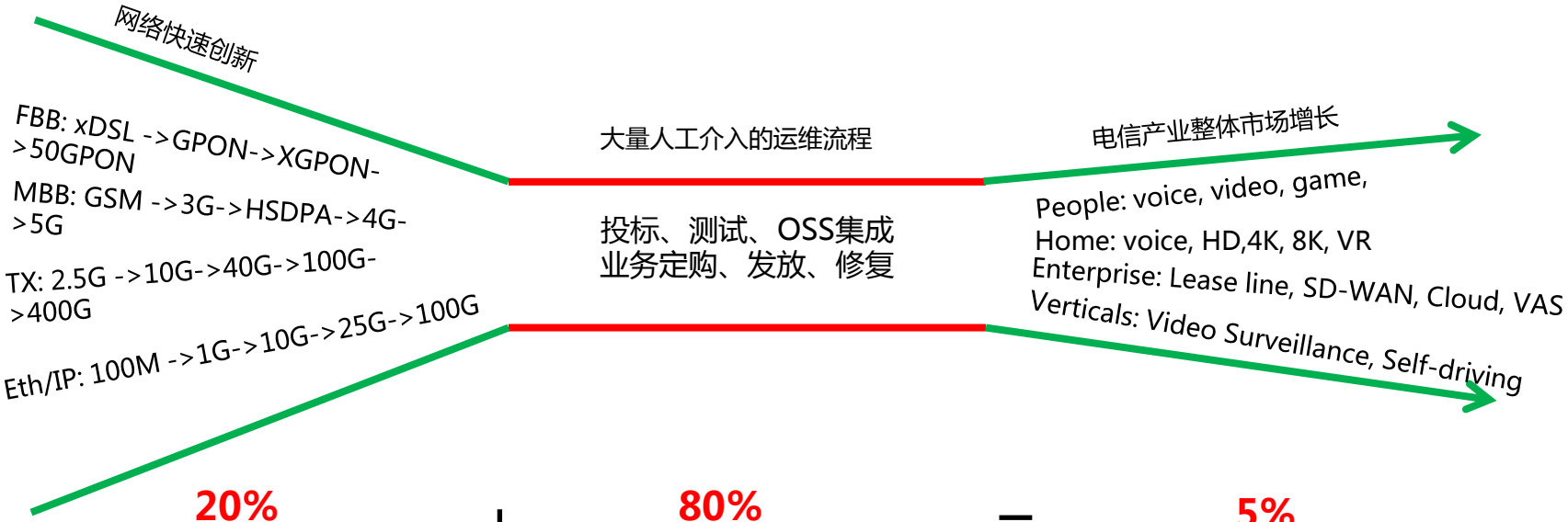
ONAP简介和CCVPN案例分析

杨邦文（Ben Yang）

HUAWEI

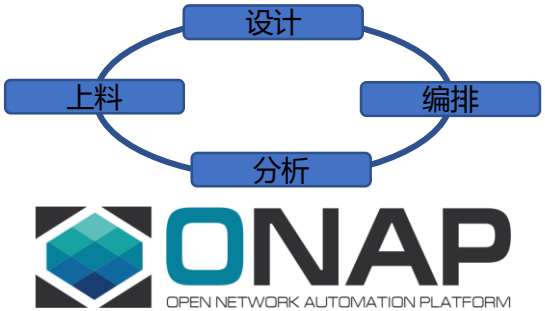
ONAP要解决什么问题：电信产业的成本结构问题



