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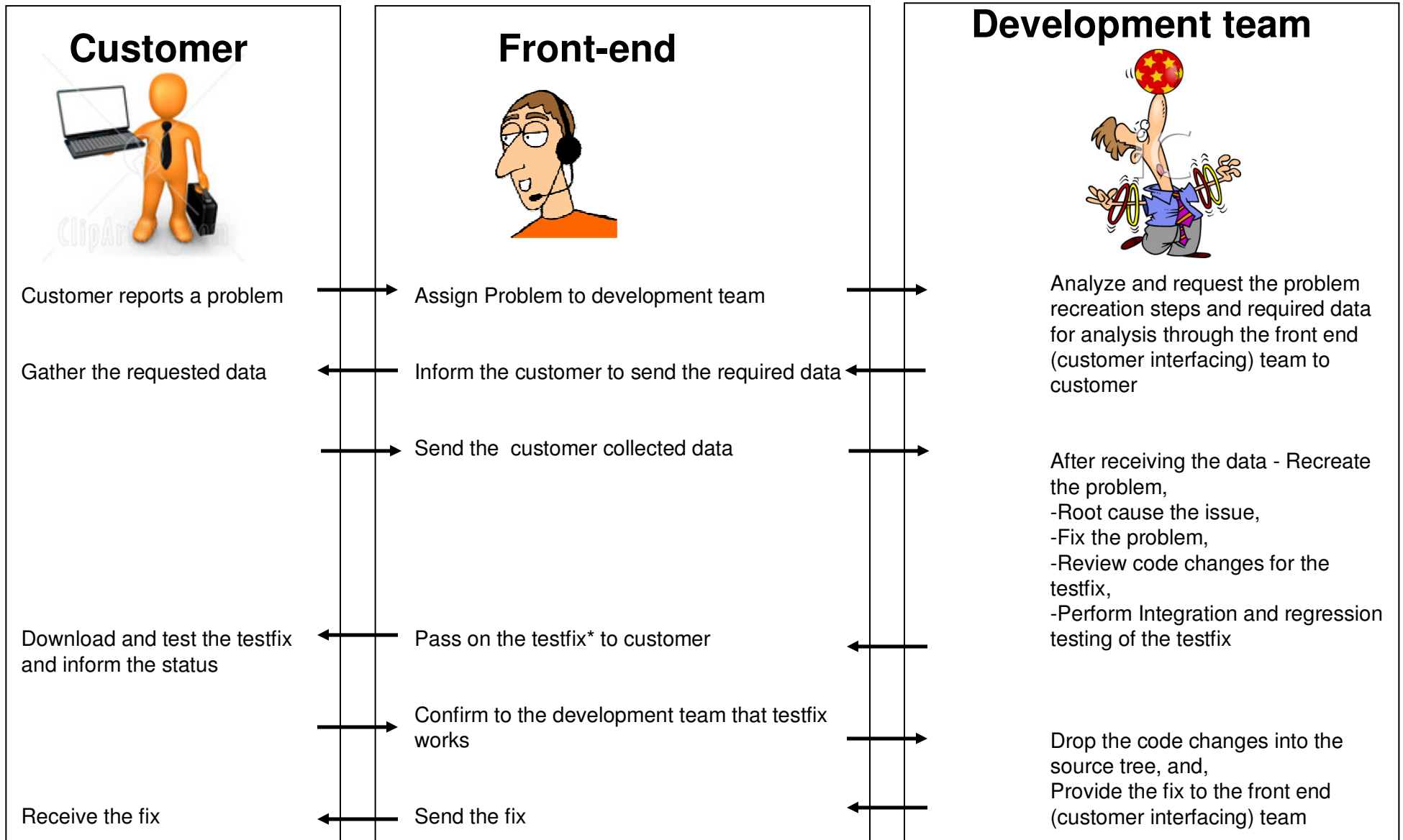
Process for improving quality and reliability of fixes for customer reported defects

