Process Enablement with Microsoft Dynamics CRM 2013

VERSION: 1.0

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Microsoft Dynamics CRM

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Introduction

The introduction of business process flows offers a significant new capability and way of working within Microsoft Dynamics CRM.

This paper will describe:

- The purpose of business process flows and the business context in which to consider using them
- How business process flows work and the characteristics that you should be aware of when designing a solution using them

Structuring and re-designing your processes

Preface

We live in a world of change and it seems that regardless of the industry or size of customer there is always a new dynamic on the horizon which alters the way an organization has to do business in the future. Whether it is a new regulation coming into effect within the financial services market or the launch of a new product or service within a technology firm the changes need to be quickly absorbed and then rolled out to the employees.

The changes are not only about the internal industry/business trends but also the fundamental shift in the way a customer engages with a company prior to a purchase. Customers are becoming more empowered than ever to evaluate and research a product through a variety of channels such as gathering social opinions and further research on the internet prior to speaking with a sales team at an organization. By the time they do connect, in most cases, they are already at the latter stages of decision making.

Customer expectation has also reached an all-time high as we move into a new digital age. I personally expect that when I call my energy department to enquire about a bill they would know my complete profile and see if I had a discussion with any division of that company prior to my call. Whether a business or consumer environment customers expect a level of service much more than they have ever had in the past and with fierce competition out there organizations are now really starting to feel the need to drive a business process strategy across departments with customer needs at the core before the 'empowered customer' moves to someone new.

To achieve a successful result, an organization should fundamentally look at the processes within their company and constantly re-evaluate and evolve its effectiveness. This is not only to meet the customer expectations, but also to increase the productivity of staff who are having to keep on top of all these changes and strive to transform a customer enquiry into a profitable, thriving business relationship.

Understanding the business dynamic

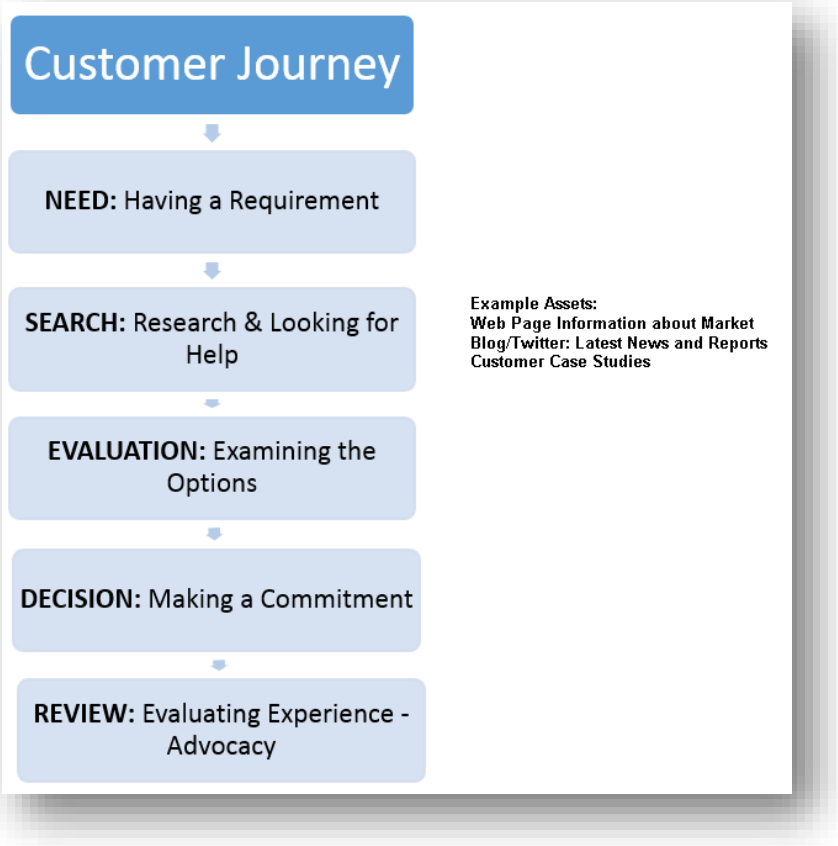
The alignment of new business demands with the ever busy employees that have to execute is the biggest area that requires focus when undergoing a business process transformation. In my opinion there are three areas which need addressing before progressing onto tools and technology.

- ***Customer Journey:*** Understand the way a customer would like to interact with your organization throughout the lifecycle (Pre – Post Sale)

- ***Internal Pressures & Requirements:*** Understand the internal mandatory requirements for information capture and sharing as the customer reaches each milestone on their interaction lifecycle
- ***Measures & Terminology:*** Reach agreement on metrics allowing the business to see benchmarked results from the previous iteration and introduce common terminology for simplification across departments to aid easier connections

Customer journey

I think before taking a look at your own internal processes it is important to conduct a detailed analysis on the customer lifecycle and how they expect to interact with you. Take some time to speak to recent customers to gain feedback on their own research process and understand how they expect to engage with the suppliers of their solutions. Map it out in a simple diagram and note the amount of information they require at any given point either from you or through self-serve methods. Too often we leap to defining our own utopia process to fit with either our management reporting demands, compliance requirements or to fit with what we have done in the past. I suggest that process will come only after you understand what the customer demands. Below is a very simple example of a basic customer journey – this is step one. Step two is fleshing out all of the customer facing information which needs to be available (multi-channel) so that they can move easily between each stage.



Internal pressures & requirements

As much as we would always like to escape this area as an employee there is always going to be an element of internal pressures and requirements within any business process. Organizations that sell large products or highly risky services will always be subject to regulations and internal reviews which are there to protect not only the

customer, but also the business and employee. It's the 'internal tax' that needs to be done and the trick is to make sure that it is completed in the most efficient way possible. Too often I hear horror stories from organizations who didn't secure validity of a deal before going ahead and spending time and money on trying to win the business. By making sure all of the due diligence in in place prior to pushing a deal forward the sales person and business are comfortable that this is something worth the time and effort.

As with mapping the customer journey, being able to draw up the internal process and requirements connected to each customer stage is equally critical for success. Securing a working group internally is a sensible next step to take a deep dive into all the requirements across departments and understand the inefficient areas that could be improved. Technology mapping plays a part but only after this has taken place. It is however, a good idea to have someone in this area as part of the discussions to ensure that they understand the rationale and requirements in context plus ensures they are achievable within a new system.

Business Change working groups are also a great way to ensure support from all levels of the business and also to reach a consensus on the amount of 'business tax' required to drive a deal forward.

Some suggested role types to include within such a group include:

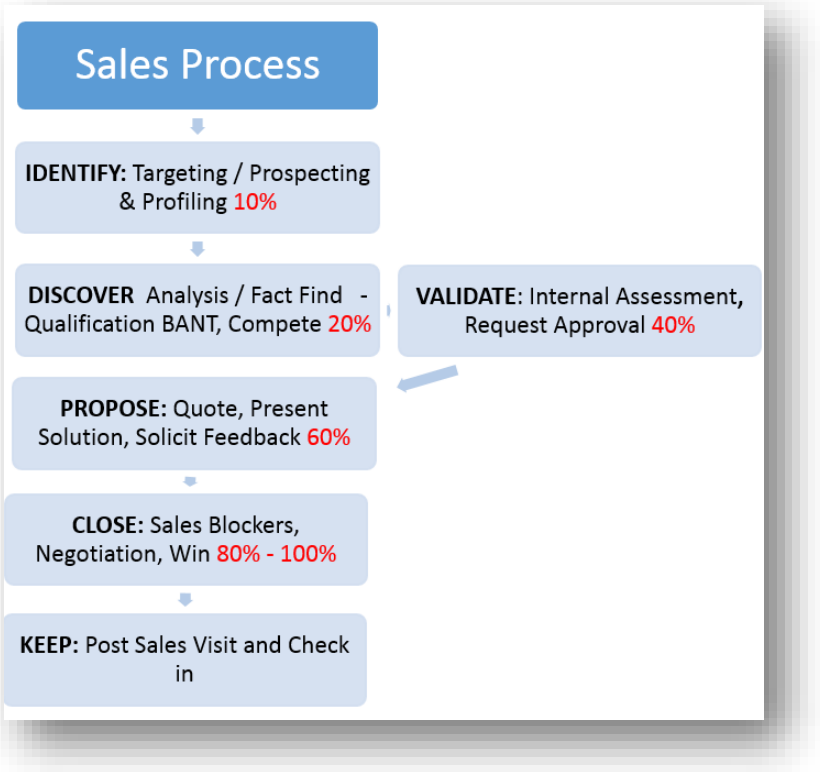
- Executive sponsor (who has responsibility for all of the areas affected in the business change and can help drive adoption of the new processes as both an evangelist and an enforcer),
- Technology Project lead (Someone with in depth knowledge of Microsoft Dynamics CRM and in partnership with the technology vendor for additional support)
- Process Project Manager (Someone on the business side who understands how the business functions as a whole but also understands how a customer would typically approach working with your organization and the cycles they run through)
- Process Leads (These represent the business groups effected and have a deep understanding of their own departments and the nuances)
- Often we see an outside individual who is not close to the current business processes to help with advice and experience from other companies.

Once the group is in place the team typically tackles some of the below tasks and actions plus instigates a regular cadence following delivery of a new process and technology to manage any changes and updates as the business moves forward.

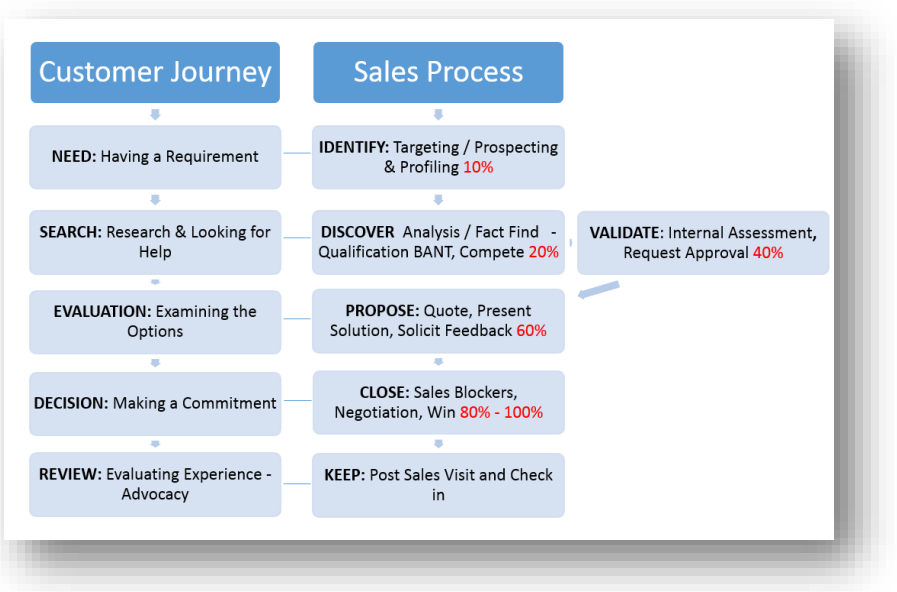
- Deep dive into the current pains across all of the business processes (an example could be an approval process which doesn't get to the right people or a risk assessment which has taken place late due to a lack of earlier information captured)
- Understand the gaps in the process which caused pains in the past for the customer and internally, this could be a lack of the correct information captured at the right time or a lack of understanding of the customer buying cycle at the point of collecting the right information.
- Take the gaps and the pains and look at the business impact if the process was not altered and the benefits of making a change (Suggestion here is to look at deals which have been lost due to a gap in the process – due to competitive engagement, lack of business unit visibility, team collaboration)
- Define a true vision for what 'better' might look like. The temptation may be to jump immediately into redesign. But we suggest that you take the time to document your existing process flows first. We see many companies jump to technology before updating their original process maps to reflect the selling world today. There are two reasons to do this task. First, if your team represents multiple functional business areas, it is important for them to develop a solid understanding of the parts of the sales process that are outside their department to agree on common areas. Second, to take the time to

surface the problems in your current process. Technology will not correct fundamental flaws if there are basic problems with the way you are interacting today, you need to ensure that they are identified and corrected in your redesign efforts, instead of being inadvertently repeated.

This should output an internal process which has high level stages (see fig two as a basic example) and then down to a level depth which describes all of the activities and actions the teams need complete in order to progress a deal.



Map Customer Journey and Sales Process together to see a clear view on the actions that need to take place to guide a Customer to a closed deal.



Technology adoption: latest Microsoft Dynamics CRM changes

Once the business change team is in place and has agreed on the process it is then time to take the vision and apply to Microsoft Dynamics CRM. My tip would be to not map every single activity into the technology and force people down a certain path. Define the high priority gates and keep it simple in terms of data entry as much as possible. We have seen the best results when the interface captures the key information and not seen as a lengthy data entry tool. Start with the minimum requirements and then add further functionality and capability once adoption has occurred utilizing the change team to refine and evolve as you receive user feedback.

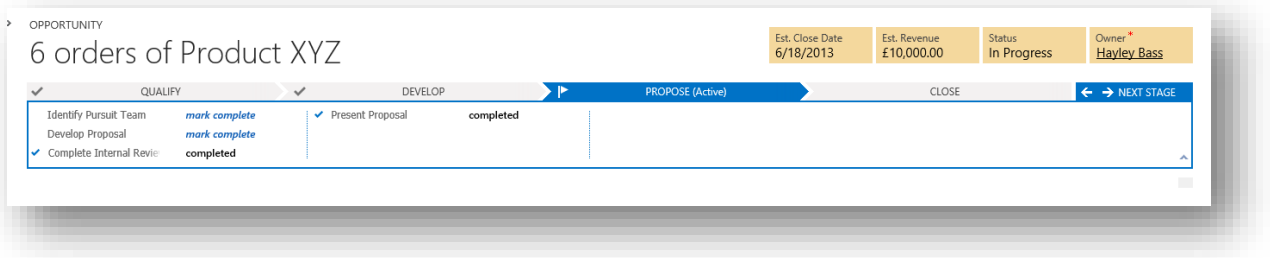
Stage	Step	Field	REQ?	Entity	Workflow / Action
Identify	• Identify Contact • Identify Account • Customer Need	• **Lookup:** Contact • **Lookup:** Account • **Lookup/Free Text:** Customer Need		Lead	• Creates Account / Contact if new • Creates Opportunity Post Qualification • Updates Probability
Discover	• Purchase Timeframe • Estimated Budget • Key Competitor • Purchase Process • Identify Decision Maker	• Date Field • Currency Field • Lookup Competitor List • Option Set List • Lookup Contact		Opportunity	• Schedule Call (Customer Needs & BANT) • Complete Call when activity is past Due Date • Updates Probability
Validate	• Request Approval • Approved • Risk Flags • Complete Internal Review	• Request Approval • Manager/Team Approved CheckBox • Risk (Free text box) • Internal Review	Yes (REQ.APP)	Opportunity	• Send Approval Request, Schedule Follow Up call if not Approved within X Days, • Schedule Call to speak with Implementation Team • Updates Probability
Propose	• Identify Pursuit Team • Develop Proposal • Present Proposal	• Pursuit Team • Proposal Developed Field • Proposal Presentation		Opportunity	• Validate Stakeholders has Data added • Updates Probability
Close	• Complete Final Proposal • Present Final Proposal • Confirm Decision Date • Order Received • Send Thank You Letter	• Complete Proposal • Final Proposal Sent • Decision (Date Field) • Send Thank you Letter		Opportunity	• Send E-mail Template of Thank You once box ticked • Updates Probability
Keep	• Post Sales Call Complete			Opportunity	Schedules a Phone call at account Level Ref Opp to call Customer X Months after any opportunity closed Won.

December 2012 CRM Online release

With Microsoft Dynamics CRM Online December 2012 Service Update, we released the concept of a process flow into lead, opportunity and case management. Rather than hide the process in a separate document the new visual design is to help provide insights and guidance to priorities actions to close more Sales deals and cases without missing any important steps. Each business process within the product consists of stages and steps.

Think of stages as “gates” that a process goes through to lead to a successful business outcome and steps as recommended actions to take or a piece of information to record. For example, in a lead management process there is typically a need to search for that person in CRM to see if they are already known as a contact. Likewise, in a customer service context the first questions asked are focused on the identity of the customer and whether this is a new or existing issue they’re calling about.

The December 2012 Service Update provided several pre- defined steps such as locate existing contact and account — these steps help preserve data cleanliness in your CRM system. This reinforces Microsoft’s principles of proactivity. A stage can consist of one or many steps. A process can easily be configured to add or remove stages and steps according to your specific processes.

