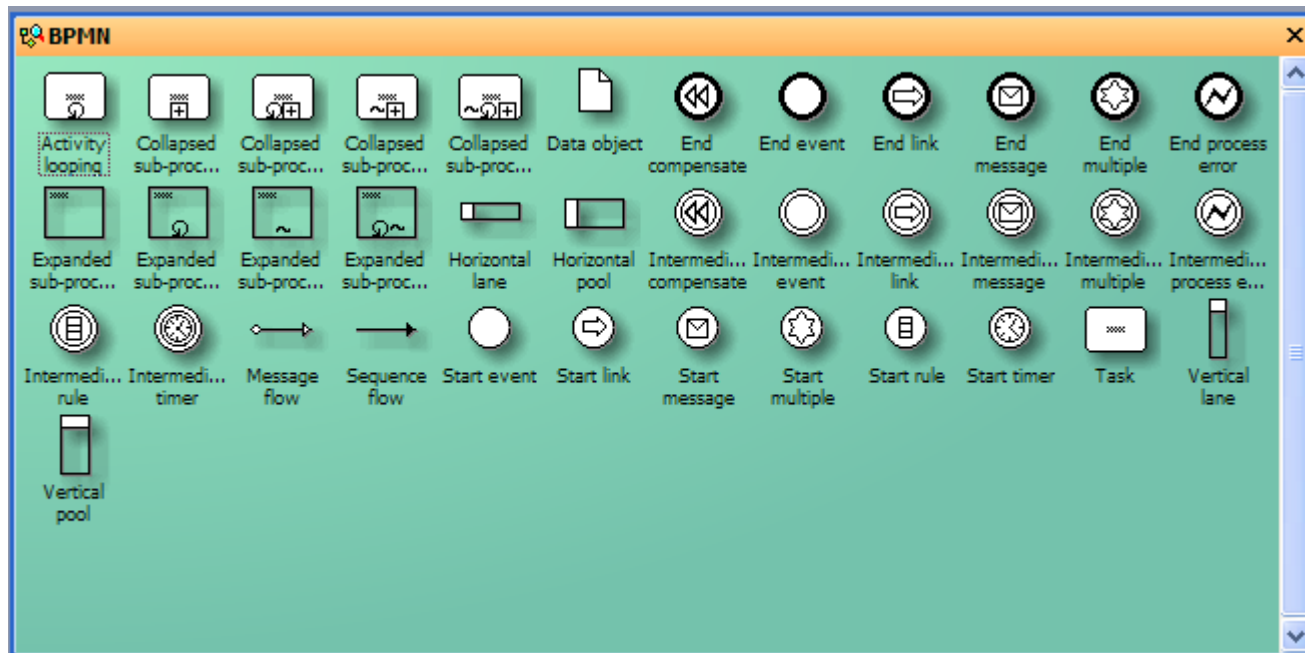
Version 2.1 Features:

- ▶ Linux support (new in 2.1)
- ▶ Enhanced visual process package documentation (new in 2.1)
- ▶ Two distinct views on the same process, one for business and one for IT

#### TIBCO BUSINESS STUDIO FORUM

#### Read the TIBCO Business Studio Forum

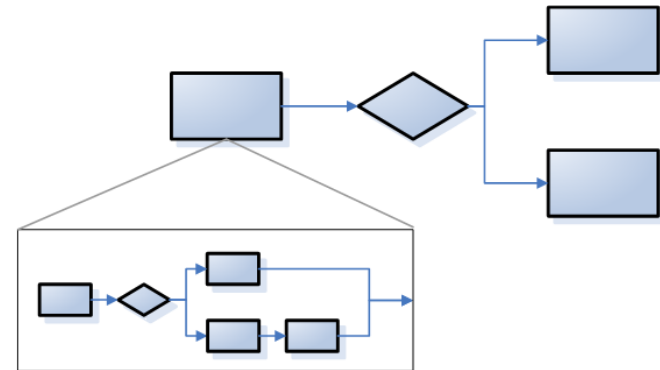
The TIBCO Business Studio forum is a place where you can ask questions, and learn from others who are also using this product. Here you can upload your own processes as examples to others, and download processes posted by other community members. It is a place where best practices are shared and identified. The Business Studio forum is monitored by TIBCO engineers