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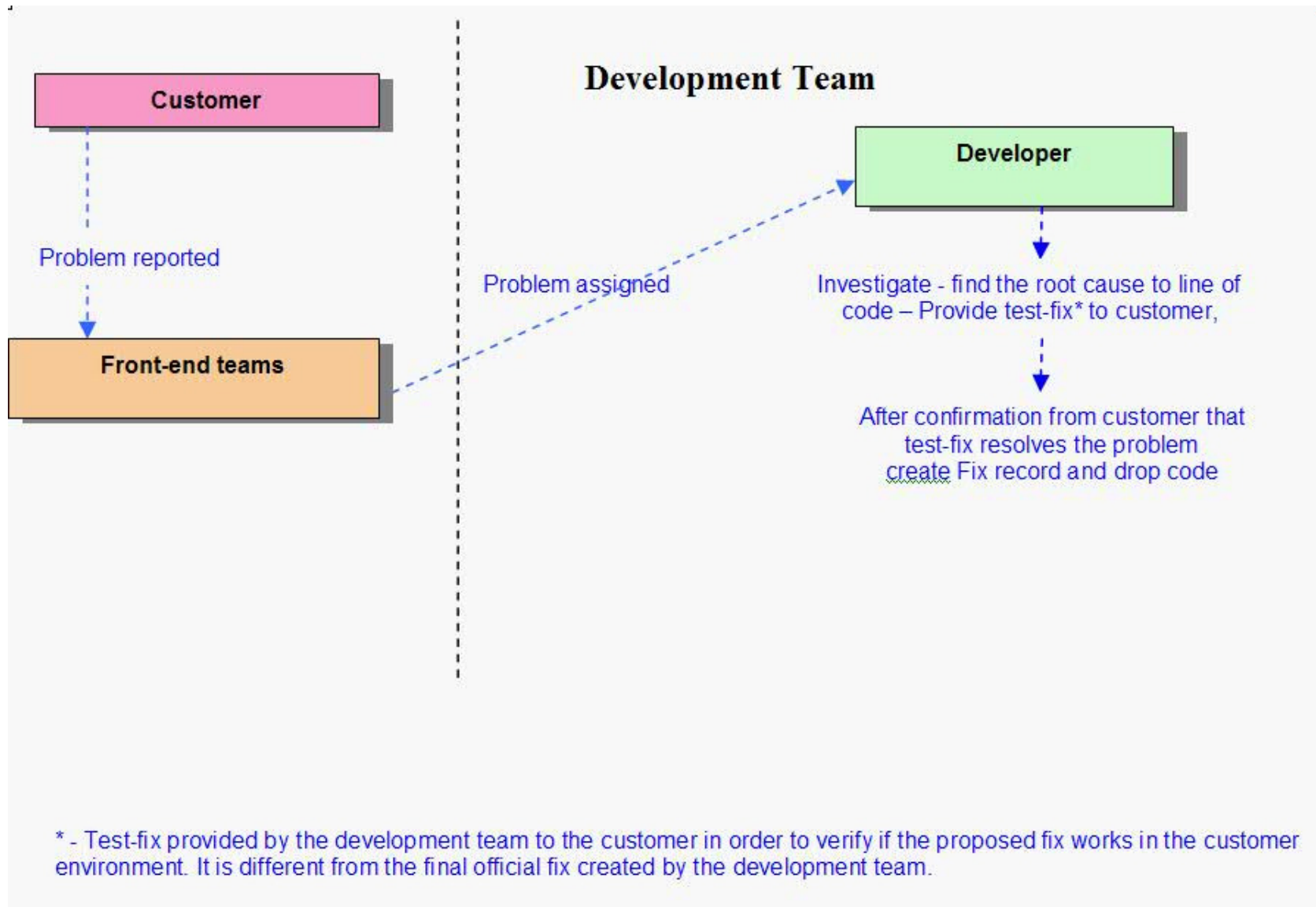
Problem Statement:

- **Possible causes for low quality and reliability of fixes provided to customer:**
  - **Inadequate integration testing**
  - **Inadequate regression testing of fixed component**
  - **Insufficient code reviews**

- **The above reasons could be due to development team owning the entire problem resolution process:**
  - **Getting the problem recreation steps and required data for analysis through the front end (customer interfacing) team,**
  - **Recreating the problem,**
  - **Root causing the issue,**
  - **Fixing the problem,**
  - **Reviewing code changes for the fix,**
  - **Integration and regression testing of the fix,**
  - **Dropping the code changes into the source tree, and,**
  - **Providing the fix to the front end (customer interfacing) team**

Problem scenario

Customer	Front-end	Development team

Customer reports a problem → Assign Problem to development team → Analyze and request the problem recreation steps and required data for analysis through the front end (customer interfacing) team to customer

Gather the requested data ← Inform the customer to send the required data ←

Send the customer collected data →

After receiving the data - Recreate the problem,
-Root cause the issue,
-Fix the problem,
-Review code changes for the testfix,
-Perform Integration and regression testing of the testfix

Download and test the testfix and inform the status ← Pass on the testfix* to customer ←

Confirm to the development team that testfix works →

Drop the code changes into the source tree, and,
Provide the fix to the front end (customer interfacing) team