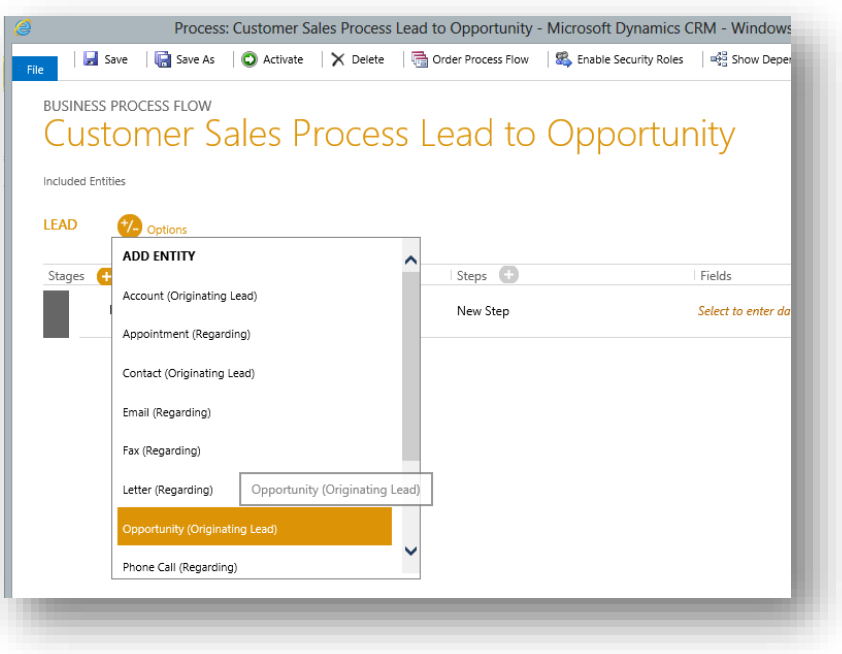


Microsoft Dynamics CRM 2013 update

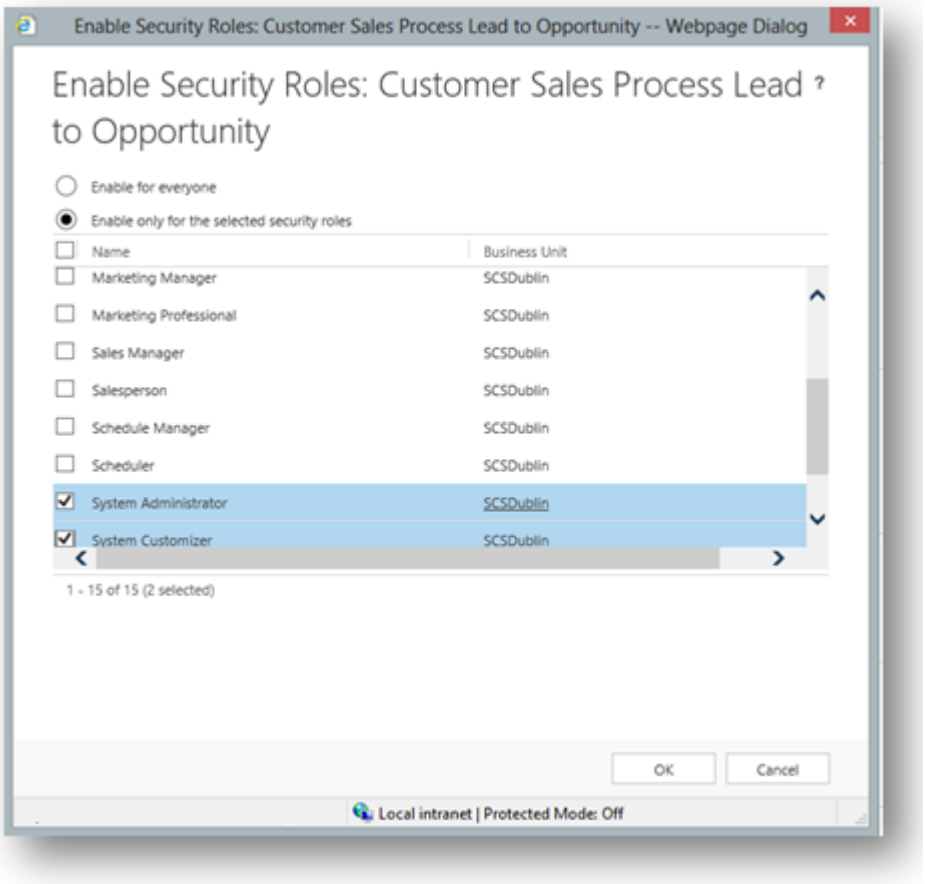
With the launch of Microsoft Dynamics CRM 2013 and Microsoft Dynamics CRM Online Fall ’13, the process flow has been enhanced and evolved to enable you to map your business processes easily and effectively.

Key Feature Updates:

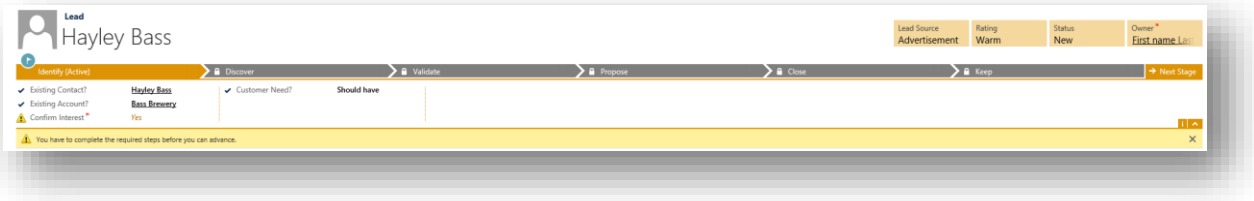
- **Deployment:** Available for CRM Online and On-premise Release
- **Delivery:** Ability to package the process flow as a Microsoft Dynamics CRM Solution and Import/Export into another Microsoft Dynamics CRM Instance
- **Multi Entity Process**: Ability to create and define a process flow which extends beyond just one single entity and includes the ability to add in custom entities. Example: Lead to Opportunity Sales Process – following the journey from Lead to Opportunity to Order and Invoice within one single process flow.



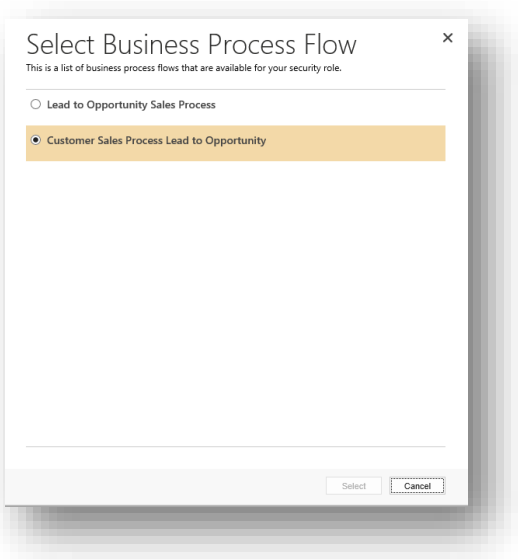
- **Process Flow on any Entity:** no restriction on the entities which can have a process flow defined including custom.
- **Role Based Processes:** Ability to define and release process flows to certain business roles as defined by the administrator. This allows a clutter free list to be displayed to a user to reduce confusion and allow them to focus on the task in hand. It is important to note however, that this controls who can initiate and switch to a process, rather than who can see a process once it is activated. Once a process is activated it is visible to anyone who has access to the related record the process is activated against



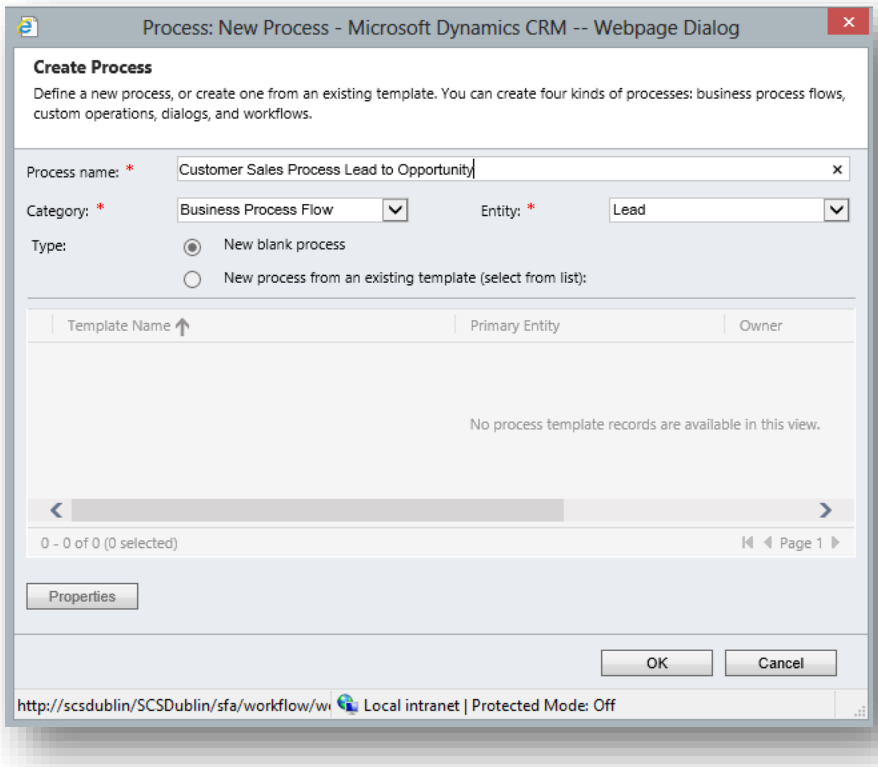
- **Stage Gating:** Ability to enforce certain steps within a process flow which restrict the user from progressing through the stages until complete.

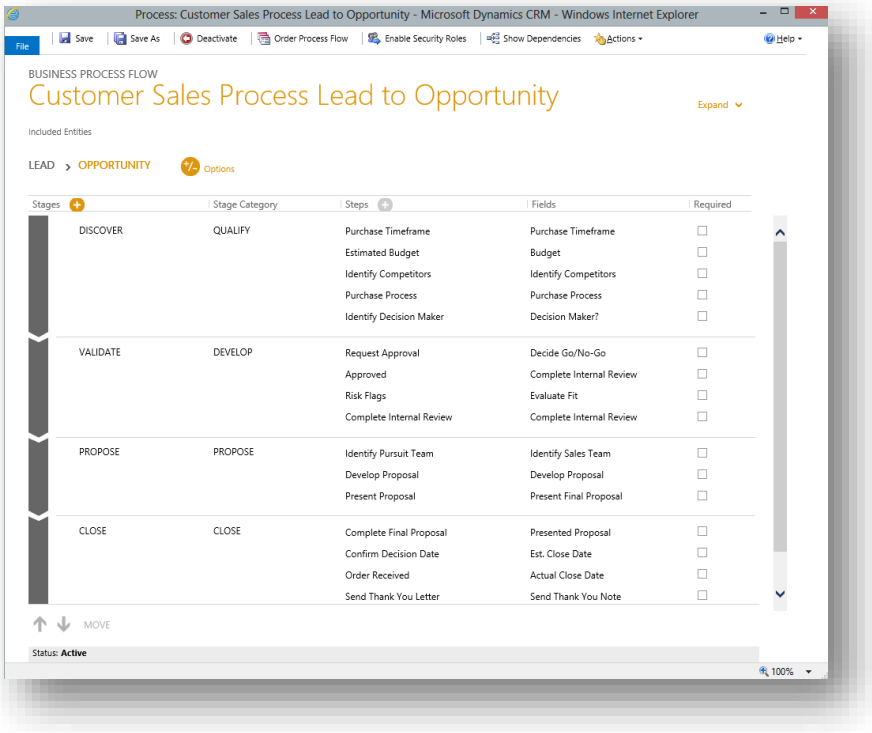


- **Process Switching:** Ability to allow a user to switch a process on demand. Should the process need to be changed as the customer requirement alters unexpectedly. Example: Sales Opportunity transfer from a High Risk Project to a Low Risk Engagement.

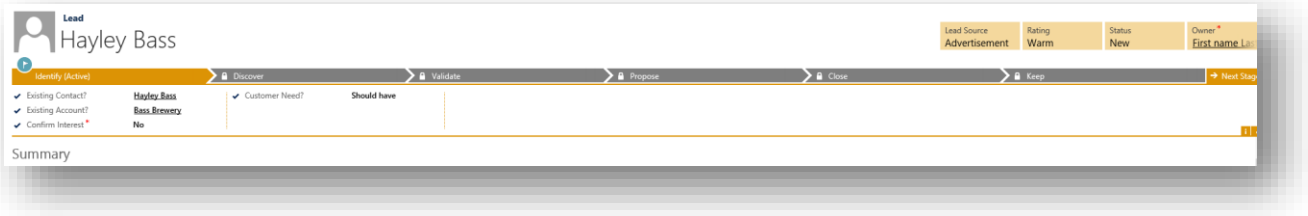


- **Full Stage Movement:** Allowing a user to move forwards and backwards in a process flow to reflect the changing nature of enquires with customers and allow an element of autonomy.
- **Process Editor:** Easy to use process designer allowing a business administrator the ability to define and share new process flows without the need to be a technical expert.





Once complete the new process is ready to be activated and tested with users.

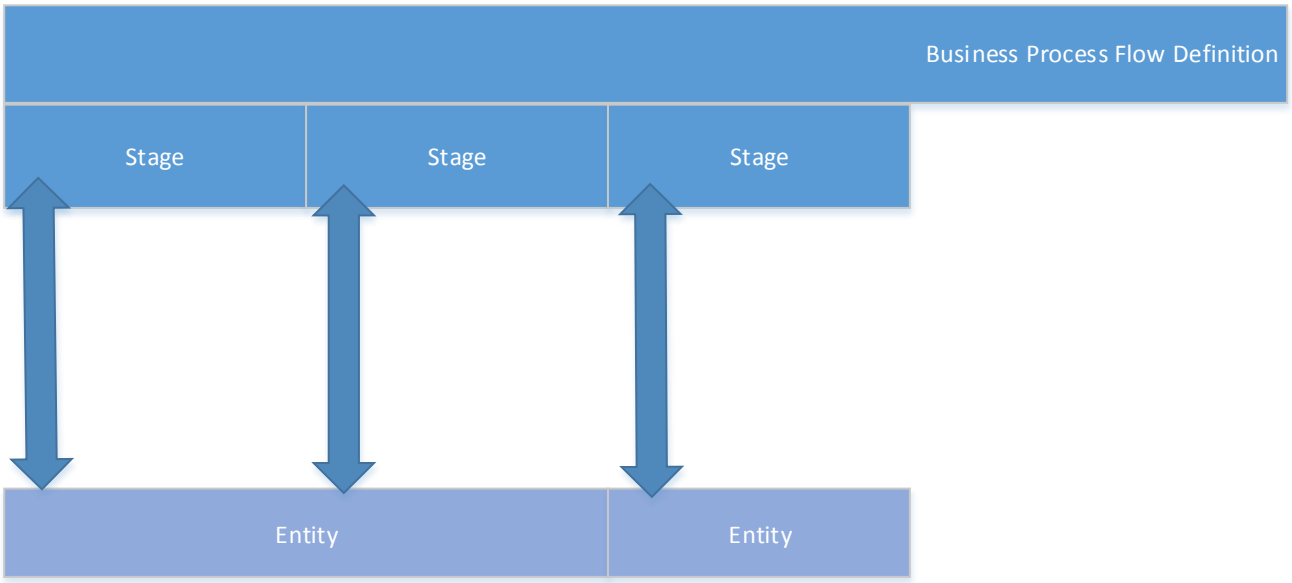


Business process flows build on a number of underlying elements:

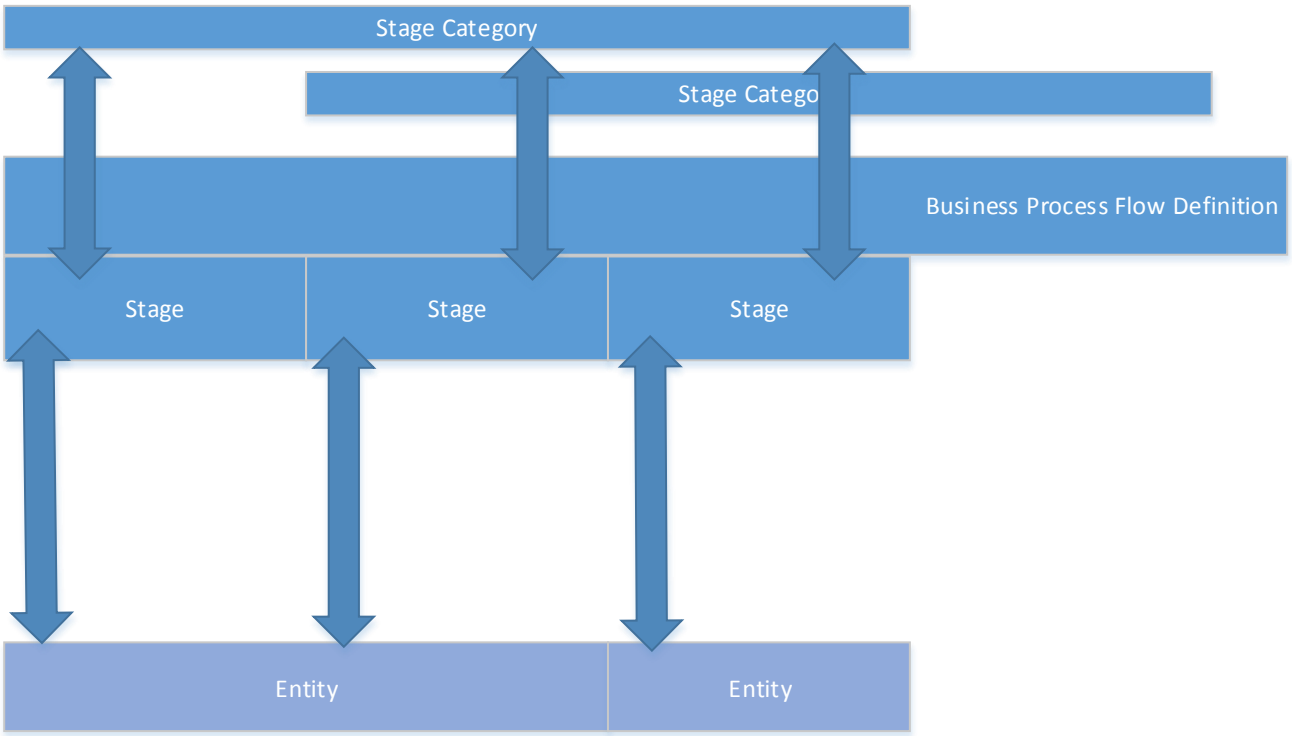
- Business process flow Definition: the overall definition of a type of a business process flow, describing the configuration of that business process flow
- Stages: A business process flow can have up to 30 different stages, each defining a particular phase or part of a process, transitioning to a new stage should indicate a change in state, for example in an opportunity moving from qualification to development stage, or an account from prospect to customer.
- Stage Categories: In order to allow for measuring across different types of related business process flows, each stage can be categorized, the stage category providing a consistent value set to report against enabling
- Related Entities: the entities which the process flow links between and from which it shows and allows editing of data
- Steps: within a stage, steps define the individual actions a user needs to perform, each linked to a field on the related entity for that stage. Each stage can have a maximum of 30 steps

