

Recruitment Process Guide and Simulator Implementation

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Purpose and scope

This guide describes a typical UK recruitment process, from a business need to a new starter's first day, and explains how the Recruitment Process Simulator models it. The simulator is a discrete event simulation calibrated to published UK benchmarks: a median time to hire of about 36 calendar days, 72 applicants per advert and 86% of offers accepted.

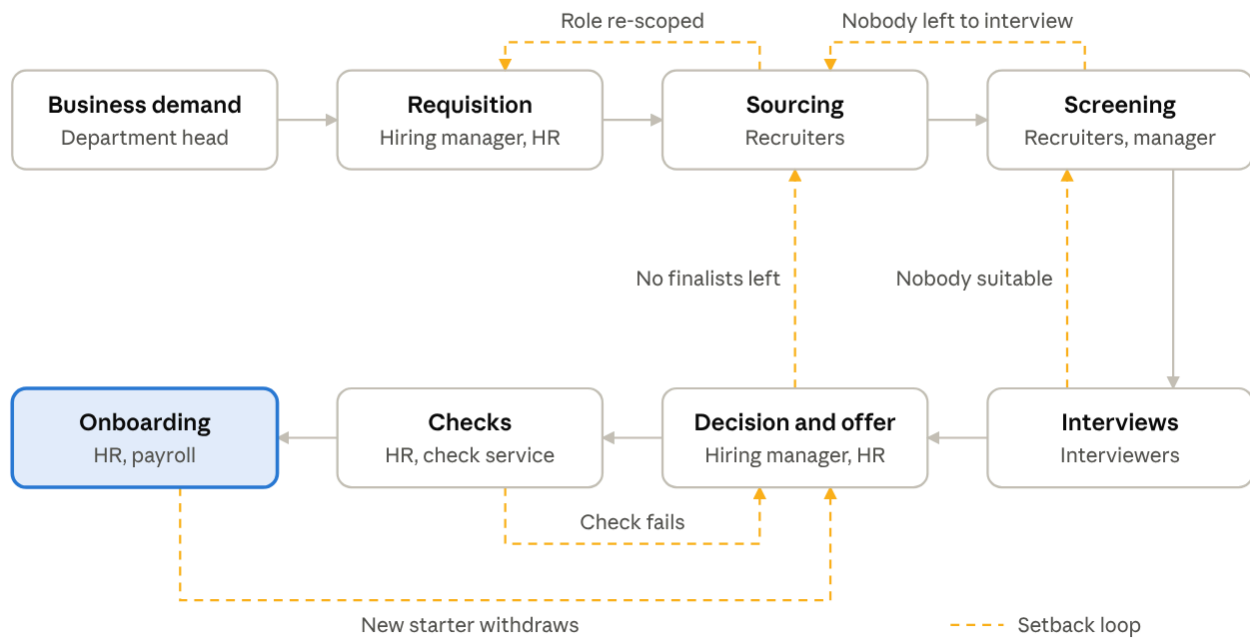
It is written for HR, talent acquisition and operations leads who want to understand the process, test changes before making them, or extend the model. The first half covers the process itself: stages, stakeholders, decisions, systems and setbacks. The second half covers the implementation: the engine, parameters, outputs, calibration and testing.

The simulator is published at [Recruitment process simulator](#). All durations are in working days unless marked as calendar days.

The recruitment process

A vacancy moves through eight stages, and a clean pass takes about 51 working days of planned time, 20 of them the new starter's notice period. Six setback loops can send it back to an earlier stage.

Eight stages from business need to first day, with six ways back



recruitment process · 8 stages, 6 setback loops

The process runs left to right along the top row, then right to left along the bottom. Dashed lines are setbacks; offers that are declined pass to the next finalist within the offer stage.

Stage	Starts when	Ends when	Plan (working days)
Business demand	A manager raises a need	The need is confirmed and funded	3.1
Requisition	Funding is approved	The requisition is approved in the ATS	0.9
Sourcing	The advert is set up	Enough candidates pass the screen (3 by default)	6.1
Screening	Enough screened candidates are in the pool	The hiring manager agrees the shortlist	3.3
Interviews	The shortlist is agreed	The final round's debrief ranks the finalists	12
Decision and offer	Finalists are ranked	A candidate accepts	5.7
Checks	The offer is accepted and notice starts	ID, references and right to work clear	7.1

Stage	Starts when	Ends when	Plan (working days)
Onboarding	Checks clear	The new starter's first day	13

CVs are screened every two days from the moment the advert goes live, so screening overlaps sourcing. Checks run during the notice period, so onboarding is the rest of the notice once checks clear.