Receive the fix ← Send the fix ←

*: Test fix provided by the development team to the customer in order to verify if the proposed fix works in the customer environment. It is different from the final official fix created by the development team
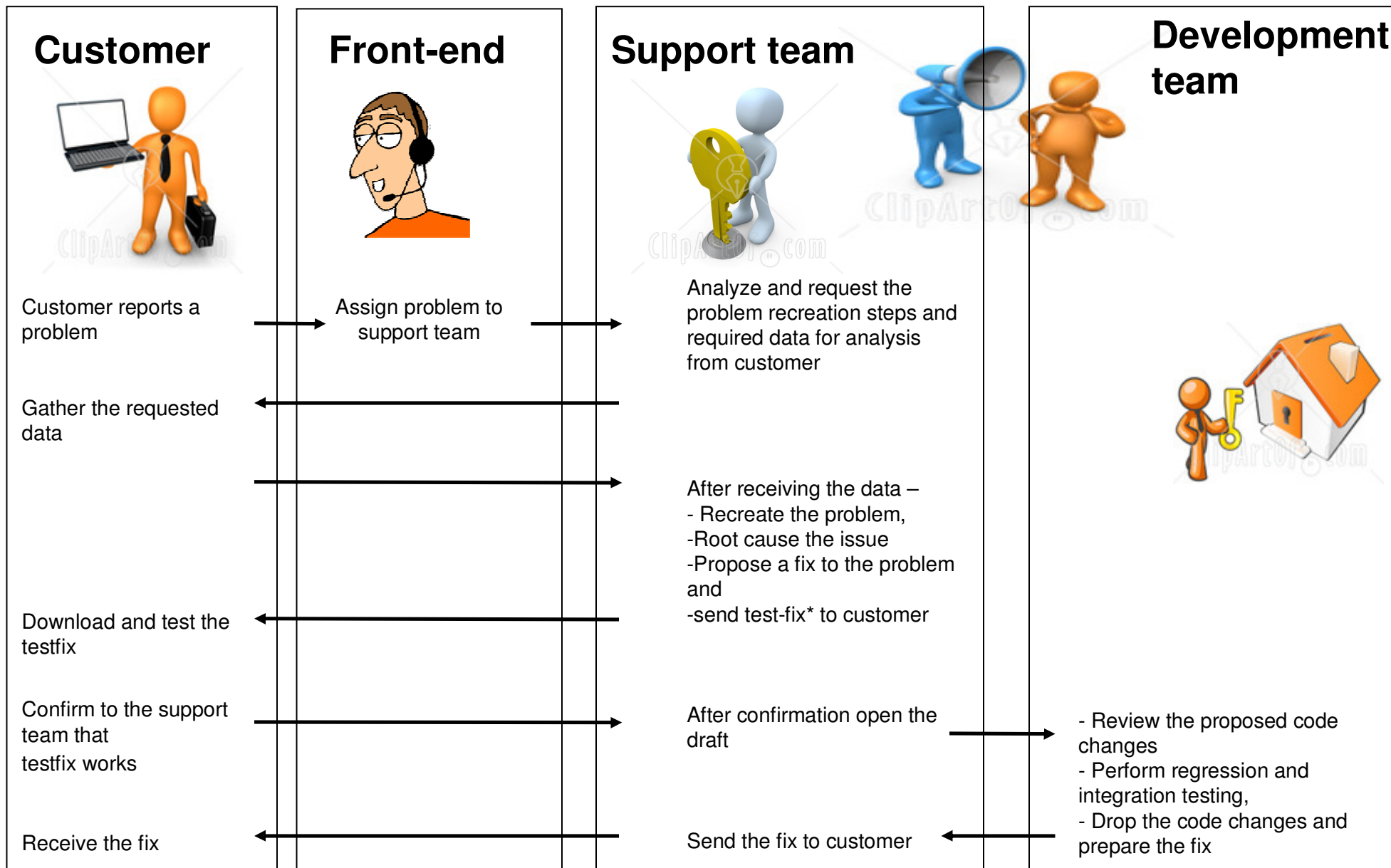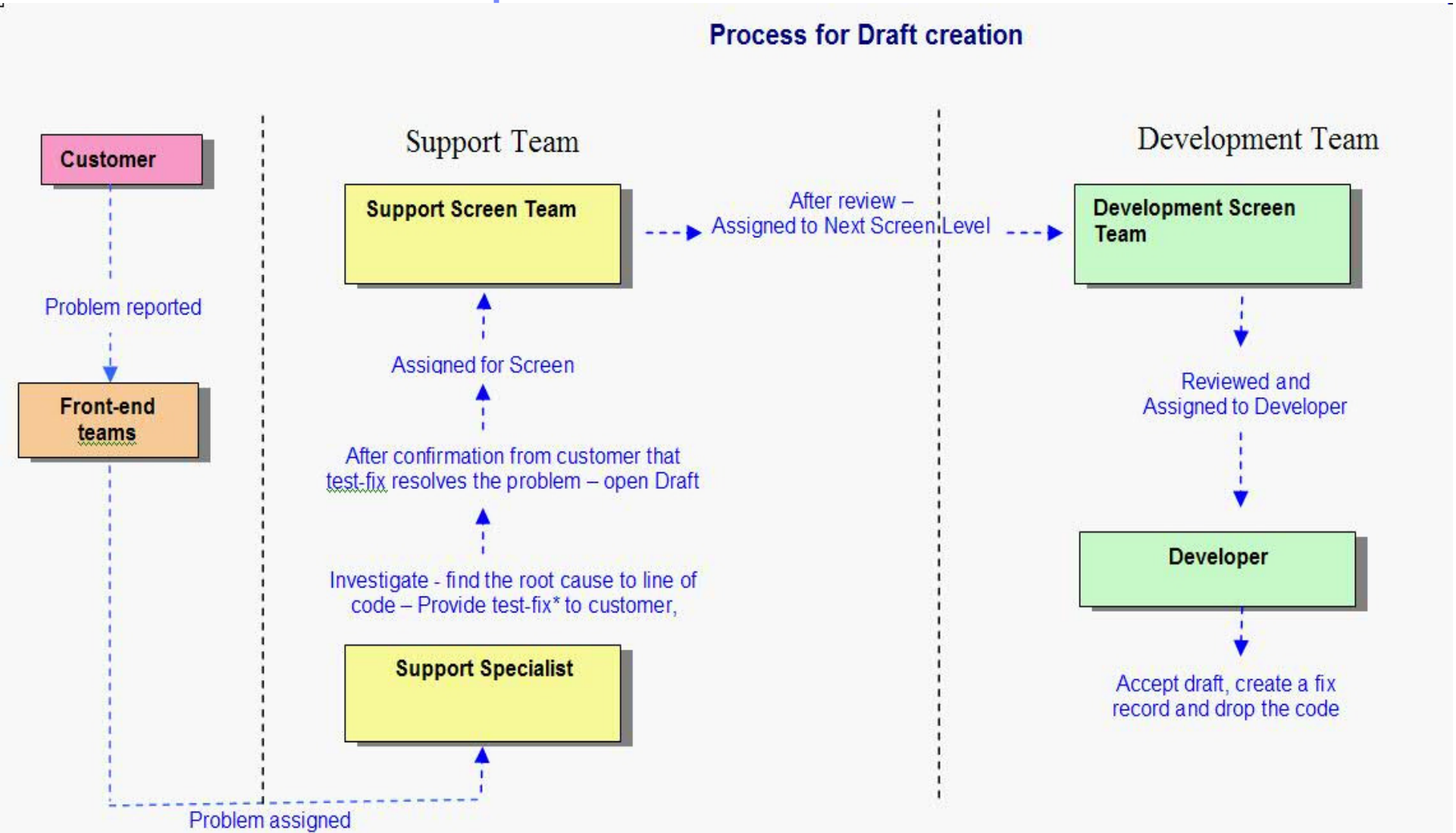
Existing Process for fix creation