Business flow terminology

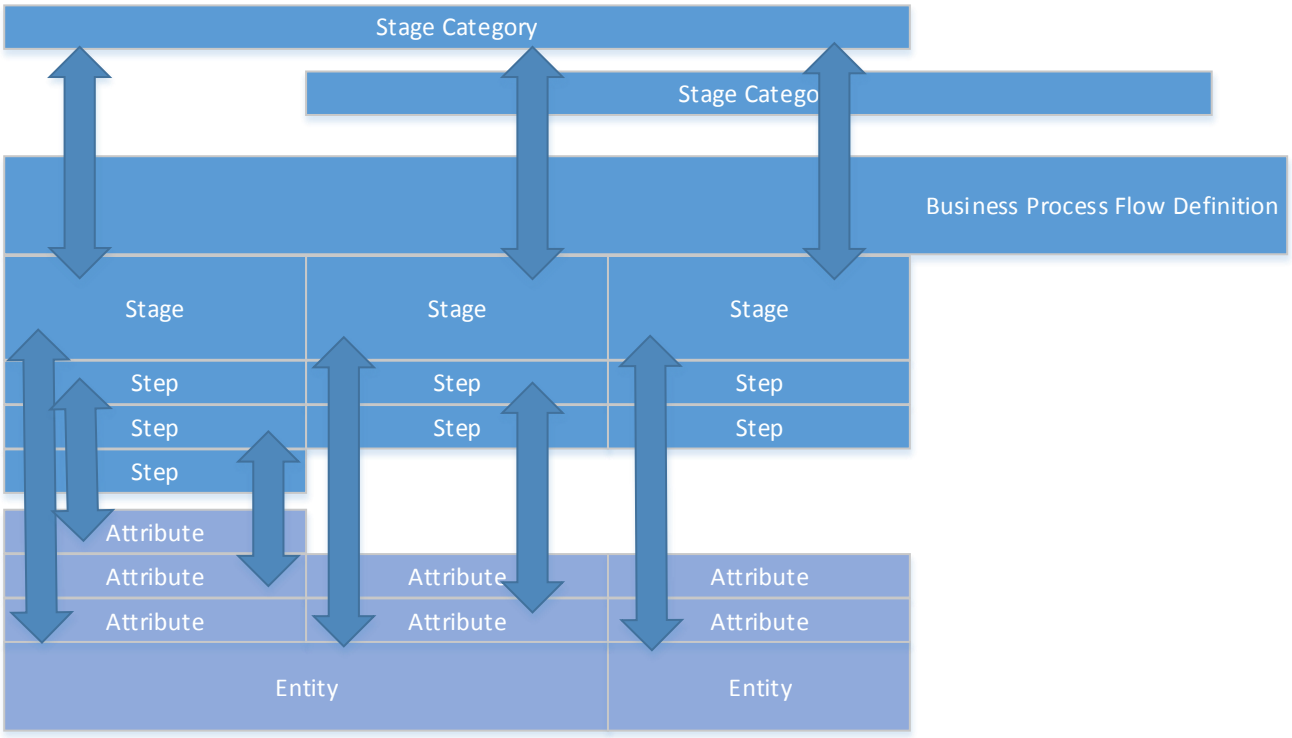
Initially, a business process flow definition therefore is linked to related entities and within each entity defines the different stages which make up the process.



The next layer is to categorize each of the stages in the process which lets you link common stages for reporting across different business process flows.



Finally within each stage the steps are defined, each of these being linked to an attribute of the related entity.



Measurement of performance

One thing to think about throughout this project is to agree a common set of measures on what success will look like once the process changes are in place. It is critical to understand what the better does look like from a reporting perspective. Adoption rates, win rate, lead and pipeline engagement and velocity could all be examples of measures we have seen other organizations put together. If you don't understand where you are today and where you want to get to it will be difficult to justify future changes and improvements.

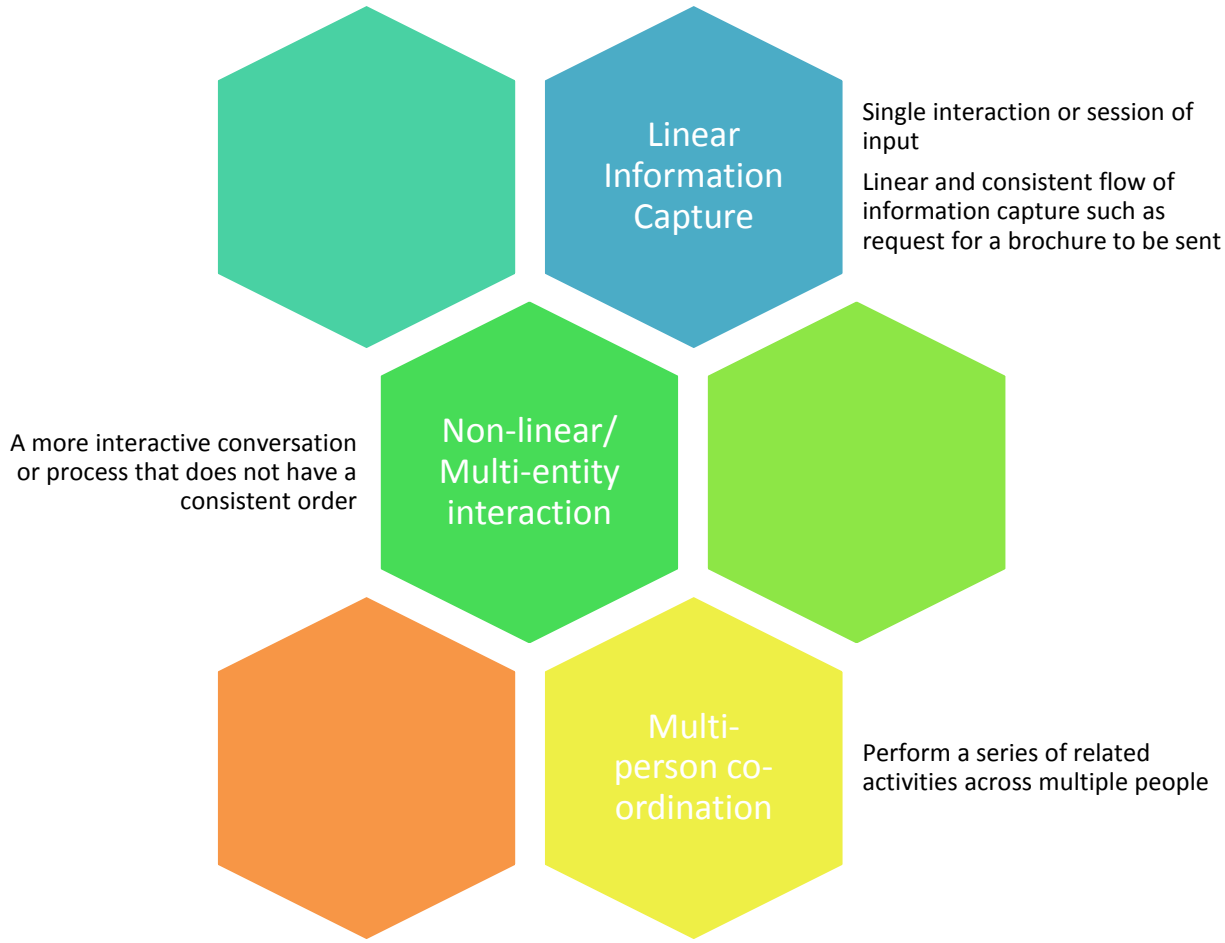
When to use business process flows

As much as understanding the capabilities of business process flows, it is as valuable to understand when they are best used and when they are not suited to particular needs.

Common interaction patterns

When considering business process flows, a useful perspective to take is to understand the type of interaction with the system that a user will need and want to use.

There are some typical ways of users wanting to interact with a system, and for each of these we need to determine the best way to address these.

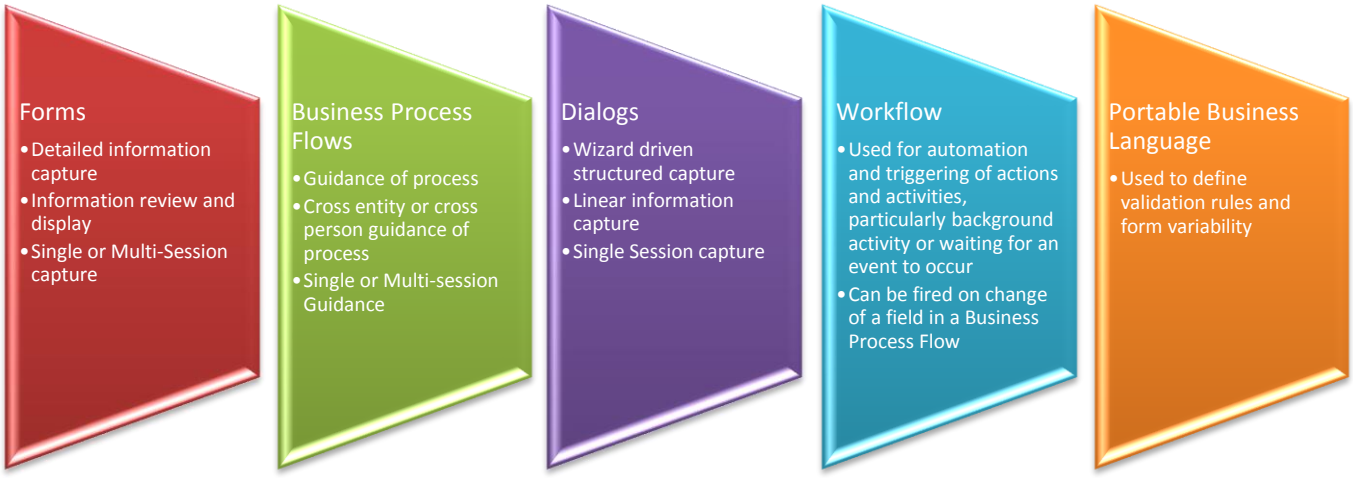


While these are all valid needs, not all of these interaction patterns are best suited to use with business process flows.

Overlapping capabilities

Microsoft Dynamics CRM offers a wide range of capabilities. For the types of interaction pattern discussed above business process flows are not the only answer.

Each of these capabilities overlaps and can assist as part of a solution, understanding where each plays a part and what they offer is useful when fitting business process flows into a design.



In particular, choosing the right capability for a particular task is important. Although it may appear beneficial to standardize on a single, consistent approach, this can lead to a greater degree of compromise when trying to force one tool to meet varying needs rather than using the right tool for each job.

Ensuring that each of these approaches is considered when designing a solution is a good practice to provide the most appropriate experience to the end user.

Purpose of business process flows

When introducing business process flows, there are some key scenarios they were designed to address. Being aware of and aligning use of business process flows with their intended purposes will assist you to get the most from them.

These are not the only ways in which business process flows can be used, but the understanding of this will give insight to why they are implemented the way they are and the capabilities offered.

In each of these cases, business process flows can be used to both:

- Support a more dynamic business through periods of change
- Give both end users and management a greater degree of insight to the current state of the business and certainty of outcome as a result.

Guide vs. control

One fundamental intention of business process flows that often gets overlooked is that they are intended to guide a user through a process, not to control them.

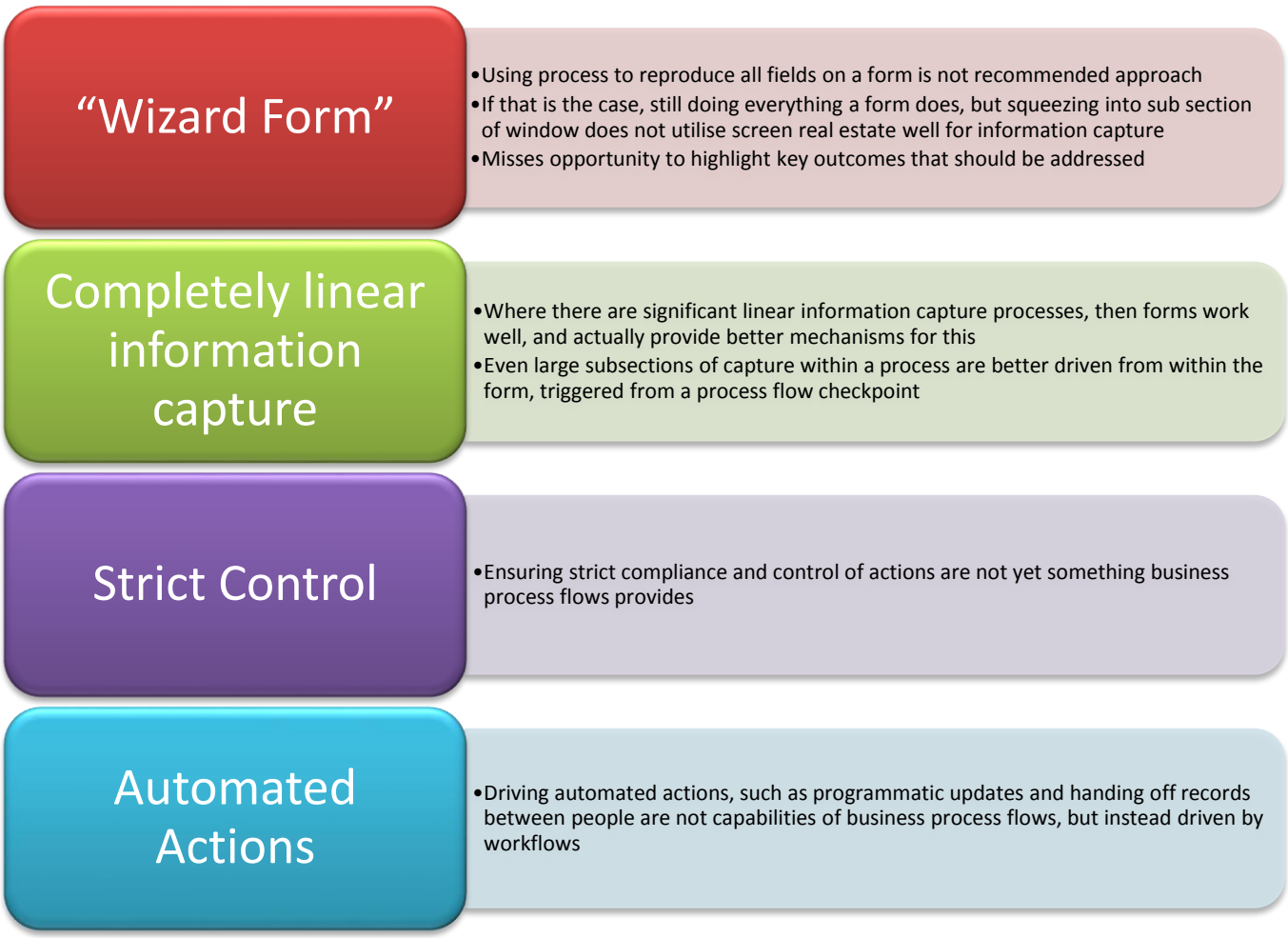
This is important as when trying to enforce control using process flows, there is an expectation that certain actions must be done or cannot be done at certain points. Whereas the intent with business process flows is not to place that level of enforcement on the user, but instead to provide them guidance as to what to consider next. The choice of what to do next is still in the hands of the user.

Business process flows:

- Guide the user who is working with the system
- Do not control or force specific steps on a user
- Provide guidance across entities
- Do not control hand offs between different people but can highlight and record transitions between different participants
- Provide visible indicators and tracking of the current status of a process

What aren’t business process flows intended for?

As useful as understanding where business process flows add value is recognising scenarios, or anti-patterns, where they do not work well and are not intended to address. The following are some commonly considered scenarios which are not best placed for addressing with business process flows



Designing your business process flows

When designing process flows, breaking down what it is that needs to be achieved and how to fit these goals to the workings of the system is a useful approach to follow. There are some key areas to consider, and the following sections will highlight these.

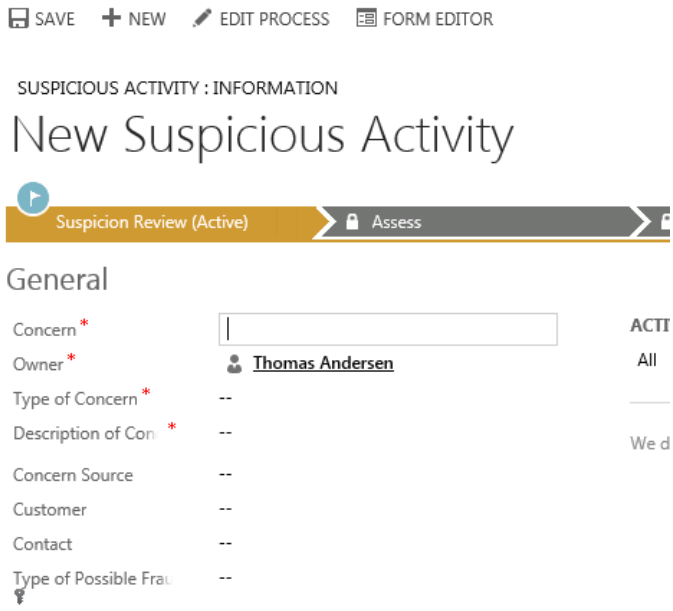
When to start the process

The first concept to clarify is that process flows have been designed to actively participate once the initial record is created.

