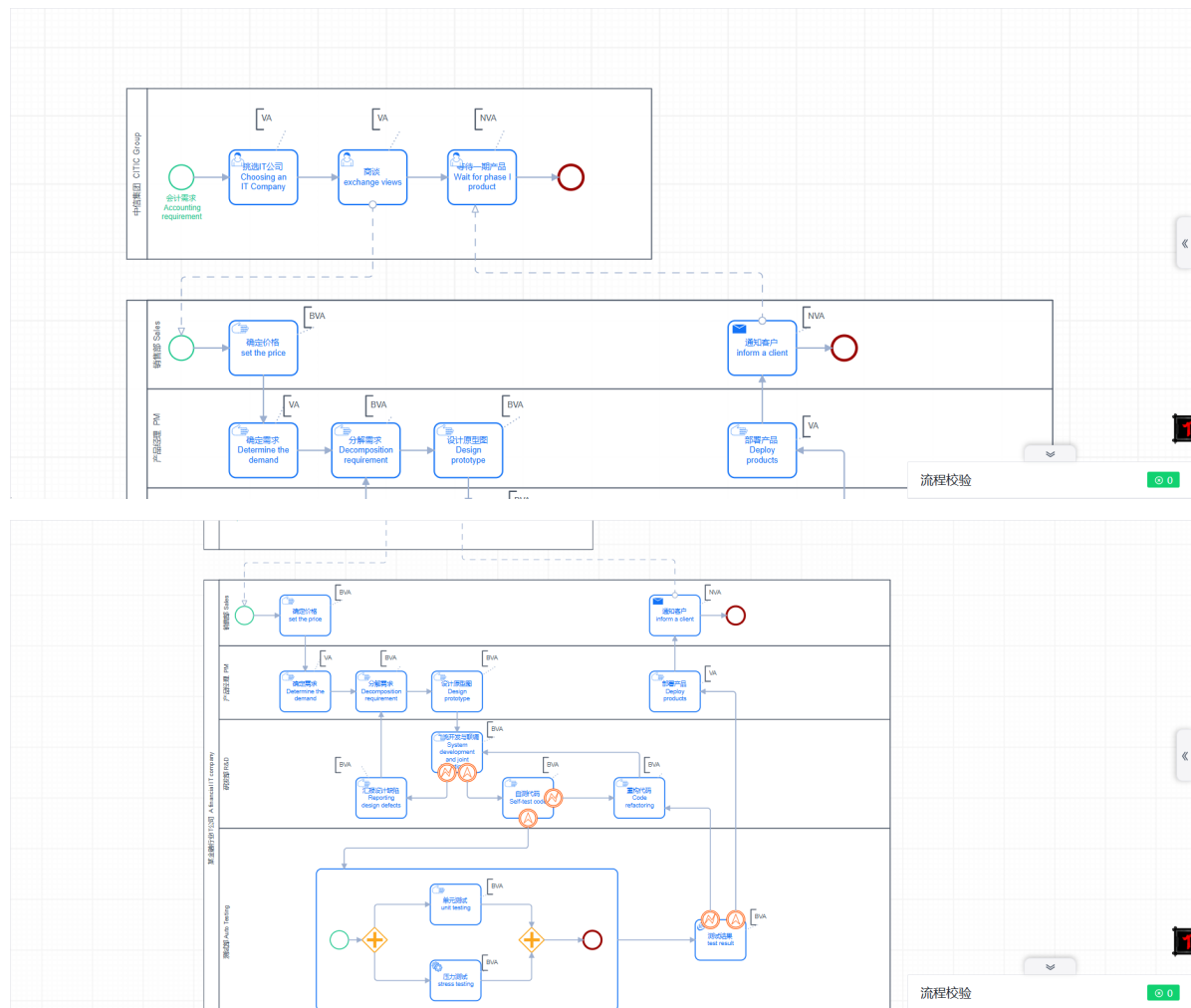


Task1