20% CAPEX 产品制造 + **80%** OPEX 服务 = **5%** Growth 电信产业增长

鲍莫尔成本病：制造效率的提升（货物降价）导致服务成本（人的成本）不降反升

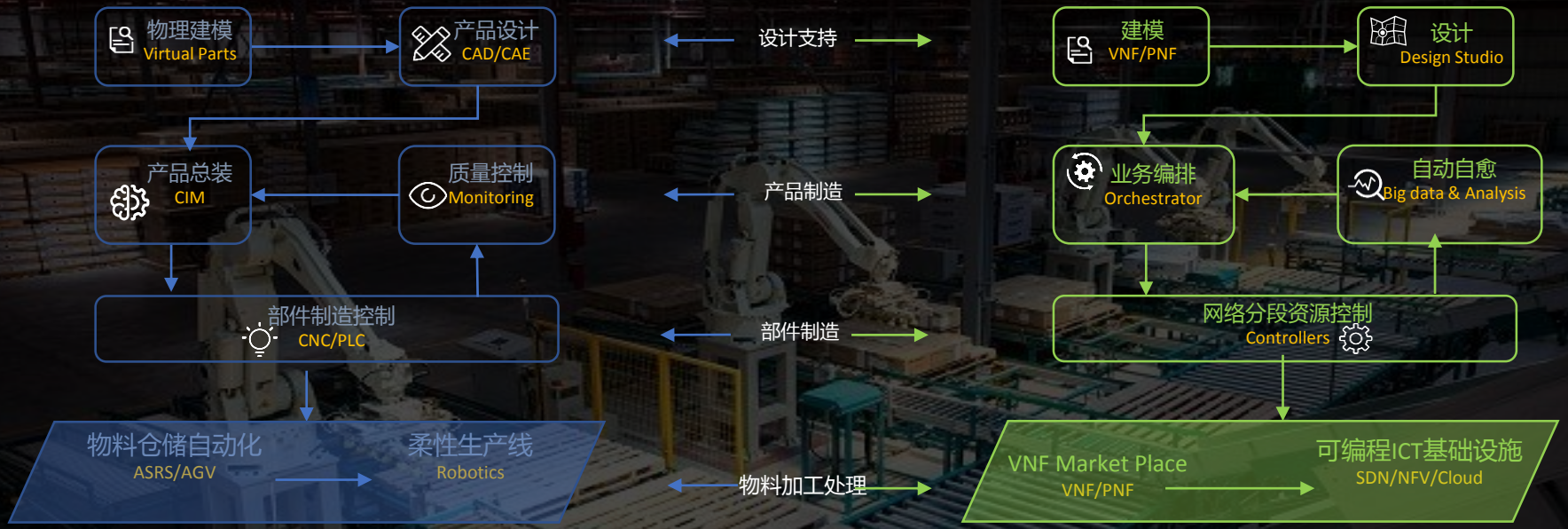
怎么解决：把网络业务的生产过程变成制造过程



厂商生产标准化构建块（NF）　　运营商自动化组装（可编程）　　各种千变万化的业务