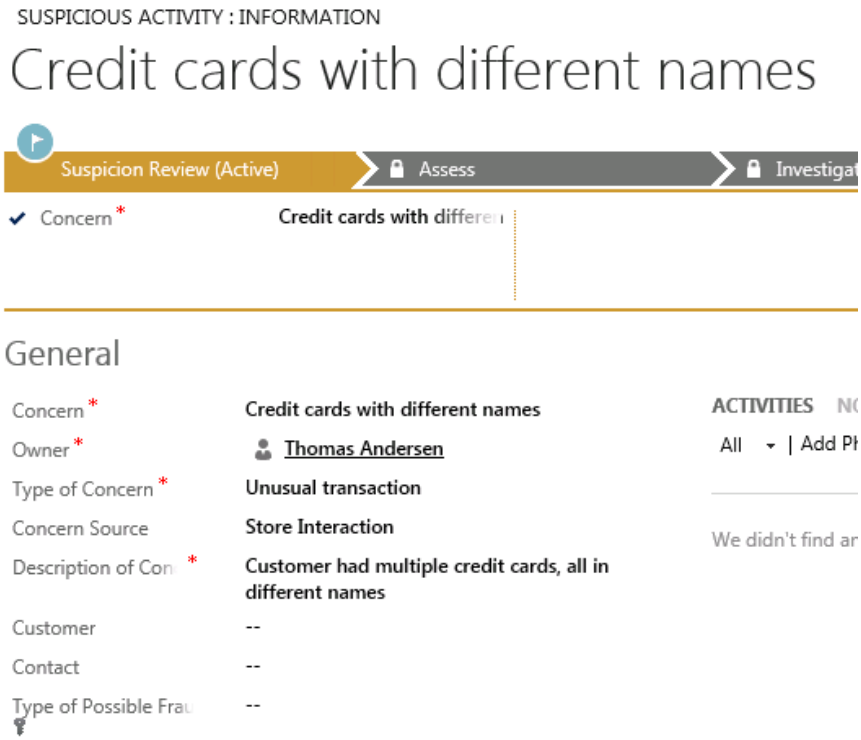
When the form for a new record of a type that initiates a process flow is initially launched, if there is a process flow for this entity type it will show it exists but will be collapsed by default. This is intentional to allow the user to focus on capturing the mandatory information describing the record. The creation of the record then automatically triggers the expansion of the process to guide the user through the next steps.

As an example:

- First start creating the record
- Existence of process flow is visible, but collapsed to allow focus on mandatory information capture



- On completion of mandatory information and creation
- Process Flow becomes expanded and visible



Collapsed until created

Business process flows are initially shown in a collapsed form until the record is created. This is intentional although not always obvious why.

When considering the initiation of a process and creation of a related entity, the first action is define the thing that is being interacted with. Before you define what it is you're working on, how can the next steps become relevant? :

- For a contact, that may be to capture enough to describe the person such as name
- For a case, that may be to define the initial problem report and who the case is on behalf of

This is important to do, as both initially this is important information to capture, but also important to display immediately later in order to find and describe the item it is you're capturing.

The describing information would typically need to be the initial information captured on the form, both for initial capture and for displaying later.

It would also typically be mandatory information, i.e. the minimum information to describe the item being acted on in such a way that it is recognisable later. Driving creation of the record as soon as possible, and as soon as there is enough information to discover and recognise the record later, means that the activity and information isn't lost when the form is closed and is therefore encouraged as an approach.

One consequence of this however is that, if the process flow was shown fully before creation, it would still make sense to capture this fundamental information first and ensure the record is created as soon as possible. Showing the process flow would lead to some difficult decisions about what to show on the process flow:

- We could focus the initial stage on the mandatory information to be captured to create the form.
    - The implication of this however, is that the mandatory information would now be shown on the process flow and immediately beneath it in the form. This duplication would be confusing to the user
- We could not include the mandatory information on the process flow, but instead show the next steps.
    - But this would mean that the user on opening up a new form for creation would see as the first item on the form, the process flow, highlighting the second step to do.
    - They would need to scan past this guidance down to the form itself to capture the mandatory information first
    - Again, this simply creates a confusing situation
- We could capture the mandatory information on the process flow, and move the mandatory fields to a less prominent place within the form
    - But when there isn't a process flow active, or the process has moved onto a later stage, on accessing the form the user would want to see the initial key descriptive information about the record. If the information is mandatory, then it is likely to be key to understanding that record, so would not want to be hidden away from the user
    - Process Flows vary by user role, so this key information capture would need to be incorporated on all process flows

As a result of all these scenarios, it was determined that a cleaner, more consistent and less confusing approach was to maintain the concept that the place to capture the initial mandatory and descriptive information about the record was in the form itself and to start with the process flow collapsed. Once the creation is complete, the process flow would expand to start to guide the user in what they should do after this point.

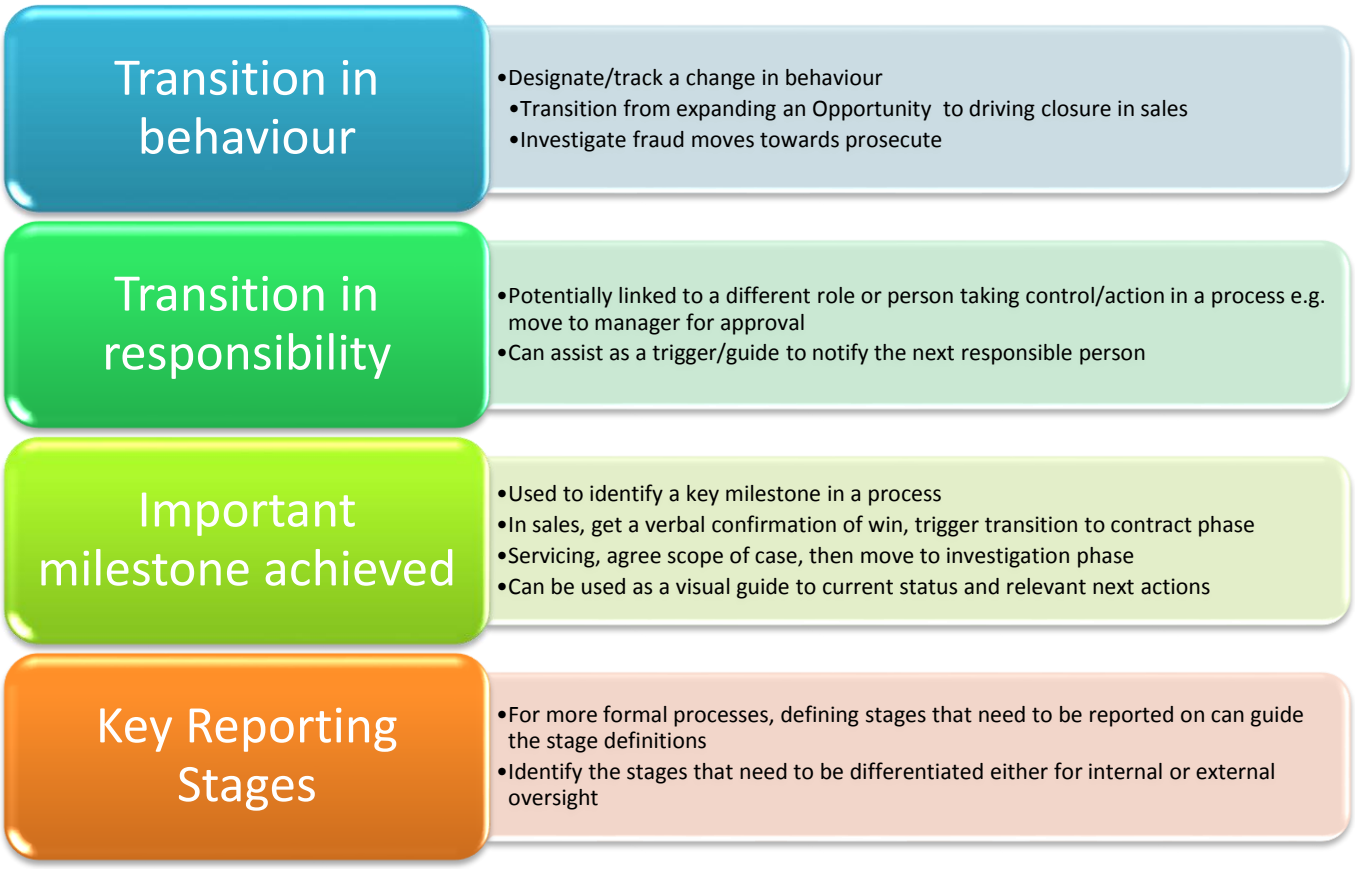
When designing business process flows, this leads to some design principles to follow. These are guidance principles, there may be scenarios these do not fully apply, but in most cases these are relevant and should be considered:

- Mandatory information should be captured as part of the initial creation of a record. Note: this can use the new Quick Create Forms introduced with CRM 2013 for the initial record capture
- Keep this initial mandatory information to the minimum necessary to allow creation of the record
- Keep this mandatory information visible at the start of the form to assist with initial creation and ongoing review of the record

- Consider the first stage of the business process flow for guidance that should be applied after the initial creation is complete

Determining stages

The next element is to consider the entities and stages that the process flow will encompass. Considering when a stage change is relevant can often be broken down to the following scenarios. Recognising these and defining a stage to reflect them can be valuable in process design:



Determining steps

Finally considering the individual steps within a stage need to be chosen. When choosing steps, some questions to ask can guide to defining valuable steps that don't simply become a different way to show the form:

- Will this be a good driver of behaviour?
  - What behaviour/action do you intend to encourage?
- Is this an important checkpoint?
- What common concern/missed action are you trying to ensure?
- Is this key data to capture as part of a process or to confirm an action e.g. txn confirmation id
  - Capturing the outcome value, such as a transaction id, can be a good way to ensure completion of key activities and a guide to users to perform the action to gain the resulting data if they have omitted it previously

Steps do not need to be fields on the form, but do need to be fields on the related entity. But this does not mean that process flows become another way to represent information capture, each step should really be a driver to make progress towards a broader outcome.

There are some scenarios where showing information can be useful as part of a process. One example is to provide a link to some help for the user at a point in the process. This can be achieved using a field with a default value set to a URL of an explanatory resource.

Example process flow

The following example highlights use of business process flows across a multi-entity and multi-role scenario, assisting with separation of responsibilities but also security isolation of data.

In this scenario, any user can capture and record suspicious activity, which is then passed to a fraud team to investigate. Characteristics of this are that:

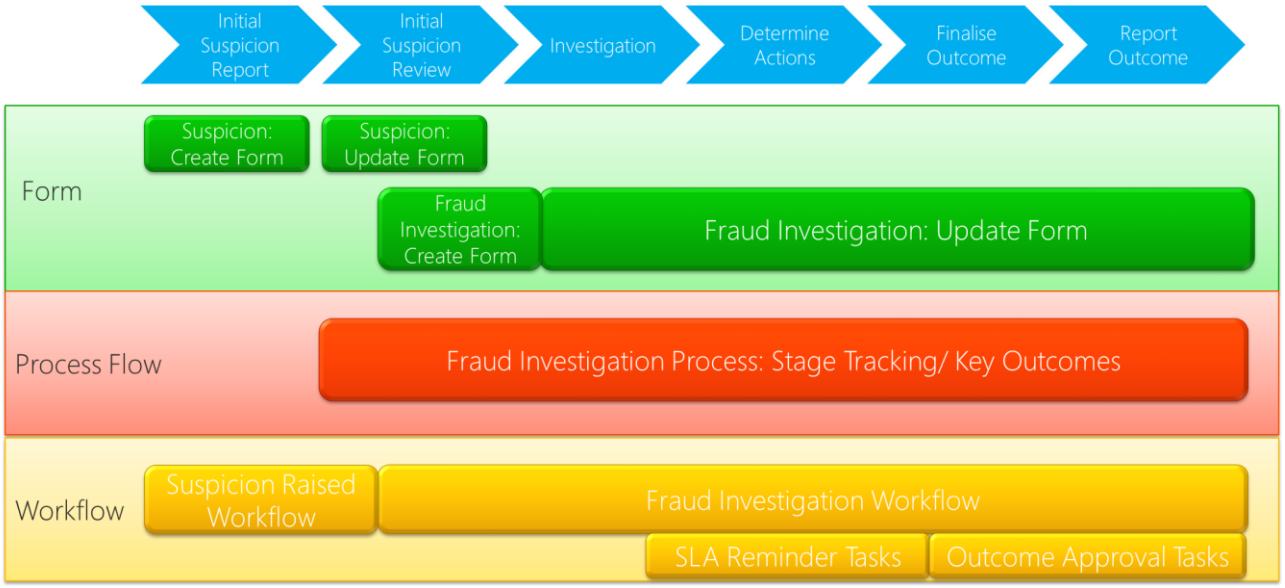
- The initial capture of the suspicion should be kept separate from the ongoing investigation because even through the initial reporter may have spotted the problem, it may not be appropriate to share with them the deeper findings, such as how a security breach was achieved
- The hand-off from the initial report to the fraud team to investigate needs to be managed and tracked
- How each suspicious activity is investigated and the outcome should be tracked for reporting to senior management as well as outside regulators
- Guidance to make sure that important steps in the process have been followed is valuable, such as a check to make sure that a report to the regulator for particular types of discovered behaviour

To achieve this 2 entities have been created and the following process used

- Suspicious activity recording stage
  - Owner only view for user who created record
  - Capture concern using Suspicious Activity entity
- Fraud Review stage
  - Role specific to fraud team
  - Initial phase to review suspicion
  - Next phase is to create a Fraud Investigation entity record and track the investigation

As discussed earlier however, not all of this is covered simply by using business process flows, but instead a combination of:

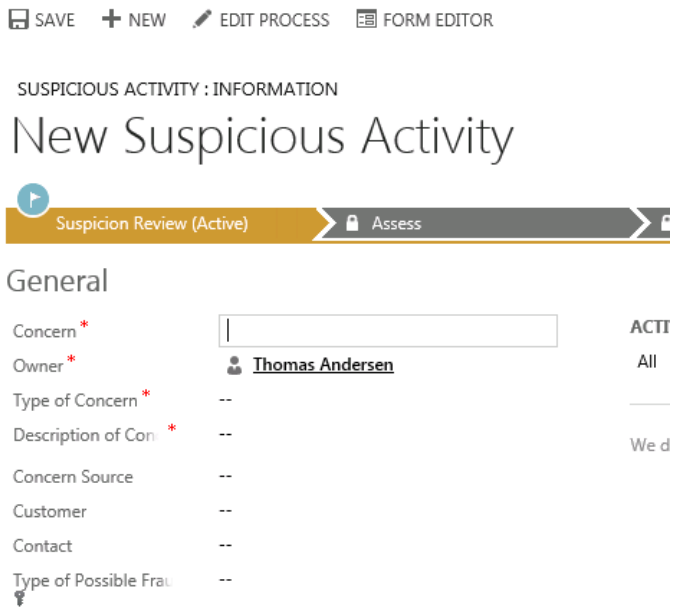
- Entity Forms for detailed information capture and display
- Process Flows for guidance and tracking through the process
- Workflow: for hand offs between team and SLA management



This then translates into the user experience as shown:

Initial Record Creation

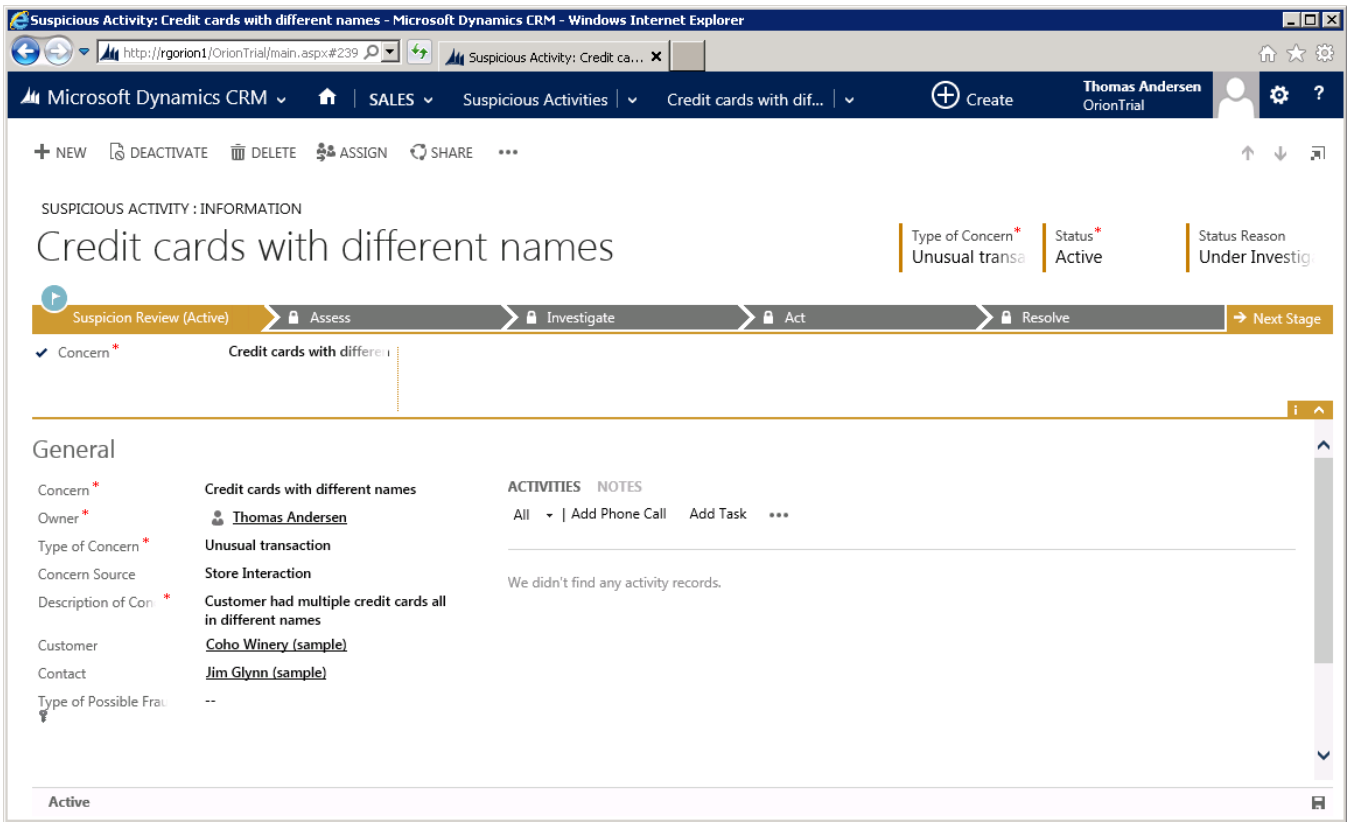
- Need to create initiating record
- Note:
  - process flow exists, but not expanded until mandatory information entered
  - Mandatory Information initial focus for form so that it can be entered, the record created and the process started