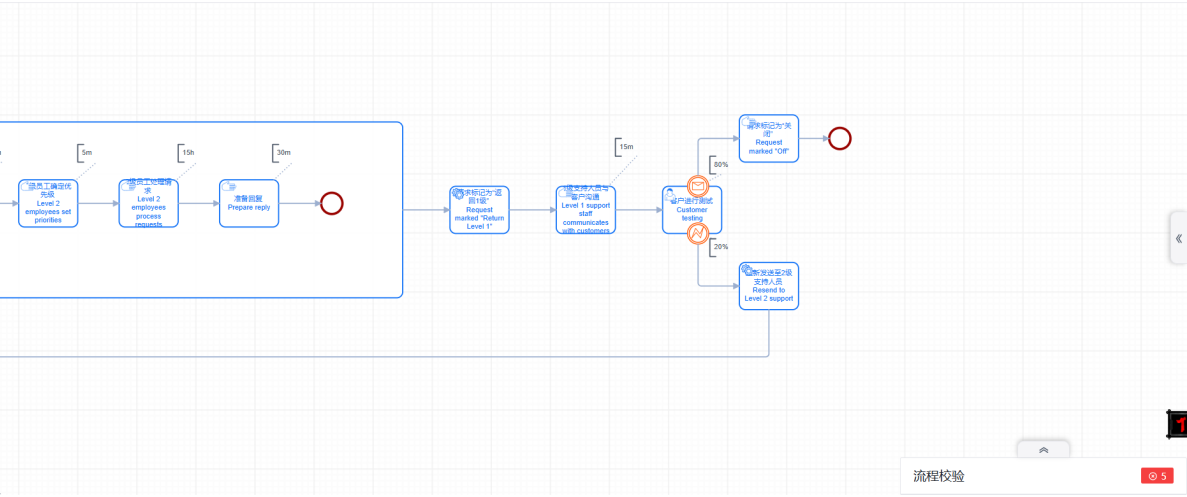
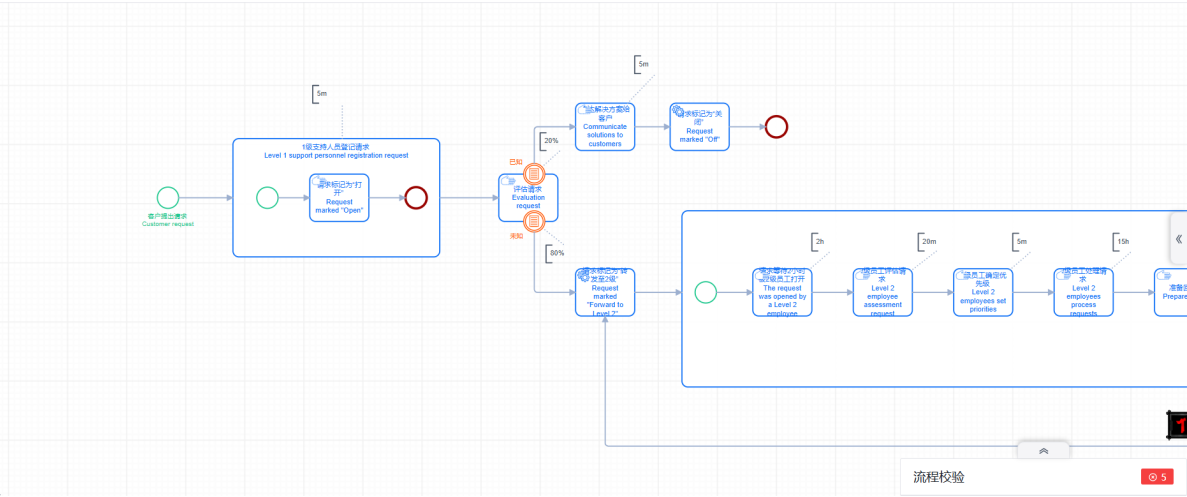
Task2