HUAWEI

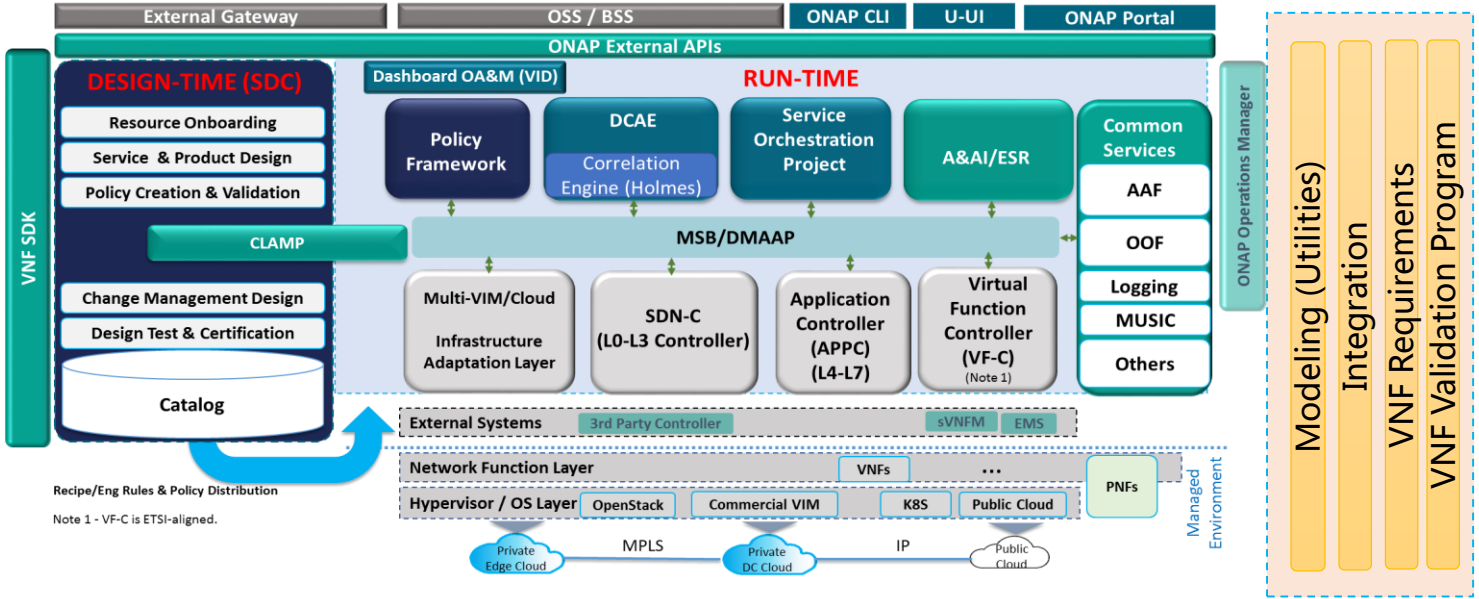
智能制造的系统架构



汽车智能制造

电信业务的制造

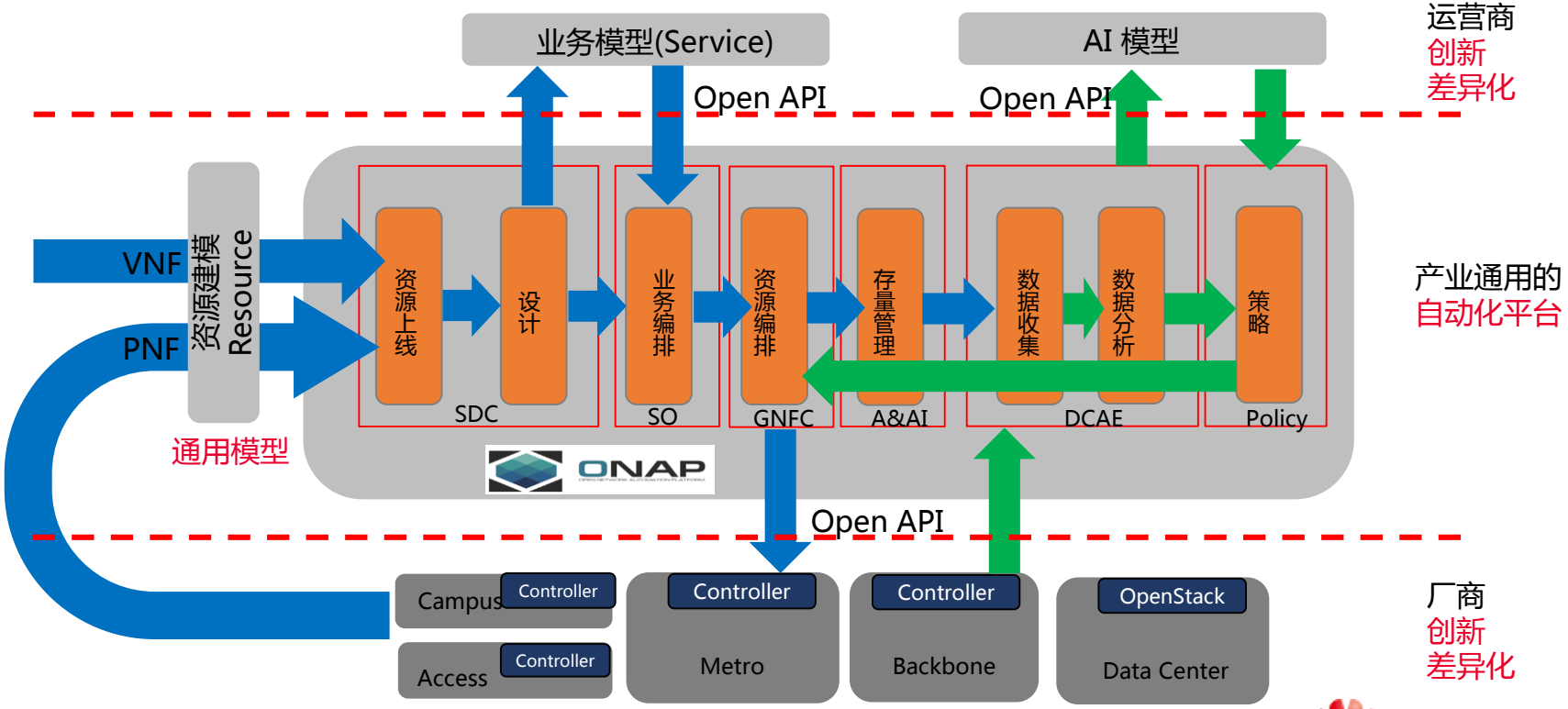
ONAP的架构和模块



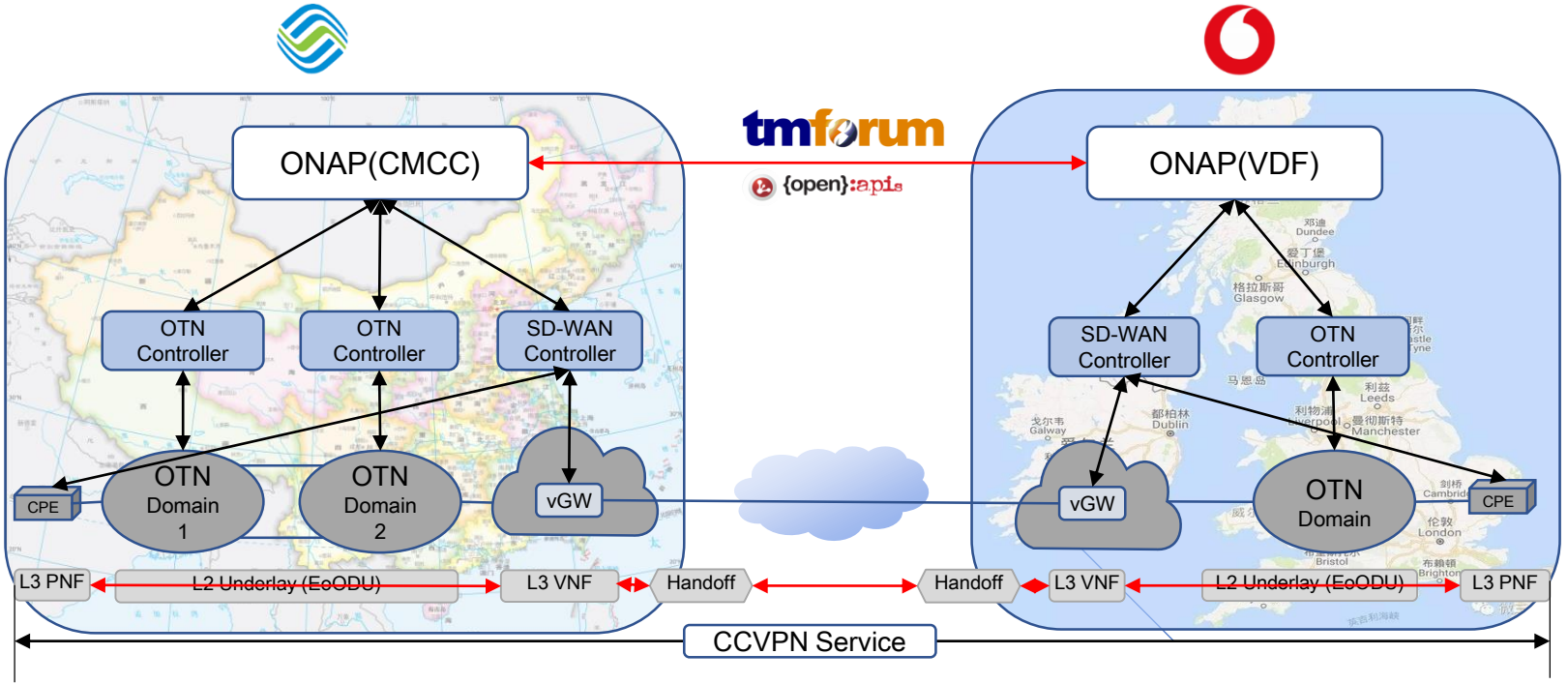
ONAP包含的子模块/系统主要归属于如下两大架构框架:

- 设计态环境（Design-time）：对网络业务的设计，定义和编程。设计态环境是一个集成开发环境，它含有工具、技术、以及可部署资产库的定义和描述。
- 运行态环境(Run-time)：执行在设计阶段的网络业务逻辑编程。运行态环境运用闭环的策略驱动自动化降低运营成本。