Create the record

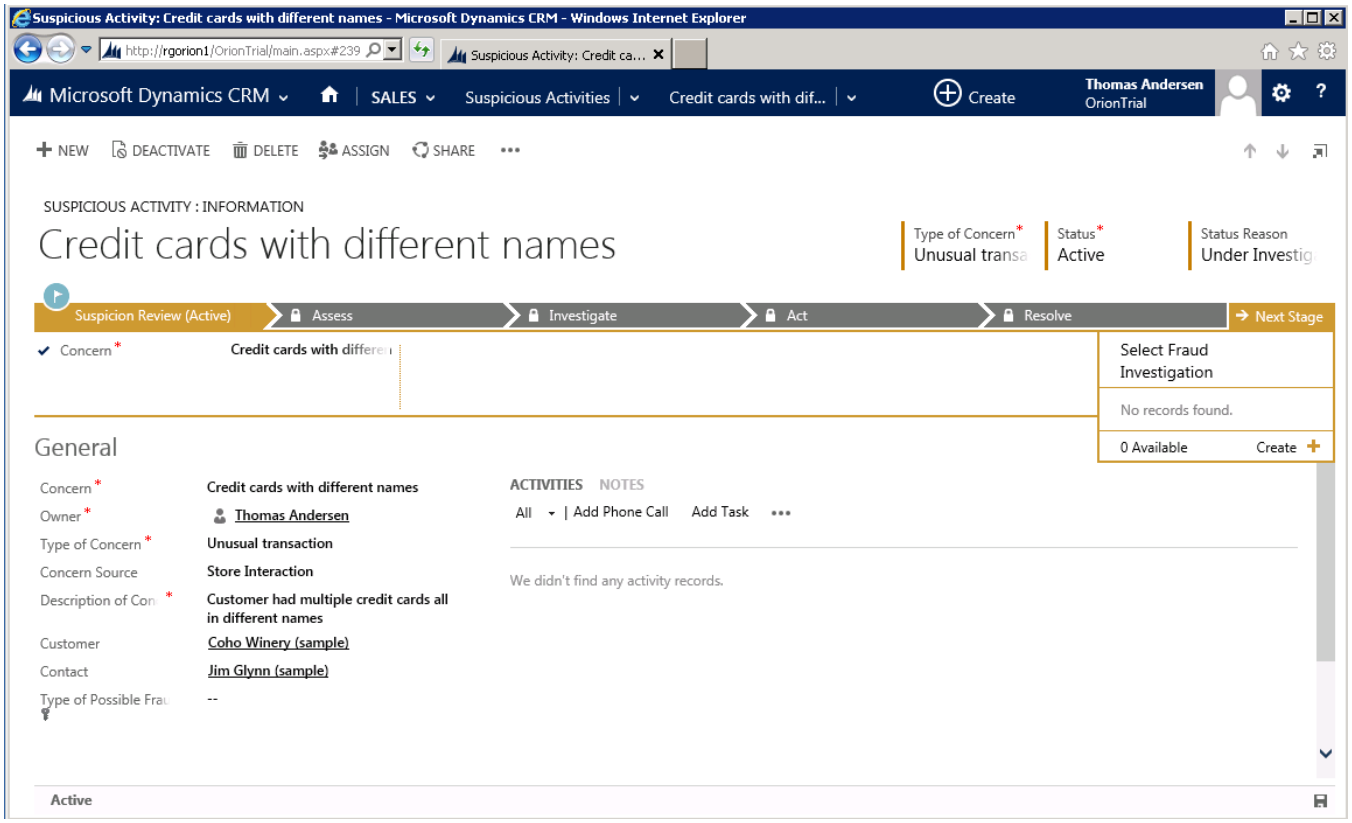
- Once the mandatory information is complete, the record is created

- The business process flow is now expanded automatically to guide the user through remaining actions



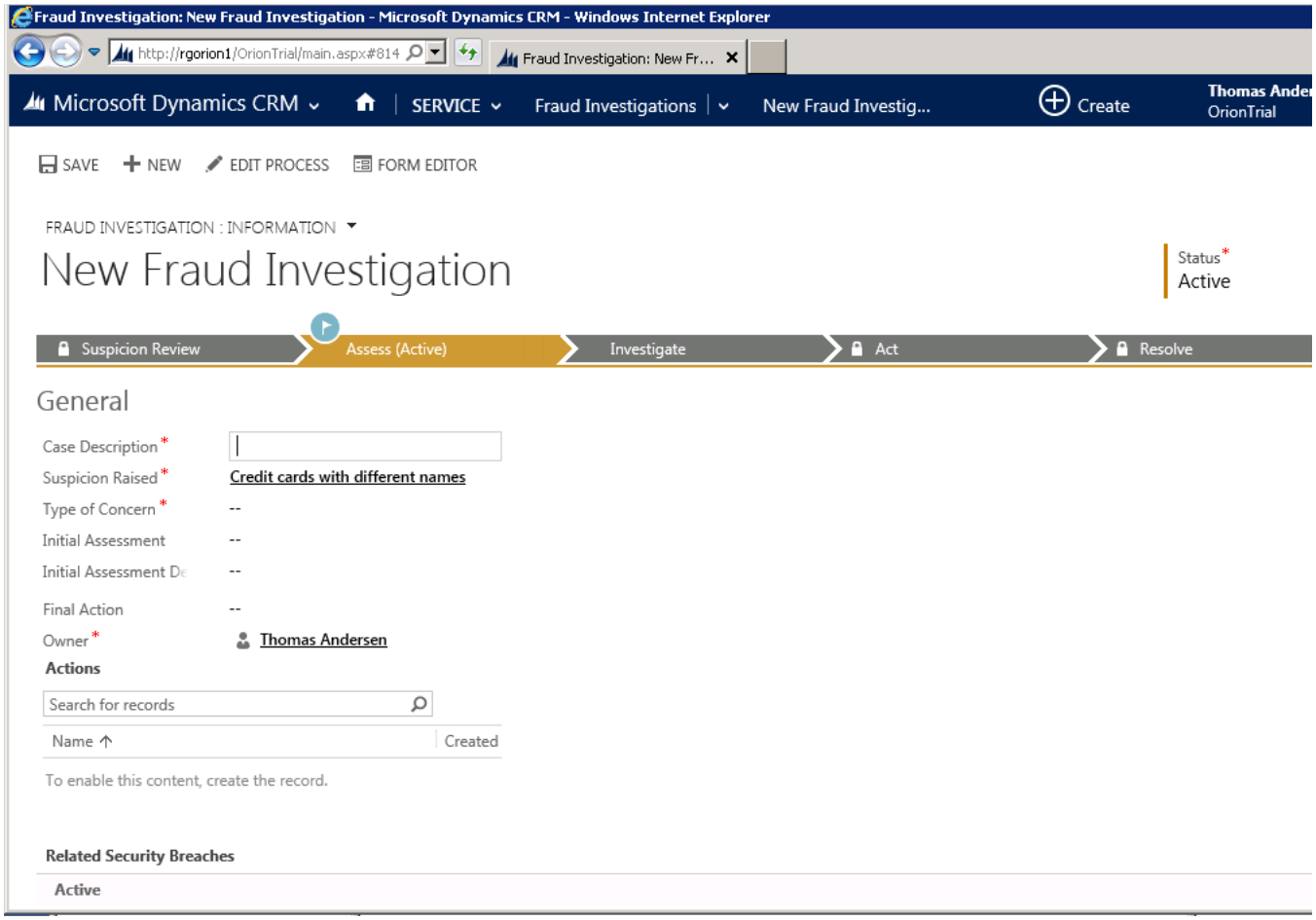
Move to the next stage with a different entity i.e. the fraud investigation

- When the user selects to move to the next stage, if the stage is linked to a different entity type then the Process flow triggers a lookup to allow the user to create a new investigation or link to an existing one (If available)
- Either an existing related record can be chosen or a new record can be created



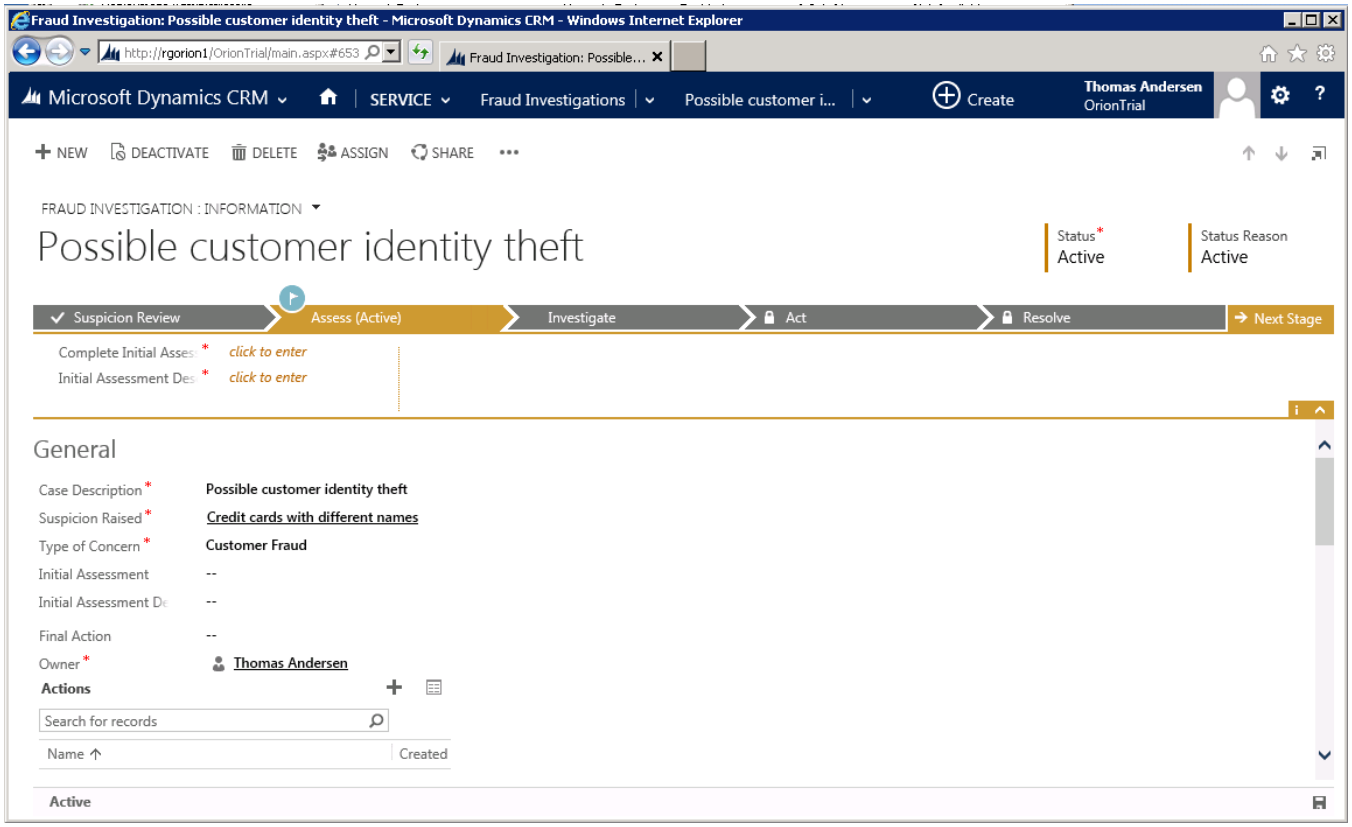
Create the new related entity for Fraud Investigation

- Again, during record creation, process flow is collapsed to allow focus on mandatory information capture
- Avoids duplication of information capture between form and process flow



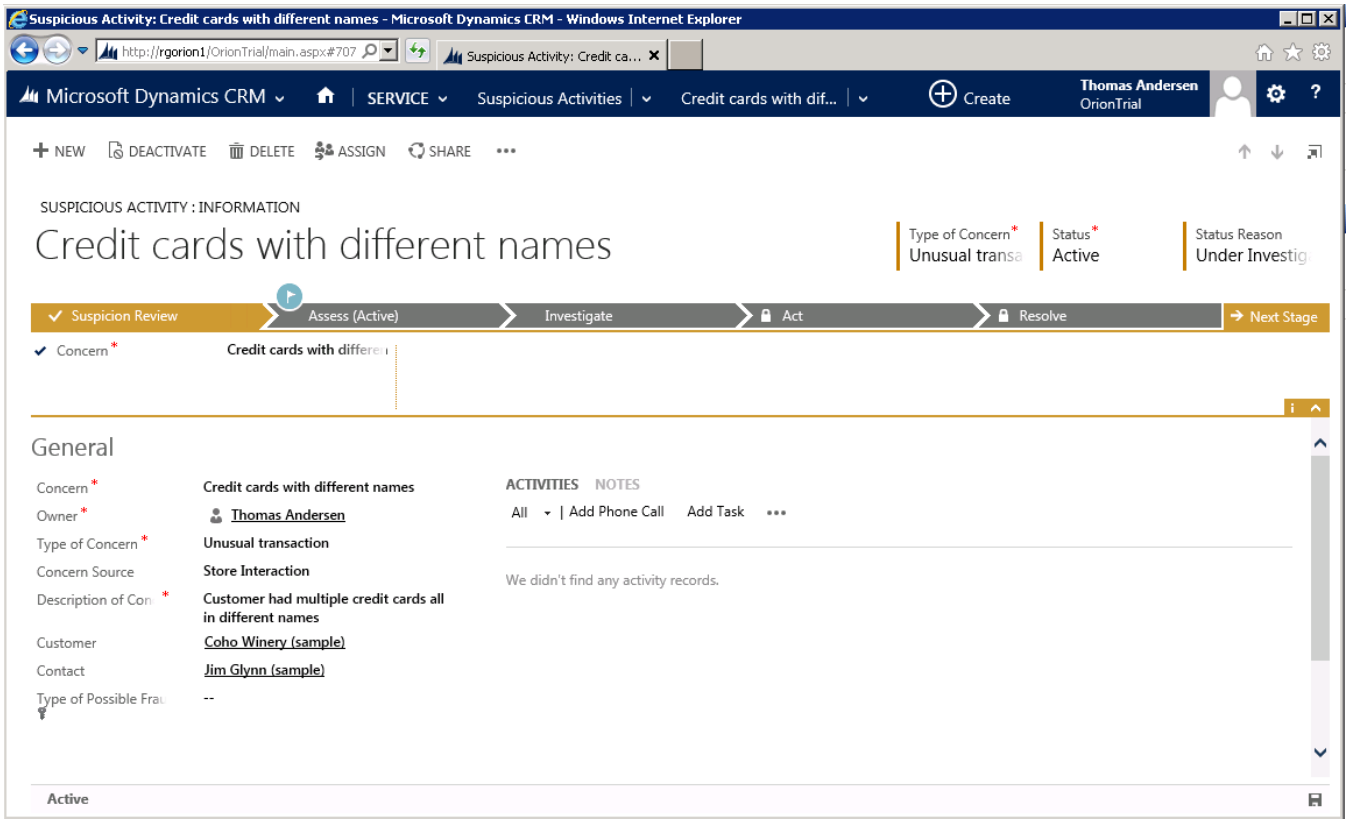
Continue the process:

- Once the related record is created, the process flow automatically expands and guides through the next stage of process



As well as progressing forwards through a process, another useful feature of business process flows is the ability quickly and easily view previous records in the process, maintaining seamless access to the information across the process

- When a process flow spans entities, the related data across these entities can easily be accessed
- Switching to a previous stage shows the related entity form for that stage
- With the introduction of auto-save, this makes the user experience more seamless when moving between related records within a process flow while ensuring any data that has been entered is saved



Naming convention

It is valuable to define a consistent naming convention for your business processes, particularly where multiple processes will be used per entity.

Where users need to choose in ‘switch process’ then this becomes essential.

The process name is also visible alongside a description field within the ‘Switch Process’ view. The clearer the convention and description the easier for the user to navigate to the correct process.

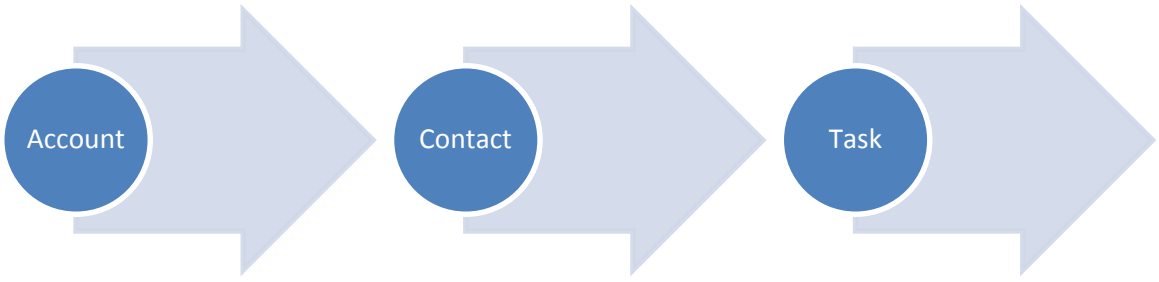
How do business process flows Work

When designing large scale or complex solutions, understanding the way that a feature works can inform the solution design to ensure it meets the broader business need in a scalable and secure way.