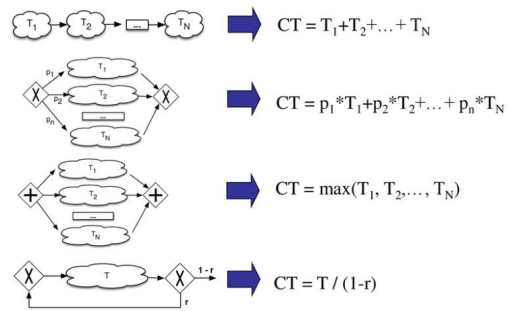
损失示例 (Loss Example)	浪费类型 (Waste Type)	解决方案 (How to Fix)
Compliance: It failed to comply with financial regulations and standards, and the software platform was used for illegal activities such as money laundering (未能遵循金融法规和标准，软件平台被用于洗钱等违法活动)	缺陷 (Defects)	Fix software vulnerabilities for rectification and file fines (修复软件漏洞进行整改和提交罚款)

损失示例 (Loss Example)	浪费类型 (Waste Type)	解决方案 (How to Fix)
Excessive Feature Development: The development team developed too many features without clear requirements. (开发团队在没有明确需求的情况下，开发了过多的功能)	过度生产 (Overproduction)	Use project management tools such as Teambition to divide responsibility for feature development into individuals(使用项目管理工具如Teambition将功能开发责任划分到个体)
System Response Time: When users use the system, they wait for a response due to system performance problems, which affects work efficiency.(用户在使用系统时，因系统性能问题而等待响应，影响工作效率。)	等待 (Waiting)	Change the architecture and choose a more advanced technology architecture to refactor the code(更改架构体系，选择更加先进的技术体系重构代码)
Lack of Training Opportunities: Employees did not receive the necessary training, resulting in unfamiliar business logic and slow development efficiency(员工未能获得必要的培训，导致不熟悉业务逻辑，开发效率缓慢)	未使用的人才 (Unused Talent)	Issue business logic documentation manuals and add necessary training time for employees(下发业务逻辑文档手册，并为员工添加必要的培训时间)
Data Transfer Delays: Transferring data between different banking systems is inefficient due to unnecessary intermediate steps(在不同银行系统之间传输数据因不必要的中间步骤导致效率低下)	不必要的运输 (Unnecessary Transportation)	Break data barriers and unify the system database led by the state(打破数据壁垒，由国家牵头统一系统数据库)
Outdated Technology or Software): The use of JSP,PHP and other old technologies, resulting in increased maintenance costs(使用JSP,PHP等旧技术，导致维护成本增加)	过剩库存 (Excessive Inventory)	Select the updated technology to refactor the code(选择更新的技术重构代码)
Redundant Manual Operations: Data entry and front-end unit testing require repeated manual work by employees(数据录入和前端单元测试中员工需要进行重复的手动操作)	不必要的动作 (Unnecessary Motion)	Automated testing and automatic data entry(自动化测试和自动数据录入)

损失示例 (Loss Example)	浪费类型 (Waste Type)	解决方案 (How to Fix)
<p>Excessive Testing: Conduct too many tests or reviews beyond what is actually needed.(进行过多的测试或审查，超出实际需求。)</p>	<p>额外加工 (Extra-processing)</p>	<p>Use project management tools such as Teambition to divide functional responsibilities into individuals(使用项目管理工具如Teambition将功能测试责任划分到个体)</p>