Customer

Development Team

Developer

Problem reported

Problem assigned

Investigate - find the root cause to line of code – Provide test-fix* to customer,

Front-end teams

After confirmation from customer that test-fix resolves the problem create Fix record and drop code

* - Test-fix provided by the development team to the customer in order to verify if the proposed fix works in the customer environment. It is different from the final official fix created by the development team.

Solution:

- **Draft process assigns well defined steps to the support and development teams to improve quality and reliability of fix**

- **The support team owns the following tasks:**
  - **getting the problem recreation steps,**
  - **recreating the problem,**
  - **root causing the issue,**
  - **proposing a fix,**
  - **reviewing the proposed changes, and**
  - **delivering the prepared fix to the front end (customer interfacing) team**

- **The development team owns the following:**
  - **Reviewing the proposed code changes**
  - **Perform regression and integration testing, and**
  - **Dropping the code changes and preparing the fix**

- **Process based on structured draft document**

Solution scenario

Customer	**Front-end**	**Support team**	**Development team**

Customer reports a problem

Assign problem to support team

Analyze and request the problem recreation steps and required data for analysis from customer

Gather the requested data

After receiving the data –
- Recreate the problem,
-Root cause the issue
-Propose a fix to the problem and
-send test-fix* to customer

Download and test the testfix

Confirm to the support team that
testfix works

After confirmation open the draft

- Review the proposed code changes
- Perform regression and integration testing,
- Drop the code changes and prepare the fix

Receive the fix

Send the fix to customer

*: Test fix provided by the support team to the customer in order to verify if the proposed fix works in the customer environment. It is different from the final official fix created by the development team

Illustration of draft process

Process for Draft creation

Support Team

Development Team

Customer

Support Screen Team

After review –
Assigned to Next Screen Level

Development Screen
Team

Problem reported

Assigned for Screen

Reviewed and
Assigned to Developer

Front-end
teams

After confirmation from customer that
test-fix resolves the problem – open Draft

Investigate - find the root cause to line of
code – Provide test-fix* to customer,

Developer

Support Specialist

Accept draft, create a fix
record and drop the code

Problem assigned

* - Test-fix provided by the support team to the customer in order to verify if the proposed fix works in the customer
environment. It is different from the final official fix created by the development team.