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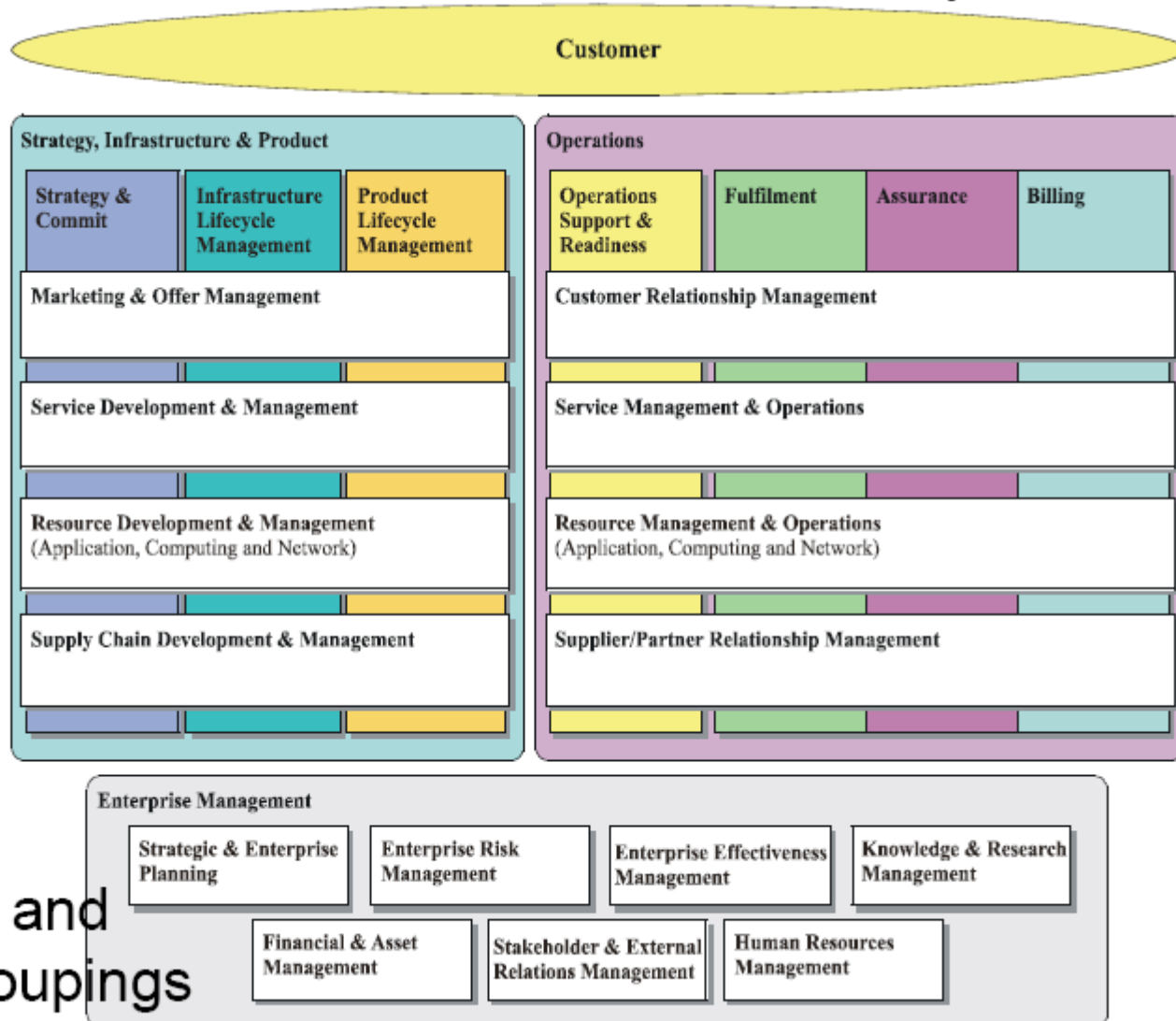
# **ETOM: HIERARCHICAL MODEL**