Task3





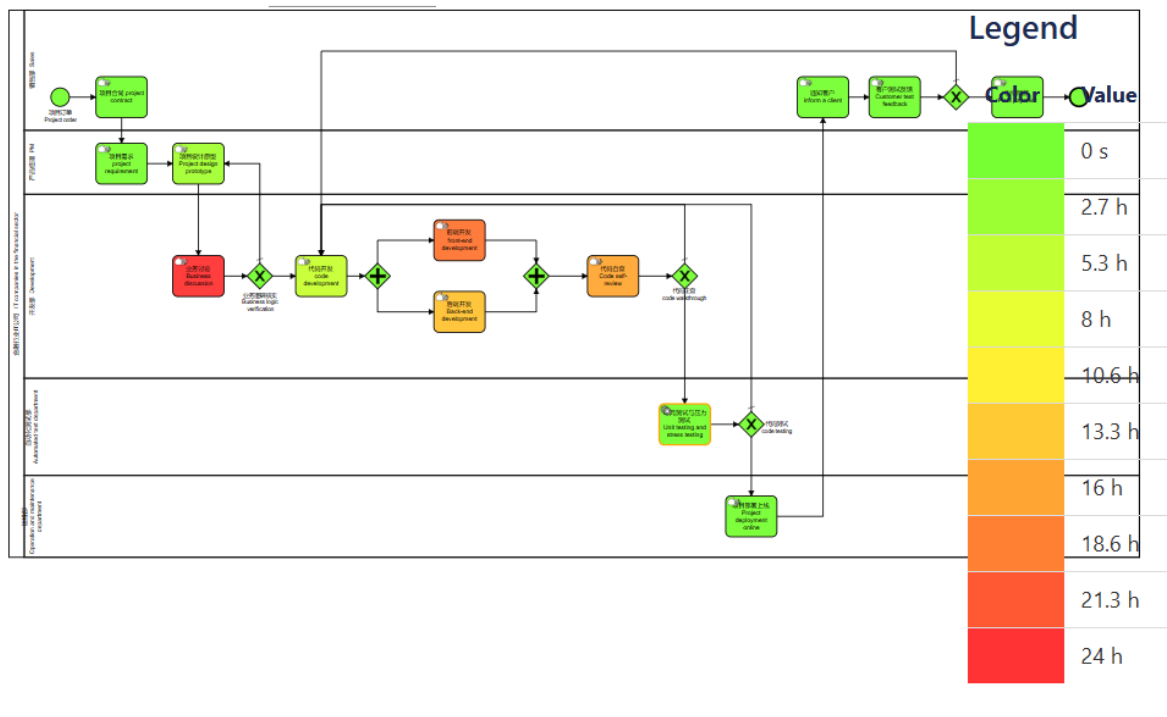
$$CT_{sum} = 0.2 \times 5 + 1362.5 \times 0.8 = 1091(min)$$



	Minimum	Maximum	Average
Process instance cycle times including off-timetable hours	17.3 weeks	73.1 weeks	38.1 weeks
Process instance cycle times excluding off-timetable hours	4.1 weeks	17.4 weeks	9.1 weeks
Process instance costs	578481.8 EUR	3858603.8 EUR	1741165.9 EUR







Name	Waiting time			Duration			Duration over threshold			Cost			Cost over threshold			
	Count	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
业务讨论 Business discussion	7	0 s	24 h	5.8 d	14.8 m	1 d	5.8 d	14.5 m	1 d	5.8 d	251.8	254.5	257.6	246.8	249.5	252.6
代码开发 code development	28	0 s	5.5 h	4.3 d	1.2 d	1.5 d	5.5 d	1.2 d	1.5 d	5.5 d	30278.1	30449.2	30584.6	29678.1	29849.2	29984.6
代码自查 Code self-review	28	0 s	15.8 h	4.8 d	49.3 m	16.9 h	4.9 d	49.3 m	16.9 h	4.9 d	822.4	1040	1207.2	822.4	1040	1207.2
前端开发 front-end development	28	0 s	19.4 h	6.3 d	2.8 d	3.8 d	1.3 w	2.8 d	3.8 d	1.3 w	67549.3	73265.4	77387.4	66949.3	72665.4	76787.4
后端开发 Back-end development	28	0 s	13.9 h	5.2 d	2.8 d	3.6 d	1.2 w	2.8 d	3.6 d	1.2 w	68615.4	73508.8	79718.4	68015.4	72908.8	79118.4
客户测试反馈 Customer test feedback	6	0 s	0 s	0 s	20 h	20 h	20 h	20 h	20 h	20 h	20000	20000	20000	20000	20000	20000
收结尾款 Final payment	3	0 s	0 s	0 s	2 h	2 h	2 h	2 h	2 h	2 h	2000	2000	2000	2000	2000	2000
通知客户 inform a client	6	0 s	0 s	0 s	1 h	1 h	1 h	60 m	60 m	60 m	1000	1000	1000	1000	1000	1000
项目合同 project contract	3	0 s	15 s	30 s	30 s	45 s	1 m	15 s	5 s	15 s	408.3	408.3	408.3	0	0	0
项目设计原型 Project design prototype	7	0 s	3.1 h	6 h	3 h	6.1 h	9 h	3 h	6.1 h	9 h	3200	3200	3200	2950	2950	2950
项目部署上线 Project deployment online	6	0 s	0 s	0 s	1 d	1 d	1 d	24 h	24 h	24 h	12200	12200	12200	11900	11900	11900
项目需求 project requirement	3	0 s	29.5 m	59 m	30 m	59.5 m	1.5 h	29.4 m	58.9 m	1.5 h	505	505	505	500	500	500