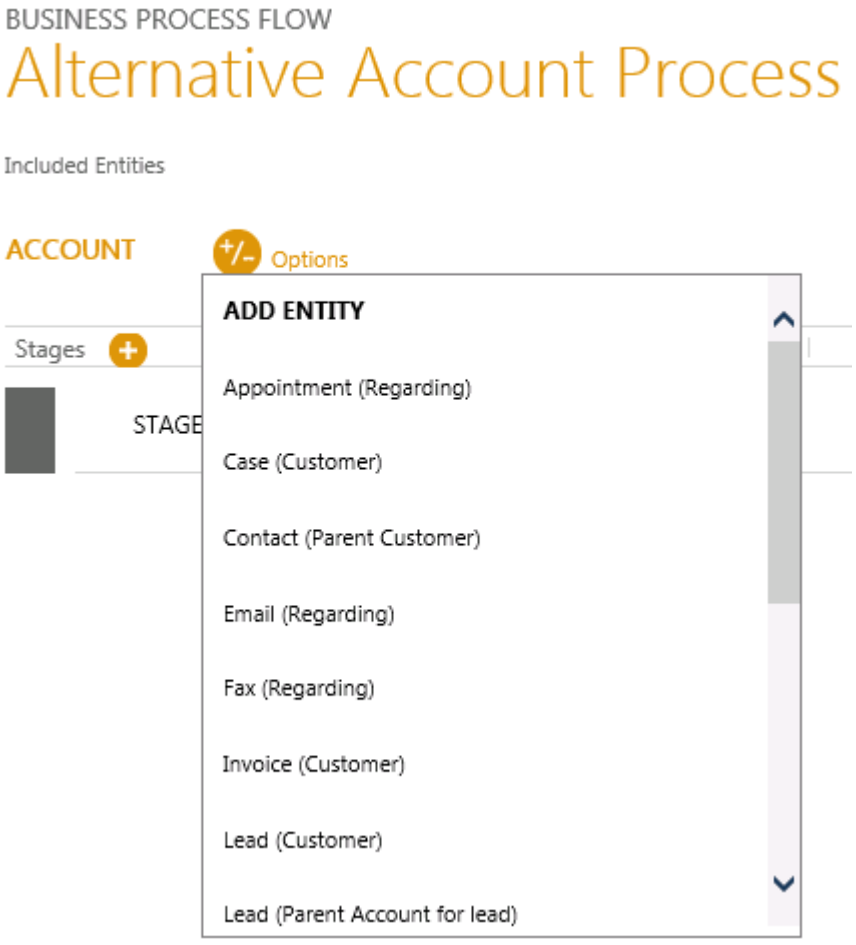
This section will describe the underlying workings of business process flows, this is not intended as something that an implementer would need to know to configure the system, but it will inform them to ensure that the end solutions performs in the way they would expect.

Linking multiple entities

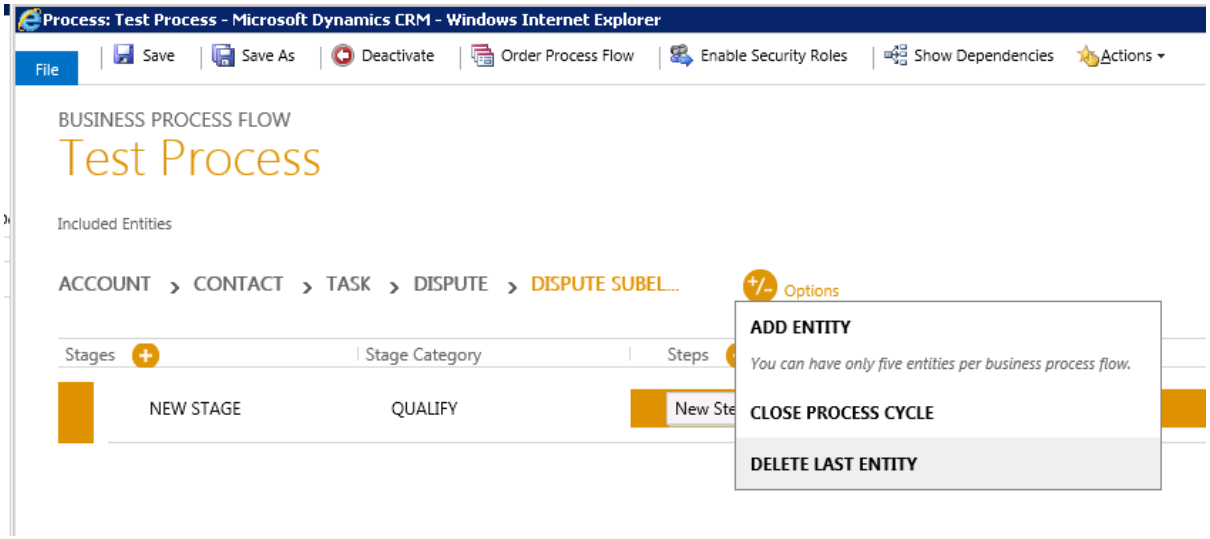
Business process flows can be defined across multiple entities. The following flow of linked entities for example can be modelled.



Within the user interface the related entities are added one by one within the business process flow definition.



There is a maximum limit of 5 entities per business process flow. As shown in the following diagram once 5 entities are in place, another cannot be added.



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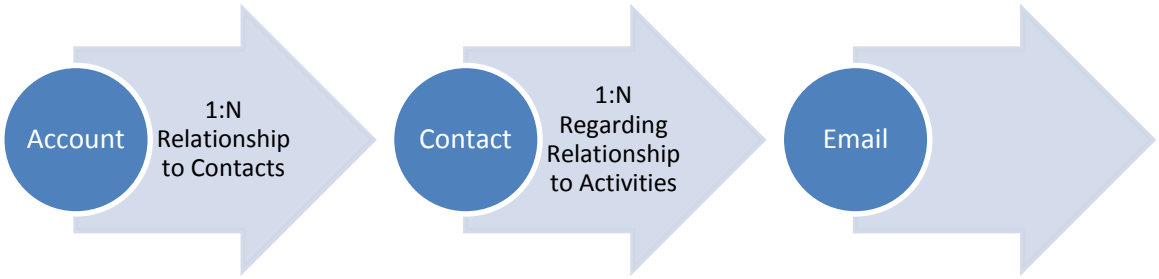
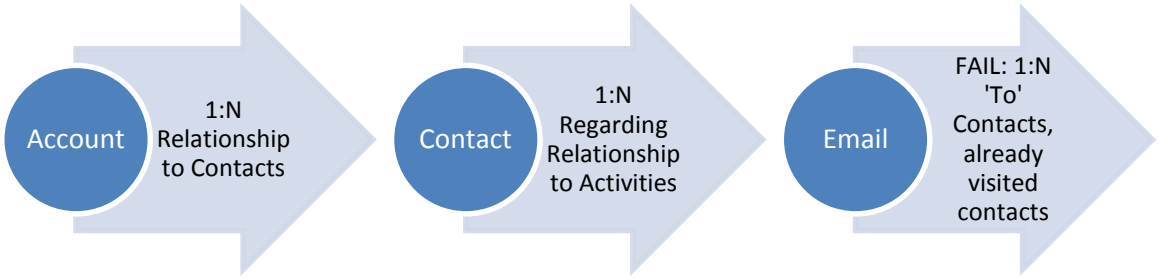
When planning a business process flow, the chain of entities which can be linked needs to be considered. Business process flows are designed to run from a parent entity and then to link to related entities that further describe that initial entity. When adding an entity to a business process flow, it is important to appreciate what kinds of entities can be linked:

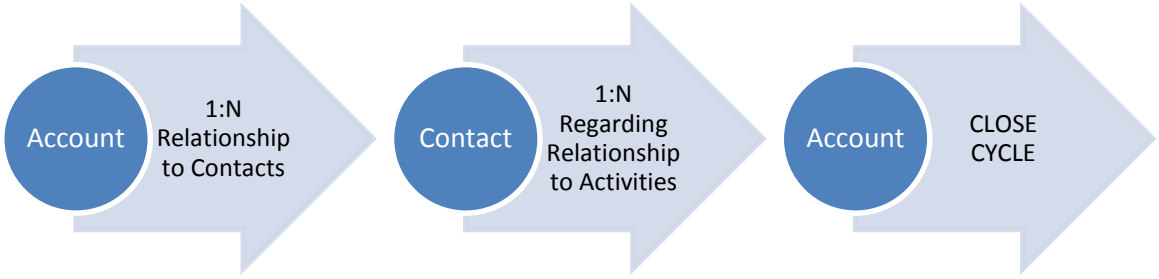
- Only entity types that are enabled for business process flows in their entity definition
- Only entity types that are using refreshed forms can be included in business process flows
  - For new implementations on CRM 2013 this will automatically be the case
  - For upgraded organizations, the existing form will be upgraded to work with CRM 2013 but not take full advantage of the new release. A separate 'Refresh form' will also be created which follows the full layout approach of CRM 2013. To take advantage of business process flows, these refresh forms need to be used
- Only entity types that have a relationship from the previous entity type in the process definition
  - Entities without a direct relationship cannot follow each other in a process definition
- The next entity must be related through a 1:N parental or referential relationship
  - The parent entity must be included first in the process flow
  - N:N relationships cannot be traversed within a business process flow
  - It is not possible to traverse from the child to a parent entity across an N:1 relationship in a process definition



In general, revisiting entities earlier in the chain is not possible, even where cyclic relationships link back through a different relationship to the same entity type.



The exception to this is to close the process cycle where the final entity can be a previous entity in the process e.g. Account or Contact in this case. Once the process cycle has been closed however, no further entities can be added.



As the process flow transitions from one entity type to another, the user is offered the ability to select an existing entity instance from the related entities across that relationship or to create a new related record. The selected or newly created record is linked to the process instance.

Note, that the record to be linked to next in the business process flow must be related to the preceding record across the relationship defined in the process definition. It is not possible to link between unrelated records in a business process flow or to link across multiple different relationships for the same stage.

Business process storage

Business Processes themselves do not store data directly, they are an overlay on the entities they are linked to.

Business process flows themselves simply store:

- Which business process flow definition is active for this process instance
    - as will be discussed later note the definition for a particular instance can be changed later
- Which records are linked to the business process flow
- The stage the process flow is in

The business process flow definition defines which fields from which entities are shown within the flow. All data entered in the process flows is stored directly within the entity records themselves rather than there being any process flow specific storage of data.

The process instance record is created when a business process flow enabled record is opened in the user interface in the full form when the business process flow is shown for the first time. The process instance record consists of the following data:

Process Instance Id	Process Id	Process Stage	Related Entity 1	Related Entity 2	Related Entity 3	Related Entity 4	Related Entity 5

Business process flow mechanics

Understanding what is stored about a business process flow is one thing, understanding the lifecycle of a business process flow can also be useful.

When a record is viewed for the first time in the full form, the system will check to see if a business process flow instance should be started.

A business process flow will be started if:

- The entity is business process flow enabled
- No previous business process flow is already linked to this record
- There are one or more business process flows activated for this entity and enabled for one of the current user's security roles.

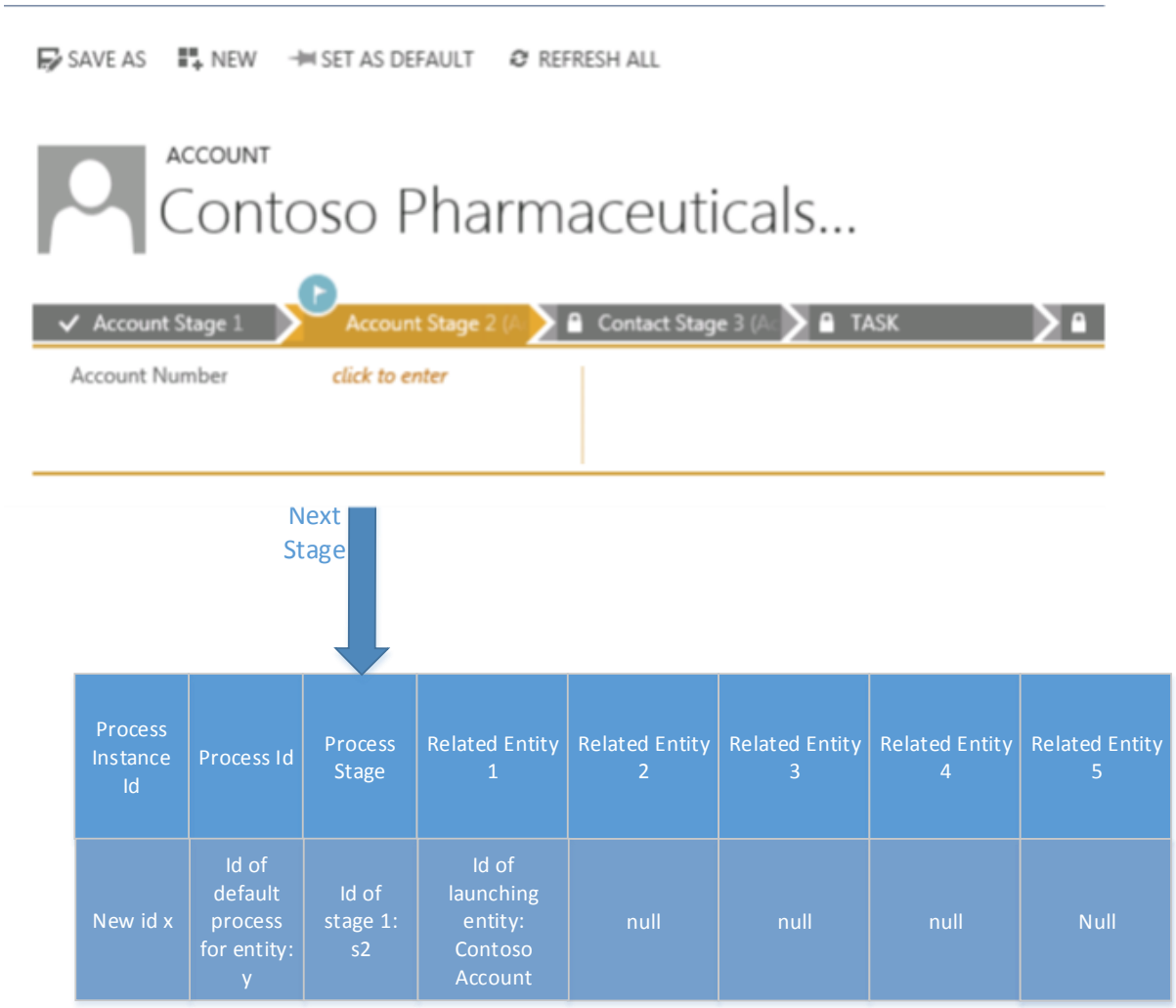
If these conditions are all met, then an instance of the highest ordered business process flow that the current user can access will be created.

In doing this a business process flow instance record will be created in the database, setting:

- The new id to uniquely identify this business process flow instance
- Which business process flow definition has been selected to be used
- The stage of the process, in this case the first stage as the process has been newly created
- The entity id and type of the launching and initial entity, or entity 1

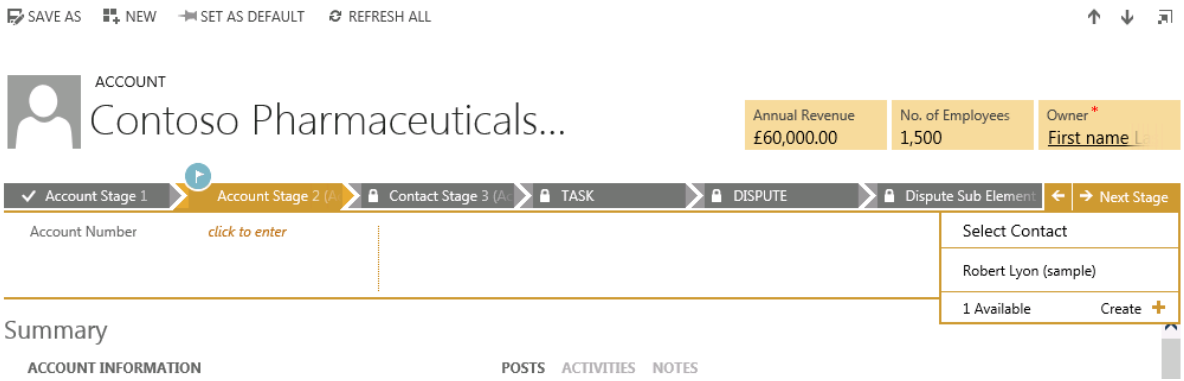
Process Instance Id	Process Id	Process Stage	Related Entity 1	Related Entity 2	Related Entity 3	Related Entity 4	Related Entity 5
New id x	Id of default process for entity: y	Id of stage 1: s1	Id of launching entity: Contoso Account	null	null	null	Null

Once the user, either in this session or a subsequent one, acts on the record and moves it on to the next stage, the business process flow record is updated with the new stage.

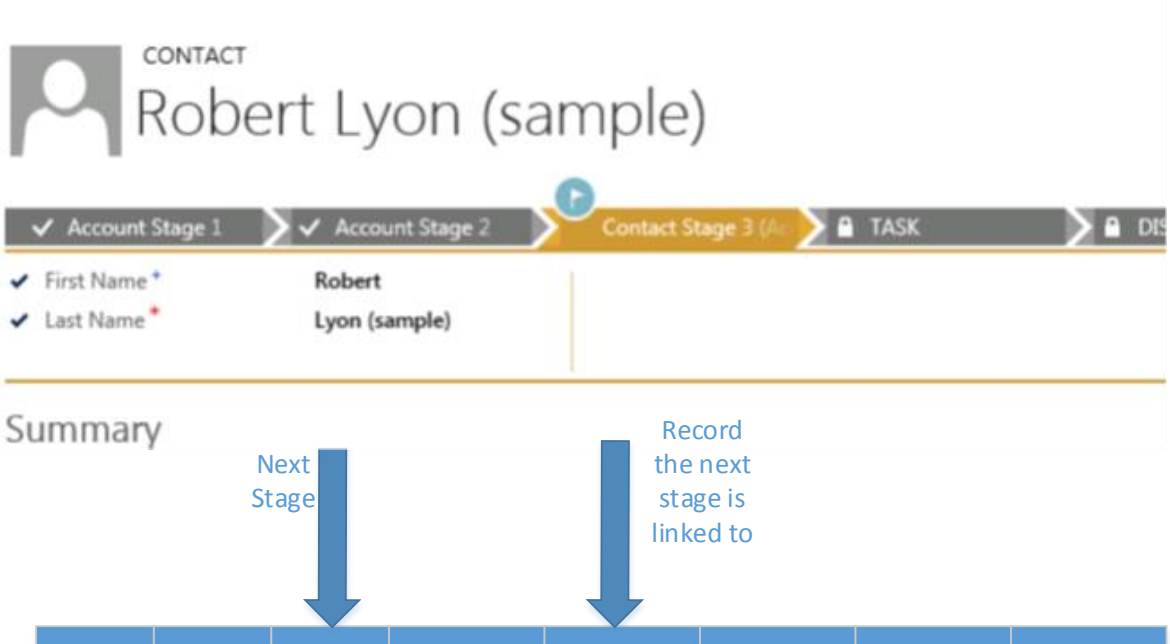


Process Instance Id	Process Id	Process Stage	Related Entity 1	Related Entity 2	Related Entity 3	Related Entity 4	Related Entity 5
New id x	Id of default process for entity: y	Id of stage 1: s2	Id of launching entity: Contoso Account	null	null	null	Null

When the process flow is moved to a stage which is linked to a different record instance, the user is given the option through a lookup on the linking relationship to either link to an existing record linked by that relationship or to create a new record.