- Process architecture:  
hierarchical



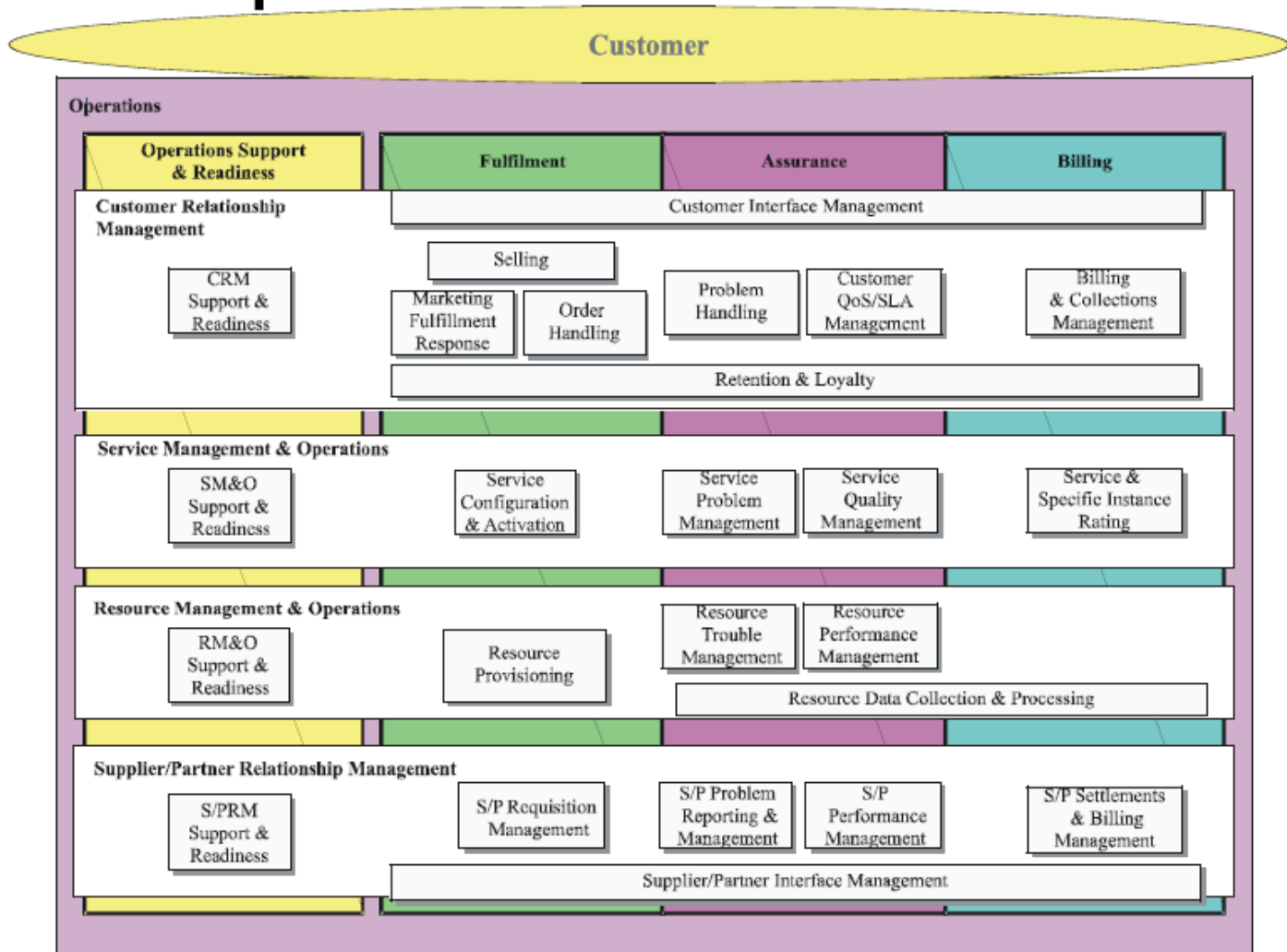
- Different level of processes
  - Level 0: business activities
  - Level 1: process groupings
  - Level 2: core processes
  - Level 3: business process flows
  - Level 4: operational process flows
  - Level 5: detailed process flows