ONAP怎么运转：运营商和厂商共用的自动化流水线



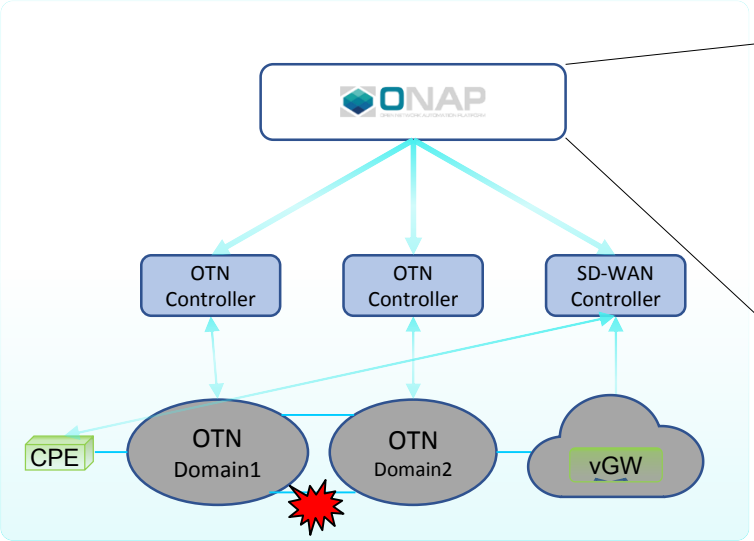
CCVPN用例：如何解决复杂网络业务的自动化问题

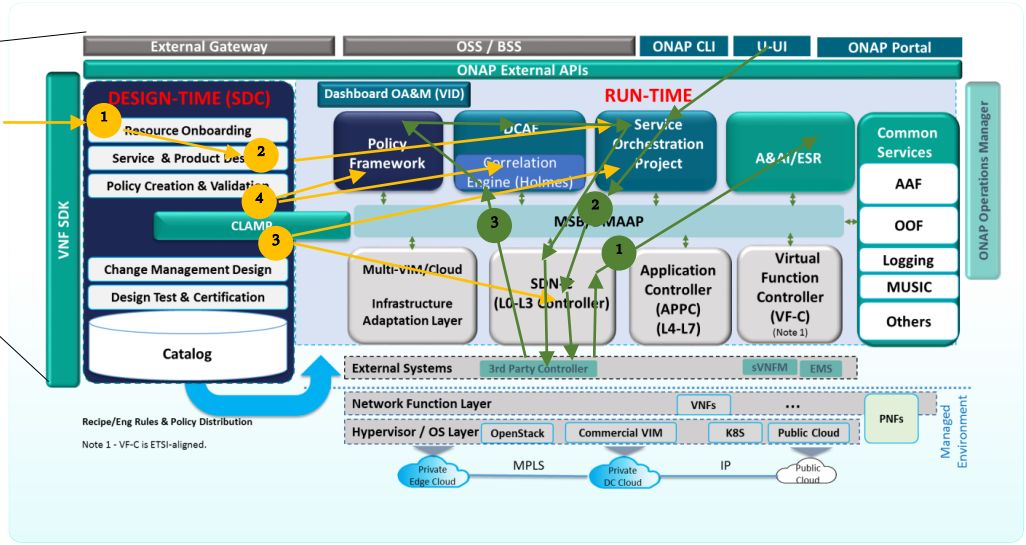


HUAWEI

Home

ONAP如何无码化实现CCVPN





CCVPN 业务设计:

1. 模型驱动的VF上线
2. 在线业务设计
3. 控制工作流设计 (BPMN/DG)
4. 闭环采集分析与策略设计

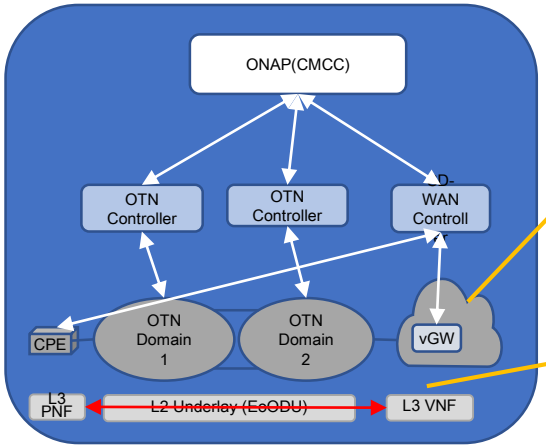
CCVPN 在运行态的执行过程:

1. 网络拓扑自动发现
2. 业务部署与实例化
3. 闭环控制

HUAWEI

第一步: 模型驱动的资源上线

1. CCVPN 场景分析，并分解成资源定义
2. VNF资源/配置建模成ONAP中的 VF资源定义
3. 对设计出来的VF作测试验证

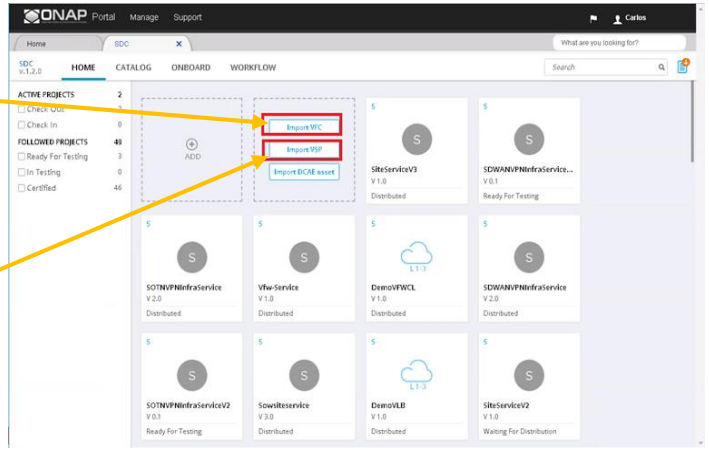


VNFs

ar1000V.csar

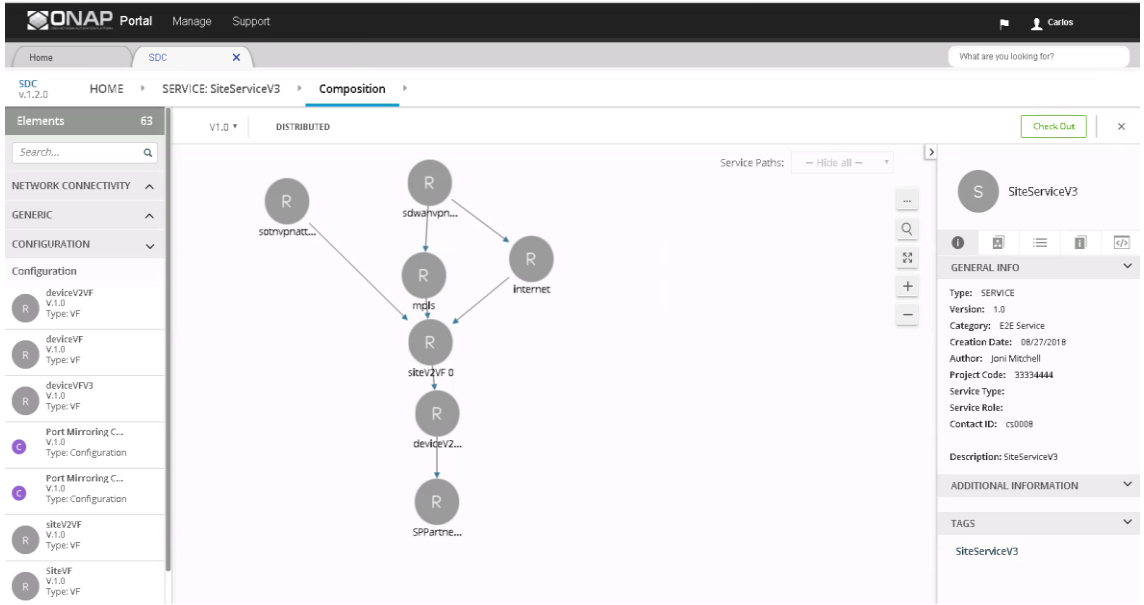
Configurations

Site.yml
Sotn connectivity.yml
Device.yml
SDWAN connectivity.yml
Sitewan.yml
Sitelan.yml
Sppartner.yml