Stakeholders and decisions

Seven stakeholder groups make 20 decisions, numbered in the order they happen. Decision 6 happens only before a role is re-advertised, decisions 11 to 13 repeat for every interview round, and 14 to 20 repeat whenever an offer passes to the next finalist. Ten of the decisions branch the process; the rest are tasks that are always completed.

#	Stage	Stakeholder	Decision	What it changes in the model
1	Business demand	Department head	Is there a real need?	Can cancel the vacancy (3%)
2	Business demand	Finance approvers	Fund the role?	Can cancel the vacancy (3%)
3	Requisition	Hiring manager	What role, what level?	Task
4	Requisition	HR advisers	Which grade and band?	Task
5	Requisition	Finance approvers	Approve the cost?	Can send the requisition back for rework (10%)
6	Sourcing	Hiring manager	Re-scope before re-advertising?	Re-scopes the role before a new advert (30%)
7	Sourcing	Recruiters	Which channels?	Task
8	Sourcing	Candidates	Apply?	Each applicant arrives individually
9	Screening	Recruiters	Who passes the screen?	Top 8% by assessed quality pass
10	Screening	Hiring manager	Who makes the shortlist?	Takes the best four from the pool

#	Stage	Stakeholder	Decision	What it changes in the model
11	Interviews	Recruiters	When to schedule?	Books each interview; 10% need rebooking
12	Interviews	Candidates	Stay in the process?	Candidates give up after 15 days without contact
13	Interviews	Interviewers	Pass this round?	Top 55% of each round go through
14	Decision and offer	Hiring manager	Who gets the offer?	Best-ranked finalist first
15	Decision and offer	HR advisers	What terms to offer?	Task
16	Decision and offer	Candidates	Accept the offer?	12% decline, rising 2 points per 20 days waited
17	Checks	HR advisers	Do the checks clear?	3% fail, offer withdrawn
18	Onboarding	Candidates	Still joining?	4% withdraw during notice
19	Onboarding	HR advisers	Contract in place?	Task
20	Onboarding	Hiring manager	Ready for day one?	10% not ready, start delayed

Percentages are the calibrated defaults and can be changed in the simulator.

Systems and data flows

Seven systems hold or pass on the process data, with the applicant tracking system (ATS) as the record at every stage after demand. The simulator counts each exchange, so it reports data traffic per hire by system.

System	Demand	Requisition	Sourcing	Screening	Interviews	Offer	Checks	Onboarding
Finance system	Budget check	Cost centre				Salary approval		
Applicant tracking system		Requisition record	Applications in	Screen outcomes	Scorecards	Offer letter	Check status	Hire record out

System	Demand	Requisition	Sourcing	Screening	Interviews	Offer	Checks	Onboarding
Job boards and careers site			Advert out, CVs in					
Calendar and email				Rejection emails	Invites, slots, outcomes	Offer email		
Background check service							ID, references, results	
HR information system	Headcount plan							Employee record
Payroll								Bank and tax details

The key hand-off is at onboarding, when the hire record moves from the ATS into the HR information system and payroll. Candidate personal data is held in the ATS, calendar and background check service, so retention and access rules under UK GDPR apply to all three.

Loops and setbacks

About 40% of vacancies hit at least one setback with the default settings, and setbacks are the main reason actual stage times run over plan. Each setback sends the vacancy back to an earlier point rather than ending it.

Setback	From	Goes back to	Trigger
Requisition sent back	Requisition	Requisition (rework at half effort)	Finance does not approve the cost
Role re-scoped	Sourcing	Requisition	Hiring manager re-scopes before a new advert
Nobody left to interview	Screening	Sourcing (new advert)	Pool empty and advert finished
Nobody suitable after interviews	Interviews	Candidate pool	No one passes the final round
Interview rescheduled	Interviews	Interviews (rebook)	Diary clash or cancellation
Offer declined or lost	Offer	Offer (next finalist)	Decline, or finalist gave up waiting

Setback	From	Goes back to	Trigger
No finalists left	Offer	Candidate pool	Every finalist has declined or left
Check fails	Checks	Offer (next finalist)	Reference or right-to-work failure
New starter withdraws	Onboarding	Offer (next finalist)	Withdrawal during notice
Start delayed	Onboarding	Onboarding (delay)	Equipment or access not ready

Two outcomes end a vacancy without a hire: cancellation at the demand stage, and abandonment after six failed searches.

How the simulator is built

The simulator is a discrete event simulation that runs entirely in the browser in one self-contained HTML page. The clock jumps from one event to the next instead of ticking day by day, so a year of hiring runs in a fraction of a second.