- Standardized by TMF: ITU-T M.3050
- AB process decomposition model
  - **Process model, not state model!**
  - **Grouping**
    - ◆ Vertical: purpose of the processes
    - ◆ Horizontal: where those processes are taking place
  - **Decomposition: notional level 0 to maximum of 3 levels**
    - ◆ NOT the goal to address detailed processes and procedures of an enterprise
- Out of scope
  - **Rainy day scenarios**
  - **Dynamic aspects**



Horizontal and vertical groupings

# eTOM OPS: level 0, 1, 2 processes



# Level 1 mapping on level 2 objects

	Strategy & commit	Infrastructure lifecycle management	Product lifecycle management
Marketing and offer management	Market strategy and policy	Product and offer capability delivery	Product and offer development and retirement
	Product and offer portfolio planning	Marketing capability delivery	Sales development
			Product marketing communications and promotion
Service development and management	Service strategy and planning	Service capability delivery	Service development and retirement
Resource development and management	Resource strategy and planning	Resource capability delivery	resource development and retirement
Supply chain development and management	Supply chain strategy and planning	Supply chain capability delivery	Supply chain development and change management

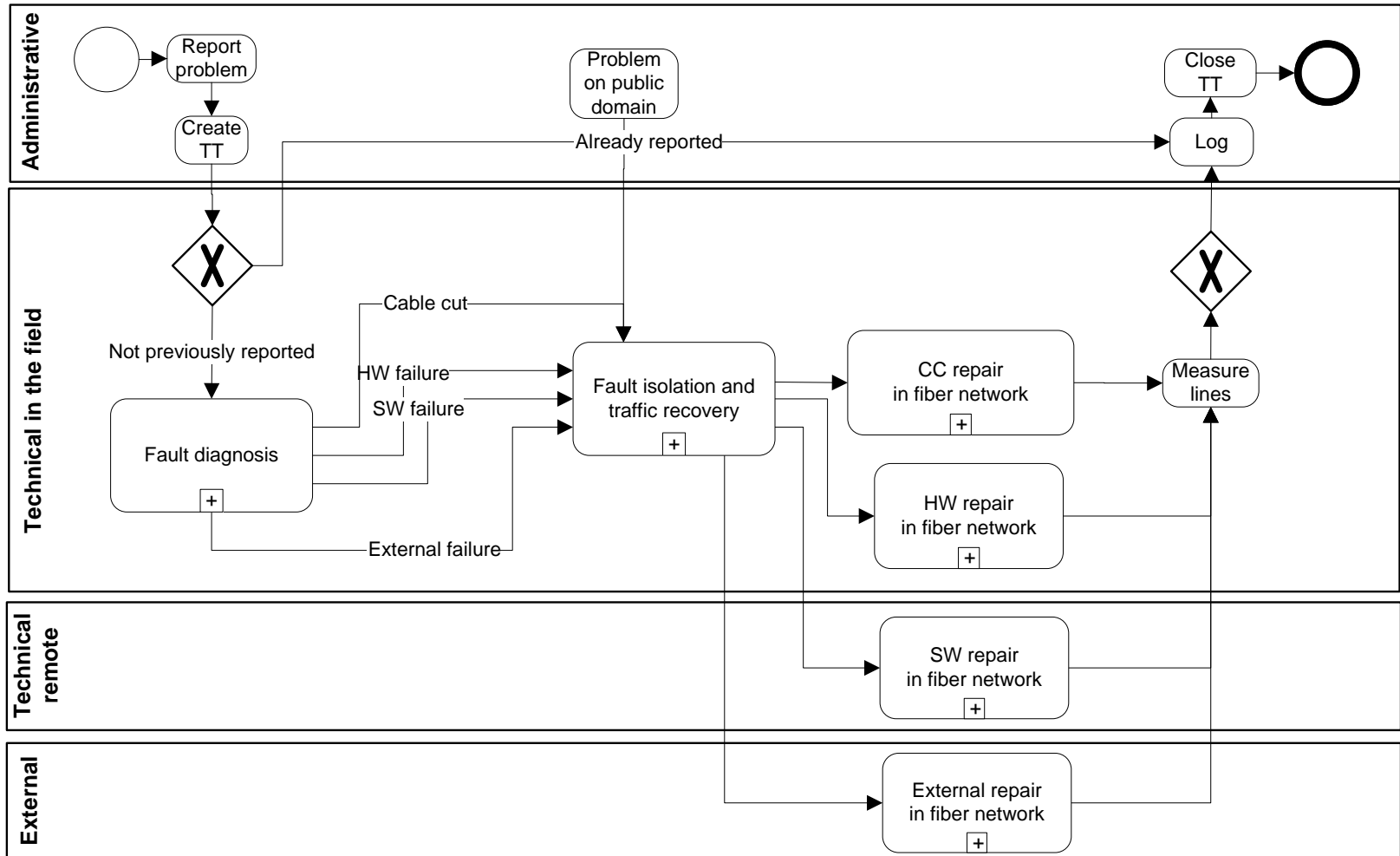
# Level 2 mapping on level 3 objects

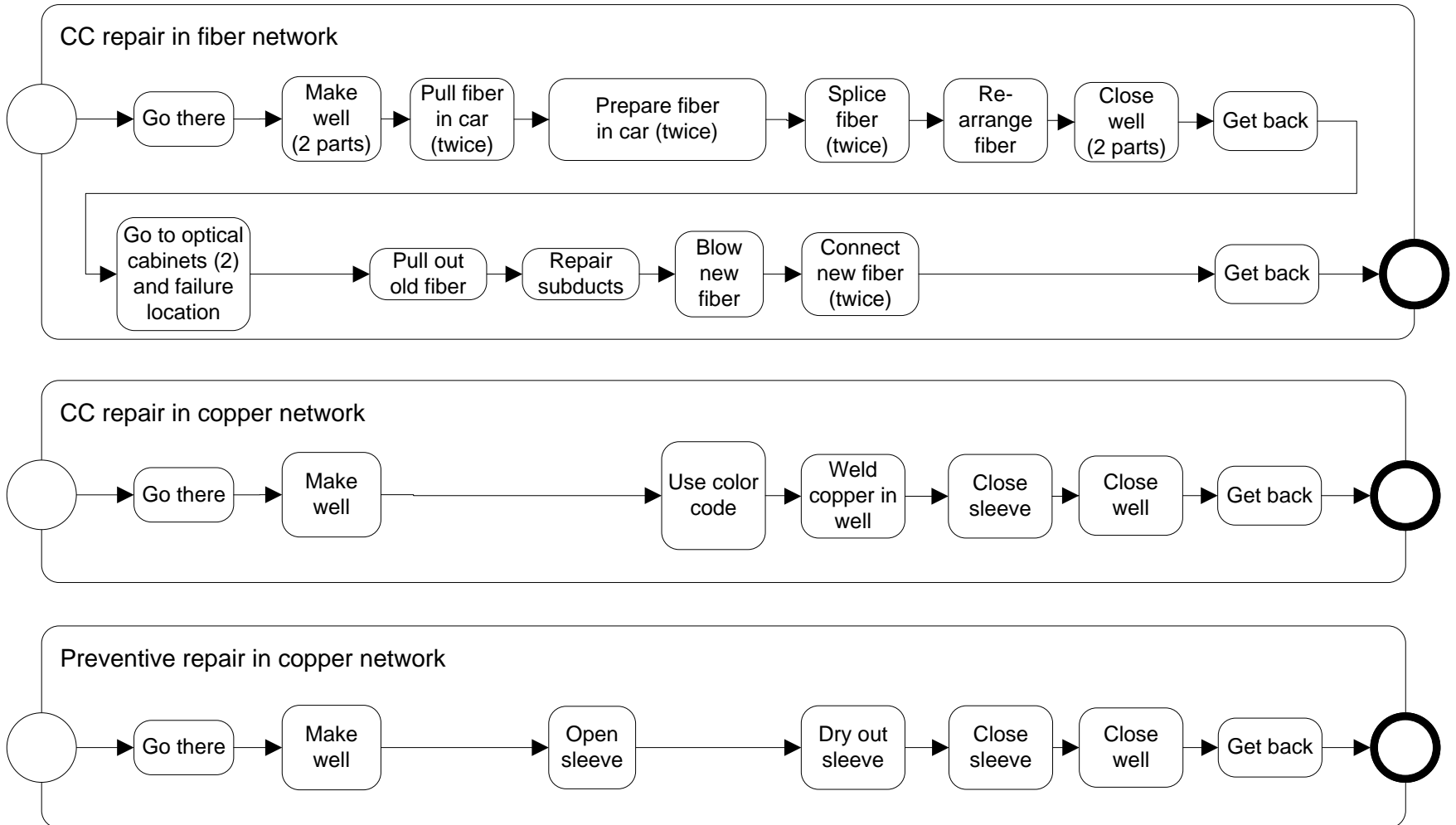
Resource capability delivery	=	Map and analyze resource requirements	Capture resource capability shortfalls	Gain resource capability investment approval	Design resource capabilities	Enable resource support and operations	Manage resource capability delivery	Manage handover to resource operations
resource development and retirement	=	Gather and analyze new resource ideas	Assess performance of existing resources	Develop new resource business proposal	Develop detailed resource specifications	Manage resource development	Manage resource deployment	Manage resource exit
service capability delivery	=	Map and analyze service requirements	Capture service capability shortfalls	Gain service capability investment approval	Design service capabilities	Enable service support and operations	Manage service capability delivery	Manage handover to service operations
service development and retirement	=	Gather and analyze new service ideas	Assess performance of existing services	Develop new service business proposal	Develop detailed service specifications	Manage service development	Manage service deployment	Manage service exit
Supply chain capability delivery	=	Determine the sourcing requirements	Determine potential suppliers/partners	Manage the tender process	Gain tender decision approval	Negotiate commercial arrangements	Gain approval for commercial arrangements	
Supply chain development and change management	=	Manage supplier/partner engagement	Manage supply chain contract variation	Manage supplier/partner termination				