Once that record has been created or chosen, the business process flow instance is updated with the related record type and id in the corresponding entity placeholder, in this case, entity 2.

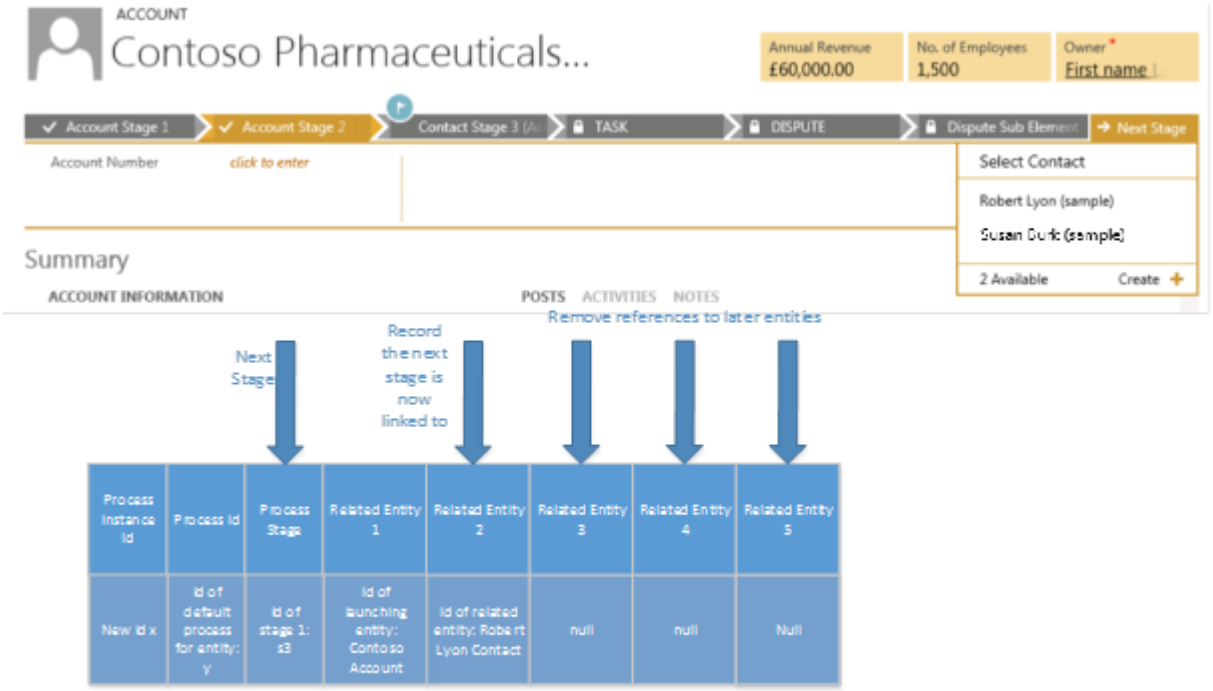


Process Instance Id	Process Id	Process Stage	Related Entity 1	Related Entity 2	Related Entity 3	Related Entity 4	Related Entity 5
New id x	Id of default process for entity: y	Id of stage 1: s3	Id of launching entity: Contoso Account	Id of related entity: Robert Lyon Contact	null	null	Null

As the process is moved through to stages involving the 3rd, 4th and 5th related entities similar applies, adding the instance to the business process flow record.

Once a record has been chosen for a process, it is possible to reselect the related entity by moving back to the preceding stage and selecting next stage again, for example from account to contact again in the example above.

At this point, the related record selection option will be shown, and if a new record is chosen, this will be updated in the business process flow record.



Because any subsequent entity records are through relationships from the originally chosen record, any records stored in the business process flow record for later entities in the process definition will be set back to null.

Switching business process flows

It is possible to change the business process flow linked to a particular record in one of two ways:

- Explicitly choosing 'Switch Business Process' from within the user interface when viewing a record which is linked to the business process
- When the record is already linked to one business process flow, selecting the record as a related entity in another business process flow

When a record is shown and the business process flow is changed, because no data is associated with the business process flow itself, no data will be lost from the previous business flow as that will all be associated with the related records itself although the state of the previous business process flow itself would be lost.

Although multiple process definitions can be specified for a particular entity type, only one active business process flow instance can be displayed at any one time.

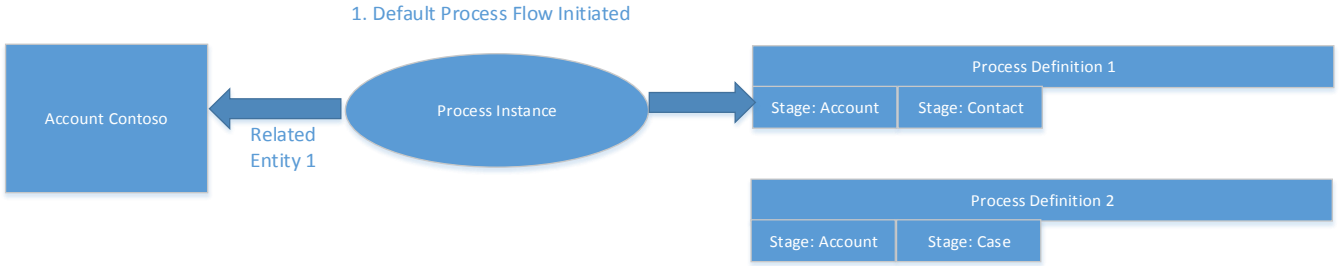
When a record is already included in a business process flow instance, and it is selected for inclusion in another business process flow, two things will happen:

- Any previous business process flow instances including that record will either be
    - Deleted: if the current entity is Entity 1 for that particular business process flow
    - Updated: if the current entity is linked as Entity 2-5. If that is the case:
        - the current entity will be unlinked from the previous business process flow (by setting the related entity to null for the appropriate link)
        - the process stage will be set to null
- The business process flow instance currently being displayed will be updated to link to the selected record

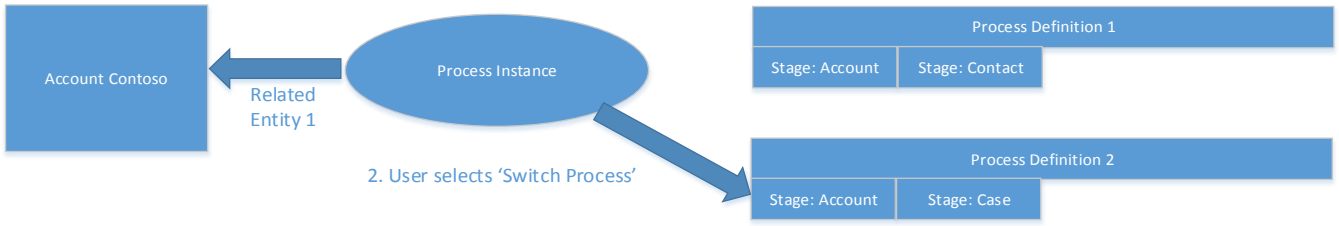
Therefore where overlapping business process flows interact with the same record, the latest one to be assigned will ‘win’.

This is shown in the following examples.

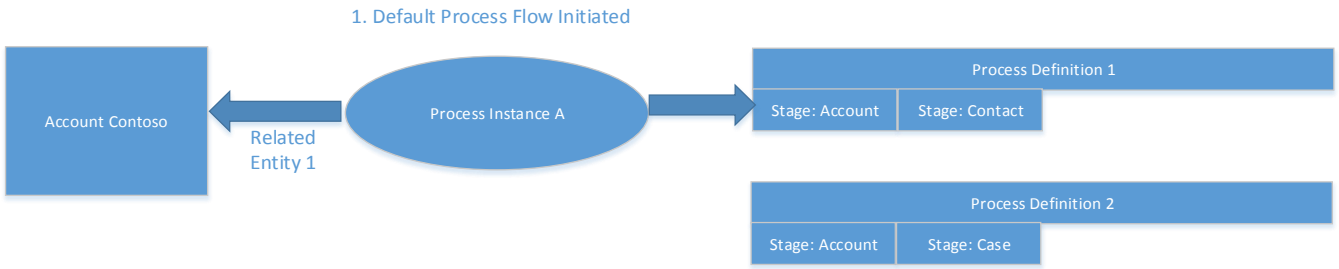
Firstly we will show a user explicitly switching processes. When an account is created, the default process flow for account is initiated. This links the account record to a new process instance which is linked to process definition 1.



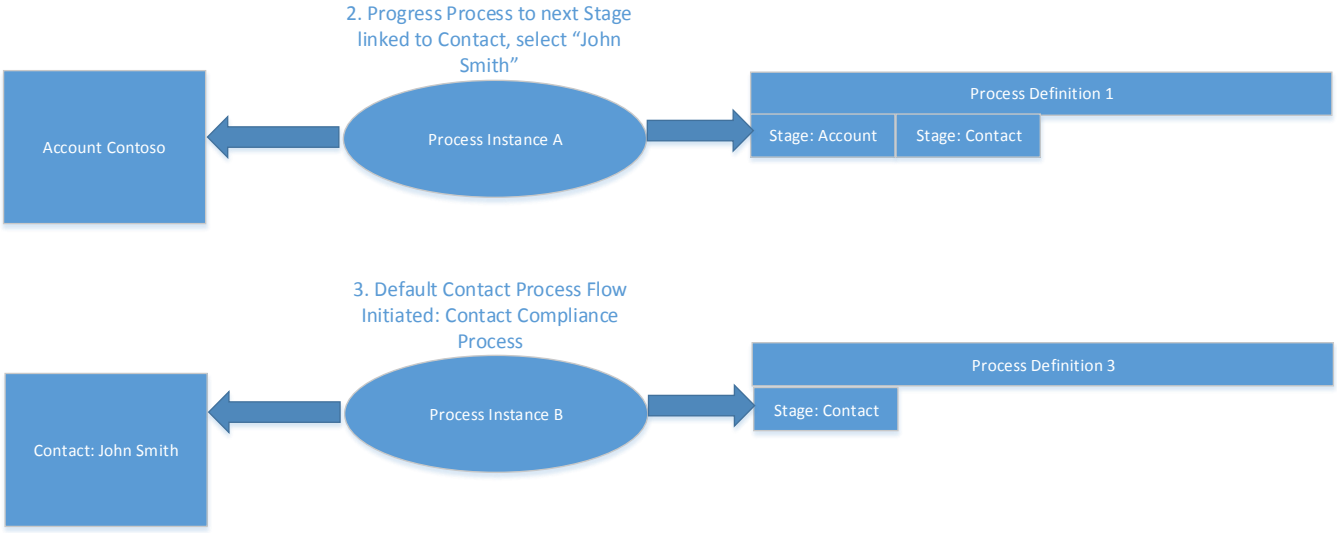
The user however, decides that process definition is more appropriate to this scenario, so selects ‘Switch Process’ from the command bar and chooses Process Definition 2 instead. This resets the process definition that the process instance is linked to, and points it instead at Process Definition 2.



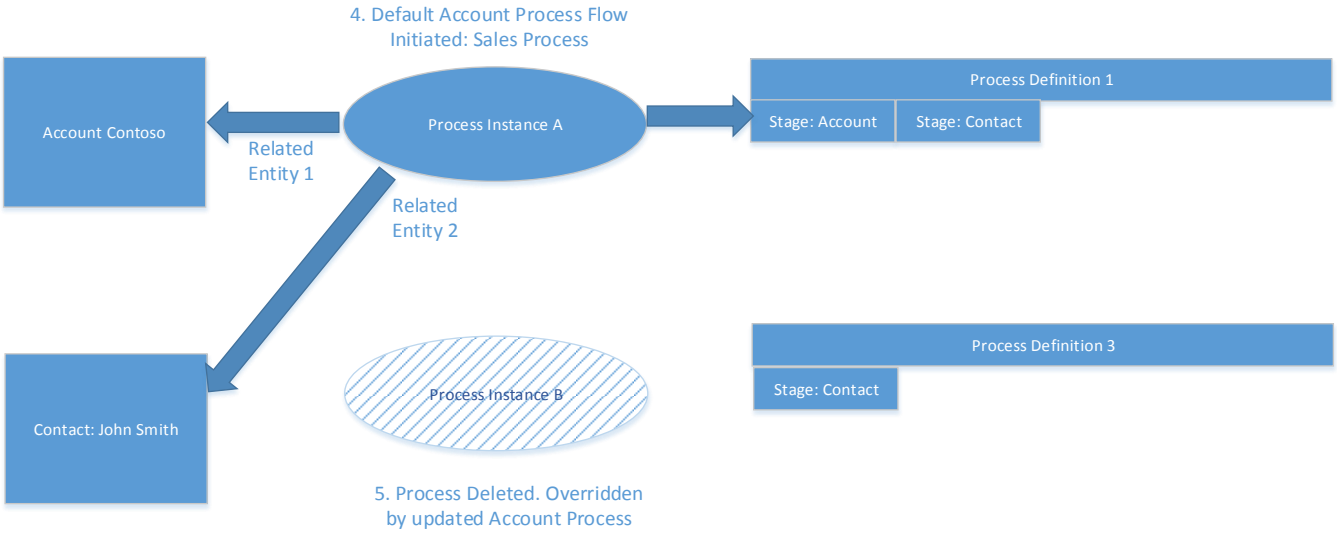
In this next example, a different scenario will be shown where an explicit process switch does not occur. The first step occurs in the same way, creating a new process instance A linked to the default account process definition 1



In this case, however, a contact record is also created, and on the creation of the contact record, a separate Compliance Process is initiated as it is the default Contact Process, this creates a new process instance B linked to Process Definition 3.



When the user moves the account process on to the next stage, which is linked to the Contact Entity type, and they select "John Smith" as the related contact, Process Instance A is now pointed to the Contact John Smith. In doing this, as only one process instance can be linked to the same record instance at a time, Process Instance B which was linked to the "John Smith" Contact record is deleted.



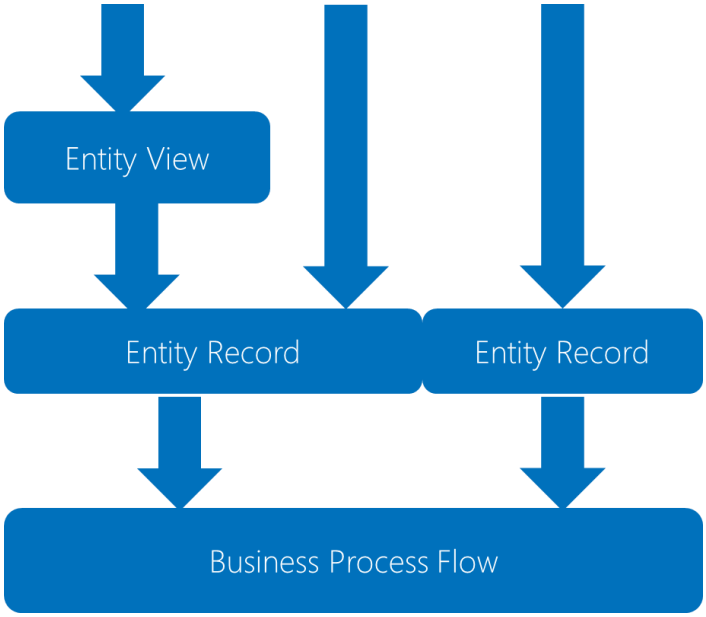
As this shows, where there are overlapping process definitions that could be linked to the same data records for different purposes, this needs careful consideration as newer updates may overwrite process instances initiated earlier.

Business process flows capabilities

Now that the way that business process flows work is understood, some of the more specific capabilities related to them will be described in detail.

Viewing a record linked to a process

Although business process flows have been introduced, the entry point to information typically starts from a particular record. That may be from a view, a report or a sent link, but in each case the initial entry point is actually to a particular record form.



This has implications for how existing, active process flows are shown. A common misconception is that accessing a record linked to a process would always immediately show the active stage of the process and the corresponding record for that stage. This would actually be incredibly confusing and problematic:

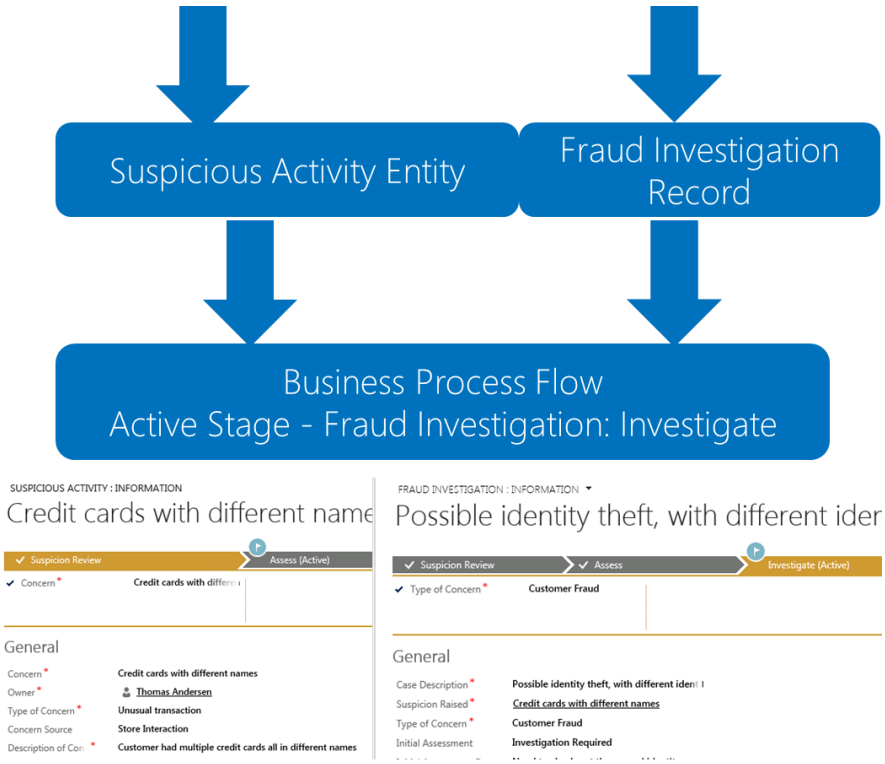
- If, in the example case above, the user opened a particular ‘Suspicious Activity’ record but instead of seeing details of that record were instead (permissions allowing) shown the related Fraud Investigation record that would not be the expected result
- That would also mean there was no direct way to get to a particular record

This would be counter intuitive and frustrating for a user.