HUAWEI

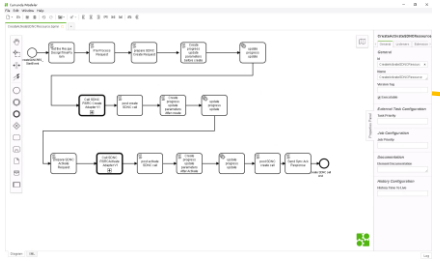
第二步：在线业务设计（配菜）

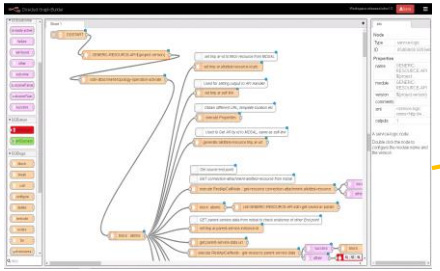


HUAWEI

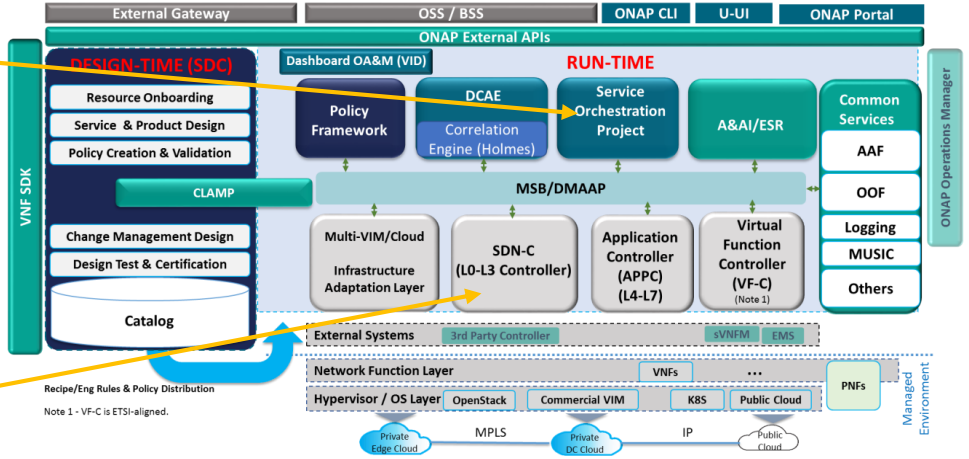
第三步：业务与资源工作流设计 (炒菜)

Service/Resource workflow design(BPMN)





Resource flow design(DG)



HUAWEI

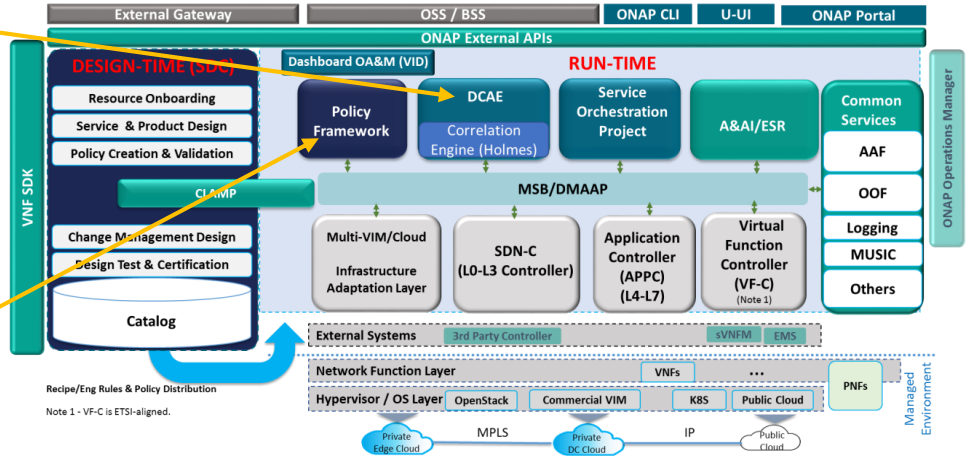
第四步: 数据采集&策略规则设计

```
rule "Set Up Correlation"
no-loop true
salience 200
when
$a: VesAlarm($id: eventId,
$start: startEpochMicrosec,
eventName.indexOf("Fault_Route_Status") != -1)
$b: VesAlarm(eventId != $id,
eventName.indexOf("Fault_Route_Status") != -1,
Math.abs(startEpochMicrosec - $start) < 60000)
then
String status = "down";
if (status.equalsIgnoreCase(getAdditionalField($a, "cpar-status"))
&& status.equalsIgnoreCase(getAdditionalField($b, "cpar-status"))) {
if (isCorrelated($a, $b)){
// If any of the alarms have been marked as root, a policy message has ever been created and sent. Do NOT send it again.
if ($a.getRootFlag() != 1 && $b.getRootFlag() != 1) {
PolicyMsg msg = createPolicyMsg($a);
DmaapService dmaapService = ServiceLocatorHolder.getLocator().getService(DmaapService.class);
dmaapService.publishPolicyMsg(msg, "unauthenticated.DCAE_CL_OUTPUT");
updateAaiLinkStatus(getLogicLink($a), status);
}
$a.setRootFlag(1);
$b.setRootFlag(1);
update($a);
update($b);
}
}
end

rule "Clear Alarms"
no-loop true
salience 100
when
$a: VesAlarm(eventName.indexOf("Fault_Route_Status") != -1)
then
if ("up".equalsIgnoreCase(getAdditionalField($a, "cpar-status"))) {
```