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# APPLICATION ON FTTH

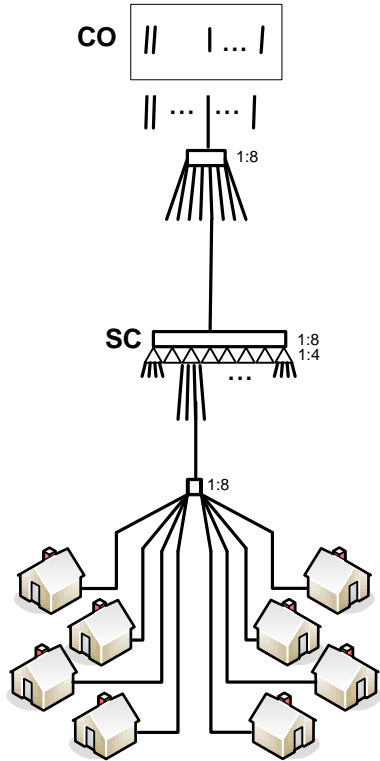
# Overview repair process



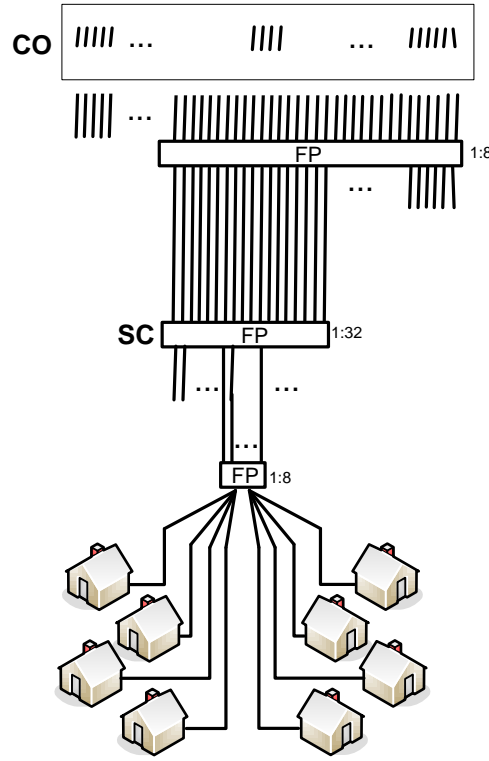


# Considered access network topologies

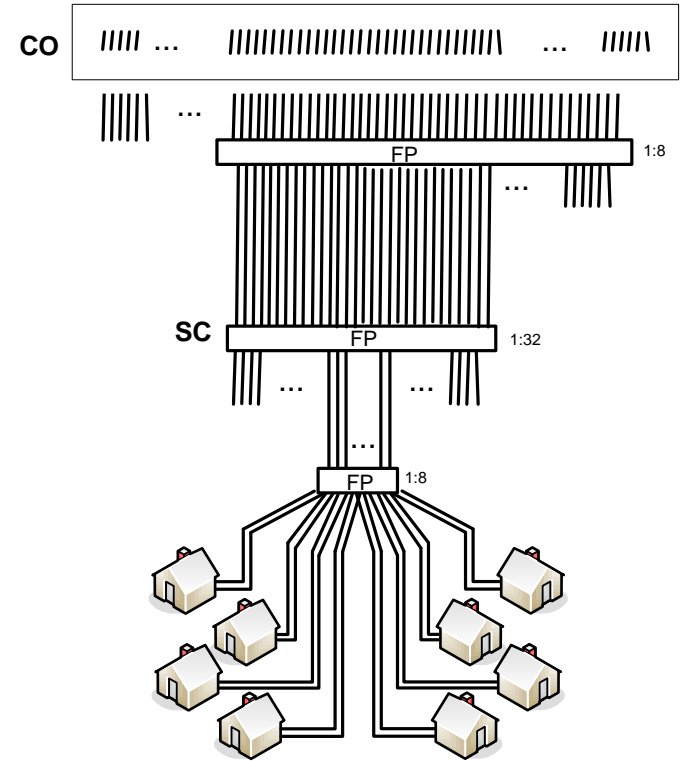
feeding  
distribution 1  
distribution 2  
customer connection