Implementation

- Draft tool
  - Used to fill up information in draft
  - Important Sections in draft
    - Associated PMRs~/ Fix Records+ and i-fix*
      - -- Points to all relevant symptoms / solutions
      - -- Multi i-fix**
      - -- Records all generated i-fixes
    - Error description
      - -- Recreate scenarios

~: **PMR is a Problem Management Record created for the customer problem reported**

+: **A Fix Record is the final official fix for the reported problem. It is available only as part of a scheduled product release**

*: **i-fix is a interim fix officially provided to the customer for an existing Fix Record till the time that the release containing the same Fix Record can be made available**

: **Multi i-fix: Allows providing multiple fixes to the customer at one go


Snapshot of sample draft

Existing Process for I-fix request

- I-fix request raised on existing fix record

    - To satisfy customer's requirement of interim fix till official release is available
    - Front end team raises the request
    - Development team provides the i-fix
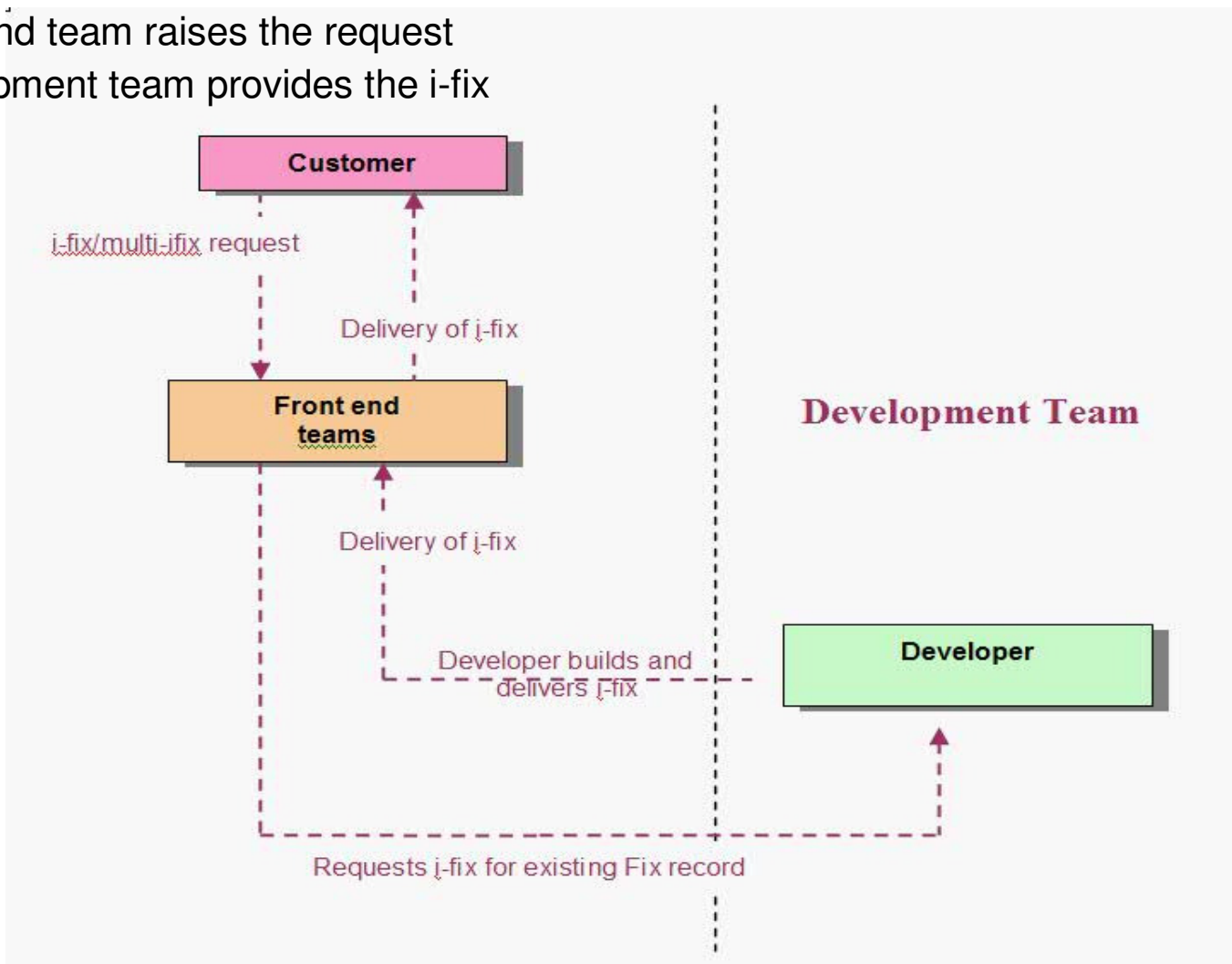
Illustration of new process for I-fix request