Data analysis rule design

```
controlLoop:
  version: 2.0.0
  controlLoopName: ControlLoop-CCVPN-2179b738-fd36-4843-a71a-a8c24c70c55b
  trigger_policy: unique-policy-id-16-Reroute
  timeout: 3600
  abatement: false

policies:
  - id: unique-policy-id-16-Reroute
    name: Connectivity Reroute
    description:
    actor: SDNC
    recipe: Reroute
    target:
      type: VM
    retry: 3
    timeout: 1200
    success: final_success
    failure: final_failure
    failure_timeout: final_failure_timeout
    failure_retries: final_failure_retries
    failure_exception: final_failure_exception
    failure_guard: final_failure_guard
```

Policy rule design

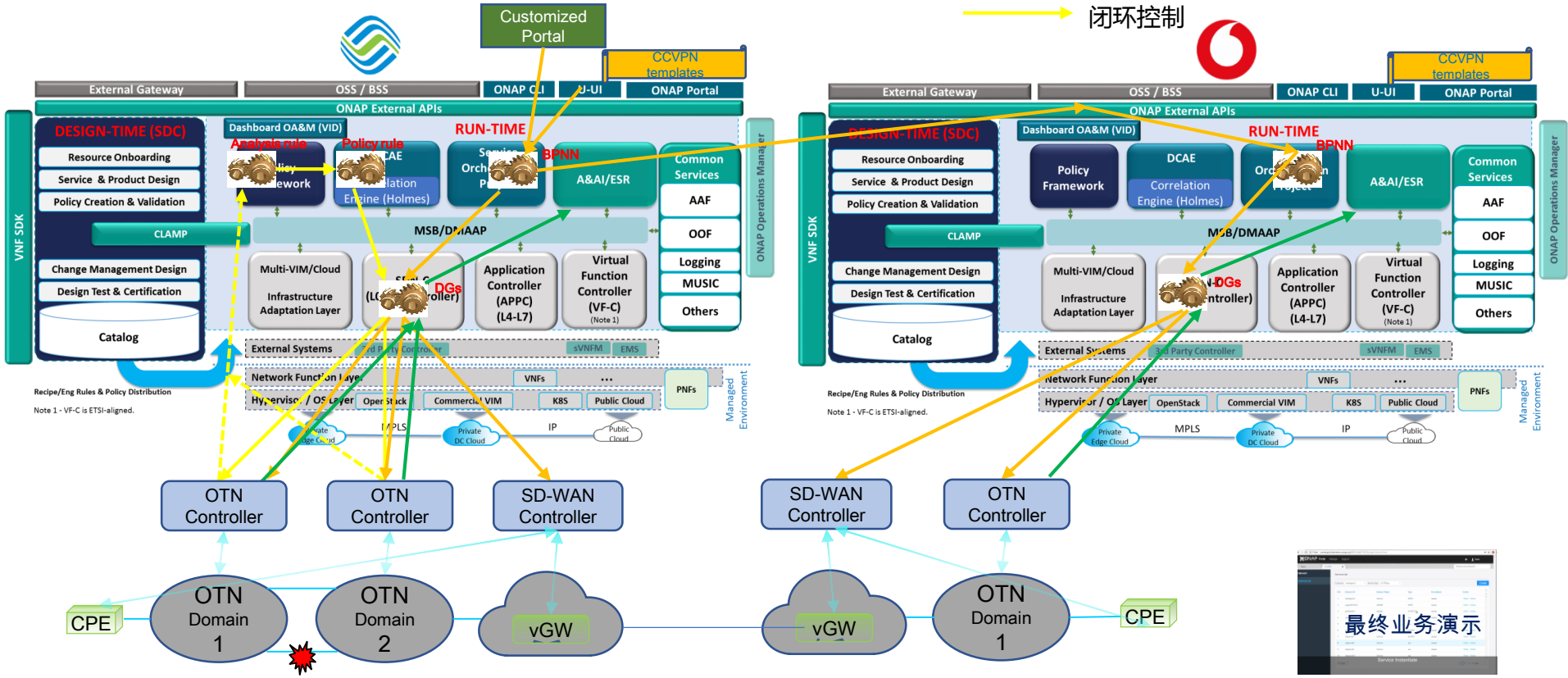


Home

HUAWEI

CCVPN如何自动运行

Topo同步
业务部署与实例化
闭环控制



HUAWEI

Thank you.

把数字世界带入每个人、每个家庭、
每个组织，构建万物互联的智能世界。

Bring digital to every person, home and organization for a fully connected, intelligent world.