Event engine. Future events sit in a priority queue ordered by time, with ties broken by the order they were scheduled. Each vacancy, interview and screening session is a process written as a JavaScript generator. A process pauses on one of four commands and the engine resumes it when the matching event fires:

- **delay:** an elapsed wait that holds nobody, such as diary lead time or a notice period
- **use:** work that needs a person from a team, queuing if everyone is busy
- **all:** wait for several sub-processes to finish, such as every interview in a round
- **wait:** sleep until signalled, such as waiting for enough candidates to pass the screen

Entities. Vacancies arrive at random at a set weekly rate, or in a batch on day one. Every applicant is an individual with an application time, a hidden quality score and a personal patience limit.

Resources and queues. Recruiters, HR advisers, finance approvers and interviewers are shared pools with fixed capacity, served first come, first served. Hiring managers are a pool of individuals, each owning several roles. An interview needs a whole panel at once, so it waits until enough interviewers are free.

Candidate behaviour.

- **Quality and assessment:** each assessment ranks candidates on quality plus random noise and keeps the top share. Better assessment means better hires, and passing one stage makes passing the next more likely.
- **Patience:** every contact (screen result, interview, offer) resets a candidate's patience clock. If it runs out, they withdraw from wherever they are, including mid-queue.
- **Offer response:** the chance of declining rises the longer the candidate has waited since applying.

Process realism. CVs are screened every two days while the advert is open. Interviews start once three candidates pass, and later passers form a reserve pool. Background checks run during the notice period rather than before it.

Durations. Each duration is drawn from a right-skewed triangle whose average equals the figure entered, so plans built from those figures are unbiased. Most tasks come in a little quick, with a tail of slow ones.

Replications. Results come from independent replications, each with its own reproducible random seed. Vacancies opening during a warm-up period are excluded, and the live view plays replication 1.

Parameters

About 70 parameters in eight groups drive every result, and changing any one re-runs all replications. The defaults below describe an average UK employer; replace them with your own data to model your organisation.

Group	What it controls	Key defaults
Scenario	Workload and how the experiment runs	1.5 new vacancies a week, 250-day period, 40-day warm-up, 20 replications, seed 1
Team capacity	Shared teams that work queues behind	2 recruiters, 2 HR advisers, 1 finance approver, 6 hiring managers, 8 interviewers, panels of 2
Effort per task	Working time that holds a person	Interview including prep 0.3 days, CV screen 0.02 days, role write-up 0.5 days
Waiting times	Elapsed time that holds nobody	Advert open 20 days, half of applications within 5 days, diary lead time 4 days, debrief 1 day, checks 7 days, notice 20 days

Group	What it controls	Key defaults
Candidates	Funnel size and behaviour	72 applicants per advert, 8% pass the screen, interviews start at 3, up to 4 interviewed, 2 rounds, 55% pass each round, patience 15 days
Approvals and setbacks	How often things go wrong	Requisition rework 10%, re-scope 30%, reschedule 10%, offer decline 12%, check failure 3%, withdrawal 4%
Costs	Daily rates and fixed costs, in pounds	Recruiter £250, hiring manager £400, interviewer £350 per day; advert £300; checks £80; empty seat £200 per day
Fine-tuning	Built-in assumptions	Duration variability 40%, rework at 50% effort, abandon after 6 searches

Effort and waiting times are kept separate on purpose. Effort uses up team capacity and creates queues; waiting times only add elapsed days.

Outputs

The simulator shows one run event by event in a live view and summarises all replications in a results panel. With the defaults, the median time to fill is about 56 working days from vacancy opening to first day, including a 20-day notice period.

Live view. A service blueprint with the process line on top, then stakeholder and system rows, one column per stage.

- **Stage circles** count the work done: demands raised, requisitions approved, candidates sourced, CVs screened, interviews held, offers made, checks completed and new starters.
- **Plan and actual** sit under each stage. Plan is one clean pass with no queues or setbacks; actual is the running average including waiting and repeats, shown in amber when more than 10% over plan.
- **Decision numbers** start grey, turn green once made, and show the latest in blue. Arrows link each decision to the next.
- **Cells** flash when a decision is made or data moves, and count how often.
- **Team status** under each stakeholder shows how many people are busy and how many tasks are waiting.

- **Event log** lists what happened to each vacancy, with setbacks highlighted.

Results panel.

Output	What it tells you
Mean time to fill, with 95% confidence interval	The headline figure and how certain it is
Median and 90th percentile time to fill	The typical role and the slow tail
Time to hire, application to accepted offer	The standard benchmark measure, in working and calendar days
Process cost per hire, with breakdown	Staff time, adverts and checks per hire
Empty-seat cost per hire	The cost of the role being unfilled
Quality of hire	The hired person's percentile among all applicants
Team load	Utilisation and average queue wait for each team
Setback frequency	How often each loop happens
Stage time against plan	Where actual time exceeds the plan
Decisions and data exchanges per hire	Workload by stakeholder and traffic by system
Benchmark comparison	Five measures checked against published UK figures

The setback arcs on the process line are drawn thicker the more often each loop happens across all replications.