- I-fix request raised on existing fix record

    - To satisfy customer's requirement of interim fix till official release is available
    - Support team uses the draft to raise the request
    - Development team provides the i-fix
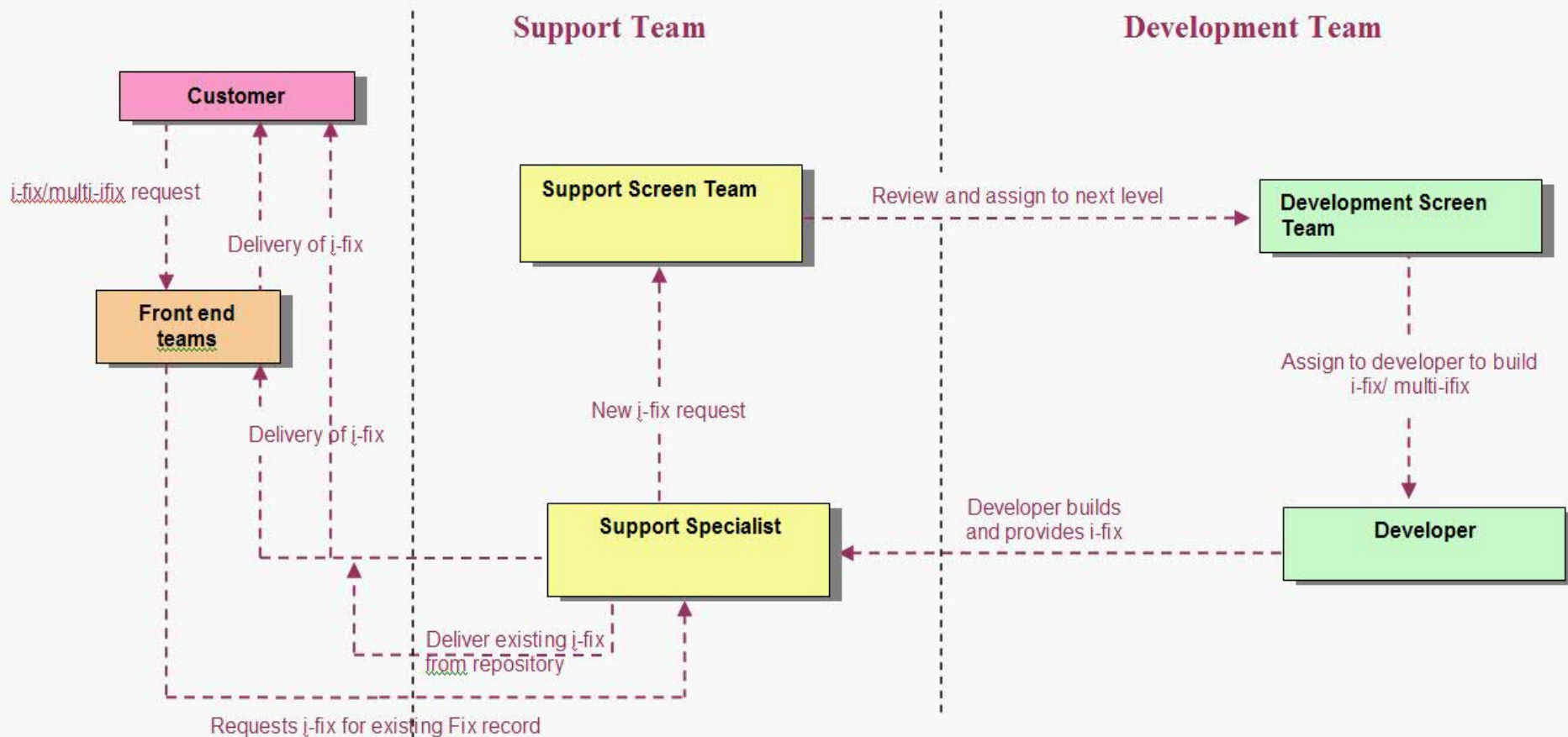
Solution Analysis (Advantages/Benefits)

- Draft process assigns well defined tasks to support and development teams
    - Reduced ownership enables development team to improve focus on
        - Regression testing
        - Integration testing
        - Improved test scope leads to
            - Improved quality
            - Improved reliability of fixed code

- Fix review by two independent teams
    - Stringent fix quality => Fix becomes more reliable

- The draft is a useful reference point
    - Helpful to development team to identify and prioritize on critical components (customer view)
        - Improve reliability of identified components on future releases
    - Single reference for all relevant symptoms/ solutions
        - Useful for peer support teams