What actually happens is that when a record is opened, the form for that entity is shown and a stage linked to that record is shown even if that is not the currently active stage in the process flow. The active stage would be highlighted, even if that is for a stage linked to a different entity type and record, but it would not be the current stage in focus.

Depending on which record linked to a particular process that you access the process from you will see slightly different results.

Using the Fraud Investigation scenario, the example below shows an investigation that is currently at the ‘Investigate’ stage, but depending on whether the Suspicious Activity or Fraud Investigation record is opened, the actual stage initially shown would be different to reflect the display of the request entity record. Note in both cases the Investigate stage is highlighted as the active stage, even though for the Suspicious Activity form it is not shown as the stage in focus.



Stage gating

Part of the guidance intended through the use of business process flows is to ensure that key information is captured at each stage.

Business process flows supports this by allowing the process flow to have fields defined as required. At each stage, it is not possible to move onto the next stage without completing all the fields defined in the business process definition as required for the preceding stage.

It should be noted, this is different from 'Business Required' fields in the underlying entities and it is possible to save the entity without the required fields of the business process flow being entered, whereas 'Business Required' fields need to be entered before the initial record creation occurs. One consequence of this is to note, that by their definition 'Business Required' fields cannot be used to control the change of stage in a process. Because the process flow will be collapsed until the record is created, there is a clear distinction between:

- 'Business Required' fields: used to ensure consistent creation of a record
- Stage Gating fields: used to manage stage transitions

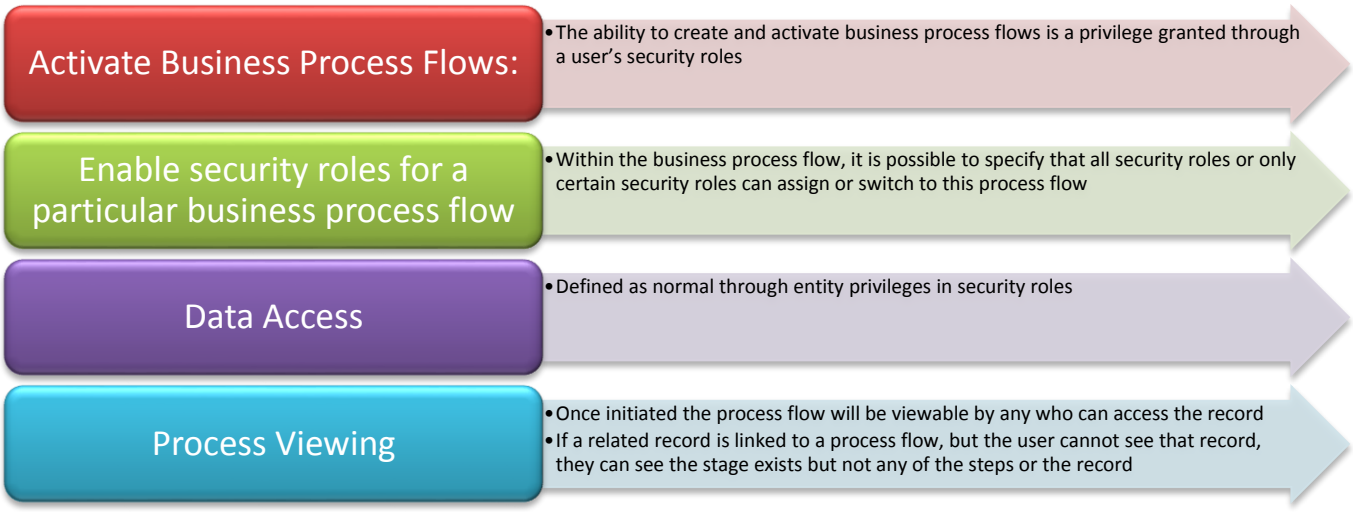
The only distinction or exception case is where required fields are initially hidden on creation, but made visible and therefore active later. This has implications in that the form cannot be saved until these fields are now entered, meaning this forces action within a particular user session.

Business process flows define different required fields to progress between stages than are needed to create a particular entity record.

These required fields for a stage defined as part of a business process flow are what are described as the stage gate conditions that must be met to move onto the next stage.

Security of business process flows

Security controls around business process flows come in a number of forms:



When a user has access through the broader security model to view a particular record, if that record has an active business process flow they will be able to see the business process flow. The permissions around business process flows dictate who can activate and assign business process flows to records, not who can see them when in progress. If the user cannot see the related entity record then they will not be able to view the related process, access to view the active business process flow is controlled through access to the related record where the data is held.

If no business process flow is active for that particular record, if through their security roles they have access to a business process flow definition for that entity type, an instance of this will be created and linked to the record.

If a user has permissions through their security roles for multiple business process flow definitions for the current record's entity type, they will be offered the ability to switch the process type to another that they have the privileges to assign.

Because no data is stored directly on the process flow itself, the security access to data is handled through permissions on the underlying entities and records themselves using the standard security model controls. Because all users who can access the record can see the currently active business process flow and stage for that record, there are some edge scenarios that need consideration in the way the business process flow is defined. For example, a contact record that has a related process which is in the 'fraud recovery' stage may reveal in itself that a fraud investigation is taking place which may not be appropriate to reveal to a broader audience. Choosing stage names cautiously or assigning sensitive processes to entity types or record instances whose access is more carefully managed may be appropriate in these types of scenarios.

Auditing of business process flows

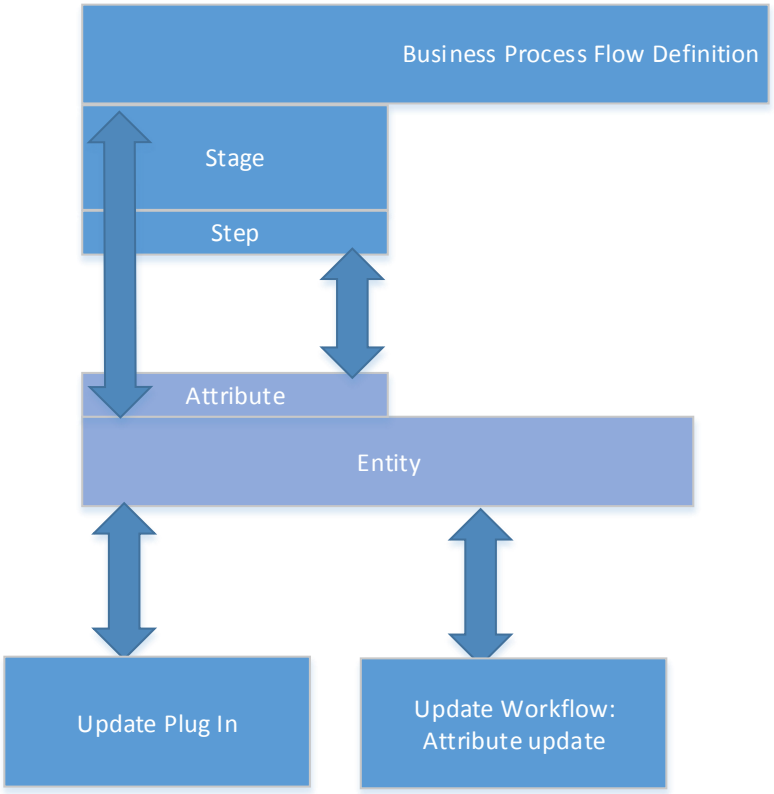
When the process or process stage related to an entity is changed, that is recorded in the audit log for that entity. Using separate stages to differentiate before and after a particular transition allows use of the audit log to track those events.

Note that where multi-entity business process flows are used, the audit events are recorded against the related entity record for the stage in which they occur.

There is not currently a way to view the audit events across a process in a single view.

Triggering actions from business process flows

There is no way to directly derive actions from business process flow events. As data changes occur directly on the related entity records though, plug-ins and workflows can be setup to run when the data change and these can therefore be fired as a result of changes in the business process flows.



These triggers can be performed on processid and stageid on the related entity

- Can trigger workflow on change to these attributes on a process flow enabled entity
- Can also trigger plug in although not on specific field so need to use pre and post images to detect process/stage change when record update triggered
- Changes only recorded to the 'new' stage
    - Therefore when spanning entities, update does not occur on 'old' entity to indicate process has 'left' the entity stage
    - Need to detect on new stage event on new entity

Programmatically updating business process flows

A common ask is whether there are ways to programmatically update business process flows. Although it is not an intentional feature of CRM 2013, there are limited capabilities to update business process flows, but with known constraints

- It is possible to set processid and stageid attributes on a record through SDK
    - Need to set the guid for the relevant entity type and current process (when setting stage)
- Only possible server side
    - No client SDK equivalent
    - There is no direct UI refresh on change. In particular there is no fully supported way to update the business process flow in the UI without fully refreshing the page, which may have other implications for users such as losing unsaved data
- Stage Changes
    - Can only change the stage within the current record, e.g. cannot tell the Fraud Investigation entity to change its process stage back to that of the Suspicious Activity review.

This is an area that will be expanded on in future, but was not intentionally offered as a feature for this release hence the current limitations.

Ordering business process flows

When a business process flow is being defined, an order can also be specified between the different definitions. When a business process flow is assigned to a record for the first time, the highest ordered definition that the user's security roles are allowed to assign will be chosen and assigned. This can be changed subsequently through switching the process but the initial process definition will be assigned automatically based on the order specified in the customizations.

Editing business process flows

Unlike with workflows, business process flows can be edited and their definitions changed while in flight. This includes all elements of the business process flow other than the initial entity type including the name and subsequent entity types. Where changes in related entities and stages occur, this will impact on currently in-flight instances of the business process flow. This is an action that should be considered carefully, for example whether changes should be applied out of office hours or at a pre-communicated point to avoid confusion for end users or any potential performance implication of updating the definitions.

Stage categories

Stage Categories are defined through a global Option Set called 'Stage Categories'

The categories can therefore be customized but only one set can be defined across an implementation, intentionally to provide a set of values for consistent reporting across process definitions

These can then be used for reporting across business process flow definitions. These can be viewed using the related Process Stage entity that implicitly gets linked to a business process flow enabled entity.

Viewing results

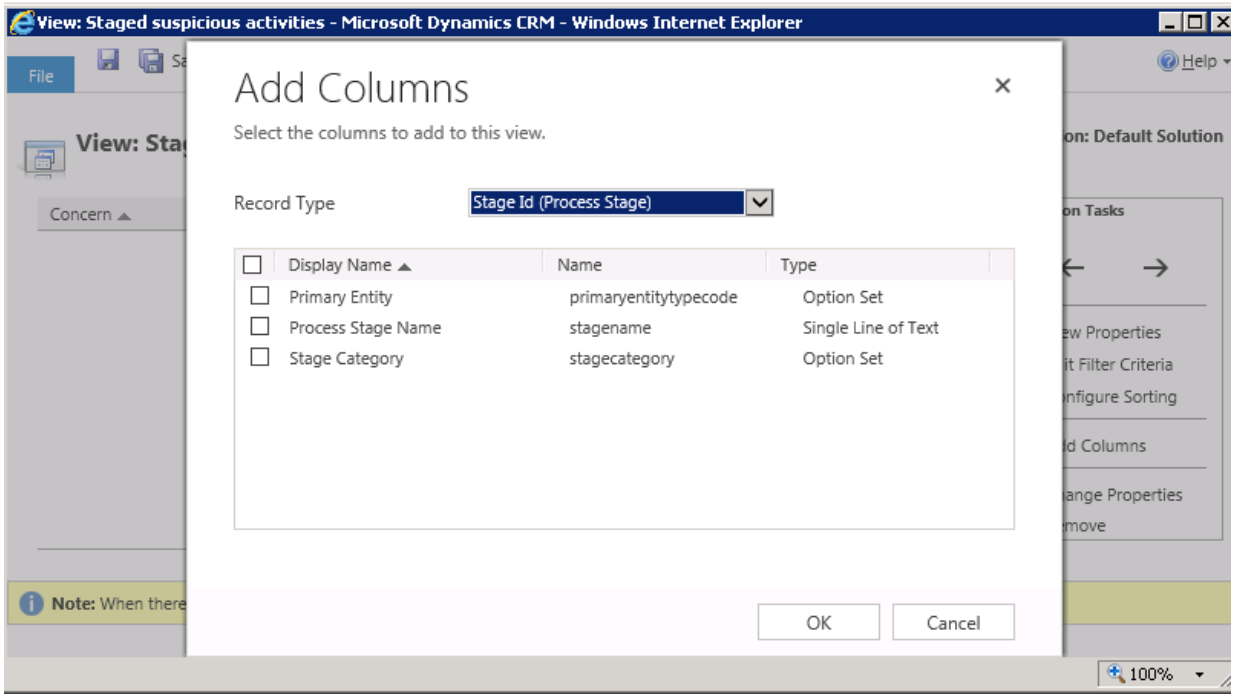
It is possible to view the current state of business process flows related to a particular entity type.

For each entity type, it is possible within the view to see the related Process Stage entity, detailing whether the entity is linked to an active business process flow. It will also show what stage the record is at, although note this is the latest stage for the particular entity type rather than the latest stage for other entity types. For example in

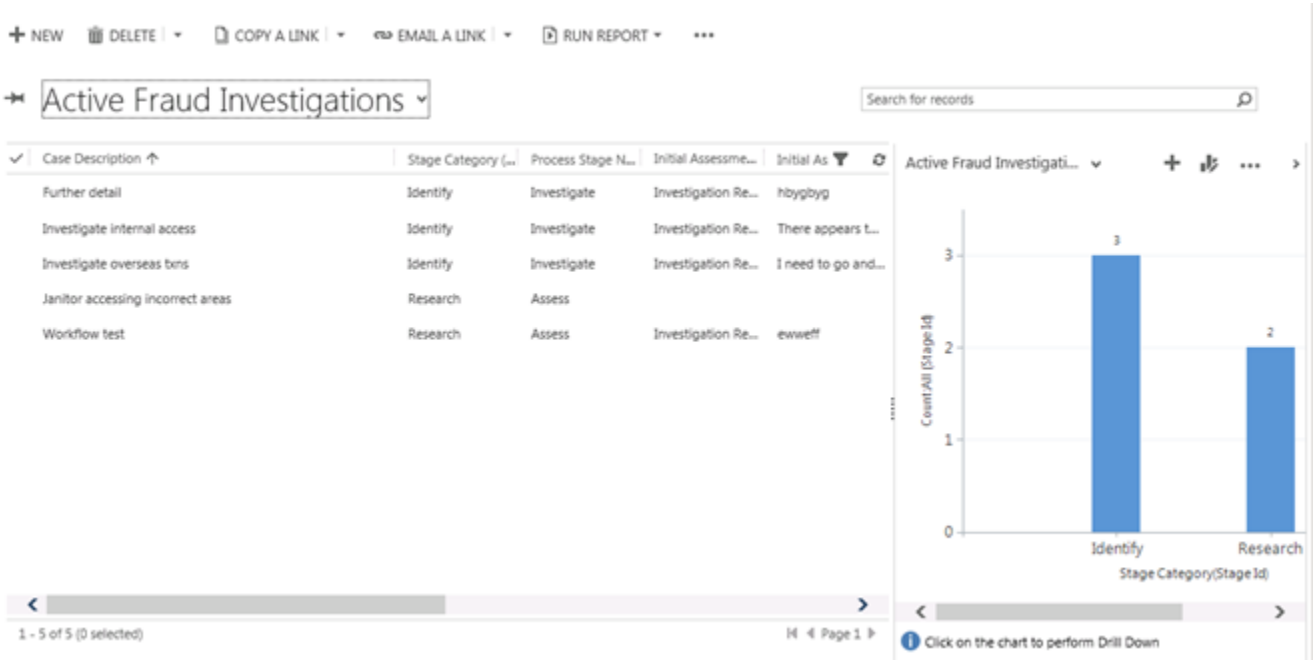
the example given earlier, the account entity would only show stages linked to the account entity type, even if the business process flow has moved on to account or task related entity stages.

One point to note, is that to view process stages in charts, at least one view for that entity type must have a column from the related Process Stage entity on it, which triggers the charts mechanism to recognize the Business Process metadata for selection.

So, firstly add a column to a view for that entity type:



Then can select a chart and report by Stage Name or Stage Category as required:



At this point it is not possible to view all the business process flows in flight across the system in a single view within the UI.

Solutions

Business process flows can be linked to, exported and imported as part of a solution, allowing them to be defined as part of a particular implementation and moved between environments.

Summary

Business process flows add a significant new capability to Microsoft Dynamics CRM 2013.

Defining and delivering a new business process within an organization can take time and will need buy in from not only the project sponsors but equally the users of the updated flow. We should recognize that the first phase will not always hit the mark first time and will need to be altered as business need changes and users become familiar with the technology. The new updated process flow capabilities within Microsoft Dynamics CRM can make applying the new process simple but a process constantly evolves and therefore the biggest effort remains the design and evolution of the process to meet the constant changing needs of the customer.

Understanding how business process flows work and being able to use that knowledge to design solutions that take full advantage of them will be a significant advantage for an implementer. The descriptions above will give that insight to the area of CRM 2013 business process flows.