Calibration, testing and validation

The defaults reproduce five published benchmarks, and a 22-test verification suite passes in full after fixing three bugs it found. The model has not yet been validated against any one organisation's data.

Calibration. The defaults were tuned until all five measures fell inside the benchmark ranges.

Measure	Model	Benchmark
Time to hire, application to accepted offer (median)	About 36 calendar days	UK average 4.9 weeks; UK median 40 days (NatWest Mentor)
Applicants per advert	72	About 72 per role (SmartRecruiters UK analysis)
Applicants interviewed	5.4%	3% to 4.1% (funnel benchmarks)
Interviewed candidates offered	26%	About 27% (funnel benchmarks)
Offers accepted	86%	About 84% (funnel benchmarks)

Verification tests. The suite runs against the simulation engine in Node.js and should be re-run after any change.

Test	Result
No randomness: stage times equal the plan	Exact, to 0.000000000000001 days
Random durations average to the figures entered	Within 1% over 3,000 runs
Probabilities come out at the rates set	20% declines gave 78% acceptance; 10% rates gave 9% to 11%
Offers and acceptances balance for every vacancy	No mismatches
Utilisation law: busy share equals arrivals × effort ÷ capacity	Within 3 points for each team
Little's law: open vacancies equal arrival rate × time open	18.1 against 18.2
Effects point the right way	More recruiters, more patience and better assessment all improve results
Edge cases	No applicants, no vacancies and oversized panels all behave correctly
Reproducibility and confidence intervals	Same seed identical; 95% interval covered the true mean in 92 of 100 trials

Bugs found and fixed. The onboarding plan counted contract preparation on top of the notice period instead of within it. Costs were charged for interviews cancelled before they happened. Interviews waited up to half a day after enough candidates had passed

the screen.

Validation. Proving the model matches a specific organisation needs its own data:

1. Calibrate durations, pass rates and setback rates from a year of ATS stage timestamps.
2. Back-test: run that year with real volumes and team sizes, and check it reproduces results not used in calibration.
3. Hold-out test: calibrate on one year and predict the next.
4. Check a past change, such as a new recruiter, against what actually happened.
5. Walk recruiters and hiring managers through the event log to confirm it looks like real life.

Limitations and next steps

The model is a credible average-employer starting point, not yet a model of any specific organisation. Its main simplifications:

- **Queues:** all teams serve work first come, first served, with no priority roles.
- **Calendar:** working days only, with no holidays, part-time hours or seasonal peaks.
- **Outside parties:** department heads, job boards and the background check service never run out of capacity.
- **Sourcing:** every role is filled by open advertising; internal moves, referrals and agencies are not modelled, and channel choice does not change applicant numbers.
- **Rounds:** each interview round waits for its slowest interview, so strong candidates are not fast-tracked.
- **Plan estimates:** the sourcing plan runs about 17% under actual because applications arrive at random, and the interview plan excludes the wait for each round's slowest interview.

Next steps, in order of value:

1. Calibrate and validate against your own ATS data (see the validation steps above).
2. Add internal, referral and agency sourcing channels with their own speed and quality.
3. Add priority rules and working calendars for teams.
4. Build the verification tests into the page as a "Run tests" button.

Using the simulator

Open the [simulator](#), change a setting, and the results re-run within about a second. Press Play to watch replication 1 unfold, and Restart to begin again.

Quick start.

1. Read the benchmark table in the results panel to confirm the defaults look sensible.
2. Change one setting at a time and compare mean time to fill, its confidence interval, and team load.
3. Use Play to see where work queues and which setbacks fire.
4. Raise replications to 100 or more before relying on a small difference.

Common scenarios.

Question	Settings to change
How long will one new role take?	New vacancies per week 0, roles opened on day 1 set to 1, warm-up 0, replications 200
What if 20 roles open at once?	Roles opened on day 1 set to 20; watch team load and recruiter waits
Would another recruiter help?	Recruiters up by 1; compare time to fill and recruiter utilisation
Should we drop an interview round?	Interview rounds down by 1; compare time to hire and quality of hire
What does slow feedback cost us?	Raise debrief time or lower candidate patience; watch drop-outs and declines
Are interviewers our bottleneck?	Lower interviewers available, or raise panel size; watch interviewer utilisation

When a team's utilisation passes about 85%, its bar turns amber and time to fill rises sharply. That is where adding capacity pays off most.