- Draft ensures accurate data collection for a problem
    - Faster creation of official fix
        - Reduced cost of defect

Solution Analysis (Advantages/Benefits ..cont'd)

- Official interim fixes (i-fixes) already recorded in a draft
  - can be quickly provided to customers with the same reported problem
  - I-fix provided way before official release
    - Reduces downtime for customer systems
  - i-fixes are stored in repository
    - Repeat requests are serviced immediately
  - Draft process also allows requesting a multi i-fix
    - A single Multi i-fix includes separate fixes for multiple issues
      - ➢ Multiple issues may also be resolved with a single i-fix
  - Save valuable customer time and money
    - Average savings of 10 customer days* per i-fix download requested by customer**
  - Improved customer satisfaction

- Draft provides a set of test steps for development team
  - Ready set of steps to test a i-fix in customer environment

- Draft serves as a repository for the support team

- Draft Process saves valuable development/support time
 - 8 man hours per i-fix download requested by customer**

*: customer day = 24 hours
**: Averaged out based on Service Level Agreement for customers and all severity levels
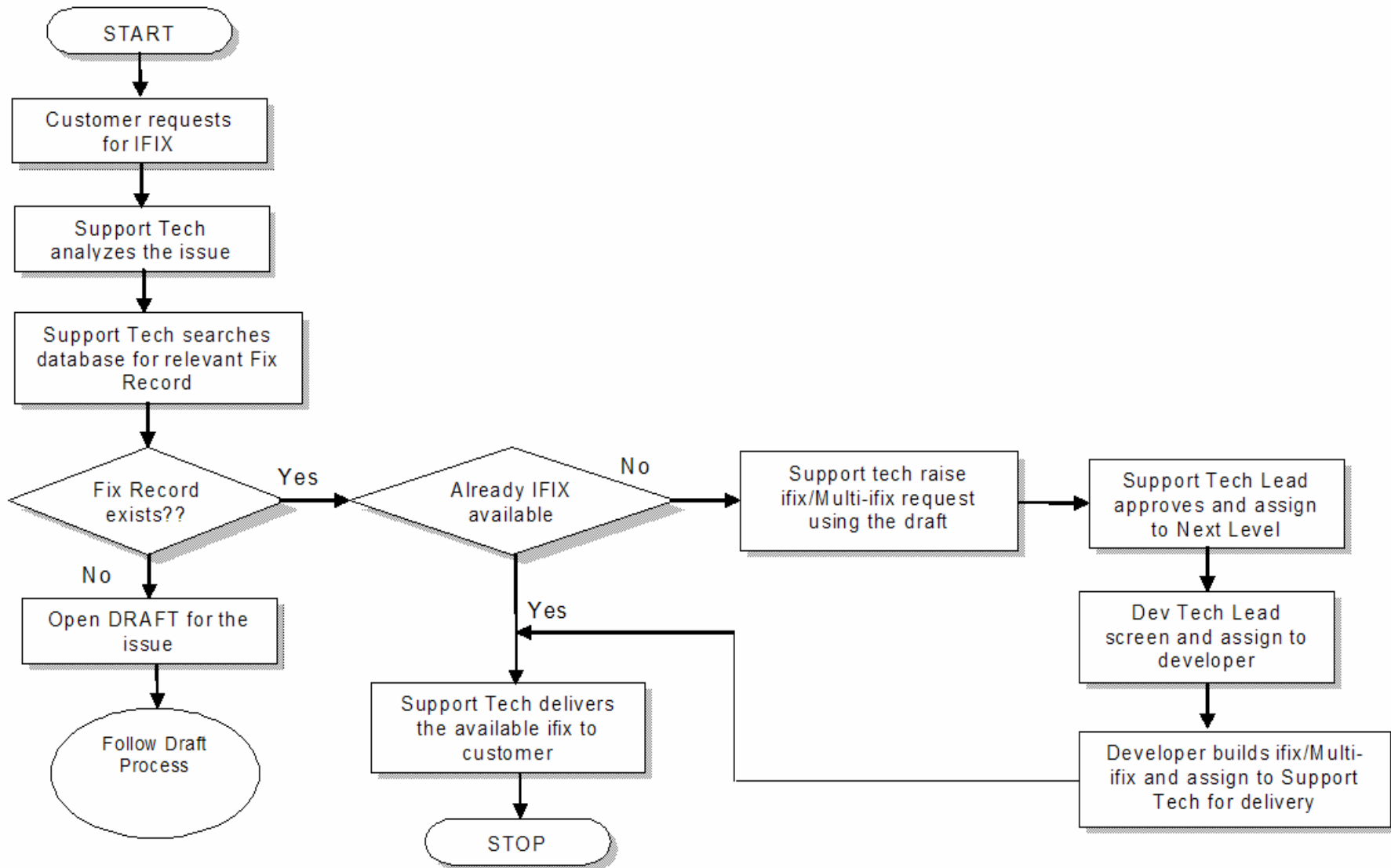
Take away for other teams