Heatmap based on Waiting tim...



Task4-2(Increased the number of R&D staff)

Resources +

Name	# of Resources	Cost per Hour	Timetable	Remove
* 运维部 Operation and maintenance	* 1	500	Default ▾	
* 自动化测试部 Automatec	* 1	0	24/7 ▾	
* 开发部 Development	* 6	3000	Default ▾	
* 产品经理 PM	* 1	1000	Default ▾	
* 销售部 Sales	* 1	1000	Default ▾	
* Automated Service	* 1	0	24/7 ▾	

	Minimum	Maximum	Average
Process instance cycle times including off-timetable hours	26 weeks	35.7 weeks	30.6 weeks
Process instance cycle times excluding off-timetable hours	6.2 weeks	8.5 weeks	7.3 weeks
Process instance costs	4797947.4 EUR	6908911.2 EUR	5835424.6 EUR

Name	Waiting time				Duration			Duration over threshold			Cost			Cost over threshold		
	Count	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
业务讨论 Business discussion	8	0 s	0 s	0 s	14.9 m	15 m	15.1 m	14.5 m	14.6 m	14.7 m	747.9	753.3	757.8	742.9	748.3	752.8
代码开发 code development	33	0 s	0 s	0 s	1.2 d	1.3 d	1.3 d	1.2 d	1.2 d	1.3 d	89953.5	90545.4	91231.4	89353.5	89945.4	90631.4
代码自查 Code self-review	33	0 s	0 s	0 s	49.6 m	1 h	1.2 h	49.6 m	1 h	1.2 h	2479.6	3022.4	3611.8	2479.6	3022.4	3611.8
前端开发 front-end development	33	0 s	0 s	0 s	2.8 d	3 d	3.2 d	2.8 d	3 d	3.2 d	204194	215839.5	232859	203594	215239.5	232259
后端开发 Back-end development	33	0 s	0 s	0 s	2.8 d	3 d	3.1 d	2.8 d	3 d	3.1 d	203499.4	215838.4	225705.1	202899.4	215238.4	225105.1
客户测试反馈 Customer test feedback	4	0 s	0 s	0 s	20 h	20 h	20 h	20 h	20 h	20 h	20000	20000	20000	20000	20000	20000
收结尾款 Final payment	3	0 s	0 s	0 s	2 h	2 h	2 h	2 h	2 h	2 h	2000	2000	2000	2000	2000	2000
通知客户 inform a client	4	0 s	0 s	0 s	1 h	1 h	1 h	60 m	60 m	60 m	1000	1000	1000	1000	1000	1000
项目合同 project contract	3	0 s	15 s	30 s	30 s	45 s	1 m	15 s	5 s	15 s	408.3	408.3	408.3	0	0	0
项目设计原型 Project design prototype	8	1 h	3.8 h	6 h	4 h	6.8 h	9 h	4 h	6.8 h	9 h	3200	3200	3200	2950	2950	2950
项目部署上线 Project deployment online	4	0 s	0 s	0 s	1 d	1 d	1 d	24 h	24 h	24 h	12200	12200	12200	11900	11900	11900
项目需求 project requirement	3	0 s	29.5 m	59 m	30 m	59.5 m	1.5 h	29.4 m	58.9 m	1.5 h	505	505	505	500	500	500