fibre pt2mpt

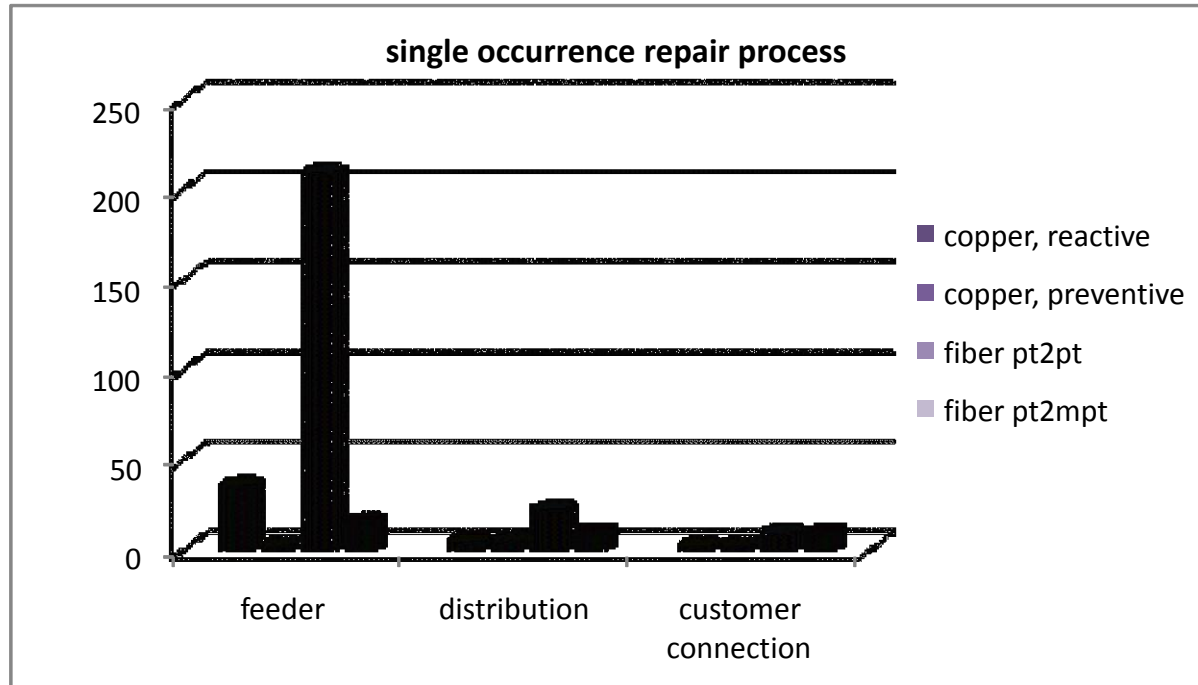


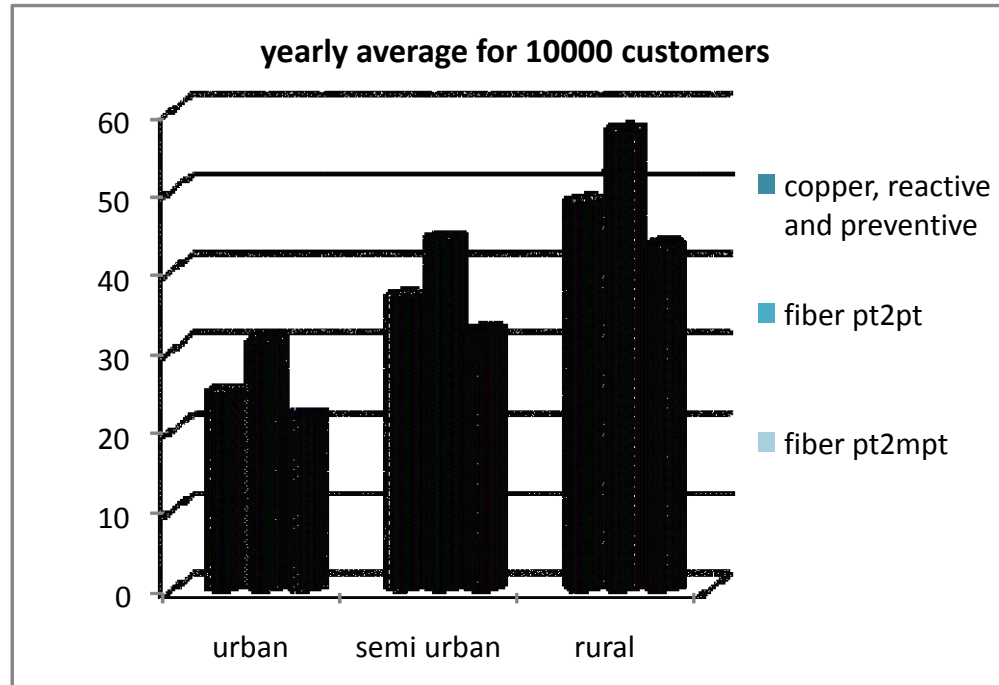
fibre pt2pt



copper pt2pt

# Cost single repair action





Thanks for your attention!  
Any questions?

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