- Draft process in place for IBM AIX ® development and support teams
    - Is proven to improve
        - Reliability
        - Quality
        - Turnaround time of fixes provided to customers

- Draft process is an effective problem solving process through collaboration
    - Stringent fix verification mechanism in place
        - Improves fix quality and reliability

- Helpful to development teams
    - Identify and focus on critical components
    - Improve reliability of identified components on future releases

- Allows i-fix request
    - Saves customer time and money
    - Enhanced customer satisfaction

Backup slide – 1   (draft process work flow)
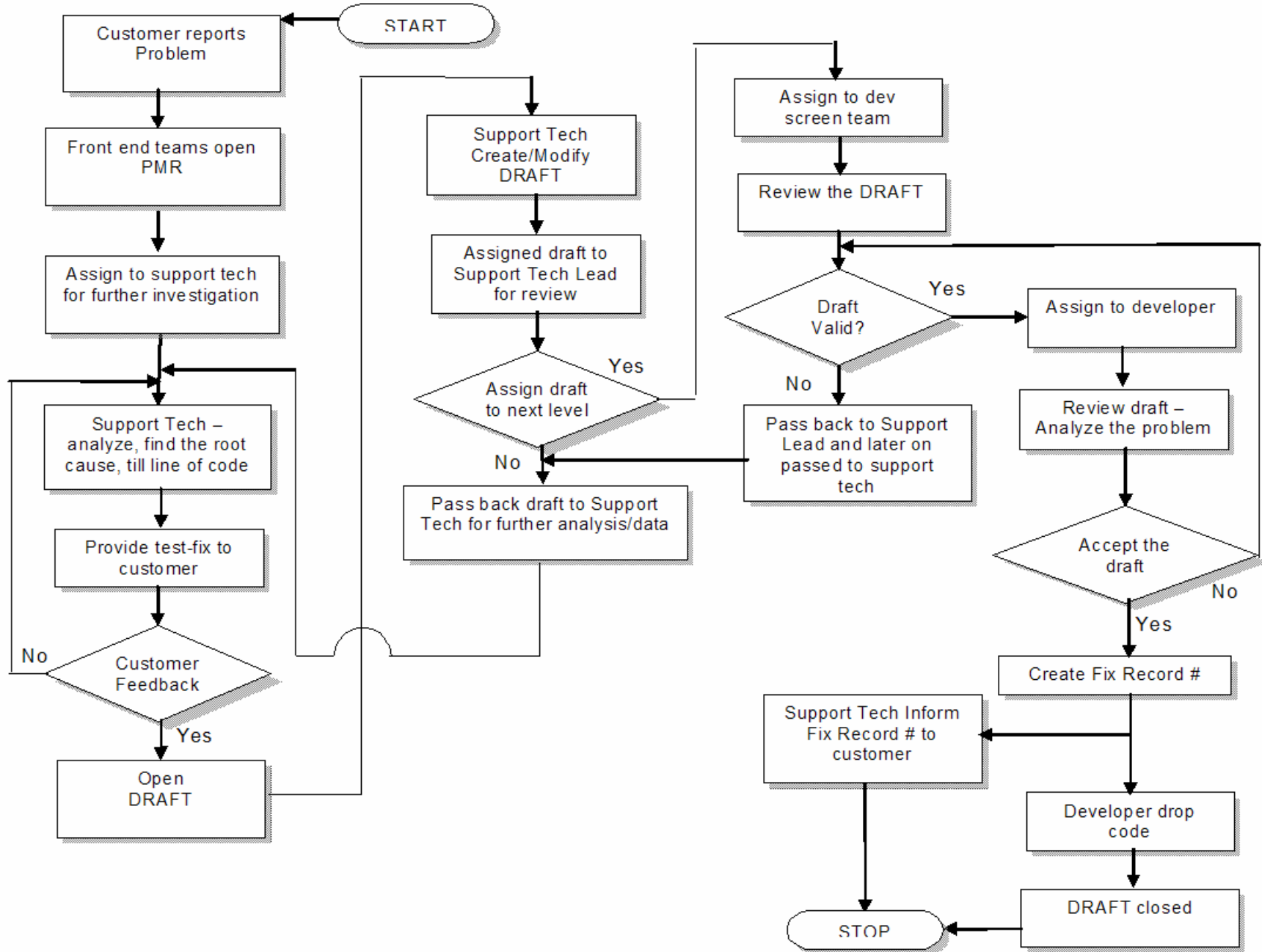
Backup slide – 2 (i-fix request process)

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